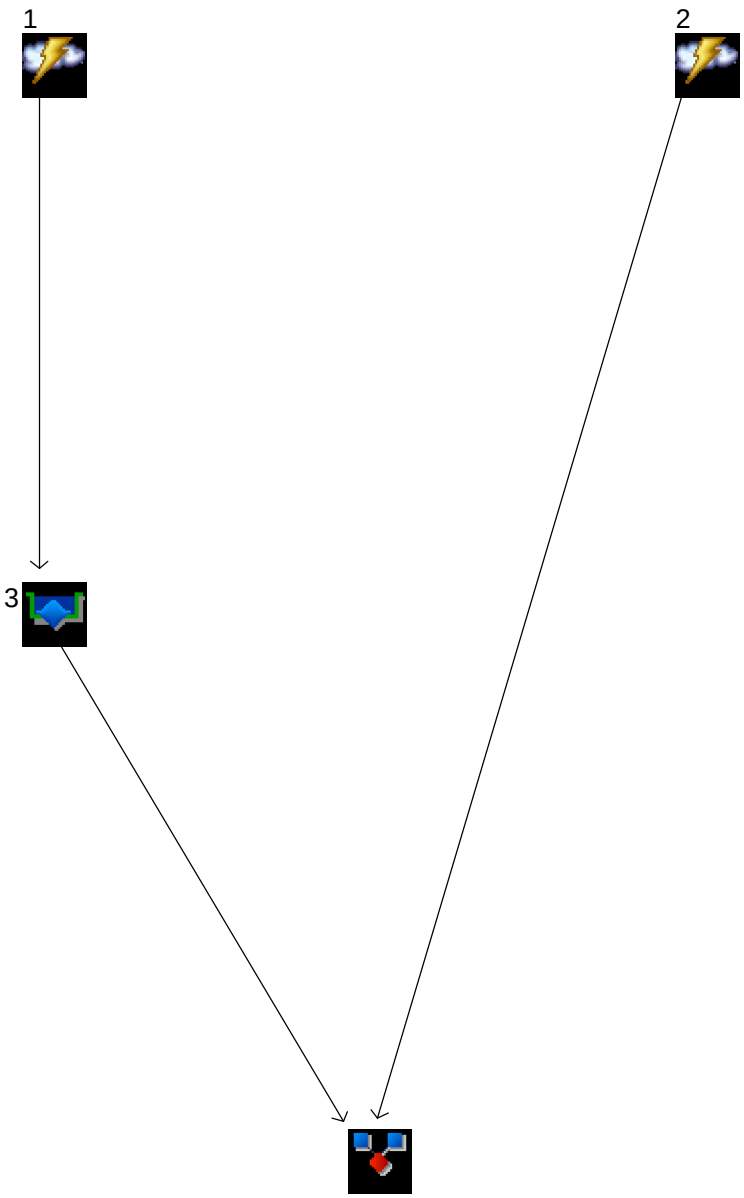
Watershed Model Schematic



Legend

Hyd.	Origin	Description
1	Rational	South Basin (2)
2	Rational	South Undeveloped
3	Reservoir	South Detention
4	Combine	Drainage to Southeast

Hydrograph Summary Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2009 by Autodesk, Inc. v6.066

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph description
1	Rational	13.30	1	28	22,340	------	------	------	South Basin (2)
2	Rational	4.165	1	15	3,748	------	------	------	South Undeveloped
3	Reservoir	5.082	1	45	22,330	1	1286.22	14,831	South Detention
4	Combine	5.082	1	45	26,078	2, 3	------	------	Drainage to Southeast

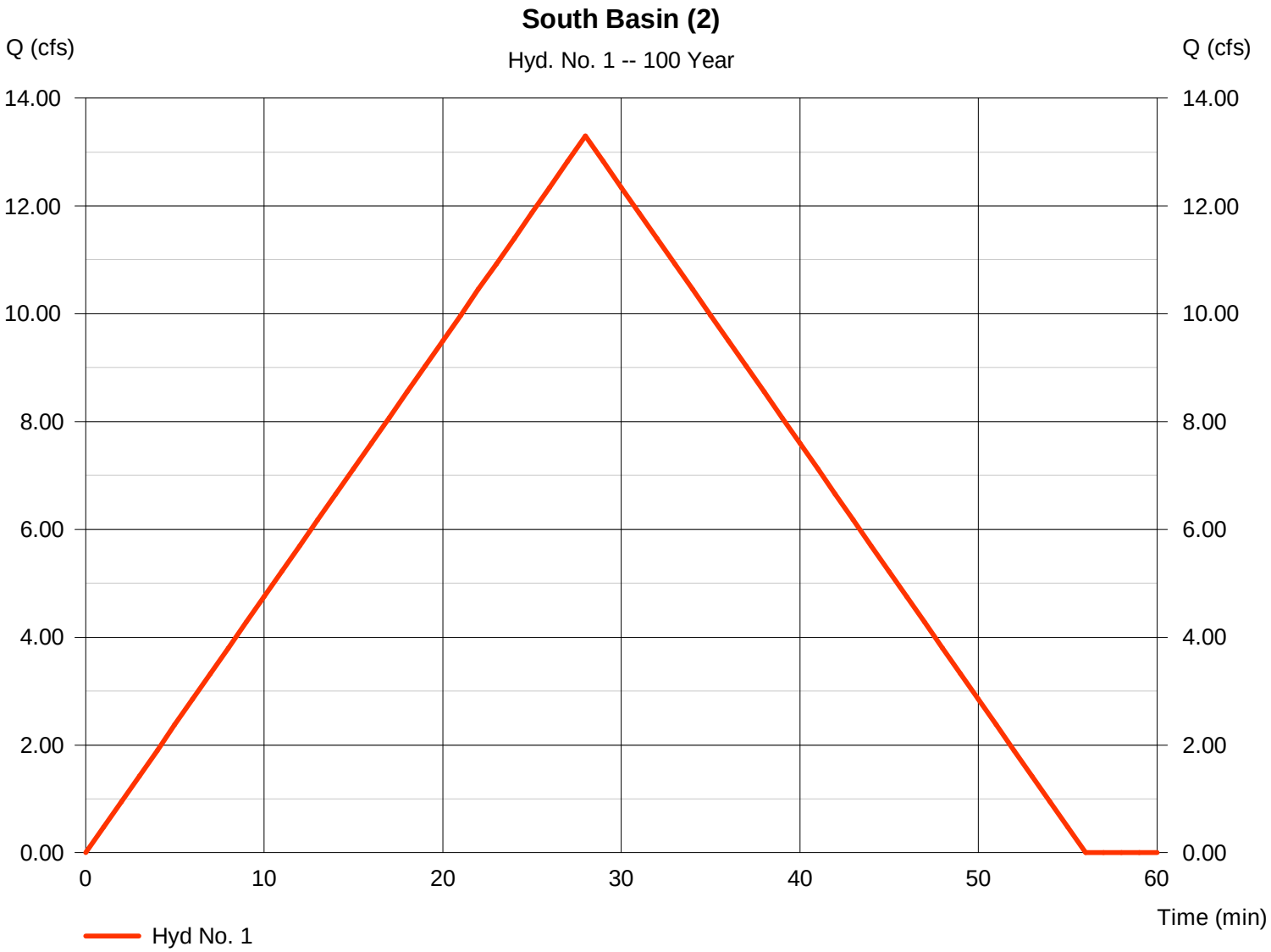
Hydrograph Report

Hyd. No. 1

South Basin (2)

Hydrograph type	=	Rational	Peak discharge	=	13.30 cfs
Storm frequency	=	100 yrs	Time to peak	=	28 min
Time interval	=	1 min	Hyd. volume	=	22,340 cuft
Drainage area	=	3.450 ac	Runoff coeff.	=	0.69*
Intensity	=	5.586 in/hr	Tc by TR55	=	28.00 min
IDF Curve	=	wichita.IDF	Asc/Rec limb fact	=	1/1

* Composite (Area/C) = [(0.650 x 0.69) + (2.800 x 0.69)] / 3.450



TR55 Tc Worksheet

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2009 by Autodesk, Inc. v6.066

Hyd. No. 1

South Basin (2)

Description	A		B		C		Totals
Sheet Flow							
Manning's n-value	= 0.035		0.011		0.011		
Flow length (ft)	= 100.0		0.0		0.0		
Two-year 24-hr precip. (in)	= 3.50		0.00		0.00		
Land slope (%)	= 0.26		0.00		0.00		
Travel Time (min)	**= 6.61**	**+**	**0.00**	**+**	**0.00**	**=**	**6.61**
Shallow Concentrated Flow							
Flow length (ft)	= 1000.00		0.00		0.00		
Watercourse slope (%)	= 0.15		0.00		0.00		
Surface description	= Paved		Paved		Paved		
Average velocity (ft/s)	= 0.79		0.00		0.00		
Travel Time (min)	**= 21.17**	**+**	**0.00**	**+**	**0.00**	**=**	**21.17**
Channel Flow							
X sectional flow area (sqft)	= 0.00		0.00		0.00		
Wetted perimeter (ft)	= 0.00		0.00		0.00		
Channel slope (%)	= 0.00		0.00		0.00		
Manning's n-value	= 0.015		0.015		0.015		
Velocity (ft/s)	= 0.00		0.00		0.00		
Flow length (ft)	= 0.0		0.0		0.0		
Travel Time (min)	**= 0.00**	**+**	**0.00**	**+**	**0.00**	**=**	**0.00**

Total Travel Time, Tc ..... 28.00 min

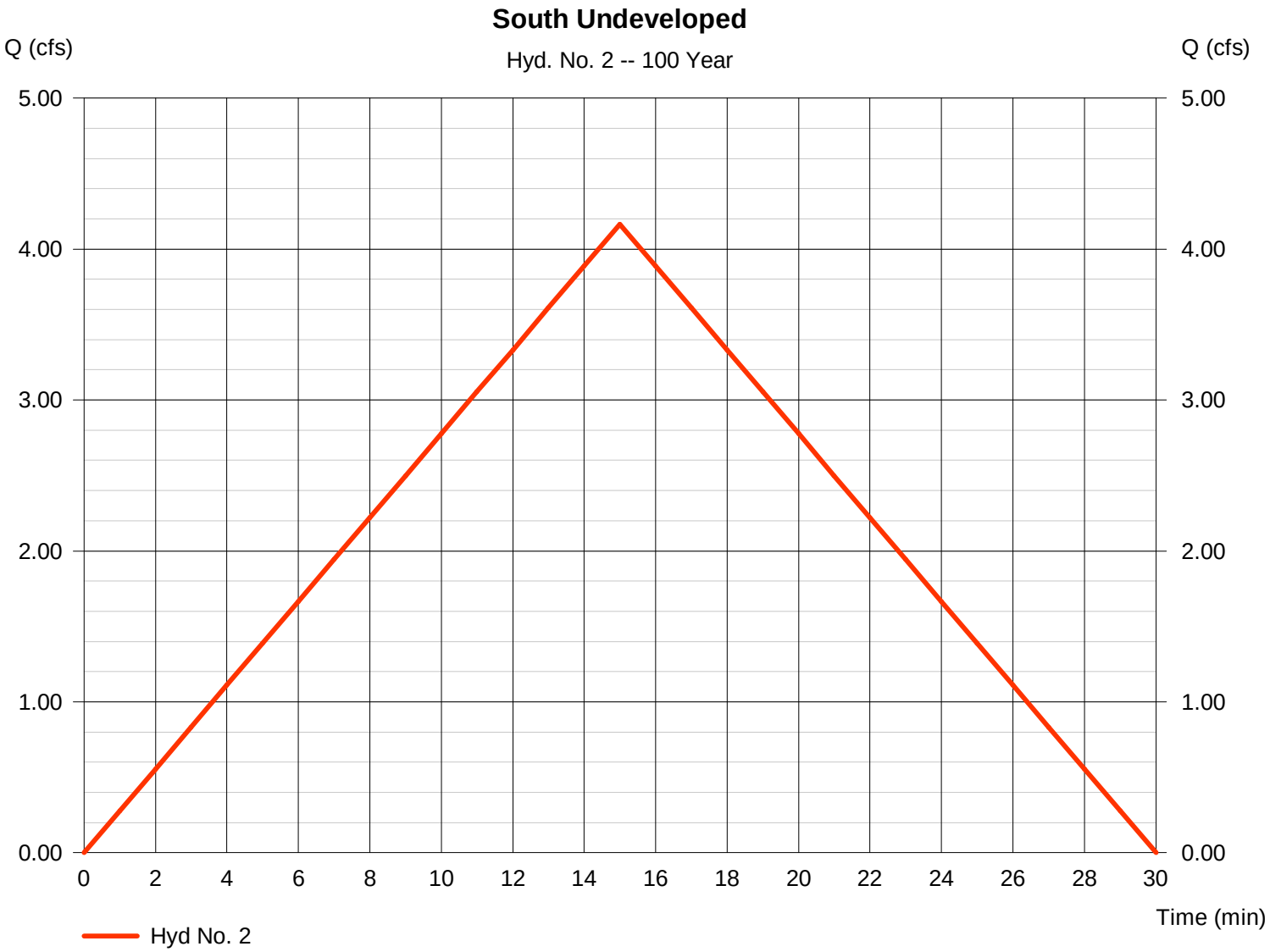
Hydrograph Report

Hyd. No. 2

South Undeveloped

Hydrograph type	=	Rational	Peak discharge	=	4.165 cfs
Storm frequency	=	100 yrs	Time to peak	=	15 min
Time interval	=	1 min	Hyd. volume	=	3,748 cuft
Drainage area	=	1.950 ac	Runoff coeff.	=	0.29*
Intensity	=	7.365 in/hr	Tc by User	=	15.00 min
IDF Curve	=	wichita.IDF	Asc/Rec limb fact	=	1/1

* Composite (Area/C) = [(1.600 x 0.20) + (0.350 x 0.69)] / 1.950



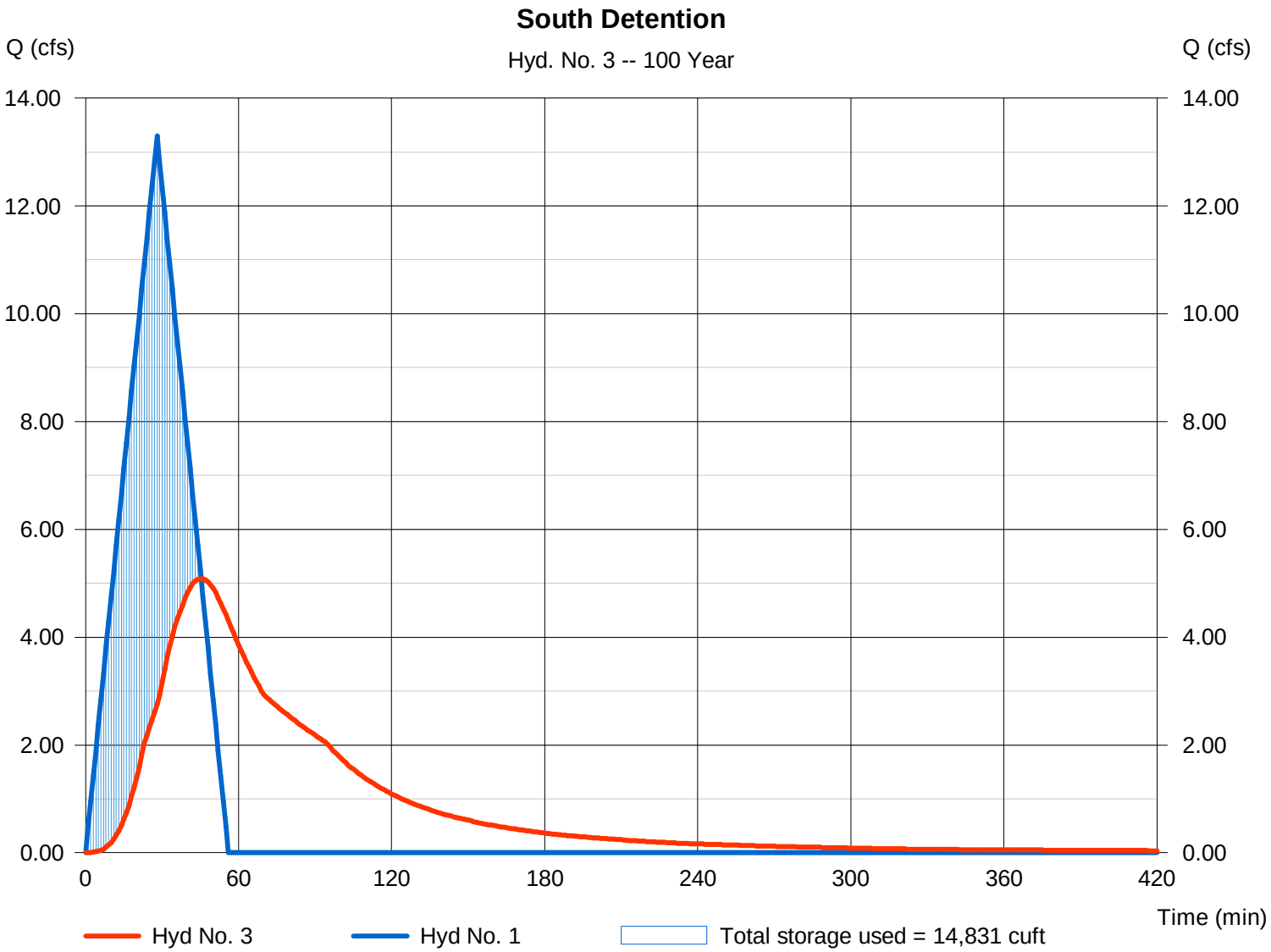
Hydrograph Report

Hyd. No. 3

South Detention

Hydrograph type	=	Reservoir	Peak discharge	=	5.082 cfs
Storm frequency	=	100 yrs	Time to peak	=	45 min
Time interval	=	1 min	Hyd. volume	=	22,330 cuft
Inflow hyd. No.	=	1 - South Basin (2)	Max. Elevation	=	1286.22 ft
Reservoir name	=	South Detention Area	Max. Storage	=	14,831 cuft

Storage Indication method used.



Pond Report

Pond No. 1 - South Detention Area

Pond Data

Contours - User-defined contour areas. Conic method used for volume calculation. Begining Elevation = 1285.50 ft

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	1285.50	12,500	0	0
0.50	1286.00	14,900	6,841	6,841
1.50	1287.00	61,650	35,616	42,456
2.50	1288.00	65,000	63,311	105,768

Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	Inactive	Inactive	Inactive	Inactive
Span (in)	= 0.00	0.00	0.00	0.00
No. Barrels	= 0	0	0	0
Invert El. (ft)	= 0.00	0.00	0.00	0.00
Length (ft)	= 0.00	0.00	0.00	0.00
Slope (%)	= 0.00	0.00	0.00	n/a
N-Value	= .013	.013	.013	n/a
Orifice Coeff.	= 0.60	0.60	0.60	0.60
Multi-Stage	= n/a	No	No	No

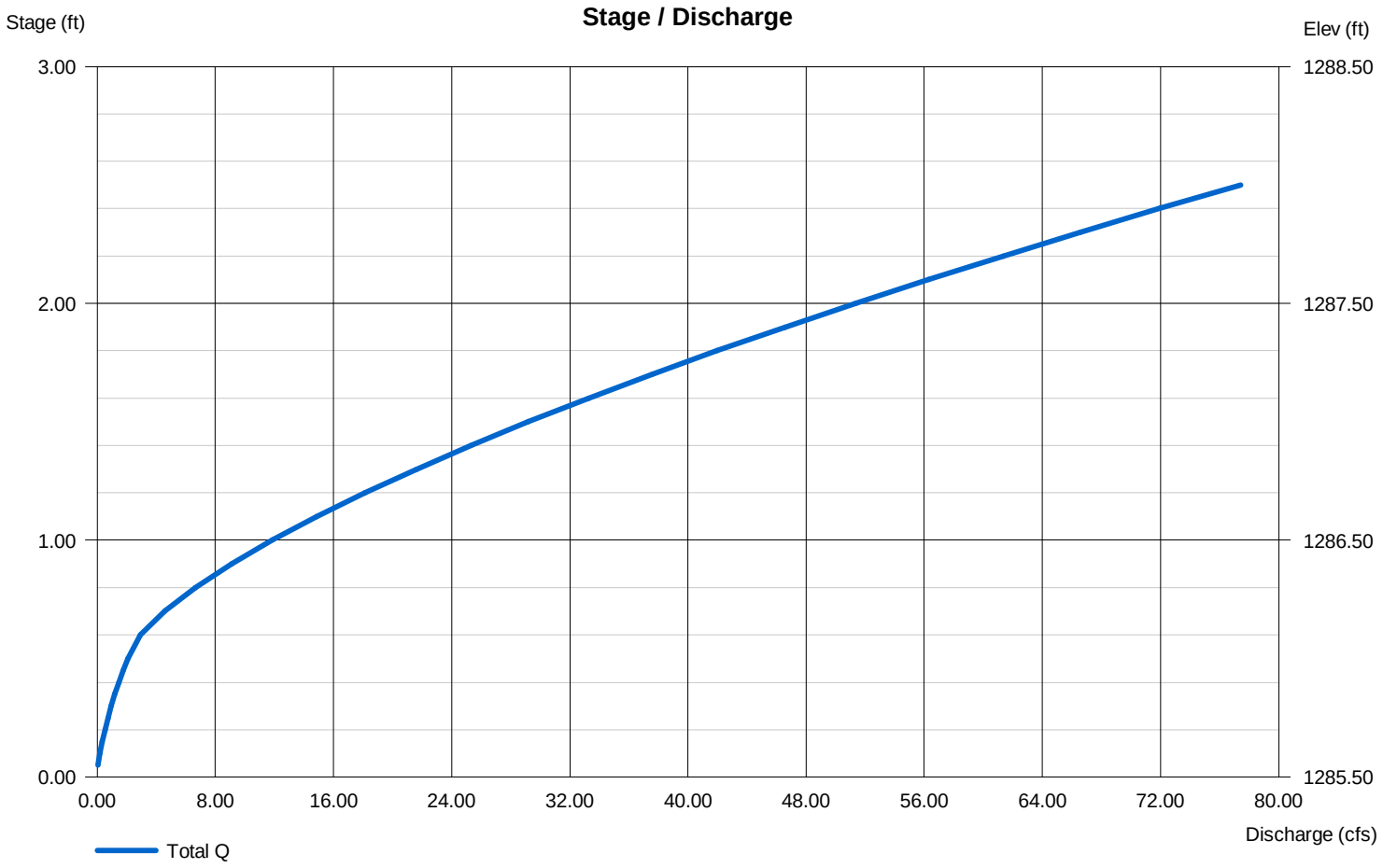
Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 1.75	6.00	Inactive	Inactive
Crest El. (ft)	= 1285.50	1286.05	0.00	0.00
Weir Coeff.	= 3.33	3.33	3.33	3.33
Weir Type	= Rect	Rect	---	---
Multi-Stage	= No	No	No	No

Exfil.(in/hr) = 0.000 (by Contour)

TW Elev. (ft) = 0.00

Note: Culvert/Orifice outflows are analyzed under inlet (ic) and outlet (oc) control. Weir risers checked for orifice conditions (ic) and submergence (s).

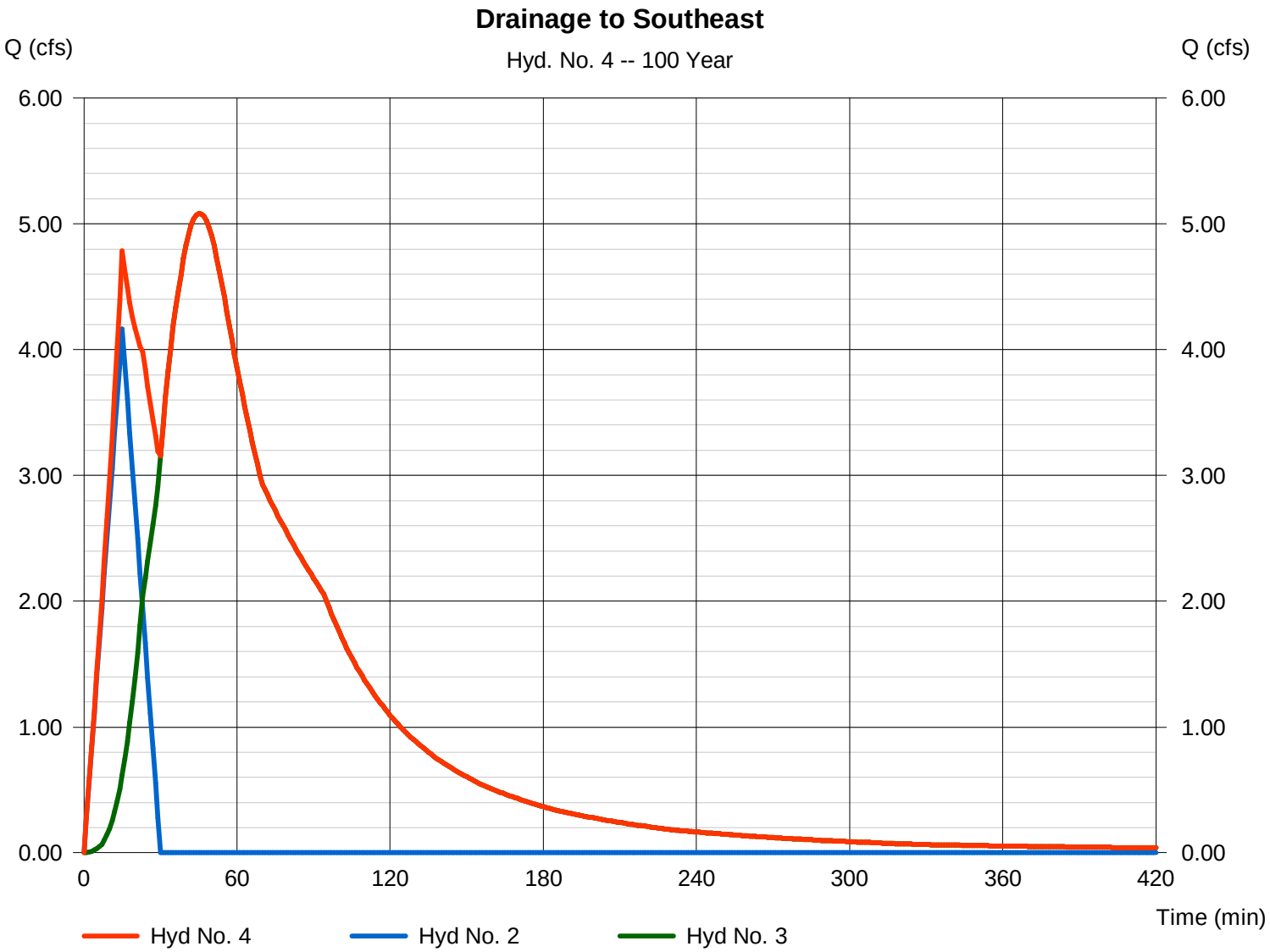


Hydrograph Report

Hyd. No. 4

Drainage to Southeast

Hydrograph type	= Combine	Peak discharge	= 5.082 cfs
Storm frequency	= 100 yrs	Time to peak	= 45 min
Time interval	= 1 min	Hyd. volume	= 26,078 cuft
Inflow hyds.	= 2, 3	Contrib. drain. area	= 1.950 ac



Hydraflow Rainfall Report

Return Period (Yrs)	Intensity-Duration-Frequency Equation Coefficients (FHA)			
	B	D	E	(N/A)
1	0.0000	0.0000	0.0000	--------
2	76.3137	14.3000	0.8844	--------
3	0.0000	0.0000	0.0000	--------
5	52.6224	11.2000	0.7497	--------
10	55.1841	11.1000	0.7229	--------
25	60.7012	11.1000	0.7068	--------
50	66.9222	11.3000	0.7004	--------
100	62.2794	10.1000	0.6624	--------

File name: wichita.IDF

Intensity = B / (Tc + D)^E

Return Period (Yrs)	Intensity Values (in/hr)											
	5 min	10	15	20	25	30	35	40	45	50	55	60
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	5.57	4.54	3.85	3.35	2.97	2.67	2.43	2.23	2.06	1.92	1.80	1.69
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	6.52	5.33	4.55	3.99	3.57	3.24	2.97	2.75	2.57	2.41	2.27	2.15
10	7.40	6.09	5.22	4.60	4.13	3.76	3.46	3.21	3.00	2.82	2.67	2.53
25	8.51	7.03	6.05	5.35	4.81	4.39	4.05	3.76	3.52	3.32	3.14	2.98
50	9.47	7.86	6.78	6.00	5.41	4.94	4.56	4.24	3.98	3.75	3.55	3.37
100	10.31	8.53	7.37	6.53	5.90	5.40	5.00	4.66	4.37	4.13	3.92	3.73

Tc = time in minutes. Values may exceed 60.

Precip. file name: wich_24hr.pcp

Storm Distribution	Rainfall Precipitation Table (in)							
	1-yr	2-yr	3-yr	5-yr	10-yr	25-yr	50-yr	100-yr
SCS 24-hour	0.00	3.50	0.00	4.50	5.30	6.10	6.80	7.90
SCS 6-Hr	0.00	1.80	0.00	0.00	2.60	0.00	0.00	4.00
Huff-1st	0.00	1.55	0.00	2.75	4.00	5.38	6.50	8.00
Huff-2nd	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-3rd	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-4th	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-Indy	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Custom	0.00	1.75	0.00	2.80	3.90	5.25	6.00	7.10