

Preliminary
Drainage Report
For
Vista Del Agua Specific Plan
Coachella, CA

Revised
September 20, 2017

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



Christopher F. Lenz, PE 63001

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- APPENDIX B: Onsite Hydrology Calculations and Input Details
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- APPENDIX D: Petra Geotechnical Infiltration Report

1 INTRODUCTION

1.1. SITE DESCRIPTION

1.1.1. LOCATION

The Vista Del Agua project is located northeast of the intersection of Tyler Street and 48th Avenua near the northern limits of the city of Coachella. Legally, it is parcels 603-150-005, 006, 007, 008, 009, 010, 011-1, 012-2, 008-9, 603-130-003-3, 003-2, 009-8, 603-122-05-9, 603-150-004-5.

1.1.2. EXISTING FEATURES

The site consists of 275.4 gross acres of unsubdivided land. The site drains northeast to southwest with varying terrain at a slope range of 1-4 percent. The area is primarily farm land and undeveloped parcels. To the north of the site is the All American Canal and Interstate 10.

1.1.3. PROPOSED CONDITION

It is proposed that the subject property be developed by specific plan to permit up to 1640 units. The site will contain 10 planning areas, two commercial (258 acres), 3 Multi-Family planning areas (39 acres), a regional park (14 acres), and 4 single family residential planning areas (177 acres). The remaining areas are roads and buffer areas.

1.2. PURPOSE OF REPORT

The purpose of this report is to analyze the hydrology of the landscape and assess the hydraulic conditions of the subject parcel. As required by the region, this report will show the subject site will retain the 100 year 24 hour post development runoff volume. Additionally, water quality volume will be added to the runoff retention requirements for a total retention volume indicated for the different management areas.

1.3. FEMA INFORMATION

The Flood Insurance Rate Maps (Panel 2260G of 06065) for this subject property shows that the site falls within two regions identified as Zone X. Zone X (unhatched) denotes areas determined to be outside of the 500-yr flood, or areas determined to be outside of the 0.2% annual chance floodplain. Zone X (Hatched), in the southwest portion of the site are areas of 0.2% annual flood chance, areas of 1% annual flood chance with average depths of less than 1 foot ot with drainage areas less than 1 square mile; and areas protected by levees form 1% annual chance flood. Refer to Figure 4 FEMA Map.

2. EXISTING DRAINAGE PATTERNS

2.1. OFFSITE

The site is relatively isolated when reviewed regionally. It is protected by the All American Canal, Interstate 10, and Detention Dike 2. Because of this the offsite are that is tributary to the site is relatively small. Two areas have been identified. Offsite Area A is the area bounded by I-10 and the northern limits of the property. It is roughly 60 acres and is proposed to be accepted into planning area 3 or 47th Ave and passed through the site. Offsite Area B is an area along the eastern edge of the property that flows southwesterly into the site. It is roughly 20 acres and is proposed to be analyzed and controlled with the proposed perimeter street and continue southerly. Refer to Exhibit B in Appendix A for detail.

2.2. ONSITE

A portion of the site has been farmed recently and in the recent past (primarily along the eastern edge, Polk Street, and along the south side of 47th street. The rest has been primarily open desert with fair land cover. Runoff from the site does not show evidence of concentration beyond areas of vegetation and ponding. The site drains to the south west, where it overtops 48th street and continues southerly. Due to the farming activity south of the property, there is also no evidence of concentration of flow south of 48th. Refer to Figure 1, Figure 2 and Appendix A for detail.

3. PROPOSED DRAINAGE PATTERNS

3.1. OFFSITE

Offsite flows will be collected at the exiting points of interception with the projects development limits. Area A will be accepted and passed through Planning Area 3 or 47th Ave. Area B is proposed to be analyzed and controlled with Polk Street and continue southerly.

3.2. ONSITE

As required by the City of Coachella, the project will retain its full 100 year 24 hours post development runoff. The site has been designed with multiple drainage management areas, all with infiltration basins. The projects infiltration rates were studied by Petra Geotechnical and confirmed to be between 1.6 and 2.7 inches per hour. However for design an infiltration rate of 1.0 in/hr was used, as approved by the City per the attached E-mail in Appendix D - Infiltration Report. Refer to Figure 5 Proposed Conditions DMA Map, and Appendix B for detail.

4. HYDROLOGIC CONDITIONS

The Synthetic Unit Hydrograph has been employed to determine peak runoff volumes. The Riverside County Flood Control and Water Conservation District (RCFCD & WCD) Hydrology Manual (reference 1) was used to develop the hydrological parameters for the 100 year 24-hr storm event. Due to the large number of similar DMAs, a representative flow rate yield was identified by studying three DMA and determining the yield per acre to be applied to the remaining DMA's. Refer to Appendix B for detail.

The Rationale Method has been employed to determine peak runoff amounts. The Riverside County Flood Control and Water Conservation District (RCFCD & WCD) Hydrology Manual (reference 1) was used to develop the hydrological parameters for the 10 and 100 year peak runoff for routing through the proposed project area by the proposed streets. Refer to Appendices B and C for detail.

4.1. Offsite

There are contributing areas to the north and east of the project that will be accepted and passed through the subject project, or routed by edge condition roads. They are identified in Exhibit B in Appendix A. The area that will be accepted into the proposed projects system of drainage is Area A (60 acres). The remaining offsite area, Area B (20 acres), will be routed southerly by the proposed construction of Polk Street.

4.2. Onsite

The Synthetic Unit Hydrograph method was used to develop and analyze the proposed conditions. Planning Areas 1-4, 9, and 10 were analyzed independently due to the specific land use (multi family, park, and commercial). The remaining areas were determined using a runoff yield method described below.

Runoff Yield

Within planning area 5, three areas were designed with lots, streets, and design grades to represent final design conditions to be used for drainage analysis. The three areas were of differing size. All areas had the following inputs;

100 year rainfall - 4.47"
Runoff Index - 56
%Impervious - 60%
Soil Group B and AMC 3

Area	Acreage [ac ft]	Yield [ac ft/ac]
A-22	9.5	0.243
A-27	18	0.243
A-34	2	0.242

Once the runoff yield of 0.243 acft/ac was identified, that volume was then routed through a basin with an assumed infiltration of 1.0 in/hr. Infiltration decreases the storage required. The resulting routed yield was calculated to be 0.155 acft/acre and used for calculations in this report. Refer to Figure 5 Proposed Conditions DMA Map, and Appendix B for detail.

The following is the results of the analysis of the DMA's;

Drainage Area	Land Use	Acres	Required Flood Volume [cf]	WQMP Volume [cf]	Min Basin Volume [ac-ft]	Estimated Basin Area** [sf]	Estimated Basin Area** [ac]
1	C	16.80	151,144	17,690	3.5	57,938	1.3
2	MF	7.33	52,891	6,384	1.2	20,275	0.5
3*	MF	10.10	72,878	8,797	1.7	27,937	0.6
4	MF	21.94	158,311	19,110	3.6	60,686	1.4
5	SF	43.03	290,539	25,000	6.7	111,373	2.6
6	SF	71.65	483,781	41,629	11.1	185,449	4.3
7	SF	46.89	316,601	27,243	7.3	121,364	2.8
8	SF	14.82	100,065	8,610	2.3	38,358	0.9
9*	OS	13.82	60,509	1,003	1.4	23,195	0.5
10	C	8.27	74,402	8,708	1.7	28,521	0.7
Roads	n/a	20.73	205,149	27,094	4.7	78,641	1.8

Note: Areas 1 - 4 and 10 calculated independently not based on yield calculation

* Note: The drainage area has offsite flow to be accepted and routed, but no water quality or flood volume

** Note: Estimated area assumed 3' deep basin, no freeboard, and 15% cushion (for grades, contouring, etc)

Refer to Figure 5 Proposed Conditions DMA Map, and Appendix B for detail.

5. HYDRAULIC CONDITIONS

5.1. Proposed Conditions

As designed, the project will use infiltration basins for the 100 year 24 hour runoff volume. The primary hydraulic concerns will be the routing of runoff along the proposed streets, and the inlets conveying street runoff into the basins. Primarily the basins will spill over the edges, if any exceedance storm impacts the area. No significant hydraulic structures or storm drain is proposed at this time, and at time of final design scupper and inlets will be analyzed and proposed as part of the more detailed design.

5.2. Roads

Interior roads will consist of pavement thickness in conformance with the Geotechnical Report, when available, and per County of Riverside Standards. Local roads will have 36 foot widths measured back of curb to back of curb per County of Riverside Standards. Streets will be designed to pass the 10-year storm water within the curb, with the 100-year flows contained within the right-of-way. All interior roads will have cross slopes of two (2) percent. Street capacity for the minimum slope roads (0.4%) have been calculated at 33 cfs for curb capacity and 66 cfs for right-of-way capacity. Most of the streets will be designed in excess of the 0.4% minimum, with many over 1%. In locations where streets cannot contain the peak flows or intersections are desired to be kept dry, storm drain may be used at final design. Refer to Figure 5 and Appendix C for additional detail.

6. WATER QUALITY

6.1. Proposed Conditions

The project proposes to use joint water quality and flood control facilities through the use of infiltration basins. The project has prepared a water quality management plan. The water quality volume required is well within the required volume for 100year 24hr runoff storage reflected in Table 4.1.

7. MAINTENANCE

Maintenance of the onsite basins is proposed to be by the City of Coachella through a Landscape Maintenance Assessment district. The City will also maintain all the streets and inlets. Maintenance of the other catch basins and storm drains interior to the project if needed at final design will be the responsibility of the City of Coachella as they will be within public right-of-way.

REFERENCES

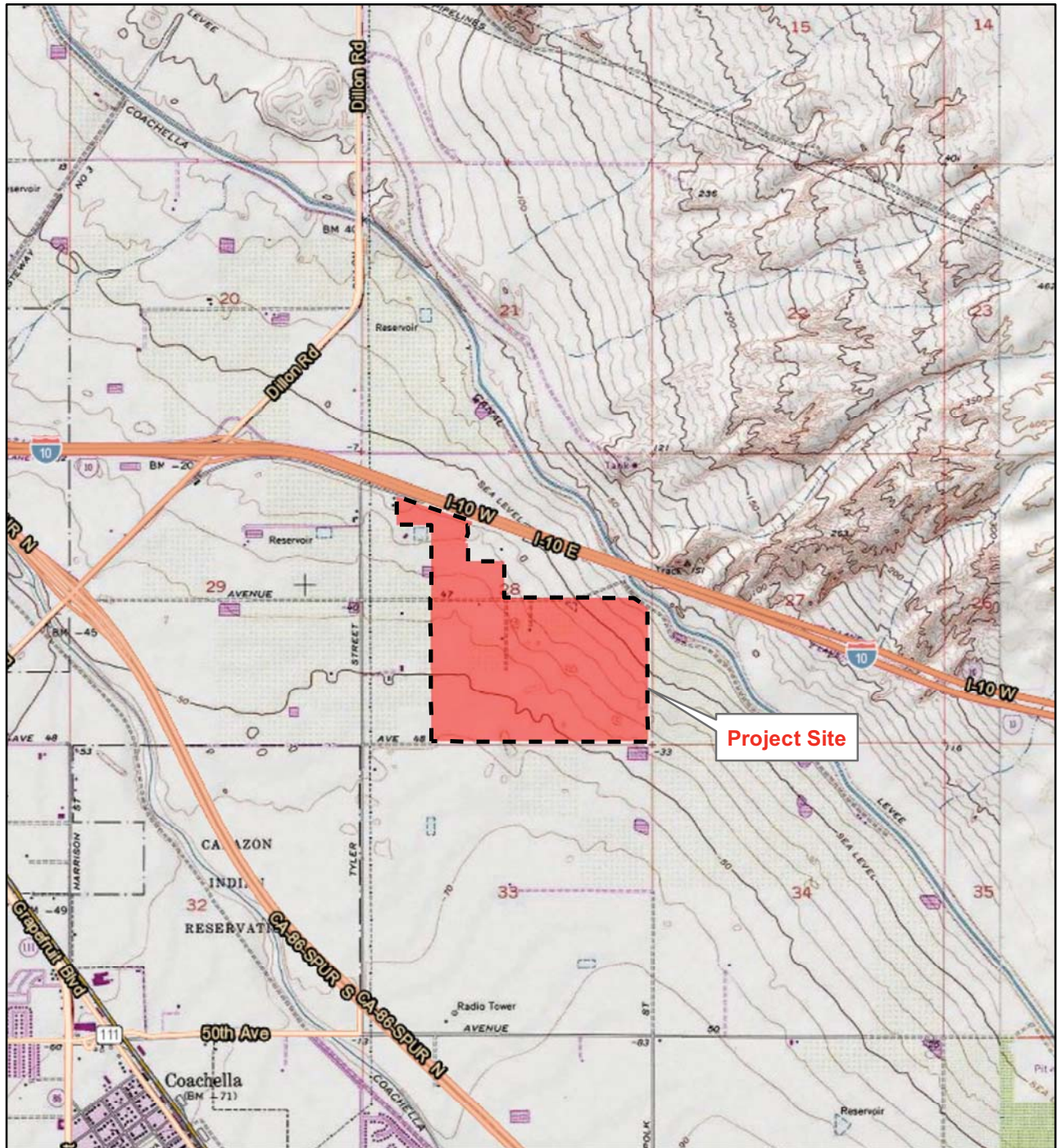
1. Riverside County Flood Control and Water Conservation District Hydrology Manual, April 1978.

Figure 1 Vicinity Map

Vista Del Agua

Site Location (USGS)

Figure 1



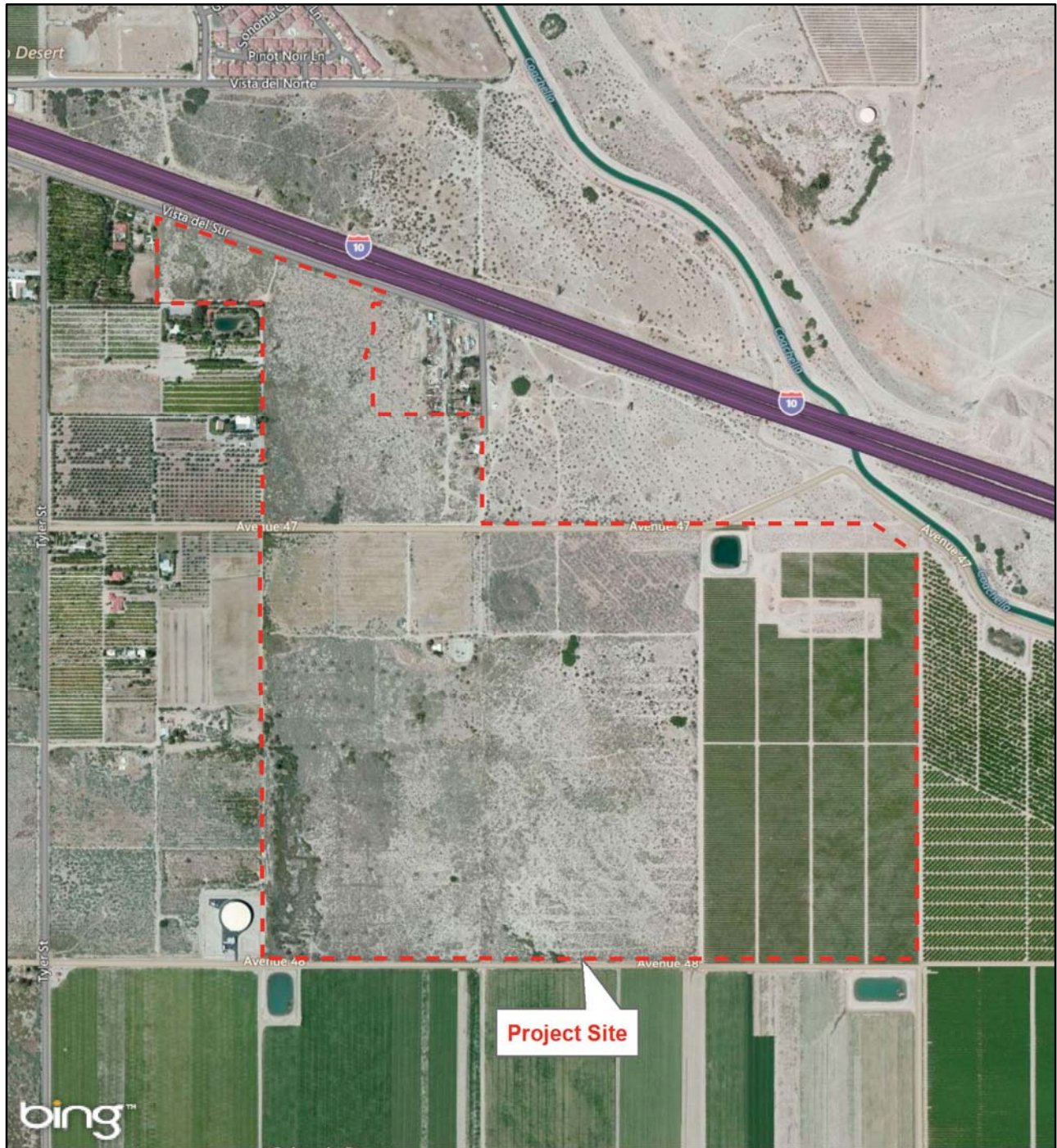
Vista Del Agua - Specific Plan
September 2014

Figure 2
Aerial Map

Vista Del Agua

Aerial Photograph

Figure 2



Vista Del Agua - Specific Plan
September 2014

FIGURE 3

Land Use Plan

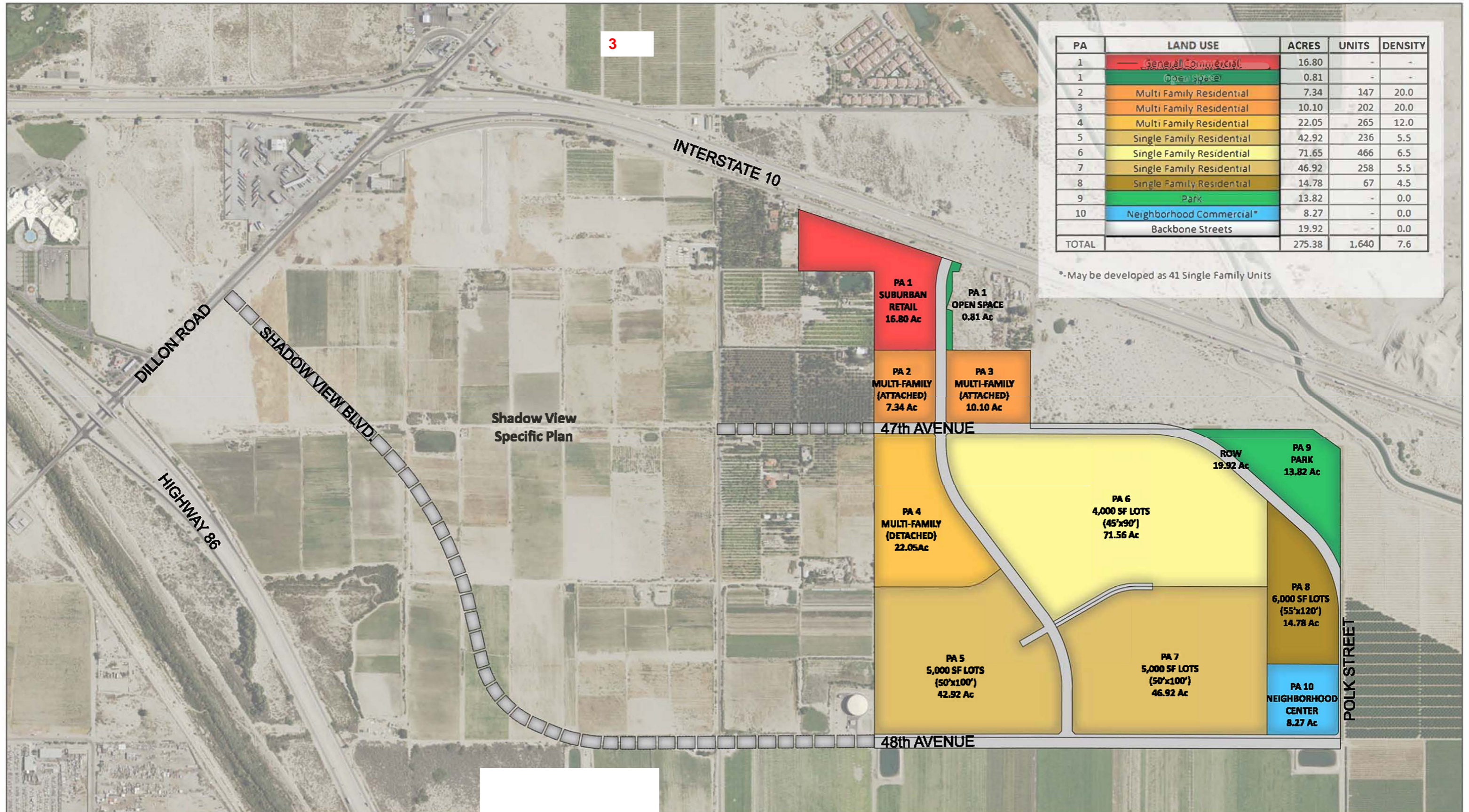
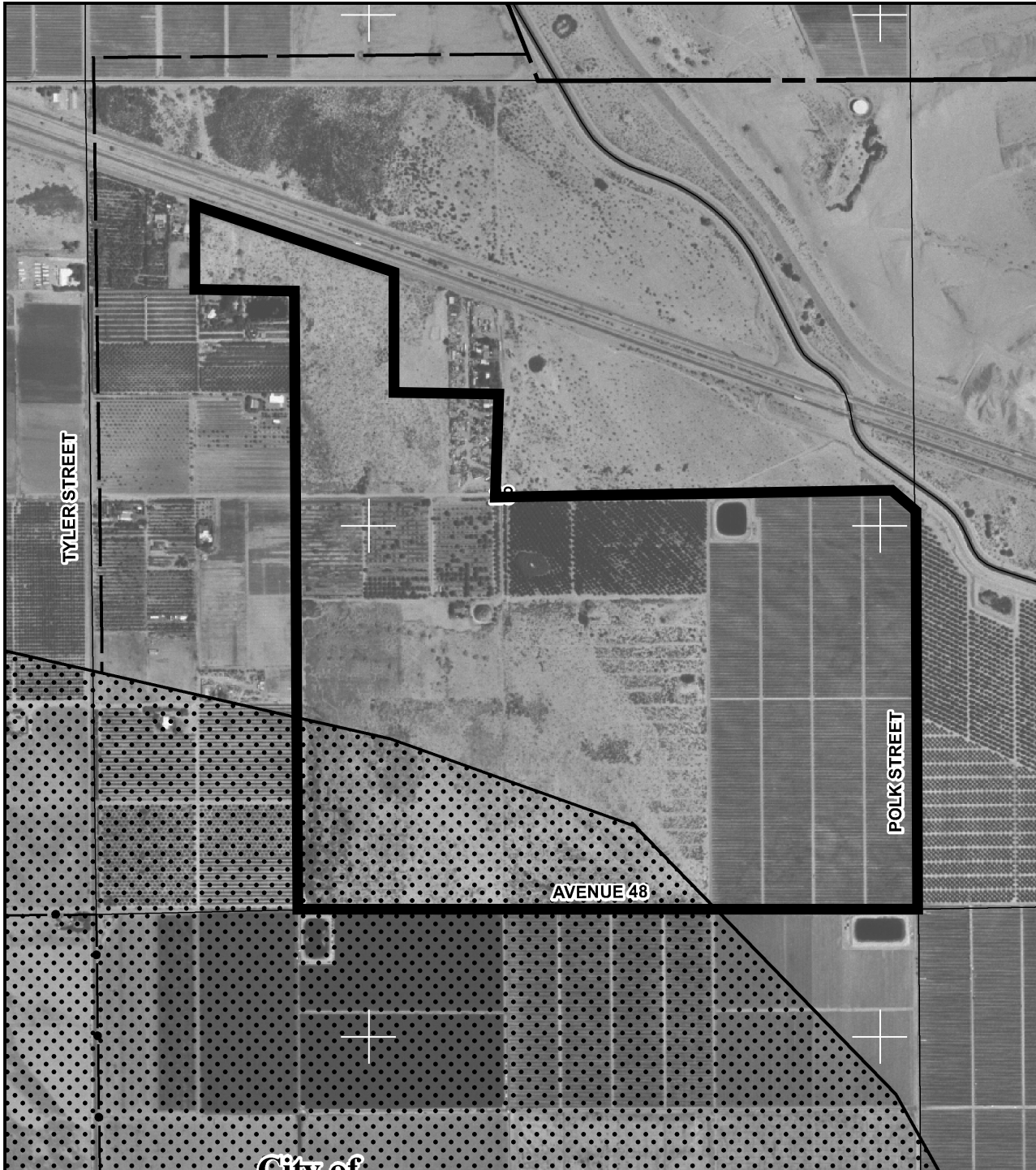
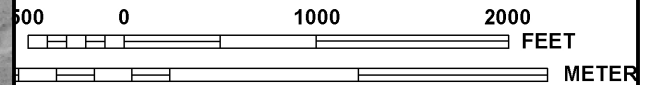


FIGURE 4

FEMA Map



MAP SCALE 1" = 1000'



NATIONAL FLOOD INSURANCE PROGRAM

PANEL 2260G

FIRM
FLOOD INSURANCE RATE MAP

RIVERSIDE COUNTY,
CALIFORNIA
AND INCORPORATED AREAS

PANEL 2260 OF 3805
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
COACHELLA, CITY OF	060249	2260	G
INDIO, CITY OF	060255	2260	G
RIVERSIDE COUNTY	060245	2260	G

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



MAP NUMBER
06065C2260G

EFFECTIVE DATE
AUGUST 28, 2008

Federal Emergency Management Agency

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov

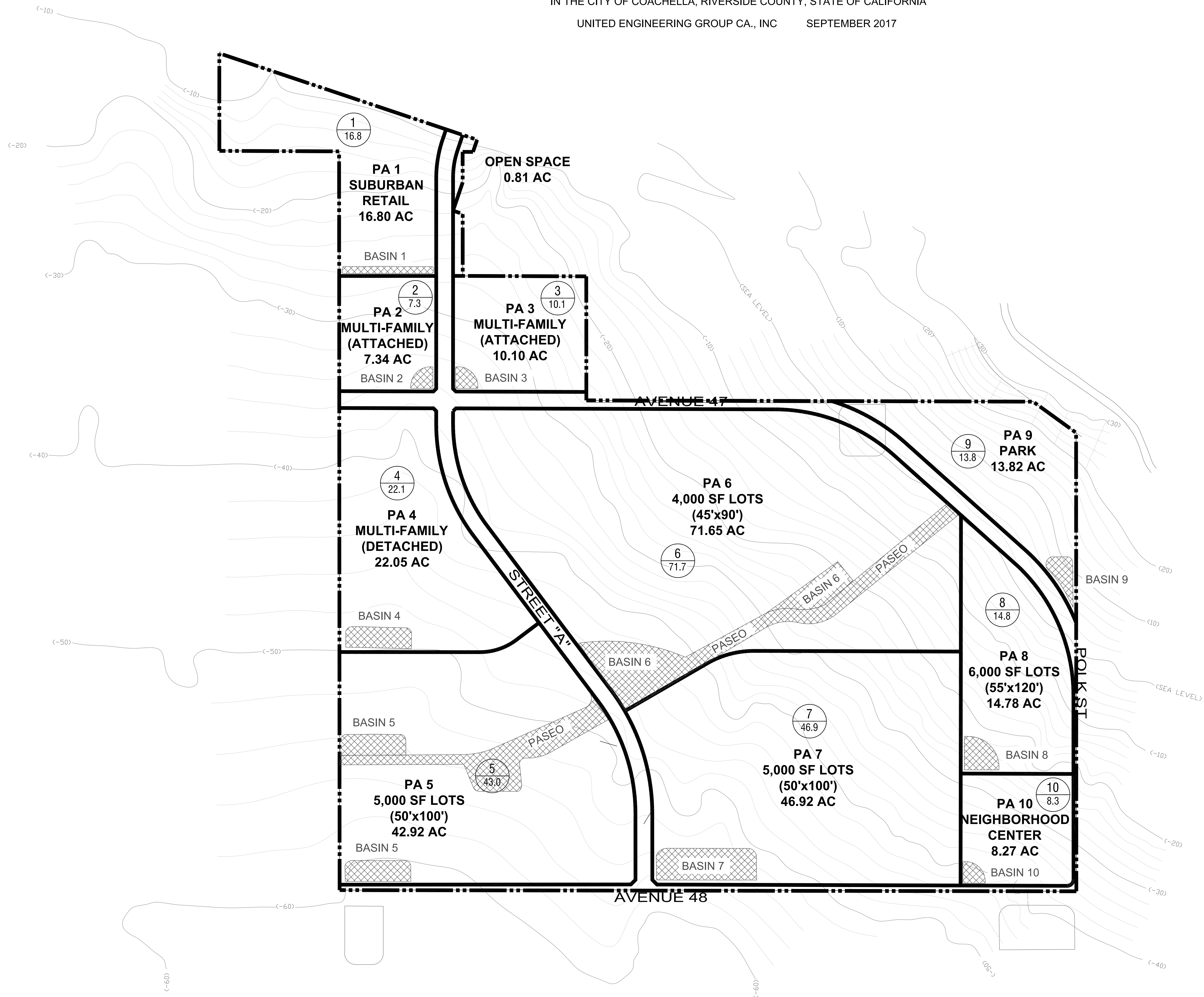
FIGURE 5

Proposed Conditions DMA Map

PROPOSED CONDITION DMA MAP FOR THE VISTA DEL AGUA SPECIFIC PLAN

IN THE CITY OF COACHELLA, RIVERSIDE COUNTY, STATE OF CALIFORNIA

UNITED ENGINEERING GROUP CA., INC SEPTEMBER 2017



SCALE 1" = 200'

LEGEND:

- PROJECT BOUNDARY
- CONTRIBUTORY BASIN BOUNDARY
- PRELIMINARY SUITABLE BASIN LOCATIONS
- DRAINAGE MANAGEMENT AREA (DMA) AREA (ACRES)

NOTE: REFER TO DRAINAGE REPORT FOR DESIGN DETAILS AND RESULTS OF DESIGN.
NOTE: EXISTING TOPOGRAPHY SHOWN. REFER TO SP AND TPM FOR DESIGN DETAIL.
NOTE: PASEO AREA SHOWN AS POSSIBLE BASIN AREA. AT TRACT DESIGN LEVEL THE PORTION OF THE PASEO TO BE DESIGNED AS BASIN AREAS WILL BE DETAILED.

SUBMITTALS:	REVISIONS		
	NO.	DESCRIPTION	DATE
DESIGNED BY:			
DRAWN BY:			
CHECKED BY:			

CHRISTOPHER F. LENZ DATE _____
 R.C.E. No. 63001

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PROPOSED CONDITION DMA MAP
VISTA DEL AGUA
 SEPTEMBER 2017
 SHEET 1 OF 1
 PROJECT NUMBER
 CA-30025

Appendix A

Offsite Runoff Review - JLC Engineering

Memorandum of Understanding

Date: November 10, 2014
To: Dean Phillips, PLS
From: Joseph L. Castaneda, P.E.
Re: Vista Del Agua - Project Impacts associated with Offsite Runoff

The Vista Del Agua project is located in the Coachella Valley and is roughly bounded by Interstate 10 to the north, All-American Canal to the east, Tyler Street to the West and Avenue 48th to the south. JLC was requested by UEG to assess the offsite and onsite drainage impacts to the proposed project. As a result, this memorandum was developed to discuss the following:

1. Regional Offsite watershed tributary to the project and existing facilities.
2. Local offsite watershed tributary to the project site.
3. Onsite watershed and required drainage infrastructure to resolve localized flooding.

REGIONAL OFFSITE DRAINAGE

Based on the existing terrain, the upstream watershed is comprised of large alluvial fans that sheet flow across the watershed area. These large offsite watershed areas are located east of the All-American Canal. As part of the All-American Canal, the Bureau of Reclamation constructed a series of dikes that would collect and discharge the runoff, emanating from the offsite watershed, to the White Water River. Exhibit A has been prepared to show the boundary of the project site and the existing facilities that protect the project from offsite flooding. A brief description of the facilities has been provided:

1. Detention Dike No. 1 is an existing facility that collects 268.1 square miles of offsite watershed area. See Excerpt 1 narrative and Plate 3. Detention Dike No. 1 extends from Interstate 10 to the Salton Sea. Detention Dike No. 1 system has two facilities that regulate the outflow collected by the dike. These two facilities are defined as Wasteway No. 1 and Wasteway No. 2. It should be noted, that the offsite area upstream of the project is 51.8 square miles of the total area of 268.1 square miles. Excerpt 1 defines the offsite watershed upstream of the project as Area D. Area D is collected and discharged directly into Wasteway No. 2.
2. Wasteway No. 2 is an existing channel and inlet system that regulates the runoff collected by Detention Dike No. 1, which emanates from Area D. The Wasteway No. 2 channel conveys the regional offsite watershed areas directly into White Water River.
3. Detention Dike No. 3 is an existing facility that collects 145.7 square miles of offsite watershed area. See Excerpt 1 narrative and Plate 3. The Detention Dike No. 3 system implement the use of Wasteway No. 3 to regulate the outflow collected by the dike. Detention Dike No. 3 diverts runoff upstream of the project site to the west and towards Wasteway No. 3.
4. Wasteway No. 3 is an existing channel and inlet system that regulates the runoff collected by Detention Dike No. 2, which emanates from Area E, F, and G. The

Wasteway No. 3 channel conveys the regional offsite watershed areas directly into White Water River.

Based on the research conducted the project is not impacted by any large regional watershed areas. The existing facilities discussed provide flood protection to the project site by diverting upstream watershed areas to the White Water River.

Local Offsite Watershed Areas

The local offsite area was evaluated using the topographic mapping provided by UEG and the USGS map. Based on the project site location and the existing topography the project has the following offsite watersheds that contribute runoff to the project site:

1. Area A, located north of the project, is a 60 acre drainage area. The area runoff flows in a southerly direction. The project will be required to construct channels or storm drain systems to intercept the flows along Street "A" and the northerly and easterly boundary of Planning Area 3. The intercepted flows would be conveyed to the southwesterly corner of the project site.
2. Area B, located east of the project, is a 20 acre drainage area. The area runoff flows in a southwesterly direction. The project will be required to construct a channel or storm drain system to intercept the flows along Polk Street. The intercepted flows would be conveyed to the southwesterly corner of the project site.

The local offsite drainage area is minimal and typical storm drain solution will be used to provide flood protection for the project area.

Onsite Watershed Areas

Based on the topographic mapping, the entire project flows towards the southerly boundary of the project site. The major project challenge will be to intercept and collect the offsite and onsite runoff without developing a diversion of flows. The project will be required to construct storm drains, open space/earthen channel systems and retention basins to mitigate and flood protect the project site.

VISTA DEL AGUA

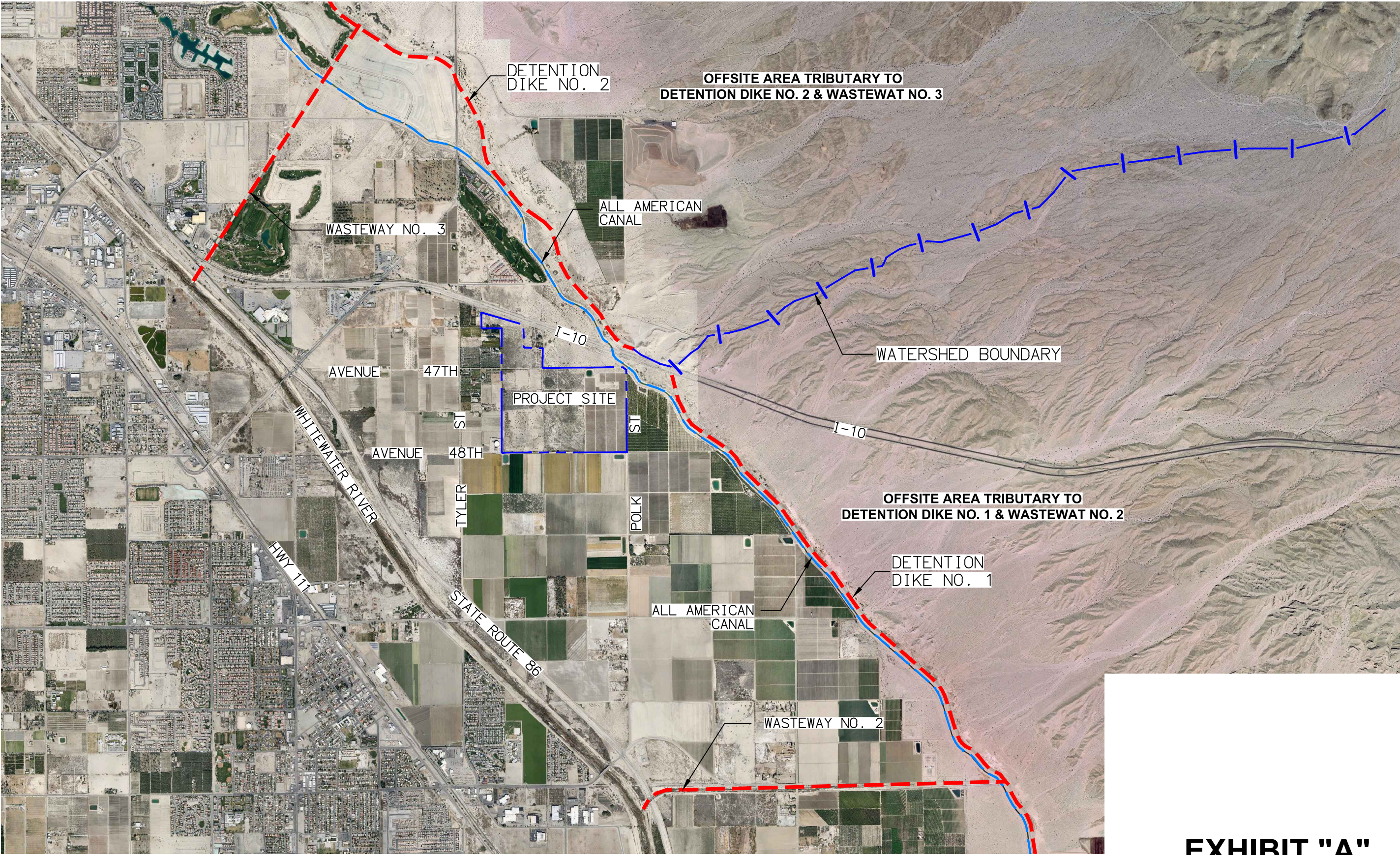


EXHIBIT "A"

VISTA DEL AGUA

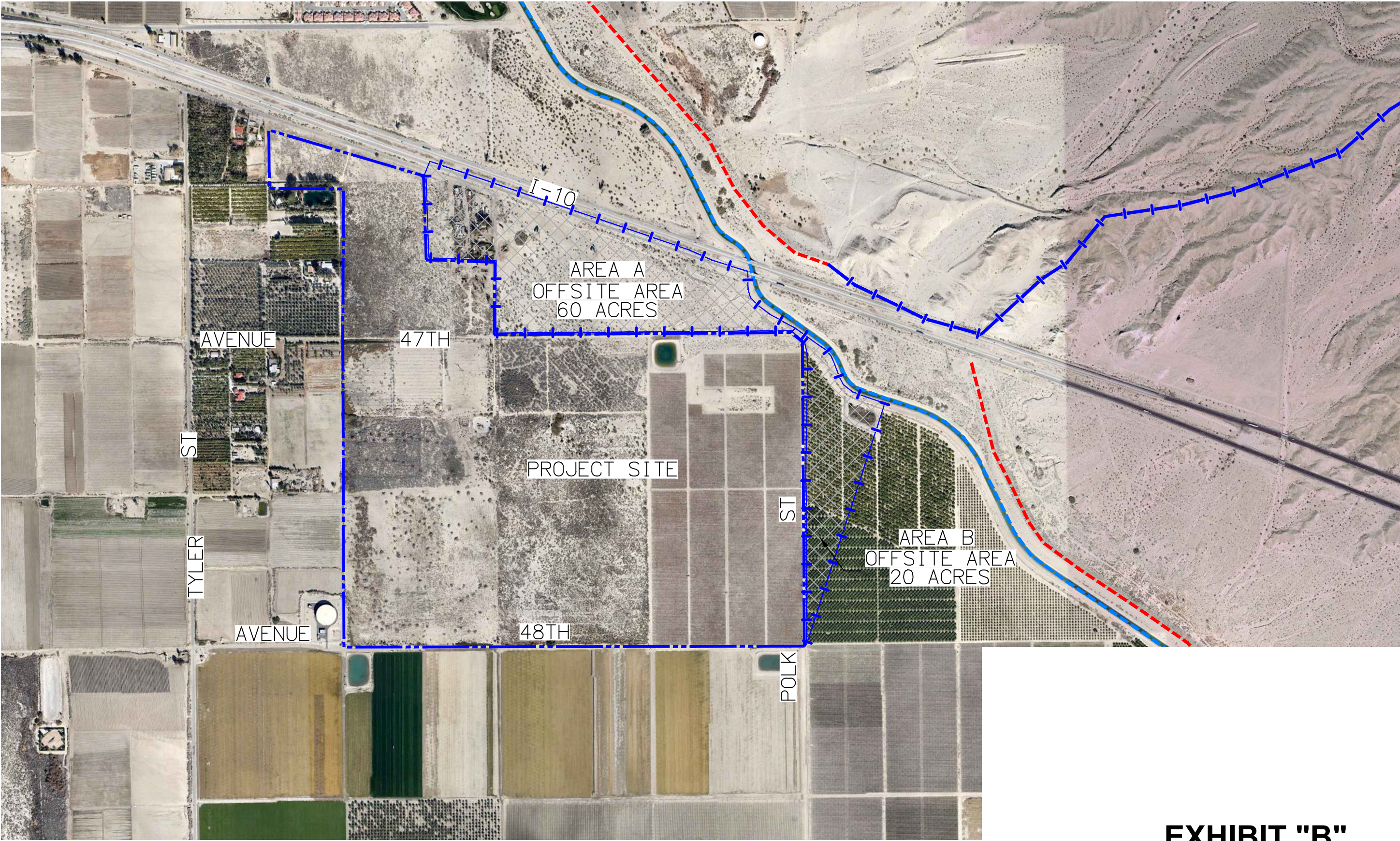


EXHIBIT "B"

VISTA DEL AGUA

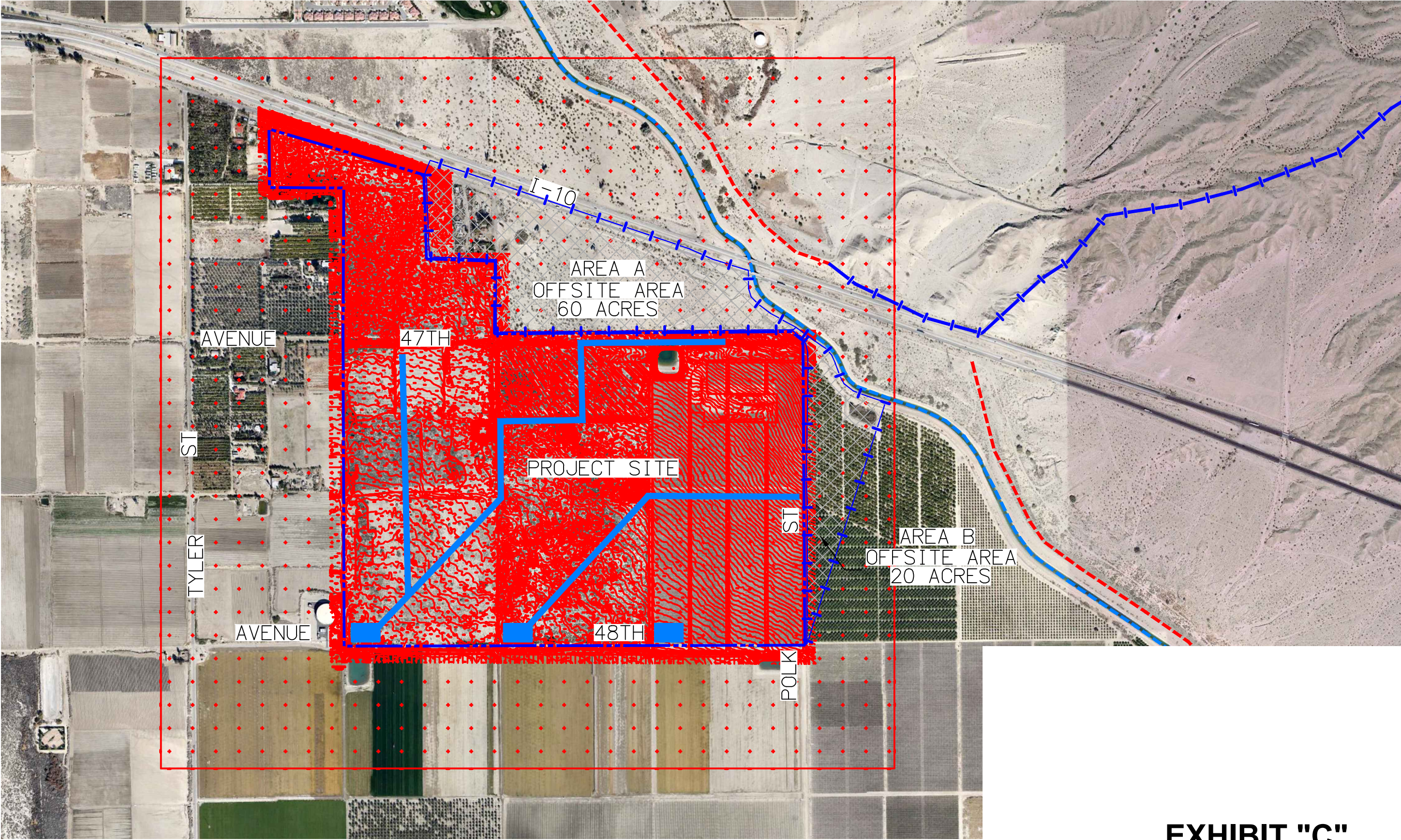


EXHIBIT "C"

Appendix B

Onsite Hydrology Calculations and Input Details

RUNOFF INDEX NUMBERS OF HYDROLOGIC SOIL-COVER COMPLEXES FOR PERVIOUS AREAS-AMC II

Cover Type (3)	Quality of Cover (2)	Soil Group			
		A	B	C	D
<u>NATURAL COVERS -</u>					
Barren (Rockland, eroded and graded land)		78	86	91	93
Chaparrel, Broadleaf (Manzonita, ceanothus and scrub oak)	Poor	53	70	80	85
	Fair	40	63	75	81
	Good	31	57	71	78
Chaparrel, Narrowleaf (Chamise and redshank)	Poor	71	82	88	91
	Fair	55	72	81	86
Grass, Annual or Perennial	Poor	67	78	86	89
	Fair	50	69	79	84
	Good	38	61	74	80
Meadows or Cienegas (Areas with seasonally high water table, principal vegetation is sod forming grass)	Poor	63	77	85	88
	Fair	51	70	80	84
	Good	30	58	72	78
Open Brush (Soft wood shrubs - buckwheat, sage, etc.)	Poor	62	76	84	88
	Fair	46	66	77	83
	Good	41	63	75	81
Woodland (Coniferous or broadleaf trees predominate. Canopy density is at least 50 percent)	Poor	45	66	77	83
	Fair	36	60	73	79
	Good	28	55	70	77
Woodland, Grass (Coniferous or broadleaf trees with canopy density from 20 to 50 percent)	Poor	57	73	82	86
	Fair	44	65	77	82
	Good	33	58	72	79
<u>URBAN COVERS -</u>					
Residential or Commercial Landscaping (Lawn, shrubs, etc.)	Good	32	56	69	75
Turf (Irrigated and mowed grass)	Poor	58	74	83	87
	Fair	44	65	77	82
	Good	33	58	72	79
<u>AGRICULTURAL COVERS -</u>					
Fallow (Land plowed but not tilled or seeded)		76	85	90	92

RCFC & WCD
HYDROLOGY MANUAL

RUNOFF INDEX NUMBERS
FOR
PERVIOUS AREA

RUNOFF INDEX NUMBERS OF HYDROLOGIC SOIL-COVER COMPLEXES FOR PERVIOUS AREAS-AMC II

Cover Type (3)	Quality of Cover (2)	Soil Group			
		A	B	C	D
<u>AGRICULTURAL COVERS</u> (cont.) -					
Legumes, Close Seeded (Alfalfa, sweetclover, timothy, etc.)	Poor	66	77	85	89
	Good	58	72	81	85
Orchards, Deciduous (Apples, apricots, pears, walnuts, etc.)		See Note 4			
Orchards, Evergreen (Citrus, avocados, etc.)	Poor	57	73	82	86
	Fair	44	65	77	82
	Good	33	58	72	79
Pasture, Dryland (Annual grasses)	Poor	67	78	86	89
	Fair	50	69	79	84
	Good	38	61	74	80
Pasture, Irrigated (Legumes and perennial grass)	Poor	58	74	83	87
	Fair	44	65	77	82
	Good	33	58	72	79
Row Crops (Field crops - tomatoes, sugar beets, etc.)	Poor	72	81	88	91
	Good	67	78	85	89
Small Grain (Wheat, oats, barley, etc.)	Poor	65	76	84	88
	Good	63	75	83	87
Vineyard		See Note 4			

Notes:

1. All runoff index (RI) numbers are for Antecedent Moisture Condition (AMC) II.
2. Quality of cover definitions:
 Poor-Heavily grazed or regularly burned areas. Less than 50 percent of the ground surface is protected by plant cover or brush and tree canopy.
 Fair-Moderate cover with 50 percent to 75 percent of the ground surface protected.
 Good-Heavy or dense cover with more than 75 percent of the ground surface protected.
3. See Plate C-2 for a detailed description of cover types.
4. Use runoff index numbers based on ground cover type. See discussion under "Cover Type Descriptions" on Plate C-2.
5. Reference Bibliography item 17.

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 HYDROLOGY MANUAL

**RUNOFF INDEX NUMBERS
 FOR
 PERVIOUS AREA**

ACTUAL IMPERVIOUS COVER

Land Use (1)	Range-Percent	Recommended Value For Average Conditions-Percent (2)
Natural or Agriculture	0 - 10	0
Single Family Residential: (3)		
40,000 S. F. (1 Acre) Lots	10 - 25	20
20,000 S. F. (½ Acre) Lots	30 - 45	40
7,200 - 10,000 S. F. Lots	45 - 55	50
Vista Del Agua SP		→ 60
Multiple Family Residential:		
Condominiums	45 - 70	65
Apartments	65 - 90	80
Mobile Home Park	60 - 85	75
Commercial, Downtown Business or Industrial	80 -100	90

Notes:

1. Land use should be based on ultimate development of the watershed. Long range master plans for the County and incorporated cities should be reviewed to insure reasonable land use assumptions.
2. Recommended values are based on average conditions which may not apply to a particular study area. The percentage impervious may vary greatly even on comparable sized lots due to differences in dwelling size, improvements, etc. Landscape practices should also be considered as it is common in some areas to use ornamental gravels underlain by impervious plastic materials in place of lawns and shrubs. A field investigation of a study area should always be made, and a review of aerial photos, where available may assist in estimating the percentage of impervious cover in developed areas.
3. For typical horse ranch subdivisions increase impervious area 5 percent over the values recommended in the table above.

RCFC & WCD
HYDROLOGY MANUAL

**IMPERVIOUS COVER
FOR
DEVELOPED AREAS**



NOAA Atlas 14, Volume 6, Version 2
Location name: Coachella, California, US*
Latitude: 33.7007°, Longitude: -116.1557°
Elevation: -56 ft*
 * source: Google Maps



POINT PRECIPITATION FREQUENCY ESTIMATES

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

NOAA, National Weather Service, Silver Spring, Maryland

[PF_tabular](#) | [PF_graphical](#) | [Maps & aeriels](#)

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches/hour)¹										
Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	0.780 (0.648-0.948)	1.22 (1.02-1.49)	1.86 (1.54-2.26)	2.41 (1.98-2.95)	3.23 (2.57-4.09)	3.91 (3.05-5.06)	4.67 (3.54-6.19)	5.51 (4.07-7.52)	6.76 (4.79-9.64)	7.85 (5.36-11.6)
10-min	0.558 (0.468-0.678)	0.876 (0.732-1.06)	1.33 (1.10-1.61)	1.73 (1.42-2.12)	2.31 (1.84-2.93)	2.80 (2.18-3.64)	3.34 (2.54-4.44)	3.94 (2.91-5.39)	4.84 (3.43-6.91)	5.63 (3.85-8.32)
15-min	0.452 (0.376-0.544)	0.708 (0.588-0.856)	1.07 (0.892-1.30)	1.39 (1.15-1.71)	1.86 (1.48-2.36)	2.26 (1.76-2.93)	2.70 (2.05-3.58)	3.18 (2.35-4.35)	3.90 (2.76-5.57)	4.54 (3.10-6.70)
30-min	0.324 (0.270-0.392)	0.508 (0.424-0.616)	0.770 (0.640-0.936)	1.00 (0.824-1.23)	1.34 (1.07-1.70)	1.62 (1.27-2.10)	1.94 (1.47-2.57)	2.28 (1.69-3.12)	2.81 (1.99-4.00)	3.26 (2.23-4.81)
60-min	0.226 (0.189-0.274)	0.356 (0.296-0.431)	0.539 (0.448-0.655)	0.700 (0.576-0.858)	0.937 (0.746-1.19)	1.14 (0.886-1.47)	1.35 (1.03-1.80)	1.60 (1.18-2.19)	1.96 (1.39-2.80)	2.28 (1.56-3.37)
2-hr	0.156 (0.130-0.188)	0.232 (0.193-0.281)	0.344 (0.286-0.419)	0.447 (0.368-0.548)	0.604 (0.480-0.766)	0.740 (0.576-0.958)	0.892 (0.678-1.19)	1.07 (0.788-1.46)	1.33 (0.944-1.90)	1.57 (1.07-2.32)
3-hr	0.125 (0.104-0.151)	0.182 (0.152-0.221)	0.268 (0.223-0.326)	0.348 (0.287-0.427)	0.473 (0.376-0.599)	0.582 (0.454-0.754)	0.707 (0.537-0.939)	0.851 (0.629-1.16)	1.08 (0.762-1.53)	1.28 (0.872-1.89)
6-hr	0.082 (0.068-0.099)	0.119 (0.099-0.144)	0.174 (0.145-0.212)	0.226 (0.186-0.277)	0.308 (0.245-0.391)	0.381 (0.297-0.494)	0.466 (0.354-0.619)	0.564 (0.417-0.771)	0.719 (0.509-1.03)	0.859 (0.587-1.27)
12-hr	0.049 (0.041-0.059)	0.072 (0.060-0.088)	0.107 (0.089-0.131)	0.140 (0.115-0.171)	0.191 (0.152-0.242)	0.235 (0.184-0.305)	0.287 (0.218-0.381)	0.346 (0.256-0.474)	0.439 (0.311-0.627)	0.522 (0.357-0.772)
24-hr	0.031 (0.027-0.036)	0.047 (0.041-0.054)	0.071 (0.062-0.082)	0.092 (0.081-0.107)	0.125 (0.106-0.150)	0.153 (0.127-0.188)	0.185 (0.150-0.233)	0.222 (0.175-0.287)	0.278 (0.211-0.374)	0.327 (0.240-0.454)
2-day	0.018 (0.016-0.021)	0.027 (0.024-0.032)	0.041 (0.036-0.048)	0.054 (0.047-0.063)	0.072 (0.061-0.087)	0.088 (0.073-0.109)	0.106 (0.086-0.133)	0.125 (0.099-0.162)	0.155 (0.117-0.208)	0.180 (0.132-0.250)
3-day	0.013 (0.011-0.015)	0.020 (0.017-0.023)	0.030 (0.026-0.034)	0.039 (0.034-0.045)	0.052 (0.044-0.062)	0.063 (0.052-0.077)	0.075 (0.061-0.094)	0.089 (0.070-0.114)	0.109 (0.082-0.146)	0.126 (0.092-0.175)
4-day	0.010 (0.009-0.012)	0.016 (0.014-0.018)	0.024 (0.021-0.027)	0.030 (0.027-0.036)	0.041 (0.035-0.049)	0.049 (0.041-0.061)	0.059 (0.048-0.074)	0.069 (0.055-0.090)	0.085 (0.064-0.114)	0.098 (0.072-0.136)
7-day	0.006 (0.005-0.007)	0.009 (0.008-0.011)	0.014 (0.012-0.016)	0.018 (0.016-0.021)	0.024 (0.021-0.029)	0.029 (0.024-0.036)	0.035 (0.028-0.044)	0.041 (0.032-0.053)	0.050 (0.038-0.067)	0.058 (0.042-0.080)
10-day	0.004 (0.004-0.005)	0.007 (0.006-0.008)	0.010 (0.009-0.012)	0.013 (0.011-0.015)	0.017 (0.015-0.021)	0.021 (0.017-0.026)	0.025 (0.020-0.031)	0.029 (0.023-0.038)	0.036 (0.027-0.048)	0.041 (0.030-0.057)
20-day	0.002 (0.002-0.003)	0.004 (0.003-0.004)	0.005 (0.005-0.006)	0.007 (0.006-0.008)	0.009 (0.008-0.011)	0.011 (0.009-0.014)	0.013 (0.011-0.017)	0.016 (0.012-0.020)	0.019 (0.014-0.026)	0.022 (0.016-0.030)
30-day	0.002 (0.001-0.002)	0.003 (0.002-0.003)	0.004 (0.003-0.005)	0.005 (0.004-0.006)	0.007 (0.006-0.008)	0.008 (0.007-0.010)	0.010 (0.008-0.012)	0.011 (0.009-0.015)	0.014 (0.010-0.018)	0.016 (0.011-0.022)
45-day	0.001 (0.001-0.001)	0.002 (0.002-0.002)	0.003 (0.003-0.003)	0.004 (0.003-0.004)	0.005 (0.004-0.006)	0.006 (0.005-0.007)	0.007 (0.006-0.009)	0.008 (0.007-0.011)	0.010 (0.008-0.014)	0.012 (0.009-0.016)
60-day	0.001 (0.001-0.001)	0.002 (0.001-0.002)	0.002 (0.002-0.003)	0.003 (0.003-0.004)	0.004 (0.003-0.005)	0.005 (0.004-0.006)	0.006 (0.005-0.007)	0.007 (0.005-0.009)	0.008 (0.006-0.011)	0.009 (0.007-0.013)

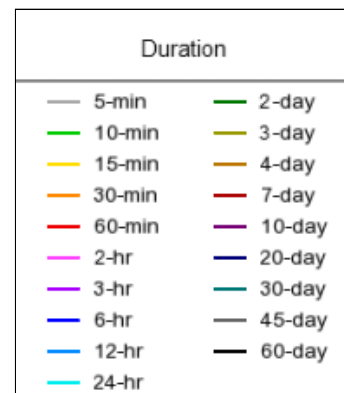
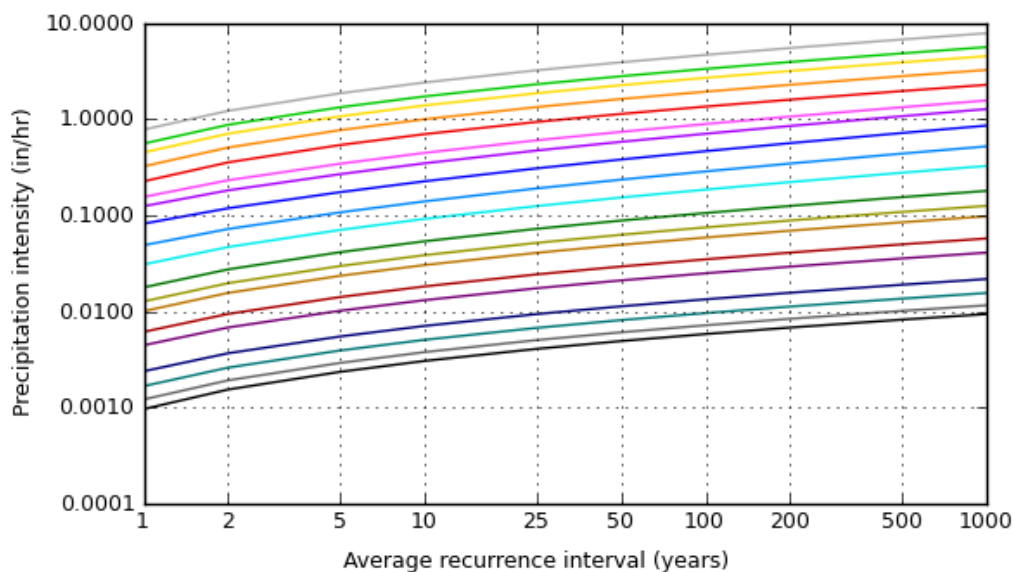
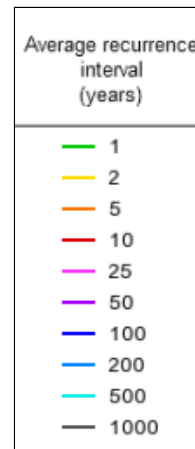
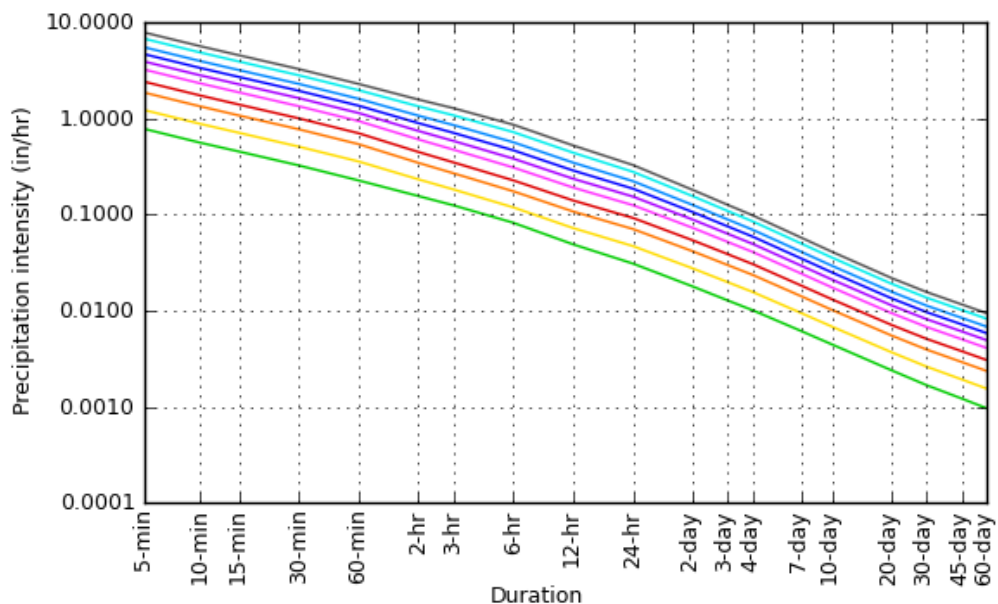
¹ Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS). Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values. Please refer to NOAA Atlas 14 document for more information.

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PF graphical

PDS-based intensity-duration-frequency (IDF) curves

Latitude: 33.7007°, Longitude: -116.1557°



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Maps & aerials

Small scale terrain





Large scale terrain



Large scale map



Large scale aerial





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Questions?: HDSC.Questions@noaa.gov

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NOAA Atlas 14, Volume 6, Version 2
Location name: Coachella, California, US*
Latitude: 33.7007°, Longitude: -116.1557°
Elevation: -56 ft*
 * source: Google Maps



POINT PRECIPITATION FREQUENCY ESTIMATES

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

NOAA, National Weather Service, Silver Spring, Maryland

[PF_tabular](#) | [PF_graphical](#) | [Maps & aeriels](#)

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches)¹										
Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	0.065 (0.054-0.079)	0.102 (0.085-0.124)	0.155 (0.128-0.188)	0.201 (0.165-0.246)	0.269 (0.214-0.341)	0.326 (0.254-0.422)	0.389 (0.295-0.516)	0.459 (0.339-0.627)	0.563 (0.399-0.803)	0.654 (0.447-0.967)
10-min	0.093 (0.078-0.113)	0.146 (0.122-0.177)	0.222 (0.184-0.269)	0.288 (0.237-0.353)	0.385 (0.307-0.489)	0.467 (0.364-0.606)	0.557 (0.423-0.740)	0.657 (0.485-0.899)	0.807 (0.572-1.15)	0.938 (0.641-1.39)
15-min	0.113 (0.094-0.136)	0.177 (0.147-0.214)	0.268 (0.223-0.326)	0.348 (0.287-0.427)	0.466 (0.371-0.591)	0.565 (0.440-0.732)	0.674 (0.512-0.895)	0.795 (0.587-1.09)	0.976 (0.691-1.39)	1.13 (0.775-1.68)
30-min	0.162 (0.135-0.196)	0.254 (0.212-0.308)	0.385 (0.320-0.468)	0.500 (0.412-0.613)	0.669 (0.533-0.849)	0.812 (0.633-1.05)	0.968 (0.736-1.29)	1.14 (0.843-1.56)	1.40 (0.993-2.00)	1.63 (1.11-2.41)
60-min	0.226 (0.189-0.274)	0.356 (0.296-0.431)	0.539 (0.448-0.655)	0.700 (0.576-0.858)	0.937 (0.746-1.19)	1.14 (0.886-1.47)	1.35 (1.03-1.80)	1.60 (1.18-2.19)	1.96 (1.39-2.80)	2.28 (1.56-3.37)
2-hr	0.311 (0.259-0.377)	0.464 (0.386-0.562)	0.689 (0.572-0.838)	0.894 (0.736-1.10)	1.21 (0.961-1.53)	1.48 (1.15-1.92)	1.78 (1.36-2.37)	2.13 (1.58-2.92)	2.67 (1.89-3.80)	3.14 (2.14-4.63)
3-hr	0.374 (0.312-0.453)	0.547 (0.455-0.663)	0.806 (0.670-0.980)	1.05 (0.862-1.28)	1.42 (1.13-1.80)	1.75 (1.36-2.27)	2.12 (1.61-2.82)	2.56 (1.89-3.50)	3.23 (2.29-4.61)	3.83 (2.62-5.66)
6-hr	0.491 (0.410-0.594)	0.710 (0.592-0.861)	1.04 (0.867-1.27)	1.35 (1.12-1.66)	1.84 (1.47-2.34)	2.28 (1.78-2.96)	2.79 (2.12-3.70)	3.38 (2.50-4.62)	4.31 (3.05-6.14)	5.14 (3.52-7.60)
12-hr	0.589 (0.491-0.713)	0.870 (0.725-1.05)	1.29 (1.07-1.57)	1.69 (1.39-2.07)	2.30 (1.83-2.91)	2.84 (2.21-3.68)	3.45 (2.63-4.59)	4.17 (3.08-5.71)	5.29 (3.75-7.55)	6.29 (4.30-9.30)
24-hr	0.740 (0.655-0.853)	1.13 (0.994-1.30)	1.69 (1.49-1.96)	2.21 (1.93-2.58)	3.00 (2.54-3.61)	3.68 (3.06-4.52)	4.45 (3.61-5.60)	5.33 (4.21-6.88)	6.67 (5.06-8.96)	7.84 (5.75-10.9)
2-day	0.855 (0.757-0.986)	1.32 (1.17-1.52)	1.99 (1.75-2.30)	2.58 (2.26-3.01)	3.48 (2.95-4.19)	4.24 (3.52-5.21)	5.08 (4.12-6.39)	6.02 (4.75-7.78)	7.43 (5.64-9.99)	8.63 (6.34-12.0)
3-day	0.917 (0.811-1.06)	1.42 (1.25-1.64)	2.14 (1.89-2.48)	2.78 (2.43-3.24)	3.73 (3.16-4.49)	4.53 (3.76-5.56)	5.40 (4.38-6.79)	6.38 (5.04-8.24)	7.82 (5.93-10.5)	9.05 (6.64-12.6)
4-day	0.968 (0.857-1.12)	1.50 (1.32-1.73)	2.26 (1.99-2.61)	2.92 (2.56-3.41)	3.91 (3.32-4.71)	4.74 (3.94-5.83)	5.65 (4.58-7.10)	6.65 (5.25-8.60)	8.14 (6.17-10.9)	9.39 (6.89-13.1)
7-day	1.03 (0.913-1.19)	1.59 (1.40-1.83)	2.38 (2.09-2.75)	3.07 (2.68-3.58)	4.09 (3.46-4.92)	4.94 (4.10-6.07)	5.86 (4.76-7.38)	6.89 (5.44-8.90)	8.39 (6.37-11.3)	9.66 (7.09-13.4)
10-day	1.07 (0.946-1.23)	1.64 (1.45-1.89)	2.44 (2.15-2.83)	3.15 (2.75-3.67)	4.19 (3.55-5.04)	5.05 (4.20-6.21)	5.99 (4.86-7.54)	7.03 (5.55-9.09)	8.56 (6.49-11.5)	9.84 (7.22-13.7)
20-day	1.15 (1.01-1.32)	1.77 (1.56-2.04)	2.64 (2.33-3.05)	3.40 (2.97-3.97)	4.51 (3.82-5.43)	5.43 (4.51-6.67)	6.43 (5.22-8.09)	7.52 (5.94-9.72)	9.12 (6.92-12.3)	10.5 (7.67-14.5)
30-day	1.21 (1.07-1.39)	1.88 (1.66-2.17)	2.83 (2.50-3.28)	3.66 (3.20-4.27)	4.87 (4.12-5.86)	5.86 (4.87-7.20)	6.94 (5.63-8.72)	8.11 (6.40-10.5)	9.81 (7.45-13.2)	11.2 (8.24-15.6)
45-day	1.31 (1.16-1.51)	2.08 (1.84-2.40)	3.15 (2.78-3.65)	4.08 (3.57-4.76)	5.45 (4.61-6.56)	6.56 (5.45-8.06)	7.77 (6.30-9.77)	9.07 (7.17-11.7)	11.0 (8.32-14.7)	12.5 (9.20-17.4)
60-day	1.39 (1.23-1.60)	2.22 (1.97-2.57)	3.40 (2.99-3.93)	4.41 (3.86-5.14)	5.88 (4.99-7.09)	7.10 (5.89-8.72)	8.40 (6.82-10.6)	9.81 (7.75-12.7)	11.9 (8.99-15.9)	13.5 (9.94-18.8)

¹ Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS). Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values. Please refer to NOAA Atlas 14 document for more information.

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Unit Hydrograph Analysis

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8.2

Study date 01/11/16 File: VDA24100.out

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

Program License Serial Number 6232

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

English Units used in output format

A-22 100yr 24hr event

--
Drainage Area = 9.53(Ac.) = 0.015 Sq. Mi.
0.015 Sq. Mi. Drainage Area for Depth-Area Areal Adjustment = 9.53(Ac.) =
Length along longest watercourse = 1199.00(Ft.)
(Ft.) Length along longest watercourse measured to centroid = 697.00
Length along longest watercourse = 0.227 Mi.
Mi. Length along longest watercourse measured to centroid = 0.132

Difference in elevation = 16.40(Ft.)
Slope along watercourse = 72.2202 Ft./Mi.
Average Manning's 'N' = 0.015
Lag time = 0.042 Hr.
Lag time = 2.53 Min.
25% of lag time = 0.63 Min.
40% of lag time = 1.01 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]

9.53 1.14 10.86

100 YEAR Area rainfall data:

Area(Ac.)[1] Rainfall(In)[2] Weighting[1*2]
 9.53 4.47 42.60

STORM EVENT (YEAR) = 100.00
 Area Averaged 2-Year Rainfall = 1.140(In)
 Area Averaged 100-Year Rainfall = 4.470(In)

Point rain (area averaged) = 4.470(In)
 Areal adjustment factor = 100.00 %
 Adjusted average point rain = 4.470(In)

Sub-Area Data:
 Area(Ac.) Runoff Index Impervious %
 9.530 56.00 0.600
 Total Area Entered = 9.53(Ac.)

RI (In/Hr)	RI AMC-3	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F
56.0	74.8	0.305	0.600	0.140	1.000	
0.140						Sum (F) =
0.140						

Area averaged mean soil loss (F) (In/Hr) = 0.140
 Minimum soil loss rate ((In/Hr)) = 0.070
 (for 24 hour storm duration)
 Soil low loss rate (decimal) = 0.420

Unit Hydrograph
 DESERT S-Curve

Unit Hydrograph Data

Unit time period (hrs)	Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	197.917	41.825
2	0.167	395.834	45.696
3	0.250	593.751	8.967
4	0.333	791.669	3.511
		Sum = 100.000	Sum = 9.604

The following loss rate calculations reflect use of the minimum calculated loss rate subtracted from the Storm Rain to produce the maximum Effective Rain value

Unit	Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr)		Effective (In/Hr)
				Max	Low	
1	0.08	0.07	0.036	(0.249)	0.015	0.021
2	0.17	0.07	0.036	(0.248)	0.015	0.021
3	0.25	0.07	0.036	(0.247)	0.015	0.021
4	0.33	0.10	0.054	(0.246)	0.023	0.031
5	0.42	0.10	0.054	(0.245)	0.023	0.031
6	0.50	0.10	0.054	(0.244)	0.023	0.031
7	0.58	0.10	0.054	(0.243)	0.023	0.031
8	0.67	0.10	0.054	(0.242)	0.023	0.031
9	0.75	0.10	0.054	(0.241)	0.023	0.031
10	0.83	0.13	0.072	(0.240)	0.030	0.041
11	0.92	0.13	0.072	(0.239)	0.030	0.041
12	1.00	0.13	0.072	(0.239)	0.030	0.041
13	1.08	0.10	0.054	(0.238)	0.023	0.031
14	1.17	0.10	0.054	(0.237)	0.023	0.031
15	1.25	0.10	0.054	(0.236)	0.023	0.031
16	1.33	0.10	0.054	(0.235)	0.023	0.031
17	1.42	0.10	0.054	(0.234)	0.023	0.031
18	1.50	0.10	0.054	(0.233)	0.023	0.031
19	1.58	0.10	0.054	(0.232)	0.023	0.031
20	1.67	0.10	0.054	(0.231)	0.023	0.031
21	1.75	0.10	0.054	(0.230)	0.023	0.031
22	1.83	0.13	0.072	(0.229)	0.030	0.041
23	1.92	0.13	0.072	(0.228)	0.030	0.041
24	2.00	0.13	0.072	(0.227)	0.030	0.041
25	2.08	0.13	0.072	(0.226)	0.030	0.041
26	2.17	0.13	0.072	(0.225)	0.030	0.041
27	2.25	0.13	0.072	(0.225)	0.030	0.041
28	2.33	0.13	0.072	(0.224)	0.030	0.041
29	2.42	0.13	0.072	(0.223)	0.030	0.041
30	2.50	0.13	0.072	(0.222)	0.030	0.041
31	2.58	0.17	0.089	(0.221)	0.038	0.052
32	2.67	0.17	0.089	(0.220)	0.038	0.052
33	2.75	0.17	0.089	(0.219)	0.038	0.052
34	2.83	0.17	0.089	(0.218)	0.038	0.052
35	2.92	0.17	0.089	(0.217)	0.038	0.052
36	3.00	0.17	0.089	(0.216)	0.038	0.052
37	3.08	0.17	0.089	(0.216)	0.038	0.052
38	3.17	0.17	0.089	(0.215)	0.038	0.052
39	3.25	0.17	0.089	(0.214)	0.038	0.052
40	3.33	0.17	0.089	(0.213)	0.038	0.052
41	3.42	0.17	0.089	(0.212)	0.038	0.052
42	3.50	0.17	0.089	(0.211)	0.038	0.052
43	3.58	0.17	0.089	(0.210)	0.038	0.052
44	3.67	0.17	0.089	(0.209)	0.038	0.052
45	3.75	0.17	0.089	(0.208)	0.038	0.052
46	3.83	0.20	0.107	(0.208)	0.045	0.062
47	3.92	0.20	0.107	(0.207)	0.045	0.062
48	4.00	0.20	0.107	(0.206)	0.045	0.062
49	4.08	0.20	0.107	(0.205)	0.045	0.062
50	4.17	0.20	0.107	(0.204)	0.045	0.062
51	4.25	0.20	0.107	(0.203)	0.045	0.062
52	4.33	0.23	0.125	(0.202)	0.053	0.073
53	4.42	0.23	0.125	(0.201)	0.053	0.073
54	4.50	0.23	0.125	(0.201)	0.053	0.073
55	4.58	0.23	0.125	(0.200)	0.053	0.073
56	4.67	0.23	0.125	(0.199)	0.053	0.073
57	4.75	0.23	0.125	(0.198)	0.053	0.073
58	4.83	0.27	0.143	(0.197)	0.060	0.083

59	4.92	0.27	0.143	(0.196)	0.060	0.083
60	5.00	0.27	0.143	(0.195)	0.060	0.083
61	5.08	0.20	0.107	(0.195)	0.045	0.062
62	5.17	0.20	0.107	(0.194)	0.045	0.062
63	5.25	0.20	0.107	(0.193)	0.045	0.062
64	5.33	0.23	0.125	(0.192)	0.053	0.073
65	5.42	0.23	0.125	(0.191)	0.053	0.073
66	5.50	0.23	0.125	(0.190)	0.053	0.073
67	5.58	0.27	0.143	(0.190)	0.060	0.083
68	5.67	0.27	0.143	(0.189)	0.060	0.083
69	5.75	0.27	0.143	(0.188)	0.060	0.083
70	5.83	0.27	0.143	(0.187)	0.060	0.083
71	5.92	0.27	0.143	(0.186)	0.060	0.083
72	6.00	0.27	0.143	(0.185)	0.060	0.083
73	6.08	0.30	0.161	(0.185)	0.068	0.093
74	6.17	0.30	0.161	(0.184)	0.068	0.093
75	6.25	0.30	0.161	(0.183)	0.068	0.093
76	6.33	0.30	0.161	(0.182)	0.068	0.093
77	6.42	0.30	0.161	(0.181)	0.068	0.093
78	6.50	0.30	0.161	(0.181)	0.068	0.093
79	6.58	0.33	0.179	(0.180)	0.075	0.104
80	6.67	0.33	0.179	(0.179)	0.075	0.104
81	6.75	0.33	0.179	(0.178)	0.075	0.104
82	6.83	0.33	0.179	(0.177)	0.075	0.104
83	6.92	0.33	0.179	(0.176)	0.075	0.104
84	7.00	0.33	0.179	(0.176)	0.075	0.104
85	7.08	0.33	0.179	(0.175)	0.075	0.104
86	7.17	0.33	0.179	(0.174)	0.075	0.104
87	7.25	0.33	0.179	(0.173)	0.075	0.104
88	7.33	0.37	0.197	(0.172)	0.083	0.114
89	7.42	0.37	0.197	(0.172)	0.083	0.114
90	7.50	0.37	0.197	(0.171)	0.083	0.114
91	7.58	0.40	0.215	(0.170)	0.090	0.124
92	7.67	0.40	0.215	(0.169)	0.090	0.124
93	7.75	0.40	0.215	(0.169)	0.090	0.124
94	7.83	0.43	0.232	(0.168)	0.098	0.135
95	7.92	0.43	0.232	(0.167)	0.098	0.135
96	8.00	0.43	0.232	(0.166)	0.098	0.135
97	8.08	0.50	0.268	(0.165)	0.113	0.156
98	8.17	0.50	0.268	(0.165)	0.113	0.156
99	8.25	0.50	0.268	(0.164)	0.113	0.156
100	8.33	0.50	0.268	(0.163)	0.113	0.156
101	8.42	0.50	0.268	(0.162)	0.113	0.156
102	8.50	0.50	0.268	(0.162)	0.113	0.156
103	8.58	0.53	0.286	(0.161)	0.120	0.166
104	8.67	0.53	0.286	(0.160)	0.120	0.166
105	8.75	0.53	0.286	(0.159)	0.120	0.166
106	8.83	0.57	0.304	(0.159)	0.128	0.176
107	8.92	0.57	0.304	(0.158)	0.128	0.176
108	9.00	0.57	0.304	(0.157)	0.128	0.176
109	9.08	0.63	0.340	(0.156)	0.143	0.197
110	9.17	0.63	0.340	(0.156)	0.143	0.197
111	9.25	0.63	0.340	(0.155)	0.143	0.197
112	9.33	0.67	0.358	(0.154)	0.150	0.207
113	9.42	0.67	0.358	(0.153)	0.150	0.207
114	9.50	0.67	0.358	(0.153)	0.150	0.207
115	9.58	0.70	0.375	0.152 (0.158)		0.224
116	9.67	0.70	0.375	0.151 (0.158)		0.224
117	9.75	0.70	0.375	0.150 (0.158)		0.225
118	9.83	0.73	0.393	0.150 (0.165)		0.244

119	9.92	0.73	0.393	0.149	(0.165)	0.244
120	10.00	0.73	0.393	0.148	(0.165)	0.245
121	10.08	0.50	0.268	(0.148)	0.113	0.156
122	10.17	0.50	0.268	(0.147)	0.113	0.156
123	10.25	0.50	0.268	(0.146)	0.113	0.156
124	10.33	0.50	0.268	(0.145)	0.113	0.156
125	10.42	0.50	0.268	(0.145)	0.113	0.156
126	10.50	0.50	0.268	(0.144)	0.113	0.156
127	10.58	0.67	0.358	0.143	(0.150)	0.214
128	10.67	0.67	0.358	0.143	(0.150)	0.215
129	10.75	0.67	0.358	0.142	(0.150)	0.216
130	10.83	0.67	0.358	0.141	(0.150)	0.216
131	10.92	0.67	0.358	0.141	(0.150)	0.217
132	11.00	0.67	0.358	0.140	(0.150)	0.218
133	11.08	0.63	0.340	0.139	(0.143)	0.201
134	11.17	0.63	0.340	0.139	(0.143)	0.201
135	11.25	0.63	0.340	0.138	(0.143)	0.202
136	11.33	0.63	0.340	0.137	(0.143)	0.203
137	11.42	0.63	0.340	0.136	(0.143)	0.203
138	11.50	0.63	0.340	0.136	(0.143)	0.204
139	11.58	0.57	0.304	(0.135)	0.128	0.176
140	11.67	0.57	0.304	(0.134)	0.128	0.176
141	11.75	0.57	0.304	(0.134)	0.128	0.176
142	11.83	0.60	0.322	0.133	(0.135)	0.189
143	11.92	0.60	0.322	0.132	(0.135)	0.189
144	12.00	0.60	0.322	0.132	(0.135)	0.190
145	12.08	0.83	0.447	0.131	(0.188)	0.316
146	12.17	0.83	0.447	0.130	(0.188)	0.317
147	12.25	0.83	0.447	0.130	(0.188)	0.317
148	12.33	0.87	0.465	0.129	(0.195)	0.336
149	12.42	0.87	0.465	0.129	(0.195)	0.336
150	12.50	0.87	0.465	0.128	(0.195)	0.337
151	12.58	0.93	0.501	0.127	(0.210)	0.373
152	12.67	0.93	0.501	0.127	(0.210)	0.374
153	12.75	0.93	0.501	0.126	(0.210)	0.375
154	12.83	0.97	0.519	0.125	(0.218)	0.393
155	12.92	0.97	0.519	0.125	(0.218)	0.394
156	13.00	0.97	0.519	0.124	(0.218)	0.394
157	13.08	1.13	0.608	0.123	(0.255)	0.484
158	13.17	1.13	0.608	0.123	(0.255)	0.485
159	13.25	1.13	0.608	0.122	(0.255)	0.486
160	13.33	1.13	0.608	0.122	(0.255)	0.486
161	13.42	1.13	0.608	0.121	(0.255)	0.487
162	13.50	1.13	0.608	0.120	(0.255)	0.488
163	13.58	0.77	0.411	0.120	(0.173)	0.292
164	13.67	0.77	0.411	0.119	(0.173)	0.292
165	13.75	0.77	0.411	0.118	(0.173)	0.293
166	13.83	0.77	0.411	0.118	(0.173)	0.293
167	13.92	0.77	0.411	0.117	(0.173)	0.294
168	14.00	0.77	0.411	0.117	(0.173)	0.295
169	14.08	0.90	0.483	0.116	(0.203)	0.367
170	14.17	0.90	0.483	0.115	(0.203)	0.367
171	14.25	0.90	0.483	0.115	(0.203)	0.368
172	14.33	0.87	0.465	0.114	(0.195)	0.351
173	14.42	0.87	0.465	0.114	(0.195)	0.351
174	14.50	0.87	0.465	0.113	(0.195)	0.352
175	14.58	0.87	0.465	0.113	(0.195)	0.352
176	14.67	0.87	0.465	0.112	(0.195)	0.353
177	14.75	0.87	0.465	0.111	(0.195)	0.353
178	14.83	0.83	0.447	0.111	(0.188)	0.336

179	14.92	0.83	0.447	0.110	(0.188)	0.337
180	15.00	0.83	0.447	0.110	(0.188)	0.337
181	15.08	0.80	0.429	0.109	(0.180)	0.320
182	15.17	0.80	0.429	0.109	(0.180)	0.321
183	15.25	0.80	0.429	0.108	(0.180)	0.321
184	15.33	0.77	0.411	0.107	(0.173)	0.304
185	15.42	0.77	0.411	0.107	(0.173)	0.304
186	15.50	0.77	0.411	0.106	(0.173)	0.305
187	15.58	0.63	0.340	0.106	(0.143)	0.234
188	15.67	0.63	0.340	0.105	(0.143)	0.234
189	15.75	0.63	0.340	0.105	(0.143)	0.235
190	15.83	0.63	0.340	0.104	(0.143)	0.235
191	15.92	0.63	0.340	0.104	(0.143)	0.236
192	16.00	0.63	0.340	0.103	(0.143)	0.237
193	16.08	0.13	0.072	(0.103)	0.030	0.041
194	16.17	0.13	0.072	(0.102)	0.030	0.041
195	16.25	0.13	0.072	(0.102)	0.030	0.041
196	16.33	0.13	0.072	(0.101)	0.030	0.041
197	16.42	0.13	0.072	(0.101)	0.030	0.041
198	16.50	0.13	0.072	(0.100)	0.030	0.041
199	16.58	0.10	0.054	(0.100)	0.023	0.031
200	16.67	0.10	0.054	(0.099)	0.023	0.031
201	16.75	0.10	0.054	(0.099)	0.023	0.031
202	16.83	0.10	0.054	(0.098)	0.023	0.031
203	16.92	0.10	0.054	(0.098)	0.023	0.031
204	17.00	0.10	0.054	(0.097)	0.023	0.031
205	17.08	0.17	0.089	(0.097)	0.038	0.052
206	17.17	0.17	0.089	(0.096)	0.038	0.052
207	17.25	0.17	0.089	(0.096)	0.038	0.052
208	17.33	0.17	0.089	(0.095)	0.038	0.052
209	17.42	0.17	0.089	(0.095)	0.038	0.052
210	17.50	0.17	0.089	(0.094)	0.038	0.052
211	17.58	0.17	0.089	(0.094)	0.038	0.052
212	17.67	0.17	0.089	(0.093)	0.038	0.052
213	17.75	0.17	0.089	(0.093)	0.038	0.052
214	17.83	0.13	0.072	(0.092)	0.030	0.041
215	17.92	0.13	0.072	(0.092)	0.030	0.041
216	18.00	0.13	0.072	(0.091)	0.030	0.041
217	18.08	0.13	0.072	(0.091)	0.030	0.041
218	18.17	0.13	0.072	(0.090)	0.030	0.041
219	18.25	0.13	0.072	(0.090)	0.030	0.041
220	18.33	0.13	0.072	(0.090)	0.030	0.041
221	18.42	0.13	0.072	(0.089)	0.030	0.041
222	18.50	0.13	0.072	(0.089)	0.030	0.041
223	18.58	0.10	0.054	(0.088)	0.023	0.031
224	18.67	0.10	0.054	(0.088)	0.023	0.031
225	18.75	0.10	0.054	(0.087)	0.023	0.031
226	18.83	0.07	0.036	(0.087)	0.015	0.021
227	18.92	0.07	0.036	(0.087)	0.015	0.021
228	19.00	0.07	0.036	(0.086)	0.015	0.021
229	19.08	0.10	0.054	(0.086)	0.023	0.031
230	19.17	0.10	0.054	(0.085)	0.023	0.031
231	19.25	0.10	0.054	(0.085)	0.023	0.031
232	19.33	0.13	0.072	(0.085)	0.030	0.041
233	19.42	0.13	0.072	(0.084)	0.030	0.041
234	19.50	0.13	0.072	(0.084)	0.030	0.041
235	19.58	0.10	0.054	(0.083)	0.023	0.031
236	19.67	0.10	0.054	(0.083)	0.023	0.031
237	19.75	0.10	0.054	(0.083)	0.023	0.031
238	19.83	0.07	0.036	(0.082)	0.015	0.021

239	19.92	0.07	0.036	(0.082)	0.015	0.021
240	20.00	0.07	0.036	(0.082)	0.015	0.021
241	20.08	0.10	0.054	(0.081)	0.023	0.031
242	20.17	0.10	0.054	(0.081)	0.023	0.031
243	20.25	0.10	0.054	(0.080)	0.023	0.031
244	20.33	0.10	0.054	(0.080)	0.023	0.031
245	20.42	0.10	0.054	(0.080)	0.023	0.031
246	20.50	0.10	0.054	(0.079)	0.023	0.031
247	20.58	0.10	0.054	(0.079)	0.023	0.031
248	20.67	0.10	0.054	(0.079)	0.023	0.031
249	20.75	0.10	0.054	(0.078)	0.023	0.031
250	20.83	0.07	0.036	(0.078)	0.015	0.021
251	20.92	0.07	0.036	(0.078)	0.015	0.021
252	21.00	0.07	0.036	(0.078)	0.015	0.021
253	21.08	0.10	0.054	(0.077)	0.023	0.031
254	21.17	0.10	0.054	(0.077)	0.023	0.031
255	21.25	0.10	0.054	(0.077)	0.023	0.031
256	21.33	0.07	0.036	(0.076)	0.015	0.021
257	21.42	0.07	0.036	(0.076)	0.015	0.021
258	21.50	0.07	0.036	(0.076)	0.015	0.021
259	21.58	0.10	0.054	(0.075)	0.023	0.031
260	21.67	0.10	0.054	(0.075)	0.023	0.031
261	21.75	0.10	0.054	(0.075)	0.023	0.031
262	21.83	0.07	0.036	(0.075)	0.015	0.021
263	21.92	0.07	0.036	(0.074)	0.015	0.021
264	22.00	0.07	0.036	(0.074)	0.015	0.021
265	22.08	0.10	0.054	(0.074)	0.023	0.031
266	22.17	0.10	0.054	(0.074)	0.023	0.031
267	22.25	0.10	0.054	(0.073)	0.023	0.031
268	22.33	0.07	0.036	(0.073)	0.015	0.021
269	22.42	0.07	0.036	(0.073)	0.015	0.021
270	22.50	0.07	0.036	(0.073)	0.015	0.021
271	22.58	0.07	0.036	(0.073)	0.015	0.021
272	22.67	0.07	0.036	(0.072)	0.015	0.021
273	22.75	0.07	0.036	(0.072)	0.015	0.021
274	22.83	0.07	0.036	(0.072)	0.015	0.021
275	22.92	0.07	0.036	(0.072)	0.015	0.021
276	23.00	0.07	0.036	(0.072)	0.015	0.021
277	23.08	0.07	0.036	(0.071)	0.015	0.021
278	23.17	0.07	0.036	(0.071)	0.015	0.021
279	23.25	0.07	0.036	(0.071)	0.015	0.021
280	23.33	0.07	0.036	(0.071)	0.015	0.021
281	23.42	0.07	0.036	(0.071)	0.015	0.021
282	23.50	0.07	0.036	(0.071)	0.015	0.021
283	23.58	0.07	0.036	(0.071)	0.015	0.021
284	23.67	0.07	0.036	(0.071)	0.015	0.021
285	23.75	0.07	0.036	(0.070)	0.015	0.021
286	23.83	0.07	0.036	(0.070)	0.015	0.021
287	23.92	0.07	0.036	(0.070)	0.015	0.021
288	24.00	0.07	0.036	(0.070)	0.015	0.021

(Loss Rate Not Used)

Sum =	100.0		Sum =	34.9
Flood volume =	Effective rainfall	2.91(In)		
times area	9.5(Ac.)/[((In)/(Ft.))] =		2.3(Ac.Ft)	
Total soil loss =	1.56(In)			
Total soil loss =	1.238(Ac.Ft)			
Total rainfall =	4.47(In)			
Flood volume =	100696.0 Cubic Feet			
Total soil loss =	53935.9 Cubic Feet			

Peak flow rate of this hydrograph = 4.681(CFS)

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

Hydrograph in 5 Minute intervals ((CFS))

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

Time(h+m)	Volume	Ac.Ft	Q(CFS)	0	2.5	5.0	7.5
0+ 5	0.0006		0.08	Q			
0+10	0.0018		0.17	Q			
0+15	0.0031		0.19	Q			
0+20	0.0048		0.24	Q			
0+25	0.0067		0.29	VQ			
0+30	0.0088		0.30	VQ			
0+35	0.0108		0.30	VQ			
0+40	0.0129		0.30	VQ			
0+45	0.0149		0.30	VQ			
0+50	0.0173		0.34	VQ			
0+55	0.0199		0.39	VQ			
1+ 0	0.0227		0.40	VQ			
1+ 5	0.0251		0.36	VQ			
1+10	0.0273		0.31	VQ			
1+15	0.0294		0.30	VQ			
1+20	0.0314		0.30	VQ			
1+25	0.0335		0.30	VQ			
1+30	0.0355		0.30	VQ			
1+35	0.0376		0.30	VQ			
1+40	0.0397		0.30	VQ			
1+45	0.0417		0.30	VQ			

1+50	0.0441	0.34	VQ	|	|	|
1+55	0.0467	0.39	VQ	|	|	|
2+ 0	0.0494	0.40	VQ	|	|	|
2+ 5	0.0522	0.40	VQ	|	|	|
2+10	0.0549	0.40	VQ	|	|	|
2+15	0.0577	0.40	VQ	|	|	|
2+20	0.0604	0.40	|Q	|	|	|
2+25	0.0632	0.40	|Q	|	|	|
2+30	0.0659	0.40	|Q	|	|	|
2+35	0.0689	0.44	|Q	|	|	|
2+40	0.0723	0.49	|Q	|	|	|
2+45	0.0757	0.49	|Q	|	|	|
2+50	0.0791	0.50	|Q	|	|	|
2+55	0.0826	0.50	|Q	|	|	|
3+ 0	0.0860	0.50	|Q	|	|	|
3+ 5	0.0894	0.50	|Q	|	|	|
3+10	0.0929	0.50	|Q	|	|	|
3+15	0.0963	0.50	|Q	|	|	|
3+20	0.0997	0.50	|Q	|	|	|
3+25	0.1031	0.50	|Q	|	|	|
3+30	0.1066	0.50	|Q	|	|	|
3+35	0.1100	0.50	|Q	|	|	|
3+40	0.1134	0.50	|Q	|	|	|
3+45	0.1169	0.50	|QV	|	|	|
3+50	0.1206	0.54	| Q	|	|	|
3+55	0.1246	0.59	| Q	|	|	|
4+ 0	0.1287	0.59	| Q	|	|	|
4+ 5	0.1328	0.60	| Q	|	|	|
4+10	0.1370	0.60	| Q	|	|	|
4+15	0.1411	0.60	| Q	|	|	|

4+20	0.1455	0.64	| Q	|	|	|
4+25	0.1502	0.69	| Q	|	|	|
4+30	0.1550	0.69	| Q	|	|	|
4+35	0.1598	0.70	| Q	|	|	|
4+40	0.1646	0.70	| Q	|	|	|
4+45	0.1694	0.70	| Q	|	|	|
4+50	0.1745	0.74	| QV	|	|	|
4+55	0.1799	0.78	| Q	|	|	|
5+ 0	0.1853	0.79	| Q	|	|	|
5+ 5	0.1903	0.71	| QV	|	|	|
5+10	0.1946	0.62	| QV	|	|	|
5+15	0.1987	0.60	| QV	|	|	|
5+20	0.2031	0.64	| QV	|	|	|
5+25	0.2078	0.69	| QV	|	|	|
5+30	0.2126	0.69	| QV	|	|	|
5+35	0.2177	0.74	| QV	|	|	|
5+40	0.2231	0.78	| Q	|	|	|
5+45	0.2286	0.79	| Q	|	|	|
5+50	0.2341	0.80	| QV	|	|	|
5+55	0.2396	0.80	| QV	|	|	|
6+ 0	0.2451	0.80	| QV	|	|	|
6+ 5	0.2508	0.84	| QV	|	|	|
6+10	0.2569	0.88	| QV	|	|	|
6+15	0.2631	0.89	| QV	|	|	|
6+20	0.2693	0.90	| QV	|	|	|
6+25	0.2754	0.90	| QV	|	|	|
6+30	0.2816	0.90	| QV	|	|	|
6+35	0.2881	0.94	| QV	|	|	|
6+40	0.2948	0.98	| Q V	|	|	|
6+45	0.3017	0.99	| Q V	|	|	|

6+50	0.3086	1.00	|	Q V	|		|
6+55	0.3154	1.00	|	Q V	|		|
7+ 0	0.3223	1.00	|	Q V	|		|
7+ 5	0.3291	1.00	|	Q V	|		|
7+10	0.3360	1.00	|	Q V	|		|
7+15	0.3429	1.00	|	Q V	|		|
7+20	0.3500	1.04	|	Q V	|		|
7+25	0.3575	1.08	|	Q V	|		|
7+30	0.3650	1.09	|	Q V	|		|
7+35	0.3728	1.14	|	Q V	|		|
7+40	0.3810	1.18	|	Q V	|		|
7+45	0.3892	1.19	|	Q V	|		|
7+50	0.3977	1.24	|	Q V	|		|
7+55	0.4066	1.28	|	Q V	|		|
8+ 0	0.4155	1.29	|	Q V	|		|
8+ 5	0.4250	1.38	|	Q V	|		|
8+10	0.4351	1.47	|	Q V	|		|
8+15	0.4453	1.49	|	Q V	|		|
8+20	0.4556	1.49	|	Q V	|		|
8+25	0.4659	1.49	|	Q V	|		|
8+30	0.4762	1.49	|	Q V	|		|
8+35	0.4868	1.54	|	Q V	|		|
8+40	0.4977	1.58	|	Q V	|		|
8+45	0.5086	1.59	|	Q V	|		|
8+50	0.5199	1.64	|	Q V	|		|
8+55	0.5315	1.68	|	Q V	|		|
9+ 0	0.5431	1.69	|	Q V	|		|
9+ 5	0.5554	1.78	|	Q V	|		|
9+10	0.5682	1.87	|	Q V	|		|
9+15	0.5812	1.89	|	Q V	|		|

9+20	0.5946	1.94	|	Q	V	|	|
9+25	0.6082	1.98	|	Q	V	|	|
9+30	0.6219	1.99	|	Q	V	|	|
9+35	0.6361	2.06	|	Q	|V	|	|
9+40	0.6508	2.13	|	Q	|V	|	|
9+45	0.6656	2.15	|	Q	|V	|	|
9+50	0.6810	2.24	|	Q	|V	|	|
9+55	0.6970	2.32	|	Q	| V	|	|
10+ 0	0.7131	2.34	|	Q	| V	|	|
10+ 5	0.7268	1.99	|	Q	| V	|	|
10+10	0.7379	1.60	|	Q	| V	|	|
10+15	0.7484	1.52	|	Q	| V	|	|
10+20	0.7587	1.49	|	Q	| V	|	|
10+25	0.7690	1.49	|	Q	| V	|	|
10+30	0.7792	1.49	|	Q	| V	|	|
10+35	0.7912	1.73	|	Q	| V	|	|
10+40	0.8049	1.99	|	Q	| V	|	|
10+45	0.8190	2.05	|	Q	| V	|	|
10+50	0.8333	2.07	|	Q	| V	|	|
10+55	0.8476	2.08	|	Q	| V	|	|
11+ 0	0.8620	2.09	|	Q	| V	|	|
11+ 5	0.8759	2.02	|	Q	| V	|	|
11+10	0.8893	1.95	|	Q	| V	|	|
11+15	0.9027	1.94	|	Q	| V	|	|
11+20	0.9161	1.94	|	Q	| V	|	|
11+25	0.9295	1.95	|	Q	| V	|	|
11+30	0.9429	1.95	|	Q	| V	|	|
11+35	0.9557	1.85	|	Q	| V	|	|
11+40	0.9676	1.73	|	Q	| V	|	|
11+45	0.9793	1.70	|	Q	| V	|	|

11+50	0.9913	1.74	|	Q	|	V	|	|
11+55	1.0037	1.80	|	Q	|	V	|	|
12+ 0	1.0162	1.82	|	Q	|	V	|	|
12+ 5	1.0323	2.33	|	Q	|	V	|	|
12+10	1.0522	2.89	|	|Q	|	V	|	|
12+15	1.0728	3.00	|	| Q	|	V	|	|
12+20	1.0943	3.12	|	| Q	|	V	|	|
12+25	1.1164	3.21	|	| Q	|	V	|	|
12+30	1.1386	3.23	|	| Q	|	V	|	|
12+35	1.1619	3.38	|	| Q	|	V	|	|
12+40	1.1864	3.55	|	| Q	|	V	|	|
12+45	1.2111	3.58	|	| Q	|	V	|	|
12+50	1.2364	3.67	|	| Q	|	V	|	|
12+55	1.2622	3.76	|	| Q	|	V	|	|
13+ 0	1.2883	3.78	|	| Q	|	V	|	|
13+ 5	1.3169	4.15	|	| Q	|	V	|	|
13+10	1.3482	4.55	|	| Q	|	V	|	|
13+15	1.3801	4.63	|	| Q	|	V	|	|
13+20	1.4123	4.67	|	| Q	|	V	|	|
13+25	1.4445	4.68	|	| Q	|	V	|	|
13+30	1.4767	4.68	|	| Q	|	V	|	|
13+35	1.5035	3.90	|	| Q	|	V	|	|
13+40	1.5245	3.04	|	| Q	|	V	|	|
13+45	1.5443	2.88	|	|Q	|	V	|	|
13+50	1.5637	2.81	|	|Q	|	V	|	|
13+55	1.5831	2.82	|	|Q	|	V	|	|
14+ 0	1.6025	2.83	|	|Q	|	V	|	|
14+ 5	1.6240	3.12	|	| Q	|	V	|	|
14+10	1.6477	3.44	|	| Q	|	V	|	|
14+15	1.6719	3.51	|	| Q	|	V	|	|

14+20	1.6957	3.46	|	|	Q	|	V|
14+25	1.7191	3.39	|	|	Q	|	V|
14+30	1.7424	3.38	|	|	Q	|	V
14+35	1.7657	3.38	|	|	Q	|	V
14+40	1.7890	3.39	|	|	Q	|	V
14+45	1.8124	3.39	|	|	Q	|	|V
14+50	1.8353	3.33	|	|	Q	|	|V
14+55	1.8577	3.25	|	|	Q	|	| V
15+ 0	1.8800	3.24	|	|	Q	|	| V
15+ 5	1.9018	3.17	|	|	Q	|	| V
15+10	1.9232	3.10	|	|	Q	|	| V
15+15	1.9444	3.09	|	|	Q	|	| V
15+20	1.9652	3.01	|	|	Q	|	| V
15+25	1.9855	2.94	|	|	Q	|	| V
15+30	2.0056	2.93	|	|	Q	|	| V
15+35	2.0238	2.64	|	|	Q	|	| V
15+40	2.0399	2.33	|	|	Q	|	| V
15+45	2.0556	2.28	|	|	Q	|	| V
15+50	2.0712	2.26	|	|	Q	|	| V
15+55	2.0868	2.26	|	|	Q	|	| V
16+ 0	2.1024	2.27	|	|	Q	|	| V
16+ 5	2.1127	1.49	|	Q	|	|	| V
16+10	2.1170	0.63	|	Q	|	|	| V
16+15	2.1202	0.46	|	Q	|	|	| V
16+20	2.1229	0.40	|	Q	|	|	| V
16+25	2.1257	0.40	|	Q	|	|	| V
16+30	2.1284	0.40	|	Q	|	|	| V
16+35	2.1309	0.36	|	Q	|	|	| V
16+40	2.1330	0.31	|	Q	|	|	| V
16+45	2.1351	0.30	|	Q	|	|	| V

16+50	2.1372	0.30	|Q	|	|	|	V
16+55	2.1392	0.30	|Q	|	|	|	V
17+ 0	2.1413	0.30	|Q	|	|	|	V
17+ 5	2.1439	0.38	|Q	|	|	|	V
17+10	2.1472	0.47	|Q	|	|	|	V
17+15	2.1506	0.49	|Q	|	|	|	V
17+20	2.1540	0.50	|Q	|	|	|	V
17+25	2.1574	0.50	|Q	|	|	|	V
17+30	2.1609	0.50	|Q	|	|	|	V
17+35	2.1643	0.50	|Q	|	|	|	V
17+40	2.1677	0.50	|Q	|	|	|	V
17+45	2.1712	0.50	|Q	|	|	|	V
17+50	2.1743	0.46	|Q	|	|	|	V
17+55	2.1771	0.41	|Q	|	|	|	V
18+ 0	2.1799	0.40	|Q	|	|	|	V
18+ 5	2.1827	0.40	|Q	|	|	|	V
18+10	2.1854	0.40	|Q	|	|	|	V
18+15	2.1881	0.40	|Q	|	|	|	V
18+20	2.1909	0.40	|Q	|	|	|	V
18+25	2.1936	0.40	|Q	|	|	|	V
18+30	2.1964	0.40	|Q	|	|	|	V
18+35	2.1988	0.36	|Q	|	|	|	V
18+40	2.2010	0.31	|Q	|	|	|	V
18+45	2.2031	0.30	|Q	|	|	|	V
18+50	2.2048	0.26	|Q	|	|	|	V
18+55	2.2063	0.21	Q	|	|	|	V
19+ 0	2.2077	0.20	Q	|	|	|	V
19+ 5	2.2094	0.24	Q	|	|	|	V
19+10	2.2113	0.29	|Q	|	|	|	V
19+15	2.2134	0.30	|Q	|	|	|	V

	19+20	2.2157	0.34	|Q	|	|	|	V
|	19+25	2.2184	0.39	|Q	|	|	|	V
|	19+30	2.2211	0.40	|Q	|	|	|	V
|	19+35	2.2235	0.36	|Q	|	|	|	V
|	19+40	2.2257	0.31	|Q	|	|	|	V
|	19+45	2.2278	0.30	|Q	|	|	|	V
|	19+50	2.2295	0.26	|Q	|	|	|	V
|	19+55	2.2310	0.21	Q	|	|	|	V
|	20+ 0	2.2324	0.20	Q	|	|	|	V
|	20+ 5	2.2341	0.24	Q	|	|	|	V
|	20+10	2.2360	0.29	|Q	|	|	|	V
|	20+15	2.2381	0.30	|Q	|	|	|	V
|	20+20	2.2401	0.30	|Q	|	|	|	V
|	20+25	2.2422	0.30	|Q	|	|	|	V
|	20+30	2.2442	0.30	|Q	|	|	|	V
|	20+35	2.2463	0.30	|Q	|	|	|	V
|	20+40	2.2484	0.30	|Q	|	|	|	V
|	20+45	2.2504	0.30	|Q	|	|	|	V
|	20+50	2.2522	0.26	|Q	|	|	|	V
|	20+55	2.2537	0.21	Q	|	|	|	V
|	21+ 0	2.2551	0.20	Q	|	|	|	
V|	21+ 5	2.2567	0.24	Q	|	|	|	
V|	21+10	2.2587	0.29	|Q	|	|	|	
V|	21+15	2.2607	0.30	|Q	|	|	|	
V|	21+20	2.2625	0.26	|Q	|	|	|	
V|	21+25	2.2640	0.21	Q	|	|	|	
V|	21+30	2.2653	0.20	Q	|	|	|	
V|	21+35	2.2670	0.24	Q	|	|	|	
V|	21+40	2.2690	0.29	|Q	|	|	|	
V|	21+45	2.2710	0.30	|Q	|	|	|	

V|	21+50	2.2728	0.26	|Q	|	|	|
V|	21+55	2.2742	0.21	Q	|	|	|
V|	22+ 0	2.2756	0.20	Q	|	|	|
V|	22+ 5	2.2773	0.24	Q	|	|	|
V|	22+10	2.2793	0.29	|Q	|	|	|
V|	22+15	2.2813	0.30	|Q	|	|	|
V|	22+20	2.2831	0.26	|Q	|	|	|
V|	22+25	2.2845	0.21	Q	|	|	|
V|	22+30	2.2859	0.20	Q	|	|	|
V|	22+35	2.2873	0.20	Q	|	|	|
V|	22+40	2.2887	0.20	Q	|	|	|
V|	22+45	2.2901	0.20	Q	|	|	|
V|	22+50	2.2914	0.20	Q	|	|	|
V|	22+55	2.2928	0.20	Q	|	|	|
V|	23+ 0	2.2942	0.20	Q	|	|	|
V|	23+ 5	2.2955	0.20	Q	|	|	|
V|	23+10	2.2969	0.20	Q	|	|	|
V|	23+15	2.2983	0.20	Q	|	|	|
V|	23+20	2.2997	0.20	Q	|	|	|
V|	23+25	2.3010	0.20	Q	|	|	|
V|	23+30	2.3024	0.20	Q	|	|	|
V|	23+35	2.3038	0.20	Q	|	|	|
V|	23+40	2.3052	0.20	Q	|	|	|
V|	23+45	2.3065	0.20	Q	|	|	|
V|	23+50	2.3079	0.20	Q	|	|	|
V|	23+55	2.3093	0.20	Q	|	|	|
V|	24+ 0	2.3106	0.20	Q	|	|	|
V	24+ 5	2.3114	0.12	Q			
V	24+10	2.3116	0.02	Q			
V	24+15	2.3117	0.01	Q			
V							

Unit Hydrograph Analysis

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Study date 01/11/16 File: VDA24100.out

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

Program License Serial Number 6232

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

English Units used in output format

A-27 100yr 24 hr Event

--
Drainage Area = 18.14(Ac.) = 0.028 Sq. Mi.
0.028 Sq. Mi. Drainage Area for Depth-Area Areal Adjustment = 18.14(Ac.) =
Length along longest watercourse = 2330.00(Ft.)
(Ft.) Length along longest watercourse measured to centroid = 1586.00
Length along longest watercourse = 0.441 Mi.
Mi. Length along longest watercourse measured to centroid = 0.300

Difference in elevation = 31.10(Ft.)
Slope along watercourse = 70.4755 Ft./Mi.
Average Manning's 'N' = 0.015
Lag time = 0.074 Hr.
Lag time = 4.47 Min.
25% of lag time = 1.12 Min.
40% of lag time = 1.79 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]

18.14 1.14 20.68

100 YEAR Area rainfall data:

Area(Ac.)[1] Rainfall(In)[2] Weighting[1*2]
18.14 4.47 81.09

STORM EVENT (YEAR) = 100.00
Area Averaged 2-Year Rainfall = 1.140(In)
Area Averaged 100-Year Rainfall = 4.470(In)

Point rain (area averaged) = 4.470(In)
Areal adjustment factor = 100.00 %
Adjusted average point rain = 4.470(In)

Sub-Area Data:

Area(Ac.) Runoff Index Impervious %
18.140 56.00 0.600
Total Area Entered = 18.14(Ac.)

RI (In/Hr)	RI AMC-3	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F
0.140	56.0	74.8	0.305	0.600	0.140	1.000

Sum (F) =

0.140

Area averaged mean soil loss (F) (In/Hr) = 0.140
Minimum soil loss rate ((In/Hr)) = 0.070
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.420

Unit Hydrograph
DESERT S-Curve

--
Unit Hydrograph Data

Unit time period (hrs)	Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)	
1	0.083	111.979	21.075	3.853
2	0.167	223.957	50.317	9.199
3	0.250	335.936	15.364	2.809
4	0.333	447.914	6.652	1.216
5	0.417	559.893	3.462	0.633
6	0.500	671.871	1.635	0.299
7	0.583	783.850	1.495	0.273
		Sum = 100.000	Sum=	18.282

The following loss rate calculations reflect use of the minimum
calculated loss

rate subtracted from the Storm Rain to produce the maximum Effective Rain value

Unit	Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr)		Effective (In/Hr)
				Max	Low	
1	0.08	0.07	0.036	(0.249)	0.015	0.021
2	0.17	0.07	0.036	(0.248)	0.015	0.021
3	0.25	0.07	0.036	(0.247)	0.015	0.021
4	0.33	0.10	0.054	(0.246)	0.023	0.031
5	0.42	0.10	0.054	(0.245)	0.023	0.031
6	0.50	0.10	0.054	(0.244)	0.023	0.031
7	0.58	0.10	0.054	(0.243)	0.023	0.031
8	0.67	0.10	0.054	(0.242)	0.023	0.031
9	0.75	0.10	0.054	(0.241)	0.023	0.031
10	0.83	0.13	0.072	(0.240)	0.030	0.041
11	0.92	0.13	0.072	(0.239)	0.030	0.041
12	1.00	0.13	0.072	(0.239)	0.030	0.041
13	1.08	0.10	0.054	(0.238)	0.023	0.031
14	1.17	0.10	0.054	(0.237)	0.023	0.031
15	1.25	0.10	0.054	(0.236)	0.023	0.031
16	1.33	0.10	0.054	(0.235)	0.023	0.031
17	1.42	0.10	0.054	(0.234)	0.023	0.031
18	1.50	0.10	0.054	(0.233)	0.023	0.031
19	1.58	0.10	0.054	(0.232)	0.023	0.031
20	1.67	0.10	0.054	(0.231)	0.023	0.031
21	1.75	0.10	0.054	(0.230)	0.023	0.031
22	1.83	0.13	0.072	(0.229)	0.030	0.041
23	1.92	0.13	0.072	(0.228)	0.030	0.041
24	2.00	0.13	0.072	(0.227)	0.030	0.041
25	2.08	0.13	0.072	(0.226)	0.030	0.041
26	2.17	0.13	0.072	(0.225)	0.030	0.041
27	2.25	0.13	0.072	(0.225)	0.030	0.041
28	2.33	0.13	0.072	(0.224)	0.030	0.041
29	2.42	0.13	0.072	(0.223)	0.030	0.041
30	2.50	0.13	0.072	(0.222)	0.030	0.041
31	2.58	0.17	0.089	(0.221)	0.038	0.052
32	2.67	0.17	0.089	(0.220)	0.038	0.052
33	2.75	0.17	0.089	(0.219)	0.038	0.052
34	2.83	0.17	0.089	(0.218)	0.038	0.052
35	2.92	0.17	0.089	(0.217)	0.038	0.052
36	3.00	0.17	0.089	(0.216)	0.038	0.052
37	3.08	0.17	0.089	(0.216)	0.038	0.052
38	3.17	0.17	0.089	(0.215)	0.038	0.052
39	3.25	0.17	0.089	(0.214)	0.038	0.052
40	3.33	0.17	0.089	(0.213)	0.038	0.052
41	3.42	0.17	0.089	(0.212)	0.038	0.052
42	3.50	0.17	0.089	(0.211)	0.038	0.052
43	3.58	0.17	0.089	(0.210)	0.038	0.052
44	3.67	0.17	0.089	(0.209)	0.038	0.052
45	3.75	0.17	0.089	(0.208)	0.038	0.052
46	3.83	0.20	0.107	(0.208)	0.045	0.062
47	3.92	0.20	0.107	(0.207)	0.045	0.062
48	4.00	0.20	0.107	(0.206)	0.045	0.062
49	4.08	0.20	0.107	(0.205)	0.045	0.062
50	4.17	0.20	0.107	(0.204)	0.045	0.062
51	4.25	0.20	0.107	(0.203)	0.045	0.062
52	4.33	0.23	0.125	(0.202)	0.053	0.073
53	4.42	0.23	0.125	(0.201)	0.053	0.073
54	4.50	0.23	0.125	(0.201)	0.053	0.073
55	4.58	0.23	0.125	(0.200)	0.053	0.073

56	4.67	0.23	0.125	(0.199)	0.053	0.073
57	4.75	0.23	0.125	(0.198)	0.053	0.073
58	4.83	0.27	0.143	(0.197)	0.060	0.083
59	4.92	0.27	0.143	(0.196)	0.060	0.083
60	5.00	0.27	0.143	(0.195)	0.060	0.083
61	5.08	0.20	0.107	(0.195)	0.045	0.062
62	5.17	0.20	0.107	(0.194)	0.045	0.062
63	5.25	0.20	0.107	(0.193)	0.045	0.062
64	5.33	0.23	0.125	(0.192)	0.053	0.073
65	5.42	0.23	0.125	(0.191)	0.053	0.073
66	5.50	0.23	0.125	(0.190)	0.053	0.073
67	5.58	0.27	0.143	(0.190)	0.060	0.083
68	5.67	0.27	0.143	(0.189)	0.060	0.083
69	5.75	0.27	0.143	(0.188)	0.060	0.083
70	5.83	0.27	0.143	(0.187)	0.060	0.083
71	5.92	0.27	0.143	(0.186)	0.060	0.083
72	6.00	0.27	0.143	(0.185)	0.060	0.083
73	6.08	0.30	0.161	(0.185)	0.068	0.093
74	6.17	0.30	0.161	(0.184)	0.068	0.093
75	6.25	0.30	0.161	(0.183)	0.068	0.093
76	6.33	0.30	0.161	(0.182)	0.068	0.093
77	6.42	0.30	0.161	(0.181)	0.068	0.093
78	6.50	0.30	0.161	(0.181)	0.068	0.093
79	6.58	0.33	0.179	(0.180)	0.075	0.104
80	6.67	0.33	0.179	(0.179)	0.075	0.104
81	6.75	0.33	0.179	(0.178)	0.075	0.104
82	6.83	0.33	0.179	(0.177)	0.075	0.104
83	6.92	0.33	0.179	(0.176)	0.075	0.104
84	7.00	0.33	0.179	(0.176)	0.075	0.104
85	7.08	0.33	0.179	(0.175)	0.075	0.104
86	7.17	0.33	0.179	(0.174)	0.075	0.104
87	7.25	0.33	0.179	(0.173)	0.075	0.104
88	7.33	0.37	0.197	(0.172)	0.083	0.114
89	7.42	0.37	0.197	(0.172)	0.083	0.114
90	7.50	0.37	0.197	(0.171)	0.083	0.114
91	7.58	0.40	0.215	(0.170)	0.090	0.124
92	7.67	0.40	0.215	(0.169)	0.090	0.124
93	7.75	0.40	0.215	(0.169)	0.090	0.124
94	7.83	0.43	0.232	(0.168)	0.098	0.135
95	7.92	0.43	0.232	(0.167)	0.098	0.135
96	8.00	0.43	0.232	(0.166)	0.098	0.135
97	8.08	0.50	0.268	(0.165)	0.113	0.156
98	8.17	0.50	0.268	(0.165)	0.113	0.156
99	8.25	0.50	0.268	(0.164)	0.113	0.156
100	8.33	0.50	0.268	(0.163)	0.113	0.156
101	8.42	0.50	0.268	(0.162)	0.113	0.156
102	8.50	0.50	0.268	(0.162)	0.113	0.156
103	8.58	0.53	0.286	(0.161)	0.120	0.166
104	8.67	0.53	0.286	(0.160)	0.120	0.166
105	8.75	0.53	0.286	(0.159)	0.120	0.166
106	8.83	0.57	0.304	(0.159)	0.128	0.176
107	8.92	0.57	0.304	(0.158)	0.128	0.176
108	9.00	0.57	0.304	(0.157)	0.128	0.176
109	9.08	0.63	0.340	(0.156)	0.143	0.197
110	9.17	0.63	0.340	(0.156)	0.143	0.197
111	9.25	0.63	0.340	(0.155)	0.143	0.197
112	9.33	0.67	0.358	(0.154)	0.150	0.207
113	9.42	0.67	0.358	(0.153)	0.150	0.207
114	9.50	0.67	0.358	(0.153)	0.150	0.207
115	9.58	0.70	0.375	0.152 (0.158)		0.224

116	9.67	0.70	0.375	0.151	(0.158)	0.224
117	9.75	0.70	0.375	0.150	(0.158)	0.225
118	9.83	0.73	0.393	0.150	(0.165)	0.244
119	9.92	0.73	0.393	0.149	(0.165)	0.244
120	10.00	0.73	0.393	0.148	(0.165)	0.245
121	10.08	0.50	0.268	(0.148)	0.113	0.156
122	10.17	0.50	0.268	(0.147)	0.113	0.156
123	10.25	0.50	0.268	(0.146)	0.113	0.156
124	10.33	0.50	0.268	(0.145)	0.113	0.156
125	10.42	0.50	0.268	(0.145)	0.113	0.156
126	10.50	0.50	0.268	(0.144)	0.113	0.156
127	10.58	0.67	0.358	0.143	(0.150)	0.214
128	10.67	0.67	0.358	0.143	(0.150)	0.215
129	10.75	0.67	0.358	0.142	(0.150)	0.216
130	10.83	0.67	0.358	0.141	(0.150)	0.216
131	10.92	0.67	0.358	0.141	(0.150)	0.217
132	11.00	0.67	0.358	0.140	(0.150)	0.218
133	11.08	0.63	0.340	0.139	(0.143)	0.201
134	11.17	0.63	0.340	0.139	(0.143)	0.201
135	11.25	0.63	0.340	0.138	(0.143)	0.202
136	11.33	0.63	0.340	0.137	(0.143)	0.203
137	11.42	0.63	0.340	0.136	(0.143)	0.203
138	11.50	0.63	0.340	0.136	(0.143)	0.204
139	11.58	0.57	0.304	(0.135)	0.128	0.176
140	11.67	0.57	0.304	(0.134)	0.128	0.176
141	11.75	0.57	0.304	(0.134)	0.128	0.176
142	11.83	0.60	0.322	0.133	(0.135)	0.189
143	11.92	0.60	0.322	0.132	(0.135)	0.189
144	12.00	0.60	0.322	0.132	(0.135)	0.190
145	12.08	0.83	0.447	0.131	(0.188)	0.316
146	12.17	0.83	0.447	0.130	(0.188)	0.317
147	12.25	0.83	0.447	0.130	(0.188)	0.317
148	12.33	0.87	0.465	0.129	(0.195)	0.336
149	12.42	0.87	0.465	0.129	(0.195)	0.336
150	12.50	0.87	0.465	0.128	(0.195)	0.337
151	12.58	0.93	0.501	0.127	(0.210)	0.373
152	12.67	0.93	0.501	0.127	(0.210)	0.374
153	12.75	0.93	0.501	0.126	(0.210)	0.375
154	12.83	0.97	0.519	0.125	(0.218)	0.393
155	12.92	0.97	0.519	0.125	(0.218)	0.394
156	13.00	0.97	0.519	0.124	(0.218)	0.394
157	13.08	1.13	0.608	0.123	(0.255)	0.484
158	13.17	1.13	0.608	0.123	(0.255)	0.485
159	13.25	1.13	0.608	0.122	(0.255)	0.486
160	13.33	1.13	0.608	0.122	(0.255)	0.486
161	13.42	1.13	0.608	0.121	(0.255)	0.487
162	13.50	1.13	0.608	0.120	(0.255)	0.488
163	13.58	0.77	0.411	0.120	(0.173)	0.292
164	13.67	0.77	0.411	0.119	(0.173)	0.292
165	13.75	0.77	0.411	0.118	(0.173)	0.293
166	13.83	0.77	0.411	0.118	(0.173)	0.293
167	13.92	0.77	0.411	0.117	(0.173)	0.294
168	14.00	0.77	0.411	0.117	(0.173)	0.295
169	14.08	0.90	0.483	0.116	(0.203)	0.367
170	14.17	0.90	0.483	0.115	(0.203)	0.367
171	14.25	0.90	0.483	0.115	(0.203)	0.368
172	14.33	0.87	0.465	0.114	(0.195)	0.351
173	14.42	0.87	0.465	0.114	(0.195)	0.351
174	14.50	0.87	0.465	0.113	(0.195)	0.352
175	14.58	0.87	0.465	0.113	(0.195)	0.352

176	14.67	0.87	0.465	0.112	(0.195)	0.353
177	14.75	0.87	0.465	0.111	(0.195)	0.353
178	14.83	0.83	0.447	0.111	(0.188)	0.336
179	14.92	0.83	0.447	0.110	(0.188)	0.337
180	15.00	0.83	0.447	0.110	(0.188)	0.337
181	15.08	0.80	0.429	0.109	(0.180)	0.320
182	15.17	0.80	0.429	0.109	(0.180)	0.321
183	15.25	0.80	0.429	0.108	(0.180)	0.321
184	15.33	0.77	0.411	0.107	(0.173)	0.304
185	15.42	0.77	0.411	0.107	(0.173)	0.304
186	15.50	0.77	0.411	0.106	(0.173)	0.305
187	15.58	0.63	0.340	0.106	(0.143)	0.234
188	15.67	0.63	0.340	0.105	(0.143)	0.234
189	15.75	0.63	0.340	0.105	(0.143)	0.235
190	15.83	0.63	0.340	0.104	(0.143)	0.235
191	15.92	0.63	0.340	0.104	(0.143)	0.236
192	16.00	0.63	0.340	0.103	(0.143)	0.237
193	16.08	0.13	0.072	(0.103)	0.030	0.041
194	16.17	0.13	0.072	(0.102)	0.030	0.041
195	16.25	0.13	0.072	(0.102)	0.030	0.041
196	16.33	0.13	0.072	(0.101)	0.030	0.041
197	16.42	0.13	0.072	(0.101)	0.030	0.041
198	16.50	0.13	0.072	(0.100)	0.030	0.041
199	16.58	0.10	0.054	(0.100)	0.023	0.031
200	16.67	0.10	0.054	(0.099)	0.023	0.031
201	16.75	0.10	0.054	(0.099)	0.023	0.031
202	16.83	0.10	0.054	(0.098)	0.023	0.031
203	16.92	0.10	0.054	(0.098)	0.023	0.031
204	17.00	0.10	0.054	(0.097)	0.023	0.031
205	17.08	0.17	0.089	(0.097)	0.038	0.052
206	17.17	0.17	0.089	(0.096)	0.038	0.052
207	17.25	0.17	0.089	(0.096)	0.038	0.052
208	17.33	0.17	0.089	(0.095)	0.038	0.052
209	17.42	0.17	0.089	(0.095)	0.038	0.052
210	17.50	0.17	0.089	(0.094)	0.038	0.052
211	17.58	0.17	0.089	(0.094)	0.038	0.052
212	17.67	0.17	0.089	(0.093)	0.038	0.052
213	17.75	0.17	0.089	(0.093)	0.038	0.052
214	17.83	0.13	0.072	(0.092)	0.030	0.041
215	17.92	0.13	0.072	(0.092)	0.030	0.041
216	18.00	0.13	0.072	(0.091)	0.030	0.041
217	18.08	0.13	0.072	(0.091)	0.030	0.041
218	18.17	0.13	0.072	(0.090)	0.030	0.041
219	18.25	0.13	0.072	(0.090)	0.030	0.041
220	18.33	0.13	0.072	(0.090)	0.030	0.041
221	18.42	0.13	0.072	(0.089)	0.030	0.041
222	18.50	0.13	0.072	(0.089)	0.030	0.041
223	18.58	0.10	0.054	(0.088)	0.023	0.031
224	18.67	0.10	0.054	(0.088)	0.023	0.031
225	18.75	0.10	0.054	(0.087)	0.023	0.031
226	18.83	0.07	0.036	(0.087)	0.015	0.021
227	18.92	0.07	0.036	(0.087)	0.015	0.021
228	19.00	0.07	0.036	(0.086)	0.015	0.021
229	19.08	0.10	0.054	(0.086)	0.023	0.031
230	19.17	0.10	0.054	(0.085)	0.023	0.031
231	19.25	0.10	0.054	(0.085)	0.023	0.031
232	19.33	0.13	0.072	(0.085)	0.030	0.041
233	19.42	0.13	0.072	(0.084)	0.030	0.041
234	19.50	0.13	0.072	(0.084)	0.030	0.041
235	19.58	0.10	0.054	(0.083)	0.023	0.031

236	19.67	0.10	0.054	(0.083)	0.023	0.031
237	19.75	0.10	0.054	(0.083)	0.023	0.031
238	19.83	0.07	0.036	(0.082)	0.015	0.021
239	19.92	0.07	0.036	(0.082)	0.015	0.021
240	20.00	0.07	0.036	(0.082)	0.015	0.021
241	20.08	0.10	0.054	(0.081)	0.023	0.031
242	20.17	0.10	0.054	(0.081)	0.023	0.031
243	20.25	0.10	0.054	(0.080)	0.023	0.031
244	20.33	0.10	0.054	(0.080)	0.023	0.031
245	20.42	0.10	0.054	(0.080)	0.023	0.031
246	20.50	0.10	0.054	(0.079)	0.023	0.031
247	20.58	0.10	0.054	(0.079)	0.023	0.031
248	20.67	0.10	0.054	(0.079)	0.023	0.031
249	20.75	0.10	0.054	(0.078)	0.023	0.031
250	20.83	0.07	0.036	(0.078)	0.015	0.021
251	20.92	0.07	0.036	(0.078)	0.015	0.021
252	21.00	0.07	0.036	(0.078)	0.015	0.021
253	21.08	0.10	0.054	(0.077)	0.023	0.031
254	21.17	0.10	0.054	(0.077)	0.023	0.031
255	21.25	0.10	0.054	(0.077)	0.023	0.031
256	21.33	0.07	0.036	(0.076)	0.015	0.021
257	21.42	0.07	0.036	(0.076)	0.015	0.021
258	21.50	0.07	0.036	(0.076)	0.015	0.021
259	21.58	0.10	0.054	(0.075)	0.023	0.031
260	21.67	0.10	0.054	(0.075)	0.023	0.031
261	21.75	0.10	0.054	(0.075)	0.023	0.031
262	21.83	0.07	0.036	(0.075)	0.015	0.021
263	21.92	0.07	0.036	(0.074)	0.015	0.021
264	22.00	0.07	0.036	(0.074)	0.015	0.021
265	22.08	0.10	0.054	(0.074)	0.023	0.031
266	22.17	0.10	0.054	(0.074)	0.023	0.031
267	22.25	0.10	0.054	(0.073)	0.023	0.031
268	22.33	0.07	0.036	(0.073)	0.015	0.021
269	22.42	0.07	0.036	(0.073)	0.015	0.021
270	22.50	0.07	0.036	(0.073)	0.015	0.021
271	22.58	0.07	0.036	(0.073)	0.015	0.021
272	22.67	0.07	0.036	(0.072)	0.015	0.021
273	22.75	0.07	0.036	(0.072)	0.015	0.021
274	22.83	0.07	0.036	(0.072)	0.015	0.021
275	22.92	0.07	0.036	(0.072)	0.015	0.021
276	23.00	0.07	0.036	(0.072)	0.015	0.021
277	23.08	0.07	0.036	(0.071)	0.015	0.021
278	23.17	0.07	0.036	(0.071)	0.015	0.021
279	23.25	0.07	0.036	(0.071)	0.015	0.021
280	23.33	0.07	0.036	(0.071)	0.015	0.021
281	23.42	0.07	0.036	(0.071)	0.015	0.021
282	23.50	0.07	0.036	(0.071)	0.015	0.021
283	23.58	0.07	0.036	(0.071)	0.015	0.021
284	23.67	0.07	0.036	(0.071)	0.015	0.021
285	23.75	0.07	0.036	(0.070)	0.015	0.021
286	23.83	0.07	0.036	(0.070)	0.015	0.021
287	23.92	0.07	0.036	(0.070)	0.015	0.021
288	24.00	0.07	0.036	(0.070)	0.015	0.021

(Loss Rate Not Used)

Sum =	100.0		Sum =	34.9
Flood volume =	Effective rainfall	2.91(In)		
times area	18.1(Ac.)/[(In)/(Ft.)] =		4.4(Ac.Ft)	
Total soil loss =	1.56(In)			
Total soil loss =	2.357(Ac.Ft)			
Total rainfall =	4.47(In)			

Flood volume = 191667.0 Cubic Feet
 Total soil loss = 102664.0 Cubic Feet

Peak flow rate of this hydrograph = 8.879(CFS)

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

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	2.5	5.0	7.5
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0+ 5	0.0006	0.08	Q			
0+10	0.0024	0.27	VQ			
0+15	0.0047	0.33	VQ			
0+20	0.0074	0.39	VQ			
0+25	0.0109	0.50	V Q			
0+30	0.0146	0.54	V Q	|	|	|
0+35	0.0184	0.56	V Q	|	|	|
0+40	0.0223	0.56	V Q	|	|	|
0+45	0.0262	0.57	V Q	|	|	|
0+50	0.0304	0.61	V Q	|	|	|
0+55	0.0352	0.70	V Q	|	|	|
1+ 0	0.0403	0.73	V Q	|	|	|
1+ 5	0.0451	0.71	V Q	|	|	|
1+10	0.0494	0.62	V Q	|	|	|
1+15	0.0535	0.59	V Q	|	|	|
1+20	0.0575	0.58	V Q	|	|	|
1+25	0.0614	0.57	V Q	|	|	|
1+30	0.0654	0.57	V Q	|	|	|
1+35	0.0693	0.57	V Q	|	|	|
1+40	0.0732	0.57	V Q	|	|	|

1+45	0.0771	0.57	V Q	|	|	|
1+50	0.0813	0.61	V Q	|	|	|
1+55	0.0862	0.70	V Q	|	|	|
2+ 0	0.0912	0.73	V Q	|	|	|
2+ 5	0.0964	0.75	V Q	|	|	|
2+10	0.1015	0.75	V Q	|	|	|
2+15	0.1068	0.76	V Q	|	|	|
2+20	0.1120	0.76	|V Q	|	|	|
2+25	0.1172	0.76	|V Q	|	|	|
2+30	0.1224	0.76	|V Q	|	|	|
2+35	0.1279	0.80	|V Q	|	|	|
2+40	0.1341	0.89	|V Q	|	|	|
2+45	0.1404	0.92	|V Q	|	|	|
2+50	0.1469	0.94	|V Q	|	|	|
2+55	0.1534	0.94	|V Q	|	|	|
3+ 0	0.1599	0.95	|V Q	|	|	|
3+ 5	0.1664	0.95	|V Q	|	|	|
3+10	0.1730	0.95	|V Q	|	|	|
3+15	0.1795	0.95	|V Q	|	|	|
3+20	0.1860	0.95	|V Q	|	|	|
3+25	0.1926	0.95	|V Q	|	|	|
3+30	0.1991	0.95	|V Q	|	|	|
3+35	0.2056	0.95	|V Q	|	|	|
3+40	0.2121	0.95	|V Q	|	|	|
3+45	0.2187	0.95	|V Q	|	|	|
3+50	0.2255	0.99	| VQ	|	|	|
3+55	0.2330	1.08	| V Q	|	|	|
4+ 0	0.2406	1.11	| V Q	|	|	|
4+ 5	0.2484	1.13	| V Q	|	|	|
4+10	0.2562	1.13	| V Q	|	|	|

4+15	0.2640	1.14	| V Q	|	|	|
4+20	0.2721	1.18	| V Q	|	|	|
4+25	0.2809	1.27	| V Q	|	|	|
4+30	0.2898	1.30	| V Q	|	|	|
4+35	0.2989	1.32	| V Q	|	|	|
4+40	0.3080	1.32	| V Q	|	|	|
4+45	0.3171	1.32	| V Q	|	|	|
4+50	0.3265	1.37	| V Q	|	|	|
4+55	0.3366	1.46	| V Q	|	|	|
5+ 0	0.3469	1.49	| V Q	|	|	|
5+ 5	0.3567	1.42	| V Q	|	|	|
5+10	0.3653	1.24	| VQ	|	|	|
5+15	0.3734	1.19	| VQ	|	|	|
5+20	0.3817	1.20	| VQ	|	|	|
5+25	0.3906	1.29	| V Q	|	|	|
5+30	0.3996	1.31	| V Q	|	|	|
5+35	0.4089	1.36	| V Q	|	|	|
5+40	0.4189	1.46	| V Q	|	|	|
5+45	0.4292	1.49	| V Q	|	|	|
5+50	0.4396	1.50	| V Q	|	|	|
5+55	0.4500	1.51	| V Q	|	|	|
6+ 0	0.4604	1.51	| V Q	|	|	|
6+ 5	0.4711	1.56	| V Q	|	|	|
6+10	0.4825	1.65	| V Q	|	|	|
6+15	0.4941	1.68	| V Q	|	|	|
6+20	0.5058	1.69	| V Q	|	|	|
6+25	0.5175	1.70	| V Q	|	|	|
6+30	0.5292	1.70	| V Q	|	|	|
6+35	0.5413	1.75	| V Q	|	|	|
6+40	0.5539	1.84	| V Q	|	|	|

6+45	0.5668	1.87	V Q		
6+50	0.5798	1.88	V Q		
6+55	0.5928	1.89	V Q		
7+ 0	0.6059	1.89	V Q		
7+ 5	0.6189	1.90	V Q		
7+10	0.6320	1.90	V Q		
7+15	0.6451	1.90	V Q		
7+20	0.6584	1.94	V Q		
7+25	0.6724	2.03	V Q		
7+30	0.6866	2.06	V Q		
7+35	0.7012	2.11	V Q		
7+40	0.7164	2.22	V Q		
7+45	0.7319	2.25	V Q		
7+50	0.7478	2.30	V Q		
7+55	0.7643	2.41	V Q		
8+ 0	0.7811	2.44	V Q		
8+ 5	0.7986	2.53	V Q		
8+10	0.8174	2.73	V Q		
8+15	0.8366	2.79	V |Q		
8+20	0.8560	2.82	V |Q		
8+25	0.8755	2.83	V |Q		
8+30	0.8951	2.84	V |Q		
8+35	0.9150	2.89	V |Q		
8+40	0.9355	2.98	V |Q		
8+45	0.9562	3.01	V | Q		
8+50	0.9773	3.06	V | Q		
8+55	0.9991	3.16	V| Q		
9+ 0	1.0211	3.20	V| Q		
9+ 5	1.0438	3.29	V| Q		
9+10	1.0678	3.49	V| Q		

9+15	1.0923	3.55	|	v|	Q	|	|
9+20	1.1172	3.62	|	v	Q	|	|
9+25	1.1429	3.73	|	v	Q	|	|
9+30	1.1688	3.76	|	v	Q	|	|
9+35	1.1953	3.84	|	v	Q	|	|
9+40	1.2228	4.00	|	|v	Q	|	|
9+45	1.2508	4.06	|	|v	Q	|	|
9+50	1.2794	4.16	|	|v	Q	|	|
9+55	1.3094	4.35	|	|v	Q	|	|
10+ 0	1.3398	4.42	|	| v	Q	|	|
10+ 5	1.3681	4.11	|	| v	Q	|	|
10+10	1.3908	3.30	|	| vQ		|	|
10+15	1.4119	3.06	|	| Q		|	|
10+20	1.4322	2.95	|	|Q v		|	|
10+25	1.4521	2.90	|	|Q v		|	|
10+30	1.4719	2.87	|	|Q v		|	|
10+35	1.4931	3.07	|	| QV		|	|
10+40	1.5180	3.61	|	| vQ		|	|
10+45	1.5440	3.79	|	| vQ		|	|
10+50	1.5707	3.87	|	| vQ		|	|
10+55	1.5977	3.92	|	| vQ		|	|
11+ 0	1.6249	3.95	|	| vQ		|	|
11+ 5	1.6518	3.91	|	| Q		|	|
11+10	1.6777	3.76	|	| Q		|	|
11+15	1.7033	3.72	|	| QV		|	|
11+20	1.7289	3.71	|	| QV		|	|
11+25	1.7544	3.71	|	| QV		|	|
11+30	1.7800	3.72	|	| Q v		|	|
11+35	1.8049	3.62	|	| Q v		|	|
11+40	1.8281	3.37	|	| Q v		|	|

11+45	1.8508	3.29	|	|	Q V	|	|
11+50	1.8735	3.31	|	|	Q V	|	|
11+55	1.8970	3.41	|	|	Q V	|	|
12+ 0	1.9207	3.44	|	|	Q V	|	|
12+ 5	1.9478	3.94	|	|	Q V	|	|
12+10	1.9830	5.11	|	|	V Q	|	|
12+15	2.0208	5.48	|	|	V |Q	|	|
12+20	2.0601	5.72	|	|	V | Q	|	|
12+25	2.1013	5.97	|	|	V| Q	|	|
12+30	2.1431	6.07	|	|	V| Q	|	|
12+35	2.1863	6.28	|	|	V| Q	|	|
12+40	2.2320	6.63	|	|	V Q	|	|
12+45	2.2784	6.75	|	|	V Q	|	|
12+50	2.3258	6.88	|	|	|V Q	|	|
12+55	2.3745	7.07	|	|	|V Q	|	|
13+ 0	2.4237	7.15	|	|	| V Q	|	|
13+ 5	2.4756	7.53	|	|	| V Q	|	|
13+10	2.5333	8.38	|	|	| V	|	Q
13+15	2.5929	8.65	|	|	| V	|	Q
13+20	2.6533	8.77	|	|	| V	|	Q
13+25	2.7142	8.84	|	|	| V	|	Q
13+30	2.7753	8.88	|	|	| V	|	Q
13+35	2.8315	8.16	|	|	| V	|	Q
13+40	2.8753	6.36	|	|	| QV	|	|
13+45	2.9154	5.82	|	|	| Q V	|	|
13+50	2.9538	5.59	|	|	| Q V	|	|
13+55	2.9916	5.47	|	|	|Q V	|	|
14+ 0	3.0289	5.43	|	|	|Q V	|	|
14+ 5	3.0679	5.66	|	|	| Q V	|	|
14+10	3.1115	6.33	|	|	| Q V	|	|

14+15	3.1565	6.54	|	|	|	Q V	|
14+20	3.2018	6.57	|	|	|	Q V	|
14+25	3.2463	6.46	|	|	|	Q V	|
14+30	3.2907	6.44	|	|	|	Q V	|
14+35	3.3351	6.45	|	|	|	Q V	|
14+40	3.3795	6.45	|	|	|	Q V	|
14+45	3.4240	6.46	|	|	|	Q	|V
14+50	3.4680	6.39	|	|	|	Q	|V
14+55	3.5110	6.24	|	|	|	Q	|V
15+ 0	3.5537	6.20	|	|	|	Q	| V
15+ 5	3.5958	6.12	|	|	|	Q	| V
15+10	3.6368	5.95	|	|	|	Q	| V
15+15	3.6775	5.91	|	|	|	Q	| V
15+20	3.7176	5.82	|	|	|	Q	| V
15+25	3.7565	5.66	|	|	|	Q	| V
15+30	3.7952	5.61	|	|	|	Q	| V
15+35	3.8318	5.32	|	|	|	Q	| V
15+40	3.8639	4.66	|	|	|	Q	| V
15+45	3.8946	4.46	|	|	|	Q	| V
15+50	3.9248	4.38	|	|	|	Q	| V
15+55	3.9547	4.35	|	|	|	Q	| V
16+ 0	3.9846	4.33	|	|	|	Q	| V
16+ 5	4.0092	3.57	|	|	|	Q	| V
16+10	4.0214	1.78	|	Q	|	|	| V
16+15	4.0299	1.23	|	Q	|	|	| V
16+20	4.0367	0.99	|	Q	|	|	| V
16+25	4.0427	0.87	|	Q	|	|	| V
16+30	4.0483	0.81	|	Q	|	|	| V
16+35	4.0532	0.72	|	Q	|	|	| V
16+40	4.0575	0.62	|	Q	|	|	| V

16+45	4.0616	0.59	| Q	|	|	|	V
16+50	4.0656	0.58	| Q	|	|	|	V
16+55	4.0696	0.57	| Q	|	|	|	V
17+ 0	4.0735	0.57	| Q	|	|	|	V
17+ 5	4.0780	0.65	| Q	|	|	|	V
17+10	4.0838	0.84	| Q	|	|	|	V
17+15	4.0900	0.90	| Q	|	|	|	V
17+20	4.0963	0.92	| Q	|	|	|	V
17+25	4.1028	0.94	| Q	|	|	|	V
17+30	4.1093	0.94	| Q	|	|	|	V
17+35	4.1158	0.95	| Q	|	|	|	V
17+40	4.1223	0.95	| Q	|	|	|	V
17+45	4.1289	0.95	| Q	|	|	|	V
17+50	4.1351	0.91	| Q	|	|	|	V
17+55	4.1407	0.81	| Q	|	|	|	V
18+ 0	4.1461	0.78	| Q	|	|	|	V
18+ 5	4.1514	0.77	| Q	|	|	|	V
18+10	4.1567	0.76	| Q	|	|	|	V
18+15	4.1619	0.76	| Q	|	|	|	V
18+20	4.1672	0.76	| Q	|	|	|	V
18+25	4.1724	0.76	| Q	|	|	|	V
18+30	4.1776	0.76	| Q	|	|	|	V
18+35	4.1826	0.72	| Q	|	|	|	V
18+40	4.1869	0.62	| Q	|	|	|	V
18+45	4.1910	0.59	| Q	|	|	|	V
18+50	4.1947	0.54	| Q	|	|	|	V
18+55	4.1977	0.44	|Q	|	|	|	V
19+ 0	4.2005	0.41	|Q	|	|	|	V
19+ 5	4.2035	0.43	|Q	|	|	|	V
19+10	4.2071	0.52	| Q	|	|	|	V

	19+15	4.2108	0.55	| Q	|	|	|	V
	19+20	4.2150	0.60	| Q	|	|	|	V
	19+25	4.2198	0.70	| Q	|	|	|	V
	19+30	4.2248	0.73	| Q	|	|	|	V
	19+35	4.2297	0.71	| Q	|	|	|	V
	19+40	4.2339	0.62	| Q	|	|	|	V
	19+45	4.2380	0.59	| Q	|	|	|	V
	19+50	4.2417	0.54	| Q	|	|	|	V
	19+55	4.2447	0.44	| Q	|	|	|	V
	20+ 0	4.2476	0.41	| Q	|	|	|	V
	20+ 5	4.2505	0.43	| Q	|	|	|	V
	20+10	4.2541	0.52	| Q	|	|	|	V
	20+15	4.2579	0.55	| Q	|	|	|	V
	20+20	4.2617	0.56	| Q	|	|	|	V
	20+25	4.2656	0.56	| Q	|	|	|	V
	20+30	4.2695	0.57	| Q	|	|	|	V
	20+35	4.2734	0.57	| Q	|	|	|	V
	20+40	4.2773	0.57	| Q	|	|	|	V
	20+45	4.2812	0.57	| Q	|	|	|	V
	20+50	4.2849	0.53	| Q	|	|	|	V
	20+55	4.2879	0.43	| Q	|	|	|	V
V|	21+ 0	4.2907	0.40	| Q	|	|	|	
V|	21+ 5	4.2936	0.43	| Q	|	|	|	
V|	21+10	4.2972	0.52	| Q	|	|	|	
V|	21+15	4.3010	0.55	| Q	|	|	|	
V|	21+20	4.3045	0.52	| Q	|	|	|	
V|	21+25	4.3075	0.43	| Q	|	|	|	
V|	21+30	4.3103	0.40	| Q	|	|	|	
V|	21+35	4.3132	0.43	| Q	|	|	|	
V|	21+40	4.3168	0.52	| Q	|	|	|	

V|	21+45	4.3206	0.55	| Q	|	|	|
V|	21+50	4.3241	0.52	| Q	|	|	|
V|	21+55	4.3271	0.43	| Q	|	|	|
V|	22+ 0	4.3299	0.40	| Q	|	|	|
V|	22+ 5	4.3328	0.43	| Q	|	|	|
V|	22+10	4.3364	0.52	| Q	|	|	|
V|	22+15	4.3402	0.55	| Q	|	|	|
V|	22+20	4.3437	0.52	| Q	|	|	|
V|	22+25	4.3467	0.43	| Q	|	|	|
V|	22+30	4.3494	0.40	| Q	|	|	|
V|	22+35	4.3521	0.39	| Q	|	|	|
V|	22+40	4.3548	0.39	| Q	|	|	|
V|	22+45	4.3574	0.38	| Q	|	|	|
V|	22+50	4.3600	0.38	| Q	|	|	|
V|	22+55	4.3627	0.38	| Q	|	|	|
V|	23+ 0	4.3653	0.38	| Q	|	|	|
V|	23+ 5	4.3679	0.38	| Q	|	|	|
V|	23+10	4.3705	0.38	| Q	|	|	|
V|	23+15	4.3731	0.38	| Q	|	|	|
V|	23+20	4.3757	0.38	| Q	|	|	|
V|	23+25	4.3783	0.38	| Q	|	|	|
V|	23+30	4.3809	0.38	| Q	|	|	|
V|	23+35	4.3836	0.38	| Q	|	|	|
V|	23+40	4.3862	0.38	| Q	|	|	|
V|	23+45	4.3888	0.38	| Q	|	|	|
V|	23+50	4.3914	0.38	| Q	|	|	|
V|	23+55	4.3940	0.38	| Q	|	|	|
V|	24+ 0	4.3966	0.38	| Q	|	|	|
V|	24+ 5	4.3987	0.30	| Q	|	|	|
V|	24+10	4.3994	0.11	Q	|	|	|

V|	24+15	4.3998	0.05	Q	|	|	|
V	24+20	4.3999	0.03	Q			
V	24+25	4.4000	0.01	Q			
V	24+30	4.4001	0.01	Q			
V							

Unit Hydrograph Analysis

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8.2

Study date 01/11/16 File: VDA24100.out

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

Program License Serial Number 6232

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

English Units used in output format

A-34 100yr 24hr event

--
Drainage Area = 1.65(Ac.) = 0.003 Sq. Mi.
0.003 Drainage Area for Depth-Area Areal Adjustment = 1.65(Ac.) =
Sq. Mi.
(Ft.) Length along longest watercourse = 537.00(Ft.)
Length along longest watercourse measured to centroid = 277.00
(Ft.)
Length along longest watercourse = 0.102 Mi.
Mi. Length along longest watercourse measured to centroid = 0.052

Difference in elevation = 3.10(Ft.)
Slope along watercourse = 30.4804 Ft./Mi.
Average Manning's 'N' = 0.015
Lag time = 0.026 Hr.
Lag time = 1.54 Min.
25% of lag time = 0.39 Min.
40% of lag time = 0.62 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]

1.65 1.14 1.88

100 YEAR Area rainfall data:

Area(Ac.)[1] Rainfall(In)[2] Weighting[1*2]
1.65 4.47 7.38

STORM EVENT (YEAR) = 100.00
Area Averaged 2-Year Rainfall = 1.140(In)
Area Averaged 100-Year Rainfall = 4.470(In)

Point rain (area averaged) = 4.470(In)
Areal adjustment factor = 100.00 %
Adjusted average point rain = 4.470(In)

Sub-Area Data:

Area(Ac.) Runoff Index Impervious %
1.650 56.00 0.600
Total Area Entered = 1.65(Ac.)

RI RI Infil. Rate Impervious Adj. Infil. Rate Area% F
AMC2 AMC-3 (In/Hr) (Dec.%) (In/Hr) (Dec.)
(In/Hr)
56.0 74.8 0.305 0.600 0.140 1.000
0.140
Sum (F) =
0.140

Area averaged mean soil loss (F) (In/Hr) = 0.140
Minimum soil loss rate ((In/Hr)) = 0.070
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.420

Unit Hydrograph
DESERT S-Curve

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Unit Hydrograph Data

Unit time period Time % of lag Distribution Unit Hydrograph
(hrs) Graph % (CFS)

1 0.083 323.705 58.580 0.974
2 0.167 647.410 37.254 0.619
3 0.250 971.115 4.166 0.069
Sum = 100.000 Sum= 1.663

The following loss rate calculations reflect use of the minimum
calculated loss
rate subtracted from the Storm Rain to produce the maximum Effective
Rain value

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

	(Hr.)	Percent	(In/Hr)	Max	Low	(In/Hr)
1	0.08	0.07	0.036	(0.249)	0.015	0.021
2	0.17	0.07	0.036	(0.248)	0.015	0.021
3	0.25	0.07	0.036	(0.247)	0.015	0.021
4	0.33	0.10	0.054	(0.246)	0.023	0.031
5	0.42	0.10	0.054	(0.245)	0.023	0.031
6	0.50	0.10	0.054	(0.244)	0.023	0.031
7	0.58	0.10	0.054	(0.243)	0.023	0.031
8	0.67	0.10	0.054	(0.242)	0.023	0.031
9	0.75	0.10	0.054	(0.241)	0.023	0.031
10	0.83	0.13	0.072	(0.240)	0.030	0.041
11	0.92	0.13	0.072	(0.239)	0.030	0.041
12	1.00	0.13	0.072	(0.239)	0.030	0.041
13	1.08	0.10	0.054	(0.238)	0.023	0.031
14	1.17	0.10	0.054	(0.237)	0.023	0.031
15	1.25	0.10	0.054	(0.236)	0.023	0.031
16	1.33	0.10	0.054	(0.235)	0.023	0.031
17	1.42	0.10	0.054	(0.234)	0.023	0.031
18	1.50	0.10	0.054	(0.233)	0.023	0.031
19	1.58	0.10	0.054	(0.232)	0.023	0.031
20	1.67	0.10	0.054	(0.231)	0.023	0.031
21	1.75	0.10	0.054	(0.230)	0.023	0.031
22	1.83	0.13	0.072	(0.229)	0.030	0.041
23	1.92	0.13	0.072	(0.228)	0.030	0.041
24	2.00	0.13	0.072	(0.227)	0.030	0.041
25	2.08	0.13	0.072	(0.226)	0.030	0.041
26	2.17	0.13	0.072	(0.225)	0.030	0.041
27	2.25	0.13	0.072	(0.225)	0.030	0.041
28	2.33	0.13	0.072	(0.224)	0.030	0.041
29	2.42	0.13	0.072	(0.223)	0.030	0.041
30	2.50	0.13	0.072	(0.222)	0.030	0.041
31	2.58	0.17	0.089	(0.221)	0.038	0.052
32	2.67	0.17	0.089	(0.220)	0.038	0.052
33	2.75	0.17	0.089	(0.219)	0.038	0.052
34	2.83	0.17	0.089	(0.218)	0.038	0.052
35	2.92	0.17	0.089	(0.217)	0.038	0.052
36	3.00	0.17	0.089	(0.216)	0.038	0.052
37	3.08	0.17	0.089	(0.216)	0.038	0.052
38	3.17	0.17	0.089	(0.215)	0.038	0.052
39	3.25	0.17	0.089	(0.214)	0.038	0.052
40	3.33	0.17	0.089	(0.213)	0.038	0.052
41	3.42	0.17	0.089	(0.212)	0.038	0.052
42	3.50	0.17	0.089	(0.211)	0.038	0.052
43	3.58	0.17	0.089	(0.210)	0.038	0.052
44	3.67	0.17	0.089	(0.209)	0.038	0.052
45	3.75	0.17	0.089	(0.208)	0.038	0.052
46	3.83	0.20	0.107	(0.208)	0.045	0.062
47	3.92	0.20	0.107	(0.207)	0.045	0.062
48	4.00	0.20	0.107	(0.206)	0.045	0.062
49	4.08	0.20	0.107	(0.205)	0.045	0.062
50	4.17	0.20	0.107	(0.204)	0.045	0.062
51	4.25	0.20	0.107	(0.203)	0.045	0.062
52	4.33	0.23	0.125	(0.202)	0.053	0.073
53	4.42	0.23	0.125	(0.201)	0.053	0.073
54	4.50	0.23	0.125	(0.201)	0.053	0.073
55	4.58	0.23	0.125	(0.200)	0.053	0.073
56	4.67	0.23	0.125	(0.199)	0.053	0.073
57	4.75	0.23	0.125	(0.198)	0.053	0.073
58	4.83	0.27	0.143	(0.197)	0.060	0.083
59	4.92	0.27	0.143	(0.196)	0.060	0.083

60	5.00	0.27	0.143	(0.195)	0.060	0.083
61	5.08	0.20	0.107	(0.195)	0.045	0.062
62	5.17	0.20	0.107	(0.194)	0.045	0.062
63	5.25	0.20	0.107	(0.193)	0.045	0.062
64	5.33	0.23	0.125	(0.192)	0.053	0.073
65	5.42	0.23	0.125	(0.191)	0.053	0.073
66	5.50	0.23	0.125	(0.190)	0.053	0.073
67	5.58	0.27	0.143	(0.190)	0.060	0.083
68	5.67	0.27	0.143	(0.189)	0.060	0.083
69	5.75	0.27	0.143	(0.188)	0.060	0.083
70	5.83	0.27	0.143	(0.187)	0.060	0.083
71	5.92	0.27	0.143	(0.186)	0.060	0.083
72	6.00	0.27	0.143	(0.185)	0.060	0.083
73	6.08	0.30	0.161	(0.185)	0.068	0.093
74	6.17	0.30	0.161	(0.184)	0.068	0.093
75	6.25	0.30	0.161	(0.183)	0.068	0.093
76	6.33	0.30	0.161	(0.182)	0.068	0.093
77	6.42	0.30	0.161	(0.181)	0.068	0.093
78	6.50	0.30	0.161	(0.181)	0.068	0.093
79	6.58	0.33	0.179	(0.180)	0.075	0.104
80	6.67	0.33	0.179	(0.179)	0.075	0.104
81	6.75	0.33	0.179	(0.178)	0.075	0.104
82	6.83	0.33	0.179	(0.177)	0.075	0.104
83	6.92	0.33	0.179	(0.176)	0.075	0.104
84	7.00	0.33	0.179	(0.176)	0.075	0.104
85	7.08	0.33	0.179	(0.175)	0.075	0.104
86	7.17	0.33	0.179	(0.174)	0.075	0.104
87	7.25	0.33	0.179	(0.173)	0.075	0.104
88	7.33	0.37	0.197	(0.172)	0.083	0.114
89	7.42	0.37	0.197	(0.172)	0.083	0.114
90	7.50	0.37	0.197	(0.171)	0.083	0.114
91	7.58	0.40	0.215	(0.170)	0.090	0.124
92	7.67	0.40	0.215	(0.169)	0.090	0.124
93	7.75	0.40	0.215	(0.169)	0.090	0.124
94	7.83	0.43	0.232	(0.168)	0.098	0.135
95	7.92	0.43	0.232	(0.167)	0.098	0.135
96	8.00	0.43	0.232	(0.166)	0.098	0.135
97	8.08	0.50	0.268	(0.165)	0.113	0.156
98	8.17	0.50	0.268	(0.165)	0.113	0.156
99	8.25	0.50	0.268	(0.164)	0.113	0.156
100	8.33	0.50	0.268	(0.163)	0.113	0.156
101	8.42	0.50	0.268	(0.162)	0.113	0.156
102	8.50	0.50	0.268	(0.162)	0.113	0.156
103	8.58	0.53	0.286	(0.161)	0.120	0.166
104	8.67	0.53	0.286	(0.160)	0.120	0.166
105	8.75	0.53	0.286	(0.159)	0.120	0.166
106	8.83	0.57	0.304	(0.159)	0.128	0.176
107	8.92	0.57	0.304	(0.158)	0.128	0.176
108	9.00	0.57	0.304	(0.157)	0.128	0.176
109	9.08	0.63	0.340	(0.156)	0.143	0.197
110	9.17	0.63	0.340	(0.156)	0.143	0.197
111	9.25	0.63	0.340	(0.155)	0.143	0.197
112	9.33	0.67	0.358	(0.154)	0.150	0.207
113	9.42	0.67	0.358	(0.153)	0.150	0.207
114	9.50	0.67	0.358	(0.153)	0.150	0.207
115	9.58	0.70	0.375	0.152 (0.158)		0.224
116	9.67	0.70	0.375	0.151 (0.158)		0.224
117	9.75	0.70	0.375	0.150 (0.158)		0.225
118	9.83	0.73	0.393	0.150 (0.165)		0.244
119	9.92	0.73	0.393	0.149 (0.165)		0.244

120	10.00	0.73	0.393		0.148	(0.165)	0.245
121	10.08	0.50	0.268	(	0.148)	0.113	0.156
122	10.17	0.50	0.268	(	0.147)	0.113	0.156
123	10.25	0.50	0.268	(	0.146)	0.113	0.156
124	10.33	0.50	0.268	(	0.145)	0.113	0.156
125	10.42	0.50	0.268	(	0.145)	0.113	0.156
126	10.50	0.50	0.268	(	0.144)	0.113	0.156
127	10.58	0.67	0.358		0.143	(0.150)	0.214
128	10.67	0.67	0.358		0.143	(0.150)	0.215
129	10.75	0.67	0.358		0.142	(0.150)	0.216
130	10.83	0.67	0.358		0.141	(0.150)	0.216
131	10.92	0.67	0.358		0.141	(0.150)	0.217
132	11.00	0.67	0.358		0.140	(0.150)	0.218
133	11.08	0.63	0.340		0.139	(0.143)	0.201
134	11.17	0.63	0.340		0.139	(0.143)	0.201
135	11.25	0.63	0.340		0.138	(0.143)	0.202
136	11.33	0.63	0.340		0.137	(0.143)	0.203
137	11.42	0.63	0.340		0.136	(0.143)	0.203
138	11.50	0.63	0.340		0.136	(0.143)	0.204
139	11.58	0.57	0.304	(	0.135)	0.128	0.176
140	11.67	0.57	0.304	(	0.134)	0.128	0.176
141	11.75	0.57	0.304	(	0.134)	0.128	0.176
142	11.83	0.60	0.322		0.133	(0.135)	0.189
143	11.92	0.60	0.322		0.132	(0.135)	0.189
144	12.00	0.60	0.322		0.132	(0.135)	0.190
145	12.08	0.83	0.447		0.131	(0.188)	0.316
146	12.17	0.83	0.447		0.130	(0.188)	0.317
147	12.25	0.83	0.447		0.130	(0.188)	0.317
148	12.33	0.87	0.465		0.129	(0.195)	0.336
149	12.42	0.87	0.465		0.129	(0.195)	0.336
150	12.50	0.87	0.465		0.128	(0.195)	0.337
151	12.58	0.93	0.501		0.127	(0.210)	0.373
152	12.67	0.93	0.501		0.127	(0.210)	0.374
153	12.75	0.93	0.501		0.126	(0.210)	0.375
154	12.83	0.97	0.519		0.125	(0.218)	0.393
155	12.92	0.97	0.519		0.125	(0.218)	0.394
156	13.00	0.97	0.519		0.124	(0.218)	0.394
157	13.08	1.13	0.608		0.123	(0.255)	0.485
158	13.17	1.13	0.608		0.123	(0.255)	0.485
159	13.25	1.13	0.608		0.122	(0.255)	0.486
160	13.33	1.13	0.608		0.122	(0.255)	0.486
161	13.42	1.13	0.608		0.121	(0.255)	0.487
162	13.50	1.13	0.608		0.120	(0.255)	0.488
163	13.58	0.77	0.411		0.120	(0.173)	0.292
164	13.67	0.77	0.411		0.119	(0.173)	0.292
165	13.75	0.77	0.411		0.118	(0.173)	0.293
166	13.83	0.77	0.411		0.118	(0.173)	0.293
167	13.92	0.77	0.411		0.117	(0.173)	0.294
168	14.00	0.77	0.411		0.117	(0.173)	0.295
169	14.08	0.90	0.483		0.116	(0.203)	0.367
170	14.17	0.90	0.483		0.115	(0.203)	0.367
171	14.25	0.90	0.483		0.115	(0.203)	0.368
172	14.33	0.87	0.465		0.114	(0.195)	0.351
173	14.42	0.87	0.465		0.114	(0.195)	0.351
174	14.50	0.87	0.465		0.113	(0.195)	0.352
175	14.58	0.87	0.465		0.113	(0.195)	0.352
176	14.67	0.87	0.465		0.112	(0.195)	0.353
177	14.75	0.87	0.465		0.111	(0.195)	0.353
178	14.83	0.83	0.447		0.111	(0.188)	0.336
179	14.92	0.83	0.447		0.110	(0.188)	0.337

180	15.00	0.83	0.447	0.110	(0.188)	0.337
181	15.08	0.80	0.429	0.109	(0.180)	0.320
182	15.17	0.80	0.429	0.109	(0.180)	0.321
183	15.25	0.80	0.429	0.108	(0.180)	0.321
184	15.33	0.77	0.411	0.107	(0.173)	0.304
185	15.42	0.77	0.411	0.107	(0.173)	0.304
186	15.50	0.77	0.411	0.106	(0.173)	0.305
187	15.58	0.63	0.340	0.106	(0.143)	0.234
188	15.67	0.63	0.340	0.105	(0.143)	0.234
189	15.75	0.63	0.340	0.105	(0.143)	0.235
190	15.83	0.63	0.340	0.104	(0.143)	0.236
191	15.92	0.63	0.340	0.104	(0.143)	0.236
192	16.00	0.63	0.340	0.103	(0.143)	0.237
193	16.08	0.13	0.072	(0.103)	0.030	0.041
194	16.17	0.13	0.072	(0.102)	0.030	0.041
195	16.25	0.13	0.072	(0.102)	0.030	0.041
196	16.33	0.13	0.072	(0.101)	0.030	0.041
197	16.42	0.13	0.072	(0.101)	0.030	0.041
198	16.50	0.13	0.072	(0.100)	0.030	0.041
199	16.58	0.10	0.054	(0.100)	0.023	0.031
200	16.67	0.10	0.054	(0.099)	0.023	0.031
201	16.75	0.10	0.054	(0.099)	0.023	0.031
202	16.83	0.10	0.054	(0.098)	0.023	0.031
203	16.92	0.10	0.054	(0.098)	0.023	0.031
204	17.00	0.10	0.054	(0.097)	0.023	0.031
205	17.08	0.17	0.089	(0.097)	0.038	0.052
206	17.17	0.17	0.089	(0.096)	0.038	0.052
207	17.25	0.17	0.089	(0.096)	0.038	0.052
208	17.33	0.17	0.089	(0.095)	0.038	0.052
209	17.42	0.17	0.089	(0.095)	0.038	0.052
210	17.50	0.17	0.089	(0.094)	0.038	0.052
211	17.58	0.17	0.089	(0.094)	0.038	0.052
212	17.67	0.17	0.089	(0.093)	0.038	0.052
213	17.75	0.17	0.089	(0.093)	0.038	0.052
214	17.83	0.13	0.072	(0.092)	0.030	0.041
215	17.92	0.13	0.072	(0.092)	0.030	0.041
216	18.00	0.13	0.072	(0.091)	0.030	0.041
217	18.08	0.13	0.072	(0.091)	0.030	0.041
218	18.17	0.13	0.072	(0.090)	0.030	0.041
219	18.25	0.13	0.072	(0.090)	0.030	0.041
220	18.33	0.13	0.072	(0.090)	0.030	0.041
221	18.42	0.13	0.072	(0.089)	0.030	0.041
222	18.50	0.13	0.072	(0.089)	0.030	0.041
223	18.58	0.10	0.054	(0.088)	0.023	0.031
224	18.67	0.10	0.054	(0.088)	0.023	0.031
225	18.75	0.10	0.054	(0.087)	0.023	0.031
226	18.83	0.07	0.036	(0.087)	0.015	0.021
227	18.92	0.07	0.036	(0.087)	0.015	0.021
228	19.00	0.07	0.036	(0.086)	0.015	0.021
229	19.08	0.10	0.054	(0.086)	0.023	0.031
230	19.17	0.10	0.054	(0.085)	0.023	0.031
231	19.25	0.10	0.054	(0.085)	0.023	0.031
232	19.33	0.13	0.072	(0.085)	0.030	0.041
233	19.42	0.13	0.072	(0.084)	0.030	0.041
234	19.50	0.13	0.072	(0.084)	0.030	0.041
235	19.58	0.10	0.054	(0.083)	0.023	0.031
236	19.67	0.10	0.054	(0.083)	0.023	0.031
237	19.75	0.10	0.054	(0.083)	0.023	0.031
238	19.83	0.07	0.036	(0.082)	0.015	0.021
239	19.92	0.07	0.036	(0.082)	0.015	0.021

240	20.00	0.07	0.036	(0.082)	0.015	0.021
241	20.08	0.10	0.054	(0.081)	0.023	0.031
242	20.17	0.10	0.054	(0.081)	0.023	0.031
243	20.25	0.10	0.054	(0.080)	0.023	0.031
244	20.33	0.10	0.054	(0.080)	0.023	0.031
245	20.42	0.10	0.054	(0.080)	0.023	0.031
246	20.50	0.10	0.054	(0.079)	0.023	0.031
247	20.58	0.10	0.054	(0.079)	0.023	0.031
248	20.67	0.10	0.054	(0.079)	0.023	0.031
249	20.75	0.10	0.054	(0.078)	0.023	0.031
250	20.83	0.07	0.036	(0.078)	0.015	0.021
251	20.92	0.07	0.036	(0.078)	0.015	0.021
252	21.00	0.07	0.036	(0.078)	0.015	0.021
253	21.08	0.10	0.054	(0.077)	0.023	0.031
254	21.17	0.10	0.054	(0.077)	0.023	0.031
255	21.25	0.10	0.054	(0.077)	0.023	0.031
256	21.33	0.07	0.036	(0.076)	0.015	0.021
257	21.42	0.07	0.036	(0.076)	0.015	0.021
258	21.50	0.07	0.036	(0.076)	0.015	0.021
259	21.58	0.10	0.054	(0.075)	0.023	0.031
260	21.67	0.10	0.054	(0.075)	0.023	0.031
261	21.75	0.10	0.054	(0.075)	0.023	0.031
262	21.83	0.07	0.036	(0.075)	0.015	0.021
263	21.92	0.07	0.036	(0.074)	0.015	0.021
264	22.00	0.07	0.036	(0.074)	0.015	0.021
265	22.08	0.10	0.054	(0.074)	0.023	0.031
266	22.17	0.10	0.054	(0.074)	0.023	0.031
267	22.25	0.10	0.054	(0.073)	0.023	0.031
268	22.33	0.07	0.036	(0.073)	0.015	0.021
269	22.42	0.07	0.036	(0.073)	0.015	0.021
270	22.50	0.07	0.036	(0.073)	0.015	0.021
271	22.58	0.07	0.036	(0.073)	0.015	0.021
272	22.67	0.07	0.036	(0.072)	0.015	0.021
273	22.75	0.07	0.036	(0.072)	0.015	0.021
274	22.83	0.07	0.036	(0.072)	0.015	0.021
275	22.92	0.07	0.036	(0.072)	0.015	0.021
276	23.00	0.07	0.036	(0.072)	0.015	0.021
277	23.08	0.07	0.036	(0.071)	0.015	0.021
278	23.17	0.07	0.036	(0.071)	0.015	0.021
279	23.25	0.07	0.036	(0.071)	0.015	0.021
280	23.33	0.07	0.036	(0.071)	0.015	0.021
281	23.42	0.07	0.036	(0.071)	0.015	0.021
282	23.50	0.07	0.036	(0.071)	0.015	0.021
283	23.58	0.07	0.036	(0.071)	0.015	0.021
284	23.67	0.07	0.036	(0.071)	0.015	0.021
285	23.75	0.07	0.036	(0.070)	0.015	0.021
286	23.83	0.07	0.036	(0.070)	0.015	0.021
287	23.92	0.07	0.036	(0.070)	0.015	0.021
288	24.00	0.07	0.036	(0.070)	0.015	0.021

(Loss Rate Not Used)

Sum =	100.0	Sum =	34.9
Flood volume =	Effective rainfall	2.91(In)	
times area	1.6(Ac.)/[(In)/(Ft.)] =	0.4(Ac.Ft)	
Total soil loss =	1.56(In)		
Total soil loss =	0.214(Ac.Ft)		
Total rainfall =	4.47(In)		
Flood volume =	17434.6 Cubic Feet		
Total soil loss =	9338.4 Cubic Feet		

Peak flow rate of this hydrograph = 0.811(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

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Hydrograph in 5 Minute intervals ((CFS))

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

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	2.5	5.0	7.5
0+ 5	0.0001	0.02	Q			
0+10	0.0004	0.03	Q	|	|	|
0+15	0.0006	0.03	Q	|	|	|
0+20	0.0009	0.04	Q	|	|	|
0+25	0.0013	0.05	Q	|	|	|
0+30	0.0016	0.05	Q	|	|	|
0+35	0.0020	0.05	Q	|	|	|
0+40	0.0023	0.05	Q	|	|	|
0+45	0.0027	0.05	Q	|	|	|
0+50	0.0031	0.06	Q	|	|	|
0+55	0.0036	0.07	Q	|	|	|
1+ 0	0.0041	0.07	Q	|	|	|
1+ 5	0.0045	0.06	Q	|	|	|
1+10	0.0048	0.05	Q	|	|	|
1+15	0.0052	0.05	Q	|	|	|
1+20	0.0055	0.05	Q	|	|	|
1+25	0.0059	0.05	Q	|	|	|
1+30	0.0063	0.05	Q	|	|	|
1+35	0.0066	0.05	Q	|	|	|
1+40	0.0070	0.05	Q	|	|	|
1+45	0.0073	0.05	Q	|	|	|
1+50	0.0077	0.06	Q	|	|	|

1+55	0.0082	0.07	Q	|	|	|
2+ 0	0.0087	0.07	Q	|	|	|
2+ 5	0.0092	0.07	Q	|	|	|
2+10	0.0096	0.07	Q	|	|	|
2+15	0.0101	0.07	QV	|	|	|
2+20	0.0106	0.07	QV	|	|	|
2+25	0.0111	0.07	QV	|	|	|
2+30	0.0115	0.07	QV	|	|	|
2+35	0.0121	0.08	QV	|	|	|
2+40	0.0127	0.09	QV	|	|	|
2+45	0.0133	0.09	QV	|	|	|
2+50	0.0139	0.09	QV	|	|	|
2+55	0.0145	0.09	QV	|	|	|
3+ 0	0.0151	0.09	QV	|	|	|
3+ 5	0.0157	0.09	QV	|	|	|
3+10	0.0162	0.09	QV	|	|	|
3+15	0.0168	0.09	QV	|	|	|
3+20	0.0174	0.09	QV	|	|	|
3+25	0.0180	0.09	QV	|	|	|
3+30	0.0186	0.09	QV	|	|	|
3+35	0.0192	0.09	QV	|	|	|
3+40	0.0198	0.09	QV	|	|	|
3+45	0.0204	0.09	Q V	|	|	|
3+50	0.0211	0.10	Q V	|	|	|
3+55	0.0218	0.10	Q V	|	|	|
4+ 0	0.0225	0.10	Q V	|	|	|
4+ 5	0.0232	0.10	Q V	|	|	|
4+10	0.0239	0.10	Q V	|	|	|
4+15	0.0246	0.10	Q V	|	|	|
4+20	0.0254	0.11	Q V	|	|	|

4+25	0.0262	0.12	Q	V	|	|	|
4+30	0.0271	0.12	Q	V	|	|	|
4+35	0.0279	0.12	Q	V	|	|	|
4+40	0.0287	0.12	Q	V	|	|	|
4+45	0.0296	0.12	Q	V	|	|	|
4+50	0.0305	0.13	Q	V	|	|	|
4+55	0.0314	0.14	Q	V	|	|	|
5+ 0	0.0324	0.14	Q	V	|	|	|
5+ 5	0.0332	0.12	Q	V	|	|	|
5+10	0.0339	0.10	Q	V	|	|	|
5+15	0.0346	0.10	Q	V	|	|	|
5+20	0.0354	0.11	Q	V	|	|	|
5+25	0.0362	0.12	Q	V	|	|	|
5+30	0.0371	0.12	Q	V	|	|	|
5+35	0.0380	0.13	Q	V	|	|	|
5+40	0.0389	0.14	Q	V	|	|	|
5+45	0.0398	0.14	Q	V	|	|	|
5+50	0.0408	0.14	Q	V	|	|	|
5+55	0.0418	0.14	Q	V	|	|	|
6+ 0	0.0427	0.14	Q	V	|	|	|
6+ 5	0.0437	0.15	Q	V	|	|	|
6+10	0.0448	0.15	Q	V	|	|	|
6+15	0.0459	0.16	Q	V	|	|	|
6+20	0.0469	0.16	Q	V	|	|	|
6+25	0.0480	0.16	Q	V	|	|	|
6+30	0.0491	0.16	Q	V	|	|	|
6+35	0.0502	0.17	Q	V	|	|	|
6+40	0.0514	0.17	Q	V	|	|	|
6+45	0.0526	0.17	Q	V	|	|	|
6+50	0.0538	0.17	Q	V	|	|	|

6+55	0.0550	0.17	Q	V	|	|	|
7+ 0	0.0561	0.17	Q	V	|	|	|
7+ 5	0.0573	0.17	Q	V	|	|	|
7+10	0.0585	0.17	Q	V	|	|	|
7+15	0.0597	0.17	Q	V	|	|	|
7+20	0.0610	0.18	Q	V	|	|	|
7+25	0.0623	0.19	Q	V	|	|	|
7+30	0.0636	0.19	Q	V	|	|	|
7+35	0.0649	0.20	Q	V	|	|	|
7+40	0.0664	0.21	Q	V	|	|	|
7+45	0.0678	0.21	Q	V	|	|	|
7+50	0.0693	0.22	Q	V	|	|	|
7+55	0.0708	0.22	Q	V	|	|	|
8+ 0	0.0724	0.22	Q	V	|	|	|
8+ 5	0.0741	0.24	Q	V	|	|	|
8+10	0.0758	0.26	|Q	V	|	|	|
8+15	0.0776	0.26	|Q	V	|	|	|
8+20	0.0794	0.26	|Q	V	|	|	|
8+25	0.0812	0.26	|Q	V	|	|	|
8+30	0.0830	0.26	|Q	V	|	|	|
8+35	0.0848	0.27	|Q	V	|	|	|
8+40	0.0867	0.28	|Q	V	|	|	|
8+45	0.0886	0.28	|Q	V	|	|	|
8+50	0.0906	0.29	|Q	V	|	|	|
8+55	0.0926	0.29	|Q	V	|	|	|
9+ 0	0.0946	0.29	|Q	V	|	|	|
9+ 5	0.0968	0.31	|Q	V	|	|	|
9+10	0.0990	0.33	|Q	V	|	|	|
9+15	0.1013	0.33	|Q	V	|	|	|
9+20	0.1036	0.34	|Q	V	|	|	|

9+25	0.1060	0.34	|Q	v	|	|
9+30	0.1084	0.35	|Q	v	|	|
9+35	0.1108	0.36	|Q	|v	|	|
9+40	0.1134	0.37	|Q	|v	|	|
9+45	0.1160	0.37	|Q	|v	|	|
9+50	0.1187	0.39	|Q	|v	|	|
9+55	0.1215	0.40	|Q	| v	|	|
10+ 0	0.1243	0.41	|Q	| v	|	|
10+ 5	0.1265	0.32	|Q	| v	|	|
10+10	0.1283	0.27	|Q	| v	|	|
10+15	0.1301	0.26	|Q	| v	|	|
10+20	0.1319	0.26	|Q	| v	|	|
10+25	0.1336	0.26	|Q	| v	|	|
10+30	0.1354	0.26	|Q	| v	|	|
10+35	0.1376	0.32	|Q	| v	|	|
10+40	0.1400	0.35	|Q	| v	|	|
10+45	0.1425	0.36	|Q	| v	|	|
10+50	0.1450	0.36	|Q	| v	|	|
10+55	0.1475	0.36	|Q	| v	|	|
11+ 0	0.1500	0.36	|Q	| v	|	|
11+ 5	0.1523	0.35	|Q	| v	|	|
11+10	0.1546	0.34	|Q	| v	|	|
11+15	0.1570	0.34	|Q	| v	|	|
11+20	0.1593	0.34	|Q	| v	|	|
11+25	0.1616	0.34	|Q	| v	|	|
11+30	0.1639	0.34	|Q	| v	|	|
11+35	0.1661	0.31	|Q	| v	|	|
11+40	0.1681	0.30	|Q	| v	|	|
11+45	0.1701	0.29	|Q	| v	|	|
11+50	0.1722	0.31	|Q	| v	|	|

11+55	0.1744	0.31	|Q	|	v	|	|
12+ 0	0.1766	0.32	|Q	|	v	|	|
12+ 5	0.1796	0.44	|Q	|	v	|	|
12+10	0.1832	0.52	| Q	|	v	|	|
12+15	0.1868	0.53	| Q	|	v	|	|
12+20	0.1905	0.55	| Q	|	v|	|	|
12+25	0.1944	0.56	| Q	|	v|	|	|
12+30	0.1982	0.56	| Q	|	v|	|	|
12+35	0.2024	0.60	| Q	|	v	|	|
12+40	0.2066	0.62	| Q	|	v	|	|
12+45	0.2109	0.62	| Q	|	|v	|	|
12+50	0.2153	0.64	| Q	|	|v	|	|
12+55	0.2198	0.65	| Q	|	|v	|	|
13+ 0	0.2243	0.66	| Q	|	| v	|	|
13+ 5	0.2295	0.74	| Q	|	| v	|	|
13+10	0.2350	0.80	| Q	|	| v	|	|
13+15	0.2405	0.81	| Q	|	| v	|	|
13+20	0.2461	0.81	| Q	|	| v	|	|
13+25	0.2517	0.81	| Q	|	| v	|	|
13+30	0.2573	0.81	| Q	|	| v	|	|
13+35	0.2615	0.62	| Q	|	| v	|	|
13+40	0.2650	0.50	|Q	|	| v	|	|
13+45	0.2683	0.49	|Q	|	| v	|	|
13+50	0.2717	0.49	|Q	|	| v	|	|
13+55	0.2751	0.49	|Q	|	| v	|	|
14+ 0	0.2784	0.49	|Q	|	| v	|	|
14+ 5	0.2823	0.56	| Q	|	| v	|	|
14+10	0.2865	0.61	| Q	|	| v	|	|
14+15	0.2907	0.61	| Q	|	| v|	|	|
14+20	0.2948	0.60	| Q	|	| v|	|	|

14+25	0.2988	0.59	| Q	|	|	v|
14+30	0.3028	0.58	| Q	|	|	v
14+35	0.3069	0.59	| Q	|	|	v
14+40	0.3109	0.59	| Q	|	|	|v
14+45	0.3149	0.59	| Q	|	|	|v
14+50	0.3189	0.57	| Q	|	|	|v
14+55	0.3227	0.56	| Q	|	|	| v
15+ 0	0.3266	0.56	| Q	|	|	| v
15+ 5	0.3304	0.54	| Q	|	|	| v
15+10	0.3340	0.53	| Q	|	|	| v
15+15	0.3377	0.53	| Q	|	|	| v
15+20	0.3413	0.52	| Q	|	|	| v
15+25	0.3448	0.51	| Q	|	|	| v
15+30	0.3483	0.51	| Q	|	|	| v
15+35	0.3513	0.44	|Q	|	|	| v
15+40	0.3540	0.39	|Q	|	|	| v
15+45	0.3567	0.39	|Q	|	|	| v
15+50	0.3594	0.39	|Q	|	|	| v
15+55	0.3621	0.39	|Q	|	|	| v
16+ 0	0.3648	0.39	|Q	|	|	| v
16+ 5	0.3662	0.20	Q	|	|	| v
16+10	0.3668	0.08	Q	|	|	| v
16+15	0.3672	0.07	Q	|	|	| v
16+20	0.3677	0.07	Q	|	|	| v
16+25	0.3682	0.07	Q	|	|	| v
16+30	0.3687	0.07	Q	|	|	| v
16+35	0.3691	0.06	Q	|	|	| v
16+40	0.3694	0.05	Q	|	|	| v
16+45	0.3698	0.05	Q	|	|	| v
16+50	0.3701	0.05	Q	|	|	| v

16+55	0.3705	0.05	Q	|	|	|	V
17+ 0	0.3708	0.05	Q	|	|	|	V
17+ 5	0.3713	0.07	Q	|	|	|	V
17+10	0.3719	0.08	Q	|	|	|	V
17+15	0.3725	0.09	Q	|	|	|	V
17+20	0.3731	0.09	Q	|	|	|	V
17+25	0.3737	0.09	Q	|	|	|	V
17+30	0.3743	0.09	Q	|	|	|	V
17+35	0.3749	0.09	Q	|	|	|	V
17+40	0.3755	0.09	Q	|	|	|	V
17+45	0.3761	0.09	Q	|	|	|	V
17+50	0.3766	0.08	Q	|	|	|	V
17+55	0.3771	0.07	Q	|	|	|	V
18+ 0	0.3776	0.07	Q	|	|	|	V
18+ 5	0.3780	0.07	Q	|	|	|	V
18+10	0.3785	0.07	Q	|	|	|	V
18+15	0.3790	0.07	Q	|	|	|	V
18+20	0.3795	0.07	Q	|	|	|	V
18+25	0.3799	0.07	Q	|	|	|	V
18+30	0.3804	0.07	Q	|	|	|	V
18+35	0.3808	0.06	Q	|	|	|	V
18+40	0.3812	0.05	Q	|	|	|	V
18+45	0.3815	0.05	Q	|	|	|	V
18+50	0.3818	0.04	Q	|	|	|	V
18+55	0.3821	0.04	Q	|	|	|	V
19+ 0	0.3823	0.03	Q	|	|	|	V
19+ 5	0.3826	0.04	Q	|	|	|	V
19+10	0.3830	0.05	Q	|	|	|	V
19+15	0.3833	0.05	Q	|	|	|	V
19+20	0.3838	0.06	Q	|	|	|	V

	19+25	0.3842	0.07	Q				V
	19+30	0.3847	0.07	Q				V
	19+35	0.3851	0.06	Q				V
	19+40	0.3855	0.05	Q				V
	19+45	0.3858	0.05	Q				V
	19+50	0.3861	0.04	Q				V
	19+55	0.3864	0.04	Q				V
	20+ 0	0.3866	0.03	Q				V
	20+ 5	0.3869	0.04	Q				V
	20+10	0.3872	0.05	Q				V
	20+15	0.3876	0.05	Q				V
	20+20	0.3880	0.05	Q				V
	20+25	0.3883	0.05	Q				V
	20+30	0.3887	0.05	Q				V
	20+35	0.3890	0.05	Q				V
	20+40	0.3894	0.05	Q				V
	20+45	0.3897	0.05	Q				V
	20+50	0.3900	0.04	Q				V
	20+55	0.3903	0.04	Q				
V|	21+ 0	0.3905	0.03	Q				
V|	21+ 5	0.3908	0.04	Q				
V|	21+10	0.3912	0.05	Q				
V|	21+15	0.3915	0.05	Q				
V|	21+20	0.3918	0.04	Q				
V|	21+25	0.3921	0.04	Q				
V|	21+30	0.3923	0.03	Q				
V|	21+35	0.3926	0.04	Q				
V|	21+40	0.3930	0.05	Q				
V|	21+45	0.3933	0.05	Q				
V|	21+50	0.3936	0.04	Q				

V|	21+55	0.3938	0.04	Q	|	|	|
V|	22+ 0	0.3941	0.03	Q	|	|	|
V|	22+ 5	0.3944	0.04	Q	|	|	|
V|	22+10	0.3947	0.05	Q	|	|	|
V|	22+15	0.3951	0.05	Q	|	|	|
V|	22+20	0.3954	0.04	Q	|	|	|
V|	22+25	0.3956	0.04	Q	|	|	|
V|	22+30	0.3959	0.03	Q	|	|	|
V|	22+35	0.3961	0.03	Q	|	|	|
V|	22+40	0.3963	0.03	Q	|	|	|
V|	22+45	0.3966	0.03	Q	|	|	|
V|	22+50	0.3968	0.03	Q	|	|	|
V|	22+55	0.3970	0.03	Q	|	|	|
V|	23+ 0	0.3973	0.03	Q	|	|	|
V|	23+ 5	0.3975	0.03	Q	|	|	|
V|	23+10	0.3978	0.03	Q	|	|	|
V|	23+15	0.3980	0.03	Q	|	|	|
V|	23+20	0.3982	0.03	Q	|	|	|
V|	23+25	0.3985	0.03	Q	|	|	|
V|	23+30	0.3987	0.03	Q	|	|	|
V|	23+35	0.3989	0.03	Q	|	|	|
V|	23+40	0.3992	0.03	Q	|	|	|
V|	23+45	0.3994	0.03	Q	|	|	|
V|	23+50	0.3997	0.03	Q	|	|	|
V|	23+55	0.3999	0.03	Q	|	|	|
V|	24+ 0	0.4001	0.03	Q	|	|	|
V|	24+ 5	0.4002	0.01	Q	|	|	|
V|	24+10	0.4002	0.00	Q	|	|	|
V							

FLOOD HYDROGRAPH ROUTING PROGRAM
Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2012
Study date: 01/11/16

VDA 22 Routed

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Program License Serial Number 6232

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***** HYDROGRAPH INFORMATION

From study/file name: vda24100.rte
*****HYDROGRAPH
DATA*****
Number of intervals = 291
Time interval = 5.0 (Min.)
Maximum/Peak flow rate = 4.681 (CFS)
Total volume = 2.312 (Ac.Ft)
Status of hydrographs being held in storage
Stream 1 Stream 2 Stream 3 Stream 4 Stream 5
Peak (CFS) 0.000 0.000 0.000 0.000
0.000
Vol (Ac.Ft) 0.000 0.000 0.000 0.000
0.000

++++
++++
Process from Point/Station 2202.000 to Point/Station
2203.000
**** RETARDING BASIN ROUTING ****

User entry of depth-outflow-storage data

--
Total number of inflow hydrograph intervals = 291
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
1.000	0.800	0.268	0.799	0.801
2.000	1.600	0.268	1.599	1.601
2.500	2.000	0.268	1.999	2.001

--
 Hydrograph Detention Basin Routing

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

Time Depth (Hours) (Ft.)	Inflow (CFS)	Outflow (CFS)	Storage (Ac.Ft)		.0	1.2	2.34	3.51	4.68
0.083	0.08	0.00	0.000	O	|	|	|	|	
0.167	0.17	0.00	0.001	OI	|	|	|	|	
0.250	0.19	0.00	0.002	OI	|	|	|	|	
0.333	0.24	0.00	0.004	OI	|	|	|	|	
0.417	0.29	0.00	0.006	OI	|	|	|	|	
0.500	0.30	0.00	0.008	O I	|	|	|	|	
0.583	0.30	0.00	0.010	O I	|	|	|	|	
0.667	0.30	0.00	0.012	O I	|	|	|	|	
0.750	0.30	0.00	0.014	O I	|	|	|	|	
0.833	0.34	0.01	0.016	O I	|	|	|	|	
0.917	0.39	0.01	0.018	O I	|	|	|	|	
1.000	0.40	0.01	0.021	O I	|	|	|	|	
1.083	0.36	0.01	0.024	O I	|	|	|	|	
1.167	0.31	0.01	0.026	O I	|	|	|	|	
1.250	0.30	0.01	0.028	O I	|	|	|	|	

101.333 0.49	0.00	0.13	0.393	o	|	|	|	|
101.417 0.49	0.00	0.13	0.392	o	|	|	|	|
101.500 0.49	0.00	0.13	0.391	o	|	|	|	|
101.583 0.49	0.00	0.13	0.391	o	|	|	|	|
101.667 0.49	0.00	0.13	0.390	o	|	|	|	|
101.750 0.49	0.00	0.13	0.389	o	|	|	|	|
101.833 0.48	0.00	0.13	0.388	o	|	|	|	|
101.917 0.48	0.00	0.13	0.387	o	|	|	|	|
102.000 0.48	0.00	0.13	0.386	o	|	|	|	|
102.083 0.48	0.00	0.13	0.385	o	|	|	|	|
102.167 0.48	0.00	0.13	0.384	o	|	|	|	|
102.250 0.48	0.00	0.13	0.383	o	|	|	|	|
102.333 0.48	0.00	0.13	0.383	o	|	|	|	|
102.417 0.48	0.00	0.13	0.382	o	|	|	|	|
102.500 0.48	0.00	0.13	0.381	o	|	|	|	|
102.583 0.47	0.00	0.13	0.380	o	|	|	|	|
102.667 0.47	0.00	0.13	0.379	o	|	|	|	|
102.750 0.47	0.00	0.13	0.378	o	|	|	|	|
102.833 0.47	0.00	0.13	0.377	o	|	|	|	|
102.917 0.47	0.00	0.13	0.376	o	|	|	|	|
103.000 0.47	0.00	0.13	0.376	o	|	|	|	|
103.083 0.47	0.00	0.13	0.375	o	|	|	|	|
103.167 0.47	0.00	0.13	0.374	o	|	|	|	|
103.250 0.47	0.00	0.12	0.373	o	|	|	|	|
103.333 0.47	0.00	0.12	0.372	o	|	|	|	|
103.417 0.46	0.00	0.12	0.371	o	|	|	|	|
103.500 0.46	0.00	0.12	0.370	o	|	|	|	|
103.583 0.46	0.00	0.12	0.370	o	|	|	|	|
103.667 0.46	0.00	0.12	0.369	o	|	|	|	|
103.750 0.46	0.00	0.12	0.368	o	|	|	|	|

103.833 0.46	0.00	0.12	0.367	o	|	|	|	|
103.917 0.46	0.00	0.12	0.366	o	|	|	|	|
104.000 0.46	0.00	0.12	0.365	o	|	|	|	|
104.083 0.46	0.00	0.12	0.364	o	|	|	|	|
104.167 0.45	0.00	0.12	0.364	o	|	|	|	|
104.250 0.45	0.00	0.12	0.363	o	|	|	|	|
104.333 0.45	0.00	0.12	0.362	o	|	|	|	|
104.417 0.45	0.00	0.12	0.361	o	|	|	|	|
104.500 0.45	0.00	0.12	0.360	o	|	|	|	|
104.583 0.45	0.00	0.12	0.359	o	|	|	|	|
104.667 0.45	0.00	0.12	0.359	o	|	|	|	|
104.750 0.45	0.00	0.12	0.358	o	|	|	|	|
104.833 0.45	0.00	0.12	0.357	o	|	|	|	|
104.917 0.45	0.00	0.12	0.356	o	|	|	|	|
105.000 0.44	0.00	0.12	0.355	o	|	|	|	|
105.083 0.44	0.00	0.12	0.354	o	|	|	|	|
105.167 0.44	0.00	0.12	0.354	o	|	|	|	|
105.250 0.44	0.00	0.12	0.353	o	|	|	|	|
105.333 0.44	0.00	0.12	0.352	o	|	|	|	|
105.417 0.44	0.00	0.12	0.351	o	|	|	|	|
105.500 0.44	0.00	0.12	0.350	o	|	|	|	|
105.583 0.44	0.00	0.12	0.350	o	|	|	|	|
105.667 0.44	0.00	0.12	0.349	o	|	|	|	|
105.750 0.43	0.00	0.12	0.348	o	|	|	|	|
105.833 0.43	0.00	0.12	0.347	o	|	|	|	|
105.917 0.43	0.00	0.12	0.346	o	|	|	|	|
106.000 0.43	0.00	0.12	0.346	o	|	|	|	|
106.083 0.43	0.00	0.12	0.345	o	|	|	|	|
106.167 0.43	0.00	0.12	0.344	o	|	|	|	|
106.250 0.43	0.00	0.11	0.343	o	|	|	|	|

106.333 0.43	0.00	0.11	0.342	o	|	|	|	|
106.417 0.43	0.00	0.11	0.342	o	|	|	|	|
106.500 0.43	0.00	0.11	0.341	o	|	|	|	|
106.583 0.43	0.00	0.11	0.340	o	|	|	|	|
106.667 0.42	0.00	0.11	0.339	o	|	|	|	|
106.750 0.42	0.00	0.11	0.338	o	|	|	|	|
106.833 0.42	0.00	0.11	0.338	o	|	|	|	|
106.917 0.42	0.00	0.11	0.337	o	|	|	|	|
107.000 0.42	0.00	0.11	0.336	o	|	|	|	|
107.083 0.42	0.00	0.11	0.335	o	|	|	|	|
107.167 0.42	0.00	0.11	0.335	o	|	|	|	|
107.250 0.42	0.00	0.11	0.334	o	|	|	|	|
107.333 0.42	0.00	0.11	0.333	o	|	|	|	|
107.417 0.42	0.00	0.11	0.332	o	|	|	|	|
107.500 0.41	0.00	0.11	0.332	o	|	|	|	|
107.583 0.41	0.00	0.11	0.331	o	|	|	|	|
107.667 0.41	0.00	0.11	0.330	o	|	|	|	|
107.750 0.41	0.00	0.11	0.329	o	|	|	|	|
107.833 0.41	0.00	0.11	0.328	o	|	|	|	|
107.917 0.41	0.00	0.11	0.328	o	|	|	|	|
108.000 0.41	0.00	0.11	0.327	o	|	|	|	|
108.083 0.41	0.00	0.11	0.326	o	|	|	|	|
108.167 0.41	0.00	0.11	0.325	o	|	|	|	|
108.250 0.41	0.00	0.11	0.325	o	|	|	|	|
108.333 0.40	0.00	0.11	0.324	o	|	|	|	|
108.417 0.40	0.00	0.11	0.323	o	|	|	|	|
108.500 0.40	0.00	0.11	0.322	o	|	|	|	|
108.583 0.40	0.00	0.11	0.322	o	|	|	|	|
108.667 0.40	0.00	0.11	0.321	o	|	|	|	|
108.750 0.40	0.00	0.11	0.320	o	|	|	|	|

111.333 0.37	0.00	0.10	0.298	o	|	|	|	|
111.417 0.37	0.00	0.10	0.297	o	|	|	|	|
111.500 0.37	0.00	0.10	0.297	o	|	|	|	|
111.583 0.37	0.00	0.10	0.296	o	|	|	|	|
111.667 0.37	0.00	0.10	0.295	o	|	|	|	|
111.750 0.37	0.00	0.10	0.295	o	|	|	|	|
111.833 0.37	0.00	0.10	0.294	o	|	|	|	|
111.917 0.37	0.00	0.10	0.293	o	|	|	|	|
112.000 0.37	0.00	0.10	0.293	o	|	|	|	|
112.083 0.37	0.00	0.10	0.292	o	|	|	|	|
112.167 0.36	0.00	0.10	0.291	o	|	|	|	|
112.250 0.36	0.00	0.10	0.291	o	|	|	|	|
112.333 0.36	0.00	0.10	0.290	o	|	|	|	|
112.417 0.36	0.00	0.10	0.289	o	|	|	|	|
112.500 0.36	0.00	0.10	0.289	o	|	|	|	|
112.583 0.36	0.00	0.10	0.288	o	|	|	|	|
112.667 0.36	0.00	0.10	0.287	o	|	|	|	|
112.750 0.36	0.00	0.10	0.287	o	|	|	|	|
112.833 0.36	0.00	0.10	0.286	o	|	|	|	|
112.917 0.36	0.00	0.10	0.285	o	|	|	|	|
113.000 0.36	0.00	0.10	0.285	o	|	|	|	|
113.083 0.36	0.00	0.10	0.284	o	|	|	|	|
113.167 0.35	0.00	0.09	0.283	o	|	|	|	|
113.250 0.35	0.00	0.09	0.283	o	|	|	|	|
113.333 0.35	0.00	0.09	0.282	o	|	|	|	|
113.417 0.35	0.00	0.09	0.281	o	|	|	|	|
113.500 0.35	0.00	0.09	0.281	o	|	|	|	|
113.583 0.35	0.00	0.09	0.280	o	|	|	|	|
113.667 0.35	0.00	0.09	0.280	o	|	|	|	|
113.750 0.35	0.00	0.09	0.279	o	|	|	|	|

116.333 0.32	0.00	0.09	0.260	o	|	|	|	|
116.417 0.32	0.00	0.09	0.259	o	|	|	|	|
116.500 0.32	0.00	0.09	0.258	o	|	|	|	|
116.583 0.32	0.00	0.09	0.258	o	|	|	|	|
116.667 0.32	0.00	0.09	0.257	o	|	|	|	|
116.750 0.32	0.00	0.09	0.257	o	|	|	|	|
116.833 0.32	0.00	0.09	0.256	o	|	|	|	|
116.917 0.32	0.00	0.09	0.255	o	|	|	|	|
117.000 0.32	0.00	0.09	0.255	o	|	|	|	|
117.083 0.32	0.00	0.09	0.254	o	|	|	|	|
117.167 0.32	0.00	0.08	0.254	o	|	|	|	|
117.250 0.32	0.00	0.08	0.253	o	|	|	|	|
117.333 0.32	0.00	0.08	0.253	o	|	|	|	|
117.417 0.31	0.00	0.08	0.252	o	|	|	|	|
117.500 0.31	0.00	0.08	0.251	o	|	|	|	|
117.583 0.31	0.00	0.08	0.251	o	|	|	|	|
117.667 0.31	0.00	0.08	0.250	o	|	|	|	|
117.750 0.31	0.00	0.08	0.250	o	|	|	|	|
117.833 0.31	0.00	0.08	0.249	o	|	|	|	|
117.917 0.31	0.00	0.08	0.248	o	|	|	|	|
118.000 0.31	0.00	0.08	0.248	o	|	|	|	|
118.083 0.31	0.00	0.08	0.247	o	|	|	|	|
118.167 0.31	0.00	0.08	0.247	o	|	|	|	|
118.250 0.31	0.00	0.08	0.246	o	|	|	|	|
118.333 0.31	0.00	0.08	0.246	o	|	|	|	|
118.417 0.31	0.00	0.08	0.245	o	|	|	|	|
118.500 0.31	0.00	0.08	0.244	o	|	|	|	|
118.583 0.30	0.00	0.08	0.244	o	|	|	|	|
118.667 0.30	0.00	0.08	0.243	o	|	|	|	|
118.750 0.30	0.00	0.08	0.243	o	|	|	|	|

118.833 0.30	0.00	0.08	0.242	o	|	|	|	|
118.917 0.30	0.00	0.08	0.242	o	|	|	|	|
119.000 0.30	0.00	0.08	0.241	o	|	|	|	|
119.083 0.30	0.00	0.08	0.241	o	|	|	|	|
119.167 0.30	0.00	0.08	0.240	o	|	|	|	|
119.250 0.30	0.00	0.08	0.239	o	|	|	|	|
119.333 0.30	0.00	0.08	0.239	o	|	|	|	|
119.417 0.30	0.00	0.08	0.238	o	|	|	|	|
119.500 0.30	0.00	0.08	0.238	o	|	|	|	|
119.583 0.30	0.00	0.08	0.237	o	|	|	|	|
119.667 0.30	0.00	0.08	0.237	o	|	|	|	|
119.750 0.30	0.00	0.08	0.236	o	|	|	|	|
119.833 0.29	0.00	0.08	0.236	o	|	|	|	|
119.917 0.29	0.00	0.08	0.235	o	|	|	|	|
120.000 0.29	0.00	0.08	0.235	o	|	|	|	|
120.083 0.29	0.00	0.08	0.234	o	|	|	|	|
120.167 0.29	0.00	0.08	0.233	o	|	|	|	|
120.250 0.29	0.00	0.08	0.233	o	|	|	|	|
120.333 0.29	0.00	0.08	0.232	o	|	|	|	|
120.417 0.29	0.00	0.08	0.232	o	|	|	|	|
120.500 0.29	0.00	0.08	0.231	o	|	|	|	|
120.583 0.29	0.00	0.08	0.231	o	|	|	|	|
120.667 0.29	0.00	0.08	0.230	o	|	|	|	|
120.750 0.29	0.00	0.08	0.230	o	|	|	|	|
120.833 0.29	0.00	0.08	0.229	o	|	|	|	|
120.917 0.29	0.00	0.08	0.229	o	|	|	|	|
121.000 0.29	0.00	0.08	0.228	o	|	|	|	|
121.083 0.28	0.00	0.08	0.228	o	|	|	|	|
121.167 0.28	0.00	0.08	0.227	o	|	|	|	|
121.250 0.28	0.00	0.08	0.227	o	|	|	|	|

121.333 0.28	0.00	0.08	0.226	o	|	|	|	|
121.417 0.28	0.00	0.08	0.226	o	|	|	|	|
121.500 0.28	0.00	0.08	0.225	o	|	|	|	|
121.583 0.28	0.00	0.08	0.224	o	|	|	|	|
121.667 0.28	0.00	0.08	0.224	o	|	|	|	|
121.750 0.28	0.00	0.07	0.223	o	|	|	|	|
121.833 0.28	0.00	0.07	0.223	o	|	|	|	|
121.917 0.28	0.00	0.07	0.222	o	|	|	|	|
122.000 0.28	0.00	0.07	0.222	o	|	|	|	|
122.083 0.28	0.00	0.07	0.221	o	|	|	|	|
122.167 0.28	0.00	0.07	0.221	o	|	|	|	|
122.250 0.28	0.00	0.07	0.220	o	|	|	|	|
122.333 0.27	0.00	0.07	0.220	o	|	|	|	|
122.417 0.27	0.00	0.07	0.219	o	|	|	|	|
122.500 0.27	0.00	0.07	0.219	o	|	|	|	|
122.583 0.27	0.00	0.07	0.218	o	|	|	|	|
122.667 0.27	0.00	0.07	0.218	o	|	|	|	|
122.750 0.27	0.00	0.07	0.217	o	|	|	|	|
122.833 0.27	0.00	0.07	0.217	o	|	|	|	|
122.917 0.27	0.00	0.07	0.216	o	|	|	|	|
123.000 0.27	0.00	0.07	0.216	o	|	|	|	|
123.083 0.27	0.00	0.07	0.215	o	|	|	|	|
123.167 0.27	0.00	0.07	0.215	o	|	|	|	|
123.250 0.27	0.00	0.07	0.214	o	|	|	|	|
123.333 0.27	0.00	0.07	0.214	o	|	|	|	|
123.417 0.27	0.00	0.07	0.213	o	|	|	|	|
123.500 0.27	0.00	0.07	0.213	o	|	|	|	|
123.583 0.27	0.00	0.07	0.212	o	|	|	|	|
123.667 0.26	0.00	0.07	0.212	o	|	|	|	|
123.750 0.26	0.00	0.07	0.211	o	|	|	|	|

123.833 0.26	0.00	0.07	0.211	o	|	|	|	|
123.917 0.26	0.00	0.07	0.210	o	|	|	|	|
124.000 0.26	0.00	0.07	0.210	o	|	|	|	|
124.083 0.26	0.00	0.07	0.209	o	|	|	|	|
124.167 0.26	0.00	0.07	0.209	o	|	|	|	|
124.250 0.26	0.00	0.07	0.209	o	|	|	|	|
124.333 0.26	0.00	0.07	0.208	o	|	|	|	|
124.417 0.26	0.00	0.07	0.208	o	|	|	|	|
124.500 0.26	0.00	0.07	0.207	o	|	|	|	|
124.583 0.26	0.00	0.07	0.207	o	|	|	|	|
124.667 0.26	0.00	0.07	0.206	o	|	|	|	|
124.750 0.26	0.00	0.07	0.206	o	|	|	|	|
124.833 0.26	0.00	0.07	0.205	o	|	|	|	|
124.917 0.26	0.00	0.07	0.205	o	|	|	|	|
125.000 0.26	0.00	0.07	0.204	o	|	|	|	|
125.083 0.25	0.00	0.07	0.204	o	|	|	|	|
125.167 0.25	0.00	0.07	0.203	o	|	|	|	|
125.250 0.25	0.00	0.07	0.203	o	|	|	|	|
125.333 0.25	0.00	0.07	0.202	o	|	|	|	|
125.417 0.25	0.00	0.07	0.202	o	|	|	|	|
125.500 0.25	0.00	0.07	0.201	o	|	|	|	|
125.583 0.25	0.00	0.07	0.201	o	|	|	|	|
125.667 0.25	0.00	0.07	0.200	o	|	|	|	|
125.750 0.25	0.00	0.07	0.200	o	|	|	|	|
125.833 0.25	0.00	0.07	0.200	o	|	|	|	|
125.917 0.25	0.00	0.07	0.199	o	|	|	|	|
126.000 0.25	0.00	0.07	0.199	o	|	|	|	|
126.083 0.25	0.00	0.07	0.198	o	|	|	|	|
126.167 0.25	0.00	0.07	0.198	o	|	|	|	|
126.250 0.25	0.00	0.07	0.197	o	|	|	|	|

126.333 0.25	0.00	0.07	0.197	o	|	|	|	|
126.417 0.25	0.00	0.07	0.196	o	|	|	|	|
126.500 0.24	0.00	0.07	0.196	o	|	|	|	|
126.583 0.24	0.00	0.07	0.195	o	|	|	|	|
126.667 0.24	0.00	0.07	0.195	o	|	|	|	|
126.750 0.24	0.00	0.07	0.195	o	|	|	|	|
126.833 0.24	0.00	0.07	0.194	o	|	|	|	|
126.917 0.24	0.00	0.06	0.194	o	|	|	|	|
127.000 0.24	0.00	0.06	0.193	o	|	|	|	|
127.083 0.24	0.00	0.06	0.193	o	|	|	|	|
127.167 0.24	0.00	0.06	0.192	o	|	|	|	|
127.250 0.24	0.00	0.06	0.192	o	|	|	|	|
127.333 0.24	0.00	0.06	0.191	o	|	|	|	|
127.417 0.24	0.00	0.06	0.191	o	|	|	|	|
127.500 0.24	0.00	0.06	0.191	o	|	|	|	|
127.583 0.24	0.00	0.06	0.190	o	|	|	|	|
127.667 0.24	0.00	0.06	0.190	o	|	|	|	|
127.750 0.24	0.00	0.06	0.189	o	|	|	|	|
127.833 0.24	0.00	0.06	0.189	o	|	|	|	|
127.917 0.24	0.00	0.06	0.188	o	|	|	|	|
128.000 0.23	0.00	0.06	0.188	o	|	|	|	|
128.083 0.23	0.00	0.06	0.188	o	|	|	|	|
128.167 0.23	0.00	0.06	0.187	o	|	|	|	|
128.250 0.23	0.00	0.06	0.187	o	|	|	|	|
128.333 0.23	0.00	0.06	0.186	o	|	|	|	|
128.417 0.23	0.00	0.06	0.186	o	|	|	|	|
128.500 0.23	0.00	0.06	0.185	o	|	|	|	|
128.583 0.23	0.00	0.06	0.185	o	|	|	|	|
128.667 0.23	0.00	0.06	0.185	o	|	|	|	|
128.750 0.23	0.00	0.06	0.184	o	|	|	|	|

128.833 0.23	0.00	0.06	0.184	o	|	|	|	|
128.917 0.23	0.00	0.06	0.183	o	|	|	|	|
129.000 0.23	0.00	0.06	0.183	o	|	|	|	|
129.083 0.23	0.00	0.06	0.182	o	|	|	|	|
129.167 0.23	0.00	0.06	0.182	o	|	|	|	|
129.250 0.23	0.00	0.06	0.182	o	|	|	|	|
129.333 0.23	0.00	0.06	0.181	o	|	|	|	|
129.417 0.23	0.00	0.06	0.181	o	|	|	|	|
129.500 0.23	0.00	0.06	0.180	o	|	|	|	|
129.583 0.22	0.00	0.06	0.180	o	|	|	|	|
129.667 0.22	0.00	0.06	0.179	o	|	|	|	|
129.750 0.22	0.00	0.06	0.179	o	|	|	|	|
129.833 0.22	0.00	0.06	0.179	o	|	|	|	|
129.917 0.22	0.00	0.06	0.178	o	|	|	|	|
130.000 0.22	0.00	0.06	0.178	o	|	|	|	|
130.083 0.22	0.00	0.06	0.177	o	|	|	|	|
130.167 0.22	0.00	0.06	0.177	o	|	|	|	|
130.250 0.22	0.00	0.06	0.177	o	|	|	|	|
130.333 0.22	0.00	0.06	0.176	o	|	|	|	|
130.417 0.22	0.00	0.06	0.176	o	|	|	|	|
130.500 0.22	0.00	0.06	0.175	o	|	|	|	|
130.583 0.22	0.00	0.06	0.175	o	|	|	|	|
130.667 0.22	0.00	0.06	0.175	o	|	|	|	|
130.750 0.22	0.00	0.06	0.174	o	|	|	|	|
130.833 0.22	0.00	0.06	0.174	o	|	|	|	|
130.917 0.22	0.00	0.06	0.173	o	|	|	|	|
131.000 0.22	0.00	0.06	0.173	o	|	|	|	|
131.083 0.22	0.00	0.06	0.173	o	|	|	|	|
131.167 0.22	0.00	0.06	0.172	o	|	|	|	|
131.250 0.21	0.00	0.06	0.172	o	|	|	|	|

133.833 0.20	0.00	0.05	0.160	o	|	|	|	|
133.917 0.20	0.00	0.05	0.160	o	|	|	|	|
134.000 0.20	0.00	0.05	0.159	o	|	|	|	|
134.083 0.20	0.00	0.05	0.159	o	|	|	|	|
134.167 0.20	0.00	0.05	0.158	o	|	|	|	|
134.250 0.20	0.00	0.05	0.158	o	|	|	|	|
134.333 0.20	0.00	0.05	0.158	o	|	|	|	|
134.417 0.20	0.00	0.05	0.157	o	|	|	|	|
134.500 0.20	0.00	0.05	0.157	o	|	|	|	|
134.583 0.20	0.00	0.05	0.157	o	|	|	|	|
134.667 0.20	0.00	0.05	0.156	o	|	|	|	|
134.750 0.19	0.00	0.05	0.156	o	|	|	|	|
134.833 0.19	0.00	0.05	0.156	o	|	|	|	|
134.917 0.19	0.00	0.05	0.155	o	|	|	|	|
135.000 0.19	0.00	0.05	0.155	o	|	|	|	|
135.083 0.19	0.00	0.05	0.154	o	|	|	|	|
135.167 0.19	0.00	0.05	0.154	o	|	|	|	|
135.250 0.19	0.00	0.05	0.154	o	|	|	|	|
135.333 0.19	0.00	0.05	0.153	o	|	|	|	|
135.417 0.19	0.00	0.05	0.153	o	|	|	|	|
135.500 0.19	0.00	0.05	0.153	o	|	|	|	|
135.583 0.19	0.00	0.05	0.152	o	|	|	|	|
135.667 0.19	0.00	0.05	0.152	o	|	|	|	|
135.750 0.19	0.00	0.05	0.152	o	|	|	|	|
135.833 0.19	0.00	0.05	0.151	o	|	|	|	|
135.917 0.19	0.00	0.05	0.151	o	|	|	|	|
136.000 0.19	0.00	0.05	0.151	o	|	|	|	|
136.083 0.19	0.00	0.05	0.150	o	|	|	|	|
136.167 0.19	0.00	0.05	0.150	o	|	|	|	|
136.250 0.19	0.00	0.05	0.150	o	|	|	|	|

136.333 0.19	0.00	0.05	0.149	o	|	|	|	|
136.417 0.19	0.00	0.05	0.149	o	|	|	|	|
136.500 0.19	0.00	0.05	0.149	o	|	|	|	|
136.583 0.19	0.00	0.05	0.148	o	|	|	|	|
136.667 0.18	0.00	0.05	0.148	o	|	|	|	|
136.750 0.18	0.00	0.05	0.148	o	|	|	|	|
136.833 0.18	0.00	0.05	0.147	o	|	|	|	|
136.917 0.18	0.00	0.05	0.147	o	|	|	|	|
137.000 0.18	0.00	0.05	0.146	o	|	|	|	|
137.083 0.18	0.00	0.05	0.146	o	|	|	|	|
137.167 0.18	0.00	0.05	0.146	o	|	|	|	|
137.250 0.18	0.00	0.05	0.145	o	|	|	|	|
137.333 0.18	0.00	0.05	0.145	o	|	|	|	|
137.417 0.18	0.00	0.05	0.145	o	|	|	|	|
137.500 0.18	0.00	0.05	0.144	o	|	|	|	|
137.583 0.18	0.00	0.05	0.144	o	|	|	|	|
137.667 0.18	0.00	0.05	0.144	o	|	|	|	|
137.750 0.18	0.00	0.05	0.143	o	|	|	|	|
137.833 0.18	0.00	0.05	0.143	o	|	|	|	|
137.917 0.18	0.00	0.05	0.143	o	|	|	|	|
138.000 0.18	0.00	0.05	0.142	o	|	|	|	|
138.083 0.18	0.00	0.05	0.142	o	|	|	|	|
138.167 0.18	0.00	0.05	0.142	o	|	|	|	|
138.250 0.18	0.00	0.05	0.142	o	|	|	|	|
138.333 0.18	0.00	0.05	0.141	o	|	|	|	|
138.417 0.18	0.00	0.05	0.141	o	|	|	|	|
138.500 0.18	0.00	0.05	0.141	o	|	|	|	|
138.583 0.18	0.00	0.05	0.140	o	|	|	|	|
138.667 0.17	0.00	0.05	0.140	o	|	|	|	|
138.750 0.17	0.00	0.05	0.140	o	|	|	|	|

141.333 0.16	0.00	0.04	0.130	o	|	|	|	|
141.417 0.16	0.00	0.04	0.130	o	|	|	|	|
141.500 0.16	0.00	0.04	0.129	o	|	|	|	|
141.583 0.16	0.00	0.04	0.129	o	|	|	|	|
141.667 0.16	0.00	0.04	0.129	o	|	|	|	|
141.750 0.16	0.00	0.04	0.128	o	|	|	|	|
141.833 0.16	0.00	0.04	0.128	o	|	|	|	|
141.917 0.16	0.00	0.04	0.128	o	|	|	|	|
142.000 0.16	0.00	0.04	0.128	o	|	|	|	|
142.083 0.16	0.00	0.04	0.127	o	|	|	|	|
142.167 0.16	0.00	0.04	0.127	o	|	|	|	|
142.250 0.16	0.00	0.04	0.127	o	|	|	|	|
142.333 0.16	0.00	0.04	0.126	o	|	|	|	|
142.417 0.16	0.00	0.04	0.126	o	|	|	|	|
142.500 0.16	0.00	0.04	0.126	o	|	|	|	|
142.583 0.16	0.00	0.04	0.126	o	|	|	|	|
142.667 0.16	0.00	0.04	0.125	o	|	|	|	|
142.750 0.16	0.00	0.04	0.125	o	|	|	|	|
142.833 0.16	0.00	0.04	0.125	o	|	|	|	|
142.917 0.16	0.00	0.04	0.124	o	|	|	|	|
143.000 0.16	0.00	0.04	0.124	o	|	|	|	|
143.083 0.15	0.00	0.04	0.124	o	|	|	|	|
143.167 0.15	0.00	0.04	0.124	o	|	|	|	|
143.250 0.15	0.00	0.04	0.123	o	|	|	|	|
143.333 0.15	0.00	0.04	0.123	o	|	|	|	|
143.417 0.15	0.00	0.04	0.123	o	|	|	|	|
143.500 0.15	0.00	0.04	0.122	o	|	|	|	|
143.583 0.15	0.00	0.04	0.122	o	|	|	|	|
143.667 0.15	0.00	0.04	0.122	o	|	|	|	|
143.750 0.15	0.00	0.04	0.122	o	|	|	|	|

143.833 0.15	0.00	0.04	0.121	o	|	|	|	|
143.917 0.15	0.00	0.04	0.121	o	|	|	|	|
144.000 0.15	0.00	0.04	0.121	o	|	|	|	|
144.083 0.15	0.00	0.04	0.120	o	|	|	|	|
144.167 0.15	0.00	0.04	0.120	o	|	|	|	|
144.250 0.15	0.00	0.04	0.120	o	|	|	|	|
144.333 0.15	0.00	0.04	0.120	o	|	|	|	|
144.417 0.15	0.00	0.04	0.119	o	|	|	|	|
144.500 0.15	0.00	0.04	0.119	o	|	|	|	|
144.583 0.15	0.00	0.04	0.119	o	|	|	|	|
144.667 0.15	0.00	0.04	0.118	o	|	|	|	|
144.750 0.15	0.00	0.04	0.118	o	|	|	|	|
144.833 0.15	0.00	0.04	0.118	o	|	|	|	|
144.917 0.15	0.00	0.04	0.118	o	|	|	|	|
145.000 0.15	0.00	0.04	0.117	o	|	|	|	|
145.083 0.15	0.00	0.04	0.117	o	|	|	|	|
145.167 0.15	0.00	0.04	0.117	o	|	|	|	|
145.250 0.15	0.00	0.04	0.117	o	|	|	|	|
145.333 0.15	0.00	0.04	0.116	o	|	|	|	|
145.417 0.15	0.00	0.04	0.116	o	|	|	|	|
145.500 0.14	0.00	0.04	0.116	o	|	|	|	|
145.583 0.14	0.00	0.04	0.116	o	|	|	|	|
145.667 0.14	0.00	0.04	0.115	o	|	|	|	|
145.750 0.14	0.00	0.04	0.115	o	|	|	|	|
145.833 0.14	0.00	0.04	0.115	o	|	|	|	|
145.917 0.14	0.00	0.04	0.114	o	|	|	|	|
146.000 0.14	0.00	0.04	0.114	o	|	|	|	|
146.083 0.14	0.00	0.04	0.114	o	|	|	|	|
146.167 0.14	0.00	0.04	0.114	o	|	|	|	|
146.250 0.14	0.00	0.04	0.113	o	|	|	|	|

146.333 0.14	0.00	0.04	0.113	o	|	|	|	|
146.417 0.14	0.00	0.04	0.113	o	|	|	|	|
146.500 0.14	0.00	0.04	0.113	o	|	|	|	|
146.583 0.14	0.00	0.04	0.112	o	|	|	|	|
146.667 0.14	0.00	0.04	0.112	o	|	|	|	|
146.750 0.14	0.00	0.04	0.112	o	|	|	|	|
146.833 0.14	0.00	0.04	0.112	o	|	|	|	|
146.917 0.14	0.00	0.04	0.111	o	|	|	|	|
147.000 0.14	0.00	0.04	0.111	o	|	|	|	|
147.083 0.14	0.00	0.04	0.111	o	|	|	|	|
147.167 0.14	0.00	0.04	0.111	o	|	|	|	|
147.250 0.14	0.00	0.04	0.110	o	|	|	|	|
147.333 0.14	0.00	0.04	0.110	o	|	|	|	|
147.417 0.14	0.00	0.04	0.110	o	|	|	|	|
147.500 0.14	0.00	0.04	0.110	o	|	|	|	|
147.583 0.14	0.00	0.04	0.109	o	|	|	|	|
147.667 0.14	0.00	0.04	0.109	o	|	|	|	|
147.750 0.14	0.00	0.04	0.109	o	|	|	|	|
147.833 0.14	0.00	0.04	0.109	o	|	|	|	|
147.917 0.14	0.00	0.04	0.108	o	|	|	|	|
148.000 0.14	0.00	0.04	0.108	o	|	|	|	|
148.083 0.13	0.00	0.04	0.108	o	|	|	|	|
148.167 0.13	0.00	0.04	0.108	o	|	|	|	|
148.250 0.13	0.00	0.04	0.107	o	|	|	|	|
148.333 0.13	0.00	0.04	0.107	o	|	|	|	|
148.417 0.13	0.00	0.04	0.107	o	|	|	|	|
148.500 0.13	0.00	0.04	0.107	o	|	|	|	|
148.583 0.13	0.00	0.04	0.106	o	|	|	|	|
148.667 0.13	0.00	0.04	0.106	o	|	|	|	|
148.750 0.13	0.00	0.04	0.106	o	|	|	|	|

148.833 0.13	0.00	0.04	0.106	o	|	|	|	|
148.917 0.13	0.00	0.04	0.105	o	|	|	|	|
149.000 0.13	0.00	0.04	0.105	o	|	|	|	|
149.083 0.13	0.00	0.04	0.105	o	|	|	|	|
149.167 0.13	0.00	0.04	0.105	o	|	|	|	|
149.250 0.13	0.00	0.03	0.104	o	|	|	|	|
149.333 0.13	0.00	0.03	0.104	o	|	|	|	|
149.417 0.13	0.00	0.03	0.104	o	|	|	|	|
149.500 0.13	0.00	0.03	0.104	o	|	|	|	|
149.583 0.13	0.00	0.03	0.103	o	|	|	|	|
149.667 0.13	0.00	0.03	0.103	o	|	|	|	|
149.750 0.13	0.00	0.03	0.103	o	|	|	|	|
149.833 0.13	0.00	0.03	0.103	o	|	|	|	|
149.917 0.13	0.00	0.03	0.102	o	|	|	|	|
150.000 0.13	0.00	0.03	0.102	o	|	|	|	|
150.083 0.13	0.00	0.03	0.102	o	|	|	|	|
150.167 0.13	0.00	0.03	0.102	o	|	|	|	|
150.250 0.13	0.00	0.03	0.102	o	|	|	|	|
150.333 0.13	0.00	0.03	0.101	o	|	|	|	|
150.417 0.13	0.00	0.03	0.101	o	|	|	|	|
150.500 0.13	0.00	0.03	0.101	o	|	|	|	|
150.583 0.13	0.00	0.03	0.101	o	|	|	|	|
150.667 0.13	0.00	0.03	0.100	o	|	|	|	|
150.750 0.13	0.00	0.03	0.100	o	|	|	|	|
150.833 0.12	0.00	0.03	0.100	o	|	|	|	|
150.917 0.12	0.00	0.03	0.100	o	|	|	|	|
151.000 0.12	0.00	0.03	0.099	o	|	|	|	|
151.083 0.12	0.00	0.03	0.099	o	|	|	|	|
151.167 0.12	0.00	0.03	0.099	o	|	|	|	|
151.250 0.12	0.00	0.03	0.099	o	|	|	|	|

151.333 0.12	0.00	0.03	0.099	o	|	|	|	|
151.417 0.12	0.00	0.03	0.098	o	|	|	|	|
151.500 0.12	0.00	0.03	0.098	o	|	|	|	|
151.583 0.12	0.00	0.03	0.098	o	|	|	|	|
151.667 0.12	0.00	0.03	0.098	o	|	|	|	|
151.750 0.12	0.00	0.03	0.097	o	|	|	|	|
151.833 0.12	0.00	0.03	0.097	o	|	|	|	|
151.917 0.12	0.00	0.03	0.097	o	|	|	|	|
152.000 0.12	0.00	0.03	0.097	o	|	|	|	|
152.083 0.12	0.00	0.03	0.096	o	|	|	|	|
152.167 0.12	0.00	0.03	0.096	o	|	|	|	|
152.250 0.12	0.00	0.03	0.096	o	|	|	|	|
152.333 0.12	0.00	0.03	0.096	o	|	|	|	|
152.417 0.12	0.00	0.03	0.096	o	|	|	|	|
152.500 0.12	0.00	0.03	0.095	o	|	|	|	|
152.583 0.12	0.00	0.03	0.095	o	|	|	|	|
152.667 0.12	0.00	0.03	0.095	o	|	|	|	|
152.750 0.12	0.00	0.03	0.095	o	|	|	|	|
152.833 0.12	0.00	0.03	0.095	o	|	|	|	|
152.917 0.12	0.00	0.03	0.094	o	|	|	|	|
153.000 0.12	0.00	0.03	0.094	o	|	|	|	|
153.083 0.12	0.00	0.03	0.094	o	|	|	|	|
153.167 0.12	0.00	0.03	0.094	o	|	|	|	|
153.250 0.12	0.00	0.03	0.093	o	|	|	|	|
153.333 0.12	0.00	0.03	0.093	o	|	|	|	|
153.417 0.12	0.00	0.03	0.093	o	|	|	|	|
153.500 0.12	0.00	0.03	0.093	o	|	|	|	|
153.583 0.12	0.00	0.03	0.093	o	|	|	|	|
153.667 0.12	0.00	0.03	0.092	o	|	|	|	|
153.750 0.12	0.00	0.03	0.092	o	|	|	|	|

158.833 0.10	0.00	0.03	0.080	o	|	|	|	|
158.917 0.10	0.00	0.03	0.080	o	|	|	|	|
159.000 0.10	0.00	0.03	0.080	o	|	|	|	|
159.083 0.10	0.00	0.03	0.079	o	|	|	|	|
159.167 0.10	0.00	0.03	0.079	o	|	|	|	|
159.250 0.10	0.00	0.03	0.079	o	|	|	|	|
159.333 0.10	0.00	0.03	0.079	o	|	|	|	|
159.417 0.10	0.00	0.03	0.079	o	|	|	|	|
159.500 0.10	0.00	0.03	0.079	o	|	|	|	|
159.583 0.10	0.00	0.03	0.078	o	|	|	|	|
159.667 0.10	0.00	0.03	0.078	o	|	|	|	|
159.750 0.10	0.00	0.03	0.078	o	|	|	|	|
159.833 0.10	0.00	0.03	0.078	o	|	|	|	|
159.917 0.10	0.00	0.03	0.078	o	|	|	|	|
160.000 0.10	0.00	0.03	0.077	o	|	|	|	|
160.083 0.10	0.00	0.03	0.077	o	|	|	|	|
160.167 0.10	0.00	0.03	0.077	o	|	|	|	|
160.250 0.10	0.00	0.03	0.077	o	|	|	|	|
160.333 0.10	0.00	0.03	0.077	o	|	|	|	|
160.417 0.10	0.00	0.03	0.077	o	|	|	|	|
160.500 0.10	0.00	0.03	0.076	o	|	|	|	|
160.583 0.10	0.00	0.03	0.076	o	|	|	|	|
160.667 0.10	0.00	0.03	0.076	o	|	|	|	|
160.750 0.09	0.00	0.03	0.076	o	|	|	|	|
160.833 0.09	0.00	0.03	0.076	o	|	|	|	|
160.917 0.09	0.00	0.03	0.076	o	|	|	|	|
161.000 0.09	0.00	0.03	0.075	o	|	|	|	|
161.083 0.09	0.00	0.03	0.075	o	|	|	|	|
161.167 0.09	0.00	0.03	0.075	o	|	|	|	|
161.250 0.09	0.00	0.03	0.075	o	|	|	|	|

161.333 0.09	0.00	0.03	0.075	o	|	|	|	|
161.417 0.09	0.00	0.02	0.075	o	|	|	|	|
161.500 0.09	0.00	0.02	0.074	o	|	|	|	|
161.583 0.09	0.00	0.02	0.074	o	|	|	|	|
161.667 0.09	0.00	0.02	0.074	o	|	|	|	|
161.750 0.09	0.00	0.02	0.074	o	|	|	|	|
161.833 0.09	0.00	0.02	0.074	o	|	|	|	|
161.917 0.09	0.00	0.02	0.073	o	|	|	|	|
162.000 0.09	0.00	0.02	0.073	o	|	|	|	|
162.083 0.09	0.00	0.02	0.073	o	|	|	|	|
162.167 0.09	0.00	0.02	0.073	o	|	|	|	|
162.250 0.09	0.00	0.02	0.073	o	|	|	|	|
162.333 0.09	0.00	0.02	0.073	o	|	|	|	|
162.417 0.09	0.00	0.02	0.072	o	|	|	|	|
162.500 0.09	0.00	0.02	0.072	o	|	|	|	|
162.583 0.09	0.00	0.02	0.072	o	|	|	|	|
162.667 0.09	0.00	0.02	0.072	o	|	|	|	|
162.750 0.09	0.00	0.02	0.072	o	|	|	|	|
162.833 0.09	0.00	0.02	0.072	o	|	|	|	|
162.917 0.09	0.00	0.02	0.071	o	|	|	|	|
163.000 0.09	0.00	0.02	0.071	o	|	|	|	|
163.083 0.09	0.00	0.02	0.071	o	|	|	|	|
163.167 0.09	0.00	0.02	0.071	o	|	|	|	|
163.250 0.09	0.00	0.02	0.071	o	|	|	|	|
163.333 0.09	0.00	0.02	0.071	o	|	|	|	|
163.417 0.09	0.00	0.02	0.071	o	|	|	|	|
163.500 0.09	0.00	0.02	0.070	o	|	|	|	|
163.583 0.09	0.00	0.02	0.070	o	|	|	|	|
163.667 0.09	0.00	0.02	0.070	o	|	|	|	|
163.750 0.09	0.00	0.02	0.070	o	|	|	|	|

163.833 0.09	0.00	0.02	0.070	o	|	|	|	|
163.917 0.09	0.00	0.02	0.070	o	|	|	|	|
164.000 0.09	0.00	0.02	0.069	o	|	|	|	|
164.083 0.09	0.00	0.02	0.069	o	|	|	|	|
164.167 0.09	0.00	0.02	0.069	o	|	|	|	|
164.250 0.09	0.00	0.02	0.069	o	|	|	|	|
164.333 0.09	0.00	0.02	0.069	o	|	|	|	|
164.417 0.09	0.00	0.02	0.069	o	|	|	|	|
164.500 0.09	0.00	0.02	0.068	o	|	|	|	|
164.583 0.09	0.00	0.02	0.068	o	|	|	|	|
164.667 0.09	0.00	0.02	0.068	o	|	|	|	|
164.750 0.08	0.00	0.02	0.068	o	|	|	|	|
164.833 0.08	0.00	0.02	0.068	o	|	|	|	|
164.917 0.08	0.00	0.02	0.068	o	|	|	|	|
165.000 0.08	0.00	0.02	0.067	o	|	|	|	|
165.083 0.08	0.00	0.02	0.067	o	|	|	|	|
165.167 0.08	0.00	0.02	0.067	o	|	|	|	|
165.250 0.08	0.00	0.02	0.067	o	|	|	|	|
165.333 0.08	0.00	0.02	0.067	o	|	|	|	|
165.417 0.08	0.00	0.02	0.067	o	|	|	|	|
165.500 0.08	0.00	0.02	0.067	o	|	|	|	|
165.583 0.08	0.00	0.02	0.066	o	|	|	|	|
165.667 0.08	0.00	0.02	0.066	o	|	|	|	|
165.750 0.08	0.00	0.02	0.066	o	|	|	|	|
165.833 0.08	0.00	0.02	0.066	o	|	|	|	|
165.917 0.08	0.00	0.02	0.066	o	|	|	|	|
166.000 0.08	0.00	0.02	0.066	o	|	|	|	|
166.083 0.08	0.00	0.02	0.065	o	|	|	|	|
166.167 0.08	0.00	0.02	0.065	o	|	|	|	|
166.250 0.08	0.00	0.02	0.065	o	|	|	|	|

166.333 0.08	0.00	0.02	0.065	o	|	|	|	|
166.417 0.08	0.00	0.02	0.065	o	|	|	|	|
166.500 0.08	0.00	0.02	0.065	o	|	|	|	|
166.583 0.08	0.00	0.02	0.065	o	|	|	|	|
166.667 0.08	0.00	0.02	0.064	o	|	|	|	|
166.750 0.08	0.00	0.02	0.064	o	|	|	|	|
166.833 0.08	0.00	0.02	0.064	o	|	|	|	|
166.917 0.08	0.00	0.02	0.064	o	|	|	|	|
167.000 0.08	0.00	0.02	0.064	o	|	|	|	|
167.083 0.08	0.00	0.02	0.064	o	|	|	|	|
167.167 0.08	0.00	0.02	0.064	o	|	|	|	|
167.250 0.08	0.00	0.02	0.063	o	|	|	|	|
167.333 0.08	0.00	0.02	0.063	o	|	|	|	|
167.417 0.08	0.00	0.02	0.063	o	|	|	|	|
167.500 0.08	0.00	0.02	0.063	o	|	|	|	|
167.583 0.08	0.00	0.02	0.063	o	|	|	|	|
167.667 0.08	0.00	0.02	0.063	o	|	|	|	|
167.750 0.08	0.00	0.02	0.063	o	|	|	|	|
167.833 0.08	0.00	0.02	0.062	o	|	|	|	|
167.917 0.08	0.00	0.02	0.062	o	|	|	|	|
168.000 0.08	0.00	0.02	0.062	o	|	|	|	|
168.083 0.08	0.00	0.02	0.062	o	|	|	|	|
168.167 0.08	0.00	0.02	0.062	o	|	|	|	|
168.250 0.08	0.00	0.02	0.062	o	|	|	|	|
168.333 0.08	0.00	0.02	0.062	o	|	|	|	|
168.417 0.08	0.00	0.02	0.061	o	|	|	|	|
168.500 0.08	0.00	0.02	0.061	o	|	|	|	|
168.583 0.08	0.00	0.02	0.061	o	|	|	|	|
168.667 0.08	0.00	0.02	0.061	o	|	|	|	|
168.750 0.08	0.00	0.02	0.061	o	|	|	|	|

168.833 0.08	0.00	0.02	0.061	o	|	|	|	|
168.917 0.08	0.00	0.02	0.061	o	|	|	|	|
169.000 0.08	0.00	0.02	0.060	o	|	|	|	|
169.083 0.08	0.00	0.02	0.060	o	|	|	|	|
169.167 0.08	0.00	0.02	0.060	o	|	|	|	|
169.250 0.07	0.00	0.02	0.060	o	|	|	|	|
169.333 0.07	0.00	0.02	0.060	o	|	|	|	|
169.417 0.07	0.00	0.02	0.060	o	|	|	|	|
169.500 0.07	0.00	0.02	0.060	o	|	|	|	|
169.583 0.07	0.00	0.02	0.059	o	|	|	|	|
169.667 0.07	0.00	0.02	0.059	o	|	|	|	|
169.750 0.07	0.00	0.02	0.059	o	|	|	|	|
169.833 0.07	0.00	0.02	0.059	o	|	|	|	|
169.917 0.07	0.00	0.02	0.059	o	|	|	|	|
170.000 0.07	0.00	0.02	0.059	o	|	|	|	|
170.083 0.07	0.00	0.02	0.059	o	|	|	|	|
170.167 0.07	0.00	0.02	0.058	o	|	|	|	|
170.250 0.07	0.00	0.02	0.058	o	|	|	|	|
170.333 0.07	0.00	0.02	0.058	o	|	|	|	|
170.417 0.07	0.00	0.02	0.058	o	|	|	|	|
170.500 0.07	0.00	0.02	0.058	o	|	|	|	|
170.583 0.07	0.00	0.02	0.058	o	|	|	|	|
170.667 0.07	0.00	0.02	0.058	o	|	|	|	|
170.750 0.07	0.00	0.02	0.058	o	|	|	|	|
170.833 0.07	0.00	0.02	0.057	o	|	|	|	|
170.917 0.07	0.00	0.02	0.057	o	|	|	|	|
171.000 0.07	0.00	0.02	0.057	o	|	|	|	|
171.083 0.07	0.00	0.02	0.057	o	|	|	|	|
171.167 0.07	0.00	0.02	0.057	o	|	|	|	|
171.250 0.07	0.00	0.02	0.057	o	|	|	|	|

171.333 0.07	0.00	0.02	0.057	o	|	|	|	|
171.417 0.07	0.00	0.02	0.056	o	|	|	|	|
171.500 0.07	0.00	0.02	0.056	o	|	|	|	|
171.583 0.07	0.00	0.02	0.056	o	|	|	|	|
171.667 0.07	0.00	0.02	0.056	o	|	|	|	|
171.750 0.07	0.00	0.02	0.056	o	|	|	|	|
171.833 0.07	0.00	0.02	0.056	o	|	|	|	|
171.917 0.07	0.00	0.02	0.056	o	|	|	|	|
172.000 0.07	0.00	0.02	0.056	o	|	|	|	|
172.083 0.07	0.00	0.02	0.055	o	|	|	|	|
172.167 0.07	0.00	0.02	0.055	o	|	|	|	|
172.250 0.07	0.00	0.02	0.055	o	|	|	|	|
172.333 0.07	0.00	0.02	0.055	o	|	|	|	|
172.417 0.07	0.00	0.02	0.055	o	|	|	|	|
172.500 0.07	0.00	0.02	0.055	o	|	|	|	|
172.583 0.07	0.00	0.02	0.055	o	|	|	|	|
172.667 0.07	0.00	0.02	0.055	o	|	|	|	|
172.750 0.07	0.00	0.02	0.054	o	|	|	|	|
172.833 0.07	0.00	0.02	0.054	o	|	|	|	|
172.917 0.07	0.00	0.02	0.054	o	|	|	|	|
173.000 0.07	0.00	0.02	0.054	o	|	|	|	|
173.083 0.07	0.00	0.02	0.054	o	|	|	|	|
173.167 0.07	0.00	0.02	0.054	o	|	|	|	|
173.250 0.07	0.00	0.02	0.054	o	|	|	|	|
173.333 0.07	0.00	0.02	0.054	o	|	|	|	|
173.417 0.07	0.00	0.02	0.053	o	|	|	|	|
173.500 0.07	0.00	0.02	0.053	o	|	|	|	|
173.583 0.07	0.00	0.02	0.053	o	|	|	|	|
173.667 0.07	0.00	0.02	0.053	o	|	|	|	|
173.750 0.07	0.00	0.02	0.053	o	|	|	|	|

173.833 0.07	0.00	0.02	0.053	o	|	|	|	|
173.917 0.07	0.00	0.02	0.053	o	|	|	|	|
174.000 0.07	0.00	0.02	0.053	o	|	|	|	|
174.083 0.07	0.00	0.02	0.052	o	|	|	|	|
174.167 0.07	0.00	0.02	0.052	o	|	|	|	|
174.250 0.07	0.00	0.02	0.052	o	|	|	|	|
174.333 0.07	0.00	0.02	0.052	o	|	|	|	|
174.417 0.06	0.00	0.02	0.052	o	|	|	|	|
174.500 0.06	0.00	0.02	0.052	o	|	|	|	|
174.583 0.06	0.00	0.02	0.052	o	|	|	|	|
174.667 0.06	0.00	0.02	0.052	o	|	|	|	|
174.750 0.06	0.00	0.02	0.052	o	|	|	|	|
174.833 0.06	0.00	0.02	0.051	o	|	|	|	|
174.917 0.06	0.00	0.02	0.051	o	|	|	|	|
175.000 0.06	0.00	0.02	0.051	o	|	|	|	|
175.083 0.06	0.00	0.02	0.051	o	|	|	|	|
175.167 0.06	0.00	0.02	0.051	o	|	|	|	|
175.250 0.06	0.00	0.02	0.051	o	|	|	|	|
175.333 0.06	0.00	0.02	0.051	o	|	|	|	|
175.417 0.06	0.00	0.02	0.051	o	|	|	|	|
175.500 0.06	0.00	0.02	0.050	o	|	|	|	|
175.583 0.06	0.00	0.02	0.050	o	|	|	|	|
175.667 0.06	0.00	0.02	0.050	o	|	|	|	|
175.750 0.06	0.00	0.02	0.050	o	|	|	|	|
175.833 0.06	0.00	0.02	0.050	o	|	|	|	|
175.917 0.06	0.00	0.02	0.050	o	|	|	|	|
176.000 0.06	0.00	0.02	0.050	o	|	|	|	|
176.083 0.06	0.00	0.02	0.050	o	|	|	|	|
176.167 0.06	0.00	0.02	0.050	o	|	|	|	|
176.250 0.06	0.00	0.02	0.049	o	|	|	|	|

176.333 0.06	0.00	0.02	0.049	o	|	|	|	|
176.417 0.06	0.00	0.02	0.049	o	|	|	|	|
176.500 0.06	0.00	0.02	0.049	o	|	|	|	|
176.583 0.06	0.00	0.02	0.049	o	|	|	|	|
176.667 0.06	0.00	0.02	0.049	o	|	|	|	|
176.750 0.06	0.00	0.02	0.049	o	|	|	|	|
176.833 0.06	0.00	0.02	0.049	o	|	|	|	|
176.917 0.06	0.00	0.02	0.049	o	|	|	|	|
177.000 0.06	0.00	0.02	0.048	o	|	|	|	|
177.083 0.06	0.00	0.02	0.048	o	|	|	|	|
177.167 0.06	0.00	0.02	0.048	o	|	|	|	|
177.250 0.06	0.00	0.02	0.048	o	|	|	|	|
177.333 0.06	0.00	0.02	0.048	o	|	|	|	|
177.417 0.06	0.00	0.02	0.048	o	|	|	|	|
177.500 0.06	0.00	0.02	0.048	o	|	|	|	|
177.583 0.06	0.00	0.02	0.048	o	|	|	|	|
177.667 0.06	0.00	0.02	0.048	o	|	|	|	|
177.750 0.06	0.00	0.02	0.047	o	|	|	|	|
177.833 0.06	0.00	0.02	0.047	o	|	|	|	|
177.917 0.06	0.00	0.02	0.047	o	|	|	|	|
178.000 0.06	0.00	0.02	0.047	o	|	|	|	|
178.083 0.06	0.00	0.02	0.047	o	|	|	|	|
178.167 0.06	0.00	0.02	0.047	o	|	|	|	|
178.250 0.06	0.00	0.02	0.047	o	|	|	|	|
178.333 0.06	0.00	0.02	0.047	o	|	|	|	|
178.417 0.06	0.00	0.02	0.047	o	|	|	|	|
178.500 0.06	0.00	0.02	0.046	o	|	|	|	|
178.583 0.06	0.00	0.02	0.046	o	|	|	|	|
178.667 0.06	0.00	0.02	0.046	o	|	|	|	|
178.750 0.06	0.00	0.02	0.046	o	|	|	|	|

178.833 0.06	0.00	0.02	0.046	o	|	|	|	|
178.917 0.06	0.00	0.02	0.046	o	|	|	|	|
179.000 0.06	0.00	0.02	0.046	o	|	|	|	|
179.083 0.06	0.00	0.02	0.046	o	|	|	|	|
179.167 0.06	0.00	0.02	0.046	o	|	|	|	|
179.250 0.06	0.00	0.02	0.045	o	|	|	|	|
179.333 0.06	0.00	0.02	0.045	o	|	|	|	|
179.417 0.06	0.00	0.02	0.045	o	|	|	|	|
179.500 0.06	0.00	0.02	0.045	o	|	|	|	|
179.583 0.06	0.00	0.02	0.045	o	|	|	|	|
179.667 0.06	0.00	0.02	0.045	o	|	|	|	|
179.750 0.06	0.00	0.02	0.045	o	|	|	|	|
179.833 0.06	0.00	0.01	0.045	o	|	|	|	|
179.917 0.06	0.00	0.01	0.045	o	|	|	|	|
180.000 0.06	0.00	0.01	0.045	o	|	|	|	|
180.083 0.06	0.00	0.01	0.044	o	|	|	|	|
180.167 0.06	0.00	0.01	0.044	o	|	|	|	|
180.250 0.06	0.00	0.01	0.044	o	|	|	|	|
180.333 0.06	0.00	0.01	0.044	o	|	|	|	|
180.417 0.06	0.00	0.01	0.044	o	|	|	|	|
180.500 0.05	0.00	0.01	0.044	o	|	|	|	|
180.583 0.05	0.00	0.01	0.044	o	|	|	|	|
180.667 0.05	0.00	0.01	0.044	o	|	|	|	|
180.750 0.05	0.00	0.01	0.044	o	|	|	|	|
180.833 0.05	0.00	0.01	0.044	o	|	|	|	|
180.917 0.05	0.00	0.01	0.043	o	|	|	|	|
181.000 0.05	0.00	0.01	0.043	o	|	|	|	|
181.083 0.05	0.00	0.01	0.043	o	|	|	|	|
181.167 0.05	0.00	0.01	0.043	o	|	|	|	|
181.250 0.05	0.00	0.01	0.043	o	|	|	|	|

181.333 0.05	0.00	0.01	0.043	o	|	|	|	|
181.417 0.05	0.00	0.01	0.043	o	|	|	|	|
181.500 0.05	0.00	0.01	0.043	o	|	|	|	|
181.583 0.05	0.00	0.01	0.043	o	|	|	|	|
181.667 0.05	0.00	0.01	0.043	o	|	|	|	|
181.750 0.05	0.00	0.01	0.042	o	|	|	|	|
181.833 0.05	0.00	0.01	0.042	o	|	|	|	|
181.917 0.05	0.00	0.01	0.042	o	|	|	|	|
182.000 0.05	0.00	0.01	0.042	o	|	|	|	|
182.083 0.05	0.00	0.01	0.042	o	|	|	|	|
182.167 0.05	0.00	0.01	0.042	o	|	|	|	|
182.250 0.05	0.00	0.01	0.042	o	|	|	|	|
182.333 0.05	0.00	0.01	0.042	o	|	|	|	|
182.417 0.05	0.00	0.01	0.042	o	|	|	|	|
182.500 0.05	0.00	0.01	0.042	o	|	|	|	|
182.583 0.05	0.00	0.01	0.041	o	|	|	|	|
182.667 0.05	0.00	0.01	0.041	o	|	|	|	|
182.750 0.05	0.00	0.01	0.041	o	|	|	|	|
182.833 0.05	0.00	0.01	0.041	o	|	|	|	|
182.917 0.05	0.00	0.01	0.041	o	|	|	|	|
183.000 0.05	0.00	0.01	0.041	o	|	|	|	|
183.083 0.05	0.00	0.01	0.041	o	|	|	|	|
183.167 0.05	0.00	0.01	0.041	o	|	|	|	|
183.250 0.05	0.00	0.01	0.041	o	|	|	|	|
183.333 0.05	0.00	0.01	0.041	o	|	|	|	|
183.417 0.05	0.00	0.01	0.041	o	|	|	|	|
183.500 0.05	0.00	0.01	0.040	o	|	|	|	|
183.583 0.05	0.00	0.01	0.040	o	|	|	|	|
183.667 0.05	0.00	0.01	0.040	o	|	|	|	|
183.750 0.05	0.00	0.01	0.040	o	|	|	|	|

183.833 0.05	0.00	0.01	0.040	o	|	|	|	|
183.917 0.05	0.00	0.01	0.040	o	|	|	|	|
184.000 0.05	0.00	0.01	0.040	o	|	|	|	|
184.083 0.05	0.00	0.01	0.040	o	|	|	|	|
184.167 0.05	0.00	0.01	0.040	o	|	|	|	|
184.250 0.05	0.00	0.01	0.040	o	|	|	|	|
184.333 0.05	0.00	0.01	0.040	o	|	|	|	|
184.417 0.05	0.00	0.01	0.039	o	|	|	|	|
184.500 0.05	0.00	0.01	0.039	o	|	|	|	|
184.583 0.05	0.00	0.01	0.039	o	|	|	|	|
184.667 0.05	0.00	0.01	0.039	o	|	|	|	|
184.750 0.05	0.00	0.01	0.039	o	|	|	|	|
184.833 0.05	0.00	0.01	0.039	o	|	|	|	|
184.917 0.05	0.00	0.01	0.039	o	|	|	|	|
185.000 0.05	0.00	0.01	0.039	o	|	|	|	|
185.083 0.05	0.00	0.01	0.039	o	|	|	|	|
185.167 0.05	0.00	0.01	0.039	o	|	|	|	|
185.250 0.05	0.00	0.01	0.039	o	|	|	|	|
185.333 0.05	0.00	0.01	0.038	o	|	|	|	|
185.417 0.05	0.00	0.01	0.038	o	|	|	|	|
185.500 0.05	0.00	0.01	0.038	o	|	|	|	|
185.583 0.05	0.00	0.01	0.038	o	|	|	|	|
185.667 0.05	0.00	0.01	0.038	o	|	|	|	|
185.750 0.05	0.00	0.01	0.038	o	|	|	|	|
185.833 0.05	0.00	0.01	0.038	o	|	|	|	|
185.917 0.05	0.00	0.01	0.038	o	|	|	|	|
186.000 0.05	0.00	0.01	0.038	o	|	|	|	|
186.083 0.05	0.00	0.01	0.038	o	|	|	|	|
186.167 0.05	0.00	0.01	0.038	o	|	|	|	|
186.250 0.05	0.00	0.01	0.037	o	|	|	|	|

186.333 0.05	0.00	0.01	0.037	o	|	|	|	|
186.417 0.05	0.00	0.01	0.037	o	|	|	|	|
186.500 0.05	0.00	0.01	0.037	o	|	|	|	|
186.583 0.05	0.00	0.01	0.037	o	|	|	|	|
186.667 0.05	0.00	0.01	0.037	o	|	|	|	|
186.750 0.05	0.00	0.01	0.037	o	|	|	|	|
186.833 0.05	0.00	0.01	0.037	o	|	|	|	|
186.917 0.05	0.00	0.01	0.037	o	|	|	|	|
187.000 0.05	0.00	0.01	0.037	o	|	|	|	|
187.083 0.05	0.00	0.01	0.037	o	|	|	|	|
187.167 0.05	0.00	0.01	0.037	o	|	|	|	|
187.250 0.05	0.00	0.01	0.036	o	|	|	|	|
187.333 0.05	0.00	0.01	0.036	o	|	|	|	|
187.417 0.05	0.00	0.01	0.036	o	|	|	|	|
187.500 0.05	0.00	0.01	0.036	o	|	|	|	|
187.583 0.05	0.00	0.01	0.036	o	|	|	|	|
187.667 0.05	0.00	0.01	0.036	o	|	|	|	|
187.750 0.04	0.00	0.01	0.036	o	|	|	|	|
187.833 0.04	0.00	0.01	0.036	o	|	|	|	|
187.917 0.04	0.00	0.01	0.036	o	|	|	|	|
188.000 0.04	0.00	0.01	0.036	o	|	|	|	|
188.083 0.04	0.00	0.01	0.036	o	|	|	|	|
188.167 0.04	0.00	0.01	0.036	o	|	|	|	|
188.250 0.04	0.00	0.01	0.035	o	|	|	|	|
188.333 0.04	0.00	0.01	0.035	o	|	|	|	|
188.417 0.04	0.00	0.01	0.035	o	|	|	|	|
188.500 0.04	0.00	0.01	0.035	o	|	|	|	|
188.583 0.04	0.00	0.01	0.035	o	|	|	|	|
188.667 0.04	0.00	0.01	0.035	o	|	|	|	|
188.750 0.04	0.00	0.01	0.035	o	|	|	|	|

188.833 0.04	0.00	0.01	0.035	o	|	|	|	|
188.917 0.04	0.00	0.01	0.035	o	|	|	|	|
189.000 0.04	0.00	0.01	0.035	o	|	|	|	|
189.083 0.04	0.00	0.01	0.035	o	|	|	|	|
189.167 0.04	0.00	0.01	0.035	o	|	|	|	|
189.250 0.04	0.00	0.01	0.034	o	|	|	|	|
189.333 0.04	0.00	0.01	0.034	o	|	|	|	|
189.417 0.04	0.00	0.01	0.034	o	|	|	|	|
189.500 0.04	0.00	0.01	0.034	o	|	|	|	|
189.583 0.04	0.00	0.01	0.034	o	|	|	|	|
189.667 0.04	0.00	0.01	0.034	o	|	|	|	|
189.750 0.04	0.00	0.01	0.034	o	|	|	|	|
189.833 0.04	0.00	0.01	0.034	o	|	|	|	|
189.917 0.04	0.00	0.01	0.034	o	|	|	|	|
190.000 0.04	0.00	0.01	0.034	o	|	|	|	|
190.083 0.04	0.00	0.01	0.034	o	|	|	|	|
190.167 0.04	0.00	0.01	0.034	o	|	|	|	|
190.250 0.04	0.00	0.01	0.034	o	|	|	|	|
190.333 0.04	0.00	0.01	0.033	o	|	|	|	|
190.417 0.04	0.00	0.01	0.033	o	|	|	|	|
190.500 0.04	0.00	0.01	0.033	o	|	|	|	|
190.583 0.04	0.00	0.01	0.033	o	|	|	|	|
190.667 0.04	0.00	0.01	0.033	o	|	|	|	|
190.750 0.04	0.00	0.01	0.033	o	|	|	|	|
190.833 0.04	0.00	0.01	0.033	o	|	|	|	|
190.917 0.04	0.00	0.01	0.033	o	|	|	|	|
191.000 0.04	0.00	0.01	0.033	o	|	|	|	|
191.083 0.04	0.00	0.01	0.033	o	|	|	|	|
191.167 0.04	0.00	0.01	0.033	o	|	|	|	|
191.250 0.04	0.00	0.01	0.033	o	|	|	|	|

191.333 0.04	0.00	0.01	0.033	o	|	|	|	|
191.417 0.04	0.00	0.01	0.032	o	|	|	|	|
191.500 0.04	0.00	0.01	0.032	o	|	|	|	|
191.583 0.04	0.00	0.01	0.032	o	|	|	|	|
191.667 0.04	0.00	0.01	0.032	o	|	|	|	|
191.750 0.04	0.00	0.01	0.032	o	|	|	|	|
191.833 0.04	0.00	0.01	0.032	o	|	|	|	|
191.917 0.04	0.00	0.01	0.032	o	|	|	|	|
192.000 0.04	0.00	0.01	0.032	o	|	|	|	|
192.083 0.04	0.00	0.01	0.032	o	|	|	|	|
192.167 0.04	0.00	0.01	0.032	o	|	|	|	|
192.250 0.04	0.00	0.01	0.032	o	|	|	|	|
192.333 0.04	0.00	0.01	0.032	o	|	|	|	|
192.417 0.04	0.00	0.01	0.032	o	|	|	|	|
192.500 0.04	0.00	0.01	0.032	o	|	|	|	|
192.583 0.04	0.00	0.01	0.031	o	|	|	|	|
192.667 0.04	0.00	0.01	0.031	o	|	|	|	|
192.750 0.04	0.00	0.01	0.031	o	|	|	|	|
192.833 0.04	0.00	0.01	0.031	o	|	|	|	|
192.917 0.04	0.00	0.01	0.031	o	|	|	|	|
193.000 0.04	0.00	0.01	0.031	o	|	|	|	|
193.083 0.04	0.00	0.01	0.031	o	|	|	|	|
193.167 0.04	0.00	0.01	0.031	o	|	|	|	|
193.250 0.04	0.00	0.01	0.031	o	|	|	|	|
193.333 0.04	0.00	0.01	0.031	o	|	|	|	|
193.417 0.04	0.00	0.01	0.031	o	|	|	|	|
193.500 0.04	0.00	0.01	0.031	o	|	|	|	|
193.583 0.04	0.00	0.01	0.031	o	|	|	|	|
193.667 0.04	0.00	0.01	0.031	o	|	|	|	|
193.750 0.04	0.00	0.01	0.030	o	|	|	|	|

193.833 0.04	0.00	0.01	0.030	o	|	|	|	|
193.917 0.04	0.00	0.01	0.030	o	|	|	|	|
194.000 0.04	0.00	0.01	0.030	o	|	|	|	|
194.083 0.04	0.00	0.01	0.030	o	|	|	|	|
194.167 0.04	0.00	0.01	0.030	o	|	|	|	|
194.250 0.04	0.00	0.01	0.030	o	|	|	|	|
194.333 0.04	0.00	0.01	0.030	o	|	|	|	|
194.417 0.04	0.00	0.01	0.030	o	|	|	|	|
194.500 0.04	0.00	0.01	0.030	o	|	|	|	|
194.583 0.04	0.00	0.01	0.030	o	|	|	|	|
194.667 0.04	0.00	0.01	0.030	o	|	|	|	|
194.750 0.04	0.00	0.01	0.030	o	|	|	|	|
194.833 0.04	0.00	0.01	0.030	o	|	|	|	|
194.917 0.04	0.00	0.01	0.029	o	|	|	|	|
195.000 0.04	0.00	0.01	0.029	o	|	|	|	|
195.083 0.04	0.00	0.01	0.029	o	|	|	|	|
195.167 0.04	0.00	0.01	0.029	o	|	|	|	|
195.250 0.04	0.00	0.01	0.029	o	|	|	|	|
195.333 0.04	0.00	0.01	0.029	o	|	|	|	|
195.417 0.04	0.00	0.01	0.029	o	|	|	|	|
195.500 0.04	0.00	0.01	0.029	o	|	|	|	|
195.583 0.04	0.00	0.01	0.029	o	|	|	|	|
195.667 0.04	0.00	0.01	0.029	o	|	|	|	|
195.750 0.04	0.00	0.01	0.029	o	|	|	|	|
195.833 0.04	0.00	0.01	0.029	o	|	|	|	|
195.917 0.04	0.00	0.01	0.029	o	|	|	|	|
196.000 0.04	0.00	0.01	0.029	o	|	|	|	|
196.083 0.04	0.00	0.01	0.029	o	|	|	|	|
196.167 0.04	0.00	0.01	0.028	o	|	|	|	|
196.250 0.04	0.00	0.01	0.028	o	|	|	|	|

196.333 0.04	0.00	0.01	0.028	o	|	|	|	|
196.417 0.04	0.00	0.01	0.028	o	|	|	|	|
196.500 0.04	0.00	0.01	0.028	o	|	|	|	|
196.583 0.04	0.00	0.01	0.028	o	|	|	|	|
196.667 0.04	0.00	0.01	0.028	o	|	|	|	|
196.750 0.04	0.00	0.01	0.028	o	|	|	|	|
196.833 0.03	0.00	0.01	0.028	o	|	|	|	|
196.917 0.03	0.00	0.01	0.028	o	|	|	|	|
197.000 0.03	0.00	0.01	0.028	o	|	|	|	|
197.083 0.03	0.00	0.01	0.028	o	|	|	|	|
197.167 0.03	0.00	0.01	0.028	o	|	|	|	|
197.250 0.03	0.00	0.01	0.028	o	|	|	|	|
197.333 0.03	0.00	0.01	0.028	o	|	|	|	|
197.417 0.03	0.00	0.01	0.028	o	|	|	|	|
197.500 0.03	0.00	0.01	0.027	o	|	|	|	|
197.583 0.03	0.00	0.01	0.027	o	|	|	|	|
197.667 0.03	0.00	0.01	0.027	o	|	|	|	|
197.750 0.03	0.00	0.01	0.027	o	|	|	|	|
197.833 0.03	0.00	0.01	0.027	o	|	|	|	|
197.917 0.03	0.00	0.01	0.027	o	|	|	|	|
198.000 0.03	0.00	0.01	0.027	o	|	|	|	|
198.083 0.03	0.00	0.01	0.027	o	|	|	|	|
198.167 0.03	0.00	0.01	0.027	o	|	|	|	|
198.250 0.03	0.00	0.01	0.027	o	|	|	|	|
198.333 0.03	0.00	0.01	0.027	o	|	|	|	|
198.417 0.03	0.00	0.01	0.027	o	|	|	|	|
198.500 0.03	0.00	0.01	0.027	o	|	|	|	|
198.583 0.03	0.00	0.01	0.027	o	|	|	|	|
198.667 0.03	0.00	0.01	0.027	o	|	|	|	|
198.750 0.03	0.00	0.01	0.027	o	|	|	|	|

198.833 0.03	0.00	0.01	0.026	o	|	|	|	|
198.917 0.03	0.00	0.01	0.026	o	|	|	|	|
199.000 0.03	0.00	0.01	0.026	o	|	|	|	|
199.083 0.03	0.00	0.01	0.026	o	|	|	|	|
199.167 0.03	0.00	0.01	0.026	o	|	|	|	|
199.250 0.03	0.00	0.01	0.026	o	|	|	|	|
199.333 0.03	0.00	0.01	0.026	o	|	|	|	|
199.417 0.03	0.00	0.01	0.026	o	|	|	|	|
199.500 0.03	0.00	0.01	0.026	o	|	|	|	|
199.583 0.03	0.00	0.01	0.026	o	|	|	|	|
199.667 0.03	0.00	0.01	0.026	o	|	|	|	|
199.750 0.03	0.00	0.01	0.026	o	|	|	|	|
199.833 0.03	0.00	0.01	0.026	o	|	|	|	|
199.917 0.03	0.00	0.01	0.026	o	|	|	|	|
200.000 0.03	0.00	0.01	0.026	o	|	|	|	|
200.083 0.03	0.00	0.01	0.026	o	|	|	|	|
200.167 0.03	0.00	0.01	0.025	o	|	|	|	|
200.250 0.03	0.00	0.01	0.025	o	|	|	|	|
200.333 0.03	0.00	0.01	0.025	o	|	|	|	|
200.417 0.03	0.00	0.01	0.025	o	|	|	|	|
200.500 0.03	0.00	0.01	0.025	o	|	|	|	|
200.583 0.03	0.00	0.01	0.025	o	|	|	|	|
200.667 0.03	0.00	0.01	0.025	o	|	|	|	|
200.750 0.03	0.00	0.01	0.025	o	|	|	|	|
200.833 0.03	0.00	0.01	0.025	o	|	|	|	|
200.917 0.03	0.00	0.01	0.025	o	|	|	|	|
201.000 0.03	0.00	0.01	0.025	o	|	|	|	|
201.083 0.03	0.00	0.01	0.025	o	|	|	|	|
201.167 0.03	0.00	0.01	0.025	o	|	|	|	|
201.250 0.03	0.00	0.01	0.025	o	|	|	|	|

201.333 0.03	0.00	0.01	0.025	o	|	|	|	|
201.417 0.03	0.00	0.01	0.025	o	|	|	|	|
201.500 0.03	0.00	0.01	0.025	o	|	|	|	|
201.583 0.03	0.00	0.01	0.025	o	|	|	|	|
201.667 0.03	0.00	0.01	0.024	o	|	|	|	|
201.750 0.03	0.00	0.01	0.024	o	|	|	|	|
201.833 0.03	0.00	0.01	0.024	o	|	|	|	|
201.917 0.03	0.00	0.01	0.024	o	|	|	|	|
202.000 0.03	0.00	0.01	0.024	o	|	|	|	|
202.083 0.03	0.00	0.01	0.024	o	|	|	|	|
202.167 0.03	0.00	0.01	0.024	o	|	|	|	|
202.250 0.03	0.00	0.01	0.024	o	|	|	|	|
202.333 0.03	0.00	0.01	0.024	o	|	|	|	|
202.417 0.03	0.00	0.01	0.024	o	|	|	|	|
202.500 0.03	0.00	0.01	0.024	o	|	|	|	|
202.583 0.03	0.00	0.01	0.024	o	|	|	|	|
202.667 0.03	0.00	0.01	0.024	o	|	|	|	|
202.750 0.03	0.00	0.01	0.024	o	|	|	|	|
202.833 0.03	0.00	0.01	0.024	o	|	|	|	|
202.917 0.03	0.00	0.01	0.024	o	|	|	|	|
203.000 0.03	0.00	0.01	0.024	o	|	|	|	|
203.083 0.03	0.00	0.01	0.024	o	|	|	|	|
203.167 0.03	0.00	0.01	0.023	o	|	|	|	|
203.250 0.03	0.00	0.01	0.023	o	|	|	|	|
203.333 0.03	0.00	0.01	0.023	o	|	|	|	|
203.417 0.03	0.00	0.01	0.023	o	|	|	|	|
203.500 0.03	0.00	0.01	0.023	o	|	|	|	|
203.583 0.03	0.00	0.01	0.023	o	|	|	|	|
203.667 0.03	0.00	0.01	0.023	o	|	|	|	|
203.750 0.03	0.00	0.01	0.023	o	|	|	|	|

203.833 0.03	0.00	0.01	0.023	o	|	|	|	|
203.917 0.03	0.00	0.01	0.023	o	|	|	|	|
204.000 0.03	0.00	0.01	0.023	o	|	|	|	|
204.083 0.03	0.00	0.01	0.023	o	|	|	|	|
204.167 0.03	0.00	0.01	0.023	o	|	|	|	|
204.250 0.03	0.00	0.01	0.023	o	|	|	|	|
204.333 0.03	0.00	0.01	0.023	o	|	|	|	|
204.417 0.03	0.00	0.01	0.023	o	|	|	|	|
204.500 0.03	0.00	0.01	0.023	o	|	|	|	|
204.583 0.03	0.00	0.01	0.023	o	|	|	|	|
204.667 0.03	0.00	0.01	0.023	o	|	|	|	|
204.750 0.03	0.00	0.01	0.022	o	|	|	|	|
204.833 0.03	0.00	0.01	0.022	o	|	|	|	|
204.917 0.03	0.00	0.01	0.022	o	|	|	|	|
205.000 0.03	0.00	0.01	0.022	o	|	|	|	|
205.083 0.03	0.00	0.01	0.022	o	|	|	|	|
205.167 0.03	0.00	0.01	0.022	o	|	|	|	|
205.250 0.03	0.00	0.01	0.022	o	|	|	|	|
205.333 0.03	0.00	0.01	0.022	o	|	|	|	|
205.417 0.03	0.00	0.01	0.022	o	|	|	|	|
205.500 0.03	0.00	0.01	0.022	o	|	|	|	|
205.583 0.03	0.00	0.01	0.022	o	|	|	|	|
205.667 0.03	0.00	0.01	0.022	o	|	|	|	|
205.750 0.03	0.00	0.01	0.022	o	|	|	|	|
205.833 0.03	0.00	0.01	0.022	o	|	|	|	|
205.917 0.03	0.00	0.01	0.022	o	|	|	|	|
206.000 0.03	0.00	0.01	0.022	o	|	|	|	|
206.083 0.03	0.00	0.01	0.022	o	|	|	|	|
206.167 0.03	0.00	0.01	0.022	o	|	|	|	|
206.250 0.03	0.00	0.01	0.022	o	|	|	|	|

206.333 0.03	0.00	0.01	0.021	o	|	|	|	|
206.417 0.03	0.00	0.01	0.021	o	|	|	|	|
206.500 0.03	0.00	0.01	0.021	o	|	|	|	|
206.583 0.03	0.00	0.01	0.021	o	|	|	|	|
206.667 0.03	0.00	0.01	0.021	o	|	|	|	|
206.750 0.03	0.00	0.01	0.021	o	|	|	|	|
206.833 0.03	0.00	0.01	0.021	o	|	|	|	|
206.917 0.03	0.00	0.01	0.021	o	|	|	|	|
207.000 0.03	0.00	0.01	0.021	o	|	|	|	|
207.083 0.03	0.00	0.01	0.021	o	|	|	|	|
207.167 0.03	0.00	0.01	0.021	o	|	|	|	|
207.250 0.03	0.00	0.01	0.021	o	|	|	|	|
207.333 0.03	0.00	0.01	0.021	o	|	|	|	|
207.417 0.03	0.00	0.01	0.021	o	|	|	|	|
207.500 0.03	0.00	0.01	0.021	o	|	|	|	|
207.583 0.03	0.00	0.01	0.021	o	|	|	|	|
207.667 0.03	0.00	0.01	0.021	o	|	|	|	|
207.750 0.03	0.00	0.01	0.021	o	|	|	|	|
207.833 0.03	0.00	0.01	0.021	o	|	|	|	|
207.917 0.03	0.00	0.01	0.021	o	|	|	|	|
208.000 0.03	0.00	0.01	0.021	o	|	|	|	|
208.083 0.03	0.00	0.01	0.020	o	|	|	|	|
208.167 0.03	0.00	0.01	0.020	o	|	|	|	|
208.250 0.03	0.00	0.01	0.020	o	|	|	|	|
208.333 0.03	0.00	0.01	0.020	o	|	|	|	|
208.417 0.03	0.00	0.01	0.020	o	|	|	|	|
208.500 0.03	0.00	0.01	0.020	o	|	|	|	|
208.583 0.03	0.00	0.01	0.020	o	|	|	|	|
208.667 0.03	0.00	0.01	0.020	o	|	|	|	|
208.750 0.03	0.00	0.01	0.020	o	|	|	|	|

208.833 0.03	0.00	0.01	0.020	o	|	|	|	|
208.917 0.03	0.00	0.01	0.020	o	|	|	|	|
209.000 0.02	0.00	0.01	0.020	o	|	|	|	|
209.083 0.02	0.00	0.01	0.020	o	|	|	|	|
209.167 0.02	0.00	0.01	0.020	o	|	|	|	|
209.250 0.02	0.00	0.01	0.020	o	|	|	|	|
209.333 0.02	0.00	0.01	0.020	o	|	|	|	|
209.417 0.02	0.00	0.01	0.020	o	|	|	|	|
209.500 0.02	0.00	0.01	0.020	o	|	|	|	|
209.583 0.02	0.00	0.01	0.020	o	|	|	|	|
209.667 0.02	0.00	0.01	0.020	o	|	|	|	|
209.750 0.02	0.00	0.01	0.020	o	|	|	|	|
209.833 0.02	0.00	0.01	0.020	o	|	|	|	|
209.917 0.02	0.00	0.01	0.019	o	|	|	|	|
210.000 0.02	0.00	0.01	0.019	o	|	|	|	|
210.083 0.02	0.00	0.01	0.019	o	|	|	|	|
210.167 0.02	0.00	0.01	0.019	o	|	|	|	|
210.250 0.02	0.00	0.01	0.019	o	|	|	|	|
210.333 0.02	0.00	0.01	0.019	o	|	|	|	|
210.417 0.02	0.00	0.01	0.019	o	|	|	|	|
210.500 0.02	0.00	0.01	0.019	o	|	|	|	|
210.583 0.02	0.00	0.01	0.019	o	|	|	|	|
210.667 0.02	0.00	0.01	0.019	o	|	|	|	|
210.750 0.02	0.00	0.01	0.019	o	|	|	|	|
210.833 0.02	0.00	0.01	0.019	o	|	|	|	|
210.917 0.02	0.00	0.01	0.019	o	|	|	|	|
211.000 0.02	0.00	0.01	0.019	o	|	|	|	|
211.083 0.02	0.00	0.01	0.019	o	|	|	|	|
211.167 0.02	0.00	0.01	0.019	o	|	|	|	|
211.250 0.02	0.00	0.01	0.019	o	|	|	|	|

211.333 0.02	0.00	0.01	0.019	o	|	|	|	|
211.417 0.02	0.00	0.01	0.019	o	|	|	|	|
211.500 0.02	0.00	0.01	0.019	o	|	|	|	|
211.583 0.02	0.00	0.01	0.019	o	|	|	|	|
211.667 0.02	0.00	0.01	0.019	o	|	|	|	|
211.750 0.02	0.00	0.01	0.018	o	|	|	|	|
211.833 0.02	0.00	0.01	0.018	o	|	|	|	|
211.917 0.02	0.00	0.01	0.018	o	|	|	|	|
212.000 0.02	0.00	0.01	0.018	o	|	|	|	|
212.083 0.02	0.00	0.01	0.018	o	|	|	|	|
212.167 0.02	0.00	0.01	0.018	o	|	|	|	|
212.250 0.02	0.00	0.01	0.018	o	|	|	|	|
212.333 0.02	0.00	0.01	0.018	o	|	|	|	|
212.417 0.02	0.00	0.01	0.018	o	|	|	|	|
212.500 0.02	0.00	0.01	0.018	o	|	|	|	|
212.583 0.02	0.00	0.01	0.018	o	|	|	|	|
212.667 0.02	0.00	0.01	0.018	o	|	|	|	|
212.750 0.02	0.00	0.01	0.018	o	|	|	|	|
212.833 0.02	0.00	0.01	0.018	o	|	|	|	|
212.917 0.02	0.00	0.01	0.018	o	|	|	|	|
213.000 0.02	0.00	0.01	0.018	o	|	|	|	|
213.083 0.02	0.00	0.01	0.018	o	|	|	|	|
213.167 0.02	0.00	0.01	0.018	o	|	|	|	|
213.250 0.02	0.00	0.01	0.018	o	|	|	|	|
213.333 0.02	0.00	0.01	0.018	o	|	|	|	|
213.417 0.02	0.00	0.01	0.018	o	|	|	|	|
213.500 0.02	0.00	0.01	0.018	o	|	|	|	|
213.583 0.02	0.00	0.01	0.018	o	|	|	|	|
213.667 0.02	0.00	0.01	0.018	o	|	|	|	|
213.750 0.02	0.00	0.01	0.017	o	|	|	|	|

213.833 0.02	0.00	0.01	0.017	o	|	|	|	|
213.917 0.02	0.00	0.01	0.017	o	|	|	|	|
214.000 0.02	0.00	0.01	0.017	o	|	|	|	|
214.083 0.02	0.00	0.01	0.017	o	|	|	|	|
214.167 0.02	0.00	0.01	0.017	o	|	|	|	|
214.250 0.02	0.00	0.01	0.017	o	|	|	|	|
214.333 0.02	0.00	0.01	0.017	o	|	|	|	|
214.417 0.02	0.00	0.01	0.017	o	|	|	|	|
214.500 0.02	0.00	0.01	0.017	o	|	|	|	|
214.583 0.02	0.00	0.01	0.017	o	|	|	|	|
214.667 0.02	0.00	0.01	0.017	o	|	|	|	|
214.750 0.02	0.00	0.01	0.017	o	|	|	|	|
214.833 0.02	0.00	0.01	0.017	o	|	|	|	|
214.917 0.02	0.00	0.01	0.017	o	|	|	|	|
215.000 0.02	0.00	0.01	0.017	o	|	|	|	|
215.083 0.02	0.00	0.01	0.017	o	|	|	|	|
215.167 0.02	0.00	0.01	0.017	o	|	|	|	|
215.250 0.02	0.00	0.01	0.017	o	|	|	|	|
215.333 0.02	0.00	0.01	0.017	o	|	|	|	|
215.417 0.02	0.00	0.01	0.017	o	|	|	|	|
215.500 0.02	0.00	0.01	0.017	o	|	|	|	|
215.583 0.02	0.00	0.01	0.017	o	|	|	|	|
215.667 0.02	0.00	0.01	0.017	o	|	|	|	|
215.750 0.02	0.00	0.01	0.017	o	|	|	|	|
215.833 0.02	0.00	0.01	0.017	o	|	|	|	|
215.917 0.02	0.00	0.01	0.016	o	|	|	|	|
216.000 0.02	0.00	0.01	0.016	o	|	|	|	|
216.083 0.02	0.00	0.01	0.016	o	|	|	|	|
216.167 0.02	0.00	0.01	0.016	o	|	|	|	|
216.250 0.02	0.00	0.01	0.016	o	|	|	|	|

216.333 0.02	0.00	0.01	0.016	o	|	|	|	|
216.417 0.02	0.00	0.01	0.016	o	|	|	|	|
216.500 0.02	0.00	0.01	0.016	o	|	|	|	|
216.583 0.02	0.00	0.01	0.016	o	|	|	|	|
216.667 0.02	0.00	0.01	0.016	o	|	|	|	|
216.750 0.02	0.00	0.01	0.016	o	|	|	|	|
216.833 0.02	0.00	0.01	0.016	o	|	|	|	|
216.917 0.02	0.00	0.01	0.016	o	|	|	|	|
217.000 0.02	0.00	0.01	0.016	o	|	|	|	|
217.083 0.02	0.00	0.01	0.016	o	|	|	|	|
217.167 0.02	0.00	0.01	0.016	o	|	|	|	|
217.250 0.02	0.00	0.01	0.016	o	|	|	|	|
217.333 0.02	0.00	0.01	0.016	o	|	|	|	|
217.417 0.02	0.00	0.01	0.016	o	|	|	|	|
217.500 0.02	0.00	0.01	0.016	o	|	|	|	|
217.583 0.02	0.00	0.01	0.016	o	|	|	|	|
217.667 0.02	0.00	0.01	0.016	o	|	|	|	|
217.750 0.02	0.00	0.01	0.016	o	|	|	|	|
217.833 0.02	0.00	0.01	0.016	o	|	|	|	|
217.917 0.02	0.00	0.01	0.016	o	|	|	|	|
218.000 0.02	0.00	0.01	0.016	o	|	|	|	|
218.083 0.02	0.00	0.01	0.016	o	|	|	|	|
218.167 0.02	0.00	0.01	0.015	o	|	|	|	|
218.250 0.02	0.00	0.01	0.015	o	|	|	|	|
218.333 0.02	0.00	0.01	0.015	o	|	|	|	|
218.417 0.02	0.00	0.01	0.015	o	|	|	|	|
218.500 0.02	0.00	0.01	0.015	o	|	|	|	|
218.583 0.02	0.00	0.01	0.015	o	|	|	|	|
218.667 0.02	0.00	0.01	0.015	o	|	|	|	|
218.750 0.02	0.00	0.01	0.015	o	|	|	|	|

218.833 0.02	0.00	0.01	0.015	o	|	|	|	|
218.917 0.02	0.00	0.01	0.015	o	|	|	|	|
219.000 0.02	0.00	0.01	0.015	o	|	|	|	|
219.083 0.02	0.00	0.01	0.015	o	|	|	|	|
219.167 0.02	0.00	0.01	0.015	o	|	|	|	|
219.250 0.02	0.00	0.01	0.015	o	|	|	|	|
219.333 0.02	0.00	0.01	0.015	o	|	|	|	|
219.417 0.02	0.00	0.01	0.015	o	|	|	|	|
219.500 0.02	0.00	0.00	0.015	o	|	|	|	|
219.583 0.02	0.00	0.00	0.015	o	|	|	|	|
219.667 0.02	0.00	0.00	0.015	o	|	|	|	|
219.750 0.02	0.00	0.00	0.015	o	|	|	|	|
219.833 0.02	0.00	0.00	0.015	o	|	|	|	|
219.917 0.02	0.00	0.00	0.015	o	|	|	|	|
220.000 0.02	0.00	0.00	0.015	o	|	|	|	|
220.083 0.02	0.00	0.00	0.015	o	|	|	|	|
220.167 0.02	0.00	0.00	0.015	o	|	|	|	|
220.250 0.02	0.00	0.00	0.015	o	|	|	|	|
220.333 0.02	0.00	0.00	0.015	o	|	|	|	|
220.417 0.02	0.00	0.00	0.015	o	|	|	|	|
220.500 0.02	0.00	0.00	0.015	o	|	|	|	|
220.583 0.02	0.00	0.00	0.014	o	|	|	|	|
220.667 0.02	0.00	0.00	0.014	o	|	|	|	|
220.750 0.02	0.00	0.00	0.014	o	|	|	|	|
220.833 0.02	0.00	0.00	0.014	o	|	|	|	|
220.917 0.02	0.00	0.00	0.014	o	|	|	|	|
221.000 0.02	0.00	0.00	0.014	o	|	|	|	|
221.083 0.02	0.00	0.00	0.014	o	|	|	|	|
221.167 0.02	0.00	0.00	0.014	o	|	|	|	|
221.250 0.02	0.00	0.00	0.014	o	|	|	|	|

221.333 0.02	0.00	0.00	0.014	o	|	|	|	|
221.417 0.02	0.00	0.00	0.014	o	|	|	|	|
221.500 0.02	0.00	0.00	0.014	o	|	|	|	|
221.583 0.02	0.00	0.00	0.014	o	|	|	|	|
221.667 0.02	0.00	0.00	0.014	o	|	|	|	|
221.750 0.02	0.00	0.00	0.014	o	|	|	|	|
221.833 0.02	0.00	0.00	0.014	o	|	|	|	|
221.917 0.02	0.00	0.00	0.014	o	|	|	|	|
222.000 0.02	0.00	0.00	0.014	o	|	|	|	|
222.083 0.02	0.00	0.00	0.014	o	|	|	|	|
222.167 0.02	0.00	0.00	0.014	o	|	|	|	|
222.250 0.02	0.00	0.00	0.014	o	|	|	|	|
222.333 0.02	0.00	0.00	0.014	o	|	|	|	|
222.417 0.02	0.00	0.00	0.014	o	|	|	|	|
222.500 0.02	0.00	0.00	0.014	o	|	|	|	|
222.583 0.02	0.00	0.00	0.014	o	|	|	|	|
222.667 0.02	0.00	0.00	0.014	o	|	|	|	|
222.750 0.02	0.00	0.00	0.014	o	|	|	|	|
222.833 0.02	0.00	0.00	0.014	o	|	|	|	|
222.917 0.02	0.00	0.00	0.014	o	|	|	|	|
223.000 0.02	0.00	0.00	0.014	o	|	|	|	|
223.083 0.02	0.00	0.00	0.014	o	|	|	|	|
223.167 0.02	0.00	0.00	0.013	o	|	|	|	|
223.250 0.02	0.00	0.00	0.013	o	|	|	|	|
223.333 0.02	0.00	0.00	0.013	o	|	|	|	|
223.417 0.02	0.00	0.00	0.013	o	|	|	|	|
223.500 0.02	0.00	0.00	0.013	o	|	|	|	|
223.583 0.02	0.00	0.00	0.013	o	|	|	|	|
223.667 0.02	0.00	0.00	0.013	o	|	|	|	|
223.750 0.02	0.00	0.00	0.013	o	|	|	|	|

223.833 0.02	0.00	0.00	0.013	o	|	|	|	|
223.917 0.02	0.00	0.00	0.013	o	|	|	|	|
224.000 0.02	0.00	0.00	0.013	o	|	|	|	|
224.083 0.02	0.00	0.00	0.013	o	|	|	|	|
224.167 0.02	0.00	0.00	0.013	o	|	|	|	|
224.250 0.02	0.00	0.00	0.013	o	|	|	|	|
224.333 0.02	0.00	0.00	0.013	o	|	|	|	|
224.417 0.02	0.00	0.00	0.013	o	|	|	|	|
224.500 0.02	0.00	0.00	0.013	o	|	|	|	|
224.583 0.02	0.00	0.00	0.013	o	|	|	|	|
224.667 0.02	0.00	0.00	0.013	o	|	|	|	|
224.750 0.02	0.00	0.00	0.013	o	|	|	|	|
224.833 0.02	0.00	0.00	0.013	o	|	|	|	|
224.917 0.02	0.00	0.00	0.013	o	|	|	|	|
225.000 0.02	0.00	0.00	0.013	o	|	|	|	|
225.083 0.02	0.00	0.00	0.013	o	|	|	|	|
225.167 0.02	0.00	0.00	0.013	o	|	|	|	|
225.250 0.02	0.00	0.00	0.013	o	|	|	|	|
225.333 0.02	0.00	0.00	0.013	o	|	|	|	|
225.417 0.02	0.00	0.00	0.013	o	|	|	|	|
225.500 0.02	0.00	0.00	0.013	o	|	|	|	|
225.583 0.02	0.00	0.00	0.013	o	|	|	|	|
225.667 0.02	0.00	0.00	0.013	o	|	|	|	|
225.750 0.02	0.00	0.00	0.013	o	|	|	|	|
225.833 0.02	0.00	0.00	0.013	o	|	|	|	|
225.917 0.02	0.00	0.00	0.012	o	|	|	|	|
226.000 0.02	0.00	0.00	0.012	o	|	|	|	|
226.083 0.02	0.00	0.00	0.012	o	|	|	|	|
226.167 0.02	0.00	0.00	0.012	o	|	|	|	|
226.250 0.02	0.00	0.00	0.012	o	|	|	|	|

226.333 0.02	0.00	0.00	0.012	o	|	|	|	|
226.417 0.02	0.00	0.00	0.012	o	|	|	|	|
226.500 0.02	0.00	0.00	0.012	o	|	|	|	|
226.583 0.02	0.00	0.00	0.012	o	|	|	|	|
226.667 0.02	0.00	0.00	0.012	o	|	|	|	|
226.750 0.02	0.00	0.00	0.012	o	|	|	|	|
226.833 0.02	0.00	0.00	0.012	o	|	|	|	|
226.917 0.02	0.00	0.00	0.012	o	|	|	|	|
227.000 0.02	0.00	0.00	0.012	o	|	|	|	|
227.083 0.02	0.00	0.00	0.012	o	|	|	|	|
227.167 0.02	0.00	0.00	0.012	o	|	|	|	|
227.250 0.02	0.00	0.00	0.012	o	|	|	|	|
227.333 0.02	0.00	0.00	0.012	o	|	|	|	|
227.417 0.01	0.00	0.00	0.012	o	|	|	|	|
227.500 0.01	0.00	0.00	0.012	o	|	|	|	|
227.583 0.01	0.00	0.00	0.012	o	|	|	|	|
227.667 0.01	0.00	0.00	0.012	o	|	|	|	|
227.750 0.01	0.00	0.00	0.012	o	|	|	|	|
227.833 0.01	0.00	0.00	0.012	o	|	|	|	|
227.917 0.01	0.00	0.00	0.012	o	|	|	|	|
228.000 0.01	0.00	0.00	0.012	o	|	|	|	|
228.083 0.01	0.00	0.00	0.012	o	|	|	|	|
228.167 0.01	0.00	0.00	0.012	o	|	|	|	|
228.250 0.01	0.00	0.00	0.012	o	|	|	|	|
228.333 0.01	0.00	0.00	0.012	o	|	|	|	|
228.417 0.01	0.00	0.00	0.012	o	|	|	|	|
228.500 0.01	0.00	0.00	0.012	o	|	|	|	|
228.583 0.01	0.00	0.00	0.012	o	|	|	|	|
228.667 0.01	0.00	0.00	0.012	o	|	|	|	|
228.750 0.01	0.00	0.00	0.012	o	|	|	|	|

228.833 0.01	0.00	0.00	0.012	o	|	|	|	|
228.917 0.01	0.00	0.00	0.011	o	|	|	|	|
229.000 0.01	0.00	0.00	0.011	o	|	|	|	|
229.083 0.01	0.00	0.00	0.011	o	|	|	|	|
229.167 0.01	0.00	0.00	0.011	o	|	|	|	|
229.250 0.01	0.00	0.00	0.011	o	|	|	|	|
229.333 0.01	0.00	0.00	0.011	o	|	|	|	|
229.417 0.01	0.00	0.00	0.011	o	|	|	|	|
229.500 0.01	0.00	0.00	0.011	o	|	|	|	|
229.583 0.01	0.00	0.00	0.011	o	|	|	|	|
229.667 0.01	0.00	0.00	0.011	o	|	|	|	|
229.750 0.01	0.00	0.00	0.011	o	|	|	|	|
229.833 0.01	0.00	0.00	0.011	o	|	|	|	|
229.917 0.01	0.00	0.00	0.011	o	|	|	|	|
230.000 0.01	0.00	0.00	0.011	o	|	|	|	|
230.083 0.01	0.00	0.00	0.011	o	|	|	|	|
230.167 0.01	0.00	0.00	0.011	o	|	|	|	|
230.250 0.01	0.00	0.00	0.011	o	|	|	|	|
230.333 0.01	0.00	0.00	0.011	o	|	|	|	|
230.417 0.01	0.00	0.00	0.011	o	|	|	|	|
230.500 0.01	0.00	0.00	0.011	o	|	|	|	|
230.583 0.01	0.00	0.00	0.011	o	|	|	|	|
230.667 0.01	0.00	0.00	0.011	o	|	|	|	|
230.750 0.01	0.00	0.00	0.011	o	|	|	|	|
230.833 0.01	0.00	0.00	0.011	o	|	|	|	|
230.917 0.01	0.00	0.00	0.011	o	|	|	|	|
231.000 0.01	0.00	0.00	0.011	o	|	|	|	|
231.083 0.01	0.00	0.00	0.011	o	|	|	|	|
231.167 0.01	0.00	0.00	0.011	o	|	|	|	|
231.250 0.01	0.00	0.00	0.011	o	|	|	|	|

231.333 0.01	0.00	0.00	0.011	o	|	|	|	|
231.417 0.01	0.00	0.00	0.011	o	|	|	|	|
231.500 0.01	0.00	0.00	0.011	o	|	|	|	|
231.583 0.01	0.00	0.00	0.011	o	|	|	|	|
231.667 0.01	0.00	0.00	0.011	o	|	|	|	|
231.750 0.01	0.00	0.00	0.011	o	|	|	|	|
231.833 0.01	0.00	0.00	0.011	o	|	|	|	|
231.917 0.01	0.00	0.00	0.011	o	|	|	|	|
232.000 0.01	0.00	0.00	0.011	o	|	|	|	|
232.083 0.01	0.00	0.00	0.011	o	|	|	|	|
232.167 0.01	0.00	0.00	0.011	o	|	|	|	|
232.250 0.01	0.00	0.00	0.010	o	|	|	|	|
232.333 0.01	0.00	0.00	0.010	o	|	|	|	|
232.417 0.01	0.00	0.00	0.010	o	|	|	|	|
232.500 0.01	0.00	0.00	0.010	o	|	|	|	|
232.583 0.01	0.00	0.00	0.010	o	|	|	|	|
232.667 0.01	0.00	0.00	0.010	o	|	|	|	|
232.750 0.01	0.00	0.00	0.010	o	|	|	|	|
232.833 0.01	0.00	0.00	0.010	o	|	|	|	|
232.917 0.01	0.00	0.00	0.010	o	|	|	|	|
233.000 0.01	0.00	0.00	0.010	o	|	|	|	|
233.083 0.01	0.00	0.00	0.010	o	|	|	|	|
233.167 0.01	0.00	0.00	0.010	o	|	|	|	|
233.250 0.01	0.00	0.00	0.010	o	|	|	|	|
233.333 0.01	0.00	0.00	0.010	o	|	|	|	|
233.417 0.01	0.00	0.00	0.010	o	|	|	|	|
233.500 0.01	0.00	0.00	0.010	o	|	|	|	|
233.583 0.01	0.00	0.00	0.010	o	|	|	|	|
233.667 0.01	0.00	0.00	0.010	o	|	|	|	|
233.750 0.01	0.00	0.00	0.010	o	|	|	|	|

233.833 0.01	0.00	0.00	0.010	o	|	|	|	|
233.917 0.01	0.00	0.00	0.010	o	|	|	|	|
234.000 0.01	0.00	0.00	0.010	o	|	|	|	|
234.083 0.01	0.00	0.00	0.010	o	|	|	|	|
234.167 0.01	0.00	0.00	0.010	o	|	|	|	|
234.250 0.01	0.00	0.00	0.010	o	|	|	|	|
234.333 0.01	0.00	0.00	0.010	o	|	|	|	|
234.417 0.01	0.00	0.00	0.010	o	|	|	|	|
234.500 0.01	0.00	0.00	0.010	o	|	|	|	|
234.583 0.01	0.00	0.00	0.010	o	|	|	|	|
234.667 0.01	0.00	0.00	0.010	o	|	|	|	|
234.750 0.01	0.00	0.00	0.010	o	|	|	|	|
234.833 0.01	0.00	0.00	0.010	o	|	|	|	|
234.917 0.01	0.00	0.00	0.010	o	|	|	|	|
235.000 0.01	0.00	0.00	0.010	o	|	|	|	|
235.083 0.01	0.00	0.00	0.010	o	|	|	|	|
235.167 0.01	0.00	0.00	0.010	o	|	|	|	|
235.250 0.01	0.00	0.00	0.010	o	|	|	|	|
235.333 0.01	0.00	0.00	0.010	o	|	|	|	|
235.417 0.01	0.00	0.00	0.010	o	|	|	|	|
235.500 0.01	0.00	0.00	0.010	o	|	|	|	|
235.583 0.01	0.00	0.00	0.010	o	|	|	|	|
235.667 0.01	0.00	0.00	0.010	o	|	|	|	|
235.750 0.01	0.00	0.00	0.010	o	|	|	|	|
235.833 0.01	0.00	0.00	0.009	o	|	|	|	|
235.917 0.01	0.00	0.00	0.009	o	|	|	|	|
236.000 0.01	0.00	0.00	0.009	o	|	|	|	|
236.083 0.01	0.00	0.00	0.009	o	|	|	|	|
236.167 0.01	0.00	0.00	0.009	o	|	|	|	|
236.250 0.01	0.00	0.00	0.009	o	|	|	|	|

236.333 0.01	0.00	0.00	0.009	o	|	|	|	|
236.417 0.01	0.00	0.00	0.009	o	|	|	|	|
236.500 0.01	0.00	0.00	0.009	o	|	|	|	|
236.583 0.01	0.00	0.00	0.009	o	|	|	|	|
236.667 0.01	0.00	0.00	0.009	o	|	|	|	|
236.750 0.01	0.00	0.00	0.009	o	|	|	|	|
236.833 0.01	0.00	0.00	0.009	o	|	|	|	|
236.917 0.01	0.00	0.00	0.009	o	|	|	|	|
237.000 0.01	0.00	0.00	0.009	o	|	|	|	|
237.083 0.01	0.00	0.00	0.009	o	|	|	|	|
237.167 0.01	0.00	0.00	0.009	o	|	|	|	|
237.250 0.01	0.00	0.00	0.009	o	|	|	|	|
237.333 0.01	0.00	0.00	0.009	o	|	|	|	|
237.417 0.01	0.00	0.00	0.009	o	|	|	|	|
237.500 0.01	0.00	0.00	0.009	o	|	|	|	|
237.583 0.01	0.00	0.00	0.009	o	|	|	|	|
237.667 0.01	0.00	0.00	0.009	o	|	|	|	|
237.750 0.01	0.00	0.00	0.009	o	|	|	|	|
237.833 0.01	0.00	0.00	0.009	o	|	|	|	|
237.917 0.01	0.00	0.00	0.009	o	|	|	|	|
238.000 0.01	0.00	0.00	0.009	o	|	|	|	|
238.083 0.01	0.00	0.00	0.009	o	|	|	|	|
238.167 0.01	0.00	0.00	0.009	o	|	|	|	|
238.250 0.01	0.00	0.00	0.009	o	|	|	|	|
238.333 0.01	0.00	0.00	0.009	o	|	|	|	|
238.417 0.01	0.00	0.00	0.009	o	|	|	|	|
238.500 0.01	0.00	0.00	0.009	o	|	|	|	|
238.583 0.01	0.00	0.00	0.009	o	|	|	|	|
238.667 0.01	0.00	0.00	0.009	o	|	|	|	|
238.750 0.01	0.00	0.00	0.009	o	|	|	|	|

238.833 0.01	0.00	0.00	0.009	o	|	|	|	|
238.917 0.01	0.00	0.00	0.009	o	|	|	|	|
239.000 0.01	0.00	0.00	0.009	o	|	|	|	|
239.083 0.01	0.00	0.00	0.009	o	|	|	|	|
239.167 0.01	0.00	0.00	0.009	o	|	|	|	|
239.250 0.01	0.00	0.00	0.009	o	|	|	|	|
239.333 0.01	0.00	0.00	0.009	o	|	|	|	|
239.417 0.01	0.00	0.00	0.009	o	|	|	|	|
239.500 0.01	0.00	0.00	0.009	o	|	|	|	|
239.583 0.01	0.00	0.00	0.009	o	|	|	|	|
239.667 0.01	0.00	0.00	0.009	o	|	|	|	|
239.750 0.01	0.00	0.00	0.009	o	|	|	|	|
239.833 0.01	0.00	0.00	0.008	o	|	|	|	|
239.917 0.01	0.00	0.00	0.008	o	|	|	|	|
240.000 0.01	0.00	0.00	0.008	o	|	|	|	|
240.083 0.01	0.00	0.00	0.008	o	|	|	|	|
240.167 0.01	0.00	0.00	0.008	o	|	|	|	|
240.250 0.01	0.00	0.00	0.008	o	|	|	|	|
240.333 0.01	0.00	0.00	0.008	o	|	|	|	|
240.417 0.01	0.00	0.00	0.008	o	|	|	|	|
240.500 0.01	0.00	0.00	0.008	o	|	|	|	|
240.583 0.01	0.00	0.00	0.008	o	|	|	|	|
240.667 0.01	0.00	0.00	0.008	o	|	|	|	|
240.750 0.01	0.00	0.00	0.008	o	|	|	|	|
240.833 0.01	0.00	0.00	0.008	o	|	|	|	|
240.917 0.01	0.00	0.00	0.008	o	|	|	|	|
241.000 0.01	0.00	0.00	0.008	o	|	|	|	|
241.083 0.01	0.00	0.00	0.008	o	|	|	|	|
241.167 0.01	0.00	0.00	0.008	o	|	|	|	|
241.250 0.01	0.00	0.00	0.008	o	|	|	|	|

241.333 0.01	0.00	0.00	0.008	o	|	|	|	|
241.417 0.01	0.00	0.00	0.008	o	|	|	|	|
241.500 0.01	0.00	0.00	0.008	o	|	|	|	|
241.583 0.01	0.00	0.00	0.008	o	|	|	|	|
241.667 0.01	0.00	0.00	0.008	o	|	|	|	|
241.750 0.01	0.00	0.00	0.008	o	|	|	|	|
241.833 0.01	0.00	0.00	0.008	o	|	|	|	|
241.917 0.01	0.00	0.00	0.008	o	|	|	|	|
242.000 0.01	0.00	0.00	0.008	o	|	|	|	|
242.083 0.01	0.00	0.00	0.008	o	|	|	|	|
242.167 0.01	0.00	0.00	0.008	o	|	|	|	|
242.250 0.01	0.00	0.00	0.008	o	|	|	|	|
242.333 0.01	0.00	0.00	0.008	o	|	|	|	|
242.417 0.01	0.00	0.00	0.008	o	|	|	|	|
242.500 0.01	0.00	0.00	0.008	o	|	|	|	|
242.583 0.01	0.00	0.00	0.008	o	|	|	|	|
242.667 0.01	0.00	0.00	0.008	o	|	|	|	|
242.750 0.01	0.00	0.00	0.008	o	|	|	|	|
242.833 0.01	0.00	0.00	0.008	o	|	|	|	|
242.917 0.01	0.00	0.00	0.008	o	|	|	|	|
243.000 0.01	0.00	0.00	0.008	o	|	|	|	|
243.083 0.01	0.00	0.00	0.008	o	|	|	|	|
243.167 0.01	0.00	0.00	0.008	o	|	|	|	|
243.250 0.01	0.00	0.00	0.008	o	|	|	|	|
243.333 0.01	0.00	0.00	0.008	o	|	|	|	|
243.417 0.01	0.00	0.00	0.008	o	|	|	|	|
243.500 0.01	0.00	0.00	0.008	o	|	|	|	|
243.583 0.01	0.00	0.00	0.008	o	|	|	|	|
243.667 0.01	0.00	0.00	0.008	o	|	|	|	|
243.750 0.01	0.00	0.00	0.008	o	|	|	|	|

243.833 0.01	0.00	0.00	0.008	o	|	|	|	|
243.917 0.01	0.00	0.00	0.008	o	|	|	|	|
244.000 0.01	0.00	0.00	0.008	o	|	|	|	|
244.083 0.01	0.00	0.00	0.008	o	|	|	|	|
244.167 0.01	0.00	0.00	0.008	o	|	|	|	|
244.250 0.01	0.00	0.00	0.008	o	|	|	|	|
244.333 0.01	0.00	0.00	0.008	o	|	|	|	|
244.417 0.01	0.00	0.00	0.007	o	|	|	|	|
244.500 0.01	0.00	0.00	0.007	o	|	|	|	|
244.583 0.01	0.00	0.00	0.007	o	|	|	|	|
244.667 0.01	0.00	0.00	0.007	o	|	|	|	|
244.750 0.01	0.00	0.00	0.007	o	|	|	|	|
244.833 0.01	0.00	0.00	0.007	o	|	|	|	|
244.917 0.01	0.00	0.00	0.007	o	|	|	|	|
245.000 0.01	0.00	0.00	0.007	o	|	|	|	|
245.083 0.01	0.00	0.00	0.007	o	|	|	|	|
245.167 0.01	0.00	0.00	0.007	o	|	|	|	|
245.250 0.01	0.00	0.00	0.007	o	|	|	|	|
245.333 0.01	0.00	0.00	0.007	o	|	|	|	|
245.417 0.01	0.00	0.00	0.007	o	|	|	|	|
245.500 0.01	0.00	0.00	0.007	o	|	|	|	|
245.583 0.01	0.00	0.00	0.007	o	|	|	|	|
245.667 0.01	0.00	0.00	0.007	o	|	|	|	|
245.750 0.01	0.00	0.00	0.007	o	|	|	|	|
245.833 0.01	0.00	0.00	0.007	o	|	|	|	|
245.917 0.01	0.00	0.00	0.007	o	|	|	|	|
246.000 0.01	0.00	0.00	0.007	o	|	|	|	|
246.083 0.01	0.00	0.00	0.007	o	|	|	|	|
246.167 0.01	0.00	0.00	0.007	o	|	|	|	|
246.250 0.01	0.00	0.00	0.007	o	|	|	|	|

246.333 0.01	0.00	0.00	0.007	o	|	|	|	|
246.417 0.01	0.00	0.00	0.007	o	|	|	|	|
246.500 0.01	0.00	0.00	0.007	o	|	|	|	|
246.583 0.01	0.00	0.00	0.007	o	|	|	|	|
246.667 0.01	0.00	0.00	0.007	o	|	|	|	|
246.750 0.01	0.00	0.00	0.007	o	|	|	|	|
246.833 0.01	0.00	0.00	0.007	o	|	|	|	|
246.917 0.01	0.00	0.00	0.007	o	|	|	|	|
247.000 0.01	0.00	0.00	0.007	o	|	|	|	|
247.083 0.01	0.00	0.00	0.007	o	|	|	|	|
247.167 0.01	0.00	0.00	0.007	o	|	|	|	|
247.250 0.01	0.00	0.00	0.007	o	|	|	|	|
247.333 0.01	0.00	0.00	0.007	o	|	|	|	|
247.417 0.01	0.00	0.00	0.007	o	|	|	|	|
247.500 0.01	0.00	0.00	0.007	o	|	|	|	|
247.583 0.01	0.00	0.00	0.007	o	|	|	|	|
247.667 0.01	0.00	0.00	0.007	o	|	|	|	|
247.750 0.01	0.00	0.00	0.007	o	|	|	|	|
247.833 0.01	0.00	0.00	0.007	o	|	|	|	|
247.917 0.01	0.00	0.00	0.007	o	|	|	|	|
248.000 0.01	0.00	0.00	0.007	o	|	|	|	|
248.083 0.01	0.00	0.00	0.007	o	|	|	|	|
248.167 0.01	0.00	0.00	0.007	o	|	|	|	|
248.250 0.01	0.00	0.00	0.007	o	|	|	|	|
248.333 0.01	0.00	0.00	0.007	o	|	|	|	|
248.417 0.01	0.00	0.00	0.007	o	|	|	|	|
248.500 0.01	0.00	0.00	0.007	o	|	|	|	|
248.583 0.01	0.00	0.00	0.007	o	|	|	|	|
248.667 0.01	0.00	0.00	0.007	o	|	|	|	|
248.750 0.01	0.00	0.00	0.007	o	|	|	|	|

248.833 0.01	0.00	0.00	0.007	o	|	|	|	|
248.917 0.01	0.00	0.00	0.007	o	|	|	|	|
249.000 0.01	0.00	0.00	0.007	o	|	|	|	|
249.083 0.01	0.00	0.00	0.007	o	|	|	|	|
249.167 0.01	0.00	0.00	0.007	o	|	|	|	|
249.250 0.01	0.00	0.00	0.007	o	|	|	|	|
249.333 0.01	0.00	0.00	0.007	o	|	|	|	|
249.417 0.01	0.00	0.00	0.007	o	|	|	|	|
249.500 0.01	0.00	0.00	0.007	o	|	|	|	|
249.583 0.01	0.00	0.00	0.006	o	|	|	|	|
249.667 0.01	0.00	0.00	0.006	o	|	|	|	|
249.750 0.01	0.00	0.00	0.006	o	|	|	|	|
249.833 0.01	0.00	0.00	0.006	o	|	|	|	|
249.917 0.01	0.00	0.00	0.006	o	|	|	|	|
250.000 0.01	0.00	0.00	0.006	o	|	|	|	|
250.083 0.01	0.00	0.00	0.006	o	|	|	|	|
250.167 0.01	0.00	0.00	0.006	o	|	|	|	|
250.250 0.01	0.00	0.00	0.006	o	|	|	|	|
250.333 0.01	0.00	0.00	0.006	o	|	|	|	|
250.417 0.01	0.00	0.00	0.006	o	|	|	|	|
250.500 0.01	0.00	0.00	0.006	o	|	|	|	|
250.583 0.01	0.00	0.00	0.006	o	|	|	|	|
250.667 0.01	0.00	0.00	0.006	o	|	|	|	|
250.750 0.01	0.00	0.00	0.006	o	|	|	|	|
250.833 0.01	0.00	0.00	0.006	o	|	|	|	|
250.917 0.01	0.00	0.00	0.006	o	|	|	|	|
251.000 0.01	0.00	0.00	0.006	o	|	|	|	|
251.083 0.01	0.00	0.00	0.006	o	|	|	|	|
251.167 0.01	0.00	0.00	0.006	o	|	|	|	|
251.250 0.01	0.00	0.00	0.006	o	|	|	|	|

251.333 0.01	0.00	0.00	0.006	o	|	|	|	|
251.417 0.01	0.00	0.00	0.006	o	|	|	|	|
251.500 0.01	0.00	0.00	0.006	o	|	|	|	|
251.583 0.01	0.00	0.00	0.006	o	|	|	|	|
251.667 0.01	0.00	0.00	0.006	o	|	|	|	|
251.750 0.01	0.00	0.00	0.006	o	|	|	|	|
251.833 0.01	0.00	0.00	0.006	o	|	|	|	|
251.917 0.01	0.00	0.00	0.006	o	|	|	|	|
252.000 0.01	0.00	0.00	0.006	o	|	|	|	|
252.083 0.01	0.00	0.00	0.006	o	|	|	|	|
252.167 0.01	0.00	0.00	0.006	o	|	|	|	|
252.250 0.01	0.00	0.00	0.006	o	|	|	|	|
252.333 0.01	0.00	0.00	0.006	o	|	|	|	|
252.417 0.01	0.00	0.00	0.006	o	|	|	|	|
252.500 0.01	0.00	0.00	0.006	o	|	|	|	|
252.583 0.01	0.00	0.00	0.006	o	|	|	|	|
252.667 0.01	0.00	0.00	0.006	o	|	|	|	|
252.750 0.01	0.00	0.00	0.006	o	|	|	|	|
252.833 0.01	0.00	0.00	0.006	o	|	|	|	|
252.917 0.01	0.00	0.00	0.006	o	|	|	|	|
253.000 0.01	0.00	0.00	0.006	o	|	|	|	|
253.083 0.01	0.00	0.00	0.006	o	|	|	|	|
253.167 0.01	0.00	0.00	0.006	o	|	|	|	|
253.250 0.01	0.00	0.00	0.006	o	|	|	|	|
253.333 0.01	0.00	0.00	0.006	o	|	|	|	|
253.417 0.01	0.00	0.00	0.006	o	|	|	|	|
253.500 0.01	0.00	0.00	0.006	o	|	|	|	|
253.583 0.01	0.00	0.00	0.006	o	|	|	|	|
253.667 0.01	0.00	0.00	0.006	o	|	|	|	|
253.750 0.01	0.00	0.00	0.006	o	|	|	|	|

253.833 0.01	0.00	0.00	0.006	o	|	|	|	|
253.917 0.01	0.00	0.00	0.006	o	|	|	|	|
254.000 0.01	0.00	0.00	0.006	o	|	|	|	|
254.083 0.01	0.00	0.00	0.006	o	|	|	|	|
254.167 0.01	0.00	0.00	0.006	o	|	|	|	|
254.250 0.01	0.00	0.00	0.006	o	|	|	|	|
254.333 0.01	0.00	0.00	0.006	o	|	|	|	|
254.417 0.01	0.00	0.00	0.006	o	|	|	|	|
254.500 0.01	0.00	0.00	0.006	o	|	|	|	|
254.583 0.01	0.00	0.00	0.006	o	|	|	|	|
254.667 0.01	0.00	0.00	0.006	o	|	|	|	|
254.750 0.01	0.00	0.00	0.006	o	|	|	|	|
254.833 0.01	0.00	0.00	0.006	o	|	|	|	|
254.917 0.01	0.00	0.00	0.006	o	|	|	|	|
255.000 0.01	0.00	0.00	0.006	o	|	|	|	|
255.083 0.01	0.00	0.00	0.006	o	|	|	|	|
255.167 0.01	0.00	0.00	0.006	o	|	|	|	|
255.250 0.01	0.00	0.00	0.006	o	|	|	|	|
255.333 0.01	0.00	0.00	0.006	o	|	|	|	|
255.417 0.01	0.00	0.00	0.006	o	|	|	|	|
255.500 0.01	0.00	0.00	0.006	o	|	|	|	|
255.583 0.01	0.00	0.00	0.005	o	|	|	|	|
255.667 0.01	0.00	0.00	0.005	o	|	|	|	|
255.750 0.01	0.00	0.00	0.005	o	|	|	|	|
255.833 0.01	0.00	0.00	0.005	o	|	|	|	|
255.917 0.01	0.00	0.00	0.005	o	|	|	|	|
256.000 0.01	0.00	0.00	0.005	o	|	|	|	|
256.083 0.01	0.00	0.00	0.005	o	|	|	|	|
256.167 0.01	0.00	0.00	0.005	o	|	|	|	|
256.250 0.01	0.00	0.00	0.005	o	|	|	|	|

256.333 0.01	0.00	0.00	0.005	o	|	|	|	|
256.417 0.01	0.00	0.00	0.005	o	|	|	|	|
256.500 0.01	0.00	0.00	0.005	o	|	|	|	|
256.583 0.01	0.00	0.00	0.005	o	|	|	|	|
256.667 0.01	0.00	0.00	0.005	o	|	|	|	|
256.750 0.01	0.00	0.00	0.005	o	|	|	|	|
256.833 0.01	0.00	0.00	0.005	o	|	|	|	|
256.917 0.01	0.00	0.00	0.005	o	|	|	|	|
257.000 0.01	0.00	0.00	0.005	o	|	|	|	|
257.083 0.01	0.00	0.00	0.005	o	|	|	|	|
257.167 0.01	0.00	0.00	0.005	o	|	|	|	|
257.250 0.01	0.00	0.00	0.005	o	|	|	|	|
257.333 0.01	0.00	0.00	0.005	o	|	|	|	|
257.417 0.01	0.00	0.00	0.005	o	|	|	|	|
257.500 0.01	0.00	0.00	0.005	o	|	|	|	|
257.583 0.01	0.00	0.00	0.005	o	|	|	|	|
257.667 0.01	0.00	0.00	0.005	o	|	|	|	|
257.750 0.01	0.00	0.00	0.005	o	|	|	|	|
257.833 0.01	0.00	0.00	0.005	o	|	|	|	|
257.917 0.01	0.00	0.00	0.005	o	|	|	|	|
258.000 0.01	0.00	0.00	0.005	o	|	|	|	|
258.083 0.01	0.00	0.00	0.005	o	|	|	|	|
258.167 0.01	0.00	0.00	0.005	o	|	|	|	|
258.250 0.01	0.00	0.00	0.005	o	|	|	|	|
258.333 0.01	0.00	0.00	0.005	o	|	|	|	|
258.417 0.01	0.00	0.00	0.005	o	|	|	|	|
258.500 0.01	0.00	0.00	0.005	o	|	|	|	|
258.583 0.01	0.00	0.00	0.005	o	|	|	|	|
258.667 0.01	0.00	0.00	0.005	o	|	|	|	|
258.750 0.01	0.00	0.00	0.005	o	|	|	|	|

258.833 0.01	0.00	0.00	0.005	o	|	|	|	|
258.917 0.01	0.00	0.00	0.005	o	|	|	|	|
259.000 0.01	0.00	0.00	0.005	o	|	|	|	|
259.083 0.01	0.00	0.00	0.005	o	|	|	|	|
259.167 0.01	0.00	0.00	0.005	o	|	|	|	|
259.250 0.01	0.00	0.00	0.005	o	|	|	|	|
259.333 0.01	0.00	0.00	0.005	o	|	|	|	|
259.417 0.01	0.00	0.00	0.005	o	|	|	|	|
259.500 0.01	0.00	0.00	0.005	o	|	|	|	|
259.583 0.01	0.00	0.00	0.005	o	|	|	|	|
259.667 0.01	0.00	0.00	0.005	o	|	|	|	|
259.750 0.01	0.00	0.00	0.005	o	|	|	|	|
259.833 0.01	0.00	0.00	0.005	o	|	|	|	|
259.917 0.01	0.00	0.00	0.005	o	|	|	|	|
260.000 0.01	0.00	0.00	0.005	o	|	|	|	|
260.083 0.01	0.00	0.00	0.005	o	|	|	|	|
260.167 0.01	0.00	0.00	0.005	o	|	|	|	|
260.250 0.01	0.00	0.00	0.005	o	|	|	|	|
260.333 0.01	0.00	0.00	0.005	o	|	|	|	|
260.417 0.01	0.00	0.00	0.005	o	|	|	|	|
260.500 0.01	0.00	0.00	0.005	o	|	|	|	|
260.583 0.01	0.00	0.00	0.005	o	|	|	|	|
260.667 0.01	0.00	0.00	0.005	o	|	|	|	|
260.750 0.01	0.00	0.00	0.005	o	|	|	|	|
260.833 0.01	0.00	0.00	0.005	o	|	|	|	|
260.917 0.01	0.00	0.00	0.005	o	|	|	|	|
261.000 0.01	0.00	0.00	0.005	o	|	|	|	|
261.083 0.01	0.00	0.00	0.005	o	|	|	|	|
261.167 0.01	0.00	0.00	0.005	o	|	|	|	|
261.250 0.01	0.00	0.00	0.005	o	|	|	|	|

261.333 0.01	0.00	0.00	0.005	o	|	|	|	|
261.417 0.01	0.00	0.00	0.005	o	|	|	|	|
261.500 0.01	0.00	0.00	0.005	o	|	|	|	|
261.583 0.01	0.00	0.00	0.005	o	|	|	|	|
261.667 0.01	0.00	0.00	0.005	o	|	|	|	|
261.750 0.01	0.00	0.00	0.005	o	|	|	|	|
261.833 0.01	0.00	0.00	0.005	o	|	|	|	|
261.917 0.01	0.00	0.00	0.005	o	|	|	|	|
262.000 0.01	0.00	0.00	0.005	o	|	|	|	|
262.083 0.01	0.00	0.00	0.005	o	|	|	|	|
262.167 0.01	0.00	0.00	0.005	o	|	|	|	|
262.250 0.01	0.00	0.00	0.005	o	|	|	|	|
262.333 0.01	0.00	0.00	0.005	o	|	|	|	|
262.417 0.01	0.00	0.00	0.005	o	|	|	|	|
262.500 0.01	0.00	0.00	0.005	o	|	|	|	|
262.583 0.01	0.00	0.00	0.005	o	|	|	|	|
262.667 0.01	0.00	0.00	0.005	o	|	|	|	|
262.750 0.01	0.00	0.00	0.005	o	|	|	|	|
262.833 0.01	0.00	0.00	0.004	o	|	|	|	|
262.917 0.01	0.00	0.00	0.004	o	|	|	|	|
263.000 0.01	0.00	0.00	0.004	o	|	|	|	|
263.083 0.01	0.00	0.00	0.004	o	|	|	|	|
263.167 0.01	0.00	0.00	0.004	o	|	|	|	|
263.250 0.01	0.00	0.00	0.004	o	|	|	|	|
263.333 0.01	0.00	0.00	0.004	o	|	|	|	|
263.417 0.01	0.00	0.00	0.004	o	|	|	|	|
263.500 0.01	0.00	0.00	0.004	o	|	|	|	|
263.583 0.01	0.00	0.00	0.004	o	|	|	|	|
263.667 0.01	0.00	0.00	0.004	o	|	|	|	|
263.750 0.01	0.00	0.00	0.004	o	|	|	|	|

263.833 0.01	0.00	0.00	0.004	o	|	|	|	|
263.917 0.01	0.00	0.00	0.004	o	|	|	|	|
264.000 0.01	0.00	0.00	0.004	o	|	|	|	|
264.083 0.01	0.00	0.00	0.004	o	|	|	|	|
264.167 0.01	0.00	0.00	0.004	o	|	|	|	|
264.250 0.01	0.00	0.00	0.004	o	|	|	|	|
264.333 0.01	0.00	0.00	0.004	o	|	|	|	|
264.417 0.01	0.00	0.00	0.004	o	|	|	|	|
264.500 0.01	0.00	0.00	0.004	o	|	|	|	|
264.583 0.01	0.00	0.00	0.004	o	|	|	|	|
264.667 0.01	0.00	0.00	0.004	o	|	|	|	|
264.750 0.01	0.00	0.00	0.004	o	|	|	|	|
264.833 0.01	0.00	0.00	0.004	o	|	|	|	|
264.917 0.01	0.00	0.00	0.004	o	|	|	|	|
265.000 0.01	0.00	0.00	0.004	o	|	|	|	|
265.083 0.01	0.00	0.00	0.004	o	|	|	|	|
265.167 0.01	0.00	0.00	0.004	o	|	|	|	|
265.250 0.01	0.00	0.00	0.004	o	|	|	|	|
265.333 0.01	0.00	0.00	0.004	o	|	|	|	|
265.417 0.01	0.00	0.00	0.004	o	|	|	|	|
265.500 0.01	0.00	0.00	0.004	o	|	|	|	|
265.583 0.01	0.00	0.00	0.004	o	|	|	|	|
265.667 0.01	0.00	0.00	0.004	o	|	|	|	|
265.750 0.01	0.00	0.00	0.004	o	|	|	|	|
265.833 0.01	0.00	0.00	0.004	o	|	|	|	|
265.917 0.01	0.00	0.00	0.004	o	|	|	|	|
266.000 0.01	0.00	0.00	0.004	o	|	|	|	|
266.083 0.01	0.00	0.00	0.004	o	|	|	|	|
266.167 0.01	0.00	0.00	0.004	o	|	|	|	|
266.250 0.01	0.00	0.00	0.004	o	|	|	|	|

266.333 0.01	0.00	0.00	0.004	o	|	|	|	|
266.417 0.01	0.00	0.00	0.004	o	|	|	|	|
266.500 0.01	0.00	0.00	0.004	o	|	|	|	|
266.583 0.01	0.00	0.00	0.004	o	|	|	|	|
266.667 0.01	0.00	0.00	0.004	o	|	|	|	|
266.750 0.01	0.00	0.00	0.004	o	|	|	|	|
266.833 0.01	0.00	0.00	0.004	o	|	|	|	|
266.917 0.01	0.00	0.00	0.004	o	|	|	|	|
267.000 0.01	0.00	0.00	0.004	o	|	|	|	|
267.083 0.00	0.00	0.00	0.004	o	|	|	|	|
267.167 0.00	0.00	0.00	0.004	o	|	|	|	|
267.250 0.00	0.00	0.00	0.004	o	|	|	|	|
267.333 0.00	0.00	0.00	0.004	o	|	|	|	|
267.417 0.00	0.00	0.00	0.004	o	|	|	|	|
267.500 0.00	0.00	0.00	0.004	o	|	|	|	|
267.583 0.00	0.00	0.00	0.004	o	|	|	|	|
267.667 0.00	0.00	0.00	0.004	o	|	|	|	|
267.750 0.00	0.00	0.00	0.004	o	|	|	|	|
267.833 0.00	0.00	0.00	0.004	o	|	|	|	|
267.917 0.00	0.00	0.00	0.004	o	|	|	|	|
268.000 0.00	0.00	0.00	0.004	o	|	|	|	|
268.083 0.00	0.00	0.00	0.004	o	|	|	|	|
268.167 0.00	0.00	0.00	0.004	o	|	|	|	|
268.250 0.00	0.00	0.00	0.004	o	|	|	|	|
268.333 0.00	0.00	0.00	0.004	o	|	|	|	|
268.417 0.00	0.00	0.00	0.004	o	|	|	|	|
268.500 0.00	0.00	0.00	0.004	o	|	|	|	|
268.583 0.00	0.00	0.00	0.004	o	|	|	|	|
268.667 0.00	0.00	0.00	0.004	o	|	|	|	|
268.750 0.00	0.00	0.00	0.004	o	|	|	|	|

268.833 0.00	0.00	0.00	0.004	o	|	|	|	|
268.917 0.00	0.00	0.00	0.004	o	|	|	|	|
269.000 0.00	0.00	0.00	0.004	o	|	|	|	|
269.083 0.00	0.00	0.00	0.004	o	|	|	|	|
269.167 0.00	0.00	0.00	0.004	o	|	|	|	|
269.250 0.00	0.00	0.00	0.004	o	|	|	|	|
269.333 0.00	0.00	0.00	0.004	o	|	|	|	|
269.417 0.00	0.00	0.00	0.004	o	|	|	|	|
269.500 0.00	0.00	0.00	0.004	o	|	|	|	|
269.583 0.00	0.00	0.00	0.004	o	|	|	|	|
269.667 0.00	0.00	0.00	0.004	o	|	|	|	|
269.750 0.00	0.00	0.00	0.004	o	|	|	|	|
269.833 0.00	0.00	0.00	0.004	o	|	|	|	|
269.917 0.00	0.00	0.00	0.004	o	|	|	|	|
270.000 0.00	0.00	0.00	0.004	o	|	|	|	|
270.083 0.00	0.00	0.00	0.004	o	|	|	|	|
270.167 0.00	0.00	0.00	0.004	o	|	|	|	|
270.250 0.00	0.00	0.00	0.004	o	|	|	|	|
270.333 0.00	0.00	0.00	0.004	o	|	|	|	|
270.417 0.00	0.00	0.00	0.004	o	|	|	|	|
270.500 0.00	0.00	0.00	0.004	o	|	|	|	|
270.583 0.00	0.00	0.00	0.004	o	|	|	|	|
270.667 0.00	0.00	0.00	0.004	o	|	|	|	|
270.750 0.00	0.00	0.00	0.004	o	|	|	|	|
270.833 0.00	0.00	0.00	0.004	o	|	|	|	|
270.917 0.00	0.00	0.00	0.004	o	|	|	|	|
271.000 0.00	0.00	0.00	0.004	o	|	|	|	|
271.083 0.00	0.00	0.00	0.004	o	|	|	|	|
271.167 0.00	0.00	0.00	0.004	o	|	|	|	|
271.250 0.00	0.00	0.00	0.004	o	|	|	|	|

271.333 0.00	0.00	0.00	0.004	o	|	|	|	|
271.417 0.00	0.00	0.00	0.004	o	|	|	|	|
271.500 0.00	0.00	0.00	0.004	o	|	|	|	|
271.583 0.00	0.00	0.00	0.004	o	|	|	|	|
271.667 0.00	0.00	0.00	0.004	o	|	|	|	|
271.750 0.00	0.00	0.00	0.004	o	|	|	|	|
271.833 0.00	0.00	0.00	0.004	o	|	|	|	|
271.917 0.00	0.00	0.00	0.003	o	|	|	|	|
272.000 0.00	0.00	0.00	0.003	o	|	|	|	|
272.083 0.00	0.00	0.00	0.003	o	|	|	|	|
272.167 0.00	0.00	0.00	0.003	o	|	|	|	|
272.250 0.00	0.00	0.00	0.003	o	|	|	|	|
272.333 0.00	0.00	0.00	0.003	o	|	|	|	|
272.417 0.00	0.00	0.00	0.003	o	|	|	|	|
272.500 0.00	0.00	0.00	0.003	o	|	|	|	|
272.583 0.00	0.00	0.00	0.003	o	|	|	|	|
272.667 0.00	0.00	0.00	0.003	o	|	|	|	|
272.750 0.00	0.00	0.00	0.003	o	|	|	|	|
272.833 0.00	0.00	0.00	0.003	o	|	|	|	|
272.917 0.00	0.00	0.00	0.003	o	|	|	|	|
273.000 0.00	0.00	0.00	0.003	o	|	|	|	|
273.083 0.00	0.00	0.00	0.003	o	|	|	|	|
273.167 0.00	0.00	0.00	0.003	o	|	|	|	|
273.250 0.00	0.00	0.00	0.003	o	|	|	|	|
273.333 0.00	0.00	0.00	0.003	o	|	|	|	|
273.417 0.00	0.00	0.00	0.003	o	|	|	|	|
273.500 0.00	0.00	0.00	0.003	o	|	|	|	|
273.583 0.00	0.00	0.00	0.003	o	|	|	|	|
273.667 0.00	0.00	0.00	0.003	o	|	|	|	|
273.750 0.00	0.00	0.00	0.003	o	|	|	|	|

273.833 0.00	0.00	0.00	0.003	o	|	|	|	|
273.917 0.00	0.00	0.00	0.003	o	|	|	|	|
274.000 0.00	0.00	0.00	0.003	o	|	|	|	|
274.083 0.00	0.00	0.00	0.003	o	|	|	|	|
274.167 0.00	0.00	0.00	0.003	o	|	|	|	|
274.250 0.00	0.00	0.00	0.003	o	|	|	|	|
274.333 0.00	0.00	0.00	0.003	o	|	|	|	|
274.417 0.00	0.00	0.00	0.003	o	|	|	|	|
274.500 0.00	0.00	0.00	0.003	o	|	|	|	|
274.583 0.00	0.00	0.00	0.003	o	|	|	|	|
274.667 0.00	0.00	0.00	0.003	o	|	|	|	|
274.750 0.00	0.00	0.00	0.003	o	|	|	|	|
274.833 0.00	0.00	0.00	0.003	o	|	|	|	|
274.917 0.00	0.00	0.00	0.003	o	|	|	|	|
275.000 0.00	0.00	0.00	0.003	o	|	|	|	|
275.083 0.00	0.00	0.00	0.003	o	|	|	|	|
275.167 0.00	0.00	0.00	0.003	o	|	|	|	|
275.250 0.00	0.00	0.00	0.003	o	|	|	|	|
275.333 0.00	0.00	0.00	0.003	o	|	|	|	|
275.417 0.00	0.00	0.00	0.003	o	|	|	|	|
275.500 0.00	0.00	0.00	0.003	o	|	|	|	|
275.583 0.00	0.00	0.00	0.003	o	|	|	|	|
275.667 0.00	0.00	0.00	0.003	o	|	|	|	|
275.750 0.00	0.00	0.00	0.003	o	|	|	|	|
275.833 0.00	0.00	0.00	0.003	o	|	|	|	|
275.917 0.00	0.00	0.00	0.003	o	|	|	|	|
276.000 0.00	0.00	0.00	0.003	o	|	|	|	|
276.083 0.00	0.00	0.00	0.003	o	|	|	|	|
276.167 0.00	0.00	0.00	0.003	o	|	|	|	|
276.250 0.00	0.00	0.00	0.003	o	|	|	|	|

276.333	0.00	0.00	0.003	o	|	|	|	|
0.00								
276.417	0.00	0.00	0.003	o	|	|	|	|
0.00								
276.500	0.00	0.00	0.003	o	|	|	|	|
0.00								
276.583	0.00	0.00	0.003	o	|	|	|	|
0.00								
276.667	0.00	0.00	0.003	o	|	|	|	|
0.00								
276.750	0.00	0.00	0.003	o	|	|	|	|
0.00								
276.833	0.00	0.00	0.003	o	|	|	|	|
0.00								
276.917	0.00	0.00	0.003	o	|	|	|	|
0.00								
277.000	0.00	0.00	0.003	o	|	|	|	|
0.00								
277.083	0.00	0.00	0.003	o	|	|	|	|
0.00								
277.167	0.00	0.00	0.003	o	|	|	|	|
0.00								
277.250	0.00	0.00	0.003	o	|	|	|	|
0.00								
277.333	0.00	0.00	0.003	o	|	|	|	|
0.00								
277.417	0.00	0.00	0.003	o	|	|	|	|
0.00								
277.500	0.00	0.00	0.003	o	|	|	|	|
0.00								
277.583	0.00	0.00	0.003	o				
0.00								
277.667	0.00	0.00	0.003	o				
0.00								

Remaining water in basin = 0.00 (Ac.Ft)

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*****HYDROGRAPH
DATA*****
      Number of intervals = 3332
      Time interval = 5.0 (Min.)
      Maximum/Peak flow rate = 0.268 (CFS)
      Total volume = 2.309 (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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Unit Hydrograph Analysis

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8.2

Study date 02/18/16 File: VDA3to724100.out

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

Program License Serial Number 6232

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

English Units used in output format

VDA Area 3 100yr 24hr Post Dev

--
Drainage Area = 19.00(Ac.) = 0.030 Sq. Mi.
0.030 Sq. Mi. Drainage Area for Depth-Area Areal Adjustment = 19.00(Ac.) =
Length along longest watercourse = 1919.00(Ft.)
(Ft.) Length along longest watercourse measured to centroid = 1207.00
Length along longest watercourse = 0.363 Mi.
Mi. Length along longest watercourse measured to centroid = 0.229

Difference in elevation = 9.00(Ft.)
Slope along watercourse = 24.7629 Ft./Mi.
Average Manning's 'N' = 0.015
Lag time = 0.076 Hr.
Lag time = 4.56 Min.
25% of lag time = 1.14 Min.
40% of lag time = 1.82 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]

19.00 1.14 21.66

100 YEAR Area rainfall data:

Area(Ac.)[1] Rainfall(In)[2] Weighting[1*2]
19.00 4.47 84.93

STORM EVENT (YEAR) = 100.00
Area Averaged 2-Year Rainfall = 1.140(In)
Area Averaged 100-Year Rainfall = 4.470(In)

Point rain (area averaged) = 4.470(In)
Areal adjustment factor = 100.00 %
Adjusted average point rain = 4.470(In)

Sub-Area Data:

Area(Ac.) Runoff Index Impervious %
19.000 56.00 0.900
Total Area Entered = 19.00(Ac.)

RI	RI	Infil. Rate	Impervious	Adj. Infil. Rate	Area%	F
(In/Hr)	AMC2	(In/Hr)	(Dec.%)	(In/Hr)	(Dec.)	
0.058	56.0	74.8	0.305	0.900	0.058	1.000
0.058						Sum (F) =

Area averaged mean soil loss (F) (In/Hr) = 0.058
Minimum soil loss rate ((In/Hr)) = 0.029
(for 24 hour storm duration)
Soil loss rate (decimal) = 0.180

Unit Hydrograph
DESERT S-Curve

Unit Hydrograph Data

Unit time period	Time % of lag	Distribution	Unit Hydrograph
(hrs)		Graph %	(CFS)
1	0.083	109.628	20.335
2	0.167	219.257	50.300
3	0.250	328.885	15.632
4	0.333	438.514	6.793
5	0.417	548.142	3.577
6	0.500	657.770	1.723
7	0.583	767.399	1.172
8	0.667	877.027	0.468
		Sum = 100.000	Sum= 19.148

The following loss rate calculations reflect use of the minimum

calculated loss

rate subtracted from the Storm Rain to produce the maximum Effective Rain value

Unit	Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr)		Effective (In/Hr)
				Max	Low	
1	0.08	0.07	0.036	(0.103)	0.006	0.029
2	0.17	0.07	0.036	(0.102)	0.006	0.029
3	0.25	0.07	0.036	(0.102)	0.006	0.029
4	0.33	0.10	0.054	(0.102)	0.010	0.044
5	0.42	0.10	0.054	(0.101)	0.010	0.044
6	0.50	0.10	0.054	(0.101)	0.010	0.044
7	0.58	0.10	0.054	(0.100)	0.010	0.044
8	0.67	0.10	0.054	(0.100)	0.010	0.044
9	0.75	0.10	0.054	(0.100)	0.010	0.044
10	0.83	0.13	0.072	(0.099)	0.013	0.059
11	0.92	0.13	0.072	(0.099)	0.013	0.059
12	1.00	0.13	0.072	(0.099)	0.013	0.059
13	1.08	0.10	0.054	(0.098)	0.010	0.044
14	1.17	0.10	0.054	(0.098)	0.010	0.044
15	1.25	0.10	0.054	(0.097)	0.010	0.044
16	1.33	0.10	0.054	(0.097)	0.010	0.044
17	1.42	0.10	0.054	(0.097)	0.010	0.044
18	1.50	0.10	0.054	(0.096)	0.010	0.044
19	1.58	0.10	0.054	(0.096)	0.010	0.044
20	1.67	0.10	0.054	(0.095)	0.010	0.044
21	1.75	0.10	0.054	(0.095)	0.010	0.044
22	1.83	0.13	0.072	(0.095)	0.013	0.059
23	1.92	0.13	0.072	(0.094)	0.013	0.059
24	2.00	0.13	0.072	(0.094)	0.013	0.059
25	2.08	0.13	0.072	(0.094)	0.013	0.059
26	2.17	0.13	0.072	(0.093)	0.013	0.059
27	2.25	0.13	0.072	(0.093)	0.013	0.059
28	2.33	0.13	0.072	(0.092)	0.013	0.059
29	2.42	0.13	0.072	(0.092)	0.013	0.059
30	2.50	0.13	0.072	(0.092)	0.013	0.059
31	2.58	0.17	0.089	(0.091)	0.016	0.073
32	2.67	0.17	0.089	(0.091)	0.016	0.073
33	2.75	0.17	0.089	(0.091)	0.016	0.073
34	2.83	0.17	0.089	(0.090)	0.016	0.073
35	2.92	0.17	0.089	(0.090)	0.016	0.073
36	3.00	0.17	0.089	(0.089)	0.016	0.073
37	3.08	0.17	0.089	(0.089)	0.016	0.073
38	3.17	0.17	0.089	(0.089)	0.016	0.073
39	3.25	0.17	0.089	(0.088)	0.016	0.073
40	3.33	0.17	0.089	(0.088)	0.016	0.073
41	3.42	0.17	0.089	(0.088)	0.016	0.073
42	3.50	0.17	0.089	(0.087)	0.016	0.073
43	3.58	0.17	0.089	(0.087)	0.016	0.073
44	3.67	0.17	0.089	(0.086)	0.016	0.073
45	3.75	0.17	0.089	(0.086)	0.016	0.073
46	3.83	0.20	0.107	(0.086)	0.019	0.088
47	3.92	0.20	0.107	(0.085)	0.019	0.088
48	4.00	0.20	0.107	(0.085)	0.019	0.088
49	4.08	0.20	0.107	(0.085)	0.019	0.088
50	4.17	0.20	0.107	(0.084)	0.019	0.088
51	4.25	0.20	0.107	(0.084)	0.019	0.088
52	4.33	0.23	0.125	(0.084)	0.023	0.103
53	4.42	0.23	0.125	(0.083)	0.023	0.103
54	4.50	0.23	0.125	(0.083)	0.023	0.103

55	4.58	0.23	0.125	(0.082)	0.023	0.103
56	4.67	0.23	0.125	(0.082)	0.023	0.103
57	4.75	0.23	0.125	(0.082)	0.023	0.103
58	4.83	0.27	0.143	(0.081)	0.026	0.117
59	4.92	0.27	0.143	(0.081)	0.026	0.117
60	5.00	0.27	0.143	(0.081)	0.026	0.117
61	5.08	0.20	0.107	(0.080)	0.019	0.088
62	5.17	0.20	0.107	(0.080)	0.019	0.088
63	5.25	0.20	0.107	(0.080)	0.019	0.088
64	5.33	0.23	0.125	(0.079)	0.023	0.103
65	5.42	0.23	0.125	(0.079)	0.023	0.103
66	5.50	0.23	0.125	(0.079)	0.023	0.103
67	5.58	0.27	0.143	(0.078)	0.026	0.117
68	5.67	0.27	0.143	(0.078)	0.026	0.117
69	5.75	0.27	0.143	(0.078)	0.026	0.117
70	5.83	0.27	0.143	(0.077)	0.026	0.117
71	5.92	0.27	0.143	(0.077)	0.026	0.117
72	6.00	0.27	0.143	(0.077)	0.026	0.117
73	6.08	0.30	0.161	(0.076)	0.029	0.132
74	6.17	0.30	0.161	(0.076)	0.029	0.132
75	6.25	0.30	0.161	(0.076)	0.029	0.132
76	6.33	0.30	0.161	(0.075)	0.029	0.132
77	6.42	0.30	0.161	(0.075)	0.029	0.132
78	6.50	0.30	0.161	(0.075)	0.029	0.132
79	6.58	0.33	0.179	(0.074)	0.032	0.147
80	6.67	0.33	0.179	(0.074)	0.032	0.147
81	6.75	0.33	0.179	(0.074)	0.032	0.147
82	6.83	0.33	0.179	(0.073)	0.032	0.147
83	6.92	0.33	0.179	(0.073)	0.032	0.147
84	7.00	0.33	0.179	(0.073)	0.032	0.147
85	7.08	0.33	0.179	(0.072)	0.032	0.147
86	7.17	0.33	0.179	(0.072)	0.032	0.147
87	7.25	0.33	0.179	(0.072)	0.032	0.147
88	7.33	0.37	0.197	(0.071)	0.035	0.161
89	7.42	0.37	0.197	(0.071)	0.035	0.161
90	7.50	0.37	0.197	(0.071)	0.035	0.161
91	7.58	0.40	0.215	(0.070)	0.039	0.176
92	7.67	0.40	0.215	(0.070)	0.039	0.176
93	7.75	0.40	0.215	(0.070)	0.039	0.176
94	7.83	0.43	0.232	(0.069)	0.042	0.191
95	7.92	0.43	0.232	(0.069)	0.042	0.191
96	8.00	0.43	0.232	(0.069)	0.042	0.191
97	8.08	0.50	0.268	(0.068)	0.048	0.220
98	8.17	0.50	0.268	(0.068)	0.048	0.220
99	8.25	0.50	0.268	(0.068)	0.048	0.220
100	8.33	0.50	0.268	(0.067)	0.048	0.220
101	8.42	0.50	0.268	(0.067)	0.048	0.220
102	8.50	0.50	0.268	(0.067)	0.048	0.220
103	8.58	0.53	0.286	(0.066)	0.051	0.235
104	8.67	0.53	0.286	(0.066)	0.051	0.235
105	8.75	0.53	0.286	(0.066)	0.051	0.235
106	8.83	0.57	0.304	(0.066)	0.055	0.249
107	8.92	0.57	0.304	(0.065)	0.055	0.249
108	9.00	0.57	0.304	(0.065)	0.055	0.249
109	9.08	0.63	0.340	(0.065)	0.061	0.279
110	9.17	0.63	0.340	(0.064)	0.061	0.279
111	9.25	0.63	0.340	(0.064)	0.061	0.279
112	9.33	0.67	0.358	0.064 (0.064)		0.294
113	9.42	0.67	0.358	0.063 (0.064)		0.294
114	9.50	0.67	0.358	0.063 (0.064)		0.295

115	9.58	0.70	0.375	0.063	(0.068)	0.313
116	9.67	0.70	0.375	0.062	(0.068)	0.313
117	9.75	0.70	0.375	0.062	(0.068)	0.313
118	9.83	0.73	0.393	0.062	(0.071)	0.331
119	9.92	0.73	0.393	0.062	(0.071)	0.332
120	10.00	0.73	0.393	0.061	(0.071)	0.332
121	10.08	0.50	0.268	(0.061)	0.048	0.220
122	10.17	0.50	0.268	(0.061)	0.048	0.220
123	10.25	0.50	0.268	(0.060)	0.048	0.220
124	10.33	0.50	0.268	(0.060)	0.048	0.220
125	10.42	0.50	0.268	(0.060)	0.048	0.220
126	10.50	0.50	0.268	(0.060)	0.048	0.220
127	10.58	0.67	0.358	0.059	(0.064)	0.298
128	10.67	0.67	0.358	0.059	(0.064)	0.299
129	10.75	0.67	0.358	0.059	(0.064)	0.299
130	10.83	0.67	0.358	0.058	(0.064)	0.299
131	10.92	0.67	0.358	0.058	(0.064)	0.300
132	11.00	0.67	0.358	0.058	(0.064)	0.300
133	11.08	0.63	0.340	0.057	(0.061)	0.282
134	11.17	0.63	0.340	0.057	(0.061)	0.282
135	11.25	0.63	0.340	0.057	(0.061)	0.283
136	11.33	0.63	0.340	0.057	(0.061)	0.283
137	11.42	0.63	0.340	0.056	(0.061)	0.283
138	11.50	0.63	0.340	0.056	(0.061)	0.284
139	11.58	0.57	0.304	(0.056)	0.055	0.249
140	11.67	0.57	0.304	(0.056)	0.055	0.249
141	11.75	0.57	0.304	(0.055)	0.055	0.249
142	11.83	0.60	0.322	0.055	(0.058)	0.267
143	11.92	0.60	0.322	0.055	(0.058)	0.267
144	12.00	0.60	0.322	0.054	(0.058)	0.267
145	12.08	0.83	0.447	0.054	(0.080)	0.393
146	12.17	0.83	0.447	0.054	(0.080)	0.393
147	12.25	0.83	0.447	0.054	(0.080)	0.393
148	12.33	0.87	0.465	0.053	(0.084)	0.412
149	12.42	0.87	0.465	0.053	(0.084)	0.412
150	12.50	0.87	0.465	0.053	(0.084)	0.412
151	12.58	0.93	0.501	0.053	(0.090)	0.448
152	12.67	0.93	0.501	0.052	(0.090)	0.448
153	12.75	0.93	0.501	0.052	(0.090)	0.449
154	12.83	0.97	0.519	0.052	(0.093)	0.467
155	12.92	0.97	0.519	0.051	(0.093)	0.467
156	13.00	0.97	0.519	0.051	(0.093)	0.467
157	13.08	1.13	0.608	0.051	(0.109)	0.557
158	13.17	1.13	0.608	0.051	(0.109)	0.557
159	13.25	1.13	0.608	0.050	(0.109)	0.557
160	13.33	1.13	0.608	0.050	(0.109)	0.558
161	13.42	1.13	0.608	0.050	(0.109)	0.558
162	13.50	1.13	0.608	0.050	(0.109)	0.558
163	13.58	0.77	0.411	0.049	(0.074)	0.362
164	13.67	0.77	0.411	0.049	(0.074)	0.362
165	13.75	0.77	0.411	0.049	(0.074)	0.362
166	13.83	0.77	0.411	0.049	(0.074)	0.363
167	13.92	0.77	0.411	0.048	(0.074)	0.363
168	14.00	0.77	0.411	0.048	(0.074)	0.363
169	14.08	0.90	0.483	0.048	(0.087)	0.435
170	14.17	0.90	0.483	0.048	(0.087)	0.435
171	14.25	0.90	0.483	0.047	(0.087)	0.435
172	14.33	0.87	0.465	0.047	(0.084)	0.418
173	14.42	0.87	0.465	0.047	(0.084)	0.418
174	14.50	0.87	0.465	0.047	(0.084)	0.418

175	14.58	0.87	0.465	0.046	(0.084)	0.418
176	14.67	0.87	0.465	0.046	(0.084)	0.419
177	14.75	0.87	0.465	0.046	(0.084)	0.419
178	14.83	0.83	0.447	0.046	(0.080)	0.401
179	14.92	0.83	0.447	0.046	(0.080)	0.401
180	15.00	0.83	0.447	0.045	(0.080)	0.402
181	15.08	0.80	0.429	0.045	(0.077)	0.384
182	15.17	0.80	0.429	0.045	(0.077)	0.384
183	15.25	0.80	0.429	0.045	(0.077)	0.384
184	15.33	0.77	0.411	0.044	(0.074)	0.367
185	15.42	0.77	0.411	0.044	(0.074)	0.367
186	15.50	0.77	0.411	0.044	(0.074)	0.367
187	15.58	0.63	0.340	0.044	(0.061)	0.296
188	15.67	0.63	0.340	0.043	(0.061)	0.296
189	15.75	0.63	0.340	0.043	(0.061)	0.296
190	15.83	0.63	0.340	0.043	(0.061)	0.297
191	15.92	0.63	0.340	0.043	(0.061)	0.297
192	16.00	0.63	0.340	0.043	(0.061)	0.297
193	16.08	0.13	0.072	(0.042)	0.013	0.059
194	16.17	0.13	0.072	(0.042)	0.013	0.059
195	16.25	0.13	0.072	(0.042)	0.013	0.059
196	16.33	0.13	0.072	(0.042)	0.013	0.059
197	16.42	0.13	0.072	(0.042)	0.013	0.059
198	16.50	0.13	0.072	(0.041)	0.013	0.059
199	16.58	0.10	0.054	(0.041)	0.010	0.044
200	16.67	0.10	0.054	(0.041)	0.010	0.044
201	16.75	0.10	0.054	(0.041)	0.010	0.044
202	16.83	0.10	0.054	(0.040)	0.010	0.044
203	16.92	0.10	0.054	(0.040)	0.010	0.044
204	17.00	0.10	0.054	(0.040)	0.010	0.044
205	17.08	0.17	0.089	(0.040)	0.016	0.073
206	17.17	0.17	0.089	(0.040)	0.016	0.073
207	17.25	0.17	0.089	(0.039)	0.016	0.073
208	17.33	0.17	0.089	(0.039)	0.016	0.073
209	17.42	0.17	0.089	(0.039)	0.016	0.073
210	17.50	0.17	0.089	(0.039)	0.016	0.073
211	17.58	0.17	0.089	(0.039)	0.016	0.073
212	17.67	0.17	0.089	(0.038)	0.016	0.073
213	17.75	0.17	0.089	(0.038)	0.016	0.073
214	17.83	0.13	0.072	(0.038)	0.013	0.059
215	17.92	0.13	0.072	(0.038)	0.013	0.059
216	18.00	0.13	0.072	(0.038)	0.013	0.059
217	18.08	0.13	0.072	(0.038)	0.013	0.059
218	18.17	0.13	0.072	(0.037)	0.013	0.059
219	18.25	0.13	0.072	(0.037)	0.013	0.059
220	18.33	0.13	0.072	(0.037)	0.013	0.059
221	18.42	0.13	0.072	(0.037)	0.013	0.059
222	18.50	0.13	0.072	(0.037)	0.013	0.059
223	18.58	0.10	0.054	(0.036)	0.010	0.044
224	18.67	0.10	0.054	(0.036)	0.010	0.044
225	18.75	0.10	0.054	(0.036)	0.010	0.044
226	18.83	0.07	0.036	(0.036)	0.006	0.029
227	18.92	0.07	0.036	(0.036)	0.006	0.029
228	19.00	0.07	0.036	(0.036)	0.006	0.029
229	19.08	0.10	0.054	(0.035)	0.010	0.044
230	19.17	0.10	0.054	(0.035)	0.010	0.044
231	19.25	0.10	0.054	(0.035)	0.010	0.044
232	19.33	0.13	0.072	(0.035)	0.013	0.059
233	19.42	0.13	0.072	(0.035)	0.013	0.059
234	19.50	0.13	0.072	(0.035)	0.013	0.059

235	19.58	0.10	0.054	(0.034)	0.010	0.044
236	19.67	0.10	0.054	(0.034)	0.010	0.044
237	19.75	0.10	0.054	(0.034)	0.010	0.044
238	19.83	0.07	0.036	(0.034)	0.006	0.029
239	19.92	0.07	0.036	(0.034)	0.006	0.029
240	20.00	0.07	0.036	(0.034)	0.006	0.029
241	20.08	0.10	0.054	(0.034)	0.010	0.044
242	20.17	0.10	0.054	(0.033)	0.010	0.044
243	20.25	0.10	0.054	(0.033)	0.010	0.044
244	20.33	0.10	0.054	(0.033)	0.010	0.044
245	20.42	0.10	0.054	(0.033)	0.010	0.044
246	20.50	0.10	0.054	(0.033)	0.010	0.044
247	20.58	0.10	0.054	(0.033)	0.010	0.044
248	20.67	0.10	0.054	(0.033)	0.010	0.044
249	20.75	0.10	0.054	(0.032)	0.010	0.044
250	20.83	0.07	0.036	(0.032)	0.006	0.029
251	20.92	0.07	0.036	(0.032)	0.006	0.029
252	21.00	0.07	0.036	(0.032)	0.006	0.029
253	21.08	0.10	0.054	(0.032)	0.010	0.044
254	21.17	0.10	0.054	(0.032)	0.010	0.044
255	21.25	0.10	0.054	(0.032)	0.010	0.044
256	21.33	0.07	0.036	(0.032)	0.006	0.029
257	21.42	0.07	0.036	(0.031)	0.006	0.029
258	21.50	0.07	0.036	(0.031)	0.006	0.029
259	21.58	0.10	0.054	(0.031)	0.010	0.044
260	21.67	0.10	0.054	(0.031)	0.010	0.044
261	21.75	0.10	0.054	(0.031)	0.010	0.044
262	21.83	0.07	0.036	(0.031)	0.006	0.029
263	21.92	0.07	0.036	(0.031)	0.006	0.029
264	22.00	0.07	0.036	(0.031)	0.006	0.029
265	22.08	0.10	0.054	(0.031)	0.010	0.044
266	22.17	0.10	0.054	(0.030)	0.010	0.044
267	22.25	0.10	0.054	(0.030)	0.010	0.044
268	22.33	0.07	0.036	(0.030)	0.006	0.029
269	22.42	0.07	0.036	(0.030)	0.006	0.029
270	22.50	0.07	0.036	(0.030)	0.006	0.029
271	22.58	0.07	0.036	(0.030)	0.006	0.029
272	22.67	0.07	0.036	(0.030)	0.006	0.029
273	22.75	0.07	0.036	(0.030)	0.006	0.029
274	22.83	0.07	0.036	(0.030)	0.006	0.029
275	22.92	0.07	0.036	(0.030)	0.006	0.029
276	23.00	0.07	0.036	(0.030)	0.006	0.029
277	23.08	0.07	0.036	(0.030)	0.006	0.029
278	23.17	0.07	0.036	(0.029)	0.006	0.029
279	23.25	0.07	0.036	(0.029)	0.006	0.029
280	23.33	0.07	0.036	(0.029)	0.006	0.029
281	23.42	0.07	0.036	(0.029)	0.006	0.029
282	23.50	0.07	0.036	(0.029)	0.006	0.029
283	23.58	0.07	0.036	(0.029)	0.006	0.029
284	23.67	0.07	0.036	(0.029)	0.006	0.029
285	23.75	0.07	0.036	(0.029)	0.006	0.029
286	23.83	0.07	0.036	(0.029)	0.006	0.029
287	23.92	0.07	0.036	(0.029)	0.006	0.029
288	24.00	0.07	0.036	(0.029)	0.006	0.029

(Loss Rate Not Used)

Sum = 100.0 Sum = 45.8

Flood volume = Effective rainfall 3.81(In)
times area 19.0(Ac.)/[(In)/(Ft.)] = 6.0(Ac.Ft)

Total soil loss = 0.66(In)

Total soil loss = 1.040(Ac.Ft)

Total rainfall = 4.47(In)
 Flood volume = 262981.9 Cubic Feet
 Total soil loss = 45302.6 Cubic Feet

Peak flow rate of this hydrograph = 10.660(CFS)

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

Hydrograph in 5 Minute intervals ((CFS))

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

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	5.0	10.0	15.0
0+ 5	0.0008	0.11	Q	|	|	|
0+10	0.0035	0.40	Q	|	|	|
0+15	0.0069	0.48	Q	|	|	|
0+20	0.0109	0.58	VQ	|	|	|
0+25	0.0160	0.74	VQ	|	|	|
0+30	0.0214	0.79	VQ	|	|	|
0+35	0.0271	0.82	VQ	|	|	|
0+40	0.0328	0.83	VQ	|	|	|
0+45	0.0386	0.84	VQ	|	|	|
0+50	0.0448	0.90	VQ	|	|	|
0+55	0.0519	1.04	V Q	|	|	|
1+ 0	0.0594	1.08	V Q	|	|	|
1+ 5	0.0666	1.05	V Q	|	|	|
1+10	0.0729	0.92	VQ	|	|	|
1+15	0.0790	0.88	VQ	|	|	|
1+20	0.0849	0.86	VQ	|	|	|
1+25	0.0908	0.85	VQ	|	|	|
1+30	0.0966	0.85	VQ	|	|	|
1+35	0.1024	0.84	VQ	|	|	|

1+40	0.1082	0.84	VQ	|	|	|
1+45	0.1140	0.84	VQ	|	|	|
1+50	0.1202	0.90	VQ	|	|	|
1+55	0.1274	1.04	V Q	|	|	|
2+ 0	0.1349	1.08	V Q	|	|	|
2+ 5	0.1425	1.10	V Q	|	|	|
2+10	0.1501	1.11	V Q	|	|	|
2+15	0.1578	1.12	|VQ	|	|	|
2+20	0.1656	1.12	|VQ	|	|	|
2+25	0.1733	1.12	|VQ	|	|	|
2+30	0.1811	1.12	|VQ	|	|	|
2+35	0.1892	1.18	|VQ	|	|	|
2+40	0.1983	1.32	|VQ	|	|	|
2+45	0.2077	1.37	|VQ	|	|	|
2+50	0.2172	1.38	|VQ	|	|	|
2+55	0.2268	1.39	|VQ	|	|	|
3+ 0	0.2365	1.40	|VQ	|	|	|
3+ 5	0.2461	1.40	|VQ	|	|	|
3+10	0.2558	1.40	|VQ	|	|	|
3+15	0.2655	1.40	|VQ	|	|	|
3+20	0.2752	1.40	|VQ	|	|	|
3+25	0.2848	1.40	|VQ	|	|	|
3+30	0.2945	1.40	|VQ	|	|	|
3+35	0.3042	1.40	| Q	|	|	|
3+40	0.3138	1.40	| Q	|	|	|
3+45	0.3235	1.40	| Q	|	|	|
3+50	0.3336	1.46	| Q	|	|	|
3+55	0.3446	1.60	| VQ	|	|	|
4+ 0	0.3560	1.65	| VQ	|	|	|
4+ 5	0.3674	1.67	| VQ	|	|	|

4+10	0.3790	1.68	VQ			
4+15	0.3906	1.68	VQ			
4+20	0.4025	1.74	VQ			
4+25	0.4155	1.88	VQ			
4+30	0.4288	1.93	VQ			
4+35	0.4422	1.95	VQ			
4+40	0.4557	1.96	Q			
4+45	0.4692	1.96	Q			
4+50	0.4831	2.02	VQ			
4+55	0.4980	2.16	VQ			
5+ 0	0.5132	2.21	VQ			
5+ 5	0.5278	2.11	VQ			
5+10	0.5405	1.84	Q			
5+15	0.5526	1.76	Q			
5+20	0.5648	1.78	Q			
5+25	0.5779	1.90	Q			
5+30	0.5913	1.94	Q			
5+35	0.6051	2.01	Q			
5+40	0.6199	2.16	Q			
5+45	0.6351	2.20	Q			
5+50	0.6504	2.23	Q			
5+55	0.6658	2.24	Q			
6+ 0	0.6813	2.24	Q			
6+ 5	0.6972	2.30	Q			
6+10	0.7140	2.45	Q			
6+15	0.7311	2.49	Q			
6+20	0.7484	2.51	VQ			
6+25	0.7658	2.52	Q			
6+30	0.7831	2.52	Q			
6+35	0.8009	2.58	Q			

6+40	0.8197	2.73	Q			
6+45	0.8388	2.77	Q			
6+50	0.8580	2.79	Q			
6+55	0.8773	2.80	Q			
7+ 0	0.8966	2.80	Q			
7+ 5	0.9159	2.81	QV			
7+10	0.9353	2.81	QV			
7+15	0.9546	2.81	QV			
7+20	0.9744	2.87	QV			
7+25	0.9951	3.01	Q			
7+30	1.0161	3.05	Q			
7+35	1.0376	3.13	Q			
7+40	1.0602	3.28	QV			
7+45	1.0831	3.33	QV			
7+50	1.1066	3.41	QV			
7+55	1.1311	3.56	Q			
8+ 0	1.1559	3.61	Q			
8+ 5	1.1817	3.74	Q			
8+10	1.2095	4.04	Q			
8+15	1.2380	4.13	Q			
8+20	1.2667	4.17	Q			
8+25	1.2956	4.19	Q			
8+30	1.3246	4.20	Q			
8+35	1.3540	4.27	Q			
8+40	1.3844	4.41	QV			
8+45	1.4150	4.46	QV			
8+50	1.4462	4.53	Q			
8+55	1.4785	4.68	Q			
9+ 0	1.5111	4.73	QV			
9+ 5	1.5446	4.87	QV			

9+10	1.5802	5.16	|	Q	|	|
9+15	1.6164	5.25	|	Q	|	|
9+20	1.6533	5.36	|	Q	|	|
9+25	1.6913	5.53	|	|Q	|	|
9+30	1.7298	5.59	|	|Q	|	|
9+35	1.7690	5.69	|	|Q	|	|
9+40	1.8095	5.88	|	|Q	|	|
9+45	1.8504	5.94	|	|QV	|	|
9+50	1.8920	6.04	|	| Q	|	|
9+55	1.9350	6.24	|	| Q	|	|
10+ 0	1.9784	6.30	|	| QV	|	|
10+ 5	2.0190	5.90	|	|Q V	|	|
10+10	2.0522	4.83	|	Q| V	|	|
10+15	2.0832	4.50	|	Q| V	|	|
10+20	2.1133	4.36	|	Q | V	|	|
10+25	2.1428	4.29	|	Q | V	|	|
10+30	2.1721	4.25	|	Q | V	|	|
10+35	2.2032	4.53	|	Q| V	|	|
10+40	2.2396	5.28	|	Q V	|	|
10+45	2.2776	5.51	|	|Q V	|	|
10+50	2.3163	5.62	|	|Q V	|	|
10+55	2.3554	5.68	|	|Q V	|	|
11+ 0	2.3947	5.71	|	|Q V	|	|
11+ 5	2.4338	5.67	|	|Q V	|	|
11+10	2.4717	5.51	|	|Q V	|	|
11+15	2.5093	5.46	|	Q V	|	|
11+20	2.5467	5.44	|	Q V	|	|
11+25	2.5841	5.43	|	Q V	|	|
11+30	2.6215	5.43	|	Q V	|	|
11+35	2.6580	5.30	|	Q V	|	|

11+40	2.6922	4.97	|	Q|	V	|	|
11+45	2.7257	4.86	|	Q|	V	|	|
11+50	2.7594	4.89	|	Q|	V	|	|
11+55	2.7941	5.04	|	Q	V	|	|
12+ 0	2.8291	5.08	|	Q	V	|	|
12+ 5	2.8676	5.59	|	|Q	V	|	|
12+10	2.9145	6.81	|	|	Q	V|	|
12+15	2.9640	7.19	|	|	Q	V|	|
12+20	3.0152	7.44	|	|	Q	V|	|
12+25	3.0683	7.70	|	|	Q	V	|
12+30	3.1220	7.80	|	|	Q	V	|
12+35	3.1771	8.00	|	|	Q	|V	|
12+40	3.2347	8.37	|	|	Q	|V	|
12+45	3.2932	8.49	|	|	Q	|V	|
12+50	3.3525	8.61	|	|	Q	|V	|
12+55	3.4132	8.82	|	|	Q	|V	|
13+ 0	3.4744	8.89	|	|	Q	|V	|
13+ 5	3.5383	9.27	|	|	Q	|V	|
13+10	3.6082	10.15	|	|	Q	V	|
13+15	3.6801	10.43	|	|	Q	V	|
13+20	3.7528	10.56	|	|	|Q	V	|
13+25	3.8259	10.63	|	|	|Q	V	|
13+30	3.8994	10.66	|	|	|Q	V	|
13+35	3.9677	9.92	|	|	Q|	V	|
13+40	4.0230	8.04	|	|	Q	|V	|
13+45	4.0743	7.45	|	|	Q	|V	|
13+50	4.1239	7.20	|	|	Q	|V	|
13+55	4.1726	7.07	|	|	Q	|V	|
14+ 0	4.2209	7.01	|	|	Q	|V	|
14+ 5	4.2708	7.25	|	|	Q	|V	|

14+10	4.3254	7.93	|	|	Q	|	V	|
14+15	4.3815	8.14	|	|	Q	|	V	|
14+20	4.4378	8.17	|	|	Q	|	V	|
14+25	4.4933	8.05	|	|	Q	|	V	|
14+30	4.5486	8.03	|	|	Q	|	V	|
14+35	4.6038	8.03	|	|	Q	|	V	|
14+40	4.6591	8.03	|	|	Q	|	V	|
14+45	4.7144	8.02	|	|	Q	|	V	|
14+50	4.7692	7.95	|	|	Q	|	V	|
14+55	4.8228	7.79	|	|	Q	|	V	|
15+ 0	4.8760	7.74	|	|	Q	|	V	|
15+ 5	4.9287	7.65	|	|	Q	|	V	|
15+10	4.9802	7.47	|	|	Q	|	V	|
15+15	5.0312	7.41	|	|	Q	|	V	|
15+20	5.0816	7.32	|	|	Q	|	V	|
15+25	5.1308	7.14	|	|	Q	|	V	|
15+30	5.1796	7.08	|	|	Q	|	V	|
15+35	5.2263	6.78	|	|	Q	|	V	|
15+40	5.2682	6.08	|	|	Q	|	V	|
15+45	5.3086	5.87	|	|	Q	|	V	|
15+50	5.3483	5.77	|	|	Q	|	V	|
15+55	5.3878	5.73	|	|	Q	|	V	|
16+ 0	5.4271	5.71	|	|	Q	|	V	|
16+ 5	5.4599	4.77	|	Q	|	|	V	|
16+10	5.4769	2.46	|	Q	|	|	V	|
16+15	5.4890	1.75	|	Q	|	|	V	|
16+20	5.4989	1.44	|	Q	|	|	V	|
16+25	5.5077	1.28	|	Q	|	|	V	|
16+30	5.5159	1.20	|	Q	|	|	V	|
16+35	5.5234	1.09	|	Q	|	|	V	|

16+40	5.5298	0.93	|Q	|	|	|	V
16+45	5.5359	0.88	|Q	|	|	|	V
16+50	5.5418	0.86	|Q	|	|	|	V
16+55	5.5477	0.85	|Q	|	|	|	V
17+ 0	5.5535	0.85	|Q	|	|	|	V
17+ 5	5.5601	0.96	|Q	|	|	|	V
17+10	5.5686	1.24	| Q	|	|	|	V
17+15	5.5778	1.33	| Q	|	|	|	V
17+20	5.5872	1.37	| Q	|	|	|	V
17+25	5.5967	1.39	| Q	|	|	|	V
17+30	5.6063	1.40	| Q	|	|	|	V
17+35	5.6160	1.40	| Q	|	|	|	V
17+40	5.6257	1.40	| Q	|	|	|	V
17+45	5.6353	1.40	| Q	|	|	|	V
17+50	5.6446	1.35	| Q	|	|	|	V
17+55	5.6529	1.21	| Q	|	|	|	V
18+ 0	5.6609	1.16	| Q	|	|	|	V
18+ 5	5.6688	1.14	| Q	|	|	|	V
18+10	5.6766	1.13	| Q	|	|	|	V
18+15	5.6844	1.13	| Q	|	|	|	V
18+20	5.6921	1.12	| Q	|	|	|	V
18+25	5.6999	1.12	| Q	|	|	|	V
18+30	5.7076	1.12	| Q	|	|	|	V
18+35	5.7149	1.07	| Q	|	|	|	V
18+40	5.7213	0.93	|Q	|	|	|	V
18+45	5.7274	0.88	|Q	|	|	|	V
18+50	5.7329	0.81	|Q	|	|	|	V
18+55	5.7374	0.65	|Q	|	|	|	V
19+ 0	5.7416	0.60	|Q	|	|	|	V
19+ 5	5.7460	0.64	|Q	|	|	|	V

19+10	5.7513	0.77	|Q	|	|	|	V
19+15	5.7569	0.81	|Q	|	|	|	V
19+20	5.7629	0.88	|Q	|	|	|	V
19+25	5.7700	1.03	|Q	|	|	|	V
19+30	5.7775	1.08	|Q	|	|	|	V
19+35	5.7847	1.05	|Q	|	|	|	V
19+40	5.7910	0.92	|Q	|	|	|	V
19+45	5.7970	0.88	|Q	|	|	|	V
19+50	5.8026	0.80	|Q	|	|	|	V
19+55	5.8071	0.65	|Q	|	|	|	V
20+ 0	5.8112	0.60	|Q	|	|	|	V
20+ 5	5.8156	0.64	|Q	|	|	|	V
20+10	5.8209	0.77	|Q	|	|	|	V
20+15	5.8265	0.81	|Q	|	|	|	V
20+20	5.8322	0.82	|Q	|	|	|	V
20+25	5.8379	0.83	|Q	|	|	|	V
20+30	5.8437	0.84	|Q	|	|	|	V
20+35	5.8495	0.84	|Q	|	|	|	V
20+40	5.8553	0.84	|Q	|	|	|	V
20+45	5.8611	0.84	|Q	|	|	|	V
20+50	5.8665	0.79	|Q	|	|	|	V
20+55	5.8709	0.64	|Q	|	|	|	V
21+ 0	5.8751	0.60	|Q	|	|	|	V
21+ 5	5.8795	0.64	|Q	|	|	|	V
21+10	5.8848	0.77	|Q	|	|	|	V
21+15	5.8903	0.81	|Q	|	|	|	V
V| 21+20	5.8956	0.77	|Q	|	|	|	V
V| 21+25	5.9000	0.63	|Q	|	|	|	V
V| 21+30	5.9041	0.60	|Q	|	|	|	V
V| 21+35	5.9085	0.64	|Q	|	|	|	V

V|	21+40	5.9138	0.77	|Q	|	|	|
V|	21+45	5.9194	0.81	|Q	|	|	|
V|	21+50	5.9246	0.77	|Q	|	|	|
V|	21+55	5.9290	0.63	|Q	|	|	|
V|	22+ 0	5.9331	0.60	|Q	|	|	|
V|	22+ 5	5.9375	0.64	|Q	|	|	|
V|	22+10	5.9428	0.77	|Q	|	|	|
V|	22+15	5.9484	0.81	|Q	|	|	|
V|	22+20	5.9537	0.77	|Q	|	|	|
V|	22+25	5.9580	0.63	|Q	|	|	|
V|	22+30	5.9621	0.60	|Q	|	|	|
V|	22+35	5.9661	0.58	|Q	|	|	|
V|	22+40	5.9701	0.57	|Q	|	|	|
V|	22+45	5.9740	0.57	|Q	|	|	|
V|	22+50	5.9778	0.56	|Q	|	|	|
V|	22+55	5.9817	0.56	|Q	|	|	|
V|	23+ 0	5.9856	0.56	|Q	|	|	|
V|	23+ 5	5.9894	0.56	|Q	|	|	|
V|	23+10	5.9933	0.56	|Q	|	|	|
V|	23+15	5.9972	0.56	|Q	|	|	|
V|	23+20	6.0011	0.56	|Q	|	|	|
V|	23+25	6.0049	0.56	|Q	|	|	|
V|	23+30	6.0088	0.56	|Q	|	|	|
V|	23+35	6.0127	0.56	|Q	|	|	|
V|	23+40	6.0165	0.56	|Q	|	|	|
V|	23+45	6.0204	0.56	|Q	|	|	|
V|	23+50	6.0243	0.56	|Q	|	|	|
V|	23+55	6.0281	0.56	|Q	|	|	|
V|	24+ 0	6.0320	0.56	|Q	|	|	|
V|	24+ 5	6.0351	0.45	Q	|	|	|

V|	24+10	6.0362	0.16	Q	|	|	|
V|	24+15	6.0368	0.08	Q	|	|	|
V|	24+20	6.0370	0.04	Q	|	|	|
V	24+25	6.0372	0.02	Q			
V	24+30	6.0372	0.01	Q			
V	24+35	6.0372	0.00	Q			
V							

Unit Hydrograph Analysis

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8.2

Study date 02/18/16 File: VDA3to724100.out

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

Program License Serial Number 6232

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

English Units used in output format

VDA Area 4 100yr 24hr Dev

--
Drainage Area = 10.09(Ac.) = 0.016 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 10.09(Ac.) =
0.016 Sq. Mi.
Length along longest watercourse = 1272.00(Ft.)
Length along longest watercourse measured to centroid = 500.00
(Ft.)
Length along longest watercourse = 0.241 Mi.
Length along longest watercourse measured to centroid = 0.095
Mi.
Difference in elevation = 19.00(Ft.)
Slope along watercourse = 78.8679 Ft./Mi.
Average Manning's 'N' = 0.015
Lag time = 0.037 Hr.
Lag time = 2.24 Min.
25% of lag time = 0.56 Min.
40% of lag time = 0.90 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]

10.09 1.14 11.50

100 YEAR Area rainfall data:

Area(Ac.)[1] Rainfall(In)[2] Weighting[1*2]
10.09 4.47 45.10

STORM EVENT (YEAR) = 100.00
Area Averaged 2-Year Rainfall = 1.140(In)
Area Averaged 100-Year Rainfall = 4.470(In)

Point rain (area averaged) = 4.470(In)
Areal adjustment factor = 100.00 %
Adjusted average point rain = 4.470(In)

Sub-Area Data:

Area(Ac.) Runoff Index Impervious %
10.090 56.00 0.650
Total Area Entered = 10.09(Ac.)

RI RI Infil. Rate Impervious Adj. Infil. Rate Area% F
AMC2 AMC-3 (In/Hr) (Dec.%) (In/Hr) (Dec.)

(In/Hr) 56.0 74.8 0.305 0.650 0.127 1.000

0.127

Sum (F) =

0.127

Area averaged mean soil loss (F) (In/Hr) = 0.127
Minimum soil loss rate ((In/Hr)) = 0.063
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.380

Unit Hydrograph
DESERT S-Curve

Unit Hydrograph Data

Unit time period (hrs)	Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	223.262	46.124
2	0.167	446.525	43.897
3	0.250	669.787	7.639
4	0.333	893.049	2.340
		Sum = 100.000	Sum= 10.169

The following loss rate calculations reflect use of the minimum calculated loss rate subtracted from the Storm Rain to produce the maximum Effective Rain value

Unit	Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr)		Effective (In/Hr)
				Max	Low	
1	0.08	0.07	0.036	(0.225)	0.014	0.022
2	0.17	0.07	0.036	(0.224)	0.014	0.022
3	0.25	0.07	0.036	(0.223)	0.014	0.022
4	0.33	0.10	0.054	(0.222)	0.020	0.033
5	0.42	0.10	0.054	(0.221)	0.020	0.033
6	0.50	0.10	0.054	(0.220)	0.020	0.033
7	0.58	0.10	0.054	(0.219)	0.020	0.033
8	0.67	0.10	0.054	(0.219)	0.020	0.033
9	0.75	0.10	0.054	(0.218)	0.020	0.033
10	0.83	0.13	0.072	(0.217)	0.027	0.044
11	0.92	0.13	0.072	(0.216)	0.027	0.044
12	1.00	0.13	0.072	(0.215)	0.027	0.044
13	1.08	0.10	0.054	(0.214)	0.020	0.033
14	1.17	0.10	0.054	(0.213)	0.020	0.033
15	1.25	0.10	0.054	(0.213)	0.020	0.033
16	1.33	0.10	0.054	(0.212)	0.020	0.033
17	1.42	0.10	0.054	(0.211)	0.020	0.033
18	1.50	0.10	0.054	(0.210)	0.020	0.033
19	1.58	0.10	0.054	(0.209)	0.020	0.033
20	1.67	0.10	0.054	(0.208)	0.020	0.033
21	1.75	0.10	0.054	(0.208)	0.020	0.033
22	1.83	0.13	0.072	(0.207)	0.027	0.044
23	1.92	0.13	0.072	(0.206)	0.027	0.044
24	2.00	0.13	0.072	(0.205)	0.027	0.044
25	2.08	0.13	0.072	(0.204)	0.027	0.044
26	2.17	0.13	0.072	(0.203)	0.027	0.044
27	2.25	0.13	0.072	(0.203)	0.027	0.044
28	2.33	0.13	0.072	(0.202)	0.027	0.044
29	2.42	0.13	0.072	(0.201)	0.027	0.044
30	2.50	0.13	0.072	(0.200)	0.027	0.044
31	2.58	0.17	0.089	(0.199)	0.034	0.055
32	2.67	0.17	0.089	(0.199)	0.034	0.055
33	2.75	0.17	0.089	(0.198)	0.034	0.055
34	2.83	0.17	0.089	(0.197)	0.034	0.055
35	2.92	0.17	0.089	(0.196)	0.034	0.055
36	3.00	0.17	0.089	(0.195)	0.034	0.055
37	3.08	0.17	0.089	(0.194)	0.034	0.055
38	3.17	0.17	0.089	(0.194)	0.034	0.055
39	3.25	0.17	0.089	(0.193)	0.034	0.055
40	3.33	0.17	0.089	(0.192)	0.034	0.055
41	3.42	0.17	0.089	(0.191)	0.034	0.055
42	3.50	0.17	0.089	(0.190)	0.034	0.055
43	3.58	0.17	0.089	(0.190)	0.034	0.055
44	3.67	0.17	0.089	(0.189)	0.034	0.055
45	3.75	0.17	0.089	(0.188)	0.034	0.055
46	3.83	0.20	0.107	(0.187)	0.041	0.067
47	3.92	0.20	0.107	(0.186)	0.041	0.067
48	4.00	0.20	0.107	(0.186)	0.041	0.067
49	4.08	0.20	0.107	(0.185)	0.041	0.067
50	4.17	0.20	0.107	(0.184)	0.041	0.067
51	4.25	0.20	0.107	(0.183)	0.041	0.067
52	4.33	0.23	0.125	(0.183)	0.048	0.078
53	4.42	0.23	0.125	(0.182)	0.048	0.078
54	4.50	0.23	0.125	(0.181)	0.048	0.078
55	4.58	0.23	0.125	(0.180)	0.048	0.078
56	4.67	0.23	0.125	(0.179)	0.048	0.078
57	4.75	0.23	0.125	(0.179)	0.048	0.078
58	4.83	0.27	0.143	(0.178)	0.054	0.089

59	4.92	0.27	0.143	(0.177)	0.054	0.089
60	5.00	0.27	0.143	(0.176)	0.054	0.089
61	5.08	0.20	0.107	(0.176)	0.041	0.067
62	5.17	0.20	0.107	(0.175)	0.041	0.067
63	5.25	0.20	0.107	(0.174)	0.041	0.067
64	5.33	0.23	0.125	(0.173)	0.048	0.078
65	5.42	0.23	0.125	(0.173)	0.048	0.078
66	5.50	0.23	0.125	(0.172)	0.048	0.078
67	5.58	0.27	0.143	(0.171)	0.054	0.089
68	5.67	0.27	0.143	(0.170)	0.054	0.089
69	5.75	0.27	0.143	(0.170)	0.054	0.089
70	5.83	0.27	0.143	(0.169)	0.054	0.089
71	5.92	0.27	0.143	(0.168)	0.054	0.089
72	6.00	0.27	0.143	(0.167)	0.054	0.089
73	6.08	0.30	0.161	(0.167)	0.061	0.100
74	6.17	0.30	0.161	(0.166)	0.061	0.100
75	6.25	0.30	0.161	(0.165)	0.061	0.100
76	6.33	0.30	0.161	(0.164)	0.061	0.100
77	6.42	0.30	0.161	(0.164)	0.061	0.100
78	6.50	0.30	0.161	(0.163)	0.061	0.100
79	6.58	0.33	0.179	(0.162)	0.068	0.111
80	6.67	0.33	0.179	(0.161)	0.068	0.111
81	6.75	0.33	0.179	(0.161)	0.068	0.111
82	6.83	0.33	0.179	(0.160)	0.068	0.111
83	6.92	0.33	0.179	(0.159)	0.068	0.111
84	7.00	0.33	0.179	(0.158)	0.068	0.111
85	7.08	0.33	0.179	(0.158)	0.068	0.111
86	7.17	0.33	0.179	(0.157)	0.068	0.111
87	7.25	0.33	0.179	(0.156)	0.068	0.111
88	7.33	0.37	0.197	(0.156)	0.075	0.122
89	7.42	0.37	0.197	(0.155)	0.075	0.122
90	7.50	0.37	0.197	(0.154)	0.075	0.122
91	7.58	0.40	0.215	(0.153)	0.082	0.133
92	7.67	0.40	0.215	(0.153)	0.082	0.133
93	7.75	0.40	0.215	(0.152)	0.082	0.133
94	7.83	0.43	0.232	(0.151)	0.088	0.144
95	7.92	0.43	0.232	(0.151)	0.088	0.144
96	8.00	0.43	0.232	(0.150)	0.088	0.144
97	8.08	0.50	0.268	(0.149)	0.102	0.166
98	8.17	0.50	0.268	(0.149)	0.102	0.166
99	8.25	0.50	0.268	(0.148)	0.102	0.166
100	8.33	0.50	0.268	(0.147)	0.102	0.166
101	8.42	0.50	0.268	(0.147)	0.102	0.166
102	8.50	0.50	0.268	(0.146)	0.102	0.166
103	8.58	0.53	0.286	(0.145)	0.109	0.177
104	8.67	0.53	0.286	(0.144)	0.109	0.177
105	8.75	0.53	0.286	(0.144)	0.109	0.177
106	8.83	0.57	0.304	(0.143)	0.116	0.188
107	8.92	0.57	0.304	(0.142)	0.116	0.188
108	9.00	0.57	0.304	(0.142)	0.116	0.188
109	9.08	0.63	0.340	(0.141)	0.129	0.211
110	9.17	0.63	0.340	(0.140)	0.129	0.211
111	9.25	0.63	0.340	(0.140)	0.129	0.211
112	9.33	0.67	0.358	(0.139)	0.136	0.222
113	9.42	0.67	0.358	(0.138)	0.136	0.222
114	9.50	0.67	0.358	(0.138)	0.136	0.222
115	9.58	0.70	0.375	0.137 (0.143)		0.238
116	9.67	0.70	0.375	0.136 (0.143)		0.239
117	9.75	0.70	0.375	0.136 (0.143)		0.240
118	9.83	0.73	0.393	0.135 (0.149)		0.258

119	9.92	0.73	0.393	0.134	(0.149)	0.259
120	10.00	0.73	0.393	0.134	(0.149)	0.260
121	10.08	0.50	0.268	(0.133)	0.102	0.166
122	10.17	0.50	0.268	(0.133)	0.102	0.166
123	10.25	0.50	0.268	(0.132)	0.102	0.166
124	10.33	0.50	0.268	(0.131)	0.102	0.166
125	10.42	0.50	0.268	(0.131)	0.102	0.166
126	10.50	0.50	0.268	(0.130)	0.102	0.166
127	10.58	0.67	0.358	0.129	(0.136)	0.228
128	10.67	0.67	0.358	0.129	(0.136)	0.229
129	10.75	0.67	0.358	0.128	(0.136)	0.230
130	10.83	0.67	0.358	0.127	(0.136)	0.230
131	10.92	0.67	0.358	0.127	(0.136)	0.231
132	11.00	0.67	0.358	0.126	(0.136)	0.231
133	11.08	0.63	0.340	0.126	(0.129)	0.214
134	11.17	0.63	0.340	0.125	(0.129)	0.215
135	11.25	0.63	0.340	0.124	(0.129)	0.215
136	11.33	0.63	0.340	0.124	(0.129)	0.216
137	11.42	0.63	0.340	0.123	(0.129)	0.217
138	11.50	0.63	0.340	0.123	(0.129)	0.217
139	11.58	0.57	0.304	(0.122)	0.116	0.188
140	11.67	0.57	0.304	(0.121)	0.116	0.188
141	11.75	0.57	0.304	(0.121)	0.116	0.188
142	11.83	0.60	0.322	0.120	(0.122)	0.202
143	11.92	0.60	0.322	0.119	(0.122)	0.202
144	12.00	0.60	0.322	0.119	(0.122)	0.203
145	12.08	0.83	0.447	0.118	(0.170)	0.329
146	12.17	0.83	0.447	0.118	(0.170)	0.329
147	12.25	0.83	0.447	0.117	(0.170)	0.330
148	12.33	0.87	0.465	0.117	(0.177)	0.348
149	12.42	0.87	0.465	0.116	(0.177)	0.349
150	12.50	0.87	0.465	0.115	(0.177)	0.350
151	12.58	0.93	0.501	0.115	(0.190)	0.386
152	12.67	0.93	0.501	0.114	(0.190)	0.386
153	12.75	0.93	0.501	0.114	(0.190)	0.387
154	12.83	0.97	0.519	0.113	(0.197)	0.405
155	12.92	0.97	0.519	0.112	(0.197)	0.406
156	13.00	0.97	0.519	0.112	(0.197)	0.407
157	13.08	1.13	0.608	0.111	(0.231)	0.497
158	13.17	1.13	0.608	0.111	(0.231)	0.497
159	13.25	1.13	0.608	0.110	(0.231)	0.498
160	13.33	1.13	0.608	0.110	(0.231)	0.498
161	13.42	1.13	0.608	0.109	(0.231)	0.499
162	13.50	1.13	0.608	0.109	(0.231)	0.499
163	13.58	0.77	0.411	0.108	(0.156)	0.303
164	13.67	0.77	0.411	0.107	(0.156)	0.304
165	13.75	0.77	0.411	0.107	(0.156)	0.304
166	13.83	0.77	0.411	0.106	(0.156)	0.305
167	13.92	0.77	0.411	0.106	(0.156)	0.305
168	14.00	0.77	0.411	0.105	(0.156)	0.306
169	14.08	0.90	0.483	0.105	(0.183)	0.378
170	14.17	0.90	0.483	0.104	(0.183)	0.379
171	14.25	0.90	0.483	0.104	(0.183)	0.379
172	14.33	0.87	0.465	0.103	(0.177)	0.362
173	14.42	0.87	0.465	0.103	(0.177)	0.362
174	14.50	0.87	0.465	0.102	(0.177)	0.363
175	14.58	0.87	0.465	0.102	(0.177)	0.363
176	14.67	0.87	0.465	0.101	(0.177)	0.364
177	14.75	0.87	0.465	0.101	(0.177)	0.364
178	14.83	0.83	0.447	0.100	(0.170)	0.347

179	14.92	0.83	0.447	0.099	(0.170)	0.348
180	15.00	0.83	0.447	0.099	(0.170)	0.348
181	15.08	0.80	0.429	0.098	(0.163)	0.331
182	15.17	0.80	0.429	0.098	(0.163)	0.331
183	15.25	0.80	0.429	0.097	(0.163)	0.332
184	15.33	0.77	0.411	0.097	(0.156)	0.314
185	15.42	0.77	0.411	0.096	(0.156)	0.315
186	15.50	0.77	0.411	0.096	(0.156)	0.315
187	15.58	0.63	0.340	0.095	(0.129)	0.244
188	15.67	0.63	0.340	0.095	(0.129)	0.245
189	15.75	0.63	0.340	0.095	(0.129)	0.245
190	15.83	0.63	0.340	0.094	(0.129)	0.246
191	15.92	0.63	0.340	0.094	(0.129)	0.246
192	16.00	0.63	0.340	0.093	(0.129)	0.247
193	16.08	0.13	0.072	(0.093)	0.027	0.044
194	16.17	0.13	0.072	(0.092)	0.027	0.044
195	16.25	0.13	0.072	(0.092)	0.027	0.044
196	16.33	0.13	0.072	(0.091)	0.027	0.044
197	16.42	0.13	0.072	(0.091)	0.027	0.044
198	16.50	0.13	0.072	(0.090)	0.027	0.044
199	16.58	0.10	0.054	(0.090)	0.020	0.033
200	16.67	0.10	0.054	(0.089)	0.020	0.033
201	16.75	0.10	0.054	(0.089)	0.020	0.033
202	16.83	0.10	0.054	(0.088)	0.020	0.033
203	16.92	0.10	0.054	(0.088)	0.020	0.033
204	17.00	0.10	0.054	(0.088)	0.020	0.033
205	17.08	0.17	0.089	(0.087)	0.034	0.055
206	17.17	0.17	0.089	(0.087)	0.034	0.055
207	17.25	0.17	0.089	(0.086)	0.034	0.055
208	17.33	0.17	0.089	(0.086)	0.034	0.055
209	17.42	0.17	0.089	(0.085)	0.034	0.055
210	17.50	0.17	0.089	(0.085)	0.034	0.055
211	17.58	0.17	0.089	(0.085)	0.034	0.055
212	17.67	0.17	0.089	(0.084)	0.034	0.055
213	17.75	0.17	0.089	(0.084)	0.034	0.055
214	17.83	0.13	0.072	(0.083)	0.027	0.044
215	17.92	0.13	0.072	(0.083)	0.027	0.044
216	18.00	0.13	0.072	(0.082)	0.027	0.044
217	18.08	0.13	0.072	(0.082)	0.027	0.044
218	18.17	0.13	0.072	(0.082)	0.027	0.044
219	18.25	0.13	0.072	(0.081)	0.027	0.044
220	18.33	0.13	0.072	(0.081)	0.027	0.044
221	18.42	0.13	0.072	(0.080)	0.027	0.044
222	18.50	0.13	0.072	(0.080)	0.027	0.044
223	18.58	0.10	0.054	(0.080)	0.020	0.033
224	18.67	0.10	0.054	(0.079)	0.020	0.033
225	18.75	0.10	0.054	(0.079)	0.020	0.033
226	18.83	0.07	0.036	(0.079)	0.014	0.022
227	18.92	0.07	0.036	(0.078)	0.014	0.022
228	19.00	0.07	0.036	(0.078)	0.014	0.022
229	19.08	0.10	0.054	(0.077)	0.020	0.033
230	19.17	0.10	0.054	(0.077)	0.020	0.033
231	19.25	0.10	0.054	(0.077)	0.020	0.033
232	19.33	0.13	0.072	(0.076)	0.027	0.044
233	19.42	0.13	0.072	(0.076)	0.027	0.044
234	19.50	0.13	0.072	(0.076)	0.027	0.044
235	19.58	0.10	0.054	(0.075)	0.020	0.033
236	19.67	0.10	0.054	(0.075)	0.020	0.033
237	19.75	0.10	0.054	(0.075)	0.020	0.033
238	19.83	0.07	0.036	(0.074)	0.014	0.022

239	19.92	0.07	0.036	(0.074)	0.014	0.022
240	20.00	0.07	0.036	(0.074)	0.014	0.022
241	20.08	0.10	0.054	(0.073)	0.020	0.033
242	20.17	0.10	0.054	(0.073)	0.020	0.033
243	20.25	0.10	0.054	(0.073)	0.020	0.033
244	20.33	0.10	0.054	(0.072)	0.020	0.033
245	20.42	0.10	0.054	(0.072)	0.020	0.033
246	20.50	0.10	0.054	(0.072)	0.020	0.033
247	20.58	0.10	0.054	(0.071)	0.020	0.033
248	20.67	0.10	0.054	(0.071)	0.020	0.033
249	20.75	0.10	0.054	(0.071)	0.020	0.033
250	20.83	0.07	0.036	(0.071)	0.014	0.022
251	20.92	0.07	0.036	(0.070)	0.014	0.022
252	21.00	0.07	0.036	(0.070)	0.014	0.022
253	21.08	0.10	0.054	(0.070)	0.020	0.033
254	21.17	0.10	0.054	(0.069)	0.020	0.033
255	21.25	0.10	0.054	(0.069)	0.020	0.033
256	21.33	0.07	0.036	(0.069)	0.014	0.022
257	21.42	0.07	0.036	(0.069)	0.014	0.022
258	21.50	0.07	0.036	(0.068)	0.014	0.022
259	21.58	0.10	0.054	(0.068)	0.020	0.033
260	21.67	0.10	0.054	(0.068)	0.020	0.033
261	21.75	0.10	0.054	(0.068)	0.020	0.033
262	21.83	0.07	0.036	(0.067)	0.014	0.022
263	21.92	0.07	0.036	(0.067)	0.014	0.022
264	22.00	0.07	0.036	(0.067)	0.014	0.022
265	22.08	0.10	0.054	(0.067)	0.020	0.033
266	22.17	0.10	0.054	(0.066)	0.020	0.033
267	22.25	0.10	0.054	(0.066)	0.020	0.033
268	22.33	0.07	0.036	(0.066)	0.014	0.022
269	22.42	0.07	0.036	(0.066)	0.014	0.022
270	22.50	0.07	0.036	(0.066)	0.014	0.022
271	22.58	0.07	0.036	(0.065)	0.014	0.022
272	22.67	0.07	0.036	(0.065)	0.014	0.022
273	22.75	0.07	0.036	(0.065)	0.014	0.022
274	22.83	0.07	0.036	(0.065)	0.014	0.022
275	22.92	0.07	0.036	(0.065)	0.014	0.022
276	23.00	0.07	0.036	(0.065)	0.014	0.022
277	23.08	0.07	0.036	(0.064)	0.014	0.022
278	23.17	0.07	0.036	(0.064)	0.014	0.022
279	23.25	0.07	0.036	(0.064)	0.014	0.022
280	23.33	0.07	0.036	(0.064)	0.014	0.022
281	23.42	0.07	0.036	(0.064)	0.014	0.022
282	23.50	0.07	0.036	(0.064)	0.014	0.022
283	23.58	0.07	0.036	(0.064)	0.014	0.022
284	23.67	0.07	0.036	(0.064)	0.014	0.022
285	23.75	0.07	0.036	(0.064)	0.014	0.022
286	23.83	0.07	0.036	(0.063)	0.014	0.022
287	23.92	0.07	0.036	(0.063)	0.014	0.022
288	24.00	0.07	0.036	(0.063)	0.014	0.022

(Loss Rate Not Used)

Sum =	100.0		Sum =	36.7
Flood volume =	Effective rainfall	3.06(In)		
times area	10.1(Ac.)/[((In)/(Ft.))] =		2.6(Ac.Ft)	
Total soil loss =	1.41(In)			
Total soil loss =	1.185(Ac.Ft)			
Total rainfall =	4.47(In)			
Flood volume =	112119.2 Cubic Feet			
Total soil loss =	51598.9 Cubic Feet			

Peak flow rate of this hydrograph = 5.077(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

Time(h+m)	Volume	Ac.Ft	Q(CFS)	0	2.5	5.0	7.5
0+ 5	0.0007		0.10	Q			
0+10	0.0021		0.20	Q			
0+15	0.0036		0.22	Q			
0+20	0.0055		0.28	VQ			
0+25	0.0078		0.33	VQ			
0+30	0.0101		0.34	VQ			
0+35	0.0124		0.34	VQ			
0+40	0.0148		0.34	VQ			
0+45	0.0171		0.34	VQ			
0+50	0.0198		0.39	VQ			
0+55	0.0228		0.44	VQ			
1+ 0	0.0259		0.45	VQ			
1+ 5	0.0287		0.40	VQ			
1+10	0.0311		0.35	VQ			
1+15	0.0334		0.34	VQ			
1+20	0.0357		0.34	VQ			
1+25	0.0381		0.34	VQ			
1+30	0.0404		0.34	VQ			
1+35	0.0427		0.34	VQ			
1+40	0.0451		0.34	VQ			
1+45	0.0474		0.34	VQ			

1+50	0.0501	0.39	VQ	|	|	|
1+55	0.0531	0.44	VQ	|	|	|
2+ 0	0.0562	0.45	VQ	|	|	|
2+ 5	0.0593	0.45	VQ	|	|	|
2+10	0.0624	0.45	VQ	|	|	|
2+15	0.0655	0.45	|Q	|	|	|
2+20	0.0686	0.45	|Q	|	|	|
2+25	0.0717	0.45	|Q	|	|	|
2+30	0.0748	0.45	|Q	|	|	|
2+35	0.0783	0.50	|VQ	|	|	|
2+40	0.0821	0.55	|VQ	|	|	|
2+45	0.0860	0.56	|VQ	|	|	|
2+50	0.0899	0.56	|VQ	|	|	|
2+55	0.0937	0.56	|VQ	|	|	|
3+ 0	0.0976	0.56	|VQ	|	|	|
3+ 5	0.1015	0.56	|VQ	|	|	|
3+10	0.1054	0.56	|VQ	|	|	|
3+15	0.1093	0.56	|VQ	|	|	|
3+20	0.1132	0.56	|VQ	|	|	|
3+25	0.1170	0.56	|VQ	|	|	|
3+30	0.1209	0.56	|VQ	|	|	|
3+35	0.1248	0.56	|VQ	|	|	|
3+40	0.1287	0.56	| Q	|	|	|
3+45	0.1326	0.56	| Q	|	|	|
3+50	0.1368	0.62	| Q	|	|	|
3+55	0.1414	0.67	| Q	|	|	|
4+ 0	0.1461	0.67	| Q	|	|	|
4+ 5	0.1507	0.68	| Q	|	|	|
4+10	0.1554	0.68	| Q	|	|	|
4+15	0.1600	0.68	| Q	|	|	|

4+20	0.1651	0.73	Q			
4+25	0.1704	0.78	VQ			
4+30	0.1758	0.79	VQ			
4+35	0.1813	0.79	VQ			
4+40	0.1867	0.79	VQ			
4+45	0.1921	0.79	VQ			
4+50	0.1979	0.84	Q			
4+55	0.2041	0.89	Q			
5+ 0	0.2103	0.90	Q			
5+ 5	0.2158	0.80	Q			
5+10	0.2206	0.70	QV			
5+15	0.2253	0.68	QV			
5+20	0.2303	0.73	QV			
5+25	0.2357	0.78	Q			
5+30	0.2411	0.79	Q			
5+35	0.2469	0.84	Q			
5+40	0.2530	0.89	Q			
5+45	0.2592	0.90	QV			
5+50	0.2654	0.90	QV			
5+55	0.2716	0.90	QV			
6+ 0	0.2778	0.90	QV			
6+ 5	0.2844	0.95	QV			
6+10	0.2913	1.00	Q			
6+15	0.2983	1.01	Q			
6+20	0.3053	1.02	Q			
6+25	0.3123	1.02	Q			
6+30	0.3193	1.02	Q			
6+35	0.3266	1.07	QV			
6+40	0.3343	1.12	QV			
6+45	0.3421	1.13	QV			

6+50	0.3498	1.13	QV			
6+55	0.3576	1.13	QV			
7+ 0	0.3654	1.13	QV			
7+ 5	0.3731	1.13	QV			
7+10	0.3809	1.13	QV			
7+15	0.3887	1.13	Q V			
7+20	0.3968	1.18	Q V			
7+25	0.4053	1.23	Q V			
7+30	0.4138	1.24	Q V			
7+35	0.4227	1.29	QV			
7+40	0.4319	1.34	QV			
7+45	0.4412	1.35	QV			
7+50	0.4509	1.41	Q V			
7+55	0.4609	1.45	Q V			
8+ 0	0.4710	1.46	Q V			
8+ 5	0.4818	1.57	QV			
8+10	0.4933	1.67	QV			
8+15	0.5049	1.69	QV			
8+20	0.5166	1.69	Q V			
8+25	0.5282	1.69	Q V			
8+30	0.5399	1.69	Q V			
8+35	0.5519	1.74	Q V			
8+40	0.5643	1.79	QV			
8+45	0.5767	1.80	QV			
8+50	0.5894	1.86	Q V			
8+55	0.6026	1.91	Q V			
9+ 0	0.6158	1.91	Q V			
9+ 5	0.6297	2.02	QV			
9+10	0.6443	2.12	Q V			
9+15	0.6590	2.14	Q V			

9+20	0.6741	2.19	|	Q V	|	|
9+25	0.6896	2.24	|	Q V	|	|
9+30	0.7051	2.25	|	QV	|	|
9+35	0.7212	2.33	|	Q|V	|	|
9+40	0.7378	2.41	|	Q|V	|	|
9+45	0.7545	2.43	|	Q|V	|	|
9+50	0.7719	2.52	|	QV	|	|
9+55	0.7899	2.61	|	Q V	|	|
10+ 0	0.8080	2.63	|	Q V	|	|
10+ 5	0.8232	2.20	|	Q | V	|	|
10+10	0.8355	1.79	|	Q | V	|	|
10+15	0.8473	1.71	|	Q | V	|	|
10+20	0.8589	1.69	|	Q | V	|	|
10+25	0.8706	1.69	|	Q | V	|	|
10+30	0.8822	1.69	|	Q | V	|	|
10+35	0.8959	1.98	|	Q | V	|	|
10+40	0.9115	2.26	|	Q| V	|	|
10+45	0.9274	2.32	|	Q| V	|	|
10+50	0.9435	2.34	|	Q| V	|	|
10+55	0.9597	2.34	|	Q| V	|	|
11+ 0	0.9759	2.35	|	Q| V	|	|
11+ 5	0.9915	2.27	|	Q| V	|	|
11+10	1.0067	2.20	|	Q | V	|	|
11+15	1.0217	2.19	|	Q | V	|	|
11+20	1.0368	2.19	|	Q | V	|	|
11+25	1.0520	2.20	|	Q | V	|	|
11+30	1.0672	2.21	|	Q | V	|	|
11+35	1.0815	2.07	|	Q | V	|	|
11+40	1.0949	1.95	|	Q | V	|	|
11+45	1.1081	1.92	|	Q | V	|	|

11+50	1.1218	1.98	|	Q	|	V	|	|
11+55	1.1358	2.04	|	Q	|	V	|	|
12+ 0	1.1500	2.06	|	Q	|	V	|	|
12+ 5	1.1683	2.65	|	Q		V	|	|
12+10	1.1904	3.22	|	|	Q	V	|	|
12+15	1.2133	3.32	|	|	Q	V	|	|
12+20	1.2370	3.44	|	|	Q	V	|	|
12+25	1.2613	3.53	|	|	Q	V	|	|
12+30	1.2858	3.55	|	|	Q	V	|	|
12+35	1.3114	3.73	|	|	Q	V	|	|
12+40	1.3382	3.89	|	|	Q	V	|	|
12+45	1.3653	3.93	|	|	Q	|V	|	|
12+50	1.3930	4.02	|	|	Q	|V	|	|
12+55	1.4213	4.11	|	|	Q	|V	|	|
13+ 0	1.4497	4.13	|	|	Q	|V	|	|
13+ 5	1.4811	4.56	|	|		Q	|V	|
13+10	1.5153	4.96	|	|		Q	|V	|
13+15	1.5500	5.04	|	|		Q	V	|
13+20	1.5849	5.07	|	|		Q	V	|
13+25	1.6198	5.07	|	|		Q	V	|
13+30	1.6548	5.08	|	|		Q	V	|
13+35	1.6834	4.16	|	|	Q	|	V	|
13+40	1.7060	3.29	|	|	Q	|	V	|
13+45	1.7277	3.14	|	|	Q	|	V	|
13+50	1.7490	3.10	|	|	Q	|	V	|
13+55	1.7704	3.10	|	|	Q	|	V	|
14+ 0	1.7918	3.11	|	|	Q	|	V	|
14+ 5	1.8156	3.45	|	|	Q	|	V	|
14+10	1.8416	3.78	|	|	Q	|	V	|
14+15	1.8680	3.84	|	|	Q	|	V	|

14+20	1.8940	3.77	|	|	Q	|	V|
14+25	1.9195	3.70	|	|	Q	|	V|
14+30	1.9449	3.69	|	|	Q	|	V
14+35	1.9703	3.69	|	|	Q	|	V
14+40	1.9958	3.70	|	|	Q	|	|V
14+45	2.0213	3.70	|	|	Q	|	|V
14+50	2.0463	3.62	|	|	Q	|	|V
14+55	2.0707	3.55	|	|	Q	|	| V
15+ 0	2.0951	3.54	|	|	Q	|	| V
15+ 5	2.1189	3.46	|	|	Q	|	| V
15+10	2.1422	3.38	|	|	Q	|	| V
15+15	2.1655	3.38	|	|	Q	|	| V
15+20	2.1881	3.29	|	|	Q	|	| V
15+25	2.2103	3.22	|	|	Q	|	| V
15+30	2.2324	3.21	|	|	Q	|	| V
15+35	2.2522	2.87	|	|	Q	|	| V
15+40	2.2698	2.56	|	|	Q	|	| V
15+45	2.2871	2.51	|	|	Q	|	| V
15+50	2.3043	2.50	|	|	Q|	|	| V
15+55	2.3215	2.50	|	|	Q	|	| V
16+ 0	2.3388	2.51	|	|	Q	|	| V
16+ 5	2.3495	1.56	|	|	Q	|	| V
16+10	2.3540	0.66	|	|	Q	|	| V
16+15	2.3575	0.50	|	|	Q	|	| V
16+20	2.3606	0.45	|	|	Q	|	| V
16+25	2.3637	0.45	|	|	Q	|	| V
16+30	2.3668	0.45	|	|	Q	|	| V
16+35	2.3695	0.40	|	|	Q	|	| V
16+40	2.3719	0.35	|	|	Q	|	| V
16+45	2.3743	0.34	|	|	Q	|	| V

16+50	2.3766	0.34	|Q	|	|	|	V
16+55	2.3790	0.34	|Q	|	|	|	V
17+ 0	2.3813	0.34	|Q	|	|	|	V
17+ 5	2.3843	0.44	|Q	|	|	|	V
17+10	2.3881	0.54	| Q	|	|	|	V
17+15	2.3919	0.56	| Q	|	|	|	V
17+20	2.3958	0.56	| Q	|	|	|	V
17+25	2.3997	0.56	| Q	|	|	|	V
17+30	2.4036	0.56	| Q	|	|	|	V
17+35	2.4074	0.56	| Q	|	|	|	V
17+40	2.4113	0.56	| Q	|	|	|	V
17+45	2.4152	0.56	| Q	|	|	|	V
17+50	2.4187	0.51	| Q	|	|	|	V
17+55	2.4219	0.46	|Q	|	|	|	V
18+ 0	2.4250	0.45	|Q	|	|	|	V
18+ 5	2.4281	0.45	|Q	|	|	|	V
18+10	2.4313	0.45	|Q	|	|	|	V
18+15	2.4344	0.45	|Q	|	|	|	V
18+20	2.4375	0.45	|Q	|	|	|	V
18+25	2.4406	0.45	|Q	|	|	|	V
18+30	2.4437	0.45	|Q	|	|	|	V
18+35	2.4464	0.40	|Q	|	|	|	V
18+40	2.4488	0.35	|Q	|	|	|	V
18+45	2.4512	0.34	|Q	|	|	|	V
18+50	2.4532	0.29	|Q	|	|	|	V
18+55	2.4548	0.24	Q	|	|	|	V
19+ 0	2.4564	0.23	Q	|	|	|	V
19+ 5	2.4583	0.28	|Q	|	|	|	V
19+10	2.4605	0.33	|Q	|	|	|	V
19+15	2.4628	0.34	|Q	|	|	|	V

	19+20	2.4655	0.39	|Q	|	|	|	V
|	19+25	2.4686	0.44	|Q	|	|	|	V
|	19+30	2.4716	0.45	|Q	|	|	|	V
|	19+35	2.4744	0.40	|Q	|	|	|	V
|	19+40	2.4768	0.35	|Q	|	|	|	V
|	19+45	2.4792	0.34	|Q	|	|	|	V
|	19+50	2.4811	0.29	|Q	|	|	|	V
|	19+55	2.4828	0.24	Q	|	|	|	V
|	20+ 0	2.4843	0.23	Q	|	|	|	V
|	20+ 5	2.4862	0.28	|Q	|	|	|	V
|	20+10	2.4885	0.33	|Q	|	|	|	V
|	20+15	2.4908	0.34	|Q	|	|	|	V
|	20+20	2.4931	0.34	|Q	|	|	|	V
|	20+25	2.4955	0.34	|Q	|	|	|	V
|	20+30	2.4978	0.34	|Q	|	|	|	V
|	20+35	2.5001	0.34	|Q	|	|	|	V
|	20+40	2.5025	0.34	|Q	|	|	|	V
|	20+45	2.5048	0.34	|Q	|	|	|	V
|	20+50	2.5068	0.29	|Q	|	|	|	V
|	20+55	2.5084	0.24	Q	|	|	|	V
|	21+ 0	2.5100	0.23	Q	|	|	|	
V|	21+ 5	2.5119	0.28	|Q	|	|	|	
V|	21+10	2.5141	0.33	|Q	|	|	|	
V|	21+15	2.5164	0.34	|Q	|	|	|	
V|	21+20	2.5184	0.29	|Q	|	|	|	
V|	21+25	2.5200	0.24	Q	|	|	|	
V|	21+30	2.5216	0.23	Q	|	|	|	
V|	21+35	2.5235	0.28	|Q	|	|	|	
V|	21+40	2.5258	0.33	|Q	|	|	|	
V|	21+45	2.5281	0.34	|Q	|	|	|	

V|	21+50	2.5301	0.29	|Q	|	|	|
V|	21+55	2.5317	0.24	Q	|	|	|
V|	22+ 0	2.5333	0.23	Q	|	|	|
V|	22+ 5	2.5352	0.28	|Q	|	|	|
V|	22+10	2.5374	0.33	|Q	|	|	|
V|	22+15	2.5397	0.34	|Q	|	|	|
V|	22+20	2.5417	0.29	|Q	|	|	|
V|	22+25	2.5433	0.24	Q	|	|	|
V|	22+30	2.5449	0.23	Q	|	|	|
V|	22+35	2.5465	0.23	Q	|	|	|
V|	22+40	2.5480	0.23	Q	|	|	|
V|	22+45	2.5496	0.23	Q	|	|	|
V|	22+50	2.5511	0.23	Q	|	|	|
V|	22+55	2.5527	0.23	Q	|	|	|
V|	23+ 0	2.5542	0.23	Q	|	|	|
V|	23+ 5	2.5558	0.23	Q	|	|	|
V|	23+10	2.5573	0.23	Q	|	|	|
V|	23+15	2.5589	0.23	Q	|	|	|
V|	23+20	2.5604	0.23	Q	|	|	|
V|	23+25	2.5620	0.23	Q	|	|	|
V|	23+30	2.5636	0.23	Q	|	|	|
V|	23+35	2.5651	0.23	Q	|	|	|
V|	23+40	2.5667	0.23	Q	|	|	|
V|	23+45	2.5682	0.23	Q	|	|	|
V|	23+50	2.5698	0.23	Q	|	|	|
V|	23+55	2.5713	0.23	Q	|	|	|
V|	24+ 0	2.5729	0.23	Q	|	|	|
V	24+ 5	2.5737	0.12	Q			
V	24+10	2.5739	0.02	Q			
V	24+15	2.5739	0.01	Q			
V							

Unit Hydrograph Analysis

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8.2

Study date 02/18/16 File: VDA3to724100.out

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

Program License Serial Number 6232

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

English Units used in output format

VDA Area 5 100yr 24hr post dev

--
Drainage Area = 8.70(Ac.) = 0.014 Sq. Mi.
0.014 Sq. Mi. Drainage Area for Depth-Area Areal Adjustment = 8.70(Ac.) =
Length along longest watercourse = 1278.00(Ft.)
(Ft.) Length along longest watercourse measured to centroid = 318.00
Length along longest watercourse = 0.242 Mi.
Mi. Length along longest watercourse measured to centroid = 0.060

Difference in elevation = 35.00(Ft.)
Slope along watercourse = 144.6009 Ft./Mi.
Average Manning's 'N' = 0.025
Lag time = 0.047 Hr.
Lag time = 2.81 Min.
25% of lag time = 0.70 Min.
40% of lag time = 1.12 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]

8.70 1.14 9.92

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
8.70	4.47	38.89

STORM EVENT (YEAR) = 100.00
Area Averaged 2-Year Rainfall = 1.140(In)
Area Averaged 100-Year Rainfall = 4.470(In)

Point rain (area averaged) = 4.470(In)
Areal adjustment factor = 100.00 %
Adjusted average point rain = 4.470(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
8.700	65.00	0.100
Total Area Entered = 8.70(Ac.)		

RI	RI	Infil. Rate	Impervious	Adj. Infil. Rate	Area%	F
(In/Hr)	AMC2	(In/Hr)	(Dec.%)	(In/Hr)	(Dec.)	
0.201	65.0	82.0	0.221	0.100	0.201	1.000
						Sum (F) =
0.201						

Area averaged mean soil loss (F) (In/Hr) = 0.201
Minimum soil loss rate ((In/Hr)) = 0.101
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.820

Unit Hydrograph
DESERT S-Curve

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Unit Hydrograph Data

Unit time period	Time % of lag	Distribution	Unit Hydrograph
(hrs)		Graph %	(CFS)
1	0.083	178.196	38.012
2	0.167	356.392	47.089
3	0.250	534.588	10.101
4	0.333	712.784	3.398
5	0.417	890.980	1.400
		Sum = 100.000	Sum= 8.768

The following loss rate calculations reflect use of the minimum calculated loss rate subtracted from the Storm Rain to produce the maximum Effective Rain value

Unit	Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr)		Effective (In/Hr)
				Max	Low	
1	0.08	0.07	0.036	(0.357)	0.029	0.006
2	0.17	0.07	0.036	(0.355)	0.029	0.006
3	0.25	0.07	0.036	(0.354)	0.029	0.006
4	0.33	0.10	0.054	(0.353)	0.044	0.010
5	0.42	0.10	0.054	(0.351)	0.044	0.010
6	0.50	0.10	0.054	(0.350)	0.044	0.010
7	0.58	0.10	0.054	(0.349)	0.044	0.010
8	0.67	0.10	0.054	(0.347)	0.044	0.010
9	0.75	0.10	0.054	(0.346)	0.044	0.010
10	0.83	0.13	0.072	(0.345)	0.059	0.013
11	0.92	0.13	0.072	(0.343)	0.059	0.013
12	1.00	0.13	0.072	(0.342)	0.059	0.013
13	1.08	0.10	0.054	(0.340)	0.044	0.010
14	1.17	0.10	0.054	(0.339)	0.044	0.010
15	1.25	0.10	0.054	(0.338)	0.044	0.010
16	1.33	0.10	0.054	(0.336)	0.044	0.010
17	1.42	0.10	0.054	(0.335)	0.044	0.010
18	1.50	0.10	0.054	(0.334)	0.044	0.010
19	1.58	0.10	0.054	(0.332)	0.044	0.010
20	1.67	0.10	0.054	(0.331)	0.044	0.010
21	1.75	0.10	0.054	(0.330)	0.044	0.010
22	1.83	0.13	0.072	(0.328)	0.059	0.013
23	1.92	0.13	0.072	(0.327)	0.059	0.013
24	2.00	0.13	0.072	(0.326)	0.059	0.013
25	2.08	0.13	0.072	(0.324)	0.059	0.013
26	2.17	0.13	0.072	(0.323)	0.059	0.013
27	2.25	0.13	0.072	(0.322)	0.059	0.013
28	2.33	0.13	0.072	(0.321)	0.059	0.013
29	2.42	0.13	0.072	(0.319)	0.059	0.013
30	2.50	0.13	0.072	(0.318)	0.059	0.013
31	2.58	0.17	0.089	(0.317)	0.073	0.016
32	2.67	0.17	0.089	(0.315)	0.073	0.016
33	2.75	0.17	0.089	(0.314)	0.073	0.016
34	2.83	0.17	0.089	(0.313)	0.073	0.016
35	2.92	0.17	0.089	(0.311)	0.073	0.016
36	3.00	0.17	0.089	(0.310)	0.073	0.016
37	3.08	0.17	0.089	(0.309)	0.073	0.016
38	3.17	0.17	0.089	(0.308)	0.073	0.016
39	3.25	0.17	0.089	(0.306)	0.073	0.016
40	3.33	0.17	0.089	(0.305)	0.073	0.016
41	3.42	0.17	0.089	(0.304)	0.073	0.016
42	3.50	0.17	0.089	(0.302)	0.073	0.016
43	3.58	0.17	0.089	(0.301)	0.073	0.016
44	3.67	0.17	0.089	(0.300)	0.073	0.016
45	3.75	0.17	0.089	(0.299)	0.073	0.016
46	3.83	0.20	0.107	(0.297)	0.088	0.019
47	3.92	0.20	0.107	(0.296)	0.088	0.019
48	4.00	0.20	0.107	(0.295)	0.088	0.019
49	4.08	0.20	0.107	(0.294)	0.088	0.019
50	4.17	0.20	0.107	(0.292)	0.088	0.019
51	4.25	0.20	0.107	(0.291)	0.088	0.019
52	4.33	0.23	0.125	(0.290)	0.103	0.023
53	4.42	0.23	0.125	(0.289)	0.103	0.023
54	4.50	0.23	0.125	(0.287)	0.103	0.023
55	4.58	0.23	0.125	(0.286)	0.103	0.023
56	4.67	0.23	0.125	(0.285)	0.103	0.023
57	4.75	0.23	0.125	(0.284)	0.103	0.023

58	4.83	0.27	0.143	(0.283)	0.117	0.026
59	4.92	0.27	0.143	(0.281)	0.117	0.026
60	5.00	0.27	0.143	(0.280)	0.117	0.026
61	5.08	0.20	0.107	(0.279)	0.088	0.019
62	5.17	0.20	0.107	(0.278)	0.088	0.019
63	5.25	0.20	0.107	(0.276)	0.088	0.019
64	5.33	0.23	0.125	(0.275)	0.103	0.023
65	5.42	0.23	0.125	(0.274)	0.103	0.023
66	5.50	0.23	0.125	(0.273)	0.103	0.023
67	5.58	0.27	0.143	(0.272)	0.117	0.026
68	5.67	0.27	0.143	(0.270)	0.117	0.026
69	5.75	0.27	0.143	(0.269)	0.117	0.026
70	5.83	0.27	0.143	(0.268)	0.117	0.026
71	5.92	0.27	0.143	(0.267)	0.117	0.026
72	6.00	0.27	0.143	(0.266)	0.117	0.026
73	6.08	0.30	0.161	(0.265)	0.132	0.029
74	6.17	0.30	0.161	(0.263)	0.132	0.029
75	6.25	0.30	0.161	(0.262)	0.132	0.029
76	6.33	0.30	0.161	(0.261)	0.132	0.029
77	6.42	0.30	0.161	(0.260)	0.132	0.029
78	6.50	0.30	0.161	(0.259)	0.132	0.029
79	6.58	0.33	0.179	(0.258)	0.147	0.032
80	6.67	0.33	0.179	(0.256)	0.147	0.032
81	6.75	0.33	0.179	(0.255)	0.147	0.032
82	6.83	0.33	0.179	(0.254)	0.147	0.032
83	6.92	0.33	0.179	(0.253)	0.147	0.032
84	7.00	0.33	0.179	(0.252)	0.147	0.032
85	7.08	0.33	0.179	(0.251)	0.147	0.032
86	7.17	0.33	0.179	(0.249)	0.147	0.032
87	7.25	0.33	0.179	(0.248)	0.147	0.032
88	7.33	0.37	0.197	(0.247)	0.161	0.035
89	7.42	0.37	0.197	(0.246)	0.161	0.035
90	7.50	0.37	0.197	(0.245)	0.161	0.035
91	7.58	0.40	0.215	(0.244)	0.176	0.039
92	7.67	0.40	0.215	(0.243)	0.176	0.039
93	7.75	0.40	0.215	(0.242)	0.176	0.039
94	7.83	0.43	0.232	(0.240)	0.191	0.042
95	7.92	0.43	0.232	(0.239)	0.191	0.042
96	8.00	0.43	0.232	(0.238)	0.191	0.042
97	8.08	0.50	0.268	(0.237)	0.220	0.048
98	8.17	0.50	0.268	(0.236)	0.220	0.048
99	8.25	0.50	0.268	(0.235)	0.220	0.048
100	8.33	0.50	0.268	(0.234)	0.220	0.048
101	8.42	0.50	0.268	(0.233)	0.220	0.048
102	8.50	0.50	0.268	(0.232)	0.220	0.048
103	8.58	0.53	0.286	0.231 (0.235)		0.056
104	8.67	0.53	0.286	0.229 (0.235)		0.057
105	8.75	0.53	0.286	0.228 (0.235)		0.058
106	8.83	0.57	0.304	0.227 (0.249)		0.077
107	8.92	0.57	0.304	0.226 (0.249)		0.078
108	9.00	0.57	0.304	0.225 (0.249)		0.079
109	9.08	0.63	0.340	0.224 (0.279)		0.116
110	9.17	0.63	0.340	0.223 (0.279)		0.117
111	9.25	0.63	0.340	0.222 (0.279)		0.118
112	9.33	0.67	0.358	0.221 (0.293)		0.137
113	9.42	0.67	0.358	0.220 (0.293)		0.138
114	9.50	0.67	0.358	0.219 (0.293)		0.139
115	9.58	0.70	0.375	0.218 (0.308)		0.158
116	9.67	0.70	0.375	0.217 (0.308)		0.159
117	9.75	0.70	0.375	0.216 (0.308)		0.160

118	9.83	0.73	0.393	0.215	(0.323)	0.179
119	9.92	0.73	0.393	0.214	(0.323)	0.180
120	10.00	0.73	0.393	0.213	(0.323)	0.181
121	10.08	0.50	0.268	0.212	(0.220)	0.057
122	10.17	0.50	0.268	0.211	(0.220)	0.058
123	10.25	0.50	0.268	0.209	(0.220)	0.059
124	10.33	0.50	0.268	0.208	(0.220)	0.060
125	10.42	0.50	0.268	0.207	(0.220)	0.061
126	10.50	0.50	0.268	0.206	(0.220)	0.062
127	10.58	0.67	0.358	0.205	(0.293)	0.152
128	10.67	0.67	0.358	0.204	(0.293)	0.153
129	10.75	0.67	0.358	0.203	(0.293)	0.154
130	10.83	0.67	0.358	0.202	(0.293)	0.155
131	10.92	0.67	0.358	0.201	(0.293)	0.156
132	11.00	0.67	0.358	0.200	(0.293)	0.157
133	11.08	0.63	0.340	0.199	(0.279)	0.140
134	11.17	0.63	0.340	0.198	(0.279)	0.141
135	11.25	0.63	0.340	0.198	(0.279)	0.142
136	11.33	0.63	0.340	0.197	(0.279)	0.143
137	11.42	0.63	0.340	0.196	(0.279)	0.144
138	11.50	0.63	0.340	0.195	(0.279)	0.145
139	11.58	0.57	0.304	0.194	(0.249)	0.110
140	11.67	0.57	0.304	0.193	(0.249)	0.111
141	11.75	0.57	0.304	0.192	(0.249)	0.112
142	11.83	0.60	0.322	0.191	(0.264)	0.131
143	11.92	0.60	0.322	0.190	(0.264)	0.132
144	12.00	0.60	0.322	0.189	(0.264)	0.133
145	12.08	0.83	0.447	0.188	(0.367)	0.259
146	12.17	0.83	0.447	0.187	(0.367)	0.260
147	12.25	0.83	0.447	0.186	(0.367)	0.261
148	12.33	0.87	0.465	0.185	(0.381)	0.280
149	12.42	0.87	0.465	0.184	(0.381)	0.281
150	12.50	0.87	0.465	0.183	(0.381)	0.282
151	12.58	0.93	0.501	0.182	(0.411)	0.318
152	12.67	0.93	0.501	0.181	(0.411)	0.319
153	12.75	0.93	0.501	0.180	(0.411)	0.320
154	12.83	0.97	0.519	0.180	(0.425)	0.339
155	12.92	0.97	0.519	0.179	(0.425)	0.340
156	13.00	0.97	0.519	0.178	(0.425)	0.341
157	13.08	1.13	0.608	0.177	(0.498)	0.431
158	13.17	1.13	0.608	0.176	(0.498)	0.432
159	13.25	1.13	0.608	0.175	(0.498)	0.433
160	13.33	1.13	0.608	0.174	(0.498)	0.434
161	13.42	1.13	0.608	0.173	(0.498)	0.435
162	13.50	1.13	0.608	0.172	(0.498)	0.435
163	13.58	0.77	0.411	0.172	(0.337)	0.240
164	13.67	0.77	0.411	0.171	(0.337)	0.241
165	13.75	0.77	0.411	0.170	(0.337)	0.241
166	13.83	0.77	0.411	0.169	(0.337)	0.242
167	13.92	0.77	0.411	0.168	(0.337)	0.243
168	14.00	0.77	0.411	0.167	(0.337)	0.244
169	14.08	0.90	0.483	0.166	(0.396)	0.316
170	14.17	0.90	0.483	0.165	(0.396)	0.317
171	14.25	0.90	0.483	0.165	(0.396)	0.318
172	14.33	0.87	0.465	0.164	(0.381)	0.301
173	14.42	0.87	0.465	0.163	(0.381)	0.302
174	14.50	0.87	0.465	0.162	(0.381)	0.303
175	14.58	0.87	0.465	0.161	(0.381)	0.304
176	14.67	0.87	0.465	0.160	(0.381)	0.304
177	14.75	0.87	0.465	0.160	(0.381)	0.305

178	14.83	0.83	0.447	0.159	(0.367)	0.288
179	14.92	0.83	0.447	0.158	(0.367)	0.289
180	15.00	0.83	0.447	0.157	(0.367)	0.290
181	15.08	0.80	0.429	0.156	(0.352)	0.273
182	15.17	0.80	0.429	0.156	(0.352)	0.274
183	15.25	0.80	0.429	0.155	(0.352)	0.274
184	15.33	0.77	0.411	0.154	(0.337)	0.257
185	15.42	0.77	0.411	0.153	(0.337)	0.258
186	15.50	0.77	0.411	0.152	(0.337)	0.259
187	15.58	0.63	0.340	0.152	(0.279)	0.188
188	15.67	0.63	0.340	0.151	(0.279)	0.189
189	15.75	0.63	0.340	0.150	(0.279)	0.190
190	15.83	0.63	0.340	0.149	(0.279)	0.190
191	15.92	0.63	0.340	0.149	(0.279)	0.191
192	16.00	0.63	0.340	0.148	(0.279)	0.192
193	16.08	0.13	0.072	(0.147)	0.059	0.013
194	16.17	0.13	0.072	(0.146)	0.059	0.013
195	16.25	0.13	0.072	(0.146)	0.059	0.013
196	16.33	0.13	0.072	(0.145)	0.059	0.013
197	16.42	0.13	0.072	(0.144)	0.059	0.013
198	16.50	0.13	0.072	(0.143)	0.059	0.013
199	16.58	0.10	0.054	(0.143)	0.044	0.010
200	16.67	0.10	0.054	(0.142)	0.044	0.010
201	16.75	0.10	0.054	(0.141)	0.044	0.010
202	16.83	0.10	0.054	(0.140)	0.044	0.010
203	16.92	0.10	0.054	(0.140)	0.044	0.010
204	17.00	0.10	0.054	(0.139)	0.044	0.010
205	17.08	0.17	0.089	(0.138)	0.073	0.016
206	17.17	0.17	0.089	(0.138)	0.073	0.016
207	17.25	0.17	0.089	(0.137)	0.073	0.016
208	17.33	0.17	0.089	(0.136)	0.073	0.016
209	17.42	0.17	0.089	(0.136)	0.073	0.016
210	17.50	0.17	0.089	(0.135)	0.073	0.016
211	17.58	0.17	0.089	(0.134)	0.073	0.016
212	17.67	0.17	0.089	(0.134)	0.073	0.016
213	17.75	0.17	0.089	(0.133)	0.073	0.016
214	17.83	0.13	0.072	(0.132)	0.059	0.013
215	17.92	0.13	0.072	(0.132)	0.059	0.013
216	18.00	0.13	0.072	(0.131)	0.059	0.013
217	18.08	0.13	0.072	(0.130)	0.059	0.013
218	18.17	0.13	0.072	(0.130)	0.059	0.013
219	18.25	0.13	0.072	(0.129)	0.059	0.013
220	18.33	0.13	0.072	(0.128)	0.059	0.013
221	18.42	0.13	0.072	(0.128)	0.059	0.013
222	18.50	0.13	0.072	(0.127)	0.059	0.013
223	18.58	0.10	0.054	(0.127)	0.044	0.010
224	18.67	0.10	0.054	(0.126)	0.044	0.010
225	18.75	0.10	0.054	(0.125)	0.044	0.010
226	18.83	0.07	0.036	(0.125)	0.029	0.006
227	18.92	0.07	0.036	(0.124)	0.029	0.006
228	19.00	0.07	0.036	(0.124)	0.029	0.006
229	19.08	0.10	0.054	(0.123)	0.044	0.010
230	19.17	0.10	0.054	(0.122)	0.044	0.010
231	19.25	0.10	0.054	(0.122)	0.044	0.010
232	19.33	0.13	0.072	(0.121)	0.059	0.013
233	19.42	0.13	0.072	(0.121)	0.059	0.013
234	19.50	0.13	0.072	(0.120)	0.059	0.013
235	19.58	0.10	0.054	(0.120)	0.044	0.010
236	19.67	0.10	0.054	(0.119)	0.044	0.010
237	19.75	0.10	0.054	(0.118)	0.044	0.010

238	19.83	0.07	0.036	(0.118)	0.029	0.006
239	19.92	0.07	0.036	(0.117)	0.029	0.006
240	20.00	0.07	0.036	(0.117)	0.029	0.006
241	20.08	0.10	0.054	(0.116)	0.044	0.010
242	20.17	0.10	0.054	(0.116)	0.044	0.010
243	20.25	0.10	0.054	(0.115)	0.044	0.010
244	20.33	0.10	0.054	(0.115)	0.044	0.010
245	20.42	0.10	0.054	(0.114)	0.044	0.010
246	20.50	0.10	0.054	(0.114)	0.044	0.010
247	20.58	0.10	0.054	(0.113)	0.044	0.010
248	20.67	0.10	0.054	(0.113)	0.044	0.010
249	20.75	0.10	0.054	(0.112)	0.044	0.010
250	20.83	0.07	0.036	(0.112)	0.029	0.006
251	20.92	0.07	0.036	(0.112)	0.029	0.006
252	21.00	0.07	0.036	(0.111)	0.029	0.006
253	21.08	0.10	0.054	(0.111)	0.044	0.010
254	21.17	0.10	0.054	(0.110)	0.044	0.010
255	21.25	0.10	0.054	(0.110)	0.044	0.010
256	21.33	0.07	0.036	(0.109)	0.029	0.006
257	21.42	0.07	0.036	(0.109)	0.029	0.006
258	21.50	0.07	0.036	(0.109)	0.029	0.006
259	21.58	0.10	0.054	(0.108)	0.044	0.010
260	21.67	0.10	0.054	(0.108)	0.044	0.010
261	21.75	0.10	0.054	(0.107)	0.044	0.010
262	21.83	0.07	0.036	(0.107)	0.029	0.006
263	21.92	0.07	0.036	(0.107)	0.029	0.006
264	22.00	0.07	0.036	(0.106)	0.029	0.006
265	22.08	0.10	0.054	(0.106)	0.044	0.010
266	22.17	0.10	0.054	(0.106)	0.044	0.010
267	22.25	0.10	0.054	(0.105)	0.044	0.010
268	22.33	0.07	0.036	(0.105)	0.029	0.006
269	22.42	0.07	0.036	(0.105)	0.029	0.006
270	22.50	0.07	0.036	(0.104)	0.029	0.006
271	22.58	0.07	0.036	(0.104)	0.029	0.006
272	22.67	0.07	0.036	(0.104)	0.029	0.006
273	22.75	0.07	0.036	(0.103)	0.029	0.006
274	22.83	0.07	0.036	(0.103)	0.029	0.006
275	22.92	0.07	0.036	(0.103)	0.029	0.006
276	23.00	0.07	0.036	(0.103)	0.029	0.006
277	23.08	0.07	0.036	(0.102)	0.029	0.006
278	23.17	0.07	0.036	(0.102)	0.029	0.006
279	23.25	0.07	0.036	(0.102)	0.029	0.006
280	23.33	0.07	0.036	(0.102)	0.029	0.006
281	23.42	0.07	0.036	(0.102)	0.029	0.006
282	23.50	0.07	0.036	(0.101)	0.029	0.006
283	23.58	0.07	0.036	(0.101)	0.029	0.006
284	23.67	0.07	0.036	(0.101)	0.029	0.006
285	23.75	0.07	0.036	(0.101)	0.029	0.006
286	23.83	0.07	0.036	(0.101)	0.029	0.006
287	23.92	0.07	0.036	(0.101)	0.029	0.006
288	24.00	0.07	0.036	(0.101)	0.029	0.006

(Loss Rate Not Used)

Sum =	100.0	Sum =	22.3
Flood volume =	Effective rainfall	1.86(In)	
times area	8.7(Ac.)/[(In)/(Ft.)] =	1.3(Ac.Ft)	
Total soil loss =	2.61(In)		
Total soil loss =	1.895(Ac.Ft)		
Total rainfall =	4.47(In)		
Flood volume =	58607.3 Cubic Feet		
Total soil loss =	82557.4 Cubic Feet		

 -- Peak flow rate of this hydrograph = 3.814(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))

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

Time(h+m)	Volume	Ac.Ft	Q(CFS)	0	2.5	5.0	7.5
0+ 5	0.0001		0.02	Q			
0+10	0.0005		0.05	Q			
0+15	0.0008		0.05	Q			
0+20	0.0013		0.07	Q			
0+25	0.0019		0.08	Q			
0+30	0.0024		0.08	Q			
0+35	0.0030		0.08	Q			
0+40	0.0036		0.08	Q			
0+45	0.0042		0.08	Q			
0+50	0.0048		0.10	Q			
0+55	0.0056		0.11	Q			
1+ 0	0.0064		0.11	Q			
1+ 5	0.0071		0.10	Q			
1+10	0.0077		0.09	Q			
1+15	0.0083		0.09	Q			
1+20	0.0088		0.09	Q			
1+25	0.0094		0.08	Q			
1+30	0.0100		0.08	Q			
1+35	0.0106		0.08	Q			
1+40	0.0112		0.08	Q			
1+45	0.0118		0.08	Q			

1+50	0.0124	0.10	Q	|	|	|
1+55	0.0132	0.11	Q	|	|	|
2+ 0	0.0139	0.11	Q	|	|	|
2+ 5	0.0147	0.11	Q	|	|	|
2+10	0.0155	0.11	Q	|	|	|
2+15	0.0163	0.11	Q	|	|	|
2+20	0.0170	0.11	Q	|	|	|
2+25	0.0178	0.11	Q	|	|	|
2+30	0.0186	0.11	Q	|	|	|
2+35	0.0195	0.12	Q	|	|	|
2+40	0.0204	0.14	Q	|	|	|
2+45	0.0214	0.14	Q	|	|	|
2+50	0.0223	0.14	Q	|	|	|
2+55	0.0233	0.14	Q	|	|	|
3+ 0	0.0243	0.14	Q	|	|	|
3+ 5	0.0252	0.14	Q	|	|	|
3+10	0.0262	0.14	Q	|	|	|
3+15	0.0272	0.14	Q	|	|	|
3+20	0.0282	0.14	Q	|	|	|
3+25	0.0291	0.14	Q	|	|	|
3+30	0.0301	0.14	Q	|	|	|
3+35	0.0311	0.14	Q	|	|	|
3+40	0.0321	0.14	Q	|	|	|
3+45	0.0330	0.14	Q	|	|	|
3+50	0.0341	0.15	QV	|	|	|
3+55	0.0352	0.17	QV	|	|	|
4+ 0	0.0364	0.17	QV	|	|	|
4+ 5	0.0375	0.17	QV	|	|	|
4+10	0.0387	0.17	QV	|	|	|
4+15	0.0399	0.17	QV	|	|	|

4+20	0.0411	0.18	QV	|	|	|
4+25	0.0424	0.19	QV	|	|	|
4+30	0.0438	0.20	QV	|	|	|
4+35	0.0451	0.20	QV	|	|	|
4+40	0.0465	0.20	QV	|	|	|
4+45	0.0479	0.20	QV	|	|	|
4+50	0.0493	0.21	QV	|	|	|
4+55	0.0508	0.22	QV	|	|	|
5+ 0	0.0524	0.22	QV	|	|	|
5+ 5	0.0538	0.20	QV	|	|	|
5+10	0.0550	0.18	QV	|	|	|
5+15	0.0562	0.17	QV	|	|	|
5+20	0.0574	0.18	QV	|	|	|
5+25	0.0588	0.19	QV	|	|	|
5+30	0.0601	0.20	QV	|	|	|
5+35	0.0616	0.21	QV	|	|	|
5+40	0.0631	0.22	QV	|	|	|
5+45	0.0646	0.22	QV	|	|	|
5+50	0.0662	0.23	QV	|	|	|
5+55	0.0677	0.23	Q V	|	|	|
6+ 0	0.0693	0.23	Q V	|	|	|
6+ 5	0.0709	0.24	Q V	|	|	|
6+10	0.0726	0.25	Q V	|	|	|
6+15	0.0744	0.25	|QV	|	|	|
6+20	0.0761	0.25	|QV	|	|	|
6+25	0.0779	0.25	|QV	|	|	|
6+30	0.0796	0.25	|QV	|	|	|
6+35	0.0815	0.26	|QV	|	|	|
6+40	0.0834	0.28	|QV	|	|	|
6+45	0.0853	0.28	|QV	|	|	|

6+50	0.0872	0.28	|QV	|	|	|
6+55	0.0892	0.28	|QV	|	|	|
7+ 0	0.0911	0.28	|QV	|	|	|
7+ 5	0.0931	0.28	|QV	|	|	|
7+10	0.0950	0.28	|QV	|	|	|
7+15	0.0970	0.28	|QV	|	|	|
7+20	0.0990	0.29	|QV	|	|	|
7+25	0.1011	0.31	|Q V	|	|	|
7+30	0.1032	0.31	|Q V	|	|	|
7+35	0.1054	0.32	|Q V	|	|	|
7+40	0.1077	0.33	|Q V	|	|	|
7+45	0.1101	0.34	|Q V	|	|	|
7+50	0.1125	0.35	|Q V	|	|	|
7+55	0.1150	0.36	|Q V	|	|	|
8+ 0	0.1175	0.37	|Q V	|	|	|
8+ 5	0.1202	0.39	|Q V	|	|	|
8+10	0.1230	0.42	|Q V	|	|	|
8+15	0.1259	0.42	|Q V	|	|	|
8+20	0.1288	0.42	|Q V	|	|	|
8+25	0.1317	0.42	|Q V	|	|	|
8+30	0.1347	0.42	|Q V	|	|	|
8+35	0.1377	0.45	|Q V	|	|	|
8+40	0.1411	0.48	|Q V	|	|	|
8+45	0.1445	0.50	|Q V	|	|	|
8+50	0.1484	0.57	| Q V	|	|	|
8+55	0.1529	0.65	| Q V	|	|	|
9+ 0	0.1575	0.68	| Q V	|	|	|
9+ 5	0.1631	0.81	| QV	|	|	|
9+10	0.1698	0.97	| Q V	|	|	|
9+15	0.1767	1.01	| QV	|	|	|

9+20	0.1842	1.09	|	QV	|	|	|
9+25	0.1923	1.18	|	QV	|	|	|
9+30	0.2006	1.20	|	QV	|	|	|
9+35	0.2094	1.28	|	QV	|	|	|
9+40	0.2188	1.36	|	QV	|	|	|
9+45	0.2283	1.39	|	QV	|	|	|
9+50	0.2384	1.46	|	Q V	|	|	|
9+55	0.2490	1.55	|	QV	|	|	|
10+ 0	0.2599	1.57	|	QV	|	|	|
10+ 5	0.2679	1.17	|	Q V	|	|	|
10+10	0.2725	0.66	|	Q	V	|	|
10+15	0.2763	0.56	|	Q	V	|	|
10+20	0.2800	0.53	|	Q	V	|	|
10+25	0.2836	0.53	|	Q	V	|	|
10+30	0.2873	0.53	|	Q	V	|	|
10+35	0.2931	0.84	|	Q	V	|	|
10+40	0.3015	1.22	|	Q	V	|	|
10+45	0.3105	1.31	|	Q	V	|	|
10+50	0.3197	1.34	|	Q	V	|	|
10+55	0.3291	1.36	|	Q	V	|	|
11+ 0	0.3386	1.37	|	Q	V	|	|
11+ 5	0.3476	1.32	|	Q	V	|	|
11+10	0.3563	1.26	|	Q	V	|	|
11+15	0.3649	1.25	|	Q	V	|	|
11+20	0.3735	1.25	|	Q	|V	|	|
11+25	0.3822	1.26	|	Q	|V	|	|
11+30	0.3909	1.27	|	Q	|V	|	|
11+35	0.3988	1.16	|	Q	|V	|	|
11+40	0.4058	1.02	|	Q	| V	|	|
11+45	0.4127	0.99	|	Q	| V	|	|

11+50	0.4199	1.05	| Q	| V	|	|
11+55	0.4277	1.13	| Q	| V	|	|
12+ 0	0.4356	1.15	| Q	| V	|	|
12+ 5	0.4465	1.58	| Q	| V	|	|
12+10	0.4611	2.11	| Q	| V	|	|
12+15	0.4764	2.23	| Q	| V	|	|
12+20	0.4925	2.33	| Q	| V	|	|
12+25	0.5092	2.43	| Q	| V	|	|
12+30	0.5262	2.46	| Q	| V	|	|
12+35	0.5440	2.59	| Q	| V	|	|
12+40	0.5629	2.75	| Q	| V	|	|
12+45	0.5821	2.79	| Q	| V	|	|
12+50	0.6018	2.87	| Q	| V	|	|
12+55	0.6222	2.95	| Q	| V	|	|
13+ 0	0.6427	2.98	| Q	| V	|	|
13+ 5	0.6653	3.29	| Q	| V	|	|
13+10	0.6905	3.67	| Q	| V	|	|
13+15	0.7164	3.75	| Q	| V	|	|
13+20	0.7425	3.79	| Q	| V	|	|
13+25	0.7687	3.81	| Q	| V	|	|
13+30	0.7949	3.81	| Q	| V	|	|
13+35	0.8167	3.17	| Q	| V	|	|
13+40	0.8330	2.36	| Q	| V	|	|
13+45	0.8481	2.19	| Q	| V	|	|
13+50	0.8629	2.14	| Q	| V	|	|
13+55	0.8775	2.13	| Q	| V	|	|
14+ 0	0.8922	2.13	| Q	| V	|	|
14+ 5	0.9086	2.38	| Q	| V	|	|
14+10	0.9271	2.68	| Q	| V	|	|
14+15	0.9461	2.75	| Q	| V	|	|

14+20	0.9648	2.72	|	Q	|	v	|
14+25	0.9832	2.67	|	Q	|	v	|
14+30	1.0015	2.66	|	Q	|	v	|
14+35	1.0198	2.66	|	Q	|	v	|
14+40	1.0382	2.66	|	Q	|	v	|
14+45	1.0566	2.67	|	Q	|	|v	|
14+50	1.0746	2.62	|	Q	|	|v	|
14+55	1.0922	2.55	|	Q	|	|v	|
15+ 0	1.1097	2.54	|	Q	|	|v	|
15+ 5	1.1268	2.49	|	Q|	|	|v	|
15+10	1.1435	2.42	|	Q|	|	|v	|
15+15	1.1600	2.41	|	Q|	|	|v	|
15+20	1.1762	2.35	|	Q|	|	|v	|
15+25	1.1919	2.28	|	Q|	|	|v	|
15+30	1.2076	2.27	|	Q|	|	|v	|
15+35	1.2216	2.04	|	Q	|	|v	|
15+40	1.2336	1.74	|	Q	|	|v	|
15+45	1.2452	1.69	|	Q	|	|v	|
15+50	1.2568	1.67	|	Q	|	|v	|
15+55	1.2683	1.67	|	Q	|	|v	|
16+ 0	1.2798	1.68	|	Q	|	|v	|
16+ 5	1.2873	1.09	|	Q	|	|v	|
16+10	1.2897	0.35	|Q	|	|	|v	|
16+15	1.2910	0.19	Q	|	|	|v	|
16+20	1.2919	0.13	Q	|	|	|v	|
16+25	1.2927	0.11	Q	|	|	|v	|
16+30	1.2935	0.11	Q	|	|	|v	|
16+35	1.2942	0.10	Q	|	|	|v	|
16+40	1.2948	0.09	Q	|	|	|v	|
16+45	1.2954	0.09	Q	|	|	|v	|

	16+50	1.2960	0.09	Q				V
	16+55	1.2965	0.08	Q				V
	17+ 0	1.2971	0.08	Q				V
	17+ 5	1.2979	0.11	Q				V
	17+10	1.2988	0.13	Q				V
	17+15	1.2997	0.14	Q				V
	17+20	1.3007	0.14	Q				V
	17+25	1.3017	0.14	Q				V
	17+30	1.3026	0.14	Q				V
	17+35	1.3036	0.14	Q				V
	17+40	1.3046	0.14	Q				V
	17+45	1.3055	0.14	Q				V
	17+50	1.3064	0.13	Q				V
	17+55	1.3073	0.12	Q				V
	18+ 0	1.3080	0.11	Q				V
	18+ 5	1.3088	0.11	Q				V
	18+10	1.3096	0.11	Q				V
	18+15	1.3104	0.11	Q				V
	18+20	1.3112	0.11	Q				V
V|	18+25	1.3119	0.11	Q				
V|	18+30	1.3127	0.11	Q				
V|	18+35	1.3134	0.10	Q				
V|	18+40	1.3140	0.09	Q				
V|	18+45	1.3146	0.09	Q				
V|	18+50	1.3151	0.07	Q				
V|	18+55	1.3155	0.06	Q				
V|	19+ 0	1.3159	0.06	Q				
V|	19+ 5	1.3164	0.07	Q				
V|	19+10	1.3170	0.08	Q				
V|	19+15	1.3175	0.08	Q				

V|	19+20	1.3182	0.10	Q	|	|	|
V|	19+25	1.3189	0.11	Q	|	|	|
V|	19+30	1.3197	0.11	Q	|	|	|
V|	19+35	1.3204	0.10	Q	|	|	|
V|	19+40	1.3210	0.09	Q	|	|	|
V|	19+45	1.3216	0.09	Q	|	|	|
V|	19+50	1.3221	0.07	Q	|	|	|
V|	19+55	1.3225	0.06	Q	|	|	|
V|	20+ 0	1.3229	0.06	Q	|	|	|
V|	20+ 5	1.3234	0.07	Q	|	|	|
V|	20+10	1.3240	0.08	Q	|	|	|
V|	20+15	1.3245	0.08	Q	|	|	|
V|	20+20	1.3251	0.08	Q	|	|	|
V|	20+25	1.3257	0.08	Q	|	|	|
V|	20+30	1.3263	0.08	Q	|	|	|
V|	20+35	1.3269	0.08	Q	|	|	|
V|	20+40	1.3275	0.08	Q	|	|	|
V|	20+45	1.3280	0.08	Q	|	|	|
V|	20+50	1.3285	0.07	Q	|	|	|
V|	20+55	1.3290	0.06	Q	|	|	|
V|	21+ 0	1.3294	0.06	Q	|	|	|
V|	21+ 5	1.3298	0.07	Q	|	|	|
V|	21+10	1.3304	0.08	Q	|	|	|
V|	21+15	1.3310	0.08	Q	|	|	|
V|	21+20	1.3315	0.07	Q	|	|	|
V|	21+25	1.3319	0.06	Q	|	|	|
V|	21+30	1.3323	0.06	Q	|	|	|
V|	21+35	1.3327	0.07	Q	|	|	|
V|	21+40	1.3333	0.08	Q	|	|	|
V|	21+45	1.3339	0.08	Q	|	|	|

V|	21+50	1.3344	0.07	Q	|	|	|
V|	21+55	1.3348	0.06	Q	|	|	|
V|	22+ 0	1.3352	0.06	Q	|	|	|
V|	22+ 5	1.3357	0.07	Q	|	|	|
V|	22+10	1.3362	0.08	Q	|	|	|
V|	22+15	1.3368	0.08	Q	|	|	|
V|	22+20	1.3373	0.07	Q	|	|	|
V|	22+25	1.3377	0.06	Q	|	|	|
V|	22+30	1.3381	0.06	Q	|	|	|
V|	22+35	1.3385	0.06	Q	|	|	|
V|	22+40	1.3389	0.06	Q	|	|	|
V|	22+45	1.3393	0.06	Q	|	|	|
V|	22+50	1.3397	0.06	Q	|	|	|
V|	22+55	1.3401	0.06	Q	|	|	|
V|	23+ 0	1.3404	0.06	Q	|	|	|
V|	23+ 5	1.3408	0.06	Q	|	|	|
V|	23+10	1.3412	0.06	Q	|	|	|
V|	23+15	1.3416	0.06	Q	|	|	|
V|	23+20	1.3420	0.06	Q	|	|	|
V|	23+25	1.3424	0.06	Q	|	|	|
V|	23+30	1.3428	0.06	Q	|	|	|
V|	23+35	1.3432	0.06	Q	|	|	|
V|	23+40	1.3436	0.06	Q	|	|	|
V|	23+45	1.3439	0.06	Q	|	|	|
V|	23+50	1.3443	0.06	Q	|	|	|
V|	23+55	1.3447	0.06	Q	|	|	|
V|	24+ 0	1.3451	0.06	Q	|	|	|
V|	24+ 5	1.3454	0.04	Q	|	|	|
V	24+10	1.3454	0.01	Q			
V	24+15	1.3454	0.00	Q			

v	24+20	1.3454	0.00	Q			
v							

Unit Hydrograph Analysis

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Study date 02/18/16 File: VDA3to724100.out

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

Program License Serial Number 6232

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

English Units used in output format

VDA Area 6 100yr 24hr post dev

--
Drainage Area = 6.80(Ac.) = 0.011 Sq. Mi.
0.011 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 6.80(Ac.) =
Length along longest watercourse = 1206.00(Ft.)
(Ft.) Length along longest watercourse measured to centroid = 238.00
Length along longest watercourse = 0.228 Mi.
Mi. Length along longest watercourse measured to centroid = 0.045

Difference in elevation = 33.00(Ft.)
Slope along watercourse = 144.4776 Ft./Mi.
Average Manning's 'N' = 0.025
Lag time = 0.041 Hr.
Lag time = 2.46 Min.
25% of lag time = 0.61 Min.
40% of lag time = 0.98 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]

6.80 1.14 7.75

100 YEAR Area rainfall data:

Area(Ac.)[1] Rainfall(In)[2] Weighting[1*2]
6.80 4.47 30.40

STORM EVENT (YEAR) = 100.00
Area Averaged 2-Year Rainfall = 1.140(In)
Area Averaged 100-Year Rainfall = 4.470(In)

Point rain (area averaged) = 4.470(In)
Areal adjustment factor = 100.00 %
Adjusted average point rain = 4.470(In)

Sub-Area Data:

Area(Ac.) Runoff Index Impervious %
6.800 65.00 0.100
Total Area Entered = 6.80(Ac.)

RI (In/Hr)	RI AMC-3	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F
65.0	82.0	0.221	0.100	0.201	1.000	
0.201						Sum (F) =
0.201						

Area averaged mean soil loss (F) (In/Hr) = 0.201
Minimum soil loss rate ((In/Hr)) = 0.101
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.820

Unit Hydrograph
DESERT S-Curve

Unit Hydrograph Data

Unit time period (hrs)	Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	203.339	2.933
2	0.167	406.678	3.105
3	0.250	610.016	0.594
4	0.333	813.355	0.221
		Sum = 100.000	Sum= 6.853

The following loss rate calculations reflect use of the minimum
calculated loss
rate subtracted from the Storm Rain to produce the maximum Effective
Rain value

Unit	Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr)		Effective (In/Hr)
				Max	Low	
1	0.08	0.07	0.036	(0.357)	0.029	0.006
2	0.17	0.07	0.036	(0.355)	0.029	0.006
3	0.25	0.07	0.036	(0.354)	0.029	0.006
4	0.33	0.10	0.054	(0.353)	0.044	0.010
5	0.42	0.10	0.054	(0.351)	0.044	0.010
6	0.50	0.10	0.054	(0.350)	0.044	0.010
7	0.58	0.10	0.054	(0.349)	0.044	0.010
8	0.67	0.10	0.054	(0.347)	0.044	0.010
9	0.75	0.10	0.054	(0.346)	0.044	0.010
10	0.83	0.13	0.072	(0.345)	0.059	0.013
11	0.92	0.13	0.072	(0.343)	0.059	0.013
12	1.00	0.13	0.072	(0.342)	0.059	0.013
13	1.08	0.10	0.054	(0.340)	0.044	0.010
14	1.17	0.10	0.054	(0.339)	0.044	0.010
15	1.25	0.10	0.054	(0.338)	0.044	0.010
16	1.33	0.10	0.054	(0.336)	0.044	0.010
17	1.42	0.10	0.054	(0.335)	0.044	0.010
18	1.50	0.10	0.054	(0.334)	0.044	0.010
19	1.58	0.10	0.054	(0.332)	0.044	0.010
20	1.67	0.10	0.054	(0.331)	0.044	0.010
21	1.75	0.10	0.054	(0.330)	0.044	0.010
22	1.83	0.13	0.072	(0.328)	0.059	0.013
23	1.92	0.13	0.072	(0.327)	0.059	0.013
24	2.00	0.13	0.072	(0.326)	0.059	0.013
25	2.08	0.13	0.072	(0.324)	0.059	0.013
26	2.17	0.13	0.072	(0.323)	0.059	0.013
27	2.25	0.13	0.072	(0.322)	0.059	0.013
28	2.33	0.13	0.072	(0.321)	0.059	0.013
29	2.42	0.13	0.072	(0.319)	0.059	0.013
30	2.50	0.13	0.072	(0.318)	0.059	0.013
31	2.58	0.17	0.089	(0.317)	0.073	0.016
32	2.67	0.17	0.089	(0.315)	0.073	0.016
33	2.75	0.17	0.089	(0.314)	0.073	0.016
34	2.83	0.17	0.089	(0.313)	0.073	0.016
35	2.92	0.17	0.089	(0.311)	0.073	0.016
36	3.00	0.17	0.089	(0.310)	0.073	0.016
37	3.08	0.17	0.089	(0.309)	0.073	0.016
38	3.17	0.17	0.089	(0.308)	0.073	0.016
39	3.25	0.17	0.089	(0.306)	0.073	0.016
40	3.33	0.17	0.089	(0.305)	0.073	0.016
41	3.42	0.17	0.089	(0.304)	0.073	0.016
42	3.50	0.17	0.089	(0.302)	0.073	0.016
43	3.58	0.17	0.089	(0.301)	0.073	0.016
44	3.67	0.17	0.089	(0.300)	0.073	0.016
45	3.75	0.17	0.089	(0.299)	0.073	0.016
46	3.83	0.20	0.107	(0.297)	0.088	0.019
47	3.92	0.20	0.107	(0.296)	0.088	0.019
48	4.00	0.20	0.107	(0.295)	0.088	0.019
49	4.08	0.20	0.107	(0.294)	0.088	0.019
50	4.17	0.20	0.107	(0.292)	0.088	0.019
51	4.25	0.20	0.107	(0.291)	0.088	0.019
52	4.33	0.23	0.125	(0.290)	0.103	0.023
53	4.42	0.23	0.125	(0.289)	0.103	0.023
54	4.50	0.23	0.125	(0.287)	0.103	0.023
55	4.58	0.23	0.125	(0.286)	0.103	0.023
56	4.67	0.23	0.125	(0.285)	0.103	0.023
57	4.75	0.23	0.125	(0.284)	0.103	0.023
58	4.83	0.27	0.143	(0.283)	0.117	0.026

59	4.92	0.27	0.143	(0.281)	0.117	0.026
60	5.00	0.27	0.143	(0.280)	0.117	0.026
61	5.08	0.20	0.107	(0.279)	0.088	0.019
62	5.17	0.20	0.107	(0.278)	0.088	0.019
63	5.25	0.20	0.107	(0.276)	0.088	0.019
64	5.33	0.23	0.125	(0.275)	0.103	0.023
65	5.42	0.23	0.125	(0.274)	0.103	0.023
66	5.50	0.23	0.125	(0.273)	0.103	0.023
67	5.58	0.27	0.143	(0.272)	0.117	0.026
68	5.67	0.27	0.143	(0.270)	0.117	0.026
69	5.75	0.27	0.143	(0.269)	0.117	0.026
70	5.83	0.27	0.143	(0.268)	0.117	0.026
71	5.92	0.27	0.143	(0.267)	0.117	0.026
72	6.00	0.27	0.143	(0.266)	0.117	0.026
73	6.08	0.30	0.161	(0.265)	0.132	0.029
74	6.17	0.30	0.161	(0.263)	0.132	0.029
75	6.25	0.30	0.161	(0.262)	0.132	0.029
76	6.33	0.30	0.161	(0.261)	0.132	0.029
77	6.42	0.30	0.161	(0.260)	0.132	0.029
78	6.50	0.30	0.161	(0.259)	0.132	0.029
79	6.58	0.33	0.179	(0.258)	0.147	0.032
80	6.67	0.33	0.179	(0.256)	0.147	0.032
81	6.75	0.33	0.179	(0.255)	0.147	0.032
82	6.83	0.33	0.179	(0.254)	0.147	0.032
83	6.92	0.33	0.179	(0.253)	0.147	0.032
84	7.00	0.33	0.179	(0.252)	0.147	0.032
85	7.08	0.33	0.179	(0.251)	0.147	0.032
86	7.17	0.33	0.179	(0.249)	0.147	0.032
87	7.25	0.33	0.179	(0.248)	0.147	0.032
88	7.33	0.37	0.197	(0.247)	0.161	0.035
89	7.42	0.37	0.197	(0.246)	0.161	0.035
90	7.50	0.37	0.197	(0.245)	0.161	0.035
91	7.58	0.40	0.215	(0.244)	0.176	0.039
92	7.67	0.40	0.215	(0.243)	0.176	0.039
93	7.75	0.40	0.215	(0.242)	0.176	0.039
94	7.83	0.43	0.232	(0.240)	0.191	0.042
95	7.92	0.43	0.232	(0.239)	0.191	0.042
96	8.00	0.43	0.232	(0.238)	0.191	0.042
97	8.08	0.50	0.268	(0.237)	0.220	0.048
98	8.17	0.50	0.268	(0.236)	0.220	0.048
99	8.25	0.50	0.268	(0.235)	0.220	0.048
100	8.33	0.50	0.268	(0.234)	0.220	0.048
101	8.42	0.50	0.268	(0.233)	0.220	0.048
102	8.50	0.50	0.268	(0.232)	0.220	0.048
103	8.58	0.53	0.286	0.231	(0.235)	0.056
104	8.67	0.53	0.286	0.229	(0.235)	0.057
105	8.75	0.53	0.286	0.228	(0.235)	0.058
106	8.83	0.57	0.304	0.227	(0.249)	0.077
107	8.92	0.57	0.304	0.226	(0.249)	0.078
108	9.00	0.57	0.304	0.225	(0.249)	0.079
109	9.08	0.63	0.340	0.224	(0.279)	0.116
110	9.17	0.63	0.340	0.223	(0.279)	0.117
111	9.25	0.63	0.340	0.222	(0.279)	0.118
112	9.33	0.67	0.358	0.221	(0.293)	0.137
113	9.42	0.67	0.358	0.220	(0.293)	0.138
114	9.50	0.67	0.358	0.219	(0.293)	0.139
115	9.58	0.70	0.375	0.218	(0.308)	0.158
116	9.67	0.70	0.375	0.217	(0.308)	0.159
117	9.75	0.70	0.375	0.216	(0.308)	0.160
118	9.83	0.73	0.393	0.215	(0.323)	0.179

119	9.92	0.73	0.393	0.214	(0.323)	0.180
120	10.00	0.73	0.393	0.213	(0.323)	0.181
121	10.08	0.50	0.268	0.212	(0.220)	0.057
122	10.17	0.50	0.268	0.211	(0.220)	0.058
123	10.25	0.50	0.268	0.209	(0.220)	0.059
124	10.33	0.50	0.268	0.208	(0.220)	0.060
125	10.42	0.50	0.268	0.207	(0.220)	0.061
126	10.50	0.50	0.268	0.206	(0.220)	0.062
127	10.58	0.67	0.358	0.205	(0.293)	0.152
128	10.67	0.67	0.358	0.204	(0.293)	0.153
129	10.75	0.67	0.358	0.203	(0.293)	0.154
130	10.83	0.67	0.358	0.202	(0.293)	0.155
131	10.92	0.67	0.358	0.201	(0.293)	0.156
132	11.00	0.67	0.358	0.200	(0.293)	0.157
133	11.08	0.63	0.340	0.199	(0.279)	0.140
134	11.17	0.63	0.340	0.198	(0.279)	0.141
135	11.25	0.63	0.340	0.198	(0.279)	0.142
136	11.33	0.63	0.340	0.197	(0.279)	0.143
137	11.42	0.63	0.340	0.196	(0.279)	0.144
138	11.50	0.63	0.340	0.195	(0.279)	0.145
139	11.58	0.57	0.304	0.194	(0.249)	0.110
140	11.67	0.57	0.304	0.193	(0.249)	0.111
141	11.75	0.57	0.304	0.192	(0.249)	0.112
142	11.83	0.60	0.322	0.191	(0.264)	0.131
143	11.92	0.60	0.322	0.190	(0.264)	0.132
144	12.00	0.60	0.322	0.189	(0.264)	0.133
145	12.08	0.83	0.447	0.188	(0.367)	0.259
146	12.17	0.83	0.447	0.187	(0.367)	0.260
147	12.25	0.83	0.447	0.186	(0.367)	0.261
148	12.33	0.87	0.465	0.185	(0.381)	0.280
149	12.42	0.87	0.465	0.184	(0.381)	0.281
150	12.50	0.87	0.465	0.183	(0.381)	0.282
151	12.58	0.93	0.501	0.182	(0.411)	0.318
152	12.67	0.93	0.501	0.181	(0.411)	0.319
153	12.75	0.93	0.501	0.180	(0.411)	0.320
154	12.83	0.97	0.519	0.180	(0.425)	0.339
155	12.92	0.97	0.519	0.179	(0.425)	0.340
156	13.00	0.97	0.519	0.178	(0.425)	0.341
157	13.08	1.13	0.608	0.177	(0.498)	0.431
158	13.17	1.13	0.608	0.176	(0.498)	0.432
159	13.25	1.13	0.608	0.175	(0.498)	0.433
160	13.33	1.13	0.608	0.174	(0.498)	0.434
161	13.42	1.13	0.608	0.173	(0.498)	0.435
162	13.50	1.13	0.608	0.172	(0.498)	0.436
163	13.58	0.77	0.411	0.172	(0.337)	0.240
164	13.67	0.77	0.411	0.171	(0.337)	0.241
165	13.75	0.77	0.411	0.170	(0.337)	0.241
166	13.83	0.77	0.411	0.169	(0.337)	0.242
167	13.92	0.77	0.411	0.168	(0.337)	0.243
168	14.00	0.77	0.411	0.167	(0.337)	0.244
169	14.08	0.90	0.483	0.166	(0.396)	0.316
170	14.17	0.90	0.483	0.165	(0.396)	0.317
171	14.25	0.90	0.483	0.165	(0.396)	0.318
172	14.33	0.87	0.465	0.164	(0.381)	0.301
173	14.42	0.87	0.465	0.163	(0.381)	0.302
174	14.50	0.87	0.465	0.162	(0.381)	0.303
175	14.58	0.87	0.465	0.161	(0.381)	0.304
176	14.67	0.87	0.465	0.160	(0.381)	0.304
177	14.75	0.87	0.465	0.160	(0.381)	0.305
178	14.83	0.83	0.447	0.159	(0.367)	0.288

179	14.92	0.83	0.447	0.158	(0.367)	0.289
180	15.00	0.83	0.447	0.157	(0.367)	0.290
181	15.08	0.80	0.429	0.156	(0.352)	0.273
182	15.17	0.80	0.429	0.156	(0.352)	0.274
183	15.25	0.80	0.429	0.155	(0.352)	0.274
184	15.33	0.77	0.411	0.154	(0.337)	0.257
185	15.42	0.77	0.411	0.153	(0.337)	0.258
186	15.50	0.77	0.411	0.152	(0.337)	0.259
187	15.58	0.63	0.340	0.152	(0.279)	0.188
188	15.67	0.63	0.340	0.151	(0.279)	0.189
189	15.75	0.63	0.340	0.150	(0.279)	0.190
190	15.83	0.63	0.340	0.149	(0.279)	0.190
191	15.92	0.63	0.340	0.149	(0.279)	0.191
192	16.00	0.63	0.340	0.148	(0.279)	0.192
193	16.08	0.13	0.072	(0.147)	0.059	0.013
194	16.17	0.13	0.072	(0.146)	0.059	0.013
195	16.25	0.13	0.072	(0.146)	0.059	0.013
196	16.33	0.13	0.072	(0.145)	0.059	0.013
197	16.42	0.13	0.072	(0.144)	0.059	0.013
198	16.50	0.13	0.072	(0.143)	0.059	0.013
199	16.58	0.10	0.054	(0.143)	0.044	0.010
200	16.67	0.10	0.054	(0.142)	0.044	0.010
201	16.75	0.10	0.054	(0.141)	0.044	0.010
202	16.83	0.10	0.054	(0.140)	0.044	0.010
203	16.92	0.10	0.054	(0.140)	0.044	0.010
204	17.00	0.10	0.054	(0.139)	0.044	0.010
205	17.08	0.17	0.089	(0.138)	0.073	0.016
206	17.17	0.17	0.089	(0.138)	0.073	0.016
207	17.25	0.17	0.089	(0.137)	0.073	0.016
208	17.33	0.17	0.089	(0.136)	0.073	0.016
209	17.42	0.17	0.089	(0.136)	0.073	0.016
210	17.50	0.17	0.089	(0.135)	0.073	0.016
211	17.58	0.17	0.089	(0.134)	0.073	0.016
212	17.67	0.17	0.089	(0.134)	0.073	0.016
213	17.75	0.17	0.089	(0.133)	0.073	0.016
214	17.83	0.13	0.072	(0.132)	0.059	0.013
215	17.92	0.13	0.072	(0.132)	0.059	0.013
216	18.00	0.13	0.072	(0.131)	0.059	0.013
217	18.08	0.13	0.072	(0.130)	0.059	0.013
218	18.17	0.13	0.072	(0.130)	0.059	0.013
219	18.25	0.13	0.072	(0.129)	0.059	0.013
220	18.33	0.13	0.072	(0.128)	0.059	0.013
221	18.42	0.13	0.072	(0.128)	0.059	0.013
222	18.50	0.13	0.072	(0.127)	0.059	0.013
223	18.58	0.10	0.054	(0.127)	0.044	0.010
224	18.67	0.10	0.054	(0.126)	0.044	0.010
225	18.75	0.10	0.054	(0.125)	0.044	0.010
226	18.83	0.07	0.036	(0.125)	0.029	0.006
227	18.92	0.07	0.036	(0.124)	0.029	0.006
228	19.00	0.07	0.036	(0.124)	0.029	0.006
229	19.08	0.10	0.054	(0.123)	0.044	0.010
230	19.17	0.10	0.054	(0.122)	0.044	0.010
231	19.25	0.10	0.054	(0.122)	0.044	0.010
232	19.33	0.13	0.072	(0.121)	0.059	0.013
233	19.42	0.13	0.072	(0.121)	0.059	0.013
234	19.50	0.13	0.072	(0.120)	0.059	0.013
235	19.58	0.10	0.054	(0.120)	0.044	0.010
236	19.67	0.10	0.054	(0.119)	0.044	0.010
237	19.75	0.10	0.054	(0.118)	0.044	0.010
238	19.83	0.07	0.036	(0.118)	0.029	0.006

239	19.92	0.07	0.036	(0.117)	0.029	0.006
240	20.00	0.07	0.036	(0.117)	0.029	0.006
241	20.08	0.10	0.054	(0.116)	0.044	0.010
242	20.17	0.10	0.054	(0.116)	0.044	0.010
243	20.25	0.10	0.054	(0.115)	0.044	0.010
244	20.33	0.10	0.054	(0.115)	0.044	0.010
245	20.42	0.10	0.054	(0.114)	0.044	0.010
246	20.50	0.10	0.054	(0.114)	0.044	0.010
247	20.58	0.10	0.054	(0.113)	0.044	0.010
248	20.67	0.10	0.054	(0.113)	0.044	0.010
249	20.75	0.10	0.054	(0.112)	0.044	0.010
250	20.83	0.07	0.036	(0.112)	0.029	0.006
251	20.92	0.07	0.036	(0.112)	0.029	0.006
252	21.00	0.07	0.036	(0.111)	0.029	0.006
253	21.08	0.10	0.054	(0.111)	0.044	0.010
254	21.17	0.10	0.054	(0.110)	0.044	0.010
255	21.25	0.10	0.054	(0.110)	0.044	0.010
256	21.33	0.07	0.036	(0.109)	0.029	0.006
257	21.42	0.07	0.036	(0.109)	0.029	0.006
258	21.50	0.07	0.036	(0.109)	0.029	0.006
259	21.58	0.10	0.054	(0.108)	0.044	0.010
260	21.67	0.10	0.054	(0.108)	0.044	0.010
261	21.75	0.10	0.054	(0.107)	0.044	0.010
262	21.83	0.07	0.036	(0.107)	0.029	0.006
263	21.92	0.07	0.036	(0.107)	0.029	0.006
264	22.00	0.07	0.036	(0.106)	0.029	0.006
265	22.08	0.10	0.054	(0.106)	0.044	0.010
266	22.17	0.10	0.054	(0.106)	0.044	0.010
267	22.25	0.10	0.054	(0.105)	0.044	0.010
268	22.33	0.07	0.036	(0.105)	0.029	0.006
269	22.42	0.07	0.036	(0.105)	0.029	0.006
270	22.50	0.07	0.036	(0.104)	0.029	0.006
271	22.58	0.07	0.036	(0.104)	0.029	0.006
272	22.67	0.07	0.036	(0.104)	0.029	0.006
273	22.75	0.07	0.036	(0.103)	0.029	0.006
274	22.83	0.07	0.036	(0.103)	0.029	0.006
275	22.92	0.07	0.036	(0.103)	0.029	0.006
276	23.00	0.07	0.036	(0.103)	0.029	0.006
277	23.08	0.07	0.036	(0.102)	0.029	0.006
278	23.17	0.07	0.036	(0.102)	0.029	0.006
279	23.25	0.07	0.036	(0.102)	0.029	0.006
280	23.33	0.07	0.036	(0.102)	0.029	0.006
281	23.42	0.07	0.036	(0.102)	0.029	0.006
282	23.50	0.07	0.036	(0.101)	0.029	0.006
283	23.58	0.07	0.036	(0.101)	0.029	0.006
284	23.67	0.07	0.036	(0.101)	0.029	0.006
285	23.75	0.07	0.036	(0.101)	0.029	0.006
286	23.83	0.07	0.036	(0.101)	0.029	0.006
287	23.92	0.07	0.036	(0.101)	0.029	0.006
288	24.00	0.07	0.036	(0.101)	0.029	0.006

(Loss Rate Not Used)

Sum =	100.0	Sum =	22.3
Flood volume =	Effective rainfall	1.86(In)	
times area	6.8(Ac.)/[((In)/(Ft.))] =	1.1(Ac.Ft)	
Total soil loss =	2.61(In)		
Total soil loss =	1.481(Ac.Ft)		
Total rainfall =	4.47(In)		
Flood volume =	45808.3 Cubic Feet		
Total soil loss =	64527.7 Cubic Feet		

Peak flow rate of this hydrograph = 2.982(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

Time(h+m)	Volume	Ac.Ft	Q(CFS)	0	2.5	5.0	7.5
0+ 5	0.0001		0.02	Q			
0+10	0.0004		0.04	Q			
0+15	0.0007		0.04	Q			
0+20	0.0011		0.05	Q			
0+25	0.0015		0.06	Q			
0+30	0.0019		0.07	Q			
0+35	0.0024		0.07	Q			
0+40	0.0029		0.07	Q			
0+45	0.0033		0.07	Q			
0+50	0.0038		0.08	Q			
0+55	0.0044		0.09	Q			
1+ 0	0.0050		0.09	Q			
1+ 5	0.0056		0.08	Q			
1+10	0.0060		0.07	Q			
1+15	0.0065		0.07	Q			
1+20	0.0070		0.07	Q			
1+25	0.0074		0.07	Q			
1+30	0.0079		0.07	Q			
1+35	0.0083		0.07	Q			
1+40	0.0088		0.07	Q			
1+45	0.0092		0.07	Q			

1+50	0.0098	0.08	Q	|	|	|
1+55	0.0104	0.09	Q	|	|	|
2+ 0	0.0110	0.09	Q	|	|	|
2+ 5	0.0116	0.09	Q	|	|	|
2+10	0.0122	0.09	Q	|	|	|
2+15	0.0128	0.09	Q	|	|	|
2+20	0.0134	0.09	Q	|	|	|
2+25	0.0140	0.09	Q	|	|	|
2+30	0.0146	0.09	Q	|	|	|
2+35	0.0153	0.10	Q	|	|	|
2+40	0.0160	0.11	Q	|	|	|
2+45	0.0168	0.11	Q	|	|	|
2+50	0.0175	0.11	Q	|	|	|
2+55	0.0183	0.11	Q	|	|	|
3+ 0	0.0191	0.11	Q	|	|	|
3+ 5	0.0198	0.11	Q	|	|	|
3+10	0.0206	0.11	Q	|	|	|
3+15	0.0213	0.11	Q	|	|	|
3+20	0.0221	0.11	Q	|	|	|
3+25	0.0229	0.11	Q	|	|	|
3+30	0.0236	0.11	Q	|	|	|
3+35	0.0244	0.11	Q	|	|	|
3+40	0.0251	0.11	Q	|	|	|
3+45	0.0259	0.11	Q	|	|	|
3+50	0.0267	0.12	QV	|	|	|
3+55	0.0276	0.13	QV	|	|	|
4+ 0	0.0285	0.13	QV	|	|	|
4+ 5	0.0294	0.13	QV	|	|	|
4+10	0.0303	0.13	QV	|	|	|
4+15	0.0313	0.13	QV	|	|	|

4+20	0.0322	0.14	QV	|	|	|
4+25	0.0333	0.15	QV	|	|	|
4+30	0.0343	0.15	QV	|	|	|
4+35	0.0354	0.15	QV	|	|	|
4+40	0.0365	0.15	QV	|	|	|
4+45	0.0375	0.15	QV	|	|	|
4+50	0.0387	0.16	QV	|	|	|
4+55	0.0399	0.17	QV	|	|	|
5+ 0	0.0411	0.18	QV	|	|	|
5+ 5	0.0422	0.16	QV	|	|	|
5+10	0.0431	0.14	QV	|	|	|
5+15	0.0440	0.13	QV	|	|	|
5+20	0.0450	0.14	QV	|	|	|
5+25	0.0460	0.15	QV	|	|	|
5+30	0.0471	0.15	QV	|	|	|
5+35	0.0482	0.16	QV	|	|	|
5+40	0.0494	0.17	QV	|	|	|
5+45	0.0506	0.18	QV	|	|	|
5+50	0.0519	0.18	QV	|	|	|
5+55	0.0531	0.18	Q V	|	|	|
6+ 0	0.0543	0.18	Q V	|	|	|
6+ 5	0.0556	0.19	Q V	|	|	|
6+10	0.0569	0.20	Q V	|	|	|
6+15	0.0583	0.20	Q V	|	|	|
6+20	0.0596	0.20	Q V	|	|	|
6+25	0.0610	0.20	Q V	|	|	|
6+30	0.0624	0.20	Q V	|	|	|
6+35	0.0638	0.21	Q V	|	|	|
6+40	0.0653	0.22	Q V	|	|	|
6+45	0.0668	0.22	Q V	|	|	|

6+50	0.0684	0.22	Q V	|	|	|
6+55	0.0699	0.22	Q V	|	|	|
7+ 0	0.0714	0.22	Q V	|	|	|
7+ 5	0.0729	0.22	Q V	|	|	|
7+10	0.0744	0.22	Q V	|	|	|
7+15	0.0760	0.22	Q V	|	|	|
7+20	0.0775	0.23	Q V	|	|	|
7+25	0.0792	0.24	Q V	|	|	|
7+30	0.0809	0.24	Q V	|	|	|
7+35	0.0826	0.25	|Q V	|	|	|
7+40	0.0844	0.26	|Q V	|	|	|
7+45	0.0862	0.26	|Q V	|	|	|
7+50	0.0881	0.27	|Q V	|	|	|
7+55	0.0901	0.28	|Q V	|	|	|
8+ 0	0.0920	0.29	|Q V	|	|	|
8+ 5	0.0941	0.31	|Q V	|	|	|
8+10	0.0964	0.33	|Q V	|	|	|
8+15	0.0987	0.33	|Q V	|	|	|
8+20	0.1009	0.33	|Q V	|	|	|
8+25	0.1032	0.33	|Q V	|	|	|
8+30	0.1055	0.33	|Q V	|	|	|
8+35	0.1079	0.35	|Q V	|	|	|
8+40	0.1105	0.38	|Q V	|	|	|
8+45	0.1132	0.39	|Q V	|	|	|
8+50	0.1163	0.45	|Q V	|	|	|
8+55	0.1198	0.51	| Q V	|	|	|
9+ 0	0.1235	0.53	| Q V	|	|	|
9+ 5	0.1280	0.65	| Q V	|	|	|
9+10	0.1332	0.77	| Q V	|	|	|
9+15	0.1387	0.79	| Q V	|	|	|

9+20	0.1446	0.86	| Q V	|	|	|
9+25	0.1510	0.92	| Q V	|	|	|
9+30	0.1575	0.94	| Q V	|	|	|
9+35	0.1644	1.01	| Q V	|	|	|
9+40	0.1718	1.07	| Q V	|	|	|
9+45	0.1793	1.09	| Q V	|	|	|
9+50	0.1872	1.15	| Q V	|	|	|
9+55	0.1955	1.21	| Q V	|	|	|
10+ 0	0.2040	1.23	| Q V	|	|	|
10+ 5	0.2100	0.87	| Q V	|	|	|
10+10	0.2134	0.49	|Q V	|	|	|
10+15	0.2164	0.43	|Q V	|	|	|
10+20	0.2191	0.40	|Q V	|	|	|
10+25	0.2220	0.41	|Q V	|	|	|
10+30	0.2249	0.42	|Q V	|	|	|
10+35	0.2296	0.69	| Q V	|	|	|
10+40	0.2363	0.97	| Q V	|	|	|
10+45	0.2434	1.03	| Q V	|	|	|
10+50	0.2507	1.06	| Q V	|	|	|
10+55	0.2580	1.07	| Q V	|	|	|
11+ 0	0.2654	1.07	| Q V	|	|	|
11+ 5	0.2725	1.03	| Q V	|	|	|
11+10	0.2792	0.98	| Q V	|	|	|
11+15	0.2859	0.97	| Q V	|	|	|
11+20	0.2927	0.98	| Q |V	|	|	|
11+25	0.2994	0.98	| Q |V	|	|	|
11+30	0.3063	0.99	| Q |V	|	|	|
11+35	0.3124	0.89	| Q |V	|	|	|
11+40	0.3178	0.79	| Q | V	|	|	|
11+45	0.3231	0.77	| Q | V	|	|	|

11+50	0.3288	0.82	| Q	| V	|	|
11+55	0.3349	0.89	| Q	| V	|	|
12+ 0	0.3411	0.90	| Q	| V	|	|
12+ 5	0.3500	1.28	| Q	| V	|	|
12+10	0.3615	1.68	| Q	| V	|	|
12+15	0.3736	1.76	| Q	| V	|	|
12+20	0.3863	1.84	| Q	| V	|	|
12+25	0.3994	1.91	| Q	| V	|	|
12+30	0.4127	1.92	| Q	| V	|	|
12+35	0.4267	2.04	| Q	| V	|	|
12+40	0.4415	2.16	| Q	| V	|	|
12+45	0.4566	2.18	| Q	| V	|	|
12+50	0.4721	2.25	| Q	| V	|	|
12+55	0.4880	2.31	| Q	| V	|	|
13+ 0	0.5040	2.33	| Q	| V	|	|
13+ 5	0.5219	2.60	| Q	| V	|	|
13+10	0.5418	2.88	| Q	| V	|	|
13+15	0.5621	2.94	| Q	| V	|	|
13+20	0.5825	2.97	| Q	| V	|	|
13+25	0.6030	2.98	| Q	| V	|	|
13+30	0.6236	2.98	| Q	| V	|	|
13+35	0.6402	2.41	| Q	| V	|	|
13+40	0.6526	1.81	| Q	| V	|	|
13+45	0.6643	1.69	| Q	| V	|	|
13+50	0.6757	1.66	| Q	| V	|	|
13+55	0.6871	1.66	| Q	| V	|	|
14+ 0	0.6986	1.67	| Q	| V	|	|
14+ 5	0.7116	1.88	| Q	| V	|	|
14+10	0.7262	2.11	| Q	| V	|	|
14+15	0.7410	2.16	| Q	| V	|	|

14+20	0.7557	2.13	|	Q	|	|	V	|
14+25	0.7700	2.08	|	Q	|	|	V	|
14+30	0.7843	2.08	|	Q	|	|	V	|
14+35	0.7986	2.08	|	Q	|	|	V	|
14+40	0.8130	2.08	|	Q	|	|	V	|
14+45	0.8274	2.09	|	Q	|	|	V	|
14+50	0.8414	2.04	|	Q	|	|	V	|
14+55	0.8551	1.99	|	Q	|	|	V	|
15+ 0	0.8688	1.99	|	Q	|	|	V	|
15+ 5	0.8822	1.94	|	Q	|	|	V	|
15+10	0.8952	1.89	|	Q	|	|	V	|
15+15	0.9081	1.88	|	Q	|	|	V	|
15+20	0.9207	1.83	|	Q	|	|	V	|
15+25	0.9330	1.78	|	Q	|	|	V	|
15+30	0.9452	1.77	|	Q	|	|	V	|
15+35	0.9560	1.57	|	Q	|	|	V	|
15+40	0.9653	1.35	|	Q	|	|	V	|
15+45	0.9743	1.31	|	Q	|	|	V	|
15+50	0.9833	1.30	|	Q	|	|	V	|
15+55	0.9923	1.31	|	Q	|	|	V	|
16+ 0	1.0013	1.31	|	Q	|	|	V	|
16+ 5	1.0067	0.79	|	Q	|	|	V	|
16+10	1.0083	0.23	Q	|	|	|	V	|
16+15	1.0092	0.13	Q	|	|	|	V	|
16+20	1.0098	0.09	Q	|	|	|	V	|
16+25	1.0104	0.09	Q	|	|	|	V	|
16+30	1.0111	0.09	Q	|	|	|	V	|
16+35	1.0116	0.08	Q	|	|	|	V	|
16+40	1.0121	0.07	Q	|	|	|	V	|
16+45	1.0125	0.07	Q	|	|	|	V	|

V|	19+20	1.0304	0.08	Q	|	|	|
V|	19+25	1.0310	0.09	Q	|	|	|
V|	19+30	1.0316	0.09	Q	|	|	|
V|	19+35	1.0321	0.08	Q	|	|	|
V|	19+40	1.0326	0.07	Q	|	|	|
V|	19+45	1.0330	0.07	Q	|	|	|
V|	19+50	1.0334	0.06	Q	|	|	|
V|	19+55	1.0338	0.05	Q	|	|	|
V|	20+ 0	1.0341	0.04	Q	|	|	|
V|	20+ 5	1.0344	0.05	Q	|	|	|
V|	20+10	1.0349	0.06	Q	|	|	|
V|	20+15	1.0353	0.07	Q	|	|	|
V|	20+20	1.0358	0.07	Q	|	|	|
V|	20+25	1.0362	0.07	Q	|	|	|
V|	20+30	1.0367	0.07	Q	|	|	|
V|	20+35	1.0372	0.07	Q	|	|	|
V|	20+40	1.0376	0.07	Q	|	|	|
V|	20+45	1.0381	0.07	Q	|	|	|
V|	20+50	1.0385	0.06	Q	|	|	|
V|	20+55	1.0388	0.05	Q	|	|	|
V|	21+ 0	1.0391	0.04	Q	|	|	|
V|	21+ 5	1.0395	0.05	Q	|	|	|
V|	21+10	1.0399	0.06	Q	|	|	|
V|	21+15	1.0403	0.07	Q	|	|	|
V|	21+20	1.0407	0.06	Q	|	|	|
V|	21+25	1.0411	0.05	Q	|	|	|
V|	21+30	1.0414	0.04	Q	|	|	|
V|	21+35	1.0417	0.05	Q	|	|	|
V|	21+40	1.0422	0.06	Q	|	|	|
V|	21+45	1.0426	0.07	Q	|	|	|

V|	21+50	1.0430	0.06	Q	|	|	|
V|	21+55	1.0433	0.05	Q	|	|	|
V|	22+ 0	1.0436	0.04	Q	|	|	|
V|	22+ 5	1.0440	0.05	Q	|	|	|
V|	22+10	1.0445	0.06	Q	|	|	|
V|	22+15	1.0449	0.07	Q	|	|	|
V|	22+20	1.0453	0.06	Q	|	|	|
V|	22+25	1.0456	0.05	Q	|	|	|
V|	22+30	1.0459	0.04	Q	|	|	|
V|	22+35	1.0462	0.04	Q	|	|	|
V|	22+40	1.0465	0.04	Q	|	|	|
V|	22+45	1.0468	0.04	Q	|	|	|
V|	22+50	1.0471	0.04	Q	|	|	|
V|	22+55	1.0474	0.04	Q	|	|	|
V|	23+ 0	1.0477	0.04	Q	|	|	|
V|	23+ 5	1.0481	0.04	Q	|	|	|
V|	23+10	1.0484	0.04	Q	|	|	|
V|	23+15	1.0487	0.04	Q	|	|	|
V|	23+20	1.0490	0.04	Q	|	|	|
V|	23+25	1.0493	0.04	Q	|	|	|
V|	23+30	1.0496	0.04	Q	|	|	|
V|	23+35	1.0499	0.04	Q	|	|	|
V|	23+40	1.0502	0.04	Q	|	|	|
V|	23+45	1.0505	0.04	Q	|	|	|
V|	23+50	1.0508	0.04	Q	|	|	|
V|	23+55	1.0511	0.04	Q	|	|	|
V|	24+ 0	1.0514	0.04	Q	|	|	|
V	24+ 5	1.0516	0.03	Q			
V	24+10	1.0516	0.01	Q			
V	24+15	1.0516	0.00	Q			
V							

Unit Hydrograph Analysis

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8.2

Study date 02/18/16 File: VDA3to724100.out

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

Program License Serial Number 6232

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

English Units used in output format

VDA Area 8 100yr 24hr Post Dev

--
Drainage Area = 10.85(Ac.) = 0.017 Sq. Mi.
0.017 Drainage Area for Depth-Area Areal Adjustment = 10.85(Ac.) =
Sq. Mi.
(Ft.) Length along longest watercourse = 2495.00(Ft.)
Length along longest watercourse measured to centroid = 999.00
(Ft.)
Length along longest watercourse = 0.473 Mi.
Mi. Length along longest watercourse measured to centroid = 0.189

Difference in elevation = 44.00(Ft.)
Slope along watercourse = 93.1142 Ft./Mi.
Average Manning's 'N' = 0.015
Lag time = 0.061 Hr.
Lag time = 3.65 Min.
25% of lag time = 0.91 Min.
40% of lag time = 1.46 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]

10.85 1.14 12.37

100 YEAR Area rainfall data:

Area(Ac.)[1] Rainfall(In)[2] Weighting[1*2]
10.85 4.47 48.50

STORM EVENT (YEAR) = 100.00
Area Averaged 2-Year Rainfall = 1.140(In)
Area Averaged 100-Year Rainfall = 4.470(In)

Point rain (area averaged) = 4.470(In)
Areal adjustment factor = 100.00 %
Adjusted average point rain = 4.470(In)

Sub-Area Data:

Area(Ac.) Runoff Index Impervious %
10.850 56.00 0.900
Total Area Entered = 10.85(Ac.)

RI RI Infil. Rate Impervious Adj. Infil. Rate Area% F
AMC2 AMC-3 (In/Hr) (Dec.%) (In/Hr) (Dec.)
(In/Hr)
56.0 74.8 0.305 0.900 0.058 1.000
0.058
Sum (F) =
0.058

Area averaged mean soil loss (F) (In/Hr) = 0.058
Minimum soil loss rate ((In/Hr)) = 0.029
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.180

Unit Hydrograph
DESERT S-Curve

Unit Hydrograph Data

Table with 4 columns: Unit time period (hrs), Time % of lag, Distribution Graph %, Unit Hydrograph (CFS). Rows 1-6 and a Sum row.

The following loss rate calculations reflect use of the minimum calculated loss rate subtracted from the Storm Rain to produce the maximum Effective

Rain value

Unit	Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr)		Effective (In/Hr)
				Max	Low	
1	0.08	0.07	0.036	(0.103)	0.006	0.029
2	0.17	0.07	0.036	(0.102)	0.006	0.029
3	0.25	0.07	0.036	(0.102)	0.006	0.029
4	0.33	0.10	0.054	(0.102)	0.010	0.044
5	0.42	0.10	0.054	(0.101)	0.010	0.044
6	0.50	0.10	0.054	(0.101)	0.010	0.044
7	0.58	0.10	0.054	(0.100)	0.010	0.044
8	0.67	0.10	0.054	(0.100)	0.010	0.044
9	0.75	0.10	0.054	(0.100)	0.010	0.044
10	0.83	0.13	0.072	(0.099)	0.013	0.059
11	0.92	0.13	0.072	(0.099)	0.013	0.059
12	1.00	0.13	0.072	(0.099)	0.013	0.059
13	1.08	0.10	0.054	(0.098)	0.010	0.044
14	1.17	0.10	0.054	(0.098)	0.010	0.044
15	1.25	0.10	0.054	(0.097)	0.010	0.044
16	1.33	0.10	0.054	(0.097)	0.010	0.044
17	1.42	0.10	0.054	(0.097)	0.010	0.044
18	1.50	0.10	0.054	(0.096)	0.010	0.044
19	1.58	0.10	0.054	(0.096)	0.010	0.044
20	1.67	0.10	0.054	(0.095)	0.010	0.044
21	1.75	0.10	0.054	(0.095)	0.010	0.044
22	1.83	0.13	0.072	(0.095)	0.013	0.059
23	1.92	0.13	0.072	(0.094)	0.013	0.059
24	2.00	0.13	0.072	(0.094)	0.013	0.059
25	2.08	0.13	0.072	(0.094)	0.013	0.059
26	2.17	0.13	0.072	(0.093)	0.013	0.059
27	2.25	0.13	0.072	(0.093)	0.013	0.059
28	2.33	0.13	0.072	(0.092)	0.013	0.059
29	2.42	0.13	0.072	(0.092)	0.013	0.059
30	2.50	0.13	0.072	(0.092)	0.013	0.059
31	2.58	0.17	0.089	(0.091)	0.016	0.073
32	2.67	0.17	0.089	(0.091)	0.016	0.073
33	2.75	0.17	0.089	(0.091)	0.016	0.073
34	2.83	0.17	0.089	(0.090)	0.016	0.073
35	2.92	0.17	0.089	(0.090)	0.016	0.073
36	3.00	0.17	0.089	(0.089)	0.016	0.073
37	3.08	0.17	0.089	(0.089)	0.016	0.073
38	3.17	0.17	0.089	(0.089)	0.016	0.073
39	3.25	0.17	0.089	(0.088)	0.016	0.073
40	3.33	0.17	0.089	(0.088)	0.016	0.073
41	3.42	0.17	0.089	(0.088)	0.016	0.073
42	3.50	0.17	0.089	(0.087)	0.016	0.073
43	3.58	0.17	0.089	(0.087)	0.016	0.073
44	3.67	0.17	0.089	(0.086)	0.016	0.073
45	3.75	0.17	0.089	(0.086)	0.016	0.073
46	3.83	0.20	0.107	(0.086)	0.019	0.088
47	3.92	0.20	0.107	(0.085)	0.019	0.088
48	4.00	0.20	0.107	(0.085)	0.019	0.088
49	4.08	0.20	0.107	(0.085)	0.019	0.088
50	4.17	0.20	0.107	(0.084)	0.019	0.088
51	4.25	0.20	0.107	(0.084)	0.019	0.088
52	4.33	0.23	0.125	(0.084)	0.023	0.103
53	4.42	0.23	0.125	(0.083)	0.023	0.103
54	4.50	0.23	0.125	(0.083)	0.023	0.103
55	4.58	0.23	0.125	(0.082)	0.023	0.103
56	4.67	0.23	0.125	(0.082)	0.023	0.103

57	4.75	0.23	0.125	(0.082)	0.023	0.103
58	4.83	0.27	0.143	(0.081)	0.026	0.117
59	4.92	0.27	0.143	(0.081)	0.026	0.117
60	5.00	0.27	0.143	(0.081)	0.026	0.117
61	5.08	0.20	0.107	(0.080)	0.019	0.088
62	5.17	0.20	0.107	(0.080)	0.019	0.088
63	5.25	0.20	0.107	(0.080)	0.019	0.088
64	5.33	0.23	0.125	(0.079)	0.023	0.103
65	5.42	0.23	0.125	(0.079)	0.023	0.103
66	5.50	0.23	0.125	(0.079)	0.023	0.103
67	5.58	0.27	0.143	(0.078)	0.026	0.117
68	5.67	0.27	0.143	(0.078)	0.026	0.117
69	5.75	0.27	0.143	(0.078)	0.026	0.117
70	5.83	0.27	0.143	(0.077)	0.026	0.117
71	5.92	0.27	0.143	(0.077)	0.026	0.117
72	6.00	0.27	0.143	(0.077)	0.026	0.117
73	6.08	0.30	0.161	(0.076)	0.029	0.132
74	6.17	0.30	0.161	(0.076)	0.029	0.132
75	6.25	0.30	0.161	(0.076)	0.029	0.132
76	6.33	0.30	0.161	(0.075)	0.029	0.132
77	6.42	0.30	0.161	(0.075)	0.029	0.132
78	6.50	0.30	0.161	(0.075)	0.029	0.132
79	6.58	0.33	0.179	(0.074)	0.032	0.147
80	6.67	0.33	0.179	(0.074)	0.032	0.147
81	6.75	0.33	0.179	(0.074)	0.032	0.147
82	6.83	0.33	0.179	(0.073)	0.032	0.147
83	6.92	0.33	0.179	(0.073)	0.032	0.147
84	7.00	0.33	0.179	(0.073)	0.032	0.147
85	7.08	0.33	0.179	(0.072)	0.032	0.147
86	7.17	0.33	0.179	(0.072)	0.032	0.147
87	7.25	0.33	0.179	(0.072)	0.032	0.147
88	7.33	0.37	0.197	(0.071)	0.035	0.161
89	7.42	0.37	0.197	(0.071)	0.035	0.161
90	7.50	0.37	0.197	(0.071)	0.035	0.161
91	7.58	0.40	0.215	(0.070)	0.039	0.176
92	7.67	0.40	0.215	(0.070)	0.039	0.176
93	7.75	0.40	0.215	(0.070)	0.039	0.176
94	7.83	0.43	0.232	(0.069)	0.042	0.191
95	7.92	0.43	0.232	(0.069)	0.042	0.191
96	8.00	0.43	0.232	(0.069)	0.042	0.191
97	8.08	0.50	0.268	(0.068)	0.048	0.220
98	8.17	0.50	0.268	(0.068)	0.048	0.220
99	8.25	0.50	0.268	(0.068)	0.048	0.220
100	8.33	0.50	0.268	(0.067)	0.048	0.220
101	8.42	0.50	0.268	(0.067)	0.048	0.220
102	8.50	0.50	0.268	(0.067)	0.048	0.220
103	8.58	0.53	0.286	(0.066)	0.051	0.235
104	8.67	0.53	0.286	(0.066)	0.051	0.235
105	8.75	0.53	0.286	(0.066)	0.051	0.235
106	8.83	0.57	0.304	(0.066)	0.055	0.249
107	8.92	0.57	0.304	(0.065)	0.055	0.249
108	9.00	0.57	0.304	(0.065)	0.055	0.249
109	9.08	0.63	0.340	(0.065)	0.061	0.279
110	9.17	0.63	0.340	(0.064)	0.061	0.279
111	9.25	0.63	0.340	(0.064)	0.061	0.279
112	9.33	0.67	0.358	0.064 (0.064)		0.294
113	9.42	0.67	0.358	0.063 (0.064)		0.294
114	9.50	0.67	0.358	0.063 (0.064)		0.295
115	9.58	0.70	0.375	0.063 (0.068)		0.313
116	9.67	0.70	0.375	0.062 (0.068)		0.313

117	9.75	0.70	0.375	0.062	(0.068)	0.313
118	9.83	0.73	0.393	0.062	(0.071)	0.331
119	9.92	0.73	0.393	0.062	(0.071)	0.332
120	10.00	0.73	0.393	0.061	(0.071)	0.332
121	10.08	0.50	0.268	(0.061)	0.048	0.220
122	10.17	0.50	0.268	(0.061)	0.048	0.220
123	10.25	0.50	0.268	(0.060)	0.048	0.220
124	10.33	0.50	0.268	(0.060)	0.048	0.220
125	10.42	0.50	0.268	(0.060)	0.048	0.220
126	10.50	0.50	0.268	(0.060)	0.048	0.220
127	10.58	0.67	0.358	0.059	(0.064)	0.298
128	10.67	0.67	0.358	0.059	(0.064)	0.299
129	10.75	0.67	0.358	0.059	(0.064)	0.299
130	10.83	0.67	0.358	0.058	(0.064)	0.299
131	10.92	0.67	0.358	0.058	(0.064)	0.300
132	11.00	0.67	0.358	0.058	(0.064)	0.300
133	11.08	0.63	0.340	0.057	(0.061)	0.282
134	11.17	0.63	0.340	0.057	(0.061)	0.283
135	11.25	0.63	0.340	0.057	(0.061)	0.283
136	11.33	0.63	0.340	0.057	(0.061)	0.283
137	11.42	0.63	0.340	0.056	(0.061)	0.283
138	11.50	0.63	0.340	0.056	(0.061)	0.284
139	11.58	0.57	0.304	(0.056)	0.055	0.249
140	11.67	0.57	0.304	(0.056)	0.055	0.249
141	11.75	0.57	0.304	(0.055)	0.055	0.249
142	11.83	0.60	0.322	0.055	(0.058)	0.267
143	11.92	0.60	0.322	0.055	(0.058)	0.267
144	12.00	0.60	0.322	0.054	(0.058)	0.267
145	12.08	0.83	0.447	0.054	(0.080)	0.393
146	12.17	0.83	0.447	0.054	(0.080)	0.393
147	12.25	0.83	0.447	0.054	(0.080)	0.393
148	12.33	0.87	0.465	0.053	(0.084)	0.412
149	12.42	0.87	0.465	0.053	(0.084)	0.412
150	12.50	0.87	0.465	0.053	(0.084)	0.412
151	12.58	0.93	0.501	0.053	(0.090)	0.448
152	12.67	0.93	0.501	0.052	(0.090)	0.448
153	12.75	0.93	0.501	0.052	(0.090)	0.449
154	12.83	0.97	0.519	0.052	(0.093)	0.467
155	12.92	0.97	0.519	0.051	(0.093)	0.467
156	13.00	0.97	0.519	0.051	(0.093)	0.467
157	13.08	1.13	0.608	0.051	(0.109)	0.557
158	13.17	1.13	0.608	0.051	(0.109)	0.557
159	13.25	1.13	0.608	0.050	(0.109)	0.557
160	13.33	1.13	0.608	0.050	(0.109)	0.558
161	13.42	1.13	0.608	0.050	(0.109)	0.558
162	13.50	1.13	0.608	0.050	(0.109)	0.558
163	13.58	0.77	0.411	0.049	(0.074)	0.362
164	13.67	0.77	0.411	0.049	(0.074)	0.362
165	13.75	0.77	0.411	0.049	(0.074)	0.362
166	13.83	0.77	0.411	0.049	(0.074)	0.363
167	13.92	0.77	0.411	0.048	(0.074)	0.363
168	14.00	0.77	0.411	0.048	(0.074)	0.363
169	14.08	0.90	0.483	0.048	(0.087)	0.435
170	14.17	0.90	0.483	0.048	(0.087)	0.435
171	14.25	0.90	0.483	0.047	(0.087)	0.435
172	14.33	0.87	0.465	0.047	(0.084)	0.418
173	14.42	0.87	0.465	0.047	(0.084)	0.418
174	14.50	0.87	0.465	0.047	(0.084)	0.418
175	14.58	0.87	0.465	0.046	(0.084)	0.418
176	14.67	0.87	0.465	0.046	(0.084)	0.419

177	14.75	0.87	0.465	0.046	(0.084)	0.419
178	14.83	0.83	0.447	0.046	(0.080)	0.401
179	14.92	0.83	0.447	0.046	(0.080)	0.401
180	15.00	0.83	0.447	0.045	(0.080)	0.402
181	15.08	0.80	0.429	0.045	(0.077)	0.384
182	15.17	0.80	0.429	0.045	(0.077)	0.384
183	15.25	0.80	0.429	0.045	(0.077)	0.384
184	15.33	0.77	0.411	0.044	(0.074)	0.367
185	15.42	0.77	0.411	0.044	(0.074)	0.367
186	15.50	0.77	0.411	0.044	(0.074)	0.367
187	15.58	0.63	0.340	0.044	(0.061)	0.296
188	15.67	0.63	0.340	0.043	(0.061)	0.296
189	15.75	0.63	0.340	0.043	(0.061)	0.296
190	15.83	0.63	0.340	0.043	(0.061)	0.297
191	15.92	0.63	0.340	0.043	(0.061)	0.297
192	16.00	0.63	0.340	0.043	(0.061)	0.297
193	16.08	0.13	0.072	(0.042)	0.013	0.059
194	16.17	0.13	0.072	(0.042)	0.013	0.059
195	16.25	0.13	0.072	(0.042)	0.013	0.059
196	16.33	0.13	0.072	(0.042)	0.013	0.059
197	16.42	0.13	0.072	(0.042)	0.013	0.059
198	16.50	0.13	0.072	(0.041)	0.013	0.059
199	16.58	0.10	0.054	(0.041)	0.010	0.044
200	16.67	0.10	0.054	(0.041)	0.010	0.044
201	16.75	0.10	0.054	(0.041)	0.010	0.044
202	16.83	0.10	0.054	(0.040)	0.010	0.044
203	16.92	0.10	0.054	(0.040)	0.010	0.044
204	17.00	0.10	0.054	(0.040)	0.010	0.044
205	17.08	0.17	0.089	(0.040)	0.016	0.073
206	17.17	0.17	0.089	(0.040)	0.016	0.073
207	17.25	0.17	0.089	(0.039)	0.016	0.073
208	17.33	0.17	0.089	(0.039)	0.016	0.073
209	17.42	0.17	0.089	(0.039)	0.016	0.073
210	17.50	0.17	0.089	(0.039)	0.016	0.073
211	17.58	0.17	0.089	(0.039)	0.016	0.073
212	17.67	0.17	0.089	(0.038)	0.016	0.073
213	17.75	0.17	0.089	(0.038)	0.016	0.073
214	17.83	0.13	0.072	(0.038)	0.013	0.059
215	17.92	0.13	0.072	(0.038)	0.013	0.059
216	18.00	0.13	0.072	(0.038)	0.013	0.059
217	18.08	0.13	0.072	(0.038)	0.013	0.059
218	18.17	0.13	0.072	(0.037)	0.013	0.059
219	18.25	0.13	0.072	(0.037)	0.013	0.059
220	18.33	0.13	0.072	(0.037)	0.013	0.059
221	18.42	0.13	0.072	(0.037)	0.013	0.059
222	18.50	0.13	0.072	(0.037)	0.013	0.059
223	18.58	0.10	0.054	(0.036)	0.010	0.044
224	18.67	0.10	0.054	(0.036)	0.010	0.044
225	18.75	0.10	0.054	(0.036)	0.010	0.044
226	18.83	0.07	0.036	(0.036)	0.006	0.029
227	18.92	0.07	0.036	(0.036)	0.006	0.029
228	19.00	0.07	0.036	(0.036)	0.006	0.029
229	19.08	0.10	0.054	(0.035)	0.010	0.044
230	19.17	0.10	0.054	(0.035)	0.010	0.044
231	19.25	0.10	0.054	(0.035)	0.010	0.044
232	19.33	0.13	0.072	(0.035)	0.013	0.059
233	19.42	0.13	0.072	(0.035)	0.013	0.059
234	19.50	0.13	0.072	(0.035)	0.013	0.059
235	19.58	0.10	0.054	(0.034)	0.010	0.044
236	19.67	0.10	0.054	(0.034)	0.010	0.044

237	19.75	0.10	0.054	(0.034)	0.010	0.044
238	19.83	0.07	0.036	(0.034)	0.006	0.029
239	19.92	0.07	0.036	(0.034)	0.006	0.029
240	20.00	0.07	0.036	(0.034)	0.006	0.029
241	20.08	0.10	0.054	(0.034)	0.010	0.044
242	20.17	0.10	0.054	(0.033)	0.010	0.044
243	20.25	0.10	0.054	(0.033)	0.010	0.044
244	20.33	0.10	0.054	(0.033)	0.010	0.044
245	20.42	0.10	0.054	(0.033)	0.010	0.044
246	20.50	0.10	0.054	(0.033)	0.010	0.044
247	20.58	0.10	0.054	(0.033)	0.010	0.044
248	20.67	0.10	0.054	(0.033)	0.010	0.044
249	20.75	0.10	0.054	(0.032)	0.010	0.044
250	20.83	0.07	0.036	(0.032)	0.006	0.029
251	20.92	0.07	0.036	(0.032)	0.006	0.029
252	21.00	0.07	0.036	(0.032)	0.006	0.029
253	21.08	0.10	0.054	(0.032)	0.010	0.044
254	21.17	0.10	0.054	(0.032)	0.010	0.044
255	21.25	0.10	0.054	(0.032)	0.010	0.044
256	21.33	0.07	0.036	(0.032)	0.006	0.029
257	21.42	0.07	0.036	(0.031)	0.006	0.029
258	21.50	0.07	0.036	(0.031)	0.006	0.029
259	21.58	0.10	0.054	(0.031)	0.010	0.044
260	21.67	0.10	0.054	(0.031)	0.010	0.044
261	21.75	0.10	0.054	(0.031)	0.010	0.044
262	21.83	0.07	0.036	(0.031)	0.006	0.029
263	21.92	0.07	0.036	(0.031)	0.006	0.029
264	22.00	0.07	0.036	(0.031)	0.006	0.029
265	22.08	0.10	0.054	(0.031)	0.010	0.044
266	22.17	0.10	0.054	(0.030)	0.010	0.044
267	22.25	0.10	0.054	(0.030)	0.010	0.044
268	22.33	0.07	0.036	(0.030)	0.006	0.029
269	22.42	0.07	0.036	(0.030)	0.006	0.029
270	22.50	0.07	0.036	(0.030)	0.006	0.029
271	22.58	0.07	0.036	(0.030)	0.006	0.029
272	22.67	0.07	0.036	(0.030)	0.006	0.029
273	22.75	0.07	0.036	(0.030)	0.006	0.029
274	22.83	0.07	0.036	(0.030)	0.006	0.029
275	22.92	0.07	0.036	(0.030)	0.006	0.029
276	23.00	0.07	0.036	(0.030)	0.006	0.029
277	23.08	0.07	0.036	(0.030)	0.006	0.029
278	23.17	0.07	0.036	(0.029)	0.006	0.029
279	23.25	0.07	0.036	(0.029)	0.006	0.029
280	23.33	0.07	0.036	(0.029)	0.006	0.029
281	23.42	0.07	0.036	(0.029)	0.006	0.029
282	23.50	0.07	0.036	(0.029)	0.006	0.029
283	23.58	0.07	0.036	(0.029)	0.006	0.029
284	23.67	0.07	0.036	(0.029)	0.006	0.029
285	23.75	0.07	0.036	(0.029)	0.006	0.029
286	23.83	0.07	0.036	(0.029)	0.006	0.029
287	23.92	0.07	0.036	(0.029)	0.006	0.029
288	24.00	0.07	0.036	(0.029)	0.006	0.029

(Loss Rate Not Used)

Sum =	100.0		Sum =	45.8
Flood volume =	Effective rainfall	3.81(In)		
times area	10.9(Ac.)/[((In)/(Ft.))] =		3.4(Ac.Ft)	
Total soil loss =	0.66(In)			
Total soil loss =	0.594(Ac.Ft)			
Total rainfall =	4.47(In)			
Flood volume =	150179.1 Cubic Feet			

Total soil loss = 25870.4 Cubic Feet

Peak flow rate of this hydrograph = 6.104(CFS)

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

Hydrograph in 5 Minute intervals ((CFS))

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

0+ 5	0.0006	0.09	Q			
0+10	0.0024	0.25	VQ			
0+15	0.0044	0.29	VQ			
0+20	0.0068	0.35	VQ			
0+25	0.0098	0.44	VQ			
0+30	0.0131	0.47	VQ			
0+35	0.0163	0.48	VQ			
0+40	0.0196	0.48	VQ			
0+45	0.0229	0.48	VQ			
0+50	0.0266	0.53	V Q			
0+55	0.0307	0.61	V Q			
1+ 0	0.0351	0.63	V Q			
1+ 5	0.0391	0.59	V Q			
1+10	0.0427	0.51	V Q			
1+15	0.0461	0.50	VQ			
1+20	0.0494	0.49	VQ			
1+25	0.0528	0.48	VQ			
1+30	0.0561	0.48	VQ			
1+35	0.0594	0.48	VQ			
1+40	0.0627	0.48	VQ			

1+45	0.0660	0.48	VQ	|	|	|
1+50	0.0696	0.53	V Q	|	|	|
1+55	0.0738	0.61	V Q	|	|	|
2+ 0	0.0781	0.63	V Q	|	|	|
2+ 5	0.0825	0.64	V Q	|	|	|
2+10	0.0869	0.64	|VQ	|	|	|
2+15	0.0913	0.64	|VQ	|	|	|
2+20	0.0958	0.64	|VQ	|	|	|
2+25	0.1002	0.64	|VQ	|	|	|
2+30	0.1046	0.64	|VQ	|	|	|
2+35	0.1093	0.69	|VQ	|	|	|
2+40	0.1146	0.77	|V Q	|	|	|
2+45	0.1200	0.79	|V Q	|	|	|
2+50	0.1255	0.80	|V Q	|	|	|
2+55	0.1310	0.80	|V Q	|	|	|
3+ 0	0.1365	0.80	|V Q	|	|	|
3+ 5	0.1421	0.80	|V Q	|	|	|
3+10	0.1476	0.80	|V Q	|	|	|
3+15	0.1531	0.80	|V Q	|	|	|
3+20	0.1586	0.80	|V Q	|	|	|
3+25	0.1642	0.80	|V Q	|	|	|
3+30	0.1697	0.80	|V Q	|	|	|
3+35	0.1752	0.80	| VQ	|	|	|
3+40	0.1807	0.80	| VQ	|	|	|
3+45	0.1863	0.80	| VQ	|	|	|
3+50	0.1921	0.85	| VQ	|	|	|
3+55	0.1985	0.93	| VQ	|	|	|
4+ 0	0.2050	0.95	| VQ	|	|	|
4+ 5	0.2116	0.96	| VQ	|	|	|
4+10	0.2182	0.96	| VQ	|	|	|

4+15	0.2248	0.96	VQ			
4+20	0.2318	1.01	V Q			
4+25	0.2393	1.09	V Q			
4+30	0.2469	1.11	V Q			
4+35	0.2546	1.12	V Q			
4+40	0.2623	1.12	VQ			
4+45	0.2700	1.12	VQ			
4+50	0.2781	1.17	VQ			
4+55	0.2867	1.25	VQ			
5+ 0	0.2954	1.27	V Q			
5+ 5	0.3036	1.19	VQ			
5+10	0.3107	1.03	VQ			
5+15	0.3175	0.99	Q			
5+20	0.3245	1.02	VQ			
5+25	0.3321	1.09	VQ			
5+30	0.3397	1.11	VQ			
5+35	0.3477	1.16	Q			
5+40	0.3563	1.25	Q			
5+45	0.3650	1.27	VQ			
5+50	0.3738	1.28	VQ			
5+55	0.3826	1.28	VQ			
6+ 0	0.3915	1.28	VQ			
6+ 5	0.4006	1.33	VQ			
6+10	0.4103	1.41	VQ			
6+15	0.4202	1.43	VQ			
6+20	0.4301	1.44	VQ			
6+25	0.4400	1.44	Q			
6+30	0.4499	1.44	Q			
6+35	0.4602	1.49	Q			
6+40	0.4710	1.57	VQ			

6+45	0.4819	1.59	VQ			
6+50	0.4929	1.60	VQ			
6+55	0.5040	1.60	VQ			
7+ 0	0.5150	1.60	VQ			
7+ 5	0.5261	1.60	Q			
7+10	0.5371	1.60	Q			
7+15	0.5482	1.60	Q			
7+20	0.5595	1.65	Q			
7+25	0.5714	1.73	Q			
7+30	0.5835	1.75	Q			
7+35	0.5959	1.80	VQ			
7+40	0.6089	1.89	Q			
7+45	0.6221	1.91	Q			
7+50	0.6356	1.96	Q			
7+55	0.6497	2.05	VQ			
8+ 0	0.6639	2.07	VQ			
8+ 5	0.6789	2.17	VQ			
8+10	0.6950	2.33	VQ			
8+15	0.7113	2.38	VQ			
8+20	0.7278	2.39	VQ			
8+25	0.7444	2.40	VQ			
8+30	0.7609	2.41	VQ			
8+35	0.7778	2.45	Q			
8+40	0.7952	2.53	VQ			
8+45	0.8128	2.55	VQ			
8+50	0.8308	2.61	VQ			
8+55	0.8493	2.69	VQ			
9+ 0	0.8680	2.71	Q			
9+ 5	0.8873	2.81	VQ			
9+10	0.9078	2.97	VQ			

9+15	0.9286	3.02	|	V Q	|	|
9+20	0.9498	3.08	|	|VQ	|	|
9+25	0.9717	3.17	|	|VQ	|	|
9+30	0.9938	3.20	|	|VQ	|	|
9+35	1.0163	3.27	|	|V Q	|	|
9+40	1.0396	3.38	|	| VQ	|	|
9+45	1.0630	3.41	|	| VQ	|	|
9+50	1.0870	3.48	|	| VQ	|	|
9+55	1.1116	3.58	|	| V Q	|	|
10+ 0	1.1365	3.61	|	| VQ	|	|
10+ 5	1.1591	3.28	|	| Q	|	|
10+10	1.1775	2.67	|	Q V	|	|
10+15	1.1948	2.52	|	Q V	|	|
10+20	1.2117	2.45	|	Q| V	|	|
10+25	1.2284	2.42	|	Q| V	|	|
10+30	1.2449	2.41	|	Q| V	|	|
10+35	1.2632	2.65	|	Q V	|	|
10+40	1.2844	3.08	|	| Q V	|	|
10+45	1.3063	3.19	|	| Q V	|	|
10+50	1.3287	3.24	|	| Q V	|	|
10+55	1.3511	3.26	|	| Q V	|	|
11+ 0	1.3737	3.28	|	| Q V	|	|
11+ 5	1.3959	3.22	|	| Q V	|	|
11+10	1.4174	3.13	|	| Q V	|	|
11+15	1.4388	3.11	|	| Q V	|	|
11+20	1.4602	3.10	|	| Q V	|	|
11+25	1.4816	3.10	|	| Q V	|	|
11+30	1.5029	3.10	|	| Q V	|	|
11+35	1.5235	3.00	|	|Q V	|	|
11+40	1.5429	2.81	|	|Q V	|	|

11+45	1.5619	2.76	|	|Q	v	|	|
11+50	1.5811	2.80	|	|Q	v	|	|
11+55	1.6010	2.88	|	|Q	v	|	|
12+ 0	1.6210	2.91	|	|Q	v	|	|
12+ 5	1.6438	3.31	|	| Q	v|	|	|
12+10	1.6713	3.99	|	| Q	v|	|	|
12+15	1.7000	4.18	|	| Q	v|	|	|
12+20	1.7297	4.31	|	| Q	v	|	|
12+25	1.7603	4.44	|	| Q	v	|	|
12+30	1.7912	4.49	|	| Q	v	|	|
12+35	1.8230	4.61	|	| Q	|v	|	|
12+40	1.8561	4.81	|	| Q	|v	|	|
12+45	1.8896	4.87	|	| Q	|v	|	|
12+50	1.9237	4.95	|	| Q	| v	|	|
12+55	1.9585	5.06	|	| Q	v	|	|
13+ 0	1.9936	5.09	|	| Q	v	|	|
13+ 5	2.0307	5.38	|	| |Q	v	|	|
13+10	2.0711	5.87	|	| |	Qv	|	|
13+15	2.1125	6.01	|	| |	Q	|	|
13+20	2.1543	6.06	|	| |	Q	|	|
13+25	2.1962	6.09	|	| |	Qv	|	|
13+30	2.2382	6.10	|	| |	Qv	|	|
13+35	2.2761	5.50	|	| |Q	v	|	|
13+40	2.3066	4.43	|	| Q	|	v	|
13+45	2.3352	4.15	|	| Q	|	v	|
13+50	2.3631	4.04	|	| Q	|	v	|
13+55	2.3906	4.00	|	| Q	|	v	|
14+ 0	2.4179	3.97	|	| Q	|	v	|
14+ 5	2.4468	4.19	|	| Q	|	v	|
14+10	2.4784	4.58	|	| Q	|	v	|

14+15	2.5107	4.69	|	|	Q	|	V	|
14+20	2.5429	4.68	|	|	Q	|	V	|
14+25	2.5746	4.60	|	|	Q	|	V	|
14+30	2.6062	4.59	|	|	Q	|	V	|
14+35	2.6377	4.58	|	|	Q	|	V	|
14+40	2.6693	4.58	|	|	Q	|	V	|
14+45	2.7008	4.58	|	|	Q	|	V	|
14+50	2.7320	4.53	|	|	Q	|	V	|
14+55	2.7625	4.43	|	|	Q	|	V	|
15+ 0	2.7929	4.41	|	|	Q	|	V	|
15+ 5	2.8228	4.35	|	|	Q	|	V	|
15+10	2.8521	4.25	|	|	Q	|	V	|
15+15	2.8811	4.22	|	|	Q	|	V	|
15+20	2.9098	4.16	|	|	Q	|	V	|
15+25	2.9377	4.06	|	|	Q	|	V	|
15+30	2.9655	4.03	|	|	Q	|	V	|
15+35	2.9917	3.80	|	|	Q	|	V	|
15+40	3.0152	3.41	|	|	Q	|	V	|
15+45	3.0380	3.31	|	|	Q	|	V	|
15+50	3.0605	3.27	|	|	Q	|	V	|
15+55	3.0830	3.26	|	|	Q	|	V	|
16+ 0	3.1053	3.25	|	|	Q	|	V	|
16+ 5	3.1226	2.51	|	Q	|	|	V	|
16+10	3.1310	1.22	|	Q	|	|	V	|
16+15	3.1370	0.88	|	Q	|	|	V	|
16+20	3.1421	0.74	|	Q	|	|	V	|
16+25	3.1468	0.68	|	Q	|	|	V	|
16+30	3.1512	0.64	|	Q	|	|	V	|
16+35	3.1553	0.60	|	Q	|	|	V	|
16+40	3.1589	0.52	|	Q	|	|	V	|

16+45	3.1623	0.50	|Q	|	|	|	V
16+50	3.1657	0.49	|Q	|	|	|	V
16+55	3.1690	0.48	|Q	|	|	|	V
17+ 0	3.1723	0.48	|Q	|	|	|	V
17+ 5	3.1763	0.57	| Q	|	|	|	V
17+10	3.1813	0.73	| Q	|	|	|	V
17+15	3.1866	0.77	| Q	|	|	|	V
17+20	3.1921	0.79	| Q	|	|	|	V
17+25	3.1975	0.80	| Q	|	|	|	V
17+30	3.2031	0.80	| Q	|	|	|	V
17+35	3.2086	0.80	| Q	|	|	|	V
17+40	3.2141	0.80	| Q	|	|	|	V
17+45	3.2196	0.80	| Q	|	|	|	V
17+50	3.2248	0.76	| Q	|	|	|	V
17+55	3.2295	0.68	| Q	|	|	|	V
18+ 0	3.2340	0.66	| Q	|	|	|	V
18+ 5	3.2385	0.65	| Q	|	|	|	V
18+10	3.2429	0.64	| Q	|	|	|	V
18+15	3.2473	0.64	| Q	|	|	|	V
18+20	3.2518	0.64	| Q	|	|	|	V
18+25	3.2562	0.64	| Q	|	|	|	V
18+30	3.2606	0.64	| Q	|	|	|	V
18+35	3.2647	0.60	| Q	|	|	|	V
18+40	3.2683	0.52	| Q	|	|	|	V
18+45	3.2717	0.50	|Q	|	|	|	V
18+50	3.2747	0.44	|Q	|	|	|	V
18+55	3.2772	0.36	|Q	|	|	|	V
19+ 0	3.2795	0.34	|Q	|	|	|	V
19+ 5	3.2821	0.37	|Q	|	|	|	V
19+10	3.2851	0.45	|Q	|	|	|	V

19+15	3.2884	0.47	|Q	|	|	|	V
19+20	3.2919	0.52	|Q	|	|	|	V
19+25	3.2961	0.60	|Q	|	|	|	V
19+30	3.3004	0.63	|Q	|	|	|	V
19+35	3.3045	0.59	|Q	|	|	|	V
19+40	3.3080	0.51	|Q	|	|	|	V
19+45	3.3114	0.50	|Q	|	|	|	V
19+50	3.3145	0.44	|Q	|	|	|	V
19+55	3.3170	0.36	|Q	|	|	|	V
20+ 0	3.3193	0.34	|Q	|	|	|	V
20+ 5	3.3218	0.37	|Q	|	|	|	V
20+10	3.3249	0.45	|Q	|	|	|	V
20+15	3.3281	0.47	|Q	|	|	|	V
20+20	3.3314	0.48	|Q	|	|	|	V
20+25	3.3347	0.48	|Q	|	|	|	V
20+30	3.3380	0.48	|Q	|	|	|	V
20+35	3.3413	0.48	|Q	|	|	|	V
20+40	3.3446	0.48	|Q	|	|	|	V
20+45	3.3480	0.48	|Q	|	|	|	V
20+50	3.3510	0.44	|Q	|	|	|	V
20+55	3.3534	0.36	|Q	|	|	|	V
21+ 0	3.3557	0.34	|Q	|	|	|	V
21+ 5	3.3583	0.37	|Q	|	|	|	V
21+10	3.3614	0.45	|Q	|	|	|	V
21+15	3.3646	0.47	|Q	|	|	|	V
V| 21+20	3.3675	0.43	|Q	|	|	|	V
V| 21+25	3.3700	0.35	|Q	|	|	|	V
V| 21+30	3.3723	0.34	|Q	|	|	|	V
V| 21+35	3.3749	0.37	|Q	|	|	|	V
V| 21+40	3.3779	0.45	|Q	|	|	|	V

V|	21+45	3.3812	0.47	|Q	|	|	|
V|	21+50	3.3841	0.43	|Q	|	|	|
V|	21+55	3.3865	0.35	|Q	|	|	|
V|	22+ 0	3.3889	0.34	|Q	|	|	|
V|	22+ 5	3.3914	0.37	|Q	|	|	|
V|	22+10	3.3945	0.45	|Q	|	|	|
V|	22+15	3.3977	0.47	|Q	|	|	|
V|	22+20	3.4007	0.43	|Q	|	|	|
V|	22+25	3.4031	0.35	|Q	|	|	|
V|	22+30	3.4054	0.34	|Q	|	|	|
V|	22+35	3.4077	0.33	|Q	|	|	|
V|	22+40	3.4099	0.32	|Q	|	|	|
V|	22+45	3.4121	0.32	|Q	|	|	|
V|	22+50	3.4143	0.32	|Q	|	|	|
V|	22+55	3.4165	0.32	|Q	|	|	|
V|	23+ 0	3.4187	0.32	|Q	|	|	|
V|	23+ 5	3.4210	0.32	|Q	|	|	|
V|	23+10	3.4232	0.32	|Q	|	|	|
V|	23+15	3.4254	0.32	|Q	|	|	|
V|	23+20	3.4276	0.32	|Q	|	|	|
V|	23+25	3.4298	0.32	|Q	|	|	|
V|	23+30	3.4320	0.32	|Q	|	|	|
V|	23+35	3.4342	0.32	|Q	|	|	|
V|	23+40	3.4364	0.32	|Q	|	|	|
V|	23+45	3.4386	0.32	|Q	|	|	|
V|	23+50	3.4408	0.32	|Q	|	|	|
V|	23+55	3.4430	0.32	|Q	|	|	|
V|	24+ 0	3.4453	0.32	|Q	|	|	|
V|	24+ 5	3.4468	0.23	Q	|	|	|
V|	24+10	3.4473	0.07	Q	|	|	|

V	24+15	3.4475	0.03	Q			
V	24+20	3.4476	0.01	Q			
V	24+25	3.4476	0.00	Q			

Unit Hydrograph Analysis

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8.2

Study date 02/18/16 File: VDA3to724100.out

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

Program License Serial Number 6232

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

English Units used in output format

VDA Area 24 100yr 24hr post dev

--
Drainage Area = 23.18(Ac.) = 0.036 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 23.18(Ac.) =
0.036 Sq. Mi.
Length along longest watercourse = 2213.00(Ft.)
Length along longest watercourse measured to centroid = 1620.00
(Ft.)
Length along longest watercourse = 0.419 Mi.
Length along longest watercourse measured to centroid = 0.307
Mi.
Difference in elevation = 15.00(Ft.)
Slope along watercourse = 35.7885 Ft./Mi.
Average Manning's 'N' = 0.015
Lag time = 0.084 Hr.
Lag time = 5.02 Min.
25% of lag time = 1.26 Min.
40% of lag time = 2.01 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]

23.18 1.14 26.43

100 YEAR Area rainfall data:

Area(Ac.)[1] Rainfall(In)[2] Weighting[1*2]
23.18 4.47 103.61

STORM EVENT (YEAR) = 100.00
Area Averaged 2-Year Rainfall = 1.140(In)
Area Averaged 100-Year Rainfall = 4.470(In)

Point rain (area averaged) = 4.470(In)
Areal adjustment factor = 100.00 %
Adjusted average point rain = 4.470(In)

Sub-Area Data:
Area(Ac.) Runoff Index Impervious %
23.180 56.00 0.650
Total Area Entered = 23.18(Ac.)

Table with 7 columns: RI AMC2, RI AMC-3, Infil. Rate (In/Hr), Impervious (Dec.%), Adj. Infil. Rate (In/Hr), Area% (Dec.), F. Values include 56.0, 74.8, 0.305, 0.650, 0.127, 1.000, 0.127.

Area averaged mean soil loss (F) (In/Hr) = 0.127
Minimum soil loss rate ((In/Hr)) = 0.063
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.380

Unit Hydrograph
DESERT S-Curve

Unit Hydrograph Data

Table with 5 columns: Unit time period (hrs), Time % of lag, Distribution Graph %, Unit Hydrograph (CFS). Rows 1-8 with values like 0.083, 99.591, 17.104, 3.996.

The following loss rate calculations reflect use of the minimum

calculated loss

rate subtracted from the Storm Rain to produce the maximum Effective Rain value

Unit	Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr)		Effective (In/Hr)
				Max	Low	
1	0.08	0.07	0.036	(0.225)	0.014	0.022
2	0.17	0.07	0.036	(0.224)	0.014	0.022
3	0.25	0.07	0.036	(0.223)	0.014	0.022
4	0.33	0.10	0.054	(0.222)	0.020	0.033
5	0.42	0.10	0.054	(0.221)	0.020	0.033
6	0.50	0.10	0.054	(0.220)	0.020	0.033
7	0.58	0.10	0.054	(0.219)	0.020	0.033
8	0.67	0.10	0.054	(0.219)	0.020	0.033
9	0.75	0.10	0.054	(0.218)	0.020	0.033
10	0.83	0.13	0.072	(0.217)	0.027	0.044
11	0.92	0.13	0.072	(0.216)	0.027	0.044
12	1.00	0.13	0.072	(0.215)	0.027	0.044
13	1.08	0.10	0.054	(0.214)	0.020	0.033
14	1.17	0.10	0.054	(0.213)	0.020	0.033
15	1.25	0.10	0.054	(0.213)	0.020	0.033
16	1.33	0.10	0.054	(0.212)	0.020	0.033
17	1.42	0.10	0.054	(0.211)	0.020	0.033
18	1.50	0.10	0.054	(0.210)	0.020	0.033
19	1.58	0.10	0.054	(0.209)	0.020	0.033
20	1.67	0.10	0.054	(0.208)	0.020	0.033
21	1.75	0.10	0.054	(0.208)	0.020	0.033
22	1.83	0.13	0.072	(0.207)	0.027	0.044
23	1.92	0.13	0.072	(0.206)	0.027	0.044
24	2.00	0.13	0.072	(0.205)	0.027	0.044
25	2.08	0.13	0.072	(0.204)	0.027	0.044
26	2.17	0.13	0.072	(0.203)	0.027	0.044
27	2.25	0.13	0.072	(0.203)	0.027	0.044
28	2.33	0.13	0.072	(0.202)	0.027	0.044
29	2.42	0.13	0.072	(0.201)	0.027	0.044
30	2.50	0.13	0.072	(0.200)	0.027	0.044
31	2.58	0.17	0.089	(0.199)	0.034	0.055
32	2.67	0.17	0.089	(0.199)	0.034	0.055
33	2.75	0.17	0.089	(0.198)	0.034	0.055
34	2.83	0.17	0.089	(0.197)	0.034	0.055
35	2.92	0.17	0.089	(0.196)	0.034	0.055
36	3.00	0.17	0.089	(0.195)	0.034	0.055
37	3.08	0.17	0.089	(0.194)	0.034	0.055
38	3.17	0.17	0.089	(0.194)	0.034	0.055
39	3.25	0.17	0.089	(0.193)	0.034	0.055
40	3.33	0.17	0.089	(0.192)	0.034	0.055
41	3.42	0.17	0.089	(0.191)	0.034	0.055
42	3.50	0.17	0.089	(0.190)	0.034	0.055
43	3.58	0.17	0.089	(0.190)	0.034	0.055
44	3.67	0.17	0.089	(0.189)	0.034	0.055
45	3.75	0.17	0.089	(0.188)	0.034	0.055
46	3.83	0.20	0.107	(0.187)	0.041	0.067
47	3.92	0.20	0.107	(0.186)	0.041	0.067
48	4.00	0.20	0.107	(0.186)	0.041	0.067
49	4.08	0.20	0.107	(0.185)	0.041	0.067
50	4.17	0.20	0.107	(0.184)	0.041	0.067
51	4.25	0.20	0.107	(0.183)	0.041	0.067
52	4.33	0.23	0.125	(0.183)	0.048	0.078
53	4.42	0.23	0.125	(0.182)	0.048	0.078
54	4.50	0.23	0.125	(0.181)	0.048	0.078

55	4.58	0.23	0.125	(0.180)	0.048	0.078
56	4.67	0.23	0.125	(0.179)	0.048	0.078
57	4.75	0.23	0.125	(0.179)	0.048	0.078
58	4.83	0.27	0.143	(0.178)	0.054	0.089
59	4.92	0.27	0.143	(0.177)	0.054	0.089
60	5.00	0.27	0.143	(0.176)	0.054	0.089
61	5.08	0.20	0.107	(0.176)	0.041	0.067
62	5.17	0.20	0.107	(0.175)	0.041	0.067
63	5.25	0.20	0.107	(0.174)	0.041	0.067
64	5.33	0.23	0.125	(0.173)	0.048	0.078
65	5.42	0.23	0.125	(0.173)	0.048	0.078
66	5.50	0.23	0.125	(0.172)	0.048	0.078
67	5.58	0.27	0.143	(0.171)	0.054	0.089
68	5.67	0.27	0.143	(0.170)	0.054	0.089
69	5.75	0.27	0.143	(0.170)	0.054	0.089
70	5.83	0.27	0.143	(0.169)	0.054	0.089
71	5.92	0.27	0.143	(0.168)	0.054	0.089
72	6.00	0.27	0.143	(0.167)	0.054	0.089
73	6.08	0.30	0.161	(0.167)	0.061	0.100
74	6.17	0.30	0.161	(0.166)	0.061	0.100
75	6.25	0.30	0.161	(0.165)	0.061	0.100
76	6.33	0.30	0.161	(0.164)	0.061	0.100
77	6.42	0.30	0.161	(0.164)	0.061	0.100
78	6.50	0.30	0.161	(0.163)	0.061	0.100
79	6.58	0.33	0.179	(0.162)	0.068	0.111
80	6.67	0.33	0.179	(0.161)	0.068	0.111
81	6.75	0.33	0.179	(0.161)	0.068	0.111
82	6.83	0.33	0.179	(0.160)	0.068	0.111
83	6.92	0.33	0.179	(0.159)	0.068	0.111
84	7.00	0.33	0.179	(0.158)	0.068	0.111
85	7.08	0.33	0.179	(0.158)	0.068	0.111
86	7.17	0.33	0.179	(0.157)	0.068	0.111
87	7.25	0.33	0.179	(0.156)	0.068	0.111
88	7.33	0.37	0.197	(0.156)	0.075	0.122
89	7.42	0.37	0.197	(0.155)	0.075	0.122
90	7.50	0.37	0.197	(0.154)	0.075	0.122
91	7.58	0.40	0.215	(0.153)	0.082	0.133
92	7.67	0.40	0.215	(0.153)	0.082	0.133
93	7.75	0.40	0.215	(0.152)	0.082	0.133
94	7.83	0.43	0.232	(0.151)	0.088	0.144
95	7.92	0.43	0.232	(0.151)	0.088	0.144
96	8.00	0.43	0.232	(0.150)	0.088	0.144
97	8.08	0.50	0.268	(0.149)	0.102	0.166
98	8.17	0.50	0.268	(0.149)	0.102	0.166
99	8.25	0.50	0.268	(0.148)	0.102	0.166
100	8.33	0.50	0.268	(0.147)	0.102	0.166
101	8.42	0.50	0.268	(0.147)	0.102	0.166
102	8.50	0.50	0.268	(0.146)	0.102	0.166
103	8.58	0.53	0.286	(0.145)	0.109	0.177
104	8.67	0.53	0.286	(0.144)	0.109	0.177
105	8.75	0.53	0.286	(0.144)	0.109	0.177
106	8.83	0.57	0.304	(0.143)	0.115	0.188
107	8.92	0.57	0.304	(0.142)	0.115	0.188
108	9.00	0.57	0.304	(0.142)	0.115	0.188
109	9.08	0.63	0.340	(0.141)	0.129	0.211
110	9.17	0.63	0.340	(0.140)	0.129	0.211
111	9.25	0.63	0.340	(0.140)	0.129	0.211
112	9.33	0.67	0.358	(0.139)	0.136	0.222
113	9.42	0.67	0.358	(0.138)	0.136	0.222
114	9.50	0.67	0.358	(0.138)	0.136	0.222

115	9.58	0.70	0.375	0.137	(0.143)	0.238
116	9.67	0.70	0.375	0.136	(0.143)	0.239
117	9.75	0.70	0.375	0.136	(0.143)	0.240
118	9.83	0.73	0.393	0.135	(0.149)	0.258
119	9.92	0.73	0.393	0.134	(0.149)	0.259
120	10.00	0.73	0.393	0.134	(0.149)	0.260
121	10.08	0.50	0.268	(0.133)	0.102	0.166
122	10.17	0.50	0.268	(0.133)	0.102	0.166
123	10.25	0.50	0.268	(0.132)	0.102	0.166
124	10.33	0.50	0.268	(0.131)	0.102	0.166
125	10.42	0.50	0.268	(0.131)	0.102	0.166
126	10.50	0.50	0.268	(0.130)	0.102	0.166
127	10.58	0.67	0.358	0.129	(0.136)	0.228
128	10.67	0.67	0.358	0.129	(0.136)	0.229
129	10.75	0.67	0.358	0.128	(0.136)	0.230
130	10.83	0.67	0.358	0.127	(0.136)	0.230
131	10.92	0.67	0.358	0.127	(0.136)	0.231
132	11.00	0.67	0.358	0.126	(0.136)	0.231
133	11.08	0.63	0.340	0.126	(0.129)	0.214
134	11.17	0.63	0.340	0.125	(0.129)	0.215
135	11.25	0.63	0.340	0.124	(0.129)	0.215
136	11.33	0.63	0.340	0.124	(0.129)	0.216
137	11.42	0.63	0.340	0.123	(0.129)	0.217
138	11.50	0.63	0.340	0.123	(0.129)	0.217
139	11.58	0.57	0.304	(0.122)	0.115	0.188
140	11.67	0.57	0.304	(0.121)	0.115	0.188
141	11.75	0.57	0.304	(0.121)	0.115	0.188
142	11.83	0.60	0.322	0.120	(0.122)	0.202
143	11.92	0.60	0.322	0.119	(0.122)	0.202
144	12.00	0.60	0.322	0.119	(0.122)	0.203
145	12.08	0.83	0.447	0.118	(0.170)	0.329
146	12.17	0.83	0.447	0.118	(0.170)	0.329
147	12.25	0.83	0.447	0.117	(0.170)	0.330
148	12.33	0.87	0.465	0.117	(0.177)	0.348
149	12.42	0.87	0.465	0.116	(0.177)	0.349
150	12.50	0.87	0.465	0.115	(0.177)	0.350
151	12.58	0.93	0.501	0.115	(0.190)	0.386
152	12.67	0.93	0.501	0.114	(0.190)	0.386
153	12.75	0.93	0.501	0.114	(0.190)	0.387
154	12.83	0.97	0.518	0.113	(0.197)	0.405
155	12.92	0.97	0.518	0.112	(0.197)	0.406
156	13.00	0.97	0.518	0.112	(0.197)	0.407
157	13.08	1.13	0.608	0.111	(0.231)	0.497
158	13.17	1.13	0.608	0.111	(0.231)	0.497
159	13.25	1.13	0.608	0.110	(0.231)	0.498
160	13.33	1.13	0.608	0.110	(0.231)	0.498
161	13.42	1.13	0.608	0.109	(0.231)	0.499
162	13.50	1.13	0.608	0.109	(0.231)	0.499
163	13.58	0.77	0.411	0.108	(0.156)	0.303
164	13.67	0.77	0.411	0.107	(0.156)	0.304
165	13.75	0.77	0.411	0.107	(0.156)	0.304
166	13.83	0.77	0.411	0.106	(0.156)	0.305
167	13.92	0.77	0.411	0.106	(0.156)	0.305
168	14.00	0.77	0.411	0.105	(0.156)	0.306
169	14.08	0.90	0.483	0.105	(0.183)	0.378
170	14.17	0.90	0.483	0.104	(0.183)	0.379
171	14.25	0.90	0.483	0.104	(0.183)	0.379
172	14.33	0.87	0.465	0.103	(0.177)	0.362
173	14.42	0.87	0.465	0.103	(0.177)	0.362
174	14.50	0.87	0.465	0.102	(0.177)	0.363

175	14.58	0.87	0.465	0.102	(0.177)	0.363
176	14.67	0.87	0.465	0.101	(0.177)	0.364
177	14.75	0.87	0.465	0.101	(0.177)	0.364
178	14.83	0.83	0.447	0.100	(0.170)	0.347
179	14.92	0.83	0.447	0.099	(0.170)	0.347
180	15.00	0.83	0.447	0.099	(0.170)	0.348
181	15.08	0.80	0.429	0.098	(0.163)	0.331
182	15.17	0.80	0.429	0.098	(0.163)	0.331
183	15.25	0.80	0.429	0.097	(0.163)	0.332
184	15.33	0.77	0.411	0.097	(0.156)	0.314
185	15.42	0.77	0.411	0.096	(0.156)	0.315
186	15.50	0.77	0.411	0.096	(0.156)	0.315
187	15.58	0.63	0.340	0.095	(0.129)	0.244
188	15.67	0.63	0.340	0.095	(0.129)	0.245
189	15.75	0.63	0.340	0.095	(0.129)	0.245
190	15.83	0.63	0.340	0.094	(0.129)	0.246
191	15.92	0.63	0.340	0.094	(0.129)	0.246
192	16.00	0.63	0.340	0.093	(0.129)	0.247
193	16.08	0.13	0.072	(0.093)	0.027	0.044
194	16.17	0.13	0.072	(0.092)	0.027	0.044
195	16.25	0.13	0.072	(0.092)	0.027	0.044
196	16.33	0.13	0.072	(0.091)	0.027	0.044
197	16.42	0.13	0.072	(0.091)	0.027	0.044
198	16.50	0.13	0.072	(0.090)	0.027	0.044
199	16.58	0.10	0.054	(0.090)	0.020	0.033
200	16.67	0.10	0.054	(0.089)	0.020	0.033
201	16.75	0.10	0.054	(0.089)	0.020	0.033
202	16.83	0.10	0.054	(0.088)	0.020	0.033
203	16.92	0.10	0.054	(0.088)	0.020	0.033
204	17.00	0.10	0.054	(0.088)	0.020	0.033
205	17.08	0.17	0.089	(0.087)	0.034	0.055
206	17.17	0.17	0.089	(0.087)	0.034	0.055
207	17.25	0.17	0.089	(0.086)	0.034	0.055
208	17.33	0.17	0.089	(0.086)	0.034	0.055
209	17.42	0.17	0.089	(0.085)	0.034	0.055
210	17.50	0.17	0.089	(0.085)	0.034	0.055
211	17.58	0.17	0.089	(0.085)	0.034	0.055
212	17.67	0.17	0.089	(0.084)	0.034	0.055
213	17.75	0.17	0.089	(0.084)	0.034	0.055
214	17.83	0.13	0.072	(0.083)	0.027	0.044
215	17.92	0.13	0.072	(0.083)	0.027	0.044
216	18.00	0.13	0.072	(0.082)	0.027	0.044
217	18.08	0.13	0.072	(0.082)	0.027	0.044
218	18.17	0.13	0.072	(0.082)	0.027	0.044
219	18.25	0.13	0.072	(0.081)	0.027	0.044
220	18.33	0.13	0.072	(0.081)	0.027	0.044
221	18.42	0.13	0.072	(0.080)	0.027	0.044
222	18.50	0.13	0.072	(0.080)	0.027	0.044
223	18.58	0.10	0.054	(0.080)	0.020	0.033
224	18.67	0.10	0.054	(0.079)	0.020	0.033
225	18.75	0.10	0.054	(0.079)	0.020	0.033
226	18.83	0.07	0.036	(0.079)	0.014	0.022
227	18.92	0.07	0.036	(0.078)	0.014	0.022
228	19.00	0.07	0.036	(0.078)	0.014	0.022
229	19.08	0.10	0.054	(0.077)	0.020	0.033
230	19.17	0.10	0.054	(0.077)	0.020	0.033
231	19.25	0.10	0.054	(0.077)	0.020	0.033
232	19.33	0.13	0.072	(0.076)	0.027	0.044
233	19.42	0.13	0.072	(0.076)	0.027	0.044
234	19.50	0.13	0.072	(0.076)	0.027	0.044

235	19.58	0.10	0.054	(0.075)	0.020	0.033
236	19.67	0.10	0.054	(0.075)	0.020	0.033
237	19.75	0.10	0.054	(0.075)	0.020	0.033
238	19.83	0.07	0.036	(0.074)	0.014	0.022
239	19.92	0.07	0.036	(0.074)	0.014	0.022
240	20.00	0.07	0.036	(0.074)	0.014	0.022
241	20.08	0.10	0.054	(0.073)	0.020	0.033
242	20.17	0.10	0.054	(0.073)	0.020	0.033
243	20.25	0.10	0.054	(0.073)	0.020	0.033
244	20.33	0.10	0.054	(0.072)	0.020	0.033
245	20.42	0.10	0.054	(0.072)	0.020	0.033
246	20.50	0.10	0.054	(0.072)	0.020	0.033
247	20.58	0.10	0.054	(0.071)	0.020	0.033
248	20.67	0.10	0.054	(0.071)	0.020	0.033
249	20.75	0.10	0.054	(0.071)	0.020	0.033
250	20.83	0.07	0.036	(0.071)	0.014	0.022
251	20.92	0.07	0.036	(0.070)	0.014	0.022
252	21.00	0.07	0.036	(0.070)	0.014	0.022
253	21.08	0.10	0.054	(0.070)	0.020	0.033
254	21.17	0.10	0.054	(0.069)	0.020	0.033
255	21.25	0.10	0.054	(0.069)	0.020	0.033
256	21.33	0.07	0.036	(0.069)	0.014	0.022
257	21.42	0.07	0.036	(0.069)	0.014	0.022
258	21.50	0.07	0.036	(0.068)	0.014	0.022
259	21.58	0.10	0.054	(0.068)	0.020	0.033
260	21.67	0.10	0.054	(0.068)	0.020	0.033
261	21.75	0.10	0.054	(0.068)	0.020	0.033
262	21.83	0.07	0.036	(0.067)	0.014	0.022
263	21.92	0.07	0.036	(0.067)	0.014	0.022
264	22.00	0.07	0.036	(0.067)	0.014	0.022
265	22.08	0.10	0.054	(0.067)	0.020	0.033
266	22.17	0.10	0.054	(0.066)	0.020	0.033
267	22.25	0.10	0.054	(0.066)	0.020	0.033
268	22.33	0.07	0.036	(0.066)	0.014	0.022
269	22.42	0.07	0.036	(0.066)	0.014	0.022
270	22.50	0.07	0.036	(0.066)	0.014	0.022
271	22.58	0.07	0.036	(0.065)	0.014	0.022
272	22.67	0.07	0.036	(0.065)	0.014	0.022
273	22.75	0.07	0.036	(0.065)	0.014	0.022
274	22.83	0.07	0.036	(0.065)	0.014	0.022
275	22.92	0.07	0.036	(0.065)	0.014	0.022
276	23.00	0.07	0.036	(0.065)	0.014	0.022
277	23.08	0.07	0.036	(0.064)	0.014	0.022
278	23.17	0.07	0.036	(0.064)	0.014	0.022
279	23.25	0.07	0.036	(0.064)	0.014	0.022
280	23.33	0.07	0.036	(0.064)	0.014	0.022
281	23.42	0.07	0.036	(0.064)	0.014	0.022
282	23.50	0.07	0.036	(0.064)	0.014	0.022
283	23.58	0.07	0.036	(0.064)	0.014	0.022
284	23.67	0.07	0.036	(0.064)	0.014	0.022
285	23.75	0.07	0.036	(0.064)	0.014	0.022
286	23.83	0.07	0.036	(0.063)	0.014	0.022
287	23.92	0.07	0.036	(0.063)	0.014	0.022
288	24.00	0.07	0.036	(0.063)	0.014	0.022

(Loss Rate Not Used)

Sum =	100.0		Sum =	36.7
Flood volume =	Effective rainfall	3.06(In)		
times area	23.2(Ac.)/[(In)/(Ft.)] =		5.9(Ac.Ft)	
Total soil loss =	1.41(In)			
Total soil loss =	2.721(Ac.Ft)			

Total rainfall = 4.47(In)
 Flood volume = 257566.1 Cubic Feet
 Total soil loss = 118537.8 Cubic Feet

Peak flow rate of this hydrograph = 11.603(CFS)

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

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	5.0	10.0	15.0
20.0						
0+ 5	0.0006	0.09	Q			
0+10	0.0030	0.35	Q			
0+15	0.0060	0.43	Q			
0+20	0.0096	0.52	VQ			
0+25	0.0142	0.67	VQ			
0+30	0.0191	0.72	VQ			
0+35	0.0243	0.75	VQ			
0+40	0.0296	0.77	VQ			
0+45	0.0349	0.77	VQ			
0+50	0.0405	0.82	VQ			
0+55	0.0471	0.95	VQ			
1+ 0	0.0539	0.99	VQ			
1+ 5	0.0606	0.97	VQ			
1+10	0.0665	0.85	VQ			
1+15	0.0721	0.81	VQ			
1+20	0.0776	0.80	VQ			
1+25	0.0830	0.79	VQ			
1+30	0.0884	0.78	VQ			
1+35	0.0938	0.78	VQ			

1+40	0.0991	0.78	VQ	|	|	|
1+45	0.1045	0.78	VQ	|	|	|
1+50	0.1101	0.82	VQ	|	|	|
1+55	0.1167	0.95	VQ	|	|	|
2+ 0	0.1235	0.99	VQ	|	|	|
2+ 5	0.1305	1.01	V Q	|	|	|
2+10	0.1376	1.02	V Q	|	|	|
2+15	0.1447	1.03	V Q	|	|	|
2+20	0.1518	1.03	|VQ	|	|	|
2+25	0.1589	1.04	|VQ	|	|	|
2+30	0.1660	1.04	|VQ	|	|	|
2+35	0.1735	1.08	|VQ	|	|	|
2+40	0.1818	1.21	|VQ	|	|	|
2+45	0.1905	1.25	|VQ	|	|	|
2+50	0.1992	1.27	|VQ	|	|	|
2+55	0.2081	1.28	|VQ	|	|	|
3+ 0	0.2170	1.29	|VQ	|	|	|
3+ 5	0.2259	1.29	|VQ	|	|	|
3+10	0.2348	1.30	|VQ	|	|	|
3+15	0.2437	1.30	|VQ	|	|	|
3+20	0.2526	1.30	|VQ	|	|	|
3+25	0.2615	1.30	|VQ	|	|	|
3+30	0.2705	1.30	|VQ	|	|	|
3+35	0.2794	1.30	|VQ	|	|	|
3+40	0.2883	1.30	|VQ	|	|	|
3+45	0.2972	1.30	| Q	|	|	|
3+50	0.3065	1.34	| Q	|	|	|
3+55	0.3166	1.47	| Q	|	|	|
4+ 0	0.3270	1.51	| VQ	|	|	|
4+ 5	0.3375	1.53	| VQ	|	|	|

4+10	0.3482	1.54	| VQ	|	|	|
4+15	0.3588	1.55	| VQ	|	|	|
4+20	0.3698	1.60	| VQ	|	|	|
4+25	0.3817	1.73	| VQ	|	|	|
4+30	0.3939	1.77	| VQ	|	|	|
4+35	0.4063	1.79	| VQ	|	|	|
4+40	0.4187	1.80	| VQ	|	|	|
4+45	0.4311	1.81	| VQ	|	|	|
4+50	0.4439	1.86	| Q	|	|	|
4+55	0.4576	1.99	| Q	|	|	|
5+ 0	0.4716	2.03	| VQ	|	|	|
5+ 5	0.4851	1.96	| Q	|	|	|
5+10	0.4969	1.71	| Q	|	|	|
5+15	0.5081	1.63	| Q	|	|	|
5+20	0.5194	1.64	| Q	|	|	|
5+25	0.5315	1.75	| Q	|	|	|
5+30	0.5438	1.78	| Q	|	|	|
5+35	0.5565	1.84	| Q	|	|	|
5+40	0.5701	1.98	| Q	|	|	|
5+45	0.5840	2.03	| VQ	|	|	|
5+50	0.5981	2.05	| Q	|	|	|
5+55	0.6123	2.06	| Q	|	|	|
6+ 0	0.6265	2.07	| Q	|	|	|
6+ 5	0.6411	2.11	| Q	|	|	|
6+10	0.6566	2.25	| Q	|	|	|
6+15	0.6723	2.29	| Q	|	|	|
6+20	0.6883	2.31	| Q	|	|	|
6+25	0.7042	2.32	| Q	|	|	|
6+30	0.7202	2.33	| Q	|	|	|
6+35	0.7366	2.37	| Q	|	|	|

6+40	0.7538	2.51	Q			
6+45	0.7714	2.55	Q			
6+50	0.7891	2.57	Q			
6+55	0.8069	2.58	Q			
7+ 0	0.8247	2.58	Q			
7+ 5	0.8425	2.59	Q			
7+10	0.8603	2.59	Q			
7+15	0.8782	2.59	Q			
7+20	0.8963	2.64	QV			
7+25	0.9154	2.76	QV			
7+30	0.9347	2.81	QV			
7+35	0.9545	2.87	QV			
7+40	0.9752	3.01	Q			
7+45	0.9963	3.06	Q			
7+50	1.0179	3.13	Q			
7+55	1.0404	3.27	QV			
8+ 0	1.0633	3.32	QV			
8+ 5	1.0869	3.43	QV			
8+10	1.1124	3.70	Q			
8+15	1.1385	3.80	Q			
8+20	1.1650	3.84	Q			
8+25	1.1916	3.86	QV			
8+30	1.2183	3.87	QV			
8+35	1.2453	3.92	QV			
8+40	1.2733	4.06	Q			
8+45	1.3015	4.10	Q			
8+50	1.3302	4.17	Q			
8+55	1.3599	4.31	QV			
9+ 0	1.3899	4.36	QV			
9+ 5	1.4207	4.47	QV			

9+10	1.4533	4.74	|	Q|	|	|
9+15	1.4866	4.83	|	QV	|	|
9+20	1.5205	4.92	|	QV	|	|
9+25	1.5554	5.07	|	Q	|	|
9+30	1.5907	5.13	|	Q	|	|
9+35	1.6267	5.22	|	QV	|	|
9+40	1.6641	5.43	|	QV	|	|
9+45	1.7021	5.52	|	|Q	|	|
9+50	1.7409	5.63	|	|Q	|	|
9+55	1.7813	5.87	|	|QV	|	|
10+ 0	1.8224	5.97	|	|QV	|	|
10+ 5	1.8613	5.64	|	|QV	|	|
10+10	1.8929	4.58	|	Q| V	|	|
10+15	1.9220	4.22	|	Q | V	|	|
10+20	1.9500	4.07	|	Q | V	|	|
10+25	1.9774	3.99	|	Q | V	|	|
10+30	2.0045	3.94	|	Q | V	|	|
10+35	2.0332	4.16	|	Q | V	|	|
10+40	2.0666	4.86	|	Q| V	|	|
10+45	2.1019	5.11	|	Q V	|	|
10+50	2.1379	5.24	|	Q V	|	|
10+55	2.1745	5.31	|	Q V	|	|
11+ 0	2.2113	5.35	|	Q V	|	|
11+ 5	2.2479	5.31	|	Q V	|	|
11+10	2.2833	5.14	|	Q V	|	|
11+15	2.3183	5.08	|	Q V	|	|
11+20	2.3531	5.06	|	Q V	|	|
11+25	2.3880	5.06	|	Q V	|	|
11+30	2.4229	5.07	|	Q V	|	|
11+35	2.4570	4.96	|	Q| V	|	|

11+40	2.4888	4.62	|	Q|	V	|	|	
11+45	2.5199	4.51	|	Q|	V	|	|	
11+50	2.5510	4.51	|	Q|	V	|	|	
11+55	2.5830	4.65	|	Q|	V	|	|	
12+ 0	2.6153	4.69	|	Q|	V	|	|	
12+ 5	2.6513	5.22	|	Q	V	|	|	
12+10	2.6974	6.70	|	|	Q	V	|	
12+15	2.7471	7.21	|	|	Q	V	|	
12+20	2.7988	7.52	|	|	Q	V	|	
12+25	2.8530	7.86	|	|	Q	V|	|	
12+30	2.9082	8.01	|	|	Q	V|	|	
12+35	2.9649	8.24	|	|	Q	V	|	
12+40	3.0250	8.72	|	|	Q	V	|	
12+45	3.0861	8.88	|	|	Q	V	|	
12+50	3.1483	9.03	|	|	Q	|V	|	
12+55	3.2123	9.29	|	|	Q	|V	|	
13+ 0	3.2771	9.40	|	|	Q	|V	|	
13+ 5	3.3446	9.81	|	|	Q|	V	|	
13+10	3.4196	10.89	|	|	|	Q V	|	
13+15	3.4972	11.27	|	|	|	QV	|	
13+20	3.5760	11.44	|	|	|	Q V	|	
13+25	3.6555	11.54	|	|	|	QV	|	
13+30	3.7354	11.60	|	|	|	Q V	|	
13+35	3.8102	10.86	|	|	|	Q	V	|
13+40	3.8694	8.60	|	|	Q	|	V	|
13+45	3.9234	7.83	|	|	Q	|	V	|
13+50	3.9750	7.50	|	|	Q	|	V	|
13+55	4.0255	7.33	|	|	Q	|	V	|
14+ 0	4.0754	7.24	|	|	Q	|	V	|
14+ 5	4.1269	7.48	|	|	Q	|	V	|

14+10	4.1839	8.28	|	|	Q	|	V	|
14+15	4.2429	8.57	|	|	Q	|	V	|
14+20	4.3024	8.64	|	|	Q	|	V	|
14+25	4.3610	8.51	|	|	Q	|	V	|
14+30	4.4195	8.49	|	|	Q	|	V	|
14+35	4.4780	8.49	|	|	Q	|	V	|
14+40	4.5366	8.50	|	|	Q	|	V	|
14+45	4.5952	8.51	|	|	Q	|	V	|
14+50	4.6533	8.44	|	|	Q	|	V	|
14+55	4.7101	8.24	|	|	Q	|	V	|
15+ 0	4.7664	8.18	|	|	Q	|	V	|
15+ 5	4.8222	8.09	|	|	Q	|	V	|
15+10	4.8764	7.88	|	|	Q	|	V	|
15+15	4.9302	7.81	|	|	Q	|	V	|
15+20	4.9833	7.71	|	|	Q	|	V	|
15+25	5.0350	7.50	|	|	Q	|	V	|
15+30	5.0861	7.43	|	|	Q	|	V	|
15+35	5.1352	7.12	|	|	Q	|	V	|
15+40	5.1784	6.27	|	|	Q	|	V	|
15+45	5.2196	5.99	|	|	Q	|	V	|
15+50	5.2601	5.87	|	|	Q	|	V	|
15+55	5.3001	5.81	|	|	Q	|	V	|
16+ 0	5.3400	5.79	|	|	Q	|	V	|
16+ 5	5.3742	4.97	|	|	Q	|	V	|
16+10	5.3920	2.59	|	Q	|	|	V	|
16+15	5.4044	1.79	|	Q	|	|	V	|
16+20	5.4143	1.44	|	Q	|	|	V	|
16+25	5.4230	1.25	|	Q	|	|	V	|
16+30	5.4309	1.15	|	Q	|	|	V	|
16+35	5.4381	1.05	|	Q	|	|	V	|

16+40	5.4440	0.86	|Q	|	|	|	V
16+45	5.4496	0.82	|Q	|	|	|	V
16+50	5.4551	0.80	|Q	|	|	|	V
16+55	5.4606	0.79	|Q	|	|	|	V
17+ 0	5.4660	0.78	|Q	|	|	|	V
17+ 5	5.4720	0.87	|Q	|	|	|	V
17+10	5.4797	1.12	| Q	|	|	|	V
17+15	5.4880	1.21	| Q	|	|	|	V
17+20	5.4967	1.25	| Q	|	|	|	V
17+25	5.5054	1.27	| Q	|	|	|	V
17+30	5.5143	1.28	| Q	|	|	|	V
17+35	5.5231	1.29	| Q	|	|	|	V
17+40	5.5321	1.30	| Q	|	|	|	V
17+45	5.5410	1.30	| Q	|	|	|	V
17+50	5.5496	1.25	| Q	|	|	|	V
17+55	5.5573	1.12	| Q	|	|	|	V
18+ 0	5.5648	1.08	| Q	|	|	|	V
18+ 5	5.5720	1.06	| Q	|	|	|	V
18+10	5.5793	1.05	| Q	|	|	|	V
18+15	5.5864	1.04	| Q	|	|	|	V
18+20	5.5936	1.04	| Q	|	|	|	V
18+25	5.6007	1.04	| Q	|	|	|	V
18+30	5.6079	1.04	| Q	|	|	|	V
18+35	5.6147	0.99	|Q	|	|	|	V
18+40	5.6206	0.86	|Q	|	|	|	V
18+45	5.6263	0.82	|Q	|	|	|	V
18+50	5.6315	0.76	|Q	|	|	|	V
18+55	5.6357	0.62	|Q	|	|	|	V
19+ 0	5.6396	0.57	|Q	|	|	|	V
19+ 5	5.6437	0.59	|Q	|	|	|	V

19+10	5.6485	0.70	|Q	|	|	|	V
19+15	5.6536	0.74	|Q	|	|	|	V
19+20	5.6592	0.80	|Q	|	|	|	V
19+25	5.6656	0.94	|Q	|	|	|	V
19+30	5.6724	0.99	|Q	|	|	|	V
19+35	5.6791	0.97	|Q	|	|	|	V
19+40	5.6849	0.85	|Q	|	|	|	V
19+45	5.6905	0.81	|Q	|	|	|	V
19+50	5.6957	0.75	|Q	|	|	|	V
19+55	5.7000	0.62	|Q	|	|	|	V
20+ 0	5.7039	0.57	|Q	|	|	|	V
20+ 5	5.7079	0.59	|Q	|	|	|	V
20+10	5.7128	0.70	|Q	|	|	|	V
20+15	5.7179	0.74	|Q	|	|	|	V
20+20	5.7231	0.76	|Q	|	|	|	V
20+25	5.7284	0.77	|Q	|	|	|	V
20+30	5.7337	0.77	|Q	|	|	|	V
20+35	5.7390	0.77	|Q	|	|	|	V
20+40	5.7444	0.78	|Q	|	|	|	V
20+45	5.7497	0.78	|Q	|	|	|	V
20+50	5.7548	0.73	|Q	|	|	|	V
20+55	5.7589	0.60	|Q	|	|	|	V
21+ 0	5.7628	0.56	|Q	|	|	|	V
21+ 5	5.7668	0.58	|Q	|	|	|	V
V| 21+10	5.7716	0.70	|Q	|	|	|	V
V| 21+15	5.7768	0.74	|Q	|	|	|	V
V| 21+20	5.7817	0.71	|Q	|	|	|	V
V| 21+25	5.7857	0.59	|Q	|	|	|	V
V| 21+30	5.7896	0.55	|Q	|	|	|	V
V| 21+35	5.7936	0.58	|Q	|	|	|	V

V|	21+40	5.7984	0.70	|Q	|	|	|
V|	21+45	5.8035	0.74	|Q	|	|	|
V|	21+50	5.8084	0.71	|Q	|	|	|
V|	21+55	5.8125	0.59	|Q	|	|	|
V|	22+ 0	5.8163	0.55	|Q	|	|	|
V|	22+ 5	5.8203	0.58	|Q	|	|	|
V|	22+10	5.8252	0.70	|Q	|	|	|
V|	22+15	5.8303	0.74	|Q	|	|	|
V|	22+20	5.8352	0.71	|Q	|	|	|
V|	22+25	5.8393	0.59	|Q	|	|	|
V|	22+30	5.8431	0.55	|Q	|	|	|
V|	22+35	5.8468	0.54	|Q	|	|	|
V|	22+40	5.8504	0.53	|Q	|	|	|
V|	22+45	5.8541	0.52	|Q	|	|	|
V|	22+50	5.8576	0.52	|Q	|	|	|
V|	22+55	5.8612	0.52	|Q	|	|	|
V|	23+ 0	5.8648	0.52	|Q	|	|	|
V|	23+ 5	5.8683	0.52	|Q	|	|	|
V|	23+10	5.8719	0.52	|Q	|	|	|
V|	23+15	5.8755	0.52	|Q	|	|	|
V|	23+20	5.8791	0.52	|Q	|	|	|
V|	23+25	5.8826	0.52	|Q	|	|	|
V|	23+30	5.8862	0.52	|Q	|	|	|
V|	23+35	5.8898	0.52	|Q	|	|	|
V|	23+40	5.8933	0.52	|Q	|	|	|
V|	23+45	5.8969	0.52	|Q	|	|	|
V|	23+50	5.9005	0.52	|Q	|	|	|
V|	23+55	5.9040	0.52	|Q	|	|	|
V|	24+ 0	5.9076	0.52	|Q	|	|	|
V|	24+ 5	5.9106	0.43	Q	|	|	|

V|	24+10	5.9117	0.17	Q	|	|	|
V|	24+15	5.9123	0.08	Q	|	|	|
V|	24+20	5.9126	0.04	Q	|	|	|
V|	24+25	5.9128	0.02	Q	|	|	|
V|	24+30	5.9129	0.01	Q	|	|	|
V|	24+35	5.9129	0.01	Q	|	|	|

Appendix C

Onsite Hydraulic Calculations

Channel Report

Curb Check Min

User-defined

Invert Elev (ft) = 0.30
Slope (%) = 0.40
N-Value = 0.015

Highlighted

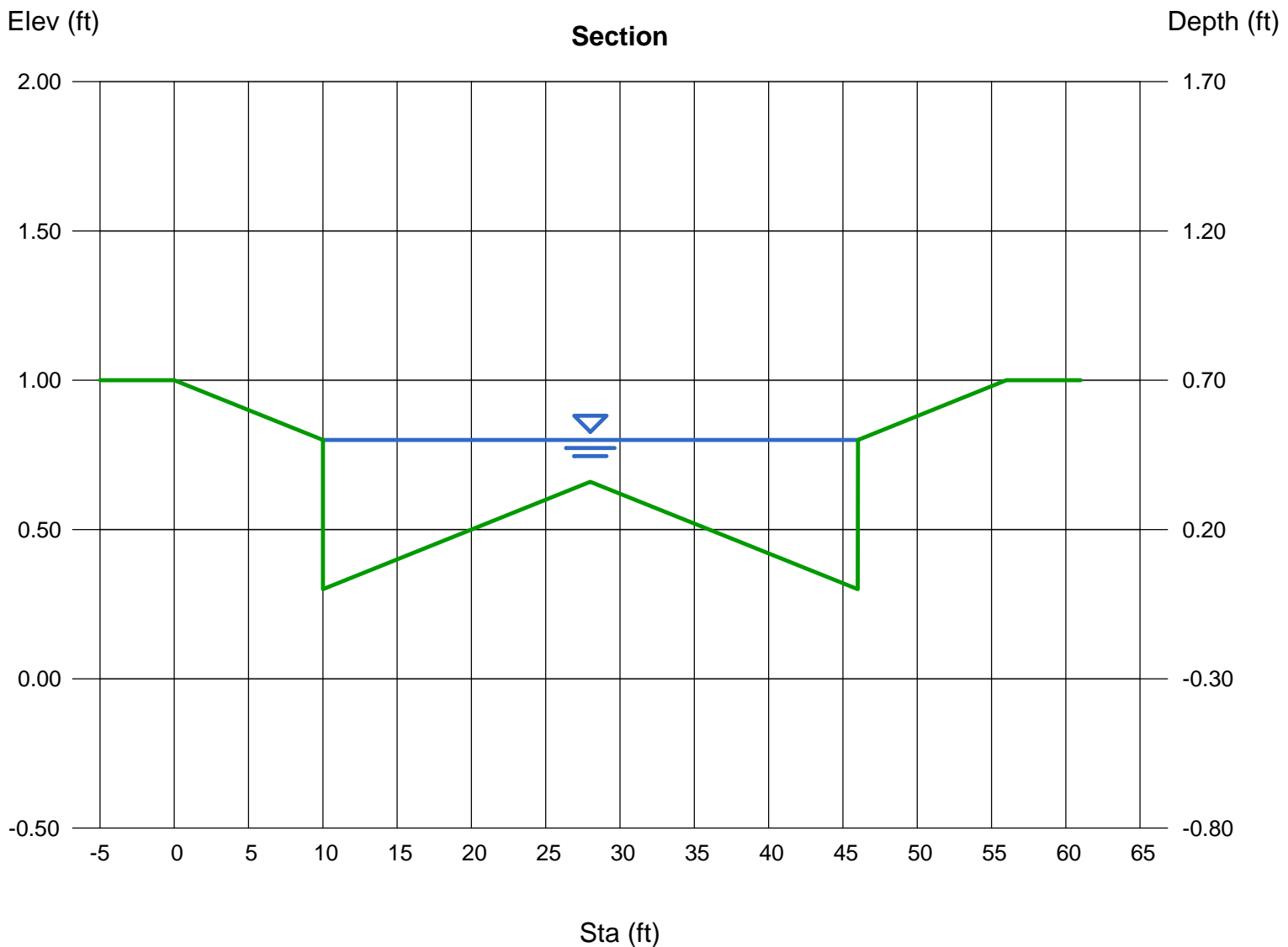
Depth (ft) = 0.50
Q (cfs) = 33.22
Area (sqft) = 11.52
Velocity (ft/s) = 2.88
Wetted Perim (ft) = 37.00
Crit Depth, Yc (ft) = 0.48
Top Width (ft) = 36.01
EGL (ft) = 0.63

Calculations

Compute by: Known Depth
Known Depth (ft) = 0.50

(Sta, El, n)-(Sta, El, n)...

(0.00, 1.00)-(10.00, 0.80, 0.015)-(10.01, 0.30, 0.015)-(28.00, 0.66, 0.015)-(46.00, 0.30, 0.015)-(46.01, 0.80, 0.015)-(56.00, 1.00, 0.015)



Channel Report

ROW Check Min

User-defined

Invert Elev (ft) = 0.30
Slope (%) = 0.40
N-Value = 0.015

Highlighted

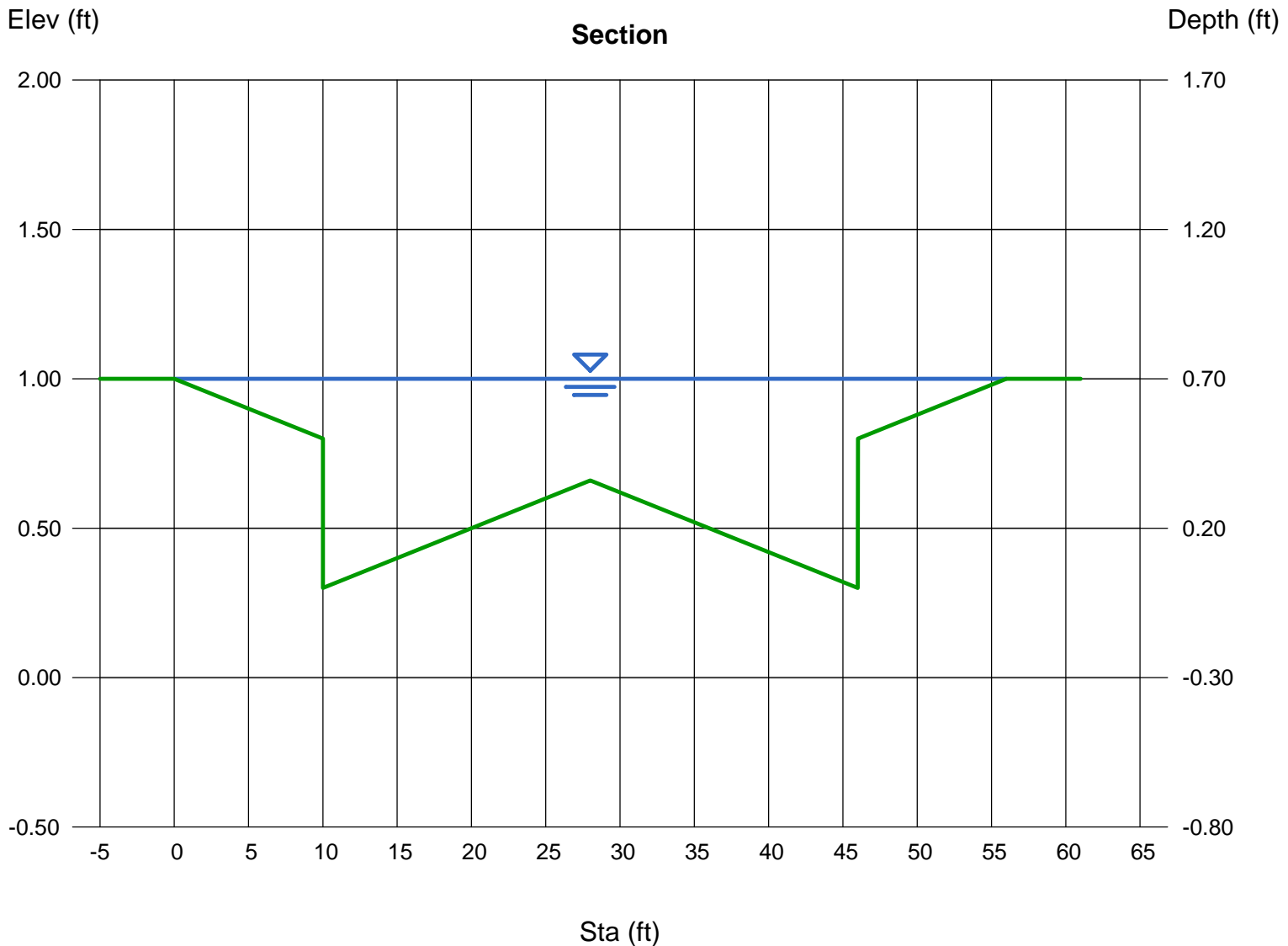
Depth (ft) = 0.70
Q (cfs) = 66.26
Area (sqft) = 20.72
Velocity (ft/s) = 3.20
Wetted Perim (ft) = 56.99
Crit Depth, Yc (ft) = 0.68
Top Width (ft) = 56.00
EGL (ft) = 0.86

Calculations

Compute by: Known Depth
Known Depth (ft) = 0.70

(Sta, El, n)-(Sta, El, n)...

(0.00, 1.00)-(10.00, 0.80, 0.015)-(10.01, 0.30, 0.015)-(28.00, 0.66, 0.015)-(46.00, 0.30, 0.015)-(46.01, 0.80, 0.015)-(56.00, 1.00, 0.015)



Appendix D

Petra Geotechnical Infiltration Report

Chris Morgan

From: Luis Lopez <llopez@coachella.org>
Sent: Thursday, May 26, 2016 9:19 AM
To: 'James M. Kozak'
Cc: Beau Cooper; Jonathan Hoy; Chris Morgan; Dean Phillips;
ron@rgplanningconsultants.com; matthewfagan@roadrunner.com; Juan Carrillo;
NoelO@aol.com
Subject: RE: Vista Del Agua Hydrology/WQ plan

Hi James,

I have talked to Noel Owseley, who has had some correspondence with Jonathan Hoy about this matter.

This is our recommendation:

The City will allow you to eliminate the required 0.5' of freeboard requirement. And, the City will allow an increase to "1 inch per hour" for the percolation rate, subject to HOA Maintenance of the basin as specified in your correspondence (through mitigation measures, and some assurance for funding which we can address through the conditions of approval).

I hope this is helpful.

Thanks,

Luis Lopez
Development Services Director
City of Coachella
1515 Sixth Street
Coachella, CA 92236
Tel: (760)398-3102
Fax: (760)398-5421
LLopez@coachella.org

From: James M. Kozak [mailto:jimk@strategicland.net]
Sent: Friday, March 18, 2016 9:29 AM
To: NoelO@aol.com
Cc: bcooper@unitedeng.com; Jonathan Hoy; cmorgan@unitedeng.com; dphillips@unitedeng.com; Luis Lopez;
ron@rgplanningconsultants.com; matthewfagan@roadrunner.com; Juan Carrillo
Subject: Re: Vista Del Agua Hydrology/WQ plan

Noel,

I represent the property property owner and know Jonathan from my Skyborne project in DHS when he was there. Since this project is a Master Planned Community with a HOA, we can solve your silting concern by having a condition of approval requiring the HOA to maintain and de-silt the basins every 3-5 years depending on weather conditions.

Will this work for you and Jonathan as a solution?

Jim



STRATEGIC LAND PARTNERS L.P.

James M. Kozak, President

[12671 High Bluff Drive, Suite 150](#)

[San Diego, CA 92130](#)

Phone: [\(858\) 699-7440](#)

Fax: [\(858\) 523-0826](#)

E-Mail: jimk@strategicland.net

Web: www.strategicland.com

**Privileged-Confidential
Communication.**

On Mar 18, 2016, at 9:01 AM, "NoelO@aol.com" <NoelO@aol.com> wrote:

Beau,

The ultimate call is Jonathan's, but as the City's plan checker I would not recommend that the perc rate used to size the basin be any lower than 0.67 in/hr. While you might achieve higher perc rates today, in several years, and after there have been several storms, because there is so much silt that washes into the basins it starts to "plug" the soils and the perc rates start to drop dramatically. When that happens the time to infiltrate starts to exceed the City's requirements.

Noel

In a message dated 3/17/2016 10:13:35 A.M. Pacific Daylight Time, bcooper@unitedeng.com writes:

Jonathan,

Attached is our Perc test results for Vista del Agua, which we discussed yesterday. I'll apologize as I think I misstated the overall rates that were achieved but nonetheless the perc rates achieved were much higher than 0.67in/hr. So we would like to be able to use something higher in our calculations. In addition, after talking to our drainage engineer (Chris Morgan) we could reduce the basin size by approx. 15%-17% if we can eliminate the required 0.5' of freeboard requirement. In most cases, as you will see from the attached drainage plan, these basins would be contained within open space/trail areas and designed to spill over in larger events. During our meeting with planning yesterday, there seems to be some hesitation with the amount of basins required to handle the hydrology of this site, so we are looking for input from you and Noel on how we can reduce these basin requirements.

The full hydrology report and WQMP were submitted to George and should be in your office for review. Please feel free to contact myself or Chris Morgan with any questions/comments.

Thanks,

**PETRA GEOTECHNICAL, INC.
RIVERSIDE COUNTY**

40880 County Center Drive, Suite R
Temecula, CA 92591
T: 951.600.9271 F: 951.719.1499



*past + present + future
it's in our science*

Engineers, Geologists
Environmental Scientists

December 1, 2014
J.N. 14-108

Mr. Beau D. Cooper
UNITED ENGINEERING GROUP
10602 Trademark Parkway, Suite 509
Rancho Cucamonga, California 91730

Subject: Summary On-Site Falling-Head Percolation Testing, Vista del Agua Project, Northwest Corner of Avenue 48 and Polk Street, City of Coachella, Riverside County, California

References: United Engineering Group, 2014, Vista Del Agua, Infrastructure Plans 5-12, Drainage/Hydrology, Figure 5-6, City of Coachella, County of Riverside, California

Dear Mr. Cooper:

Petra Geotechnical, Inc. (Petra) is pleased to submit this report documenting on-site falling-head percolation testing in support of engineering design of the proposed retention basin and three proposed water quality basins within the property located at the on the northwest corner of Avenue 48 and Polk Street in the City of Coachella, Riverside County, California. This work was performed in general accordance with the scope of work outlined in our proposal dated January 23, 2014. The purpose of this field testing was to determine additional un-factored infiltration test rates for use in the design of the proposed retention basin improvements.

SCOPE OF SERVICES

The purpose of this study is to conduct four on-site falling-head percolation testing at proposed basin locations and provide infiltration test results. Basin plans recently provided to Petra are limited to location; basin depths were provided by the client by electronic and verbal communication.

One percolation test was conducted at each of the specified locations. Boring locations, plotted on the site plan, were located in the field by Petra's field personnel on November 25, 2014. Four, three-inch diameter borings were drilled the same day to depths of five (5) feet below existing grades. The holes were pre-soaked immediately after drilling. Percolation testing was completed on September 26, 2014 by

one of Petra's senior engineering technicians. Pre-soaking was maintained on each test hole until testing commenced. All test holes were checked for caving prior to the onset of testing, as well as at the completion of testing. No caving occurred in any of the borings.

The falling-head percolation test data was utilized in determining the test infiltration rate, I_t , expressed in units of inches/hour, utilizing the Porchet Method (RCFCWCD, 2011). Test data are attached for each test. The infiltration rate, I_t , was calculated for each test by determining the volumetric water flow through the wetted borehole surface area, expressed in terms of inches per hour.

The percolation testing program consisted of the following:

1. Drill one boring (P-1) near the southwest corner of the site in the area of the proposed retention basin on PA-5 to a depth of 5 feet. Conducted testing in the entire 5 feet of the boring.
2. Drill one boring (P-2) in the area of the proposed water quality basin located on PA-10 to a depth of 5 feet. Conducted testing in the entire 5 feet of the boring.
3. Drill one boring (P-3) in the area of the proposed water quality basin located on PA-2 to a depth of 5 feet. Conducted testing in the entire 5 feet of the boring.
4. Drill one boring (P-4) in the area of the proposed water quality basin located on PA-6 to a depth of 5 feet. Conducted testing in the entire 5 feet of the boring.
5. Conduct falling head percolation tests in general compliance with County of Riverside Department of Environmental Health, Onsite Wastewater Treatment Systems – Technical Guidance Manual.
6. Analyze the percolation test data to determine the corresponding test infiltration rate.
7. Preparation of this report identifying the test locations, soil description, percolation test data, method of data analysis, and recommended un-factored test infiltration rates.

Soil Conditions

Soils encountered in test holes P-1 through P-4 consisted predominantly of sand and silty sand with trace fine to coarse gravel and occasional gravel lenses.

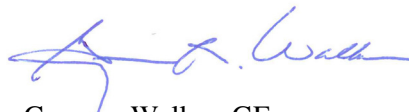
Infiltration Test Results

Test data are attached and summarized in the following table.

SUMMARY OF INFILTRATION TEST RESULTS			
Test Designation	Test Date	Basin Location	Un-Factored Infiltration Rate, I_t (in/hr)
P-1	11-25-2014	PA-5	2.2
P-2	11-25-2014	PA-10	1.6
P-3	11-25-2014	PA-2	1.8
P-4	11-25-2014	PA-6	2.7

This opportunity to be of service is sincerely appreciated. If you have any questions, please contact this office.

Respectfully submitted,
PETRA GEOTECHNICAL, INC.



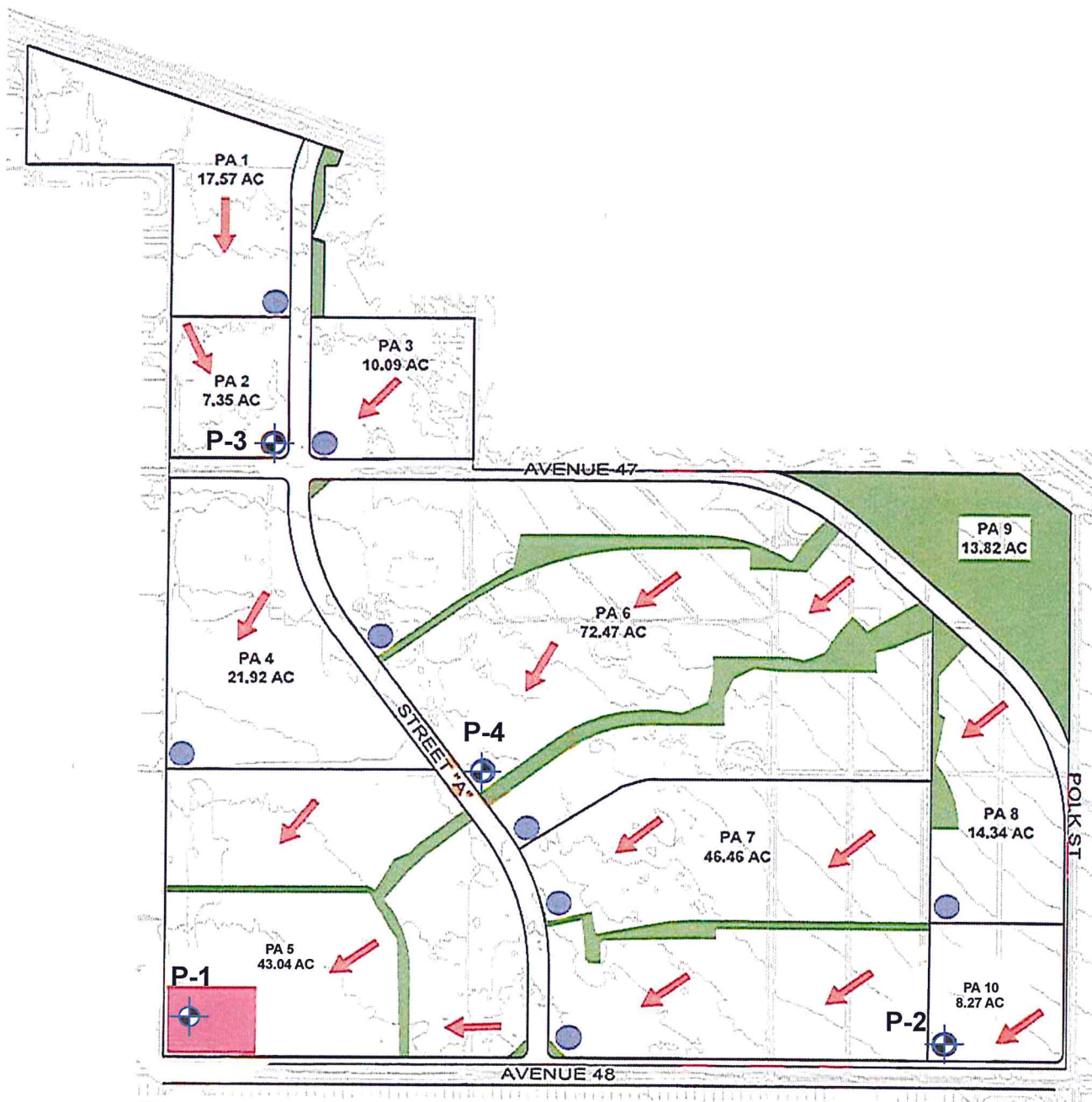
Grayson Walker, GE
Vice President
GE 871



AGW/GRW/nbc

Attachments: Percolation Test Location Map, Figure 1
Infiltration Test Results (P-1 through P-4)

Distribution: (3) Addressee



LEGEND

P-4 - Approximate Percolation Test Location



PETRA GEOTECHNICAL, INC.

40880 County Center Drive, Suite R
Temecula, California 92591
PHONE: (951) 600-9271

COSTA MESA TEMECULA PALM DESERT SANTA CLARITA

Percolation Test Location Map

Vista Del Agua Project
Coachella, California

DATE: December, 2014 J.N.: 14-108

DWG BY: AGW SCALE: NTS

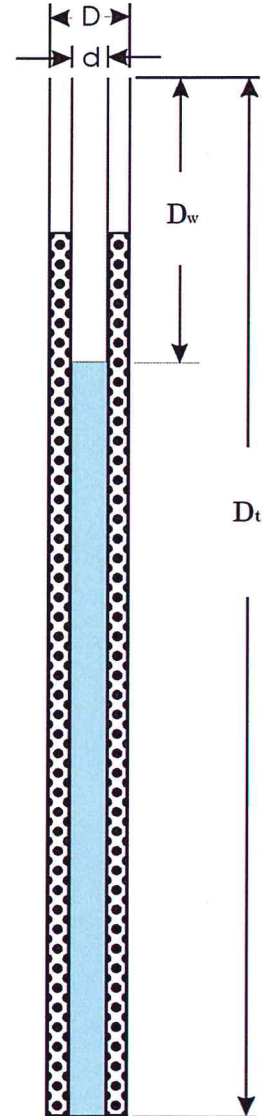
Figure 1

PERCOLATION TEST SUMMARY

Test Number: P-1

Job No. 14-108
 Project Name: Vista del Agua
 Client: UEG
 Tested by: L. Holmes / A. Wood
 Date: November 25, 2014

Depth to Bottom, ft (D_b): 5
 Diameter of Hole, in (D): 3
 Diameter of Pipe, in (d): 0
 Agg. Correction (% Voids): 100
 Soil Description: Silty SAND / SAND



Time Interval (min)	Depth to Water Surface D_w (ft)		Change in Head (in)	Perc Rate gal/day/ft ²
	1st Reading	2nd Reading		
5	0.00	2.50	30.00	88.31
5	0.00	2.20	26.40	74.78
5	0.00	1.80	21.60	58.24
5	0.00	1.60	19.20	50.55
5	0.00	1.60	19.20	50.55
5	0.00	1.50	18.00	46.85
5	0.00	1.40	16.80	43.22
5	0.00	1.30	15.60	39.68
5	0.00	1.20	14.40	36.22
5	0.00	1.10	13.20	32.83
5	0.00	1.10	13.20	32.83
5	0.00	1.10	13.20	32.83

Percolation Rate: **32.8 gal/day/ft²**
 Infiltration Rate: **2.2 inches/hour**



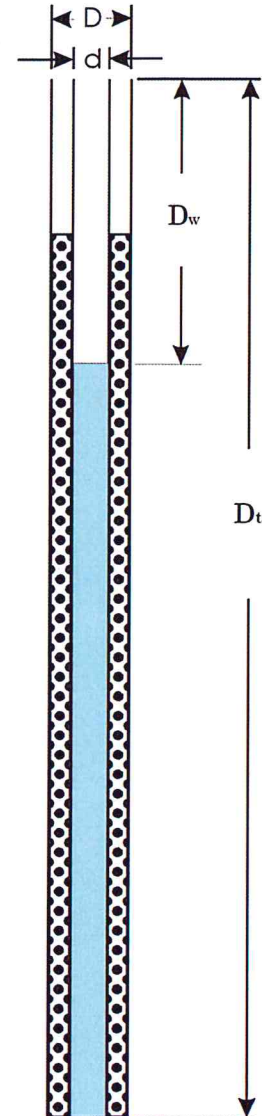
PETRA GEOTECHNICAL, INC.

PERCOLATION TEST SUMMARY

Test Number: P-2

Job No. 14-108
 Project Name: Vista del Agua
 Client: UEG
 Tested by: L. Holmes / A. Wood
 Date: November 25, 2014

Depth to Bottom, ft (D_t): 5
 Diameter of Hole, in (D): 3
 Diameter of Pipe, in (d): 0
 Agg. Correction (% Voids): 100
 Soil Description: Silty SAND / SAND



Time Interval (min)	Depth to Water Surface D_w (ft)		Change in Head (in)	Perc Rate gal/day/ft ²
	1st Reading	2nd Reading		
5	0.00	2.80	33.60	102.96
5	0.00	2.10	25.20	70.49
5	0.00	1.60	19.20	50.55
5	0.00	1.40	16.80	43.22
5	0.00	1.10	13.20	32.83
5	0.00	1.00	12.00	29.52
5	0.00	0.92	11.04	26.92
5	0.00	0.92	11.04	26.92
5	0.00	0.92	11.04	26.92
5	0.00	0.83	9.96	24.05
5	0.00	0.83	9.96	24.05
5	0.00	0.83	9.96	24.05

Percolation Rate: **24.0 gal/day/ft²**
 Infiltration Rate: **1.6 inches/hour**



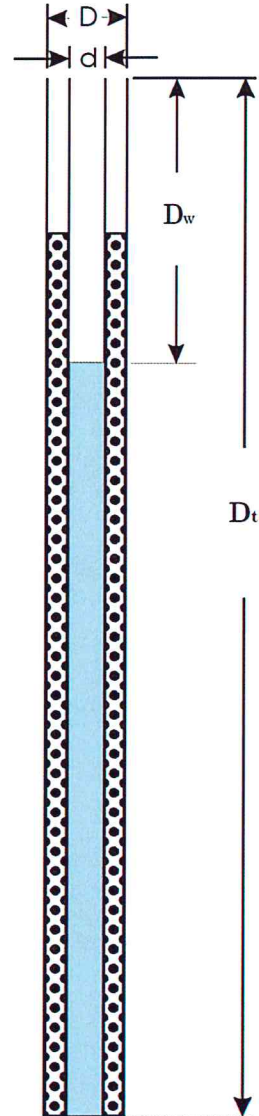
PETRA GEOTECHNICAL, INC.

PERCOLATION TEST SUMMARY

Test Number: P-3

Job No. 14-108
 Project Name: Vista del Agua
 Client: UEG
 Tested by: L. Holmes / A. Wood
 Date: November 25, 2014

Depth to Bottom, ft (D_t): 5
 Diameter of Hole, in (D): 3
 Diameter of Pipe, in (d): 0
 Agg. Correction (% Voids): 100
 Soil Description: Silty SAND / SAND



Time Interval (min)	Depth to Water Surface D_w (ft)		Change in Head (in)	Perc Rate gal/day/ft ²
	1st Reading	2nd Reading		
5	0.00	2.10	25.20	70.49
5	0.00	1.60	19.20	50.55
5	0.00	1.20	14.40	36.22
5	0.00	1.20	14.40	36.22
5	0.00	1.10	13.20	32.83
5	0.00	1.10	13.20	32.83
5	0.00	1.00	12.00	29.52
5	0.00	1.00	12.00	29.52
5	0.00	1.00	12.00	29.52
5	0.00	0.92	11.04	26.92
5	0.00	0.92	11.04	26.92
5	0.00	0.92	11.04	26.92

Percolation Rate: **26.9 gal/day/ft²**
 Infiltration Rate: **1.8 inches/hour**



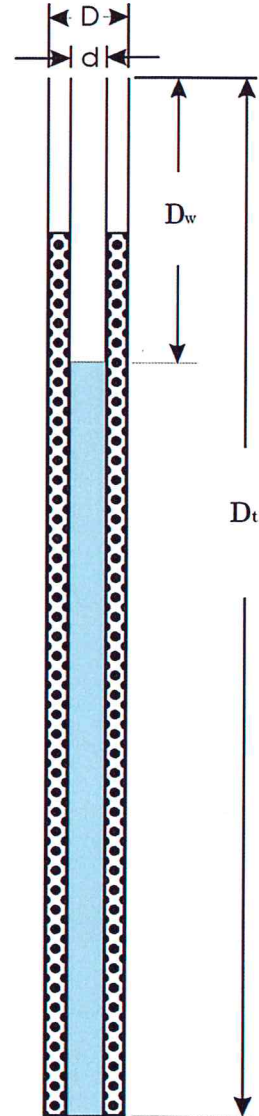
PETRA GEOTECHNICAL, INC.

PERCOLATION TEST SUMMARY

Test Number: P-4

Job No. 14-108
 Project Name: Vista del Agua
 Client: UEG
 Tested by: L. Holmes / A. Wood
 Date: November 25, 2014

Depth to Bottom, ft (D_b): 5
 Diameter of Hole, in (D): 3
 Diameter of Pipe, in (d): 0
 Agg. Correction (% Voids): 100
 Soil Description: Silty SAND / SAND



Time Interval (min)	Depth to Water Surface D_w (ft)		Change in Head (in)	Perc Rate gal/day/ft ²
	1st Reading	2nd Reading		
5	0.00	2.20	26.40	74.78
5	0.00	1.70	20.40	54.35
5	0.00	1.50	18.00	46.85
5	0.00	1.40	16.80	43.22
5	0.00	1.40	16.80	43.22
5	0.00	1.40	16.80	43.22
5	0.00	1.30	15.60	39.68
5	0.00	1.30	15.60	39.68
5	0.00	1.30	15.60	39.68
5	0.00	1.30	15.60	39.68
5	0.00	1.30	15.60	39.68
5	0.00	1.30	15.60	39.68
5	0.00	1.30	15.60	39.68

Percolation Rate: **39.7 gal/day/ft²**
 Infiltration Rate: **2.7 inches/hour**



PETRA GEOTECHNICAL, INC.