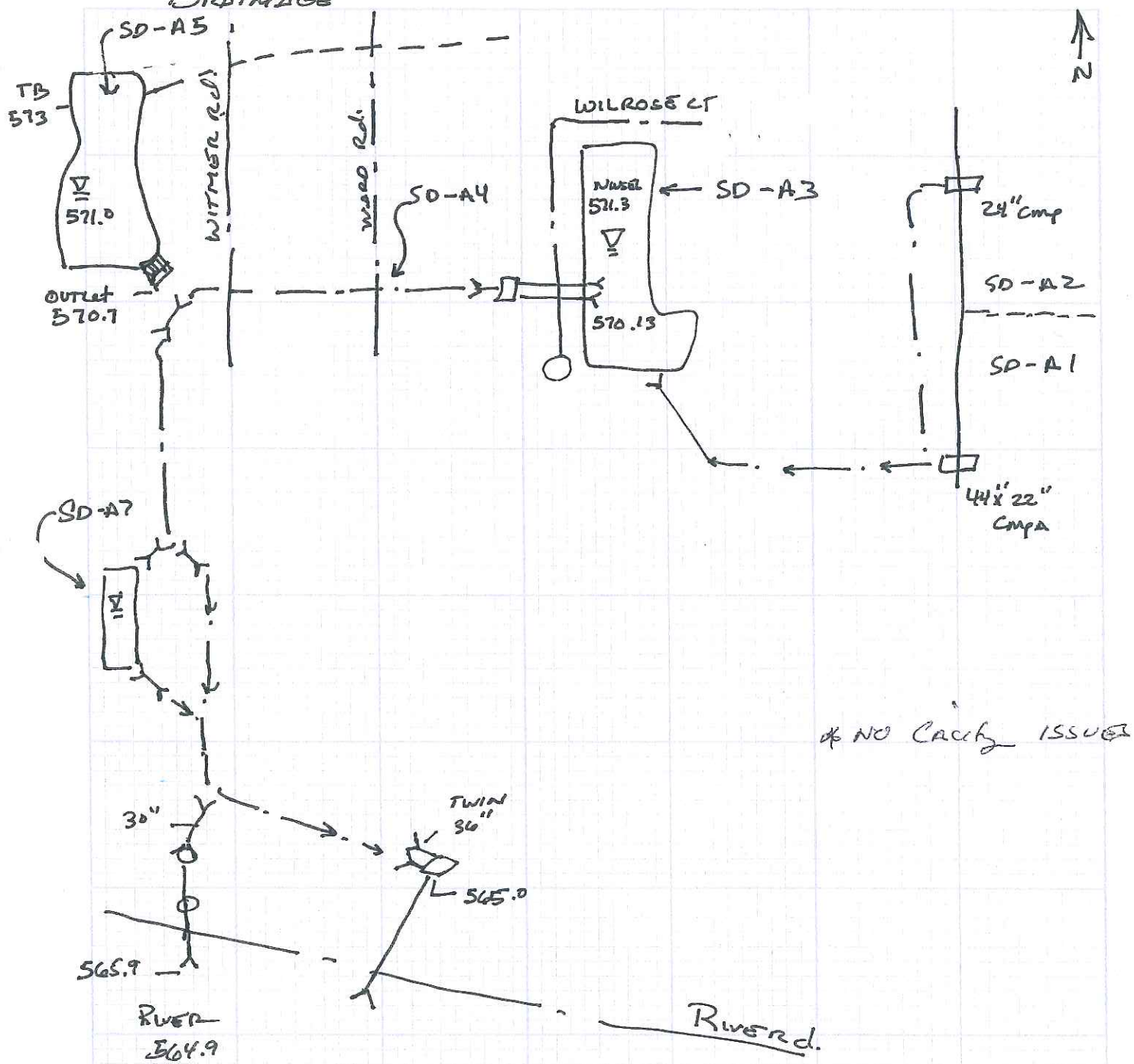
Attachment 6
Southern Drainage

GHD

Client: wheatfield. Job Number: 631040 Sheet ____ of ____

Project: Drainage Study Sheets by: DMB Date: AUG 2015

Subject: WILROSE POND | SOUTHERN DRAINAGE Checked by: ____ Date: ____



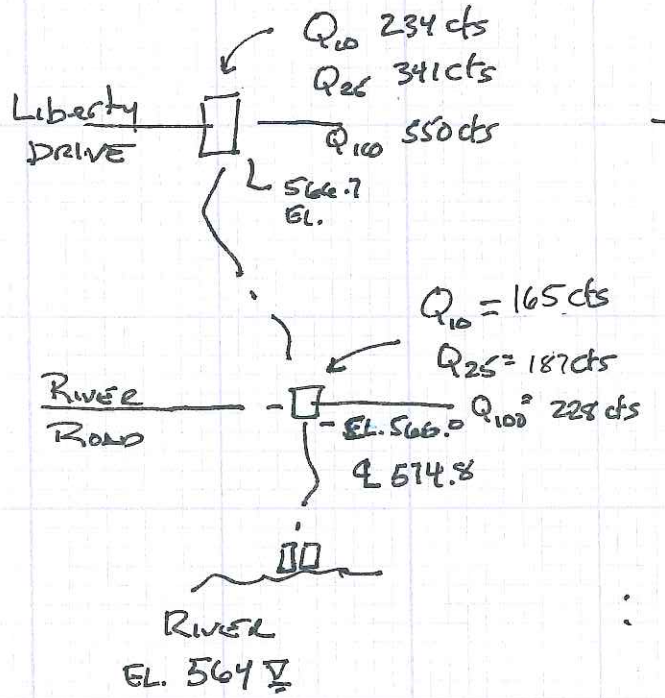
* NO CACHE ISSUES

Client ..... Job Number ..... Sheet ..... of .....

Project ..... Sheets by ..... Date .....

Subject Southern Drainage / Black Creek Modification ..... Checked by ..... Date .....

Existing Conditions



Proposed Conditions

(Route Portion of Black Creek to Wheatfield Ponds)

(A) Peak Elev 571.7

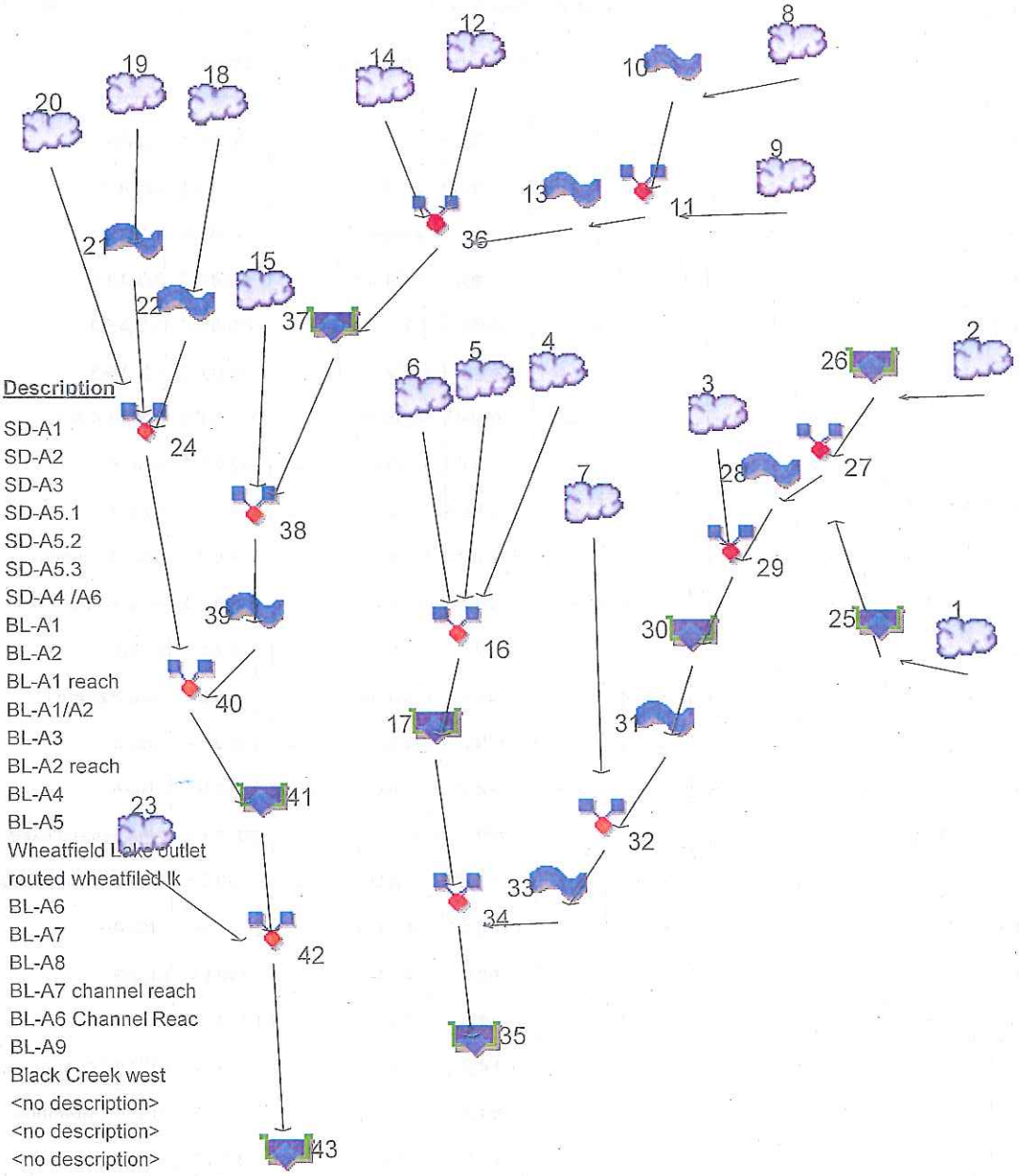
Q_{10}	110 cfs
Q_{25}	144 cfs
Q_{100}	177 cfs

: — Proposed Represents

- Decrease in storm elevation
- Reduces peak flows by 30%
- Utilize available capacity in existing lakes

Watershed Model Schematic

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2014 by Autodesk, Inc. v10.3



Legend

Hyd.	Origin	Description
1	SCS Runoff	SD-A1
2	SCS Runoff	SD-A2
3	SCS Runoff	SD-A3
4	SCS Runoff	SD-A5.1
5	SCS Runoff	SD-A5.2
6	SCS Runoff	SD-A5.3
7	SCS Runoff	SD-A4 /A6
8	SCS Runoff	BL-A1
9	SCS Runoff	BL-A2
10	Reach	BL-A1 reach
11	Combine	BL-A1/A2
12	SCS Runoff	BL-A3
13	Reach	BL-A2 reach
14	SCS Runoff	BL-A4
15	SCS Runoff	BL-A5
16	Combine	Wheatfield Lake outlet
17	Reservoir	routed wheatfiled lk
18	SCS Runoff	BL-A6
19	SCS Runoff	BL-A7
20	SCS Runoff	BL-A8
21	Reach	BL-A7 channel reach
22	Reach	BL-A6 Channel Reac
23	SCS Runoff	BL-A9
24	Combine	Black Creek west
25	Reservoir	<no description>
26	Reservoir	<no description>
27	Combine	<no description>
28	Reach	Discharge to wilrose Lake
29	Combine	<no description>
30	Reservoir	Dischare Wilrose Lake
31	Reach	southern drainage
32	Combine	Ward Road
33	Reach	Southern Drainage Extension
34	Combine	<no description>
35	Reservoir	RIver Road Outlets
36	Combine	Lakeside storm ponds
37	Reservoir	routed Lakeside ponds
38	Combine	Black Creek East
39	Reach	Black Creek western reach
40	Combine	Liberty Drive
41	Reservoir	Liberty Drive Crossing
42	Combine	River Road
43	Reservoir	River Road-Downstream

Hydrograph Return Period Recap

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2014 by Autodesk, Inc. v10.3

Hyd. No.	Hydrograph type (origin)	Inflow hyd(s)	Peak Outflow (cfs)								Hydrograph Description
			1-yr	2-yr	3-yr	5-yr	10-yr	25-yr	50-yr	100-yr	
1	SCS Runoff	------	-------	-------	-------	-------	12.38	18.15	-------	30.91	SD-A1
2	SCS Runoff	------	-------	-------	-------	-------	17.39	24.99	-------	41.24	SD-A2
3	SCS Runoff	------	-------	-------	-------	-------	98.51	141.45	-------	233.60	SD-A3
4	SCS Runoff	------	-------	-------	-------	-------	24.13	34.95	-------	58.47	SD-A5.1
5	SCS Runoff	------	-------	-------	-------	-------	293.34	357.95	-------	485.67	SD-A5.2
6	SCS Runoff	------	-------	-------	-------	-------	274.09	377.81	-------	593.62	SD-A5.3
7	SCS Runoff	------	-------	-------	-------	-------	40.48	58.46	-------	97.59	SD-A4 /A6
8	SCS Runoff	------	-------	-------	-------	-------	16.83	25.07	-------	42.97	BL-A1
9	SCS Runoff	------	-------	-------	-------	-------	15.34	22.43	-------	37.97	BL-A2
10	Reach	8	-------	-------	-------	-------	12.76	19.64	-------	35.12	BL-A1 reach
11	Combine	9, 10	-------	-------	-------	-------	23.50	34.48	-------	58.80	BL-A1/A2
12	SCS Runoff	------	-------	-------	-------	-------	39.01	56.03	-------	92.52	BL-A3
13	Reach	11	-------	-------	-------	-------	23.12	33.94	-------	58.04	BL-A2 reach
14	SCS Runoff	------	-------	-------	-------	-------	139.36	194.63	-------	309.84	BL-A4
15	SCS Runoff	------	-------	-------	-------	-------	12.93	19.05	-------	32.60	BL-A5
16	Combine	4, 5, 6,	-------	-------	-------	-------	529.91	690.77	-------	1020.70	Wheatfield Lake outlet
17	Reservoir	16	-------	-------	-------	-------	11.27	16.66	-------	29.38	routed wheatfiled lk
18	SCS Runoff	------	-------	-------	-------	-------	72.59	101.79	-------	162.94	BL-A6
19	SCS Runoff	------	-------	-------	-------	-------	68.88	92.52	-------	140.61	BL-A7
20	SCS Runoff	------	-------	-------	-------	-------	44.09	64.77	-------	110.51	BL-A8
21	Reach	19	-------	-------	-------	-------	52.95	73.26	-------	115.72	BL-A7 channel reach
22	Reach	18	-------	-------	-------	-------	63.79	90.97	-------	148.73	BL-A6 Channel Reac
23	SCS Runoff	------	-------	-------	-------	-------	24.08	35.67	-------	61.31	BL-A9
24	Combine	20, 21, 22,	-------	-------	-------	-------	119.52	169.39	-------	275.71	Black Creek west
25	Reservoir	1	-------	-------	-------	-------	12.38	18.15	-------	30.89	<no description>
26	Reservoir	2	-------	-------	-------	-------	17.42	24.99	-------	41.24	<no description>
27	Combine	25, 26	-------	-------	-------	-------	21.81	31.36	-------	53.36	<no description>
28	Reach	27	-------	-------	-------	-------	20.86	30.37	-------	51.52	Discharge to wilrose Lake
29	Combine	3, 28	-------	-------	-------	-------	117.00	168.77	-------	281.30	<no description>
30	Reservoir	29	-------	-------	-------	-------	10.16	11.62	-------	13.67	Dischare Wilrose Lake
31	Reach	30	-------	-------	-------	-------	10.08	11.56	-------	13.63	southern drainage
32	Combine	7, 31	-------	-------	-------	-------	44.23	63.37	-------	104.51	Ward Road
33	Reach	32	-------	-------	-------	-------	44.11	63.02	-------	103.45	Southern Drainage Extension

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Hydrograph Return Period Recap

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2014 by Autodesk, Inc. v10.3

Hyd. No.	Hydrograph type (origin)	Inflow hyd(s)	Peak Outflow (cfs)								Hydrograph Description
			1-yr	2-yr	3-yr	5-yr	10-yr	25-yr	50-yr	100-yr	
34	Combine	17, 33	-------	-------	-------	-------	53.73	77.30	-------	129.01	<no description>
35	Reservoir	34	-------	-------	-------	-------	53.72	77.28	-------	128.77	RIver Road Outlets
36	Combine	12, 13, 14,	-------	-------	-------	-------	150.75	213.41	-------	347.50	Lakeside storm ponds
37	Reservoir	36	-------	-------	-------	-------	69.75	128.55	-------	289.33	routed Lakeside ponds
38	Combine	15, 37	-------	-------	-------	-------	82.05	134.03	-------	296.85	Black Creek East
39	Reach	38	-------	-------	-------	-------	79.17	118.27	-------	212.04	Black Creek western reach
40	Combine	24, 39	-------	-------	-------	-------	158.16	249.53	-------	483.95	Liberty Drive
41	Reservoir	40	-------	-------	-------	-------	177.53	286.74	-------	508.89	Liberty Drive Crossing
42	Combine	23, 41	-------	-------	-------	-------	194.44	307.94	-------	545.16	River Road
43	Reservoir	42	-------	-------	-------	-------	155.83	181.70	-------	223.25	River Road-Downstream

Hydrograph Summary Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2014 by Autodesk, Inc. v10.3

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	SCS Runoff	12.38	2	1096	486,703	------	------	------	SD-A1
2	SCS Runoff	17.39	2	852	320,828	------	------	------	SD-A2
3	SCS Runoff	98.51	2	882	2,085,006	------	------	------	SD-A3
4	SCS Runoff	24.13	2	920	595,977	------	------	------	SD-A5.1
5	SCS Runoff	293.34	2	728	1,182,746	------	------	------	SD-A5.2
6	SCS Runoff	274.09	2	738	1,342,011	------	------	------	SD-A5.3
7	SCS Runoff	40.48	2	982	1,223,199	------	------	------	SD-A4 /A6
8	SCS Runoff	16.83	2	790	201,541	------	------	------	BL-A1
9	SCS Runoff	15.34	2	948	419,397	------	------	------	BL-A2
10	Reach	12.76	2	846	201,509	8	------	------	BL-A1 reach
11	Combine	23.50	2	898	620,906	9, 10	------	------	BL-A1/A2
12	SCS Runoff	39.01	2	872	795,118	------	------	------	BL-A3
13	Reach	23.12	2	930	620,891	11	------	------	BL-A2 reach
14	SCS Runoff	139.36	2	750	915,799	------	------	------	BL-A4
15	SCS Runoff	12.93	2	992	401,724	------	------	------	BL-A5
16	Combine	529.91	2	730	3,120,732	4, 5, 6,	------	------	Wheatfield Lake outlet
17	Reservoir	11.27	2	1458	1,997,411	16	571.52	2,660,696	routed wheatfiled lk
18	SCS Runoff	72.59	2	788	806,303	------	------	------	BL-A6
19	SCS Runoff	68.88	2	756	498,307	------	------	------	BL-A7
20	SCS Runoff	44.09	2	1054	1,591,442	------	------	------	BL-A8
21	Reach	52.95	2	782	498,291	19	------	------	BL-A7 channel reach
22	Reach	63.79	2	818	806,287	18	------	------	BL-A6 Channel Reac
23	SCS Runoff	24.08	2	906	570,881	------	------	------	BL-A9
24	Combine	119.52	2	802	2,896,024	20, 21, 22,	------	------	Black Creek west
25	Reservoir	12.38	2	1098	486,701	1	575.12	7,579	<no description>
26	Reservoir	17.42	2	852	320,823	2	576.52	3,409	<no description>
27	Combine	21.81	2	910	807,524	25, 26	------	------	<no description>
28	Reach	20.86	2	962	807,495	27	------	------	Discharge to wilrose Lake
29	Combine	117.00	2	892	2,892,498	3, 28	------	------	<no description>
30	Reservoir	10.16	2	1654	2,171,759	29	573.86	7,440,924	Dischare Wilrose Lake
31	Reach	10.08	2	1838	2,137,778	30	------	------	southern drainage
32	Combine	44.23	2	1008	3,360,978	7, 31	------	------	Ward Road
33	Reach	44.11	2	1054	3,360,489	32	------	------	Southern Drainage Extension

Hydrograph Summary Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2014 by Autodesk, Inc. v10.3

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
34	Combine	53.73	2	1068	5,354,622	17, 33	------	------	<no description>
35	Reservoir	53.72	2	1072	5,353,798	34	569.51	47,531	RIver Road Outlets
36	Combine	150.75	2	750	2,331,810	12, 13, 14,	------	------	Lakeside storm ponds
37	Reservoir	69.75	2	944	2,331,294	36	574.00	505,052	routed Lakeside ponds
38	Combine	82.05	2	962	2,733,019	15, 37	------	------	Black Creek East
39	Reach	79.17	2	1018	2,732,949	38	------	------	Black Creek western reach
40	Combine	158.16	2	816	5,628,976	24, 39	------	------	Liberty Drive
41	Reservoir	177.53	2	840	5,813,346	40	573.74	383,609	Liberty Drive Crossing
42	Combine	194.44	2	844	6,384,224	23, 41	------	------	River Road
43	Reservoir	155.83	2	1048	6,384,199	42	570.73	515,409	River Road-Downstream

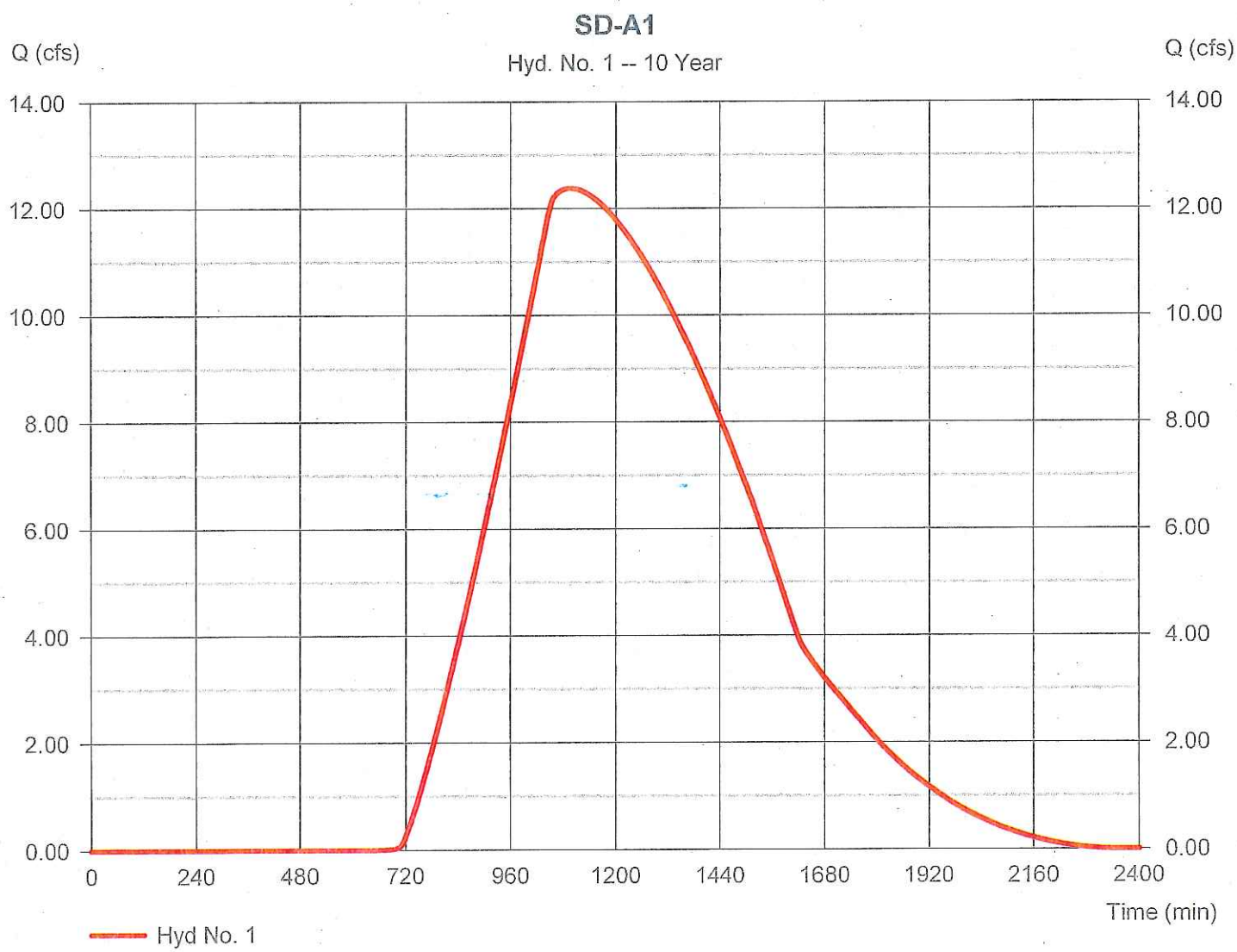
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2014 by Autodesk, Inc. v10.3 Thursday, 01 / 28 / 2016

Hyd. No. 1

SD-A1

Hydrograph type	= SCS Runoff	Peak discharge	= 12.38 cfs
Storm frequency	= 10 yrs	Time to peak	= 1096 min
Time interval	= 2 min	Hyd. volume	= 486,703 cuft
Drainage area	= 126.000 ac	Curve number	= 77
Basin Slope	= 0.0 %	Hydraulic length	= 4500 ft
Tc method	= LAG	Time of conc. (Tc)	= 580.91 min
Total precip.	= 2.99 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



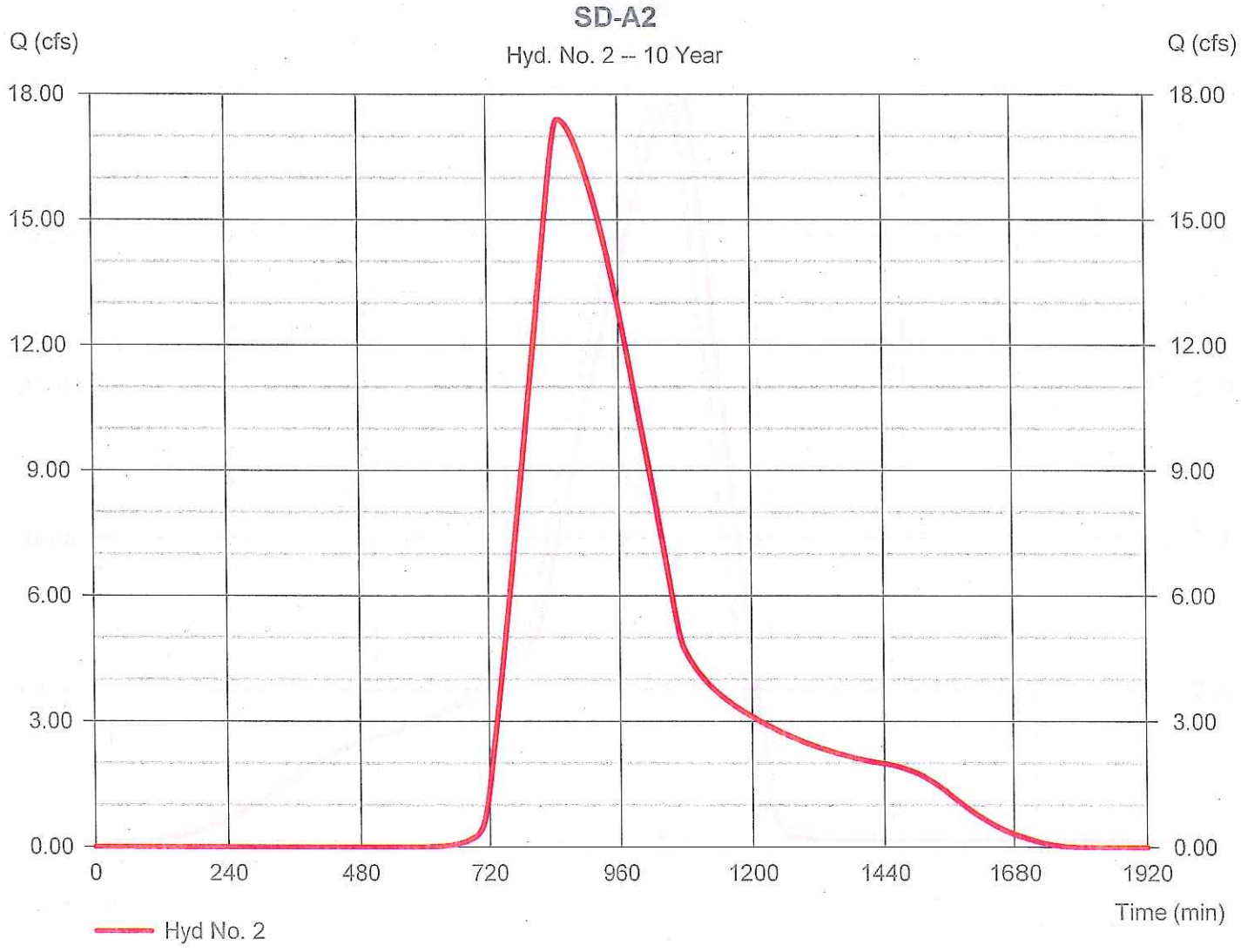
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2014 by Autodesk, Inc. v10.3 Thursday, 01 / 28 / 2016

Hyd. No. 2

SD-A2

Hydrograph type	= SCS Runoff	Peak discharge	= 17.39 cfs
Storm frequency	= 10 yrs	Time to peak	= 852 min
Time interval	= 2 min	Hyd. volume	= 320,828 cuft
Drainage area	= 71.000 ac	Curve number	= 80
Basin Slope	= 0.1 %	Hydraulic length	= 2000 ft
Tc method	= LAG	Time of conc. (Tc)	= 226.31 min
Total precip.	= 2.99 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



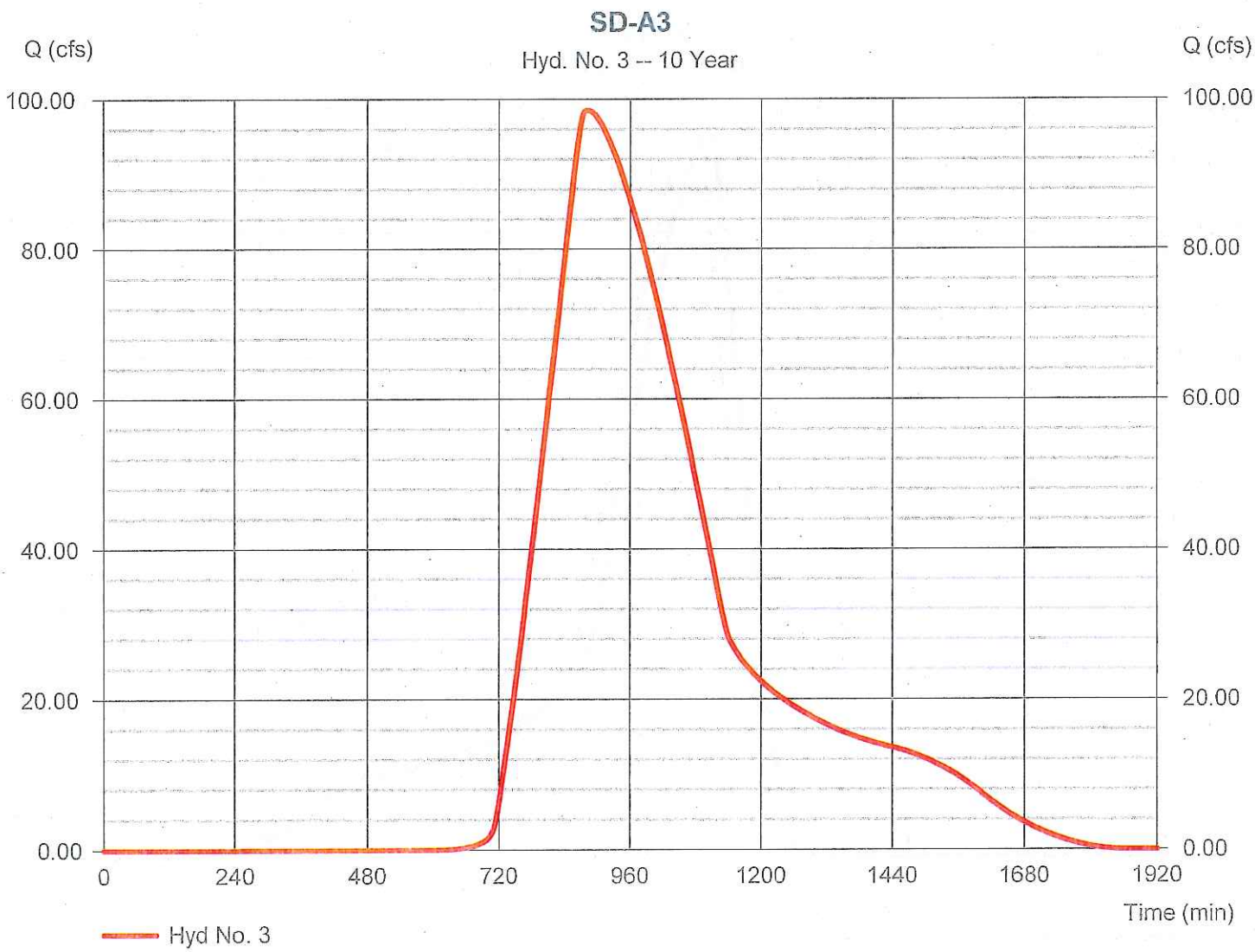
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2014 by Autodesk, Inc. v10.3 Thursday, 01 / 28 / 2016

Hyd. No. 3

SD-A3

Hydrograph type	= SCS Runoff	Peak discharge	= 98.51 cfs
Storm frequency	= 10 yrs	Time to peak	= 882 min
Time interval	= 2 min	Hyd. volume	= 2,085,006 cuft
Drainage area	= 463.000 ac	Curve number	= 80
Basin Slope	= 0.1 %	Hydraulic length	= 3200 ft
Tc method	= LAG	Time of conc. (Tc)	= 269.13 min
Total precip.	= 2.99 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



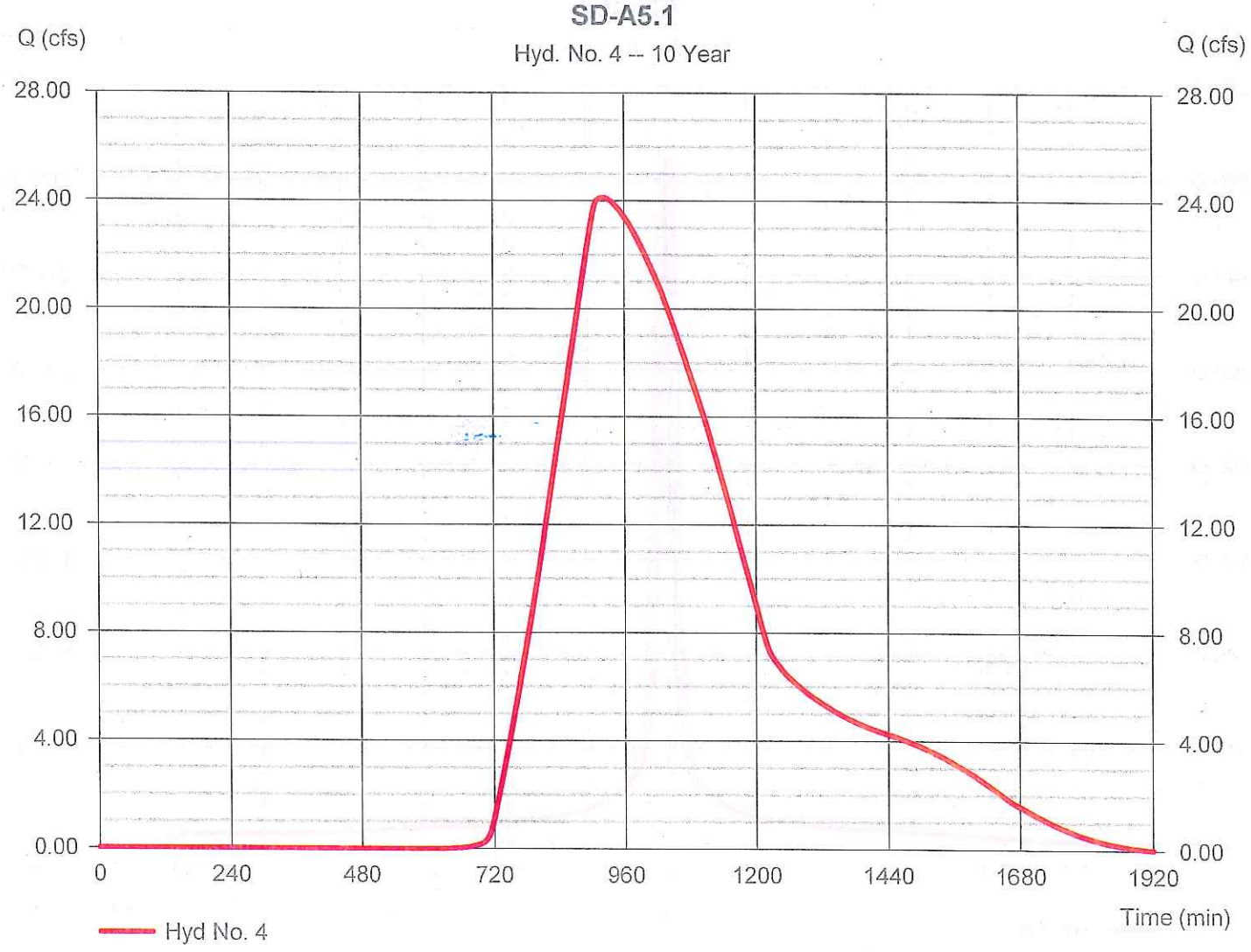
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2014 by Autodesk, Inc. v10.3 Thursday, 01 / 28 / 2016

Hyd. No. 4

SD-A5.1

Hydrograph type	= SCS Runoff	Peak discharge	= 24.13 cfs
Storm frequency	= 10 yrs	Time to peak	= 920 min
Time interval	= 2 min	Hyd. volume	= 595,977 cuft
Drainage area	= 139.000 ac	Curve number	= 79
Basin Slope	= 0.1 %	Hydraulic length	= 3000 ft
Tc method	= LAG	Time of conc. (Tc)	= 322.87 min
Total precip.	= 2.99 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



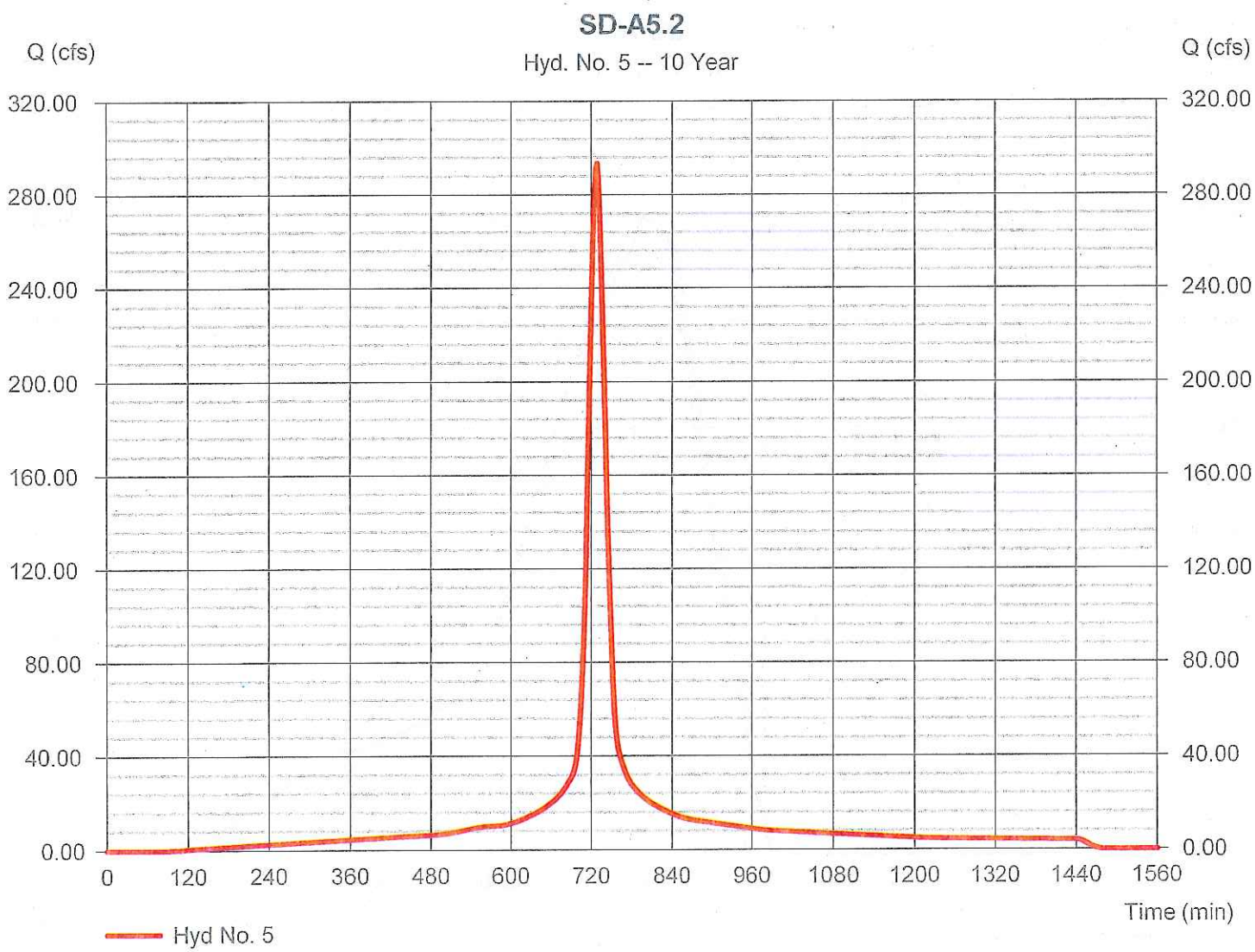
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2014 by Autodesk, Inc. v10.3 Thursday, 01 / 28 / 2016

Hyd. No. 5

SD-A5.2

Hydrograph type	= SCS Runoff	Peak discharge	= 293.34 cfs
Storm frequency	= 10 yrs	Time to peak	= 728 min
Time interval	= 2 min	Hyd. volume	= 1,182,746 cuft
Drainage area	= 120.000 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 100 ft
Tc method	= LAG	Time of conc. (Tc)	= 23.91 min
Total precip.	= 2.99 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



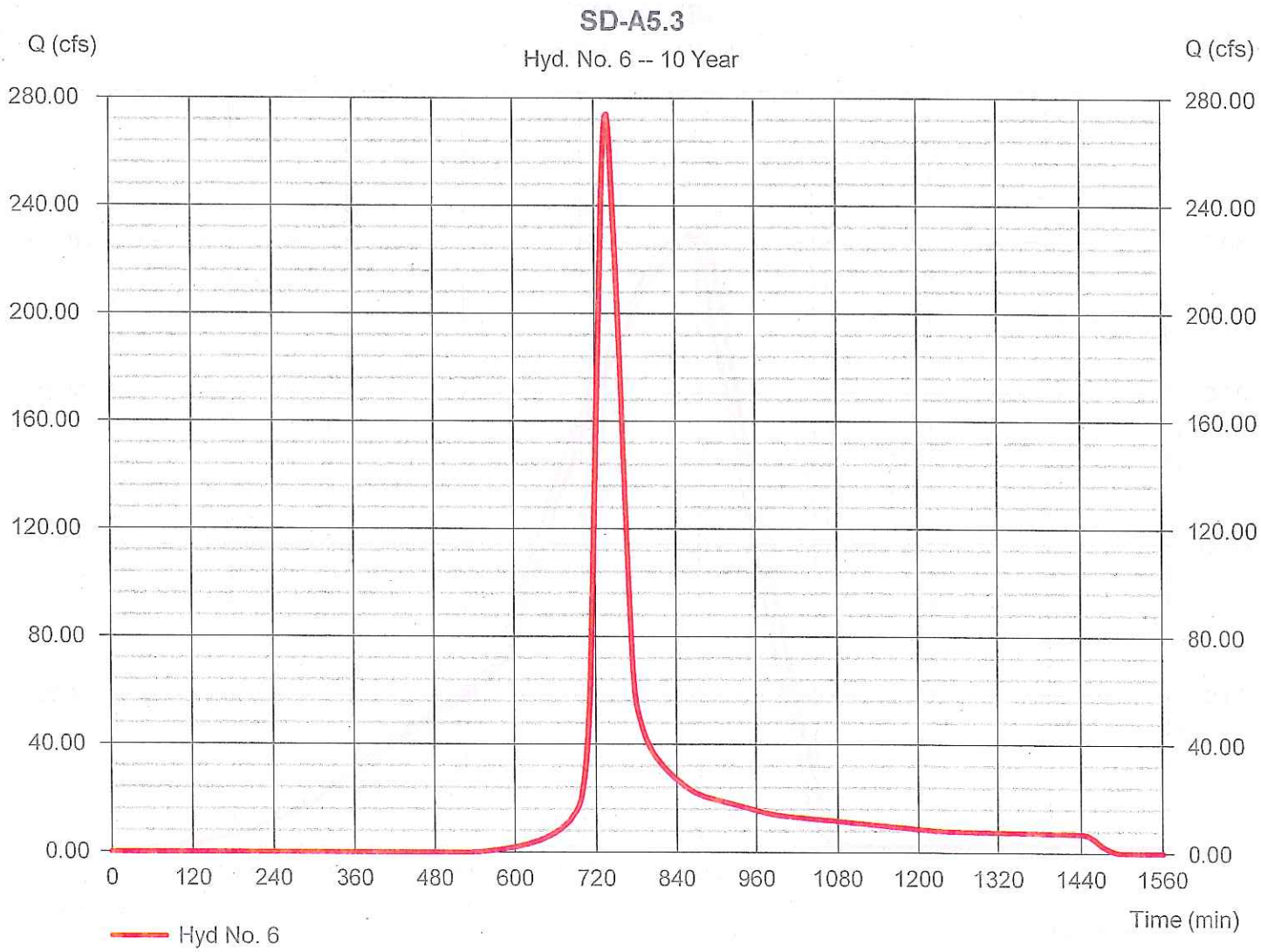
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2014 by Autodesk, Inc. v10.3 Thursday, 01 / 28 / 2016

Hyd. No. 6

SD-A5.3

Hydrograph type	= SCS Runoff	Peak discharge	= 274.09 cfs
Storm frequency	= 10 yrs	Time to peak	= 738 min
Time interval	= 2 min	Hyd. volume	= 1,342,011 cuft
Drainage area	= 257.000 ac	Curve number	= 83
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 40.00 min
Total precip.	= 2.99 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



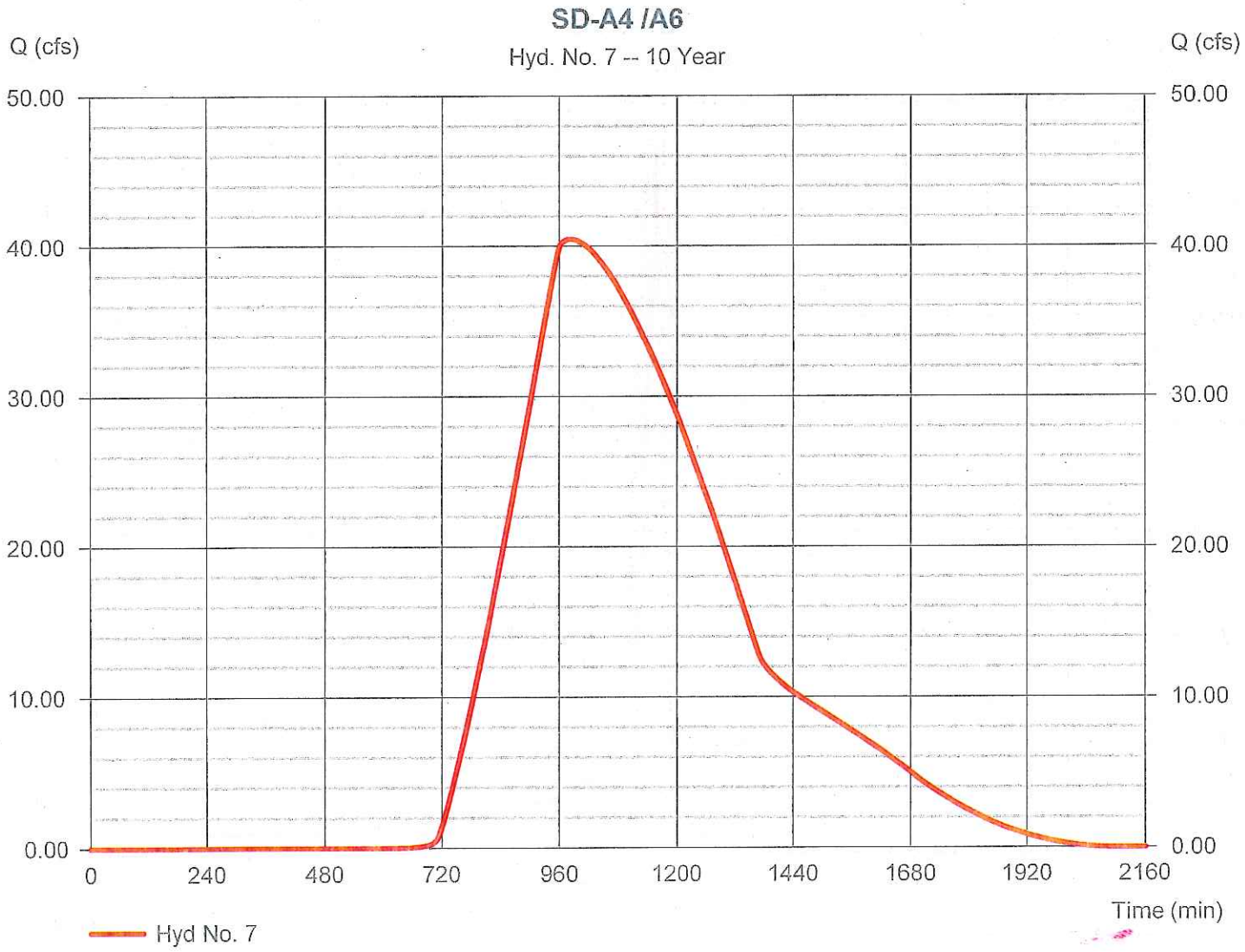
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2014 by Autodesk, Inc. v10.3 Thursday, 01 / 28 / 2016

Hyd. No. 7

SD-A4 /A6

Hydrograph type	= SCS Runoff	Peak discharge	= 40.48 cfs
Storm frequency	= 10 yrs	Time to peak	= 982 min
Time interval	= 2 min	Hyd. volume	= 1,223,199 cuft
Drainage area	= 285.000 ac	Curve number	= 79
Basin Slope	= 0.1 %	Hydraulic length	= 5000 ft
Tc method	= LAG	Time of conc. (Tc)	= 420.76 min
Total precip.	= 2.99 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



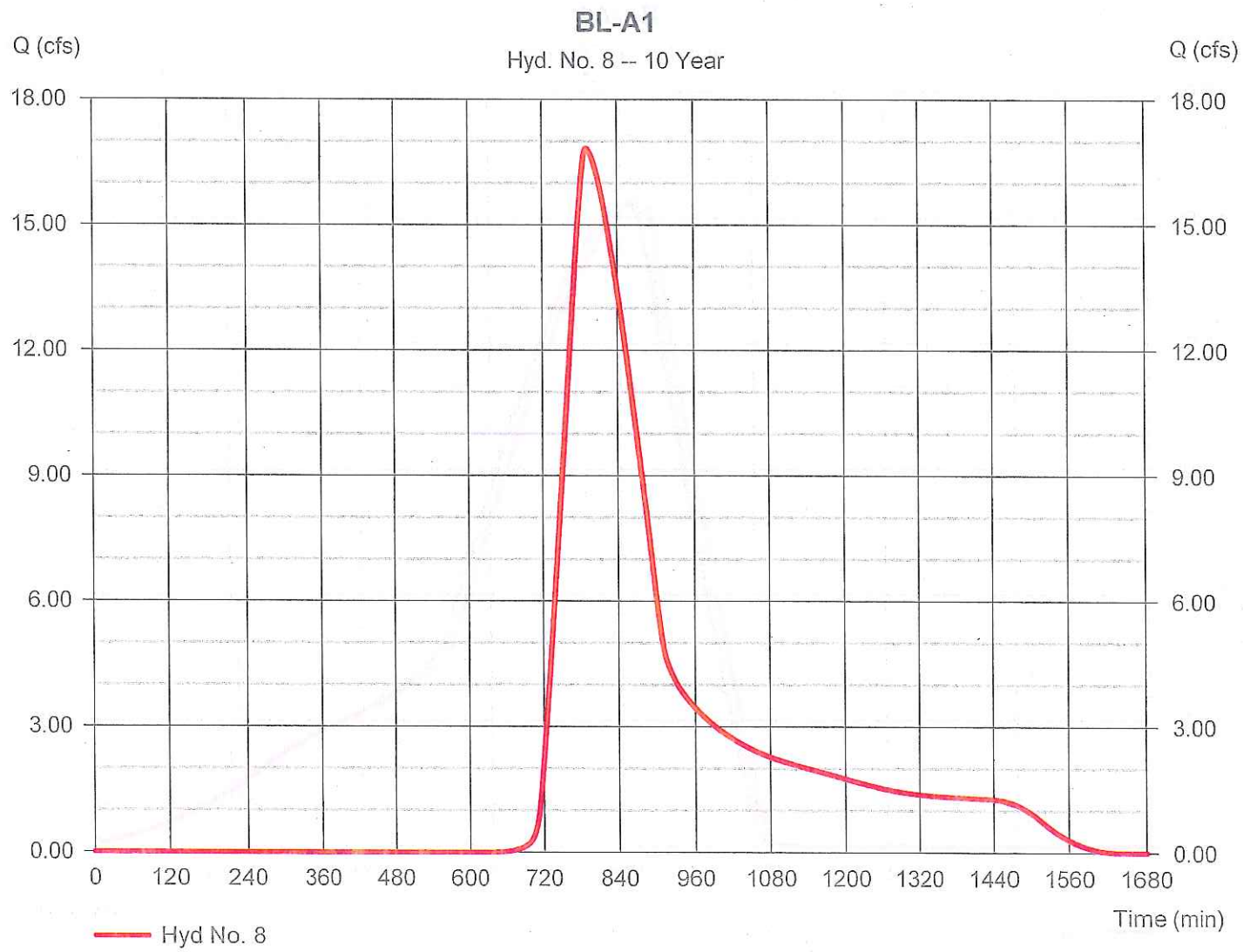
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2014 by Autodesk, Inc. v10.3 Thursday, 01 / 28 / 2016

Hyd. No. 8

BL-A1

Hydrograph type	= SCS Runoff	Peak discharge	= 16.83 cfs
Storm frequency	= 10 yrs	Time to peak	= 790 min
Time interval	= 2 min	Hyd. volume	= 201,541 cuft
Drainage area	= 52.000 ac	Curve number	= 77
Basin Slope	= 0.2 %	Hydraulic length	= 1500 ft
Tc method	= LAG	Time of conc. (Tc)	= 124.56 min
Total precip.	= 2.99 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



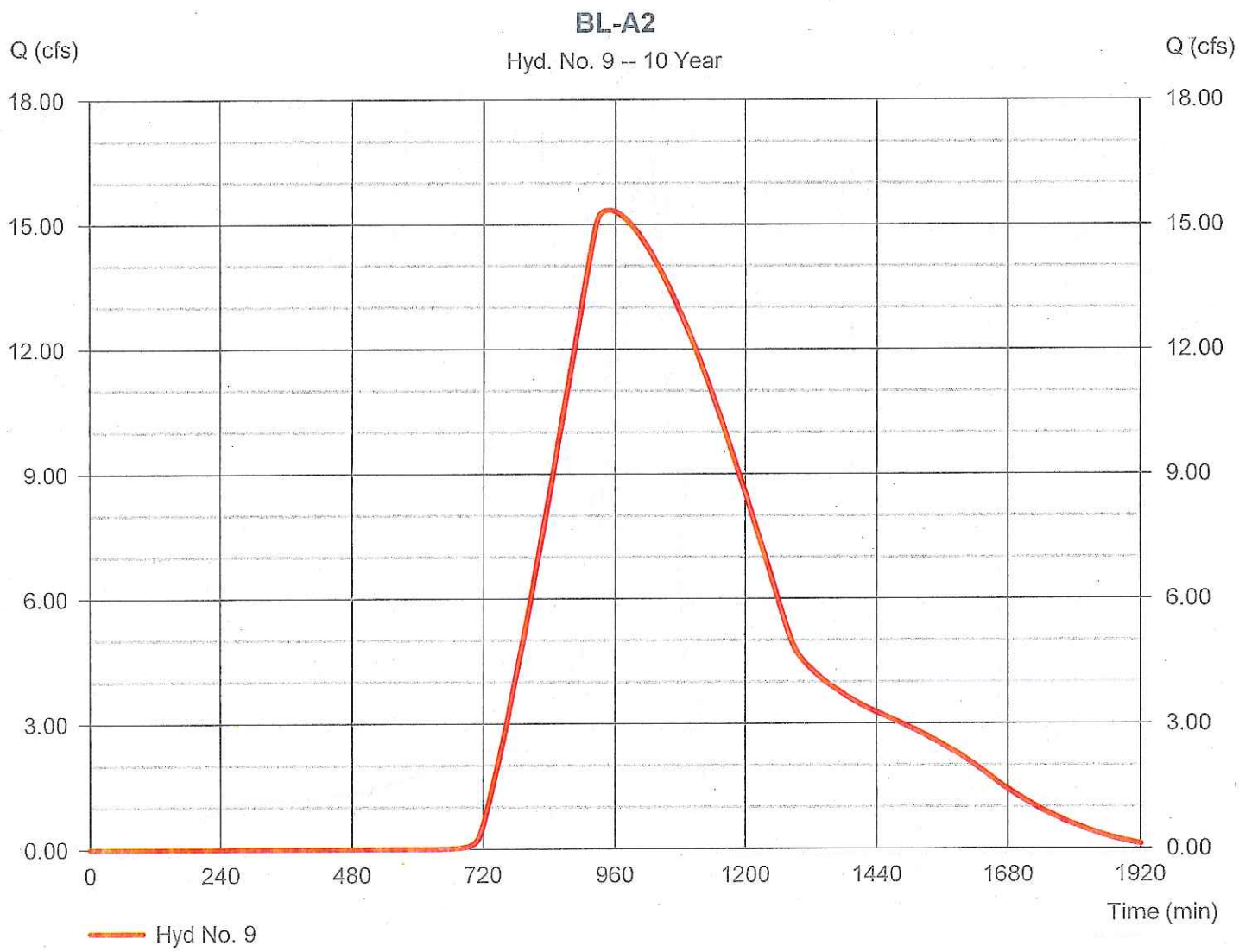
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2014 by Autodesk, Inc. v10.3 Thursday, 01 / 28 / 2016

Hyd. No. 9

BL-A2

Hydrograph type	= SCS Runoff	Peak discharge	= 15.34 cfs
Storm frequency	= 10 yrs	Time to peak	= 948 min
Time interval	= 2 min	Hyd. volume	= 419,397 cuft
Drainage area	= 103.000 ac	Curve number	= 78
Basin Slope	= 0.1 %	Hydraulic length	= 3000 ft
Tc method	= LAG	Time of conc. (Tc)	= 364.60 min
Total precip.	= 2.99 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

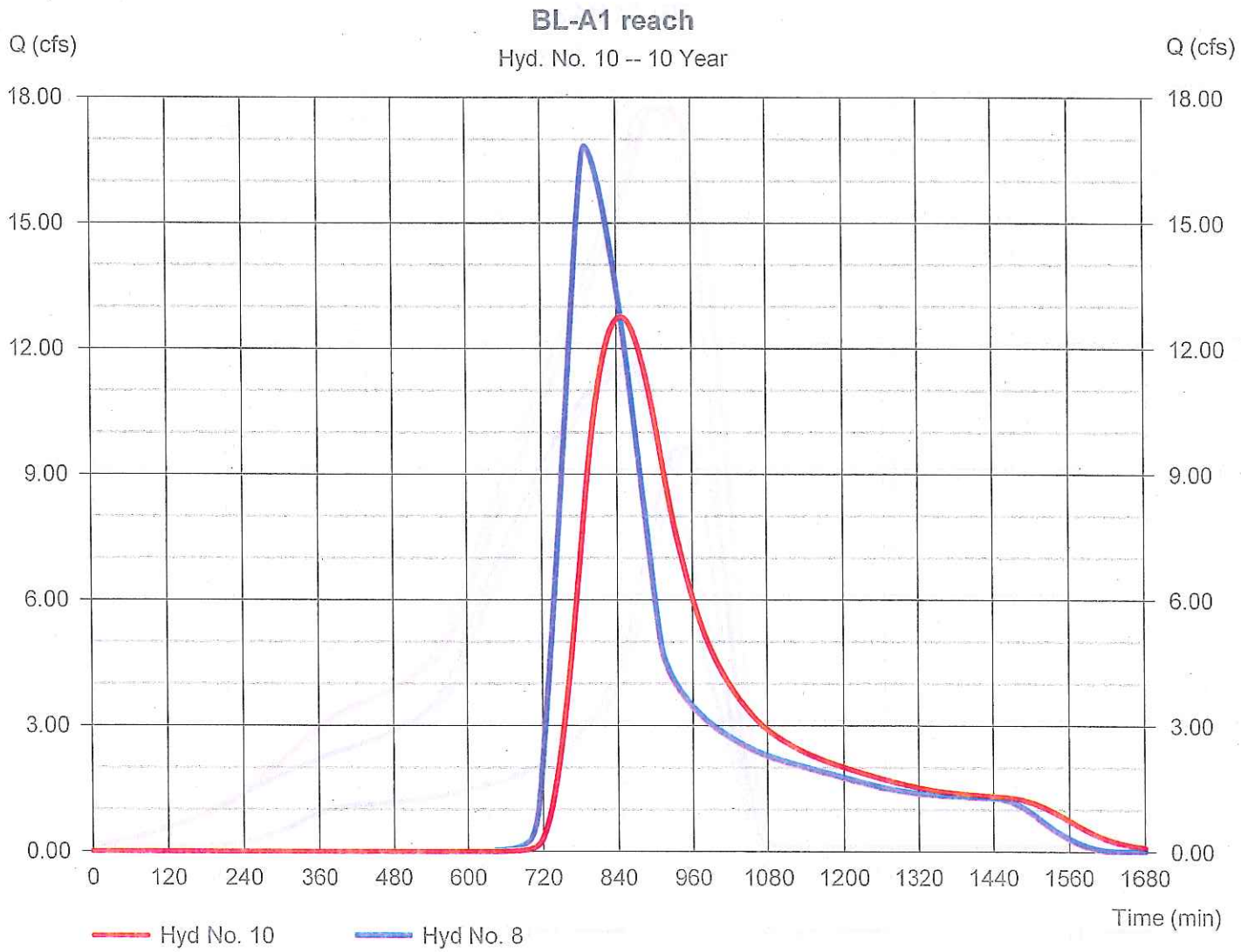
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2014 by Autodesk, Inc. v10.3 Thursday, 01 / 28 / 2016

Hyd. No. 10

BL-A1 reach

Hydrograph type	= Reach	Peak discharge	= 12.76 cfs
Storm frequency	= 10 yrs	Time to peak	= 846 min
Time interval	= 2 min	Hyd. volume	= 201,509 cuft
Inflow hyd. No.	= 8 - BL-A1	Section type	= Trapezoidal
Reach length	= 3000.0 ft	Channel slope	= 0.0 %
Manning's n	= 0.040	Bottom width	= 10.0 ft
Side slope	= 1.0:1	Max. depth	= 2.0 ft
Rating curve x	= 0.113	Rating curve m	= 1.524
Ave. velocity	= 0.00 ft/s	Routing coeff.	= 0.0378

Modified Att-Kin routing method used.



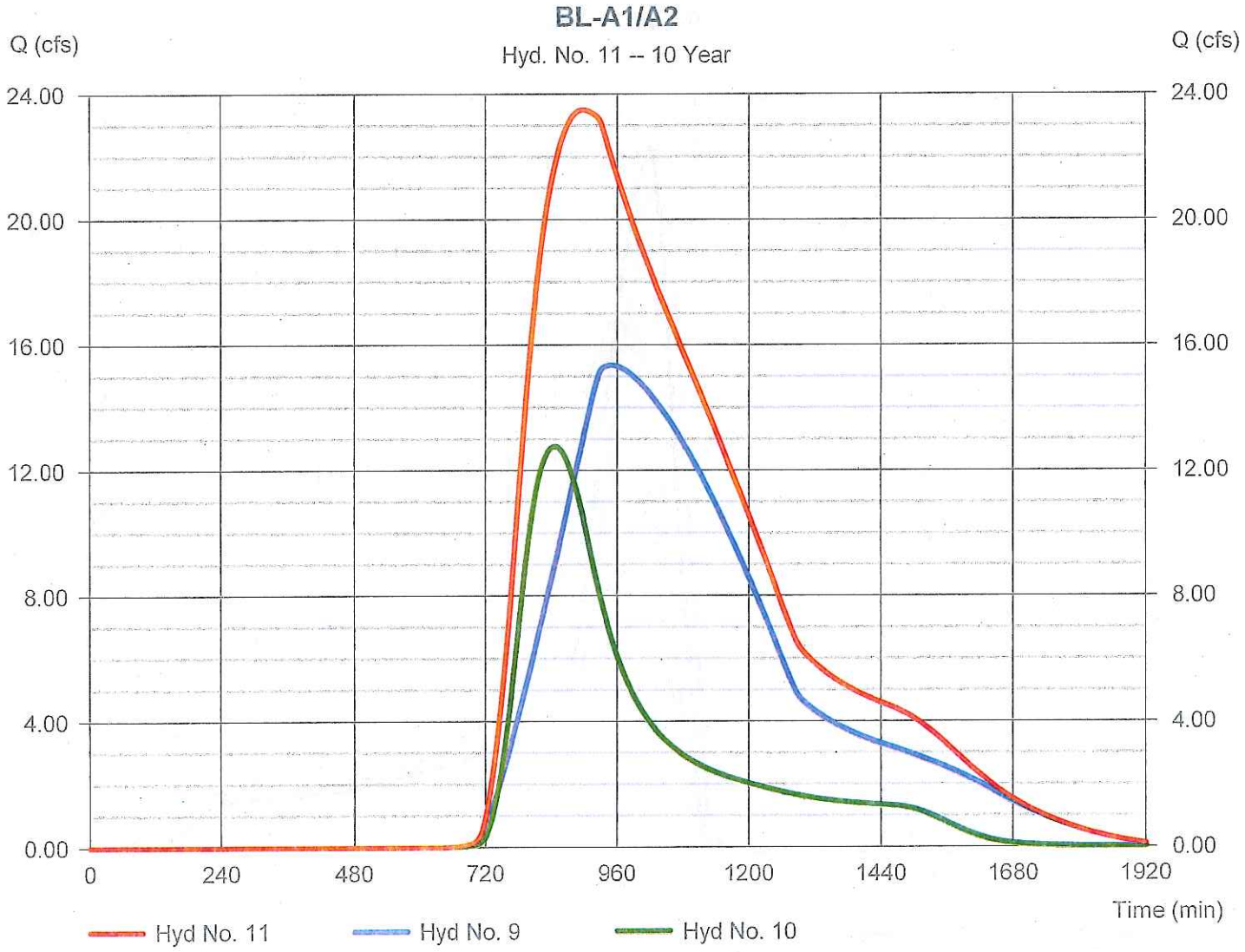
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2014 by Autodesk, Inc. v10.3 Thursday, 01 / 28 / 2016

Hyd. No. 11

BL-A1/A2

Hydrograph type	= Combine	Peak discharge	= 23.50 cfs
Storm frequency	= 10 yrs	Time to peak	= 898 min
Time interval	= 2 min	Hyd. volume	= 620,906 cuft
Inflow hyds.	= 9, 10	Contrib. drain. area	= 103.000 ac



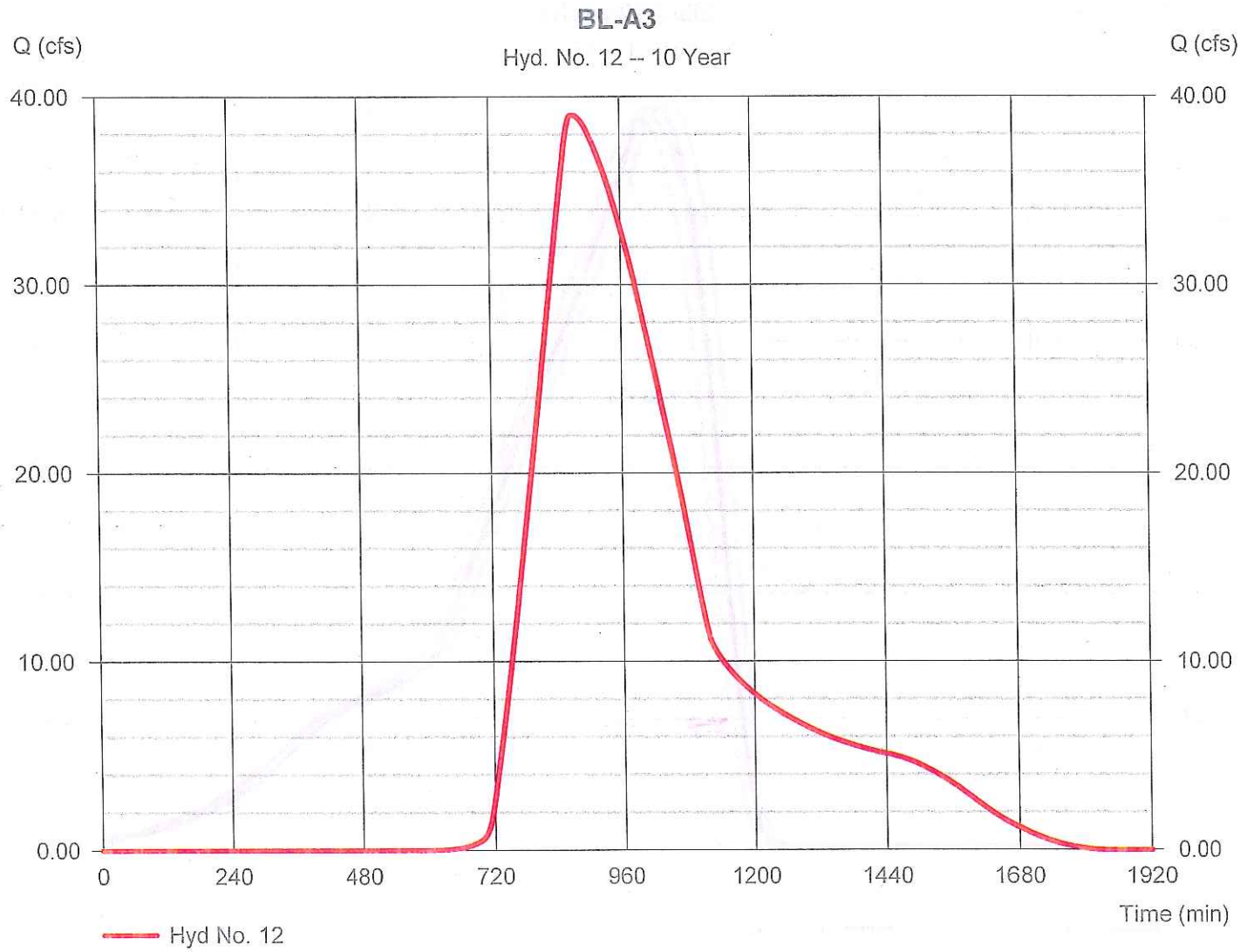
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2014 by Autodesk, Inc. v10.3 Thursday, 01 / 28 / 2016

Hyd. No. 12

BL-A3

Hydrograph type	= SCS Runoff	Peak discharge	= 39.01 cfs
Storm frequency	= 10 yrs	Time to peak	= 872 min
Time interval	= 2 min	Hyd. volume	= 795,118 cuft
Drainage area	= 176.000 ac	Curve number	= 80
Basin Slope	= 0.1 %	Hydraulic length	= 2800 ft
Tc method	= LAG	Time of conc. (Tc)	= 256.53 min
Total precip.	= 2.99 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

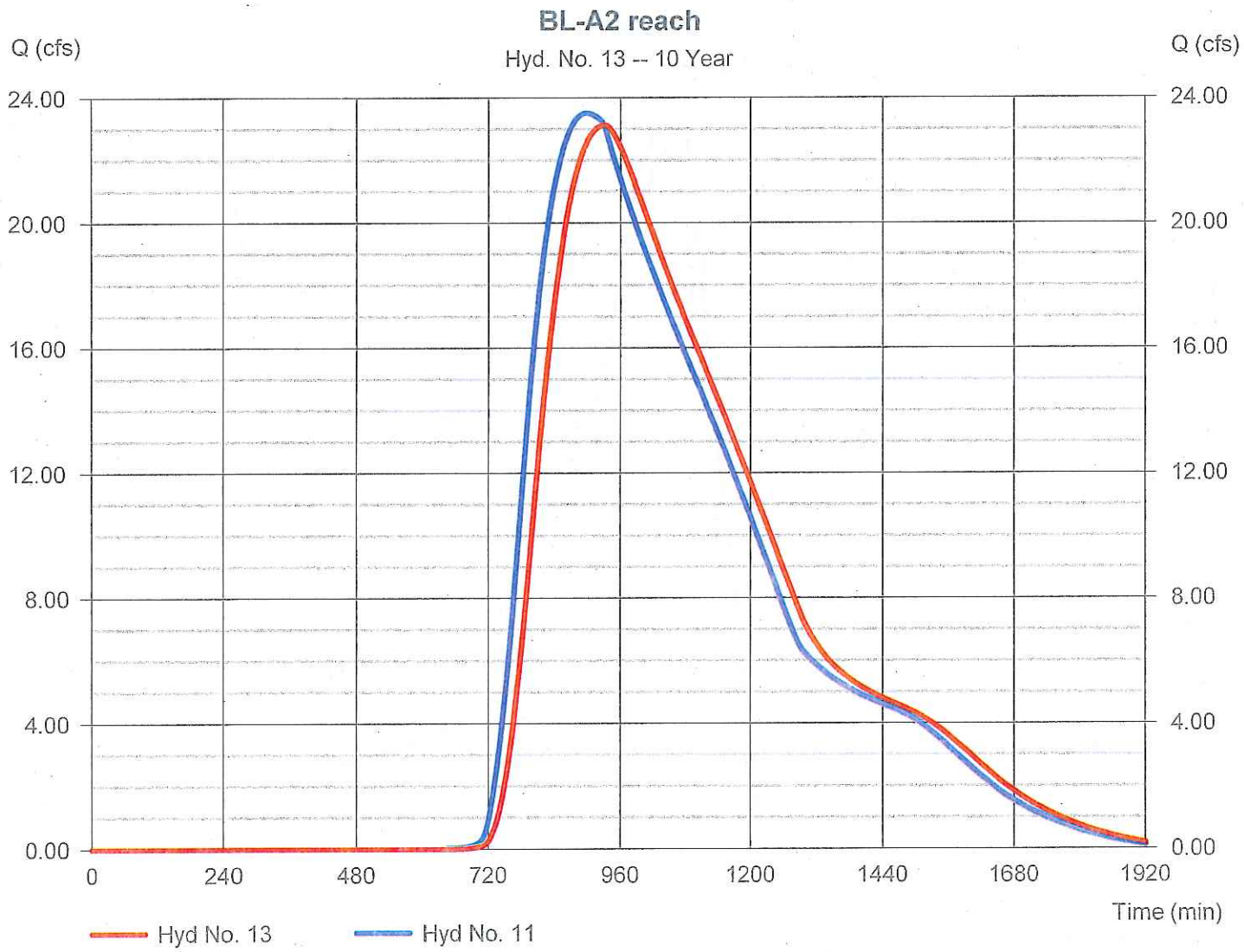
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2014 by Autodesk, Inc. v10.3 Thursday, 01 / 28 / 2016

Hyd. No. 13

BL-A2 reach

Hydrograph type	= Reach	Peak discharge	= 23.12 cfs
Storm frequency	= 10 yrs	Time to peak	= 930 min
Time interval	= 2 min	Hyd. volume	= 620,891 cuft
Inflow hyd. No.	= 11 - BL-A1/A2	Section type	= Trapezoidal
Reach length	= 2800.0 ft	Channel slope	= 0.1 %
Manning's n	= 0.035	Bottom width	= 10.0 ft
Side slope	= 1.0:1	Max. depth	= 2.0 ft
Rating curve x	= 0.259	Rating curve m	= 1.524
Ave. velocity	= 0.00 ft/s	Routing coeff.	= 0.0766

Modified Att-Kin routing method used.



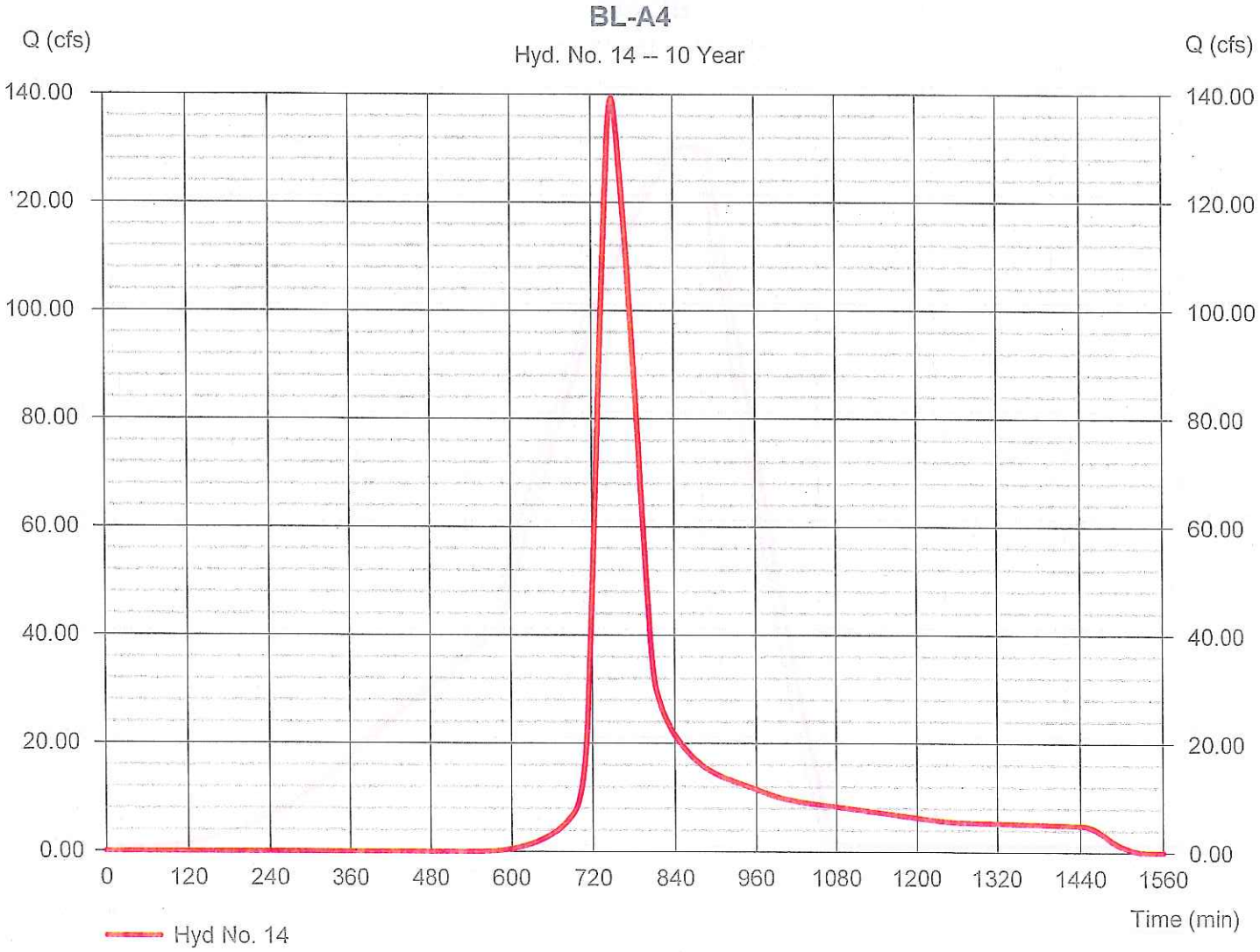
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2014 by Autodesk, Inc. v10.3 Thursday, 01 / 28 / 2016

Hyd. No. 14

BL-A4

Hydrograph type	= SCS Runoff	Peak discharge	= 139.36 cfs
Storm frequency	= 10 yrs	Time to peak	= 750 min
Time interval	= 2 min	Hyd. volume	= 915,799 cuft
Drainage area	= 184.000 ac	Curve number	= 82
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 60.00 min
Total precip.	= 2.99 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



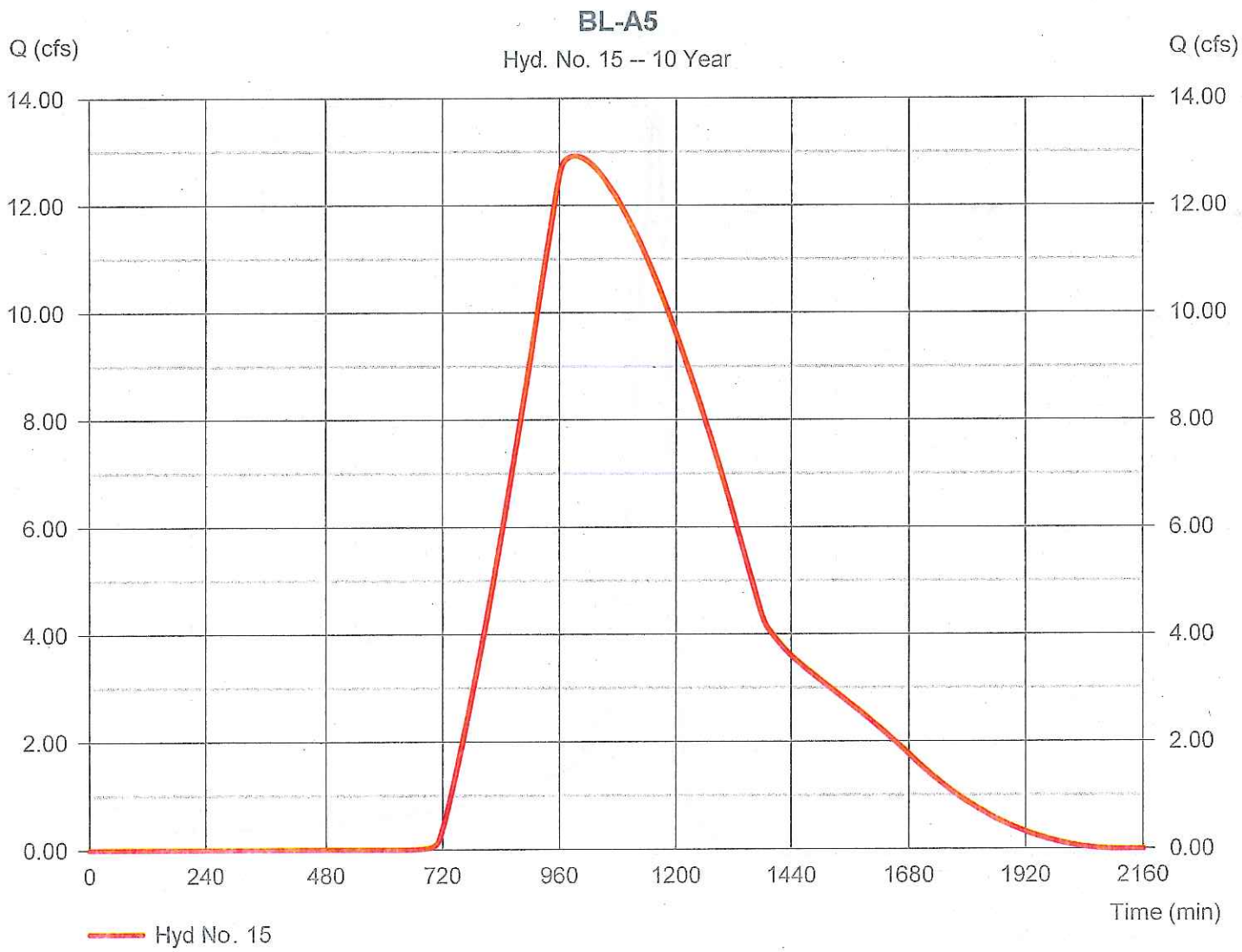
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2014 by Autodesk, Inc. v10.3 Thursday, 01 / 28 / 2016

Hyd. No. 15

BL-A5

Hydrograph type	= SCS Runoff	Peak discharge	= 12.93 cfs
Storm frequency	= 10 yrs	Time to peak	= 992 min
Time interval	= 2 min	Hyd. volume	= 401,724 cuft
Drainage area	= 104.000 ac	Curve number	= 77
Basin Slope	= 0.1 %	Hydraulic length	= 3500 ft
Tc method	= LAG	Time of conc. (Tc)	= 424.95 min
Total precip.	= 2.99 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



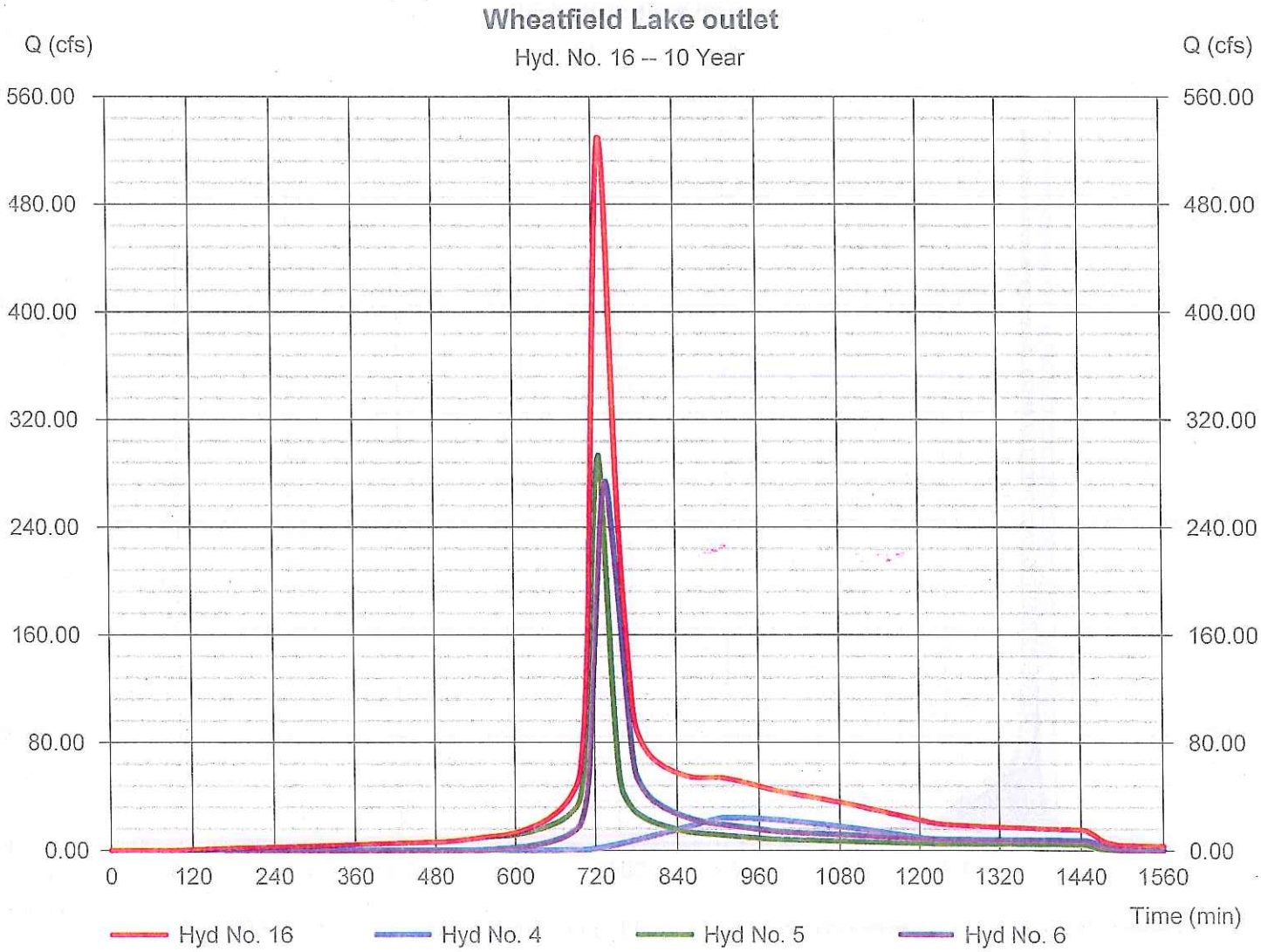
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2014 by Autodesk, Inc. v10.3 Thursday, 01 / 28 / 2016

Hyd. No. 16

Wheatfield Lake outlet

Hydrograph type	= Combine	Peak discharge	= 529.91 cfs
Storm frequency	= 10 yrs	Time to peak	= 730 min
Time interval	= 2 min	Hyd. volume	= 3,120,732 cuft
Inflow hyds.	= 4, 5, 6	Contrib. drain. area	= 516.000 ac



Hydrograph Report

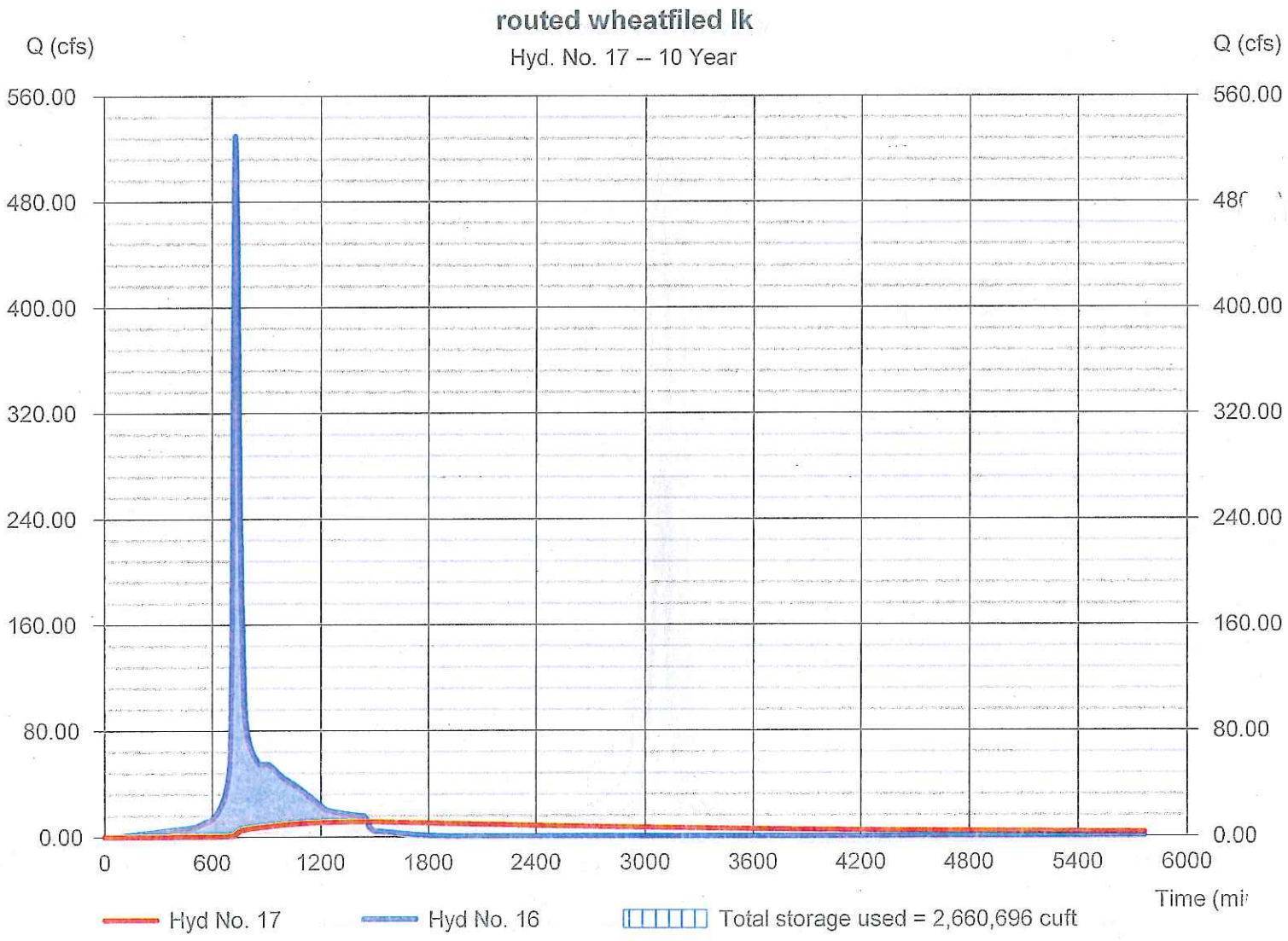
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2014 by Autodesk, Inc. v10.3 Thursday, 01 / 28 / 2016

Hyd. No. 17

routed wheatfiled lk

Hydrograph type	= Reservoir	Peak discharge	= 11.27 cfs
Storm frequency	= 10 yrs	Time to peak	= 1458 min
Time interval	= 2 min	Hyd. volume	= 1,997,411 cuft
Inflow hyd. No.	= 16 - Wheatfield Lake outlet	Max. Elevation	= 571.52 ft
Reservoir name	= Wheatfield Lakes	Max. Storage	= 2,660,696 cuft

Storage Indication method used.



Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2014 by Autodesk, Inc. v10.3 Thursday, 01 / 28 / 2016

Pond No. 2 - Wheatfield Lakes

Pond Data

Contours -User-defined contour areas. Conic method used for volume calculation. Begining Elevation = 571.00 ft

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	571.00	5,000,000	0	0
1.00	572.00	5,227,200	5,112,668	5,112,668
2.00	573.00	5,300,000	5,263,032	10,375,700
3.00	574.00	5,350,000	5,324,450	15,700,150

Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 0.00	0.00	0.00	0.00
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)	= 9.00	0.00	0.00	0.00
Crest El. (ft)	= 571.00	0.00	0.00	0.00
Weir Coeff.	= 3.33	3.33	3.33	3.33
Weir Type	= Rect	---	---	---
Multi-Stage	= No	No	No	No

Exfil.(in/hr) = 0.000 (by Wet area)
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).

Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
0.00	0	571.00	---	---	---	---	0.00	---	---	---	---	---	0.000
0.10	511,267	571.10	---	---	---	---	0.95	---	---	---	---	---	0.947
0.20	1,022,534	571.20	---	---	---	---	2.68	---	---	---	---	---	2.680
0.30	1,533,801	571.30	---	---	---	---	4.92	---	---	---	---	---	4.923
0.40	2,045,067	571.40	---	---	---	---	7.58	---	---	---	---	---	7.579
0.50	2,556,334	571.50	---	---	---	---	10.59	---	---	---	---	---	10.59
0.60	3,067,601	571.60	---	---	---	---	13.92	---	---	---	---	---	13.92
0.70	3,578,868	571.70	---	---	---	---	17.55	---	---	---	---	---	17.55
0.80	4,090,134	571.80	---	---	---	---	21.44	---	---	---	---	---	21.44
0.90	4,601,401	571.90	---	---	---	---	25.58	---	---	---	---	---	25.58
1.00	5,112,668	572.00	---	---	---	---	29.97	---	---	---	---	---	29.97
1.10	5,638,971	572.10	---	---	---	---	34.57	---	---	---	---	---	34.57
1.20	6,165,274	572.20	---	---	---	---	39.39	---	---	---	---	---	39.39
1.30	6,691,577	572.30	---	---	---	---	44.42	---	---	---	---	---	44.42
1.40	7,217,880	572.40	---	---	---	---	49.64	---	---	---	---	---	49.64
1.50	7,744,183	572.50	---	---	---	---	55.05	---	---	---	---	---	55.05
1.60	8,270,486	572.60	---	---	---	---	60.65	---	---	---	---	---	60.65
1.70	8,796,789	572.70	---	---	---	---	66.42	---	---	---	---	---	66.42
1.80	9,323,092	572.80	---	---	---	---	72.36	---	---	---	---	---	72.36
1.90	9,849,395	572.90	---	---	---	---	78.48	---	---	---	---	---	78.48
2.00	10,375,700	573.00	---	---	---	---	84.77	---	---	---	---	---	84.77
2.10	10,908,150	573.10	---	---	---	---	91.20	---	---	---	---	---	91.20
2.20	11,440,590	573.20	---	---	---	---	97.79	---	---	---	---	---	97.79
2.30	11,973,040	573.30	---	---	---	---	104.53	---	---	---	---	---	104.53
2.40	12,505,480	573.40	---	---	---	---	111.42	---	---	---	---	---	111.42
2.50	13,037,930	573.50	---	---	---	---	118.46	---	---	---	---	---	118.46
2.60	13,570,370	573.60	---	---	---	---	125.63	---	---	---	---	---	125.63
2.70	14,102,820	573.70	---	---	---	---	132.95	---	---	---	---	---	132.95
2.80	14,635,260	573.80	---	---	---	---	140.40	---	---	---	---	---	140.40
2.90	15,167,710	573.90	---	---	---	---	147.99	---	---	---	---	---	147.99
3.00	15,700,150	574.00	---	---	---	---	155.73	---	---	---	---	---	155.73

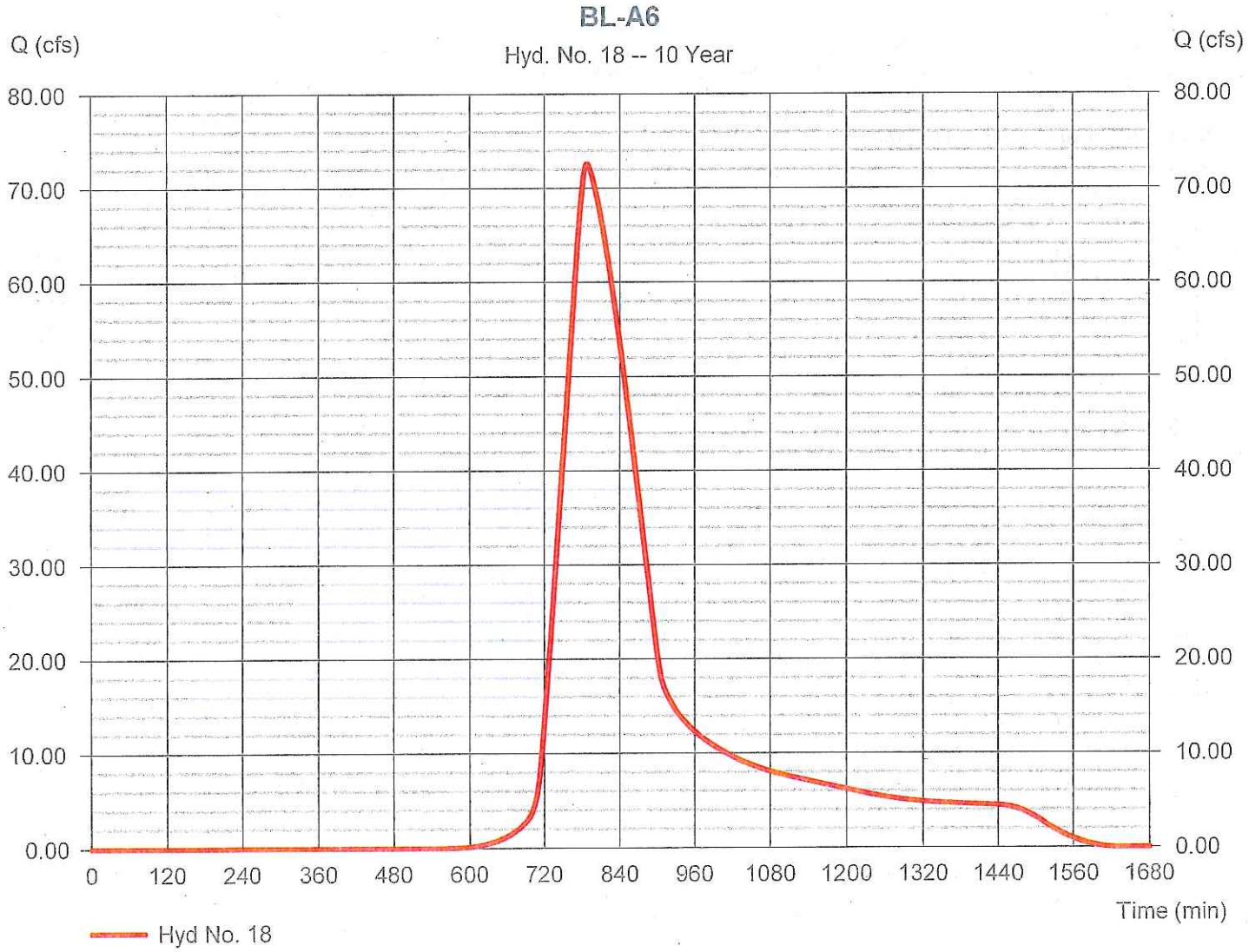
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2014 by Autodesk, Inc. v10.3 Thursday, 01 / 28 / 2016

Hyd. No. 18

BL-A6

Hydrograph type	= SCS Runoff	Peak discharge	= 72.59 cfs
Storm frequency	= 10 yrs	Time to peak	= 788 min
Time interval	= 2 min	Hyd. volume	= 806,303 cuft
Drainage area	= 162.000 ac	Curve number	= 82
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 120.00 min
Total precip.	= 2.99 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



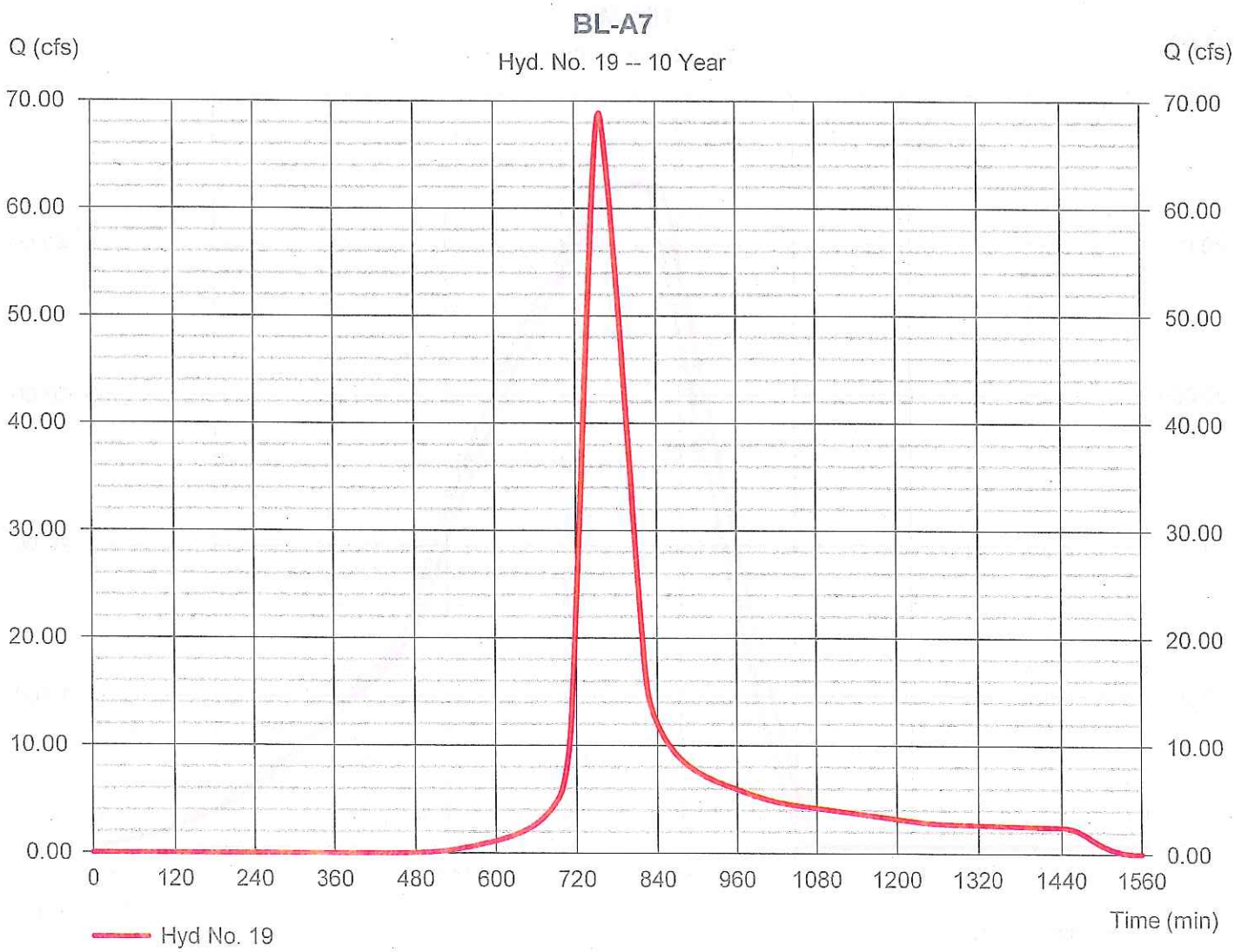
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2014 by Autodesk, Inc. v10.3 Thursday, 01 / 28 / 2016

Hyd. No. 19

BL-A7

Hydrograph type	= SCS Runoff	Peak discharge	= 68.88 cfs
Storm frequency	= 10 yrs	Time to peak	= 756 min
Time interval	= 2 min	Hyd. volume	= 498,307 cuft
Drainage area	= 83.000 ac	Curve number	= 86
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 70.00 min
Total precip.	= 2.99 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



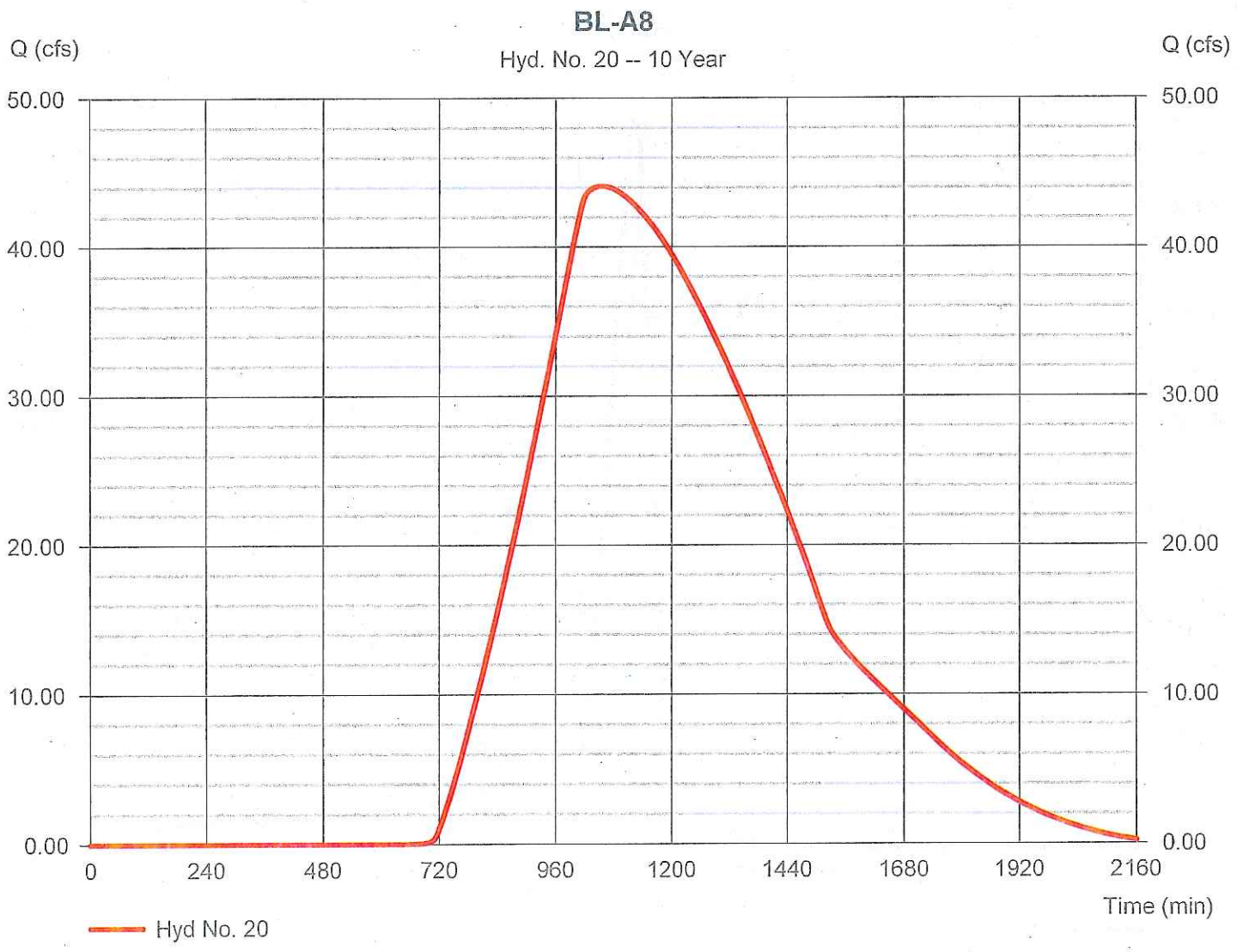
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2014 by Autodesk, Inc. v10.3 Thursday, 01 / 28 / 2016

Hyd. No. 20

BL-A8

Hydrograph type	= SCS Runoff	Peak discharge	= 44.09 cfs
Storm frequency	= 10 yrs	Time to peak	= 1054 min
Time interval	= 2 min	Hyd. volume	= 1,591,442 cuft
Drainage area	= 412.000 ac	Curve number	= 77
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 519.30 min
Total precip.	= 2.99 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



TR55 Tc Worksheet

Hyd. No. 20

BL-A8

Description	A		B		C		Totals
Sheet Flow							
Manning's n-value	= 0.240		0.011		0.011		
Flow length (ft)	= 300.0		0.0		0.0		
Two-year 24-hr precip. (in)	= 2.12		0.00		0.00		
Land slope (%)	= 0.02		0.00		0.00		
Travel Time (min)	= 266.40	+	0.00	+	0.00	=	266.40
Shallow Concentrated Flow							
Flow length (ft)	= 2700.00		0.00		0.00		
Watercourse slope (%)	= 0.02		0.00		0.00		
Surface description	= Unpaved		Paved		Paved		
Average velocity (ft/s)	=0.23		0.00		0.00		
Travel Time (min)	= 197.22	+	0.00	+	0.00	=	197.22
Channel Flow							
X sectional flow area (sqft)	= 20.00		0.00		0.00		
Wetted perimeter (ft)	= 30.00		0.00		0.00		
Channel slope (%)	= 0.10		0.00		0.00		
Manning's n-value	= 0.040		0.015		0.015		
Velocity (ft/s)	=0.90						
			0.00				
					0.00		
Flow length (ft)	({0})3000.0		0.0		0.0		
Travel Time (min)	= 55.70	+	0.00	+	0.00	=	55.70

Total Travel Time, Tc ..... **519.30 min**

Hydrograph Report

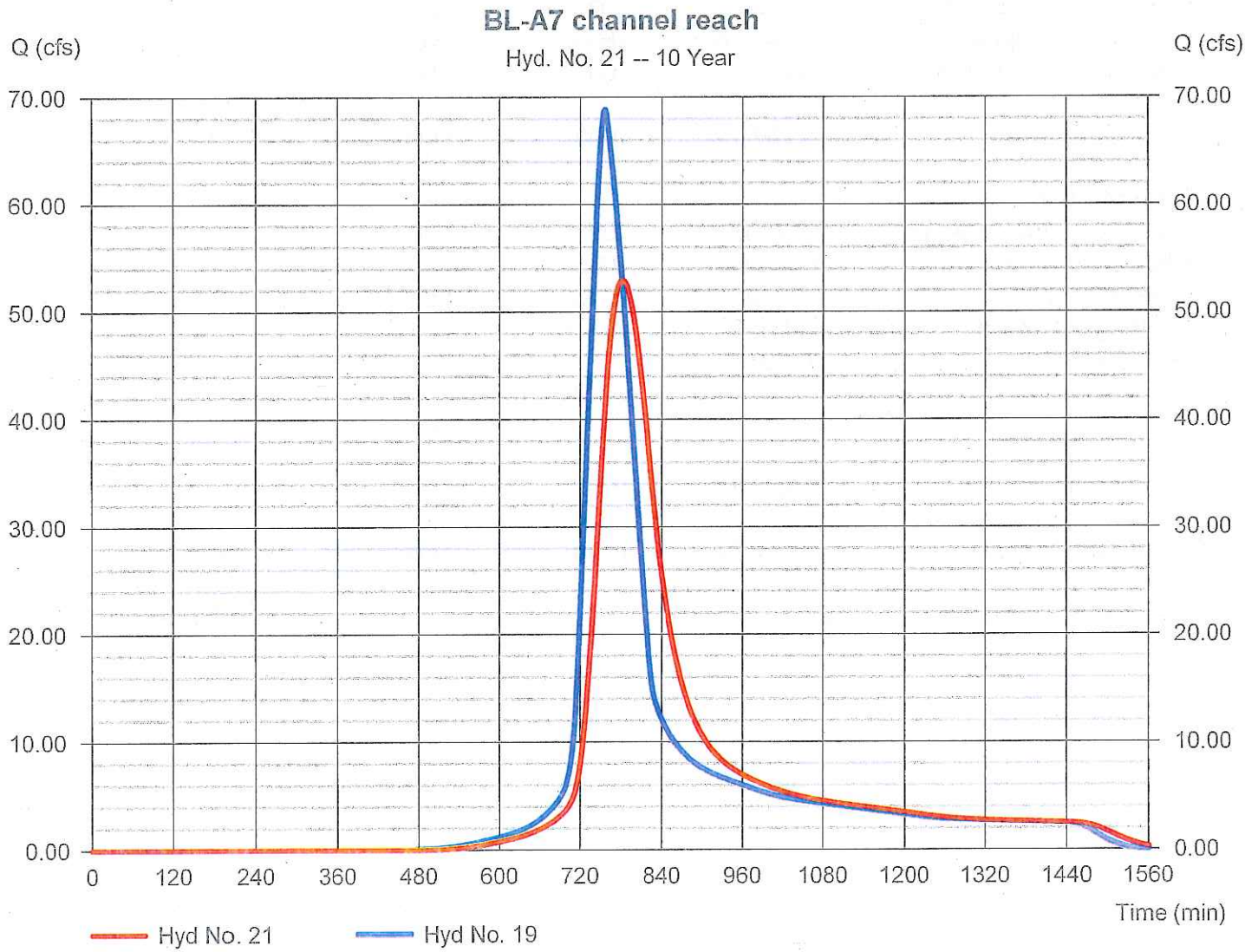
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2014 by Autodesk, Inc. v10.3 Thursday, 01 / 28 / 2016

Hyd. No. 21

BL-A7 channel reach

Hydrograph type	= Reach	Peak discharge	= 52.95 cfs
Storm frequency	= 10 yrs	Time to peak	= 782 min
Time interval	= 2 min	Hyd. volume	= 498,291 cuft
Inflow hyd. No.	= 19 - BL-A7	Section type	= Trapezoidal
Reach length	= 4300.0 ft	Channel slope	= 0.2 %
Manning's n	= 0.040	Bottom width	= 20.0 ft
Side slope	= 1.0:1	Max. depth	= 4.0 ft
Rating curve x	= 0.196	Rating curve m	= 1.567
Ave. velocity	= 0.00 ft/s	Routing coeff.	= 0.0690

Modified Att-Kin routing method used.



Hydrograph Report

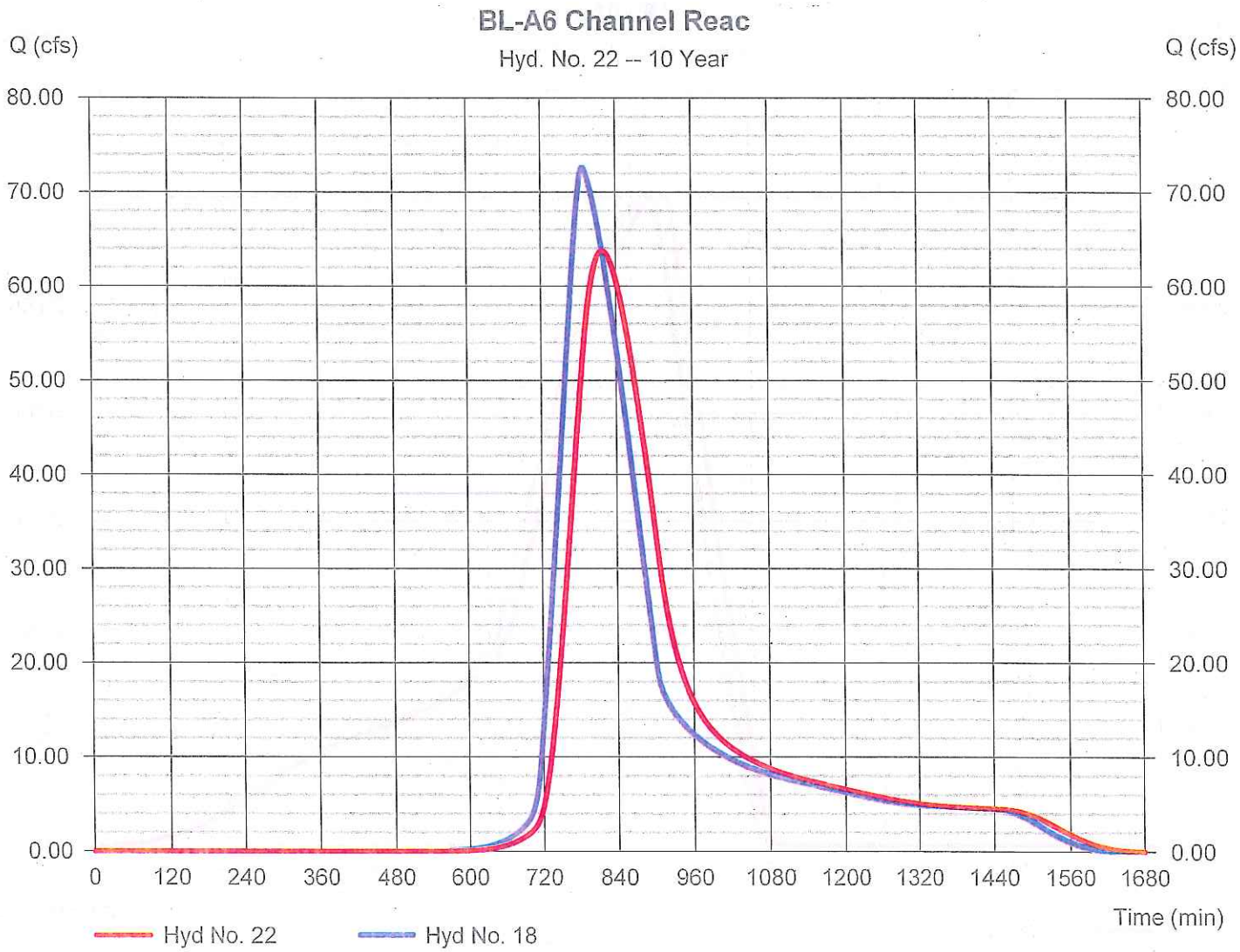
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2014 by Autodesk, Inc. v10.3 Thursday, 01 / 28 / 2016

Hyd. No. 22

BL-A6 Channel Reac

Hydrograph type	= Reach	Peak discharge	= 63.79 cfs
Storm frequency	= 10 yrs	Time to peak	= 818 min
Time interval	= 2 min	Hyd. volume	= 806,287 cuft
Inflow hyd. No.	= 18 - BL-A6	Section type	= Trapezoidal
Reach length	= 3500.0 ft	Channel slope	= 0.1 %
Manning's n	= 0.040	Bottom width	= 20.0 ft
Side slope	= 1.0:1	Max. depth	= 4.0 ft
Rating curve x	= 0.160	Rating curve m	= 1.567
Ave. velocity	= 0.00 ft/s	Routing coeff.	= 0.0756

Modified Att-Kin routing method used.



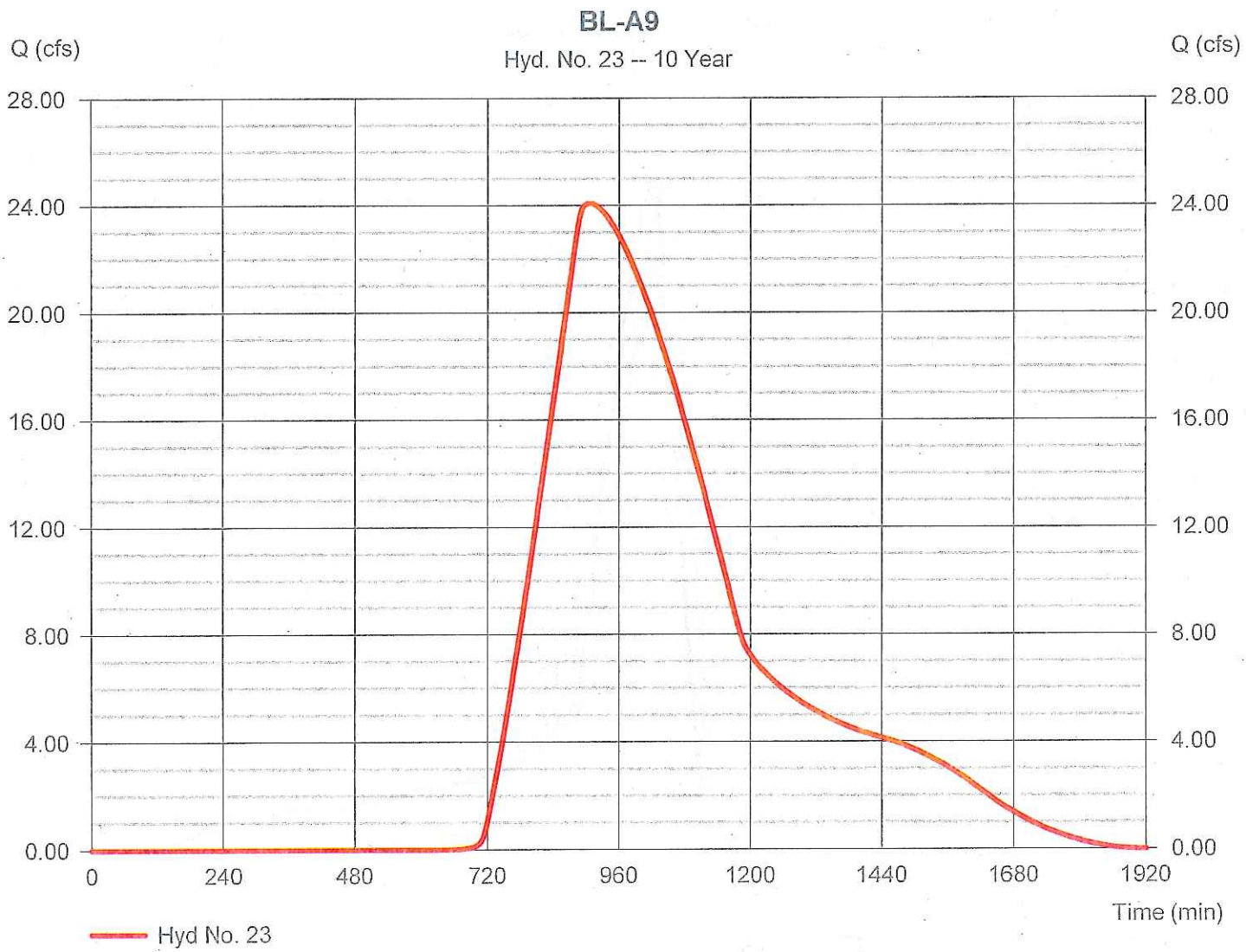
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2014 by Autodesk, Inc. v10.3 Thursday, 01 / 28 / 2016

Hyd. No. 23

BL-A9

Hydrograph type	= SCS Runoff	Peak discharge	= 24.08 cfs
Storm frequency	= 10 yrs	Time to peak	= 906 min
Time interval	= 2 min	Hyd. volume	= 570,881 cuft
Drainage area	= 148.000 ac	Curve number	= 77
Basin Slope	= 0.1 %	Hydraulic length	= 3500 ft
Tc method	= LAG	Time of conc. (Tc)	= 300.48 min
Total precip.	= 2.99 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



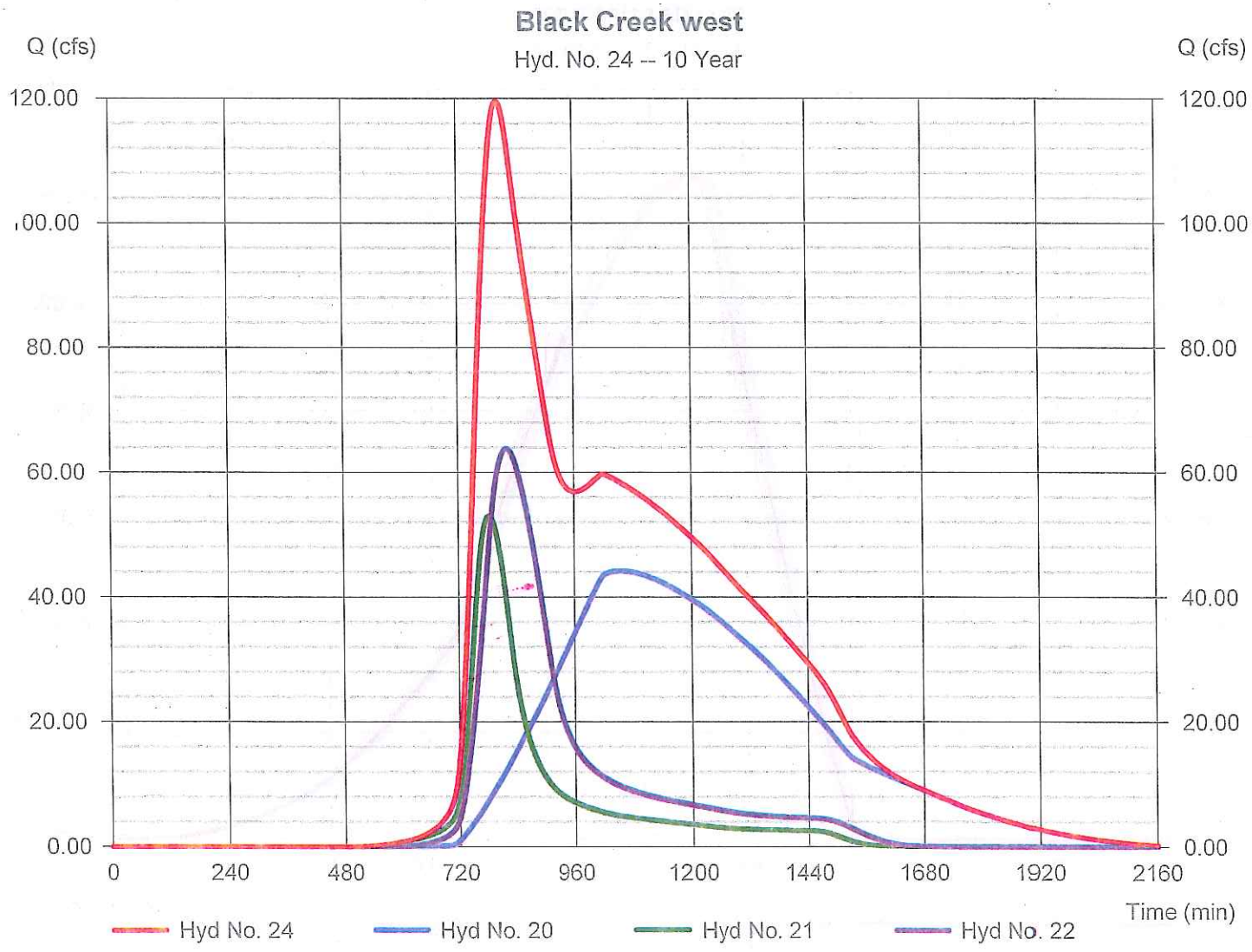
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2014 by Autodesk, Inc. v10.3 Thursday, 01 / 28 / 2016

Hyd. No. 24

Black Creek west

Hydrograph type	= Combine	Peak discharge	= 119.52 cfs
Storm frequency	= 10 yrs	Time to peak	= 802 min
Time interval	= 2 min	Hyd. volume	= 2,896,024 cuft
Inflow hyds.	= 20, 21, 22	Contrib. drain. area	= 412.000 ac



Hydrograph Report

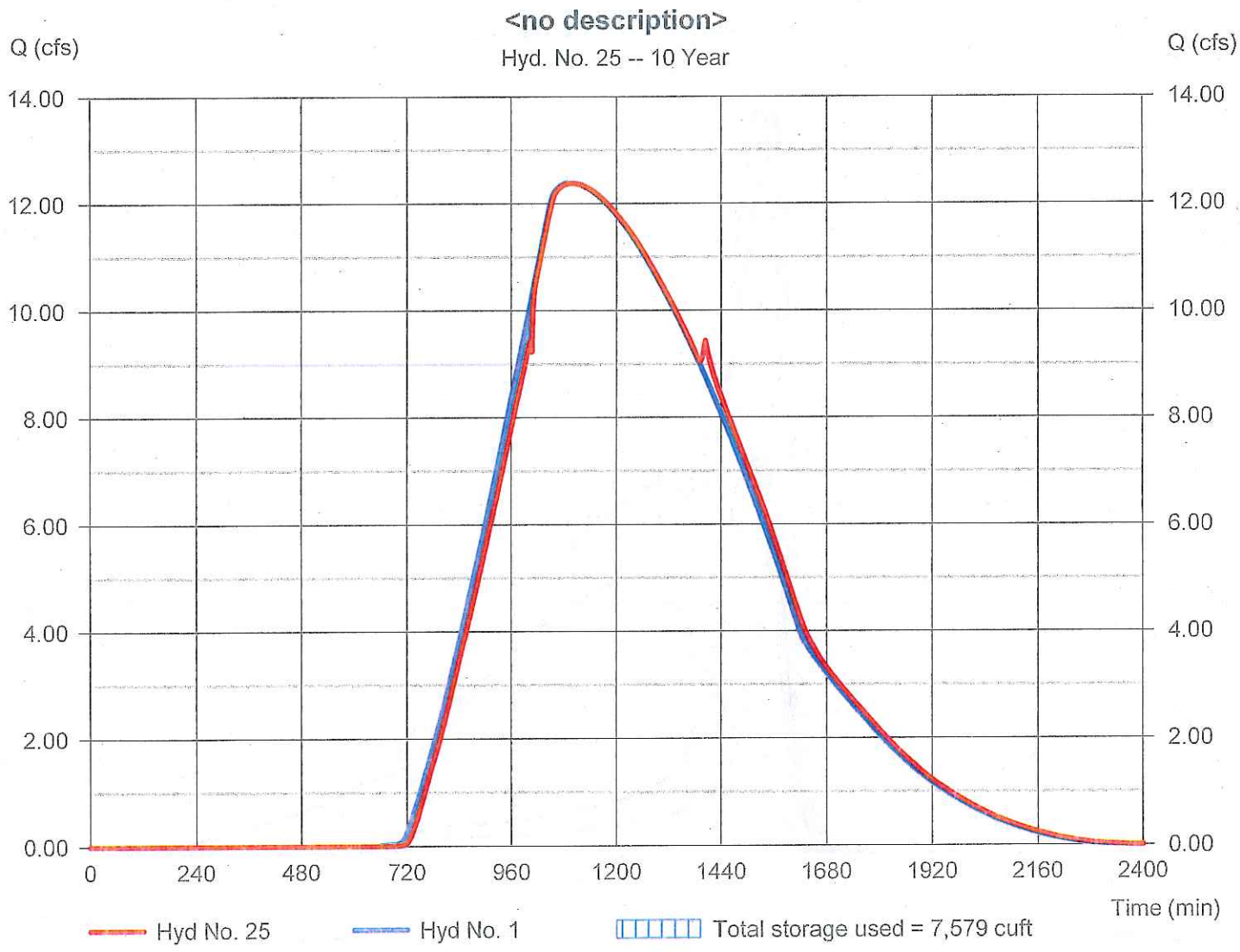
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2014 by Autodesk, Inc. v10.3 Thursday, 01 / 28 / 2016

Hyd. No. 25

<no description>

Hydrograph type	= Reservoir	Peak discharge	= 12.38 cfs
Storm frequency	= 10 yrs	Time to peak	= 1098 min
Time interval	= 2 min	Hyd. volume	= 486,701 cuft
Inflow hyd. No.	= 1 - SD-A1	Max. Elevation	= 575.12 ft
Reservoir name	= 42 cmpa crossing Ward	Max. Storage	= 7,579 cuft

Storage Indication method used.



Pond Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2014 by Autodesk, Inc. v10.3 Thursday, 01 / 28 / 2016

Pond No. 8 - 42 cmpa crossing Ward

Pond Data

Trapezoid -Bottom L x W = 800.0 x 3.0 ft, Side slope = 1.00:1, Bottom elev. = 573.20 ft, Depth = 4.00 ft

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	573.20	2,400	0	0
0.40	573.60	3,043	1,089	1,089
0.80	574.00	3,687	1,346	2,435
1.20	574.40	4,333	1,604	4,039
1.60	574.80	4,980	1,863	5,901
2.00	575.20	5,628	2,122	8,023
2.40	575.60	6,277	2,381	10,404
2.80	576.00	6,928	2,641	13,045
3.20	576.40	7,580	2,902	15,946
3.60	576.80	8,233	3,163	19,109
4.00	577.20	8,888	3,424	22,533

Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 22.00	0.00	0.00	0.00
Span (in)	= 42.00	0.00	0.00	0.00
No. Barrels	= 1	0	0	0
Invert El. (ft)	= 573.20	0.00	0.00	0.00
Length (ft)	= 40.00	0.00	0.00	0.00
Slope (%)	= 0.20	0.00	0.00	n/a
N-Value	= .024	.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)	= 0.00	30.00	0.00	0.00
Crest El. (ft)	= 0.00	576.50	0.00	0.00
Weir Coeff.	= 3.33	2.60	3.33	3.33
Weir Type	= ---	Broad	---	---
Multi-Stage	= No	No	No	No

Exfil.(in/hr) = 0.000 (by Wet area)

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).

Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
0.00	0	573.20	0.00	---	---	---	---	0.00	---	---	---	---	0.000
0.04	109	573.24	0.04 oc	---	---	---	---	0.00	---	---	---	---	0.044
0.08	218	573.28	0.14 oc	---	---	---	---	0.00	---	---	---	---	0.136
0.12	327	573.32	0.26 oc	---	---	---	---	0.00	---	---	---	---	0.257
0.16	435	573.36	0.40 oc	---	---	---	---	0.00	---	---	---	---	0.400
0.20	544	573.40	0.56 oc	---	---	---	---	0.00	---	---	---	---	0.559
0.24	653	573.44	0.73 oc	---	---	---	---	0.00	---	---	---	---	0.731
0.28	762	573.48	0.91 oc	---	---	---	---	0.00	---	---	---	---	0.913
0.32	871	573.52	1.10 oc	---	---	---	---	0.00	---	---	---	---	1.103
0.36	980	573.56	1.30 oc	---	---	---	---	0.00	---	---	---	---	1.300
0.40	1,089	573.60	1.50 oc	---	---	---	---	0.00	---	---	---	---	1.503
0.44	1,223	573.64	1.71 oc	---	---	---	---	0.00	---	---	---	---	1.709
0.48	1,358	573.68	1.92 oc	---	---	---	---	0.00	---	---	---	---	1.919
0.52	1,492	573.72	2.13 oc	---	---	---	---	0.00	---	---	---	---	2.132
0.56	1,627	573.76	2.35 oc	---	---	---	---	0.00	---	---	---	---	2.348
0.60	1,762	573.80	2.57 oc	---	---	---	---	0.00	---	---	---	---	2.566
0.64	1,896	573.84	2.79 oc	---	---	---	---	0.00	---	---	---	---	2.785
0.68	2,031	573.88	3.01 oc	---	---	---	---	0.00	---	---	---	---	3.007
0.72	2,165	573.92	3.23 oc	---	---	---	---	0.00	---	---	---	---	3.230
0.76	2,300	573.96	3.45 oc	---	---	---	---	0.00	---	---	---	---	3.454
0.80	2,435	574.00	3.68 oc	---	---	---	---	0.00	---	---	---	---	3.680
0.84	2,595	574.04	3.91 oc	---	---	---	---	0.00	---	---	---	---	3.906
0.88	2,755	574.08	4.13 oc	---	---	---	---	0.00	---	---	---	---	4.133
0.92	2,916	574.12	4.36 oc	---	---	---	---	0.00	---	---	---	---	4.361
0.96	3,076	574.16	4.59 oc	---	---	---	---	0.00	---	---	---	---	4.589
1.00	3,237	574.20	4.82 oc	---	---	---	---	0.00	---	---	---	---	4.818
1.04	3,397	574.24	5.05 oc	---	---	---	---	0.00	---	---	---	---	5.047
1.08	3,557	574.28	5.28 oc	---	---	---	---	0.00	---	---	---	---	5.277
1.12	3,718	574.32	5.51 oc	---	---	---	---	0.00	---	---	---	---	5.507
1.16	3,878	574.36	5.74 oc	---	---	---	---	0.00	---	---	---	---	5.738

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42 cmpa crossing Ward

Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
1.20	4,039	574.40	5.97 oc	---	---	---	---	0.00	---	---	---	---	5.971
1.24	4,225	574.44	6.20 oc	---	---	---	---	0.00	---	---	---	---	6.202
1.28	4,411	574.48	6.43 oc	---	---	---	---	0.00	---	---	---	---	6.434
1.32	4,597	574.52	6.67 oc	---	---	---	---	0.00	---	---	---	---	6.666
1.36	4,784	574.56	6.90 oc	---	---	---	---	0.00	---	---	---	---	6.898
1.40	4,970	574.60	7.13 oc	---	---	---	---	0.00	---	---	---	---	7.130
1.44	5,156	574.64	7.36 oc	---	---	---	---	0.00	---	---	---	---	7.363
1.48	5,342	574.68	7.60 oc	---	---	---	---	0.00	---	---	---	---	7.595
1.52	5,529	574.72	7.83 oc	---	---	---	---	0.00	---	---	---	---	7.828
1.56	5,715	574.76	8.06 oc	---	---	---	---	0.00	---	---	---	---	8.061
1.60	5,901	574.80	8.30 oc	---	---	---	---	0.00	---	---	---	---	8.296
1.64	6,113	574.84	8.53 oc	---	---	---	---	0.00	---	---	---	---	8.529
1.68	6,325	574.88	8.76 oc	---	---	---	---	0.00	---	---	---	---	8.763
1.72	6,538	574.92	9.00 oc	---	---	---	---	0.00	---	---	---	---	8.996
1.76	6,750	574.96	9.23 oc	---	---	---	---	0.00	---	---	---	---	9.230
1.80	6,962	575.00	9.46 oc	---	---	---	---	0.00	---	---	---	---	9.464
1.84	7,174	575.04	9.03 oc	---	---	---	---	0.00	---	---	---	---	9.030
1.88	7,386	575.08	10.92 oc	---	---	---	---	0.00	---	---	---	---	10.92
1.92	7,598	575.12	12.53 oc	---	---	---	---	0.00	---	---	---	---	12.53
1.96	7,811	575.16	13.95 oc	---	---	---	---	0.00	---	---	---	---	13.95
2.00	8,023	575.20	15.25 oc	---	---	---	---	0.00	---	---	---	---	15.25
2.04	8,261	575.24	16.44 oc	---	---	---	---	0.00	---	---	---	---	16.44
2.08	8,499	575.28	17.55 oc	---	---	---	---	0.00	---	---	---	---	17.55
2.12	8,737	575.32	18.59 oc	---	---	---	---	0.00	---	---	---	---	18.59
2.16	8,975	575.36	19.58 oc	---	---	---	---	0.00	---	---	---	---	19.58
2.20	9,213	575.40	20.52 oc	---	---	---	---	0.00	---	---	---	---	20.52
2.24	9,451	575.44	21.41 oc	---	---	---	---	0.00	---	---	---	---	21.41
2.28	9,689	575.48	22.28 oc	---	---	---	---	0.00	---	---	---	---	22.28
2.32	9,928	575.52	23.11 oc	---	---	---	---	0.00	---	---	---	---	23.11
2.36	10,166	575.56	23.91 oc	---	---	---	---	0.00	---	---	---	---	23.91
2.40	10,404	575.60	24.69 oc	---	---	---	---	0.00	---	---	---	---	24.69
2.44	10,668	575.64	25.44 oc	---	---	---	---	0.00	---	---	---	---	25.44
2.48	10,932	575.68	26.17 oc	---	---	---	---	0.00	---	---	---	---	26.17
2.52	11,196	575.72	26.88 oc	---	---	---	---	0.00	---	---	---	---	26.88
2.56	11,460	575.76	27.57 oc	---	---	---	---	0.00	---	---	---	---	27.57
2.60	11,724	575.80	28.25 oc	---	---	---	---	0.00	---	---	---	---	28.25
2.64	11,988	575.84	28.91 oc	---	---	---	---	0.00	---	---	---	---	28.91
2.68	12,252	575.88	29.55 oc	---	---	---	---	0.00	---	---	---	---	29.55
2.72	12,517	575.92	30.18 oc	---	---	---	---	0.00	---	---	---	---	30.18
2.76	12,781	575.96	30.80 oc	---	---	---	---	0.00	---	---	---	---	30.80
2.80	13,045	576.00	31.41 oc	---	---	---	---	0.00	---	---	---	---	31.41
2.84	13,335	576.04	32.00 oc	---	---	---	---	0.00	---	---	---	---	32.00
2.88	13,625	576.08	32.58 oc	---	---	---	---	0.00	---	---	---	---	32.58
2.92	13,915	576.12	33.16 oc	---	---	---	---	0.00	---	---	---	---	33.16
2.96	14,205	576.16	33.72 oc	---	---	---	---	0.00	---	---	---	---	33.72
3.00	14,496	576.20	34.28 oc	---	---	---	---	0.00	---	---	---	---	34.28
3.04	14,786	576.24	34.82 oc	---	---	---	---	0.00	---	---	---	---	34.82
3.08	15,076	576.28	35.36 oc	---	---	---	---	0.00	---	---	---	---	35.36
3.12	15,366	576.32	35.89 oc	---	---	---	---	0.00	---	---	---	---	35.89
3.16	15,656	576.36	36.41 oc	---	---	---	---	0.00	---	---	---	---	36.41
3.20	15,946	576.40	36.92 oc	---	---	---	---	0.00	---	---	---	---	36.92
3.24	16,263	576.44	37.43 oc	---	---	---	---	0.00	---	---	---	---	37.43
3.28	16,579	576.48	37.93 oc	---	---	---	---	0.00	---	---	---	---	37.93
3.32	16,895	576.52	38.42 oc	---	---	---	---	0.22	---	---	---	---	38.64
3.36	17,211	576.56	38.91 oc	---	---	---	---	1.14	---	---	---	---	40.06
3.40	17,528	576.60	39.39 oc	---	---	---	---	2.46	---	---	---	---	41.86
3.44	17,844	576.64	39.87 oc	---	---	---	---	4.08	---	---	---	---	43.95
3.48	18,160	576.68	40.34 oc	---	---	---	---	5.95	---	---	---	---	46.29
3.52	18,477	576.72	40.80 oc	---	---	---	---	8.04	---	---	---	---	48.84
3.56	18,793	576.76	41.26 oc	---	---	---	---	10.33	---	---	---	---	51.59
3.60	19,109	576.80	41.72 oc	---	---	---	---	12.82	---	---	---	---	54.53
3.64	19,452	576.84	42.17 oc	---	---	---	---	15.46	---	---	---	---	57.63
3.68	19,794	576.88	42.61 oc	---	---	---	---	18.27	---	---	---	---	60.88
3.72	20,136	576.92	43.05 oc	---	---	---	---	21.22	---	---	---	---	64.28
3.76	20,479	576.96	43.49 oc	---	---	---	---	24.33	---	---	---	---	67.81
3.80	20,821	577.00	43.92 oc	---	---	---	---	27.57	---	---	---	---	71.48
3.84	21,164	577.04	44.34 oc	---	---	---	---	30.94	---	---	---	---	75.28
3.88	21,506	577.08	44.77 oc	---	---	---	---	34.44	---	---	---	---	79.21
3.92	21,848	577.12	45.19 oc	---	---	---	---	38.06	---	---	---	---	83.25
3.96	22,191	577.16	45.60 oc	---	---	---	---	41.80	---	---	---	---	87.40

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42 cmpa crossing Ward

Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
4.00	22,533	577.20	46.01 oc	---	---	---	---	45.68	---	---	---	---	91.70

...End

Hydrograph Report

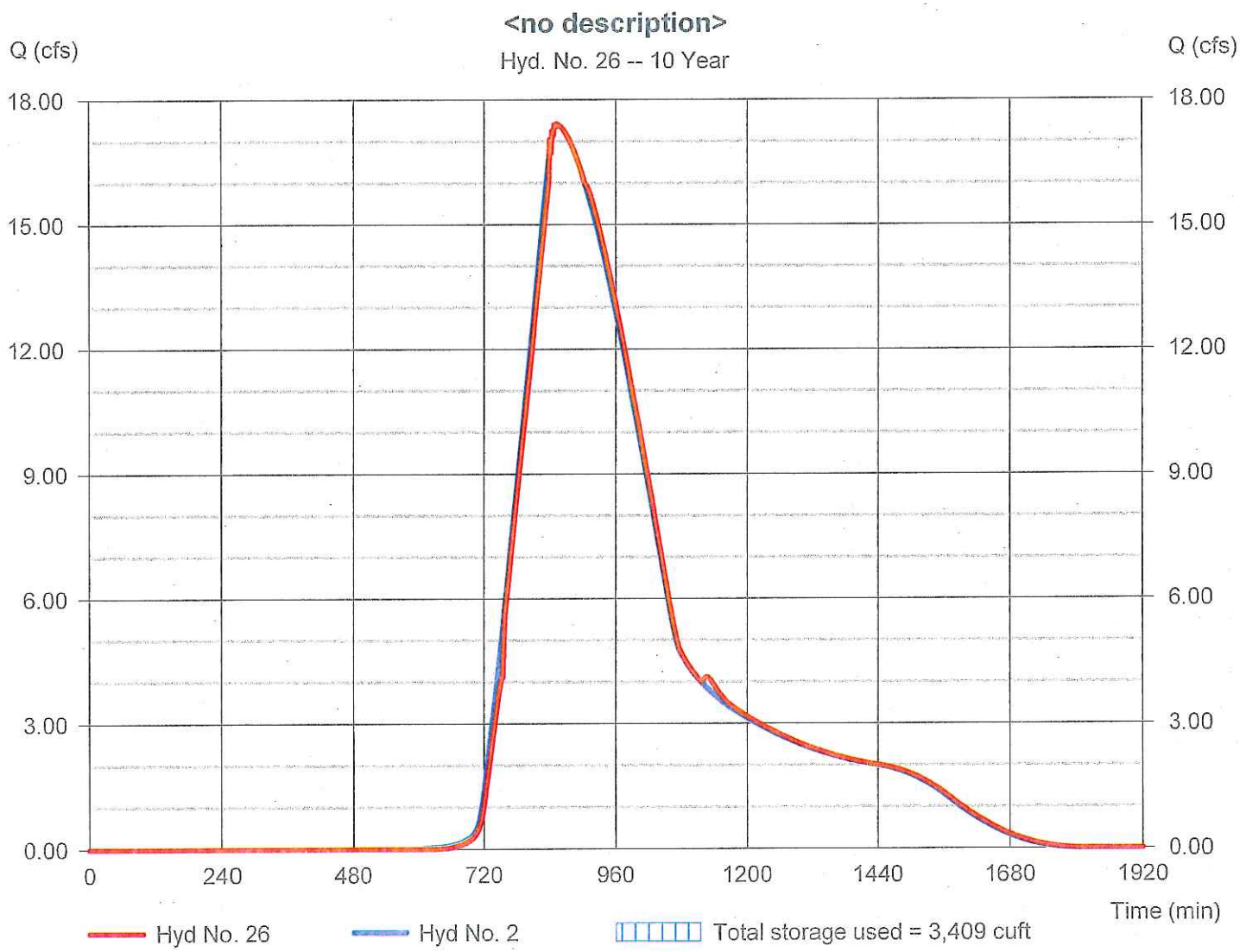
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2014 by Autodesk, Inc. v10.3 Thursday, 01 / 28 / 2016

Hyd. No. 26

<no description>

Hydrograph type	= Reservoir	Peak discharge	= 17.42 cfs
Storm frequency	= 10 yrs	Time to peak	= 852 min
Time interval	= 2 min	Hyd. volume	= 320,823 cuft
Inflow hyd. No.	= 2 - SD-A2	Max. Elevation	= 576.52 ft
Reservoir name	= 24 inch storm crossing Ward	Max. Storage	= 3,409 cuft

Storage Indication method used.



Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2014 by Autodesk, Inc. v10.3 Thursday, 01 / 28 / 2016

Pond No. 7 - 24 inch storm crossing Ward

Pond Data

Trapezoid -Bottom L x W = 200.0 x 2.0 ft, Side slope = 1.00:1, Bottom elev. = 573.30 ft, Depth = 4.00 ft

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	573.30	400	0	0
0.40	573.70	562	192	192
0.80	574.10	726	258	450
1.20	574.50	891	323	773
1.60	574.90	1,057	389	1,163
2.00	575.30	1,224	456	1,619
2.40	575.70	1,393	523	2,142
2.80	576.10	1,563	591	2,733
3.20	576.50	1,734	659	3,392
3.60	576.90	1,906	728	4,120
4.00	577.30	2,080	797	4,917

Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 24.00	0.00	0.00	0.00
Span (in)	= 24.00	0.00	0.00	0.00
No. Barrels	= 1	0	0	0
Invert El. (ft)	= 573.30	0.00	0.00	0.00
Length (ft)	= 40.00	0.00	0.00	0.00
Slope (%)	= 0.20	0.00	0.00	n/a
N-Value	= .024	.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)	= 0.00	30.00	0.00	0.00
Crest El. (ft)	= 0.00	576.50	0.00	0.00
Weir Coeff.	= 3.33	25.00	3.33	3.33
Weir Type	= ---	Broad	---	---
Multi-Stage	= No	No	No	No

Exfil.(in/hr) = 0.000 (by Wet area)
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).

Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
0.00	0	573.30	0.00	---	---	---	---	0.00	---	---	---	---	0.000
0.04	19	573.34	0.00 oc	---	---	---	---	0.00	---	---	---	---	0.004
0.08	38	573.38	0.02 oc	---	---	---	---	0.00	---	---	---	---	0.016
0.12	58	573.42	0.04 oc	---	---	---	---	0.00	---	---	---	---	0.038
0.16	77	573.46	0.07 oc	---	---	---	---	0.00	---	---	---	---	0.069
0.20	96	573.50	0.11 oc	---	---	---	---	0.00	---	---	---	---	0.108
0.24	115	573.54	0.16 oc	---	---	---	---	0.00	---	---	---	---	0.156
0.28	135	573.58	0.21 oc	---	---	---	---	0.00	---	---	---	---	0.211
0.32	154	573.62	0.27 oc	---	---	---	---	0.00	---	---	---	---	0.273
0.36	173	573.66	0.34 oc	---	---	---	---	0.00	---	---	---	---	0.342
0.40	192	573.70	0.42 oc	---	---	---	---	0.00	---	---	---	---	0.419
0.44	218	573.74	0.50 oc	---	---	---	---	0.00	---	---	---	---	0.499
0.48	244	573.78	0.58 oc	---	---	---	---	0.00	---	---	---	---	0.584
0.52	270	573.82	0.68 oc	---	---	---	---	0.00	---	---	---	---	0.677
0.56	295	573.86	0.77 oc	---	---	---	---	0.00	---	---	---	---	0.770
0.60	321	573.90	0.87 oc	---	---	---	---	0.00	---	---	---	---	0.869
0.64	347	573.94	0.97 oc	---	---	---	---	0.00	---	---	---	---	0.974
0.68	373	573.98	1.08 oc	---	---	---	---	0.00	---	---	---	---	1.079
0.72	398	574.02	1.19 oc	---	---	---	---	0.00	---	---	---	---	1.189
0.76	424	574.06	1.30 oc	---	---	---	---	0.00	---	---	---	---	1.299
0.80	450	574.10	1.41 oc	---	---	---	---	0.00	---	---	---	---	1.412
0.84	482	574.14	1.53 oc	---	---	---	---	0.00	---	---	---	---	1.528
0.88	515	574.18	1.65 oc	---	---	---	---	0.00	---	---	---	---	1.646
0.92	547	574.22	1.76 oc	---	---	---	---	0.00	---	---	---	---	1.761
0.96	579	574.26	1.88 oc	---	---	---	---	0.00	---	---	---	---	1.882
1.00	612	574.30	2.00 oc	---	---	---	---	0.00	---	---	---	---	2.000
1.04	644	574.34	2.12 oc	---	---	---	---	0.00	---	---	---	---	2.122
1.08	676	574.38	2.24 oc	---	---	---	---	0.00	---	---	---	---	2.239
1.12	709	574.42	2.36 oc	---	---	---	---	0.00	---	---	---	---	2.361
1.16	741	574.46	2.48 oc	---	---	---	---	0.00	---	---	---	---	2.481

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24 inch storm crossing Ward

Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
1.20	773	574.50	2.60 oc	---	---	---	---	0.00	---	---	---	---	2.600
1.24	812	574.54	2.72 oc	---	---	---	---	0.00	---	---	---	---	2.717
1.28	851	574.58	2.83 oc	---	---	---	---	0.00	---	---	---	---	2.830
1.32	890	574.62	2.95 oc	---	---	---	---	0.00	---	---	---	---	2.946
1.36	929	574.66	3.06 oc	---	---	---	---	0.00	---	---	---	---	3.057
1.40	968	574.70	3.16 oc	---	---	---	---	0.00	---	---	---	---	3.164
1.44	1,007	574.74	3.27 oc	---	---	---	---	0.00	---	---	---	---	3.270
1.48	1,046	574.78	3.37 oc	---	---	---	---	0.00	---	---	---	---	3.374
1.52	1,085	574.82	3.48 oc	---	---	---	---	0.00	---	---	---	---	3.476
1.56	1,124	574.86	3.57 oc	---	---	---	---	0.00	---	---	---	---	3.570
1.60	1,163	574.90	3.66 oc	---	---	---	---	0.00	---	---	---	---	3.660
1.64	1,208	574.94	3.75 oc	---	---	---	---	0.00	---	---	---	---	3.747
1.68	1,254	574.98	3.82 oc	---	---	---	---	0.00	---	---	---	---	3.824
1.72	1,299	575.02	3.90 oc	---	---	---	---	0.00	---	---	---	---	3.898
1.76	1,345	575.06	3.96 oc	---	---	---	---	0.00	---	---	---	---	3.963
1.80	1,391	575.10	4.02 oc	---	---	---	---	0.00	---	---	---	---	4.020
1.84	1,436	575.14	4.06 oc	---	---	---	---	0.00	---	---	---	---	4.065
1.88	1,482	575.18	4.10 oc	---	---	---	---	0.00	---	---	---	---	4.098
1.92	1,527	575.22	4.11 oc	---	---	---	---	0.00	---	---	---	---	4.114
1.96	1,573	575.26	4.10 oc	---	---	---	---	0.00	---	---	---	---	4.104
2.00	1,619	575.30	4.00 oc	---	---	---	---	0.00	---	---	---	---	3.999
2.04	1,671	575.34	4.90 oc	---	---	---	---	0.00	---	---	---	---	4.897
2.08	1,723	575.38	5.65 oc	---	---	---	---	0.00	---	---	---	---	5.654
2.12	1,776	575.42	6.32 oc	---	---	---	---	0.00	---	---	---	---	6.321
2.16	1,828	575.46	6.92 oc	---	---	---	---	0.00	---	---	---	---	6.924
2.20	1,880	575.50	7.48 oc	---	---	---	---	0.00	---	---	---	---	7.479
2.24	1,933	575.54	8.00 oc	---	---	---	---	0.00	---	---	---	---	7.995
2.28	1,985	575.58	8.48 oc	---	---	---	---	0.00	---	---	---	---	8.480
2.32	2,037	575.62	8.94 oc	---	---	---	---	0.00	---	---	---	---	8.939
2.36	2,090	575.66	9.37 oc	---	---	---	---	0.00	---	---	---	---	9.375
2.40	2,142	575.70	9.79 oc	---	---	---	---	0.00	---	---	---	---	9.794
2.44	2,201	575.74	10.19 oc	---	---	---	---	0.00	---	---	---	---	10.19
2.48	2,260	575.78	10.58 oc	---	---	---	---	0.00	---	---	---	---	10.58
2.52	2,319	575.82	10.95 oc	---	---	---	---	0.00	---	---	---	---	10.95
2.56	2,378	575.86	11.31 oc	---	---	---	---	0.00	---	---	---	---	11.31
2.60	2,437	575.90	11.66 oc	---	---	---	---	0.00	---	---	---	---	11.66
2.64	2,497	575.94	11.99 oc	---	---	---	---	0.00	---	---	---	---	11.99
2.68	2,556	575.98	12.32 oc	---	---	---	---	0.00	---	---	---	---	12.32
2.72	2,615	576.02	12.64 oc	---	---	---	---	0.00	---	---	---	---	12.64
2.76	2,674	576.06	12.95 oc	---	---	---	---	0.00	---	---	---	---	12.95
2.80	2,733	576.10	13.26 oc	---	---	---	---	0.00	---	---	---	---	13.26
2.84	2,799	576.14	13.56 oc	---	---	---	---	0.00	---	---	---	---	13.56
2.88	2,865	576.18	13.85 oc	---	---	---	---	0.00	---	---	---	---	13.85
2.92	2,931	576.22	14.14 oc	---	---	---	---	0.00	---	---	---	---	14.14
2.96	2,997	576.26	14.42 oc	---	---	---	---	0.00	---	---	---	---	14.42
3.00	3,063	576.30	14.69 oc	---	---	---	---	0.00	---	---	---	---	14.69
3.04	3,128	576.34	14.96 oc	---	---	---	---	0.00	---	---	---	---	14.96
3.08	3,194	576.38	15.22 oc	---	---	---	---	0.00	---	---	---	---	15.22
3.12	3,260	576.42	15.48 oc	---	---	---	---	0.00	---	---	---	---	15.48
3.16	3,326	576.46	15.74 oc	---	---	---	---	0.00	---	---	---	---	15.74
3.20	3,392	576.50	15.99 oc	---	---	---	---	0.00	---	---	---	---	15.99
3.24	3,465	576.54	16.24 oc	---	---	---	---	6.00	---	---	---	---	22.24
3.28	3,538	576.58	16.48 oc	---	---	---	---	16.96	---	---	---	---	33.44
3.32	3,611	576.62	16.73 oc	---	---	---	---	31.15	---	---	---	---	47.88
3.36	3,683	576.66	16.96 oc	---	---	---	---	47.96	---	---	---	---	64.92
3.40	3,756	576.70	17.20 oc	---	---	---	---	67.03	---	---	---	---	84.22
3.44	3,829	576.74	17.43 oc	---	---	---	---	88.11	---	---	---	---	105.54
3.48	3,902	576.78	17.65 oc	---	---	---	---	111.03	---	---	---	---	128.68
3.52	3,975	576.82	17.88 oc	---	---	---	---	135.65	---	---	---	---	153.53
3.56	4,047	576.86	18.10 oc	---	---	---	---	161.87	---	---	---	---	179.97
3.60	4,120	576.90	18.32 oc	---	---	---	---	189.71	---	---	---	---	208.03
3.64	4,200	576.94	18.54 oc	---	---	---	---	218.85	---	---	---	---	237.39
3.68	4,280	576.98	18.75 oc	---	---	---	---	249.35	---	---	---	---	268.11
3.72	4,359	577.02	18.96 oc	---	---	---	---	281.15	---	---	---	---	300.11
3.76	4,439	577.06	19.17 oc	---	---	---	---	314.19	---	---	---	---	333.37
3.80	4,519	577.10	19.38 oc	---	---	---	---	348.44	---	---	---	---	367.82
3.84	4,598	577.14	19.59 oc	---	---	---	---	383.85	---	---	---	---	403.43
3.88	4,678	577.18	19.79 oc	---	---	---	---	420.38	---	---	---	---	440.17
3.92	4,758	577.22	19.99 oc	---	---	---	---	458.00	---	---	---	---	477.99
3.96	4,838	577.26	20.19 oc	---	---	---	---	496.68	---	---	---	---	516.87

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24 inch storm crossing Ward

Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PriRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
4.00	4,917	577.30	20.39 oc	---	---	---	---	536.64	---	---	---	---	557.03

...End

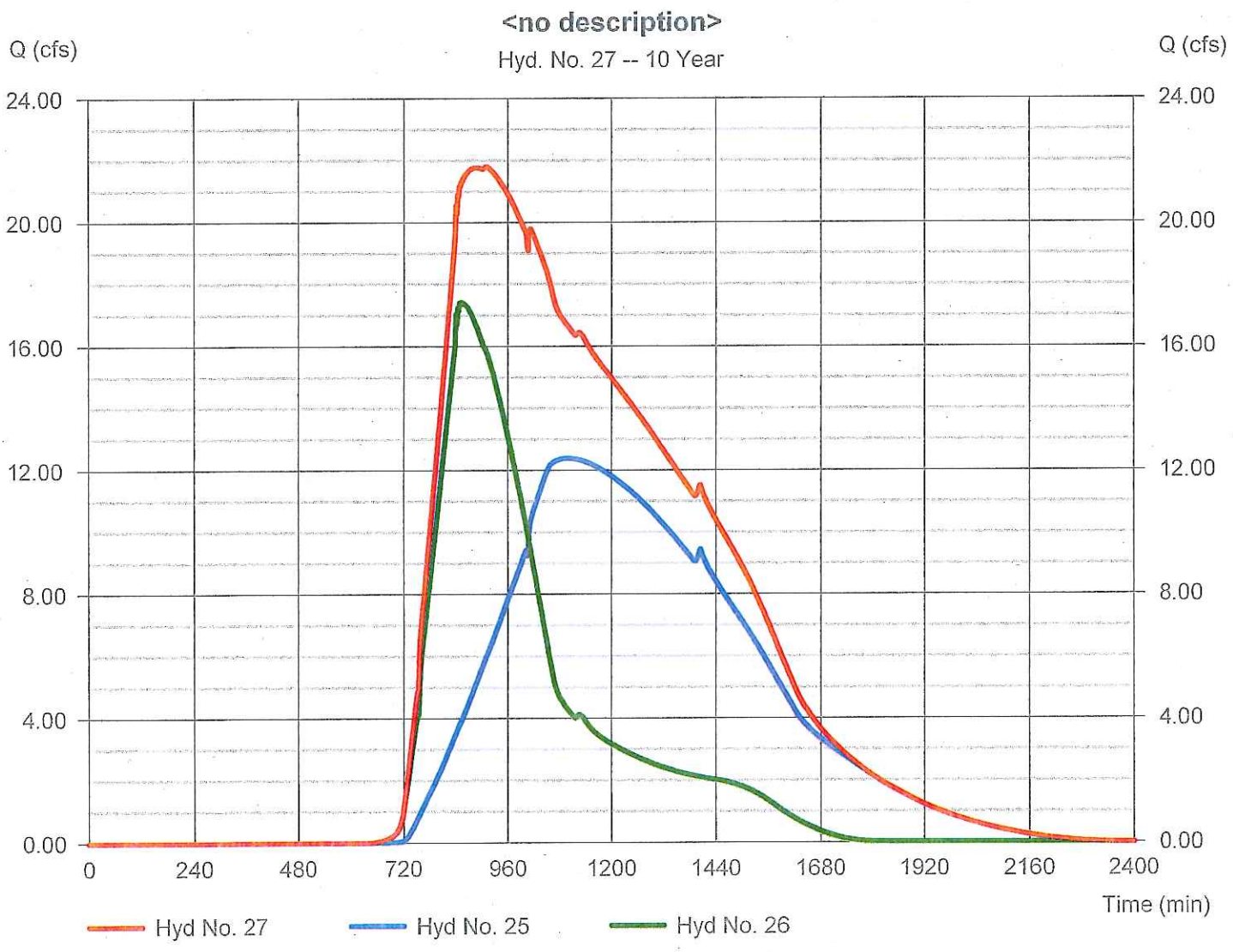
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2014 by Autodesk, Inc. v10.3 Thursday, 01 / 28 / 2016

Hyd. No. 27

<no description>

Hydrograph type	= Combine	Peak discharge	= 21.81 cfs
Storm frequency	= 10 yrs	Time to peak	= 910 min
Time interval	= 2 min	Hyd. volume	= 807,524 cuft
Inflow hyds.	= 25, 26	Contrib. drain. area	= 0.000 ac



Hydrograph Report

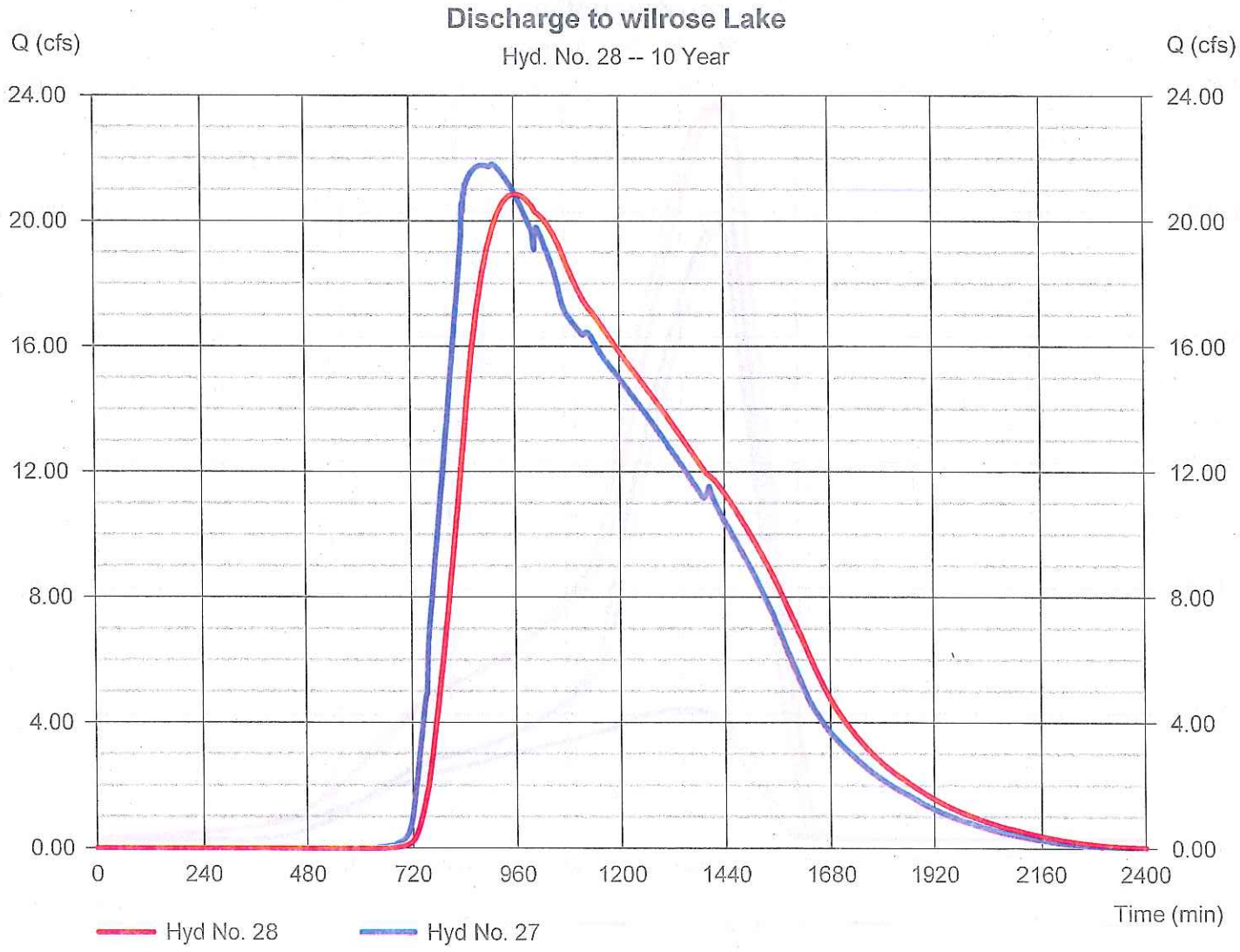
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2014 by Autodesk, Inc. v10.3 Thursday, 01 / 28 / 2016

Hyd. No. 28

Discharge to wilrose Lake

Hydrograph type	= Reach	Peak discharge	= 20.86 cfs
Storm frequency	= 10 yrs	Time to peak	= 962 min
Time interval	= 2 min	Hyd. volume	= 807,495 cuft
Inflow hyd. No.	= 27 - <no description>	Section type	= Trapezoidal
Reach length	= 3500.0 ft	Channel slope	= 0.1 %
Manning's n	= 0.040	Bottom width	= 10.0 ft
Side slope	= 2.0:1	Max. depth	= 2.0 ft
Rating curve x	= 0.227	Rating curve m	= 1.439
Ave. velocity	= 0.00 ft/s	Routing coeff.	= 0.0440

Modified Att-Kin routing method used.



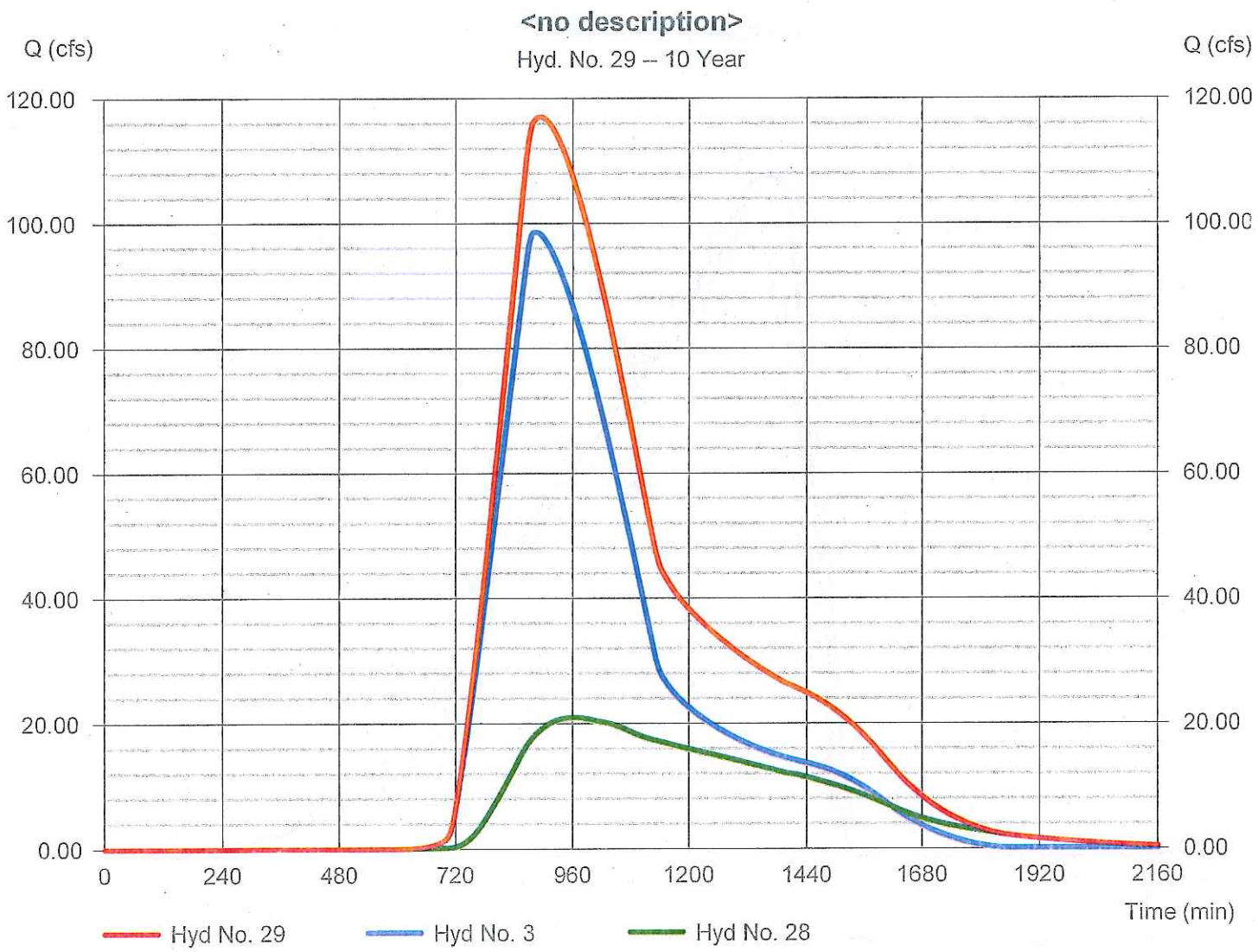
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2014 by Autodesk, Inc. v10.3 Thursday, 01 / 28 / 2016

Hyd. No. 29

<no description>

Hydrograph type	= Combine	Peak discharge	= 117.00 cfs
Storm frequency	= 10 yrs	Time to peak	= 892 min
Time interval	= 2 min	Hyd. volume	= 2,892,498 cuft
Inflow hyds.	= 3, 28	Contrib. drain. area	= 463.000 ac



Hydrograph Report

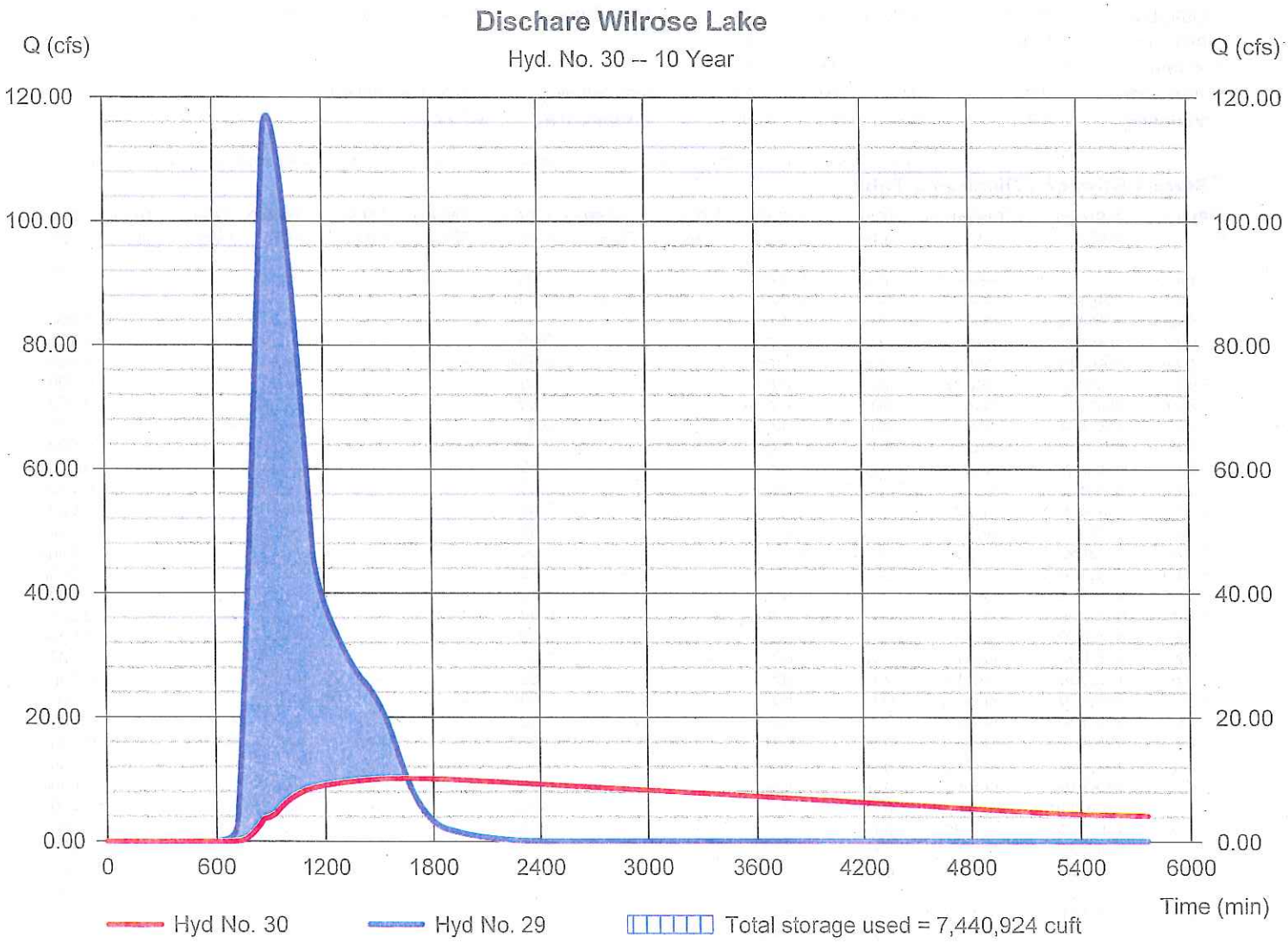
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2014 by Autodesk, Inc. v10.3 Thursday, 01 / 28 / 2016

Hyd. No. 30

Dischare Wilrose Lake

Hydrograph type	= Reservoir	Peak discharge	= 10.16 cfs
Storm frequency	= 10 yrs	Time to peak	= 1654 min
Time interval	= 2 min	Hyd. volume	= 2,171,759 cuft
Inflow hyd. No.	= 29 - <no description>	Max. Elevation	= 573.86 ft
Reservoir name	= Wilrose Pond	Max. Storage	= 7,440,924 cuft

Storage Indication method used. Wet pond routing start elevation = 571.08 ft.



Pond Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2014 by Autodesk, Inc. v10.3 Thursday, 01 / 28 / 2016

Pond No. 1 - Wilrose Pond

Pond Data

Contours -User-defined contour areas. Conic method used for volume calculation. Begining Elevation = 565.00 ft

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	565.00	825,000	0	0
2.00	567.00	827,000	1,651,835	1,651,835
4.00	569.00	829,000	1,655,834	3,307,669
6.31	571.31	849,506	1,938,432	5,246,101
8.83	573.83	850,000	2,141,164	7,387,265
10.00	575.00	2,368,206	1,808,249	9,195,514
11.00	576.00	2,589,420	2,477,746	11,673,260

Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 24.00	15.00	Inactive	Inactive
Span (in)	= 24.00	15.00	0.00	0.00
No. Barrels	= 1	2	0	0
Invert El. (ft)	= 569.83	570.13	0.00	0.00
Length (ft)	= 200.00	375.00	0.00	0.00
Slope (%)	= 0.10	0.10	0.00	n/a
N-Value	= .023	.023	.013	n/a
Orifice Coeff.	= 0.60	0.60	0.60	0.60
Multi-Stage	= n/a	Yes	No	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 40.00	Inactive	Inactive	Inactive
Crest El. (ft)	= 576.00	0.00	0.00	0.00
Weir Coeff.	= 3.33	3.33	3.33	3.33
Weir Type	= Ciplti	---	---	---
Multi-Stage	= No	No	No	No

Exfil.(in/hr) = 0.000 (by Contour)
TW Elev. (ft) = 571.21

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

Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
0.00	0	565.00	0.00	0.00	---	---	0.00	---	---	---	---	---	0.000
0.20	165,184	565.20	0.00	0.00	---	---	0.00	---	---	---	---	---	0.000
0.40	330,367	565.40	0.00	0.00	---	---	0.00	---	---	---	---	---	0.000
0.60	495,550	565.60	0.00	0.00	---	---	0.00	---	---	---	---	---	0.000
0.80	660,734	565.80	0.00	0.00	---	---	0.00	---	---	---	---	---	0.000
1.00	825,917	566.00	0.00	0.00	---	---	0.00	---	---	---	---	---	0.000
1.20	991,101	566.20	0.00	0.00	---	---	0.00	---	---	---	---	---	0.000
1.40	1,156,284	566.40	0.00	0.00	---	---	0.00	---	---	---	---	---	0.000
1.60	1,321,468	566.60	0.00	0.00	---	---	0.00	---	---	---	---	---	0.000
1.80	1,486,651	566.80	0.00	0.00	---	---	0.00	---	---	---	---	---	0.000
2.00	1,651,835	567.00	0.00	0.00	---	---	0.00	---	---	---	---	---	0.000
2.20	1,817,418	567.20	0.00	0.00	---	---	0.00	---	---	---	---	---	0.000
2.40	1,983,001	567.40	0.00	0.00	---	---	0.00	---	---	---	---	---	0.000
2.60	2,148,585	567.60	0.00	0.00	---	---	0.00	---	---	---	---	---	0.000
2.80	2,314,168	567.80	0.00	0.00	---	---	0.00	---	---	---	---	---	0.000
3.00	2,479,752	568.00	0.00	0.00	---	---	0.00	---	---	---	---	---	0.000
3.20	2,645,335	568.20	0.00	0.00	---	---	0.00	---	---	---	---	---	0.000
3.40	2,810,919	568.40	0.00	0.00	---	---	0.00	---	---	---	---	---	0.000
3.60	2,976,502	568.60	0.00	0.00	---	---	0.00	---	---	---	---	---	0.000
3.80	3,142,086	568.80	0.00	0.00	---	---	0.00	---	---	---	---	---	0.000
4.00	3,307,669	569.00	0.00	0.00	---	---	0.00	---	---	---	---	---	0.000
4.23	3,501,512	569.23	0.00	0.00	---	---	0.00	---	---	---	---	---	0.000
4.46	3,695,355	569.46	0.00	0.00	---	---	0.00	---	---	---	---	---	0.000
4.69	3,889,198	569.69	0.00	0.00	---	---	0.00	---	---	---	---	---	0.000
4.92	4,083,042	569.92	0.00	0.00	---	---	0.00	---	---	---	---	---	0.000
5.16	4,276,885	570.16	0.00	0.00	---	---	0.00	---	---	---	---	---	0.000
5.39	4,470,728	570.39	0.00	0.00	---	---	0.00	---	---	---	---	---	0.000
5.62	4,664,571	570.62	0.00	0.00	---	---	0.00	---	---	---	---	---	0.000
5.85	4,858,414	570.85	0.00	0.00	---	---	0.00	---	---	---	---	---	0.000
6.08	5,052,257	571.08	0.00	0.00	---	---	0.00	---	---	---	---	---	0.000
6.31	5,246,101	571.31	1.92 oc	1.92 ic	---	---	0.00	---	---	---	---	---	1.920
6.56	5,460,218	571.56	3.65 oc	3.63 ic	---	---	0.00	---	---	---	---	---	3.632
6.81	5,674,334	571.81	3.93 oc	3.92 ic	---	---	0.00	---	---	---	---	---	3.925
7.07	5,888,451	572.07	4.49 oc	4.49 ic	---	---	0.00	---	---	---	---	---	4.486

Continues on next page...

Wilrose Pond

Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
7.32	6,102,567	572.32	5.64 oc	5.63 ic	---	---	0.00	---	---	---	---	---	5.635
7.57	6,316,684	572.57	6.59 oc	6.59 ic	---	---	0.00	---	---	---	---	---	6.587
7.82	6,530,800	572.82	7.42 oc	7.42 ic	---	---	0.00	---	---	---	---	---	7.417
8.07	6,744,917	573.07	8.16 oc	8.16 ic	---	---	0.00	---	---	---	---	---	8.164
8.33	6,959,033	573.33	8.85 oc	8.85 ic	---	---	0.00	---	---	---	---	---	8.848
8.58	7,173,150	573.58	9.48 oc	9.48 ic	---	---	0.00	---	---	---	---	---	9.483
8.83	7,387,265	573.83	10.08 oc	10.08 ic	---	---	0.00	---	---	---	---	---	10.08
8.95	7,568,090	573.95	10.34 oc	10.34 ic	---	---	0.00	---	---	---	---	---	10.34
9.06	7,748,915	574.06	10.60 oc	10.60 ic	---	---	0.00	---	---	---	---	---	10.60
9.18	7,929,740	574.18	10.85 oc	10.85 ic	---	---	0.00	---	---	---	---	---	10.85
9.30	8,110,565	574.30	11.10 oc	11.10 ic	---	---	0.00	---	---	---	---	---	11.10
9.41	8,291,390	574.41	11.34 oc	11.34 ic	---	---	0.00	---	---	---	---	---	11.34
9.53	8,472,214	574.53	11.57 oc	11.57 ic	---	---	0.00	---	---	---	---	---	11.57
9.65	8,653,039	574.65	11.81 oc	11.80 ic	---	---	0.00	---	---	---	---	---	11.80
9.77	8,833,864	574.77	12.03 oc	12.03 ic	---	---	0.00	---	---	---	---	---	12.03
9.88	9,014,689	574.88	12.25 oc	12.25 ic	---	---	0.00	---	---	---	---	---	12.25
10.00	9,195,514	575.00	12.47 oc	12.47 ic	---	---	0.00	---	---	---	---	---	12.47
10.10	9,443,288	575.10	12.66 oc	12.66 ic	---	---	0.00	---	---	---	---	---	12.66
10.20	9,691,062	575.20	12.84 oc	12.84 ic	---	---	0.00	---	---	---	---	---	12.84
10.30	9,938,836	575.30	13.02 oc	13.02 ic	---	---	0.00	---	---	---	---	---	13.02
10.40	10,186,610	575.40	13.19 oc	13.19 ic	---	---	0.00	---	---	---	---	---	13.19
10.50	10,434,380	575.50	13.37 oc	13.36 ic	---	---	0.00	---	---	---	---	---	13.36
10.60	10,682,160	575.60	13.54 oc	13.54 ic	---	---	0.00	---	---	---	---	---	13.54
10.70	10,929,930	575.70	13.71 oc	13.71 ic	---	---	0.00	---	---	---	---	---	13.71
10.80	11,177,710	575.80	13.87 oc	13.87 ic	---	---	0.00	---	---	---	---	---	13.87
10.90	11,425,480	575.90	14.04 oc	14.04 ic	---	---	0.00	---	---	---	---	---	14.04
11.00	11,673,260	576.00	14.20 oc	14.20 ic	---	---	0.00	---	---	---	---	---	14.20

...End

Hydrograph Report

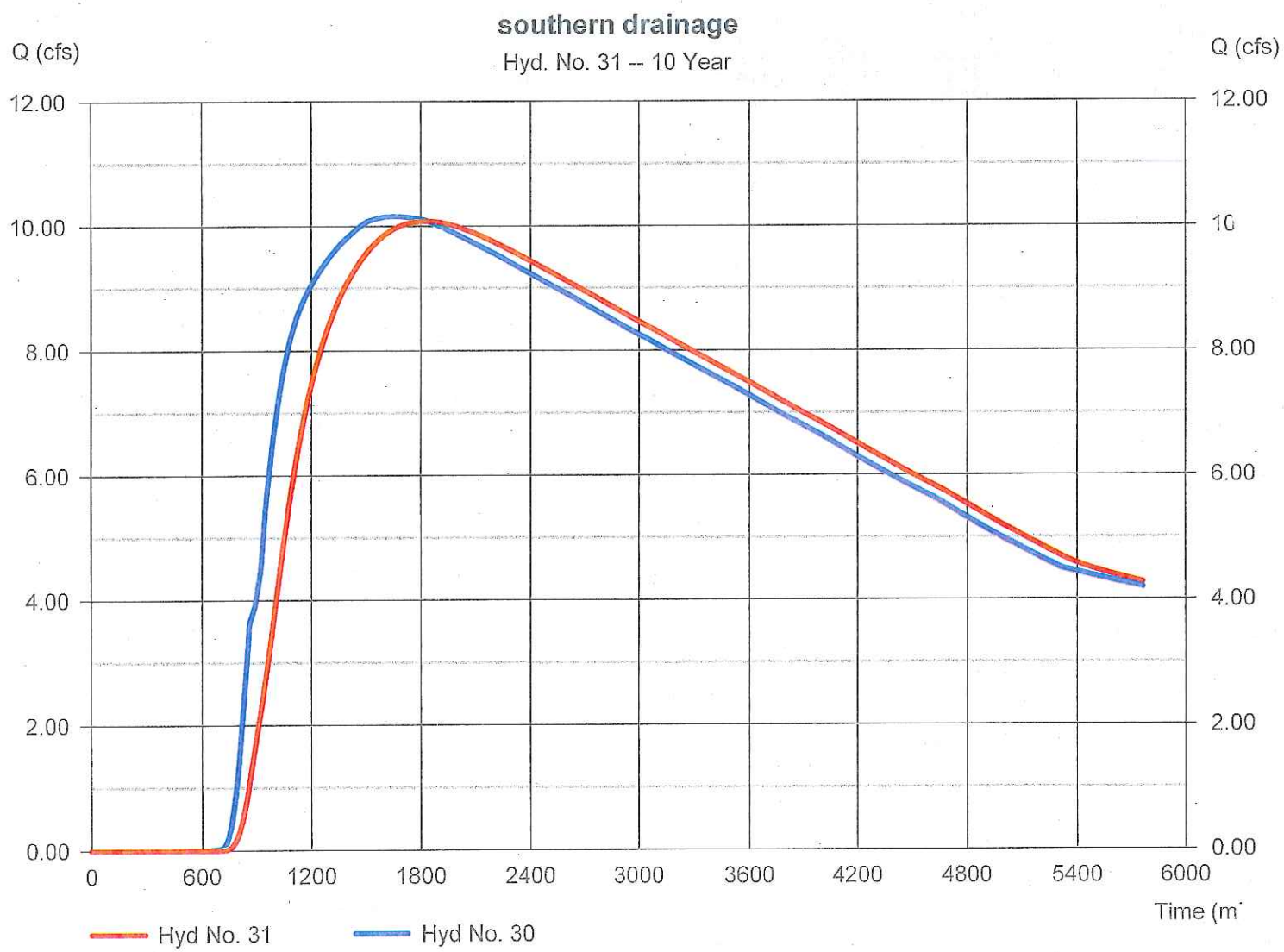
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2014 by Autodesk, Inc. v10.3 Thursday, 01 / 28 / 2016

Hyd. No. 31

southern drainage

Hydrograph type	= Reach	Peak discharge	= 10.08 cfs
Storm frequency	= 10 yrs	Time to peak	= 1838 min
Time interval	= 2 min	Hyd. volume	= 2,137,778 cuft
Inflow hyd. No.	= 30 - Dischare Wilrose Lake	Section type	= Trapezoidal
Reach length	= 6300.0 ft	Channel slope	= 0.0 %
Manning's n	= 0.040	Bottom width	= 10.0 ft
Side slope	= 1.0:1	Max. depth	= 3.0 ft
Rating curve x	= 0.113	Rating curve m	= 1.518
Ave. velocity	= 0.00 ft/s	Routing coeff.	= 0.0151

Modified Att-Kin routing method used.



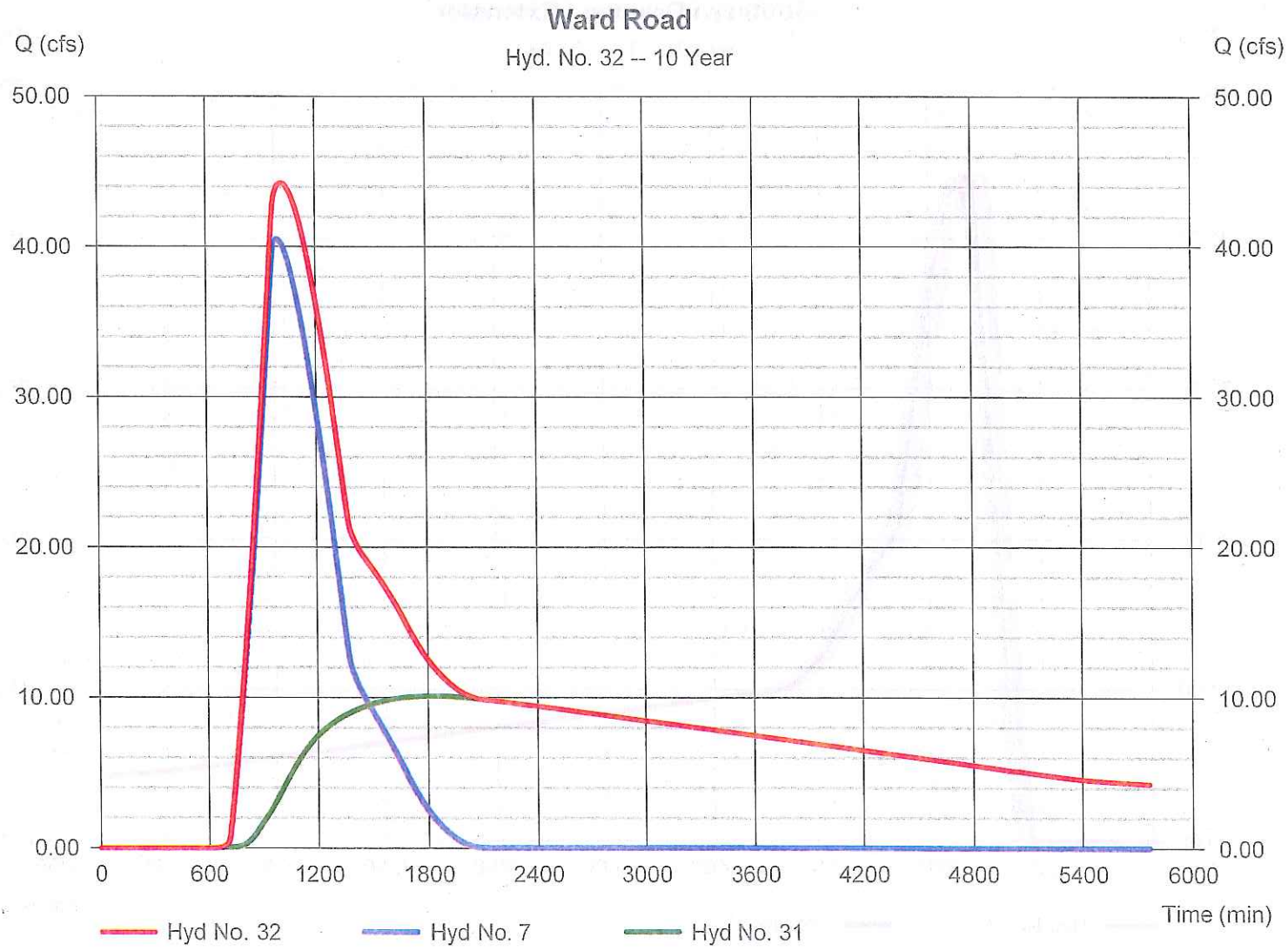
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2014 by Autodesk, Inc. v10.3 Thursday, 01 / 28 / 2016

Hyd. No. 32

Ward Road

Hydrograph type	= Combine	Peak discharge	= 44.23 cfs
Storm frequency	= 10 yrs	Time to peak	= 1008 min
Time interval	= 2 min	Hyd. volume	= 3,360,978 cuft
Inflow hyds.	= 7, 31	Contrib. drain. area	= 285.000 ac



Hydrograph Report

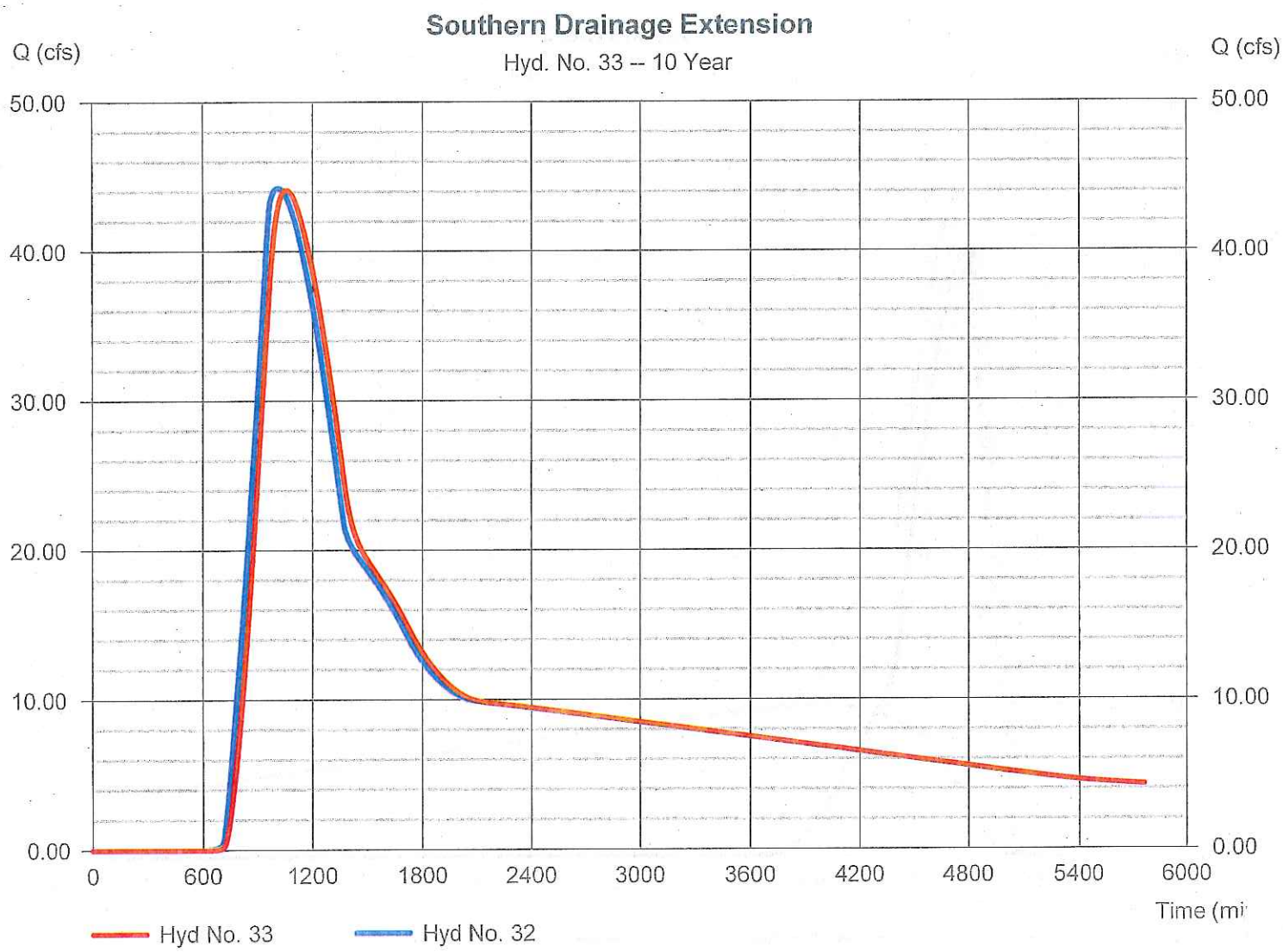
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2014 by Autodesk, Inc. v10.3 Thursday, 01 / 28 / 2016

Hyd. No. 33

Southern Drainage Extension

Hydrograph type	= Reach	Peak discharge	= 44.11 cfs
Storm frequency	= 10 yrs	Time to peak	= 1054 min
Time interval	= 2 min	Hyd. volume	= 3,360,489 cuft
Inflow hyd. No.	= 32 - Ward Road	Section type	= Trapezoidal
Reach length	= 5000.0 ft	Channel slope	= 0.1 %
Manning's n	= 0.030	Bottom width	= 10.0 ft
Side slope	= 1.0:1	Max. depth	= 4.0 ft
Rating curve x	= 0.338	Rating curve m	= 1.512
Ave. velocity	= 0.00 ft/s	Routing coeff.	= 0.0622

Modified Att-Kin routing method used.



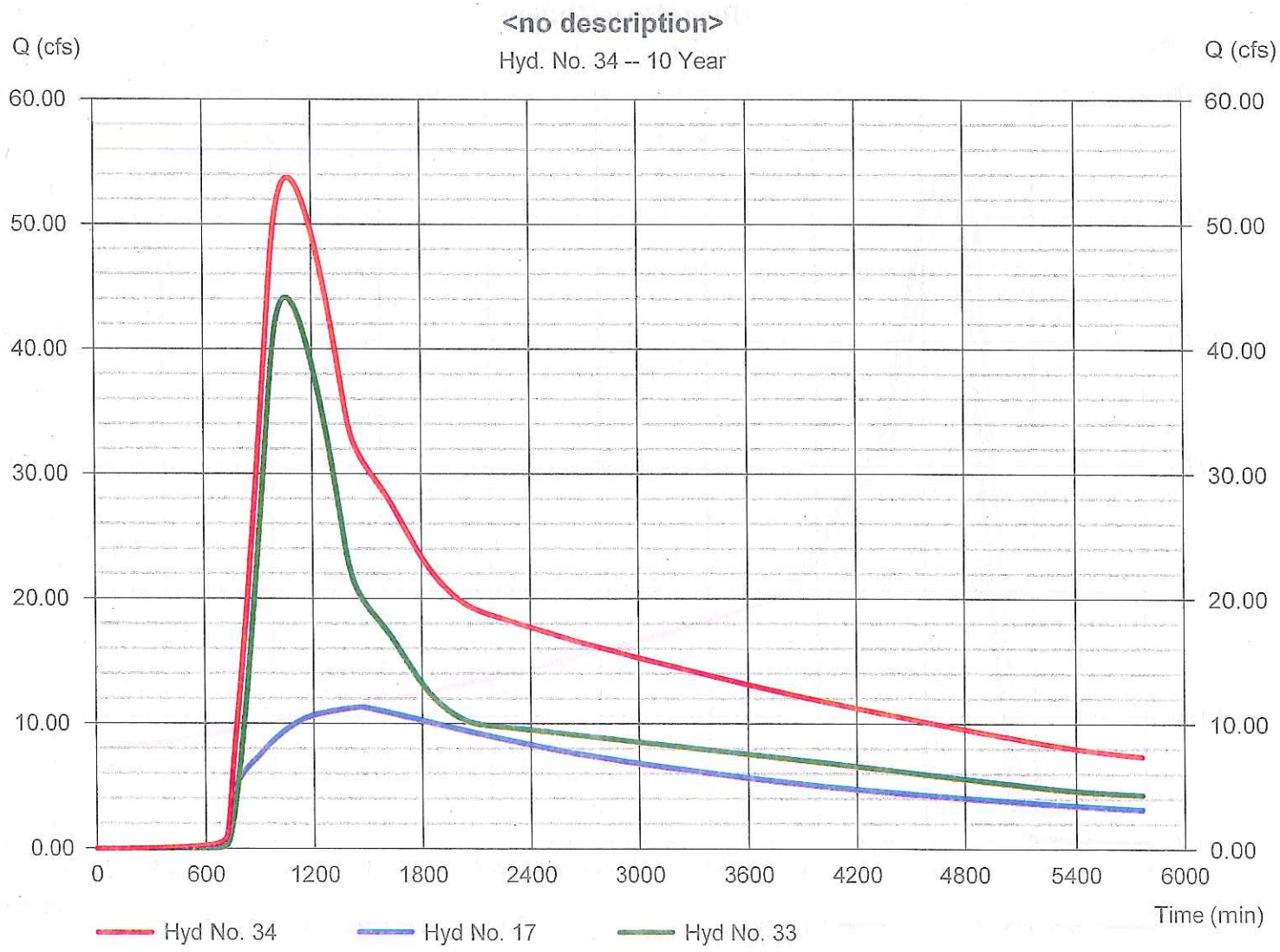
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2014 by Autodesk, Inc. v10.3 Thursday, 01 / 28 / 2016

Hyd. No. 34

<no description>

Hydrograph type	= Combine	Peak discharge	= 53.73 cfs
Storm frequency	= 10 yrs	Time to peak	= 1068 min
Time interval	= 2 min	Hyd. volume	= 5,354,622 cuft
Inflow hyds.	= 17, 33	Contrib. drain. area	= 0.000 ac



Hydrograph Report

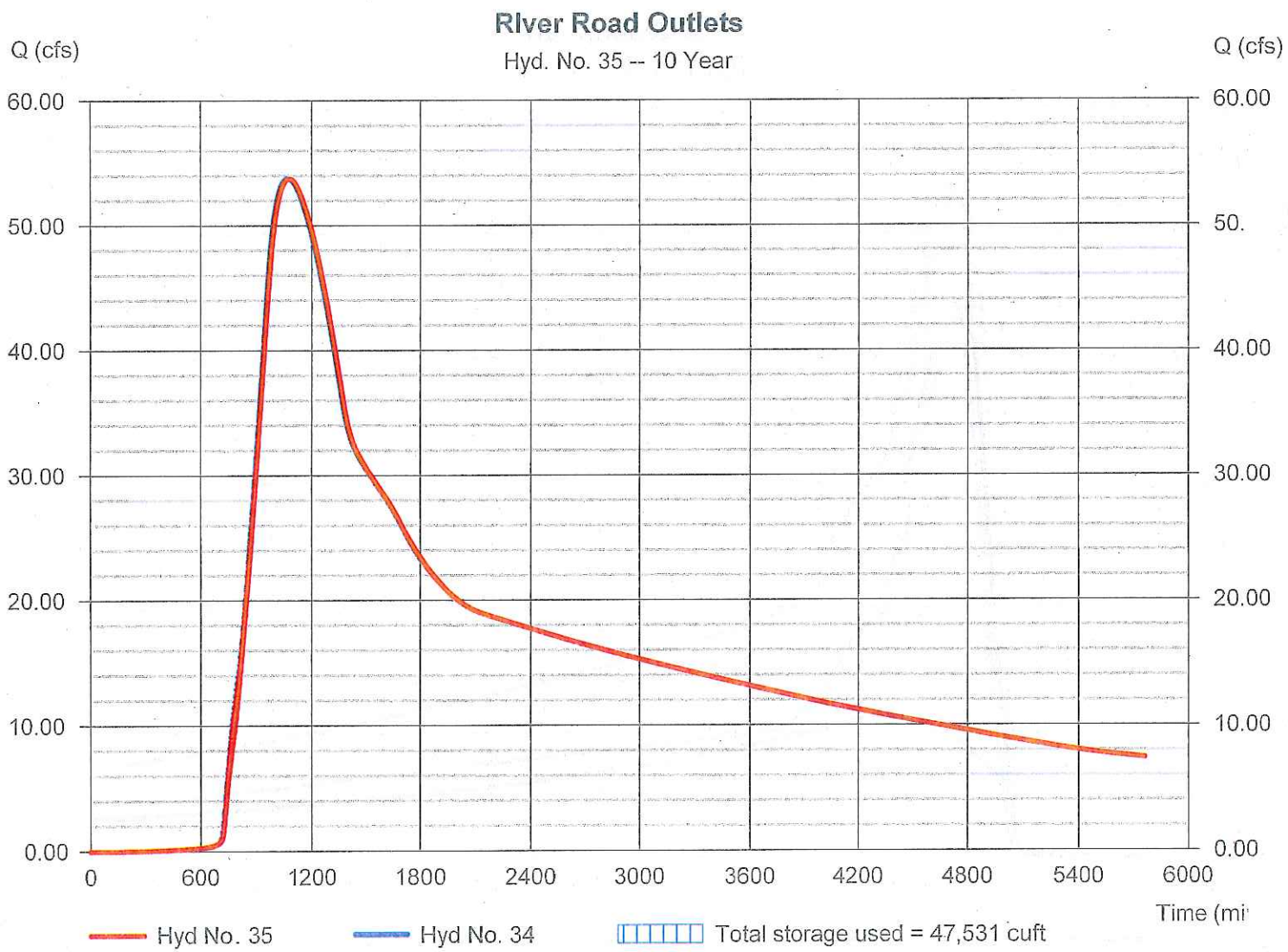
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2014 by Autodesk, Inc. v10.3 Thursday, 01 / 28 / 2016

Hyd. No. 35

RIver Road Outlets

Hydrograph type	= Reservoir	Peak discharge	= 53.72 cfs
Storm frequency	= 10 yrs	Time to peak	= 1072 min
Time interval	= 2 min	Hyd. volume	= 5,353,798 cuft
Inflow hyd. No.	= 34 - <no description>	Max. Elevation	= 569.51 ft
Reservoir name	= Twin 36 and 30 inch outlet pipes to River	Max. Storage	= 47,531 cuft

Storage Indication method used. Wet pond routing start elevation = 568.94 ft.



Pond Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2014 by Autodesk, Inc. v10.3 Thursday, 01 / 28 / 2016

Pond No. 6 - Twin 36 and 30 inch outlet pipes to River

Pond Data

Trapezoid -Bottom L x W = 1000.0 x 5.0 ft, Side slope = 1.00:1, Bottom elev. = 564.70 ft, Depth = 8.00 ft

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	564.70	5,000	0	0
0.80	565.50	6,611	4,644	4,644
1.60	566.30	8,226	5,934	10,578
2.40	567.10	9,847	7,229	17,807
3.20	567.90	11,473	8,528	26,335
4.00	568.70	13,104	9,830	36,165
4.80	569.50	14,740	11,137	47,303
5.60	570.30	16,381	12,448	59,751
6.40	571.10	18,028	13,763	73,514
7.20	571.90	19,679	15,083	88,597
8.00	572.70	21,336	16,406	105,003

Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 36.00	30.00	0.00	0.00
Span (in)	= 36.00	30.00	0.00	0.00
No. Barrels	= 2	1	0	0
Invert El. (ft)	= 564.70	568.14	0.00	0.00
Length (ft)	= 50.00	800.00	0.00	0.00
Slope (%)	= 0.50	0.30	0.00	n/a
N-Value	= .011	.015	.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)	= 0.00	0.00	0.00	0.00
Crest El. (ft)	= 0.00	0.00	0.00	0.00
Weir Coeff.	= 3.33	3.33	3.33	3.33
Weir Type	= ---	---	---	---
Multi-Stage	= No	No	No	No

Exfil.(in/hr) = 0.000 (by Wet area)
TW Elev. (ft) = 569.00

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

Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
0.00	0	564.70	0.00	0.00	---	---	---	---	---	---	---	---	0.000
0.08	464	564.78	0.00	0.00	---	---	---	---	---	---	---	---	0.000
0.16	929	564.86	0.00	0.00	---	---	---	---	---	---	---	---	0.000
0.24	1,393	564.94	0.00	0.00	---	---	---	---	---	---	---	---	0.000
0.32	1,858	565.02	0.00	0.00	---	---	---	---	---	---	---	---	0.000
0.40	2,322	565.10	0.00	0.00	---	---	---	---	---	---	---	---	0.000
0.48	2,786	565.18	0.00	0.00	---	---	---	---	---	---	---	---	0.000
0.56	3,251	565.26	0.00	0.00	---	---	---	---	---	---	---	---	0.000
0.64	3,715	565.34	0.00	0.00	---	---	---	---	---	---	---	---	0.000
0.72	4,179	565.42	0.00	0.00	---	---	---	---	---	---	---	---	0.000
0.80	4,644	565.50	0.00	0.00	---	---	---	---	---	---	---	---	0.000
0.88	5,237	565.58	0.00	0.00	---	---	---	---	---	---	---	---	0.000
0.96	5,831	565.66	0.00	0.00	---	---	---	---	---	---	---	---	0.000
1.04	6,424	565.74	0.00	0.00	---	---	---	---	---	---	---	---	0.000
1.12	7,018	565.82	0.00	0.00	---	---	---	---	---	---	---	---	0.000
1.20	7,611	565.90	0.00	0.00	---	---	---	---	---	---	---	---	0.000
1.28	8,205	565.98	0.00	0.00	---	---	---	---	---	---	---	---	0.000
1.36	8,798	566.06	0.00	0.00	---	---	---	---	---	---	---	---	0.000
1.44	9,391	566.14	0.00	0.00	---	---	---	---	---	---	---	---	0.000
1.52	9,985	566.22	0.00	0.00	---	---	---	---	---	---	---	---	0.000
1.60	10,578	566.30	0.00	0.00	---	---	---	---	---	---	---	---	0.000
1.68	11,301	566.38	0.00	0.00	---	---	---	---	---	---	---	---	0.000
1.76	12,024	566.46	0.00	0.00	---	---	---	---	---	---	---	---	0.000
1.84	12,747	566.54	0.00	0.00	---	---	---	---	---	---	---	---	0.000
1.92	13,470	566.62	0.00	0.00	---	---	---	---	---	---	---	---	0.000
2.00	14,193	566.70	0.00	0.00	---	---	---	---	---	---	---	---	0.000
2.08	14,916	566.78	0.00	0.00	---	---	---	---	---	---	---	---	0.000
2.16	15,639	566.86	0.00	0.00	---	---	---	---	---	---	---	---	0.000
2.24	16,361	566.94	0.00	0.00	---	---	---	---	---	---	---	---	0.000
2.32	17,084	567.02	0.00	0.00	---	---	---	---	---	---	---	---	0.000

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Twin 36 and 30 inch outlet pipes to River

Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
2.40	17,807	567.10	0.00	0.00	---	---	---	---	---	---	---	---	0.000
2.48	18,660	567.18	0.00	0.00	---	---	---	---	---	---	---	---	0.000
2.56	19,513	567.26	0.00	0.00	---	---	---	---	---	---	---	---	0.000
2.64	20,366	567.34	0.00	0.00	---	---	---	---	---	---	---	---	0.000
2.72	21,218	567.42	0.00	0.00	---	---	---	---	---	---	---	---	0.000
2.80	22,071	567.50	0.00	0.00	---	---	---	---	---	---	---	---	0.000
2.88	22,924	567.58	0.00	0.00	---	---	---	---	---	---	---	---	0.000
2.96	23,777	567.66	0.00	0.00	---	---	---	---	---	---	---	---	0.000
3.04	24,629	567.74	0.00	0.00	---	---	---	---	---	---	---	---	0.000
3.12	25,482	567.82	0.00	0.00	---	---	---	---	---	---	---	---	0.000
3.20	26,335	567.90	0.00	0.00	---	---	---	---	---	---	---	---	0.000
3.28	27,318	567.98	0.00	0.00	---	---	---	---	---	---	---	---	0.000
3.36	28,301	568.06	0.00	0.00	---	---	---	---	---	---	---	---	0.000
3.44	29,284	568.14	0.00	0.00	---	---	---	---	---	---	---	---	0.000
3.52	30,267	568.22	0.00	0.00	---	---	---	---	---	---	---	---	0.000
3.60	31,250	568.30	0.00	0.00	---	---	---	---	---	---	---	---	0.000
3.68	32,233	568.38	0.00	0.00	---	---	---	---	---	---	---	---	0.000
3.76	33,216	568.46	0.00	0.00	---	---	---	---	---	---	---	---	0.000
3.84	34,199	568.54	0.00	0.00	---	---	---	---	---	---	---	---	0.000
3.92	35,182	568.62	0.00	0.00	---	---	---	---	---	---	---	---	0.000
4.00	36,165	568.70	0.00	0.00	---	---	---	---	---	---	---	---	0.000
4.08	37,279	568.78	0.00	0.00	---	---	---	---	---	---	---	---	0.000
4.16	38,393	568.86	0.00	0.00	---	---	---	---	---	---	---	---	0.000
4.24	39,507	568.94	0.00	0.00	---	---	---	---	---	---	---	---	0.000
4.32	40,620	569.02	9.64 ic	0.45 oc	---	---	---	---	---	---	---	---	10.10
4.40	41,734	569.10	21.53 ic	1.18 oc	---	---	---	---	---	---	---	---	22.71
4.48	42,848	569.18	28.89 ic	1.83 oc	---	---	---	---	---	---	---	---	30.71
4.56	43,961	569.26	34.71 ic	2.49 oc	---	---	---	---	---	---	---	---	37.21
4.64	45,075	569.34	39.70 ic	3.20 oc	---	---	---	---	---	---	---	---	42.90
4.72	46,189	569.42	44.12 ic	3.96 oc	---	---	---	---	---	---	---	---	48.08
4.80	47,303	569.50	48.13 ic	4.76 oc	---	---	---	---	---	---	---	---	52.89
4.88	48,547	569.58	51.83 ic	5.60 oc	---	---	---	---	---	---	---	---	57.44
4.96	49,792	569.66	55.29 ic	6.48 oc	---	---	---	---	---	---	---	---	61.77
5.04	51,037	569.74	58.55 ic	7.38 oc	---	---	---	---	---	---	---	---	65.93
5.12	52,282	569.82	61.63 ic	8.31 oc	---	---	---	---	---	---	---	---	69.94
5.20	53,527	569.90	64.57 ic	9.24 oc	---	---	---	---	---	---	---	---	73.82
5.28	54,772	569.98	67.38 ic	10.18 oc	---	---	---	---	---	---	---	---	77.56
5.36	56,016	570.06	70.08 ic	11.12 oc	---	---	---	---	---	---	---	---	81.19
5.44	57,261	570.14	72.67 ic	12.02 oc	---	---	---	---	---	---	---	---	84.69
5.52	58,506	570.22	75.18 ic	12.89 oc	---	---	---	---	---	---	---	---	88.07
5.60	59,751	570.30	77.60 ic	13.70 oc	---	---	---	---	---	---	---	---	91.30
5.68	61,127	570.38	79.95 ic	14.42 oc	---	---	---	---	---	---	---	---	94.37
5.76	62,504	570.46	82.24 ic	15.02 oc	---	---	---	---	---	---	---	---	97.26
5.84	63,880	570.54	84.46 ic	15.43 oc	---	---	---	---	---	---	---	---	99.89
5.92	65,256	570.62	86.63 ic	15.42 oc	---	---	---	---	---	---	---	---	102.05
6.00	66,633	570.70	88.74 ic	15.31 oc	---	---	---	---	---	---	---	---	104.05
6.08	68,009	570.78	90.81 ic	15.66 oc	---	---	---	---	---	---	---	---	106.47
6.16	69,385	570.86	92.83 ic	16.01 oc	---	---	---	---	---	---	---	---	108.84
6.24	70,762	570.94	94.80 ic	16.35 oc	---	---	---	---	---	---	---	---	111.16
6.32	72,138	571.02	96.74 ic	16.69 oc	---	---	---	---	---	---	---	---	113.42
6.40	73,514	571.10	98.63 ic	17.01 oc	---	---	---	---	---	---	---	---	115.65
6.48	75,023	571.18	100.49 ic	17.33 oc	---	---	---	---	---	---	---	---	117.83
6.56	76,531	571.26	102.32 ic	17.65 oc	---	---	---	---	---	---	---	---	119.97
6.64	78,039	571.34	104.12 ic	17.96 oc	---	---	---	---	---	---	---	---	122.08
6.72	79,547	571.42	105.88 ic	18.26 oc	---	---	---	---	---	---	---	---	124.15
6.80	81,056	571.50	107.62 ic	18.56 oc	---	---	---	---	---	---	---	---	126.18
6.88	82,564	571.58	109.33 ic	18.86 oc	---	---	---	---	---	---	---	---	128.18
6.96	84,072	571.66	111.01 ic	19.15 oc	---	---	---	---	---	---	---	---	130.16
7.04	85,580	571.74	112.67 ic	19.43 oc	---	---	---	---	---	---	---	---	132.10
7.12	87,089	571.82	114.30 ic	19.72 oc	---	---	---	---	---	---	---	---	134.02
7.20	88,597	571.90	115.91 ic	19.99 oc	---	---	---	---	---	---	---	---	135.90
7.28	90,237	571.98	117.49 ic	20.27 oc	---	---	---	---	---	---	---	---	137.76
7.36	91,878	572.06	119.06 ic	20.54 oc	---	---	---	---	---	---	---	---	139.60
7.44	93,519	572.14	120.61 ic	20.80 oc	---	---	---	---	---	---	---	---	141.41
7.52	95,159	572.22	122.13 ic	21.07 oc	---	---	---	---	---	---	---	---	143.20
7.60	96,800	572.30	123.64 ic	21.33 oc	---	---	---	---	---	---	---	---	144.97
7.68	98,440	572.38	125.13 ic	21.59 oc	---	---	---	---	---	---	---	---	146.72
7.76	100,081	572.46	126.60 ic	21.84 oc	---	---	---	---	---	---	---	---	148.44
7.84	101,722	572.54	128.06 ic	22.09 oc	---	---	---	---	---	---	---	---	150.15
7.92	103,362	572.62	129.50 ic	22.34 oc	---	---	---	---	---	---	---	---	151.84

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Twin 36 and 30 inch outlet pipes to River

Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
8.00	105,003	572.70	130.92 ic	22.58 oc	---	---	---	---	---	---	---	---	153.50

...End

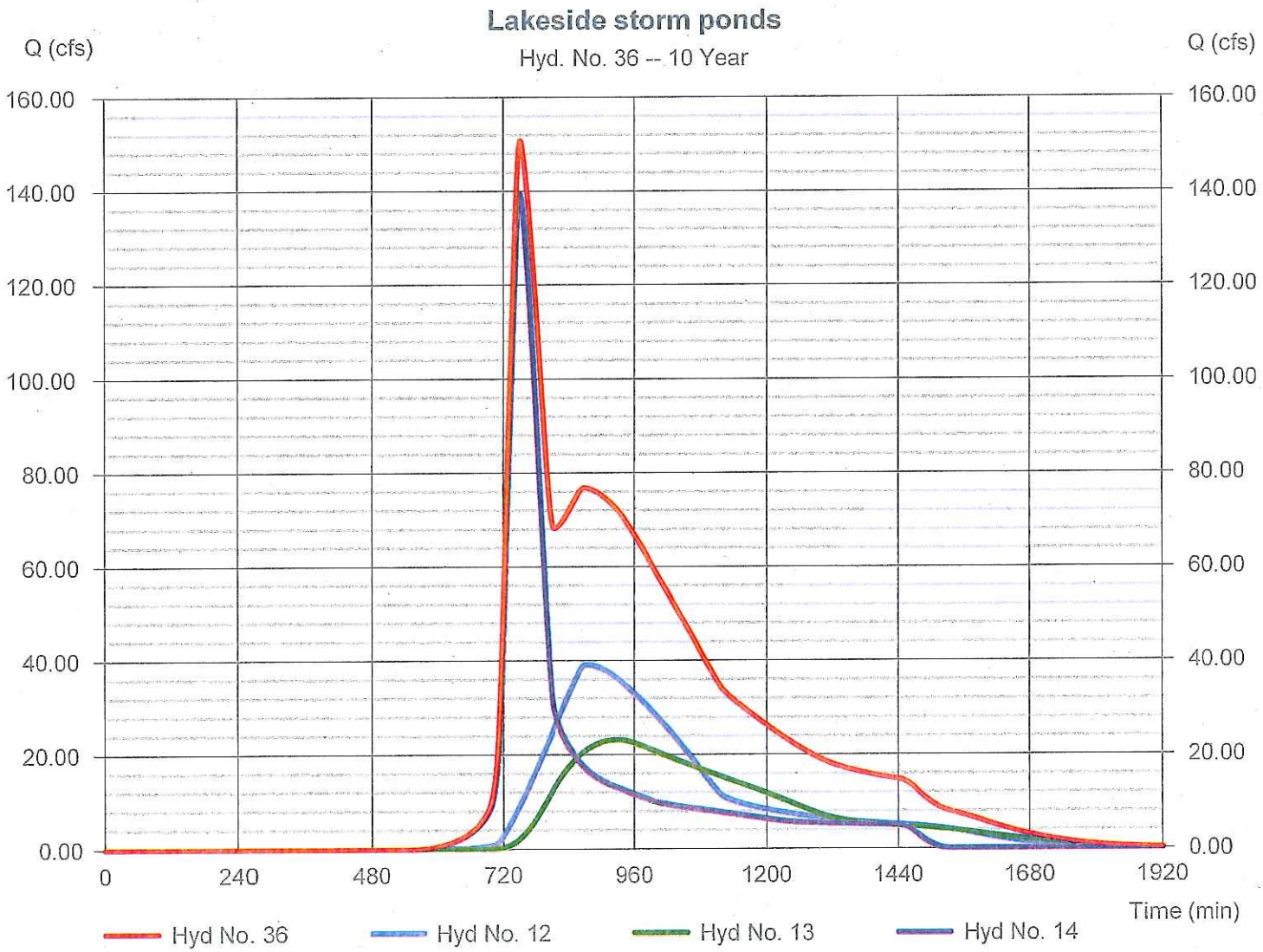
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2014 by Autodesk, Inc. v10.3 Thursday, 01 / 28 / 2016

Hyd. No. 36

Lakeside storm ponds

Hydrograph type	= Combine	Peak discharge	= 150.75 cfs
Storm frequency	= 10 yrs	Time to peak	= 750 min
Time interval	= 2 min	Hyd. volume	= 2,331,810 cuft
Inflow hyds.	= 12, 13, 14	Contrib. drain. area	= 360.000 ac



Hydrograph Report

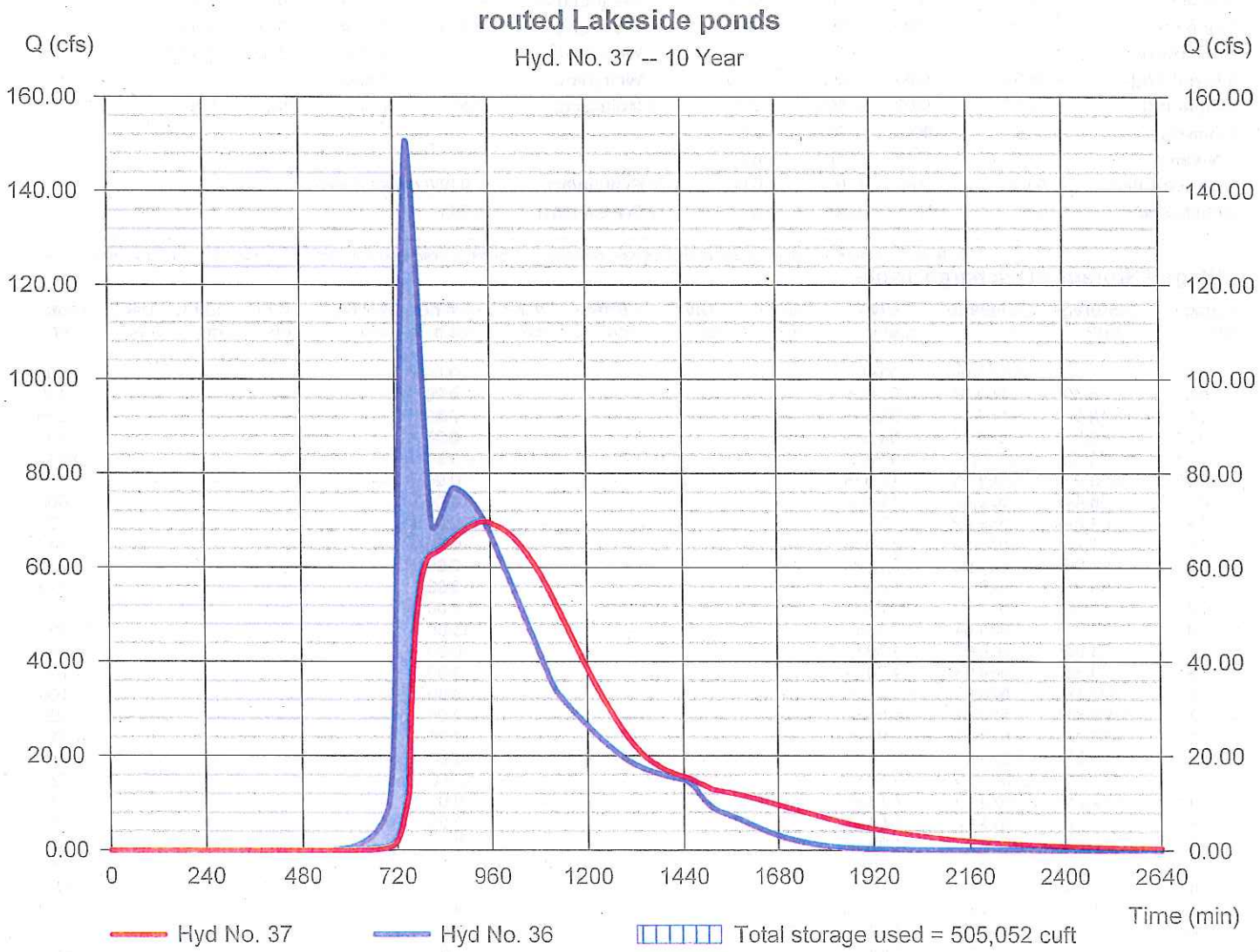
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2014 by Autodesk, Inc. v10.3 Thursday, 01 / 28 / 2016

Hyd. No. 37

routed Lakeside ponds

Hydrograph type	= Reservoir	Peak discharge	= 69.75 cfs
Storm frequency	= 10 yrs	Time to peak	= 944 min
Time interval	= 2 min	Hyd. volume	= 2,331,294 cuft
Inflow hyd. No.	= 36 - Lakeside storm ponds	Max. Elevation	= 574.00 ft
Reservoir name	= Lakeside Drive Development Pond	Max. Storage	= 505,052 cuft

Storage Indication method used.



Pond Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2014 by Autodesk, Inc. v10.3 Thursday, 01 / 28 / 2016

Pond No. 5 - Lakeside Drive Development Pond

Pond Data

Trapezoid -Bottom L x W = 1000.0 x 90.0 ft, Side slope = 2.00:1, Bottom elev. = 569.00 ft, Depth = 7.00 ft

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	569.00	90,000	0	0
0.70	569.70	93,060	64,070	64,070
1.40	570.40	96,135	66,217	130,287
2.10	571.10	99,227	68,376	198,663
2.80	571.80	102,333	70,545	269,208
3.50	572.50	105,456	72,725	341,934
4.20	573.20	108,594	74,917	416,850
4.90	573.90	111,748	77,119	493,969
5.60	574.60	114,918	79,332	573,301
6.30	575.30	118,103	81,556	654,858
7.00	576.00	121,304	83,792	738,649

Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 29.00	0.00	0.00	0.00
Span (in)	= 42.00	0.00	0.00	0.00
No. Barrels	= 1	0	0	0
Invert El. (ft)	= 569.00	0.00	0.00	0.00
Length (ft)	= 40.00	0.00	0.00	0.00
Slope (%)	= 0.20	0.00	0.00	n/a
N-Value	= .024	.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)	= 0.00	40.00	0.00	0.00
Crest El. (ft)	= 0.00	574.00	0.00	0.00
Weir Coeff.	= 3.33	2.60	3.33	3.33
Weir Type	= ---	Broad	---	---
Multi-Stage	= No	No	No	No

Exfil.(in/hr) = 0.000 (by Wet area)
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).

Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
0.00	0	569.00	0.00	---	---	---	---	0.00	---	---	---	---	0.000
0.07	6,407	569.07	0.11 oc	---	---	---	---	0.00	---	---	---	---	0.110
0.14	12,814	569.14	0.33 oc	---	---	---	---	0.00	---	---	---	---	0.326
0.21	19,221	569.21	0.60 oc	---	---	---	---	0.00	---	---	---	---	0.602
0.28	25,628	569.28	0.91 oc	---	---	---	---	0.00	---	---	---	---	0.914
0.35	32,035	569.35	1.25 oc	---	---	---	---	0.00	---	---	---	---	1.251
0.42	38,442	569.42	1.61 oc	---	---	---	---	0.00	---	---	---	---	1.606
0.49	44,849	569.49	1.97 oc	---	---	---	---	0.00	---	---	---	---	1.973
0.56	51,256	569.56	2.35 oc	---	---	---	---	0.00	---	---	---	---	2.349
0.63	57,663	569.63	2.73 oc	---	---	---	---	0.00	---	---	---	---	2.731
0.70	64,070	569.70	3.12 oc	---	---	---	---	0.00	---	---	---	---	3.119
0.77	70,692	569.77	3.51 oc	---	---	---	---	0.00	---	---	---	---	3.511
0.84	77,314	569.84	3.91 oc	---	---	---	---	0.00	---	---	---	---	3.906
0.91	83,935	569.91	4.30 oc	---	---	---	---	0.00	---	---	---	---	4.304
0.98	90,557	569.98	4.70 oc	---	---	---	---	0.00	---	---	---	---	4.704
1.05	97,179	570.05	5.11 oc	---	---	---	---	0.00	---	---	---	---	5.106
1.12	103,801	570.12	5.51 oc	---	---	---	---	0.00	---	---	---	---	5.509
1.19	110,422	570.19	5.91 oc	---	---	---	---	0.00	---	---	---	---	5.913
1.26	117,044	570.26	6.32 oc	---	---	---	---	0.00	---	---	---	---	6.318
1.33	123,666	570.33	6.72 oc	---	---	---	---	0.00	---	---	---	---	6.724
1.40	130,287	570.40	7.13 oc	---	---	---	---	0.00	---	---	---	---	7.131
1.47	137,125	570.47	7.54 oc	---	---	---	---	0.00	---	---	---	---	7.538
1.54	143,963	570.54	7.95 oc	---	---	---	---	0.00	---	---	---	---	7.946
1.61	150,800	570.61	8.35 oc	---	---	---	---	0.00	---	---	---	---	8.354
1.68	157,638	570.68	8.76 oc	---	---	---	---	0.00	---	---	---	---	8.763
1.75	164,475	570.75	9.17 oc	---	---	---	---	0.00	---	---	---	---	9.172
1.82	171,313	570.82	9.58 oc	---	---	---	---	0.00	---	---	---	---	9.582
1.89	178,151	570.89	9.99 oc	---	---	---	---	0.00	---	---	---	---	9.991
1.96	184,988	570.96	10.40 oc	---	---	---	---	0.00	---	---	---	---	10.40
2.03	191,826	571.03	10.81 oc	---	---	---	---	0.00	---	---	---	---	10.81

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Lakeside Drive Development Pond

Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
2.10	198,663	571.10	11.22 oc	---	---	---	---	0.00	---	---	---	---	11.22
2.17	205,718	571.17	11.63 oc	---	---	---	---	0.00	---	---	---	---	11.63
2.24	212,772	571.24	12.04 oc	---	---	---	---	0.00	---	---	---	---	12.04
2.31	219,827	571.31	12.45 oc	---	---	---	---	0.00	---	---	---	---	12.45
2.38	226,881	571.38	12.86 oc	---	---	---	---	0.00	---	---	---	---	12.86
2.45	233,936	571.45	14.33 oc	---	---	---	---	0.00	---	---	---	---	14.33
2.52	240,990	571.52	18.22 oc	---	---	---	---	0.00	---	---	---	---	18.22
2.59	248,045	571.59	21.42 oc	---	---	---	---	0.00	---	---	---	---	21.42
2.66	255,099	571.66	24.20 oc	---	---	---	---	0.00	---	---	---	---	24.20
2.73	262,154	571.73	26.69 oc	---	---	---	---	0.00	---	---	---	---	26.69
2.80	269,208	571.80	28.97 oc	---	---	---	---	0.00	---	---	---	---	28.97
2.87	276,481	571.87	31.08 oc	---	---	---	---	0.00	---	---	---	---	31.08
2.94	283,753	571.94	33.05 oc	---	---	---	---	0.00	---	---	---	---	33.05
3.01	291,026	572.01	34.92 oc	---	---	---	---	0.00	---	---	---	---	34.92
3.08	298,298	572.08	36.69 oc	---	---	---	---	0.00	---	---	---	---	36.69
3.15	305,571	572.15	38.38 oc	---	---	---	---	0.00	---	---	---	---	38.38
3.22	312,843	572.22	40.00 oc	---	---	---	---	0.00	---	---	---	---	40.00
3.29	320,116	572.29	41.55 oc	---	---	---	---	0.00	---	---	---	---	41.55
3.36	327,389	572.36	43.05 oc	---	---	---	---	0.00	---	---	---	---	43.05
3.43	334,661	572.43	44.50 oc	---	---	---	---	0.00	---	---	---	---	44.50
3.50	341,934	572.50	45.90 oc	---	---	---	---	0.00	---	---	---	---	45.90
3.57	349,425	572.57	47.26 oc	---	---	---	---	0.00	---	---	---	---	47.26
3.64	356,917	572.64	48.58 oc	---	---	---	---	0.00	---	---	---	---	48.58
3.71	364,409	572.71	49.87 oc	---	---	---	---	0.00	---	---	---	---	49.87
3.78	371,900	572.78	51.13 oc	---	---	---	---	0.00	---	---	---	---	51.13
3.85	379,392	572.85	52.35 oc	---	---	---	---	0.00	---	---	---	---	52.35
3.92	386,884	572.92	53.55 oc	---	---	---	---	0.00	---	---	---	---	53.55
3.99	394,375	572.99	54.72 oc	---	---	---	---	0.00	---	---	---	---	54.72
4.06	401,867	573.06	55.86 oc	---	---	---	---	0.00	---	---	---	---	55.86
4.13	409,359	573.13	56.99 oc	---	---	---	---	0.00	---	---	---	---	56.99
4.20	416,850	573.20	58.09 oc	---	---	---	---	0.00	---	---	---	---	58.09
4.27	424,562	573.27	59.17 oc	---	---	---	---	0.00	---	---	---	---	59.17
4.34	432,274	573.34	60.23 oc	---	---	---	---	0.00	---	---	---	---	60.23
4.41	439,986	573.41	61.28 oc	---	---	---	---	0.00	---	---	---	---	61.28
4.48	447,698	573.48	62.30 oc	---	---	---	---	0.00	---	---	---	---	62.30
4.55	455,410	573.55	63.31 oc	---	---	---	---	0.00	---	---	---	---	63.31
4.62	463,122	573.62	64.30 oc	---	---	---	---	0.00	---	---	---	---	64.30
4.69	470,834	573.69	65.28 oc	---	---	---	---	0.00	---	---	---	---	65.28
4.76	478,546	573.76	66.25 oc	---	---	---	---	0.00	---	---	---	---	66.25
4.83	486,258	573.83	67.20 oc	---	---	---	---	0.00	---	---	---	---	67.20
4.90	493,969	573.90	68.13 oc	---	---	---	---	0.00	---	---	---	---	68.13
4.97	501,903	573.97	69.06 oc	---	---	---	---	0.00	---	---	---	---	69.06
5.04	509,836	574.04	69.97 oc	---	---	---	---	0.83	---	---	---	---	70.80
5.11	517,769	574.11	70.87 oc	---	---	---	---	3.80	---	---	---	---	74.66
5.18	525,702	574.18	71.76 oc	---	---	---	---	7.95	---	---	---	---	79.70
5.25	533,635	574.25	72.63 oc	---	---	---	---	13.00	---	---	---	---	85.64
5.32	541,569	574.32	73.50 oc	---	---	---	---	18.83	---	---	---	---	92.33
5.39	549,502	574.39	74.36 oc	---	---	---	---	25.34	---	---	---	---	99.70
5.46	557,435	574.46	75.21 oc	---	---	---	---	32.46	---	---	---	---	107.66
5.53	565,368	574.53	76.05 oc	---	---	---	---	40.14	---	---	---	---	116.18
5.60	573,301	574.60	76.87 oc	---	---	---	---	48.33	---	---	---	---	125.20
5.67	581,457	574.67	77.69 oc	---	---	---	---	57.03	---	---	---	---	134.73
5.74	589,613	574.74	78.50 oc	---	---	---	---	66.20	---	---	---	---	144.71
5.81	597,768	574.81	79.31 oc	---	---	---	---	75.82	---	---	---	---	155.12
5.88	605,924	574.88	80.10 oc	---	---	---	---	85.85	---	---	---	---	165.96
5.95	614,080	574.95	80.89 oc	---	---	---	---	96.30	---	---	---	---	177.19
6.02	622,235	575.02	81.67 oc	---	---	---	---	107.14	---	---	---	---	188.81
6.09	630,391	575.09	82.44 oc	---	---	---	---	118.36	---	---	---	---	200.80
6.16	638,546	575.16	83.21 oc	---	---	---	---	129.94	---	---	---	---	213.15
6.23	646,702	575.23	83.97 oc	---	---	---	---	141.88	---	---	---	---	225.84
6.30	654,858	575.30	84.72 oc	---	---	---	---	154.15	---	---	---	---	238.87
6.37	663,237	575.37	85.46 oc	---	---	---	---	166.77	---	---	---	---	252.23
6.44	671,616	575.44	86.20 oc	---	---	---	---	179.71	---	---	---	---	265.91
6.51	679,995	575.51	86.93 oc	---	---	---	---	192.98	---	---	---	---	279.91
6.58	688,374	575.58	87.66 oc	---	---	---	---	206.55	---	---	---	---	294.21
6.65	696,753	575.65	88.38 oc	---	---	---	---	220.43	---	---	---	---	308.81
6.72	705,133	575.72	89.09 oc	---	---	---	---	234.61	---	---	---	---	323.70
6.79	713,512	575.79	89.80 oc	---	---	---	---	249.07	---	---	---	---	338.88
6.86	721,891	575.86	90.51 oc	---	---	---	---	263.83	---	---	---	---	354.33
6.93	730,270	575.93	91.20 oc	---	---	---	---	278.86	---	---	---	---	370.06

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Lakeside Drive Development Pond

Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
7.00	738,649	576.00	91.90 oc	---	---	---	---	294.16	---	---	---	---	386.05

...End

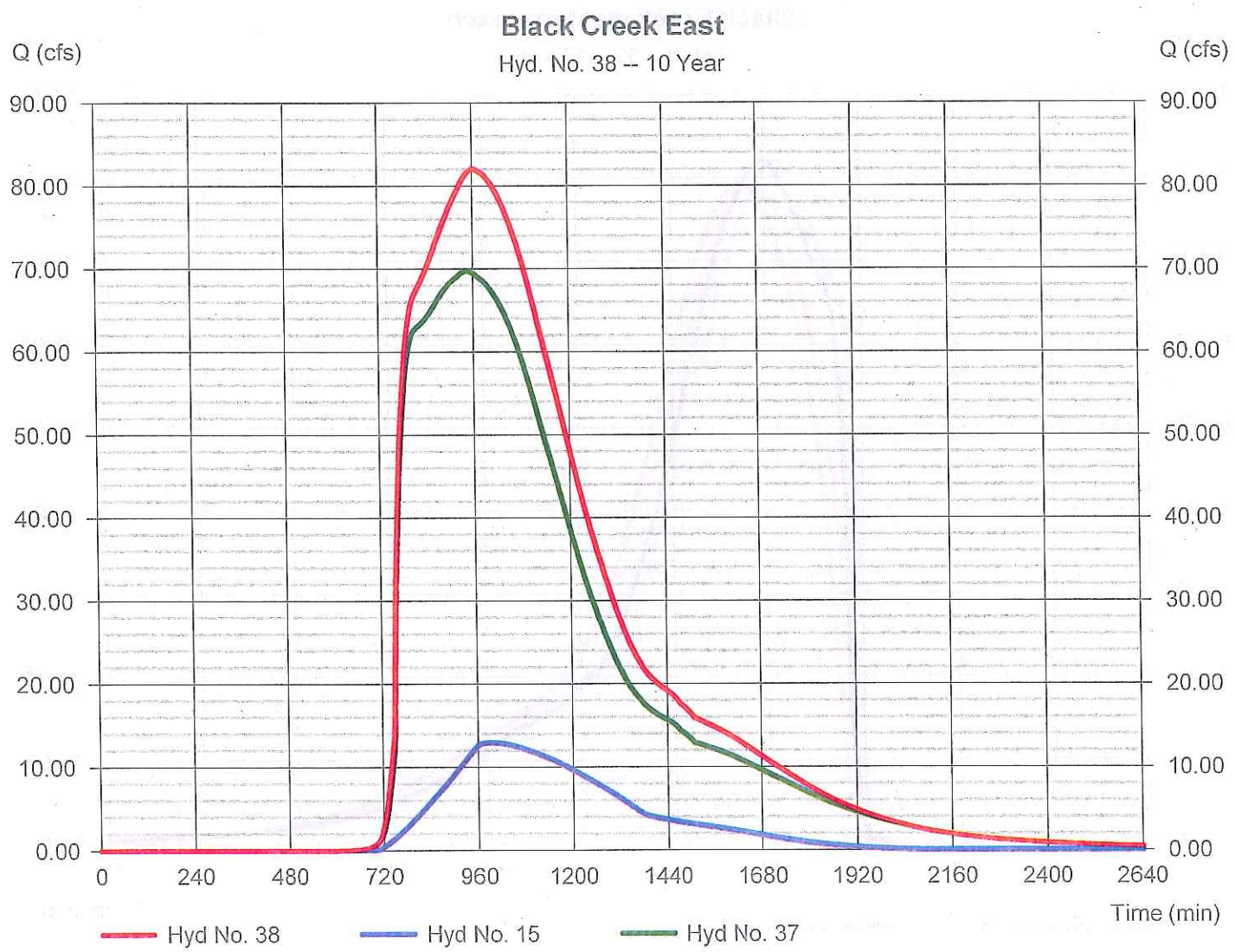
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2014 by Autodesk, Inc. v10.3 Thursday, 01 / 28 / 2016

Hyd. No. 38

Black Creek East

Hydrograph type	= Combine	Peak discharge	= 82.05 cfs
Storm frequency	= 10 yrs	Time to peak	= 962 min
Time interval	= 2 min	Hyd. volume	= 2,733,019 cuft
Inflow hyds.	= 15, 37	Contrib. drain. area	= 104.000 ac



Hydrograph Report

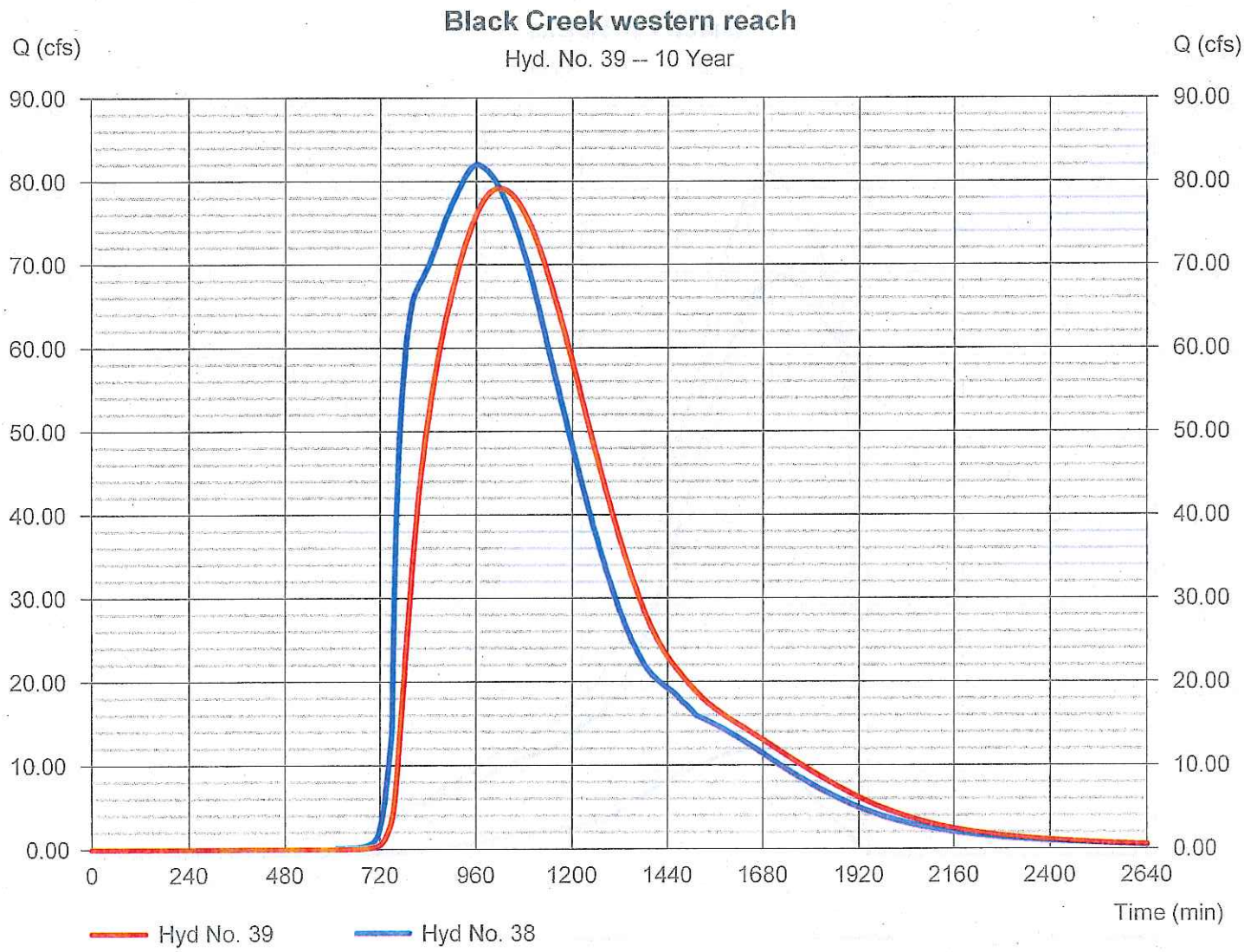
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2014 by Autodesk, Inc. v10.3 Thursday, 01 / 28 / 2016

Hyd. No. 39

Black Creek western reach

Hydrograph type	= Reach	Peak discharge	= 79.17 cfs
Storm frequency	= 10 yrs	Time to peak	= 1018 min
Time interval	= 2 min	Hyd. volume	= 2,732,949 cuft
Inflow hyd. No.	= 38 - Black Creek East	Section type	= Trapezoidal
Reach length	= 5000.0 ft	Channel slope	= 0.1 %
Manning's n	= 0.040	Bottom width	= 20.0 ft
Side slope	= 2.0:1	Max. depth	= 3.0 ft
Rating curve x	= 0.113	Rating curve m	= 1.504
Ave. velocity	= 0.00 ft/s	Routing coeff.	= 0.0364

Modified Att-Kin routing method used.



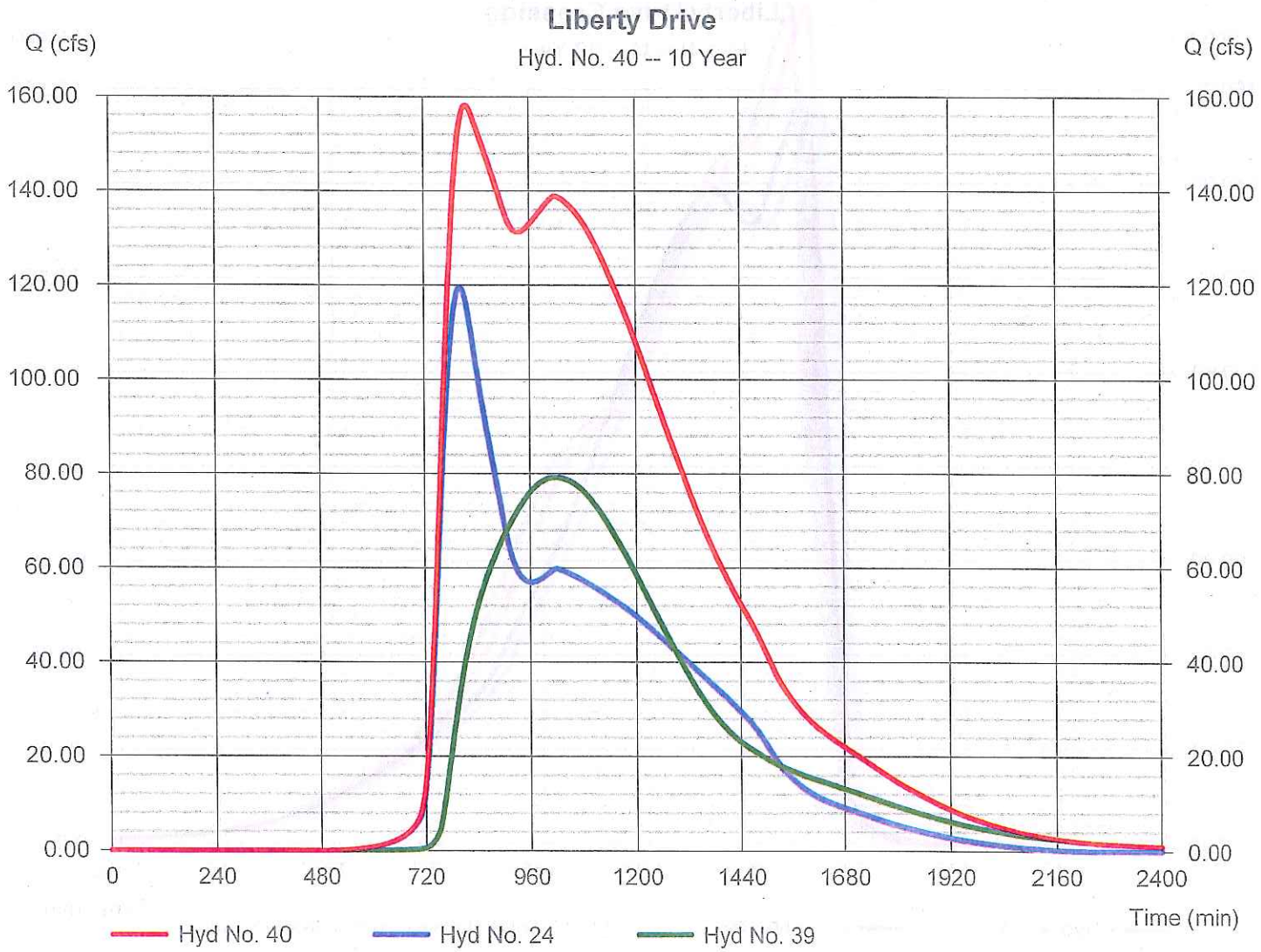
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2014 by Autodesk, Inc. v10.3 Thursday, 01 / 28 / 2016

Hyd. No. 40

Liberty Drive

Hydrograph type	= Combine	Peak discharge	= 158.16 cfs
Storm frequency	= 10 yrs	Time to peak	= 816 min
Time interval	= 2 min	Hyd. volume	= 5,628,976 cuft
Inflow hyds.	= 24, 39	Contrib. drain. area	= 0.000 ac



Hydrograph Report

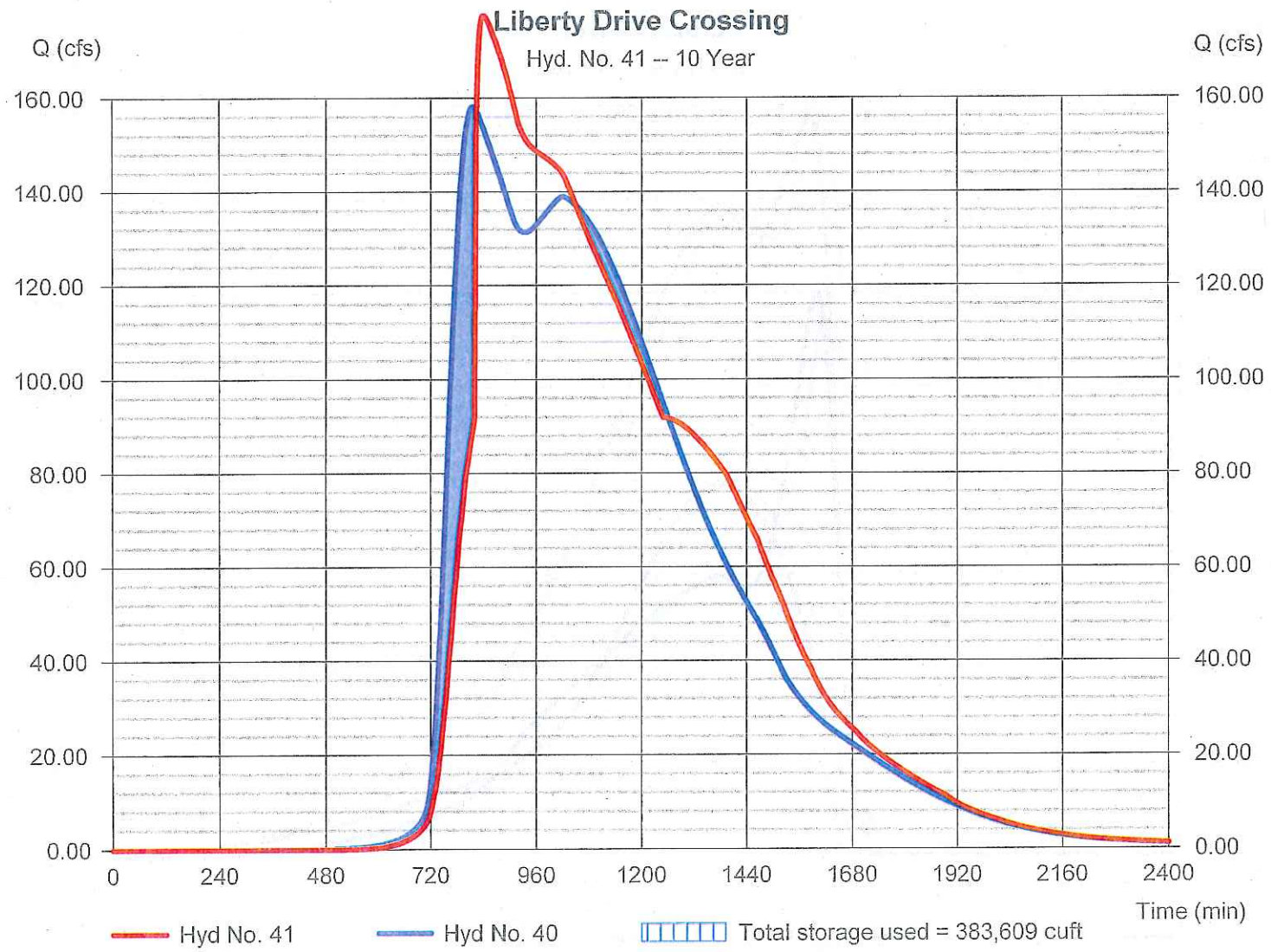
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2014 by Autodesk, Inc. v10.3 Thursday, 01 / 28 / 2016

Hyd. No. 41

Liberty Drive Crossing

Hydrograph type	= Reservoir	Peak discharge	= 177.53 cfs
Storm frequency	= 10 yrs	Time to peak	= 840 min
Time interval	= 2 min	Hyd. volume	= 5,813,346 cuft
Inflow hyd. No.	= 40 - Liberty Drive	Max. Elevation	= 573.74 ft
Reservoir name	= Impoundment area (Liberty Drive)	Max. Storage	= 383,609 cuft

Storage Indication method used.



Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2014 by Autodesk, Inc. v10.3 Thursday, 01 / 28 / 2016

Pond No. 3 - Impoundment area (Liberty Drive)

Pond Data

Contours -User-defined contour areas. Conic method used for volume calculation. Begining Elevation = 566.70 ft

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	566.70	10,000	0	0
1.00	567.70	20,000	14,713	14,713
2.00	568.70	30,000	24,829	39,542
3.00	569.70	40,000	34,877	74,419
4.00	570.70	50,000	44,903	119,321
5.00	571.70	60,000	54,919	174,240
6.00	572.70	100,000	79,145	253,385
7.00	573.70	150,000	124,146	377,531
8.00	574.70	175,000	162,323	539,854
9.00	575.70	200,000	187,342	727,196

Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 83.00	0.00	0.00	0.00
Span (in)	= 128.00	0.00	0.00	0.00
No. Barrels	= 1	0	0	0
Invert El. (ft)	= 566.70	0.00	0.00	0.00
Length (ft)	= 40.00	0.00	0.00	0.00
Slope (%)	= 0.10	0.00	0.00	n/a
N-Value	= .024	.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)	= 0.00	0.00	0.00	0.00
Crest El. (ft)	= 0.00	0.00	0.00	0.00
Weir Coeff.	= 3.33	3.33	3.33	3.33
Weir Type	= ---	---	---	---
Multi-Stage	= No	No	No	No

Exfil.(in/hr) = 0.000 (by Wet area)
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).

Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
0.00	0	566.70	0.00	---	---	---	---	---	---	---	---	---	0.000
0.10	1,471	566.80	0.43 oc	---	---	---	---	---	---	---	---	---	0.426
0.20	2,943	566.90	1.25 oc	---	---	---	---	---	---	---	---	---	1.252
0.30	4,414	567.00	2.28 oc	---	---	---	---	---	---	---	---	---	2.281
0.40	5,885	567.10	3.43 oc	---	---	---	---	---	---	---	---	---	3.427
0.50	7,356	567.20	4.64 oc	---	---	---	---	---	---	---	---	---	4.645
0.60	8,828	567.30	5.91 oc	---	---	---	---	---	---	---	---	---	5.908
0.70	10,299	567.40	7.20 oc	---	---	---	---	---	---	---	---	---	7.203
0.80	11,770	567.50	8.52 oc	---	---	---	---	---	---	---	---	---	8.517
0.90	13,241	567.60	9.85 oc	---	---	---	---	---	---	---	---	---	9.847
1.00	14,713	567.70	11.19 oc	---	---	---	---	---	---	---	---	---	11.19
1.10	17,195	567.80	12.54 oc	---	---	---	---	---	---	---	---	---	12.54
1.20	19,678	567.90	13.89 oc	---	---	---	---	---	---	---	---	---	13.89
1.30	22,161	568.00	15.24 oc	---	---	---	---	---	---	---	---	---	15.24
1.40	24,644	568.10	16.60 oc	---	---	---	---	---	---	---	---	---	16.60
1.50	27,127	568.20	17.97 oc	---	---	---	---	---	---	---	---	---	17.97
1.60	29,610	568.30	19.33 oc	---	---	---	---	---	---	---	---	---	19.33
1.70	32,093	568.40	20.69 oc	---	---	---	---	---	---	---	---	---	20.69
1.80	34,576	568.50	22.06 oc	---	---	---	---	---	---	---	---	---	22.06
1.90	37,059	568.60	23.42 oc	---	---	---	---	---	---	---	---	---	23.42
2.00	39,542	568.70	24.79 oc	---	---	---	---	---	---	---	---	---	24.79
2.10	43,029	568.80	26.16 oc	---	---	---	---	---	---	---	---	---	26.16
2.20	46,517	568.90	27.53 oc	---	---	---	---	---	---	---	---	---	27.53
2.30	50,005	569.00	28.90 oc	---	---	---	---	---	---	---	---	---	28.90
2.40	53,492	569.10	30.27 oc	---	---	---	---	---	---	---	---	---	30.27
2.50	56,980	569.20	31.63 oc	---	---	---	---	---	---	---	---	---	31.63
2.60	60,468	569.30	33.00 oc	---	---	---	---	---	---	---	---	---	33.00
2.70	63,956	569.40	34.37 oc	---	---	---	---	---	---	---	---	---	34.37
2.80	67,443	569.50	35.74 oc	---	---	---	---	---	---	---	---	---	35.74
2.90	70,931	569.60	37.11 oc	---	---	---	---	---	---	---	---	---	37.11
3.00	74,419	569.70	38.48 oc	---	---	---	---	---	---	---	---	---	38.48

Continues on next page...

Impoundment area (Liberty Drive)

Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
3.10	78,909	569.80	39.85 oc	---	---	---	---	---	---	---	---	---	39.85
3.20	83,399	569.90	41.22 oc	---	---	---	---	---	---	---	---	---	41.22
3.30	87,889	570.00	42.58 oc	---	---	---	---	---	---	---	---	---	42.58
3.40	92,380	570.10	43.95 oc	---	---	---	---	---	---	---	---	---	43.95
3.50	96,870	570.20	45.32 oc	---	---	---	---	---	---	---	---	---	45.32
3.60	101,360	570.30	46.69 oc	---	---	---	---	---	---	---	---	---	46.69
3.70	105,850	570.40	48.06 oc	---	---	---	---	---	---	---	---	---	48.06
3.80	110,341	570.50	49.42 oc	---	---	---	---	---	---	---	---	---	49.42
3.90	114,831	570.60	50.79 oc	---	---	---	---	---	---	---	---	---	50.79
4.00	119,321	570.70	52.16 oc	---	---	---	---	---	---	---	---	---	52.16
4.10	124,813	570.80	53.53 oc	---	---	---	---	---	---	---	---	---	53.53
4.20	130,305	570.90	54.90 oc	---	---	---	---	---	---	---	---	---	54.90
4.30	135,797	571.00	56.27 oc	---	---	---	---	---	---	---	---	---	56.27
4.40	141,289	571.10	57.63 oc	---	---	---	---	---	---	---	---	---	57.63
4.50	146,781	571.20	59.00 oc	---	---	---	---	---	---	---	---	---	59.00
4.60	152,272	571.30	60.37 oc	---	---	---	---	---	---	---	---	---	60.37
4.70	157,764	571.40	61.74 oc	---	---	---	---	---	---	---	---	---	61.74
4.80	163,256	571.50	63.10 oc	---	---	---	---	---	---	---	---	---	63.10
4.90	168,748	571.60	64.47 oc	---	---	---	---	---	---	---	---	---	64.47
5.00	174,240	571.70	65.84 oc	---	---	---	---	---	---	---	---	---	65.84
5.10	182,154	571.80	67.21 oc	---	---	---	---	---	---	---	---	---	67.21
5.20	190,069	571.90	68.57 oc	---	---	---	---	---	---	---	---	---	68.57
5.30	197,983	572.00	69.94 oc	---	---	---	---	---	---	---	---	---	69.94
5.40	205,898	572.10	71.31 oc	---	---	---	---	---	---	---	---	---	71.31
5.50	213,813	572.20	72.68 oc	---	---	---	---	---	---	---	---	---	72.68
5.60	221,727	572.30	74.04 oc	---	---	---	---	---	---	---	---	---	74.04
5.70	229,642	572.40	75.41 oc	---	---	---	---	---	---	---	---	---	75.41
5.80	237,556	572.50	76.78 oc	---	---	---	---	---	---	---	---	---	76.78
5.90	245,471	572.60	78.14 oc	---	---	---	---	---	---	---	---	---	78.14
6.00	253,385	572.70	79.51 oc	---	---	---	---	---	---	---	---	---	79.51
6.10	265,800	572.80	80.88 oc	---	---	---	---	---	---	---	---	---	80.88
6.20	278,214	572.90	82.25 oc	---	---	---	---	---	---	---	---	---	82.25
6.30	290,629	573.00	83.61 oc	---	---	---	---	---	---	---	---	---	83.61
6.40	303,043	573.10	84.98 oc	---	---	---	---	---	---	---	---	---	84.98
6.50	315,458	573.20	86.35 oc	---	---	---	---	---	---	---	---	---	86.35
6.60	327,873	573.30	87.71 oc	---	---	---	---	---	---	---	---	---	87.71
6.70	340,287	573.40	89.08 oc	---	---	---	---	---	---	---	---	---	89.08
6.80	352,702	573.50	90.44 oc	---	---	---	---	---	---	---	---	---	90.44
6.90	365,116	573.60	91.81 oc	---	---	---	---	---	---	---	---	---	91.81
7.00	377,531	573.70	157.19 oc	---	---	---	---	---	---	---	---	---	157.19
7.10	393,763	573.80	211.52 oc	---	---	---	---	---	---	---	---	---	211.52
7.20	409,996	573.90	254.51 oc	---	---	---	---	---	---	---	---	---	254.51
7.30	426,228	574.00	291.22 oc	---	---	---	---	---	---	---	---	---	291.22
7.40	442,460	574.10	323.79 oc	---	---	---	---	---	---	---	---	---	323.79
7.50	458,692	574.20	353.37 oc	---	---	---	---	---	---	---	---	---	353.37
7.60	474,925	574.30	380.66 oc	---	---	---	---	---	---	---	---	---	380.66
7.70	491,157	574.40	406.13 oc	---	---	---	---	---	---	---	---	---	406.13
7.80	507,389	574.50	430.08 oc	---	---	---	---	---	---	---	---	---	430.08
7.90	523,622	574.60	452.77 oc	---	---	---	---	---	---	---	---	---	452.77
8.00	539,854	574.70	474.43 oc	---	---	---	---	---	---	---	---	---	474.43
8.10	558,588	574.80	495.09 oc	---	---	---	---	---	---	---	---	---	495.09
8.20	577,323	574.90	514.93 oc	---	---	---	---	---	---	---	---	---	514.93
8.30	596,057	575.00	534.03 oc	---	---	---	---	---	---	---	---	---	534.03
8.40	614,791	575.10	552.46 oc	---	---	---	---	---	---	---	---	---	552.46
8.50	633,525	575.20	570.31 oc	---	---	---	---	---	---	---	---	---	570.31
8.60	652,260	575.30	587.61 oc	---	---	---	---	---	---	---	---	---	587.61
8.70	670,994	575.40	604.41 oc	---	---	---	---	---	---	---	---	---	604.41
8.80	689,728	575.50	620.76 oc	---	---	---	---	---	---	---	---	---	620.76
8.90	708,462	575.60	636.70 oc	---	---	---	---	---	---	---	---	---	636.70
9.00	727,196	575.70	652.28 oc	---	---	---	---	---	---	---	---	---	652.28

...End

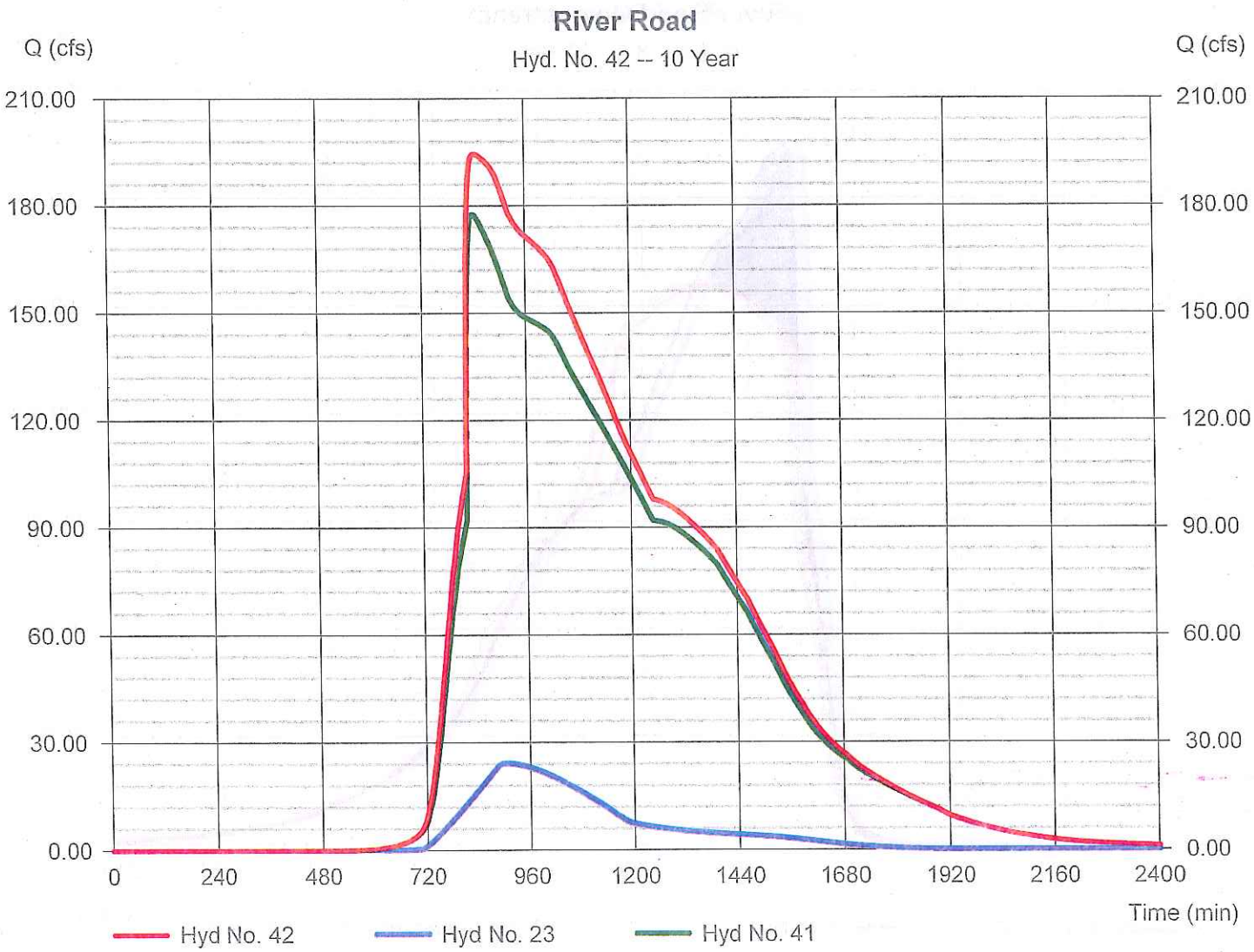
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2014 by Autodesk, Inc. v10.3 Thursday, 01 / 28 / 2016

Hyd. No. 42

River Road

Hydrograph type	= Combine	Peak discharge	= 194.44 cfs
Storm frequency	= 10 yrs	Time to peak	= 844 min
Time interval	= 2 min	Hyd. volume	= 6,384,224 cuft
Inflow hyds.	= 23, 41	Contrib. drain. area	= 148.000 ac



Hydrograph Report

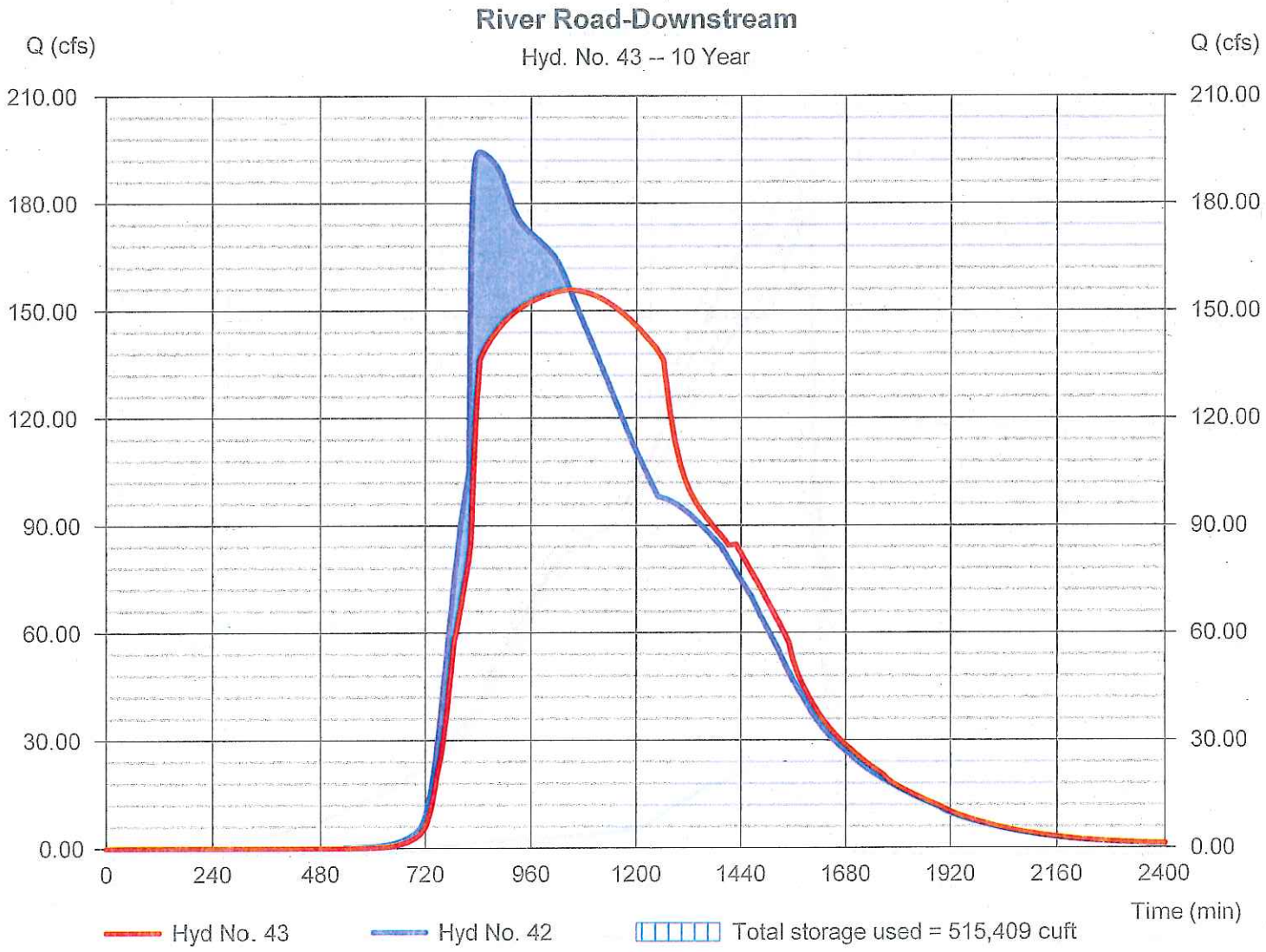
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2014 by Autodesk, Inc. v10.3 Thursday, 01 / 28 / 2016

Hyd. No. 43

River Road-Downstream

Hydrograph type	= Reservoir	Peak discharge	= 155.83 cfs
Storm frequency	= 10 yrs	Time to peak	= 1048 min
Time interval	= 2 min	Hyd. volume	= 6,384,199 cuft
Inflow hyd. No.	= 42 - River Road	Max. Elevation	= 570.73 ft
Reservoir name	= Impoundment area (River Road)	Max. Storage	= 515,409 cuft

Storage Indication method used.



Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2014 by Autodesk, Inc. v10.3 Thursday, 01 / 28 / 2016

Pond No. 4 - Impoundment area (River Road)

Pond Data

Contours -User-defined contour areas. Conic method used for volume calculation. Begining Elevation = 566.00 ft

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	566.00	10,000	0	0
1.00	567.00	20,000	14,713	14,713
2.00	568.00	50,000	33,871	48,583
3.00	569.00	75,000	62,073	110,656
4.00	570.00	100,000	87,192	197,848
5.00	571.00	900,000	433,290	631,138
6.00	572.00	1,300,000	1,093,780	1,724,918
7.00	573.00	1,350,000	1,324,789	3,049,707
8.00	574.00	1,500,000	1,424,199	4,473,906
9.00	575.00	1,600,000	1,549,576	6,023,482
10.00	576.00	18,000,000	8,321,358	14,344,840

Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 36.00	0.00	0.00	0.00
Span (in)	= 72.00	0.00	0.00	0.00
No. Barrels	= 1	0	0	0
Invert El. (ft)	= 566.00	0.00	0.00	0.00
Length (ft)	= 50.00	0.00	0.00	0.00
Slope (%)	= 1.25	0.00	0.00	n/a
N-Value	= .015	.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)	= 0.00	Inactive	0.00	0.00
Crest El. (ft)	= 0.00	575.00	0.00	0.00
Weir Coeff.	= 3.33	2.60	3.33	3.33
Weir Type	= ---	Broad	---	---
Multi-Stage	= No	No	No	No

Exfil.(in/hr) = 0.000 (by Wet area)
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).

Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
0.00	0	566.00	0.00	---	---	---	---	0.00	---	---	---	---	0.000
0.10	1,471	566.10	0.65 ic	---	---	---	---	0.00	---	---	---	---	0.646
0.20	2,943	566.20	1.83 ic	---	---	---	---	0.00	---	---	---	---	1.826
0.30	4,414	566.30	3.36 ic	---	---	---	---	0.00	---	---	---	---	3.355
0.40	5,885	566.40	5.17 ic	---	---	---	---	0.00	---	---	---	---	5.166
0.50	7,356	566.50	7.22 ic	---	---	---	---	0.00	---	---	---	---	7.220
0.60	8,828	566.60	9.49 ic	---	---	---	---	0.00	---	---	---	---	9.491
0.70	10,299	566.70	11.96 ic	---	---	---	---	0.00	---	---	---	---	11.96
0.80	11,770	566.80	14.61 ic	---	---	---	---	0.00	---	---	---	---	14.61
0.90	13,241	566.90	17.44 ic	---	---	---	---	0.00	---	---	---	---	17.44
1.00	14,713	567.00	20.43 ic	---	---	---	---	0.00	---	---	---	---	20.43
1.10	18,100	567.10	23.57 ic	---	---	---	---	0.00	---	---	---	---	23.57
1.20	21,487	567.20	26.85 ic	---	---	---	---	0.00	---	---	---	---	26.85
1.30	24,874	567.30	30.28 ic	---	---	---	---	0.00	---	---	---	---	30.28
1.40	28,261	567.40	33.84 ic	---	---	---	---	0.00	---	---	---	---	33.84
1.50	31,648	567.50	37.52 ic	---	---	---	---	0.00	---	---	---	---	37.52
1.60	35,035	567.60	41.34 ic	---	---	---	---	0.00	---	---	---	---	41.34
1.70	38,422	567.70	45.27 ic	---	---	---	---	0.00	---	---	---	---	45.27
1.80	41,809	567.80	49.33 ic	---	---	---	---	0.00	---	---	---	---	49.33
1.90	45,196	567.90	53.49 ic	---	---	---	---	0.00	---	---	---	---	53.49
2.00	48,583	568.00	57.45 oc	---	---	---	---	0.00	---	---	---	---	57.45
2.10	54,791	568.10	60.49 oc	---	---	---	---	0.00	---	---	---	---	60.49
2.20	60,998	568.20	63.53 oc	---	---	---	---	0.00	---	---	---	---	63.53
2.30	67,205	568.30	66.57 oc	---	---	---	---	0.00	---	---	---	---	66.57
2.40	73,413	568.40	69.61 oc	---	---	---	---	0.00	---	---	---	---	69.61
2.50	79,620	568.50	72.64 oc	---	---	---	---	0.00	---	---	---	---	72.64
2.60	85,827	568.60	75.68 oc	---	---	---	---	0.00	---	---	---	---	75.68
2.70	92,034	568.70	78.72 oc	---	---	---	---	0.00	---	---	---	---	78.72
2.80	98,242	568.80	81.76 oc	---	---	---	---	0.00	---	---	---	---	81.76
2.90	104,449	568.90	84.79 oc	---	---	---	---	0.00	---	---	---	---	84.79

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Impoundment area (River Road)

Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
3.00	110,656	569.00	84.50 oc	---	---	---	---	0.00	---	---	---	---	84.50
3.10	119,376	569.10	91.01 oc	---	---	---	---	0.00	---	---	---	---	91.01
3.20	128,095	569.20	97.08 oc	---	---	---	---	0.00	---	---	---	---	97.08
3.30	136,814	569.30	102.80 oc	---	---	---	---	0.00	---	---	---	---	102.80
3.40	145,533	569.40	108.21 oc	---	---	---	---	0.00	---	---	---	---	108.21
3.50	154,252	569.50	113.37 oc	---	---	---	---	0.00	---	---	---	---	113.37
3.60	162,972	569.60	118.30 oc	---	---	---	---	0.00	---	---	---	---	118.30
3.70	171,691	569.70	123.03 oc	---	---	---	---	0.00	---	---	---	---	123.03
3.80	180,410	569.80	127.59 oc	---	---	---	---	0.00	---	---	---	---	127.59
3.90	189,129	569.90	131.99 oc	---	---	---	---	0.00	---	---	---	---	131.99
4.00	197,848	570.00	136.26 oc	---	---	---	---	0.00	---	---	---	---	136.26
4.10	241,177	570.10	139.75 ic	---	---	---	---	0.00	---	---	---	---	139.75
4.20	284,506	570.20	142.41 ic	---	---	---	---	0.00	---	---	---	---	142.41
4.30	327,835	570.30	145.02 ic	---	---	---	---	0.00	---	---	---	---	145.02
4.40	371,164	570.40	147.59 ic	---	---	---	---	0.00	---	---	---	---	147.59
4.50	414,493	570.50	150.11 ic	---	---	---	---	0.00	---	---	---	---	150.11
4.60	457,822	570.60	152.59 ic	---	---	---	---	0.00	---	---	---	---	152.59
4.70	501,151	570.70	155.04 ic	---	---	---	---	0.00	---	---	---	---	155.04
4.80	544,480	570.80	157.44 ic	---	---	---	---	0.00	---	---	---	---	157.44
4.90	587,809	570.90	159.81 ic	---	---	---	---	0.00	---	---	---	---	159.81
5.00	631,138	571.00	162.14 ic	---	---	---	---	0.00	---	---	---	---	162.14
5.10	740,516	571.10	164.44 ic	---	---	---	---	0.00	---	---	---	---	164.44
5.20	849,894	571.20	166.71 ic	---	---	---	---	0.00	---	---	---	---	166.71
5.30	959,272	571.30	168.95 ic	---	---	---	---	0.00	---	---	---	---	168.95
5.40	1,068,650	571.40	171.16 ic	---	---	---	---	0.00	---	---	---	---	171.16
5.50	1,178,028	571.50	173.34 ic	---	---	---	---	0.00	---	---	---	---	173.34
5.60	1,287,406	571.60	175.49 ic	---	---	---	---	0.00	---	---	---	---	175.49
5.70	1,396,784	571.70	177.62 ic	---	---	---	---	0.00	---	---	---	---	177.62
5.80	1,506,162	571.80	179.72 ic	---	---	---	---	0.00	---	---	---	---	179.72
5.90	1,615,539	571.90	181.80 ic	---	---	---	---	0.00	---	---	---	---	181.80
6.00	1,724,918	572.00	183.85 ic	---	---	---	---	0.00	---	---	---	---	183.85
6.10	1,857,396	572.10	185.89 ic	---	---	---	---	0.00	---	---	---	---	185.89
6.20	1,989,875	572.20	187.89 ic	---	---	---	---	0.00	---	---	---	---	187.89
6.30	2,122,354	572.30	189.88 ic	---	---	---	---	0.00	---	---	---	---	189.88
6.40	2,254,833	572.40	191.85 ic	---	---	---	---	0.00	---	---	---	---	191.85
6.50	2,387,312	572.50	193.80 ic	---	---	---	---	0.00	---	---	---	---	193.80
6.60	2,519,791	572.60	195.72 ic	---	---	---	---	0.00	---	---	---	---	195.72
6.70	2,652,270	572.70	197.63 ic	---	---	---	---	0.00	---	---	---	---	197.63
6.80	2,784,749	572.80	199.52 ic	---	---	---	---	0.00	---	---	---	---	199.52
6.90	2,917,228	572.90	201.40 ic	---	---	---	---	0.00	---	---	---	---	201.40
7.00	3,049,707	573.00	203.26 ic	---	---	---	---	0.00	---	---	---	---	203.26
7.10	3,192,127	573.10	205.10 ic	---	---	---	---	0.00	---	---	---	---	205.10
7.20	3,334,547	573.20	206.92 ic	---	---	---	---	0.00	---	---	---	---	206.92
7.30	3,476,967	573.30	208.73 ic	---	---	---	---	0.00	---	---	---	---	208.73
7.40	3,619,387	573.40	210.52 ic	---	---	---	---	0.00	---	---	---	---	210.52
7.50	3,761,807	573.50	212.29 ic	---	---	---	---	0.00	---	---	---	---	212.29
7.60	3,904,227	573.60	214.06 ic	---	---	---	---	0.00	---	---	---	---	214.06
7.70	4,046,647	573.70	215.80 ic	---	---	---	---	0.00	---	---	---	---	215.80
7.80	4,189,067	573.80	217.54 ic	---	---	---	---	0.00	---	---	---	---	217.54
7.90	4,331,487	573.90	219.25 ic	---	---	---	---	0.00	---	---	---	---	219.25
8.00	4,473,906	574.00	220.96 ic	---	---	---	---	0.00	---	---	---	---	220.96
8.10	4,628,864	574.10	222.66 ic	---	---	---	---	0.00	---	---	---	---	222.66
8.20	4,783,821	574.20	224.34 ic	---	---	---	---	0.00	---	---	---	---	224.34
8.30	4,938,779	574.30	226.01 ic	---	---	---	---	0.00	---	---	---	---	226.01
8.40	5,093,736	574.40	227.66 ic	---	---	---	---	0.00	---	---	---	---	227.66
8.50	5,248,694	574.50	229.30 ic	---	---	---	---	0.00	---	---	---	---	229.30
8.60	5,403,651	574.60	230.94 ic	---	---	---	---	0.00	---	---	---	---	230.94
8.70	5,558,609	574.70	232.56 ic	---	---	---	---	0.00	---	---	---	---	232.56
8.80	5,713,566	574.80	234.17 ic	---	---	---	---	0.00	---	---	---	---	234.17
8.90	5,868,524	574.90	235.76 ic	---	---	---	---	0.00	---	---	---	---	235.76
9.00	6,023,482	575.00	237.35 ic	---	---	---	---	0.00	---	---	---	---	237.35
9.10	6,855,618	575.10	238.93 ic	---	---	---	---	0.00	---	---	---	---	238.93
9.20	7,687,753	575.20	240.50 ic	---	---	---	---	0.00	---	---	---	---	240.50
9.30	8,519,889	575.30	242.05 ic	---	---	---	---	0.00	---	---	---	---	242.05
9.40	9,352,025	575.40	243.60 ic	---	---	---	---	0.00	---	---	---	---	243.60
9.50	10,184,160	575.50	245.14 ic	---	---	---	---	0.00	---	---	---	---	245.14
9.60	11,016,300	575.60	246.66 ic	---	---	---	---	0.00	---	---	---	---	246.66
9.70	11,848,430	575.70	248.18 ic	---	---	---	---	0.00	---	---	---	---	248.18
9.80	12,680,570	575.80	249.69 ic	---	---	---	---	0.00	---	---	---	---	249.69
9.90	13,512,710	575.90	251.19 ic	---	---	---	---	0.00	---	---	---	---	251.19

Continues on next page...

Impoundment area (River Road)

Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
10.00	14,344,840	576.00	252.68 ic	---	---	---	---	0.00	---	---	---	---	252.68

...End

Hydrograph Summary Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2014 by Autodesk, Inc. v10.3

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	SCS Runoff	18.15	2	1086	698,775	------	------	------	SD-A1
2	SCS Runoff	24.99	2	850	449,319	------	------	------	SD-A2
3	SCS Runoff	141.45	2	878	2,920,046	------	------	------	SD-A3
4	SCS Runoff	34.95	2	914	841,429	------	------	------	SD-A5.1
5	SCS Runoff	357.95	2	728	1,456,218	------	------	------	SD-A5.2
6	SCS Runoff	377.81	2	738	1,836,361	------	------	------	SD-A5.3
7	SCS Runoff	58.46	2	976	1,726,974	------	------	------	SD-A4 /A6
8	SCS Runoff	25.07	2	790	289,358	------	------	------	BL-A1
9	SCS Runoff	22.43	2	942	597,046	------	------	------	BL-A2
10	Reach	19.64	2	840	289,331	8	------	------	BL-A1 reach
11	Combine	34.48	2	882	886,378	9, 10	------	------	BL-A1/A2
12	SCS Runoff	56.03	2	870	1,113,560	------	------	------	BL-A3
13	Reach	33.94	2	910	886,364	11	------	------	BL-A2 reach
14	SCS Runoff	194.63	2	750	1,262,690	------	------	------	BL-A4
15	SCS Runoff	19.05	2	984	576,767	------	------	------	BL-A5
16	Combine	690.77	2	732	4,134,009	4, 5, 6,	------	------	Wheatfield Lake outlet
17	Reservoir	16.66	2	1452	2,807,892	16	571.68	3,453,489	routed wheatfiled lk
18	SCS Runoff	101.79	2	786	1,111,719	------	------	------	BL-A6
19	SCS Runoff	92.52	2	756	666,996	------	------	------	BL-A7
20	SCS Runoff	64.77	2	1044	2,284,882	------	------	------	BL-A8
21	Reach	73.26	2	780	666,981	19	------	------	BL-A7 channel reach
22	Reach	90.97	2	814	1,111,705	18	------	------	BL-A6 Channel Reac
23	SCS Runoff	35.67	2	902	819,632	------	------	------	BL-A9
24	Combine	169.39	2	800	4,063,566	20, 21, 22,	------	------	Black Creek west
25	Reservoir	18.15	2	1090	698,772	1	575.30	8,637	<no description>
26	Reservoir	24.99	2	850	449,314	2	576.55	3,483	<no description>
27	Combine	31.36	2	880	1,148,088	25, 26	------	------	<no description>
28	Reach	30.37	2	960	1,148,060	27	------	------	Discharge to wilrose Lake
29	Combine	168.77	2	886	4,068,108	3, 28	------	------	<no description>
30	Reservoir	11.62	2	1672	2,838,127	29	574.55	8,507,575	Dischare Wilrose Lake
31	Reach	11.56	2	1830	2,787,695	30	------	------	southern drainage
32	Combine	63.37	2	994	4,514,672	7, 31	------	------	Ward Road
33	Reach	63.02	2	1038	4,481,947	32	------	------	Southern Drainage Extension

Hydrograph Summary Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2014 by Autodesk, Inc. v10.3

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
34	Combine	77.30	2	1050	7,284,998	17, 33	------	------	<no description>
35	Reservoir	77.28	2	1056	7,283,832	34	569.97	54,678	RIver Road Outlets
36	Combine	213.41	2	750	3,262,618	12, 13, 14,	------	------	Lakeside storm ponds
37	Reservoir	128.55	2	794	3,262,084	36	574.63	576,169	routed Lakeside ponds
38	Combine	134.03	2	794	3,838,849	15, 37	------	------	Black Creek East
39	Reach	118.27	2	950	3,838,794	38	------	------	Black Creek western reach
40	Combine	249.53	2	814	7,902,368	24, 39	------	------	Liberty Drive
41	Reservoir	286.74	2	820	8,115,534	40	573.99	424,248	Liberty Drive Crossing
42	Combine	307.94	2	822	8,935,170	23, 41	------	------	River Road
43	Reservoir	181.70	2	1112	8,935,161	42	571.90	1,610,684	River Road-Downstream

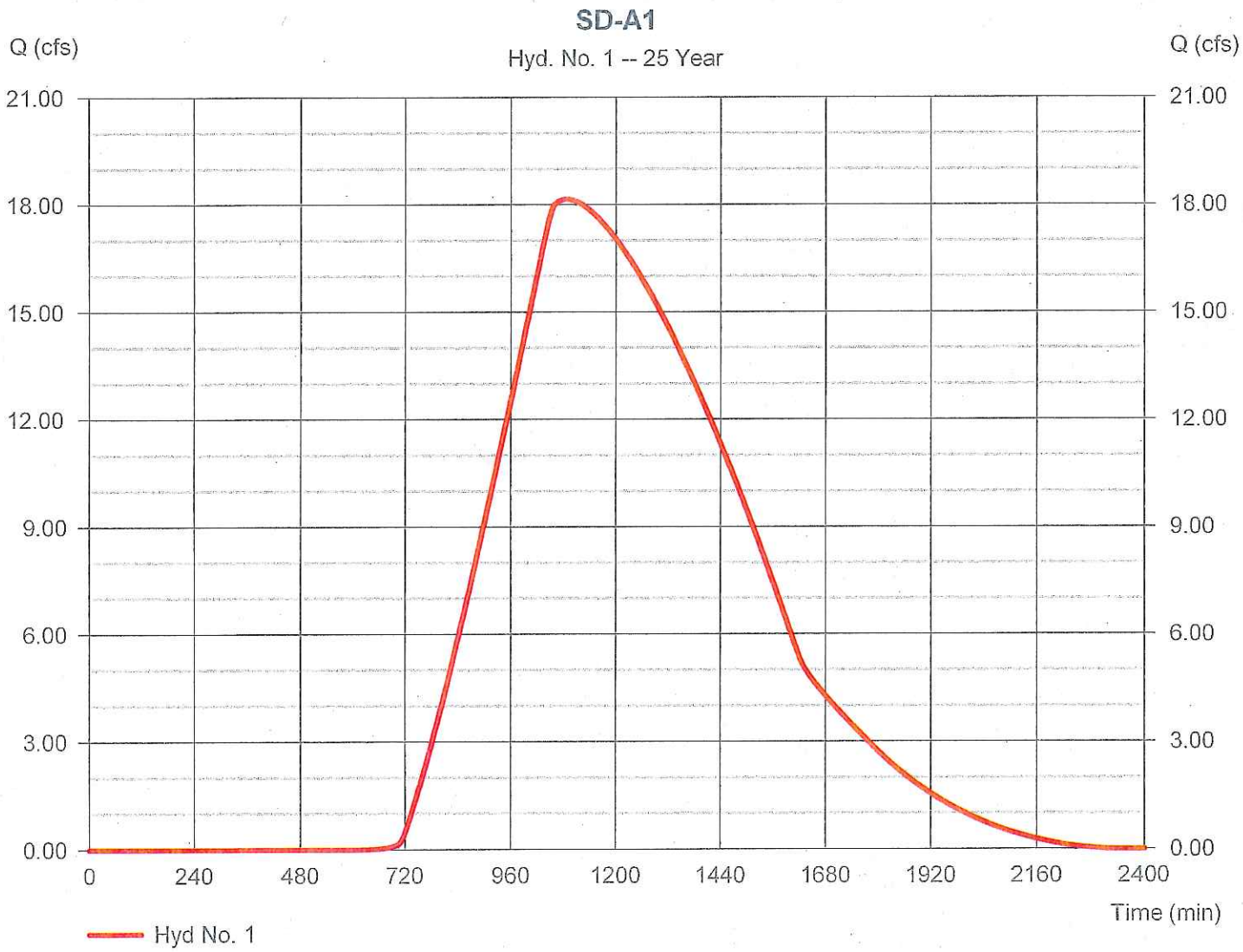
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2014 by Autodesk, Inc. v10.3 Thursday, 01 / 28 / 2016

Hyd. No. 1

SD-A1

Hydrograph type	= SCS Runoff	Peak discharge	= 18.15 cfs
Storm frequency	= 25 yrs	Time to peak	= 1086 min
Time interval	= 2 min	Hyd. volume	= 698,775 cuft
Drainage area	= 126.000 ac	Curve number	= 77
Basin Slope	= 0.0 %	Hydraulic length	= 4500 ft
Tc method	= LAG	Time of conc. (Tc)	= 580.91 min
Total precip.	= 3.63 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



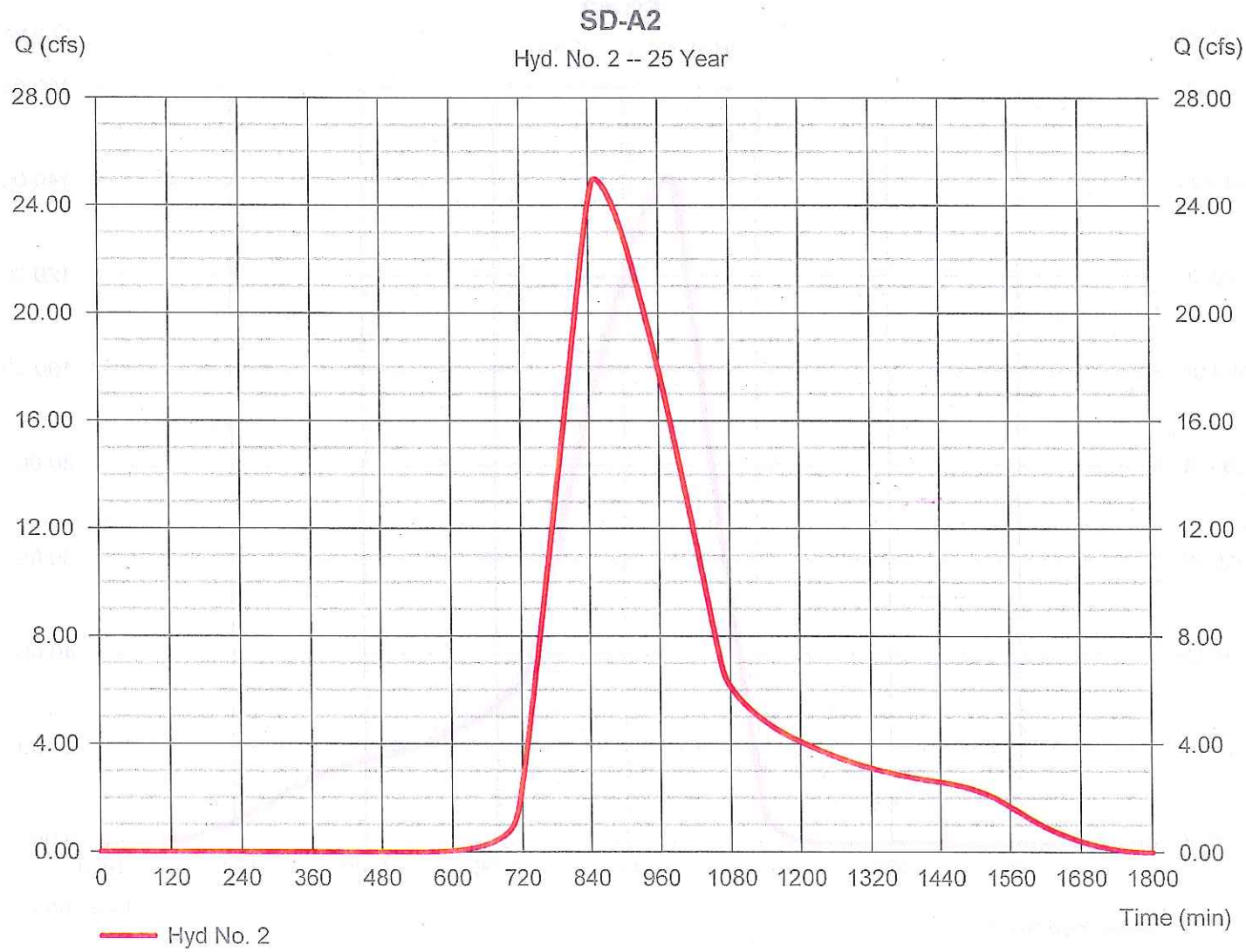
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2014 by Autodesk, Inc. v10.3 Thursday, 01 / 28 / 2016

Hyd. No. 2

SD-A2

Hydrograph type	= SCS Runoff	Peak discharge	= 24.99 cfs
Storm frequency	= 25 yrs	Time to peak	= 850 min
Time interval	= 2 min	Hyd. volume	= 449,319 cuft
Drainage area	= 71.000 ac	Curve number	= 80
Basin Slope	= 0.1 %	Hydraulic length	= 2000 ft
Tc method	= LAG	Time of conc. (Tc)	= 226.31 min
Total precip.	= 3.63 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



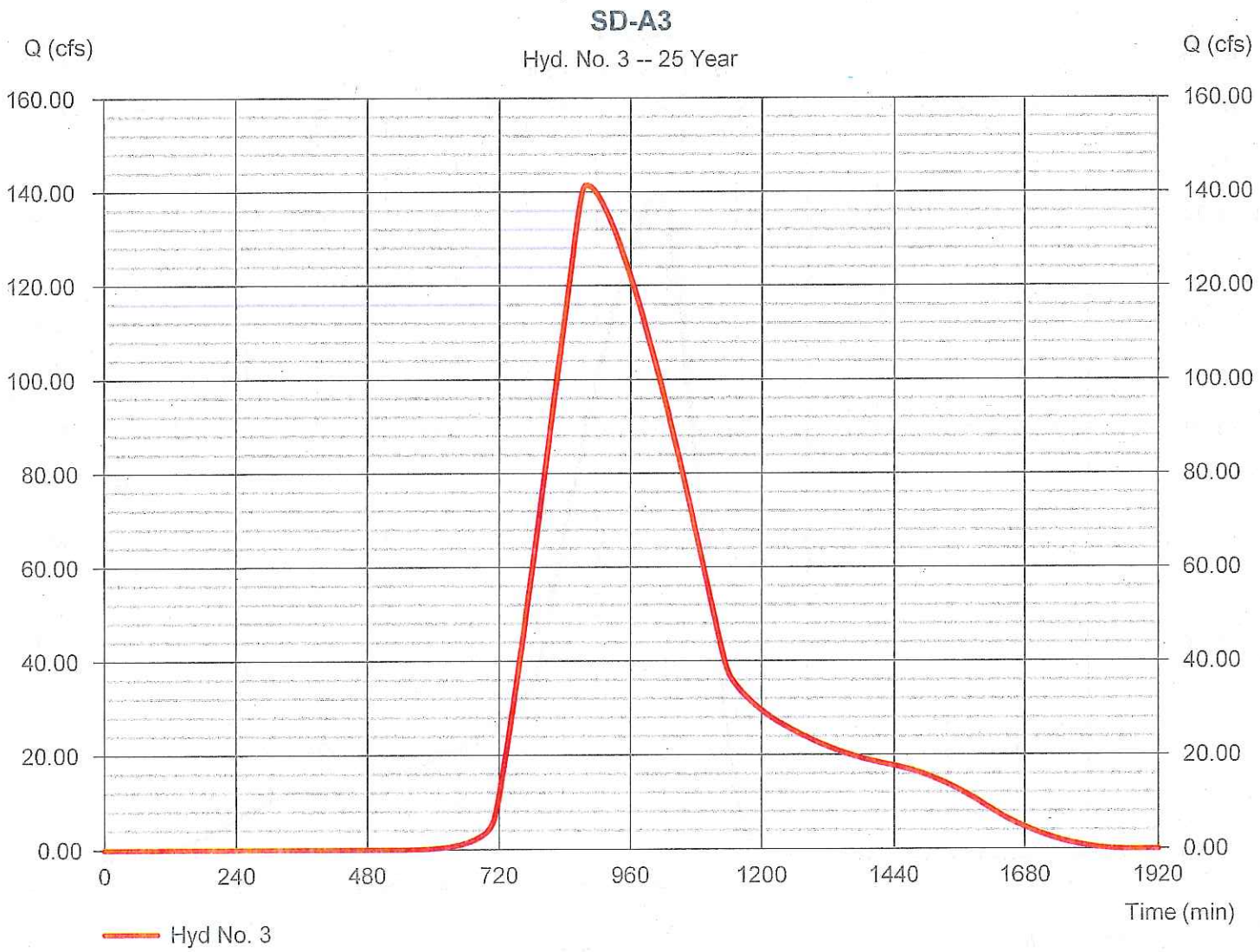
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2014 by Autodesk, Inc. v10.3 Thursday, 01 / 28 / 2016

Hyd. No. 3

SD-A3

Hydrograph type	= SCS Runoff	Peak discharge	= 141.45 cfs
Storm frequency	= 25 yrs	Time to peak	= 878 min
Time interval	= 2 min	Hyd. volume	= 2,920,046 cuft
Drainage area	= 463.000 ac	Curve number	= 80
Basin Slope	= 0.1 %	Hydraulic length	= 3200 ft
Tc method	= LAG	Time of conc. (Tc)	= 269.13 min
Total precip.	= 3.63 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



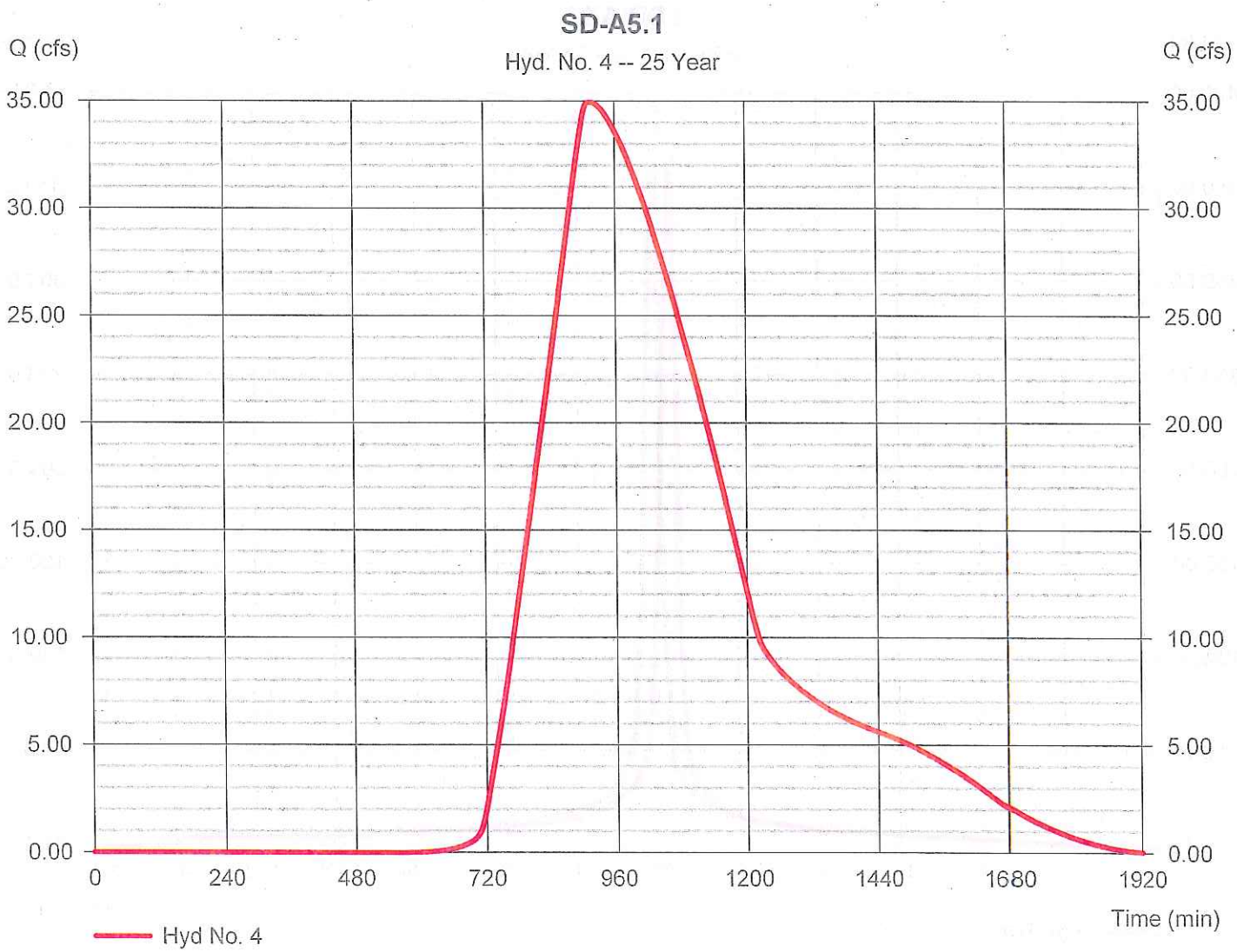
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2014 by Autodesk, Inc. v10.3 Thursday, 01 / 28 / 2016

Hyd. No. 4

SD-A5.1

Hydrograph type	= SCS Runoff	Peak discharge	= 34.95 cfs
Storm frequency	= 25 yrs	Time to peak	= 914 min
Time interval	= 2 min	Hyd. volume	= 841,429 cuft
Drainage area	= 139.000 ac	Curve number	= 79
Basin Slope	= 0.1 %	Hydraulic length	= 3000 ft
Tc method	= LAG	Time of conc. (Tc)	= 322.87 min
Total precip.	= 3.63 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



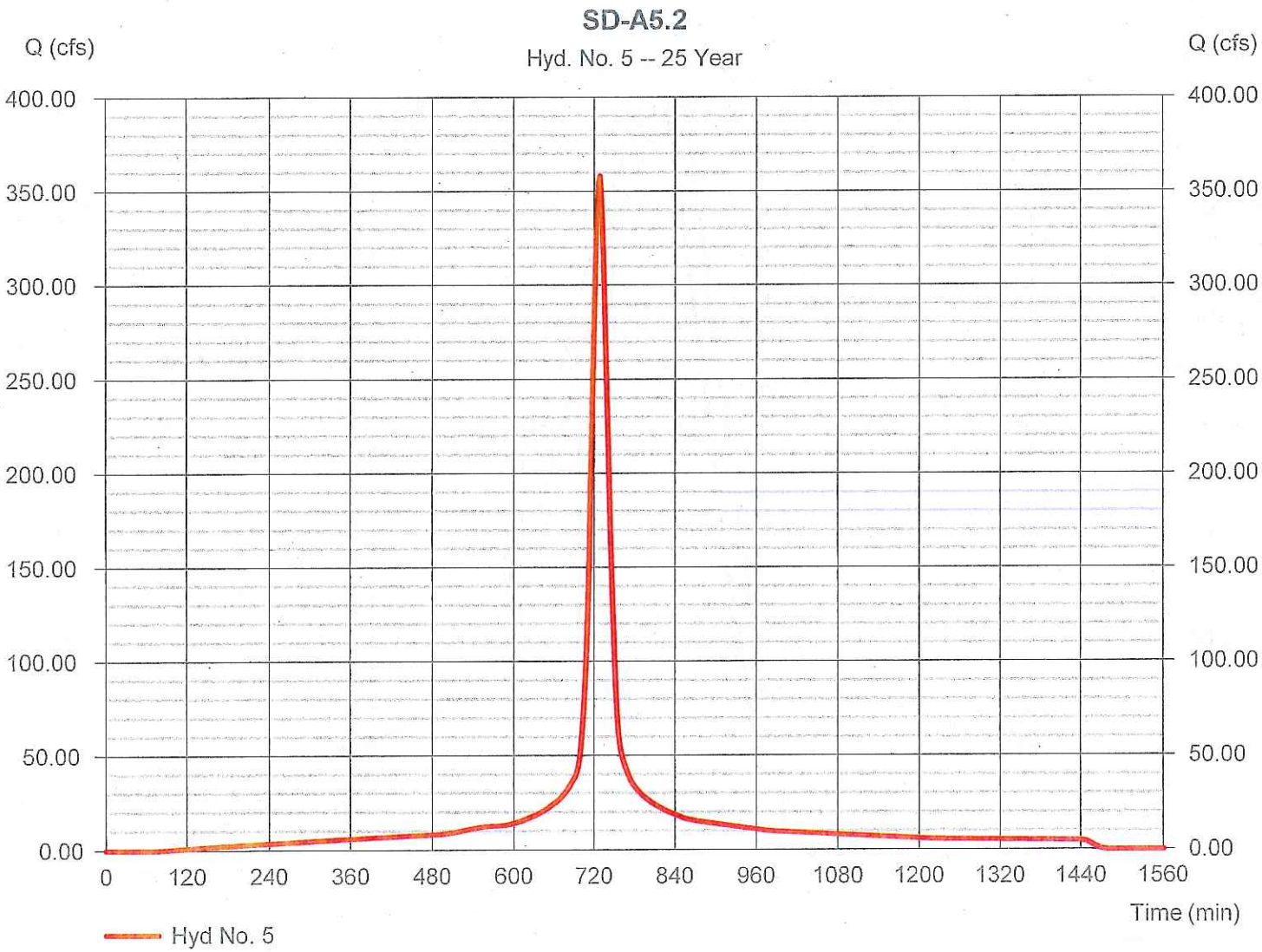
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2014 by Autodesk, Inc. v10.3 Thursday, 01 / 28 / 2016

Hyd. No. 5

SD-A5.2

Hydrograph type	= SCS Runoff	Peak discharge	= 357.95 cfs
Storm frequency	= 25 yrs	Time to peak	= 728 min
Time interval	= 2 min	Hyd. volume	= 1,456,218 cuft
Drainage area	= 120.000 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 100 ft
Tc method	= LAG	Time of conc. (Tc)	= 23.91 min
Total precip.	= 3.63 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



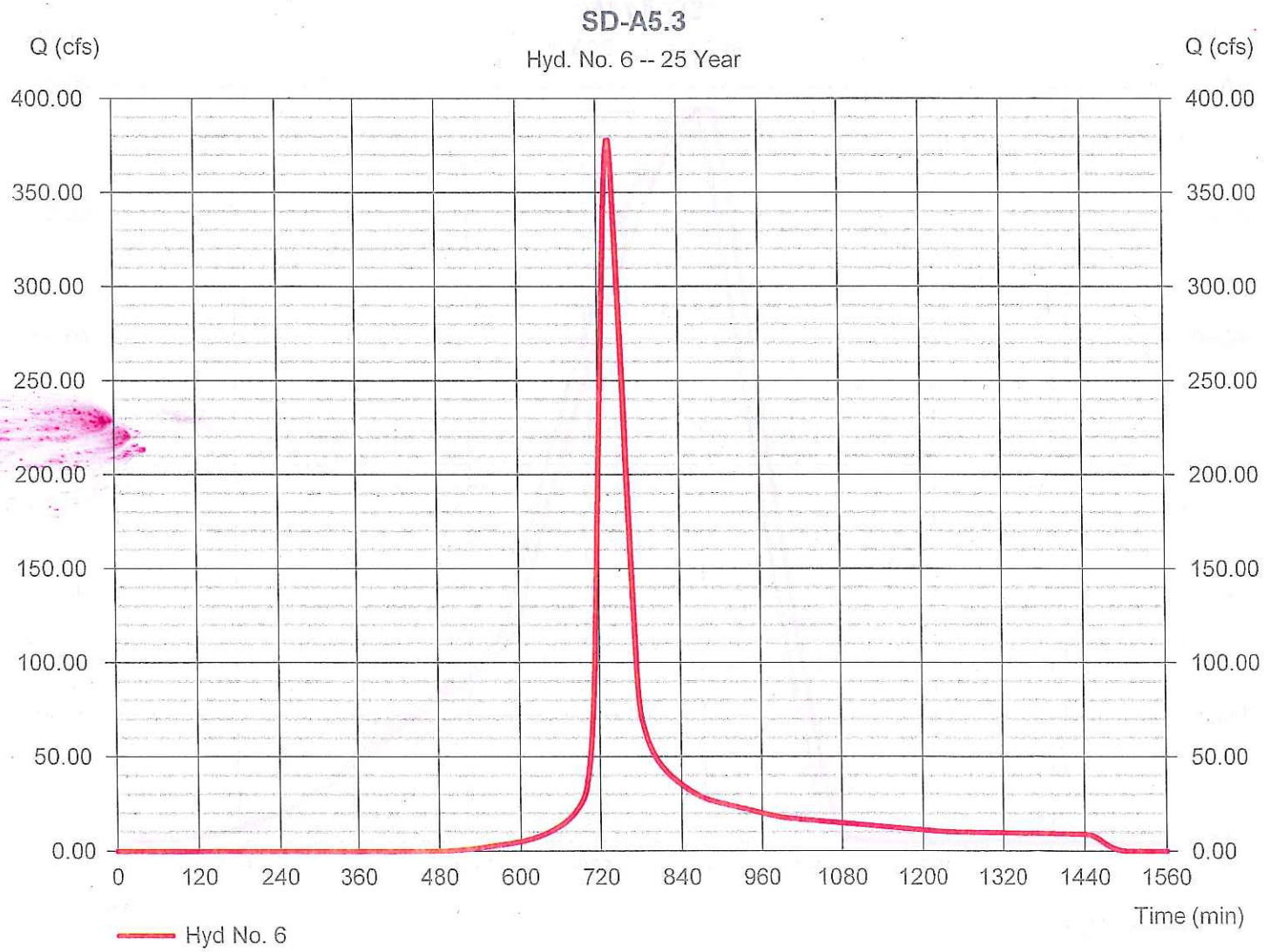
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2014 by Autodesk, Inc. v10.3 Thursday, 01 / 28 / 2016

Hyd. No. 6

SD-A5.3

Hydrograph type	= SCS Runoff	Peak discharge	= 377.81 cfs
Storm frequency	= 25 yrs	Time to peak	= 738 min
Time interval	= 2 min	Hyd. volume	= 1,836,361 cuft
Drainage area	= 257.000 ac	Curve number	= 83
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 40.00 min
Total precip.	= 3.63 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



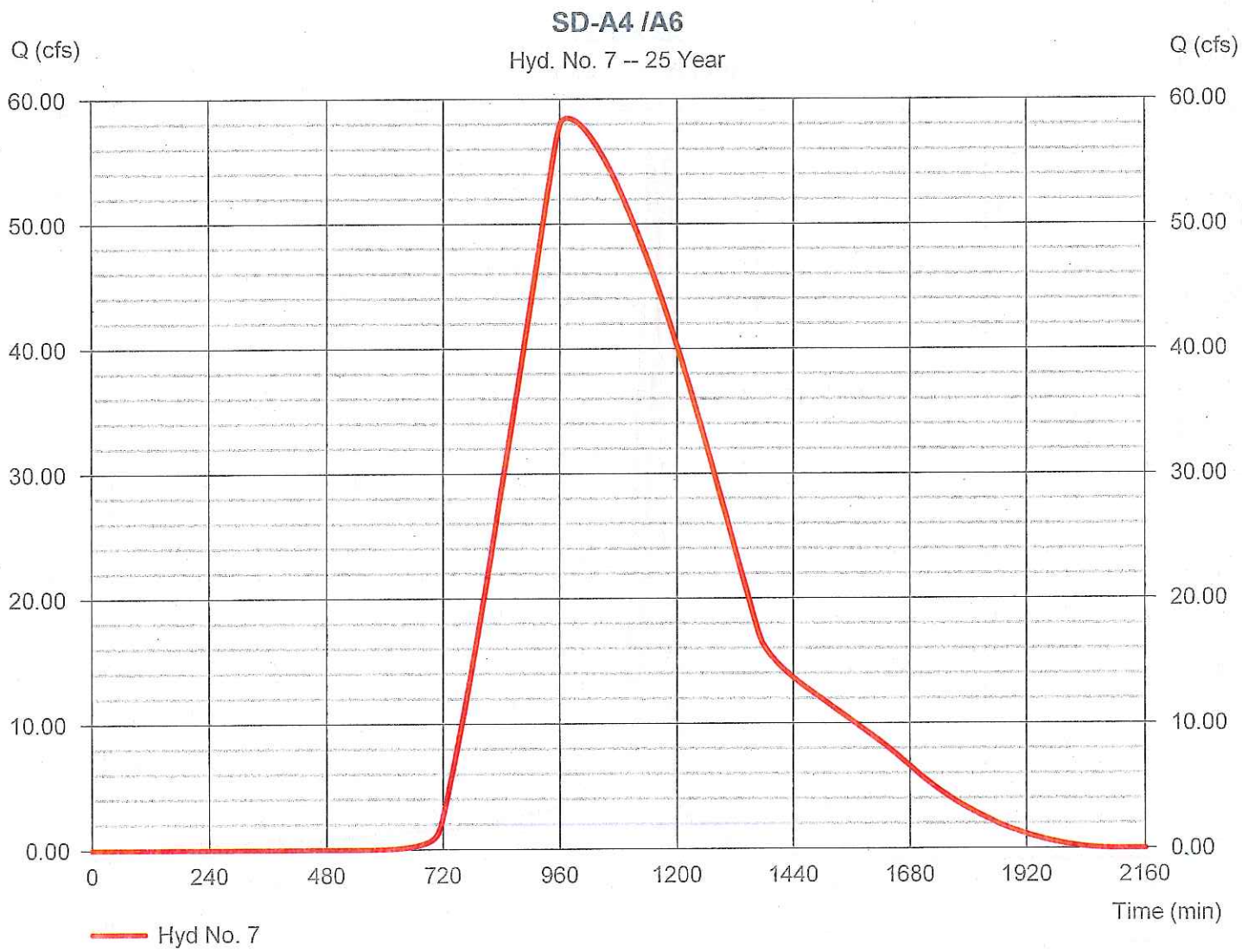
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2014 by Autodesk, Inc. v10.3 Thursday, 01 / 28 / 2016

Hyd. No. 7

SD-A4 /A6

Hydrograph type	= SCS Runoff	Peak discharge	= 58.46 cfs
Storm frequency	= 25 yrs	Time to peak	= 976 min
Time interval	= 2 min	Hyd. volume	= 1,726,974 cuft
Drainage area	= 285.000 ac	Curve number	= 79
Basin Slope	= 0.1 %	Hydraulic length	= 5000 ft
Tc method	= LAG	Time of conc. (Tc)	= 420.76 min
Total precip.	= 3.63 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



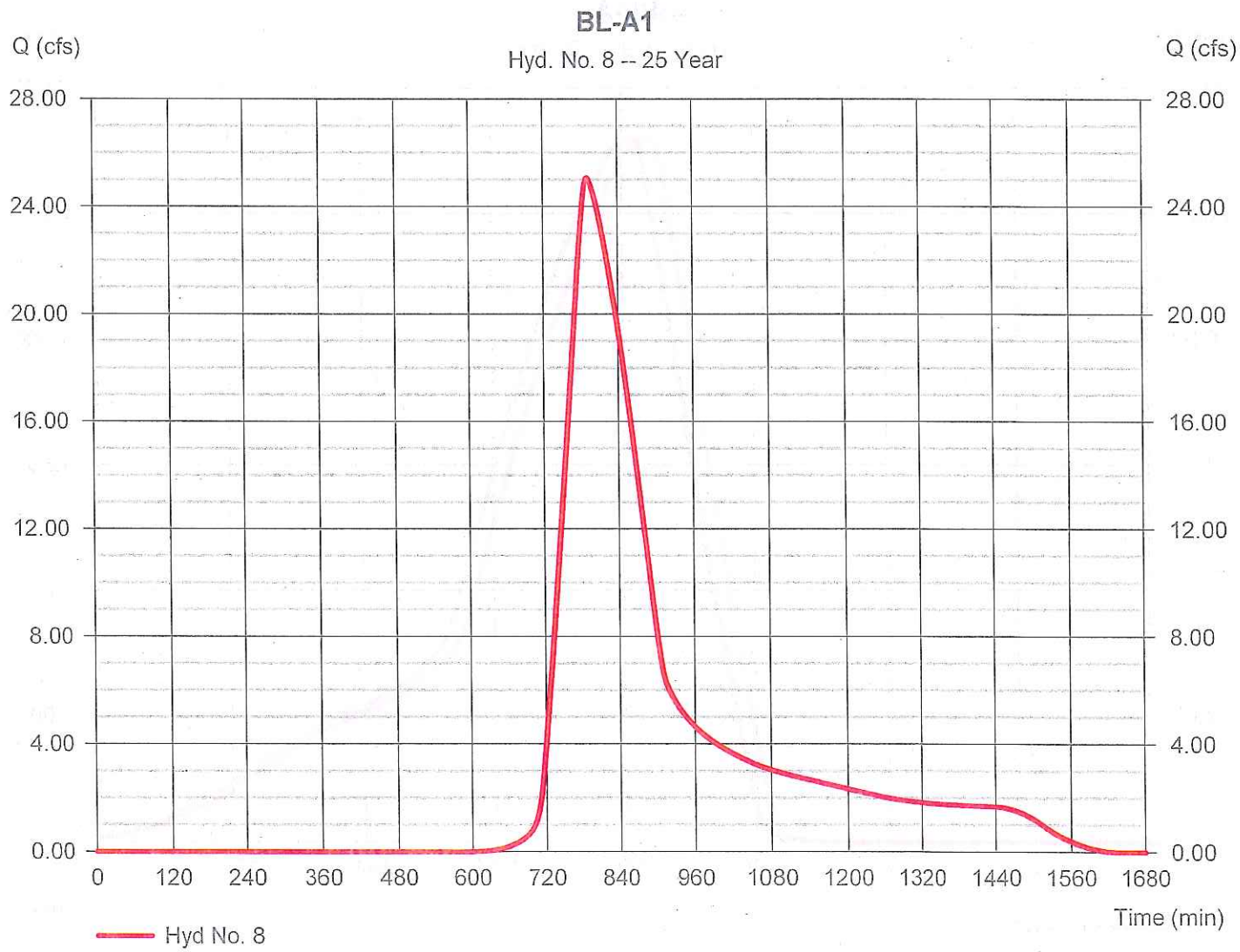
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2014 by Autodesk, Inc. v10.3 Thursday, 01 / 28 / 2016

Hyd. No. 8

BL-A1

Hydrograph type	= SCS Runoff	Peak discharge	= 25.07 cfs
Storm frequency	= 25 yrs	Time to peak	= 790 min
Time interval	= 2 min	Hyd. volume	= 289,358 cuft
Drainage area	= 52.000 ac	Curve number	= 77
Basin Slope	= 0.2 %	Hydraulic length	= 1500 ft
Tc method	= LAG	Time of conc. (Tc)	= 124.56 min
Total precip.	= 3.63 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



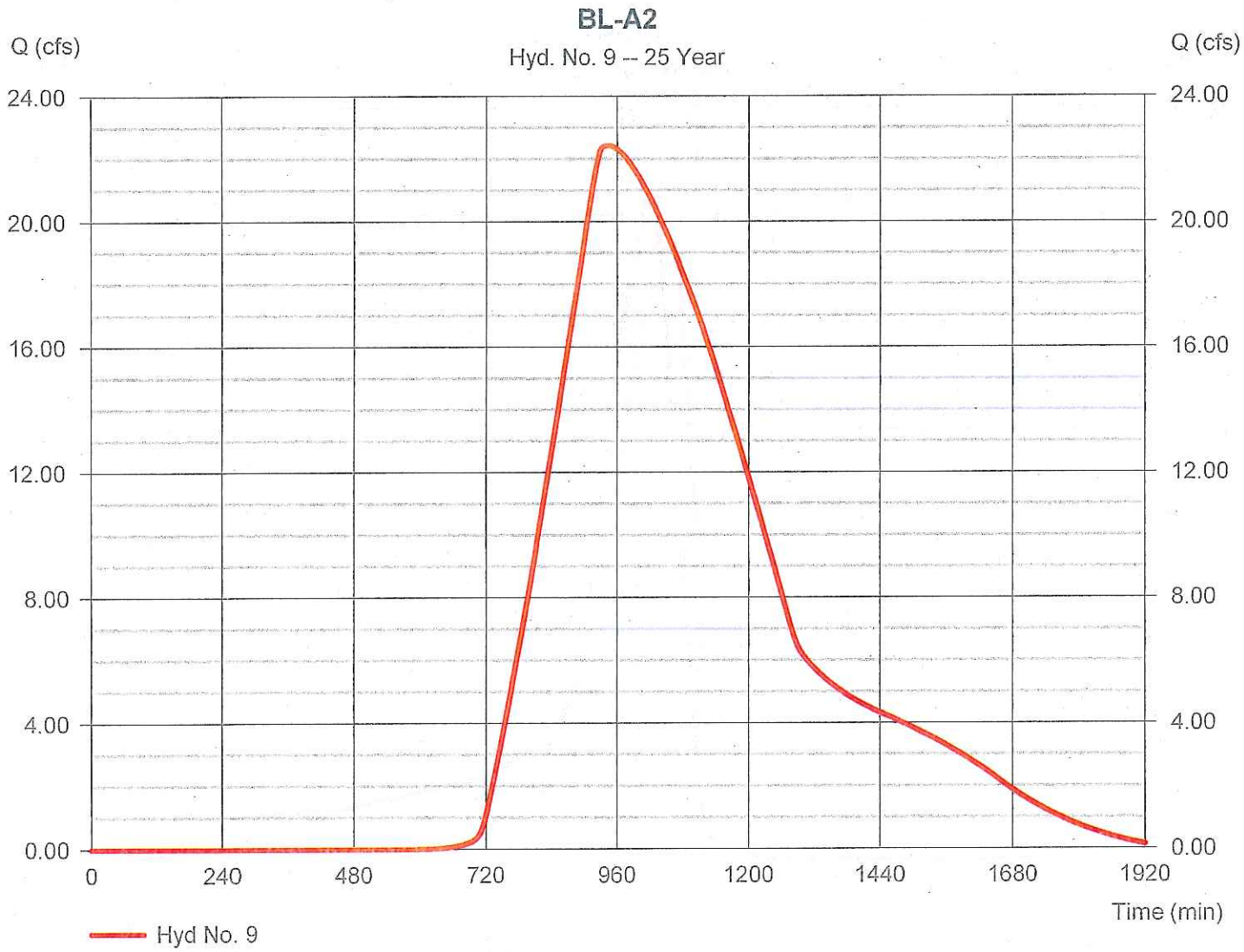
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2014 by Autodesk, Inc. v10.3 Thursday, 01 / 28 / 2016

Hyd. No. 9

BL-A2

Hydrograph type	= SCS Runoff	Peak discharge	= 22.43 cfs
Storm frequency	= 25 yrs	Time to peak	= 942 min
Time interval	= 2 min	Hyd. volume	= 597,046 cuft
Drainage area	= 103.000 ac	Curve number	= 78
Basin Slope	= 0.1 %	Hydraulic length	= 3000 ft
Tc method	= LAG	Time of conc. (Tc)	= 364.60 min
Total precip.	= 3.63 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

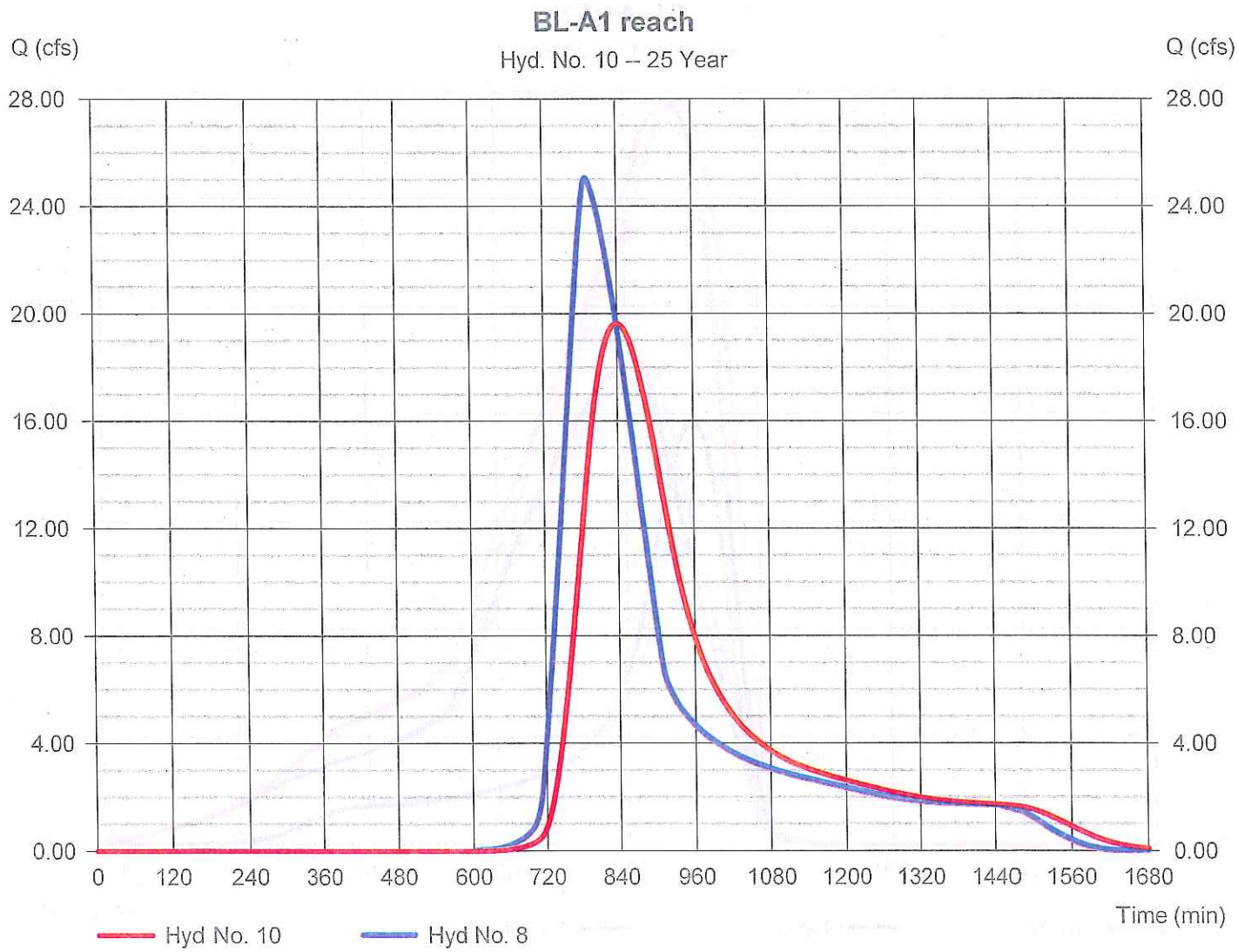
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2014 by Autodesk, Inc. v10.3 Thursday, 01 / 28 / 2016

Hyd. No. 10

BL-A1 reach

Hydrograph type	= Reach	Peak discharge	= 19.64 cfs
Storm frequency	= 25 yrs	Time to peak	= 840 min
Time interval	= 2 min	Hyd. volume	= 289,331 cuft
Inflow hyd. No.	= 8 - BL-A1	Section type	= Trapezoidal
Reach length	= 3000.0 ft	Channel slope	= 0.0 %
Manning's n	= 0.040	Bottom width	= 10.0 ft
Side slope	= 1.0:1	Max. depth	= 2.0 ft
Rating curve x	= 0.113	Rating curve m	= 1.524
Ave. velocity	= 0.00 ft/s	Routing coeff.	= 0.0432

Modified Att-Kin routing method used.



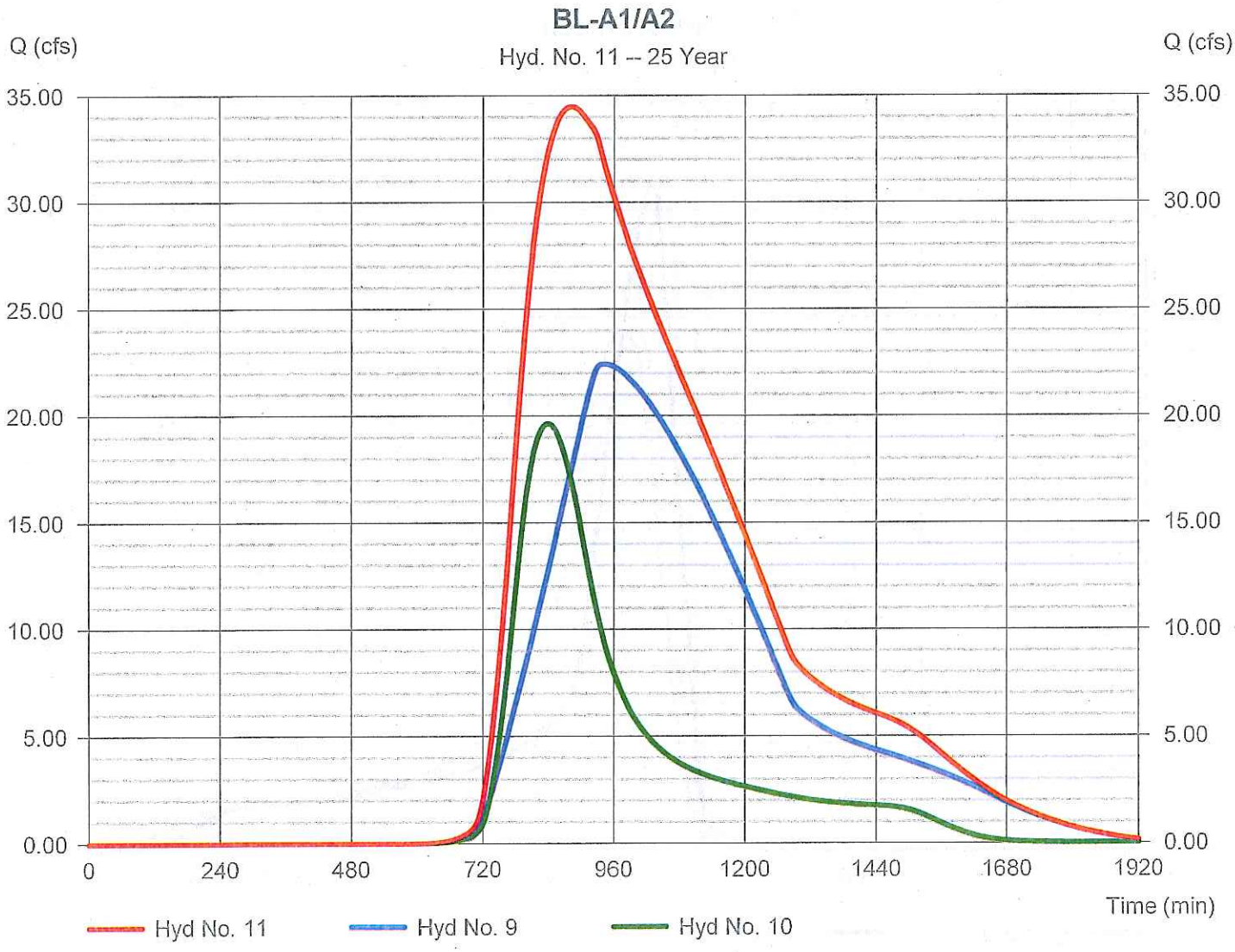
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2014 by Autodesk, Inc. v10.3 Thursday, 01 / 28 / 2016

Hyd. No. 11

BL-A1/A2

Hydrograph type	= Combine	Peak discharge	= 34.48 cfs
Storm frequency	= 25 yrs	Time to peak	= 882 min
Time interval	= 2 min	Hyd. volume	= 886,378 cuft
Inflow hyds.	= 9, 10	Contrib. drain. area	= 103.000 ac



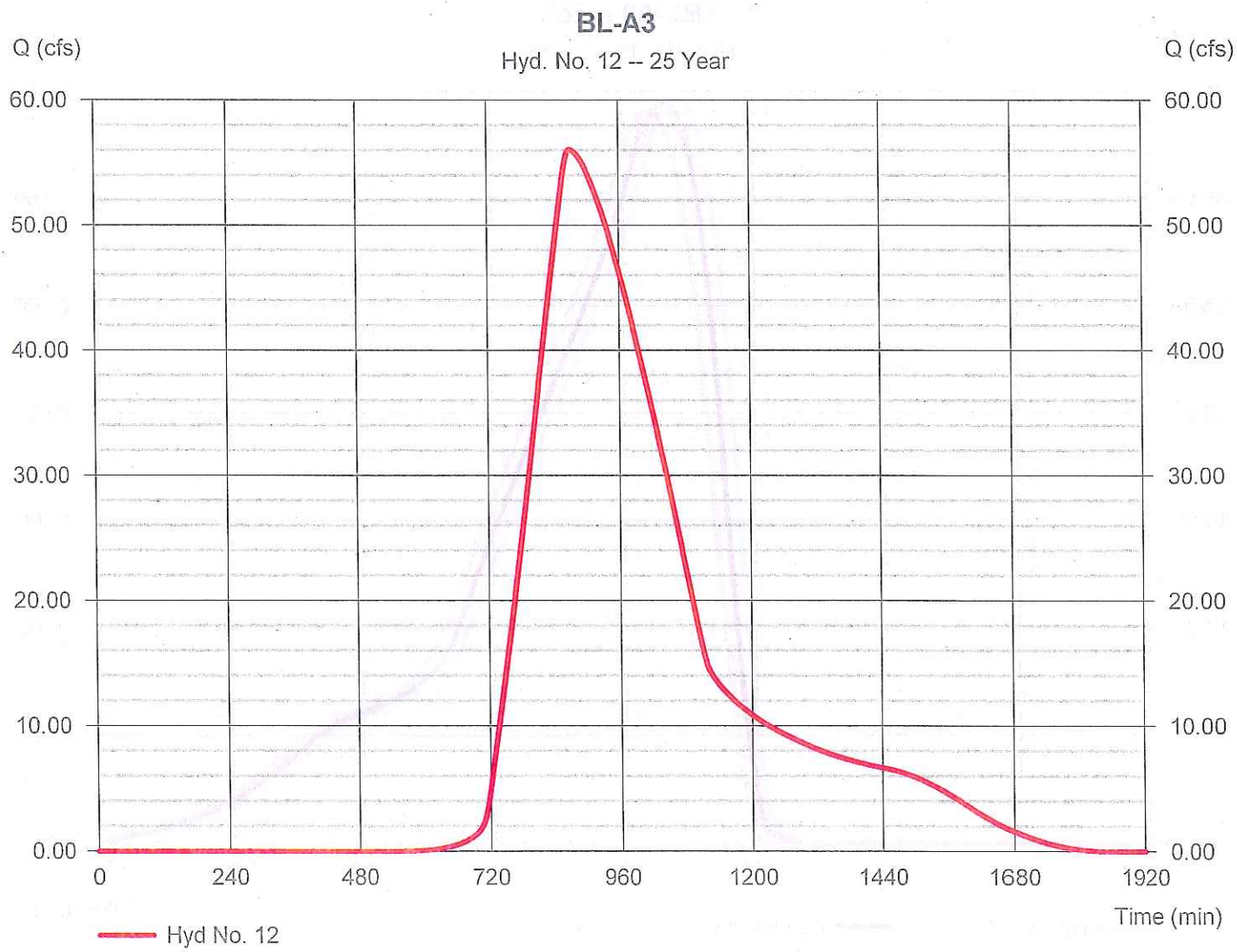
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2014 by Autodesk, Inc. v10.3 Thursday, 01 / 28 / 2016

Hyd. No. 12

BL-A3

Hydrograph type	= SCS Runoff	Peak discharge	= 56.03 cfs
Storm frequency	= 25 yrs	Time to peak	= 870 min
Time interval	= 2 min	Hyd. volume	= 1,113,560 cuft
Drainage area	= 176.000 ac	Curve number	= 80
Basin Slope	= 0.1 %	Hydraulic length	= 2800 ft
Tc method	= LAG	Time of conc. (Tc)	= 256.53 min
Total precip.	= 3.63 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

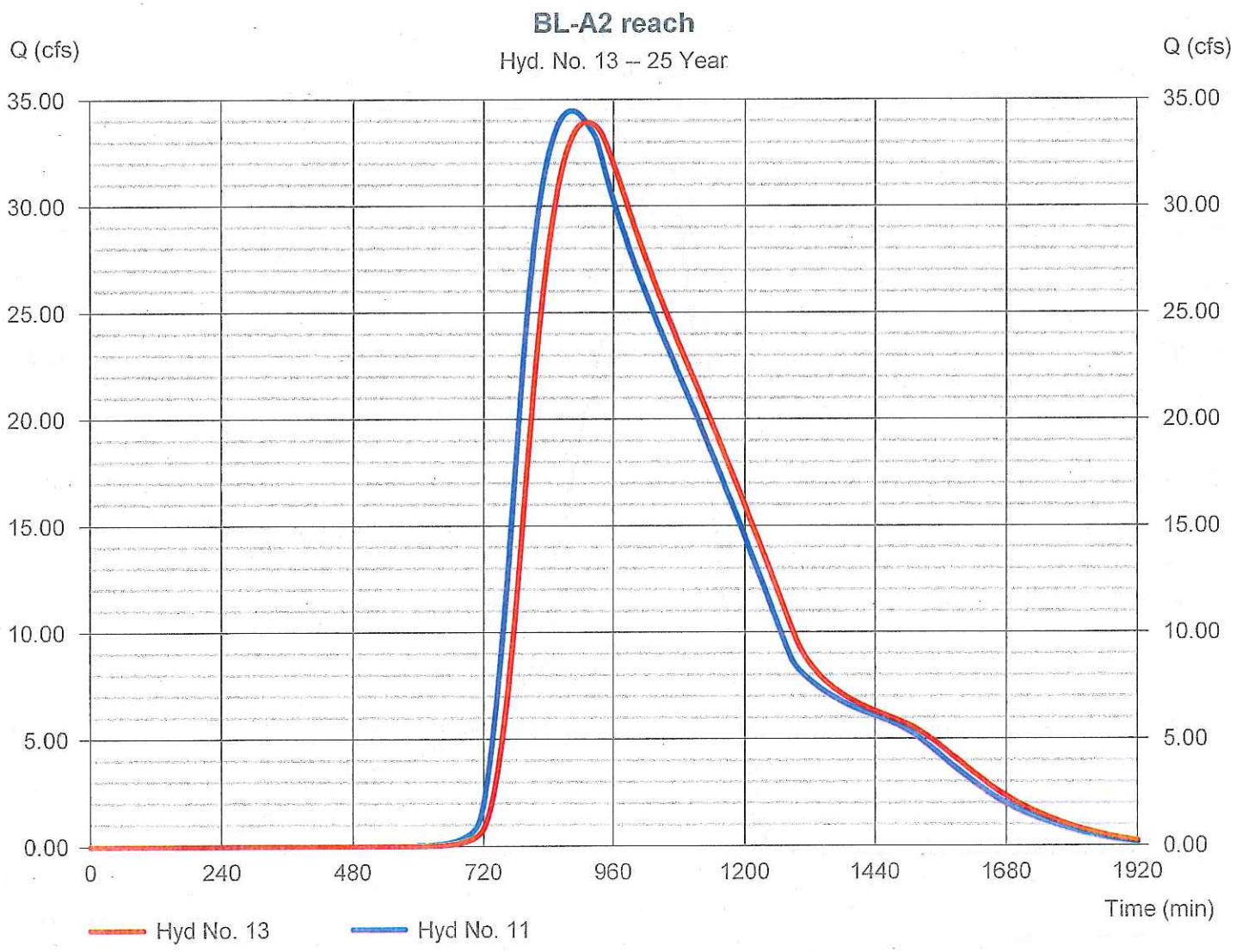
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2014 by Autodesk, Inc. v10.3 Thursday, 01 / 28 / 2016

Hyd. No. 13

BL-A2 reach

Hydrograph type	= Reach	Peak discharge	= 33.94 cfs
Storm frequency	= 25 yrs	Time to peak	= 910 min
Time interval	= 2 min	Hyd. volume	= 886,364 cuft
Inflow hyd. No.	= 11 - BL-A1/A2	Section type	= Trapezoidal
Reach length	= 2800.0 ft	Channel slope	= 0.1 %
Manning's n	= 0.035	Bottom width	= 10.0 ft
Side slope	= 1.0:1	Max. depth	= 2.0 ft
Rating curve x	= 0.259	Rating curve m	= 1.524
Ave. velocity	= 0.00 ft/s	Routing coeff.	= 0.0869

Modified Att-Kin routing method used.



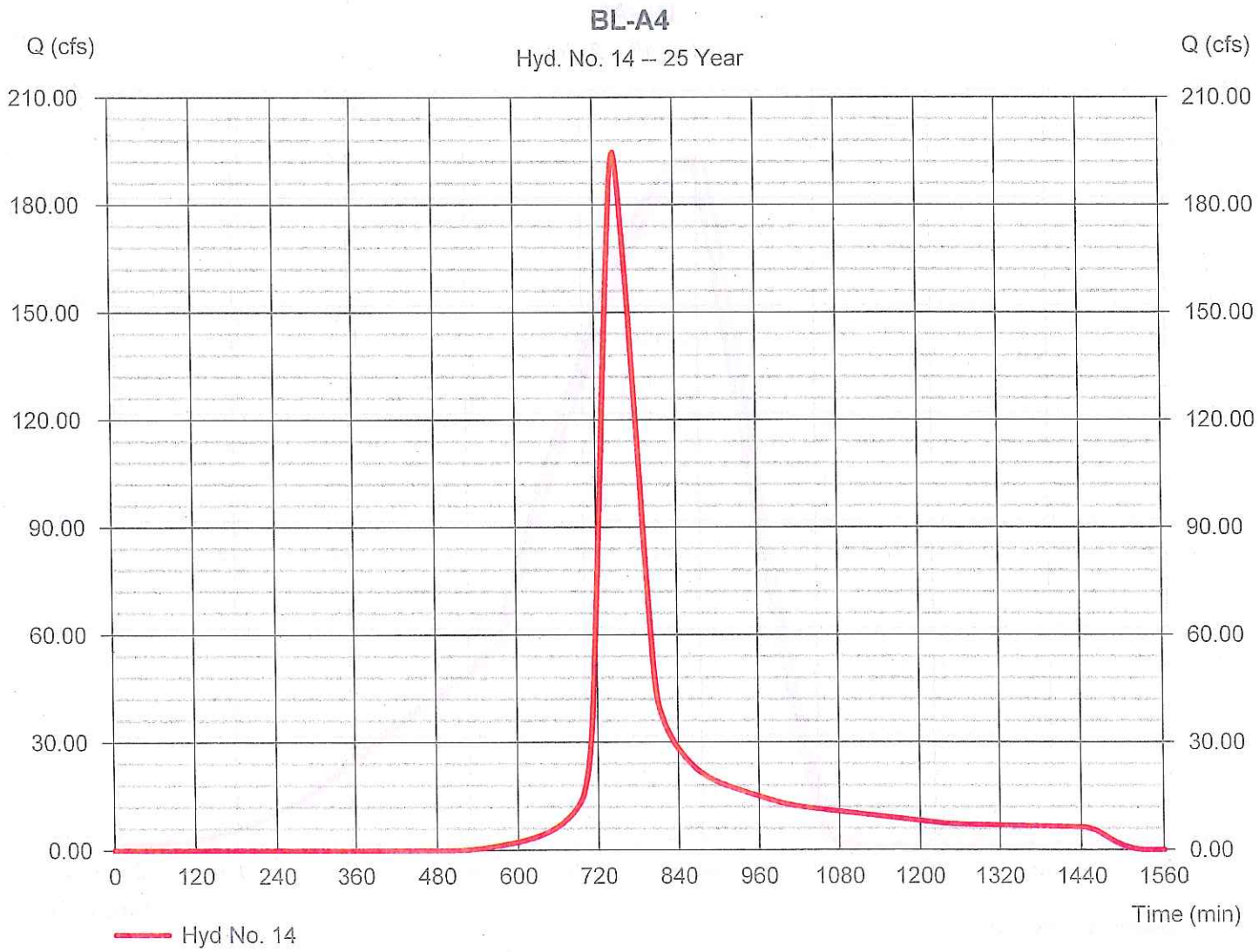
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2014 by Autodesk, Inc. v10.3 Thursday, 01 / 28 / 2016

Hyd. No. 14

BL-A4

Hydrograph type	= SCS Runoff	Peak discharge	= 194.63 cfs
Storm frequency	= 25 yrs	Time to peak	= 750 min
Time interval	= 2 min	Hyd. volume	= 1,262,690 cuft
Drainage area	= 184.000 ac	Curve number	= 82
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 60.00 min
Total precip.	= 3.63 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



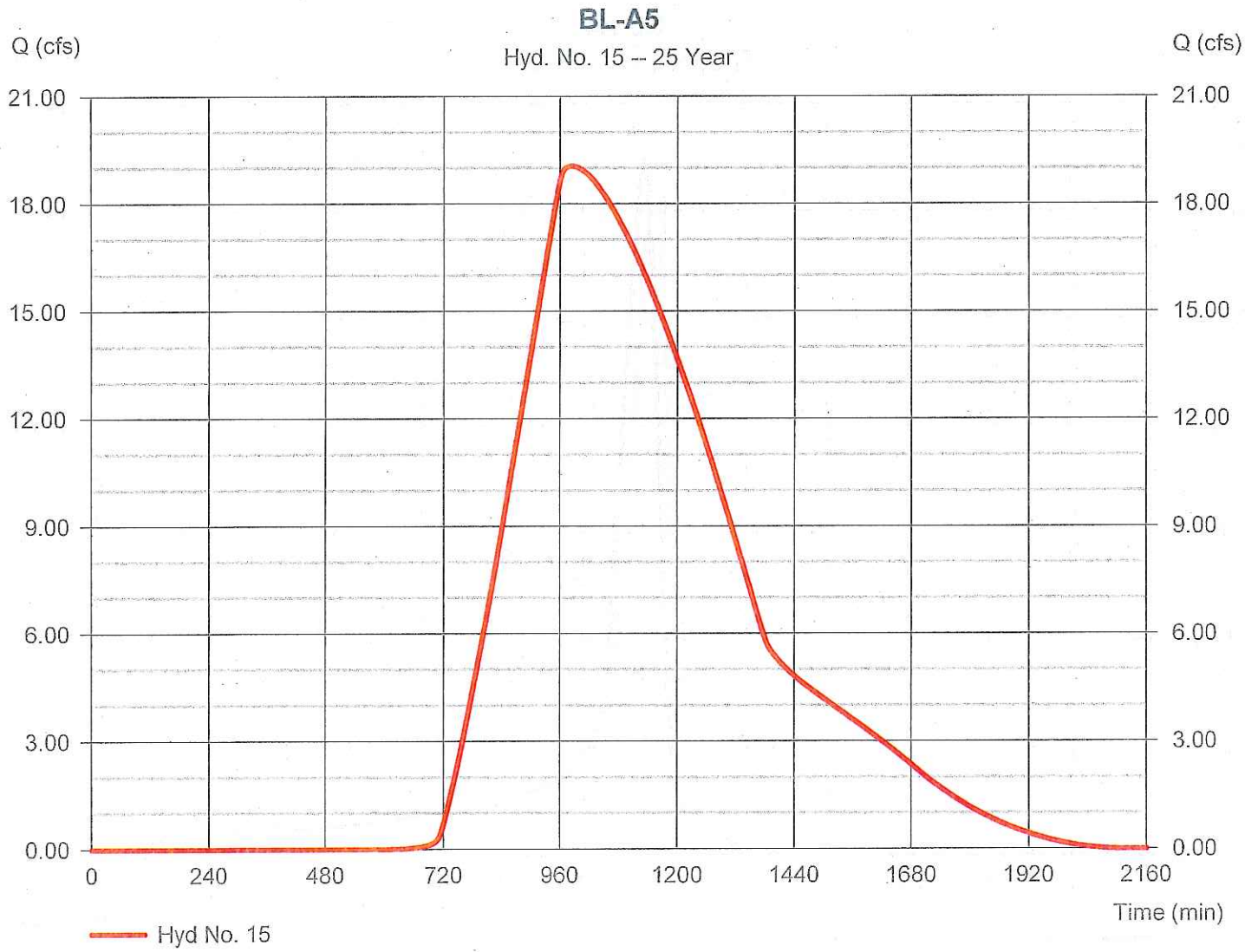
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2014 by Autodesk, Inc. v10.3 Thursday, 01 / 28 / 2016

Hyd. No. 15

BL-A5

Hydrograph type	= SCS Runoff	Peak discharge	= 19.05 cfs
Storm frequency	= 25 yrs	Time to peak	= 984 min
Time interval	= 2 min	Hyd. volume	= 576,767 cuft
Drainage area	= 104.000 ac	Curve number	= 77
Basin Slope	= 0.1 %	Hydraulic length	= 3500 ft
Tc method	= LAG	Time of conc. (Tc)	= 424.95 min
Total precip.	= 3.63 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



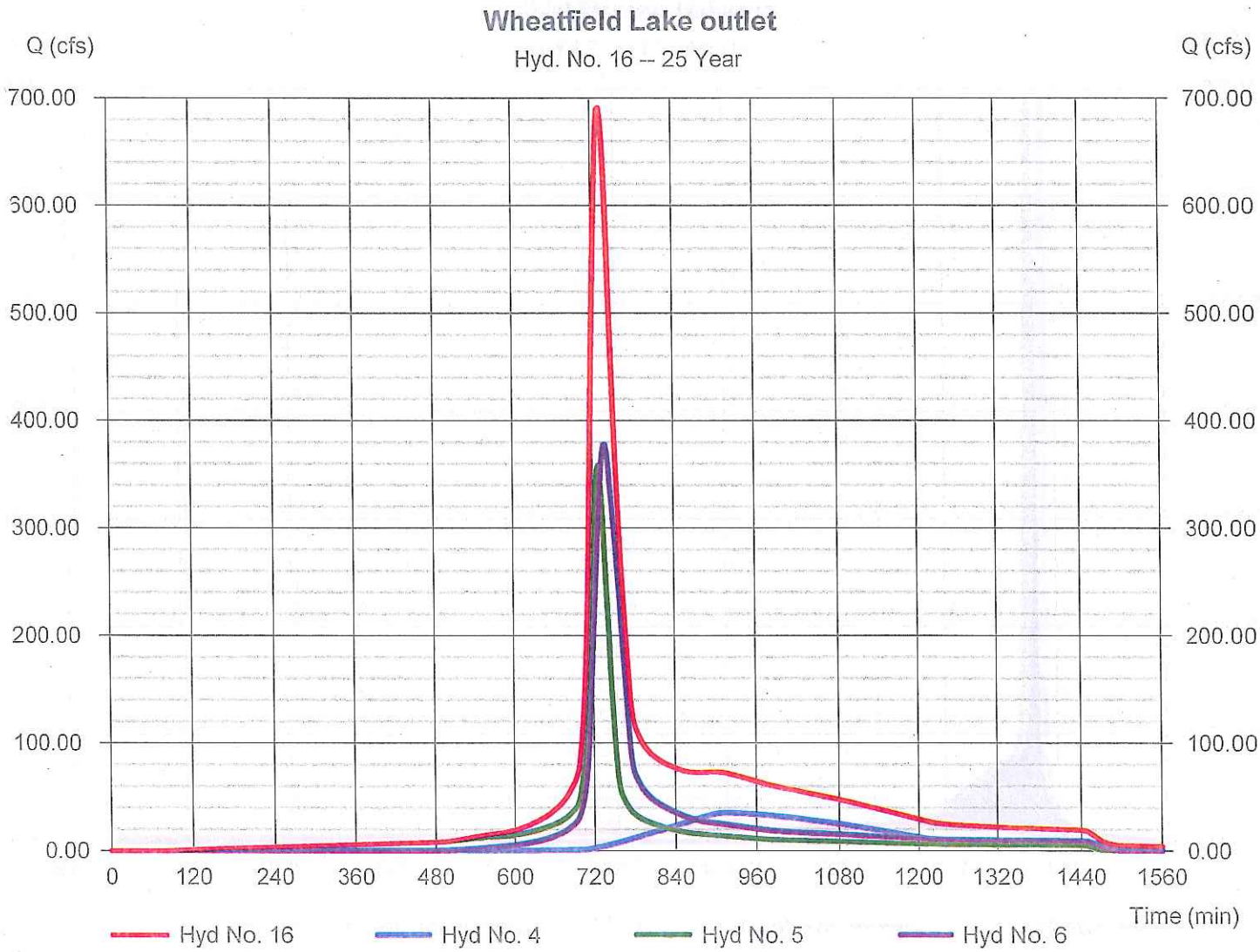
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2014 by Autodesk, Inc. v10.3 Thursday, 01 / 28 / 2016

Hyd. No. 16

Wheatfield Lake outlet

Hydrograph type	= Combine	Peak discharge	= 690.77 cfs
Storm frequency	= 25 yrs	Time to peak	= 732 min
Time interval	= 2 min	Hyd. volume	= 4,134,009 cuft
Inflow hyds.	= 4, 5, 6	Contrib. drain. area	= 516.000 ac



Hydrograph Report

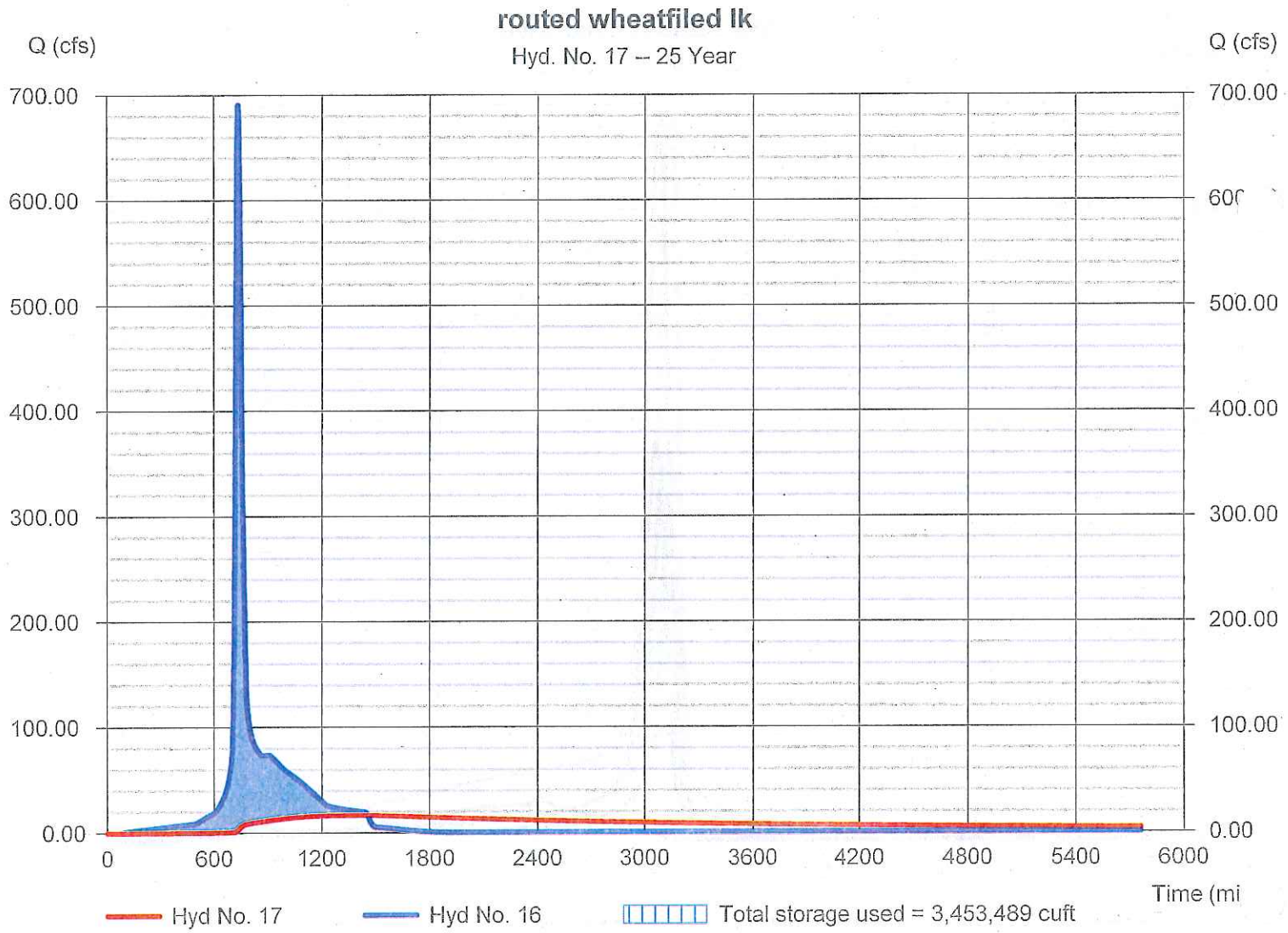
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2014 by Autodesk, Inc. v10.3 Thursday, 01 / 28 / 2016

Hyd. No. 17

routed wheatfiled lk

Hydrograph type	= Reservoir	Peak discharge	= 16.66 cfs
Storm frequency	= 25 yrs	Time to peak	= 1452 min
Time interval	= 2 min	Hyd. volume	= 2,807,892 cuft
Inflow hyd. No.	= 16 - Wheatfield Lake outlet	Max. Elevation	= 571.68 ft
Reservoir name	= Wheatfield Lakes	Max. Storage	= 3,453,489 cuft

Storage Indication method used.



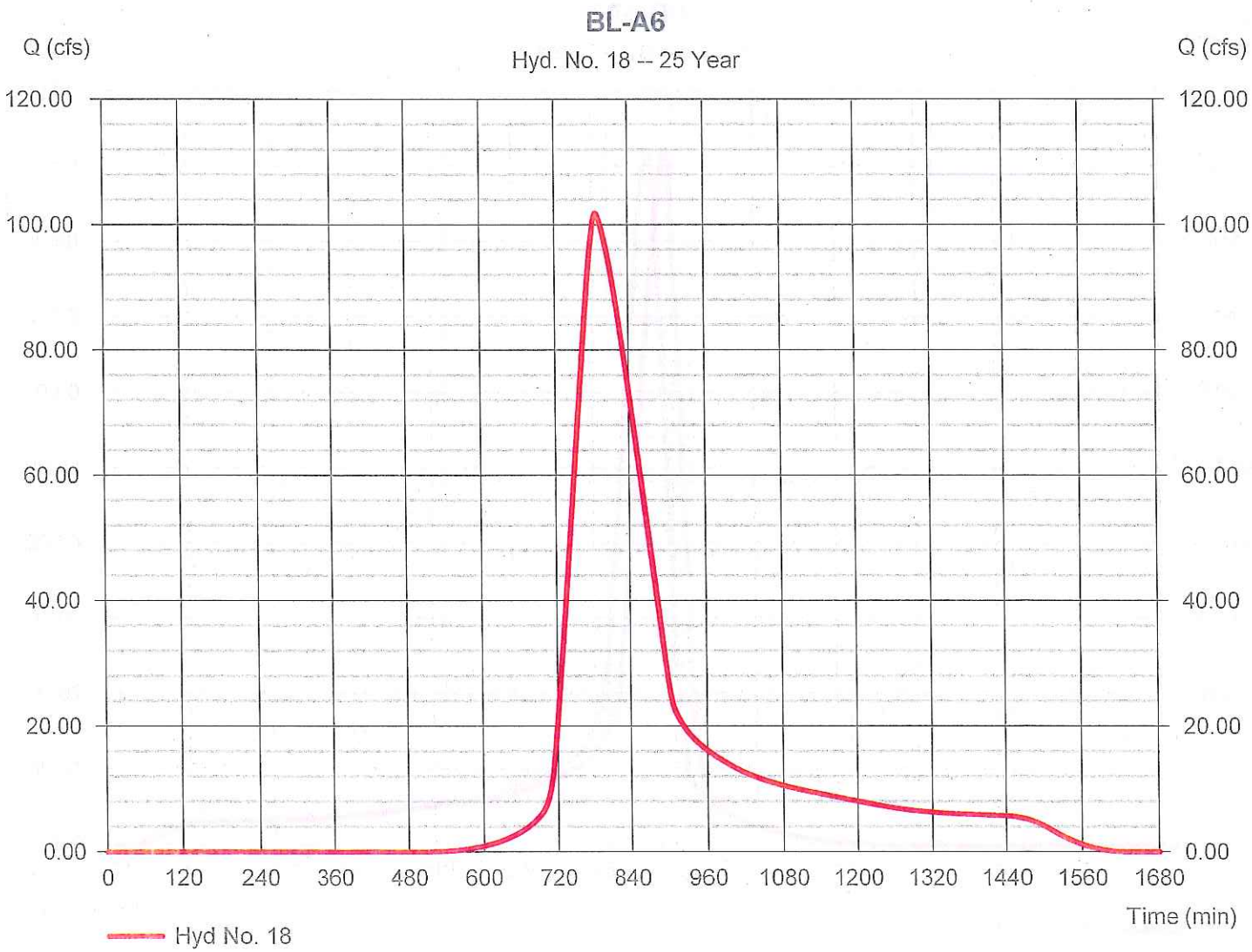
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2014 by Autodesk, Inc. v10.3 Thursday, 01 / 28 / 2016

Hyd. No. 18

BL-A6

Hydrograph type	= SCS Runoff	Peak discharge	= 101.79 cfs
Storm frequency	= 25 yrs	Time to peak	= 786 min
Time interval	= 2 min	Hyd. volume	= 1,111,719 cuft
Drainage area	= 162.000 ac	Curve number	= 82
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 120.00 min
Total precip.	= 3.63 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



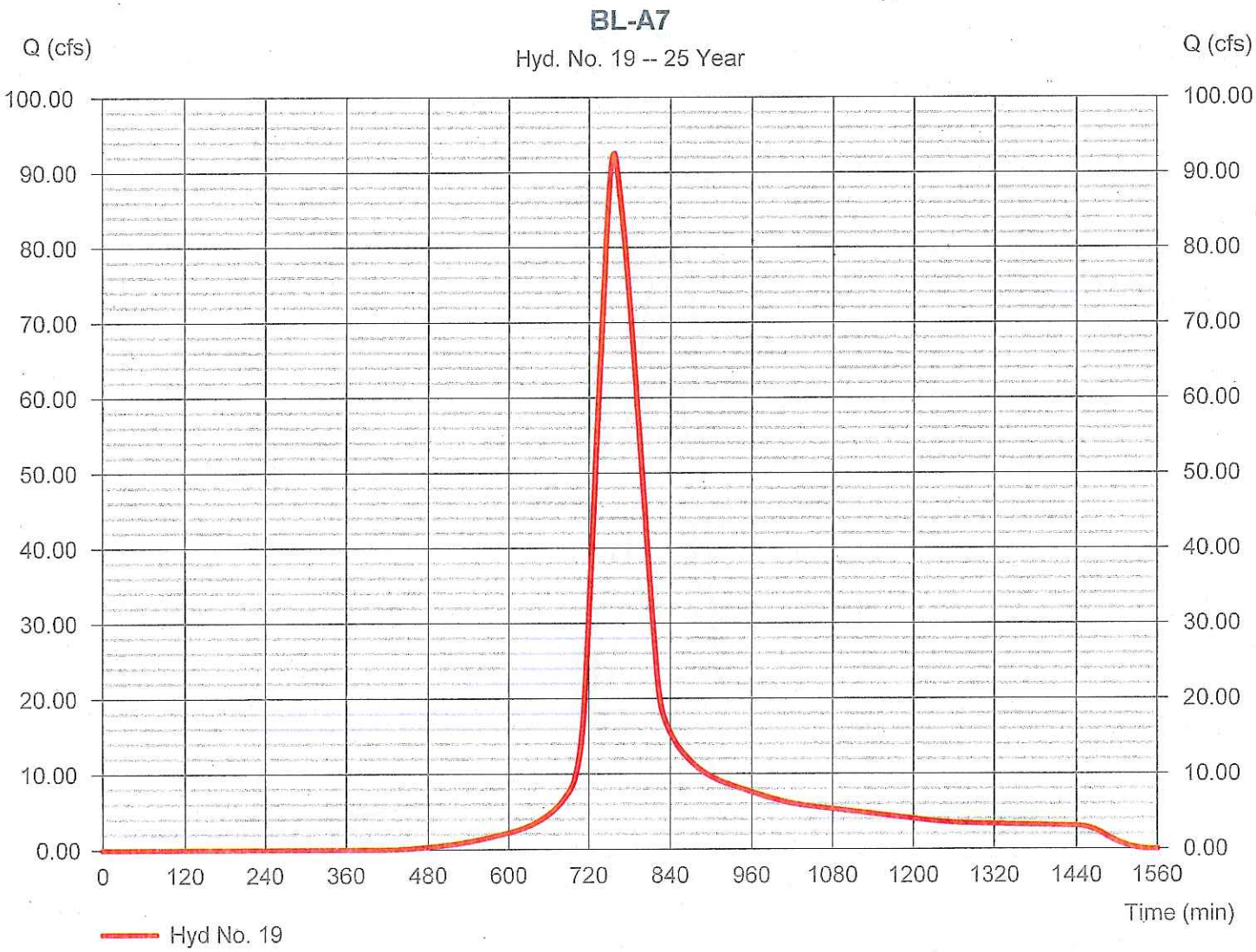
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2014 by Autodesk, Inc. v10.3 Thursday, 01 / 28 / 2016

Hyd. No. 19

BL-A7

Hydrograph type	= SCS Runoff	Peak discharge	= 92.52 cfs
Storm frequency	= 25 yrs	Time to peak	= 756 min
Time interval	= 2 min	Hyd. volume	= 666,996 cuft
Drainage area	= 83.000 ac	Curve number	= 86
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 70.00 min
Total precip.	= 3.63 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



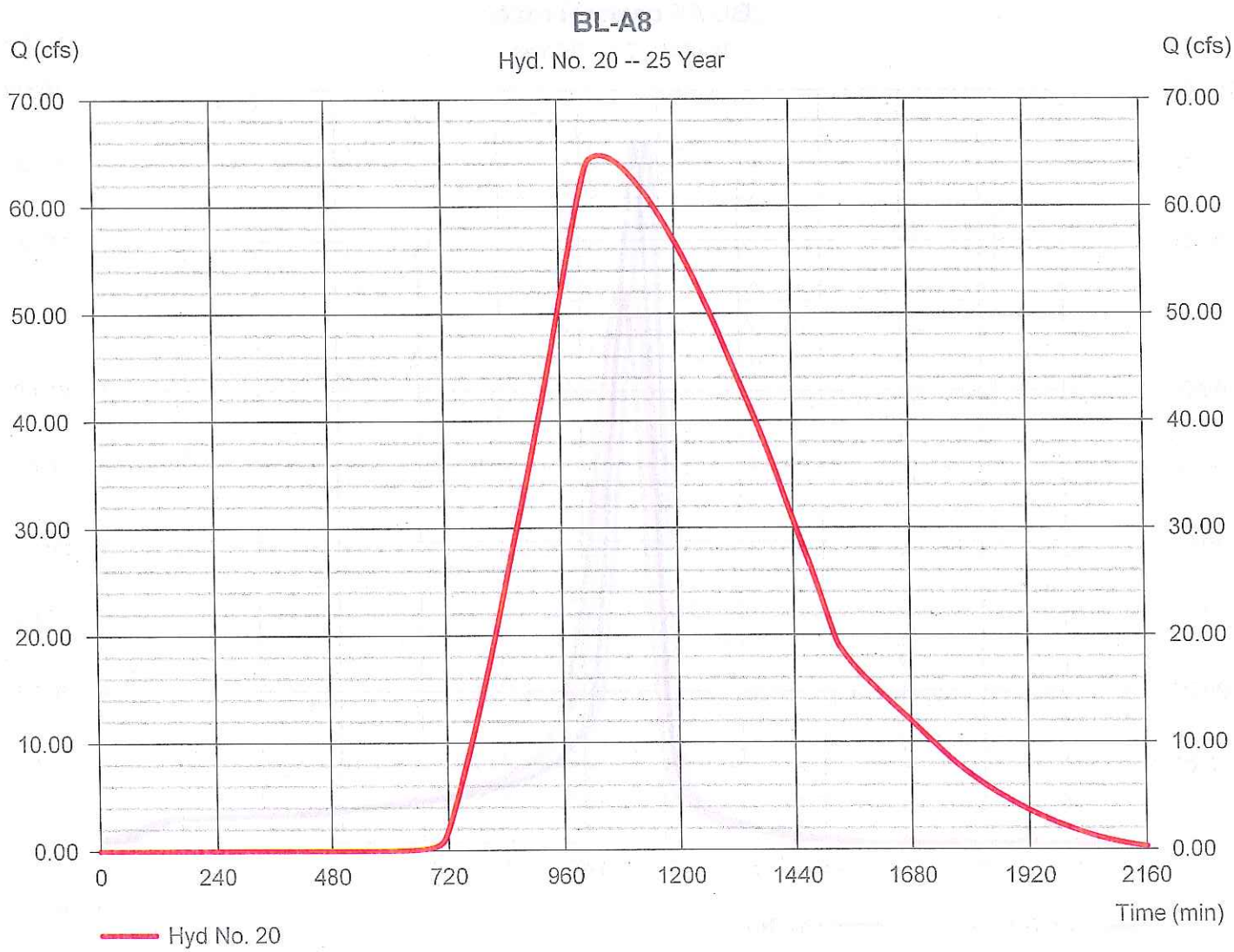
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2014 by Autodesk, Inc. v10.3 Thursday, 01 / 28 / 2016

Hyd. No. 20

BL-A8

Hydrograph type	= SCS Runoff	Peak discharge	= 64.77 cfs
Storm frequency	= 25 yrs	Time to peak	= 1044 min
Time interval	= 2 min	Hyd. volume	= 2,284,882 cuft
Drainage area	= 412.000 ac	Curve number	= 77
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 519.30 min
Total precip.	= 3.63 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

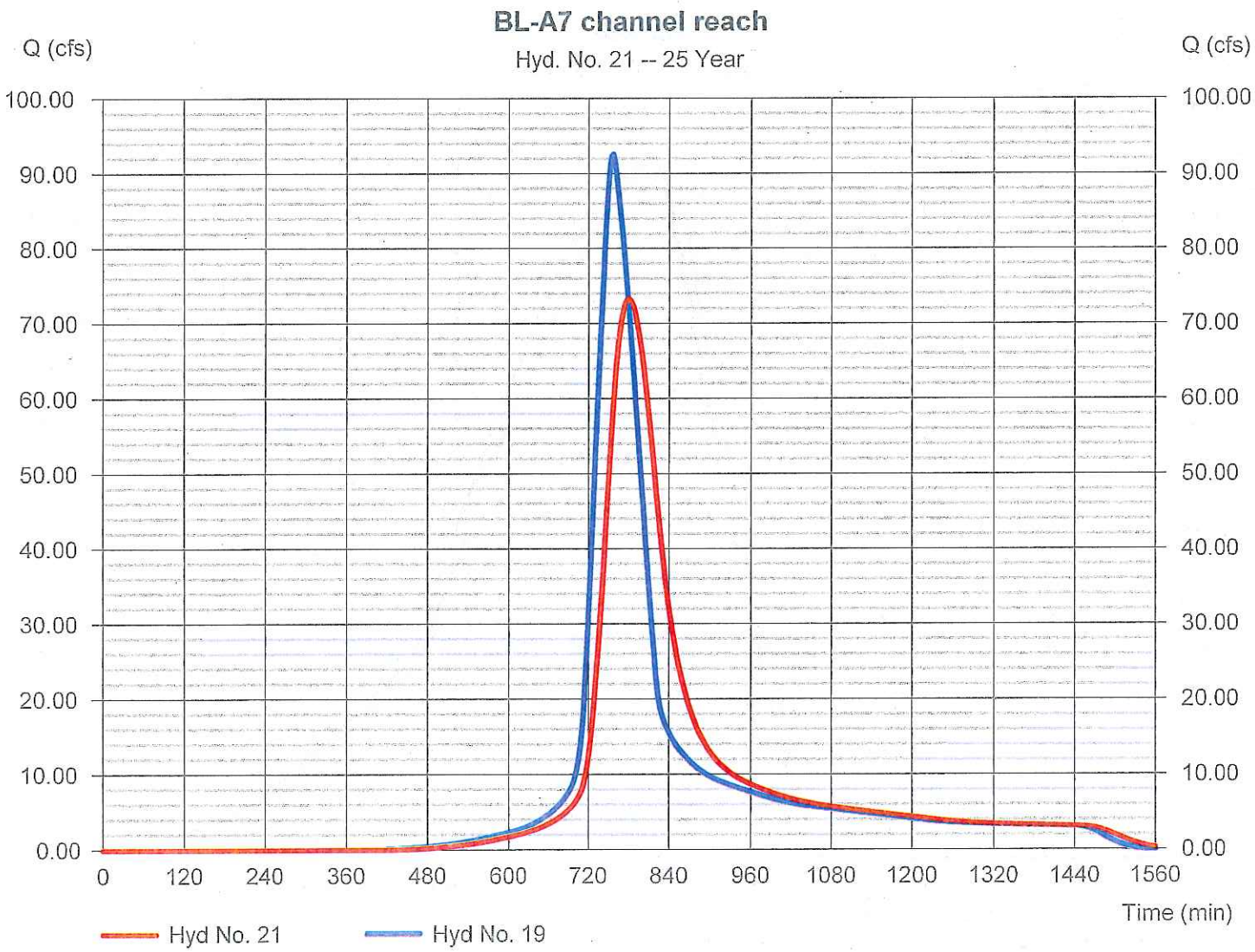
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2014 by Autodesk, Inc. v10.3 Thursday, 01 / 28 / 2016

Hyd. No. 21

BL-A7 channel reach

Hydrograph type	= Reach	Peak discharge	= 73.26 cfs
Storm frequency	= 25 yrs	Time to peak	= 780 min
Time interval	= 2 min	Hyd. volume	= 666,981 cuft
Inflow hyd. No.	= 19 - BL-A7	Section type	= Trapezoidal
Reach length	= 4300.0 ft	Channel slope	= 0.2 %
Manning's n	= 0.040	Bottom width	= 20.0 ft
Side slope	= 1.0:1	Max. depth	= 4.0 ft
Rating curve x	= 0.196	Rating curve m	= 1.567
Ave. velocity	= 0.00 ft/s	Routing coeff.	= 0.0764

Modified Att-Kin routing method used.



Hydrograph Report

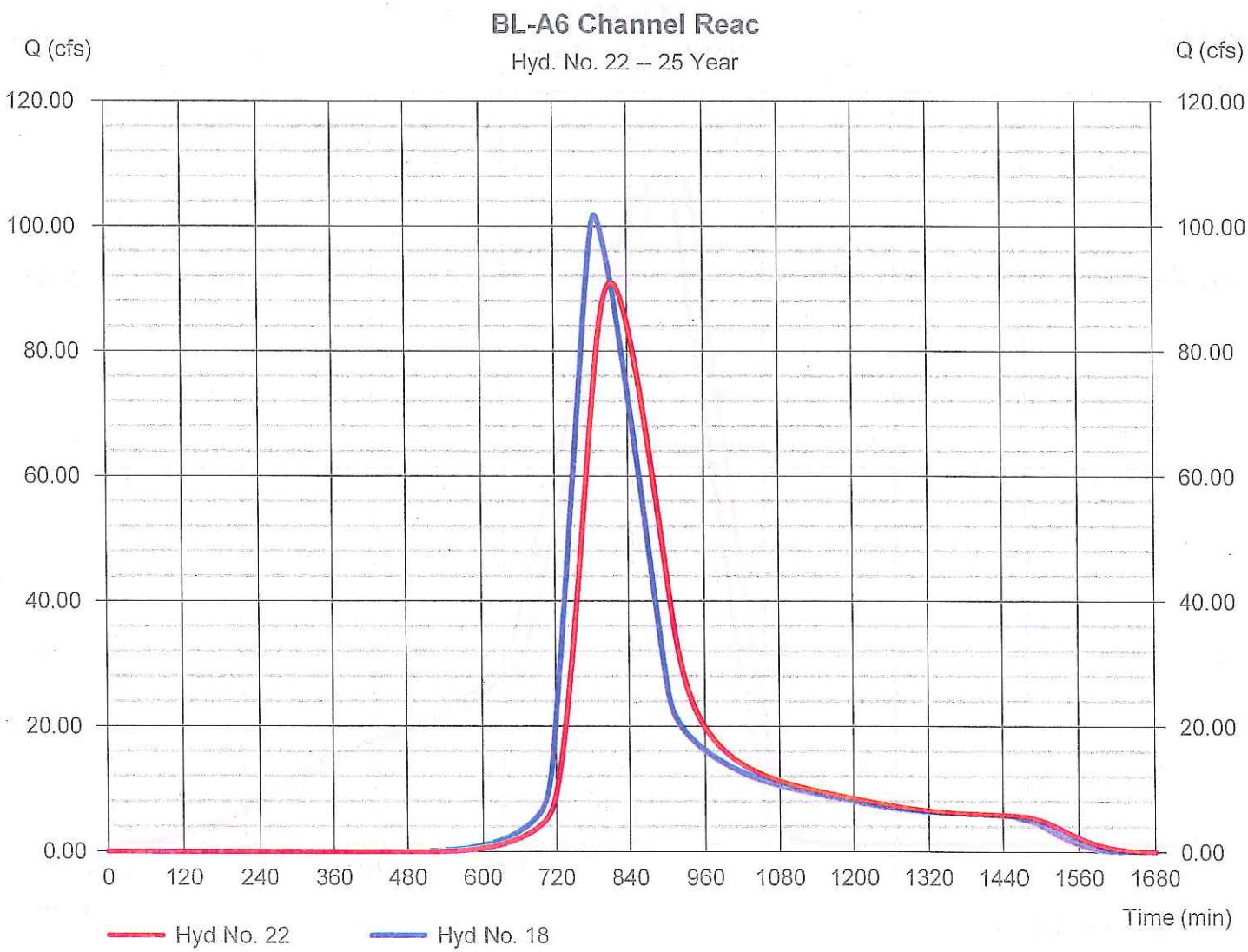
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2014 by Autodesk, Inc. v10.3 Thursday, 01 / 28 / 2016

Hyd. No. 22

BL-A6 Channel Reac

Hydrograph type	= Reach	Peak discharge	= 90.97 cfs
Storm frequency	= 25 yrs	Time to peak	= 814 min
Time interval	= 2 min	Hyd. volume	= 1,111,705 cuft
Inflow hyd. No.	= 18 - BL-A6	Section type	= Trapezoidal
Reach length	= 3500.0 ft	Channel slope	= 0.1 %
Manning's n	= 0.040	Bottom width	= 20.0 ft
Side slope	= 1.0:1	Max. depth	= 4.0 ft
Rating curve x	= 0.160	Rating curve m	= 1.567
Ave. velocity	= 0.00 ft/s	Routing coeff.	= 0.0850

Modified Att-Kin routing method used.



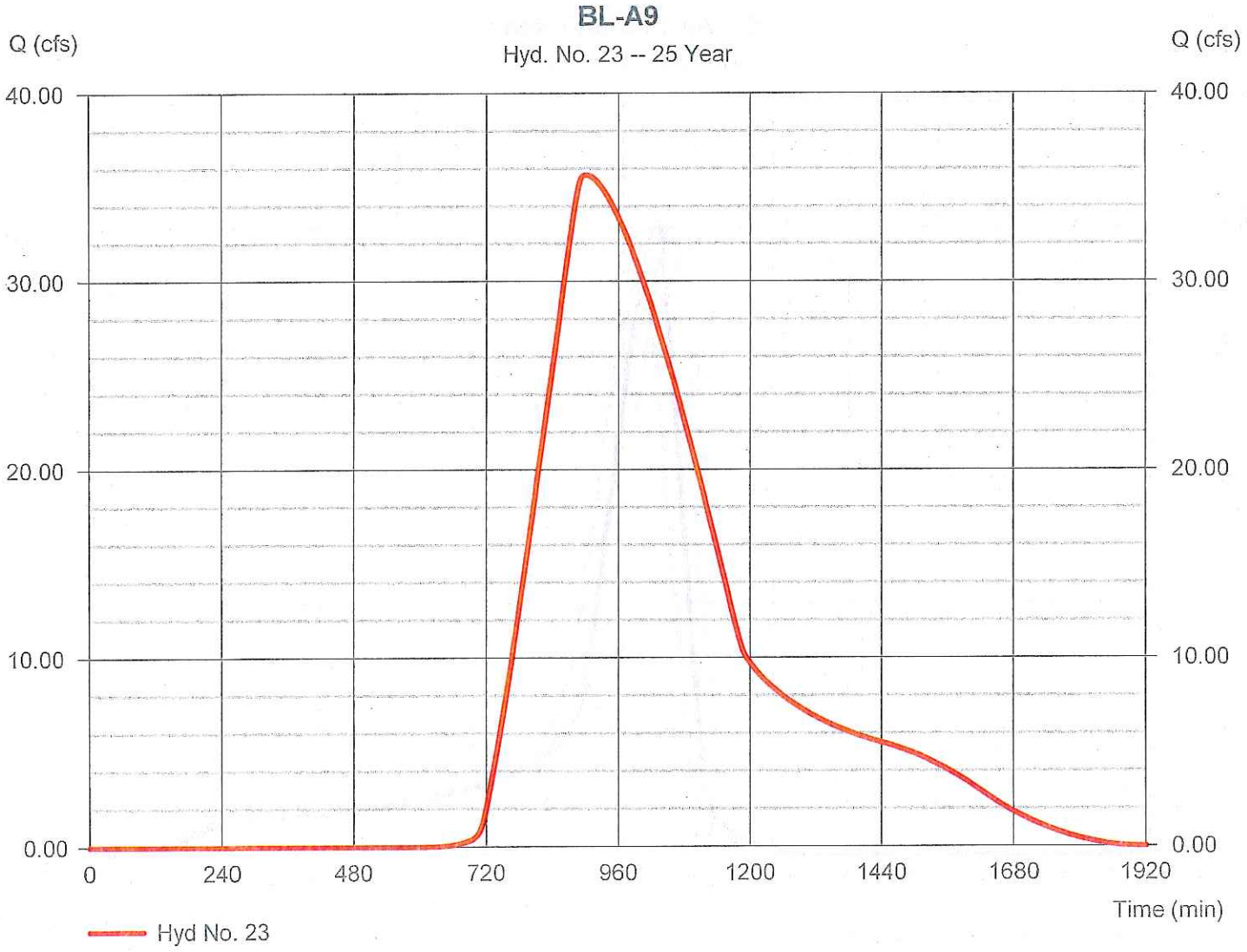
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2014 by Autodesk, Inc. v10.3 Thursday, 01 / 28 / 2016

Hyd. No. 23

BL-A9

Hydrograph type	= SCS Runoff	Peak discharge	= 35.67 cfs
Storm frequency	= 25 yrs	Time to peak	= 902 min
Time interval	= 2 min	Hyd. volume	= 819,632 cuft
Drainage area	= 148.000 ac	Curve number	= 77
Basin Slope	= 0.1 %	Hydraulic length	= 3500 ft
Tc method	= LAG	Time of conc. (Tc)	= 300.48 min
Total precip.	= 3.63 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



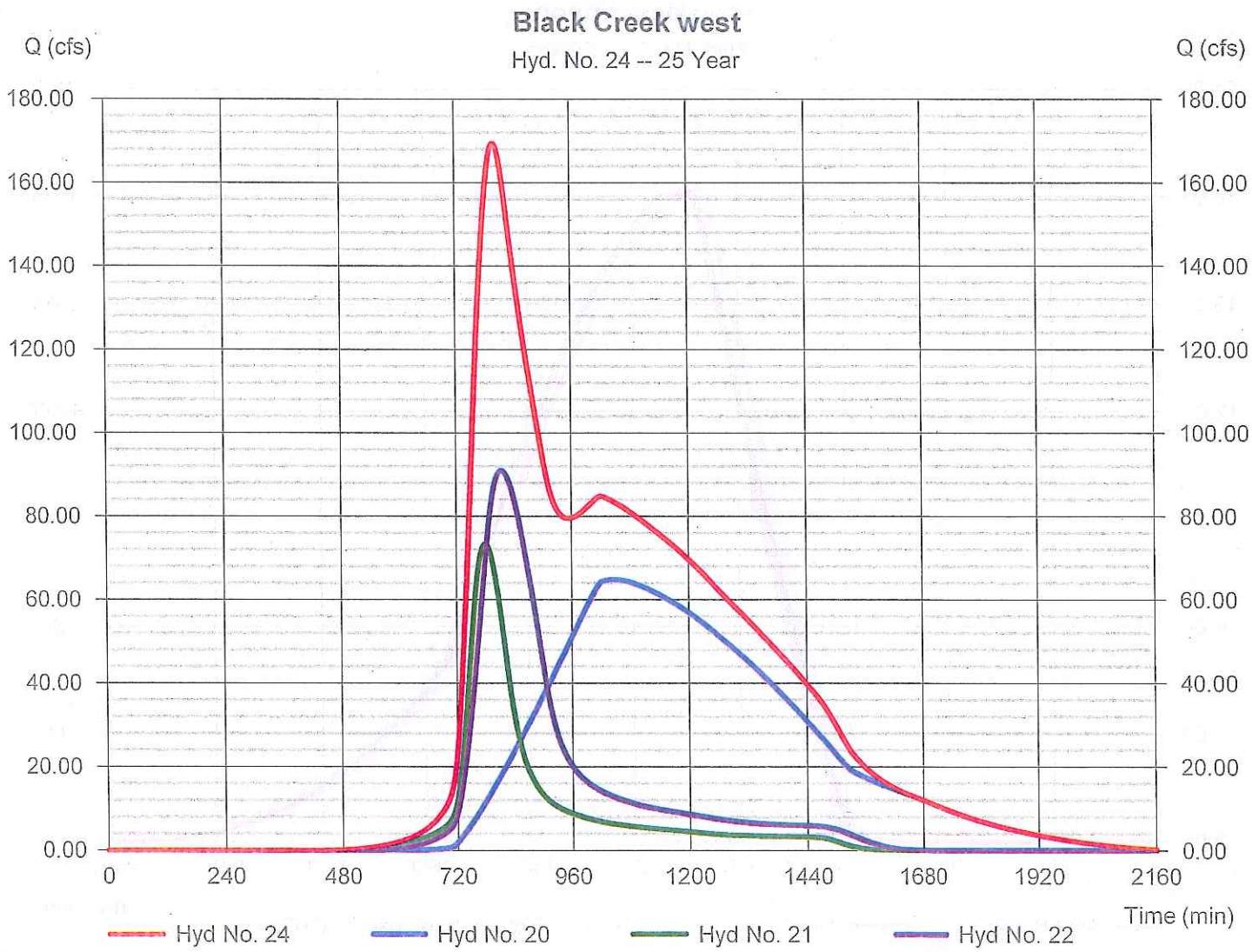
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2014 by Autodesk, Inc. v10.3 Thursday, 01 / 28 / 2016

Hyd. No. 24

Black Creek west

Hydrograph type	= Combine	Peak discharge	= 169.39 cfs
Storm frequency	= 25 yrs	Time to peak	= 800 min
Time interval	= 2 min	Hyd. volume	= 4,063,566 cuft
Inflow hyds.	= 20, 21, 22	Contrib. drain. area	= 412.000 ac



Hydrograph Report

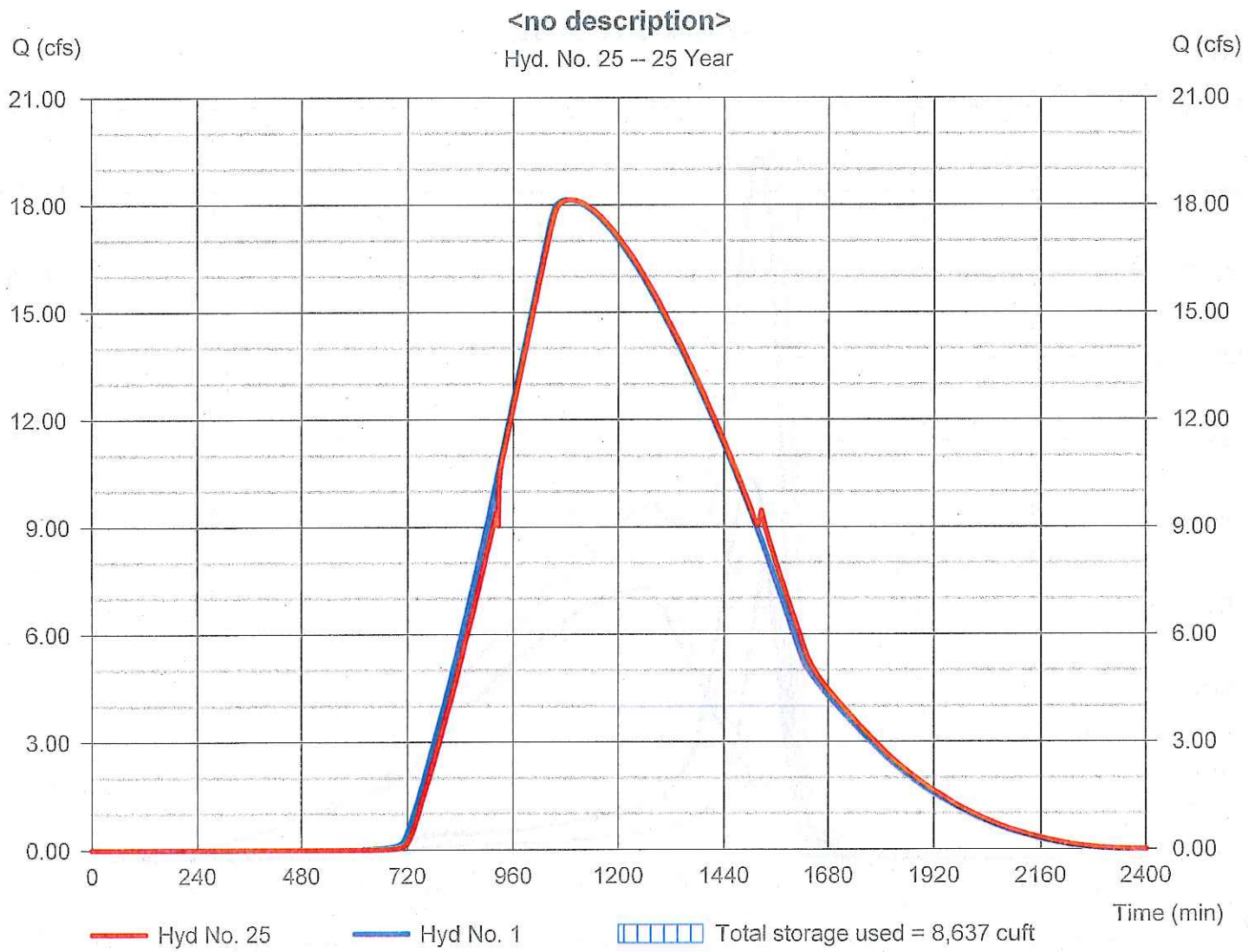
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2014 by Autodesk, Inc. v10.3 Thursday, 01 / 28 / 2016

Hyd. No. 25

<no description>

Hydrograph type	= Reservoir	Peak discharge	= 18.15 cfs
Storm frequency	= 25 yrs	Time to peak	= 1090 min
Time interval	= 2 min	Hyd. volume	= 698,772 cuft
Inflow hyd. No.	= 1 - SD-A1	Max. Elevation	= 575.30 ft
Reservoir name	= 42 cmpa crossing Ward	Max. Storage	= 8,637 cuft

Storage Indication method used.



Hydrograph Report

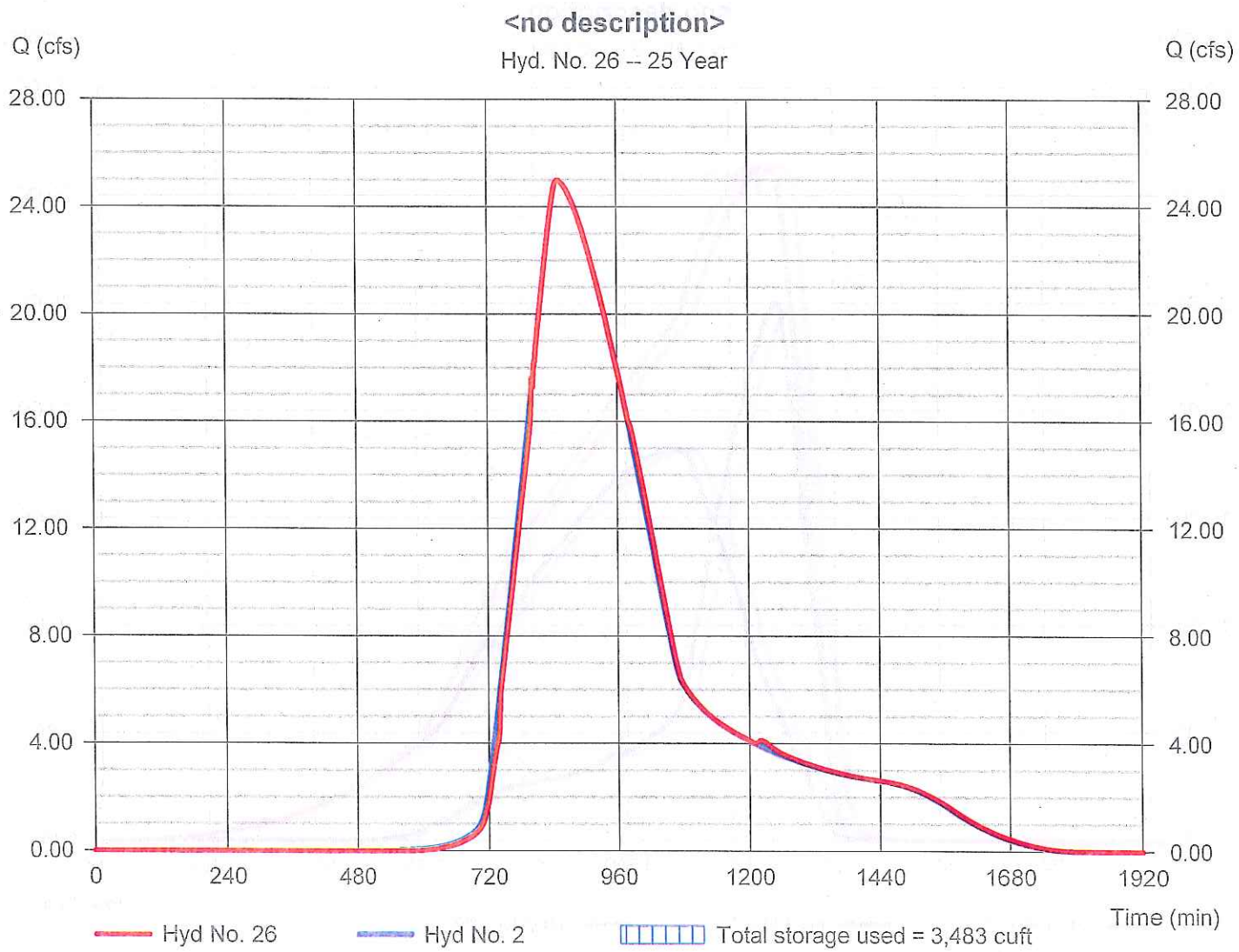
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2014 by Autodesk, Inc. v10.3 Thursday, 01 / 28 / 2016

Hyd. No. 26

<no description>

Hydrograph type	= Reservoir	Peak discharge	= 24.99 cfs
Storm frequency	= 25 yrs	Time to peak	= 850 min
Time interval	= 2 min	Hyd. volume	= 449,314 cuft
Inflow hyd. No.	= 2 - SD-A2	Max. Elevation	= 576.55 ft
Reservoir name	= 24 inch storm crossing Ward	Max. Storage	= 3,483 cuft

Storage Indication method used.



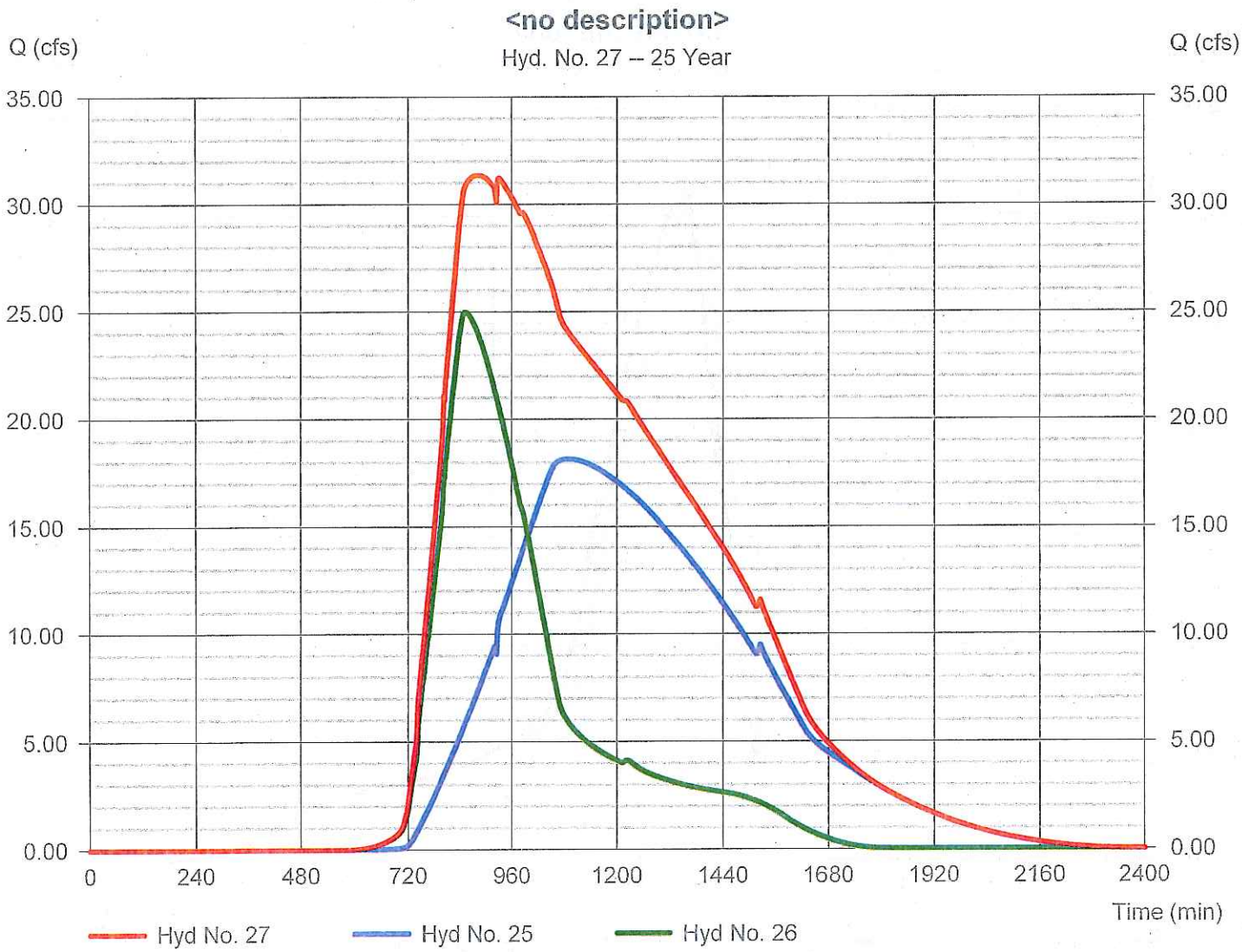
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2014 by Autodesk, Inc. v10.3 Thursday, 01 / 28 / 2016

Hyd. No. 27

<no description>

Hydrograph type	= Combine	Peak discharge	= 31.36 cfs
Storm frequency	= 25 yrs	Time to peak	= 880 min
Time interval	= 2 min	Hyd. volume	= 1,148,088 cuft
Inflow hyds.	= 25, 26	Contrib. drain. area	= 0.000 ac



Hydrograph Report

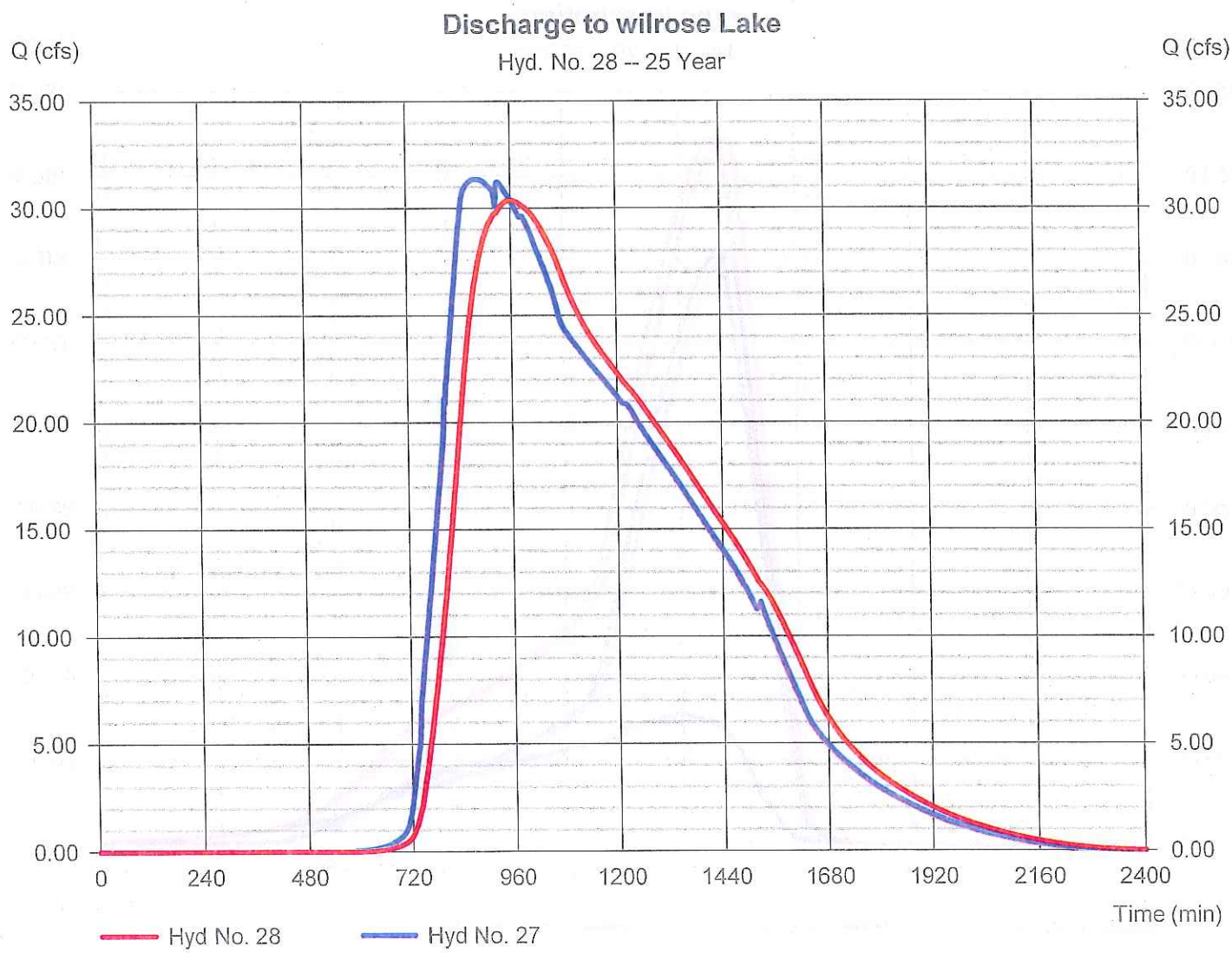
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2014 by Autodesk, Inc. v10.3 Thursday, 01 / 28 / 2016

Hyd. No. 28

Discharge to wilrose Lake

Hydrograph type	= Reach	Peak discharge	= 30.37 cfs
Storm frequency	= 25 yrs	Time to peak	= 960 min
Time interval	= 2 min	Hyd. volume	= 1,148,060 cuft
Inflow hyd. No.	= 27 - <no description>	Section type	= Trapezoidal
Reach length	= 3500.0 ft	Channel slope	= 0.1 %
Manning's n	= 0.040	Bottom width	= 10.0 ft
Side slope	= 2.0:1	Max. depth	= 2.0 ft
Rating curve x	= 0.227	Rating curve m	= 1.439
Ave. velocity	= 0.00 ft/s	Routing coeff.	= 0.0490

Modified Att-Kin routing method used.



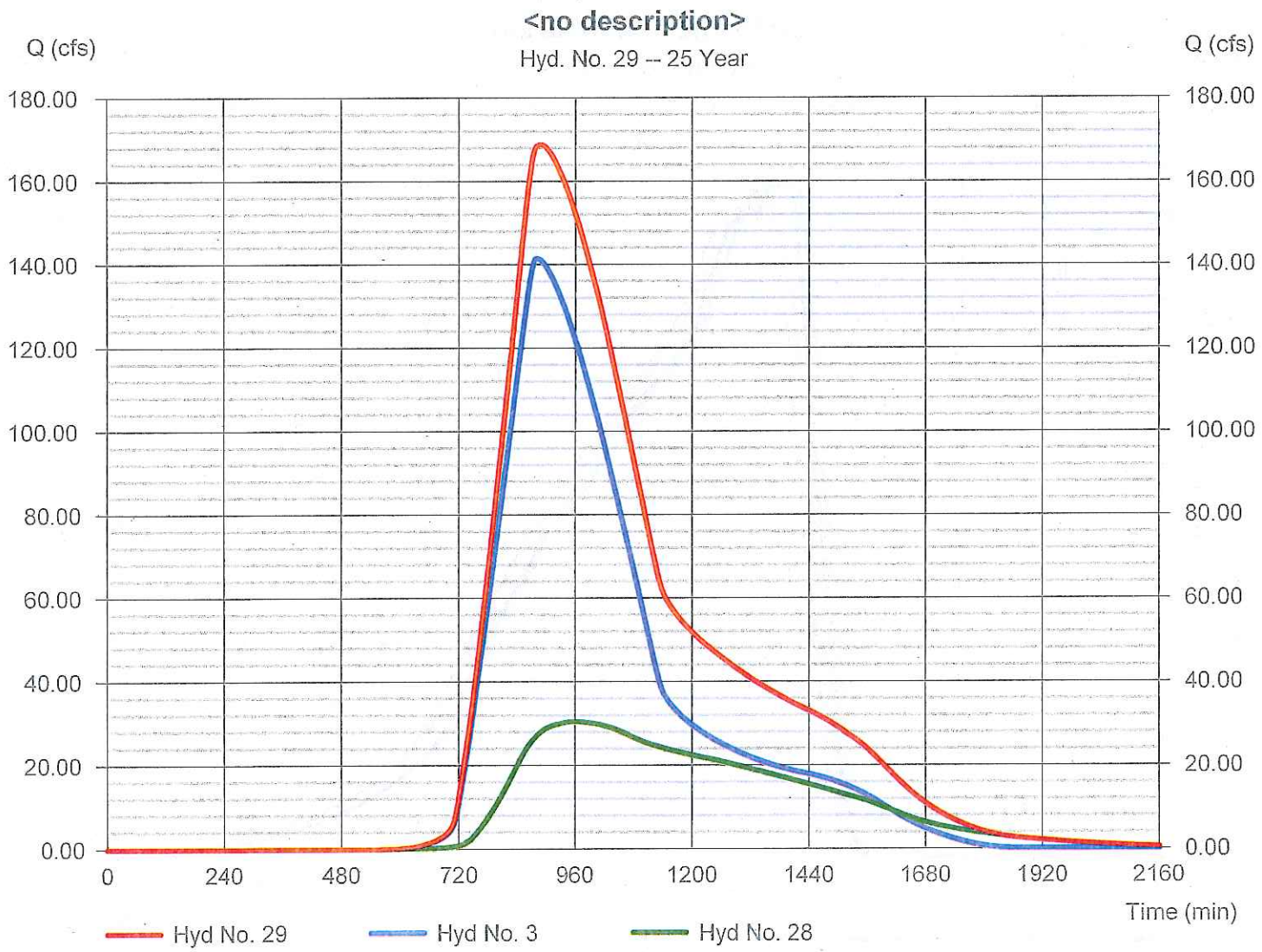
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2014 by Autodesk, Inc. v10.3 Thursday, 01 / 28 / 2016

Hyd. No. 29

<no description>

Hydrograph type	= Combine	Peak discharge	= 168.77 cfs
Storm frequency	= 25 yrs	Time to peak	= 886 min
Time interval	= 2 min	Hyd. volume	= 4,068,108 cuft
Inflow hyds.	= 3, 28	Contrib. drain. area	= 463.000 ac



Hydrograph Report

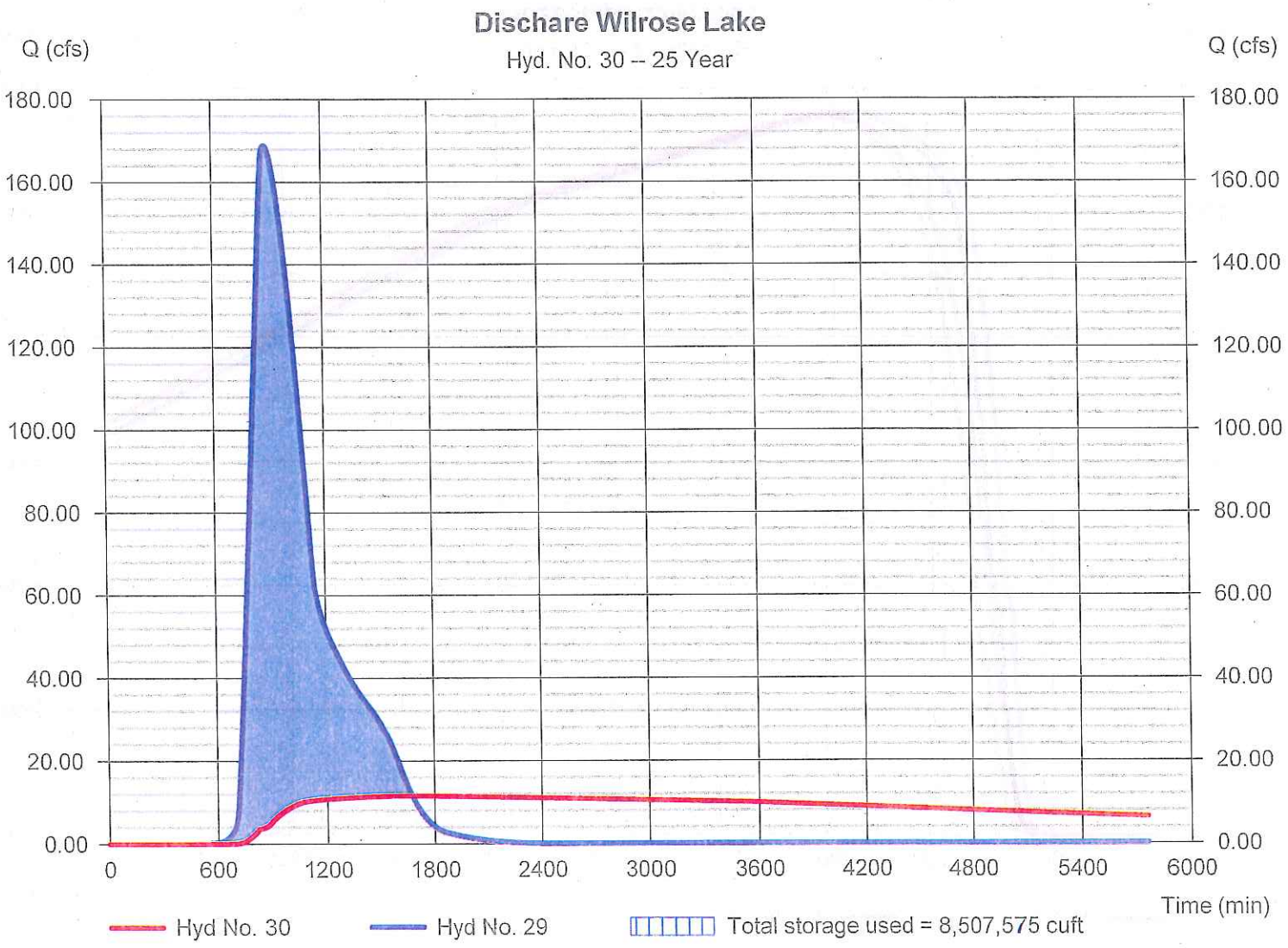
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2014 by Autodesk, Inc. v10.3 Thursday, 01 / 28 / 2016

Hyd. No. 30

Dischare Wilrose Lake

Hydrograph type	= Reservoir	Peak discharge	= 11.62 cfs
Storm frequency	= 25 yrs	Time to peak	= 1672 min
Time interval	= 2 min	Hyd. volume	= 2,838,127 cuft
Inflow hyd. No.	= 29 - <no description>	Max. Elevation	= 574.55 ft
Reservoir name	= Wilrose Pond	Max. Storage	= 8,507,575 cuft

Storage Indication method used. Wet pond routing start elevation = 571.08 ft.



Hydrograph Report

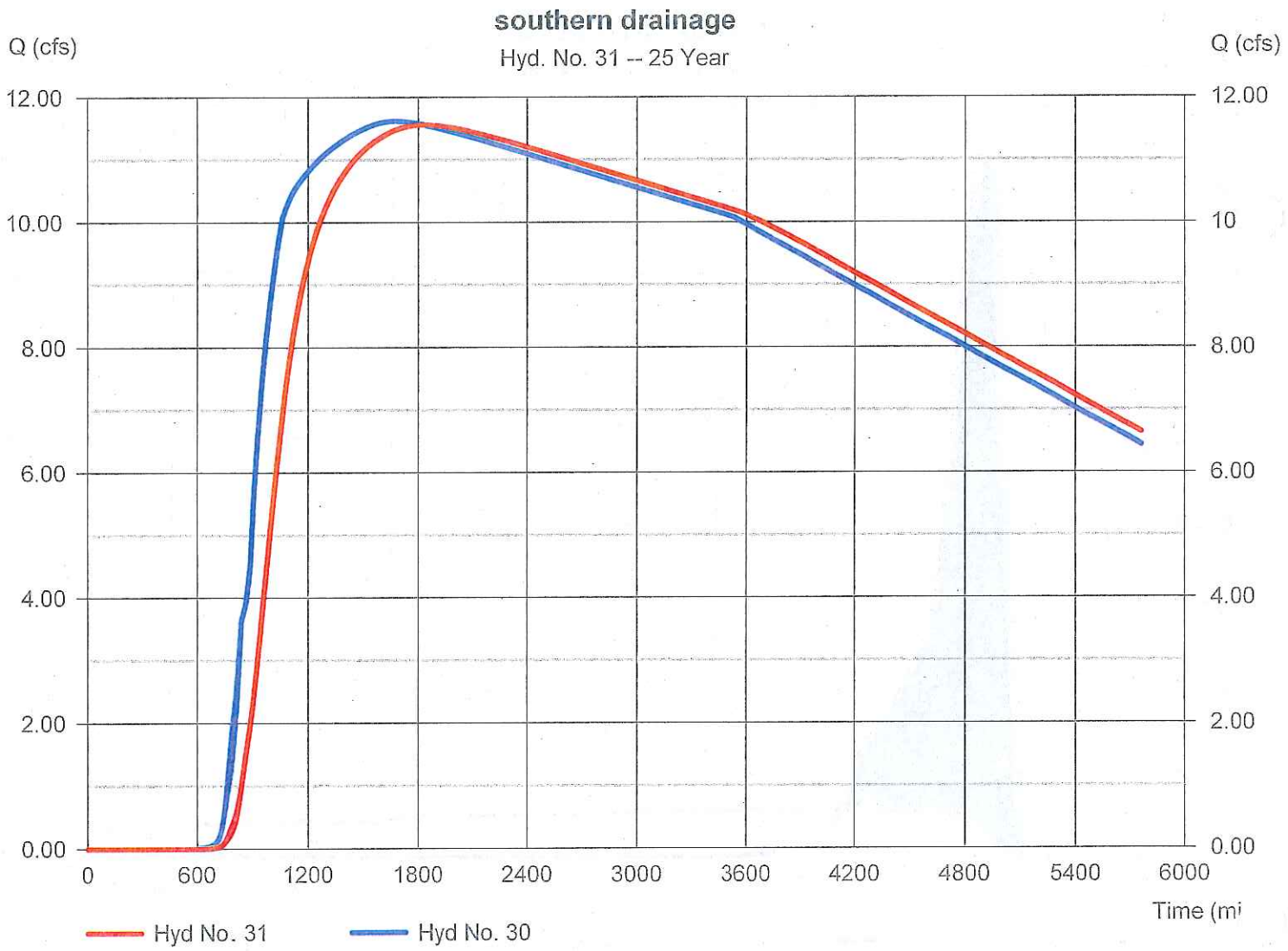
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2014 by Autodesk, Inc. v10.3 Thursday, 01 / 28 / 2016

Hyd. No. 31

southern drainage

Hydrograph type	= Reach	Peak discharge	= 11.56 cfs
Storm frequency	= 25 yrs	Time to peak	= 1830 min
Time interval	= 2 min	Hyd. volume	= 2,787,695 cuft
Inflow hyd. No.	= 30 - Dischare Wilrose Lake	Section type	= Trapezoidal
Reach length	= 6300.0 ft	Channel slope	= 0.0 %
Manning's n	= 0.040	Bottom width	= 10.0 ft
Side slope	= 1.0:1	Max. depth	= 3.0 ft
Rating curve x	= 0.113	Rating curve m	= 1.518
Ave. velocity	= 0.00 ft/s	Routing coeff.	= 0.0158

Modified Att-Kin routing method used.



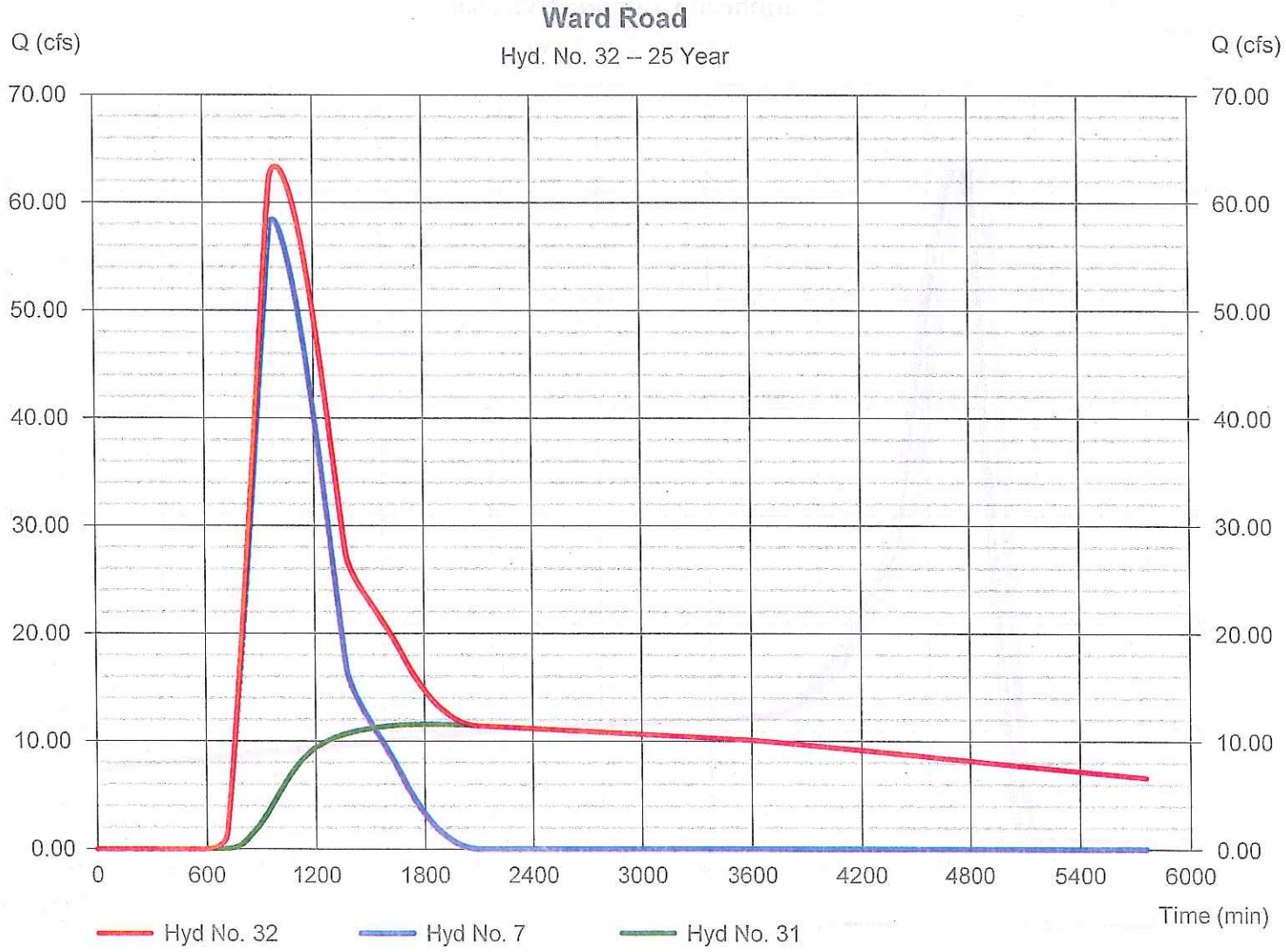
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2014 by Autodesk, Inc. v10.3 Thursday, 01 / 28 / 2016

Hyd. No. 32

Ward Road

Hydrograph type	= Combine	Peak discharge	= 63.37 cfs
Storm frequency	= 25 yrs	Time to peak	= 994 min
Time interval	= 2 min	Hyd. volume	= 4,514,672 cuft
Inflow hyds.	= 7, 31	Contrib. drain. area	= 285.000 ac



Hydrograph Report

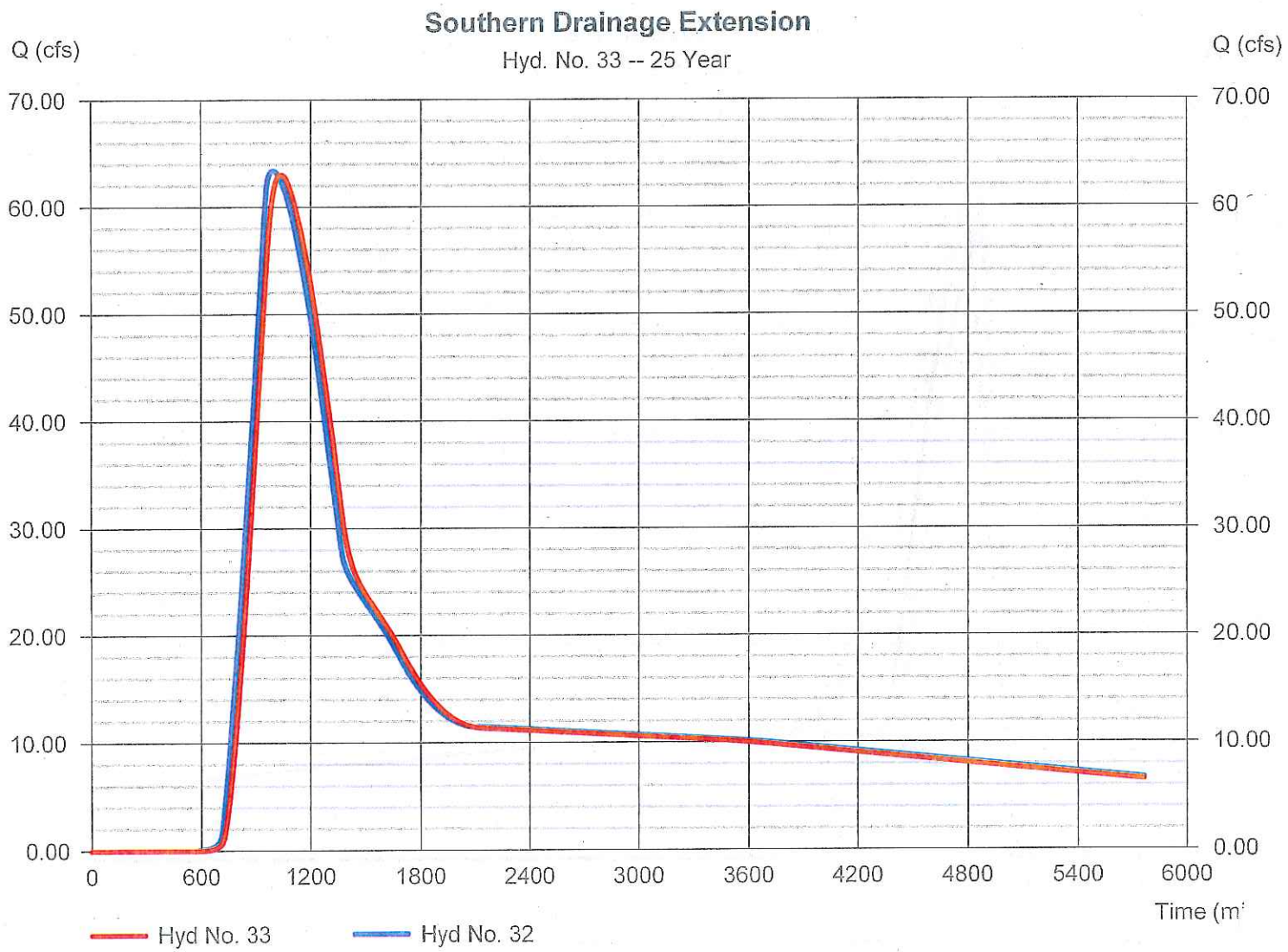
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2014 by Autodesk, Inc. v10.3 Thursday, 01 / 28 / 2016

Hyd. No. 33

Southern Drainage Extension

Hydrograph type	= Reach	Peak discharge	= 63.02 cfs
Storm frequency	= 25 yrs	Time to peak	= 1038 min
Time interval	= 2 min	Hyd. volume	= 4,481,947 cuft
Inflow hyd. No.	= 32 - Ward Road	Section type	= Trapezoidal
Reach length	= 5000.0 ft	Channel slope	= 0.1 %
Manning's n	= 0.030	Bottom width	= 10.0 ft
Side slope	= 1.0:1	Max. depth	= 4.0 ft
Rating curve x	= 0.338	Rating curve m	= 1.512
Ave. velocity	= 0.00 ft/s	Routing coeff.	= 0.0699

Modified Att-Kin routing method used.



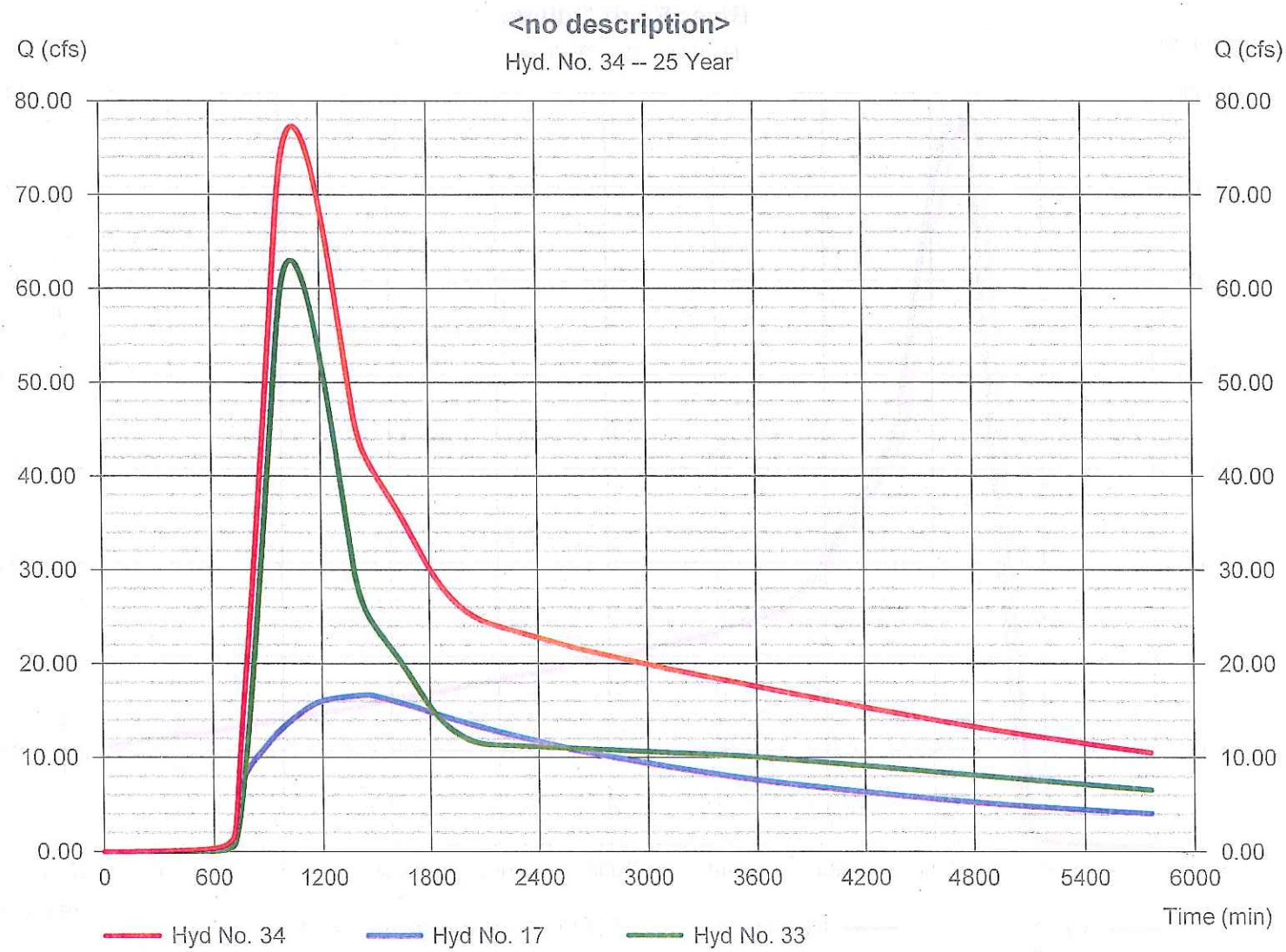
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2014 by Autodesk, Inc. v10.3 Thursday, 01 / 28 / 2016

Hyd. No. 34

<no description>

Hydrograph type	= Combine	Peak discharge	= 77.30 cfs
Storm frequency	= 25 yrs	Time to peak	= 1050 min
Time interval	= 2 min	Hyd. volume	= 7,284,998 cuft
Inflow hyds.	= 17, 33	Contrib. drain. area	= 0.000 ac



Hydrograph Report

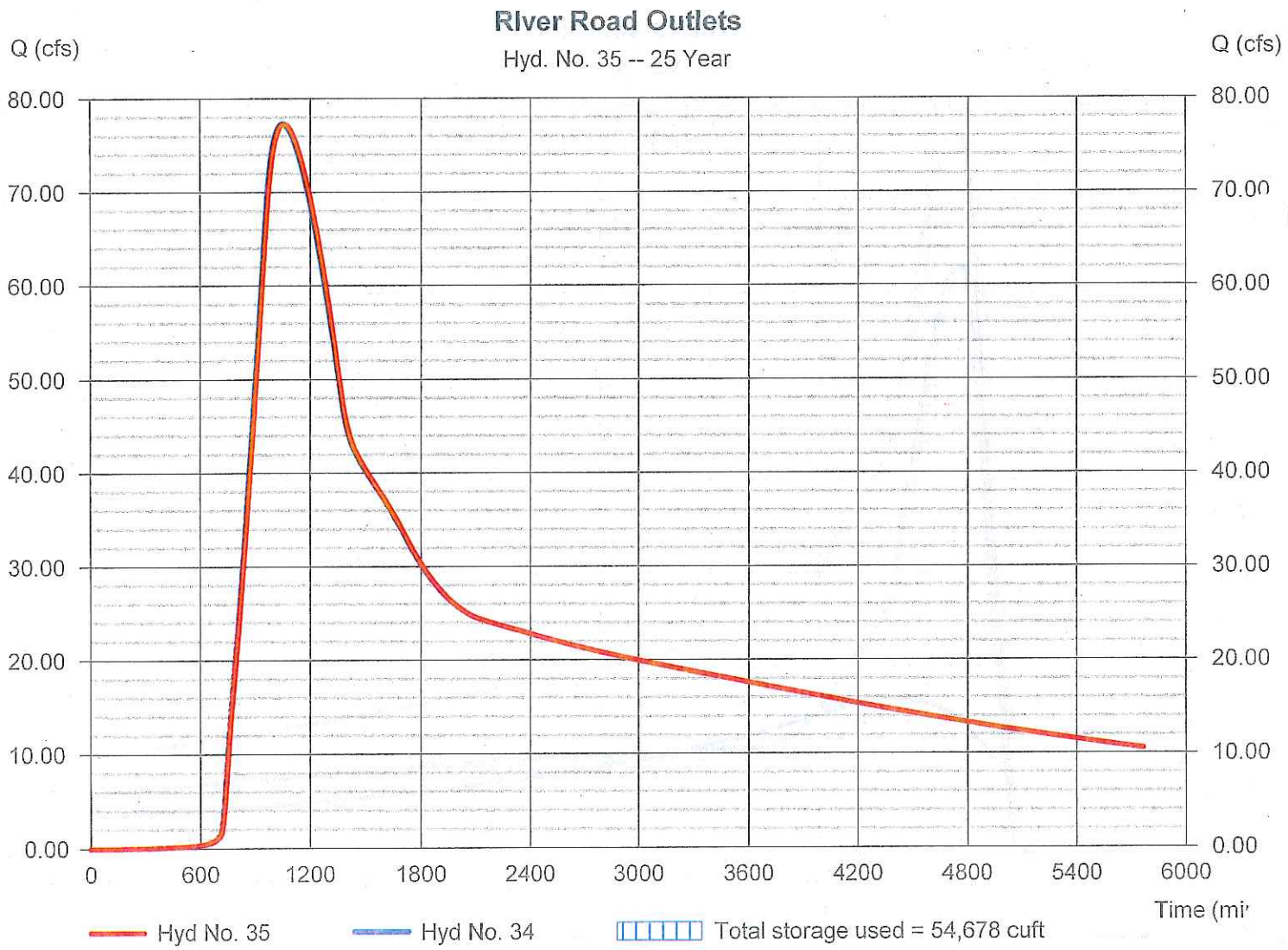
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2014 by Autodesk, Inc. v10.3 Thursday, 01 / 28 / 2016

Hyd. No. 35

RIver Road Outlets

Hydrograph type	= Reservoir	Peak discharge	= 77.28 cfs
Storm frequency	= 25 yrs	Time to peak	= 1056 min
Time interval	= 2 min	Hyd. volume	= 7,283,832 cuft
Inflow hyd. No.	= 34 - <no description>	Max. Elevation	= 569.97 ft
Reservoir name	= Twin 36 and 30 inch outlet pipes	Max. Storage	= 54,678 cuft

Storage Indication method used. Wet pond routing start elevation = 568.94 ft.



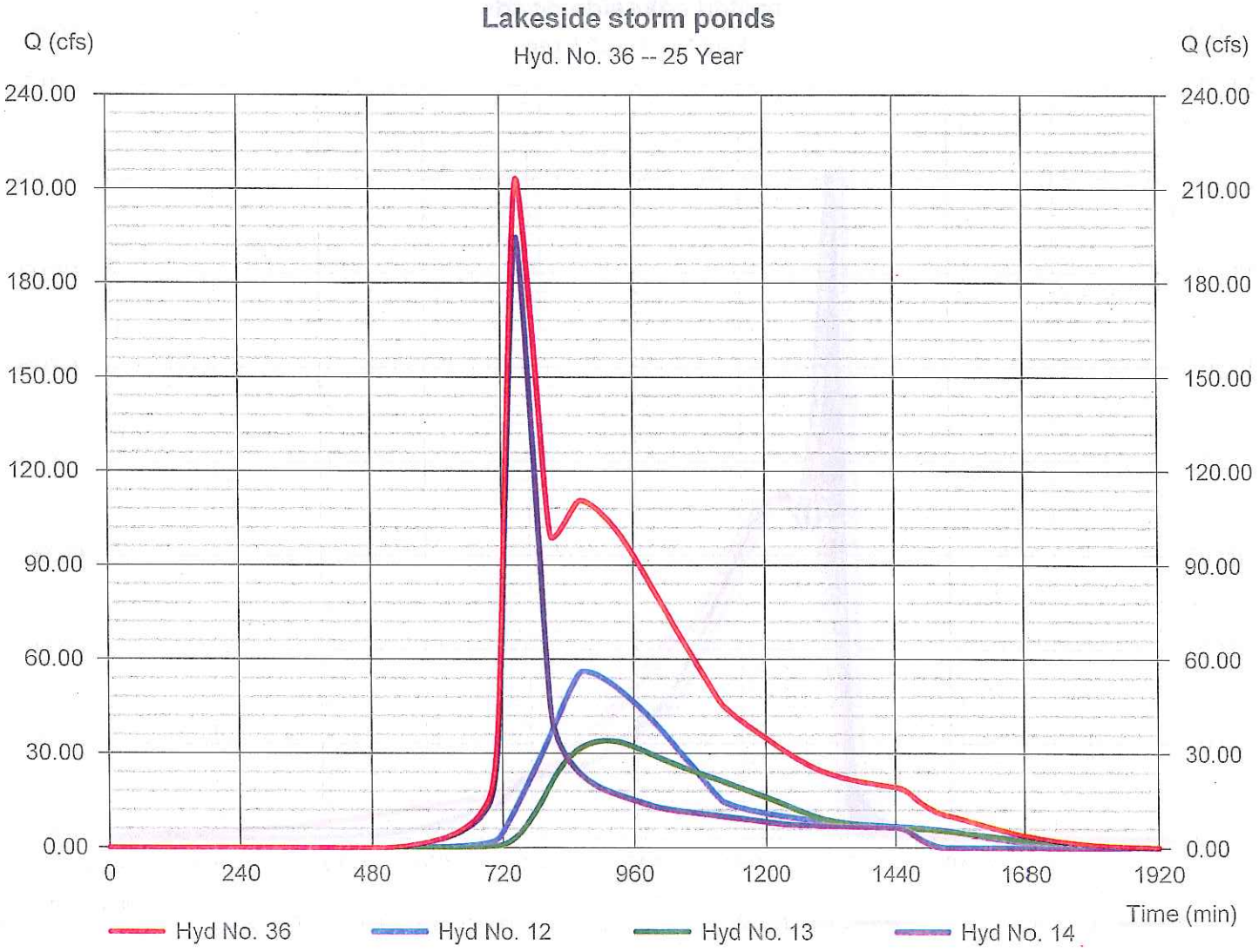
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2014 by Autodesk, Inc. v10.3 Thursday, 01 / 28 / 2016

Hyd. No. 36

Lakeside storm ponds

Hydrograph type	= Combine	Peak discharge	= 213.41 cfs
Storm frequency	= 25 yrs	Time to peak	= 750 min
Time interval	= 2 min	Hyd. volume	= 3,262,618 cuft
Inflow hyds.	= 12, 13, 14	Contrib. drain. area	= 360.000 ac



Hydrograph Report

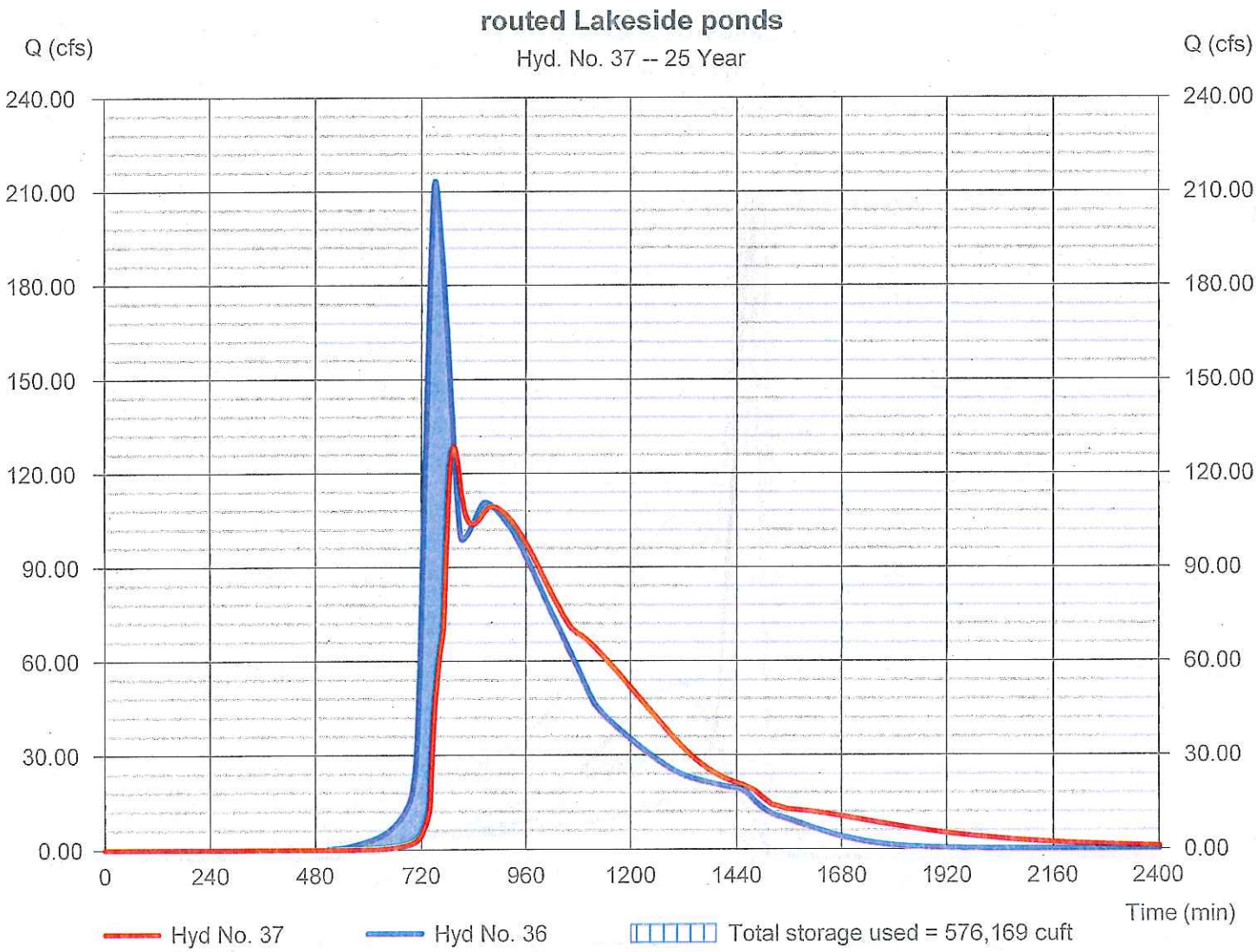
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2014 by Autodesk, Inc. v10.3 Thursday, 01 / 28 / 2016

Hyd. No. 37

routed Lakeside ponds

Hydrograph type	= Reservoir	Peak discharge	= 128.55 cfs
Storm frequency	= 25 yrs	Time to peak	= 794 min
Time interval	= 2 min	Hyd. volume	= 3,262,084 cuft
Inflow hyd. No.	= 36 - Lakeside storm ponds	Max. Elevation	= 574.63 ft
Reservoir name	= Lakeside Drive Development	Max. Storage	= 576,169 cuft

Storage Indication method used.



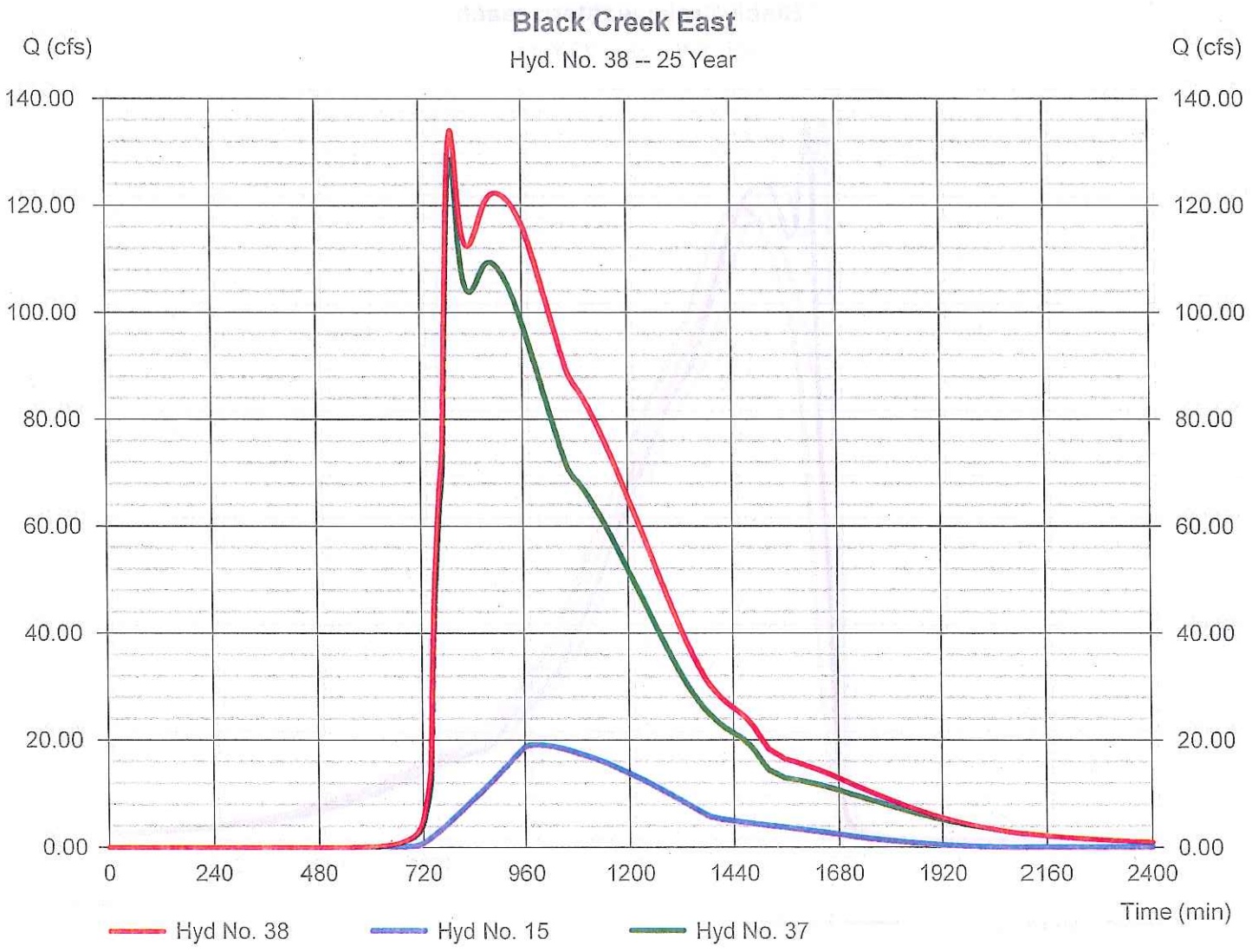
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2014 by Autodesk, Inc. v10.3 Thursday, 01 / 28 / 2016

Hyd. No. 38

Black Creek East

Hydrograph type	= Combine	Peak discharge	= 134.03 cfs
Storm frequency	= 25 yrs	Time to peak	= 794 min
Time interval	= 2 min	Hyd. volume	= 3,838,849 cuft
Inflow hyds.	= 15, 37	Contrib. drain. area	= 104.000 ac



Hydrograph Report

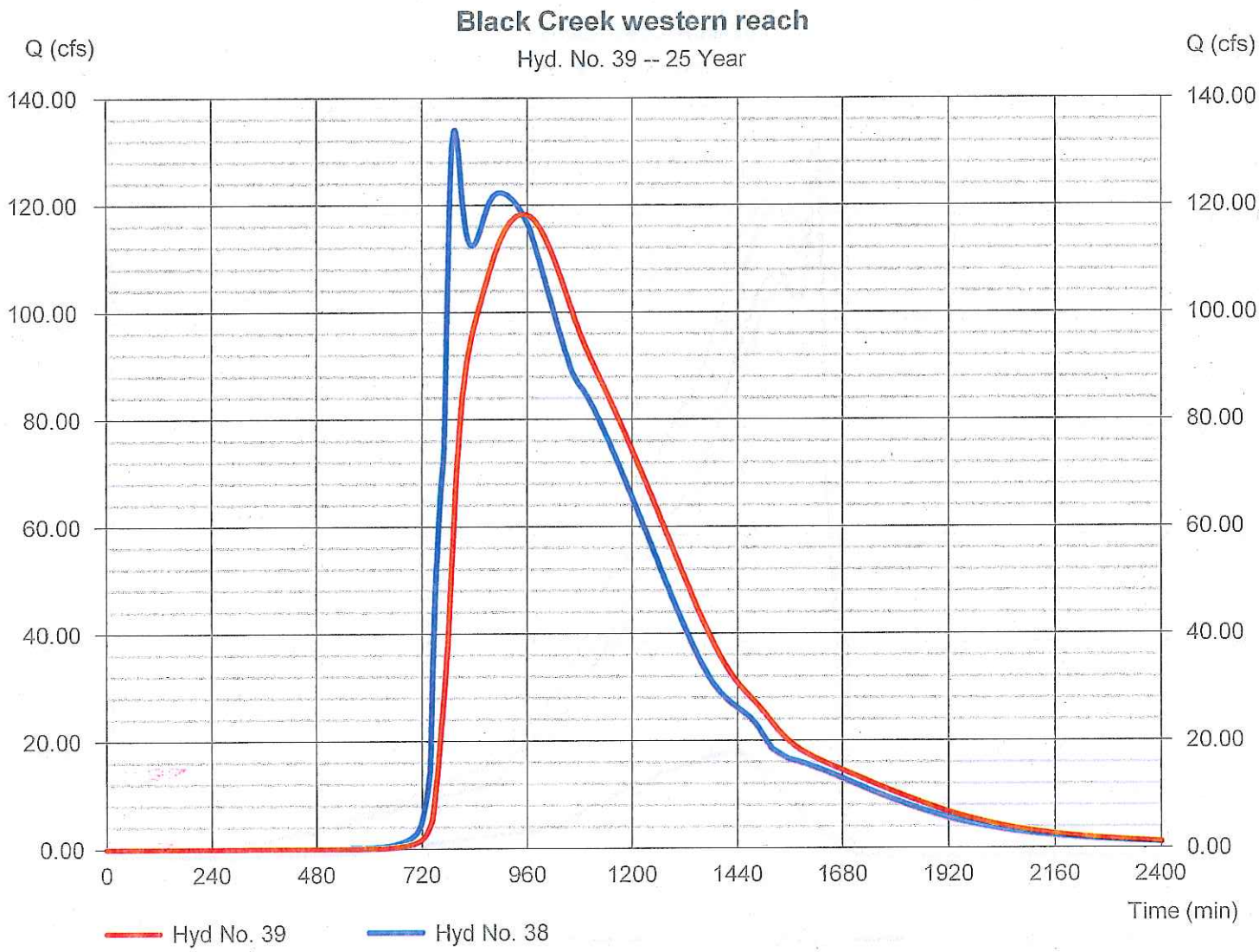
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2014 by Autodesk, Inc. v10.3 Thursday, 01 / 28 / 2016

Hyd. No. 39

Black Creek western reach

Hydrograph type	= Reach	Peak discharge	= 118.27 cfs
Storm frequency	= 25 yrs	Time to peak	= 950 min
Time interval	= 2 min	Hyd. volume	= 3,838,794 cuft
Inflow hyd. No.	= 38 - Black Creek East	Section type	= Trapezoidal
Reach length	= 5000.0 ft	Channel slope	= 0.1 %
Manning's n	= 0.040	Bottom width	= 20.0 ft
Side slope	= 2.0:1	Max. depth	= 3.0 ft
Rating curve x	= 0.113	Rating curve m	= 1.504
Ave. velocity	= 0.00 ft/s	Routing coeff.	= 0.0427

Modified Att-Kin routing method used.



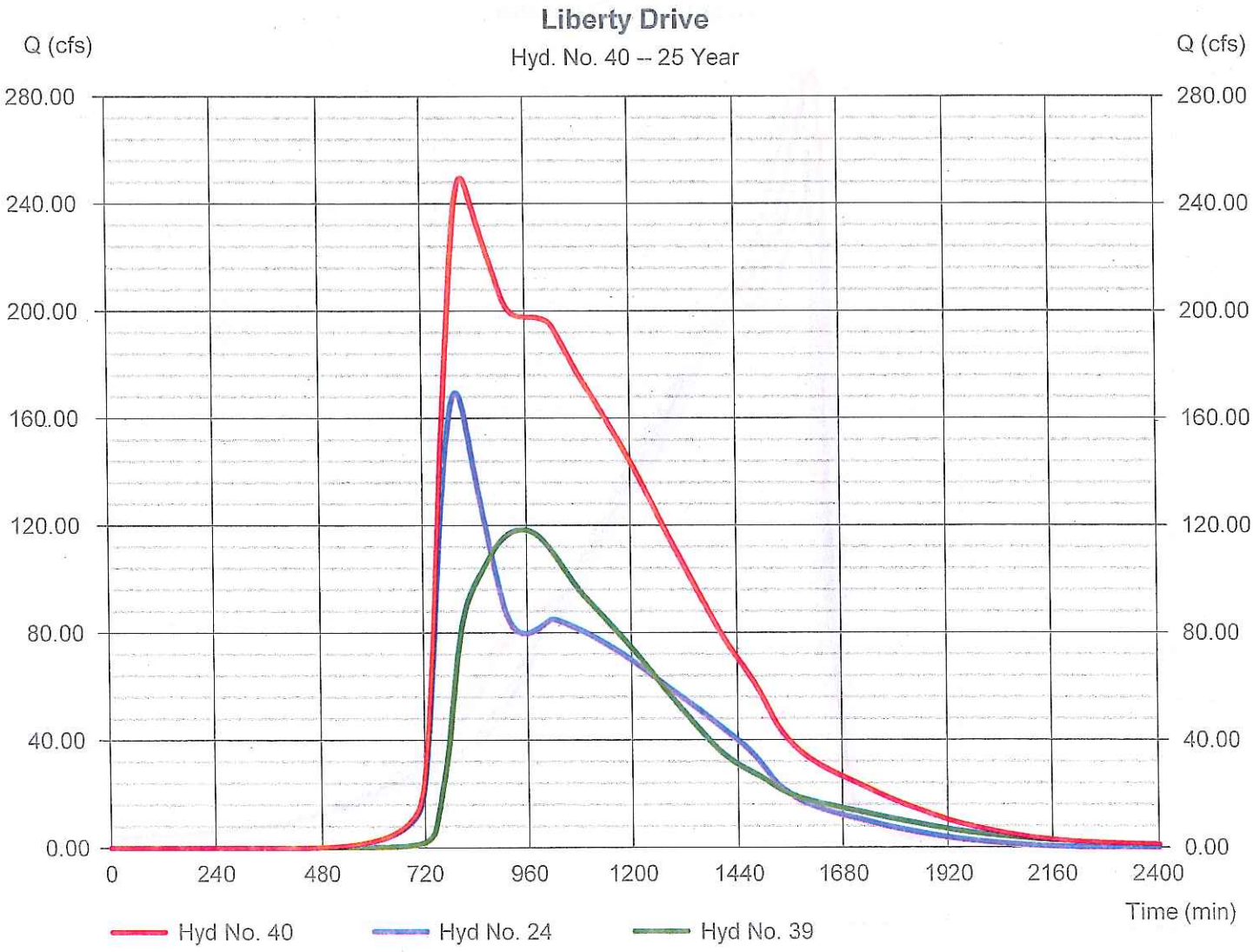
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2014 by Autodesk, Inc. v10.3 Thursday, 01 / 28 / 2016

Hyd. No. 40

Liberty Drive

Hydrograph type	= Combine	Peak discharge	= 249.53 cfs
Storm frequency	= 25 yrs	Time to peak	= 814 min
Time interval	= 2 min	Hyd. volume	= 7,902,368 cuft
Inflow hyds.	= 24, 39	Contrib. drain. area	= 0.000 ac



Hydrograph Report

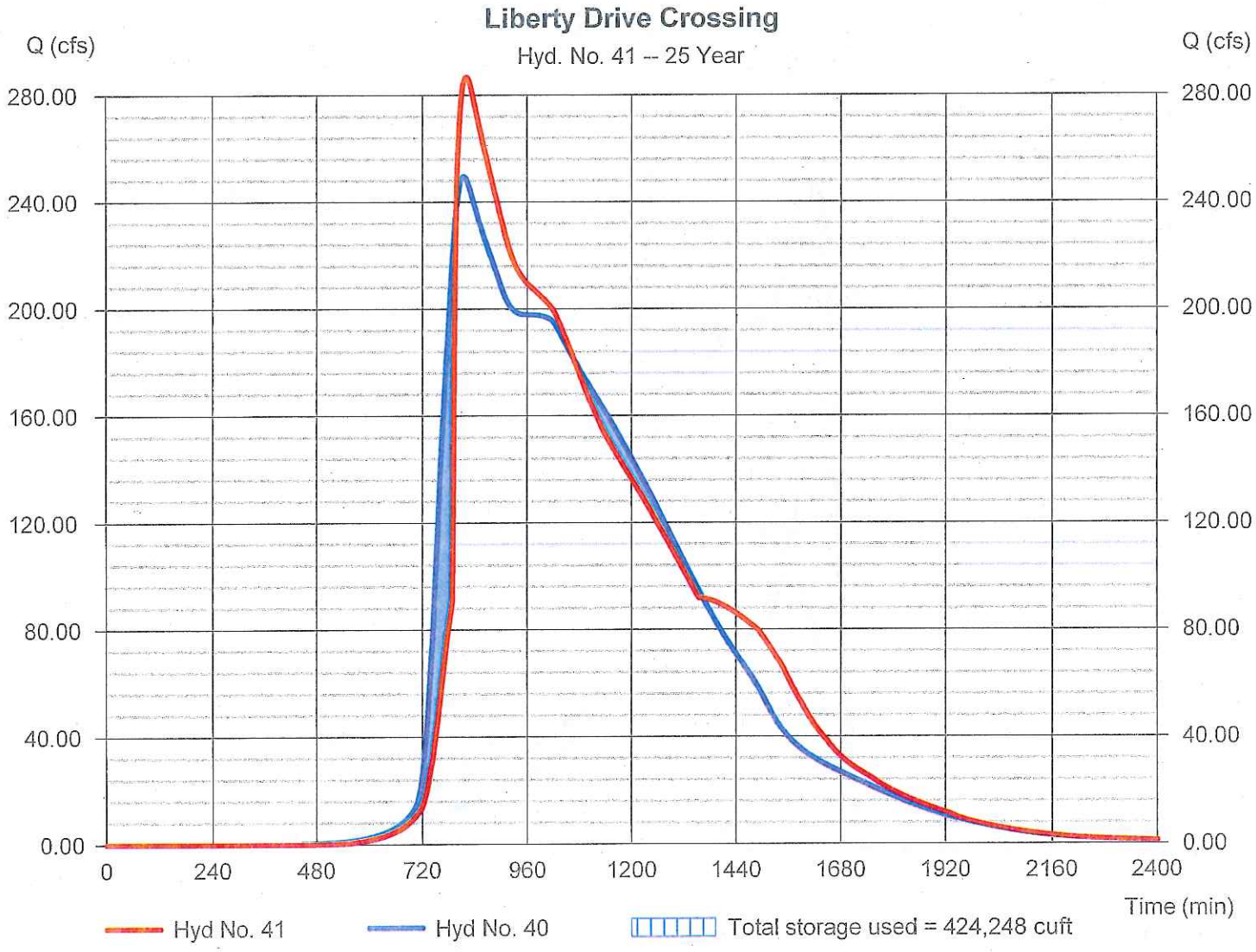
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2014 by Autodesk, Inc. v10.3 Thursday, 01 / 28 / 2016

Hyd. No. 41

Liberty Drive Crossing

Hydrograph type	= Reservoir	Peak discharge	= 286.74 cfs
Storm frequency	= 25 yrs	Time to peak	= 820 min
Time interval	= 2 min	Hyd. volume	= 8,115,534 cuft
Inflow hyd. No.	= 40 - Liberty Drive	Max. Elevation	= 573.99 ft
Reservoir name	= Impoundment area (Liberty Drive)	Max. Storage	= 424,248 cuft

Storage Indication method used.



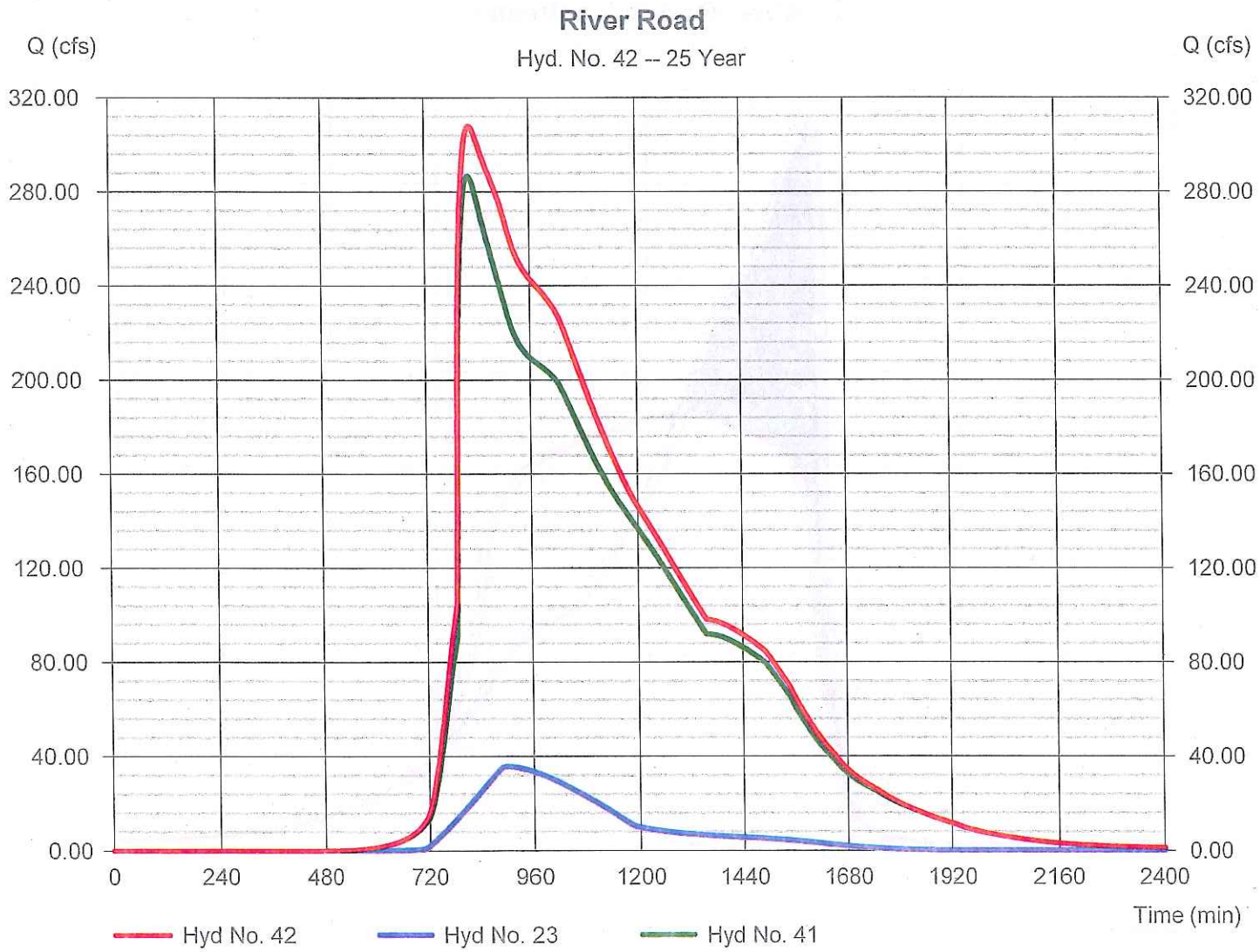
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2014 by Autodesk, Inc. v10.3 Thursday, 01 / 28 / 2016

Hyd. No. 42

River Road

Hydrograph type	= Combine	Peak discharge	= 307.94 cfs
Storm frequency	= 25 yrs	Time to peak	= 822 min
Time interval	= 2 min	Hyd. volume	= 8,935,170 cuft
Inflow hyds.	= 23, 41	Contrib. drain. area	= 148.000 ac



Hydrograph Report

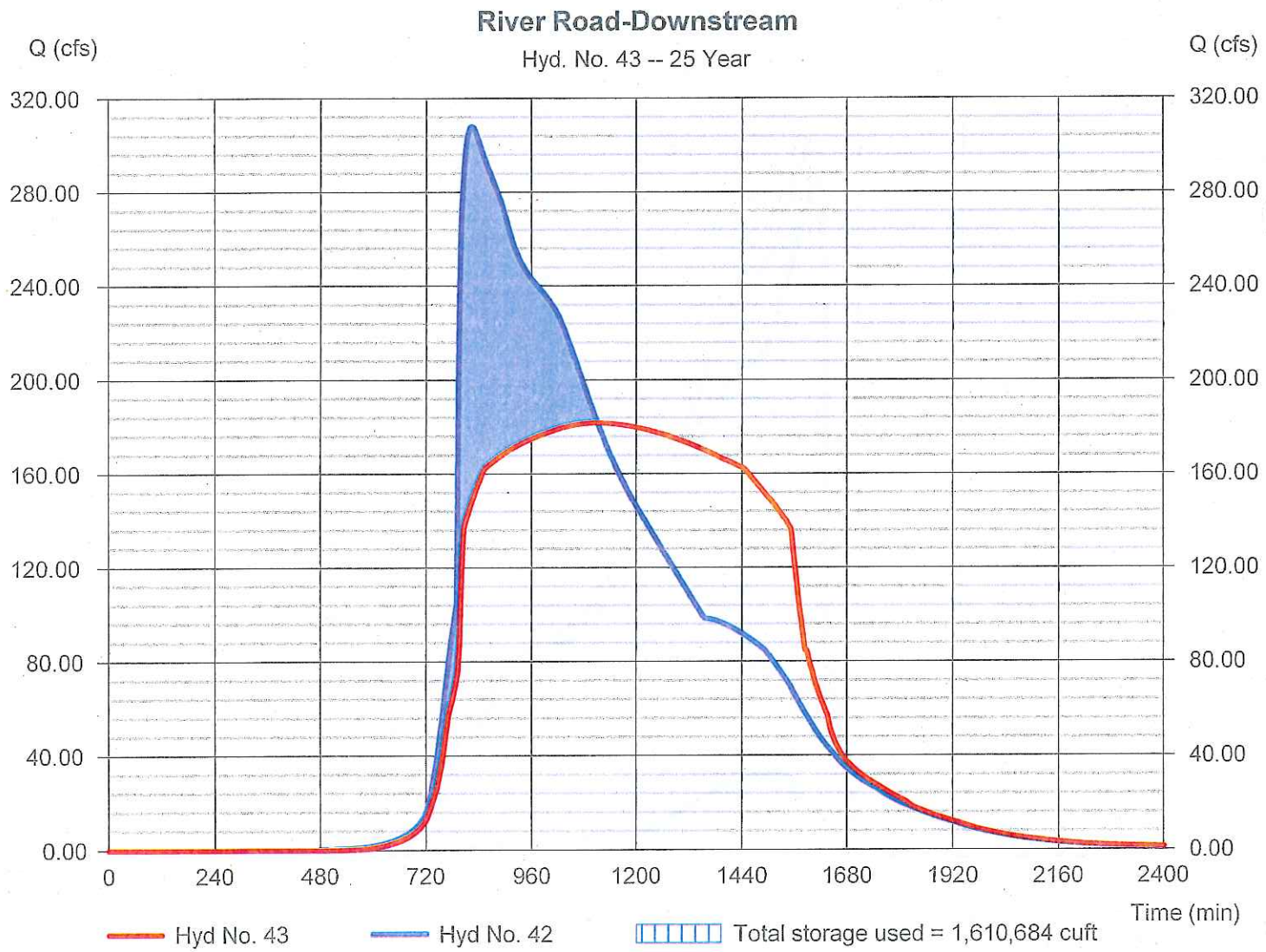
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2014 by Autodesk, Inc. v10.3 Thursday, 01 / 28 / 2016

Hyd. No. 43

River Road-Downstream

Hydrograph type	= Reservoir	Peak discharge	= 181.70 cfs
Storm frequency	= 25 yrs	Time to peak	= 1112 min
Time interval	= 2 min	Hyd. volume	= 8,935,161 cuft
Inflow hyd. No.	= 42 - River Road	Max. Elevation	= 571.90 ft
Reservoir name	= Impoundment area (River Road)	Max. Storage	= 1,610,684 cuft

Storage Indication method used.



Hydrograph Summary Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2014 by Autodesk, Inc. v10.3

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	SCS Runoff	30.91	2	1074	1,161,539	------	------	------	SD-A1
2	SCS Runoff	41.24	2	850	724,487	------	------	------	SD-A2
3	SCS Runoff	233.60	2	876	4,708,312	------	------	------	SD-A3
4	SCS Runoff	58.47	2	910	1,370,291	------	------	------	SD-A5.1
5	SCS Runoff	485.67	2	728	1,999,604	------	------	------	SD-A5.2
6	SCS Runoff	593.62	2	736	2,876,875	------	------	------	SD-A5.3
7	SCS Runoff	97.59	2	968	2,812,419	------	------	------	SD-A4 /A6
8	SCS Runoff	42.97	2	788	480,985	------	------	------	BL-A1
9	SCS Runoff	37.97	2	936	982,213	------	------	------	BL-A2
10	Reach	35.12	2	830	480,962	8	------	------	BL-A1 reach
11	Combine	58.80	2	864	1,463,176	9, 10	------	------	BL-A1/A2
12	SCS Runoff	92.52	2	868	1,795,516	------	------	------	BL-A3
13	Reach	58.04	2	888	1,463,163	11	------	------	BL-A2 reach
14	SCS Runoff	309.84	2	750	1,996,937	------	------	------	BL-A4
15	SCS Runoff	32.60	2	976	958,732	------	------	------	BL-A5
16	Combine	1020.70	2	732	6,246,767	4, 5, 6,	------	------	Wheatfield Lake outlet
17	Reservoir	29.38	2	1382	4,587,178	16	571.99	5,043,555	routed wheatfiled lk
18	SCS Runoff	162.94	2	786	1,758,174	------	------	------	BL-A6
19	SCS Runoff	140.61	2	754	1,016,487	------	------	------	BL-A7
20	SCS Runoff	110.51	2	1034	3,798,046	------	------	------	BL-A8
21	Reach	115.72	2	776	1,016,475	19	------	------	BL-A7 channel reach
22	Reach	148.73	2	808	1,758,162	18	------	------	BL-A6 Channel Reac
23	SCS Runoff	61.31	2	896	1,362,432	------	------	------	BL-A9
24	Combine	275.71	2	796	6,572,684	20, 21, 22,	------	------	Black Creek west
25	Reservoir	30.89	2	1084	1,161,534	1	575.97	12,818	<no description>
26	Reservoir	41.24	2	850	724,481	2	576.60	3,577	<no description>
27	Combine	53.36	2	876	1,886,016	25, 26	------	------	<no description>
28	Reach	51.52	2	934	1,885,991	27	------	------	Discharge to wilrose Lake
29	Combine	281.30	2	880	6,594,301	3, 28	------	------	<no description>
30	Reservoir	13.67	2	1700	3,701,488	29	575.68	10,872,630	Dischare Wilrose Lake
31	Reach	13.63	2	1858	3,622,579	30	------	------	southern drainage
32	Combine	104.51	2	980	6,435,000	7, 31	------	------	Ward Road
33	Reach	103.45	2	1016	6,377,400	32	------	------	Southern Drainage Extension

Hydrograph Summary Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2014 by Autodesk, Inc. v10.3

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
34	Combine	129.01	2	1026	10,956,210	17, 33	------	------	<no description>
35	Reservoir	128.77	2	1042	10,954,550	34	571.60	83,009	RIver Road Outlets
36	Combine	347.50	2	750	5,255,617	12, 13, 14,	------	------	Lakeside storm ponds
37	Reservoir	289.33	2	772	5,255,063	36	575.56	685,514	routed Lakeside ponds
38	Combine	296.85	2	772	6,213,794	15, 37	------	------	Black Creek East
39	Reach	212.04	2	808	6,213,759	38	------	------	Black Creek western reach
40	Combine	483.95	2	802	12,786,440	24, 39	------	------	Liberty Drive
41	Reservoir	508.89	2	814	13,042,210	40	574.87	571,616	Liberty Drive Crossing
42	Combine	545.16	2	818	14,404,640	23, 41	------	------	River Road
43	Reservoir	223.25	2	1190	14,404,630	42	574.14	4,683,661	River Road-Downstream

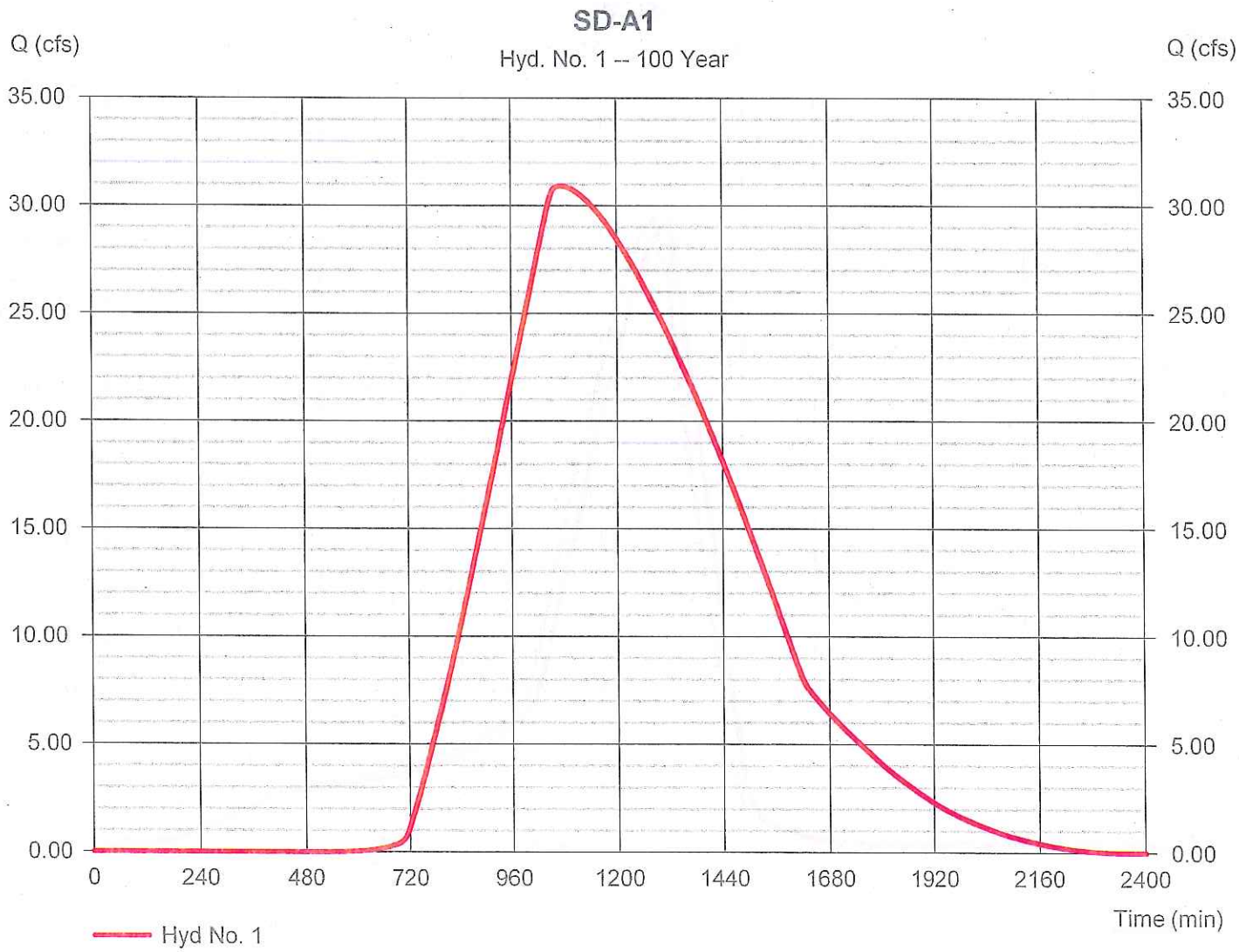
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2014 by Autodesk, Inc. v10.3 Thursday, 01 / 28 / 2016

Hyd. No. 1

SD-A1

Hydrograph type	= SCS Runoff	Peak discharge	= 30.91 cfs
Storm frequency	= 100 yrs	Time to peak	= 1074 min
Time interval	= 2 min	Hyd. volume	= 1,161,539 cuft
Drainage area	= 126.000 ac	Curve number	= 77
Basin Slope	= 0.0 %	Hydraulic length	= 4500 ft
Tc method	= LAG	Time of conc. (Tc)	= 580.91 min
Total precip.	= 4.90 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



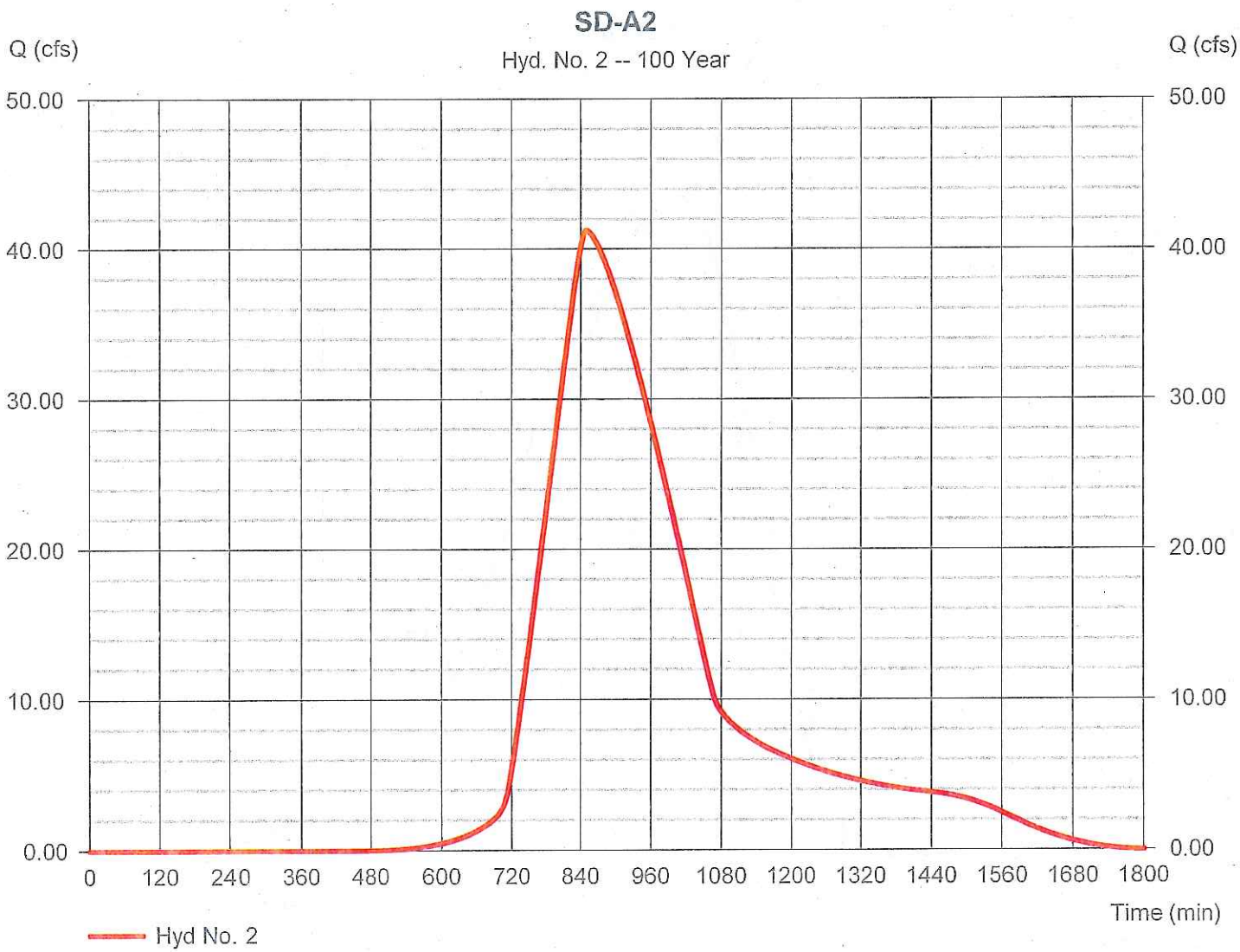
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2014 by Autodesk, Inc. v10.3 Thursday, 01 / 28 / 2016

Hyd. No. 2

SD-A2

Hydrograph type	= SCS Runoff	Peak discharge	= 41.24 cfs
Storm frequency	= 100 yrs	Time to peak	= 850 min
Time interval	= 2 min	Hyd. volume	= 724,487 cuft
Drainage area	= 71.000 ac	Curve number	= 80
Basin Slope	= 0.1 %	Hydraulic length	= 2000 ft
Tc method	= LAG	Time of conc. (Tc)	= 226.31 min
Total precip.	= 4.90 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



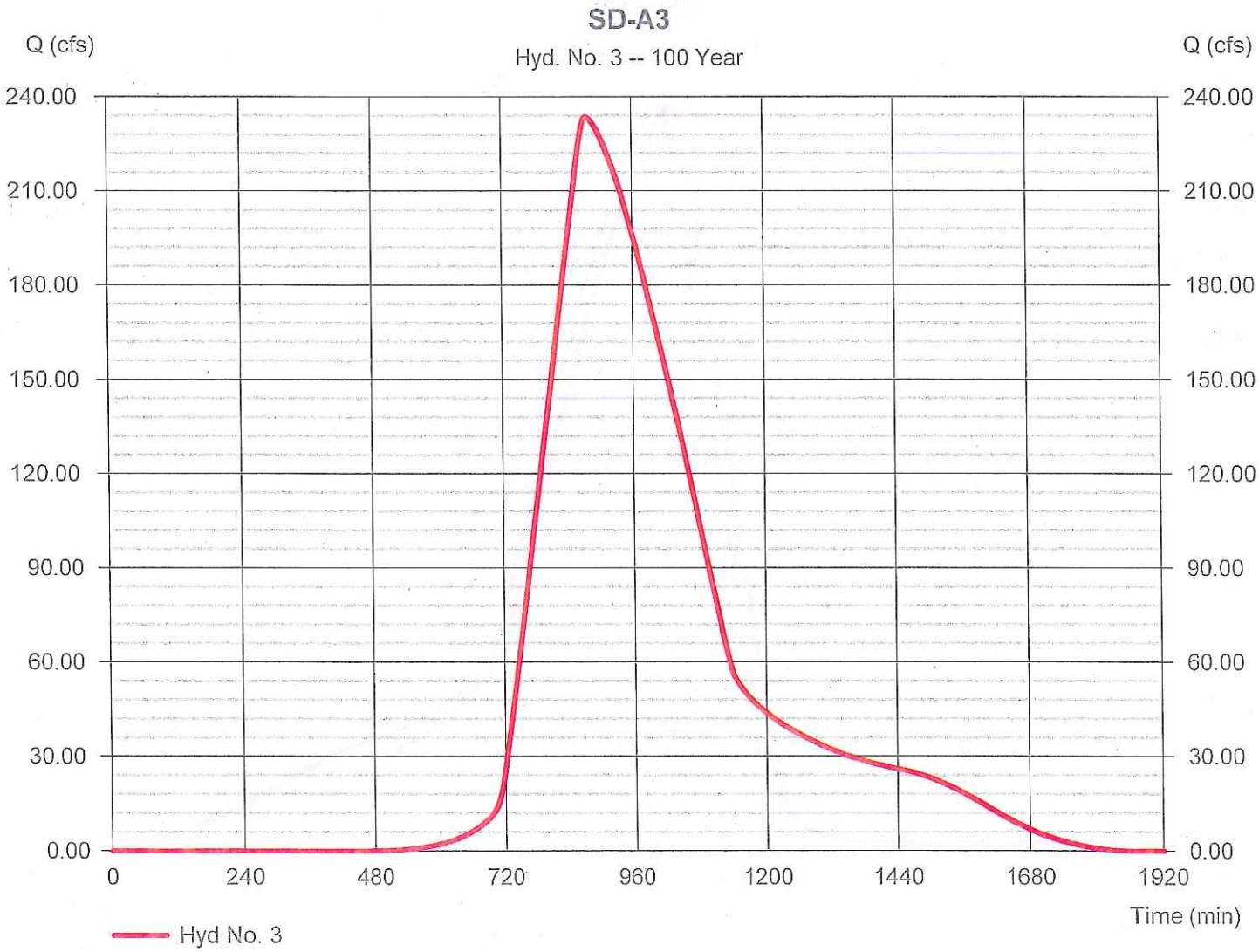
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2014 by Autodesk, Inc. v10.3 Thursday, 01 / 28 / 2016

Hyd. No. 3

SD-A3

Hydrograph type	= SCS Runoff	Peak discharge	= 233.60 cfs
Storm frequency	= 100 yrs	Time to peak	= 876 min
Time interval	= 2 min	Hyd. volume	= 4,708,312 cuft
Drainage area	= 463.000 ac	Curve number	= 80
Basin Slope	= 0.1 %	Hydraulic length	= 3200 ft
Tc method	= LAG	Time of conc. (Tc)	= 269.13 min
Total precip.	= 4.90 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



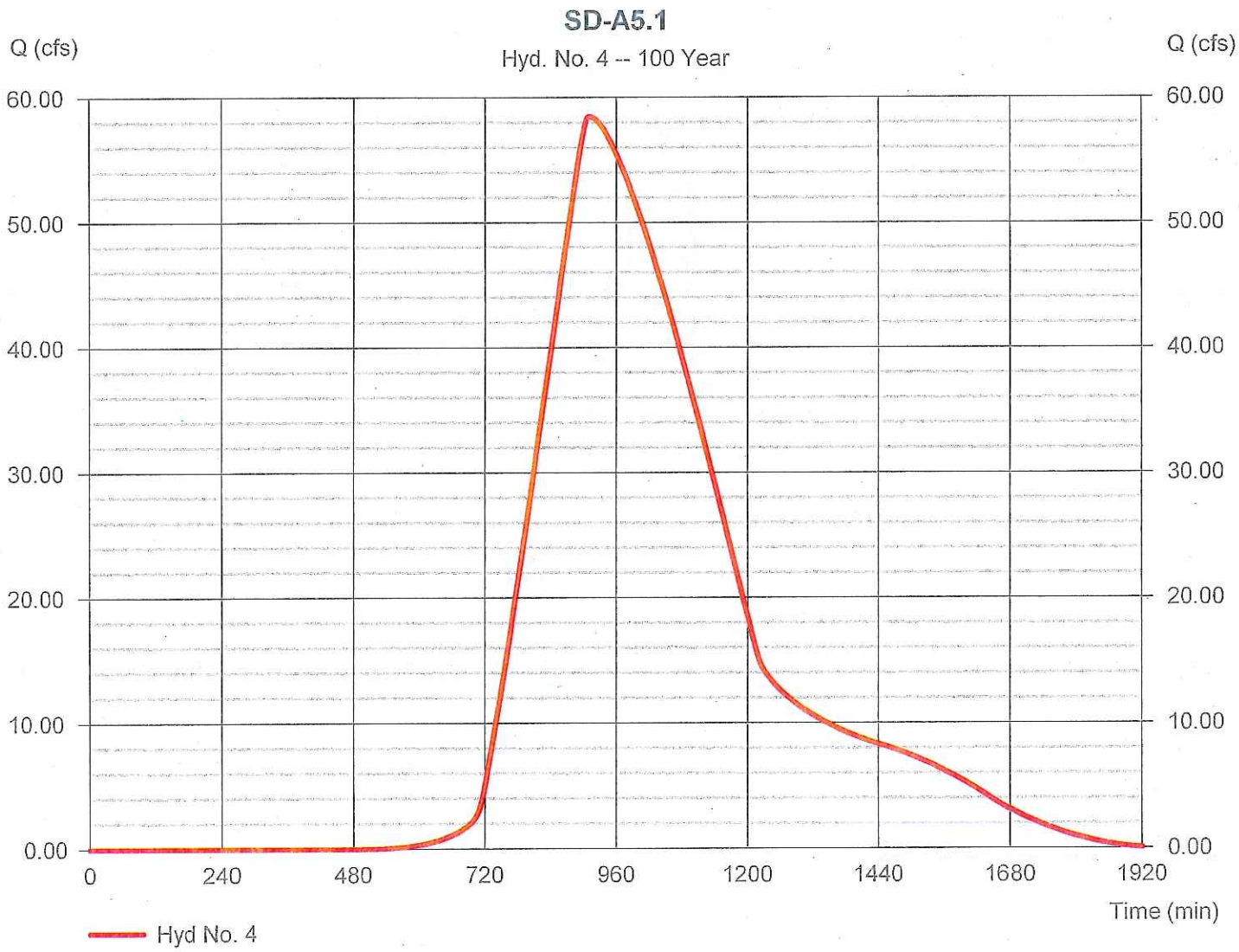
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2014 by Autodesk, Inc. v10.3 Thursday, 01 / 28 / 2016

Hyd. No. 4

SD-A5.1

Hydrograph type	= SCS Runoff	Peak discharge	= 58.47 cfs
Storm frequency	= 100 yrs	Time to peak	= 910 min
Time interval	= 2 min	Hyd. volume	= 1,370,291 cuft
Drainage area	= 139.000 ac	Curve number	= 79
Basin Slope	= 0.1 %	Hydraulic length	= 3000 ft
Tc method	= LAG	Time of conc. (Tc)	= 322.87 min
Total precip.	= 4.90 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



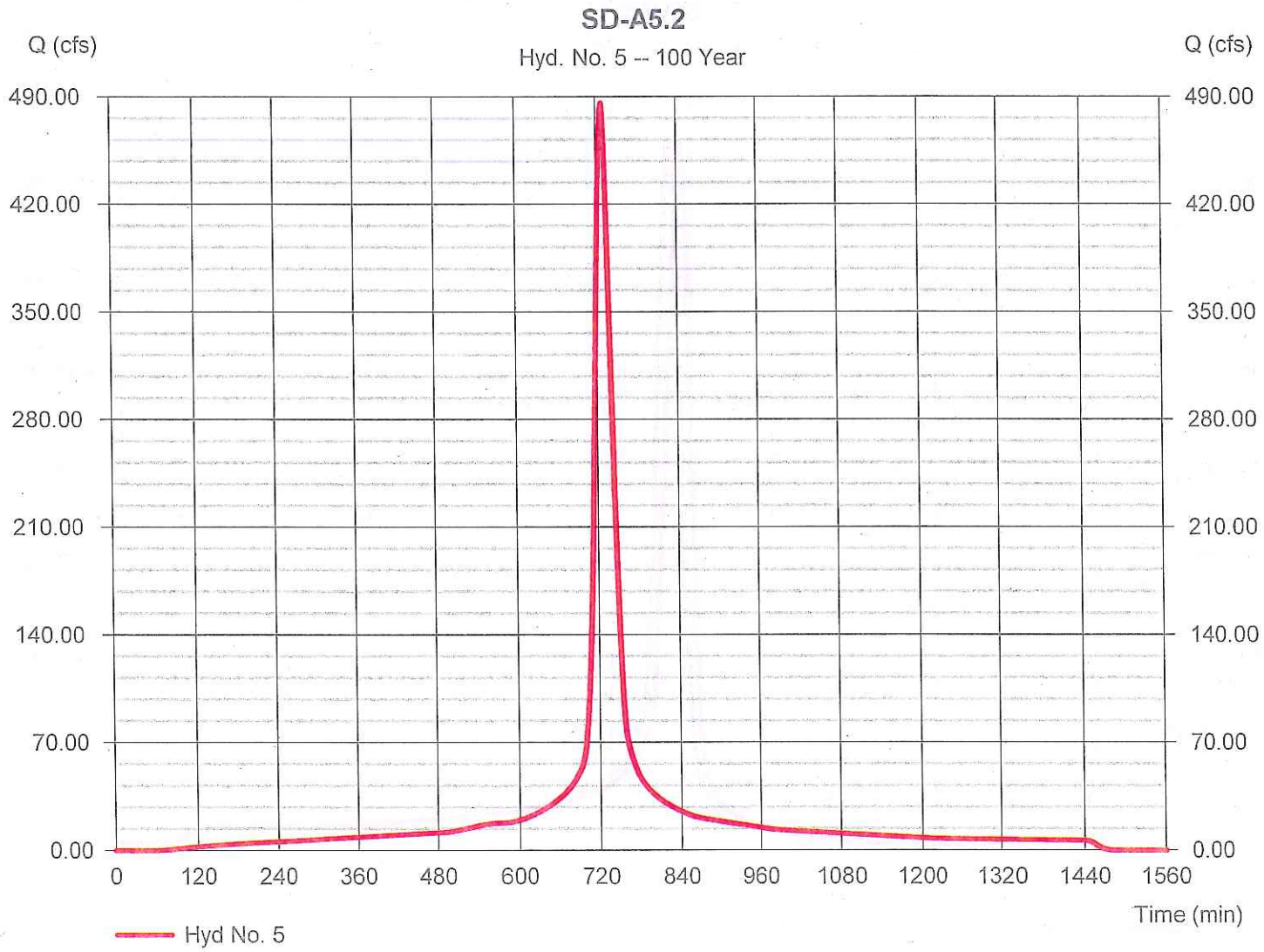
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2014 by Autodesk, Inc. v10.3 Thursday, 01 / 28 / 2016

Hyd. No. 5

SD-A5.2

Hydrograph type	= SCS Runoff	Peak discharge	= 485.67 cfs
Storm frequency	= 100 yrs	Time to peak	= 728 min
Time interval	= 2 min	Hyd. volume	= 1,999,604 cuft
Drainage area	= 120.000 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 100 ft
Tc method	= LAG	Time of conc. (Tc)	= 23.91 min
Total precip.	= 4.90 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



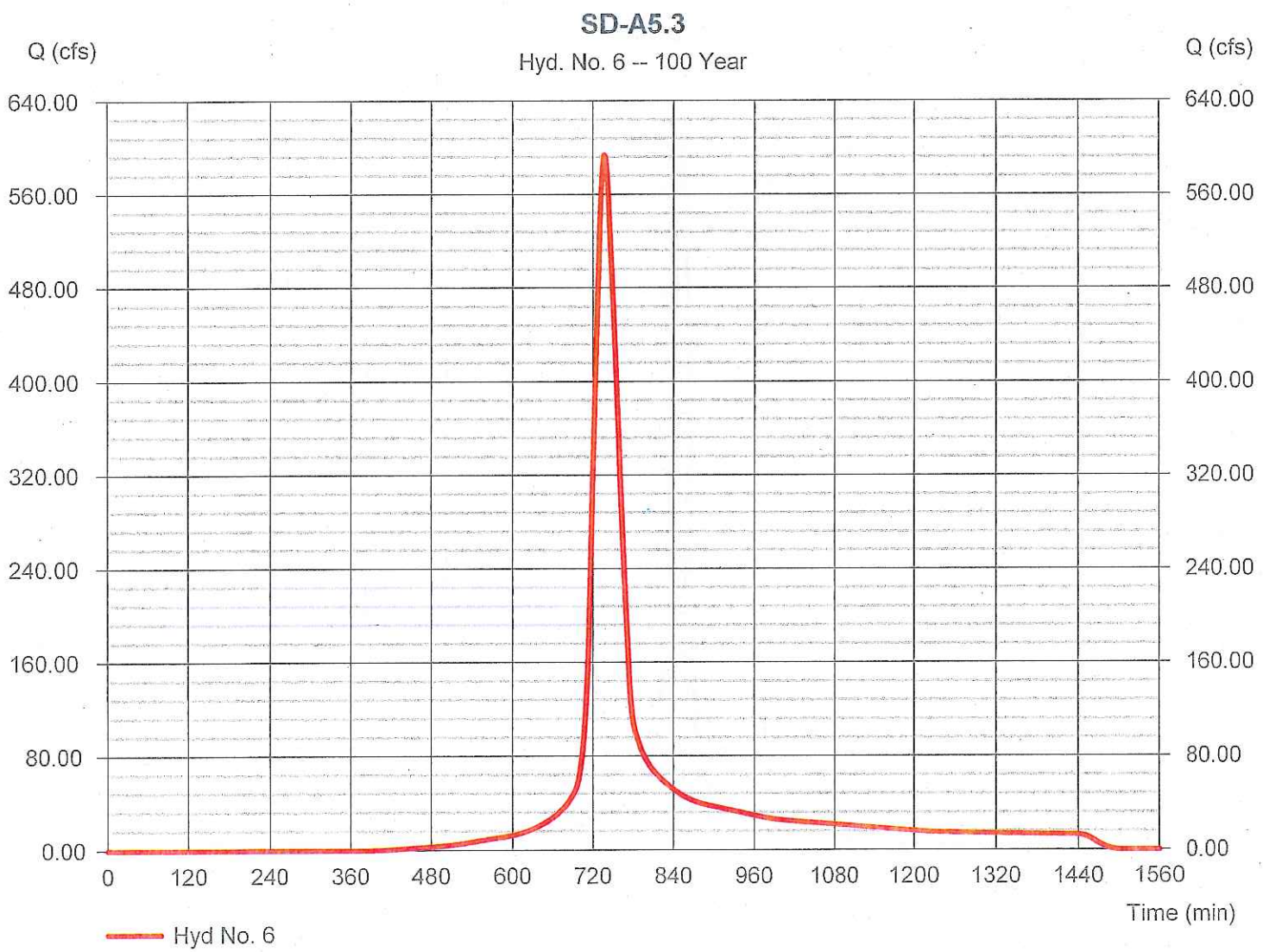
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2014 by Autodesk, Inc. v10.3 Thursday, 01 / 28 / 2016

Hyd. No. 6

SD-A5.3

Hydrograph type	= SCS Runoff	Peak discharge	= 593.62 cfs
Storm frequency	= 100 yrs	Time to peak	= 736 min
Time interval	= 2 min	Hyd. volume	= 2,876,875 cuft
Drainage area	= 257.000 ac	Curve number	= 83
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 40.00 min
Total precip.	= 4.90 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



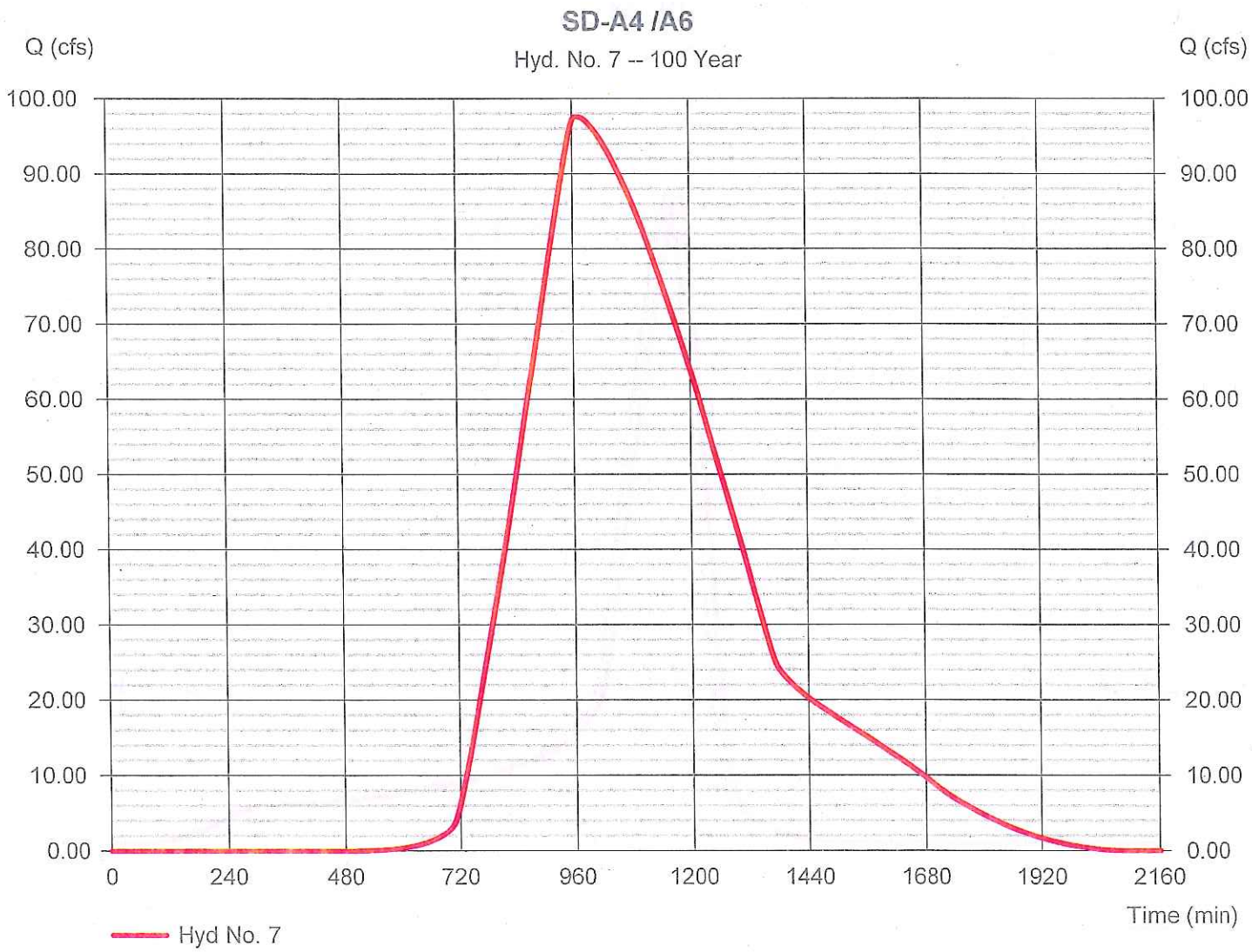
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2014 by Autodesk, Inc. v10.3 Thursday, 01 / 28 / 2016

Hyd. No. 7

SD-A4 /A6

Hydrograph type	= SCS Runoff	Peak discharge	= 97.59 cfs
Storm frequency	= 100 yrs	Time to peak	= 968 min
Time interval	= 2 min	Hyd. volume	= 2,812,419 cuft
Drainage area	= 285.000 ac	Curve number	= 79
Basin Slope	= 0.1 %	Hydraulic length	= 5000 ft
Tc method	= LAG	Time of conc. (Tc)	= 420.76 min
Total precip.	= 4.90 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



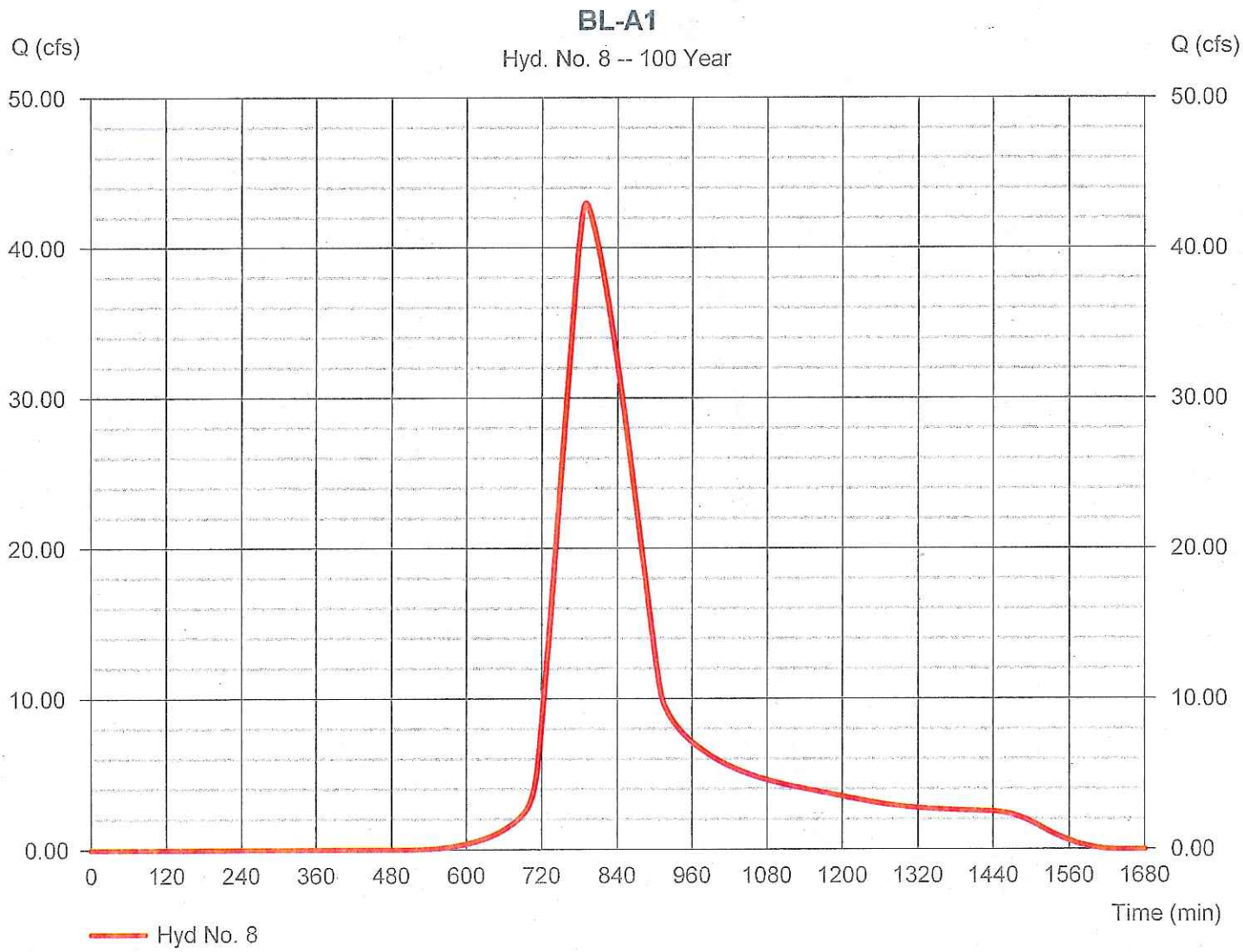
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2014 by Autodesk, Inc. v10.3 Thursday, 01 / 28 / 2016

Hyd. No. 8

BL-A1

Hydrograph type	= SCS Runoff	Peak discharge	= 42.97 cfs
Storm frequency	= 100 yrs	Time to peak	= 788 min
Time interval	= 2 min	Hyd. volume	= 480,985 cuft
Drainage area	= 52.000 ac	Curve number	= 77
Basin Slope	= 0.2 %	Hydraulic length	= 1500 ft
Tc method	= LAG	Time of conc. (Tc)	= 124.56 min
Total precip.	= 4.90 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



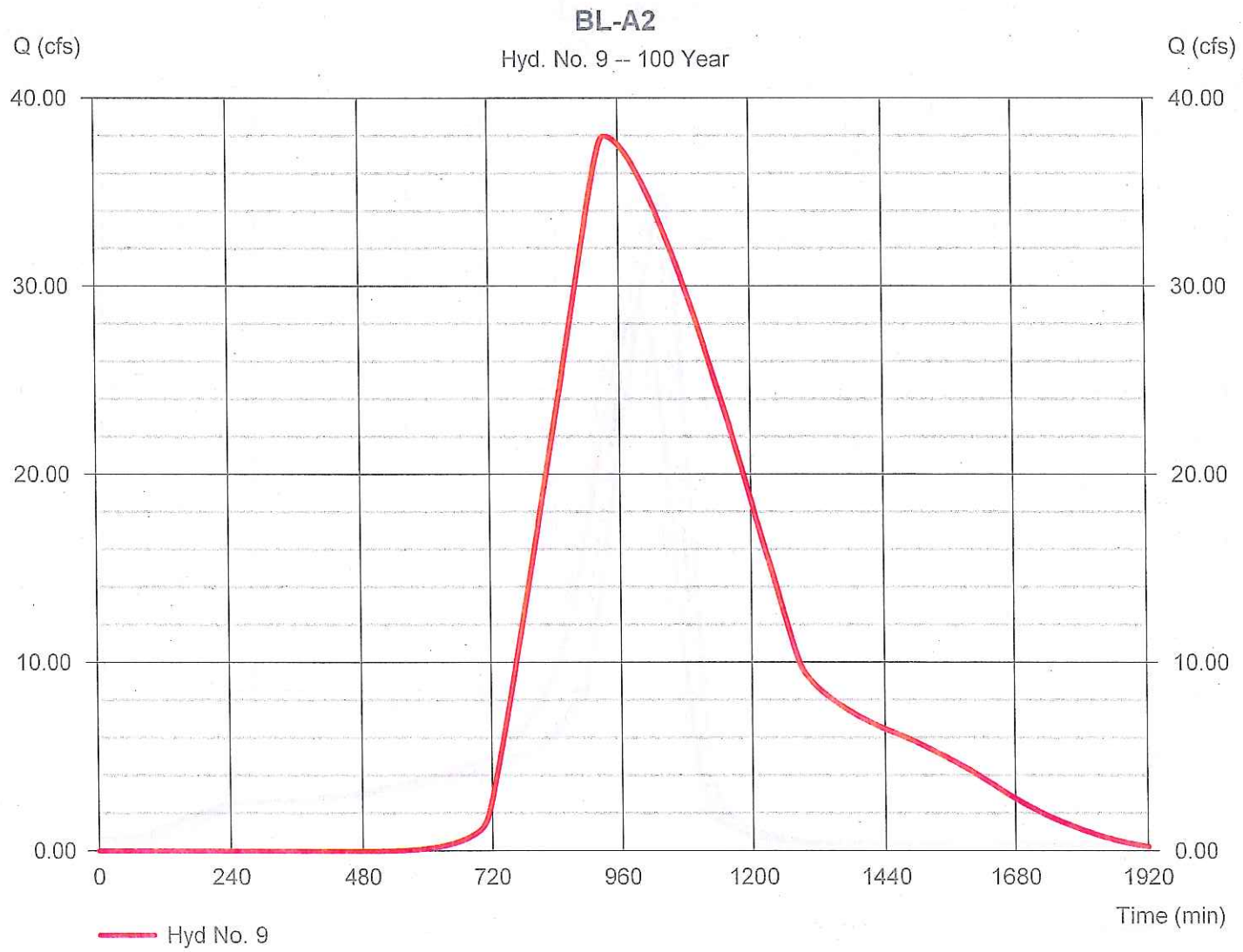
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2014 by Autodesk, Inc. v10.3 Thursday, 01 / 28 / 2016

Hyd. No. 9

BL-A2

Hydrograph type	= SCS Runoff	Peak discharge	= 37.97 cfs
Storm frequency	= 100 yrs	Time to peak	= 936 min
Time interval	= 2 min	Hyd. volume	= 982,213 cuft
Drainage area	= 103.000 ac	Curve number	= 78
Basin Slope	= 0.1 %	Hydraulic length	= 3000 ft
Tc method	= LAG	Time of conc. (Tc)	= 364.60 min
Total precip.	= 4.90 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

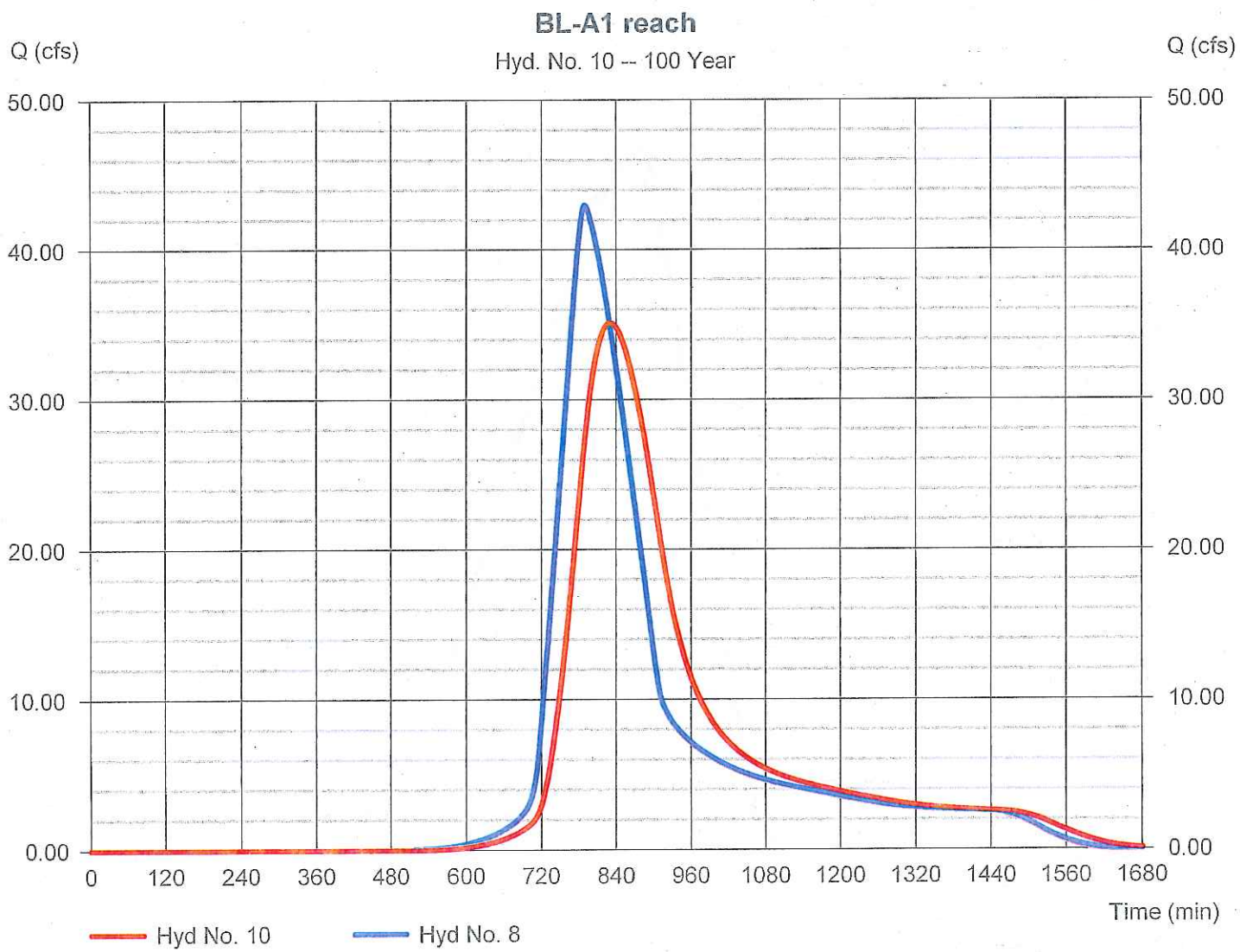
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2014 by Autodesk, Inc. v10.3 Thursday, 01 / 28 / 2016

Hyd. No. 10

BL-A1 reach

Hydrograph type	= Reach	Peak discharge	= 35.12 cfs
Storm frequency	= 100 yrs	Time to peak	= 830 min
Time interval	= 2 min	Hyd. volume	= 480,962 cuft
Inflow hyd. No.	= 8 - BL-A1	Section type	= Trapezoidal
Reach length	= 3000.0 ft	Channel slope	= 0.0 %
Manning's n	= 0.040	Bottom width	= 10.0 ft
Side slope	= 1.0:1	Max. depth	= 2.0 ft
Rating curve x	= 0.113	Rating curve m	= 1.524
Ave. velocity	= 0.00 ft/s	Routing coeff.	= 0.0518

Modified Att-Kin routing method used.



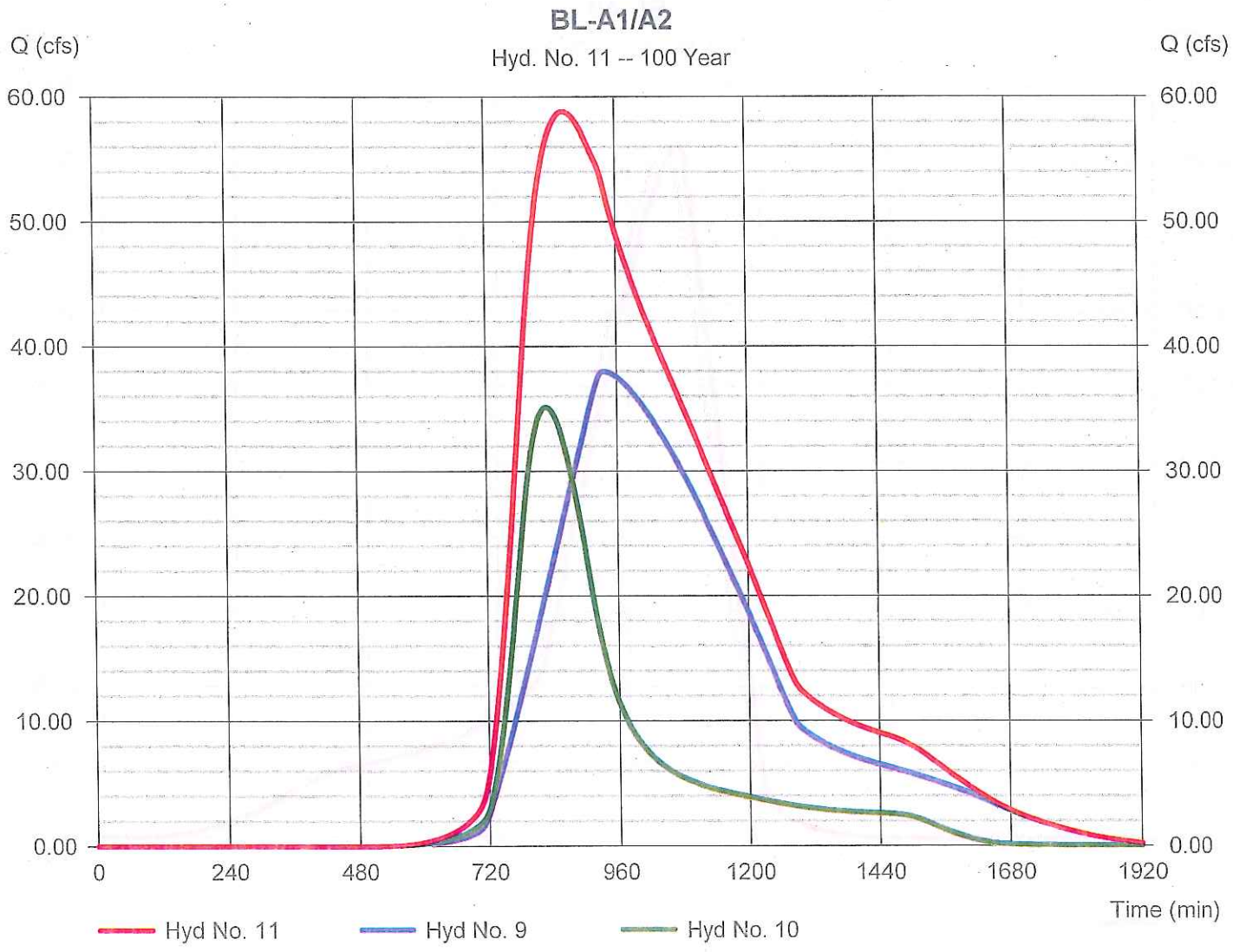
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2014 by Autodesk, Inc. v10.3 Thursday, 01 / 28 / 2016

Hyd. No. 11

BL-A1/A2

Hydrograph type	= Combine	Peak discharge	= 58.80 cfs
Storm frequency	= 100 yrs	Time to peak	= 864 min
Time interval	= 2 min	Hyd. volume	= 1,463,176 cuft
Inflow hyds.	= 9, 10	Contrib. drain. area	= 103.000 ac



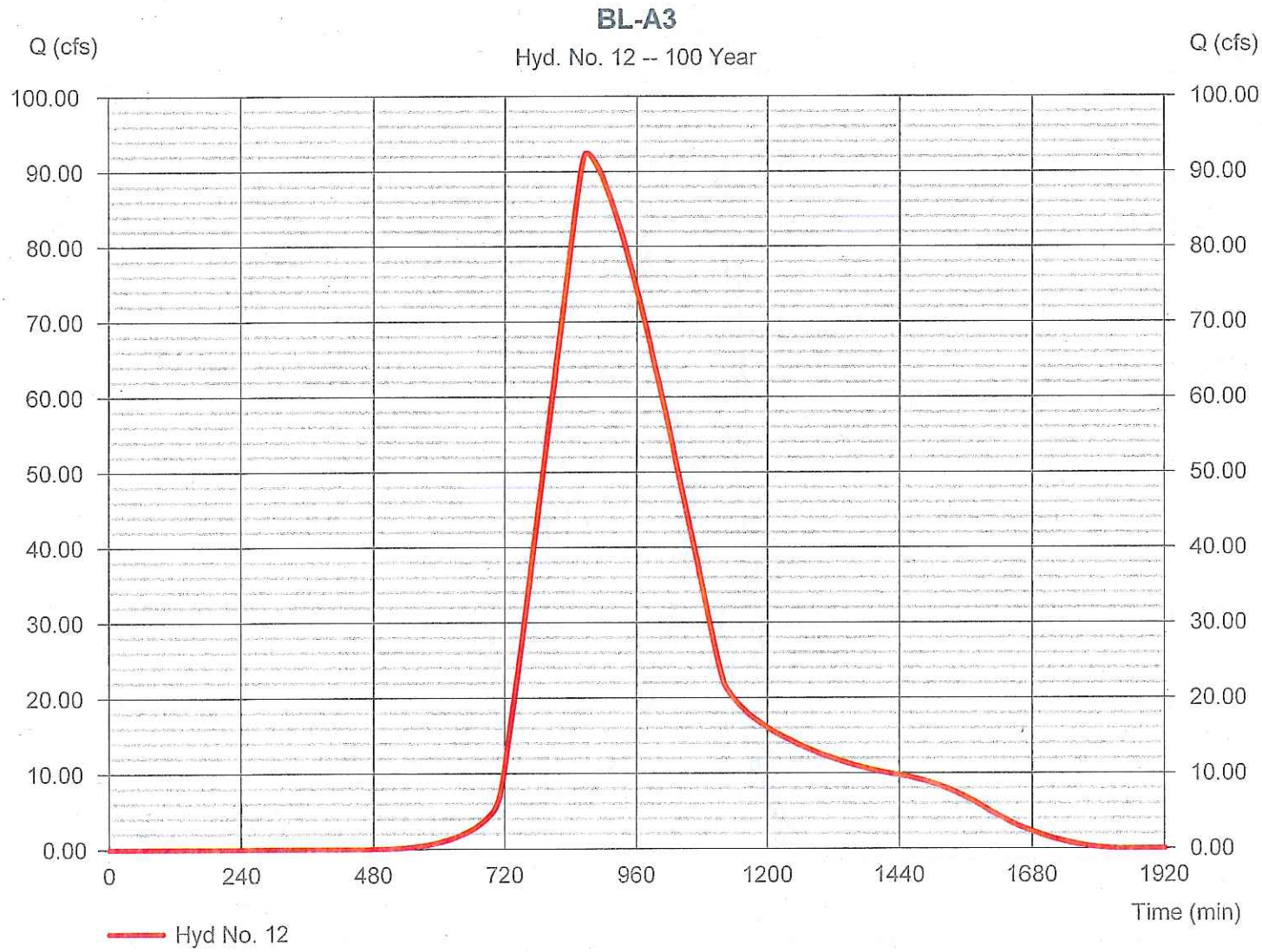
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2014 by Autodesk, Inc. v10.3 Thursday, 01 / 28 / 2016

Hyd. No. 12

BL-A3

Hydrograph type	= SCS Runoff	Peak discharge	= 92.52 cfs
Storm frequency	= 100 yrs	Time to peak	= 868 min
Time interval	= 2 min	Hyd. volume	= 1,795,516 cuft
Drainage area	= 176.000 ac	Curve number	= 80
Basin Slope	= 0.1 %	Hydraulic length	= 2800 ft
Tc method	= LAG	Time of conc. (Tc)	= 256.53 min
Total precip.	= 4.90 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

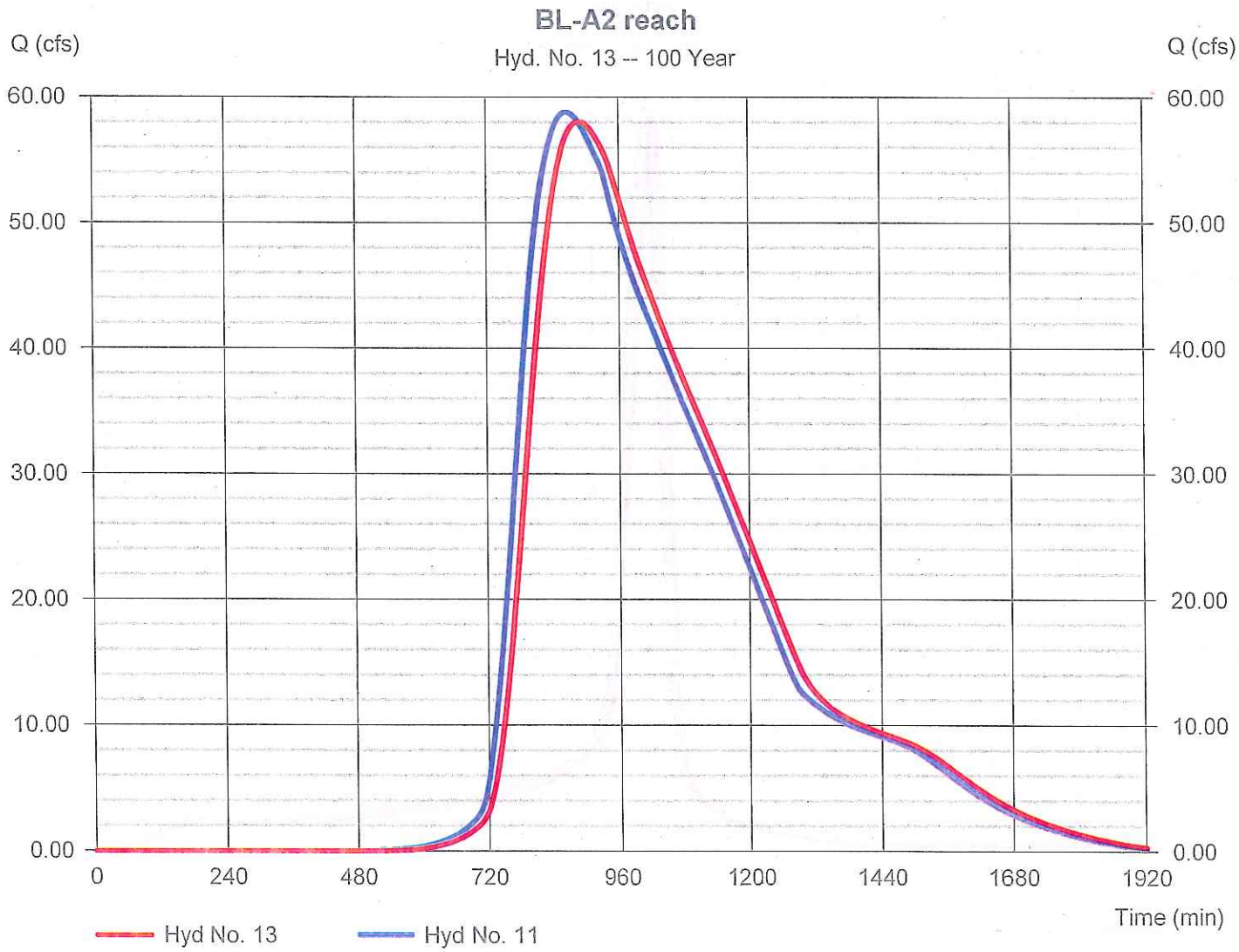
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2014 by Autodesk, Inc. v10.3 Thursday, 01 / 28 / 2016

Hyd. No. 13

BL-A2 reach

Hydrograph type	= Reach	Peak discharge	= 58.04 cfs
Storm frequency	= 100 yrs	Time to peak	= 888 min
Time interval	= 2 min	Hyd. volume	= 1,463,163 cuft
Inflow hyd. No.	= 11 - BL-A1/A2	Section type	= Trapezoidal
Reach length	= 2800.0 ft	Channel slope	= 0.1 %
Manning's n	= 0.035	Bottom width	= 10.0 ft
Side slope	= 1.0:1	Max. depth	= 2.0 ft
Rating curve x	= 0.259	Rating curve m	= 1.524
Ave. velocity	= 0.00 ft/s	Routing coeff.	= 0.1035

Modified Att-Kin routing method used.



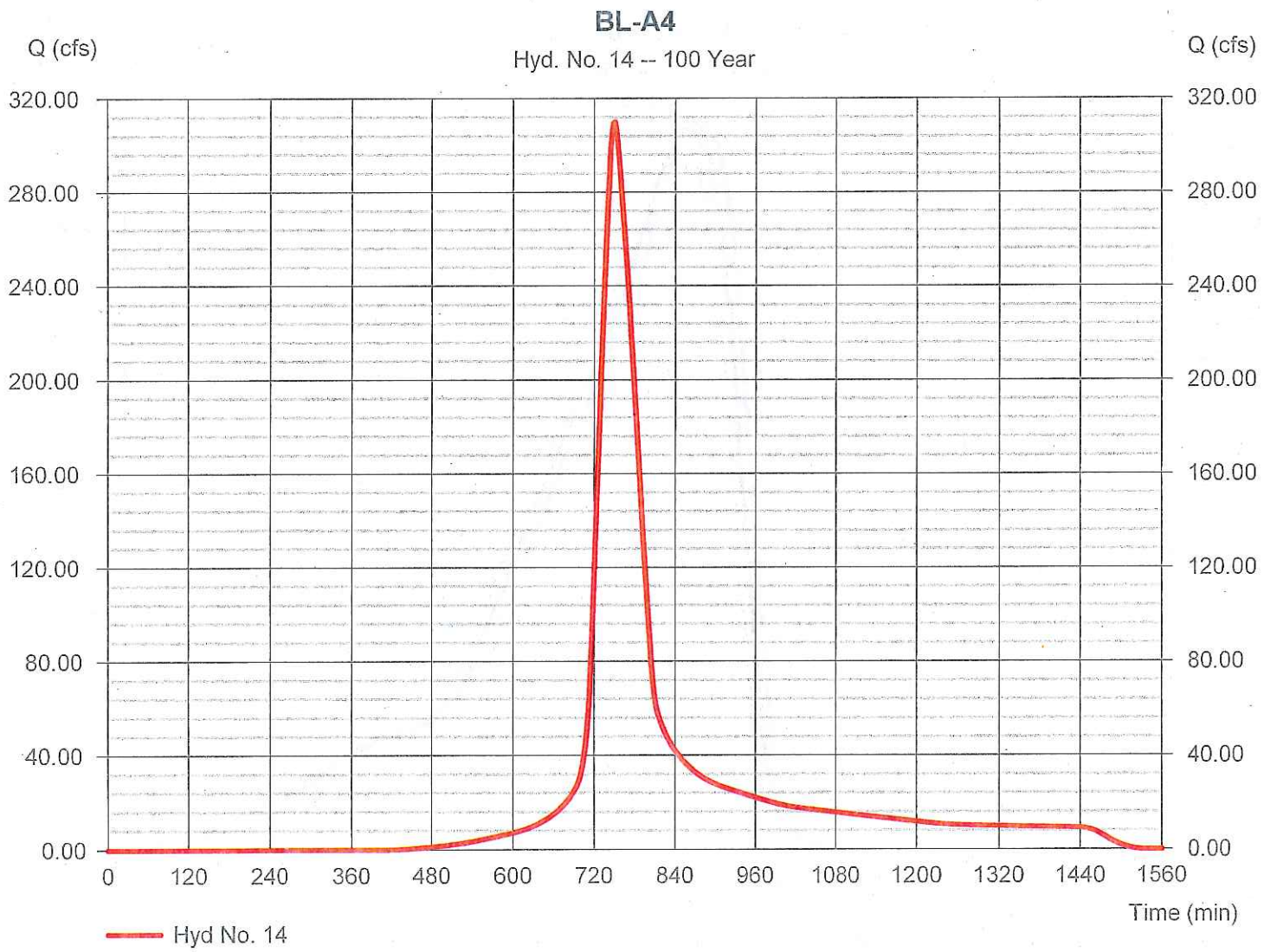
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2014 by Autodesk, Inc. v10.3 Thursday, 01 / 28 / 2016

Hyd. No. 14

BL-A4

Hydrograph type	= SCS Runoff	Peak discharge	= 309.84 cfs
Storm frequency	= 100 yrs	Time to peak	= 750 min
Time interval	= 2 min	Hyd. volume	= 1,996,937 cuft
Drainage area	= 184.000 ac	Curve number	= 82
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 60.00 min
Total precip.	= 4.90 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



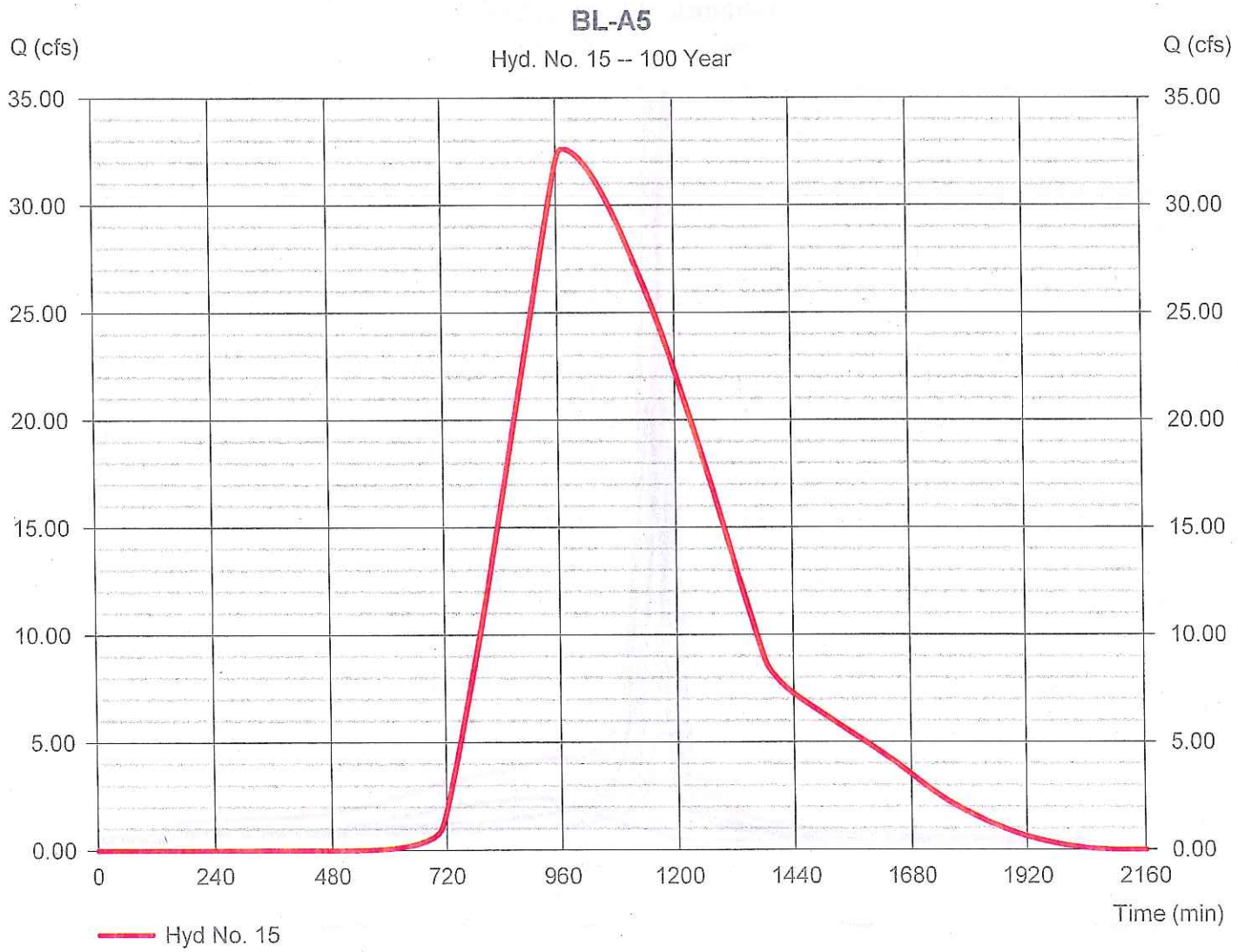
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2014 by Autodesk, Inc. v10.3 Thursday, 01 / 28 / 2016

Hyd. No. 15

BL-A5

Hydrograph type	= SCS Runoff	Peak discharge	= 32.60 cfs
Storm frequency	= 100 yrs	Time to peak	= 976 min
Time interval	= 2 min	Hyd. volume	= 958,732 cuft
Drainage area	= 104.000 ac	Curve number	= 77
Basin Slope	= 0.1 %	Hydraulic length	= 3500 ft
Tc method	= LAG	Time of conc. (Tc)	= 424.95 min
Total precip.	= 4.90 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



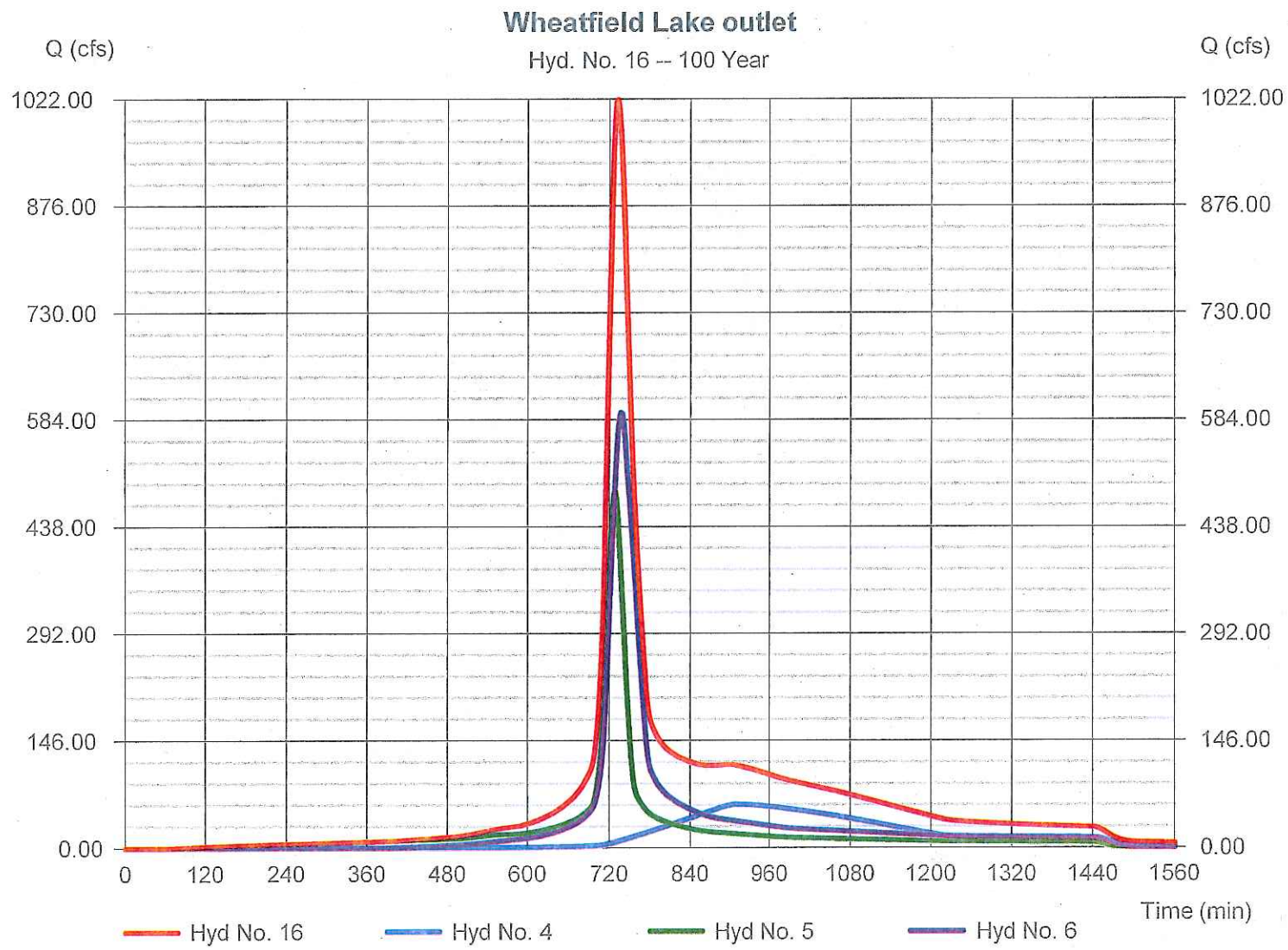
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2014 by Autodesk, Inc. v10.3 Thursday, 01 / 28 / 2016

Hyd. No. 16

Wheatfield Lake outlet

Hydrograph type	= Combine	Peak discharge	= 1020.70 cfs
Storm frequency	= 100 yrs	Time to peak	= 732 min
Time interval	= 2 min	Hyd. volume	= 6,246,767 cuft
Inflow hyds.	= 4, 5, 6	Contrib. drain. area	= 516.000 ac



Hydrograph Report

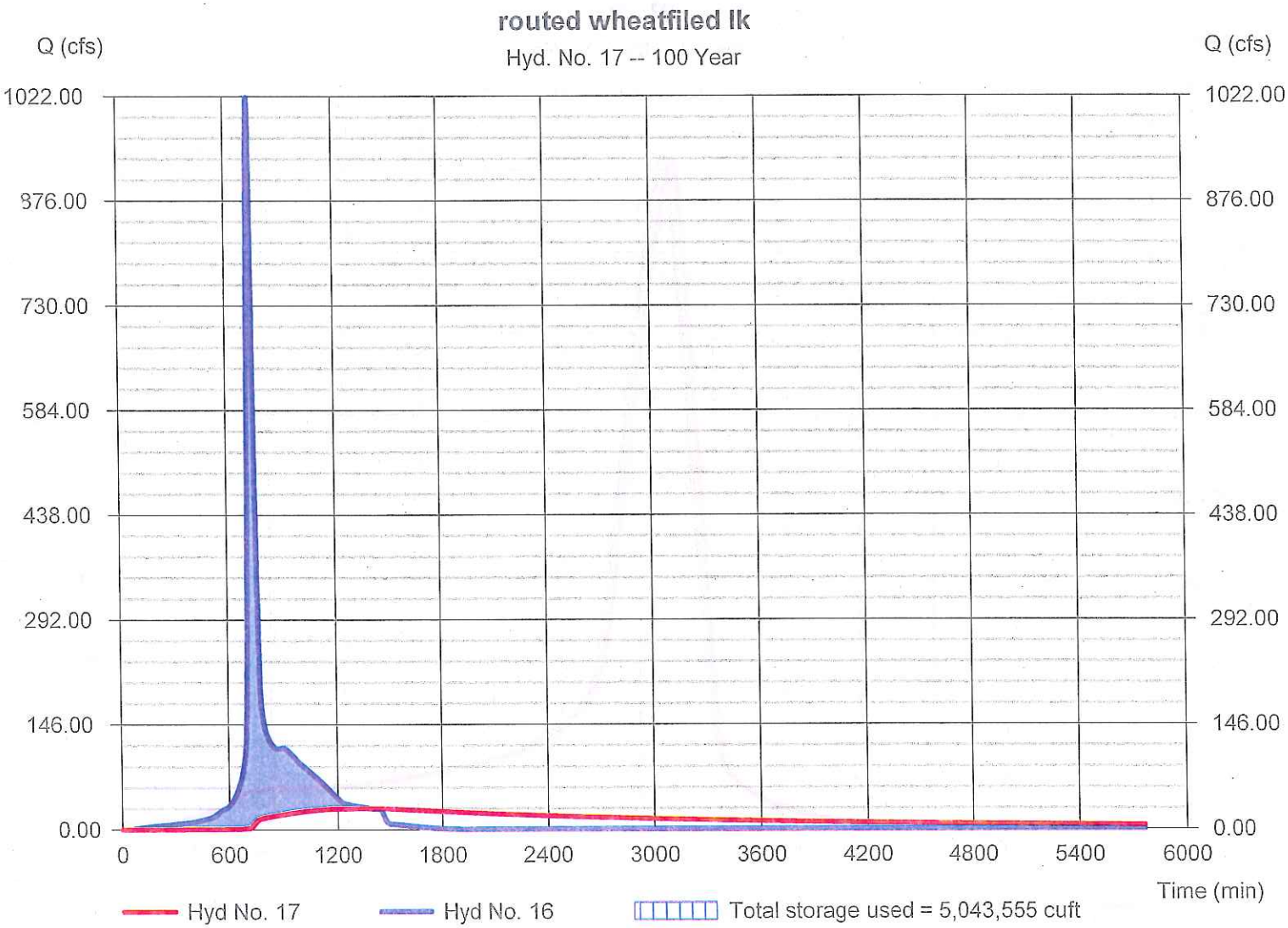
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2014 by Autodesk, Inc. v10.3 Thursday, 01 / 28 / 2016

Hyd. No. 17

routed wheatfiled lk

Hydrograph type	= Reservoir	Peak discharge	= 29.38 cfs
Storm frequency	= 100 yrs	Time to peak	= 1382 min
Time interval	= 2 min	Hyd. volume	= 4,587,178 cuft
Inflow hyd. No.	= 16 - Wheatfield Lake outlet	Max. Elevation	= 571.99 ft
Reservoir name	= Wheatfield Lakes	Max. Storage	= 5,043,555 cuft

Storage Indication method used.



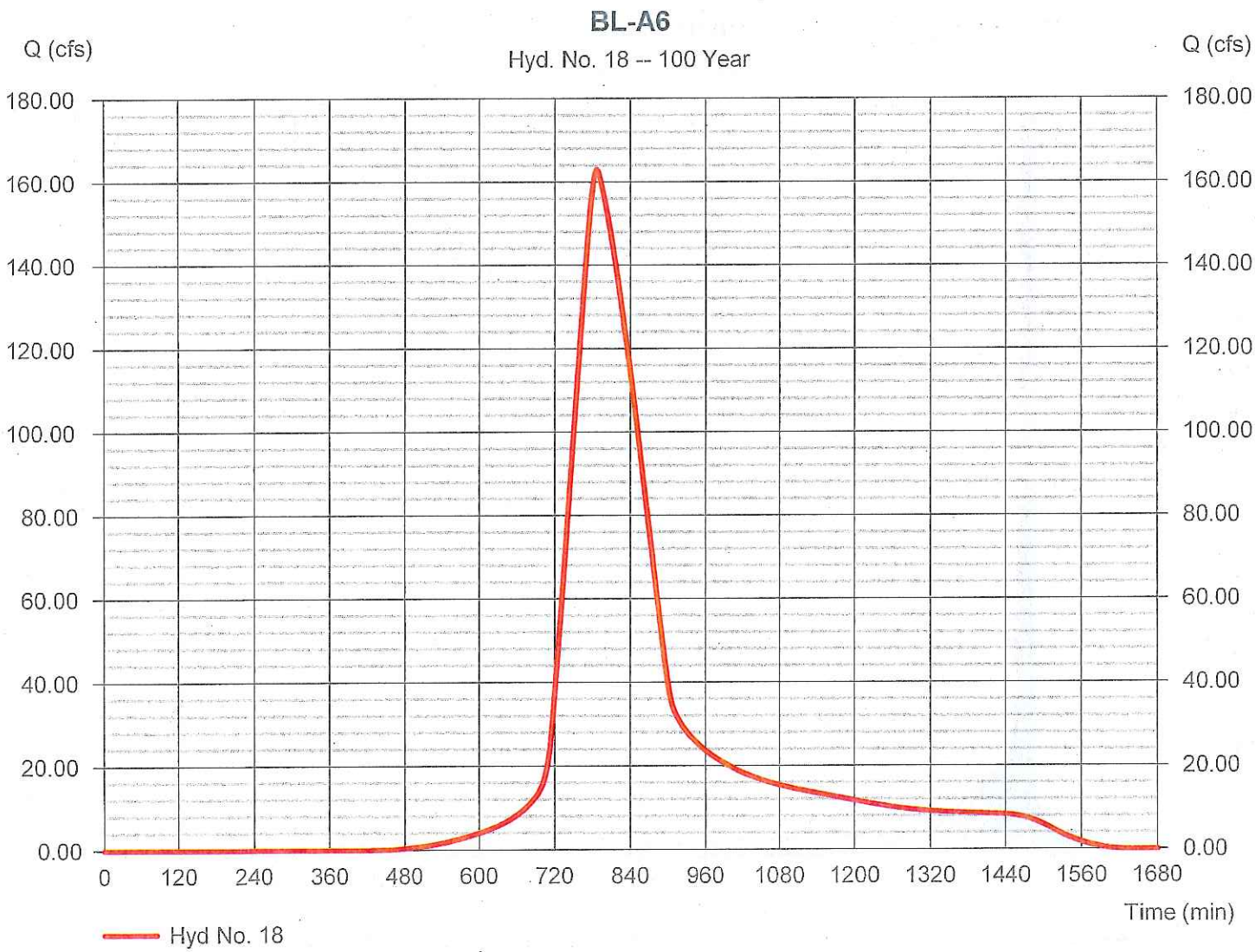
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2014 by Autodesk, Inc. v10.3 Thursday, 01 / 28 / 2016

Hyd. No. 18

BL-A6

Hydrograph type	= SCS Runoff	Peak discharge	= 162.94 cfs
Storm frequency	= 100 yrs	Time to peak	= 786 min
Time interval	= 2 min	Hyd. volume	= 1,758,174 cuft
Drainage area	= 162.000 ac	Curve number	= 82
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 120.00 min
Total precip.	= 4.90 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



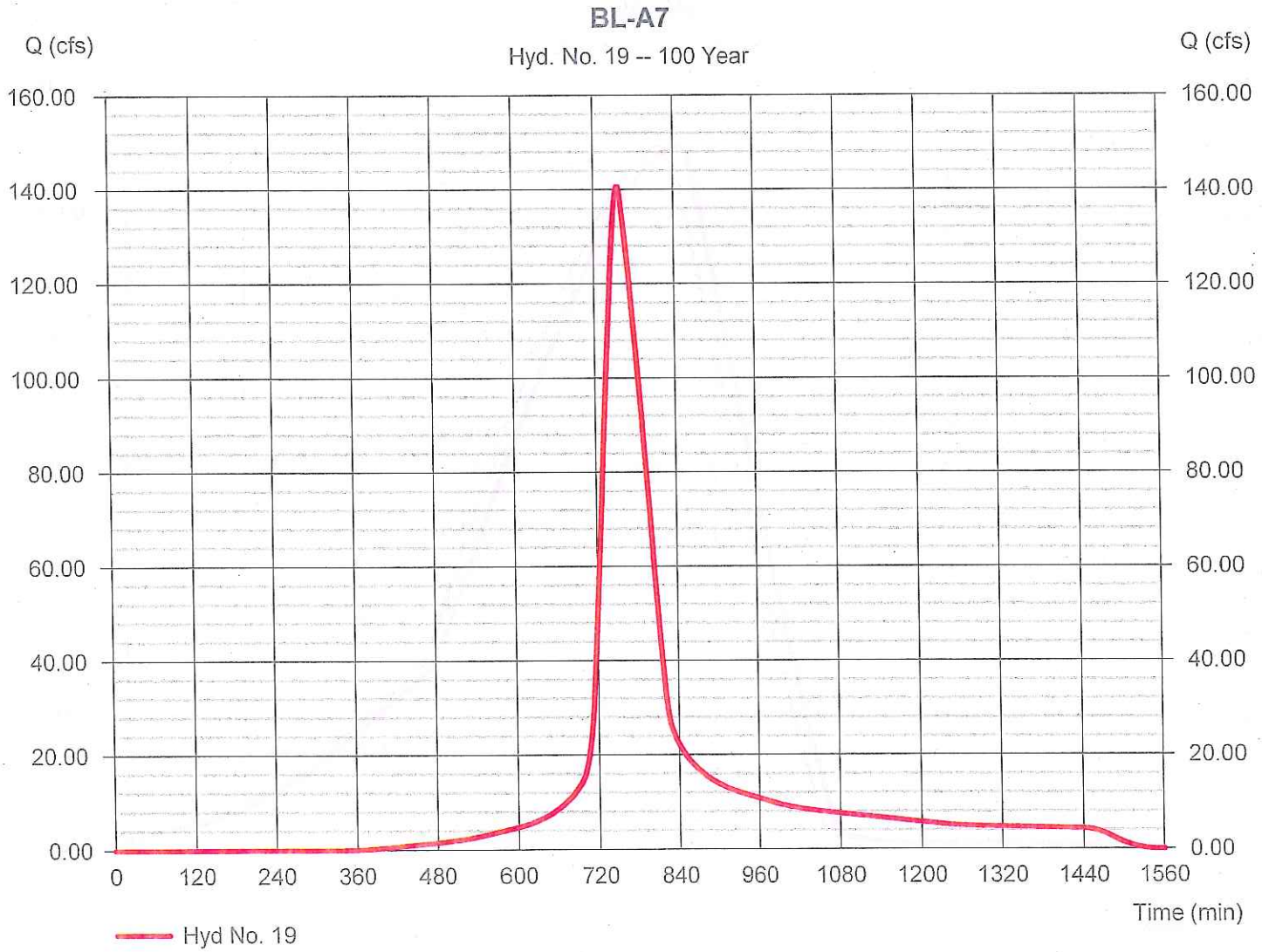
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2014 by Autodesk, Inc. v10.3 Thursday, 01 / 28 / 2016

Hyd. No. 19

BL-A7

Hydrograph type	= SCS Runoff	Peak discharge	= 140.61 cfs
Storm frequency	= 100 yrs	Time to peak	= 754 min
Time interval	= 2 min	Hyd. volume	= 1,016,487 cuft
Drainage area	= 83.000 ac	Curve number	= 86
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 70.00 min
Total precip.	= 4.90 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



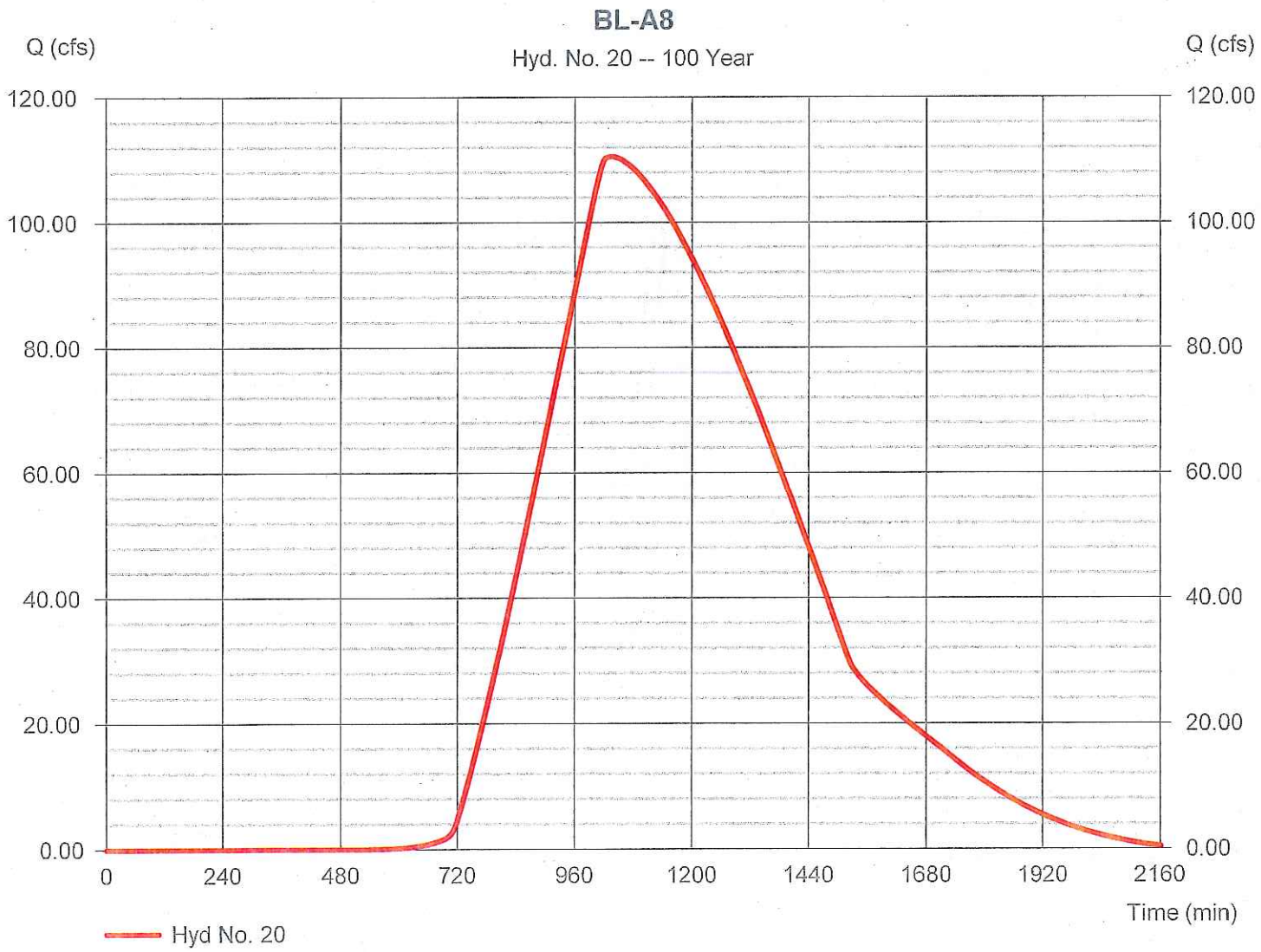
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2014 by Autodesk, Inc. v10.3 Thursday, 01 / 28 / 2016

Hyd. No. 20

BL-A8

Hydrograph type	= SCS Runoff	Peak discharge	= 110.51 cfs
Storm frequency	= 100 yrs	Time to peak	= 1034 min
Time interval	= 2 min	Hyd. volume	= 3,798,046 cuft
Drainage area	= 412.000 ac	Curve number	= 77
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 519.30 min
Total precip.	= 4.90 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

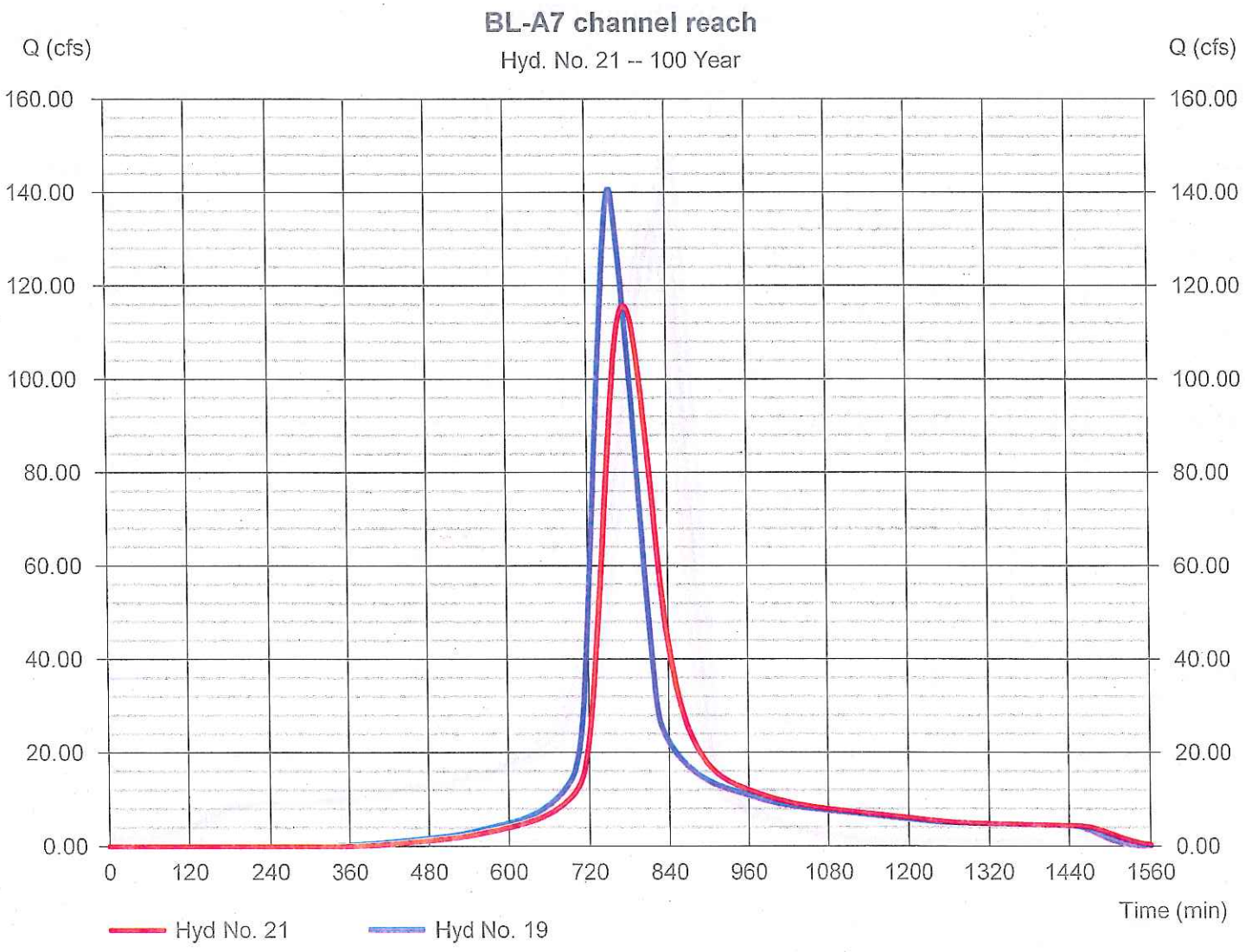
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2014 by Autodesk, Inc. v10.3 Thursday, 01 / 28 / 2016

Hyd. No. 21

BL-A7 channel reach

Hydrograph type	= Reach	Peak discharge	= 115.72 cfs
Storm frequency	= 100 yrs	Time to peak	= 776 min
Time interval	= 2 min	Hyd. volume	= 1,016,475 cuft
Inflow hyd. No.	= 19 - BL-A7	Section type	= Trapezoidal
Reach length	= 4300.0 ft	Channel slope	= 0.2 %
Manning's n	= 0.040	Bottom width	= 20.0 ft
Side slope	= 1.0:1	Max. depth	= 4.0 ft
Rating curve x	= 0.196	Rating curve m	= 1.567
Ave. velocity	= 0.00 ft/s	Routing coeff.	= 0.0884

Modified Att-Kin routing method used.



Hydrograph Report

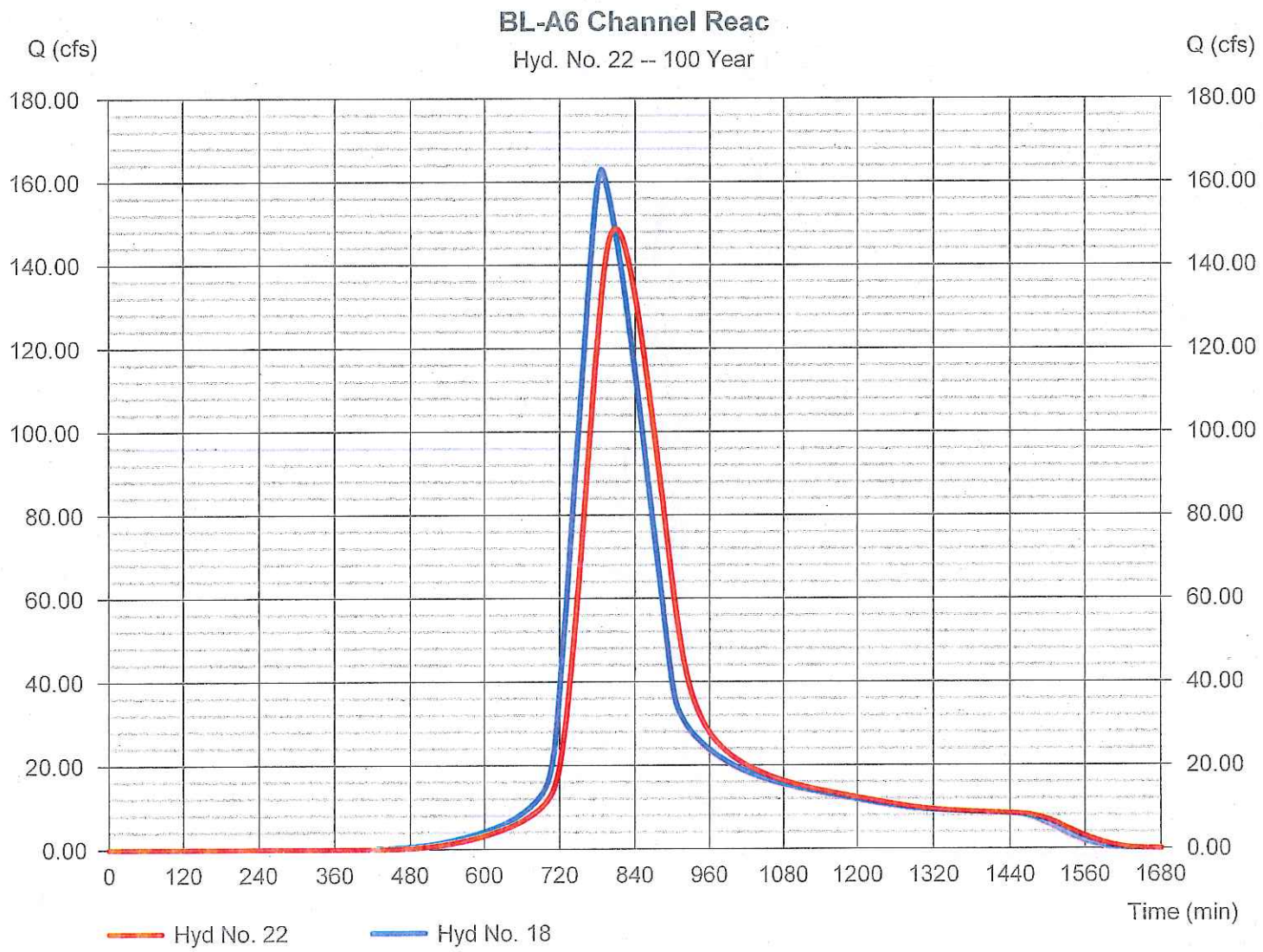
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2014 by Autodesk, Inc. v10.3 Thursday, 01 / 28 / 2016

Hyd. No. 22

BL-A6 Channel Reac

Hydrograph type	= Reach	Peak discharge	= 148.73 cfs
Storm frequency	= 100 yrs	Time to peak	= 808 min
Time interval	= 2 min	Hyd. volume	= 1,758,162 cuft
Inflow hyd. No.	= 18 - BL-A6	Section type	= Trapezoidal
Reach length	= 3500.0 ft	Channel slope	= 0.1 %
Manning's n	= 0.040	Bottom width	= 20.0 ft
Side slope	= 1.0:1	Max. depth	= 4.0 ft
Rating curve x	= 0.160	Rating curve m	= 1.567
Ave. velocity	= 0.00 ft/s	Routing coeff.	= 0.1000

Modified Att-Kin routing method used.



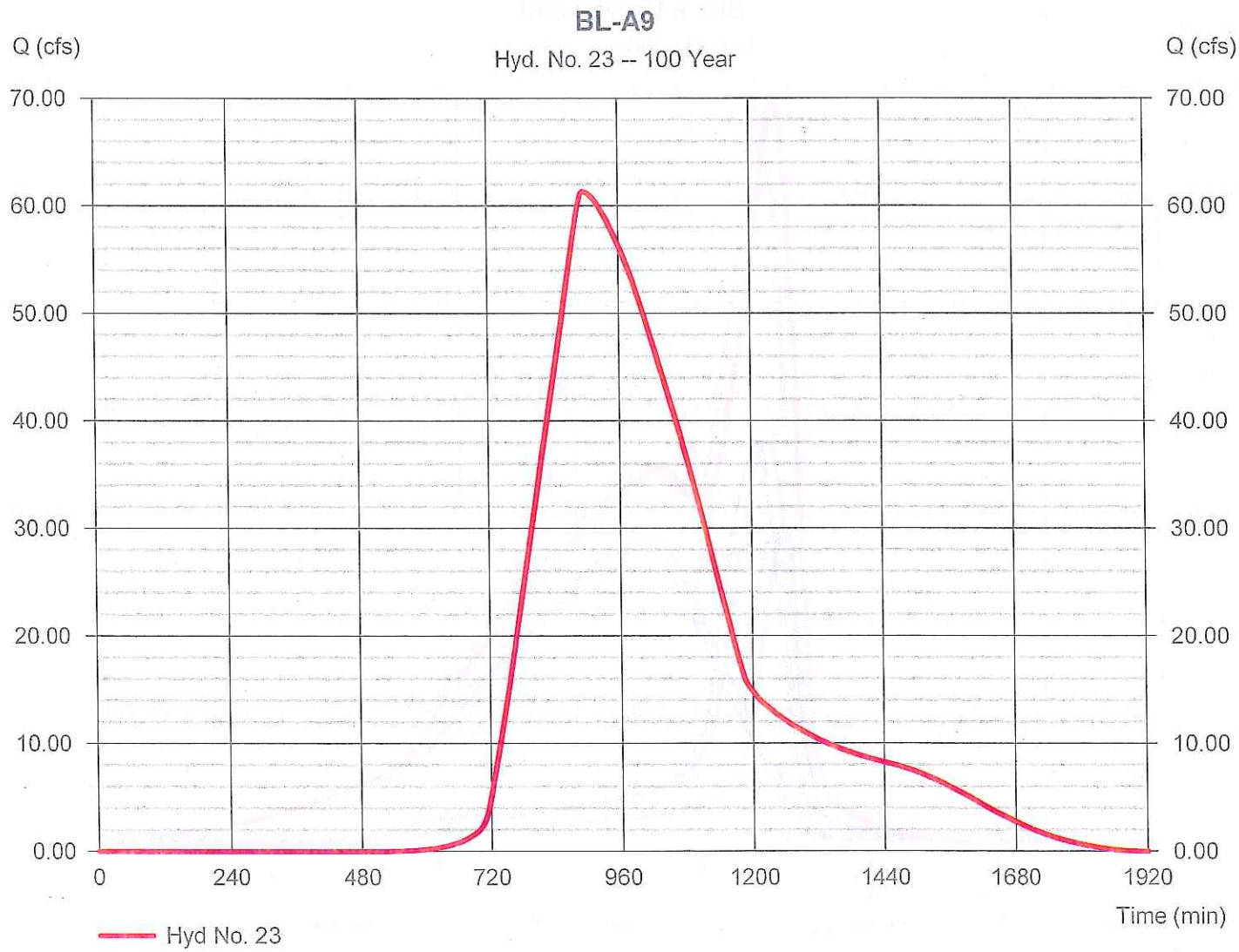
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2014 by Autodesk, Inc. v10.3 Thursday, 01 / 28 / 2016

Hyd. No. 23

BL-A9

Hydrograph type	= SCS Runoff	Peak discharge	= 61.31 cfs
Storm frequency	= 100 yrs	Time to peak	= 896 min
Time interval	= 2 min	Hyd. volume	= 1,362,432 cuft
Drainage area	= 148.000 ac	Curve number	= 77
Basin Slope	= 0.1 %	Hydraulic length	= 3500 ft
Tc method	= LAG	Time of conc. (Tc)	= 300.48 min
Total precip.	= 4.90 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



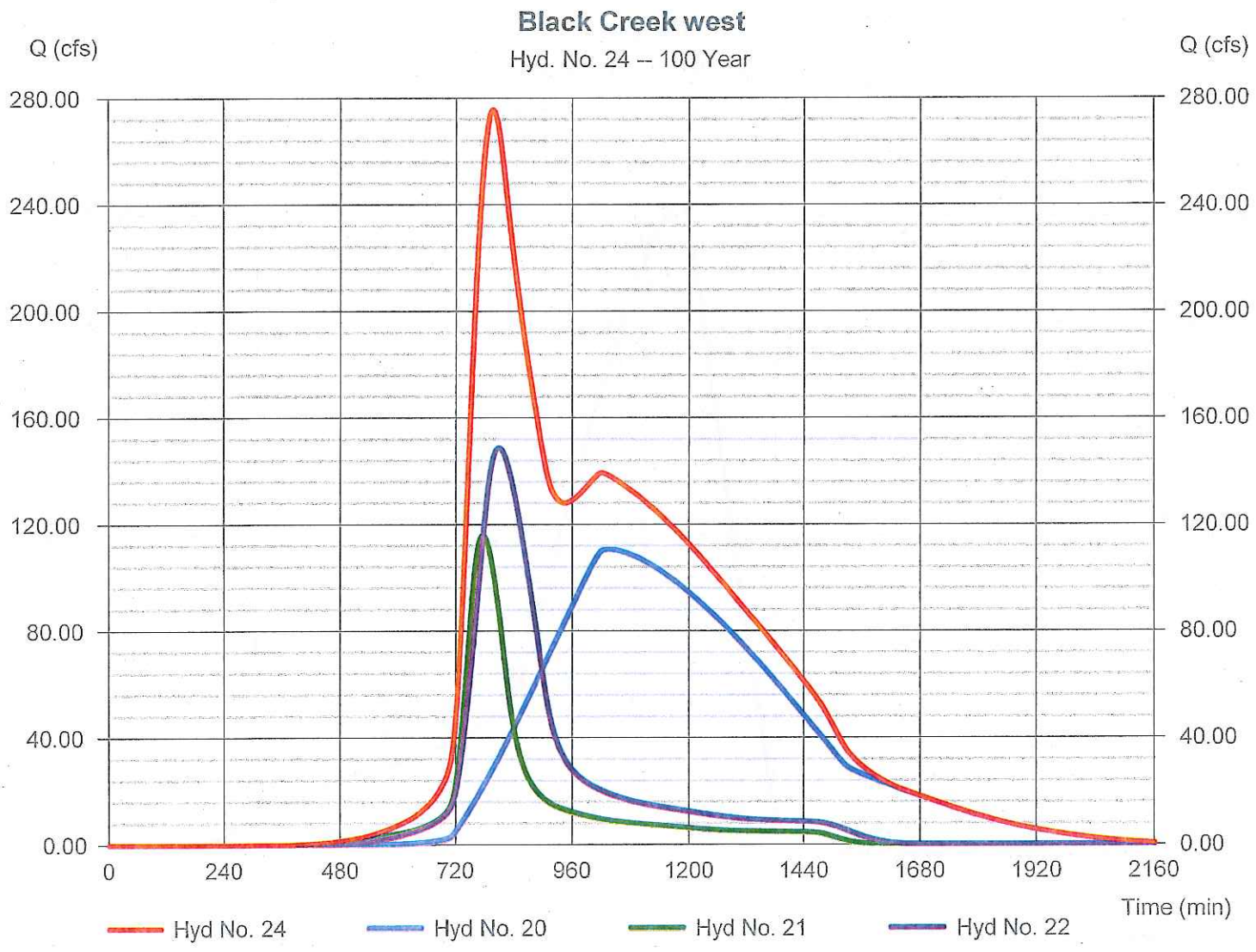
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2014 by Autodesk, Inc. v10.3 Thursday, 01 / 28 / 2016

Hyd. No. 24

Black Creek west

Hydrograph type	= Combine	Peak discharge	= 275.71 cfs
Storm frequency	= 100 yrs	Time to peak	= 796 min
Time interval	= 2 min	Hyd. volume	= 6,572,684 cuft
Inflow hyds.	= 20, 21, 22	Contrib. drain. area	= 412.000 ac



Hydrograph Report

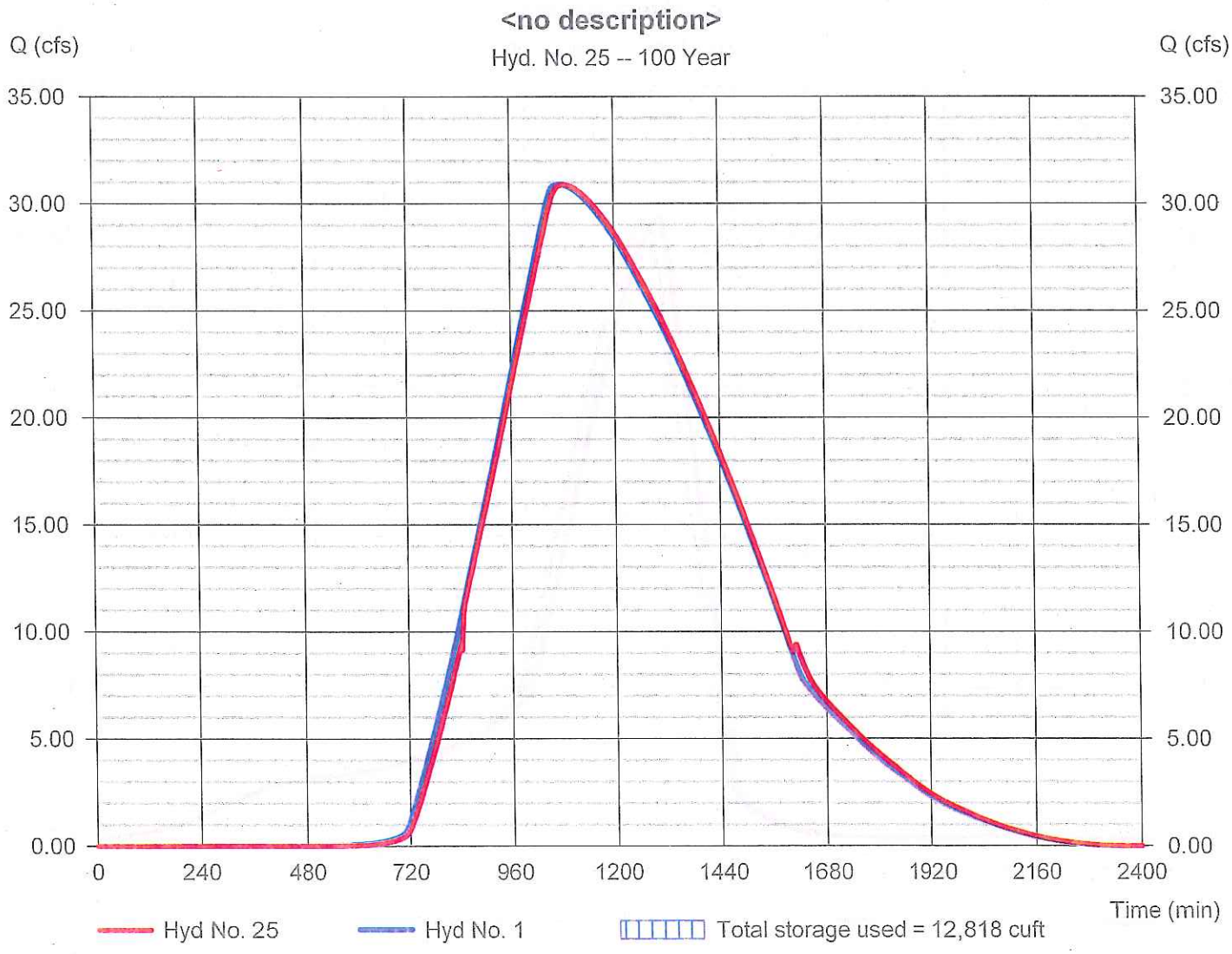
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2014 by Autodesk, Inc. v10.3 Thursday, 01 / 28 / 2016

Hyd. No. 25

<no description>

Hydrograph type	= Reservoir	Peak discharge	= 30.89 cfs
Storm frequency	= 100 yrs	Time to peak	= 1084 min
Time interval	= 2 min	Hyd. volume	= 1,161,534 cuft
Inflow hyd. No.	= 1 - SD-A1	Max. Elevation	= 575.97 ft
Reservoir name	= 42 cmpa crossing Ward	Max. Storage	= 12,818 cuft

Storage Indication method used.



Hydrograph Report

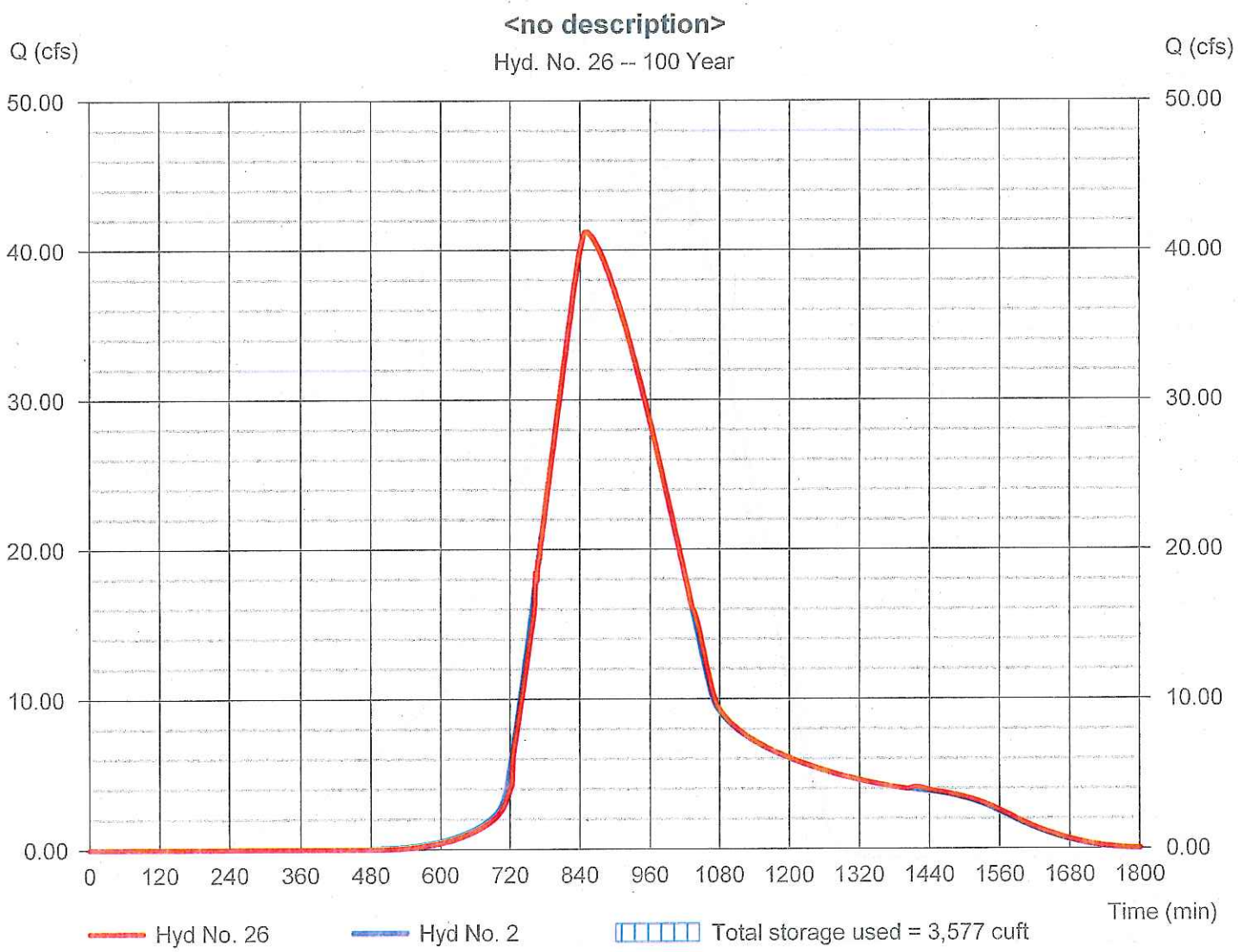
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2014 by Autodesk, Inc. v10.3 Thursday, 01 / 28 / 2016

Hyd. No. 26

<no description>

Hydrograph type	= Reservoir	Peak discharge	= 41.24 cfs
Storm frequency	= 100 yrs	Time to peak	= 850 min
Time interval	= 2 min	Hyd. volume	= 724,481 cuft
Inflow hyd. No.	= 2 - SD-A2	Max. Elevation	= 576.60 ft
Reservoir name	= 24 inch storm crossing Ward	Max. Storage	= 3,577 cuft

Storage Indication method used.



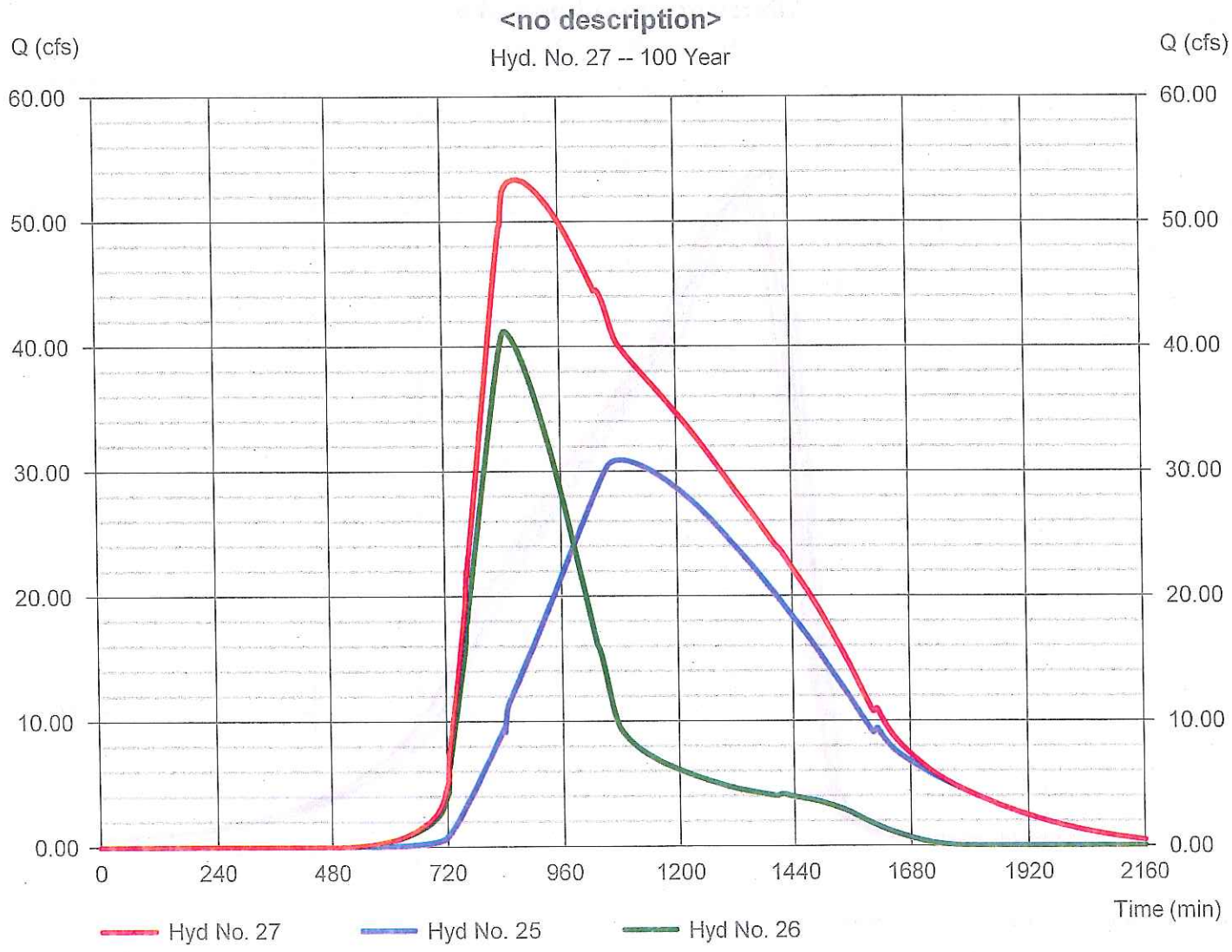
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2014 by Autodesk, Inc. v10.3 Thursday, 01 / 28 / 2016

Hyd. No. 27

<no description>

Hydrograph type	= Combine	Peak discharge	= 53.36 cfs
Storm frequency	= 100 yrs	Time to peak	= 876 min
Time interval	= 2 min	Hyd. volume	= 1,886,016 cuft
Inflow hyds.	= 25, 26	Contrib. drain. area	= 0.000 ac



Hydrograph Report

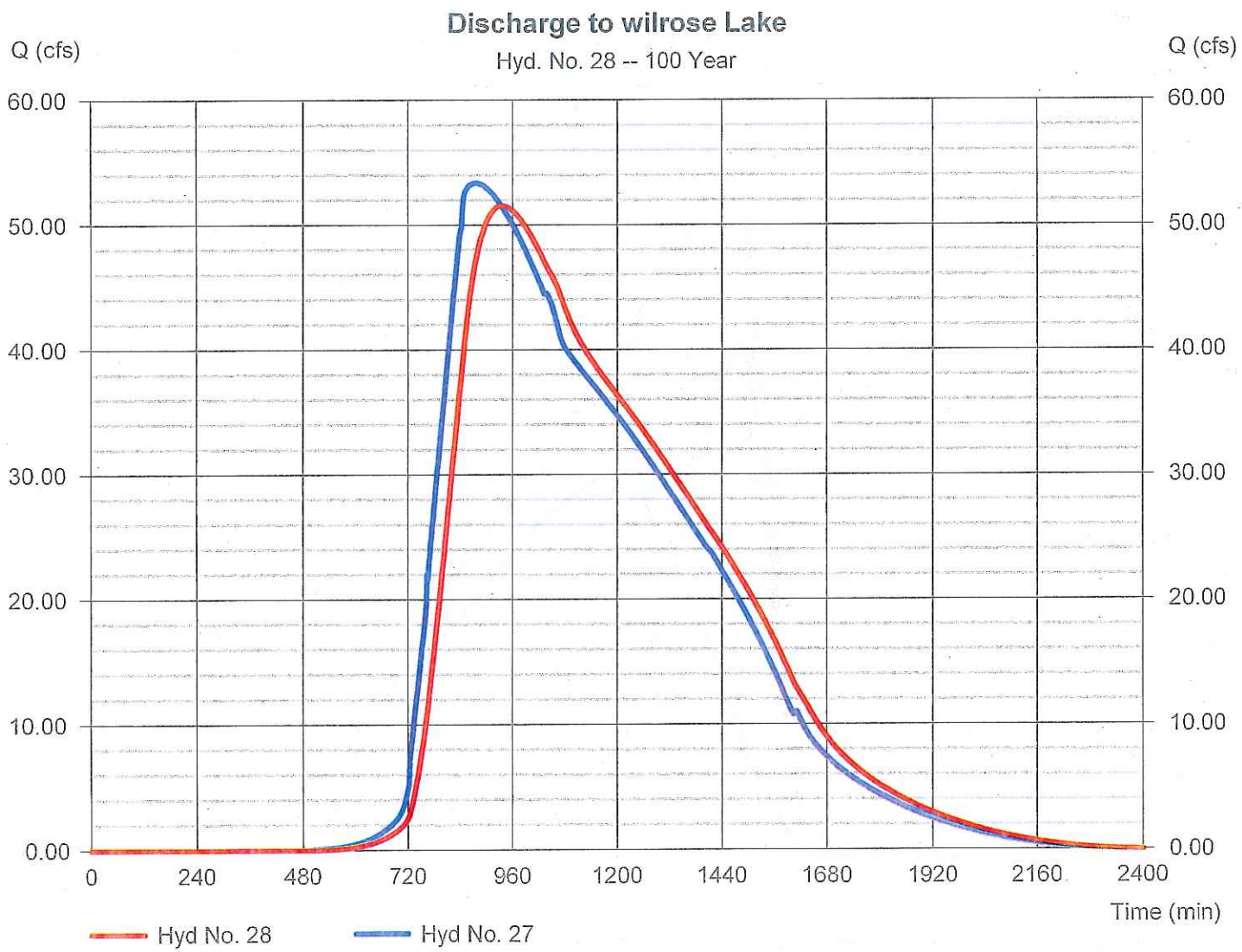
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2014 by Autodesk, Inc. v10.3 Thursday, 01 / 28 / 2016

Hyd. No. 28

Discharge to wilrose Lake

Hydrograph type	= Reach	Peak discharge	= 51.52 cfs
Storm frequency	= 100 yrs	Time to peak	= 934 min
Time interval	= 2 min	Hyd. volume	= 1,885,991 cuft
Inflow hyd. No.	= 27 - <no description>	Section type	= Trapezoidal
Reach length	= 3500.0 ft	Channel slope	= 0.1 %
Manning's n	= 0.040	Bottom width	= 10.0 ft
Side slope	= 2.0:1	Max. depth	= 2.0 ft
Rating curve x	= 0.227	Rating curve m	= 1.439
Ave. velocity	= 0.00 ft/s	Routing coeff.	= 0.0574

Modified Att-Kin routing method used.



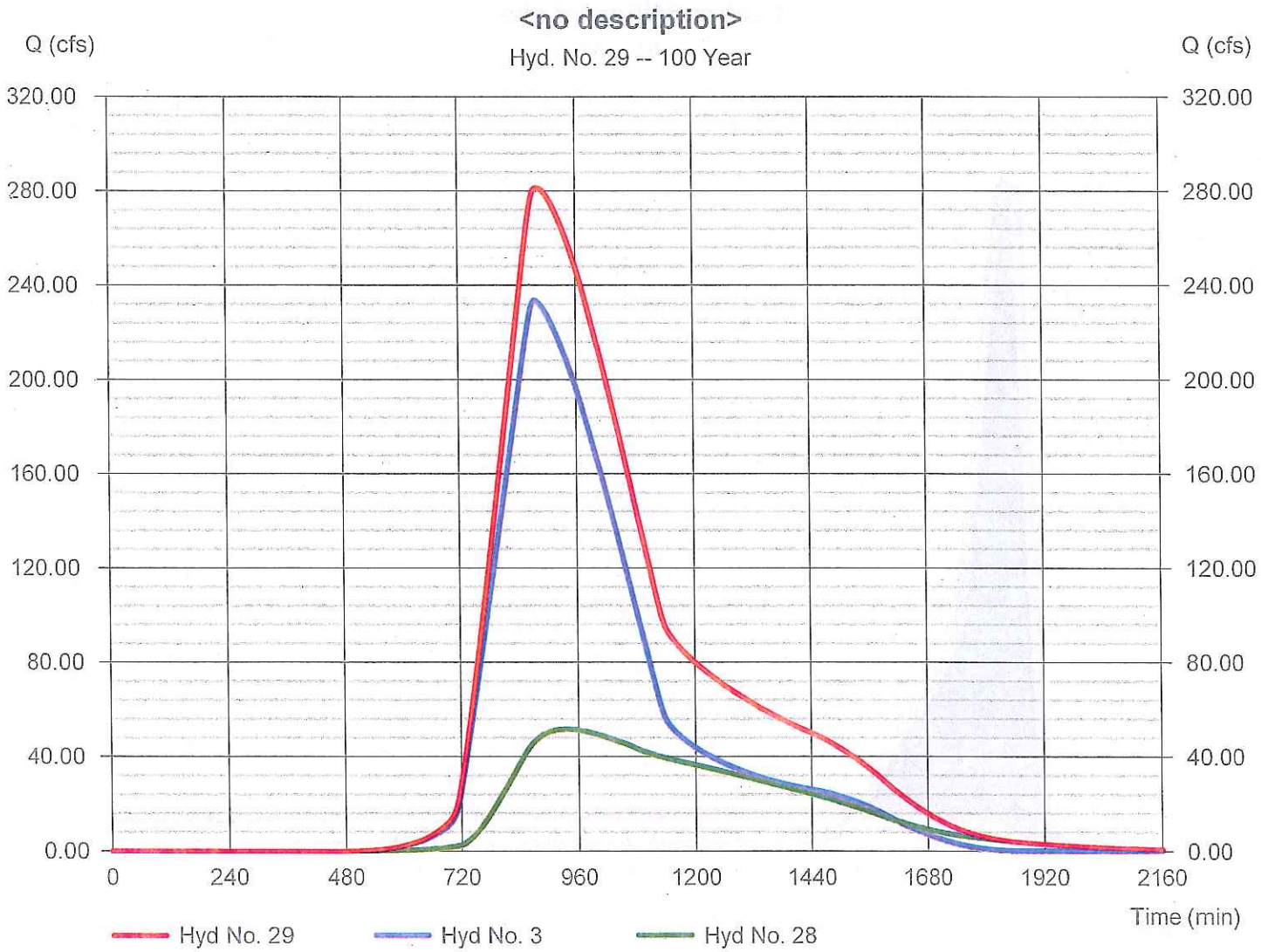
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2014 by Autodesk, Inc. v10.3 Thursday, 01 / 28 / 2016

Hyd. No. 29

<no description>

Hydrograph type	= Combine	Peak discharge	= 281.30 cfs
Storm frequency	= 100 yrs	Time to peak	= 880 min
Time interval	= 2 min	Hyd. volume	= 6,594,301 cuft
Inflow hyds.	= 3, 28	Contrib. drain. area	= 463.000 ac



Hydrograph Report

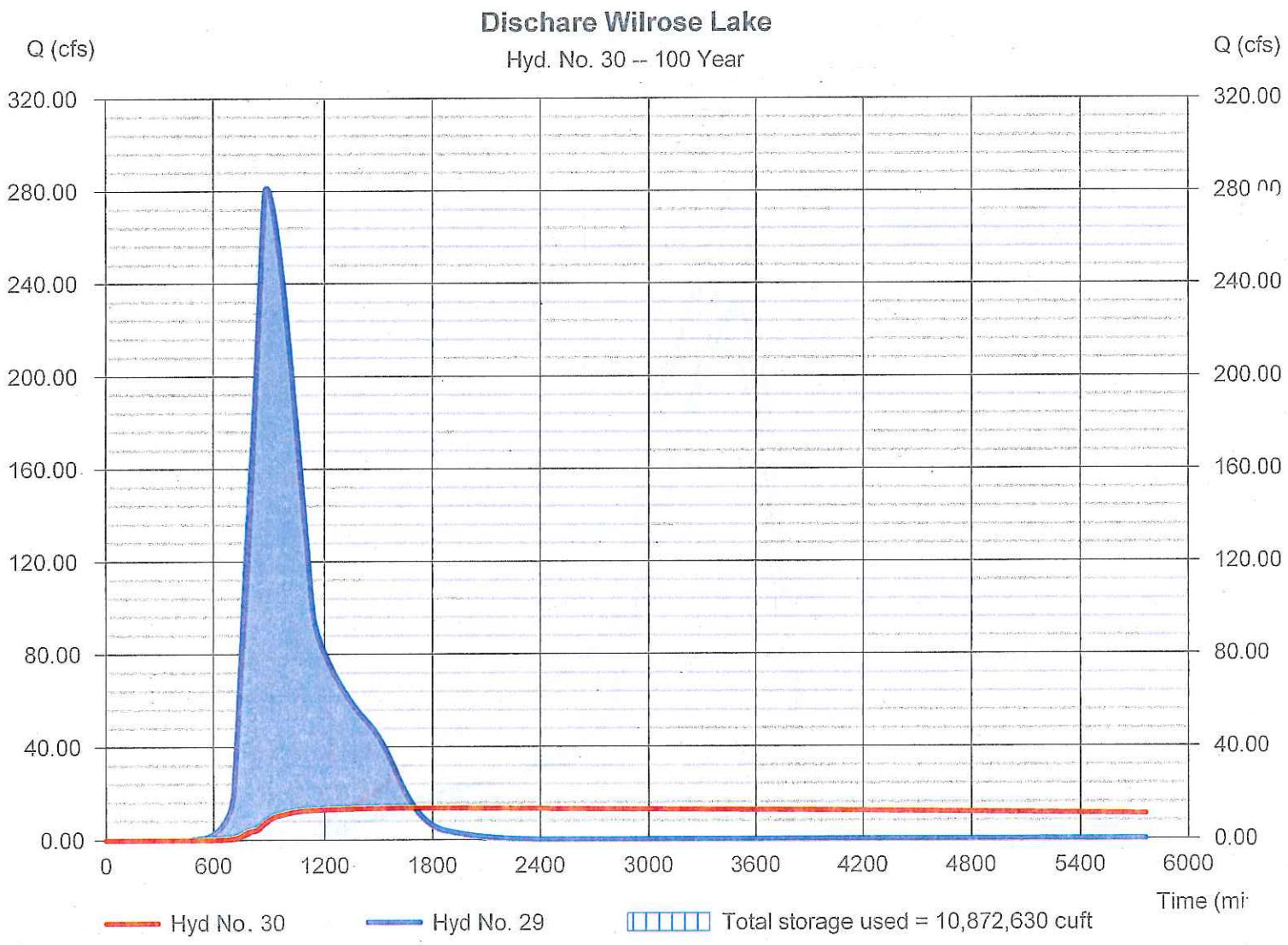
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2014 by Autodesk, Inc. v10.3 Thursday, 01 / 28 / 2016

Hyd. No. 30

Dischare Wilrose Lake

Hydrograph type	= Reservoir	Peak discharge	= 13.67 cfs
Storm frequency	= 100 yrs	Time to peak	= 1700 min
Time interval	= 2 min	Hyd. volume	= 3,701,488 cuft
Inflow hyd. No.	= 29 - <no description>	Max. Elevation	= 575.68 ft
Reservoir name	= Wilrose Pond	Max. Storage	= 10,872,630 cuft

Storage Indication method used. Wet pond routing start elevation = 571.08 ft.



Hydrograph Report

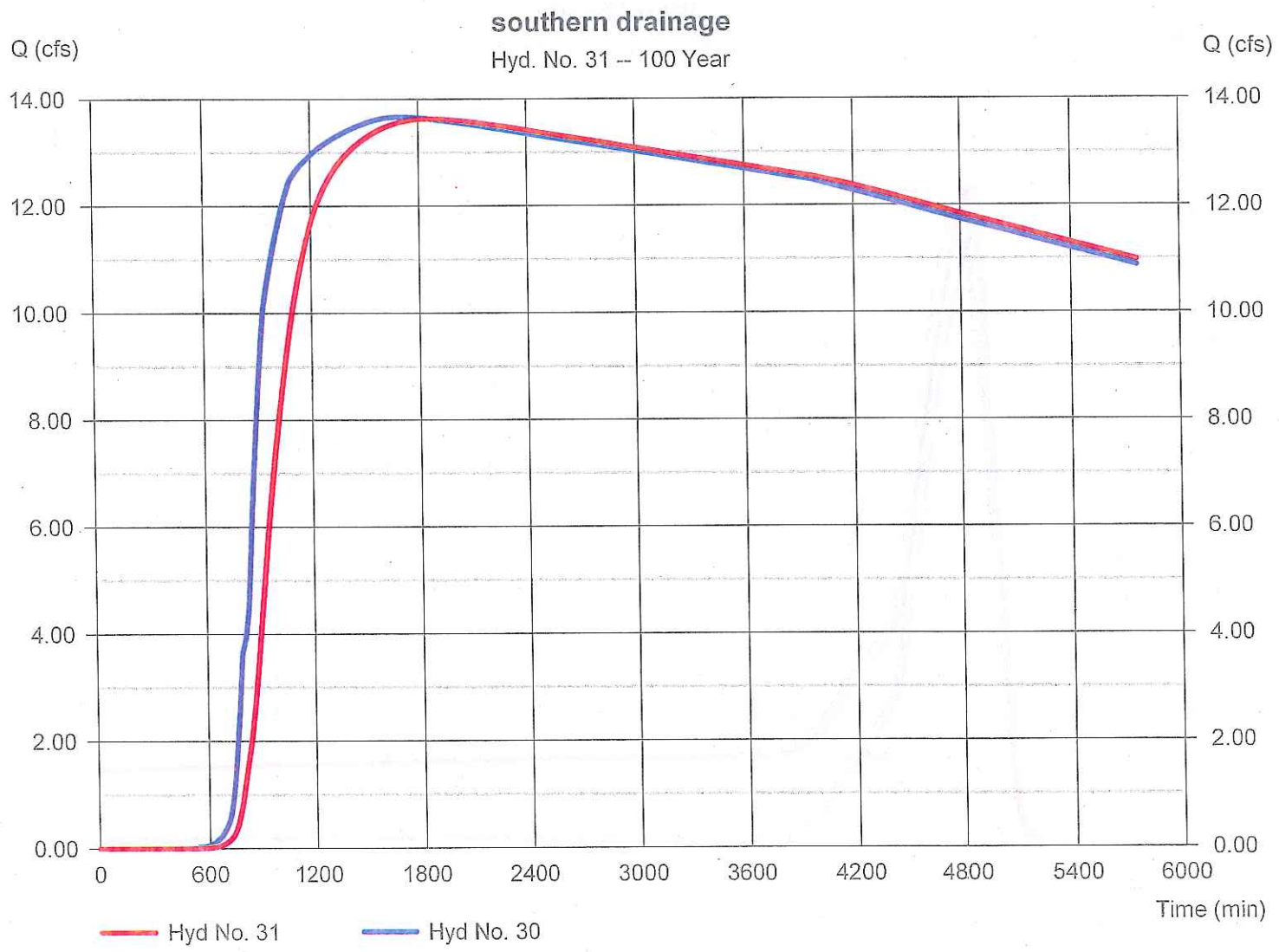
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2014 by Autodesk, Inc. v10.3 Thursday, 01 / 28 / 2016

Hyd. No. 31

southern drainage

Hydrograph type	= Reach	Peak discharge	= 13.63 cfs
Storm frequency	= 100 yrs	Time to peak	= 1858 min
Time interval	= 2 min	Hyd. volume	= 3,622,579 cuft
Inflow hyd. No.	= 30 - Dischare Wilrose Lake	Section type	= Trapezoidal
Reach length	= 6300.0 ft	Channel slope	= 0.0 %
Manning's n	= 0.040	Bottom width	= 10.0 ft
Side slope	= 1.0:1	Max. depth	= 3.0 ft
Rating curve x	= 0.113	Rating curve m	= 1.518
Ave. velocity	= 0.00 ft/s	Routing coeff.	= 0.0167

Modified Att-Kin routing method used.



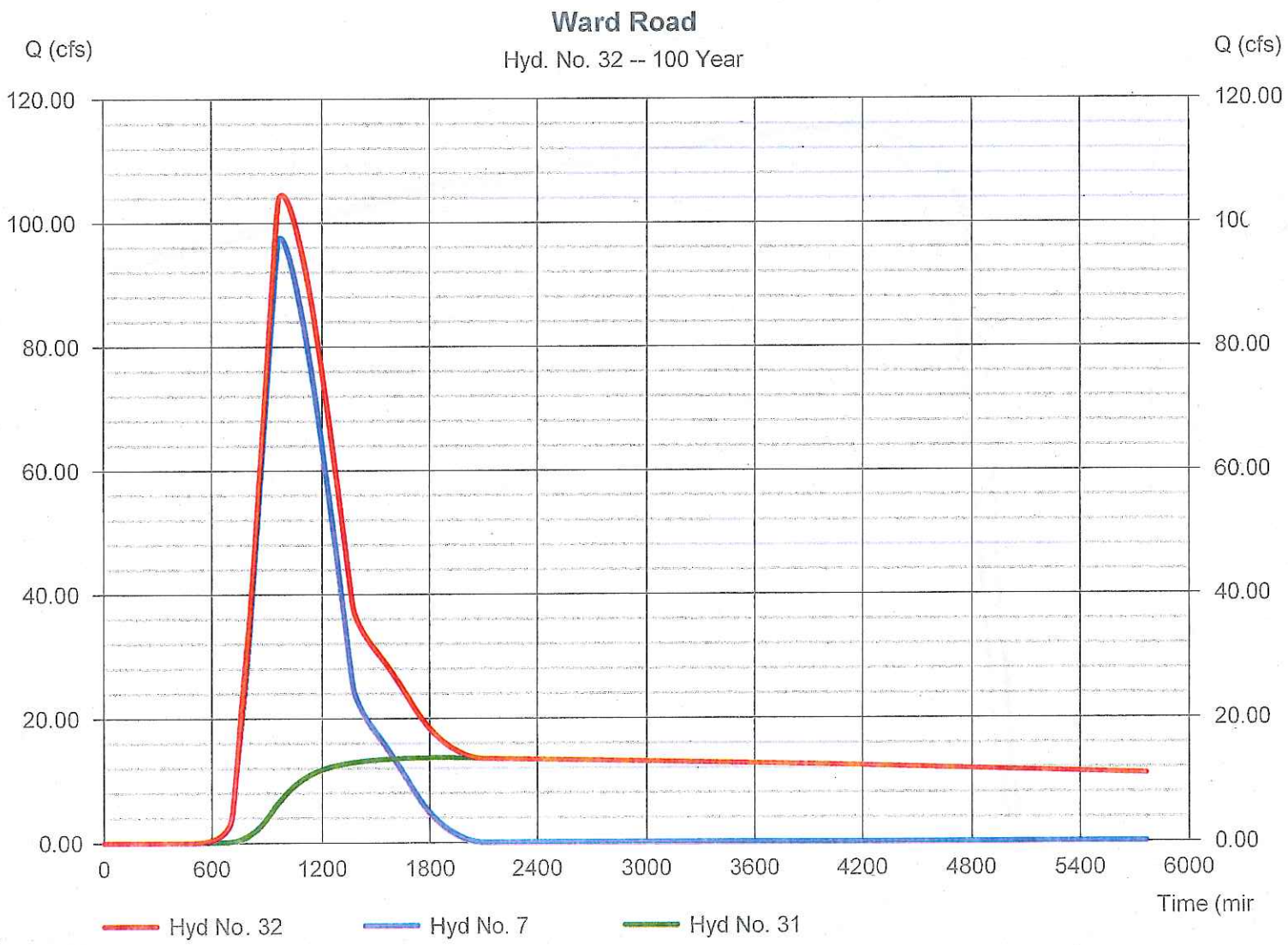
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2014 by Autodesk, Inc. v10.3 Thursday, 01 / 28 / 2016

Hyd. No. 32

Ward Road

Hydrograph type	= Combine	Peak discharge	= 104.51 cfs
Storm frequency	= 100 yrs	Time to peak	= 980 min
Time interval	= 2 min	Hyd. volume	= 6,435,000 cuft
Inflow hyds.	= 7, 31	Contrib. drain. area	= 285.000 ac



Hydrograph Report

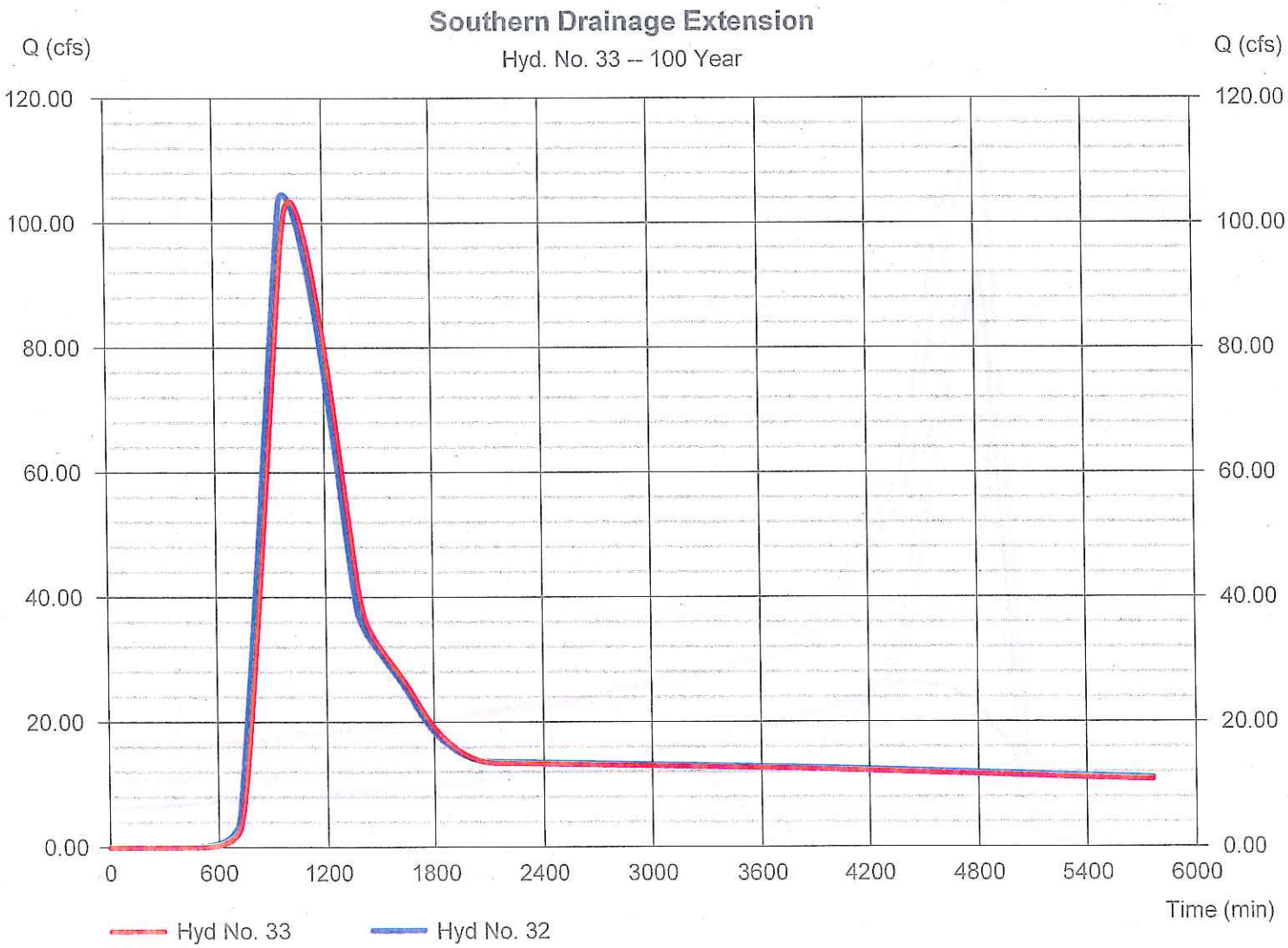
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2014 by Autodesk, Inc. v10.3 Thursday, 01 / 28 / 2016

Hyd. No. 33

Southern Drainage Extension

Hydrograph type	= Reach	Peak discharge	= 103.45 cfs
Storm frequency	= 100 yrs	Time to peak	= 1016 min
Time interval	= 2 min	Hyd. volume	= 6,377,400 cuft
Inflow hyd. No.	= 32 - Ward Road	Section type	= Trapezoidal
Reach length	= 5000.0 ft	Channel slope	= 0.1 %
Manning's n	= 0.030	Bottom width	= 10.0 ft
Side slope	= 1.0:1	Max. depth	= 4.0 ft
Rating curve x	= 0.338	Rating curve m	= 1.512
Ave. velocity	= 0.00 ft/s	Routing coeff.	= 0.0822

Modified Att-Kin routing method used.



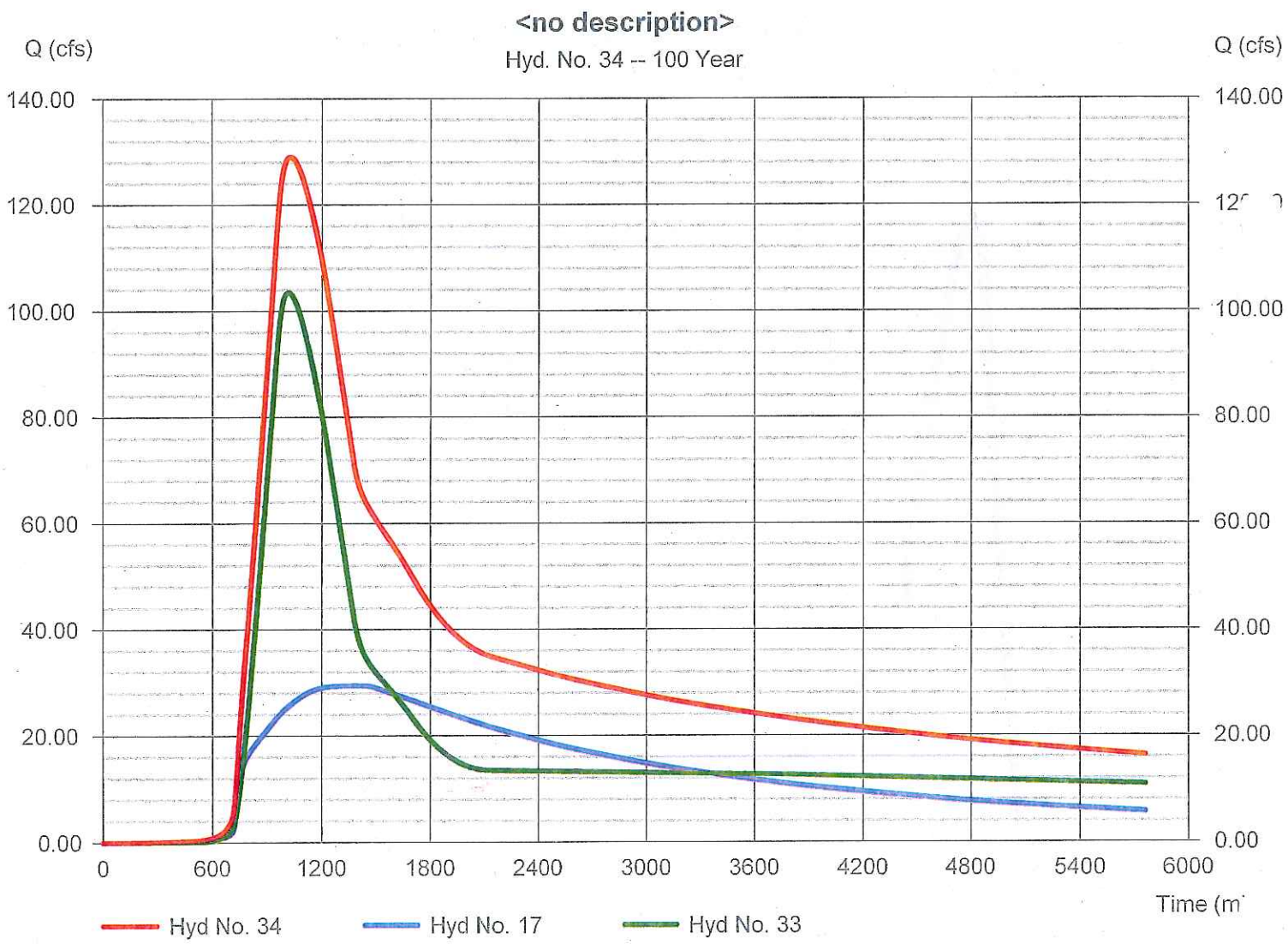
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2014 by Autodesk, Inc. v10.3 Thursday, 01 / 28 / 2016

Hyd. No. 34

<no description>

Hydrograph type	= Combine	Peak discharge	= 129.01 cfs
Storm frequency	= 100 yrs	Time to peak	= 1026 min
Time interval	= 2 min	Hyd. volume	= 10,956,210 cuft
Inflow hyds.	= 17, 33	Contrib. drain. area	= 0.000 ac



Hydrograph Report

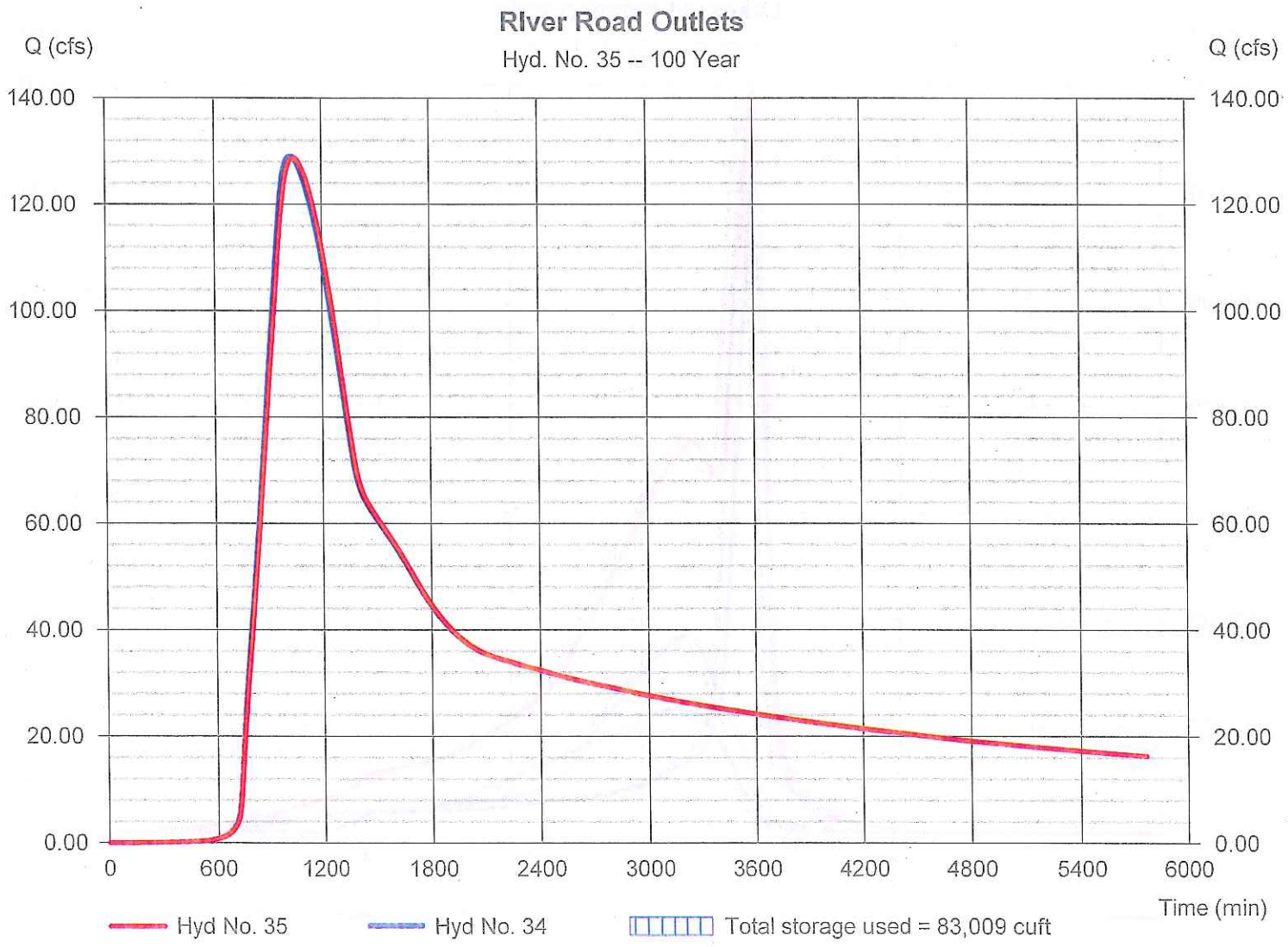
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2014 by Autodesk, Inc. v10.3 Thursday, 01 / 28 / 2016

Hyd. No. 35

RIver Road Outlets

Hydrograph type	= Reservoir	Peak discharge	= 128.77 cfs
Storm frequency	= 100 yrs	Time to peak	= 1042 min
Time interval	= 2 min	Hyd. volume	= 10,954,550 cuft
Inflow hyd. No.	= 34 - <no description>	Max. Elevation	= 571.60 ft
Reservoir name	= Twin 36 and 30 inch outlet pipes	Max. Storage	= 83,009 cuft

Storage Indication method used. Wet pond routing start elevation = 568.94 ft.



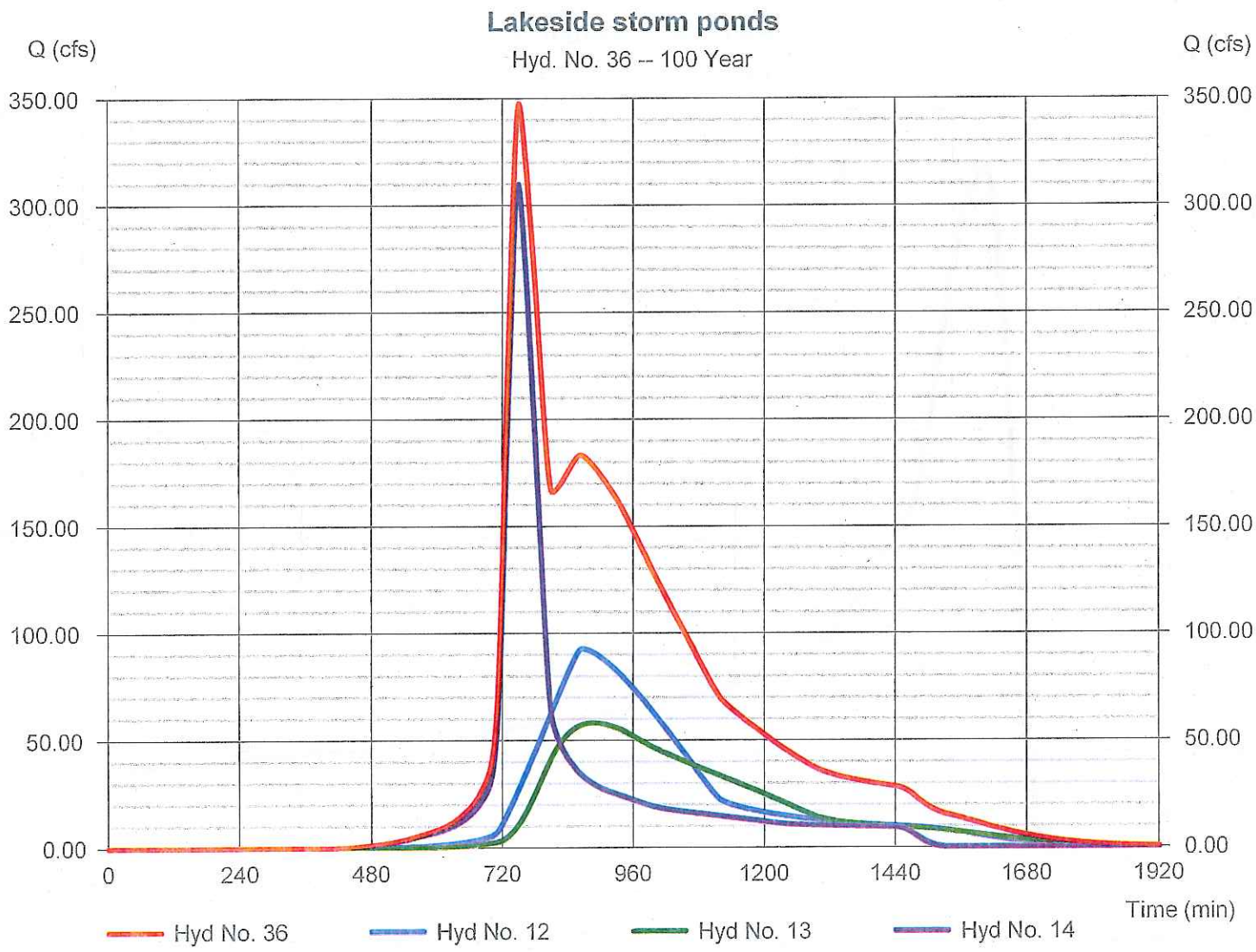
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2014 by Autodesk, Inc. v10.3 Thursday, 01 / 28 / 2016

Hyd. No. 36

Lakeside storm ponds

Hydrograph type	= Combine	Peak discharge	= 347.50 cfs
Storm frequency	= 100 yrs	Time to peak	= 750 min
Time interval	= 2 min	Hyd. volume	= 5,255,617 cuft
Inflow hyds.	= 12, 13, 14	Contrib. drain. area	= 360.000 ac



Hydrograph Report

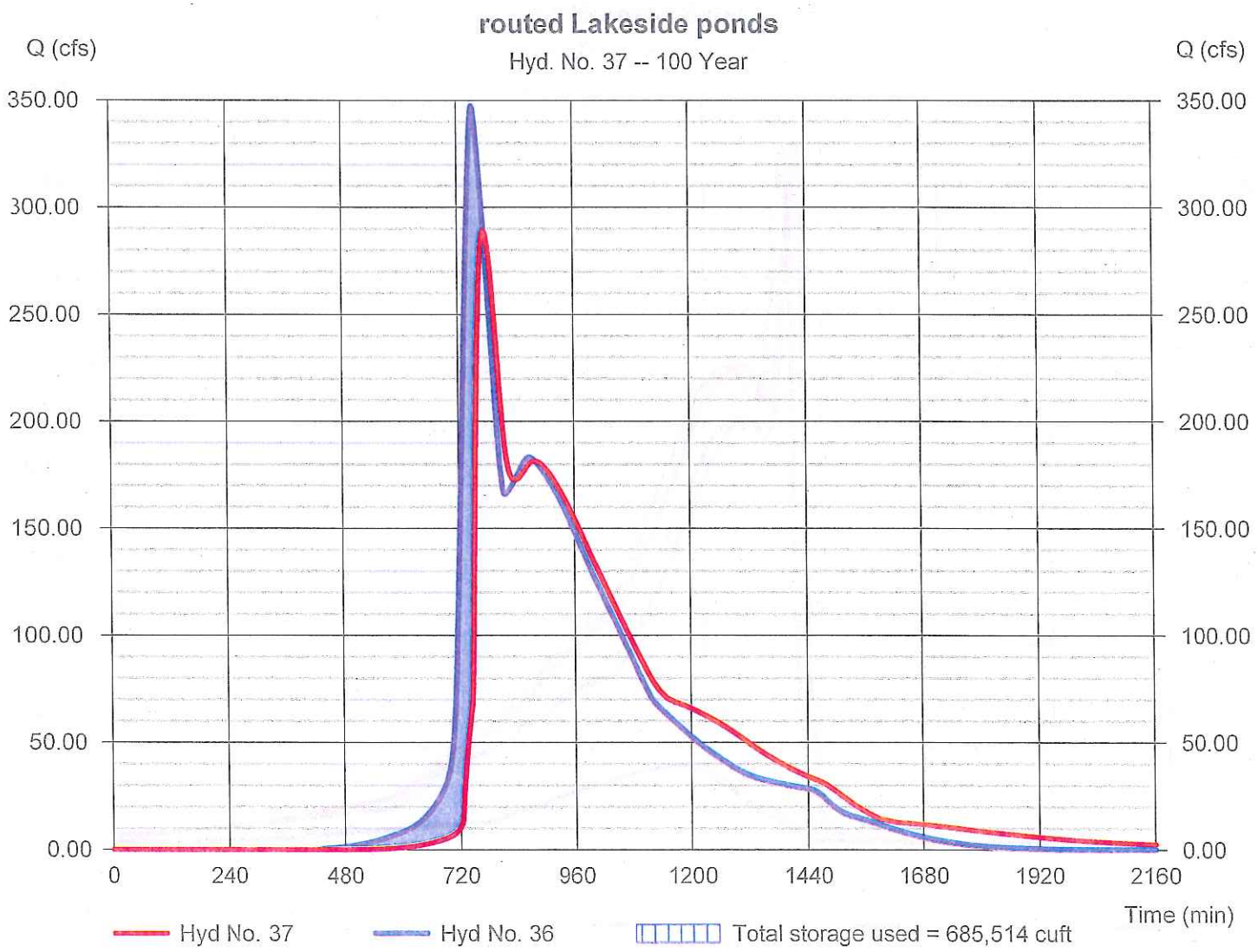
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2014 by Autodesk, Inc. v10.3 Thursday, 01 / 28 / 2016

Hyd. No. 37

routed Lakeside ponds

Hydrograph type	= Reservoir	Peak discharge	= 289.33 cfs
Storm frequency	= 100 yrs	Time to peak	= 772 min
Time interval	= 2 min	Hyd. volume	= 5,255,063 cuft
Inflow hyd. No.	= 36 - Lakeside storm ponds	Max. Elevation	= 575.56 ft
Reservoir name	= Lakeside Drive Development Pond	Max. Storage	= 685,514 cuft

Storage Indication method used.



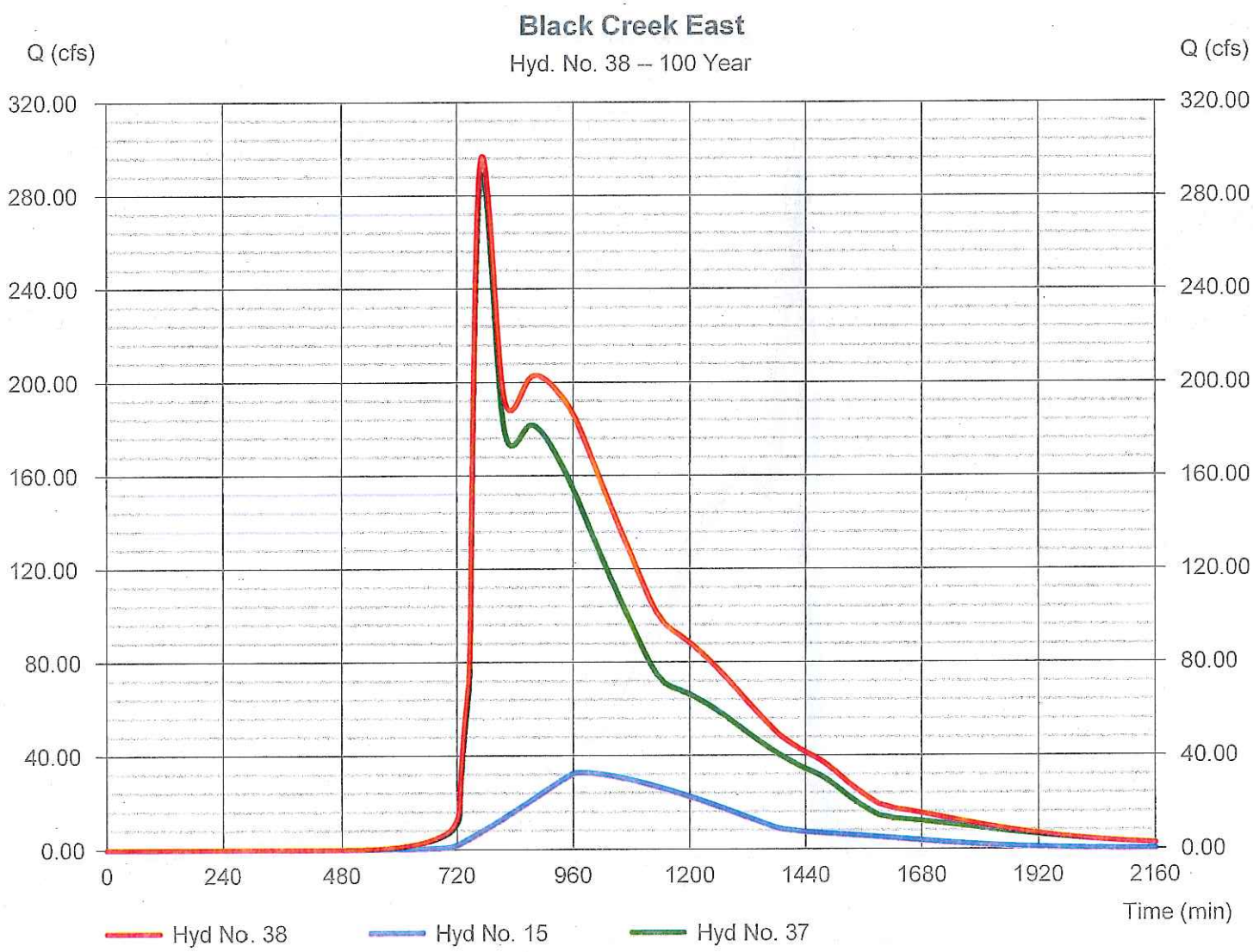
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2014 by Autodesk, Inc. v10.3 Thursday, 01 / 28 / 2016

Hyd. No. 38

Black Creek East

Hydrograph type	= Combine	Peak discharge	= 296.85 cfs
Storm frequency	= 100 yrs	Time to peak	= 772 min
Time interval	= 2 min	Hyd. volume	= 6,213,794 cuft
Inflow hyds.	= 15, 37	Contrib. drain. area	= 104.000 ac



Hydrograph Report

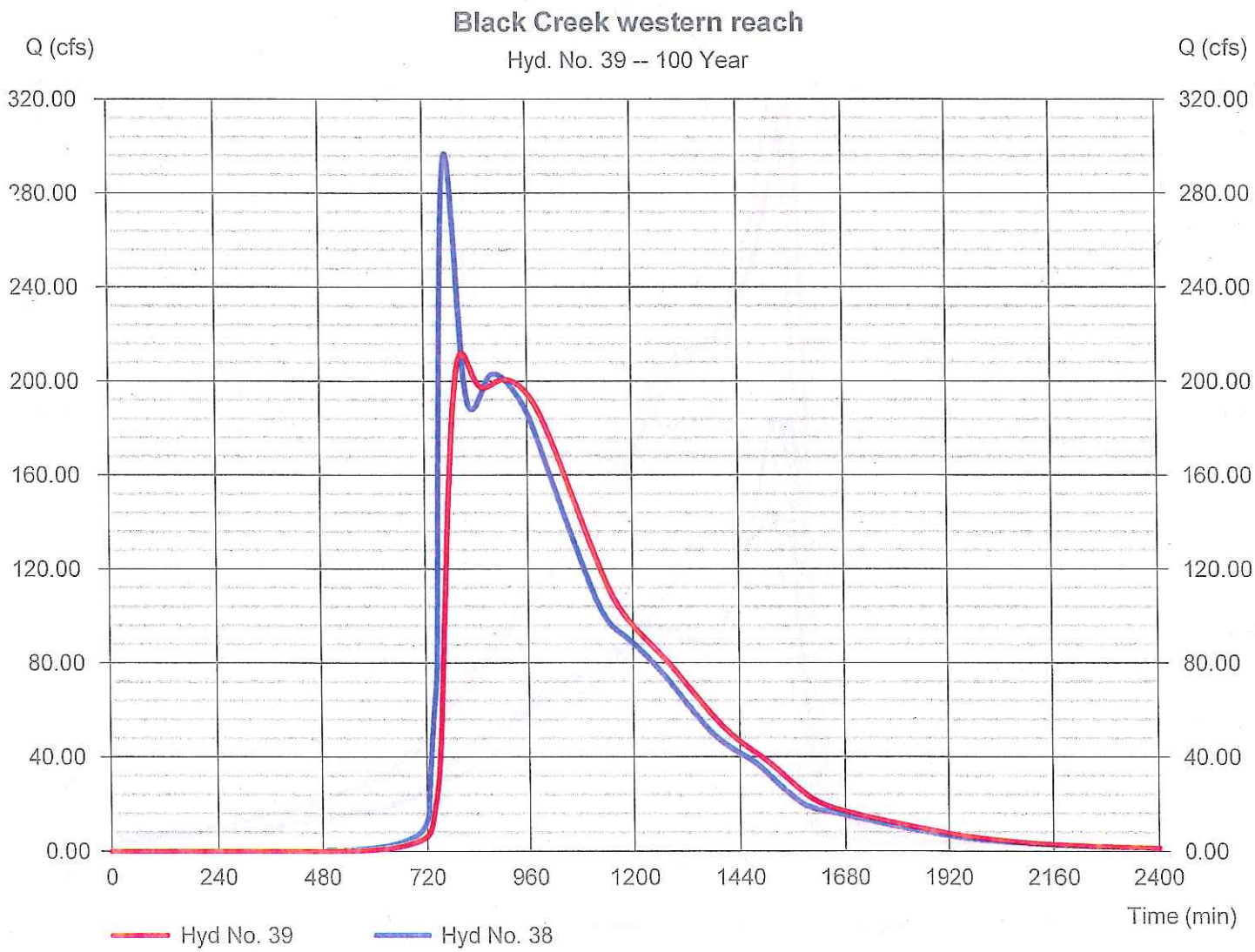
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2014 by Autodesk, Inc. v10.3 Thursday, 01 / 28 / 2016

Hyd. No. 39

Black Creek western reach

Hydrograph type	= Reach	Peak discharge	= 212.04 cfs
Storm frequency	= 100 yrs	Time to peak	= 808 min
Time interval	= 2 min	Hyd. volume	= 6,213,759 cuft
Inflow hyd. No.	= 38 - Black Creek East	Section type	= Trapezoidal
Reach length	= 5000.0 ft	Channel slope	= 0.1 %
Manning's n	= 0.040	Bottom width	= 20.0 ft
Side slope	= 2.0:1	Max. depth	= 3.0 ft
Rating curve x	= 0.113	Rating curve m	= 1.504
Ave. velocity	= 0.00 ft/s	Routing coeff.	= 0.0554

Modified Att-Kin routing method used.



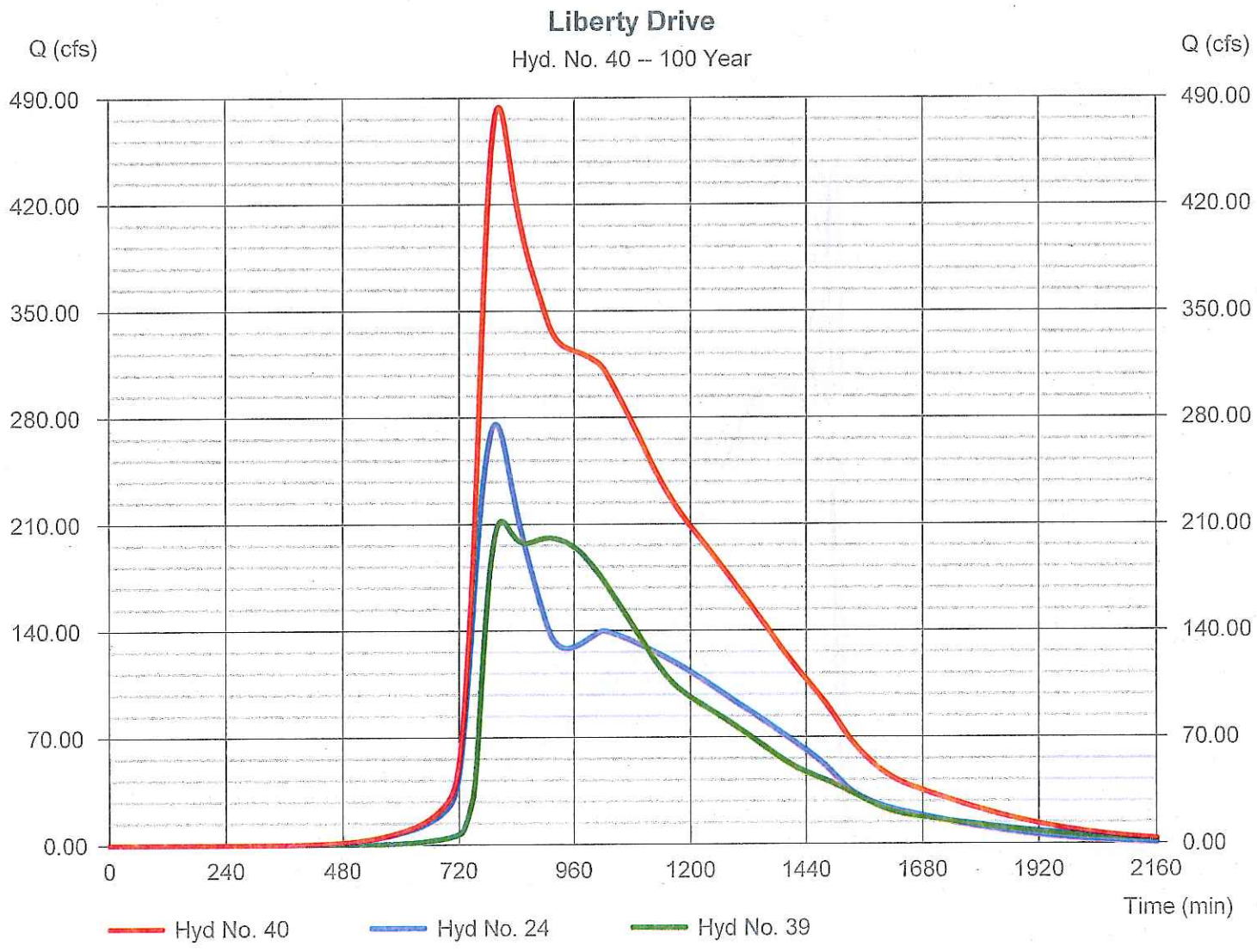
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2014 by Autodesk, Inc. v10.3 Thursday, 01 / 28 / 2016

Hyd. No. 40

Liberty Drive

Hydrograph type	= Combine	Peak discharge	= 483.95 cfs
Storm frequency	= 100 yrs	Time to peak	= 802 min
Time interval	= 2 min	Hyd. volume	= 12,786,440 cuft
Inflow hyds.	= 24, 39	Contrib. drain. area	= 0.000 ac



Hydrograph Report

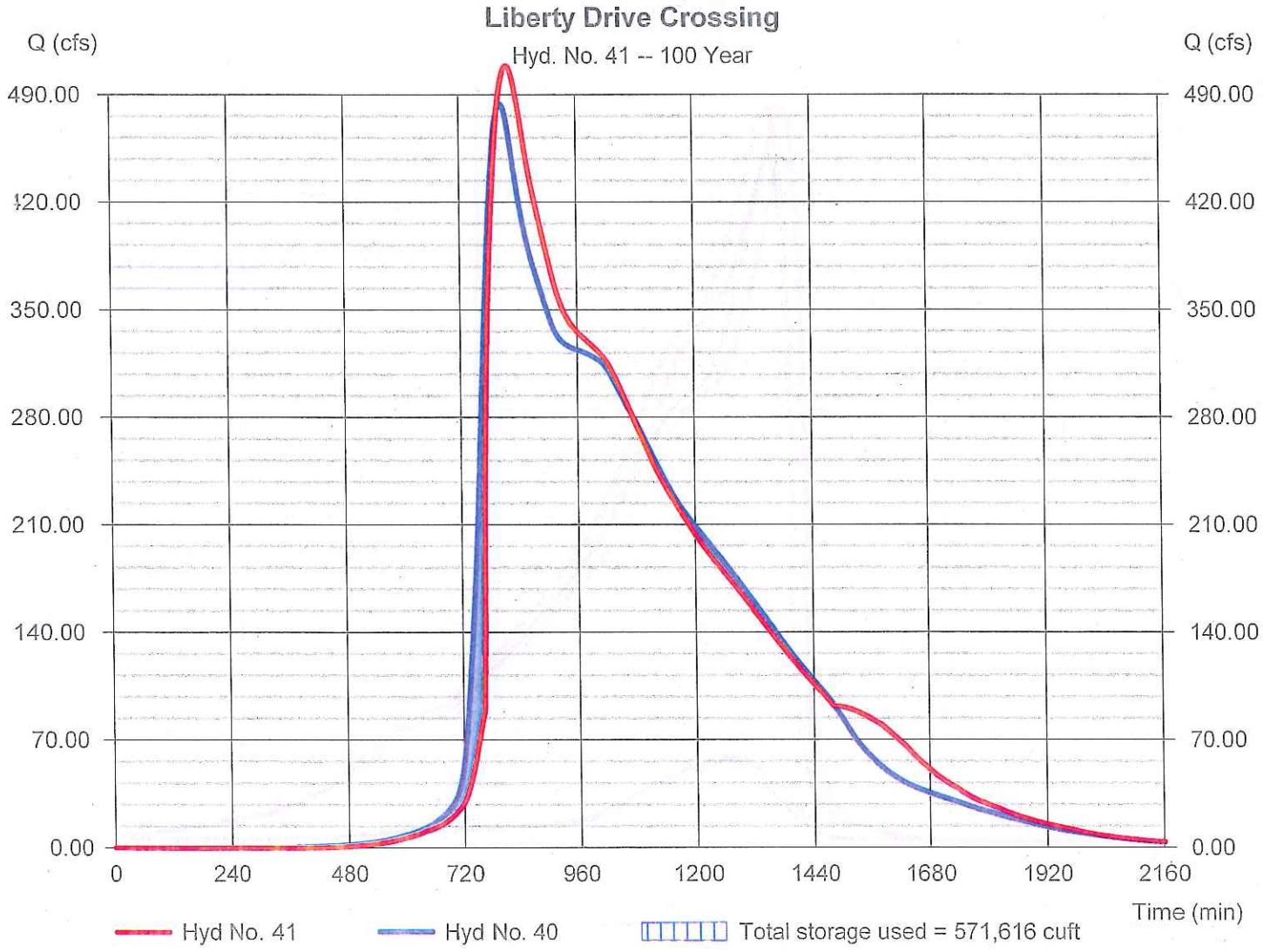
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2014 by Autodesk, Inc. v10.3 Thursday, 01 / 28 / 2016

Hyd. No. 41

Liberty Drive Crossing

Hydrograph type	= Reservoir	Peak discharge	= 508.89 cfs
Storm frequency	= 100 yrs	Time to peak	= 814 min
Time interval	= 2 min	Hyd. volume	= 13,042,210 cuft
Inflow hyd. No.	= 40 - Liberty Drive	Max. Elevation	= 574.87 ft
Reservoir name	= Impoundment area (Liberty Drive)	Max. Storage	= 571,616 cuft

Storage Indication method used.



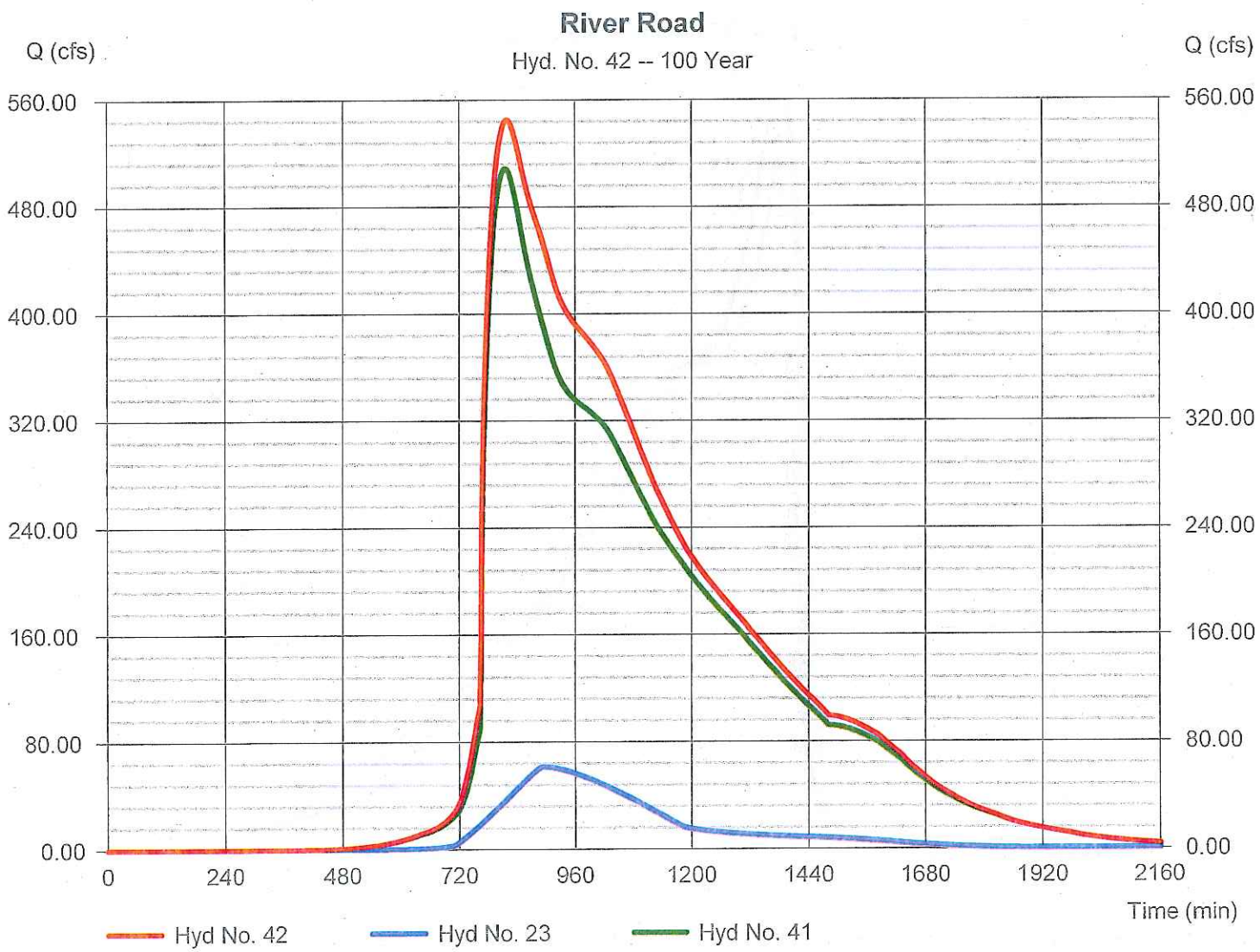
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2014 by Autodesk, Inc. v10.3 Thursday, 01 / 28 / 2016

Hyd. No. 42

River Road

Hydrograph type	= Combine	Peak discharge	= 545.16 cfs
Storm frequency	= 100 yrs	Time to peak	= 818 min
Time interval	= 2 min	Hyd. volume	= 14,404,640 cuft
Inflow hyds.	= 23, 41	Contrib. drain. area	= 148.000 ac

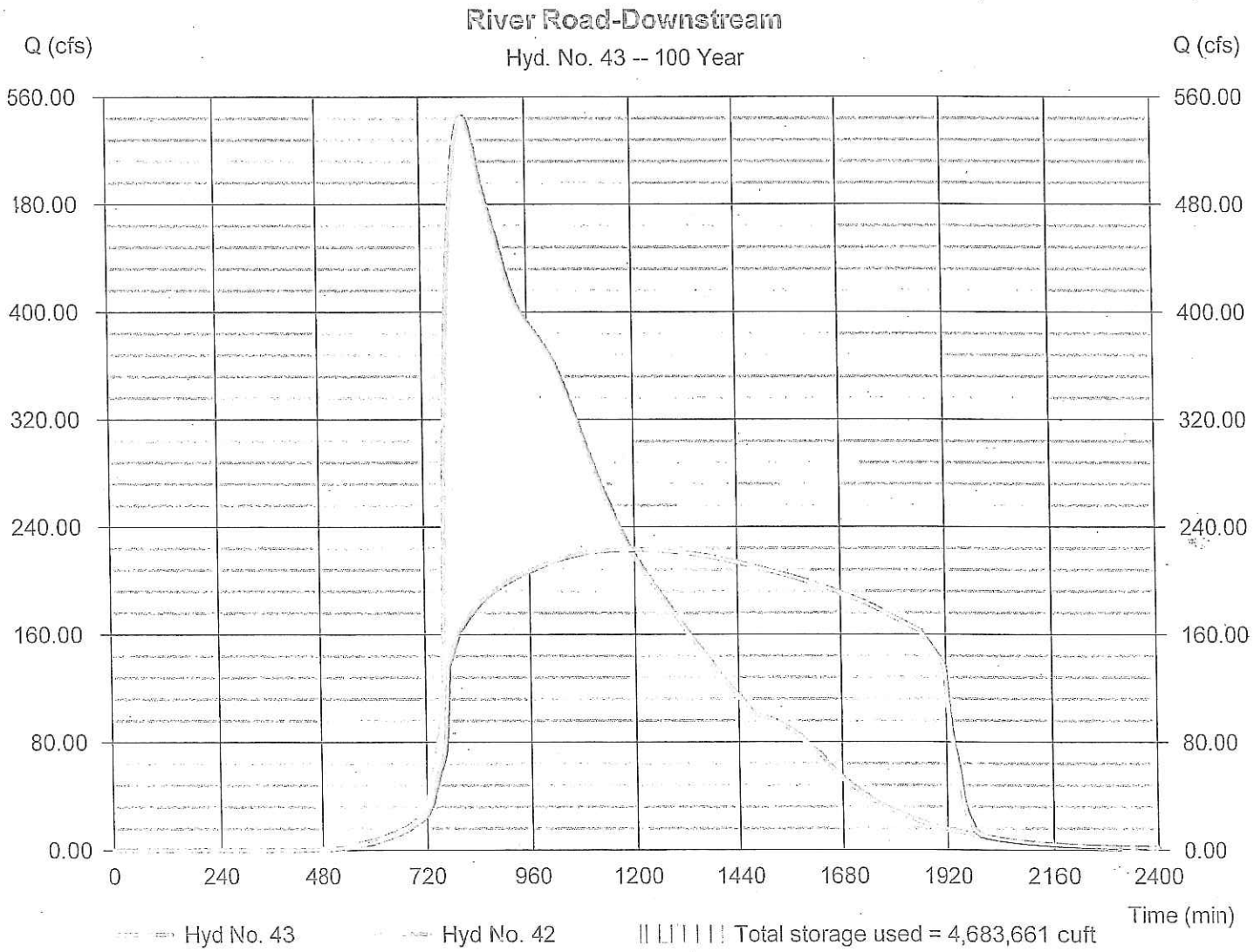


Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2014 by Autodesk, Inc. v10.3 Thursday, 01 / 28 / 2016

Hyd. No. 43

River Road-Downstream

Hydrograph type	= Reservoir	Peak discharge	= 223.25 cfs
Storm frequency	= 100 yrs	Time to peak	= 1190 min
Time interval	= 2 min	Hyd. volume	= 14,404,630 cuft
Inflow hyd. No.	= 42 - River Road	Max. Elevation	= 574.14 ft
Reservoir name	= Impoundment area (River Road)	Max. Storage	= 4,683,661 cuft

Storage Indication method used.