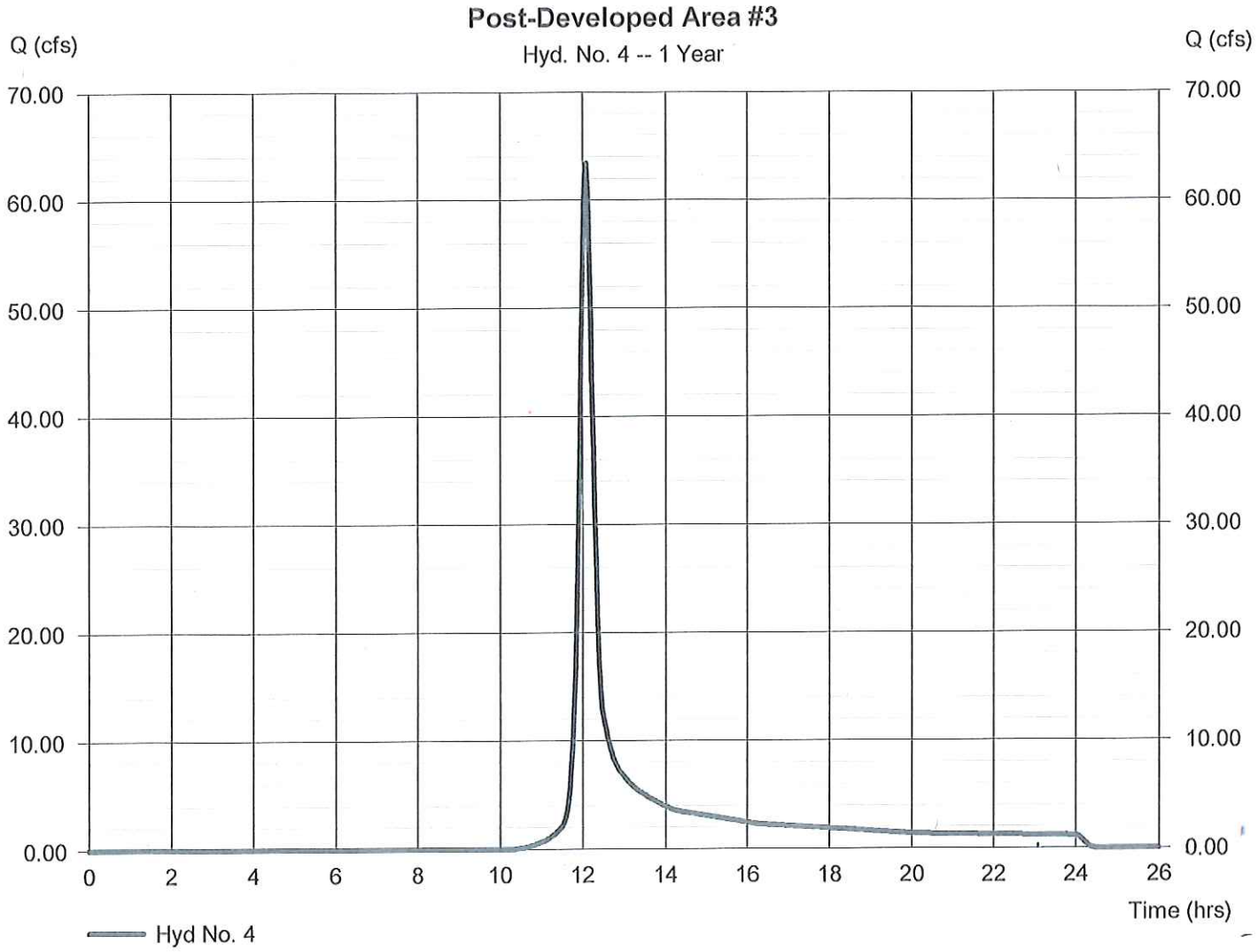
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8 — Tuesday, May 15, 2012

Hyd. No. 4

Post-Developed Area #3

Hydrograph type	= SCS Runoff	Peak discharge	= 63.44 cfs
Storm frequency	= 1 yrs	Time to peak	= 12.10 hrs
Time interval	= 2 min	Hyd. volume	= 204,171 cuft
Drainage area	= 63.500 ac	Curve number	= 82.2
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 17.10 min
Total precip.	= 2.33 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

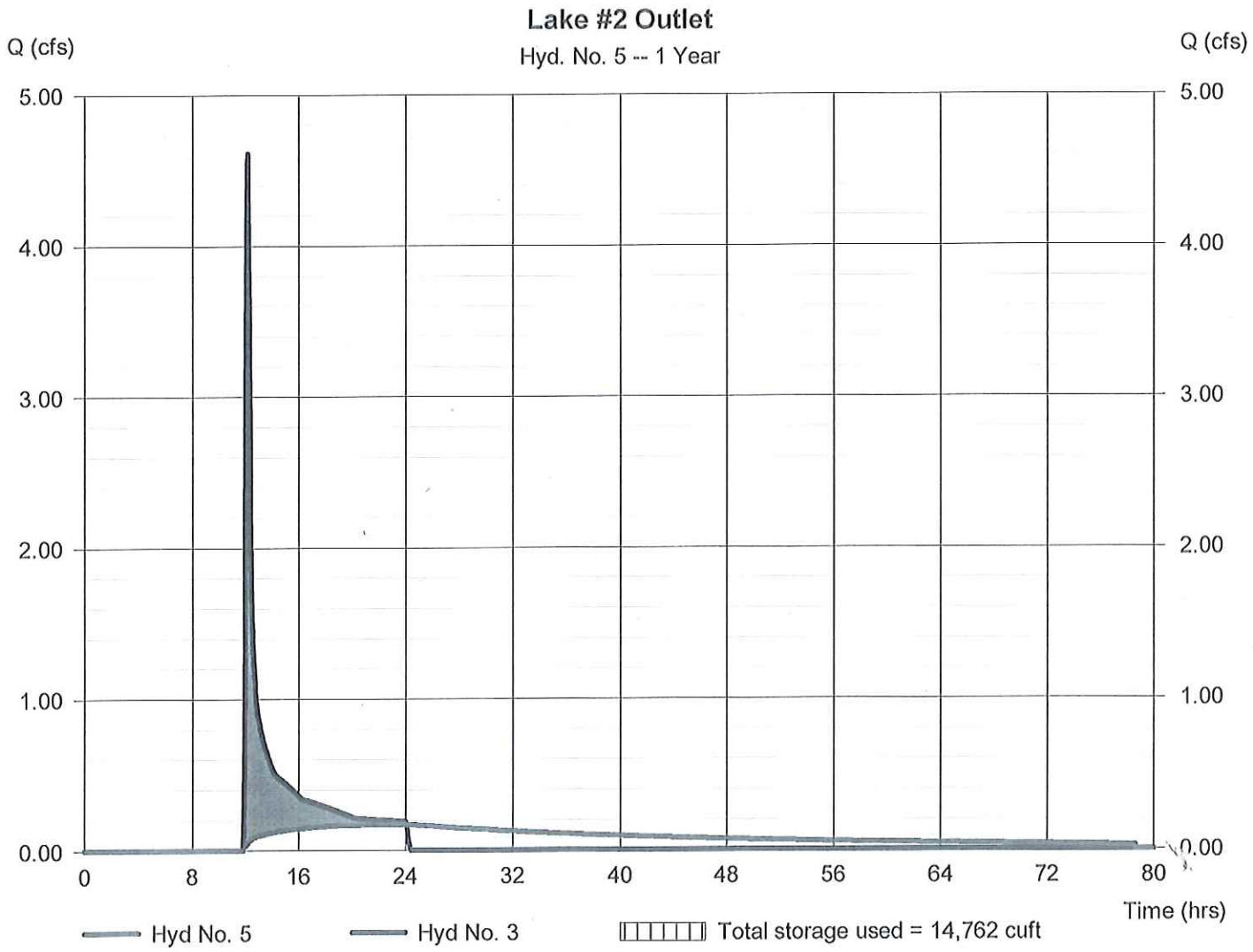
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8 — Tuesday, May 15, 2012

Hyd. No. 5

Lake #2 Outlet

Hydrograph type	= Reservoir	Peak discharge	= 0.172 cfs
Storm frequency	= 1 yrs	Time to peak	= 24.10 hrs
Time interval	= 2 min	Hyd. volume	= 21,332 cuft
Inflow hyd. No.	= 3 - Post-Developed Area #2	Max. Elevation	= 888.01 ft
Reservoir name	= Lake #2	Max. Storage	= 14,762 cuft

Storage Indication method used.



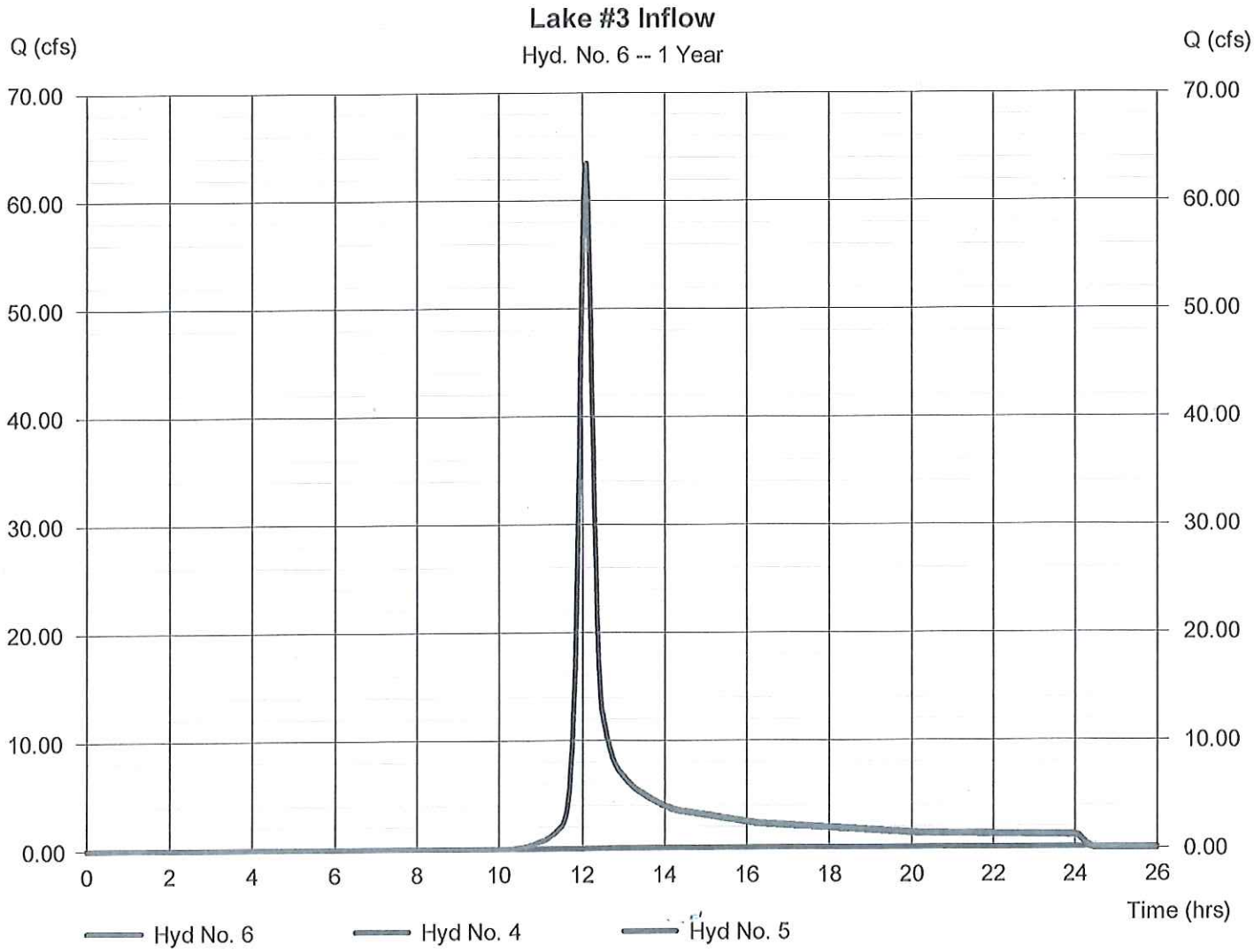
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8 — Tuesday, May 15, 2012

Hyd. No. 6

Lake #3 Inflow

Hydrograph type	= Combine	Peak discharge	= 63.48 cfs
Storm frequency	= 1 yrs	Time to peak	= 12.10 hrs
Time interval	= 2 min	Hyd. volume	= 225,503 cuft
Inflow hyds.	= 4, 5	Contrib. drain. area	= 63.500 ac



Hydrograph Report

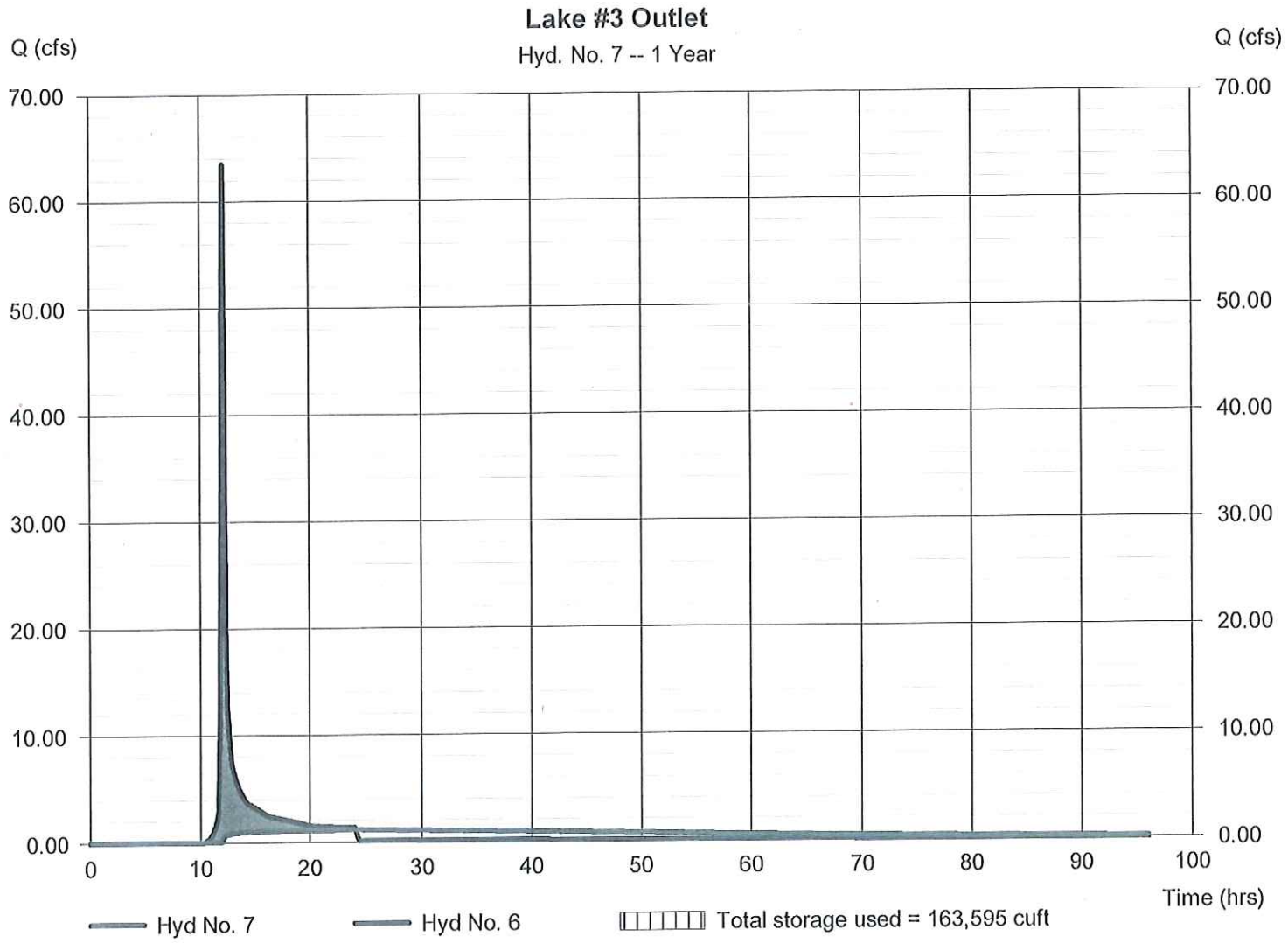
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8 — Tuesday, May 15, 2012

Hyd. No. 7

Lake #3 Outlet

Hydrograph type	= Reservoir	Peak discharge	= 1.153 cfs
Storm frequency	= 1 yrs	Time to peak	= 24.13 hrs
Time interval	= 2 min	Hyd. volume	= 196,675 cuft
Inflow hyd. No.	= 6 - Lake #3 Inflow	Max. Elevation	= 882.78 ft
Reservoir name	= Lake #3	Max. Storage	= 163,595 cuft

Storage Indication method used.



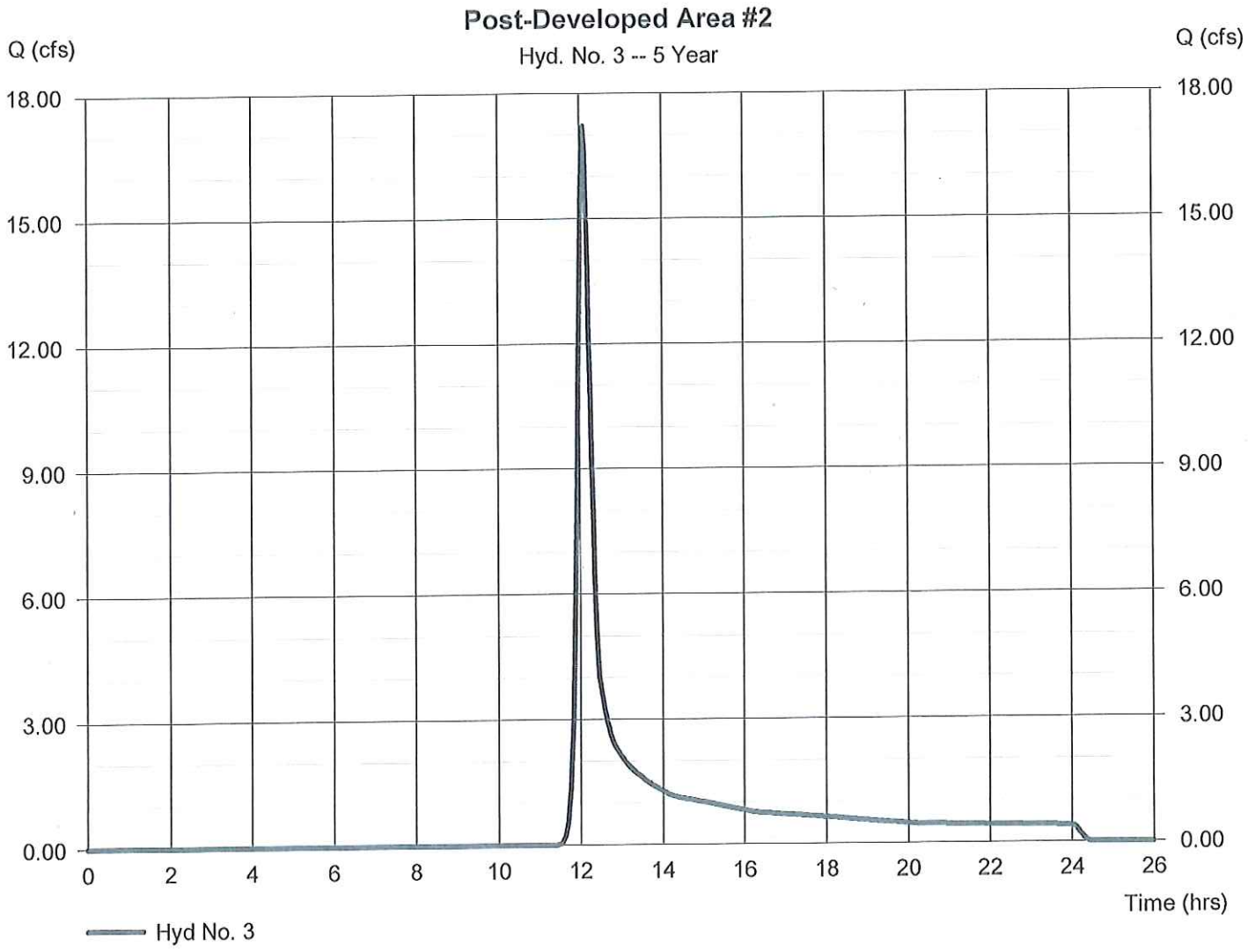
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8 — Tuesday, May 15, 2012

Hyd. No. 3

Post-Developed Area #2

Hydrograph type	= SCS Runoff	Peak discharge	= 17.22 cfs
Storm frequency	= 5 yrs	Time to peak	= 12.10 hrs
Time interval	= 2 min	Hyd. volume	= 59,211 cuft
Drainage area	= 17.600 ac	Curve number	= 68.6
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 18.00 min
Total precip.	= 3.49 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



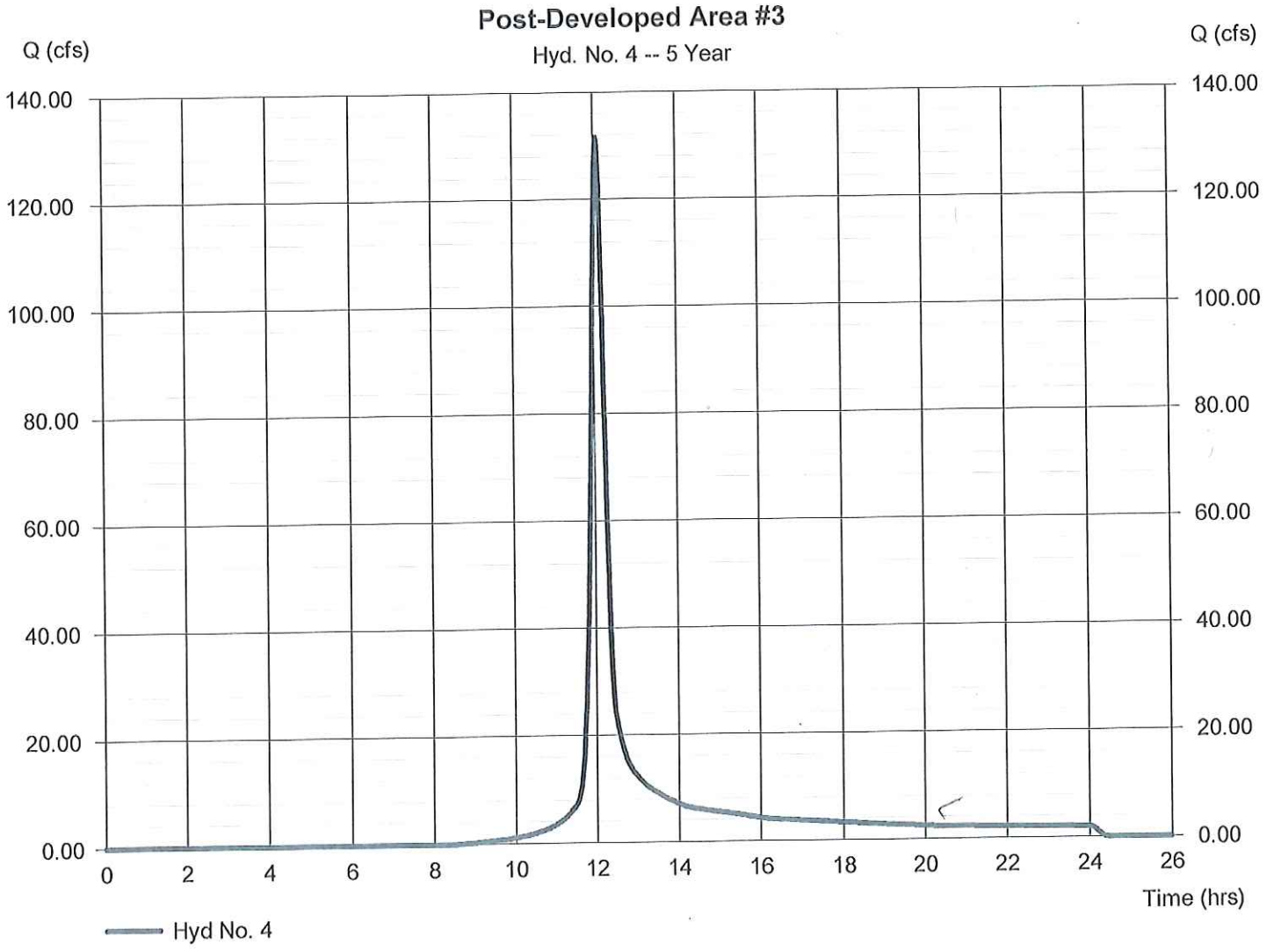
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8 — Tuesday, May 15, 2012

Hyd. No. 4

Post-Developed Area #3

Hydrograph type	= SCS Runoff	Peak discharge	= 131.67 cfs
Storm frequency	= 5 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 412,457 cuft
Drainage area	= 63.500 ac	Curve number	= 82.2
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 17.10 min
Total precip.	= 3.49 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

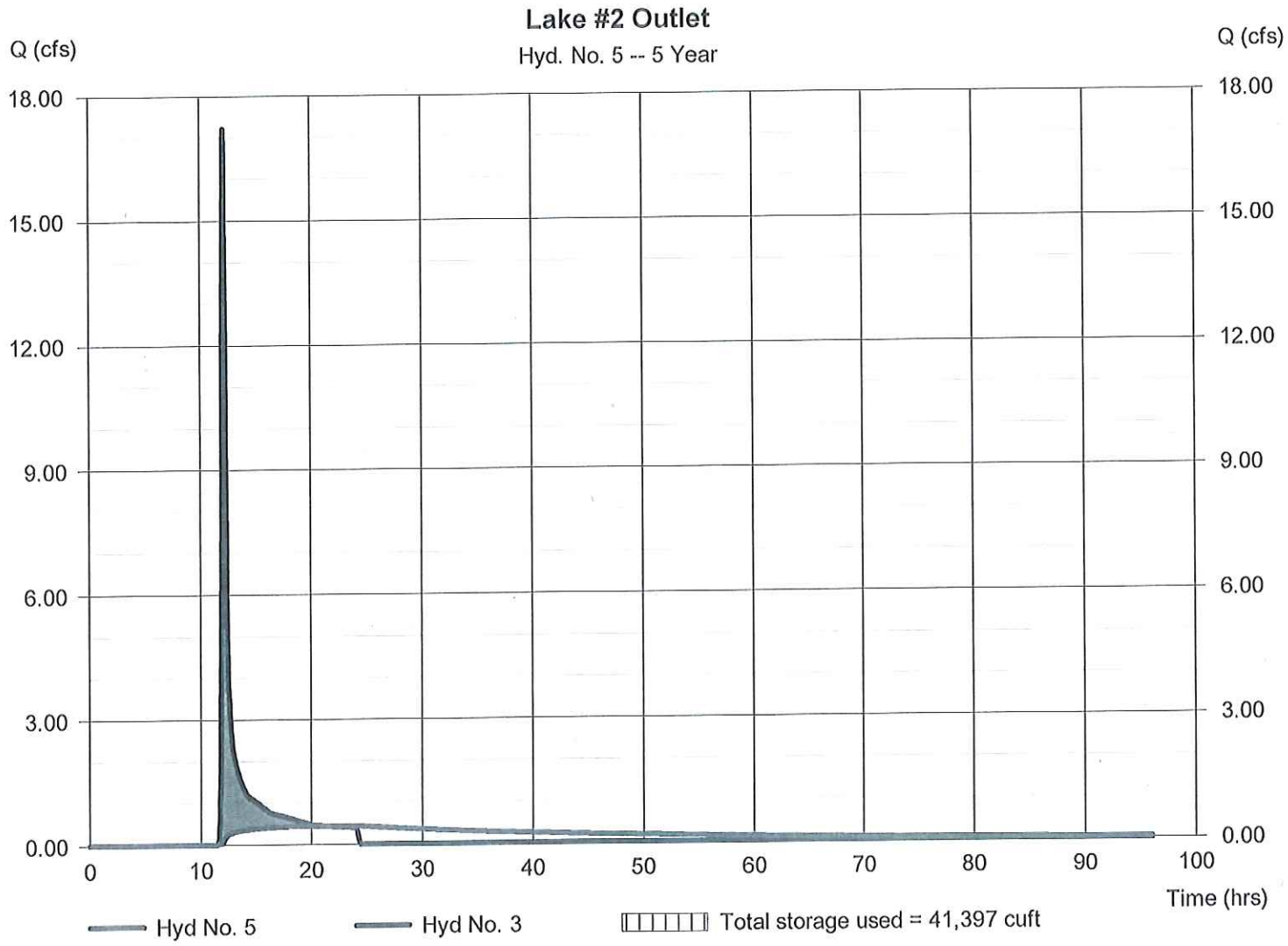
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8 — Tuesday, May 15, 2012

Hyd. No. 5

Lake #2 Outlet

Hydrograph type	= Reservoir	Peak discharge	= 0.448 cfs
Storm frequency	= 5 yrs	Time to peak	= 21.07 hrs
Time interval	= 2 min	Hyd. volume	= 58,169 cuft
Inflow hyd. No.	= 3 - Post-Developed Area #2	Max. Elevation	= 888.29 ft
Reservoir name	= Lake #2	Max. Storage	= 41,397 cuft

Storage Indication method used.



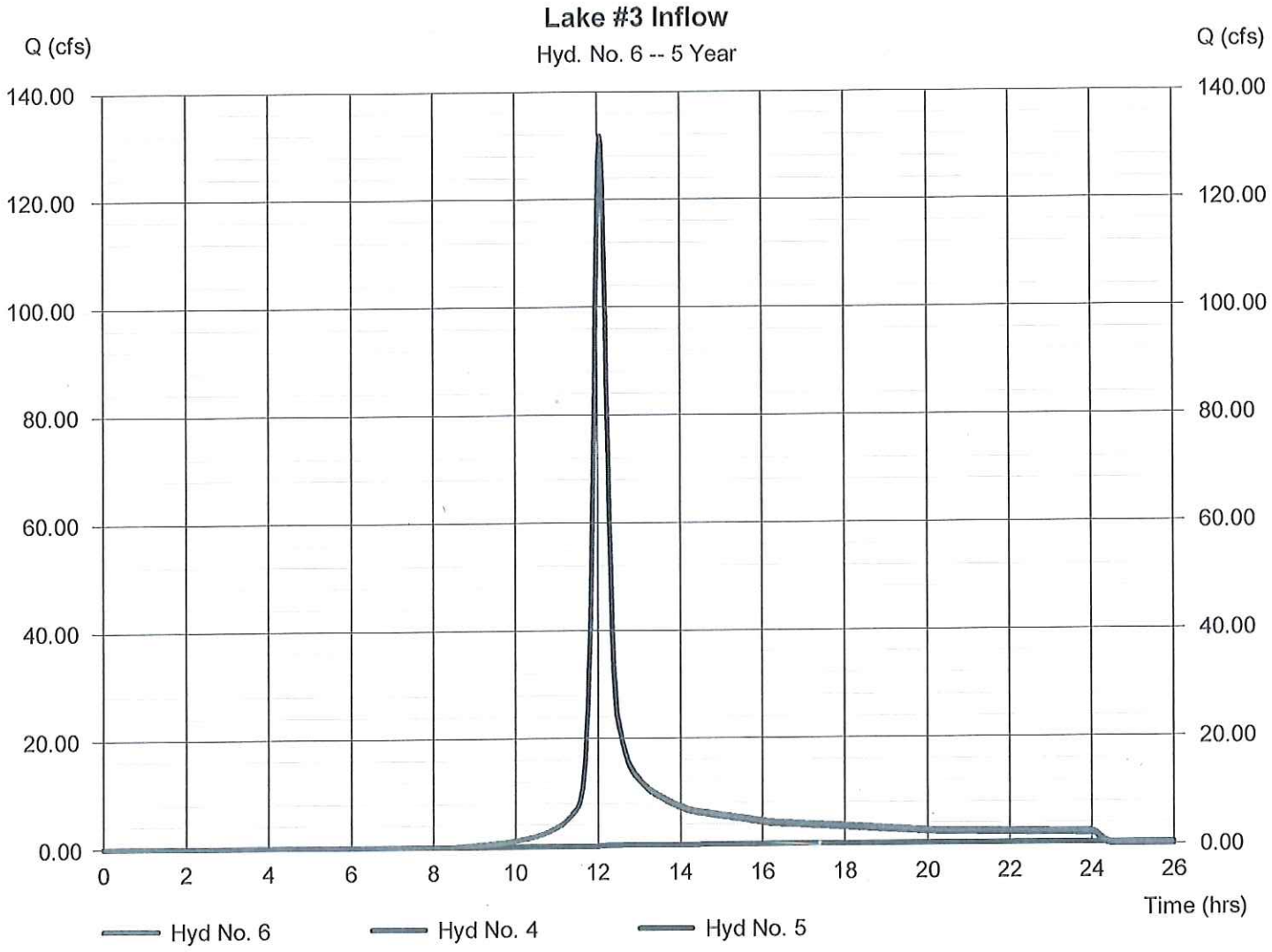
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8 — Tuesday, May 15, 2012

Hyd. No. 6

Lake #3 Inflow

Hydrograph type	= Combine	Peak discharge	= 131.78 cfs
Storm frequency	= 5 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 470,627 cuft
Inflow hyds.	= 4, 5	Contrib. drain. area	= 63.500 ac



Hydrograph Report

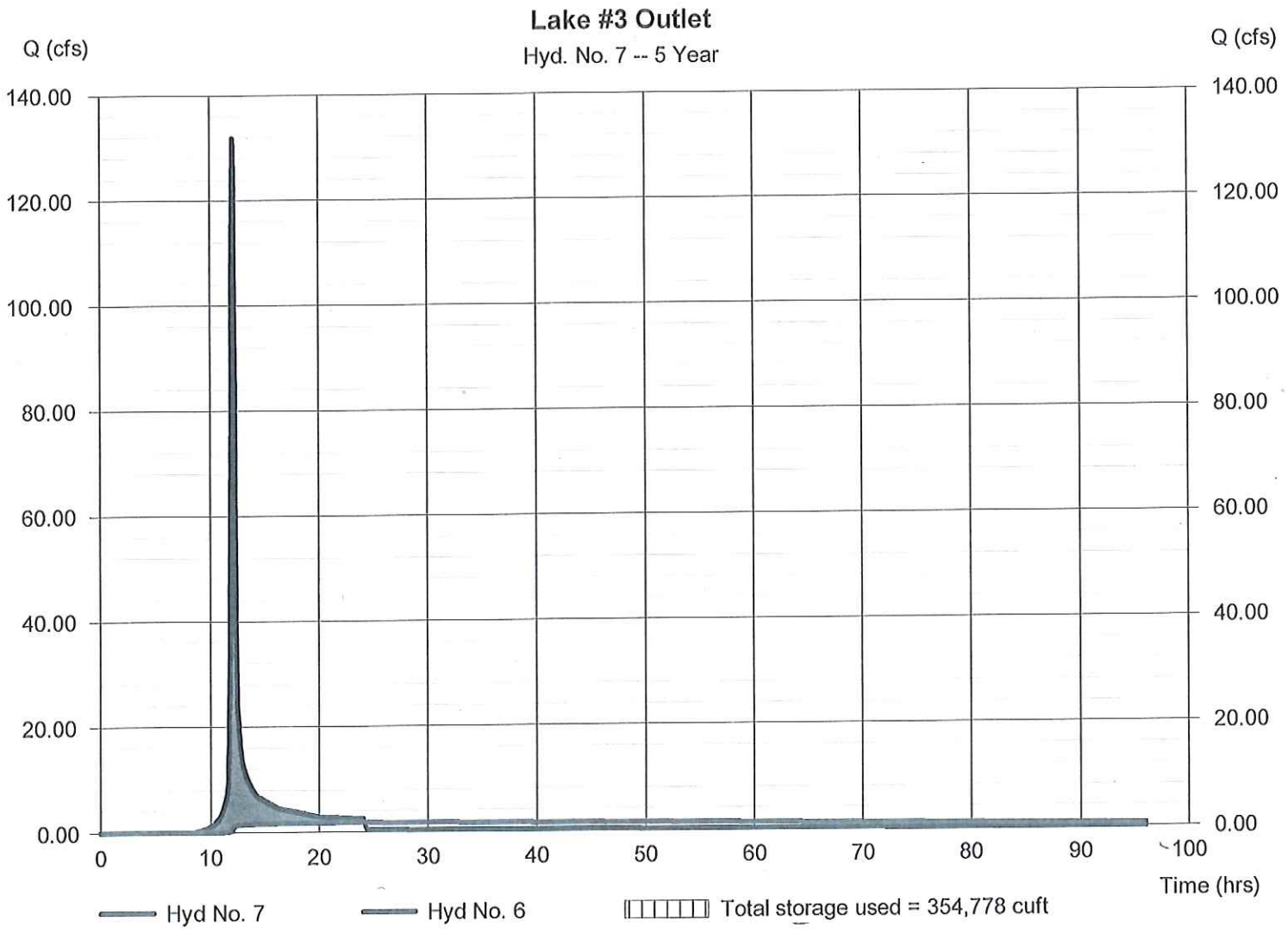
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8 — Tuesday, May 15, 2012

Hyd. No. 7

Lake #3 Outlet

Hydrograph type	= Reservoir	Peak discharge	= 1.808 cfs
Storm frequency	= 5 yrs	Time to peak	= 24.17 hrs
Time interval	= 2 min	Hyd. volume	= 395,887 cuft
Inflow hyd. No.	= 6 - Lake #3 Inflow	Max. Elevation	= 883.93 ft
Reservoir name	= Lake #3	Max. Storage	= 354,778 cuft

Storage Indication method used.



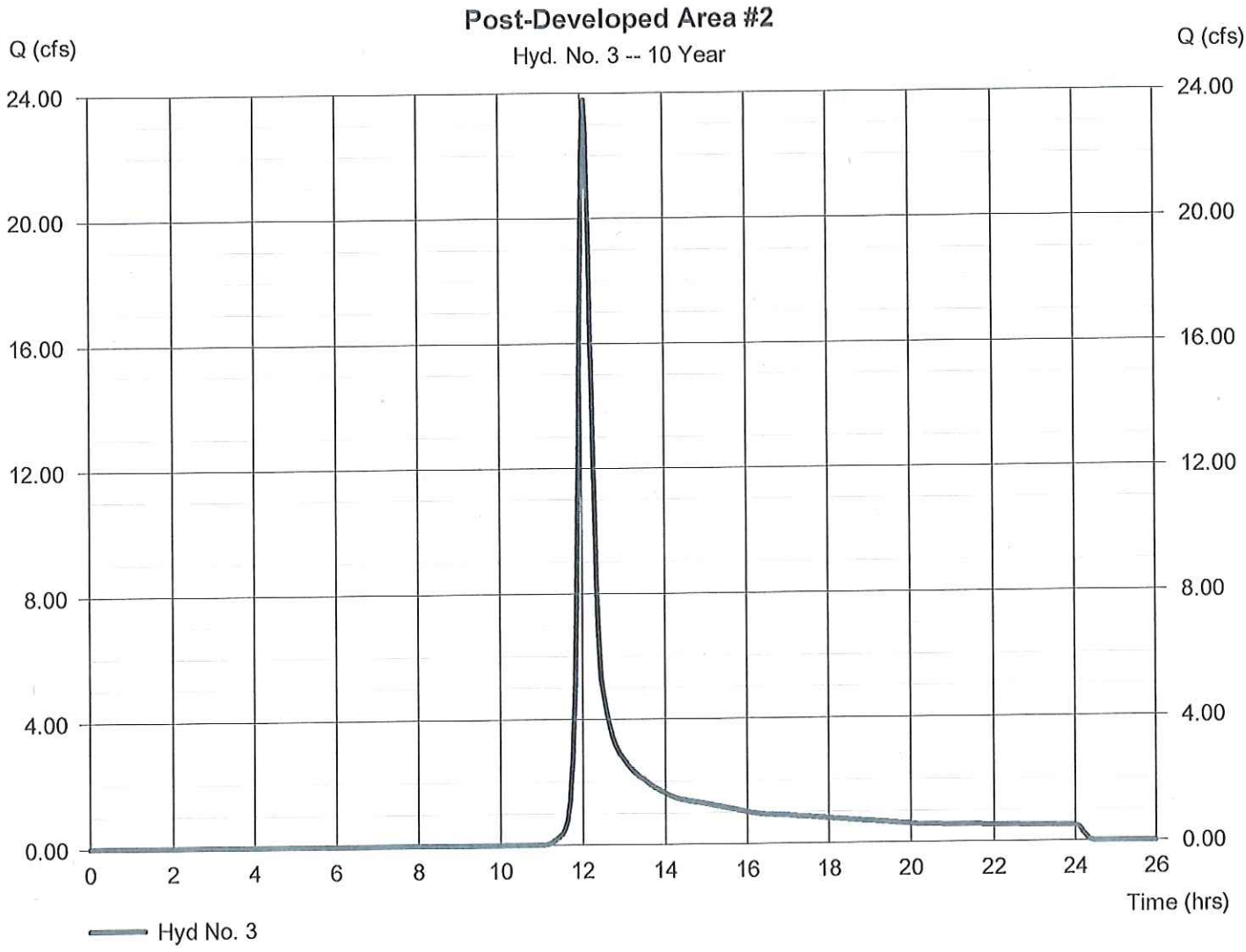
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8 — Tuesday, May 15, 2012

Hyd. No. 3

Post-Developed Area #2

Hydrograph type	= SCS Runoff	Peak discharge	= 23.78 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.10 hrs
Time interval	= 2 min	Hyd. volume	= 78,925 cuft
Drainage area	= 17.600 ac	Curve number	= 68.6
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 18.00 min
Total precip.	= 3.99 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



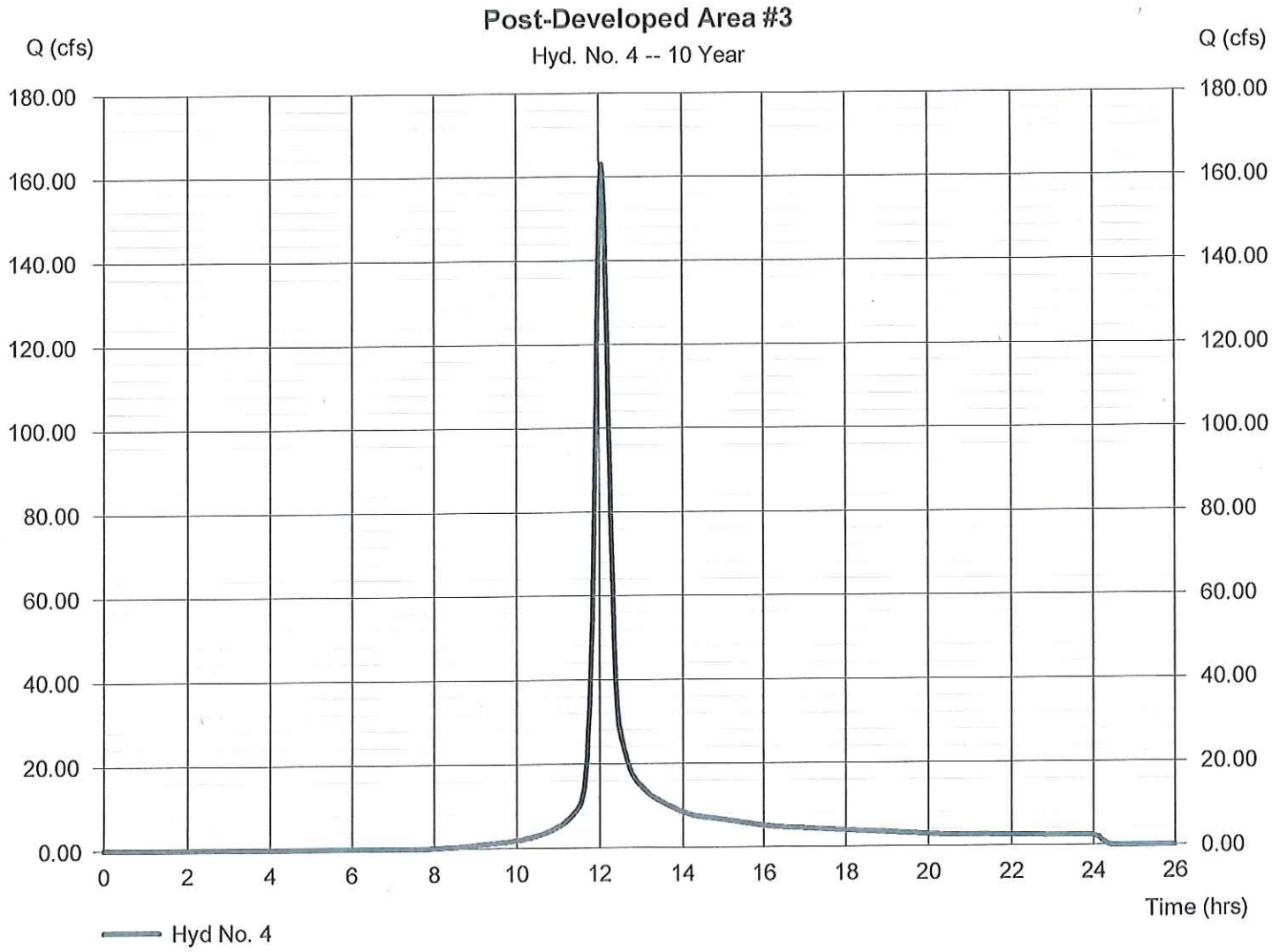
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8 — Tuesday, May 15, 2012

Hyd. No. 4

Post-Developed Area #3

Hydrograph type	= SCS Runoff	Peak discharge	= 163.00 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 509,625 cuft
Drainage area	= 63.500 ac	Curve number	= 82.2
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 17.10 min
Total precip.	= 3.99 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8

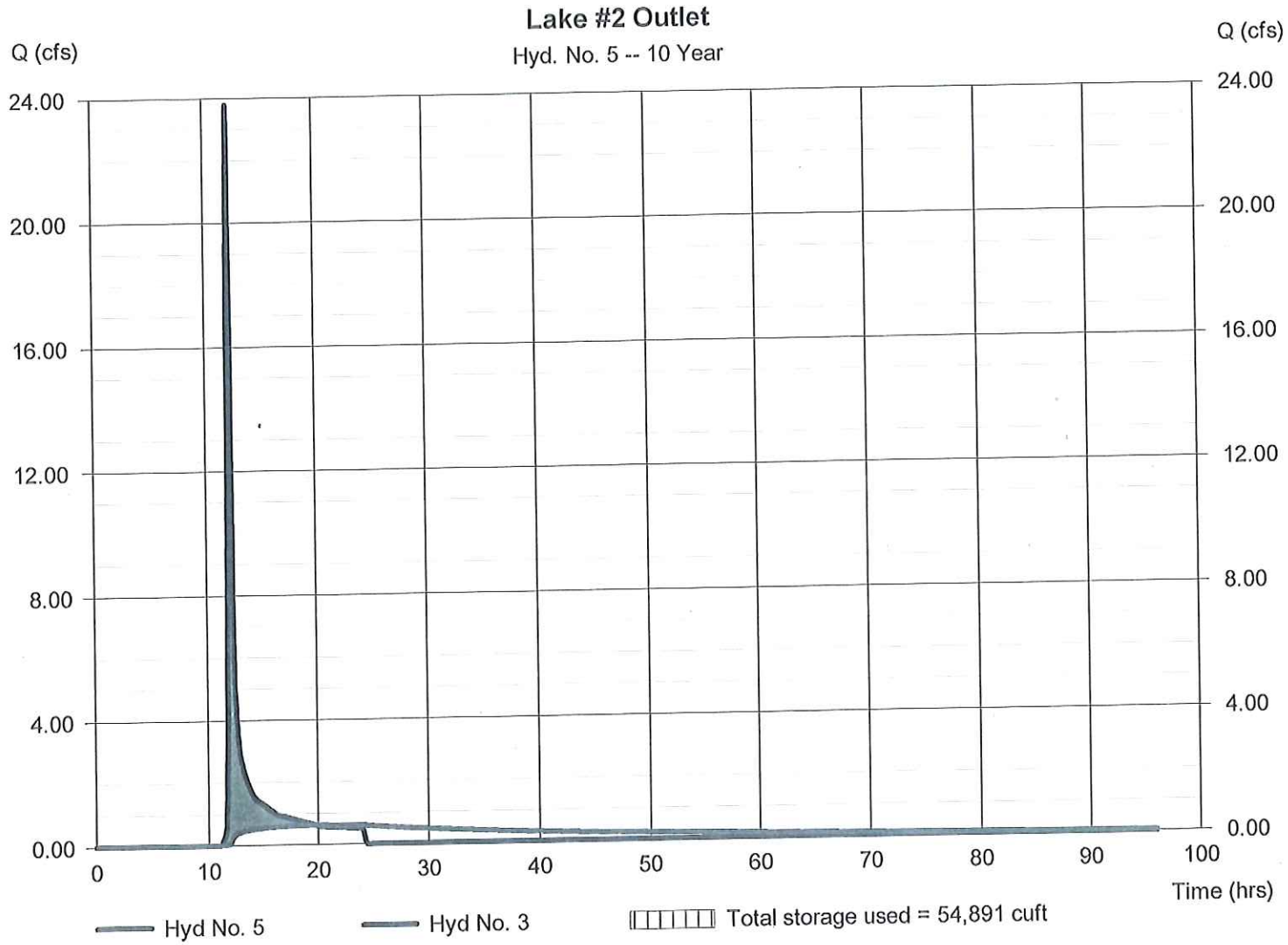
Tuesday, May 15, 2012

Hyd. No. 5

Lake #2 Outlet

Hydrograph type	= Reservoir	Peak discharge	= 0.619 cfs
Storm frequency	= 10 yrs	Time to peak	= 19.80 hrs
Time interval	= 2 min	Hyd. volume	= 76,883 cuft
Inflow hyd. No.	= 3 - Post-Developed Area #2	Max. Elevation	= 888.43 ft
Reservoir name	= Lake #2	Max. Storage	= 54,891 cuft

Storage Indication method used.



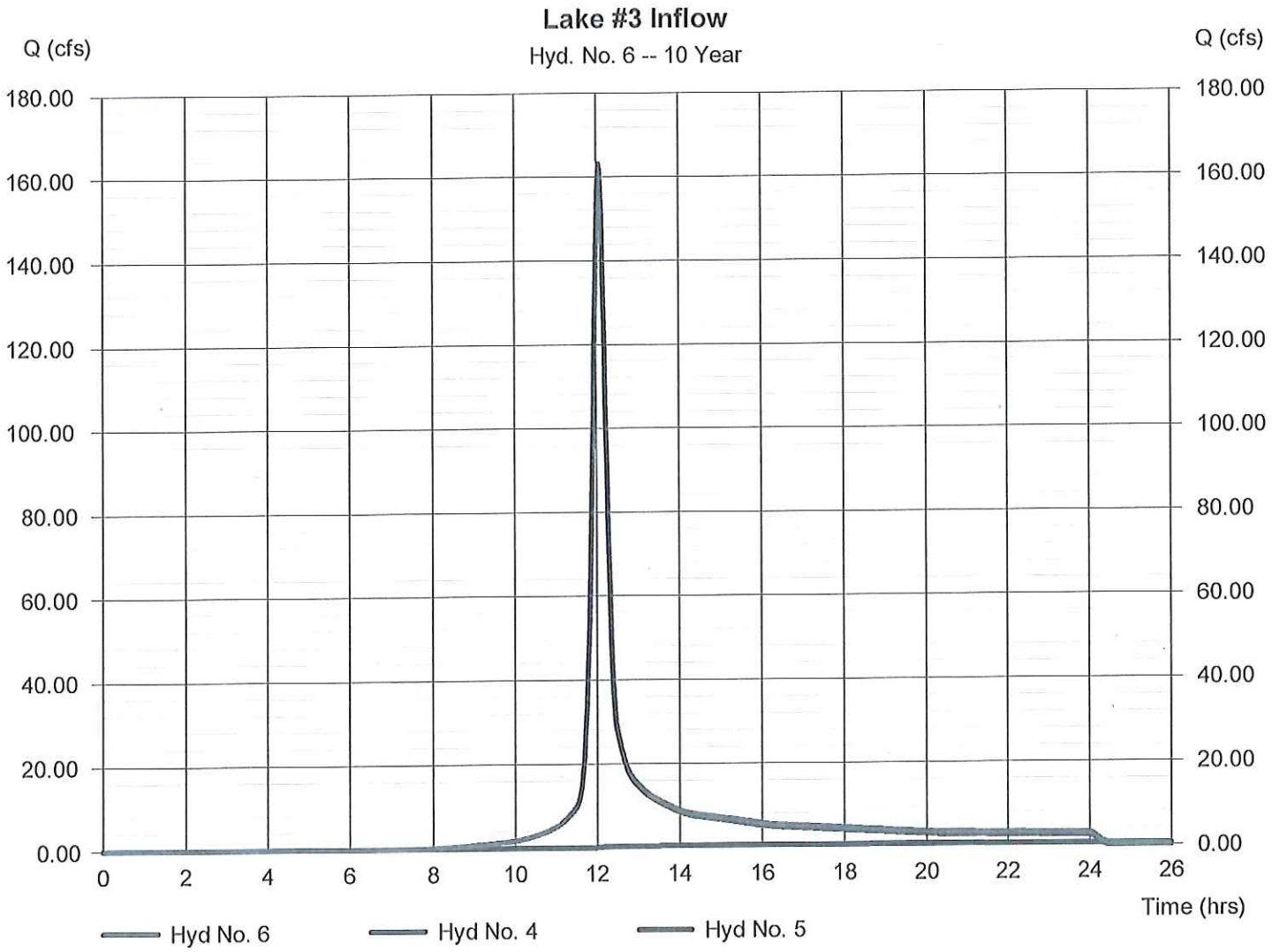
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8 — Tuesday, May 15, 2012

Hyd. No. 6

Lake #3 Inflow

Hydrograph type	= Combine	Peak discharge	= 163.17 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 586,509 cuft
Inflow hyds.	= 4, 5	Contrib. drain. area	= 63.500 ac



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8

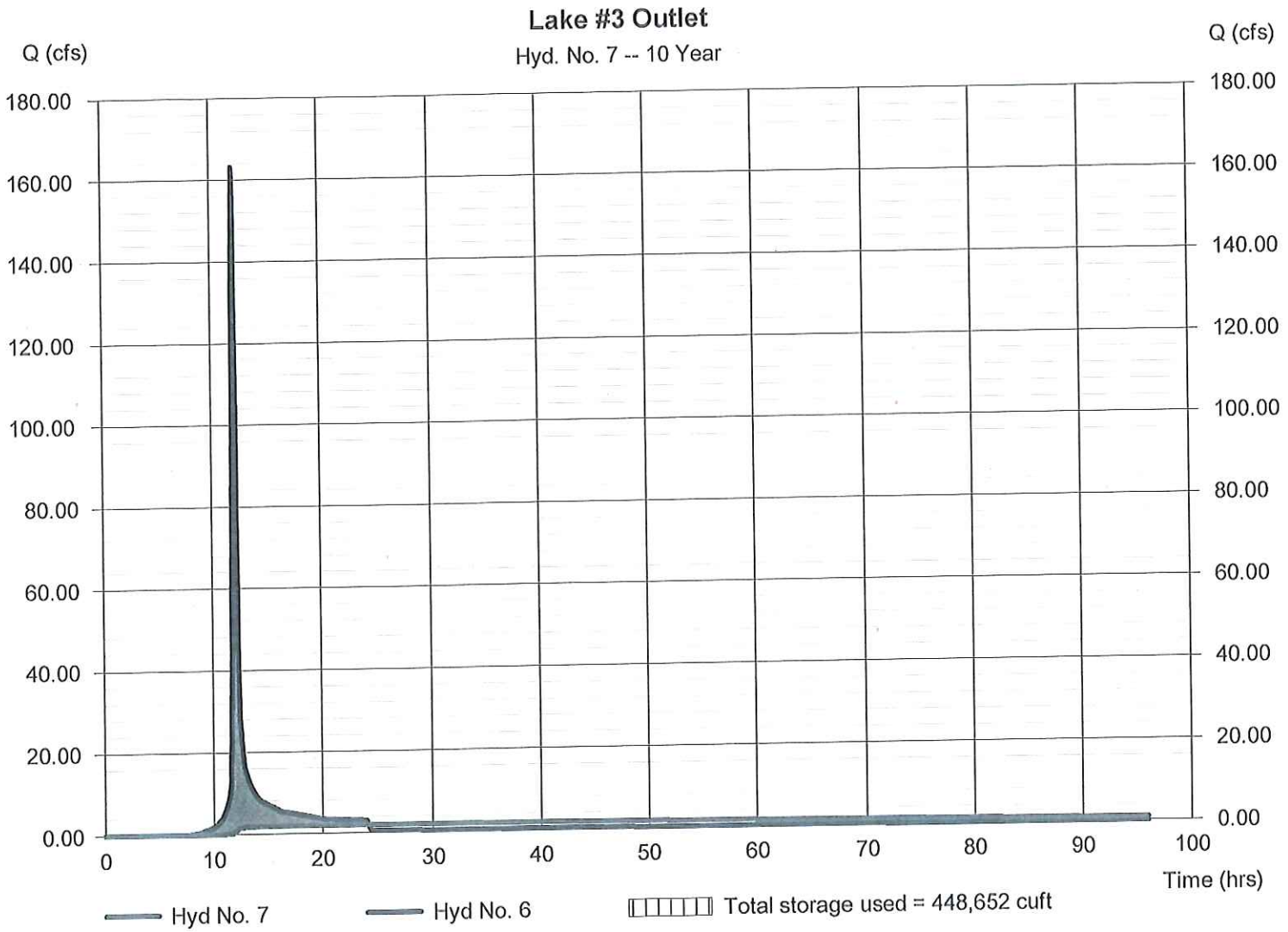
Tuesday, May 15, 2012

Hyd. No. 7

Lake #3 Outlet

Hydrograph type	= Reservoir	Peak discharge	= 2.041 cfs
Storm frequency	= 10 yrs	Time to peak	= 24.20 hrs
Time interval	= 2 min	Hyd. volume	= 473,606 cuft
Inflow hyd. No.	= 6 - Lake #3 Inflow	Max. Elevation	= 884.46 ft
Reservoir name	= Lake #3	Max. Storage	= 448,652 cuft

Storage Indication method used.



Hydrograph Report

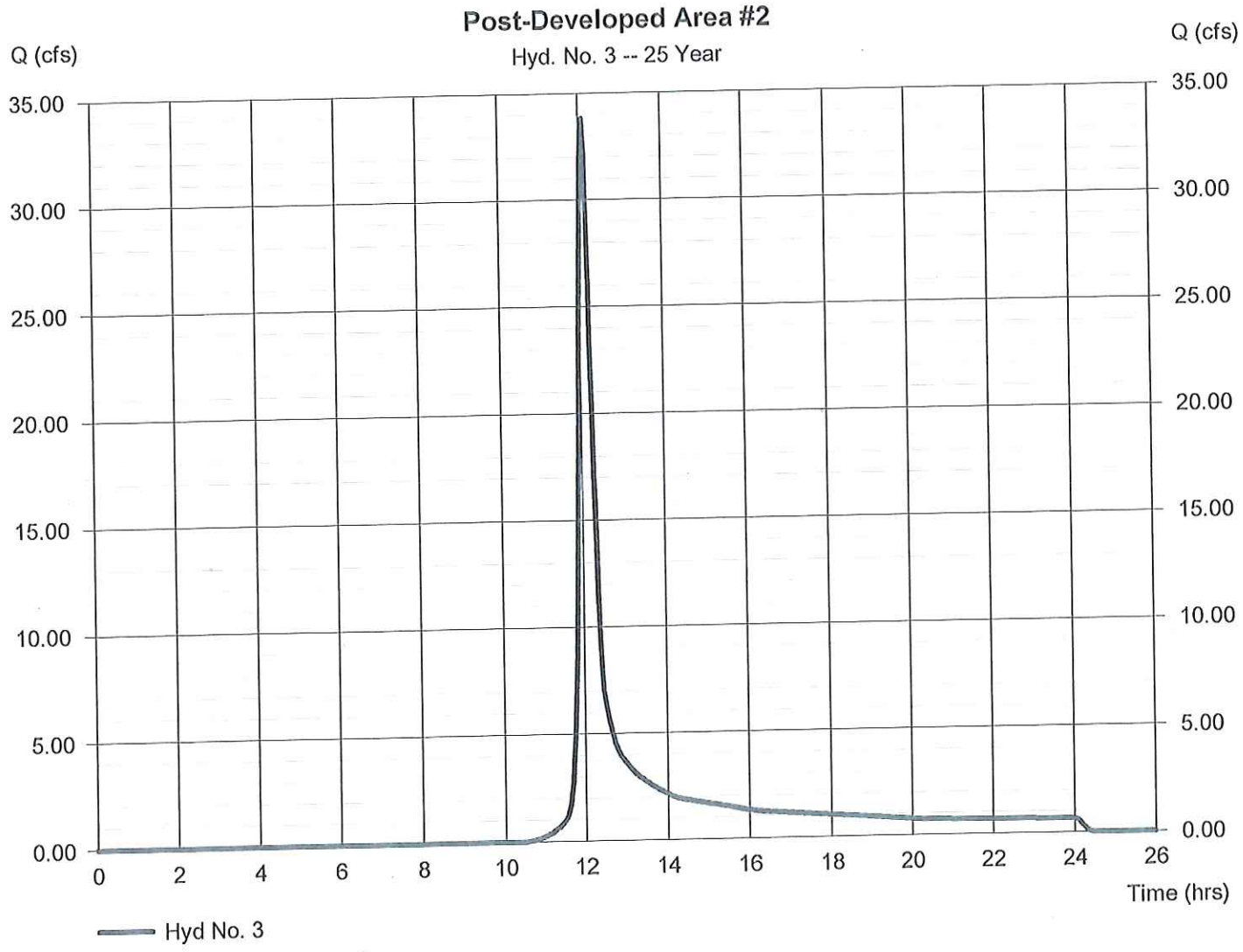
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8

Tuesday, May 15, 2012

Hyd. No. 3

Post-Developed Area #2

Hydrograph type	= SCS Runoff	Peak discharge	= 33.83 cfs
Storm frequency	= 25 yrs	Time to peak	= 12.10 hrs
Time interval	= 2 min	Hyd. volume	= 109,433 cuft
Drainage area	= 17.600 ac	Curve number	= 68.6
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 18.00 min
Total precip.	= 4.70 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



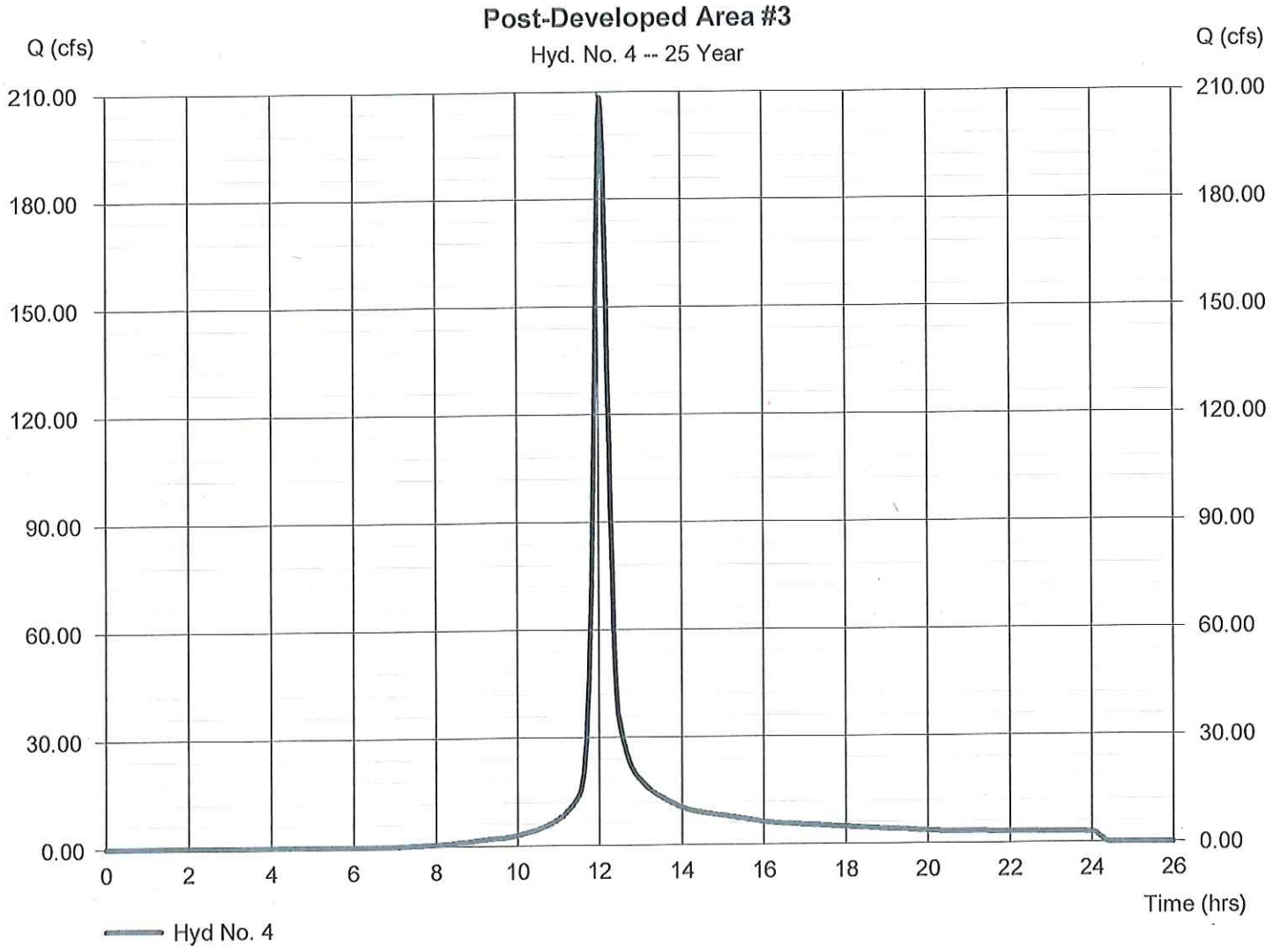
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8 — Tuesday, May 15, 2012

Hyd. No. 4

Post-Developed Area #3

Hydrograph type	= SCS Runoff	Peak discharge	= 208.47 cfs
Storm frequency	= 25 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 652,434 cuft
Drainage area	= 63.500 ac	Curve number	= 82.2
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 17.10 min
Total precip.	= 4.70 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

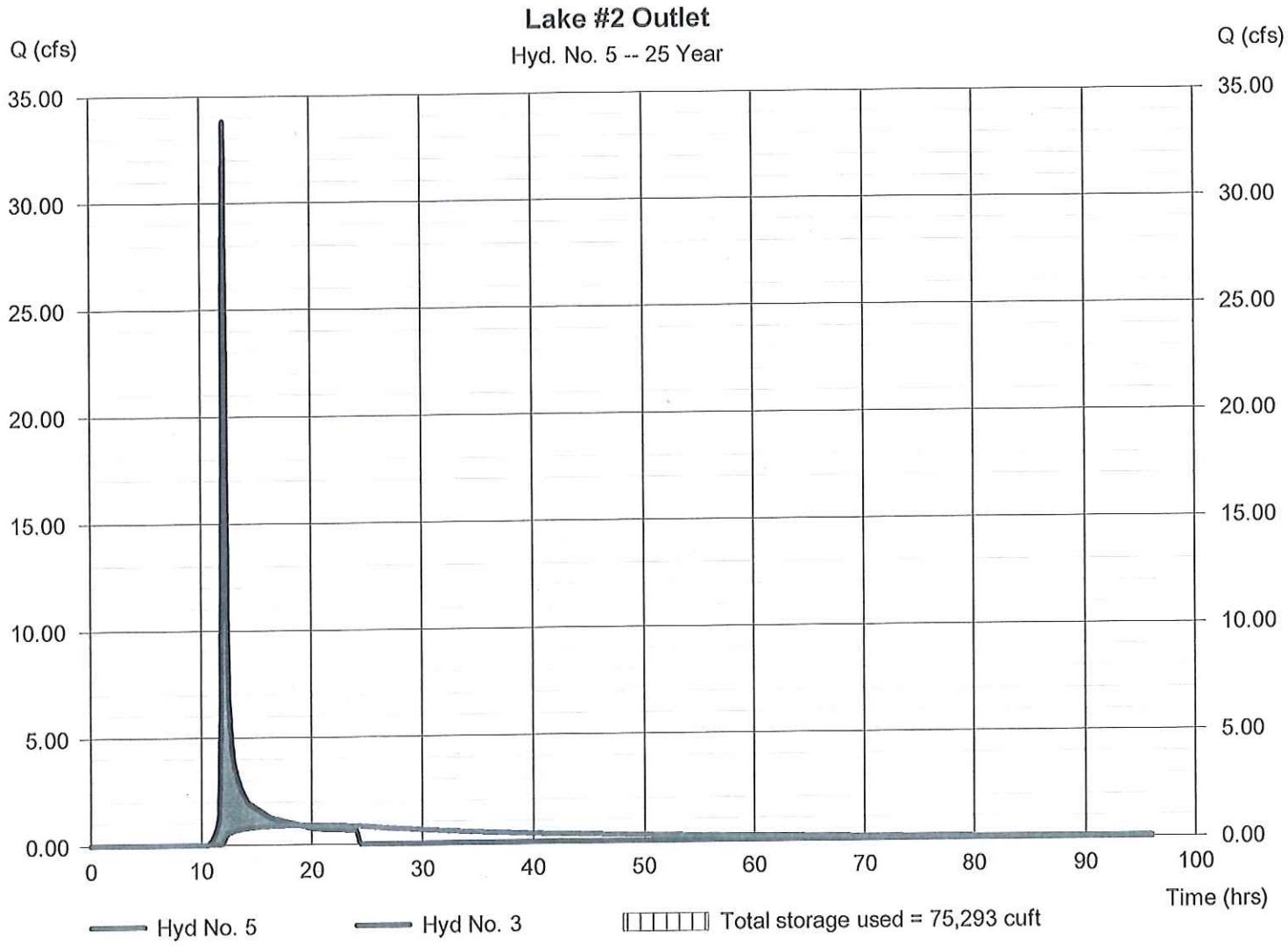
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8 — Tuesday, May 15, 2012

Hyd. No. 5

Lake #2 Outlet

Hydrograph type	= Reservoir	Peak discharge	= 0.908 cfs
Storm frequency	= 25 yrs	Time to peak	= 19.00 hrs
Time interval	= 2 min	Hyd. volume	= 106,120 cuft
Inflow hyd. No.	= 3 - Post-Developed Area #2	Max. Elevation	= 888.64 ft
Reservoir name	= Lake #2	Max. Storage	= 75,293 cuft

Storage Indication method used.



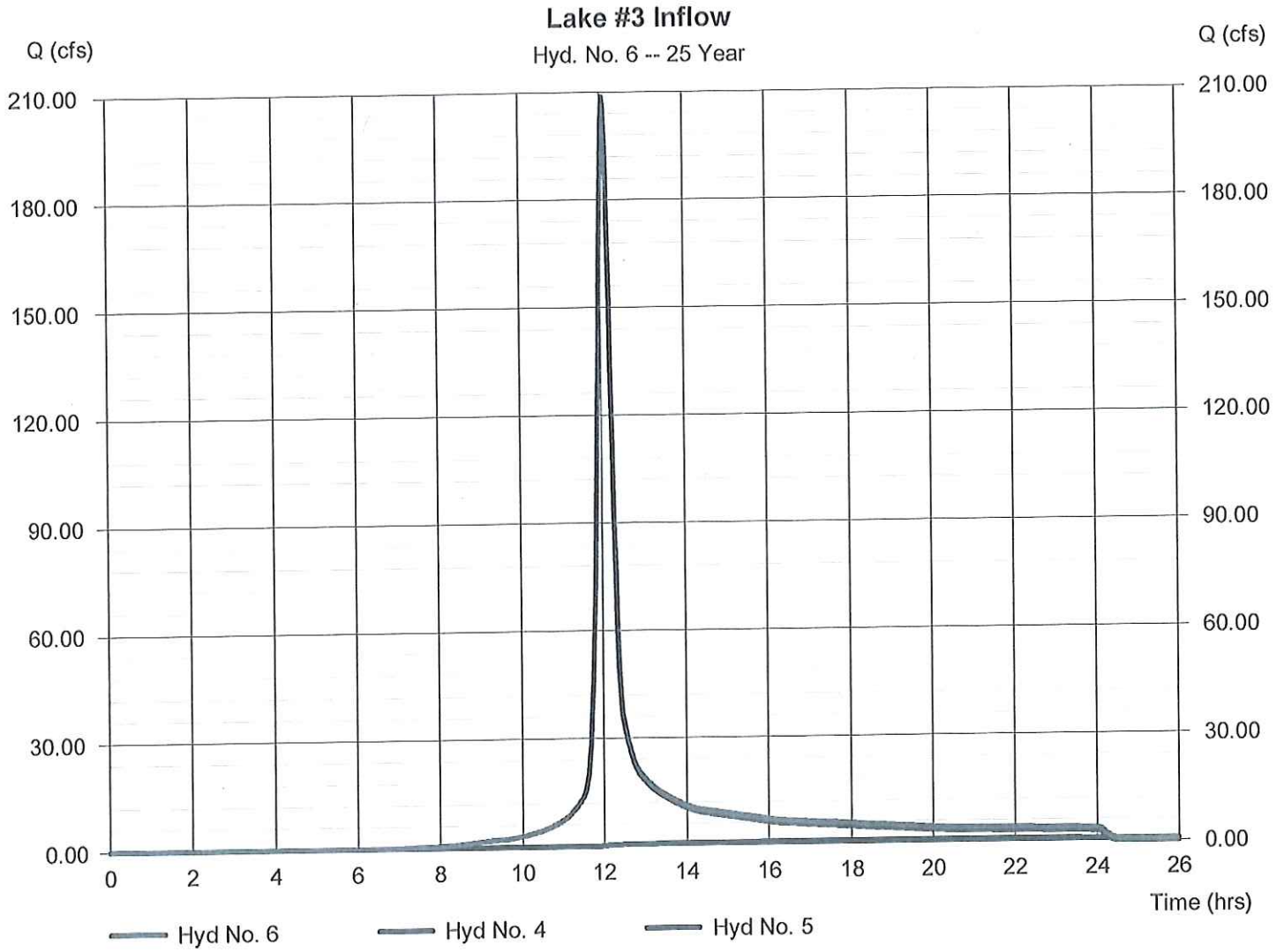
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8 — Tuesday, May 15, 2012

Hyd. No. 6

Lake #3 Inflow

Hydrograph type	= Combine	Peak discharge	= 208.71 cfs
Storm frequency	= 25 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 758,555 cuft
Inflow hyds.	= 4, 5	Contrib. drain. area	= 63.500 ac



Hydrograph Report

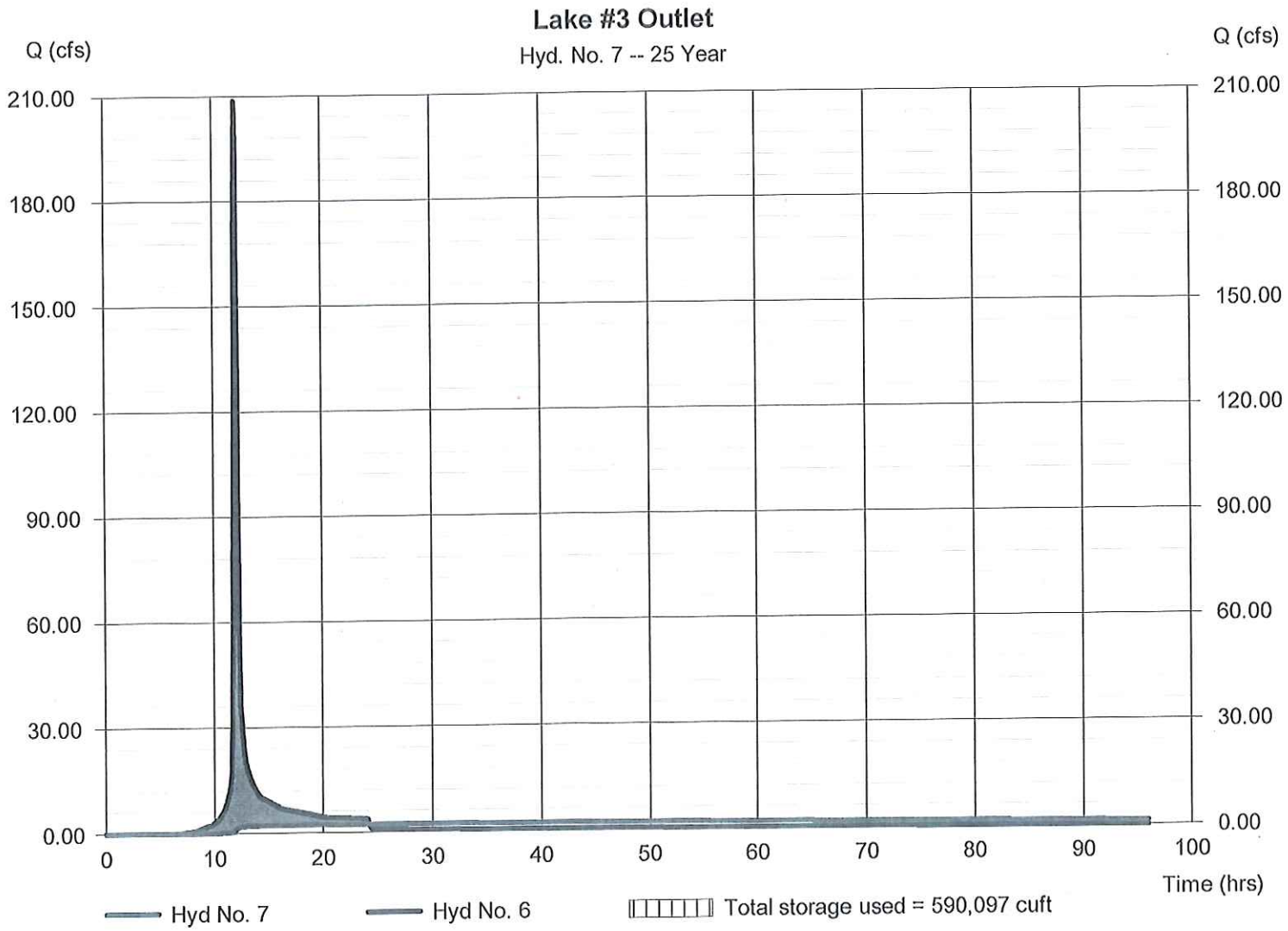
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8 — Tuesday, May 15, 2012

Hyd. No. 7

Lake #3 Outlet

Hydrograph type	= Reservoir	Peak discharge	= 2.339 cfs
Storm frequency	= 25 yrs	Time to peak	= 24.23 hrs
Time interval	= 2 min	Hyd. volume	= 573,366 cuft
Inflow hyd. No.	= 6 - Lake #3 Inflow	Max. Elevation	= 885.23 ft
Reservoir name	= Lake #3	Max. Storage	= 590,097 cuft

Storage Indication method used.



Hydrograph Report

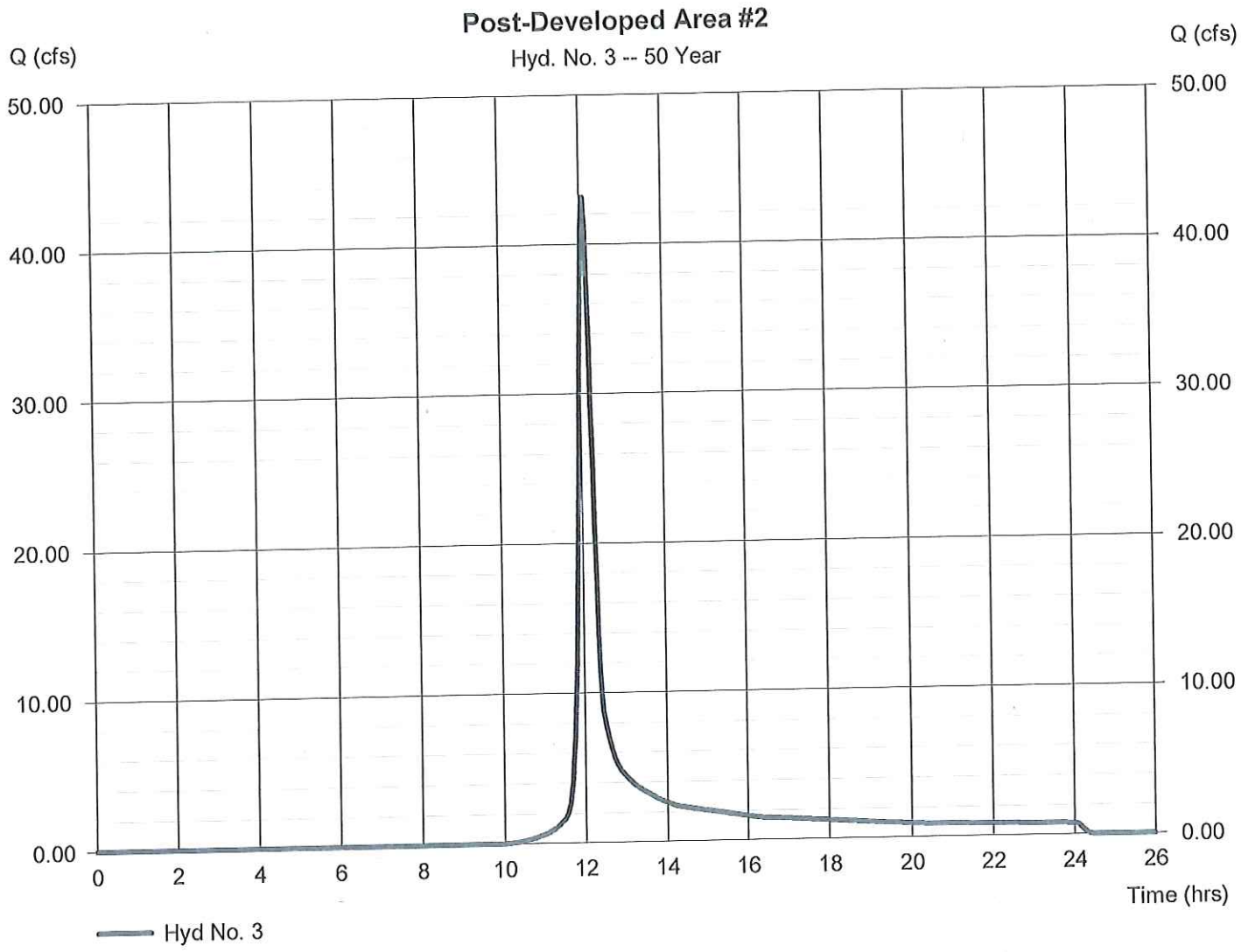
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8

Tuesday, May 15, 2012

Hyd. No. 3

Post-Developed Area #2

Hydrograph type	= SCS Runoff	Peak discharge	= 43.17 cfs
Storm frequency	= 50 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 137,993 cuft
Drainage area	= 17.600 ac	Curve number	= 68.6
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 18.00 min
Total precip.	= 5.32 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



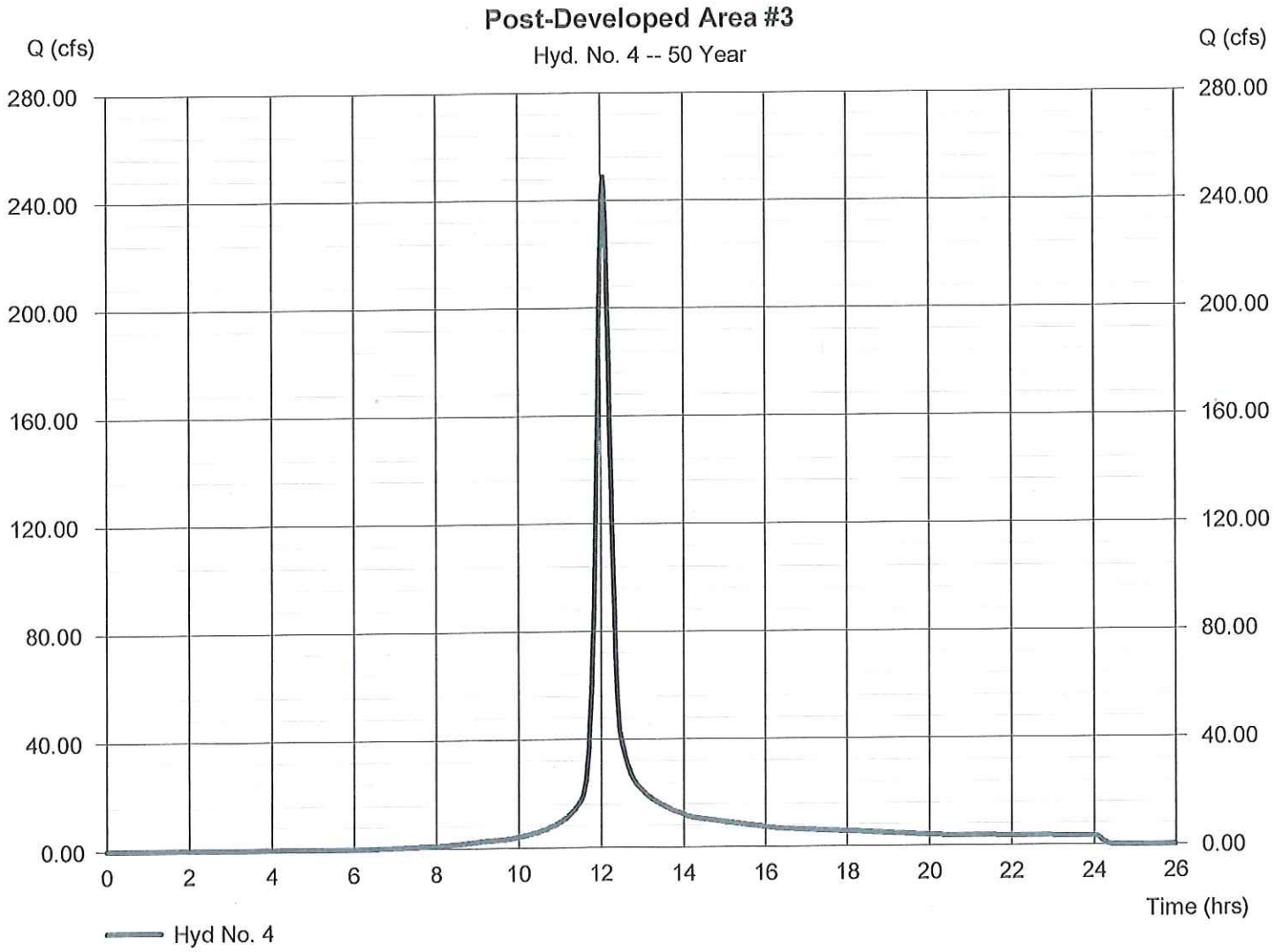
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8 — Tuesday, May 15, 2012

Hyd. No. 4

Post-Developed Area #3

Hydrograph type	= SCS Runoff	Peak discharge	= 248.74 cfs
Storm frequency	= 50 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 780,575 cuft
Drainage area	= 63.500 ac	Curve number	= 82.2
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 17.10 min
Total precip.	= 5.32 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

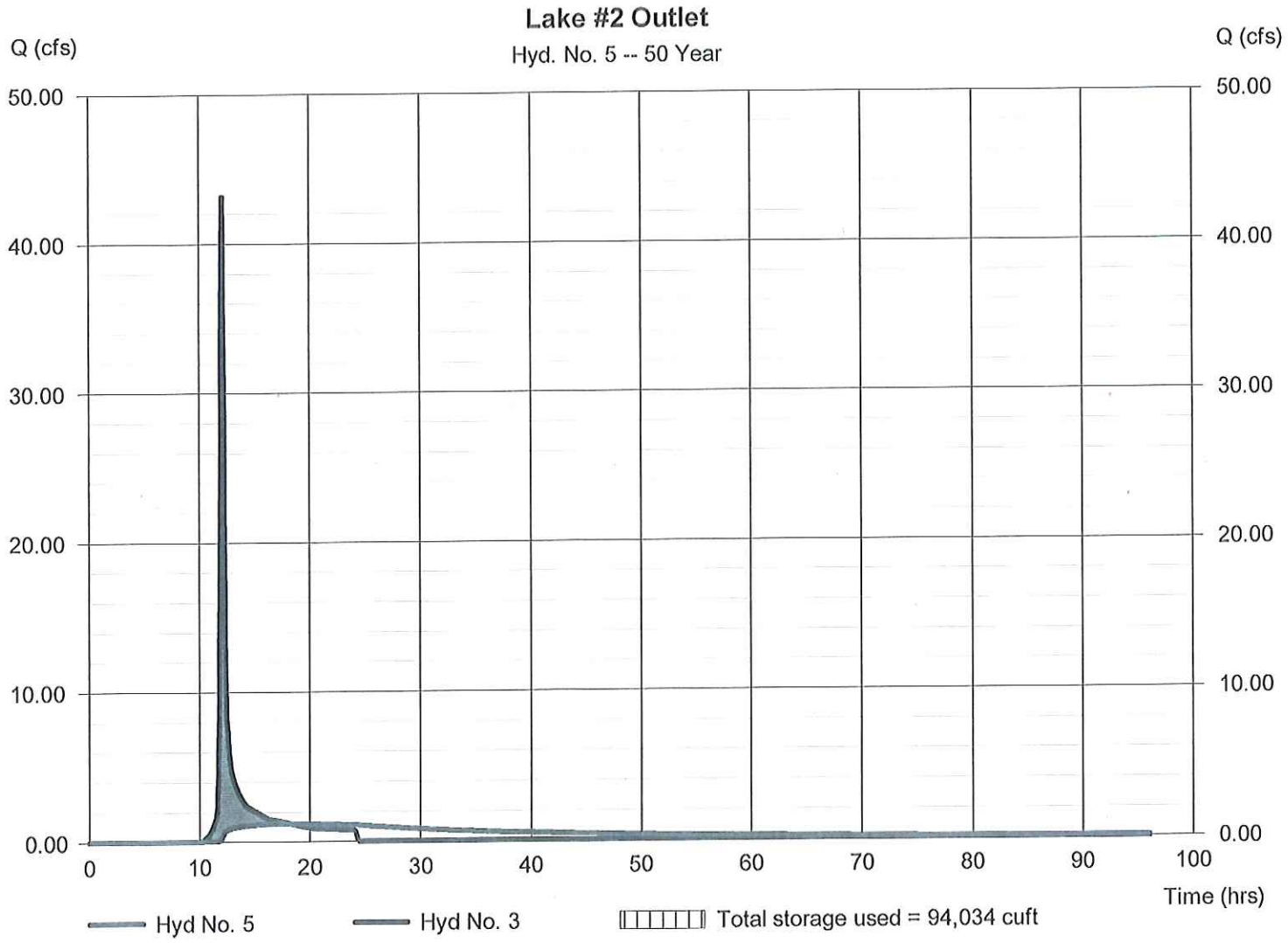
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8 — Tuesday, May 15, 2012

Hyd. No. 5

Lake #2 Outlet

Hydrograph type	= Reservoir	Peak discharge	= 1.206 cfs
Storm frequency	= 50 yrs	Time to peak	= 18.27 hrs
Time interval	= 2 min	Hyd. volume	= 133,701 cuft
Inflow hyd. No.	= 3 - Post-Developed Area #2	Max. Elevation	= 888.84 ft
Reservoir name	= Lake #2	Max. Storage	= 94,034 cuft

Storage Indication method used.



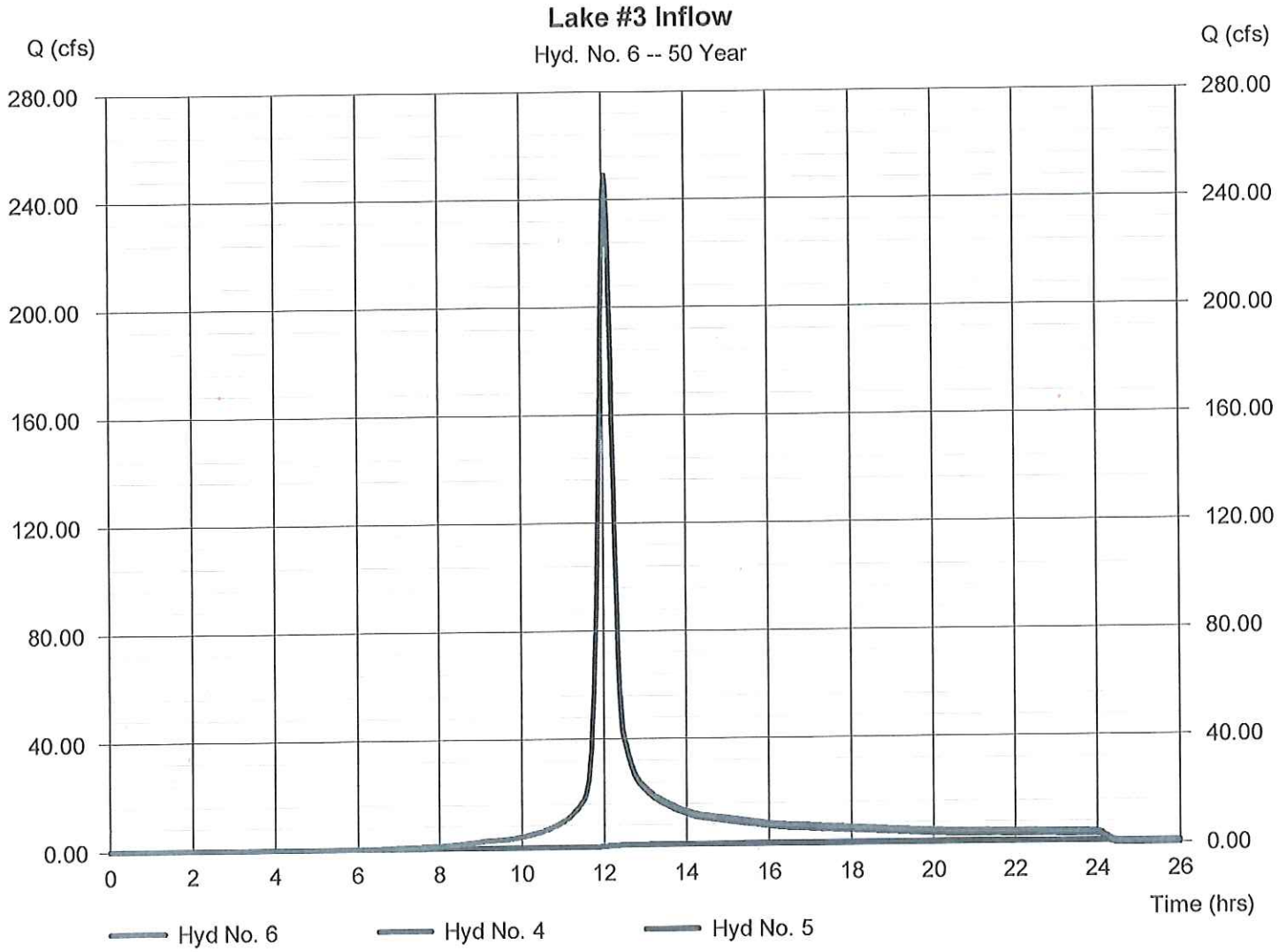
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8 — Tuesday, May 15, 2012

Hyd. No. 6

Lake #3 Inflow

Hydrograph type	= Combine	Peak discharge	= 249.07 cfs
Storm frequency	= 50 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 914,276 cuft
Inflow hyds.	= 4, 5	Contrib. drain. area	= 63.500 ac



Hydrograph Report

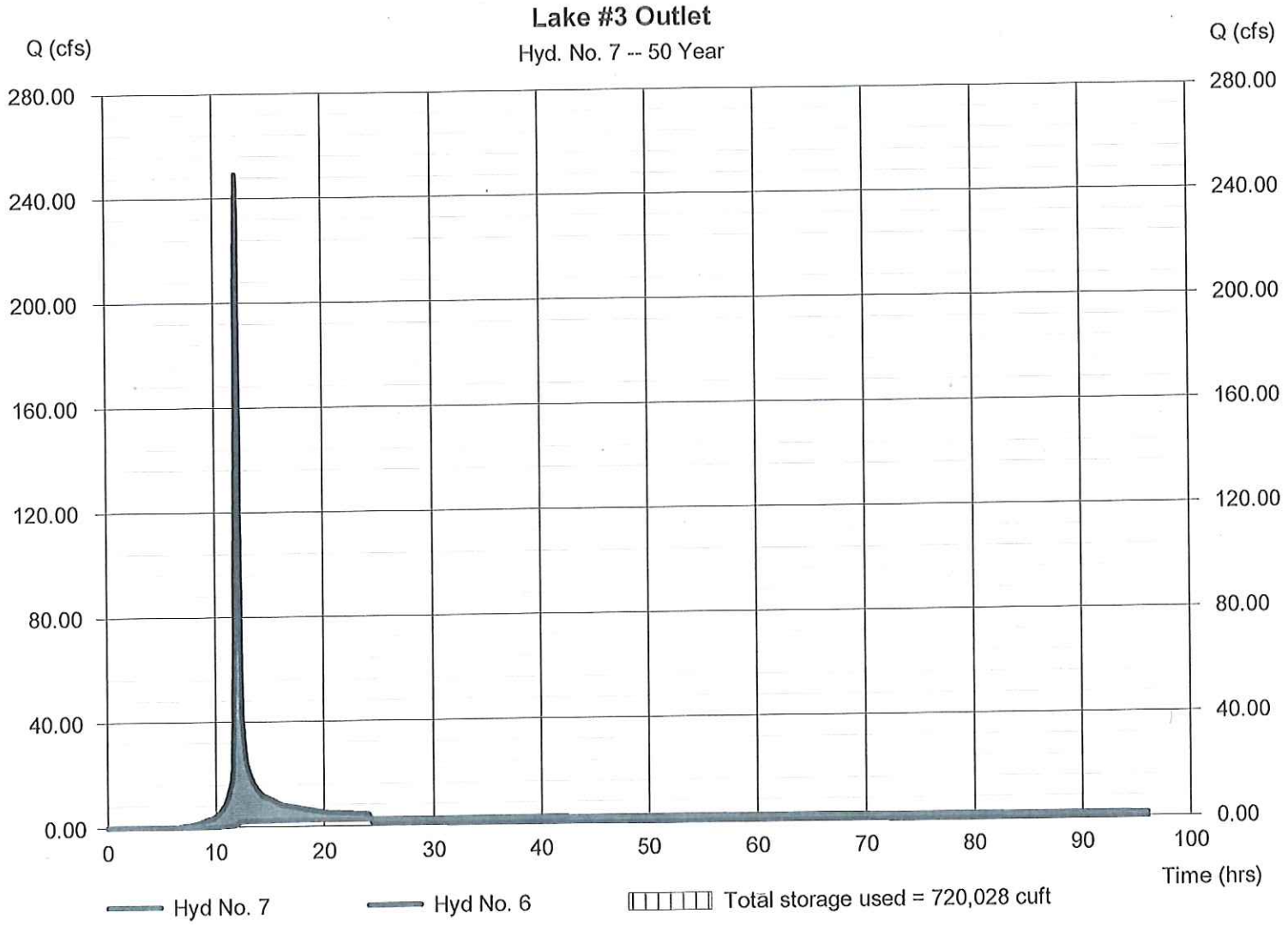
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8 — Tuesday, May 15, 2012

Hyd. No. 7

Lake #3 Outlet

Hydrograph type	= Reservoir	Peak discharge	= 2.568 cfs
Storm frequency	= 50 yrs	Time to peak	= 24.23 hrs
Time interval	= 2 min	Hyd. volume	= 651,649 cuft
Inflow hyd. No.	= 6 - Lake #3 Inflow	Max. Elevation	= 885.89 ft
Reservoir name	= Lake #3	Max. Storage	= 720,028 cuft

Storage Indication method used.



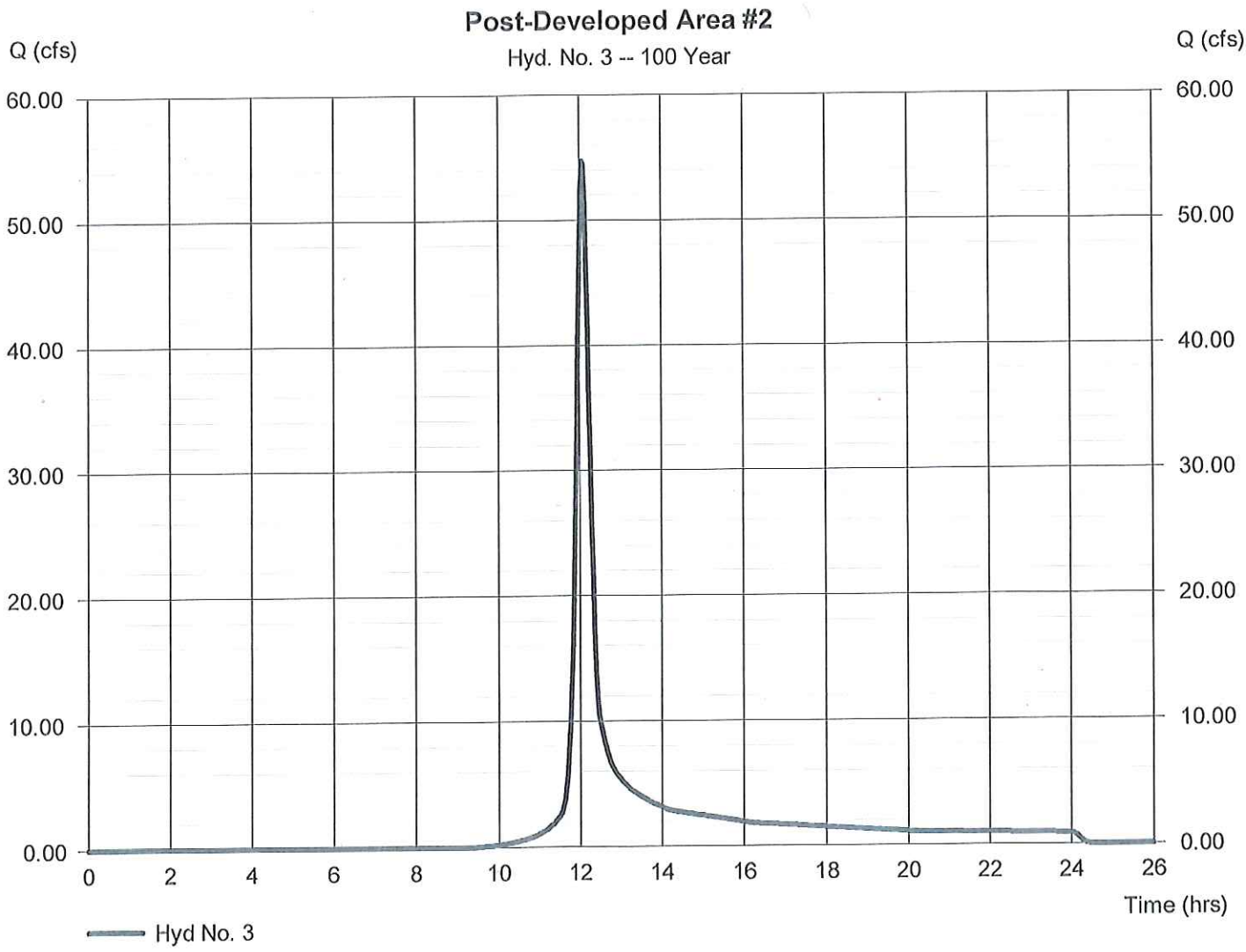
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8 — Tuesday, May 15, 2012

Hyd. No. 3

Post-Developed Area #2

Hydrograph type	= SCS Runoff	Peak discharge	= 54.70 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 172,933 cuft
Drainage area	= 17.600 ac	Curve number	= 68.6
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 18.00 min
Total precip.	= 6.04 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



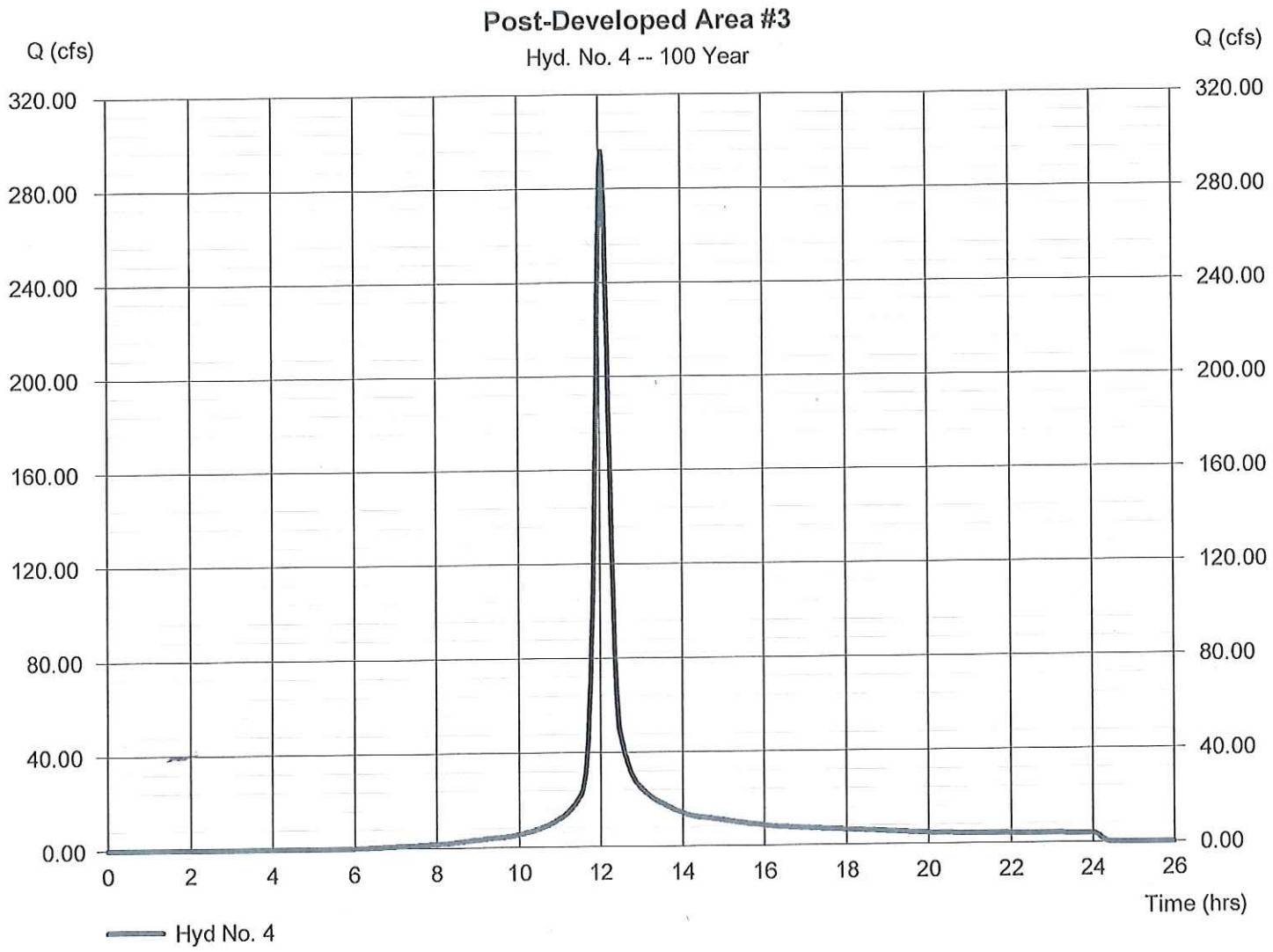
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8 — Tuesday, May 15, 2012

Hyd. No. 4

Post-Developed Area #3

Hydrograph type	= SCS Runoff	Peak discharge	= 295.85 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 932,341 cuft
Drainage area	= 63.500 ac	Curve number	= 82.2
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 17.10 min
Total precip.	= 6.04 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

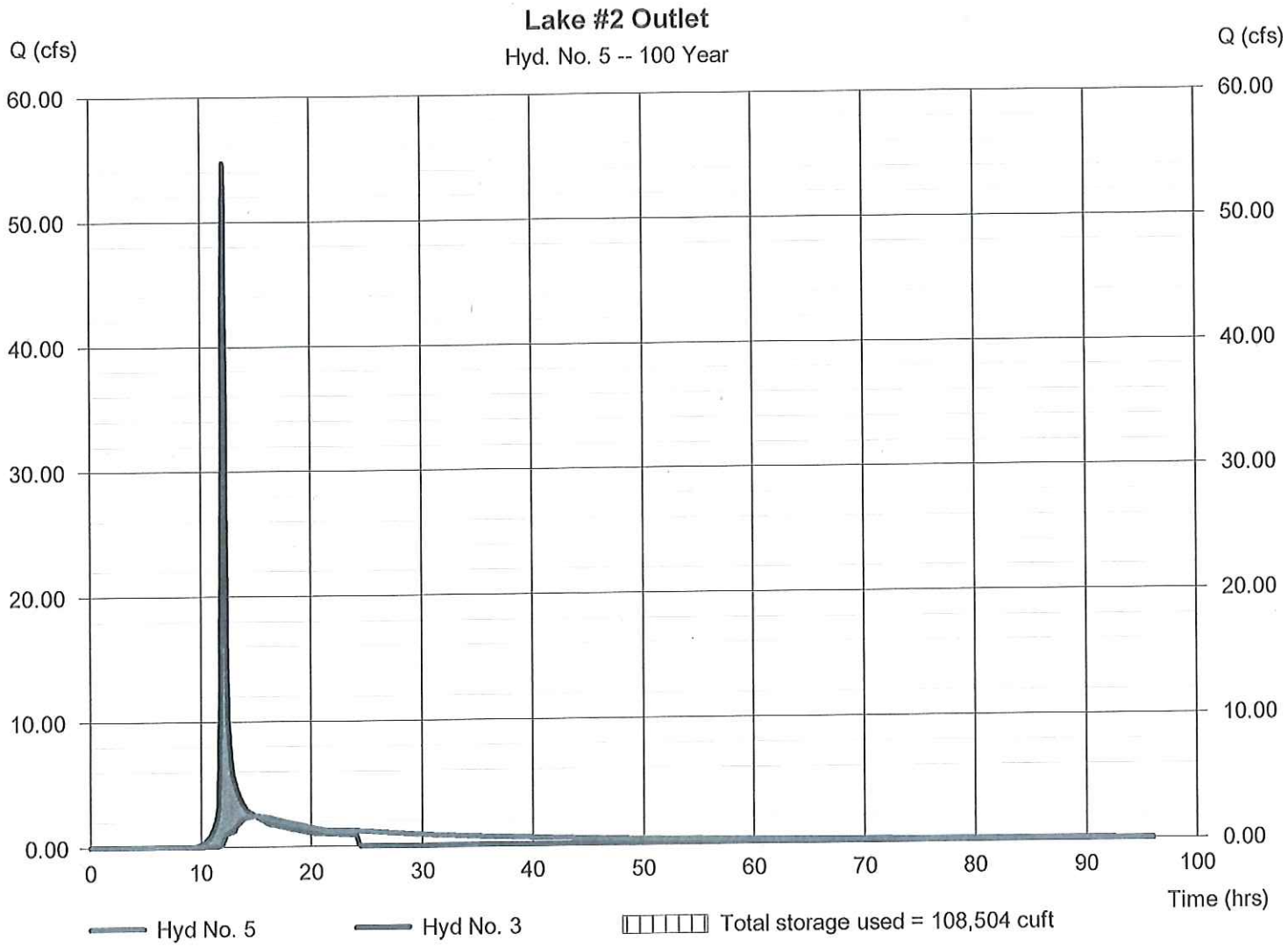
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8 — Tuesday, May 15, 2012

Hyd. No. 5

Lake #2 Outlet

Hydrograph type	= Reservoir	Peak discharge	= 2.464 cfs
Storm frequency	= 100 yrs	Time to peak	= 15.00 hrs
Time interval	= 2 min	Hyd. volume	= 168,183 cuft
Inflow hyd. No.	= 3 - Post-Developed Area #2	Max. Elevation	= 888.99 ft
Reservoir name	= Lake #2	Max. Storage	= 108,504 cuft

Storage Indication method used.



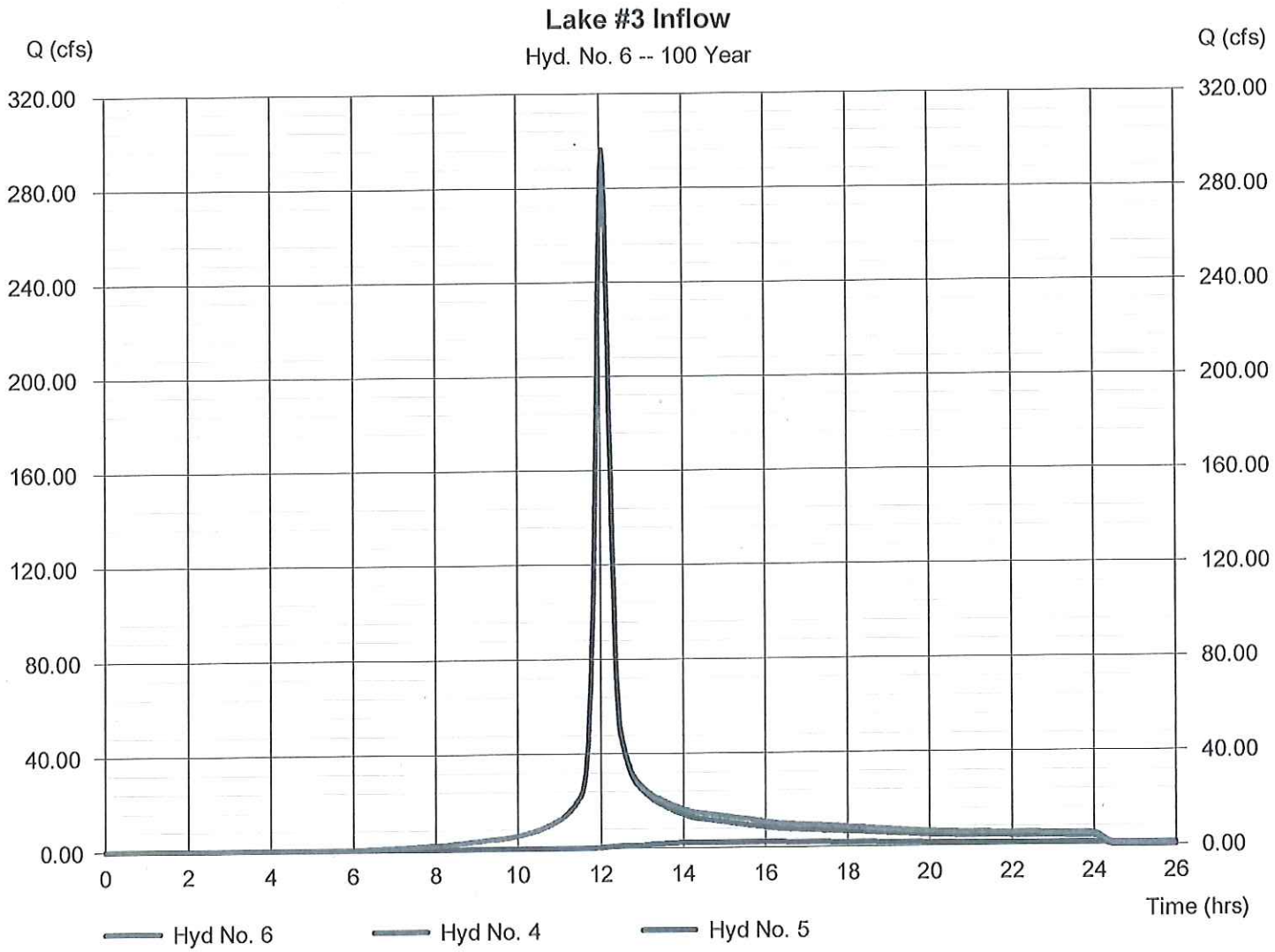
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8 — Tuesday, May 15, 2012

Hyd. No. 6

Lake #3 Inflow

Hydrograph type	= Combine	Peak discharge	= 296.32 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 1,100,524 cuft
Inflow hyds.	= 4, 5	Contrib. drain. area	= 63.500 ac



Hydrograph Report

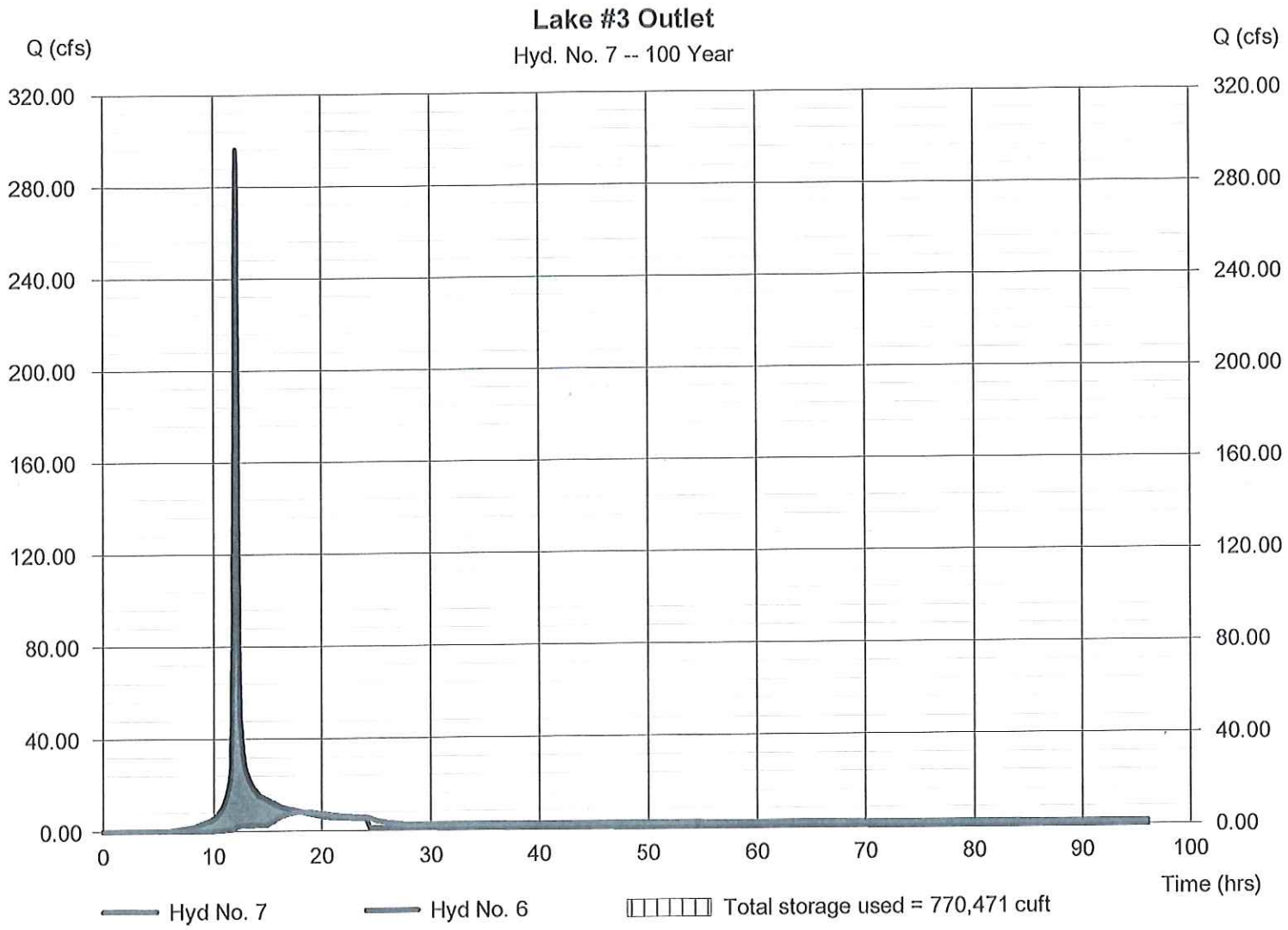
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8 — Tuesday, May 15, 2012

Hyd. No. 7

Lake #3 Outlet

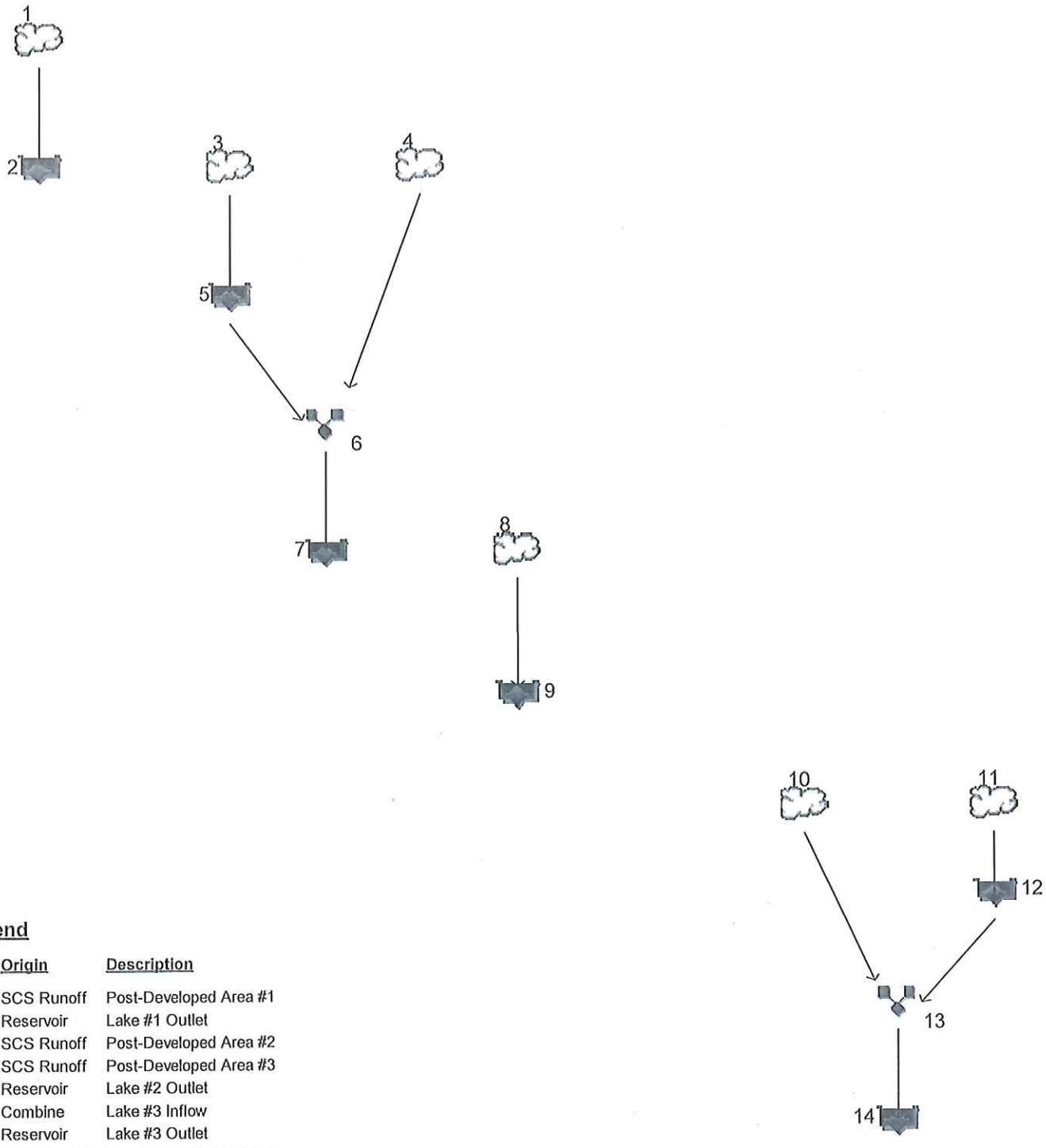
Hydrograph type	= Reservoir	Peak discharge	= 8.211 cfs
Storm frequency	= 100 yrs	Time to peak	= 18.23 hrs
Time interval	= 2 min	Hyd. volume	= 822,128 cuft
Inflow hyd. No.	= 6 - Lake #3 Inflow	Max. Elevation	= 886.14 ft
Reservoir name	= Lake #3	Max. Storage	= 770,471 cuft

Storage Indication method used.



Watershed Model Schematic

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8



Legend

Hyd.	Origin	Description
1	SCS Runoff	Post-Developed Area #1
2	Reservoir	Lake #1 Outlet
3	SCS Runoff	Post-Developed Area #2
4	SCS Runoff	Post-Developed Area #3
5	Reservoir	Lake #2 Outlet
6	Combine	Lake #3 Inflow
7	Reservoir	Lake #3 Outlet
8	SCS Runoff	Post-Developed Area #4
9	Reservoir	Lake #4 Outflow
10	SCS Runoff	Post-Developed Area #5
11	SCS Runoff	Offsite Miami University VOA
12	Reservoir	Offsite MU Basin
13	Combine	Basin 5 Inflow
14	Reservoir	Basin 5 Outflow

Hydrograph Return Period Recap

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8

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	------	16.03	25.44	-------	37.65	47.96	63.32	77.13	93.46	Post-Developed Area #1
2	Reservoir	1	0.799	1.238	-------	1.898	2.520	3.483	4.406	5.578	Lake #1 Outlet
3	SCS Runoff	------	4.614	9.775	-------	17.22	23.78	33.83	43.17	54.70	Post-Developed Area #2
4	SCS Runoff	------	63.44	93.52	-------	131.67	163.00	208.47	248.74	295.85	Post-Developed Area #3
5	Reservoir	3	0.172	0.279	-------	0.448	0.619	0.908	1.206	2.464	Lake #2 Outlet
6	Combine	4, 5	63.48	93.59	-------	131.78	163.17	208.71	249.07	296.32	Lake #3 Inflow
7	Reservoir	6	1.153	1.474	-------	1.808	2.041	2.339	2.568	8.211	Lake #3 Outlet
8	SCS Runoff	------	16.74	26.16	-------	38.45	48.83	64.13	77.85	94.05	Post-Developed Area #4
9	Reservoir	8	0.293	0.470	-------	0.729	0.975	1.378	1.852	3.606	Lake #4 Outflow
10	SCS Runoff	------	32.99	56.13	-------	86.85	113.03	152.35	188.38	231.37	Post-Developed Area #5
11	SCS Runoff	------	20.89	27.84	-------	36.16	42.76	52.13	60.27	69.69	Offsite Miami University VOA
12	Reservoir	11	4.183	4.903	-------	9.299	15.66	20.40	22.70	24.97	Offsite MU Basin
13	Combine	10, 12	37.00	60.81	-------	93.90	127.27	172.21	210.21	255.41	Basin 5 Inflow
14	Reservoir	13	0.355	0.605	-------	0.985	1.348	1.925	4.553	9.071	Basin 5 Outflow

Hydrograph Report

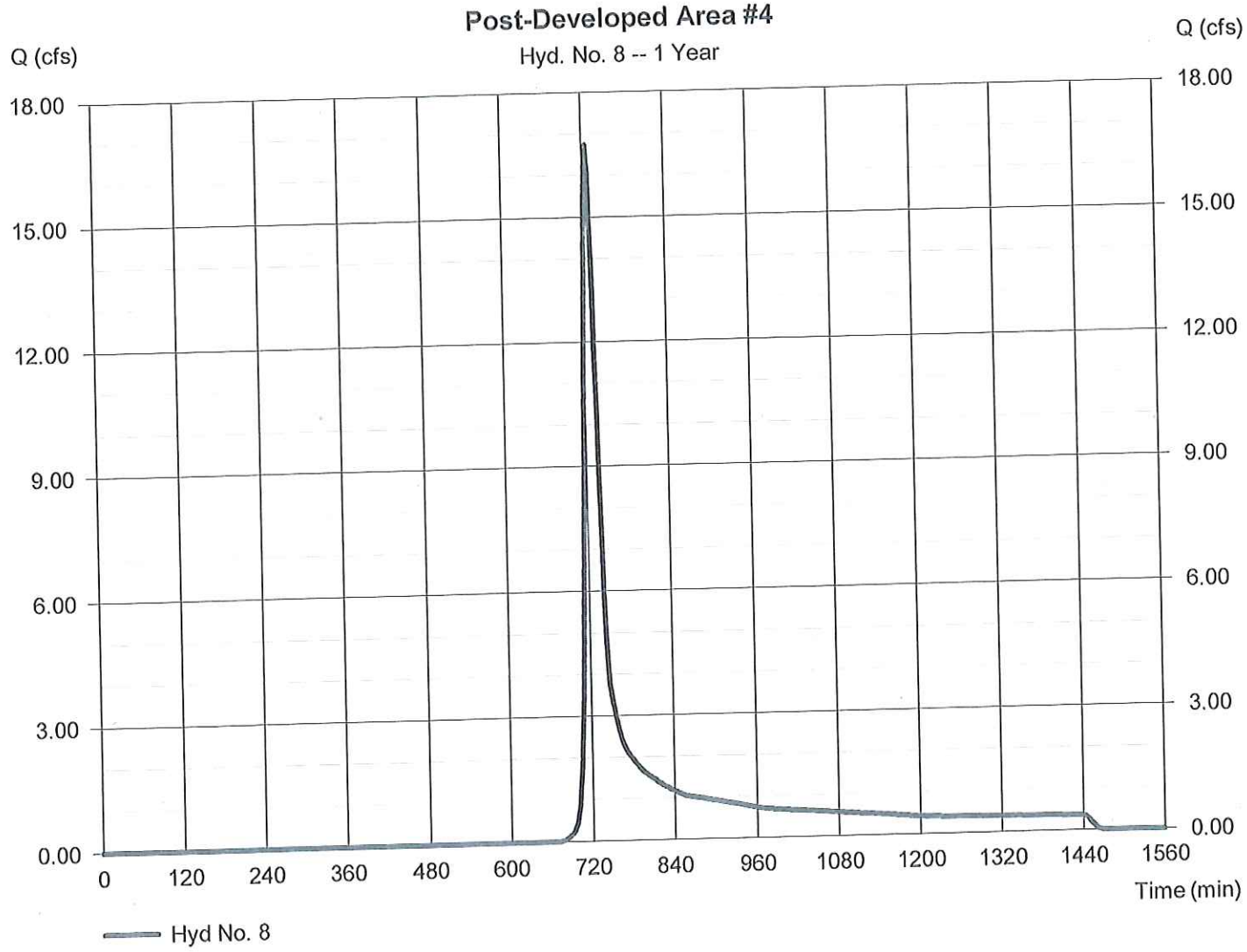
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8

Monday, Apr 16, 2012

Hyd. No. 8

Post-Developed Area #4

Hydrograph type	= SCS Runoff	Peak discharge	= 16.74 cfs
Storm frequency	= 1 yrs	Time to peak	= 726 min
Time interval	= 2 min	Hyd. volume	= 56,008 cuft
Drainage area	= 22.250 ac	Curve number	= 78.3
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 18.70 min
Total precip.	= 2.33 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8

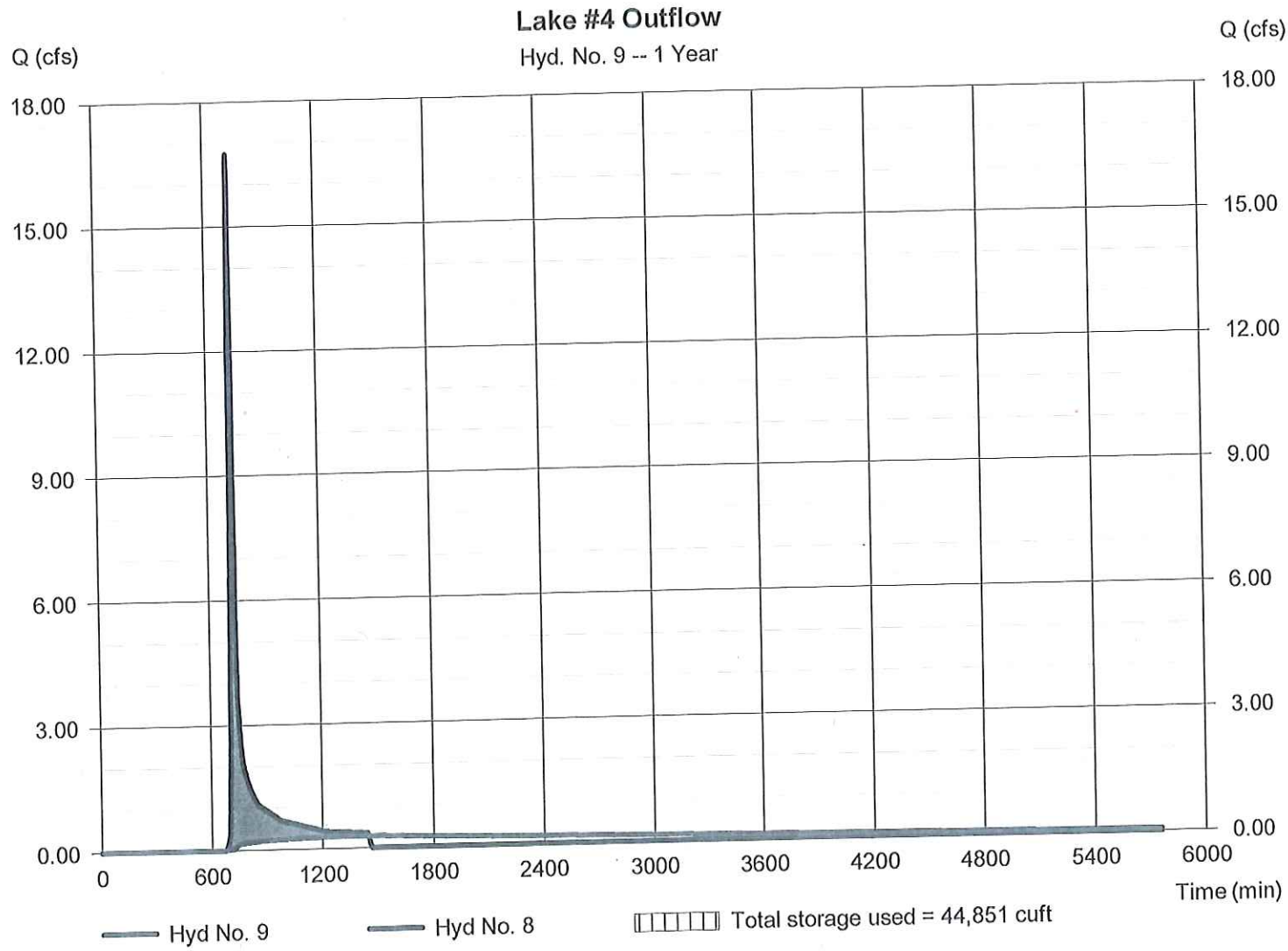
Monday, Apr 16, 2012

Hyd. No. 9

Lake #4 Outflow

Hydrograph type	= Reservoir	Peak discharge	= 0.293 cfs
Storm frequency	= 1 yrs	Time to peak	= 1448 min
Time interval	= 2 min	Hyd. volume	= 46,780 cuft
Inflow hyd. No.	= 8 - Post-Developed Area #4	Max. Elevation	= 890.03 ft
Reservoir name	= Lake #4	Max. Storage	= 44,851 cuft

Storage Indication method used.



Hydrograph Report

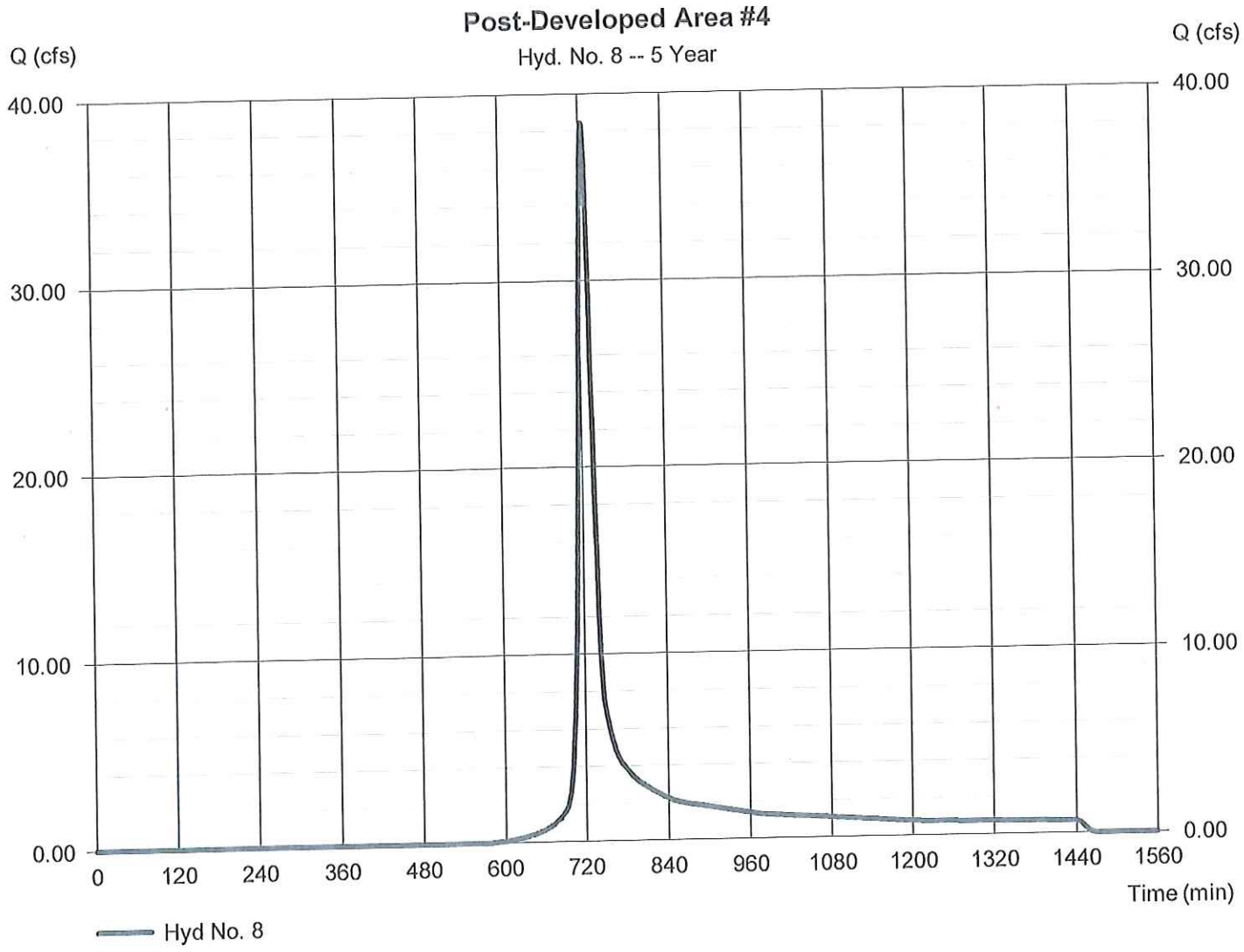
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Monday, Apr 16, 2012

Hyd. No. 8

Post-Developed Area #4

Hydrograph type	= SCS Runoff	Peak discharge	= 38.45 cfs
Storm frequency	= 5 yrs	Time to peak	= 724 min
Time interval	= 2 min	Hyd. volume	= 121,969 cuft
Drainage area	= 22.250 ac	Curve number	= 78.3
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 18.70 min
Total precip.	= 3.49 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

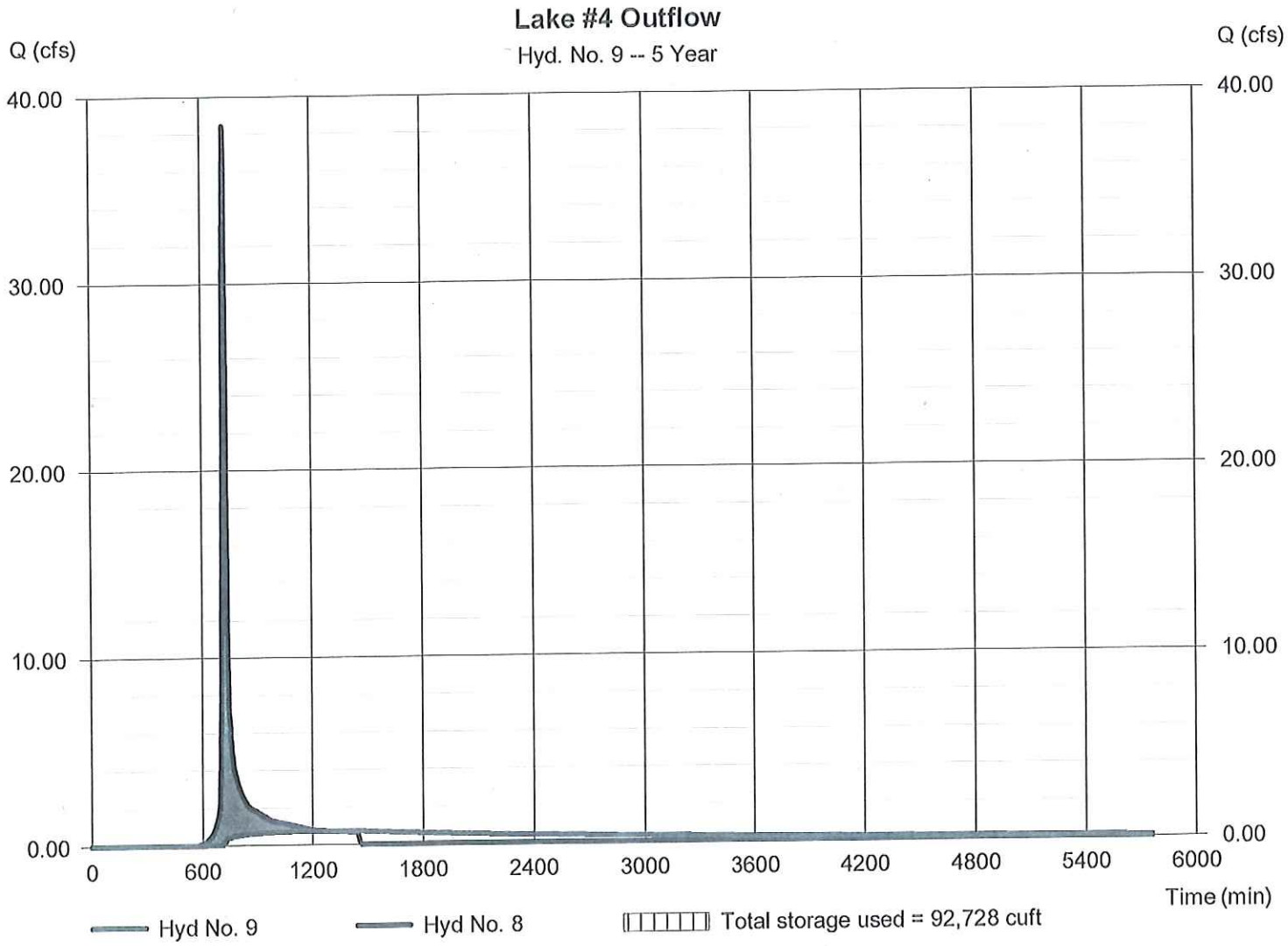
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8 — Monday, Apr 16, 2012

Hyd. No. 9

Lake #4 Outflow

Hydrograph type	= Reservoir	Peak discharge	= 0.729 cfs
Storm frequency	= 5 yrs	Time to peak	= 1294 min
Time interval	= 2 min	Hyd. volume	= 104,661 cuft
Inflow hyd. No.	= 8 - Post-Developed Area #4	Max. Elevation	= 890.48 ft
Reservoir name	= Lake #4	Max. Storage	= 92,728 cuft

Storage Indication method used.



Hydrograph Report

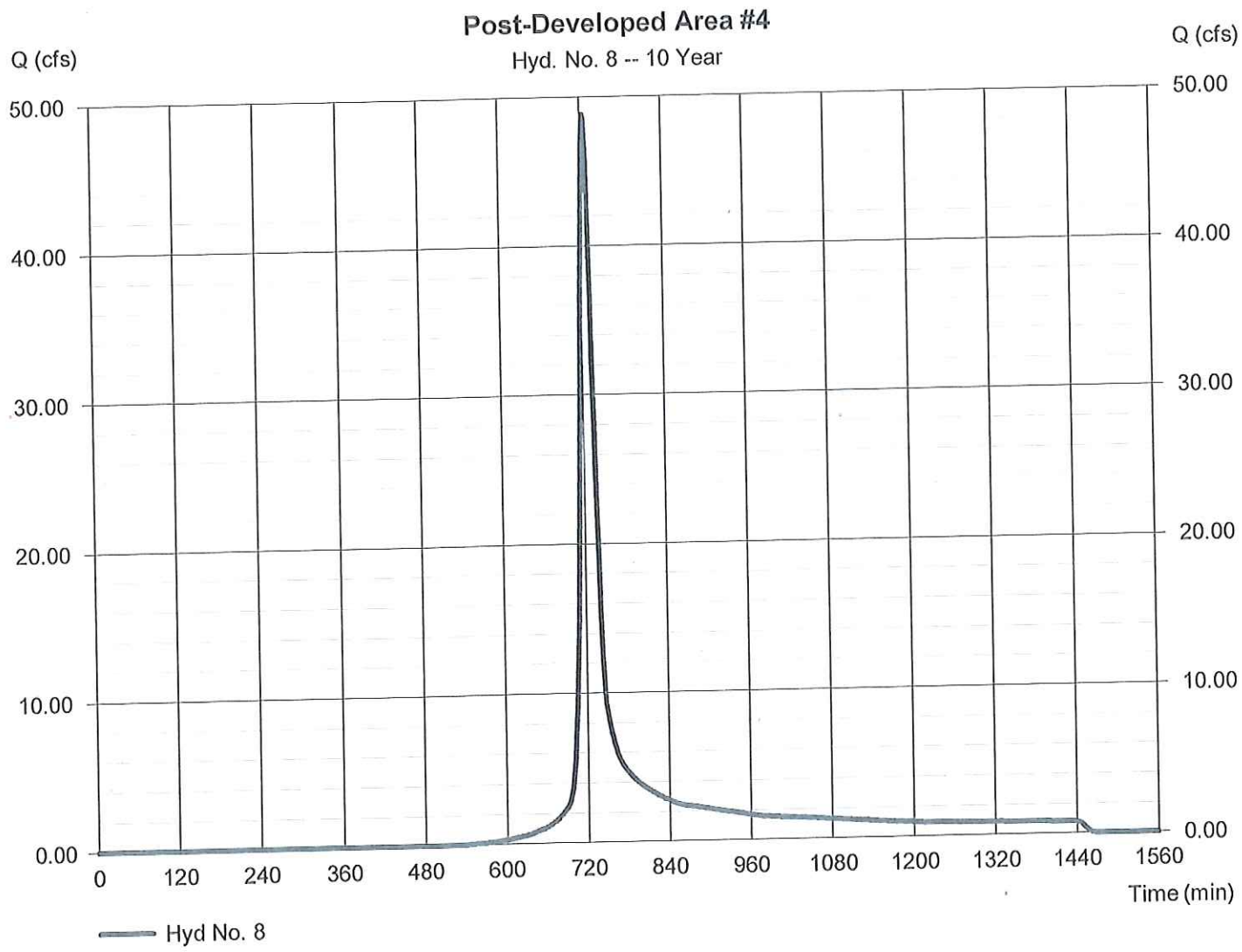
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Monday, Apr 16, 2012

Hyd. No. 8

Post-Developed Area #4

Hydrograph type	= SCS Runoff	Peak discharge	= 48.83 cfs
Storm frequency	= 10 yrs	Time to peak	= 724 min
Time interval	= 2 min	Hyd. volume	= 153,597 cuft
Drainage area	= 22.250 ac	Curve number	= 78.3
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 18.70 min
Total precip.	= 3.99 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

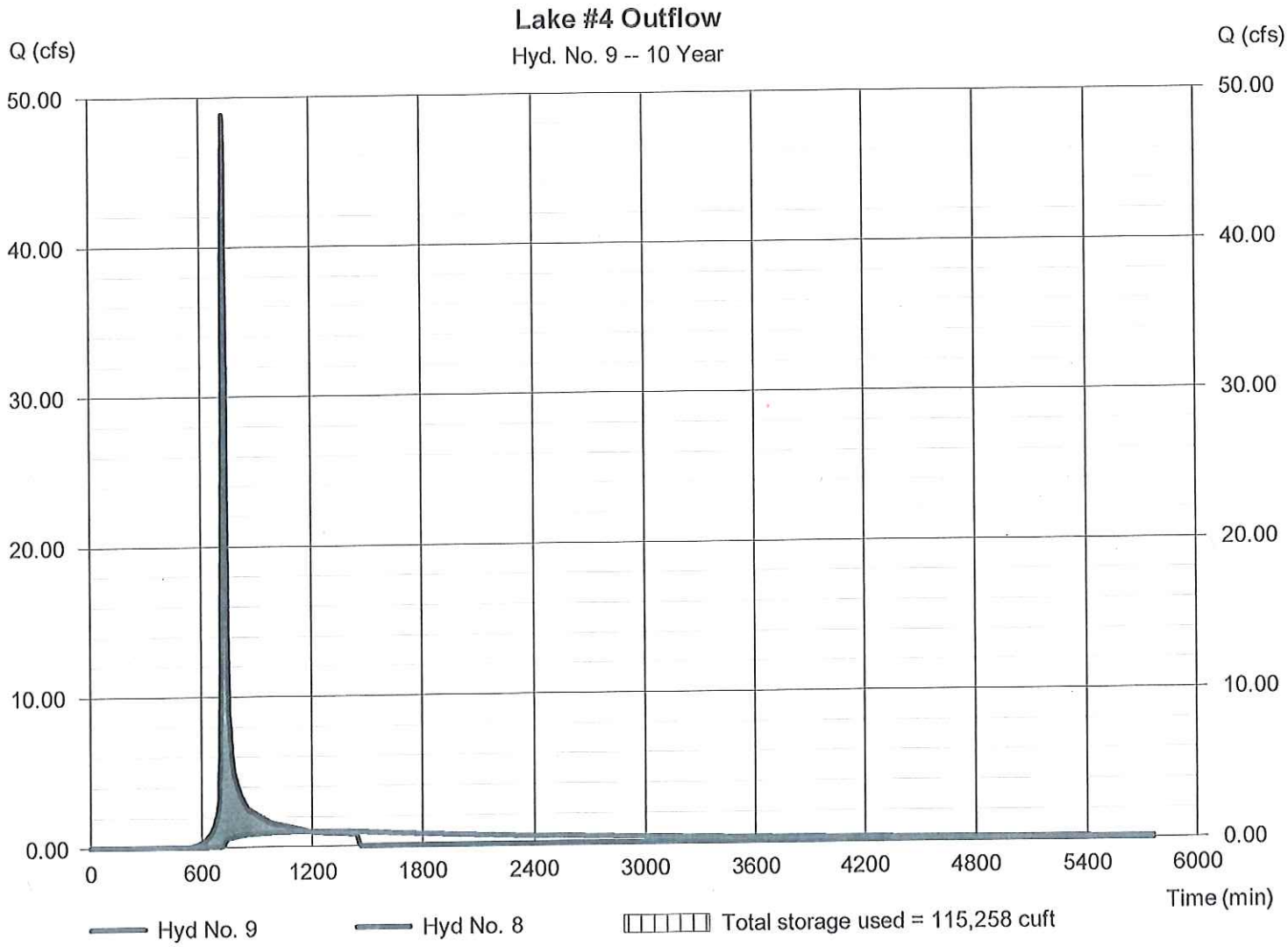
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Hyd. No. 9

Lake #4 Outflow

Hydrograph type	= Reservoir	Peak discharge	= 0.975 cfs
Storm frequency	= 10 yrs	Time to peak	= 1194 min
Time interval	= 2 min	Hyd. volume	= 133,478 cuft
Inflow hyd. No.	= 8 - Post-Developed Area #4	Max. Elevation	= 890.69 ft
Reservoir name	= Lake #4	Max. Storage	= 115,258 cuft

Storage Indication method used.



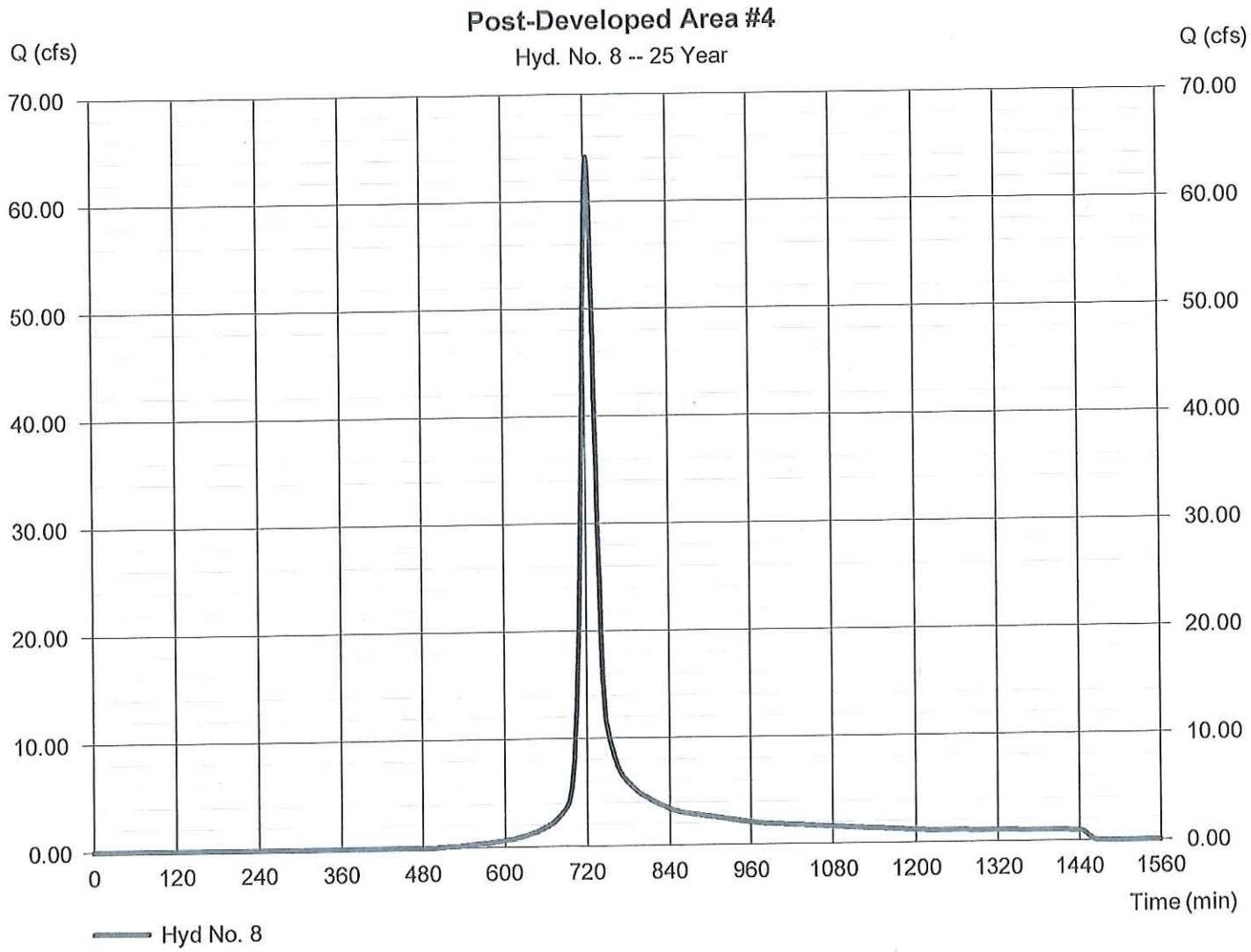
Hydrograph Report

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Hyd. No. 8

Post-Developed Area #4

Hydrograph type	= SCS Runoff	Peak discharge	= 64.13 cfs
Storm frequency	= 25 yrs	Time to peak	= 724 min
Time interval	= 2 min	Hyd. volume	= 200,684 cuft
Drainage area	= 22.250 ac	Curve number	= 78.3
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 18.70 min
Total precip.	= 4.70 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

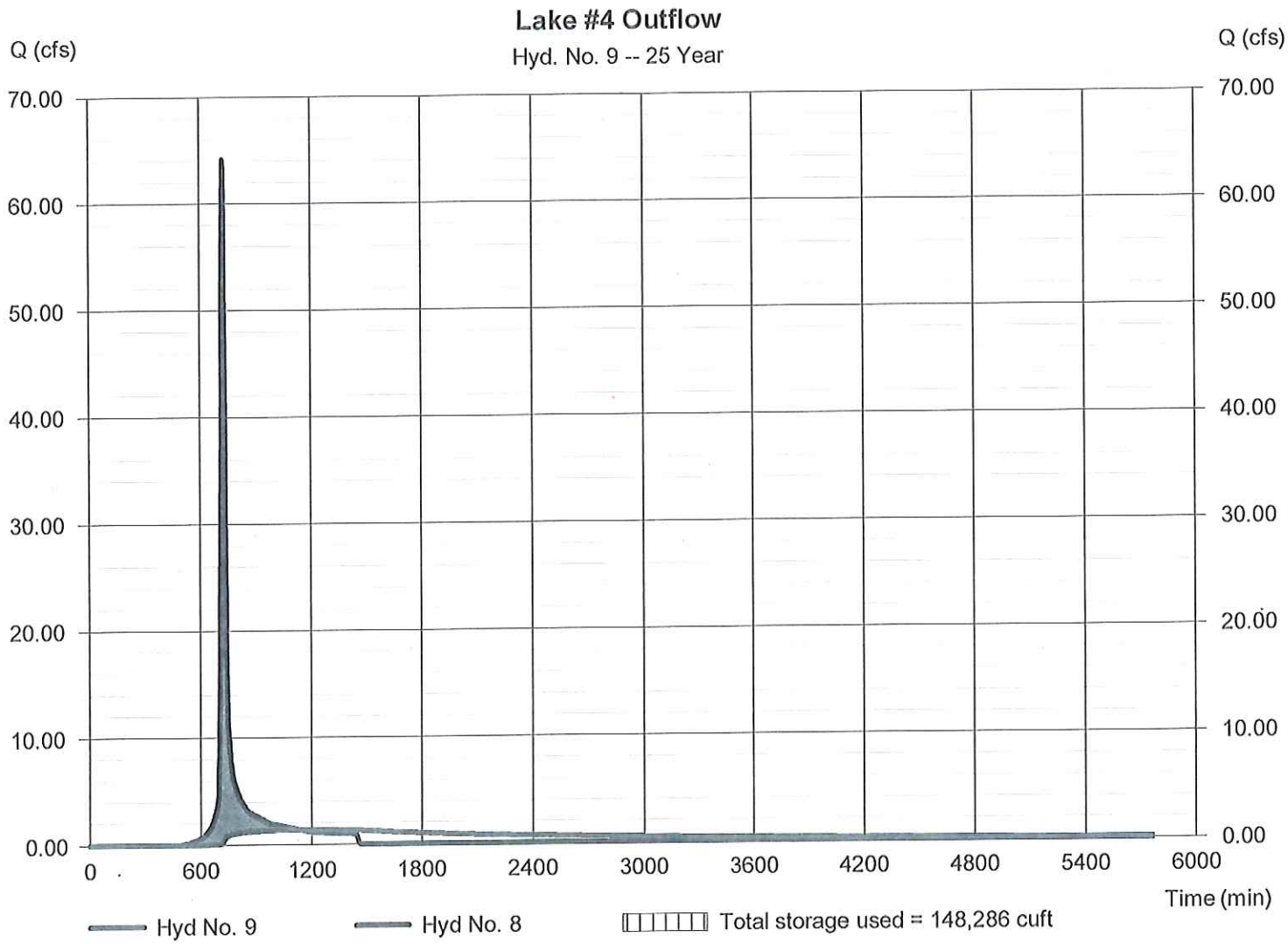
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Hyd. No. 9

Lake #4 Outflow

Hydrograph type	= Reservoir	Peak discharge	= 1.378 cfs
Storm frequency	= 25 yrs	Time to peak	= 1146 min
Time interval	= 2 min	Hyd. volume	= 177,117 cuft
Inflow hyd. No.	= 8 - Post-Developed Area #4	Max. Elevation	= 891.00 ft
Reservoir name	= Lake #4	Max. Storage	= 148,286 cuft

Storage Indication method used.



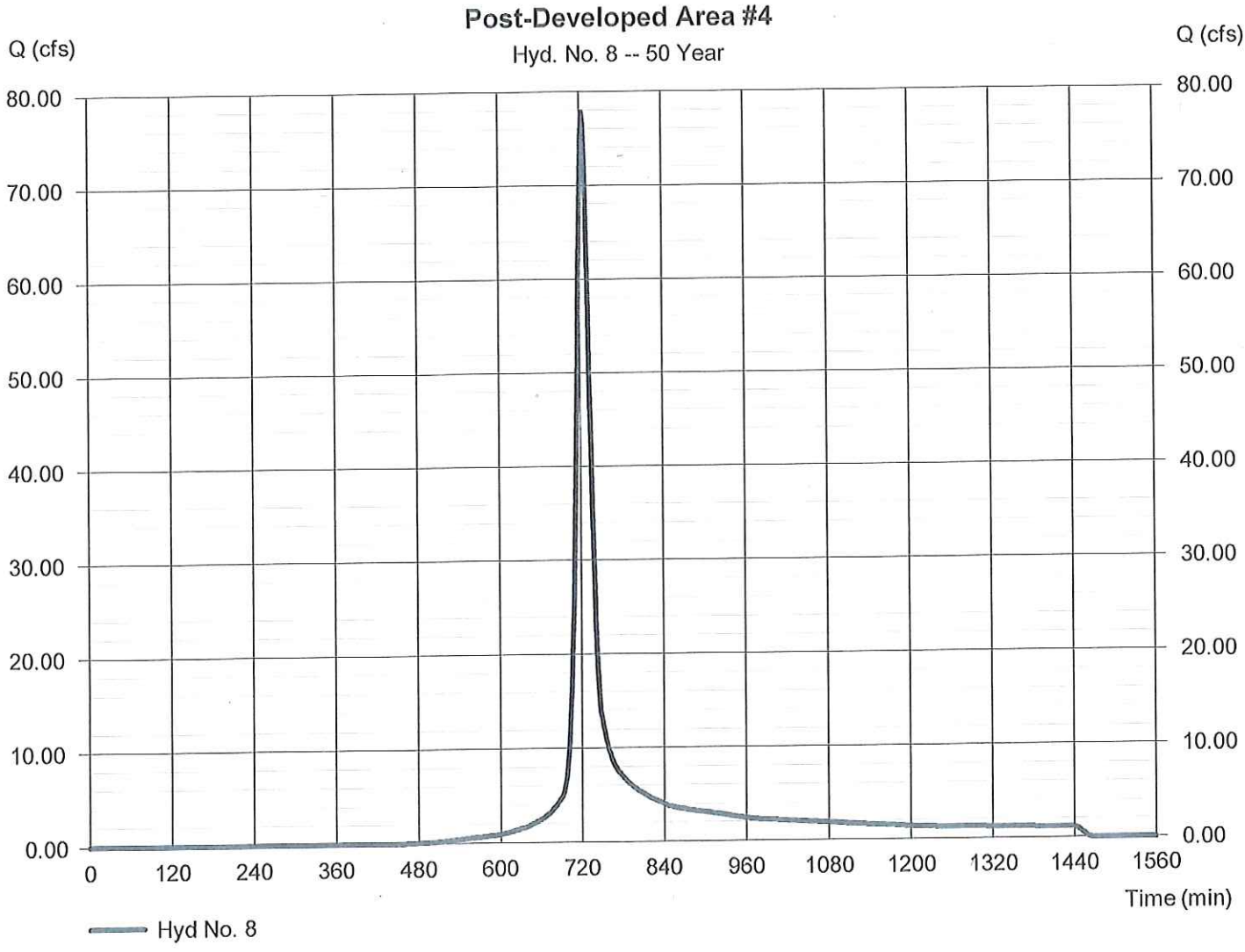
Hydrograph Report

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Hyd. No. 8

Post-Developed Area #4

Hydrograph type	= SCS Runoff	Peak discharge	= 77.85 cfs
Storm frequency	= 50 yrs	Time to peak	= 724 min
Time interval	= 2 min	Hyd. volume	= 243,382 cuft
Drainage area	= 22.250 ac	Curve number	= 78.3
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 18.70 min
Total precip.	= 5.32 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

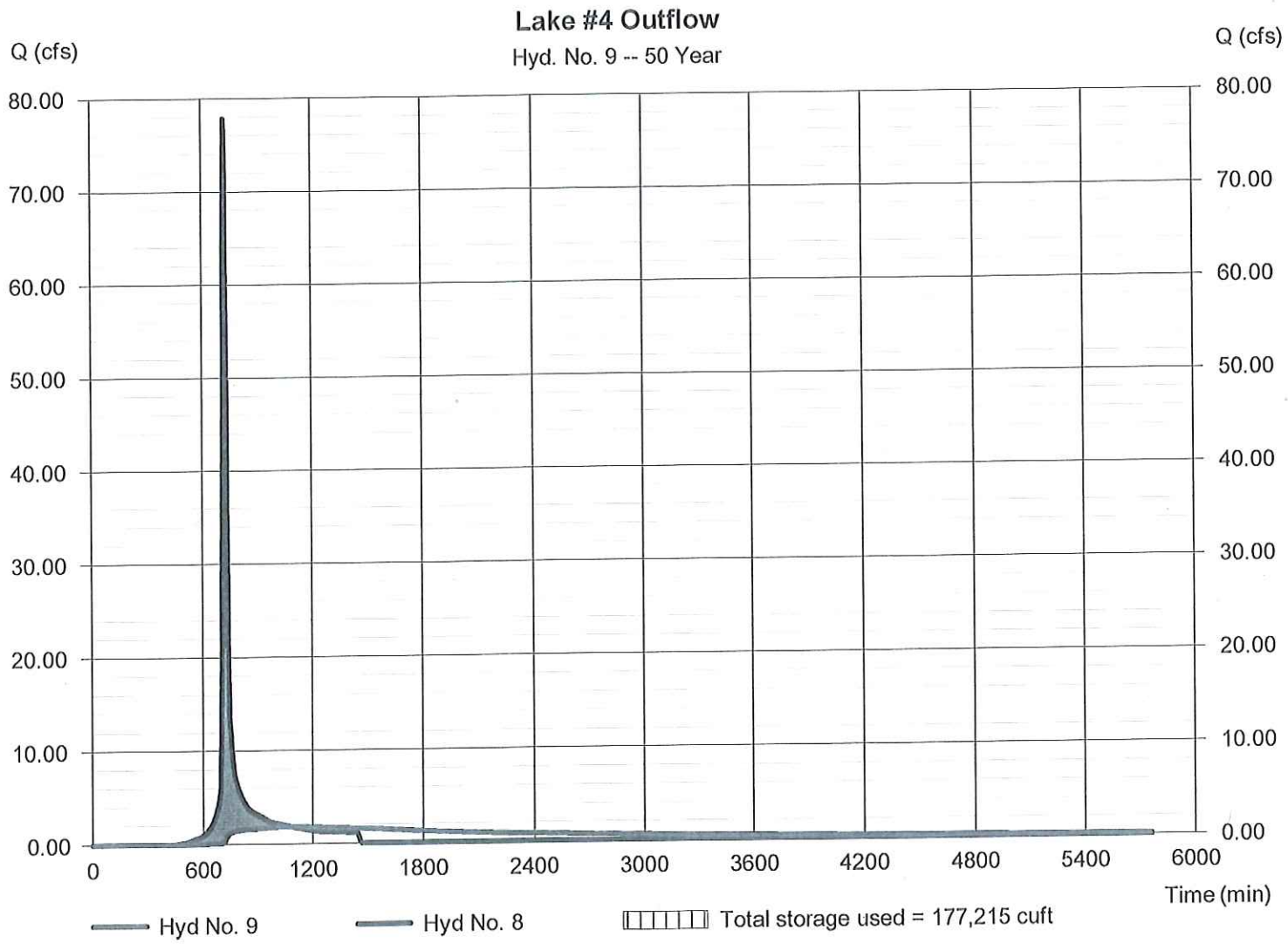
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8 — Monday, Apr 16, 2012

Hyd. No. 9

Lake #4 Outflow

Hydrograph type	= Reservoir	Peak discharge	= 1.852 cfs
Storm frequency	= 50 yrs	Time to peak	= 1086 min
Time interval	= 2 min	Hyd. volume	= 217,301 cuft
Inflow hyd. No.	= 8 - Post-Developed Area #4	Max. Elevation	= 891.26 ft
Reservoir name	= Lake #4	Max. Storage	= 177,215 cuft

Storage Indication method used.



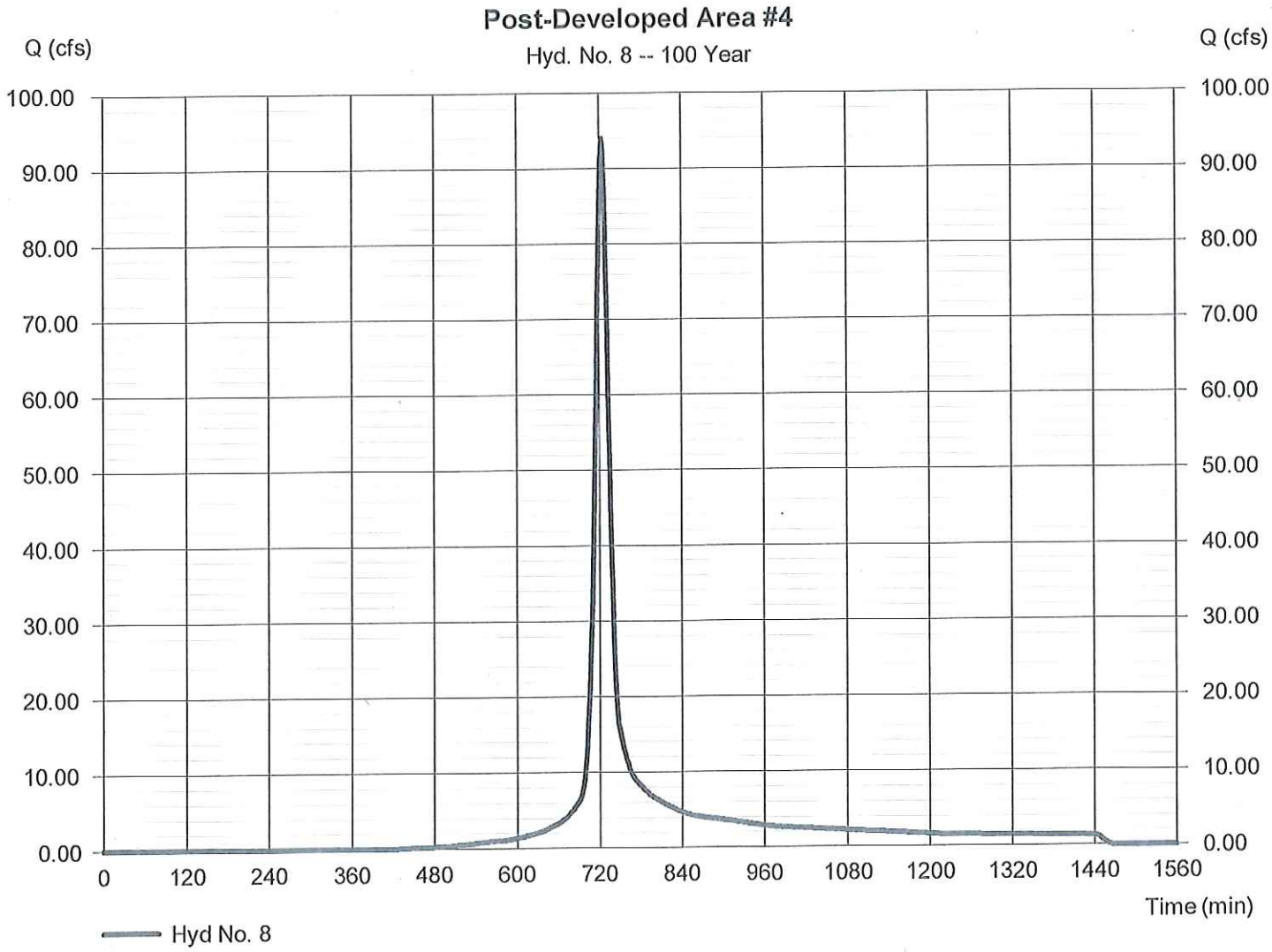
Hydrograph Report

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Hyd. No. 8

Post-Developed Area #4

Hydrograph type	= SCS Runoff	Peak discharge	= 94.05 cfs
Storm frequency	= 100 yrs	Time to peak	= 724 min
Time interval	= 2 min	Hyd. volume	= 294,358 cuft
Drainage area	= 22.250 ac	Curve number	= 78.3
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 18.70 min
Total precip.	= 6.04 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

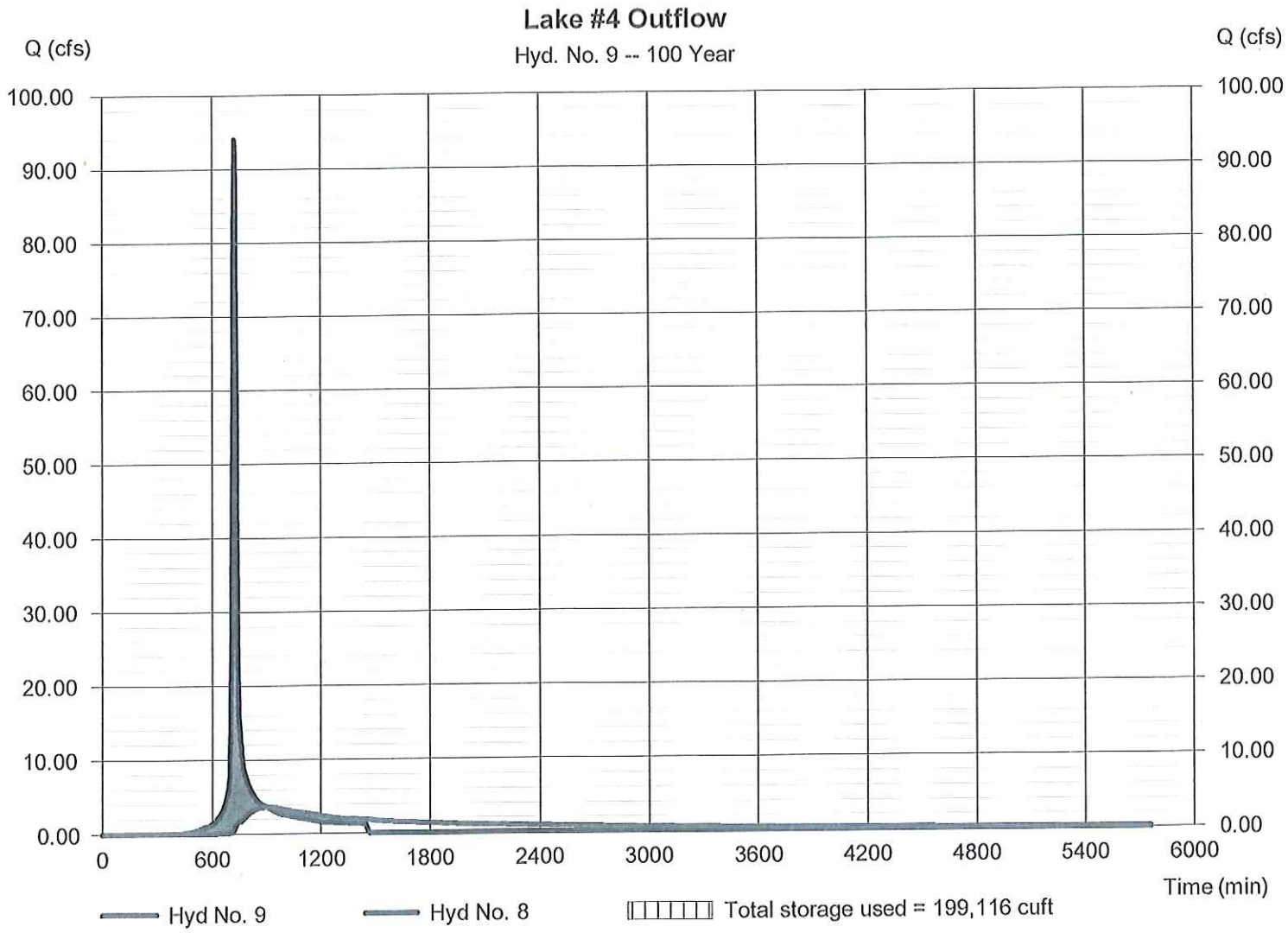
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8 — Monday, Apr 16, 2012

Hyd. No. 9

Lake #4 Outflow

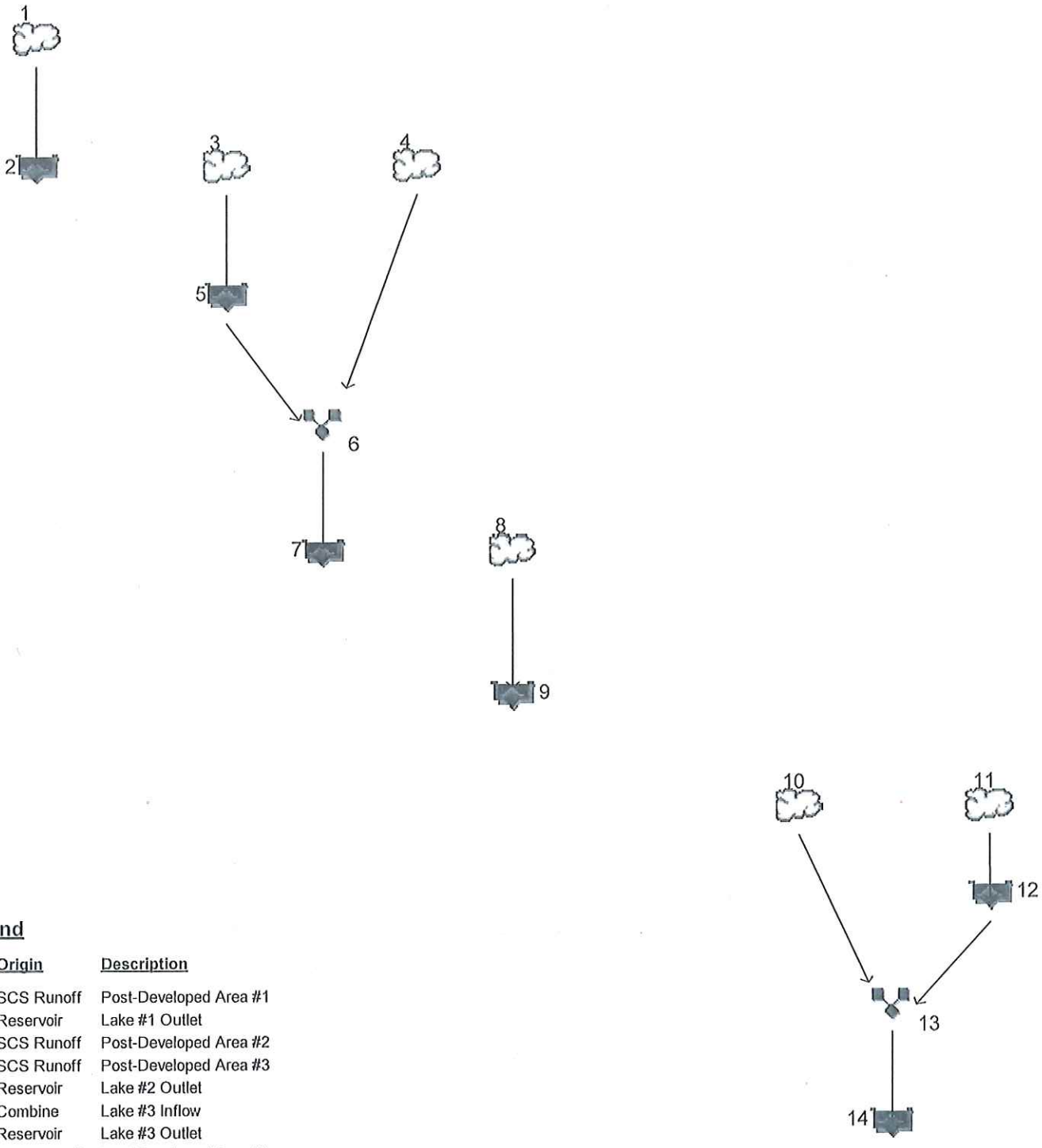
Hydrograph type	= Reservoir	Peak discharge	= 3.606 cfs
Storm frequency	= 100 yrs	Time to peak	= 904 min
Time interval	= 2 min	Hyd. volume	= 267,424 cuft
Inflow hyd. No.	= 8 - Post-Developed Area #4	Max. Elevation	= 891.45 ft
Reservoir name	= Lake #4	Max. Storage	= 199,116 cuft

Storage Indication method used.



Watershed Model Schematic

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8



Legend

Hyd.	Origin	Description
1	SCS Runoff	Post-Developed Area #1
2	Reservoir	Lake #1 Outlet
3	SCS Runoff	Post-Developed Area #2
4	SCS Runoff	Post-Developed Area #3
5	Reservoir	Lake #2 Outlet
6	Combine	Lake #3 Inflow
7	Reservoir	Lake #3 Outlet
8	SCS Runoff	Post-Developed Area #4
9	Reservoir	Lake #4 Outflow
10	SCS Runoff	Post-Developed Area #5
11	SCS Runoff	Offsite Miami University VOA
12	Reservoir	Offsite MU Basin
13	Combine	Basin 5 Inflow
14	Reservoir	Basin 5 Outflow

Hydrograph Return Period Recap

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8

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	------	16.03	25.44	-------	37.65	47.96	63.32	77.13	93.46	Post-Developed Area #1
2	Reservoir	1	0.799	1.238	-------	1.898	2.520	3.483	4.406	5.578	Lake #1 Outlet
3	SCS Runoff	------	4.614	9.775	-------	17.22	23.78	33.83	43.17	54.70	Post-Developed Area #2
4	SCS Runoff	------	63.44	93.52	-------	131.67	163.00	208.47	248.74	295.85	Post-Developed Area #3
5	Reservoir	3	0.172	0.279	-------	0.448	0.619	0.908	1.206	2.464	Lake #2 Outlet
6	Combine	4, 5	63.48	93.59	-------	131.78	163.17	208.71	249.07	296.32	Lake #3 Inflow
7	Reservoir	6	1.153	1.474	-------	1.808	2.041	2.339	2.568	8.211	Lake #3 Outlet
8	SCS Runoff	------	16.74	26.16	-------	38.45	48.83	64.13	77.85	94.05	Post-Developed Area #4
9	Reservoir	8	0.293	0.470	-------	0.729	0.975	1.378	1.852	3.606	Lake #4 Outflow
10	SCS Runoff	------	32.99	56.13	-------	86.85	113.03	152.35	188.38	231.37	Post-Developed Area #5
11	SCS Runoff	------	20.89	27.84	-------	36.16	42.76	52.13	60.27	69.69	Offsite Miami University VOA
12	Reservoir	11	4.183	4.903	-------	9.299	15.66	20.40	22.70	24.97	Offsite MU Basin
13	Combine	10, 12	37.00	60.81	-------	93.90	127.27	172.21	210.21	255.41	Basin 5 Inflow
14	Reservoir	13	0.355	0.605	-------	0.985	1.348	1.925	4.553	9.071	Basin 5 Outflow

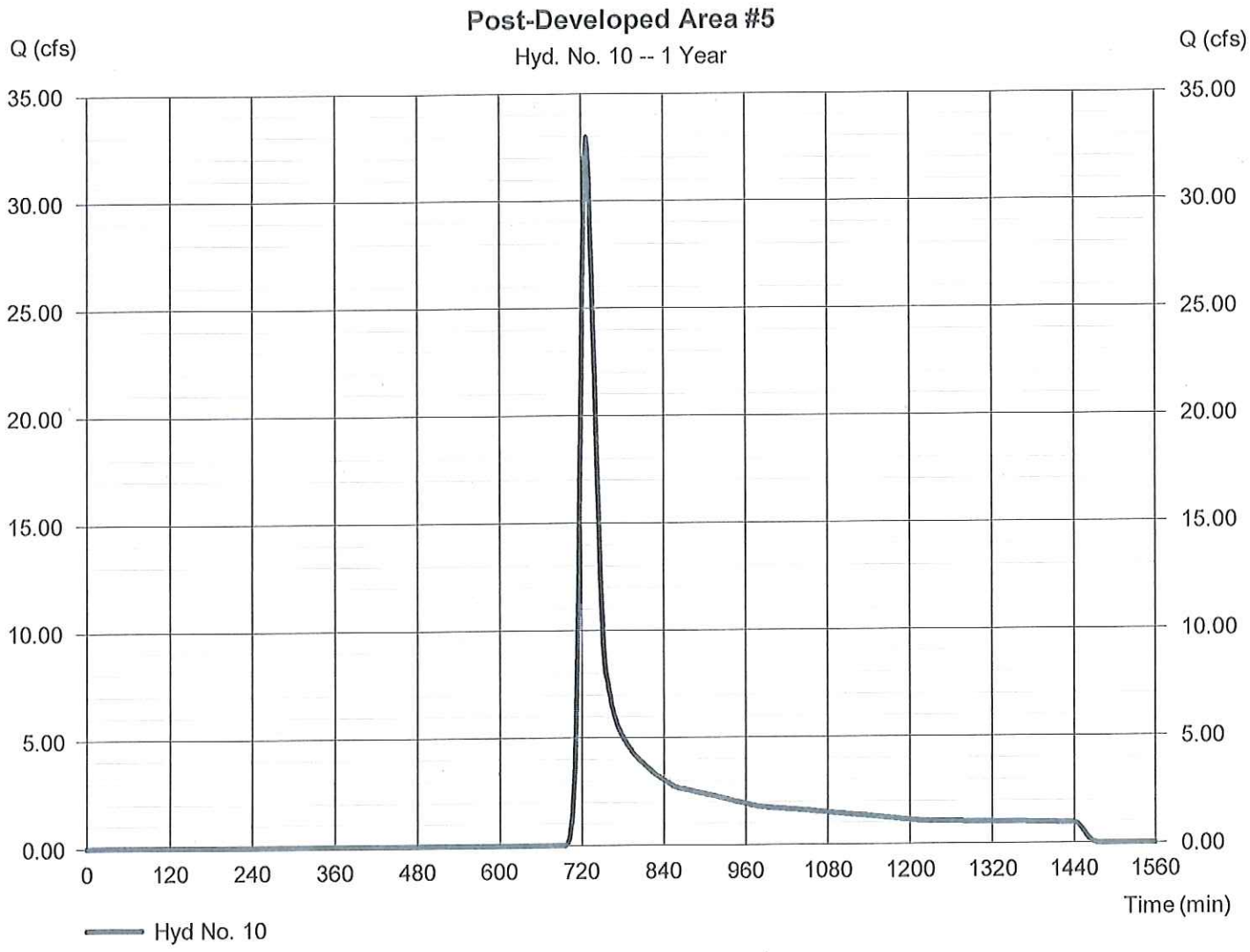
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8 — Monday, Apr 16, 2012

Hyd. No. 10

Post-Developed Area #5

Hydrograph type	= SCS Runoff	Peak discharge	= 32.99 cfs
Storm frequency	= 1 yrs	Time to peak	= 728 min
Time interval	= 2 min	Hyd. volume	= 132,384 cuft
Drainage area	= 65.640 ac	Curve number	= 74.8
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 22.30 min
Total precip.	= 2.33 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



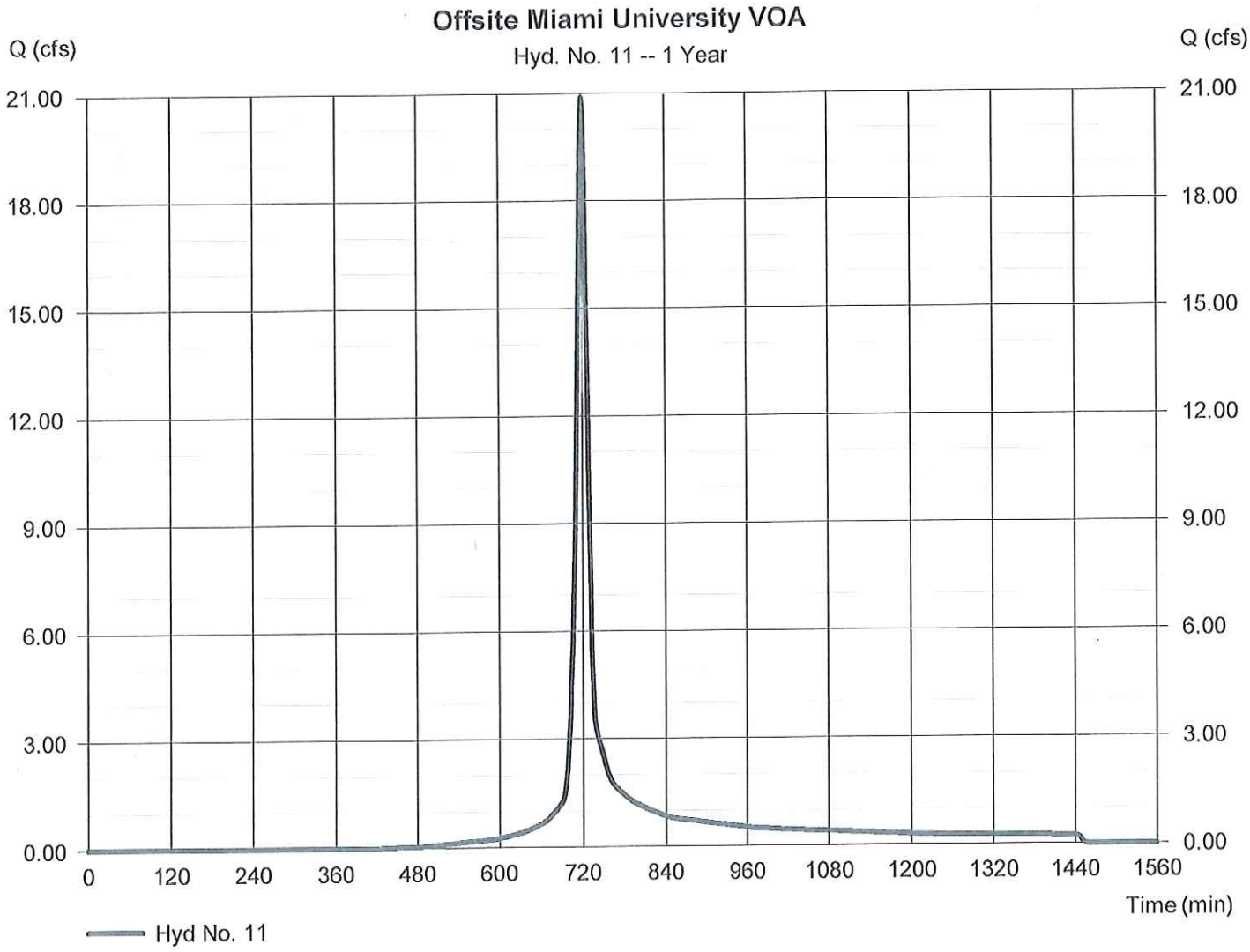
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8 — Monday, Apr 16, 2012

Hyd. No. 11

Offsite Miami University VOA

Hydrograph type	= SCS Runoff	Peak discharge	= 20.89 cfs
Storm frequency	= 1 yrs	Time to peak	= 720 min
Time interval	= 2 min	Hyd. volume	= 54,318 cuft
Drainage area	= 10.400 ac	Curve number	= 90.2
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 2.33 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

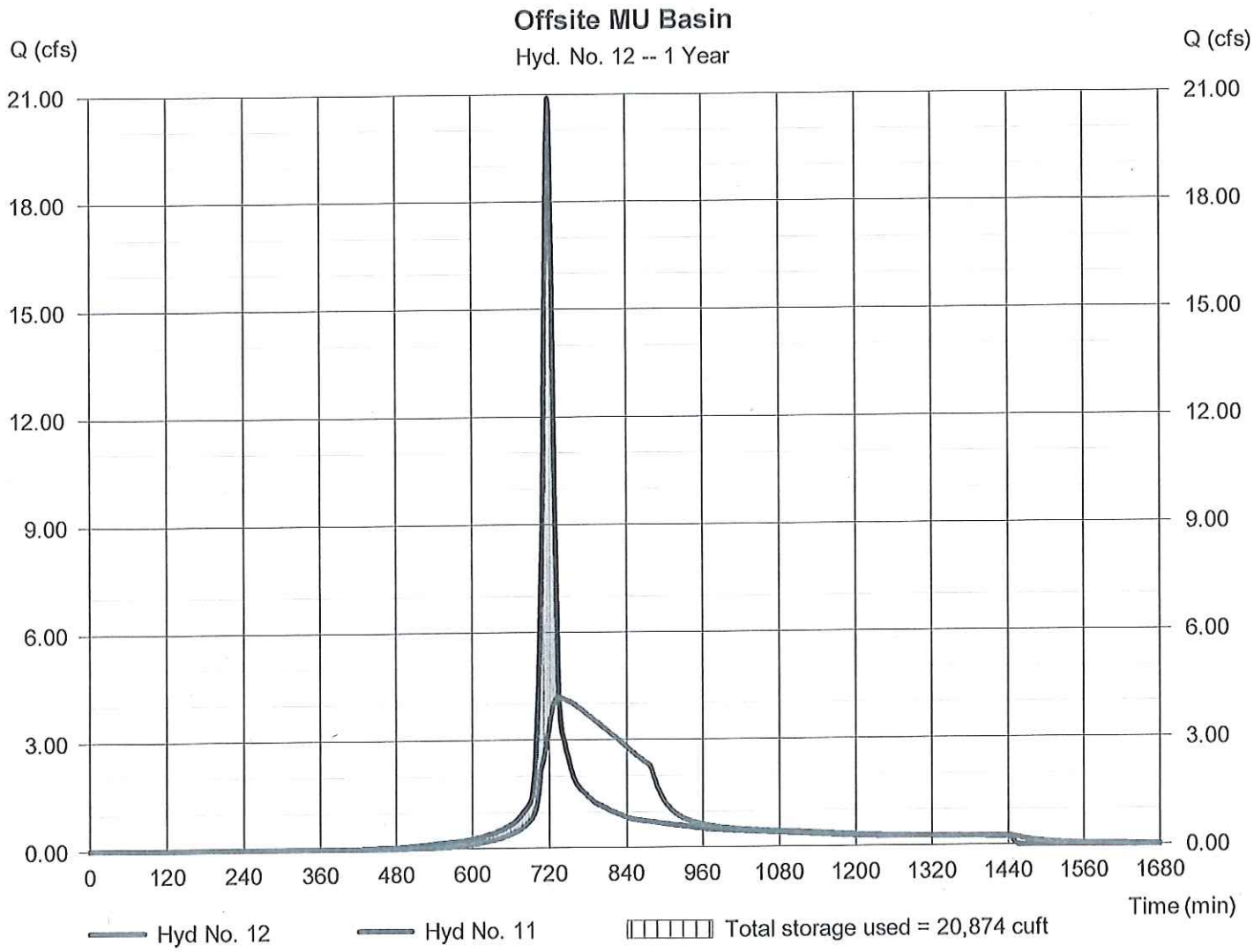
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8 — Monday, Apr 16, 2012

Hyd. No. 12

Offsite MU Basin

Hydrograph type	= Reservoir	Peak discharge	= 4.183 cfs
Storm frequency	= 1 yrs	Time to peak	= 736 min
Time interval	= 2 min	Hyd. volume	= 54,305 cuft
Inflow hyd. No.	= 11 - Offsite Miami University VDA	Max. Elevation	= 903.15 ft
Reservoir name	= Existing MU Basin	Max. Storage	= 20,874 cuft

Storage Indication method used.



Pond Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8 — Monday, Apr 16, 2012

Pond No. 6 - Existing MU Basin

Pond Data

Contours -User-defined contour areas. Conic method used for volume calculation. Begining Elevation = 901.00 ft

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	901.00	00	0	0
1.00	902.00	13,010	4,336	4,336
3.00	904.00	15,732	28,696	33,032
5.00	906.00	19,985	35,629	68,661

Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 24.00	12.00	0.00	0.00
Span (in)	= 24.00	12.00	0.00	0.00
No. Barrels	= 1	1	0	0
Invert El. (ft)	= 901.00	901.00	0.00	0.00
Length (ft)	= 150.00	0.00	0.00	0.00
Slope (%)	= 0.30	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	Yes	No	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 12.00	0.00	0.00	0.00
Crest El. (ft)	= 904.00	0.00	0.00	0.00
Weir Coeff.	= 3.00	3.33	3.33	3.33
Weir Type	= Rect	---	---	---
Multi-Stage	= Yes	No	No	No

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

TW Elev. (ft) = 0.00

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

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	901.00	0.00	0.00	---	---	0.00	---	---	---	---	---	0.000
0.10	434	901.10	0.03 oc	0.03 ic	---	---	0.00	---	---	---	---	---	0.033
0.20	867	901.20	0.13 oc	0.13 ic	---	---	0.00	---	---	---	---	---	0.131
0.30	1,301	901.30	0.29 ic	0.29 ic	---	---	0.00	---	---	---	---	---	0.288
0.40	1,734	901.40	0.52 ic	0.50 ic	---	---	0.00	---	---	---	---	---	0.495
0.50	2,168	901.50	0.74 ic	0.74 ic	---	---	0.00	---	---	---	---	---	0.741
0.60	2,602	901.60	1.07 ic	1.03 ic	---	---	0.00	---	---	---	---	---	1.029
0.70	3,035	901.70	1.39 oc	1.35 ic	---	---	0.00	---	---	---	---	---	1.345
0.80	3,469	901.80	1.69 oc	1.68 ic	---	---	0.00	---	---	---	---	---	1.678
0.90	3,903	901.90	2.01 oc	2.00 ic	---	---	0.00	---	---	---	---	---	2.000
1.00	4,336	902.00	2.27 oc	2.27 ic	---	---	0.00	---	---	---	---	---	2.274
1.20	7,206	902.20	2.74 oc	2.66 ic	---	---	0.00	---	---	---	---	---	2.658
1.40	10,075	902.40	3.03 oc	3.03 ic	---	---	0.00	---	---	---	---	---	3.033
1.60	12,945	902.60	3.44 oc	3.36 ic	---	---	0.00	---	---	---	---	---	3.355
1.80	15,815	902.80	3.76 oc	3.67 ic	---	---	0.00	---	---	---	---	---	3.668
2.00	18,684	903.00	3.97 oc	3.97 ic	---	---	0.00	---	---	---	---	---	3.970
2.20	21,554	903.20	4.29 oc	4.25 ic	---	---	0.00	---	---	---	---	---	4.249
2.40	24,423	903.40	4.51 oc	4.51 ic	---	---	0.00	---	---	---	---	---	4.512
2.60	27,293	903.60	4.84 oc	4.76 ic	---	---	0.00	---	---	---	---	---	4.759
2.80	30,163	903.80	5.06 oc	5.01 ic	---	---	0.00	---	---	---	---	---	5.006
3.00	33,032	904.00	5.28 oc	5.24 ic	---	---	0.00	---	---	---	---	---	5.241
3.20	36,595	904.20	8.14 oc	4.90 ic	---	---	3.22	---	---	---	---	---	8.118
3.40	40,158	904.40	12.85 oc	3.74 ic	---	---	9.11	---	---	---	---	---	12.85
3.60	43,721	904.60	17.73 oc	2.37 ic	---	---	15.35 s	---	---	---	---	---	17.72
3.80	47,284	904.80	19.62 oc	1.78 ic	---	---	17.84 s	---	---	---	---	---	19.62
4.00	50,847	905.00	20.93 oc	1.42 ic	---	---	19.51 s	---	---	---	---	---	20.93
4.20	54,410	905.20	22.01 oc	1.18 ic	---	---	20.83 s	---	---	---	---	---	22.01
4.40	57,972	905.40	22.97 oc	1.00 ic	---	---	21.96 s	---	---	---	---	---	22.96
4.60	61,535	905.60	23.85 oc	0.88 ic	---	---	22.97 s	---	---	---	---	---	23.84
4.80	65,098	905.80	24.67 oc	0.78 ic	---	---	23.89 s	---	---	---	---	---	24.67
5.00	68,661	906.00	25.46 oc	0.70 ic	---	---	24.76 s	---	---	---	---	---	25.46

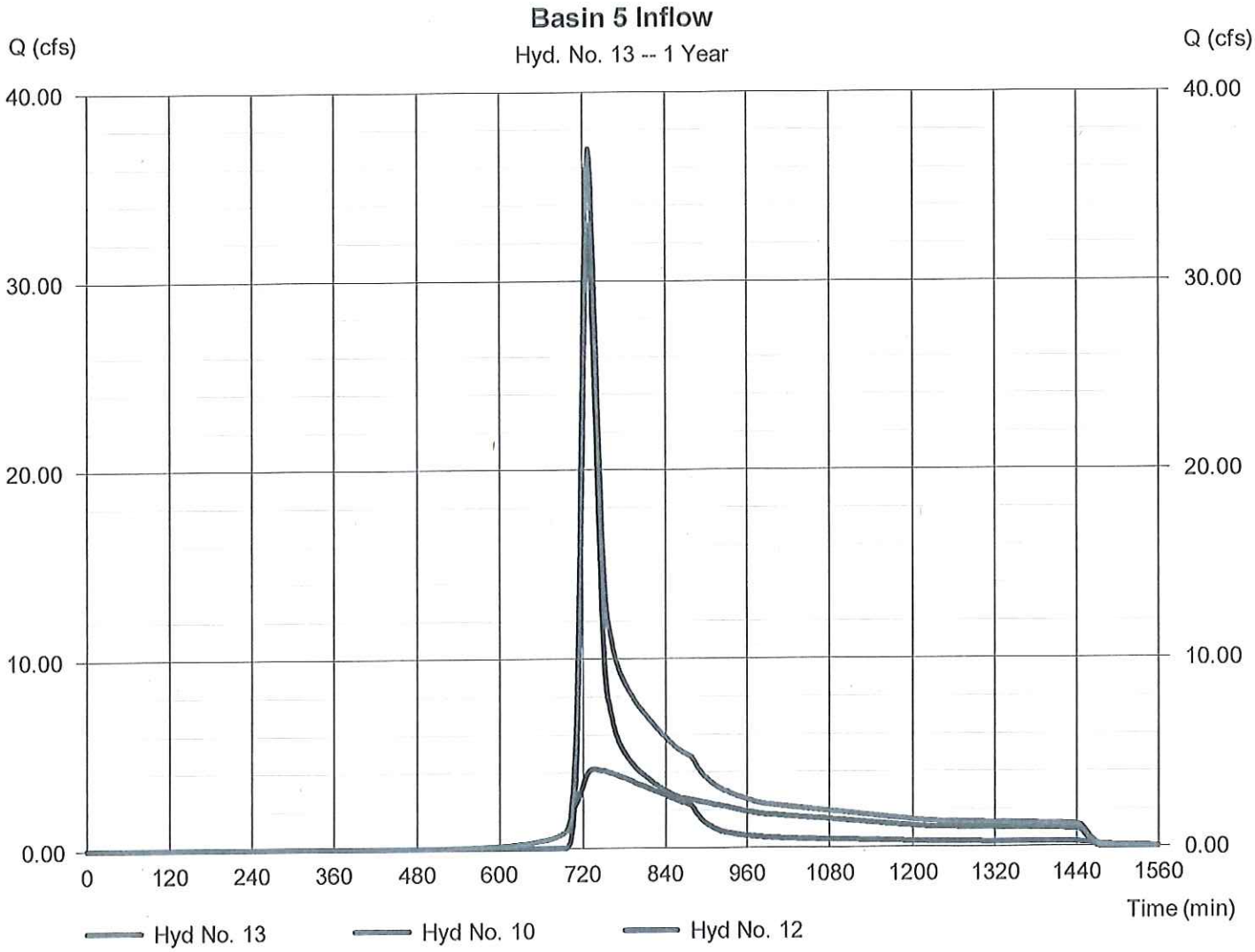
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8 — Monday, Apr 16, 2012

Hyd. No. 13

Basin 5 Inflow

Hydrograph type	= Combine	Peak discharge	= 37.00 cfs
Storm frequency	= 1 yrs	Time to peak	= 728 min
Time interval	= 2 min	Hyd. volume	= 186,689 cuft
Inflow hyds.	= 10, 12	Contrib. drain. area	= 65.640 ac



Hydrograph Report

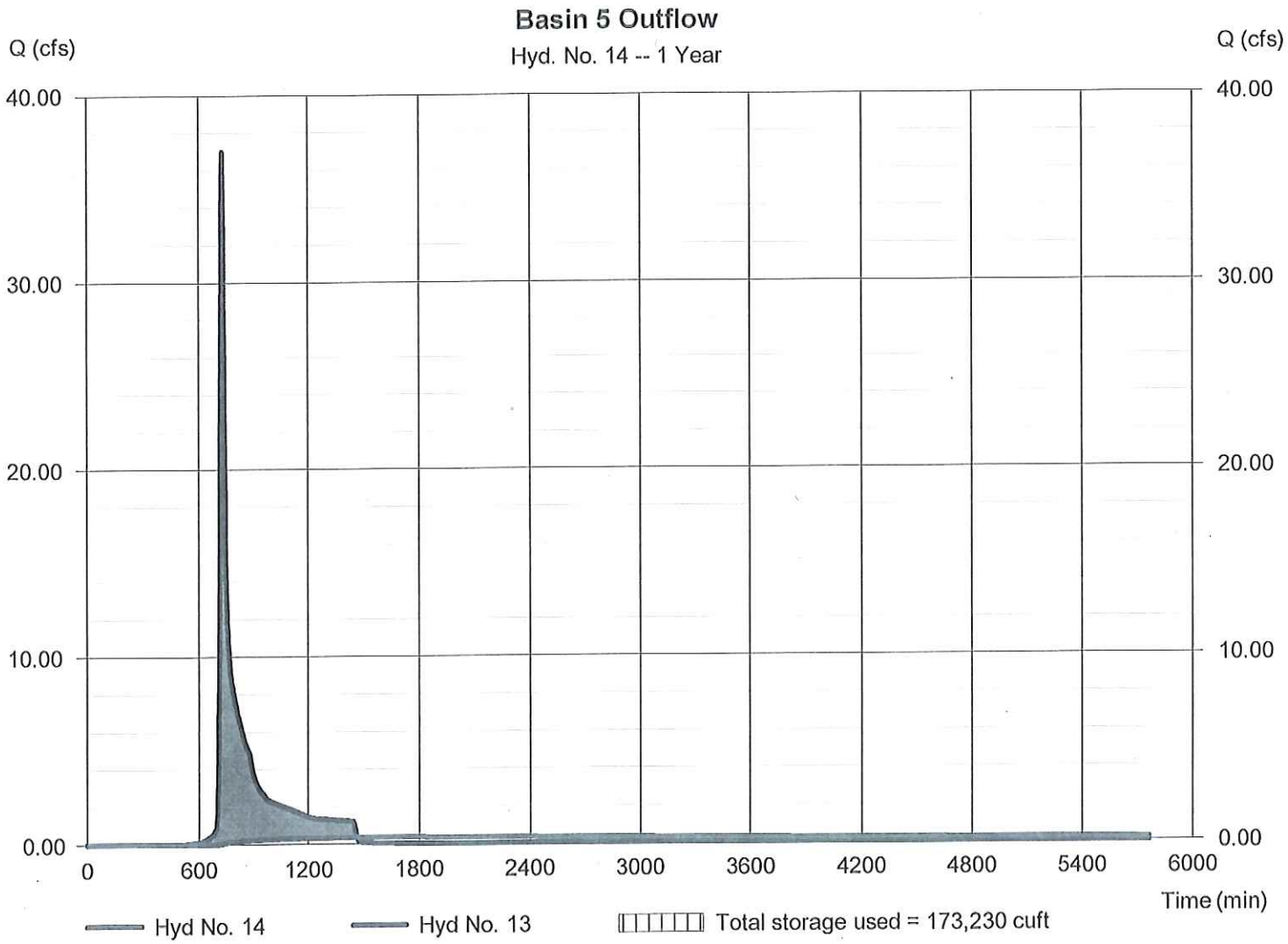
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8 — Monday, Apr 16, 2012

Hyd. No. 14

Basin 5 Outflow

Hydrograph type	= Reservoir	Peak discharge	= 0.355 cfs
Storm frequency	= 1 yrs	Time to peak	= 1464 min
Time interval	= 2 min	Hyd. volume	= 80,587 cuft
Inflow hyd. No.	= 13 - Basin 5 Inflow	Max. Elevation	= 888.11 ft
Reservoir name	= Lake #5	Max. Storage	= 173,230 cuft

Storage Indication method used.



Hydrograph Report

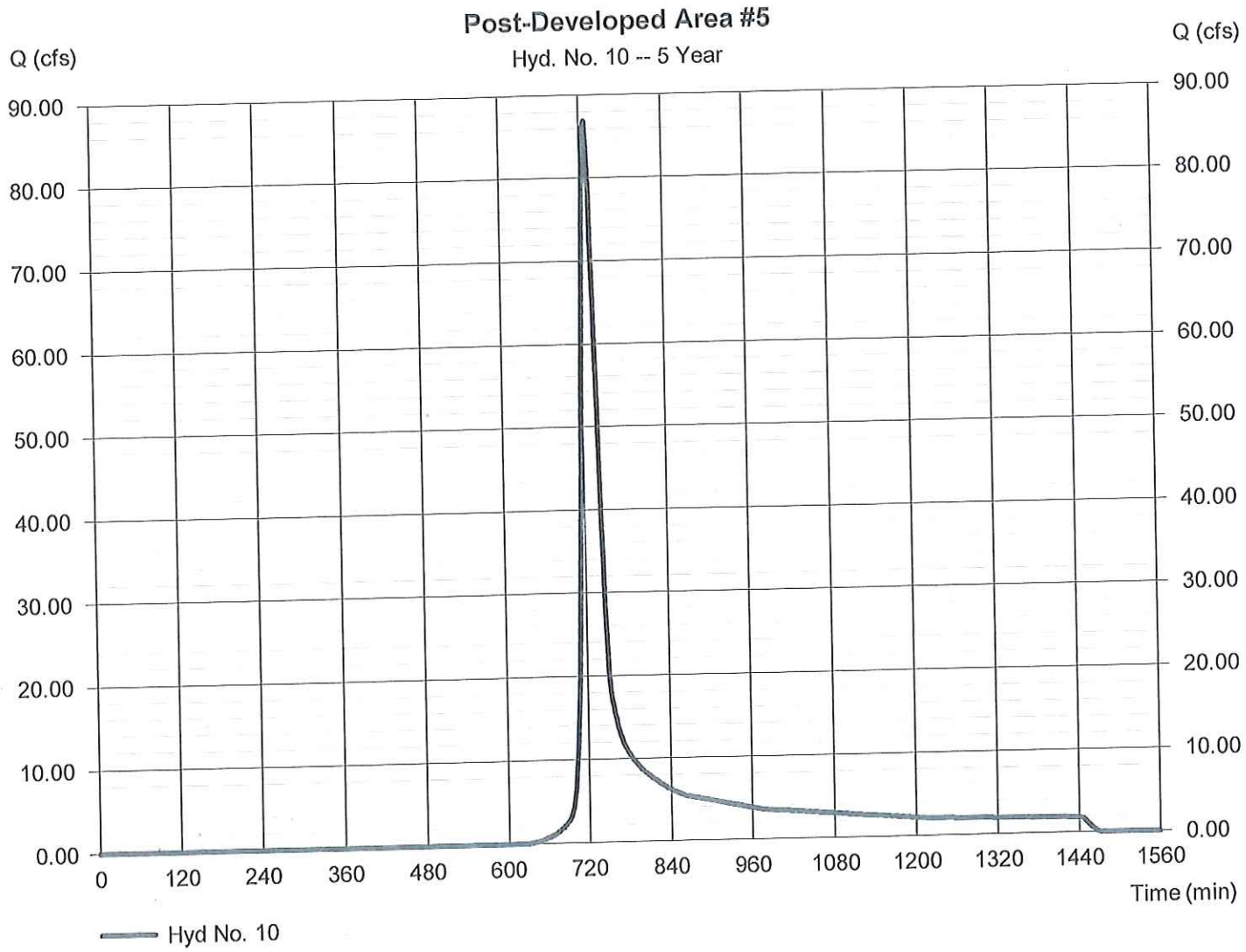
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8

Monday, Apr 16, 2012

Hyd. No. 10

Post-Developed Area #5

Hydrograph type	= SCS Runoff	Peak discharge	= 86.85 cfs
Storm frequency	= 5 yrs	Time to peak	= 728 min
Time interval	= 2 min	Hyd. volume	= 310,983 cuft
Drainage area	= 65.640 ac	Curve number	= 74.8
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 22.30 min
Total precip.	= 3.49 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



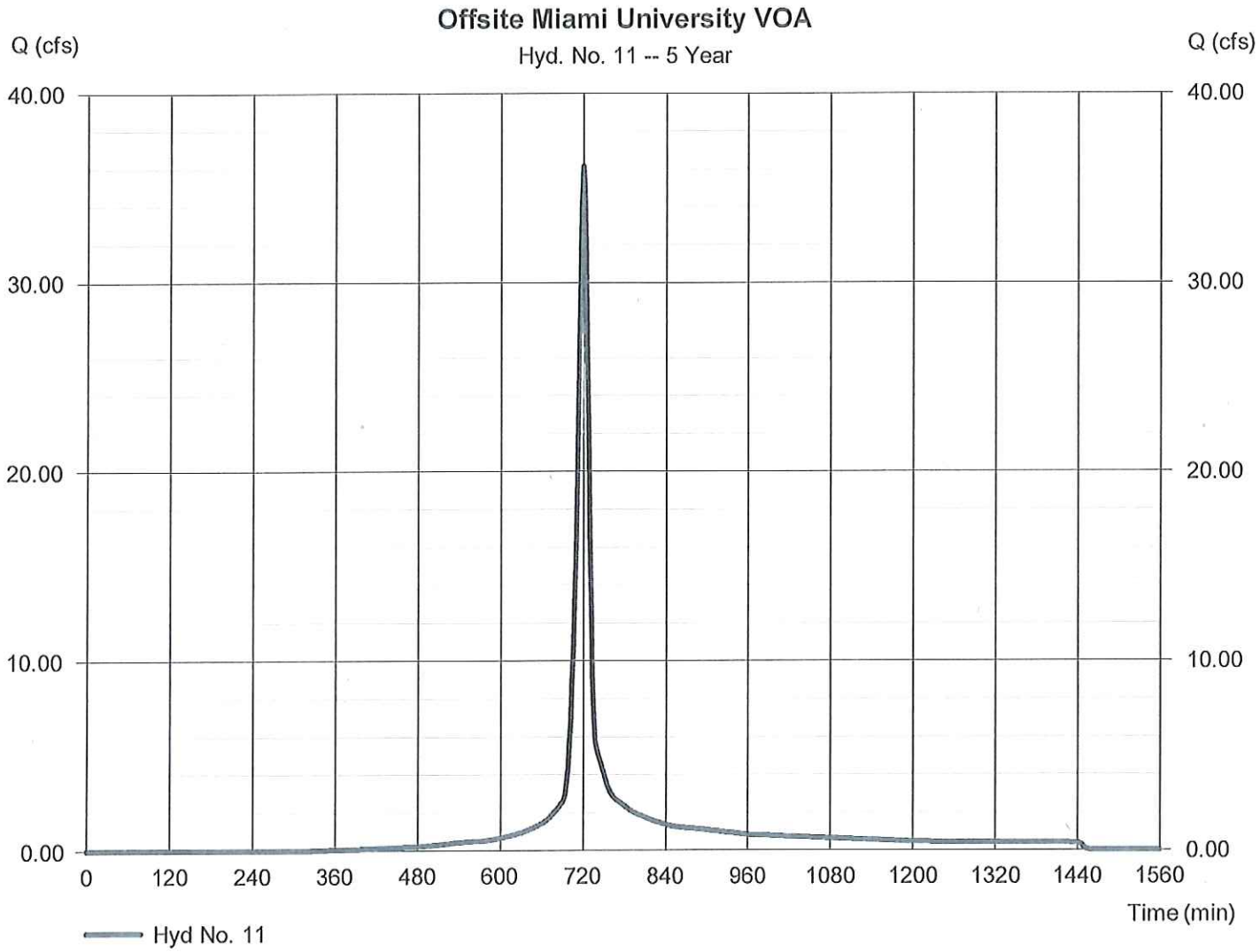
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8 — Monday, Apr 16, 2012

Hyd. No. 11

Offsite Miami University VOA

Hydrograph type	= SCS Runoff	Peak discharge	= 36.16 cfs
Storm frequency	= 5 yrs	Time to peak	= 720 min
Time interval	= 2 min	Hyd. volume	= 95,656 cuft
Drainage area	= 10.400 ac	Curve number	= 90.2
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 3.49 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

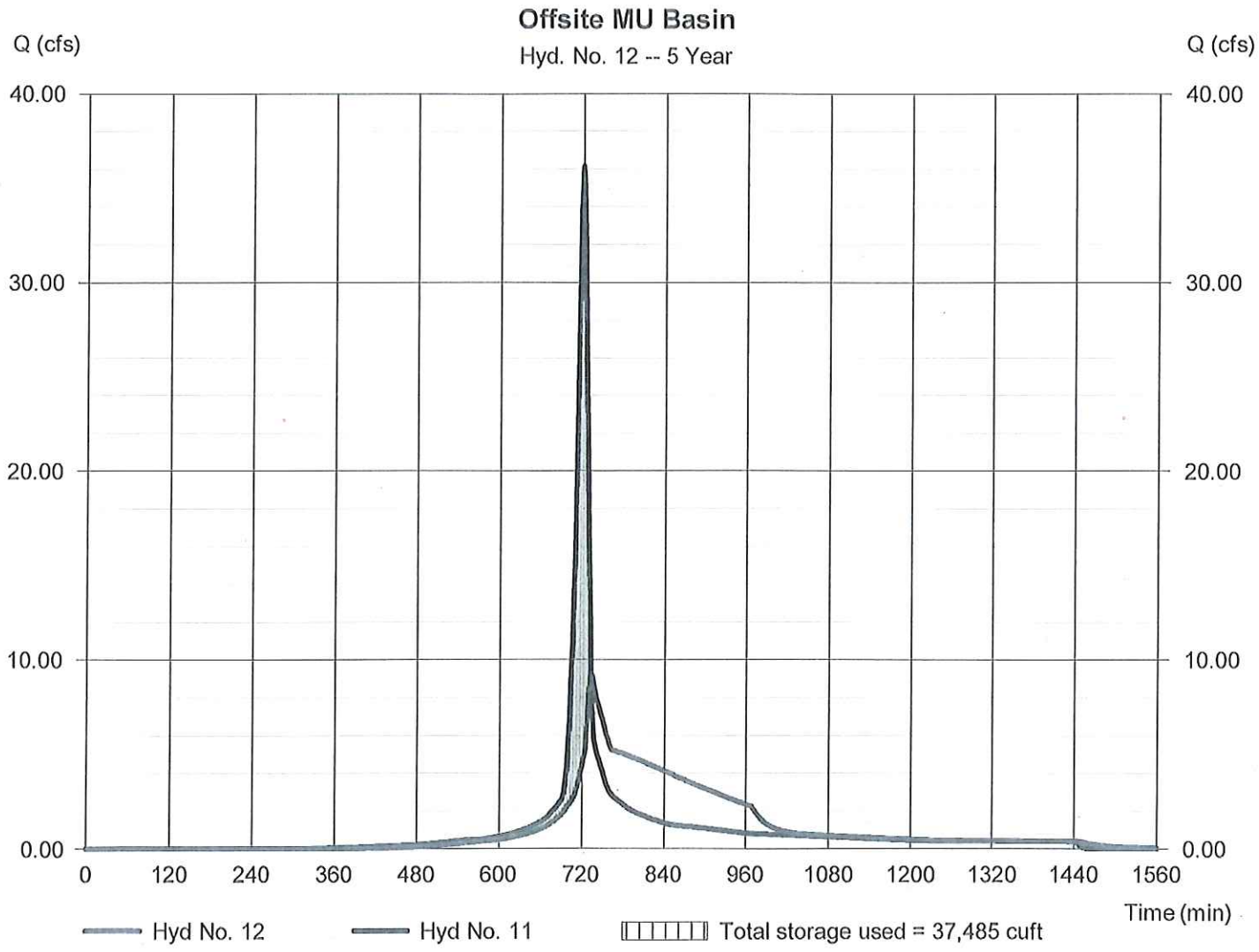
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8 — Monday, Apr 16, 2012

Hyd. No. 12

Offsite MU Basin

Hydrograph type	= Reservoir	Peak discharge	= 9.299 cfs
Storm frequency	= 5 yrs	Time to peak	= 734 min
Time interval	= 2 min	Hyd. volume	= 95,643 cuft
Inflow hyd. No.	= 11 - Offsite Miami University VDA	Max. Elevation	= 904.25 ft
Reservoir name	= Existing MU Basin	Max. Storage	= 37,485 cuft

Storage Indication method used.



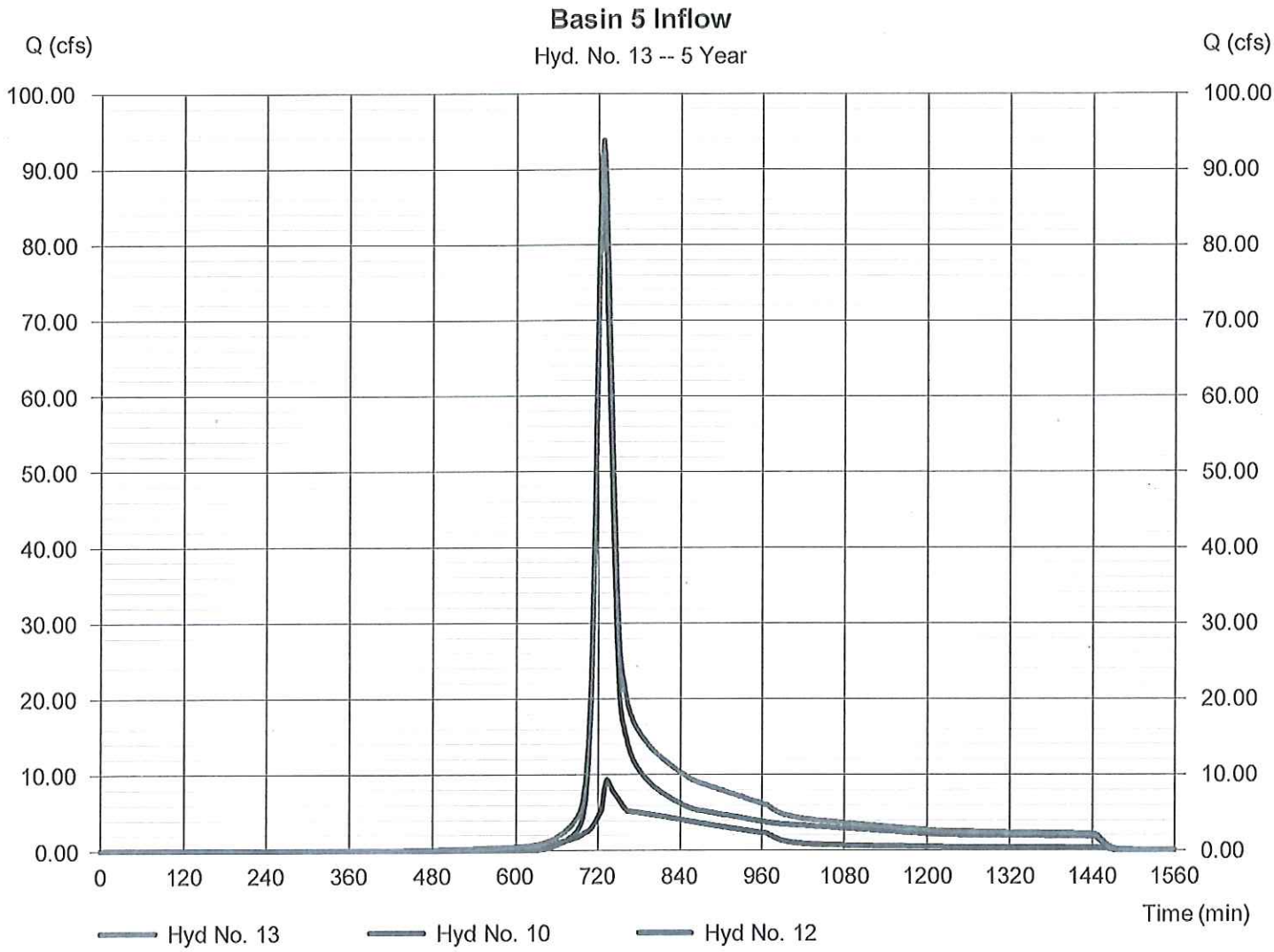
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8 — Monday, Apr 16, 2012

Hyd. No. 13

Basin 5 Inflow

Hydrograph type	= Combine	Peak discharge	= 93.90 cfs
Storm frequency	= 5 yrs	Time to peak	= 728 min
Time interval	= 2 min	Hyd. volume	= 406,626 cuft
Inflow hyds.	= 10, 12	Contrib. drain. area	= 65.640 ac



Hydrograph Report

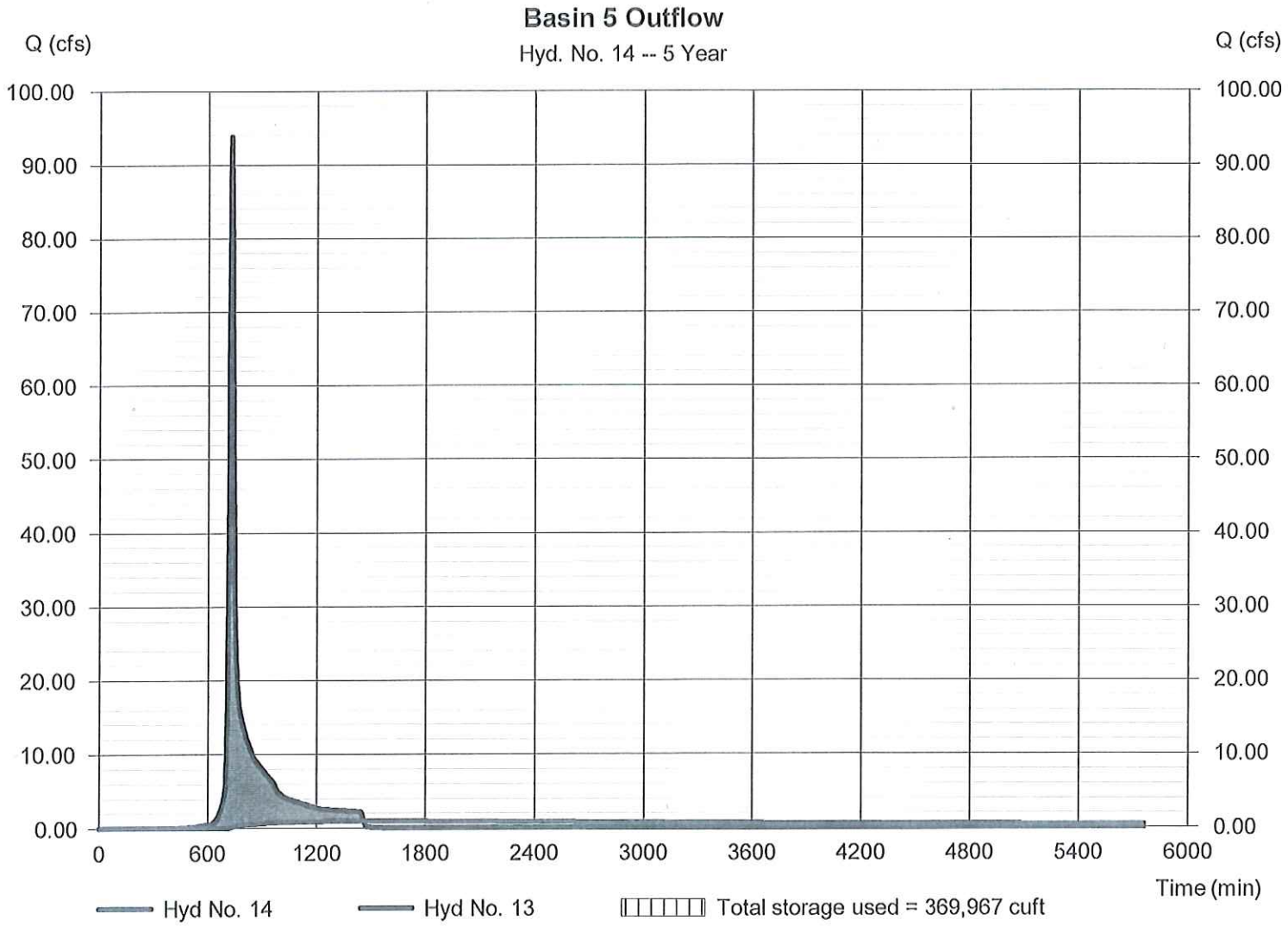
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8 — Monday, Apr 16, 2012

Hyd. No. 14

Basin 5 Outflow

Hydrograph type	= Reservoir	Peak discharge	= 0.985 cfs
Storm frequency	= 5 yrs	Time to peak	= 1458 min
Time interval	= 2 min	Hyd. volume	= 205,532 cuft
Inflow hyd. No.	= 13 - Basin 5 Inflow	Max. Elevation	= 888.70 ft
Reservoir name	= Lake #5	Max. Storage	= 369,967 cuft

Storage Indication method used.



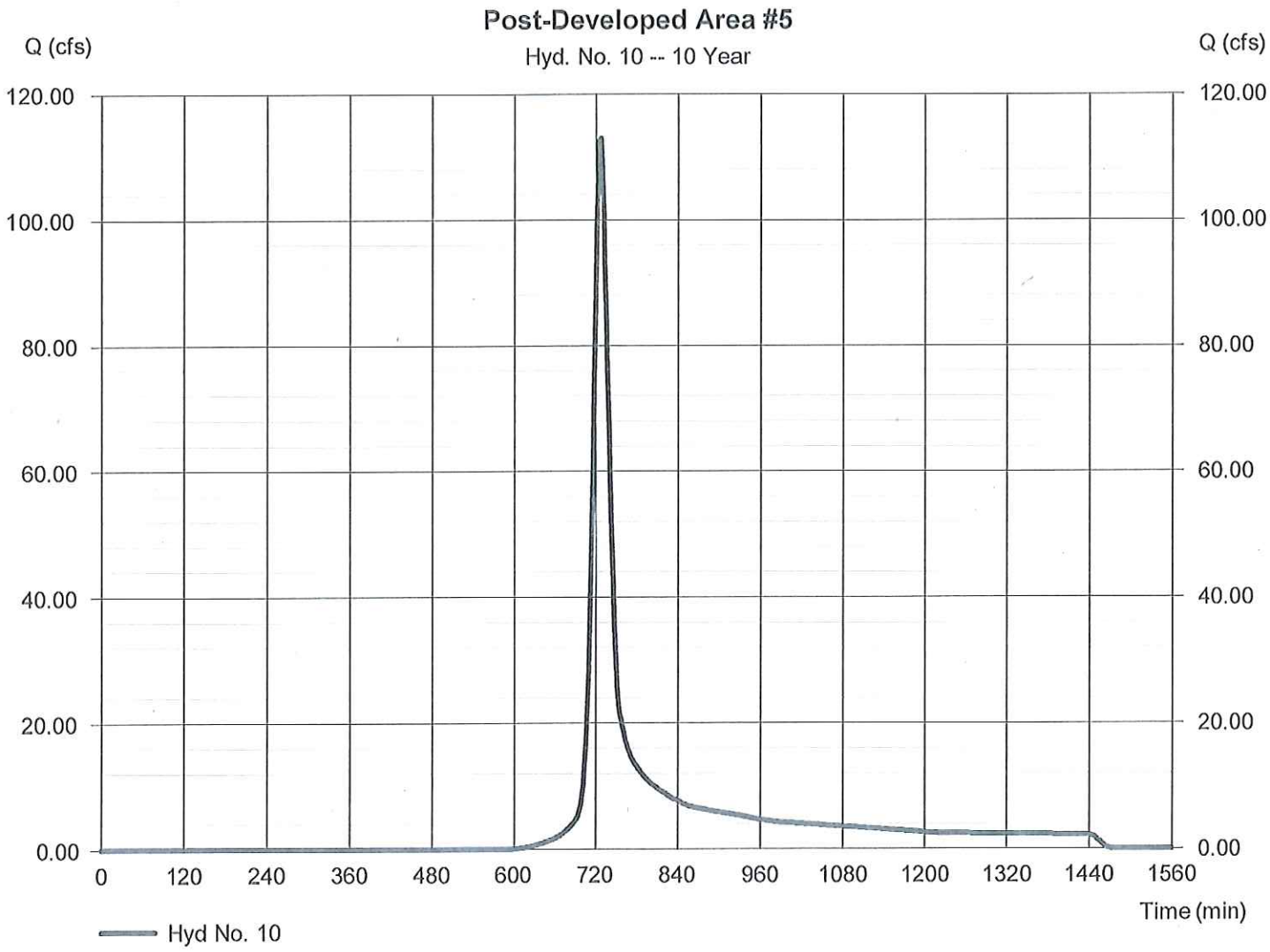
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8 — Monday, Apr 16, 2012

Hyd. No. 10

Post-Developed Area #5

Hydrograph type	= SCS Runoff	Peak discharge	= 113.03 cfs
Storm frequency	= 10 yrs	Time to peak	= 728 min
Time interval	= 2 min	Hyd. volume	= 398,961 cuft
Drainage area	= 65.640 ac	Curve number	= 74.8
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 22.30 min
Total precip.	= 3.99 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



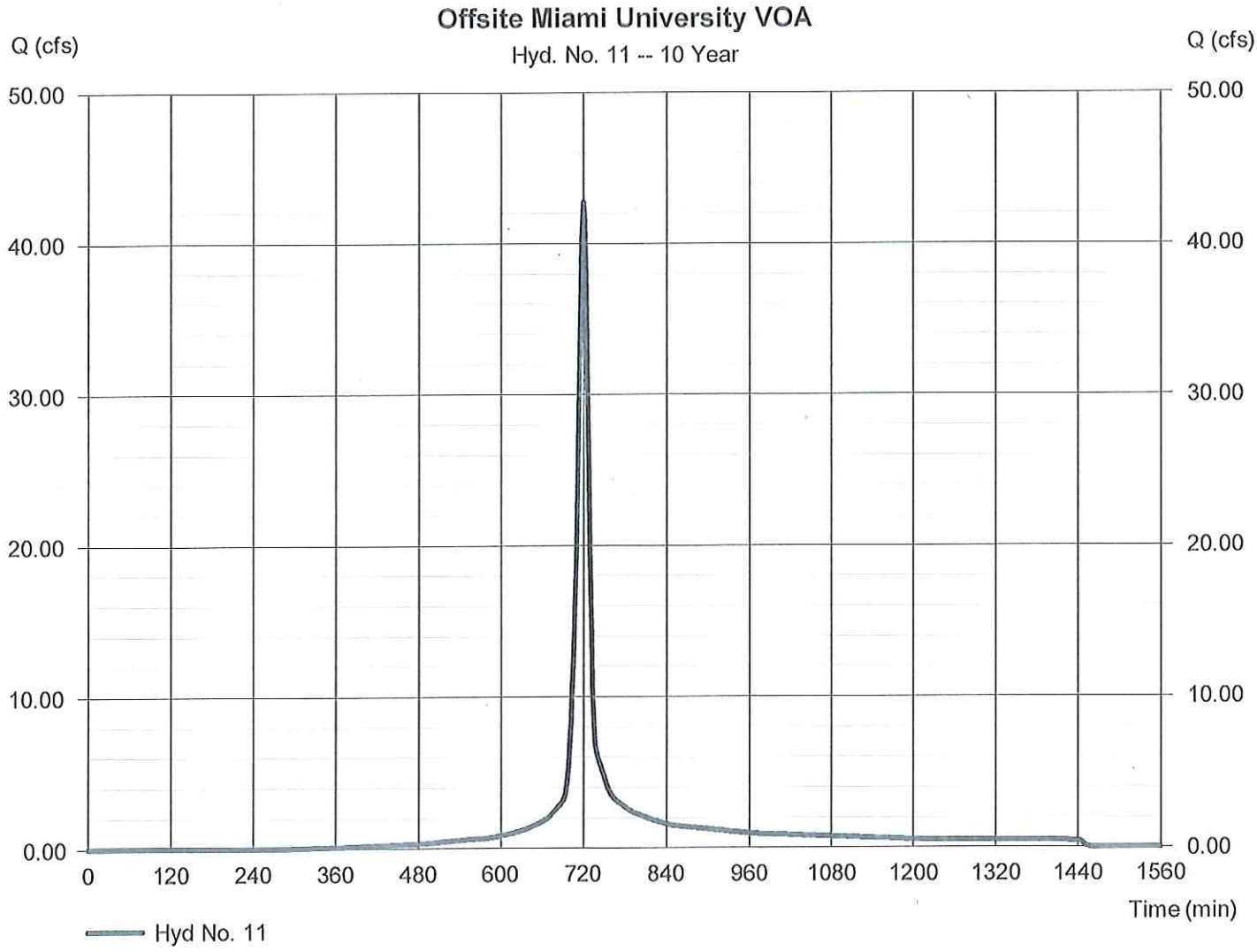
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8 — Monday, Apr 16, 2012

Hyd. No. 11

Offsite Miami University VOA

Hydrograph type	= SCS Runoff	Peak discharge	= 42.76 cfs
Storm frequency	= 10 yrs	Time to peak	= 720 min
Time interval	= 2 min	Hyd. volume	= 114,037 cuft
Drainage area	= 10.400 ac	Curve number	= 90.2
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 3.99 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

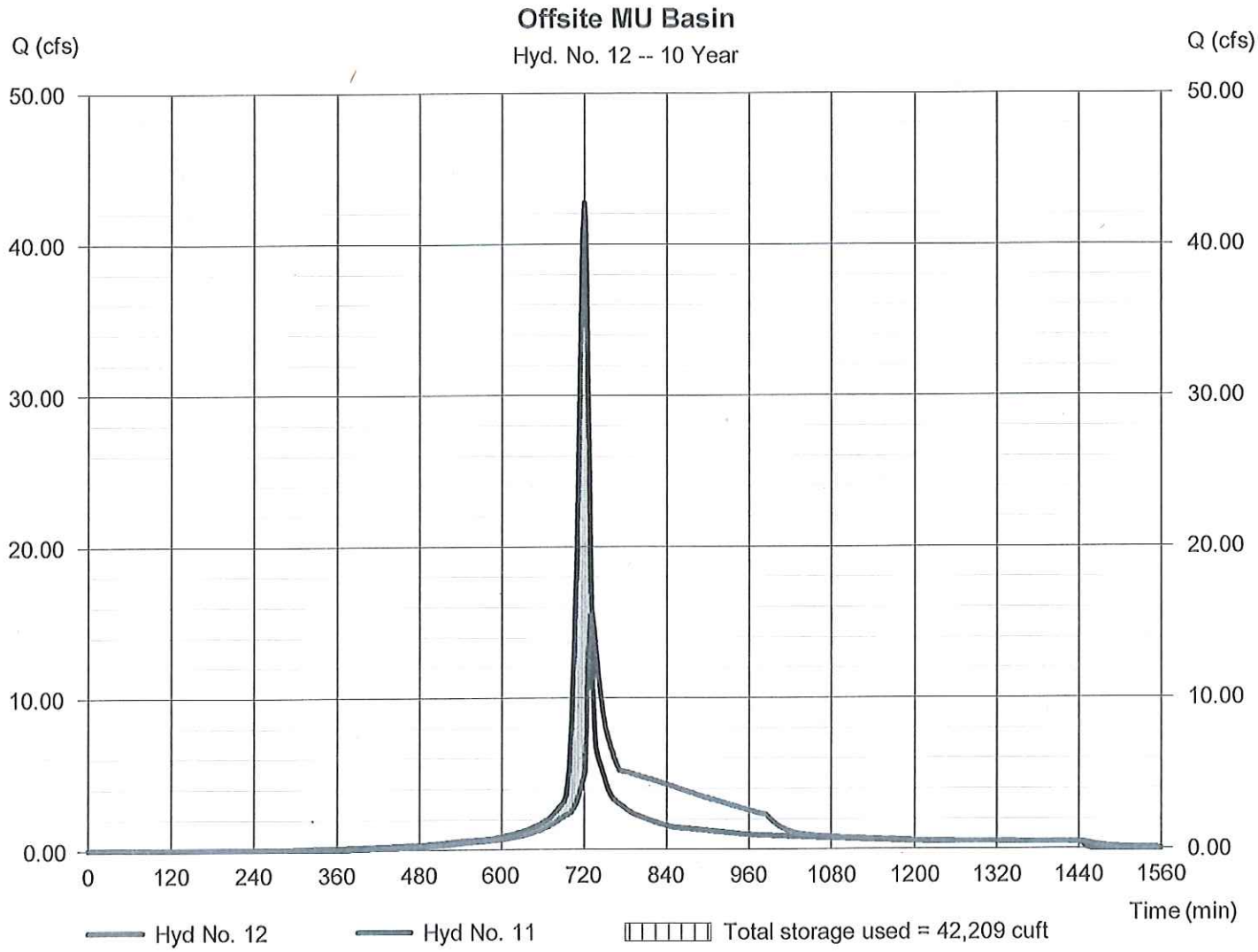
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8 — Monday, Apr 16, 2012

Hyd. No. 12

Offsite MU Basin

Hydrograph type	= Reservoir	Peak discharge	= 15.66 cfs
Storm frequency	= 10 yrs	Time to peak	= 732 min
Time interval	= 2 min	Hyd. volume	= 114,024 cuft
Inflow hyd. No.	= 11 - Offsite Miami University VMA	Max. Elevation	= 904.52 ft
Reservoir name	= Existing MU Basin	Max. Storage	= 42,209 cuft

Storage Indication method used.



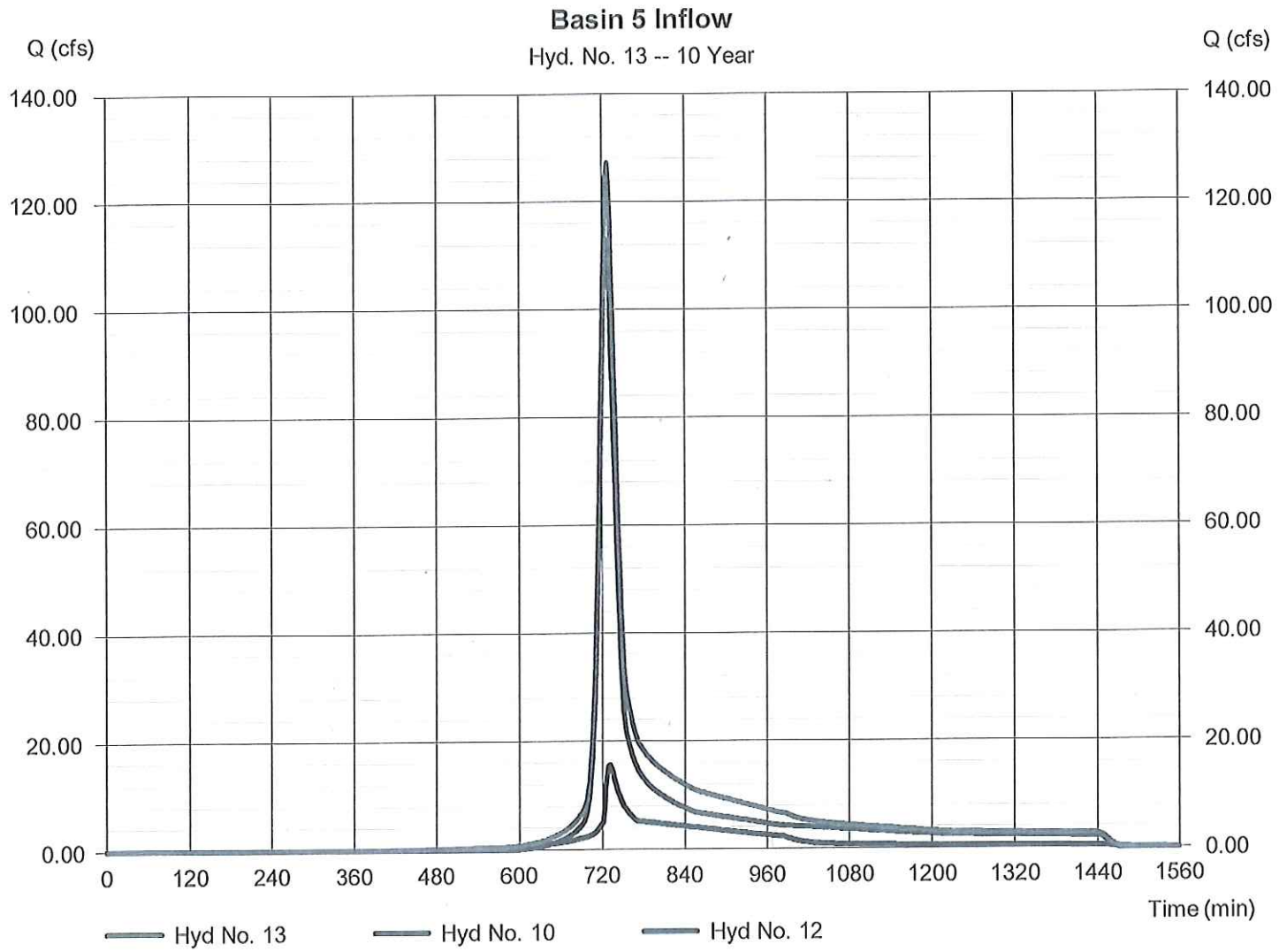
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8 — Monday, Apr 16, 2012

Hyd. No. 13

Basin 5 Inflow

Hydrograph type	= Combine	Peak discharge	= 127.27 cfs
Storm frequency	= 10 yrs	Time to peak	= 728 min
Time interval	= 2 min	Hyd. volume	= 512,985 cuft
Inflow hyds.	= 10, 12	Contrib. drain. area	= 65.640 ac



Hydrograph Report

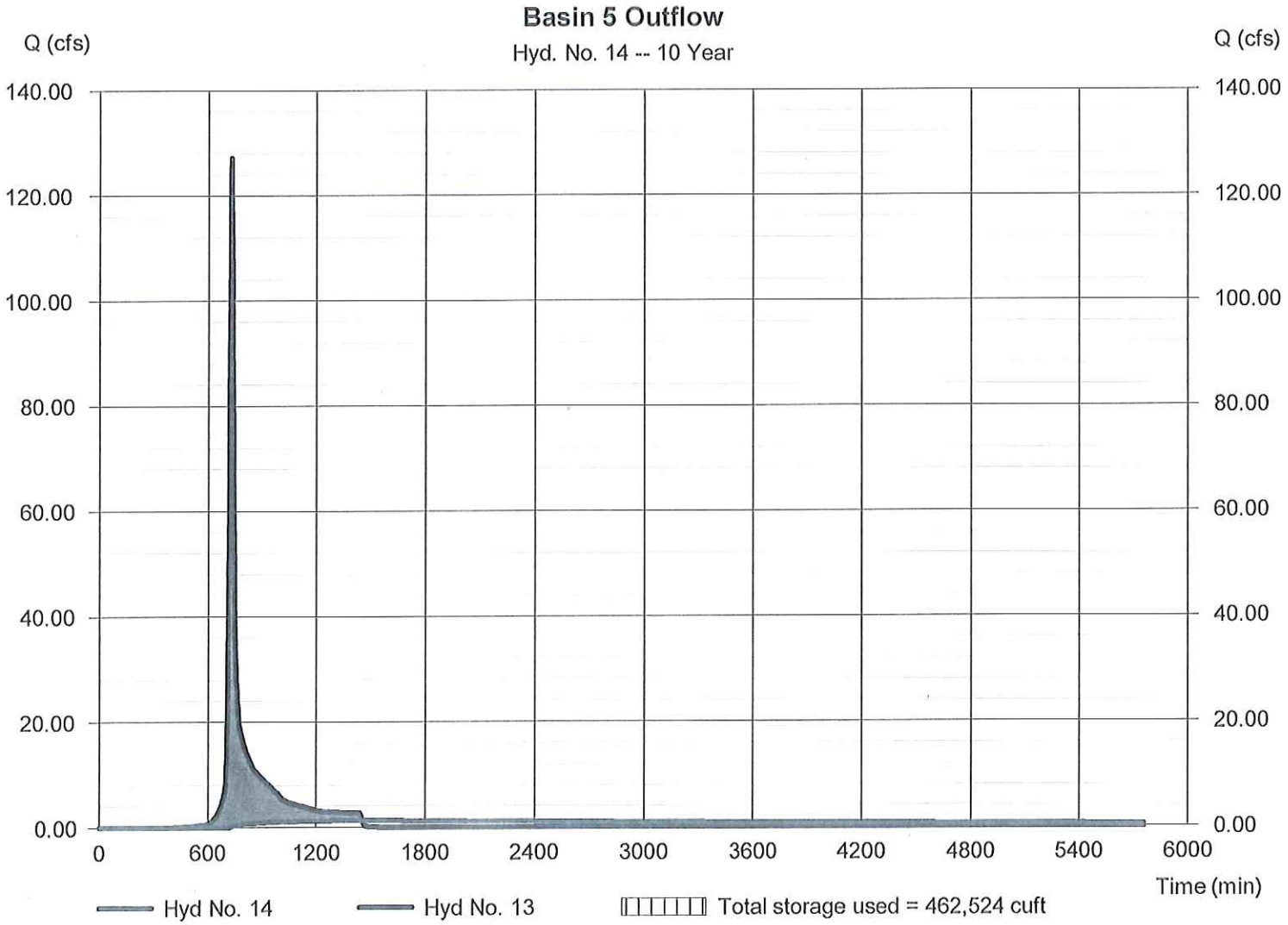
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8 — Monday, Apr 16, 2012

Hyd. No. 14

Basin 5 Outflow

Hydrograph type	= Reservoir	Peak discharge	= 1.348 cfs
Storm frequency	= 10 yrs	Time to peak	= 1456 min
Time interval	= 2 min	Hyd. volume	= 273,104 cuft
Inflow hyd. No.	= 13 - Basin 5 Inflow	Max. Elevation	= 888.98 ft
Reservoir name	= Lake #5	Max. Storage	= 462,524 cuft

Storage Indication method used.



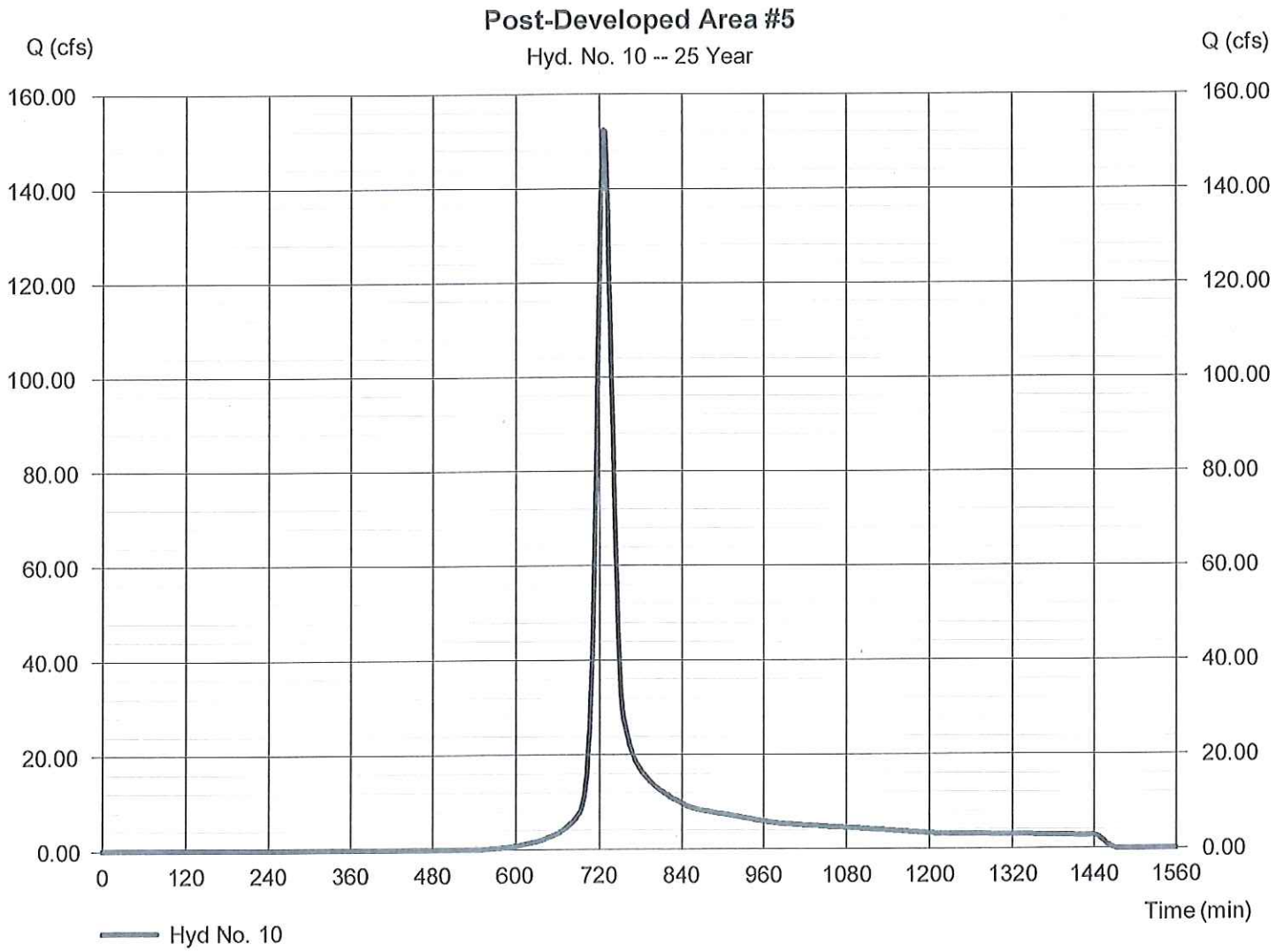
Hydrograph Report

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Hyd. No. 10

Post-Developed Area #5

Hydrograph type	= SCS Runoff	Peak discharge	= 152.35 cfs
Storm frequency	= 25 yrs	Time to peak	= 726 min
Time interval	= 2 min	Hyd. volume	= 531,623 cuft
Drainage area	= 65.640 ac	Curve number	= 74.8
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 22.30 min
Total precip.	= 4.70 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



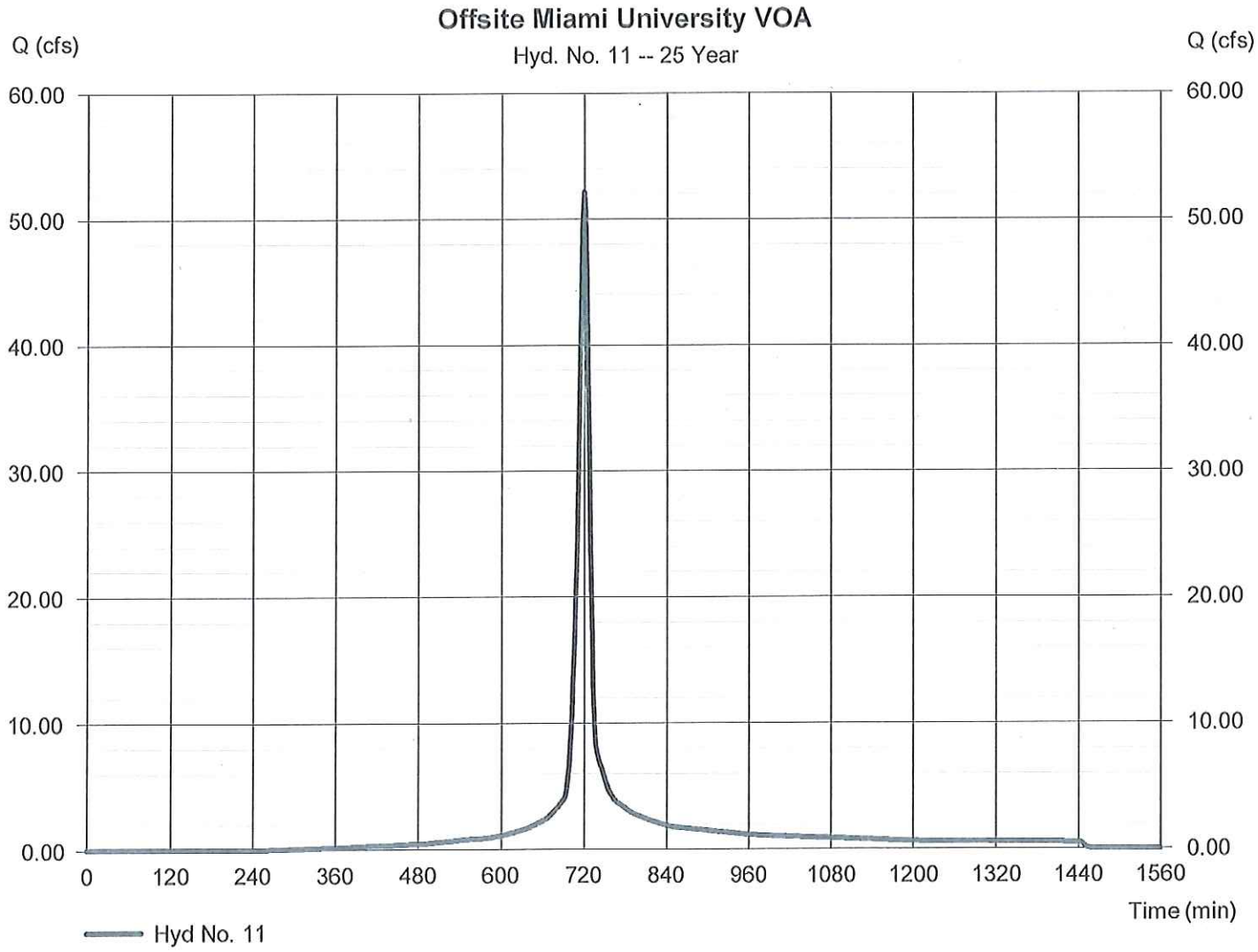
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8 — Monday, Apr 16, 2012

Hyd. No. 11

Offsite Miami University VOA

Hydrograph type	= SCS Runoff	Peak discharge	= 52.13 cfs
Storm frequency	= 25 yrs	Time to peak	= 720 min
Time interval	= 2 min	Hyd. volume	= 140,473 cuft
Drainage area	= 10.400 ac	Curve number	= 90.2
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 4.70 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

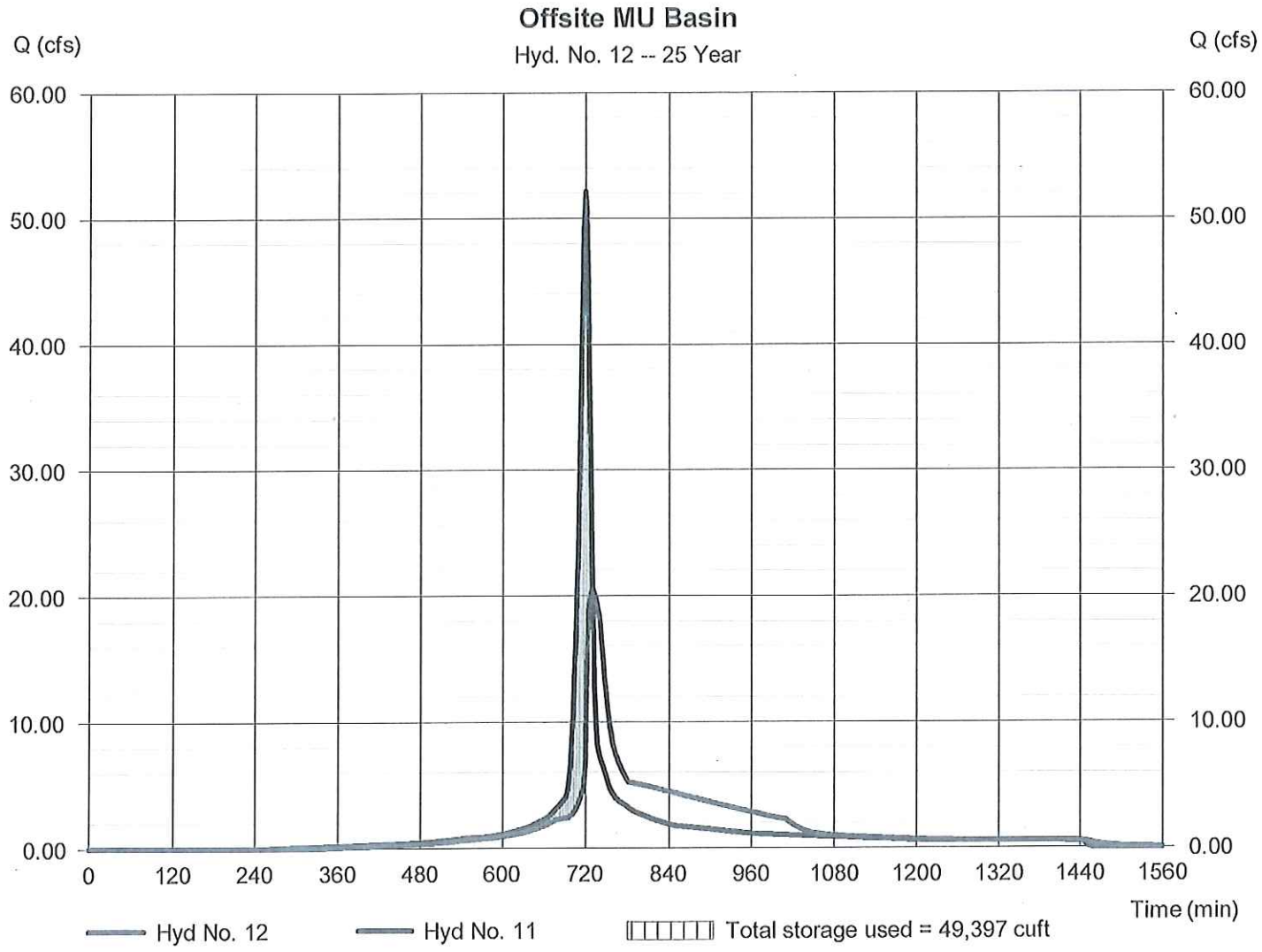
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8 — Monday, Apr 16, 2012

Hyd. No. 12

Offsite MU Basin

Hydrograph type	= Reservoir	Peak discharge	= 20.40 cfs
Storm frequency	= 25 yrs	Time to peak	= 730 min
Time interval	= 2 min	Hyd. volume	= 140,460 cuft
Inflow hyd. No.	= 11 - Offsite Miami University VDA	Max. Elevation	= 904.93 ft
Reservoir name	= Existing MU Basin	Max. Storage	= 49,397 cuft

Storage Indication method used.



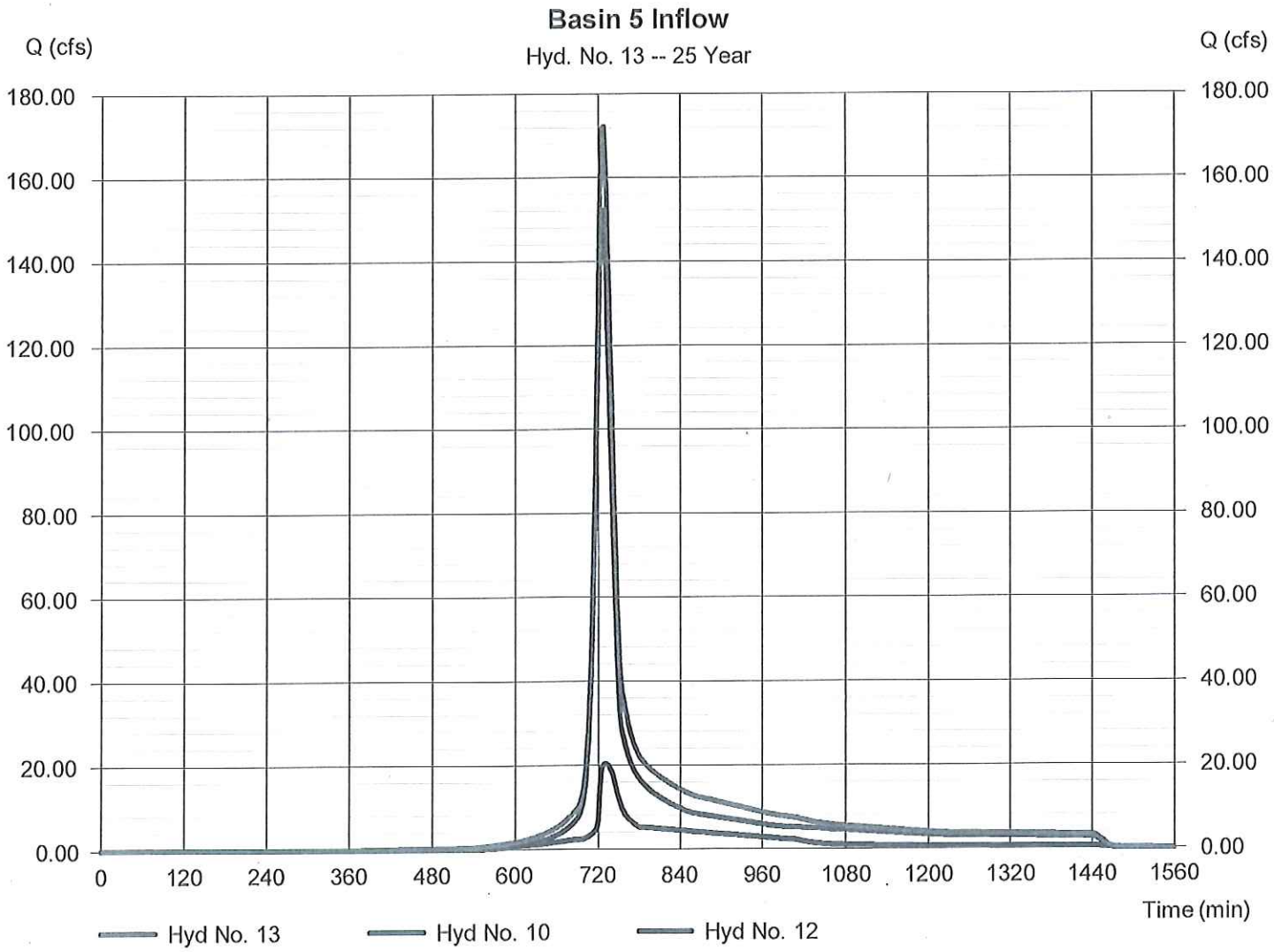
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8 — Monday, Apr 16, 2012

Hyd. No. 13

Basin 5 Inflow

Hydrograph type	= Combine	Peak discharge	= 172.21 cfs
Storm frequency	= 25 yrs	Time to peak	= 728 min
Time interval	= 2 min	Hyd. volume	= 672,083 cuft
Inflow hyds.	= 10, 12	Contrib. drain. area	= 65.640 ac



Hydrograph Report

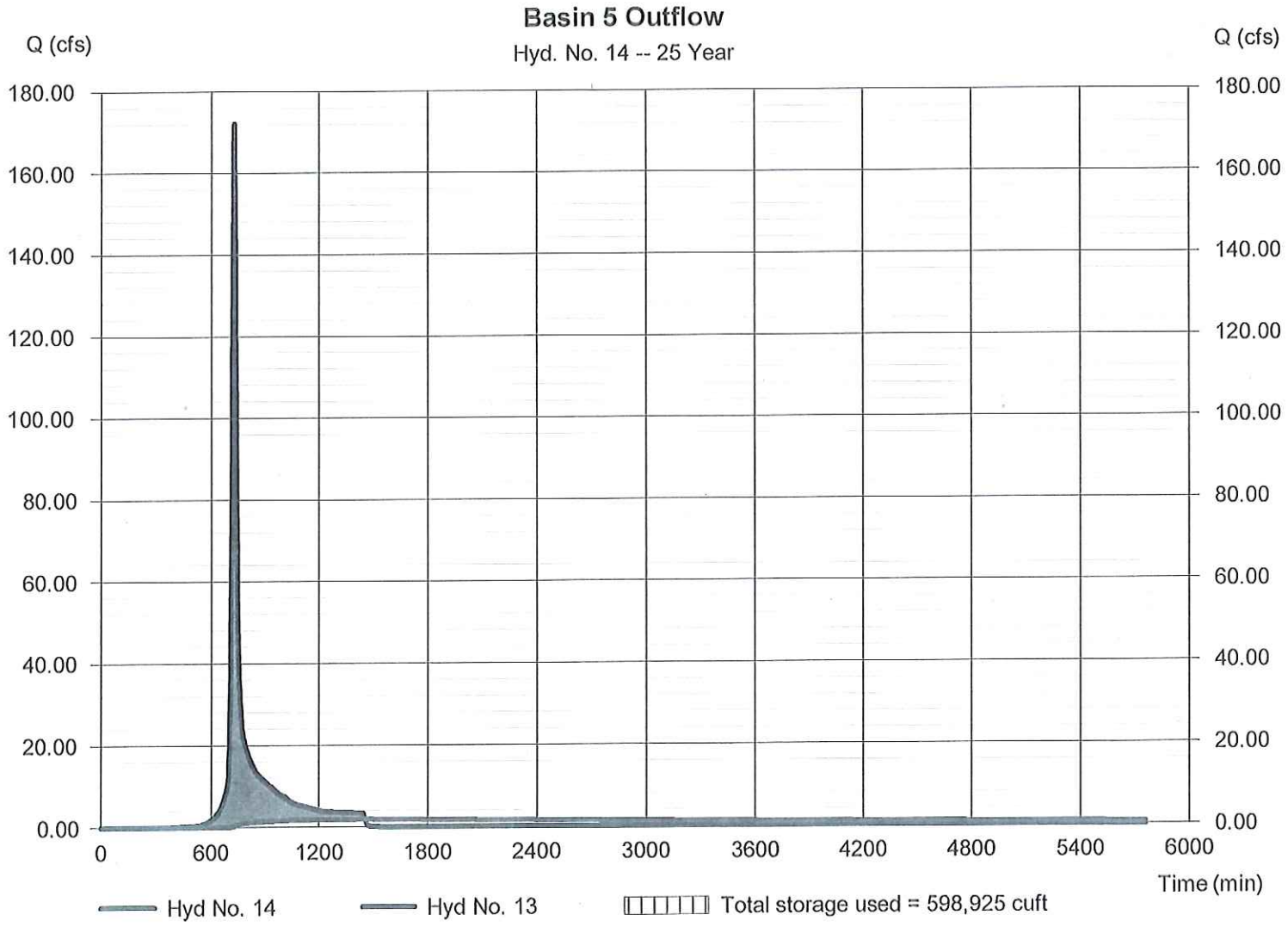
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8 — Monday, Apr 16, 2012

Hyd. No. 14

Basin 5 Outflow

Hydrograph type	= Reservoir	Peak discharge	= 1.925 cfs
Storm frequency	= 25 yrs	Time to peak	= 1456 min
Time interval	= 2 min	Hyd. volume	= 379,660 cuft
Inflow hyd. No.	= 13 - Basin 5 Inflow	Max. Elevation	= 889.37 ft
Reservoir name	= Lake #5	Max. Storage	= 598,925 cuft

Storage Indication method used.



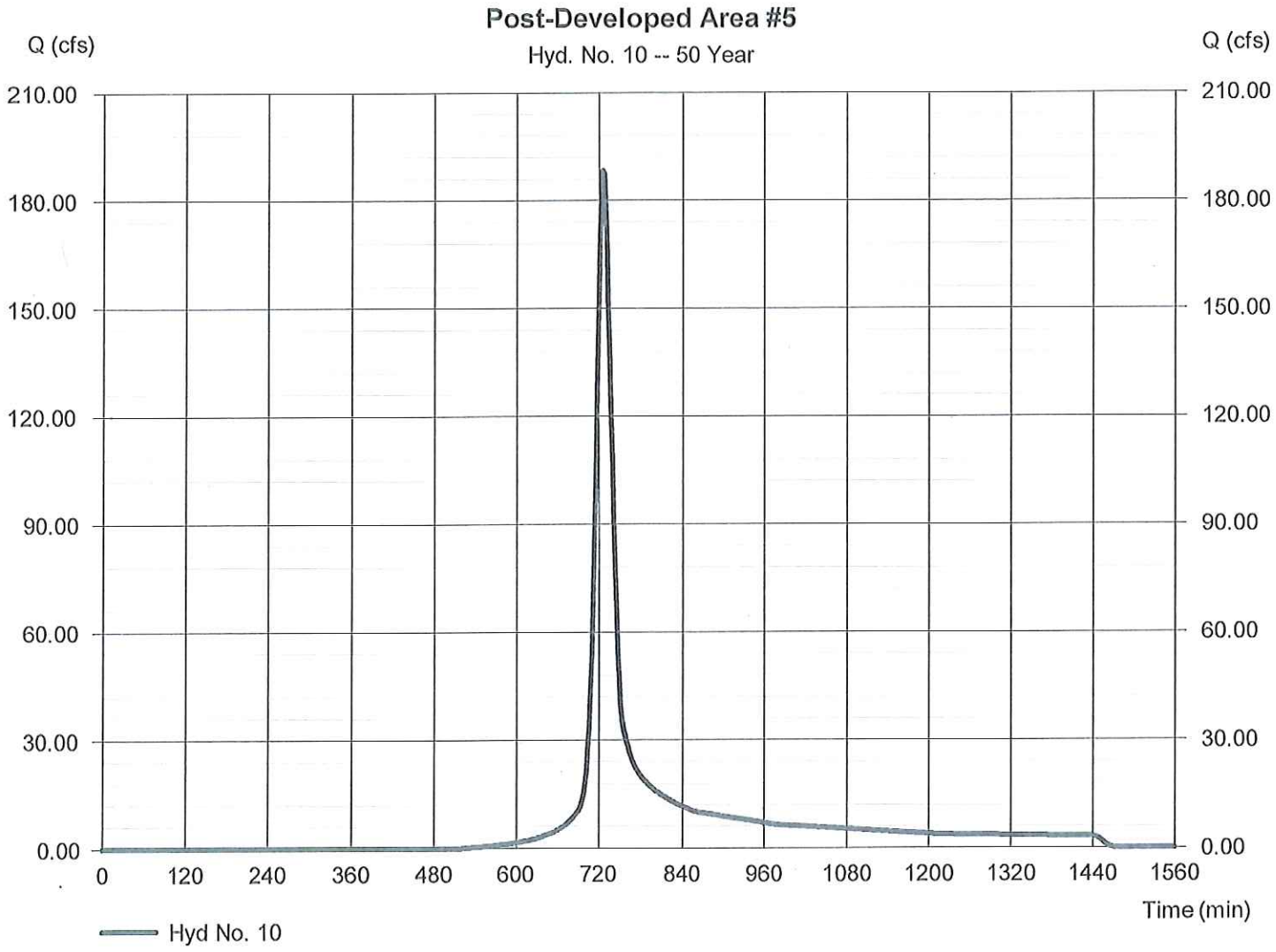
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8 — Monday, Apr 16, 2012

Hyd. No. 10

Post-Developed Area #5

Hydrograph type	= SCS Runoff	Peak discharge	= 188.38 cfs
Storm frequency	= 50 yrs	Time to peak	= 726 min
Time interval	= 2 min	Hyd. volume	= 653,197 cuft
Drainage area	= 65.640 ac	Curve number	= 74.8
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 22.30 min
Total precip.	= 5.32 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



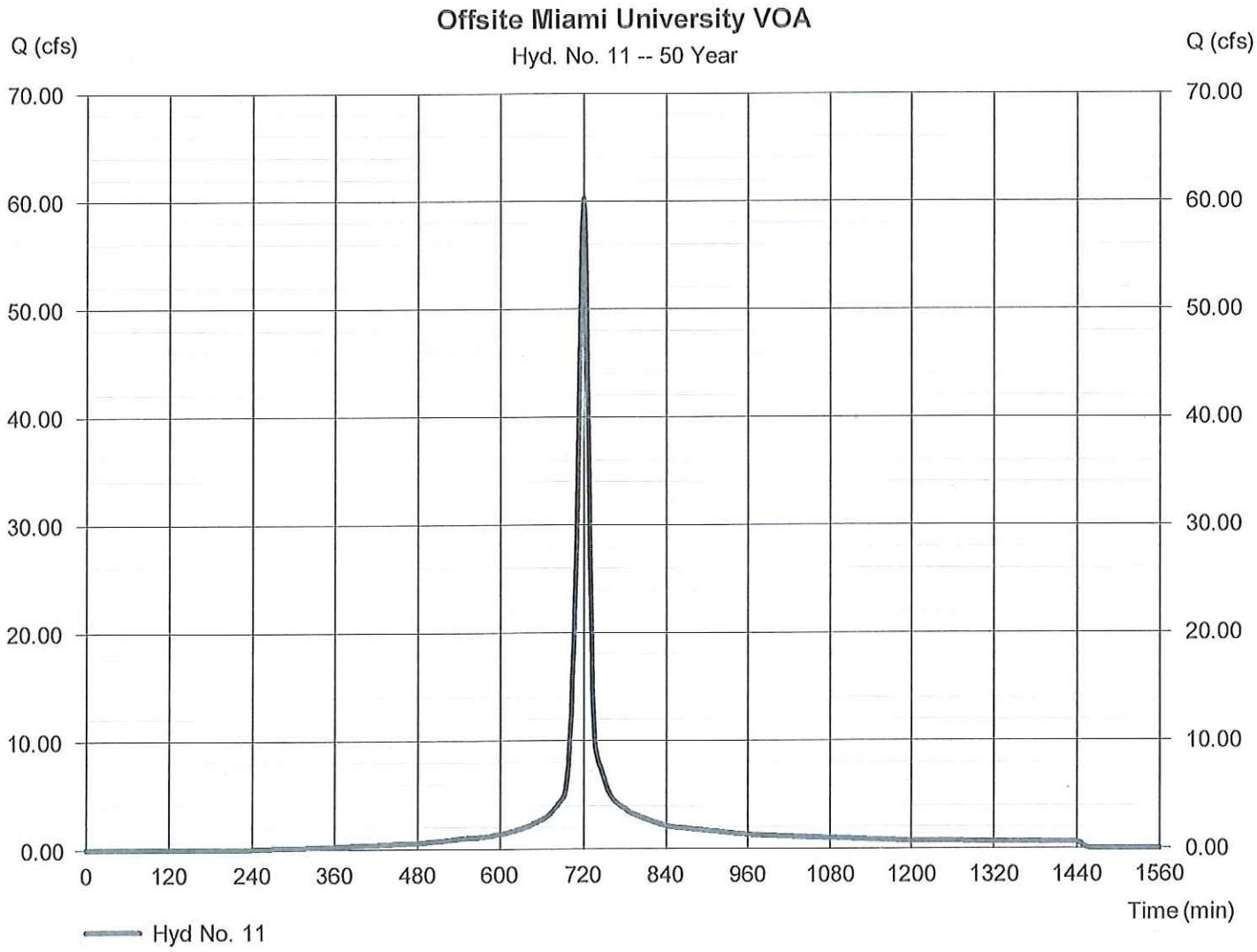
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8 — Monday, Apr 16, 2012

Hyd. No. 11

Offsite Miami University VOA

Hydrograph type	= SCS Runoff	Peak discharge	= 60.27 cfs
Storm frequency	= 50 yrs	Time to peak	= 720 min
Time interval	= 2 min	Hyd. volume	= 163,784 cuft
Drainage area	= 10.400 ac	Curve number	= 90.2
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 5.32 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

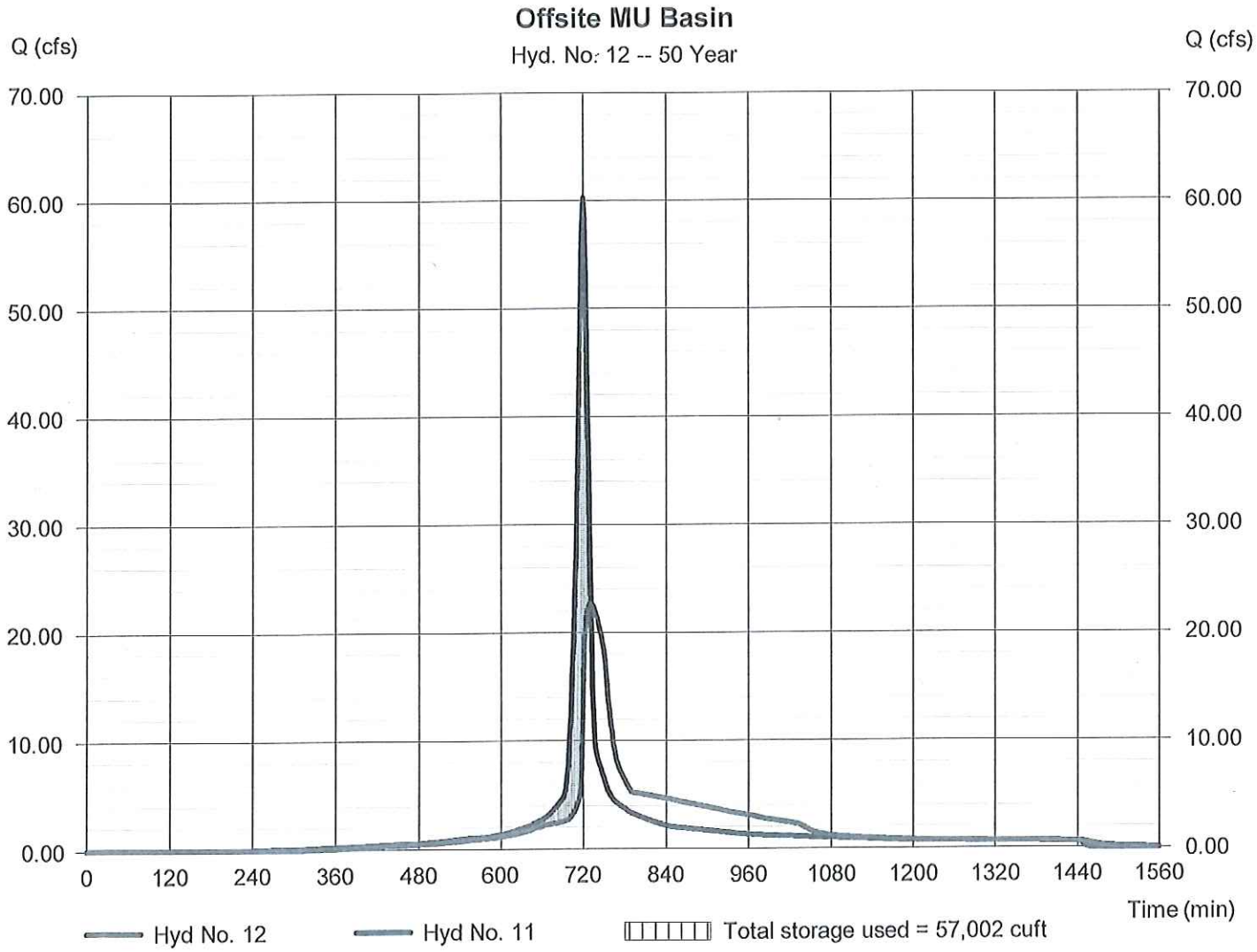
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8 — Monday, Apr 16, 2012

Hyd. No. 12

Offsite MU Basin

Hydrograph type	= Reservoir	Peak discharge	= 22.70 cfs
Storm frequency	= 50 yrs	Time to peak	= 732 min
Time interval	= 2 min	Hyd. volume	= 163,771 cuft
Inflow hyd. No.	= 11 - Offsite Miami University VMA	Max. Elevation	= 905.35 ft
Reservoir name	= Existing MU Basin	Max. Storage	= 57,002 cuft

Storage Indication method used.



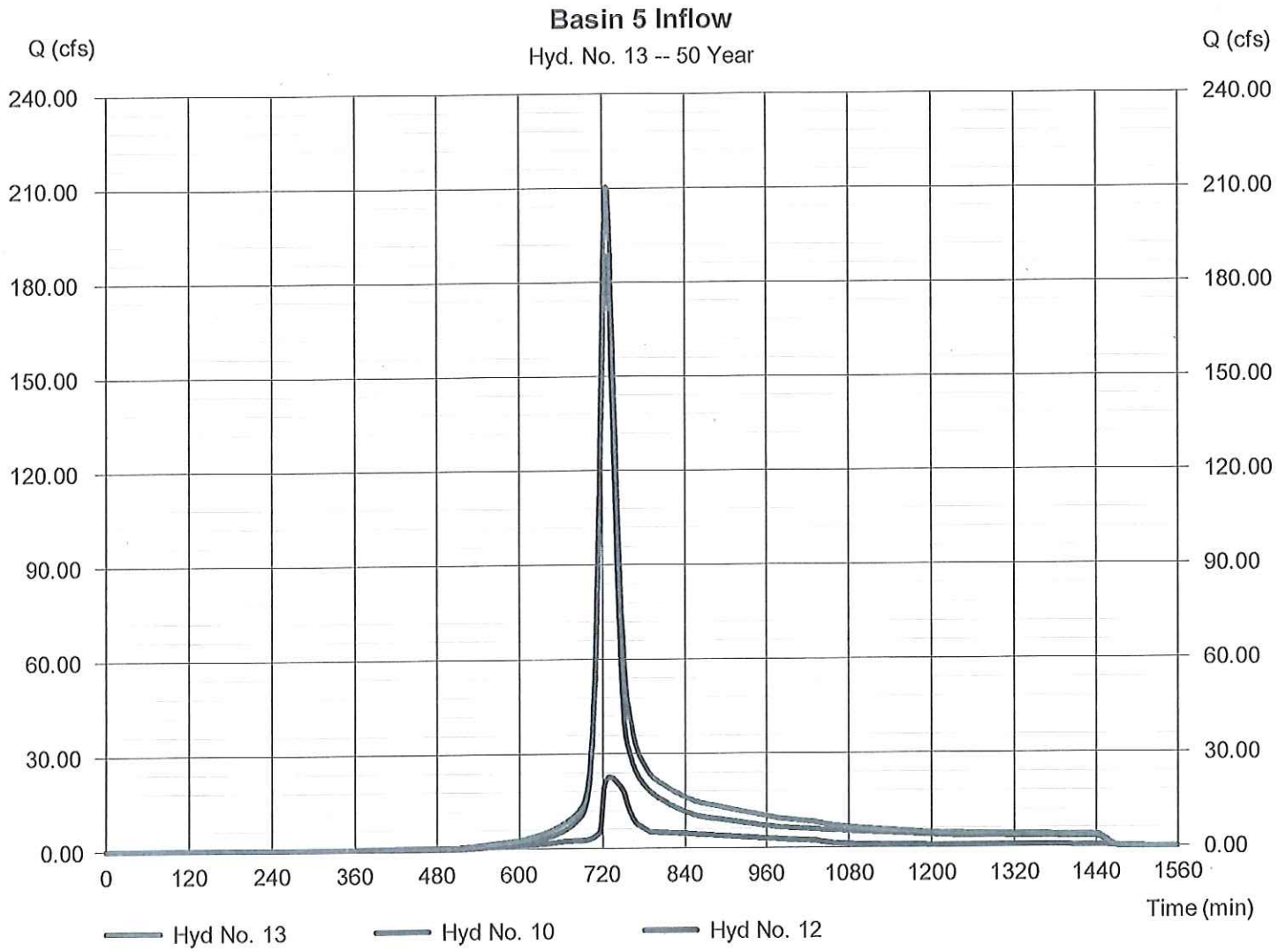
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8 — Monday, Apr 16, 2012

Hyd. No. 13

Basin 5 Inflow

Hydrograph type	= Combine	Peak discharge	= 210.21 cfs
Storm frequency	= 50 yrs	Time to peak	= 726 min
Time interval	= 2 min	Hyd. volume	= 816,969 cuft
Inflow hyds.	= 10, 12	Contrib. drain. area	= 65.640 ac



Hydrograph Report

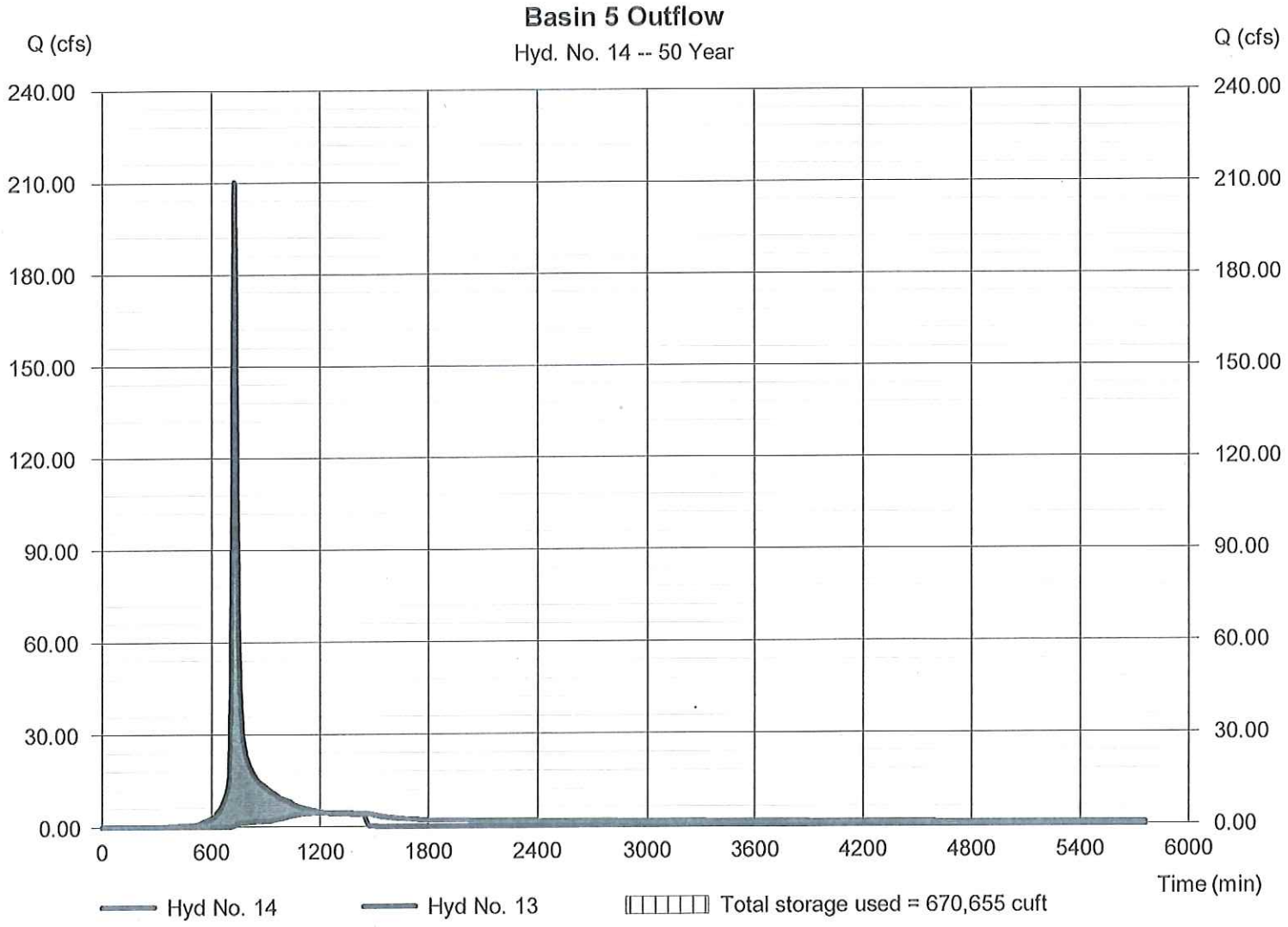
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8 — Monday, Apr 16, 2012

Hyd. No. 14

Basin 5 Outflow

Hydrograph type	= Reservoir	Peak discharge	= 4.553 cfs
Storm frequency	= 50 yrs	Time to peak	= 1220 min
Time interval	= 2 min	Hyd. volume	= 506,248 cuft
Inflow hyd. No.	= 13 - Basin 5 Inflow	Max. Elevation	= 889.58 ft
Reservoir name	= Lake #5	Max. Storage	= 670,655 cuft

Storage Indication method used.



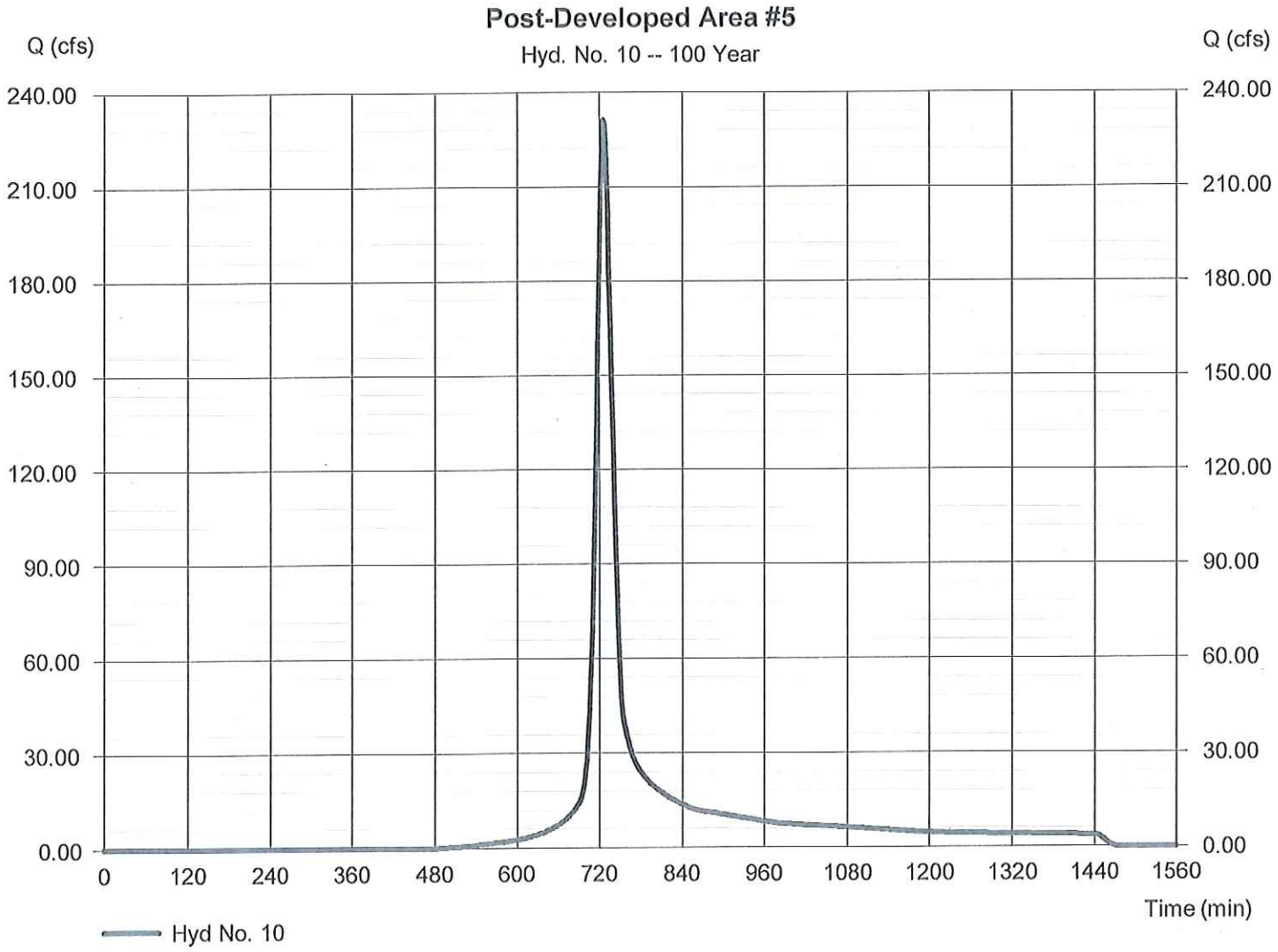
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8 — Monday, Apr 16, 2012

Hyd. No. 10

Post-Developed Area #5

Hydrograph type	= SCS Runoff	Peak discharge	= 231.37 cfs
Storm frequency	= 100 yrs	Time to peak	= 726 min
Time interval	= 2 min	Hyd. volume	= 799,510 cuft
Drainage area	= 65.640 ac	Curve number	= 74.8
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 22.30 min
Total precip.	= 6.04 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



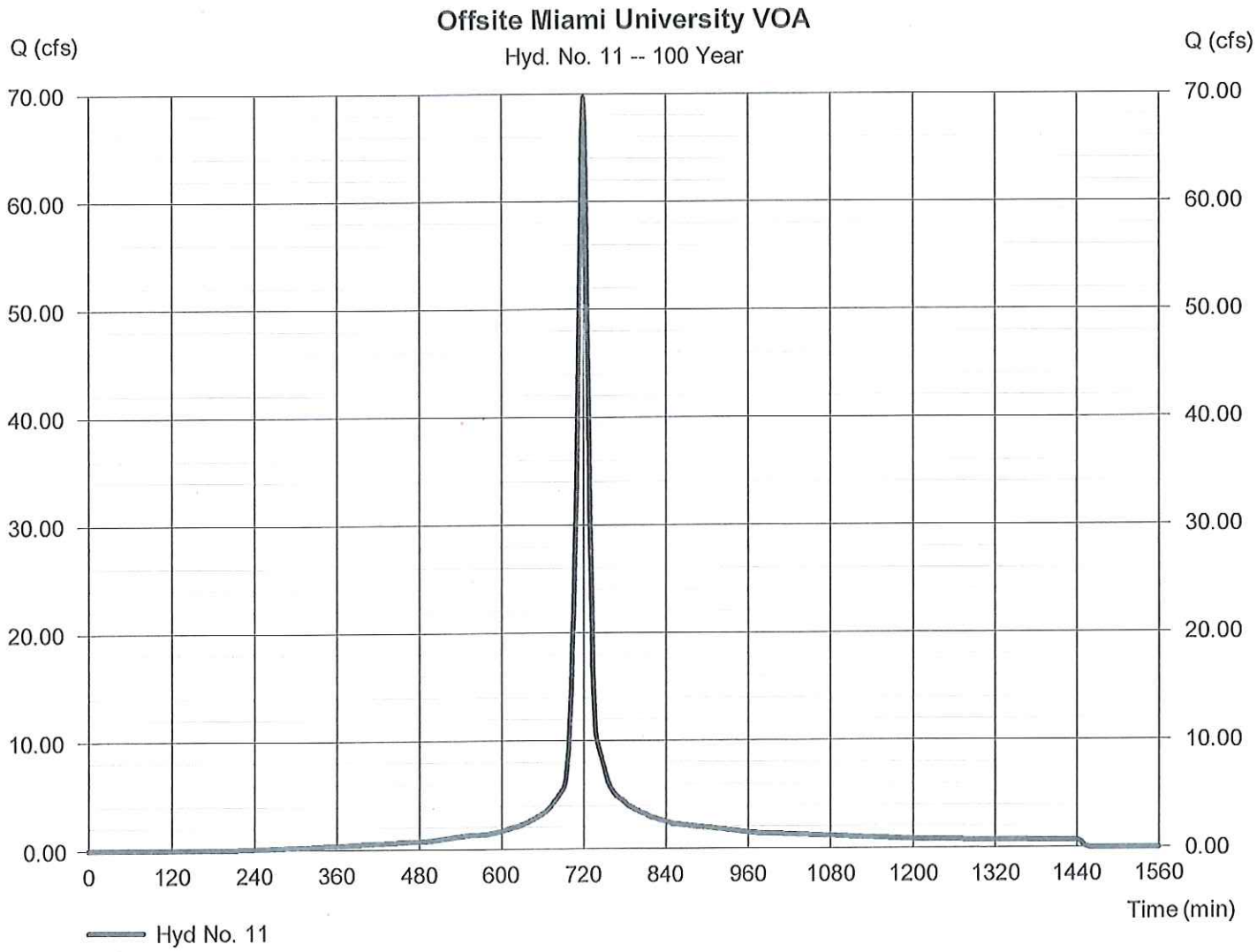
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8 — Monday, Apr 16, 2012

Hyd. No. 11

Offsite Miami University VOA

Hydrograph type	= SCS Runoff	Peak discharge	= 69.69 cfs
Storm frequency	= 100 yrs	Time to peak	= 720 min
Time interval	= 2 min	Hyd. volume	= 191,041 cuft
Drainage area	= 10.400 ac	Curve number	= 90.2
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 6.04 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

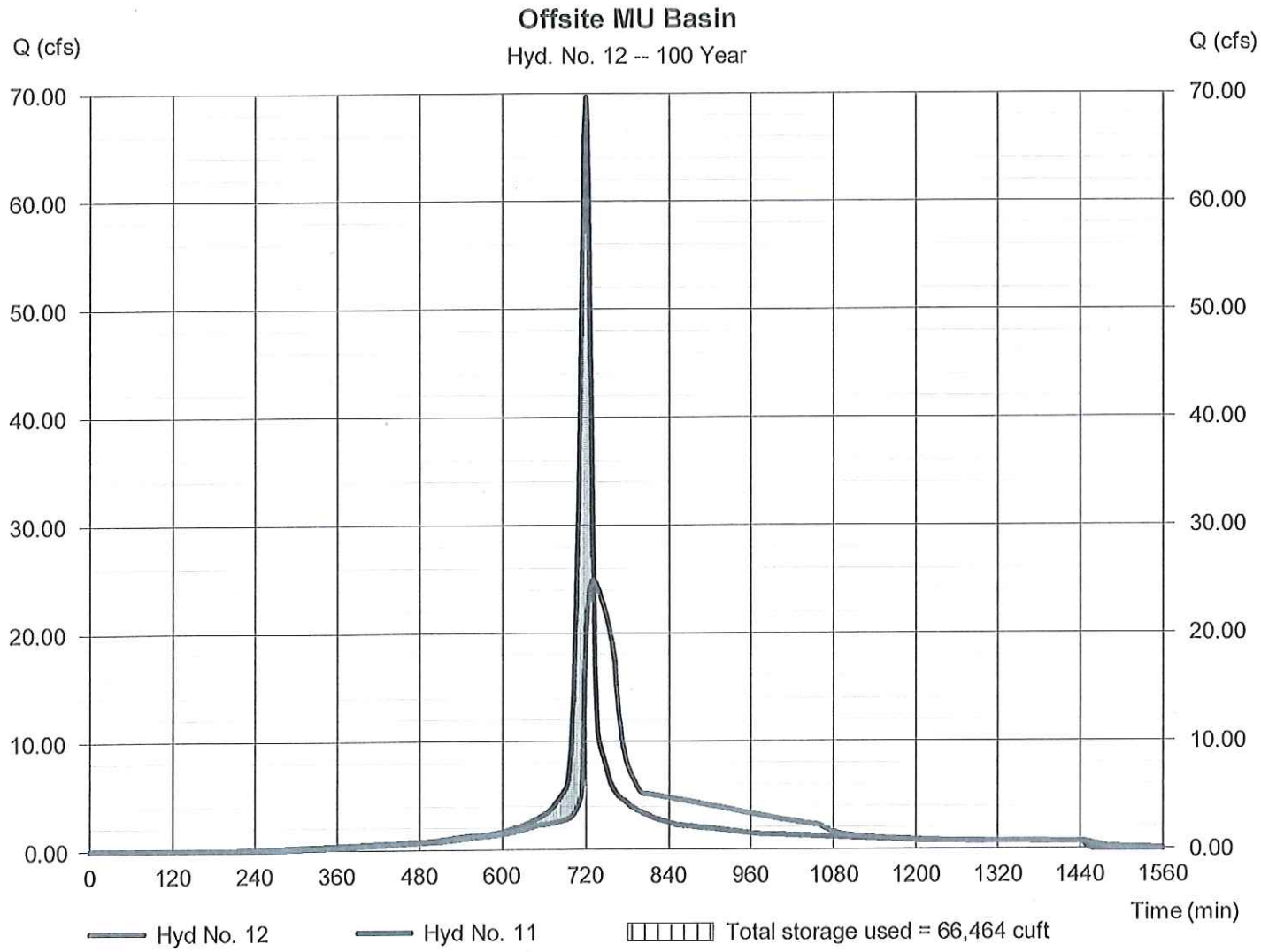
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8 — Monday, Apr 16, 2012

Hyd. No. 12

Offsite MU Basin

Hydrograph type	= Reservoir	Peak discharge	= 24.97 cfs
Storm frequency	= 100 yrs	Time to peak	= 732 min
Time interval	= 2 min	Hyd. volume	= 191,028 cuft
Inflow hyd. No.	= 11 - Offsite Miami University VDA	Max. Elevation	= 905.88 ft
Reservoir name	= Existing MU Basin	Max. Storage	= 66,464 cuft

Storage Indication method used.



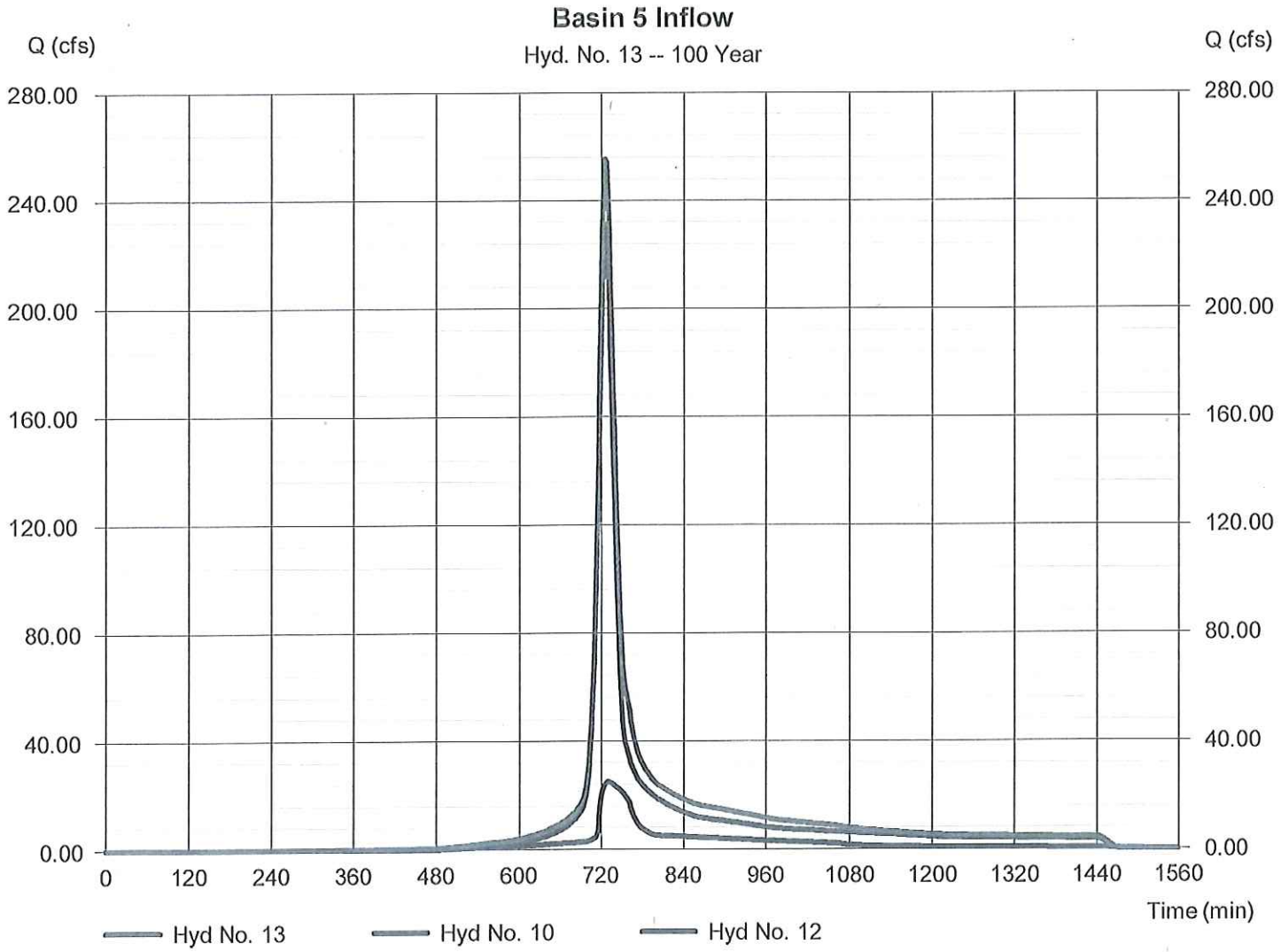
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8 — Monday, Apr 16, 2012

Hyd. No. 13

Basin 5 Inflow

Hydrograph type	= Combine	Peak discharge	= 255.41 cfs
Storm frequency	= 100 yrs	Time to peak	= 726 min
Time interval	= 2 min	Hyd. volume	= 990,538 cuft
Inflow hyds.	= 10, 12	Contrib. drain. area	= 65.640 ac



Hydrograph Report

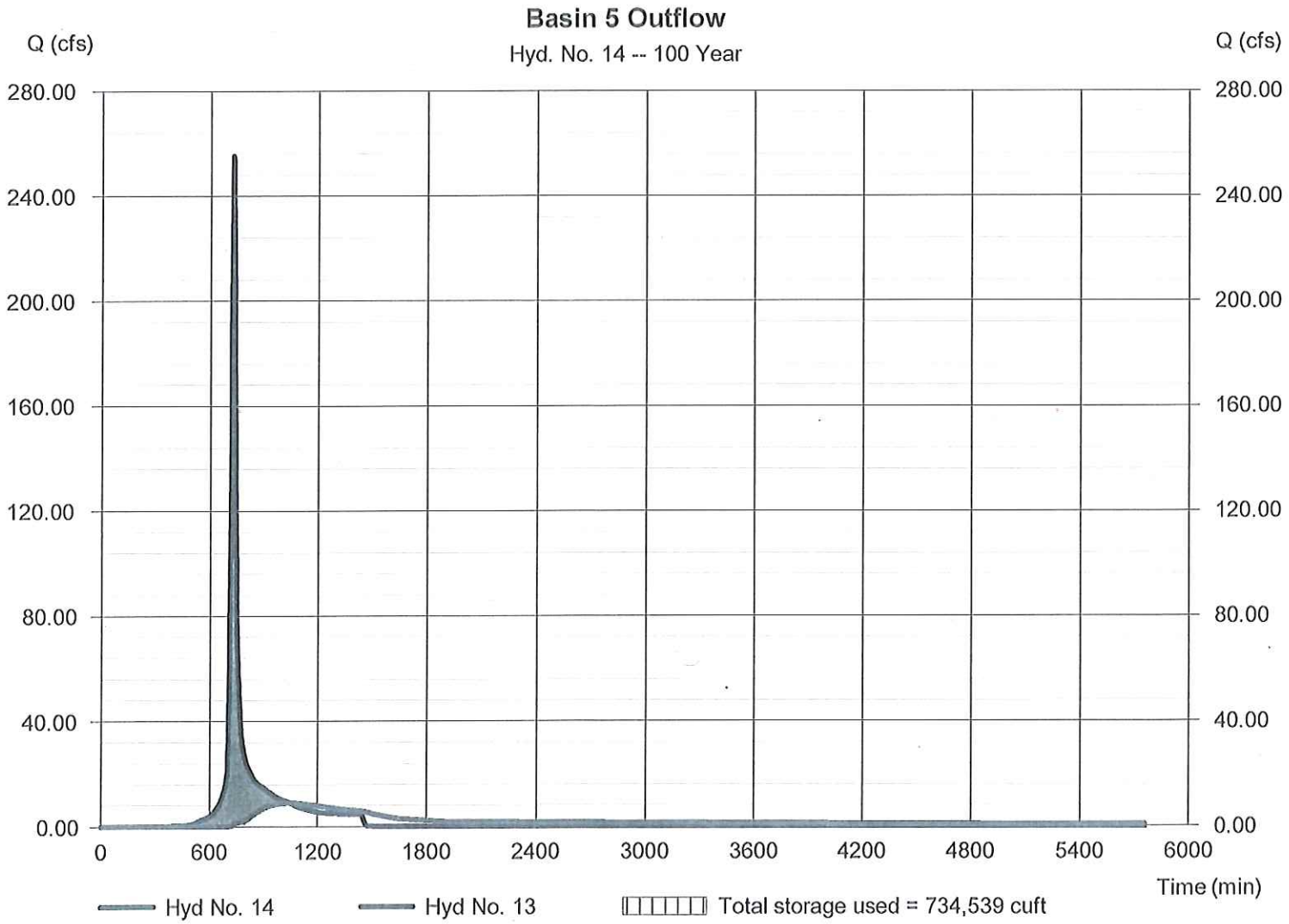
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8 — Monday, Apr 16, 2012

Hyd. No. 14

Basin 5 Outflow

Hydrograph type	= Reservoir	Peak discharge	= 9.071 cfs
Storm frequency	= 100 yrs	Time to peak	= 1050 min
Time interval	= 2 min	Hyd. volume	= 675,965 cuft
Inflow hyd. No.	= 13 - Basin 5 Inflow	Max. Elevation	= 889.77 ft
Reservoir name	= Lake #5	Max. Storage	= 734,539 cuft

Storage Indication method used.



bayer becker

PROJECT #: 07M056.005 SHEET _____ OF _____
PROJECT: Voice of America Park
CLIENT NAME: _____
SUBJECT: _____
DRAWN BY: GJK DATE: 4/16/12
CHECKED BY: _____ DATE _____

Emergency Spillway Calculations

Lake #1 (Future)

Q_{100} = 93.46 cfs
Spillway Elev = 887.25
Spillway Length = 150.00'
T/Dike Elev = 888.60

$$Q = cLH^{3/2} \Rightarrow H = \left(\frac{Q}{cL}\right)^{2/3} = \left(\frac{93.46}{3.0(150)}\right)^{2/3} = 0.35'$$

Spillway Elev + H + Freeboard $\leq$ T/Dike
887.25 + 0.35' + 1.0' $\leq$ 888.60
888.60 $\leq$ 888.60

Lake #2

Q_{100} = 58.58 cfs
Spillway Elev = 889.50
Spillway Length = 60.00'
T/Dike Elev = 891.00

$$Q = cLH^{3/2} \Rightarrow H = \left(\frac{Q}{cL}\right)^{2/3} = \left(\frac{58.58}{3.0(60)}\right)^{2/3} = 0.47'$$

Spillway Elev + H + Freeboard $\leq$ T/Dike
889.50 + 0.47' + 1.0' $\leq$ 891.00
890.97 $\leq$ 891.00

bayer becker

PROJECT #: 07M056.005 SHEET _____ OF _____
PROJECT: Voice of America Park
CLIENT NAME: _____
SUBJECT: _____
DRAWN BY: GJK DATE: 4/16/12
CHECKED BY: _____ DATE _____

Lake #3

Q = 296.32
Spillway Elev. = 886.20
Spillway Length = 150.00
T/Dike Elev. = 888.00

$Q = CL H^{3/2} \Rightarrow H = \left(\frac{Q}{CL}\right)^{2/3} = \left(\frac{296.32}{3.0(150)}\right)^{2/3} = 0.76'$

Spillway Elev. + H + Freeboard ≤ T/Dike
886.20 + 0.76 + 1.0' ≤ 888.00
887.96 ≤ 888.00

Lake #4

Q = 94.05
Spillway Elev. = 891.50
Spillway Length = 40.0'
T/Dike Elev. = 893.50

$Q = CL H^{3/2} \Rightarrow H = \left(\frac{Q}{CL}\right)^{2/3} = \left(\frac{94.05}{3.0(40.0)}\right)^{2/3} = 0.85'$

Spillway Elev + H + Freeboard ≤ T/Dike
891.50 + 0.85' + 1.0' ≤ 893.50
893.35 ≤ 893.50

Lake #5

Q = 255.41
Spillway Elev = 889.80
Spillway Length = 70.00'
T/Dike Elev = 892.00'

$Q = CL H^{3/2} \Rightarrow H = \left(\frac{Q}{CL}\right)^{2/3} = \left(\frac{255.41}{3.0(70.0)}\right)^{2/3} = 1.1'$

Spillway Elev + H + Free board ≤ T/Dike
889.80 + 1.1' + 1.0' ≤ 892.00
892.00 ≤ 892.00

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VOICE OF AMERICA PARK
ATHLETIC COMPLEX PHASE 1
SECTION 13, TOWN 3, RANGE 2,
WEST CHESTER TOWNSHIP,
BUTLER COUNTY, OHIO

DRAINAGE MAP - POST-DEVELOPED

1