DRAINAGE CALCULATIONS, HYDRAULICS & HYDROLOGY REPORT

PROPOSED WAREHOUSES
69 FITCH HILL ROAD
UNCASVILLE, CT

APRIL 2023

GREEN SITE DESIGN

69 FITCH HILL R.OAD
MONTVILLE, CT

The site was previously developed as a gravel excavation site, with areas of previous excavation, stockpiles, and cleared land. The site is proposed to be developed with three new warehouse buildings. Building 1 will be for A&B Excavation. Buildings 2 and 3 will be rental space. Green Site Design is providing the design and calculations for the stabilization of the site.

PROPOSED HYDRAULICS

There will be two main on-site drainage areas for the proposed development. Please see the attached plans entitled Drainage Plan – Drainage Map.

Drainage area 1 will handle runoff from the Building 1 area, A&B Excavation, and northern halves of Buildings 2&3. The runoff from these areas will flow to the wetlands, after flowing thru Stormwater basin 1, resulting in a decrease in peak flows to the wetlands system.

Drainage area 2 will handle runoff from the southern halves of Buildings 2&3 and their associated areas. The runoff from these areas will flow to the wetlands, after flowing thru Stormwater Basin 2, resulting in a decrease in peak flows to the existing wetlands system.

The soils on the site are extremely well drained gravel and sand. Numerous test holes were done on the site, and showed the soils and groundwater levels to be very consistent. The rainwater during most storm events will infiltrate into the ground with little runoff.

Both the existing and the proposed conditions for the development site have been analyzed for the 2-year, 10-year, 25-year, and 100-year design storms using the TR-55

SCS modelling program. The following is the summary table for the 2-year, 10-year, 25-year, and 100-year design storms showing first the existing conditions and proposed conditions, after passing thru the proposed stormwater basins. The calculations show that there will be a decrease in runoff leaving the site. The following are the results of the computer model.

Drainage Area 1

	2-year	10-year	25-year	100-year
Existing	0.265 cfs	1.847 cfs	3.208 cfs	5.659 cfs
Proposed	0.000 cfs	0.000 cfs	0.000 cfs	5.325 cfs

Drainage Area 2

	2-year	10-year	25-year	100-year
Existing	0.381 cfs	2.339 cfs	4.056 cfs	7.095 cfs
Proposed	0.000 cfs	0.000 cfs	0.000 cfs	6.325 cfs

CT GUIDELINES FOR SOIL EROSION & SEDIMENTATION CONTROL

The 2002 CT Guidelines for Soil Erosion & Sedimentation Control applies to the construction phase of the project. A detailed erosion and sediment control plan has been provided in the site development plans. The proposed Stormwater Basins have been designed to function as sedimentation traps during stabilization, and then as stormwater basins to provide permanent water quality treatment, prior to entering the existing off-site drainage systems, for the life of the facility.

Drainage Area 1, Temporary Sediment Trap 1

The first calculation required by the Guidelines is for the sediment storage volume (SSV). The sediment storage volume is the calculation for one year of predicted

sediment load. The calculations for a Temporary Sediment Trap show that the sediment storage volume required is 14,834 CF:

SSV = A(134CY/Acre)
A = 4.1 ACRES
SSV = 549.4 CY = 14,834 CF

The second calculation required by the Guidelines is for wet storage volume (WSV). The wet storage volume is the volume in the basin that is located below the riprap for the level spreader outlet of the basin (elevation 38.5). The volume of the wet storage is required to be half of the required SSV. The required wet storage volume is 14,834 CF/2 = 7,417 CF. The required dry storage volume, located above the bottom of the riprap of the level spreader outlet of the basin (elevation 38.5), is 7,417 CF.

The total storage volume required is the dry storage volume plus the wet storage volume, which is a total of 14,834 CF.

The combined volume required for the Sedimentation Basin as follows:

7,417 CF of Wet Storage Volume	15,320 CF Provided
7,417 CF of Dry Storage Volume	12,020 CF Provided
14,834 CF of Total Volume Required	27,340 CF Total Provided

Drainage Area 2 Temporary Sediment Trap 2

The first calculation required by the Guidelines is for the sediment storage volume (SSV). The sediment storage volume is the calculation for one year of predicted sediment load. The calculations for a Temporary Sediment Trap show that the sediment storage volume required is 9,045CF:

SSV = A(134CY/Acre)

A = 2.5 ACRES

SSV = 335 CY = 9,045 CF

The second calculation required by the Guidelines is for wet storage volume (WSV). The wet storage volume is the volume in the basin that is located below the riprap for the level spreader outlet of the basin (elevation 38.5). The volume of the wet storage is required to be half of the required SSV. The required wet storage volume is 9,045 CF/2 = 4,523 CF. The required dry storage volume, located above the bottom of the riprap of the level spreader outlet of the basin (elevation 38.5), is 4,523 CF.

The total storage volume required is the dry storage volume plus the wet storage volume, which is a total of 9,045 CF.

The combined volume required for the Sedimentation Basin as follows:

4,523 CF of Wet Storage Volume	10,426 CF Provided
4,523 CF of Dry Storage Volume	8,686 CF Provided
9.045 CF of Total Volume Required	19,112 CF Total Provided

CONNECTICUT STORMWATER QUALITY MANUAL

The Stormwater Management System, consisting of two and Water Quality Basins, have been designed to function as permanent water quality treatment for the life of the facility. The Connecticut 2004 Stormwater Quality Manual (Manual) applies to the post construction phase, for the operation of the facility.

Drainage Area 1, Water Quality Basin 1

The Stormwater Management System meets the criteria of the Connecticut Stormwater Quality Manual for a Water Quality Basin. The calculations show that a Water Quality Volume (WQV) of 6,621 CF is required:

WQV = (1")(R)(A)/12
A = 4.1 Acres
R = 0.05 + 0.009(I)
I = 1.8 Acres / 4.1 Acres = 0.44 (44%)
R = 0.446
WQV = 0.152 Ac-Ft = 6,621 CF required
27,340 CF Provided in the Water Quality Basin

As the calculations show that there will be no stormwater leaving the proposed stormwater management system (water quality basin), up to and including the 25 year storm event, the anticipated pollutant removal rate is 100%.

Drainage Area 2, Water Quality Basin 2

The Stormwater Management System meets the criteria of the Connecticut Stormwater Quality Manual for a Water Quality Basin. The calculations show that a Water Quality Volume (WQV) of 6,142 CF is required:

WQV = (1")(R)(A)/12
A = 2.5 Acres
R = 0.05 + 0.009(I)
I = 1.4 Acres / 2.5 Acres = 0.56 (56%)
R = 0.55
WQV = 0.1145 Ac-Ft = 4,988 CF required
19,112 CF Provided in the Water Quality Basin

As the calculations show that there will be no stormwater leaving the proposed stormwater management system (water quality basin), up to and including the 25 year storm event, the anticipated pollutant removal rate is 100%.

The University of New Hampshire's Stormwater Center in Durham New Hampshire indicates that typical Phosphorus load export rate from this type of development (commercial/industrial) will be 1.78 lbs/acre/year. For Nitrogen that value will be 15 lbs/acre/year.

(https://www.unh.edu/unhsc/sites/default/files/media/ms4_permit_nomographs_sheet_final_2020.pdf) The University of New Hampshire's research reveals that efficiency removal for typical pollutants of concern such as TSS, N, P, and zinc is directly tied to the volume of stormwater that is held and infiltrated. The research reveals that if a 2 inch depth of runoff from a site's impervious surface is held and infiltrated by a given BMP, the reduction in these pollutants is 99-100%. On this site, both Stormwater basin #1 and Stormwater basin #2 will contain up to and including the 25 year storm event. Thus, CLA believes that pollutant removal rates for pollutants of concern will be greater than 99% and there will be no increase in releases of pollutants to the wetlands system.

Pond Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2009 by Autodesk, Inc. v6.066 Thursday, Apr 27, 2023

Pond No. 2 - Stormwater Basin 2

Pond Data

Contours - User-defined contour areas. Conic method used for volume calculation. Begining Elevation = 36.00 ft

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	36.00	3,114	0	0
1.00	37.00	3,925	3,511	3,511
2.00	38.00	4,735	4,323	7,835
3.00	39.00	5,645	5,183	13,017
4.00	40.00	6,556	6,094	19,112

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)	= 10.00	0.00	0.00	0.00
Crest El. (ft)	= 38.50	0.00	0.00	0.00
Weir Coeff.	= 3.33	3.33	3.33	3.33
Weir Type	= Broad	---	---	---
Multi-Stage	= No	No	No	No

Exfil.(in/hr) = 15.000 (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	36.00	---	---	---	---	0.00	---	---	---	0.000	---	0.000
1.00	3,511	37.00	---	---	---	---	0.00	---	---	---	1.363	---	1.363
2.00	7,835	38.00	---	---	---	---	0.00	---	---	---	1.644	---	1.644
3.00	13,017	39.00	---	---	---	---	11.77	---	---	---	1.960	---	13.73
4.00	19,112	40.00	---	---	---	---	61.18	---	---	---	2.276	---	63.45

Pond Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2009 by Autodesk, Inc. v6.066 Thursday, Apr 27, 2023

Pond No. 1 - Stormwater Basin 1

Pond Data

Contours - User-defined contour areas. Conic method used for volume calculation. Begining Elevation = 36.00 ft

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	36.00	4,894	0	0
1.00	37.00	5,840	5,360	5,360
2.00	38.00	6,786	6,306	11,666
3.00	39.00	7,844	7,308	18,974
4.00	40.00	8,901	8,366	27,340

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	= 1	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)	= 10.00	0.00	0.00	0.00
Crest El. (ft)	= 38.50	0.00	0.00	0.00
Weir Coeff.	= 2.60	3.33	3.33	3.33
Weir Type	= Broad	---	---	---
Multi-Stage	= No	No	No	No

Exfil.(in/hr) = 12.000 (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	36.00	---	---	---	---	0.00	---	---	---	0.000	---	0.000
1.00	5,360	37.00	---	---	---	---	0.00	---	---	---	1.622	---	1.622
2.00	11,666	38.00	---	---	---	---	0.00	---	---	---	1.885	---	1.885
3.00	18,974	39.00	---	---	---	---	9.19	---	---	---	2.179	---	11.37
4.00	27,340	40.00	---	---	---	---	47.77	---	---	---	2.472	---	50.24

Hydrograph Summary Report

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

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph description
1	SCS Runoff	0.265	1	737	2,133	------	------	------	Existing Conditions - Areas 1
2	SCS Runoff	3.444	1	724	11,499	------	------	------	Proposed Conditions - Area 1
3	Reservoir	0.000	1	744	0	2	36.56	2,979	Stormwater Basin 1
4	SCS Runoff	0.381	2	730	2,718	------	------	------	Existing Conditions - Area 2
5	SCS Runoff	2.633	2	726	8,856	------	------	------	Proposed Conditions - Area 2
6	Reservoir	0.000	2	728	0	5	36.71	2,490	Stormwater Basin 2

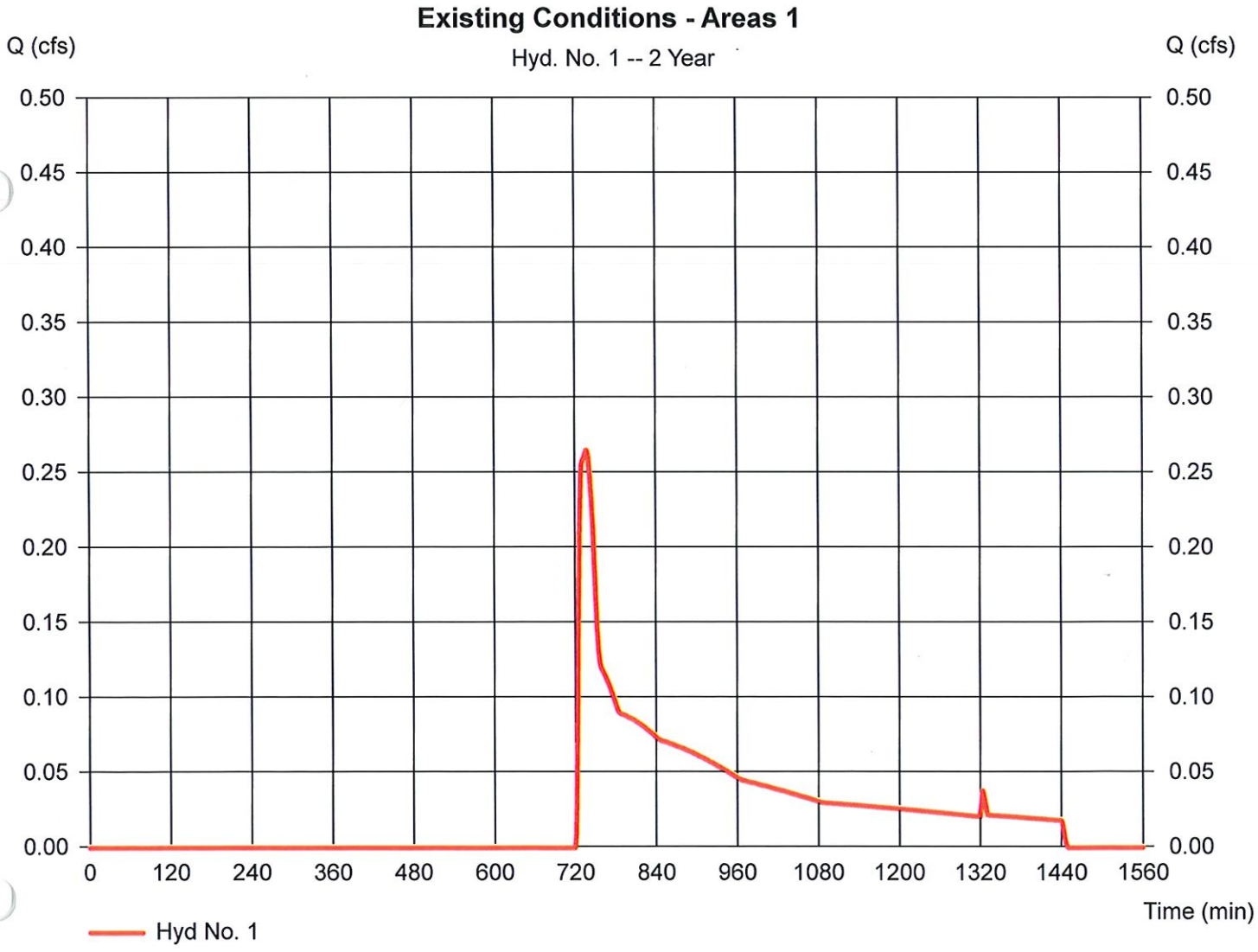
Hydrograph Report

Hyd. No. 1

Existing Conditions - Areas 1

Hydrograph type	= SCS Runoff	Peak discharge	= 0.265 cfs
Storm frequency	= 2 yrs	Time to peak	= 737 min
Time interval	= 1 min	Hyd. volume	= 2,133 cuft
Drainage area	= 1.900 ac	Curve number	= 55*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 5.31 min
Total precip.	= 3.36 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(4.100 x 55)] / 1.900



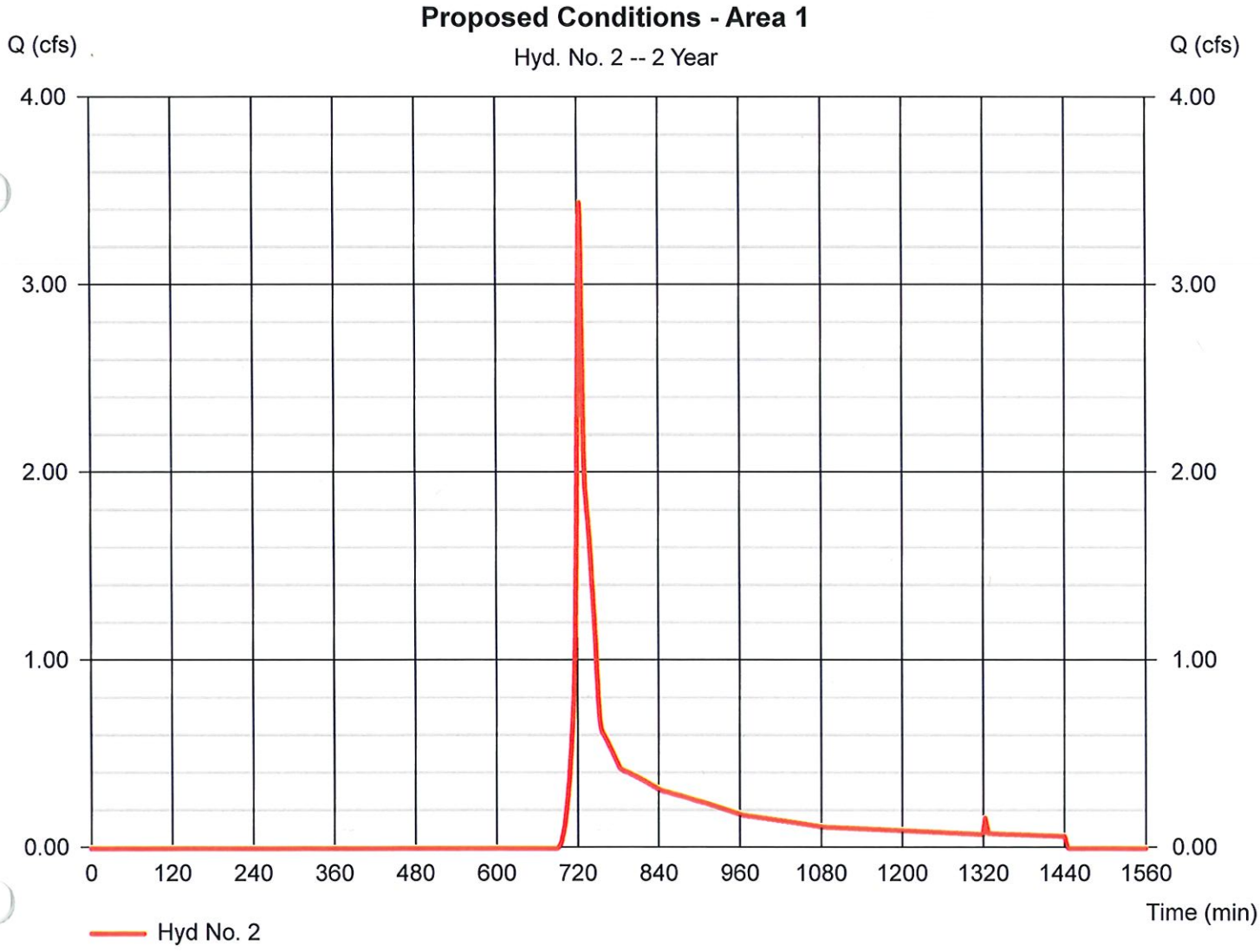
Hydrograph Report

Hyd. No. 2

Proposed Conditions - Area 1

Hydrograph type	= SCS Runoff	Peak discharge	= 3.444 cfs
Storm frequency	= 2 yrs	Time to peak	= 724 min
Time interval	= 1 min	Hyd. volume	= 11,499 cuft
Drainage area	= 4.100 ac	Curve number	= 67*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 4.50 min
Total precip.	= 3.36 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(1.800 x 83) + (2.300 x 55)] / 4.100



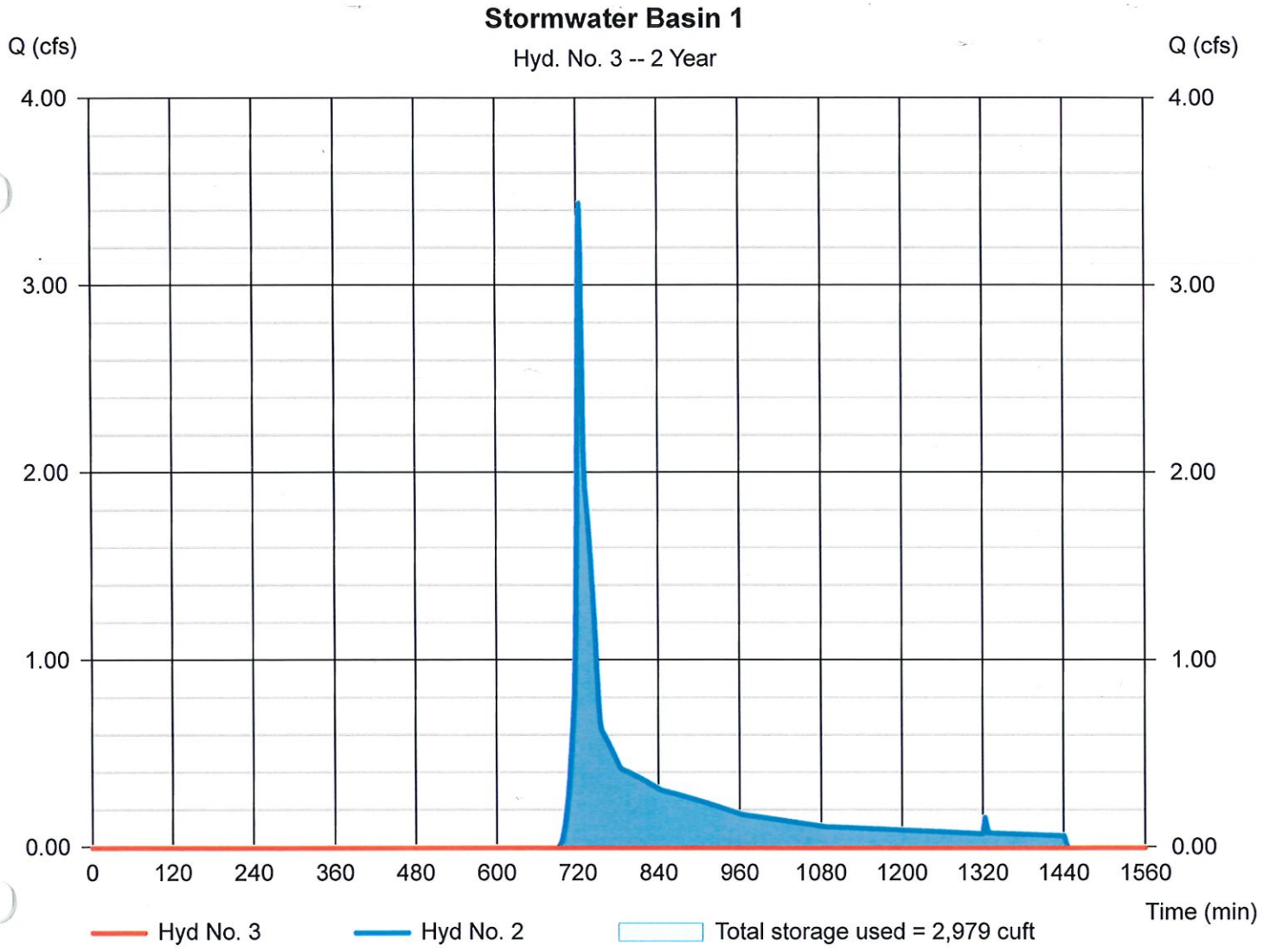
Hydrograph Report

Hyd. No. 3

Stormwater Basin 1

Hydrograph type	= Reservoir	Peak discharge	= 0.000 cfs
Storm frequency	= 2 yrs	Time to peak	= 744 min
Time interval	= 1 min	Hyd. volume	= 0 cuft
Inflow hyd. No.	= 2 - Proposed Conditions - Area 1	Max. Elevation	= 36.56 ft
Reservoir name	= Stormwater Basin 1	Max. Storage	= 2,979 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Hydrograph Report

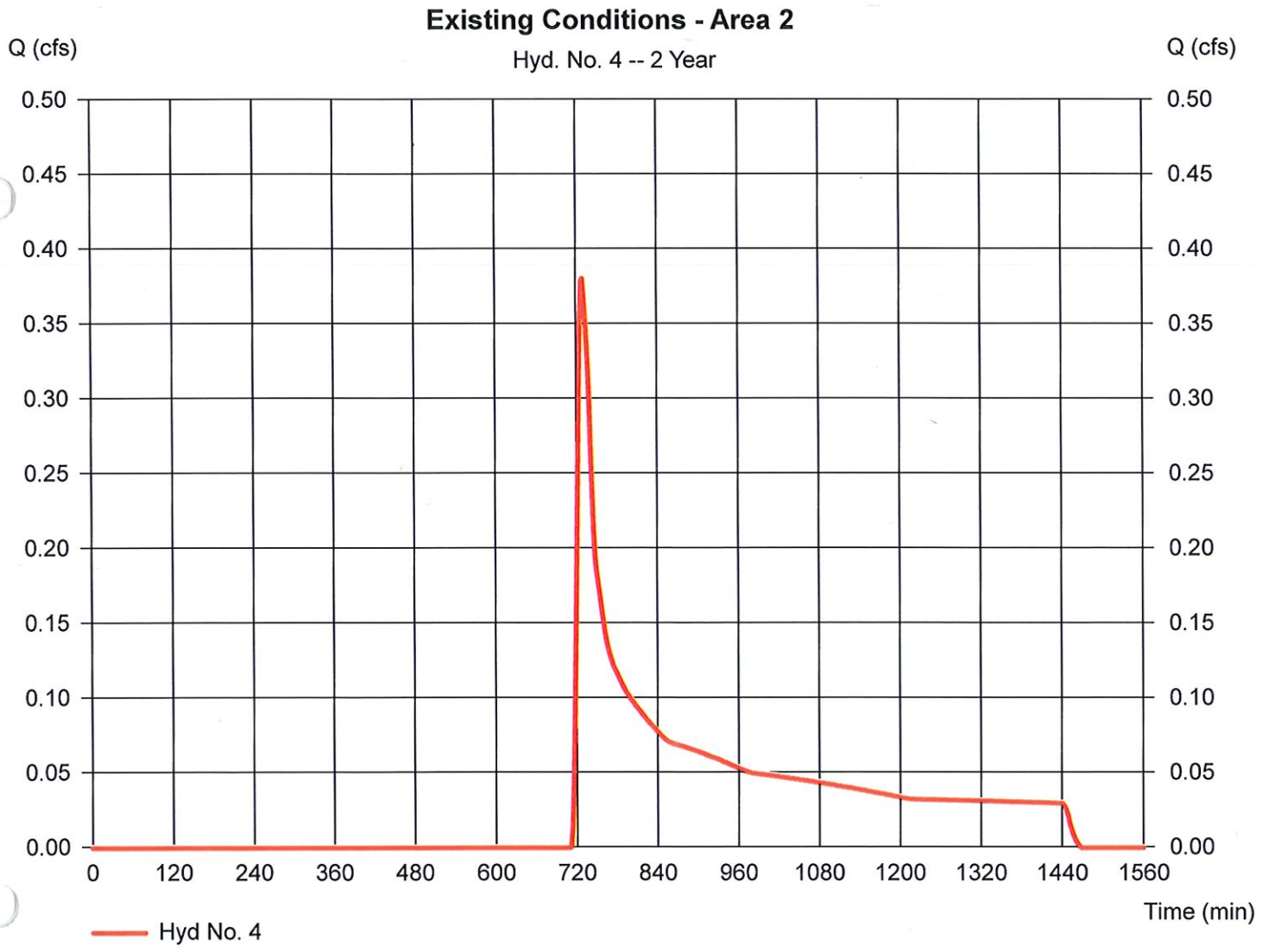
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2009 by Autodesk, Inc. v6.066 Thursday, Apr 27, 2023

Hyd. No. 4

Existing Conditions - Area 2

Hydrograph type	= SCS Runoff	Peak discharge	= 0.381 cfs
Storm frequency	= 2 yrs	Time to peak	= 730 min
Time interval	= 2 min	Hyd. volume	= 2,718 cuft
Drainage area	= 2.500 ac	Curve number	= 55*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 16.90 min
Total precip.	= 3.36 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(2.500 x 55)] / 2.500



Hydrograph Report

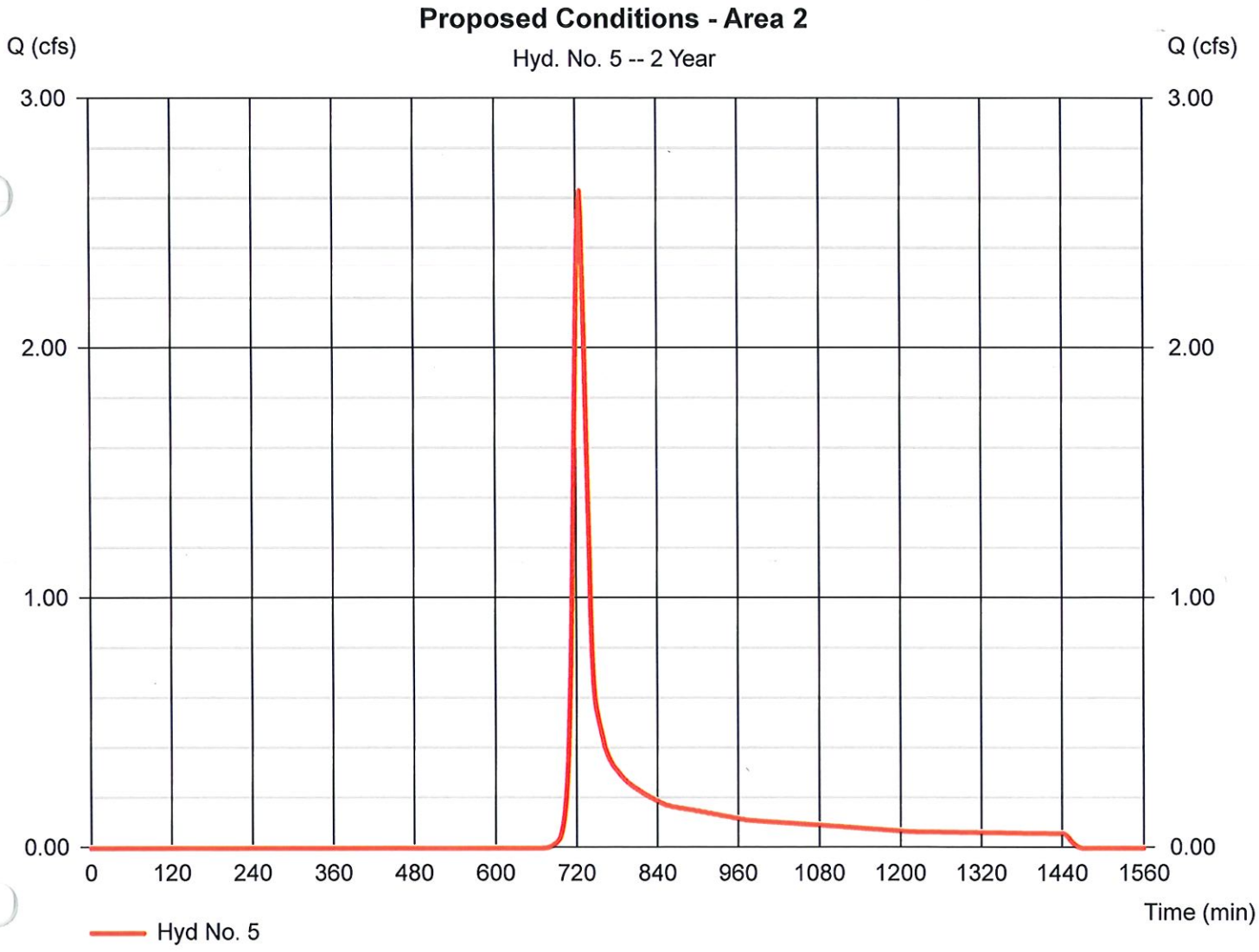
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2009 by Autodesk, Inc. v6.066 Thursday, Apr 27, 2023

Hyd. No. 5

Proposed Conditions - Area 2

Hydrograph type	= SCS Runoff	Peak discharge	= 2.633 cfs
Storm frequency	= 2 yrs	Time to peak	= 726 min
Time interval	= 2 min	Hyd. volume	= 8,856 cuft
Drainage area	= 2.500 ac	Curve number	= 71*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 16.49 min
Total precip.	= 3.36 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(1.400 x 83) + (1.100 x 55)] / 2.500



Hydrograph Report

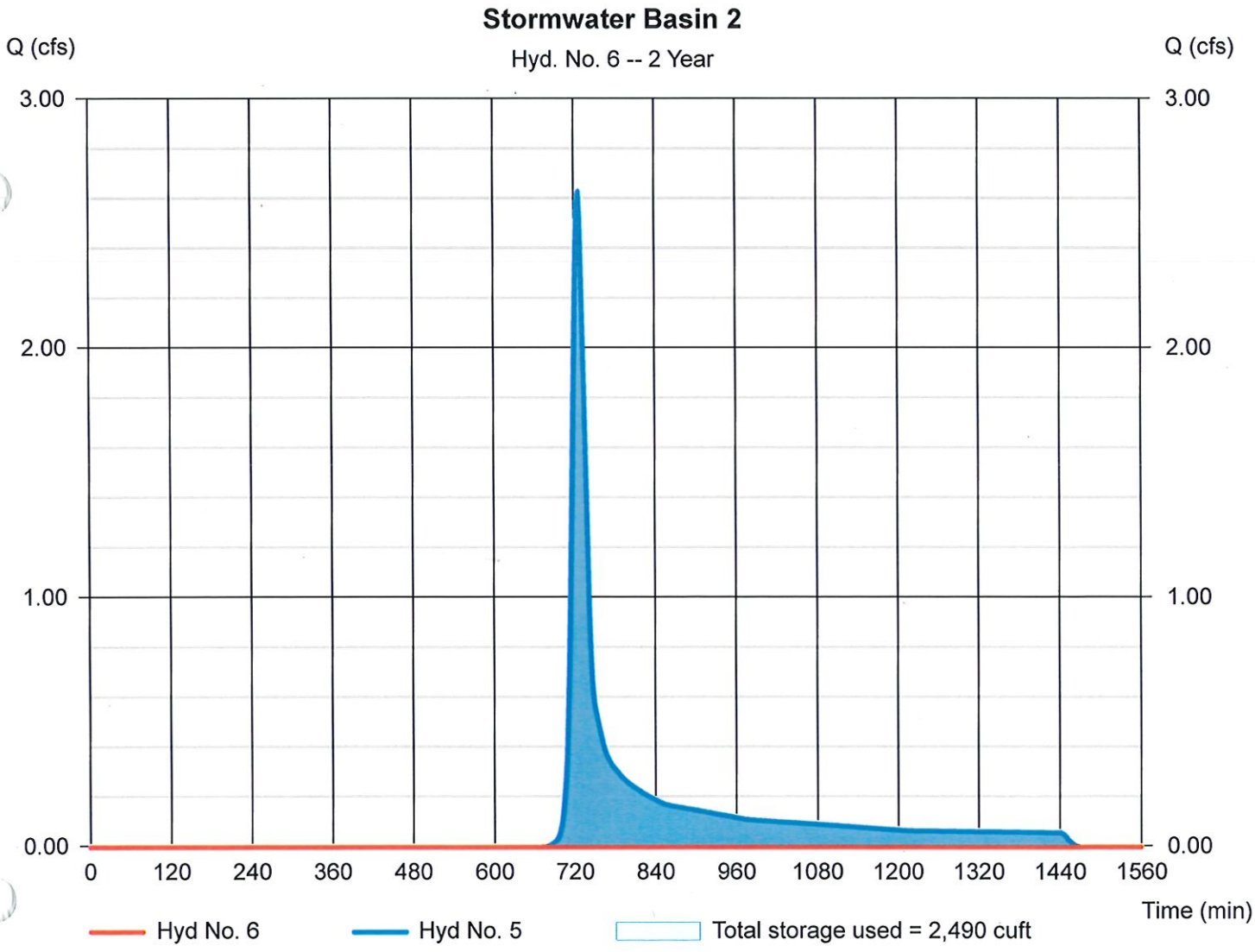
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2009 by Autodesk, Inc. v6.066 Thursday, Apr 27, 2023

Hyd. No. 6

Stormwater Basin 2

Hydrograph type	= Reservoir	Peak discharge	= 0.000 cfs
Storm frequency	= 2 yrs	Time to peak	= 728 min
Time interval	= 2 min	Hyd. volume	= 0 cuft
Inflow hyd. No.	= 5 - Proposed Conditions - Area 2	Max. Elevation	= 36.71 ft
Reservoir name	= Stormwater Basin 2	Max. Storage	= 2,490 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Hydrograph Summary Report

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

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph description
1	SCS Runoff	1.847	1	726	7,041	------	------	------	Existing Conditions - Areas 1
2	SCS Runoff	9.052	1	724	27,042	------	------	------	Proposed Conditions - Area 1
3	Reservoir	0.000	1	720	0	2	37.54	8,739	Stormwater Basin 1
4	SCS Runoff	2.339	2	726	8,983	------	------	------	Existing Conditions - Area 2
5	SCS Runoff	6.085	2	724	19,344	------	------	------	Proposed Conditions - Area 2
6	Reservoir	0.000	2	840	0	5	37.73	6,653	Stormwater Basin 2

Hydrograph Report

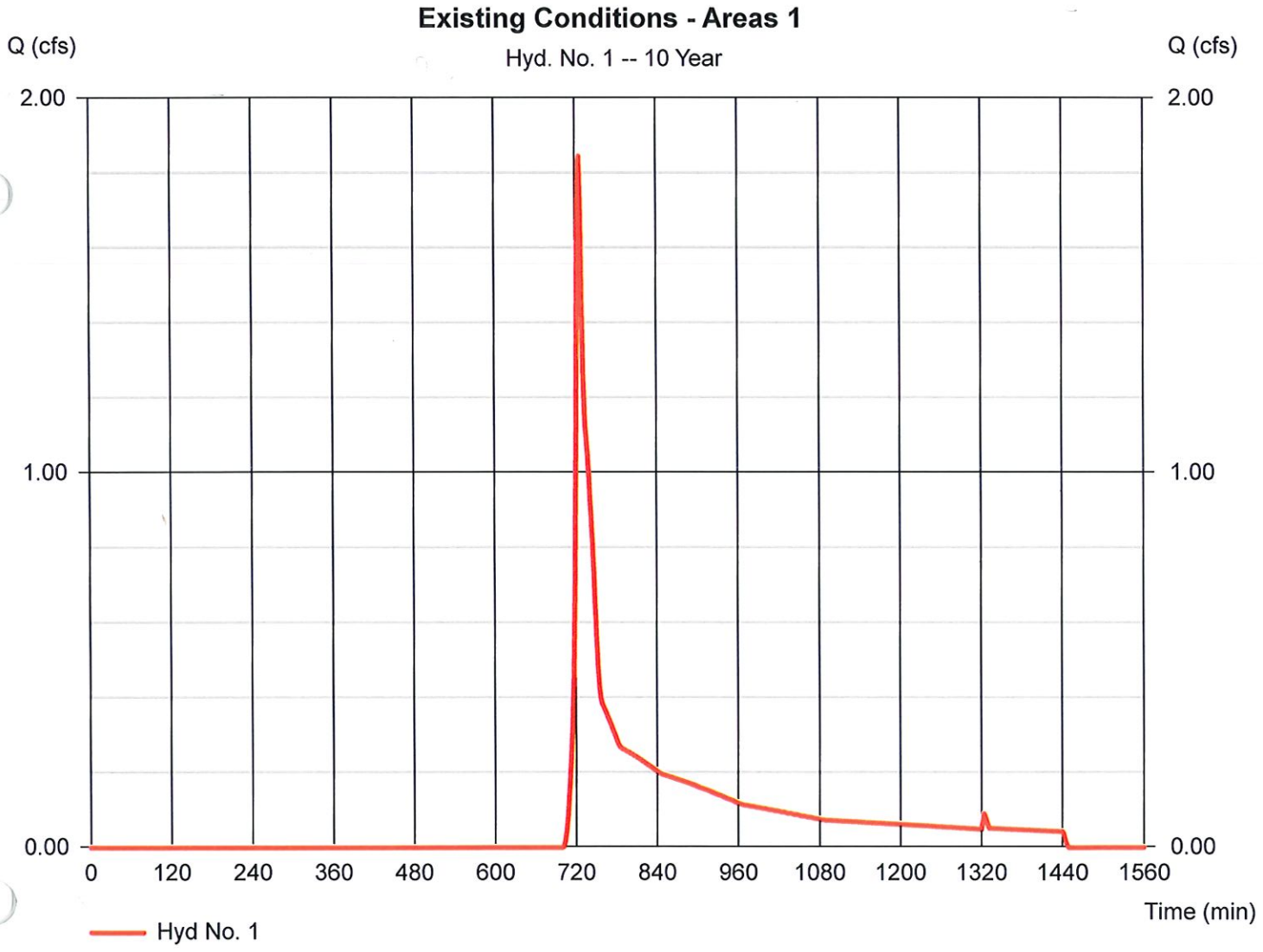
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2009 by Autodesk, Inc. v6.066 Thursday, Apr 27, 2023

Hyd. No. 1

Existing Conditions - Areas 1

Hydrograph type	= SCS Runoff	Peak discharge	= 1.847 cfs
Storm frequency	= 10 yrs	Time to peak	= 726 min
Time interval	= 1 min	Hyd. volume	= 7,041 cuft
Drainage area	= 1.900 ac	Curve number	= 55*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 5.31 min
Total precip.	= 5.02 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(4.100 x 55)] / 1.900



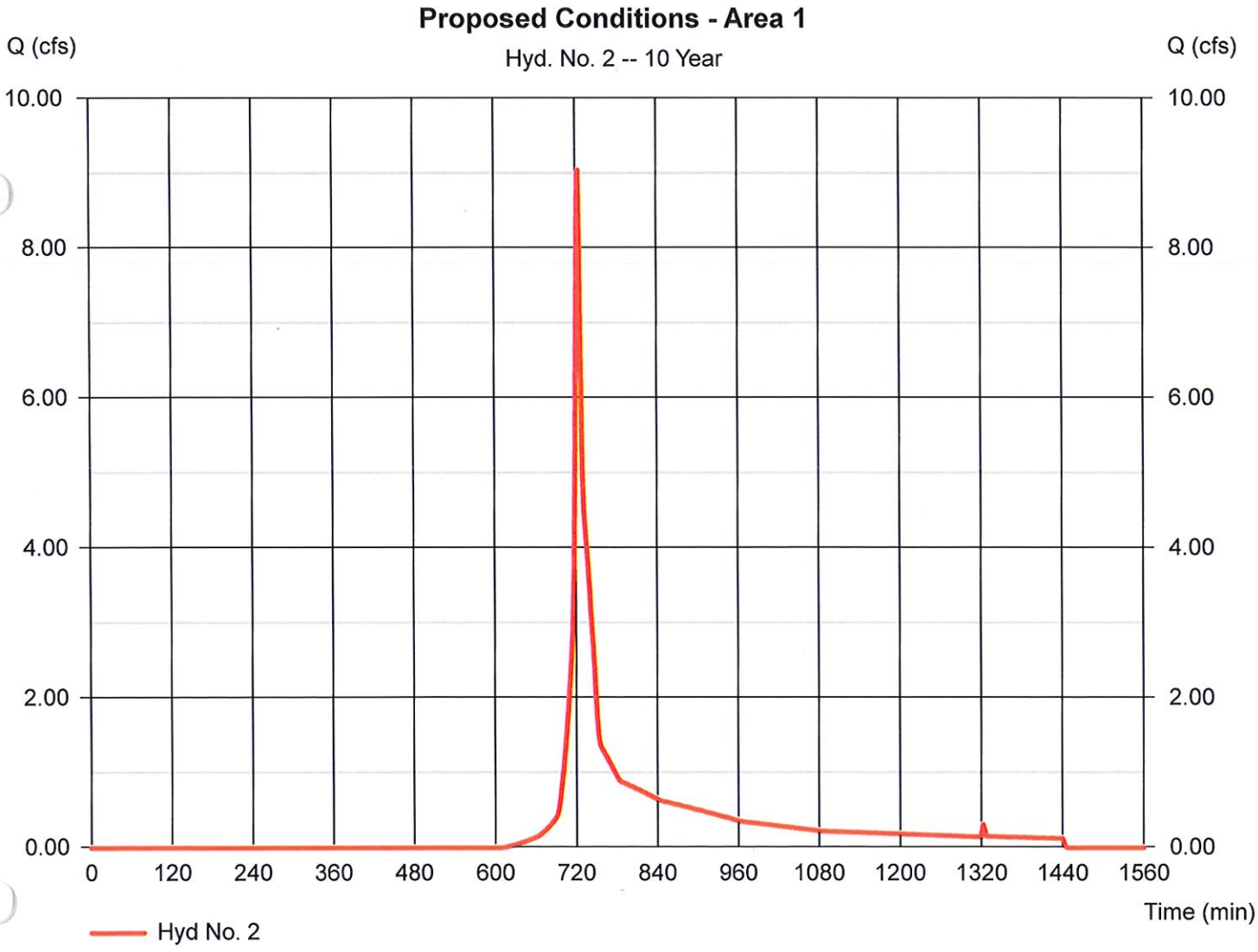
Hydrograph Report

Hyd. No. 2

Proposed Conditions - Area 1

Hydrograph type	= SCS Runoff	Peak discharge	= 9.052 cfs
Storm frequency	= 10 yrs	Time to peak	= 724 min
Time interval	= 1 min	Hyd. volume	= 27,042 cuft
Drainage area	= 4.100 ac	Curve number	= 67*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 4.50 min
Total precip.	= 5.02 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(1.800 x 83) + (2.300 x 55)] / 4.100



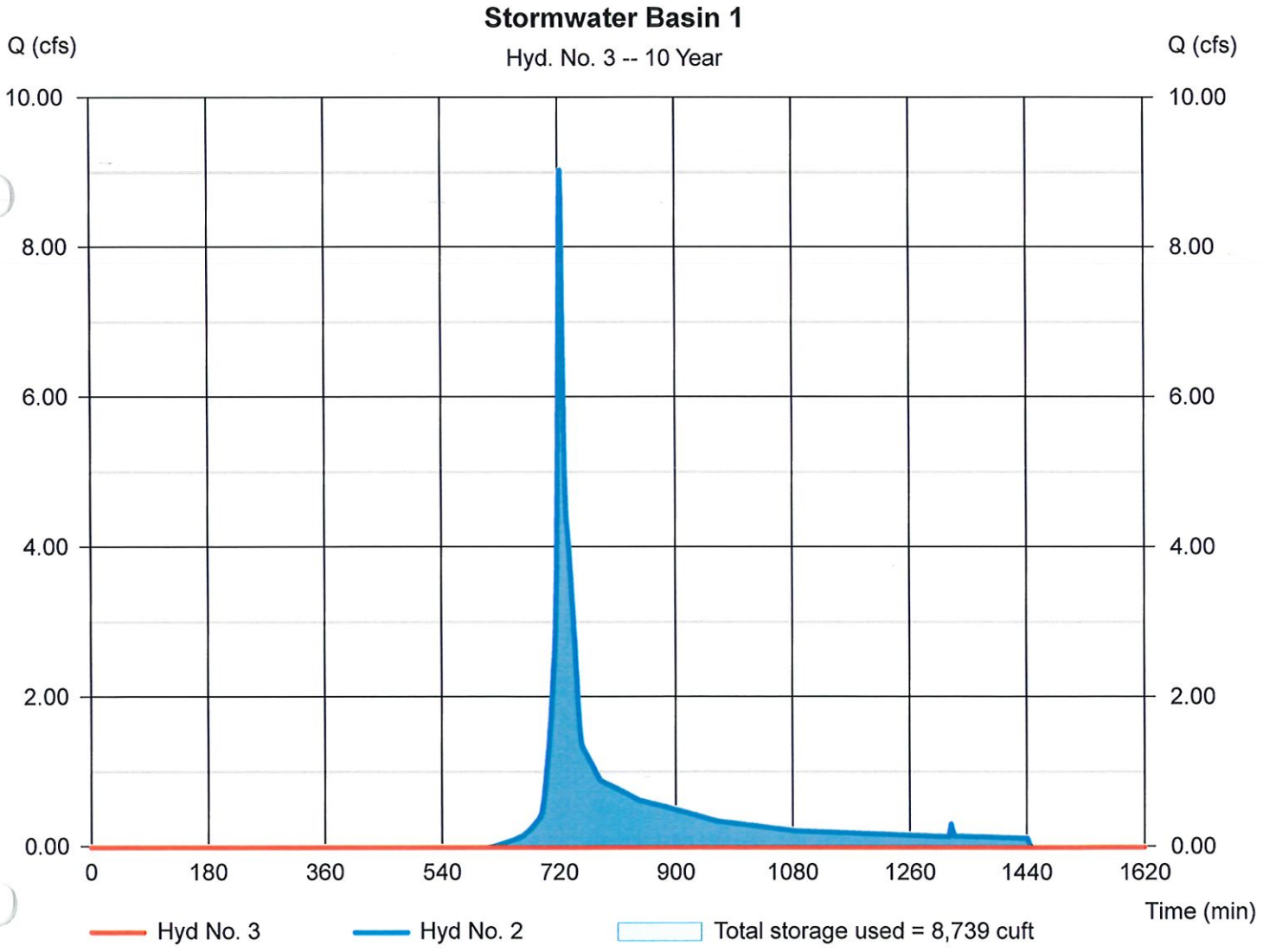
Hydrograph Report

Hyd. No. 3

Stormwater Basin 1

Hydrograph type	= Reservoir	Peak discharge	= 0.000 cfs
Storm frequency	= 10 yrs	Time to peak	= 720 min
Time interval	= 1 min	Hyd. volume	= 0 cuft
Inflow hyd. No.	= 2 - Proposed Conditions - Area 1	Max. Elevation	= 37.54 ft
Reservoir name	= Stormwater Basin 1	Max. Storage	= 8,739 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



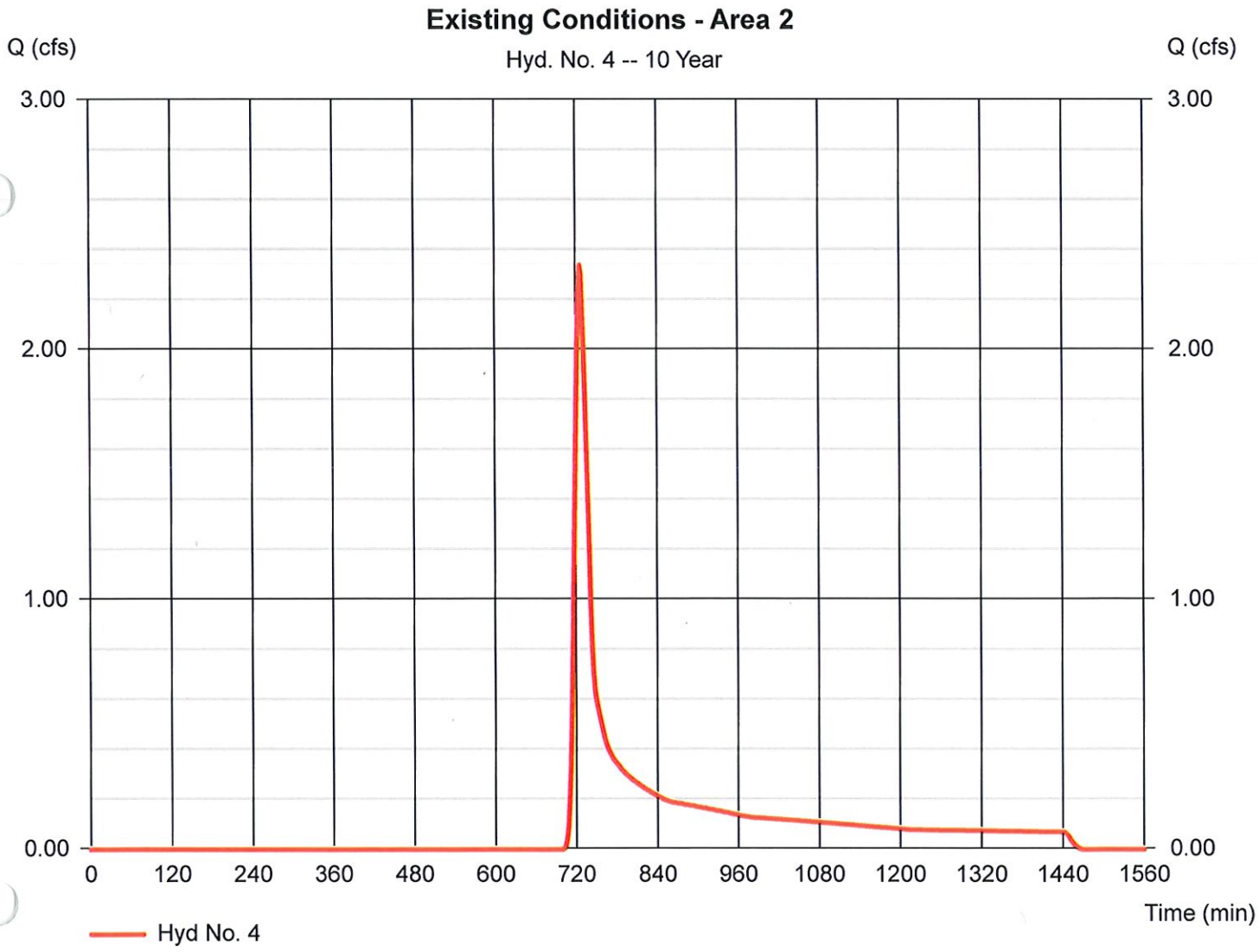
Hydrograph Report

Hyd. No. 4

Existing Conditions - Area 2

Hydrograph type	= SCS Runoff	Peak discharge	= 2.339 cfs
Storm frequency	= 10 yrs	Time to peak	= 726 min
Time interval	= 2 min	Hyd. volume	= 8,983 cuft
Drainage area	= 2.500 ac	Curve number	= 55*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 16.90 min
Total precip.	= 5.02 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(2.500 x 55)] / 2.500



Hydrograph Report

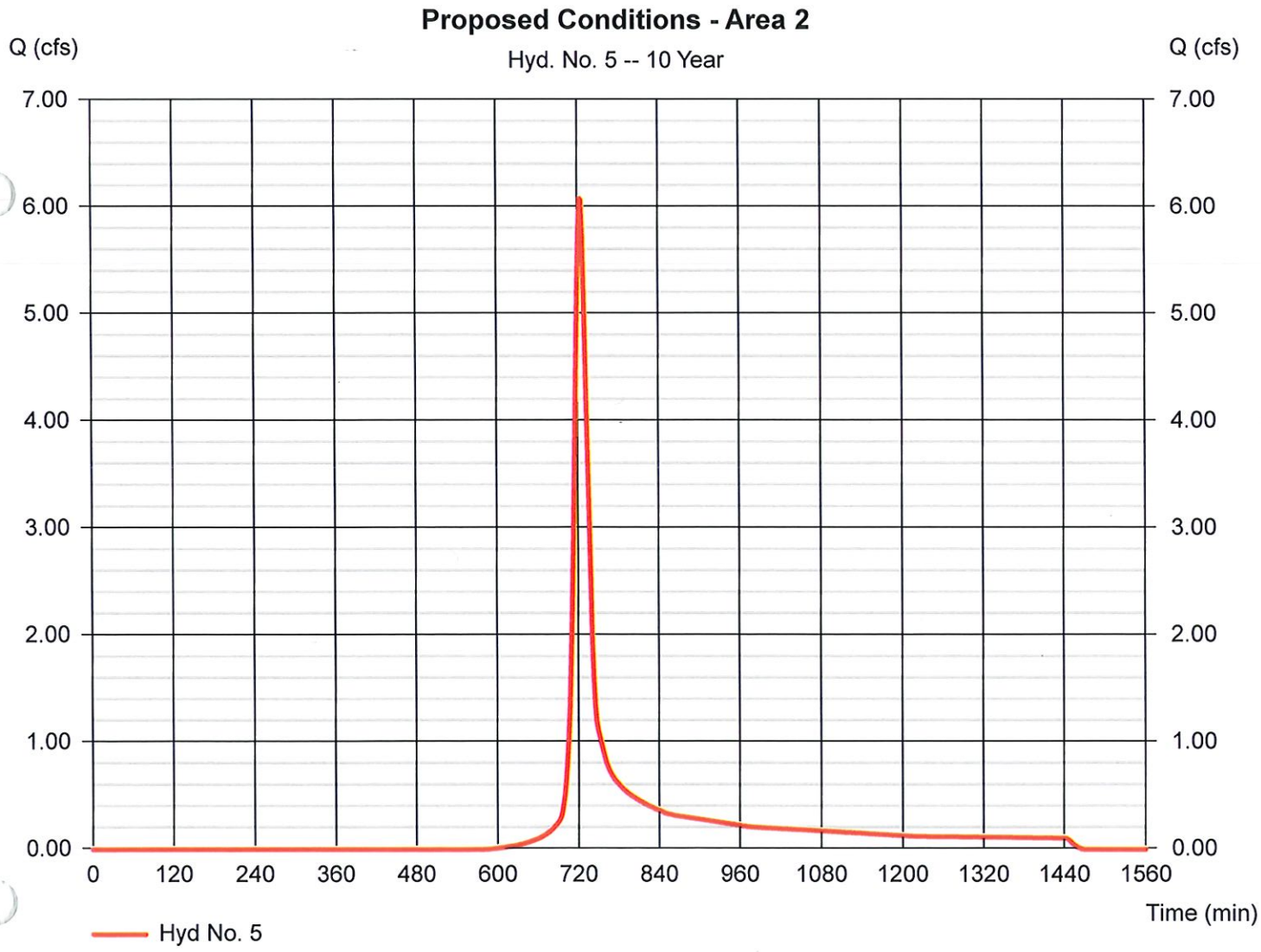
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2009 by Autodesk, Inc. v6.066 Thursday, Apr 27, 2023

Hyd. No. 5

Proposed Conditions - Area 2

Hydrograph type	= SCS Runoff	Peak discharge	= 6.085 cfs
Storm frequency	= 10 yrs	Time to peak	= 724 min
Time interval	= 2 min	Hyd. volume	= 19,344 cuft
Drainage area	= 2.500 ac	Curve number	= 71*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 16.49 min
Total precip.	= 5.02 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(1.400 x 83) + (1.100 x 55)] / 2.500



Hydrograph Report

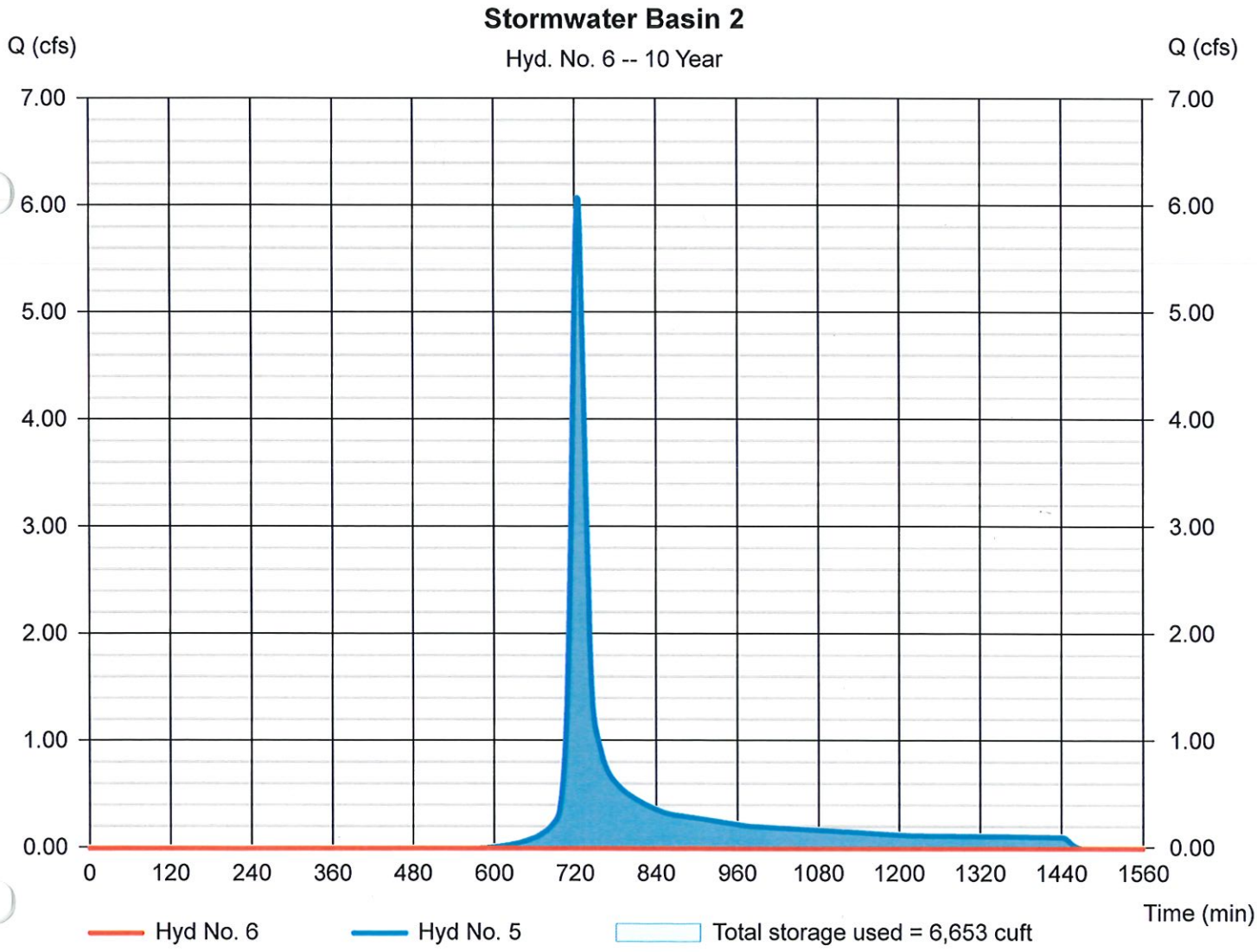
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2009 by Autodesk, Inc. v6.066 Thursday, Apr 27, 2023

Hyd. No. 6

Stormwater Basin 2

Hydrograph type	= Reservoir	Peak discharge	= 0.000 cfs
Storm frequency	= 10 yrs	Time to peak	= 840 min
Time interval	= 2 min	Hyd. volume	= 0 cuft
Inflow hyd. No.	= 5 - Proposed Conditions - Area 2	Max. Elevation	= 37.73 ft
Reservoir name	= Stormwater Basin 2	Max. Storage	= 6,653 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Hydrograph Summary Report

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

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph description
1	SCS Runoff	3.208	1	725	11,041	------	------	------	Existing Conditions - Areas 1
2	SCS Runoff	13.05	1	724	38,330	------	------	------	Proposed Conditions - Area 1
3	Reservoir	0.000	1	977	0	2	38.30	13,877	Stormwater Basin 1
4	SCS Runoff	4.056	2	726	14,088	------	------	------	Existing Conditions - Area 2
5	SCS Runoff	8.514	2	724	26,746	------	------	------	Proposed Conditions - Area 2
6	Reservoir	0.000	2	894	0	5	38.43	10,065	Stormwater Basin 2

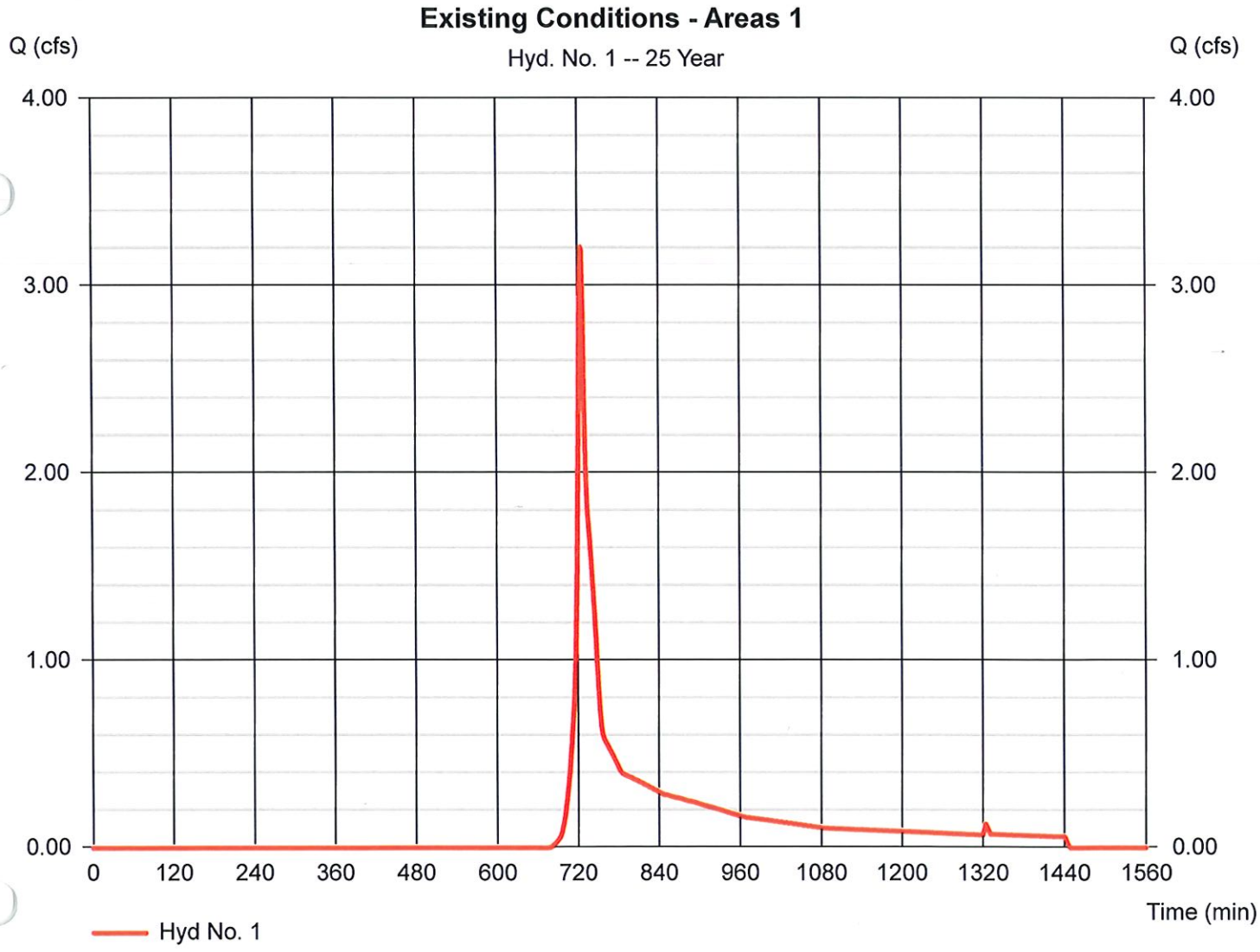
Hydrograph Report

Hyd. No. 1

Existing Conditions - Areas 1

Hydrograph type	= SCS Runoff	Peak discharge	= 3.208 cfs
Storm frequency	= 25 yrs	Time to peak	= 725 min
Time interval	= 1 min	Hyd. volume	= 11,041 cuft
Drainage area	= 1.900 ac	Curve number	= 55*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 5.31 min
Total precip.	= 6.06 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(4.100 x 55)] / 1.900



Hydrograph Report

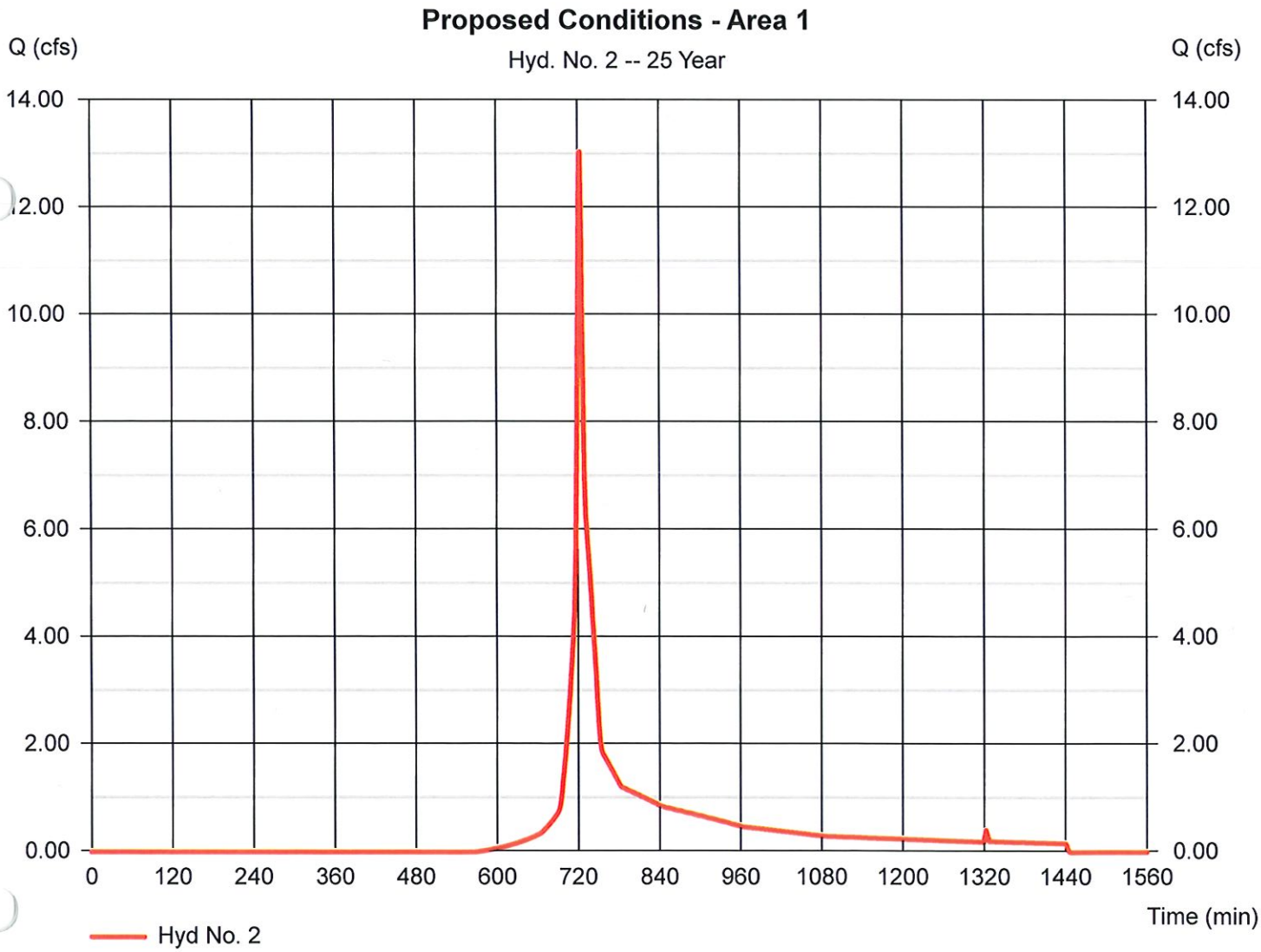
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2009 by Autodesk, Inc. v6.066 Thursday, Apr 27, 2023

Hyd. No. 2

Proposed Conditions - Area 1

Hydrograph type	= SCS Runoff	Peak discharge	= 13.05 cfs
Storm frequency	= 25 yrs	Time to peak	= 724 min
Time interval	= 1 min	Hyd. volume	= 38,330 cuft
Drainage area	= 4.100 ac	Curve number	= 67*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 4.50 min
Total precip.	= 6.06 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(1.800 x 83) + (2.300 x 55)] / 4.100



Hydrograph Report

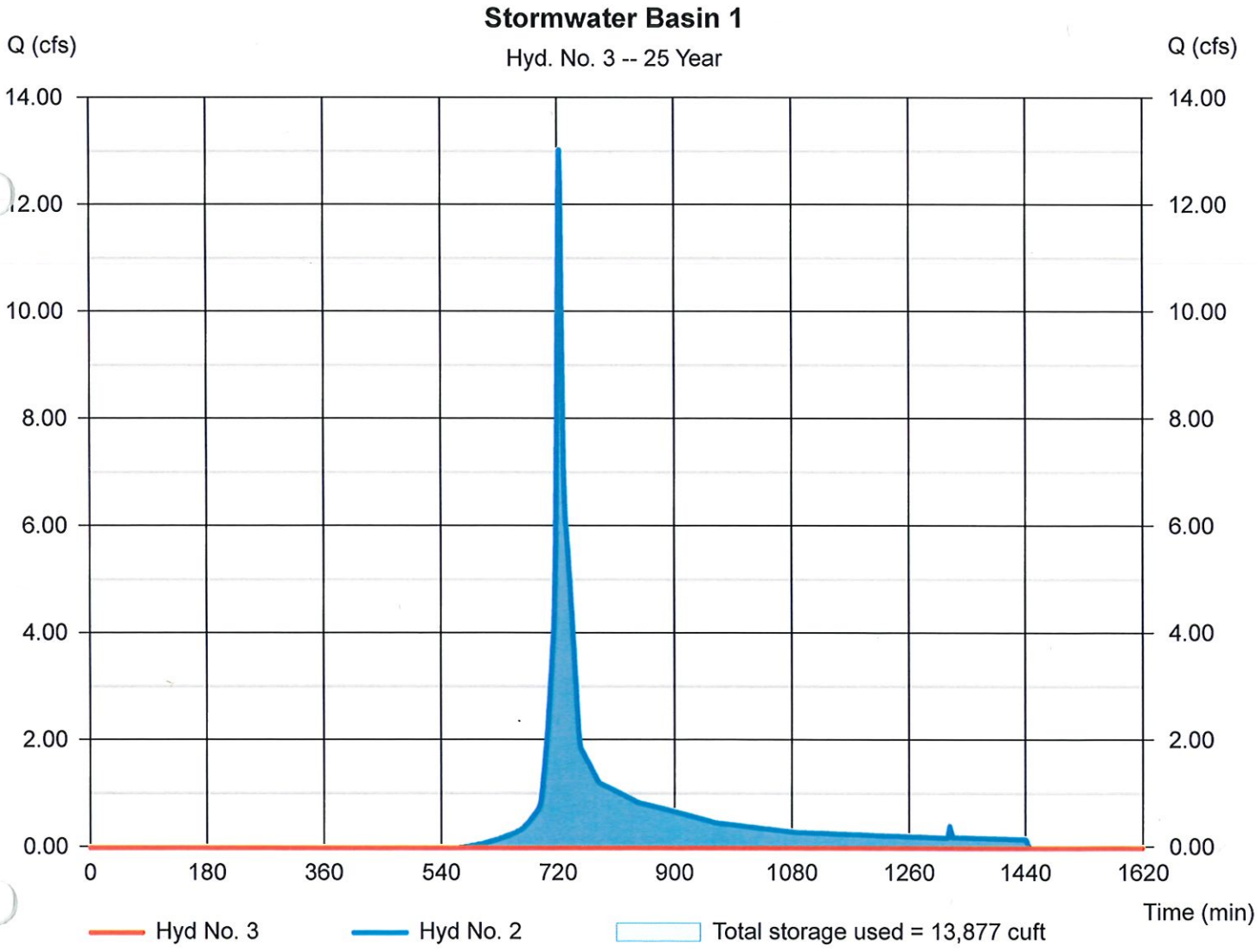
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2009 by Autodesk, Inc. v6.066 Thursday, Apr 27, 2023

Hyd. No. 3

Stormwater Basin 1

Hydrograph type	= Reservoir	Peak discharge	= 0.000 cfs
Storm frequency	= 25 yrs	Time to peak	= 977 min
Time interval	= 1 min	Hyd. volume	= 0 cuft
Inflow hyd. No.	= 2 - Proposed Conditions - Area 1	Max. Elevation	= 38.30 ft
Reservoir name	= Stormwater Basin 1	Max. Storage	= 13,877 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



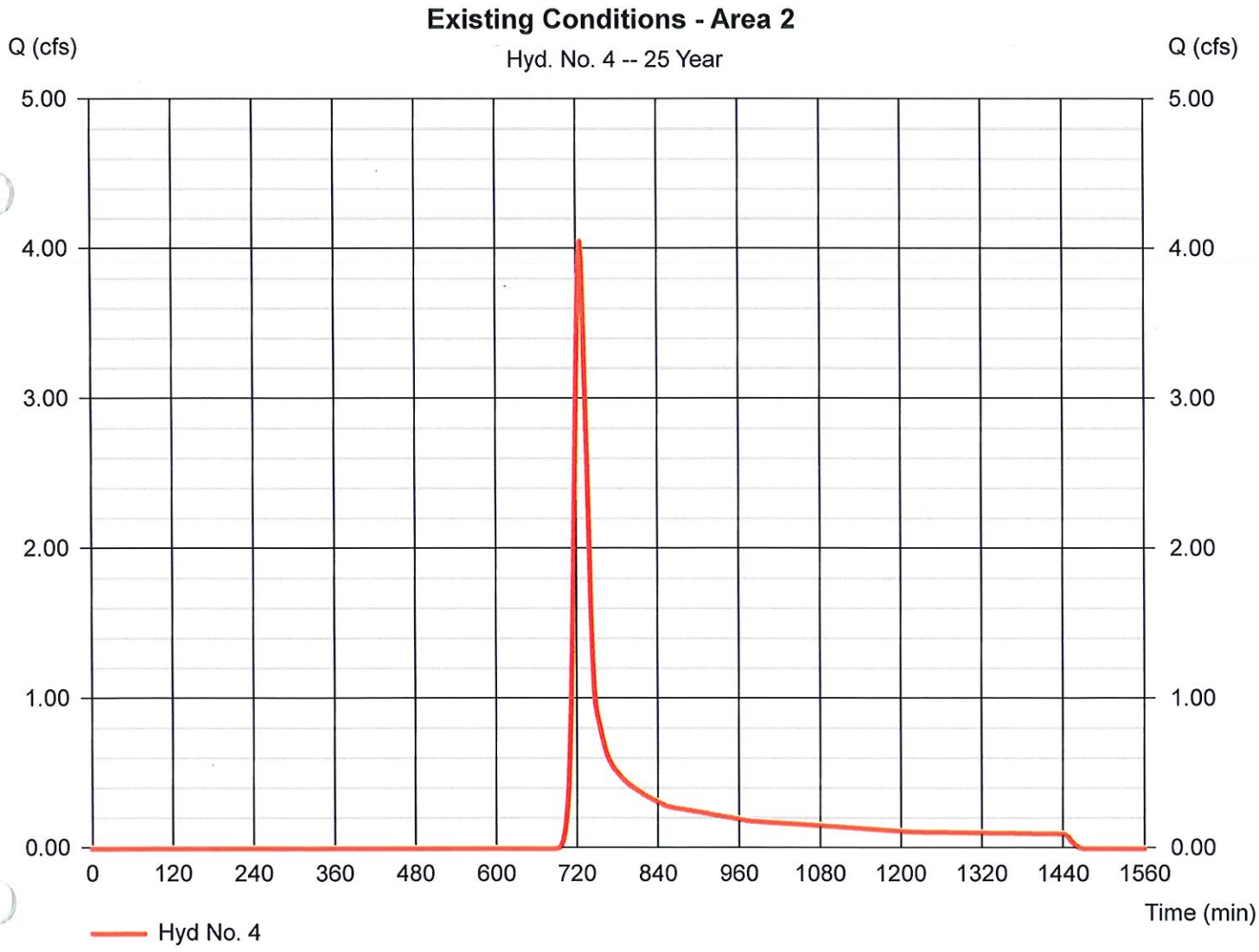
Hydrograph Report

Hyd. No. 4

Existing Conditions - Area 2

Hydrograph type	= SCS Runoff	Peak discharge	= 4.056 cfs
Storm frequency	= 25 yrs	Time to peak	= 726 min
Time interval	= 2 min	Hyd. volume	= 14,088 cuft
Drainage area	= 2.500 ac	Curve number	= 55*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 16.90 min
Total precip.	= 6.06 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(2.500 x 55)] / 2.500



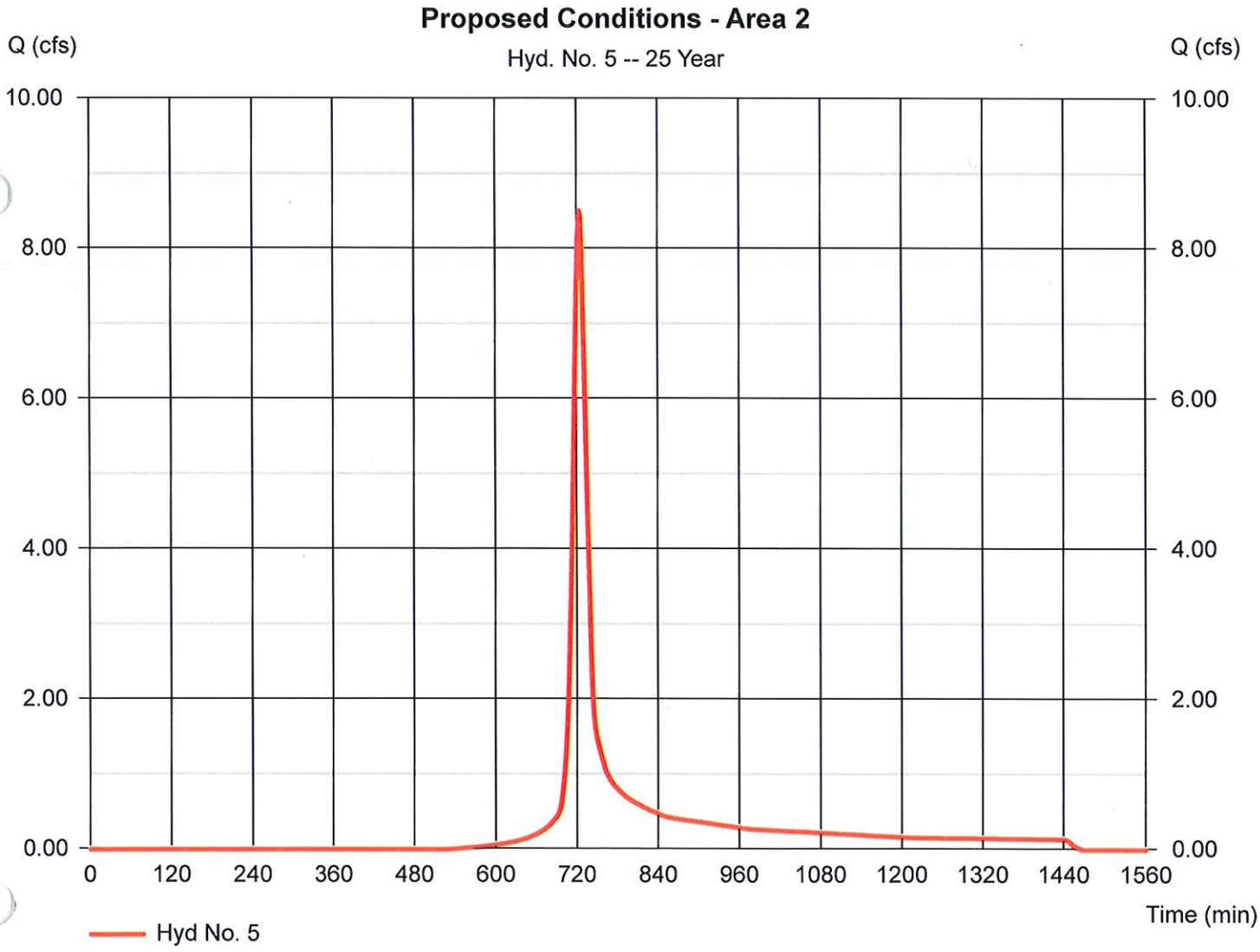
Hydrograph Report

Hyd. No. 5

Proposed Conditions - Area 2

Hydrograph type	= SCS Runoff	Peak discharge	= 8.514 cfs
Storm frequency	= 25 yrs	Time to peak	= 724 min
Time interval	= 2 min	Hyd. volume	= 26,746 cuft
Drainage area	= 2.500 ac	Curve number	= 71*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 16.49 min
Total precip.	= 6.06 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(1.400 x 83) + (1.100 x 55)] / 2.500



Hydrograph Report

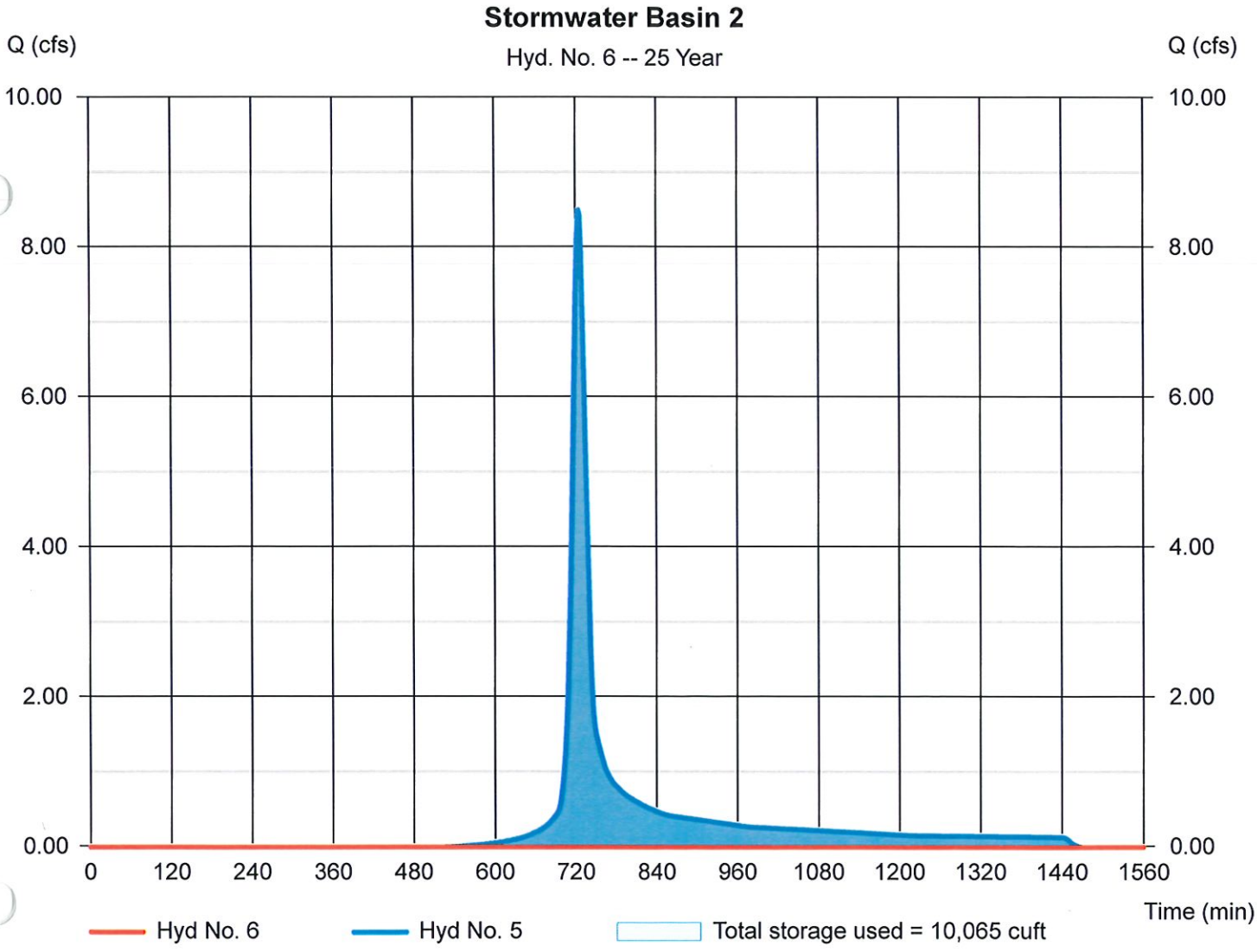
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2009 by Autodesk, Inc. v6.066 Thursday, Apr 27, 2023

Hyd. No. 6

Stormwater Basin 2

Hydrograph type	= Reservoir	Peak discharge	= 0.000 cfs
Storm frequency	= 25 yrs	Time to peak	= 894 min
Time interval	= 2 min	Hyd. volume	= 0 cuft
Inflow hyd. No.	= 5 - Proposed Conditions - Area 2	Max. Elevation	= 38.43 ft
Reservoir name	= Stormwater Basin 2	Max. Storage	= 10,065 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Hydrograph Summary Report

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

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph description
1	SCS Runoff	5.659	1	725	18,215	------	------	------	Existing Conditions - Areas 1
2	SCS Runoff	19.75	1	723	57,285	------	------	------	Proposed Conditions - Area 1
3	Reservoir	5.325	1	738	7,823	2	38.85	17,846	Stormwater Basin 1
4	SCS Runoff	7.095	2	726	23,240	------	------	------	Existing Conditions - Area 2
5	SCS Runoff	12.46	2	724	38,967	------	------	------	Proposed Conditions - Area 2
6	Reservoir	6.326	2	734	5,602	5	38.83	12,131	Stormwater Basin 2

Hydrograph Report

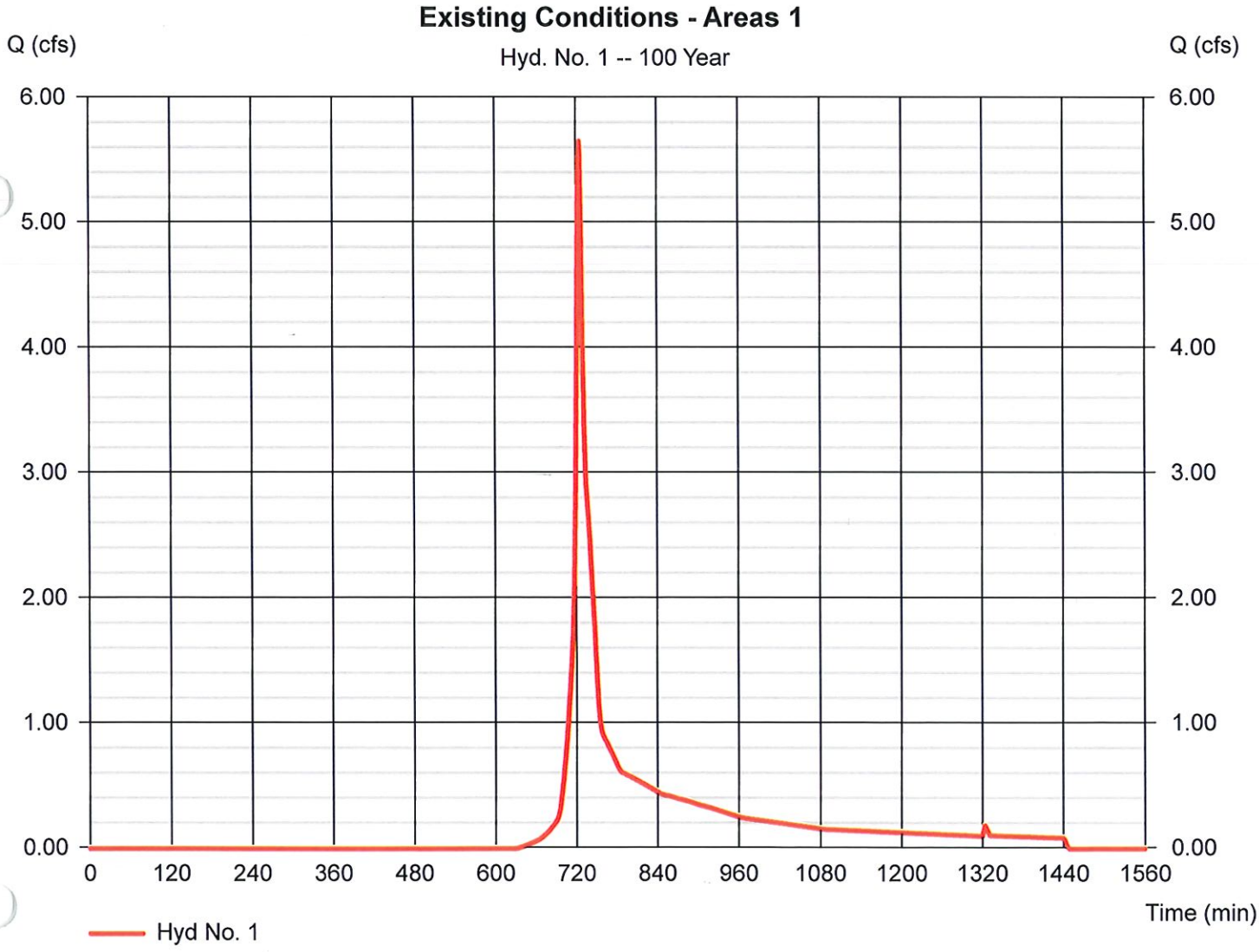
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2009 by Autodesk, Inc. v6.066 Thursday, Apr 27, 2023

Hyd. No. 1

Existing Conditions - Areas 1

Hydrograph type	= SCS Runoff	Peak discharge	= 5.659 cfs
Storm frequency	= 100 yrs	Time to peak	= 725 min
Time interval	= 1 min	Hyd. volume	= 18,215 cuft
Drainage area	= 1.900 ac	Curve number	= 55*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 5.31 min
Total precip.	= 7.67 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(4.100 x 55)] / 1.900



Hydrograph Report

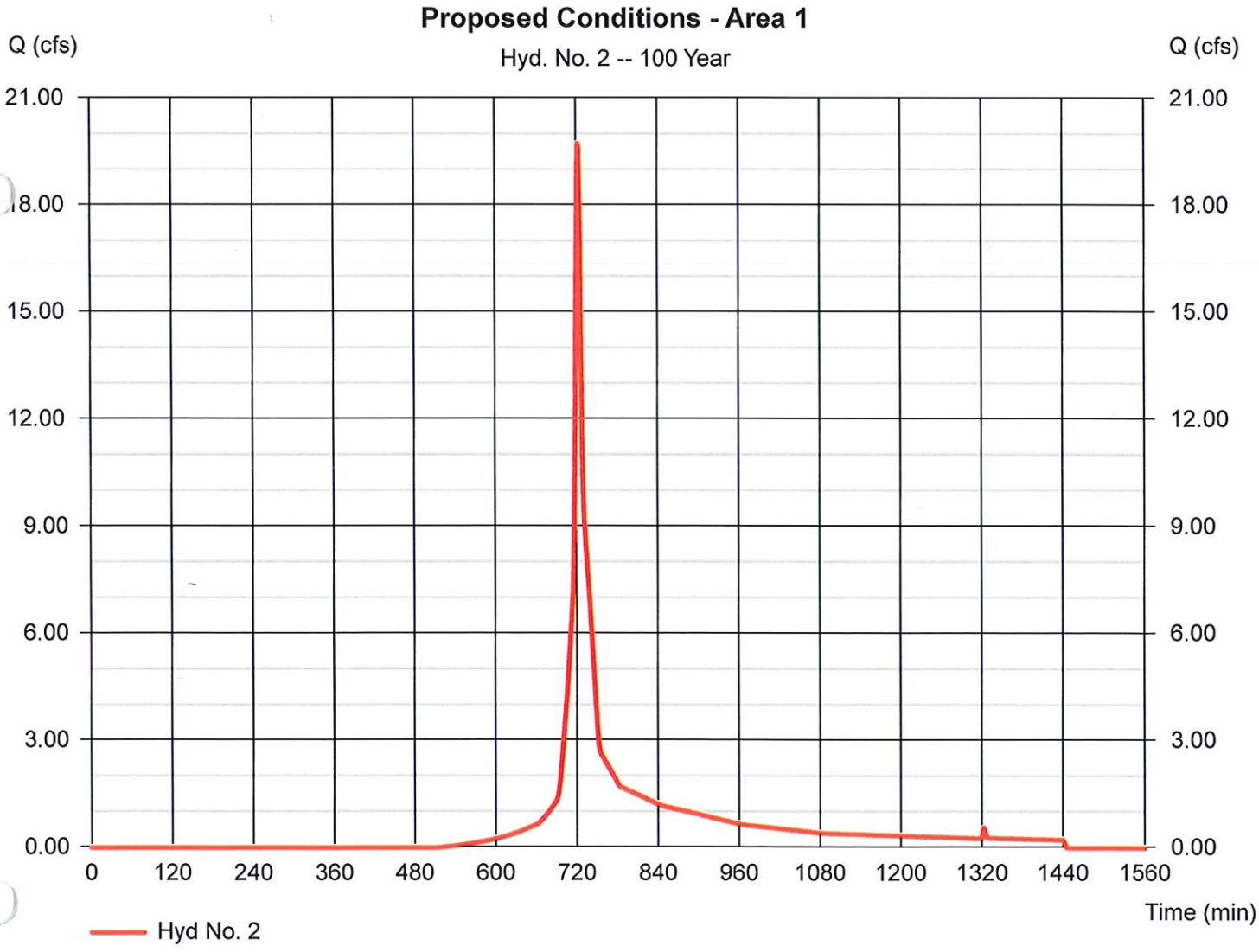
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2009 by Autodesk, Inc. v6.066 Thursday, Apr 27, 2023

Hyd. No. 2

Proposed Conditions - Area 1

Hydrograph type	= SCS Runoff	Peak discharge	= 19.75 cfs
Storm frequency	= 100 yrs	Time to peak	= 723 min
Time interval	= 1 min	Hyd. volume	= 57,285 cuft
Drainage area	= 4.100 ac	Curve number	= 67*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 4.50 min
Total precip.	= 7.67 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(1.800 x 83) + (2.300 x 55)] / 4.100



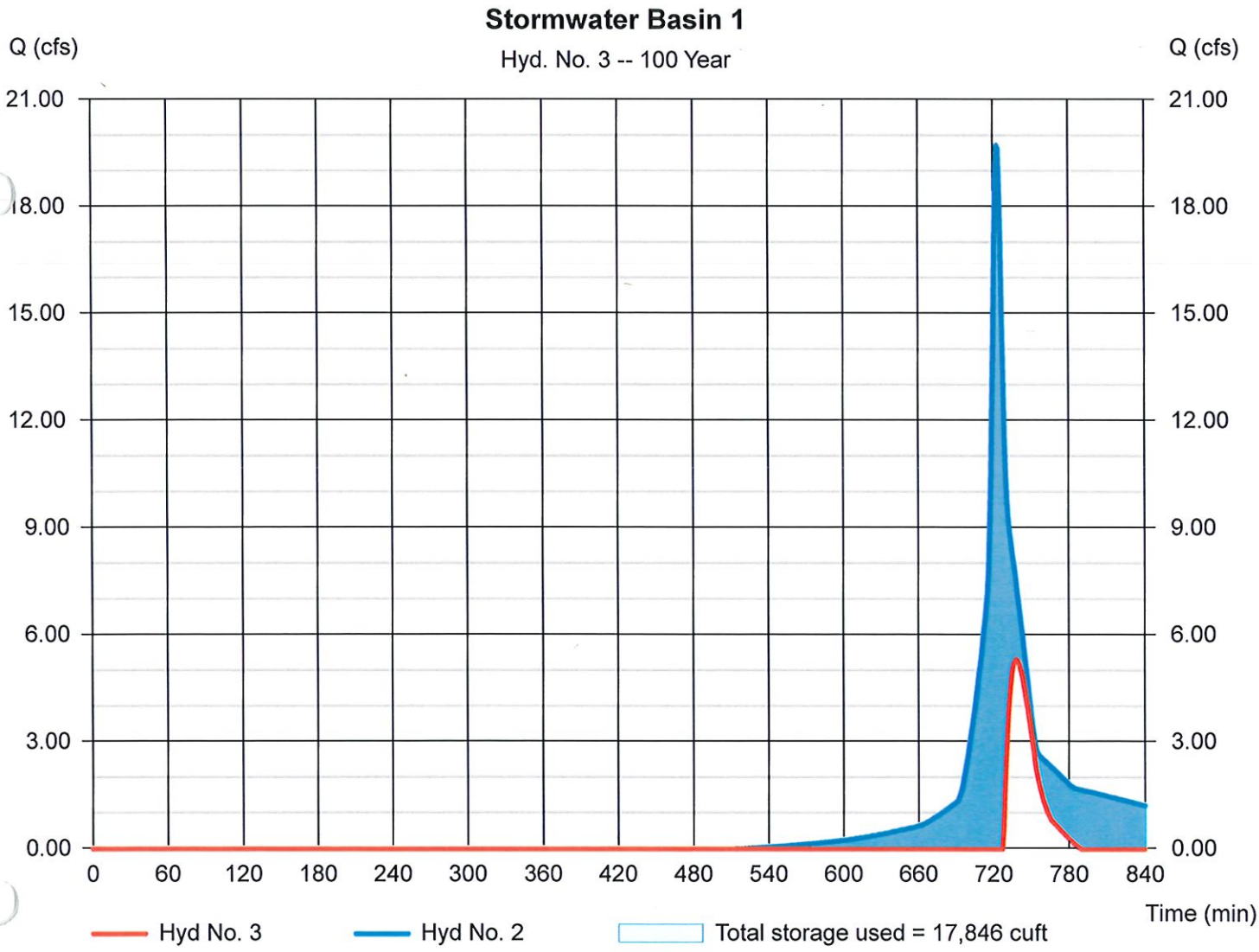
Hydrograph Report

Hyd. No. 3

Stormwater Basin 1

Hydrograph type	= Reservoir	Peak discharge	= 5.325 cfs
Storm frequency	= 100 yrs	Time to peak	= 738 min
Time interval	= 1 min	Hyd. volume	= 7,823 cuft
Inflow hyd. No.	= 2 - Proposed Conditions - Area 1	Max. Elevation	= 38.85 ft
Reservoir name	= Stormwater Basin 1	Max. Storage	= 17,846 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Hydrograph Report

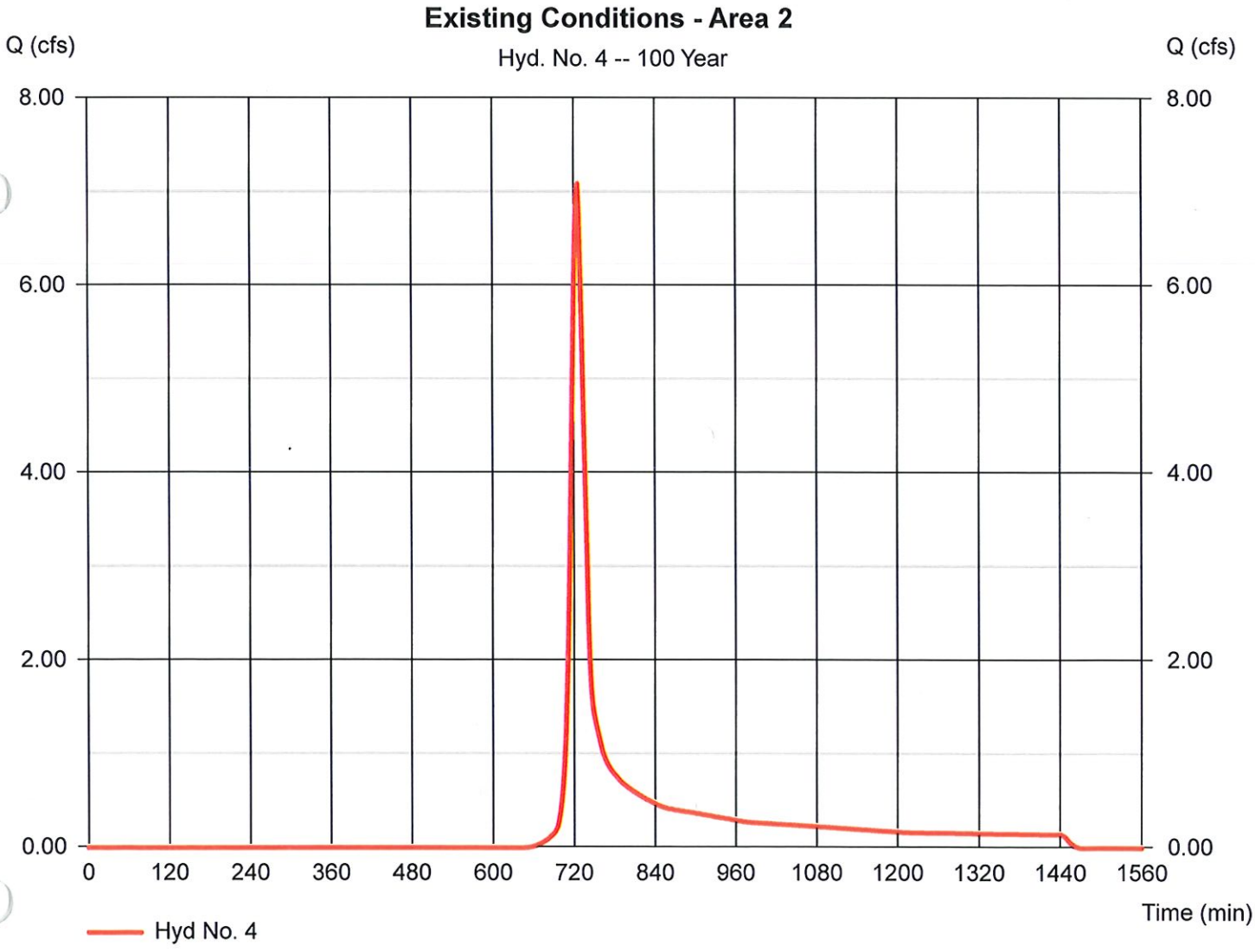
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2009 by Autodesk, Inc. v6.066 Thursday, Apr 27, 2023

Hyd. No. 4

Existing Conditions - Area 2

Hydrograph type	= SCS Runoff	Peak discharge	= 7.095 cfs
Storm frequency	= 100 yrs	Time to peak	= 726 min
Time interval	= 2 min	Hyd. volume	= 23,240 cuft
Drainage area	= 2.500 ac	Curve number	= 55*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 16.90 min
Total precip.	= 7.67 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(2.500 x 55)] / 2.500



Hydrograph Report

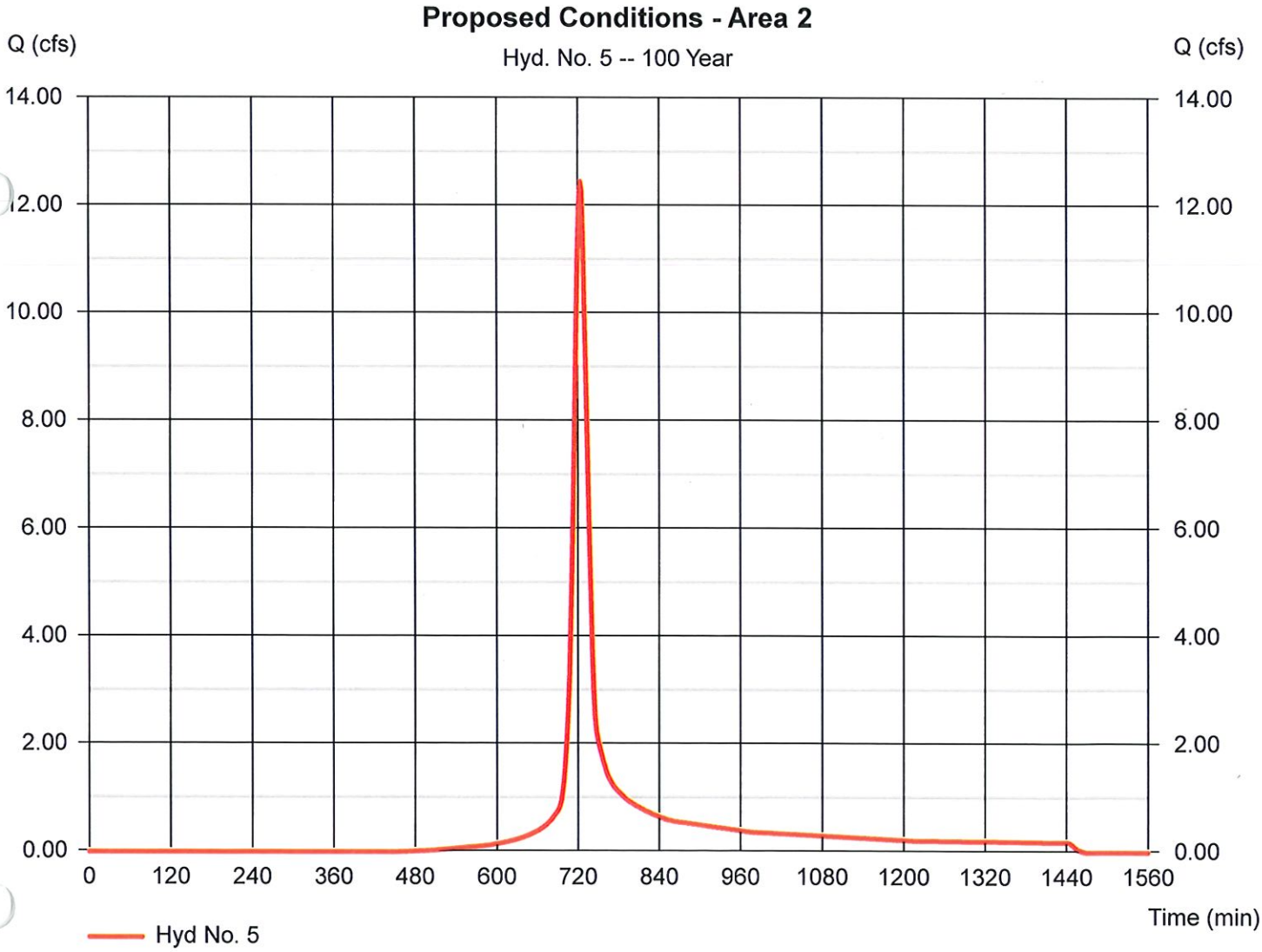
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2009 by Autodesk, Inc. v6.066 Thursday, Apr 27, 2023

Hyd. No. 5

Proposed Conditions - Area 2

Hydrograph type	= SCS Runoff	Peak discharge	= 12.46 cfs
Storm frequency	= 100 yrs	Time to peak	= 724 min
Time interval	= 2 min	Hyd. volume	= 38,967 cuft
Drainage area	= 2.500 ac	Curve number	= 71*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 16.49 min
Total precip.	= 7.67 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(1.400 x 83) + (1.100 x 55)] / 2.500



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2009 by Autodesk, Inc. v6.066 Thursday, Apr 27, 2023

Hyd. No. 6

Stormwater Basin 2

Hydrograph type	= Reservoir	Peak discharge	= 6.326 cfs
Storm frequency	= 100 yrs	Time to peak	= 734 min
Time interval	= 2 min	Hyd. volume	= 5,602 cuft
Inflow hyd. No.	= 5 - Proposed Conditions - Area 2	Max. Elevation	= 38.83 ft
Reservoir name	= Stormwater Basin 2	Max. Storage	= 12,131 cuft

Storage Indication method used. Exfiltration extracted from Outflow.