DRAINAGE CALCULATIONS, HYDRAULICS & HYDROLOGY REPORT

PROPOSED WAREHOUSES
69 FITCH HILL ROAD
UNCASVILLE, CT

APRIL 2023

Revised May 25, 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	0.768 cfs	5.347 cfs	9.287 cfs	16.38 cfs
Proposed	0.000 cfs	0.250 cfs	1.120 cfs	6.813 cfs

Drainage Area 2

	2-year	10-year	25-year	100-year
Existing	0.716 cfs	4.398 cfs	7.626 cfs	13.34 cfs
Proposed	0.000 cfs	0.000 cfs	0.000 cfs	11.54 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	29,079 CF Provided
7,417 CF of Dry Storage Volume	22,523 CF Provided
14,834 CF of Total Volume Required	51,602 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	14,620 CF Provided
4,523 CF of Dry Storage Volume	11,575 CF Provided
9.045 CF of Total Volume Required	26,195 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
51,602 CF Provided in the Water Quality Basin and Forebay

As the calculations show that there will be no stormwater leaving the proposed stormwater management system (water quality basin), up to and including the 2 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
26,195 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, Stormwater basin #1 will contain up to and including the 2 year storm event 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.

BUILDING ADDITION

Due to the size of disturbance for the building addition, 0.9 acres, a temporary sediment trap is not required. The General Permit for the Discharge of Stormwater and Dewatering Wastewaters from Construction Activities states that "For points of discharge from disturbed sites with a total contributing drainage area of between two to five acres, a temporary sediment trap or temporary sediment basin shall be designed and installed in accordance with the Guidelines.

Due to the size of disturbance for the building addition, under one acre, providing Water Quality Volume does not apply. Section 7.2 Criteria Applicability, of the Stormwater Water Quality Manual, states that "The design criteria presented in this chapter are generally applicable to the following types of development and redevelopment projects, including phased developments:

- Any development resulting in the disturbance of greater than or equal to one acre of land."

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	0.768	1	737	6,174	-----	-----	-----	Existing Conditions - Areas 1
2	SCS Runoff	3.845	1	724	13,572	-----	-----	-----	Proposed Conditions - Area 1
3	Reservoir	0.000	1	n/a	0	2	38.41	13,572	Forebay 1
4	Reservoir	0.000	1	n/a	0	3	36.00	0.000	Stormwater Basin 1
5	SCS Runoff	0.716	2	730	5,109	-----	-----	-----	Existing Conditions - Area 2
6	SCS Runoff	2.493	2	724	9,166	-----	-----	-----	Proposed Conditions - Area 2
7	Reservoir	0.459	2	760	5,968	6	38.54	3,279	Forebay 2
8	Reservoir	0.000	2	824	0	7	36.16	684	Stormwater Basin 2

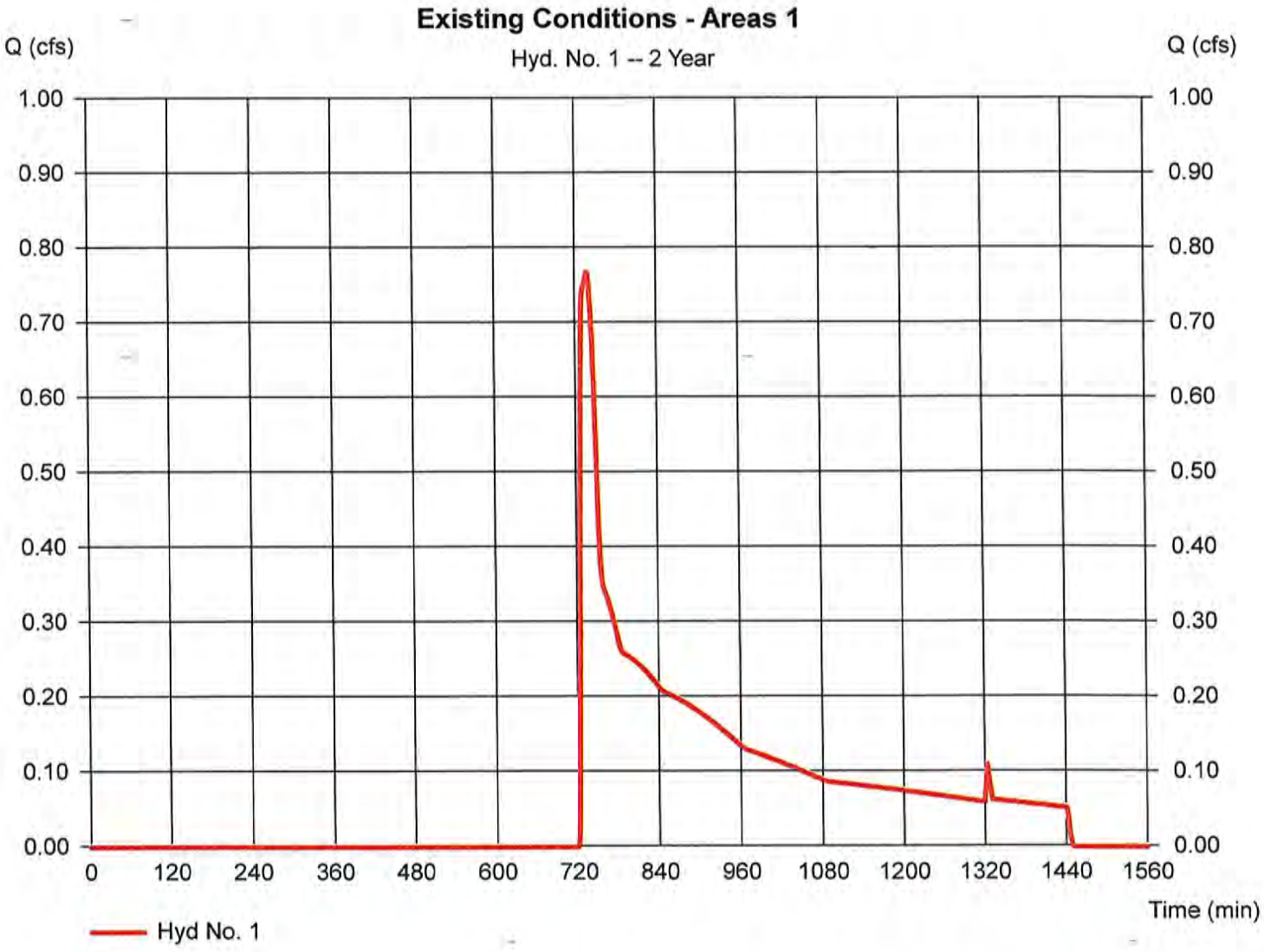
Hydrograph Report

Hyd. No. 1

Existing Conditions - Areas 1

Hydrograph type	= SCS Runoff	Peak discharge	= 0.768 cfs
Storm frequency	= 2 yrs	Time to peak	= 737 min
Time interval	= 1 min	Hyd. volume	= 6,174 cuft
Drainage area	= 5.500 ac	Curve number	= 55*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 5.30 min
Total precip.	= 3.36 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(5.300 x 55)] / 5.500



Hydrograph Report

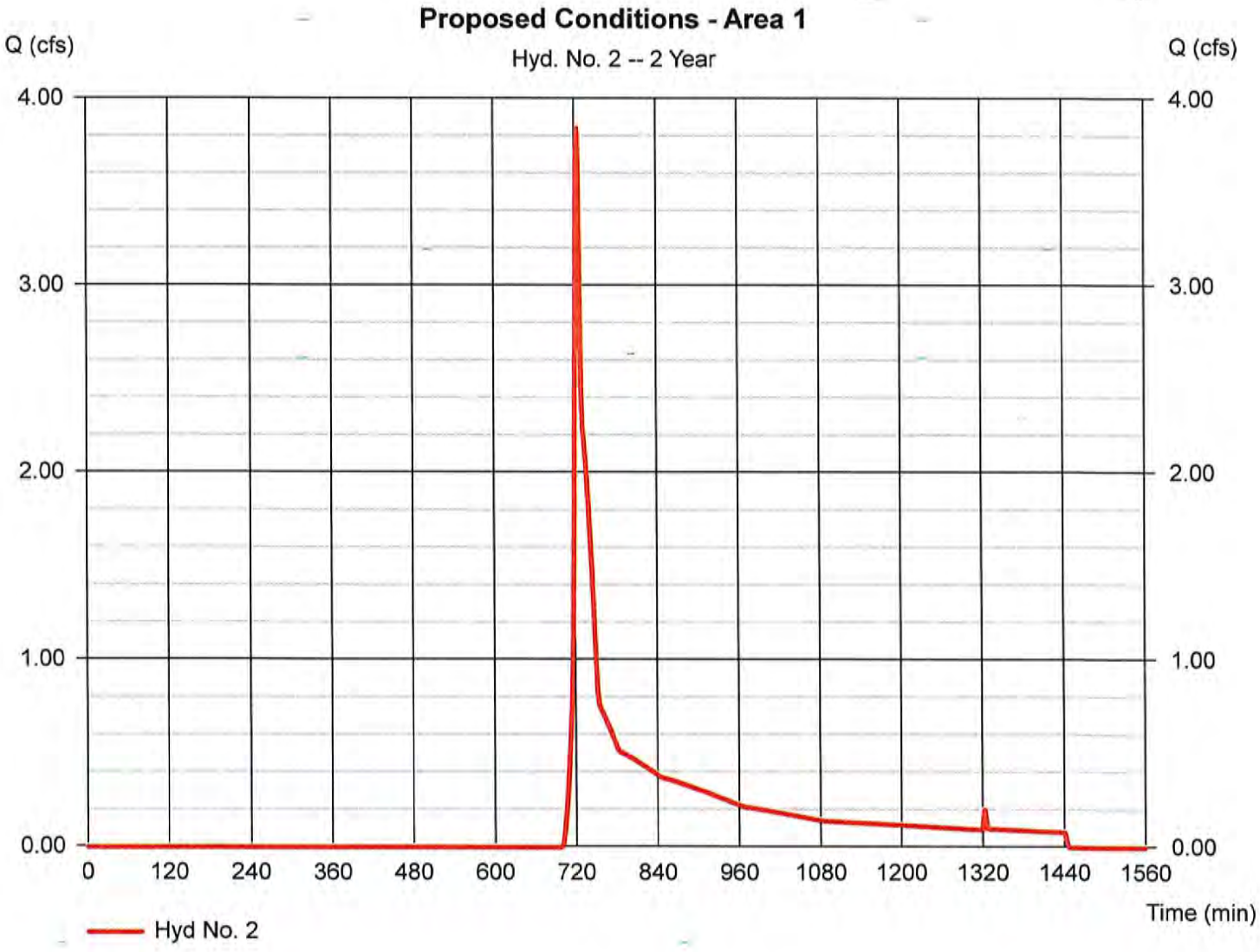
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2009 by Autodesk, Inc. v6.066 Thursday, May 25, 2023

Hyd. No. 2

Proposed Conditions - Area 1

Hydrograph type	= SCS Runoff	Peak discharge	= 3.845 cfs
Storm frequency	= 2 yrs	Time to peak	= 724 min
Time interval	= 1 min	Hyd. volume	= 13,572 cuft
Drainage area	= 5.500 ac	Curve number	= 65*
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) = [(1.900 x 83) + (3.600 x 55)] / 5.500



Hydrograph Report

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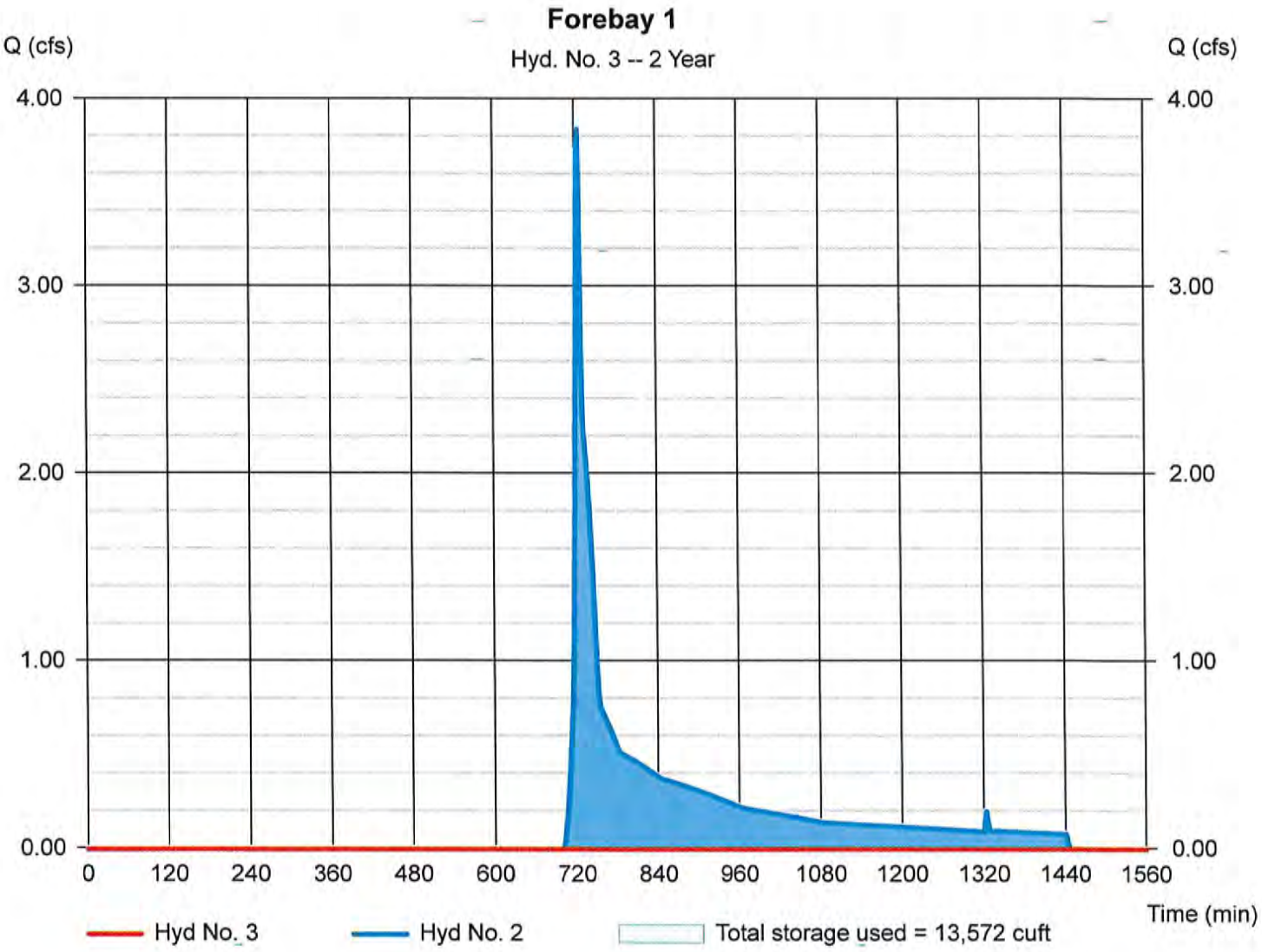
Hyd. No. 3

Forebay 1

Hydrograph type	= Reservoir	Peak discharge	= 0.000 cfs
Storm frequency	= 2 yrs	Time to peak	= n/a
Time interval	= 1 min	Hyd. volume	= 0 cuft
Inflow hyd. No.	= 2 - Proposed Conditions - Area 1	Max. Elevation	= 38.41 ft
Reservoir name	= Forebay #1	Max. Storage	= 13,572 cuft

Storage Indication method used.



Hydrograph Report

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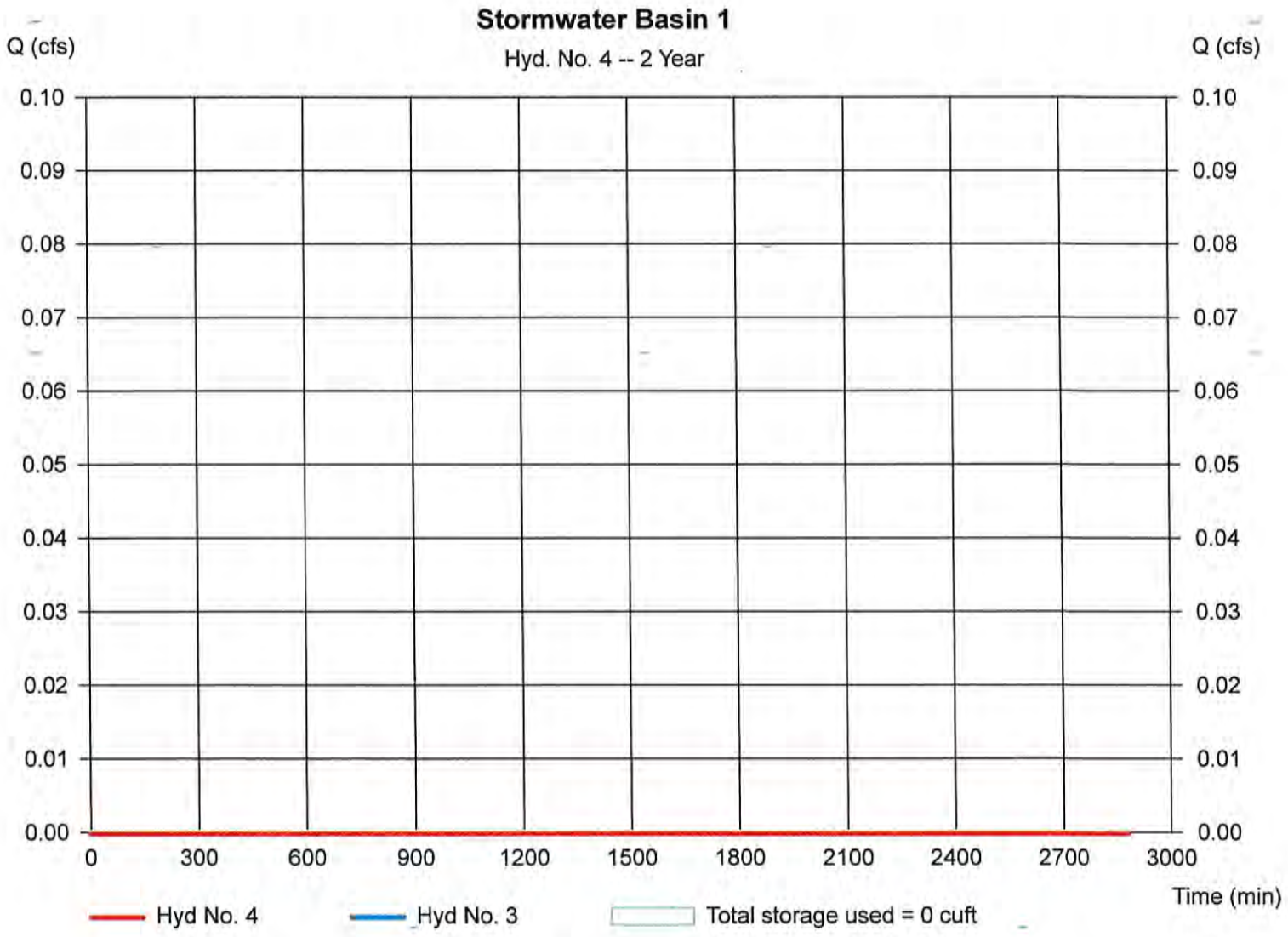
Hyd. No. 4

Stormwater Basin 1

Hydrograph type	= Reservoir	Peak discharge	= 0.000 cfs
Storm frequency	= 2 yrs	Time to peak	= n/a
Time interval	= 1 min	Hyd. volume	= 0 cuft
Inflow hyd. No.	= 3 - Forebay 1	Max. Elevation	= 36.00 ft
Reservoir name	= Stormwater Basin 1	Max. Storage	= 0 cuft

Storage Indication method used.



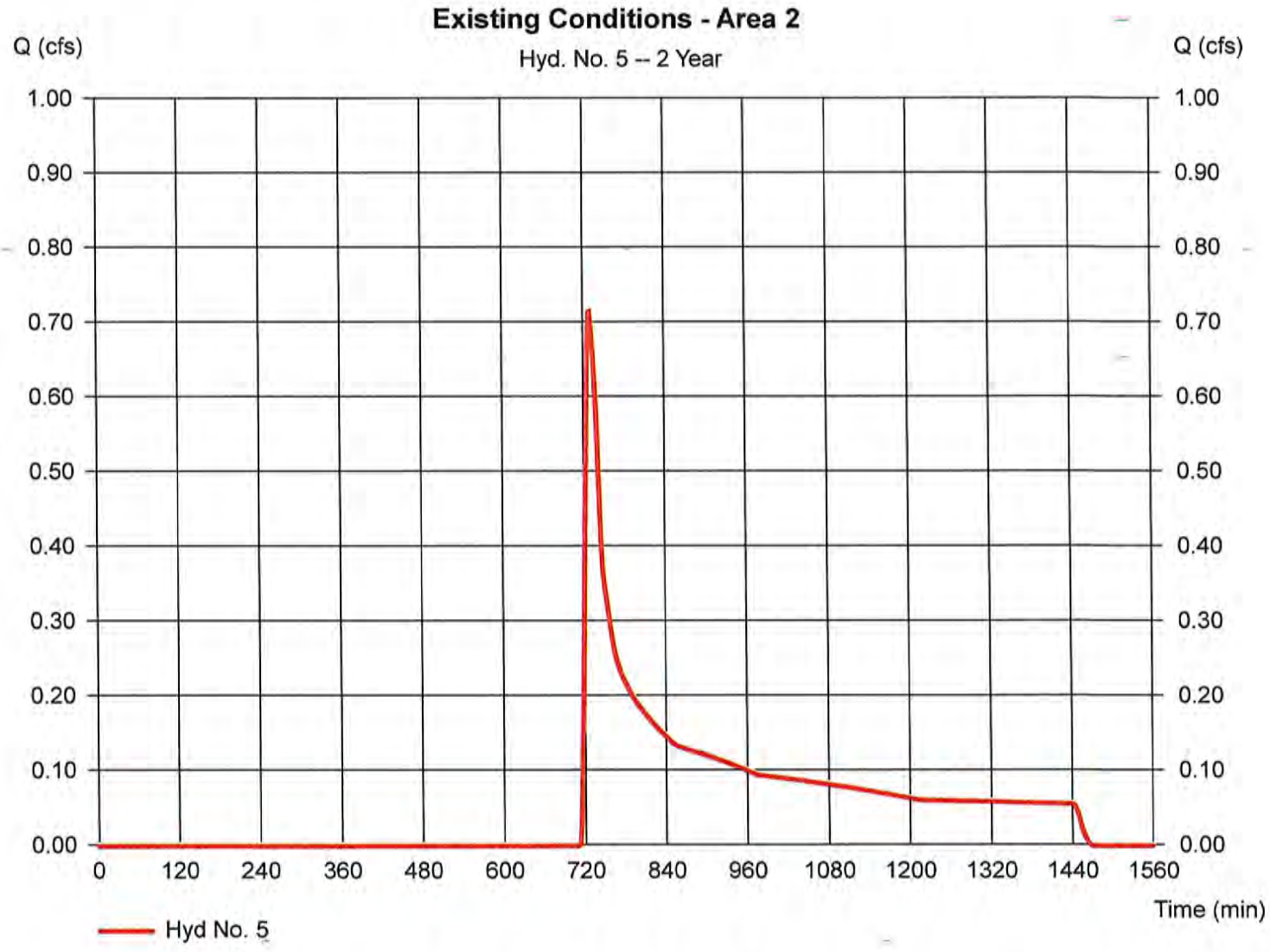
Hydrograph Report

Hyd. No. 5

Existing Conditions - Area 2

Hydrograph type	= SCS Runoff	Peak discharge	= 0.716 cfs
Storm frequency	= 2 yrs	Time to peak	= 730 min
Time interval	= 2 min	Hyd. volume	= 5,109 cuft
Drainage area	= 4.700 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) = [(4.700 x 55)] / 4.700



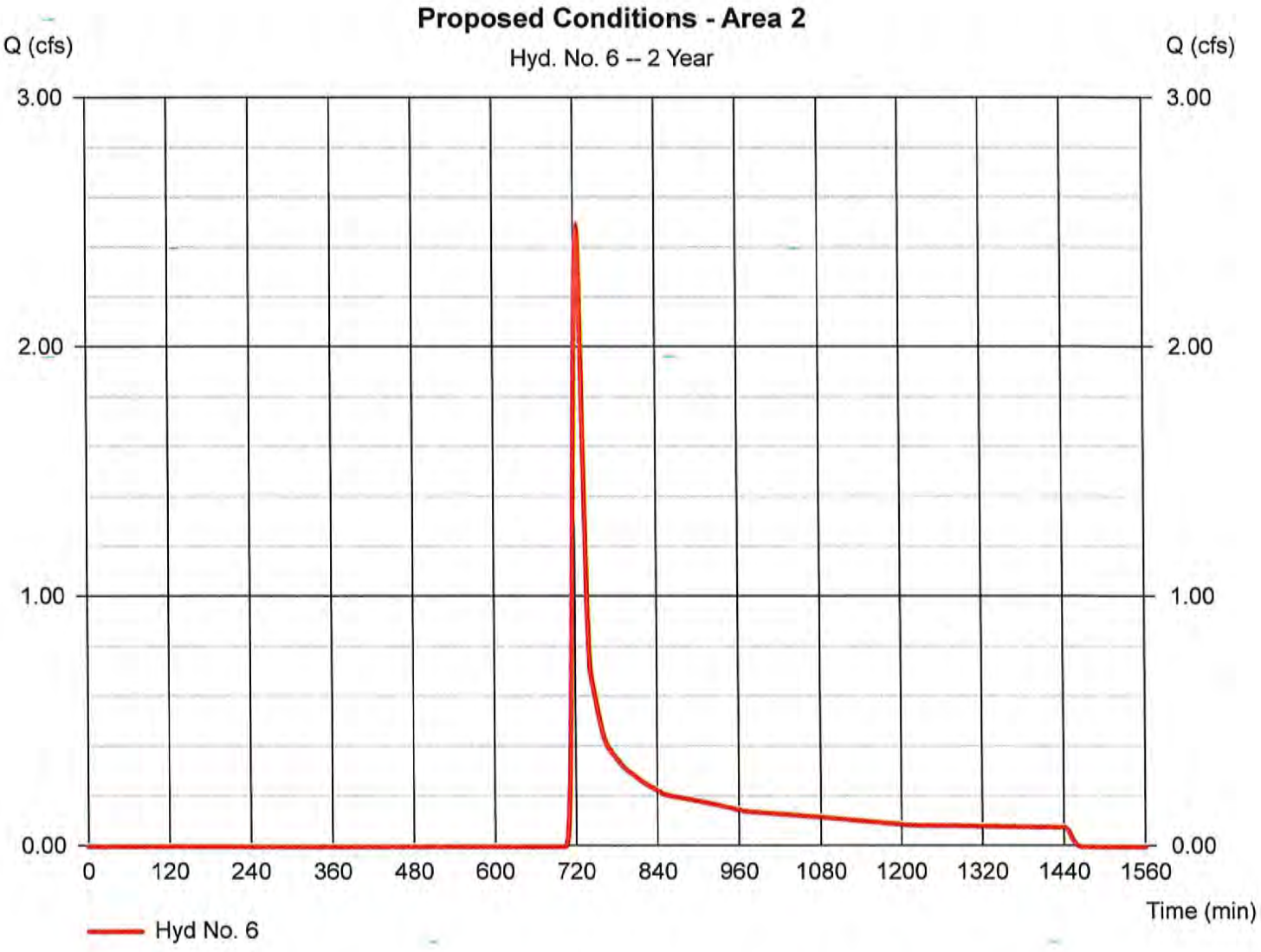
Hydrograph Report

Hyd. No. 6

Proposed Conditions - Area 2

Hydrograph type	= SCS Runoff	Peak discharge	= 2.493 cfs
Storm frequency	= 2 yrs	Time to peak	= 724 min
Time interval	= 2 min	Hyd. volume	= 9,166 cuft
Drainage area	= 4.700 ac	Curve number	= 62*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 16.50 min
Total precip.	= 3.36 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(1.200 x 83) + (3.500 x 55)] / 4.700



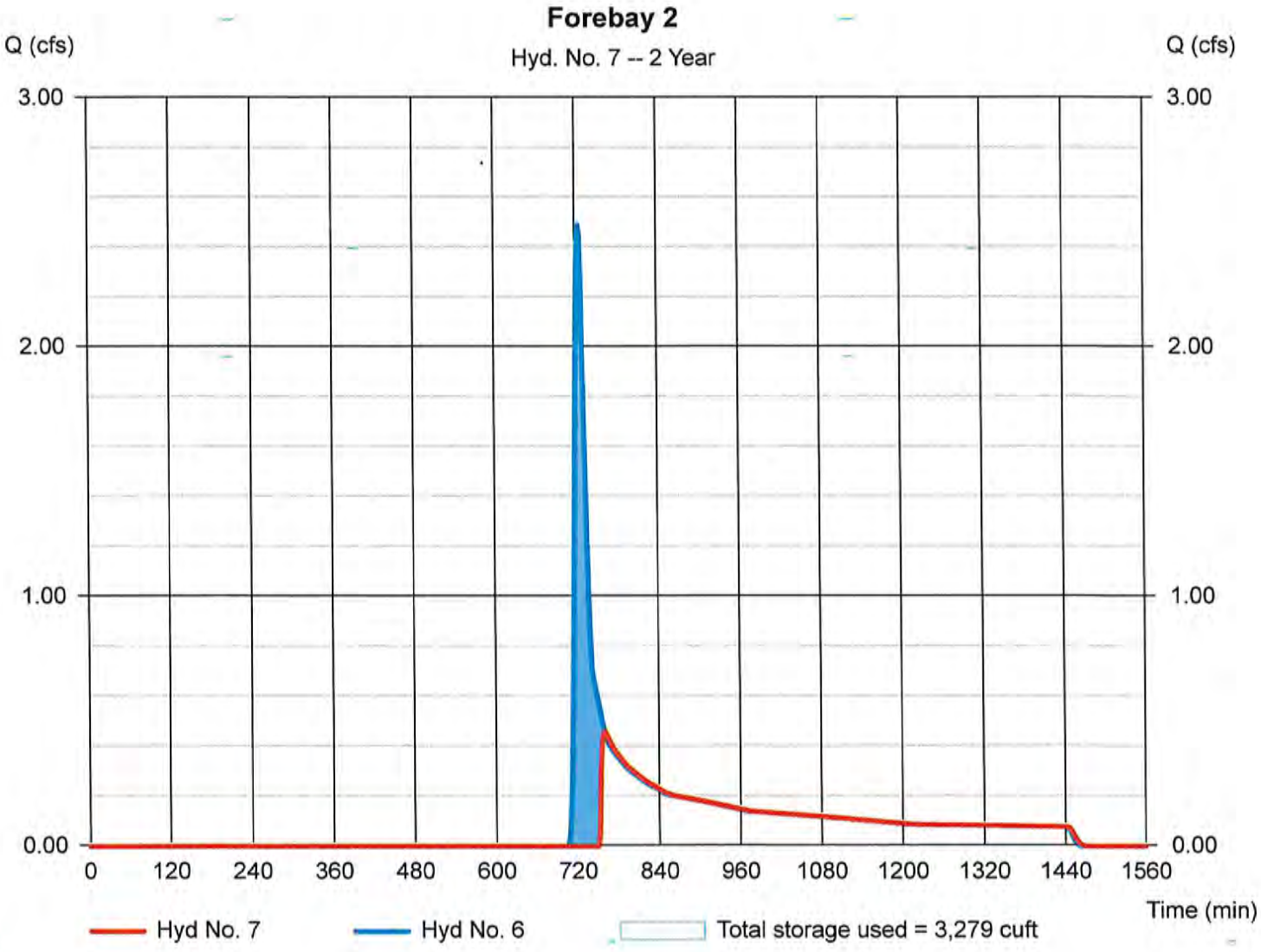
Hydrograph Report

Hyd. No. 7

Forebay 2

Hydrograph type	= Reservoir	Peak discharge	= 0.459 cfs
Storm frequency	= 2 yrs	Time to peak	= 760 min
Time interval	= 2 min	Hyd. volume	= 5,968 cuft
Inflow hyd. No.	= 6 - Proposed Conditions - Area 2	Max. Elevation	= 38.54 ft
Reservoir name	= Forbay #2	Max. Storage	= 3,279 cuft

Storage Indication method used.



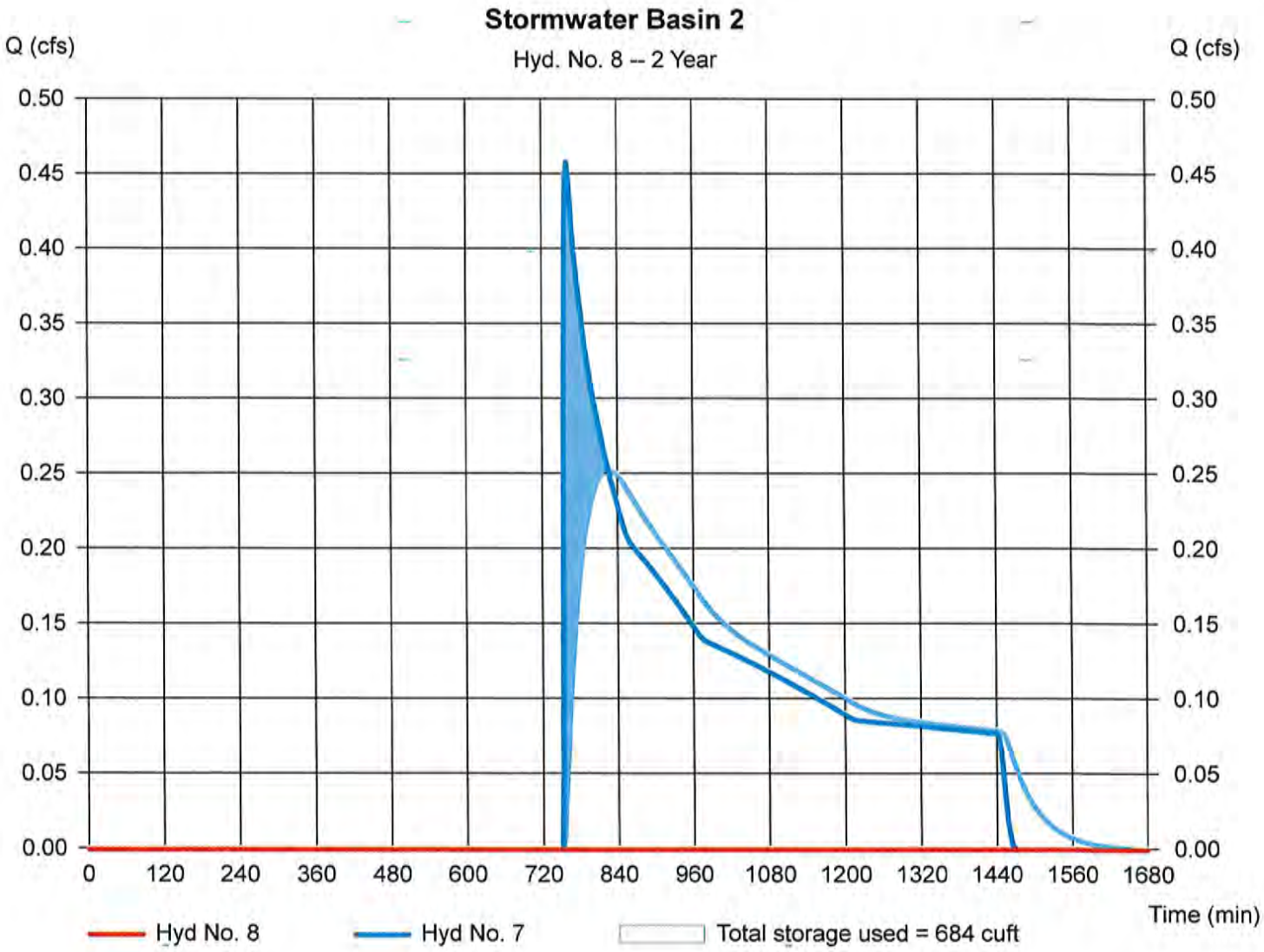
Hydrograph Report

Hyd. No. 8

Stormwater Basin 2

Hydrograph type	= Reservoir	Peak discharge	= 0.000 cfs
Storm frequency	= 2 yrs	Time to peak	= 824 min
Time interval	= 2 min	Hyd. volume	= 0 cuft
Inflow hyd. No.	= 7 - Forebay 2	Max. Elevation	= 36.16 ft
Reservoir name	= Stormwater Basin 2	Max. Storage	= 684 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	5.347	1	726	20,382	------	------	------	Existing Conditions - Areas 1
2	SCS Runoff	10.99	1	724	33,279	------	------	------	Proposed Conditions - Area 1
3	Reservoir	1.548	1	763	19,052	2	38.63	15,096	Forebay 1
4	Reservoir	0.250	1	1179	4,198	3	38.53	15,061	Stormwater Basin 1
5	SCS Runoff	4.398	2	726	16,887	------	------	------	Existing Conditions - Area 2
6	SCS Runoff	8.088	2	724	24,132	------	------	------	Proposed Conditions - Area 2
7	Reservoir	7.976	2	724	20,934	6	38.89	3,917	Forebay 2
8	Reservoir	0.000	2	834	0	7	37.24	5,270	Stormwater Basin 2

Hydrograph Report

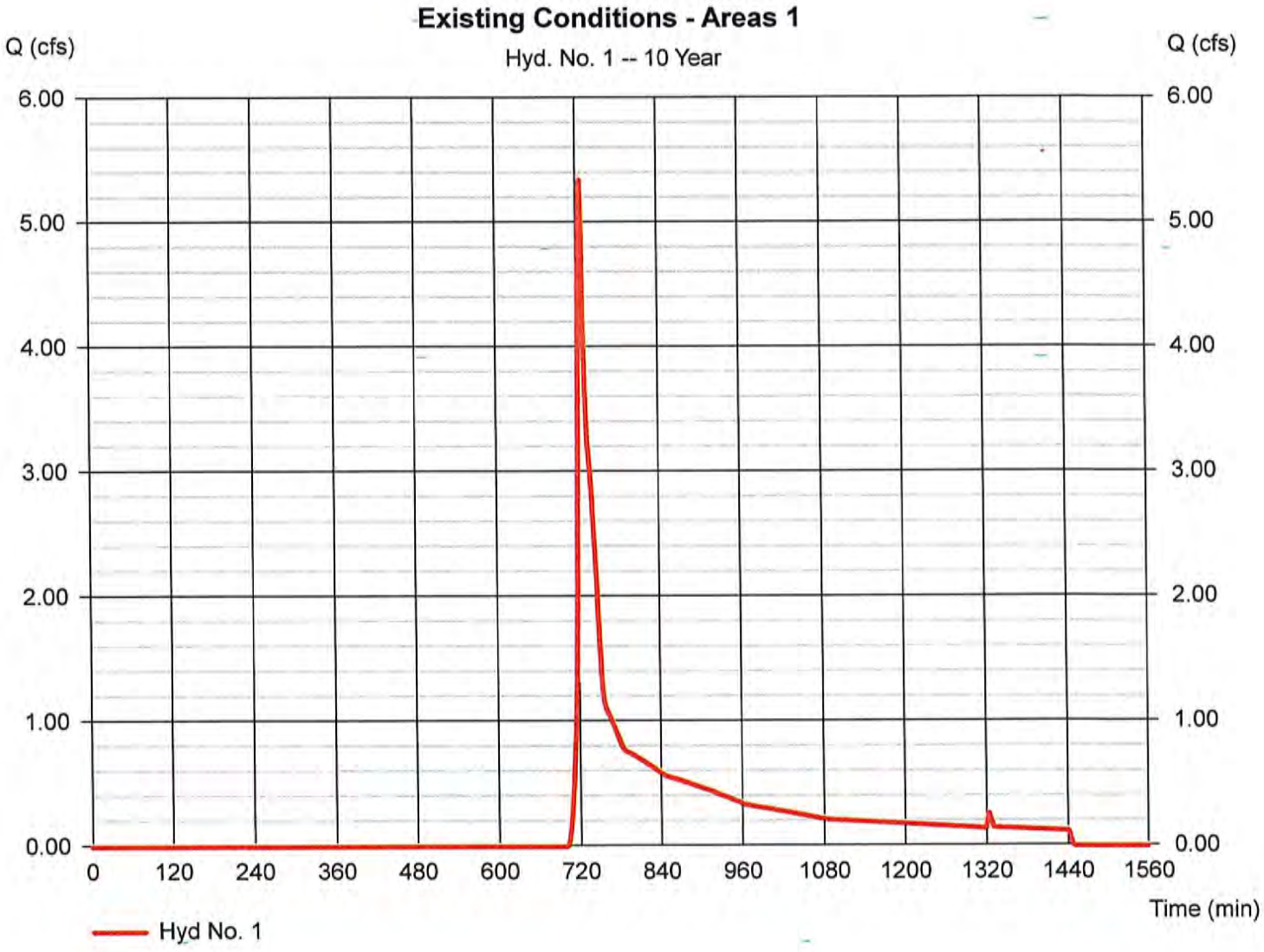
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2009 by Autodesk, Inc. v6.066 Thursday, May 25, 2023

Hyd. No. 1

Existing Conditions - Areas 1

Hydrograph type	= SCS Runoff	Peak discharge	= 5.347 cfs
Storm frequency	= 10 yrs	Time to peak	= 726 min
Time interval	= 1 min	Hyd. volume	= 20,382 cuft
Drainage area	= 5.500 ac	Curve number	= 55*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 5.30 min
Total precip.	= 5.02 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(5.300 x 55)] / 5.500



Hydrograph Report

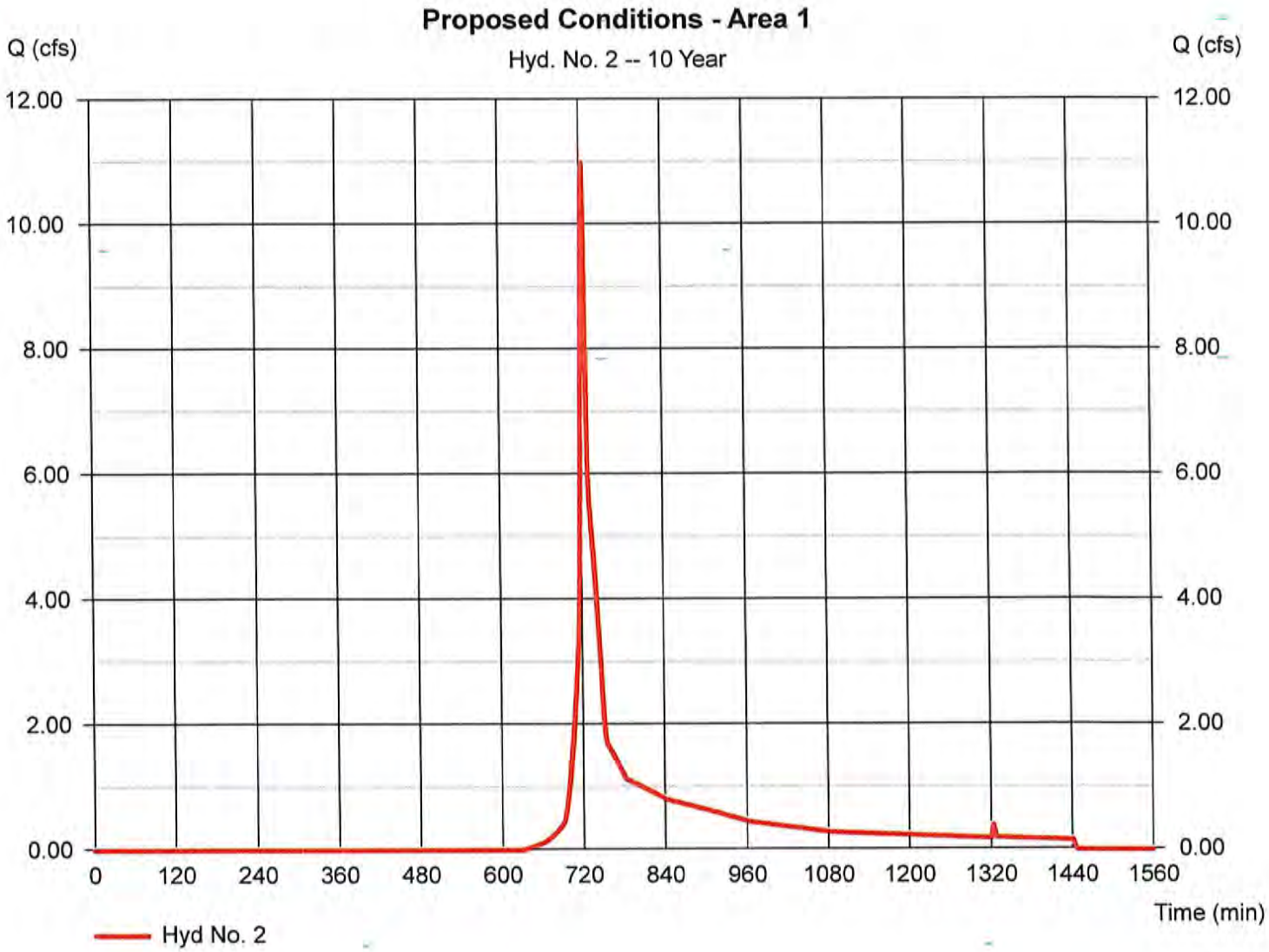
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2009 by Autodesk, Inc. v6.066 Thursday, May 25, 2023

Hyd. No. 2

Proposed Conditions - Area 1

Hydrograph type	= SCS Runoff	Peak discharge	= 10.99 cfs
Storm frequency	= 10 yrs	Time to peak	= 724 min
Time interval	= 1 min	Hyd. volume	= 33,279 cuft
Drainage area	= 5.500 ac	Curve number	= 65*
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) = [(1.900 x 83) + (3.600 x 55)] / 5.500



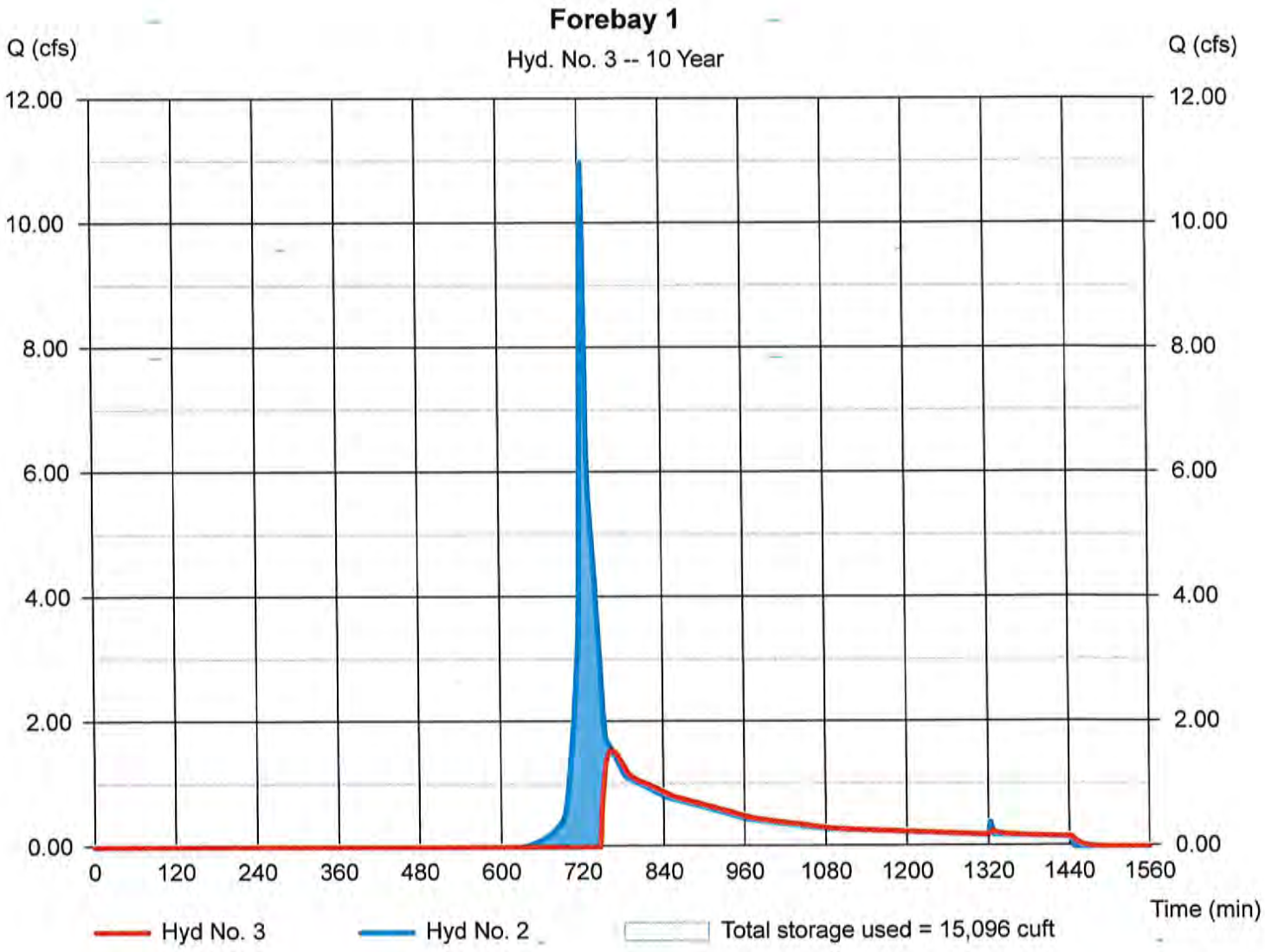
Hydrograph Report

Hyd. No. 3

Forebay 1

Hydrograph type	= Reservoir	Peak discharge	= 1.548 cfs
Storm frequency	= 10 yrs	Time to peak	= 763 min
Time interval	= 1 min	Hyd. volume	= 19,052 cuft
Inflow hyd. No.	= 2 - Proposed Conditions - Area 1	Max. Elevation	= 38.63 ft
Reservoir name	= Forebay #1	Max. Storage	= 15,096 cuft

Storage Indication method used.



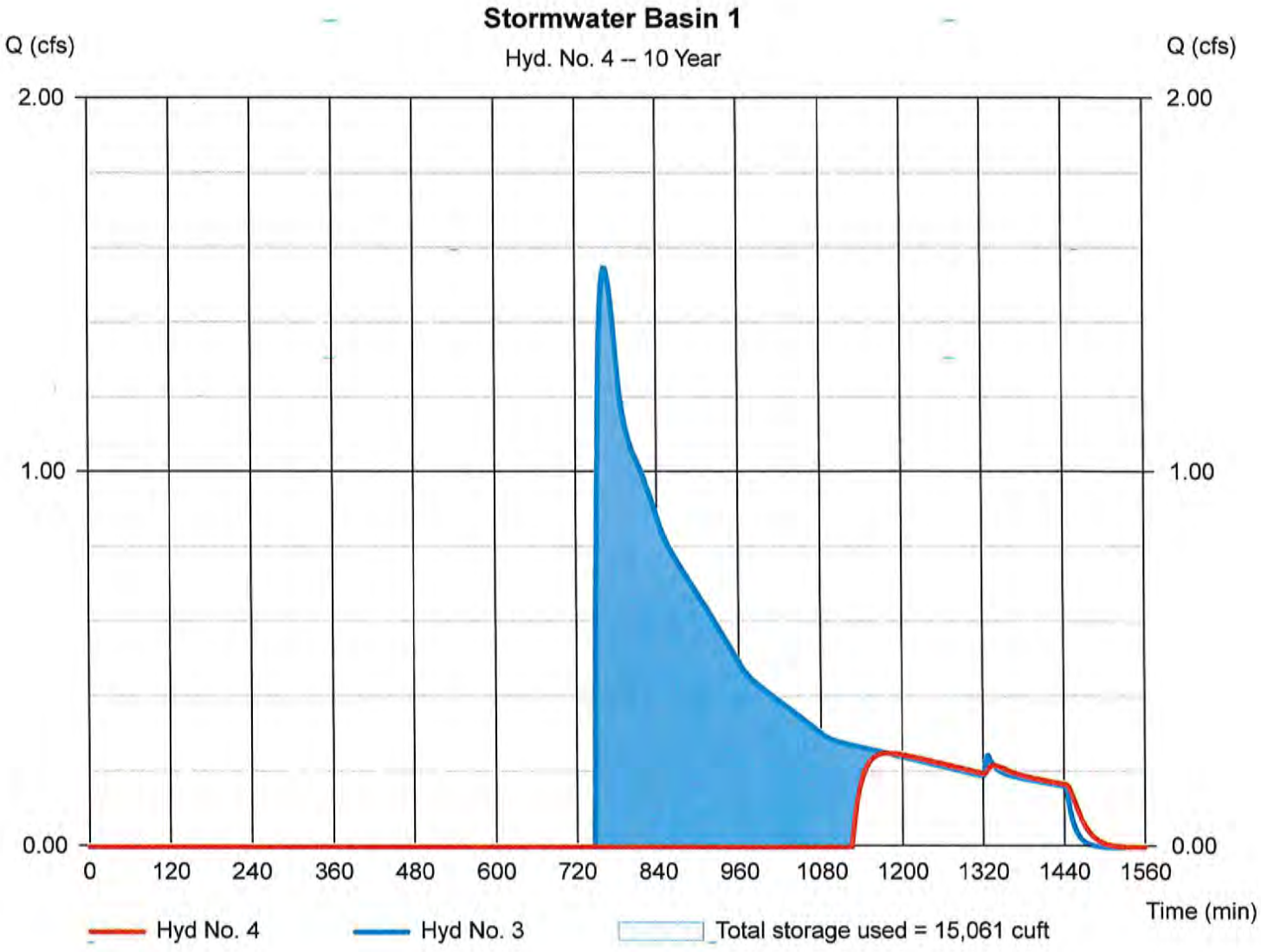
Hydrograph Report

Hyd. No. 4

Stormwater Basin 1

Hydrograph type	= Reservoir	Peak discharge	= 0.250 cfs
Storm frequency	= 10 yrs	Time to peak	= 1179 min
Time interval	= 1 min	Hyd. volume	= 4,198 cuft
Inflow hyd. No.	= 3 - Forebay 1	Max. Elevation	= 38.53 ft
Reservoir name	= Stormwater Basin 1	Max. Storage	= 15,061 cuft

Storage Indication method used.



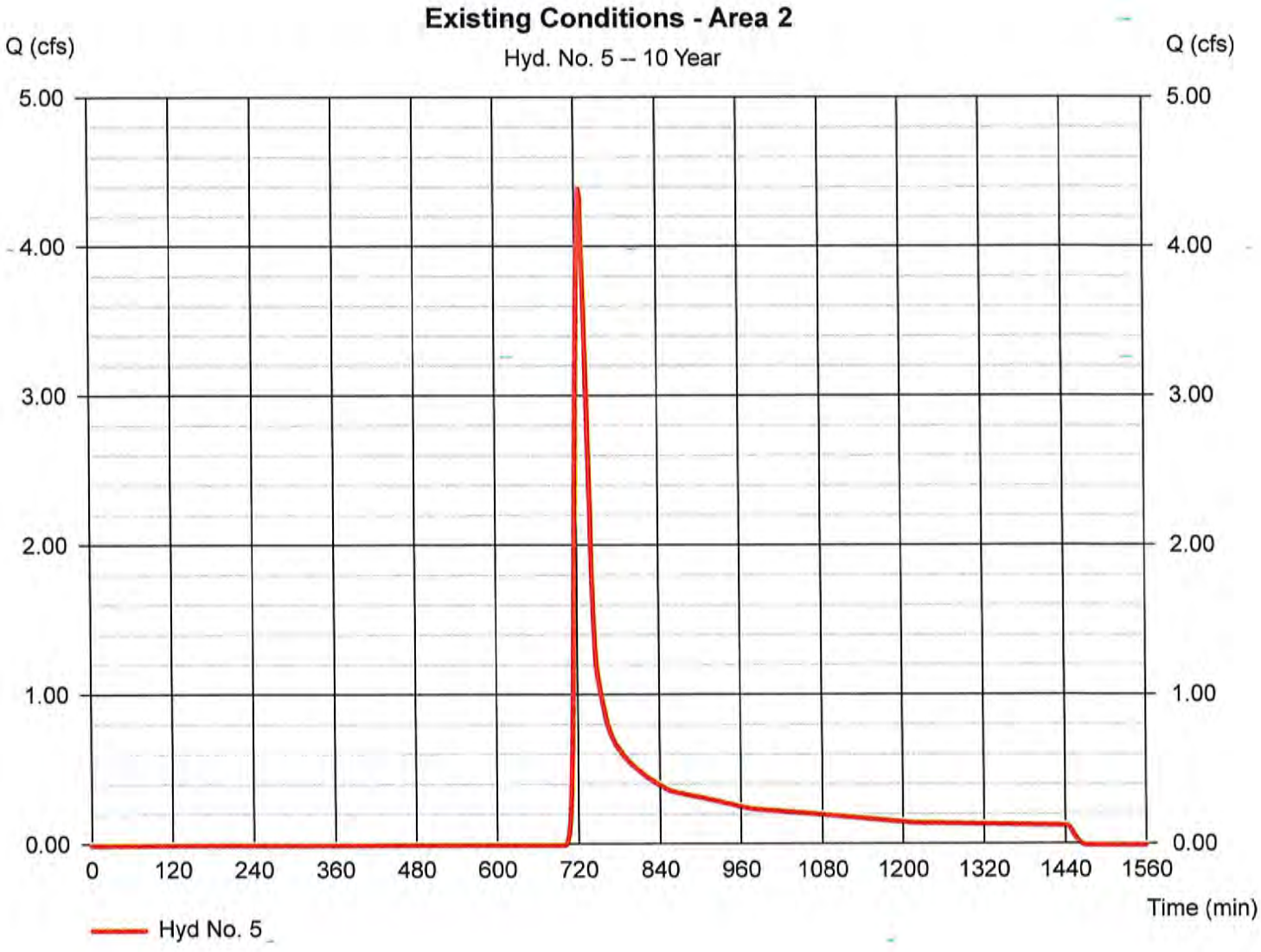
Hydrograph Report

Hyd. No. 5

Existing Conditions - Area 2

Hydrograph type	= SCS Runoff	Peak discharge	= 4.398 cfs
Storm frequency	= 10 yrs	Time to peak	= 726 min
Time interval	= 2 min	Hyd. volume	= 16,887 cuft
Drainage area	= 4.700 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) = [(4.700 x 55)] / 4.700



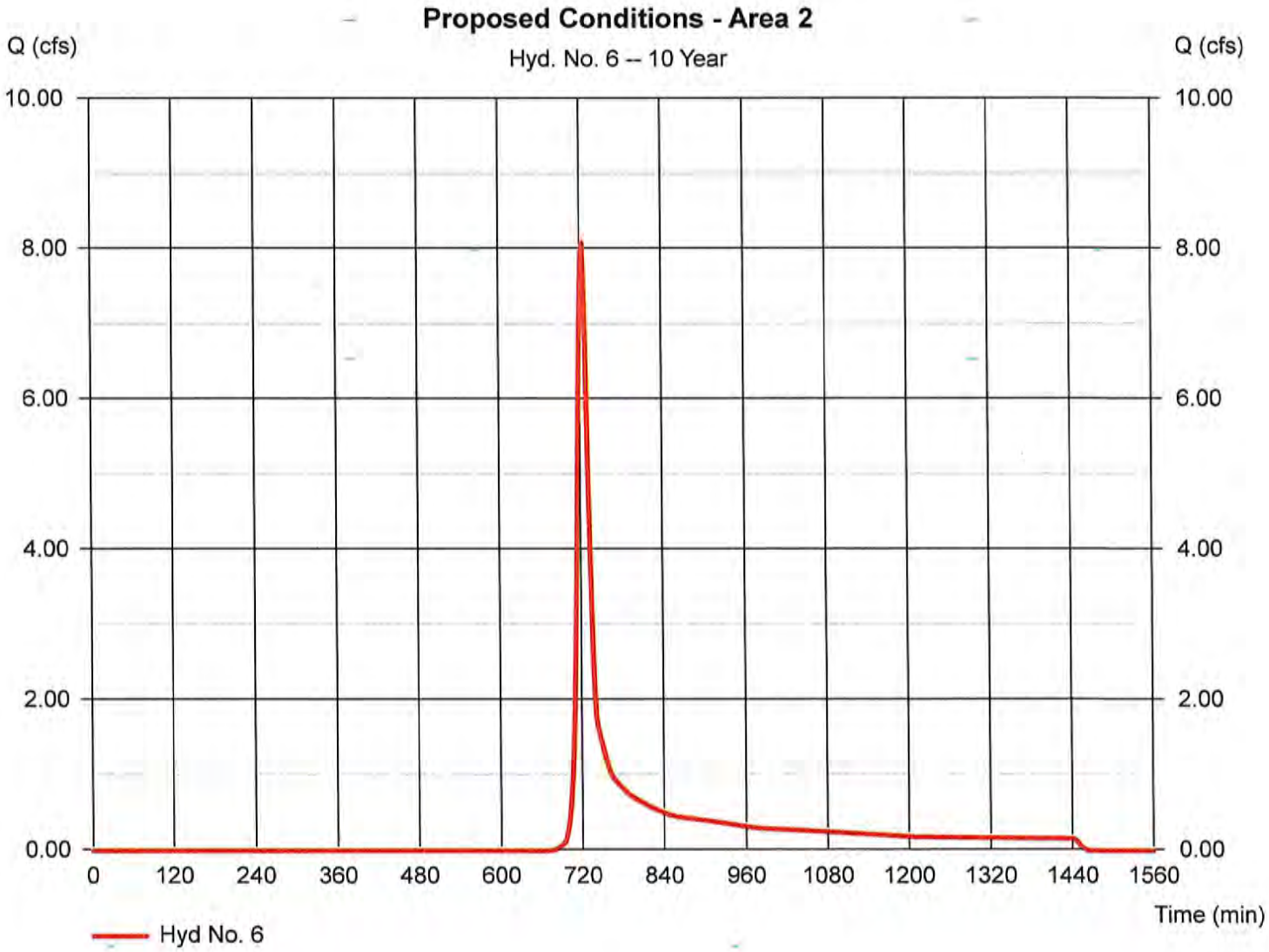
Hydrograph Report

Hyd. No. 6

Proposed Conditions - Area 2

Hydrograph type	= SCS Runoff	Peak discharge	= 8.088 cfs
Storm frequency	= 10 yrs	Time to peak	= 724 min
Time interval	= 2 min	Hyd. volume	= 24,132 cuft
Drainage area	= 4.700 ac	Curve number	= 62*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 16.50 min
Total precip.	= 5.02 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(1.200 x 83) + (3.500 x 55)] / 4.700



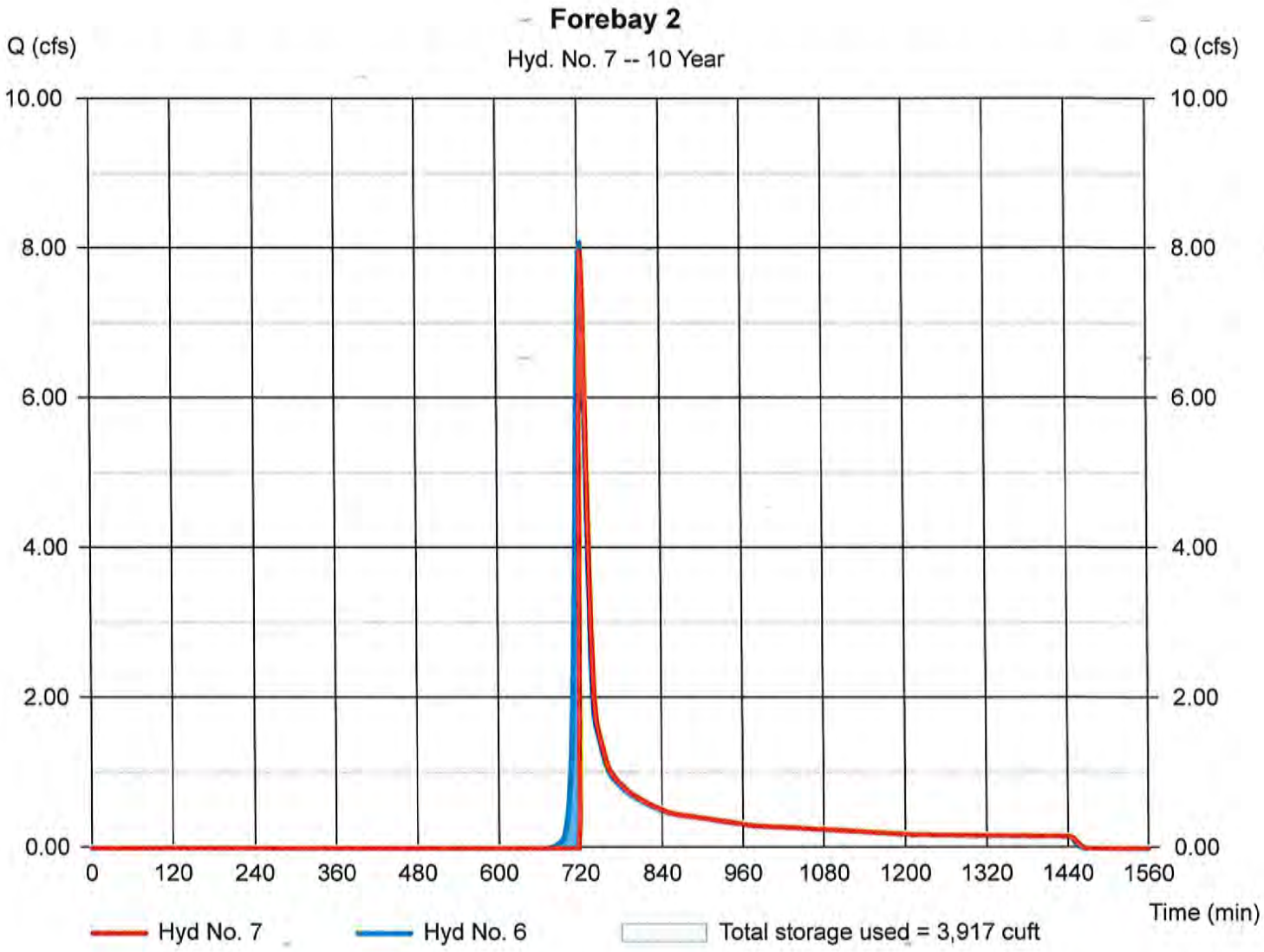
Hydrograph Report

Hyd. No. 7

Forebay 2

Hydrograph type	= Reservoir	Peak discharge	= 7.976 cfs
Storm frequency	= 10 yrs	Time to peak	= 724 min
Time interval	= 2 min	Hyd. volume	= 20,934 cuft
Inflow hyd. No.	= 6 - Proposed Conditions - Area 2	Max. Elevation	= 38.89 ft
Reservoir name	= Forbay #2	Max. Storage	= 3,917 cuft

Storage Indication method used.



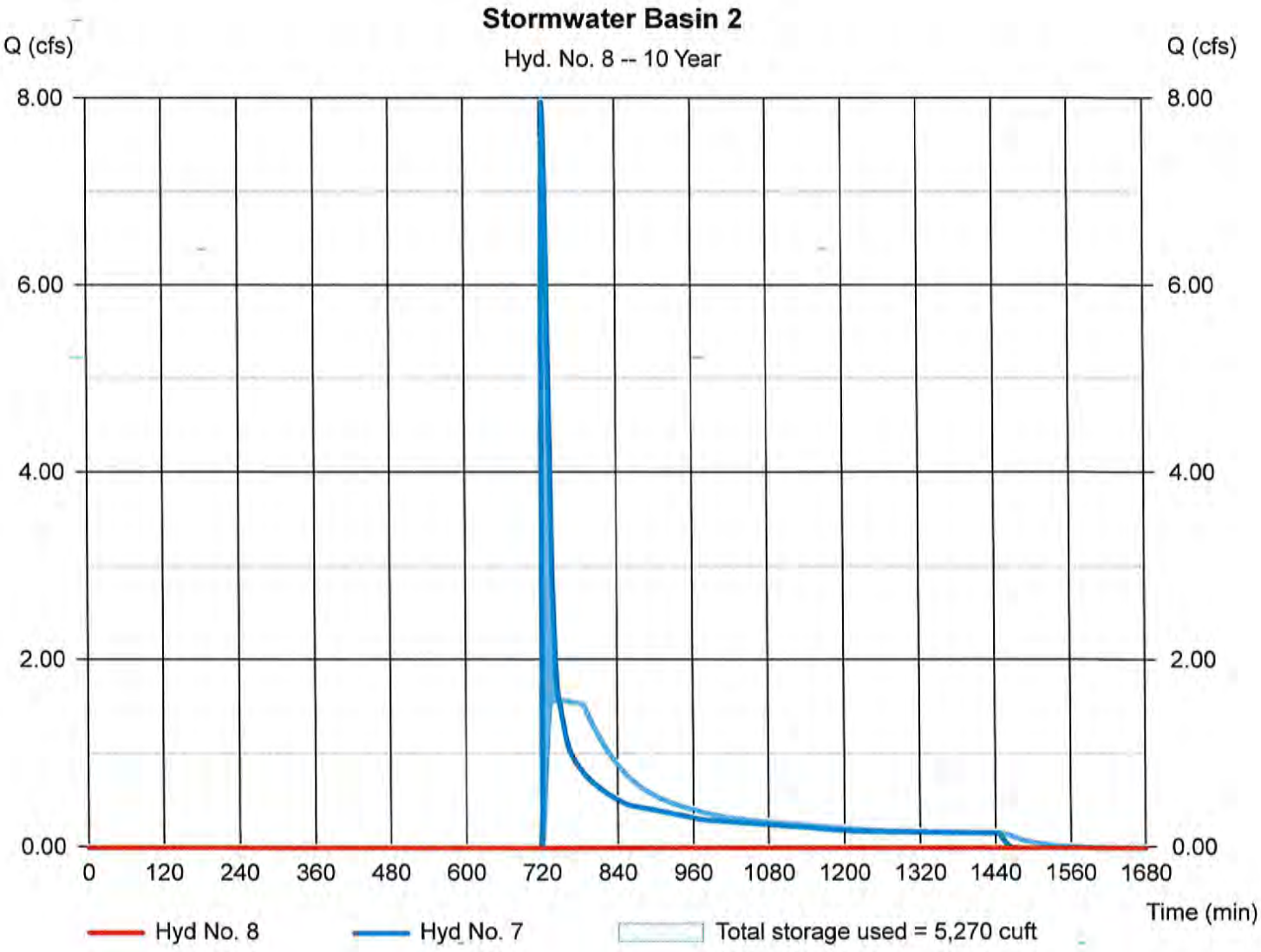
Hydrograph Report

Hyd. No. 8

Stormwater Basin 2

Hydrograph type	= Reservoir	Peak discharge	= 0.000 cfs
Storm frequency	= 10 yrs	Time to peak	= 834 min
Time interval	= 2 min	Hyd. volume	= 0 cuft
Inflow hyd. No.	= 7 - Forebay 2	Max. Elevation	= 37.24 ft
Reservoir name	= Stormwater Basin 2	Max. Storage	= 5,270 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



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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	9.287	1	725	31,962	------	------	------	Existing Conditions - Areas 1
2	SCS Runoff	16.18	1	724	47,817	------	------	------	Proposed Conditions - Area 1
3	Reservoir	6.526	1	738	33,590	2	38.84	16,549	Forebay 1
4	Reservoir	1.120	1	845	18,737	3	38.62	15,671	Stormwater Basin 1
5	SCS Runoff	7.626	2	726	26,485	------	------	------	Existing Conditions - Area 2
6	SCS Runoff	12.23	2	724	35,458	------	------	------	Proposed Conditions - Area 2
7	Reservoir	12.21	2	724	32,261	6	39.01	4,159	Forebay 2
8	Reservoir	0.000	2	940	0	7	38.39	10,874	Stormwater Basin 2

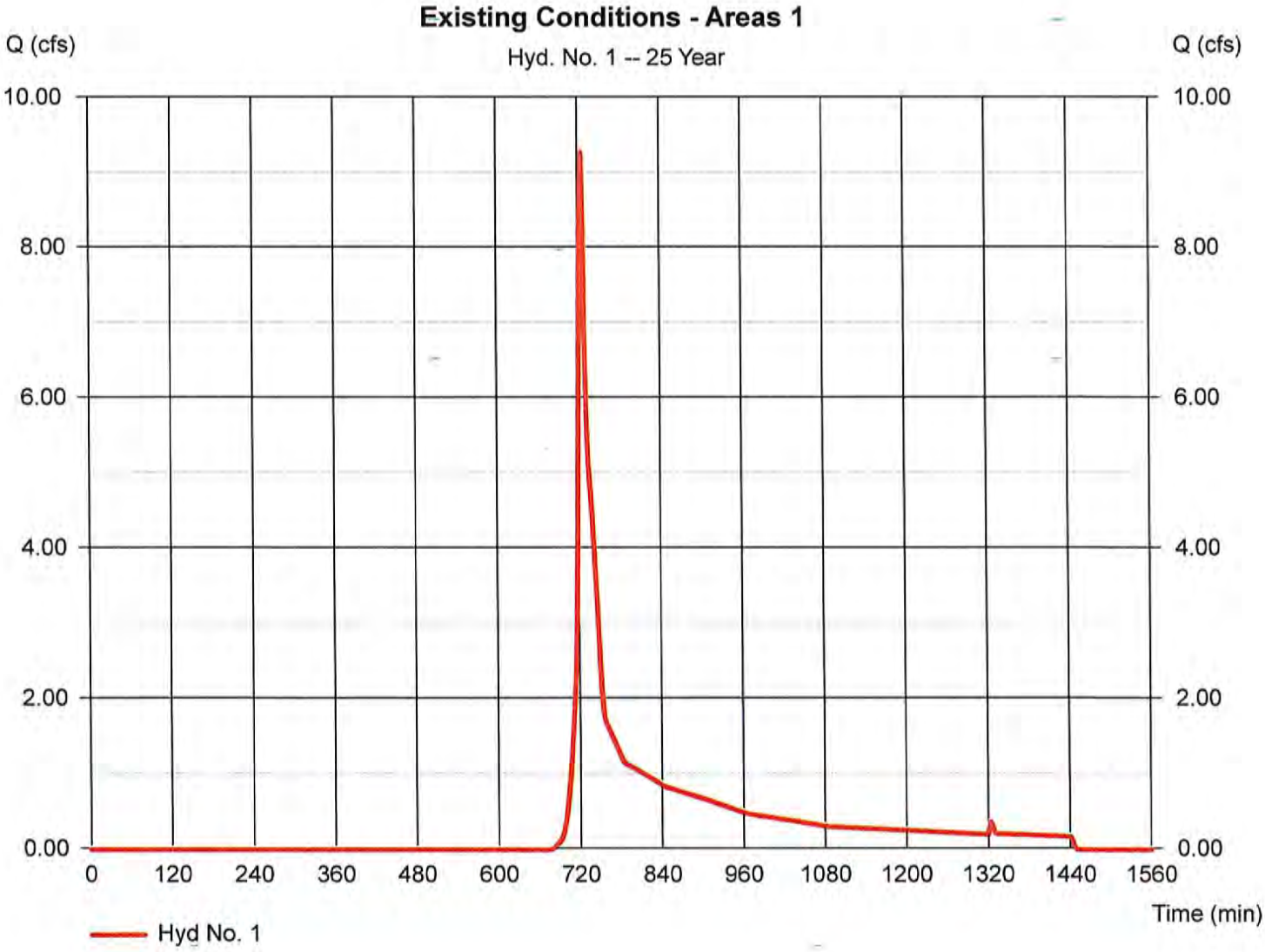
Hydrograph Report

Hyd. No. 1

Existing Conditions - Areas 1

Hydrograph type	= SCS Runoff	Peak discharge	= 9.287 cfs
Storm frequency	= 25 yrs	Time to peak	= 725 min
Time interval	= 1 min	Hyd. volume	= 31,962 cuft
Drainage area	= 5.500 ac	Curve number	= 55*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 5.30 min
Total precip.	= 6.06 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(5.300 x 55)] / 5.500



Hydrograph Report

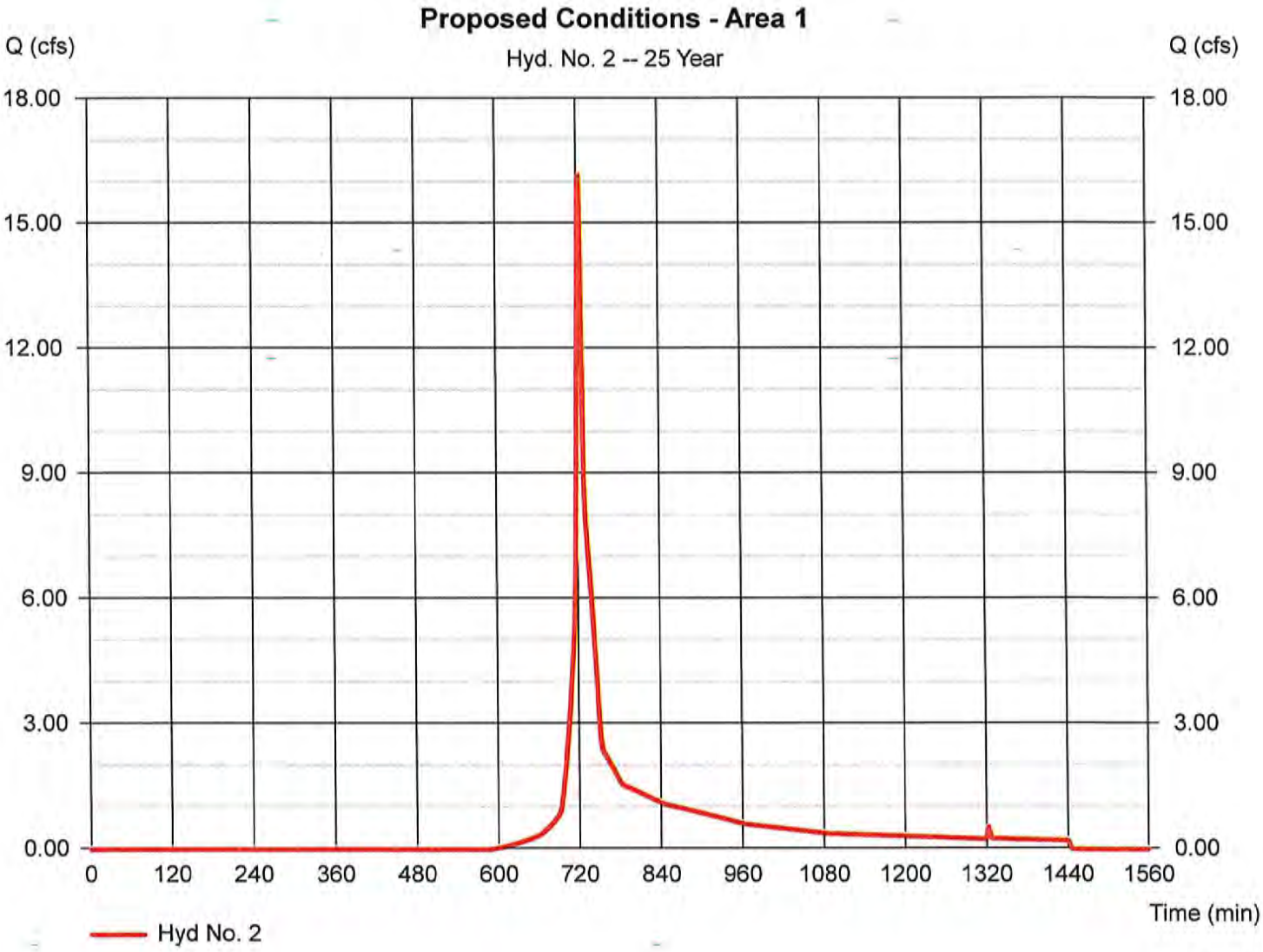
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2009 by Autodesk, Inc. v6.066 Thursday, May 25, 2023

Hyd. No. 2

Proposed Conditions - Area 1

Hydrograph type	= SCS Runoff	Peak discharge	= 16.18 cfs
Storm frequency	= 25 yrs	Time to peak	= 724 min
Time interval	= 1 min	Hyd. volume	= 47,817 cuft
Drainage area	= 5.500 ac	Curve number	= 65*
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) = [(1.900 x 83) + (3.600 x 55)] / 5.500



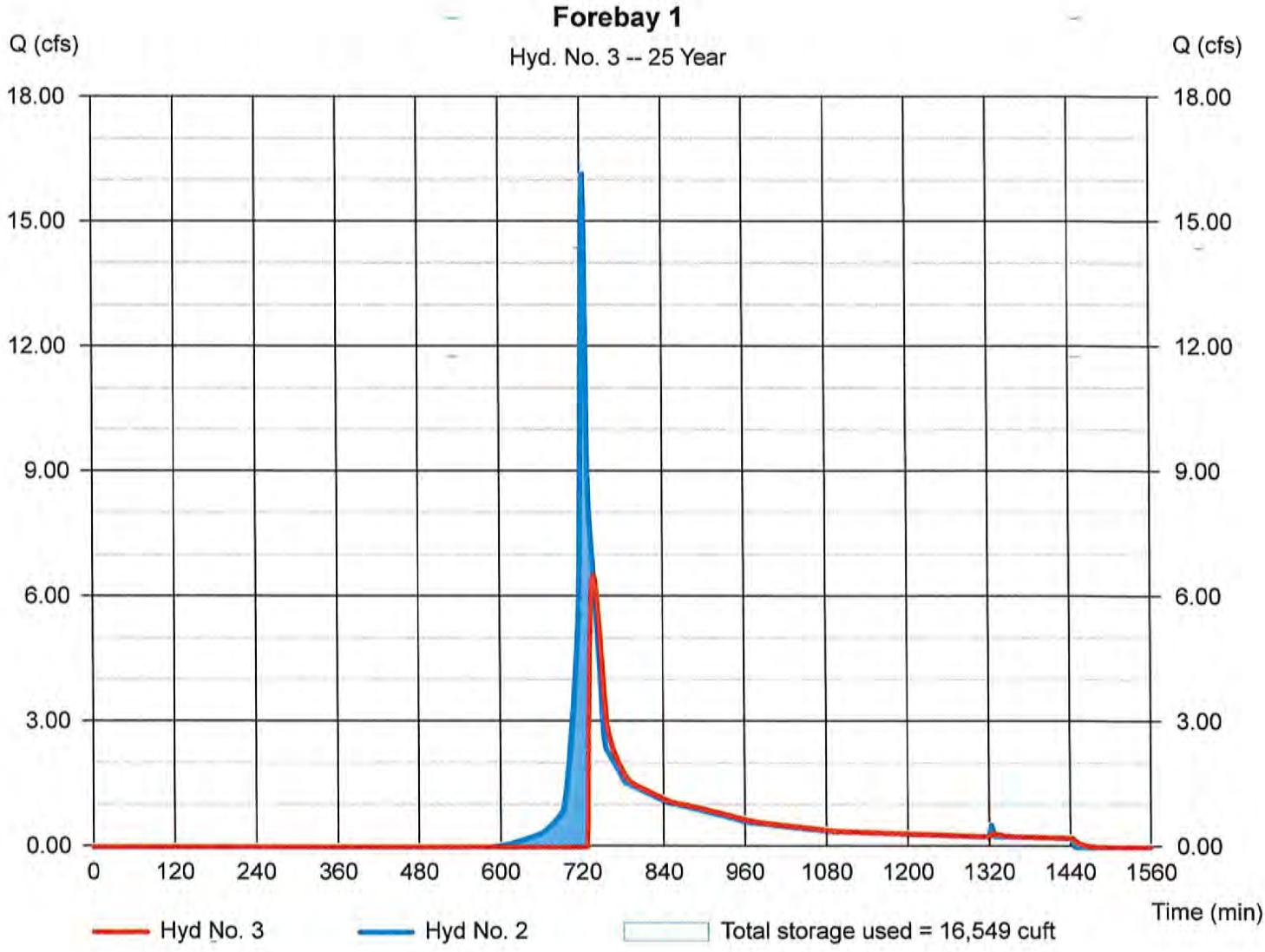
Hydrograph Report

Hyd. No. 3

Forebay 1

Hydrograph type	= Reservoir	Peak discharge	= 6.526 cfs
Storm frequency	= 25 yrs	Time to peak	= 738 min
Time interval	= 1 min	Hyd. volume	= 33,590 cuft
Inflow hyd. No.	= 2 - Proposed Conditions - Area 1	Max. Elevation	= 38.84 ft
Reservoir name	= Forebay #1	Max. Storage	= 16,549 cuft

Storage Indication method used.



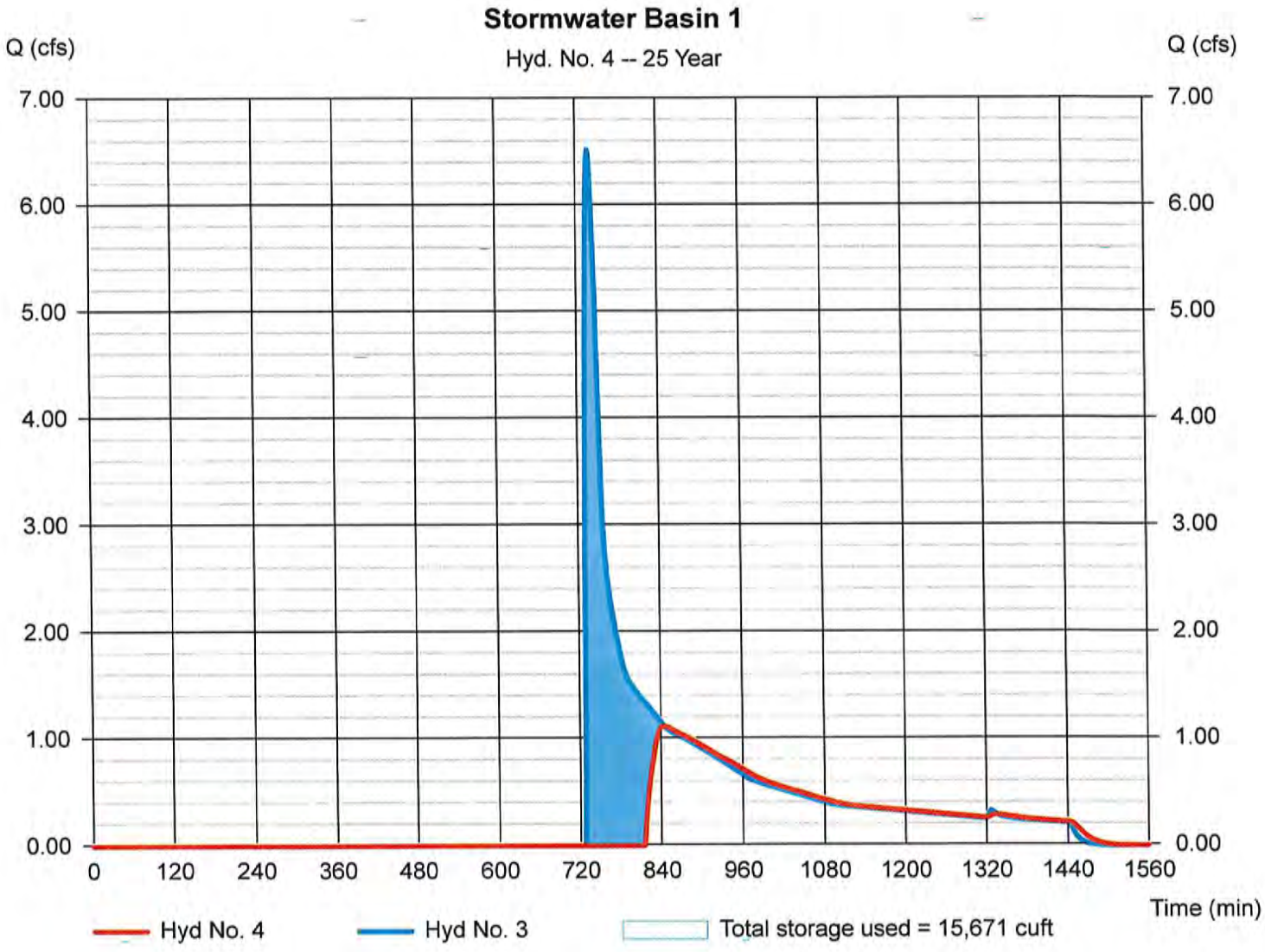
Hydrograph Report

Hyd. No. 4

Stormwater Basin 1

Hydrograph type	= Reservoir	Peak discharge	= 1.120 cfs
Storm frequency	= 25 yrs	Time to peak	= 845 min
Time interval	= 1 min	Hyd. volume	= 18,737 cuft
Inflow hyd. No.	= 3 - Forebay 1	Max. Elevation	= 38.62 ft
Reservoir name	= Stormwater Basin 1	Max. Storage	= 15,671 cuft

Storage Indication method used.



Hydrograph Report

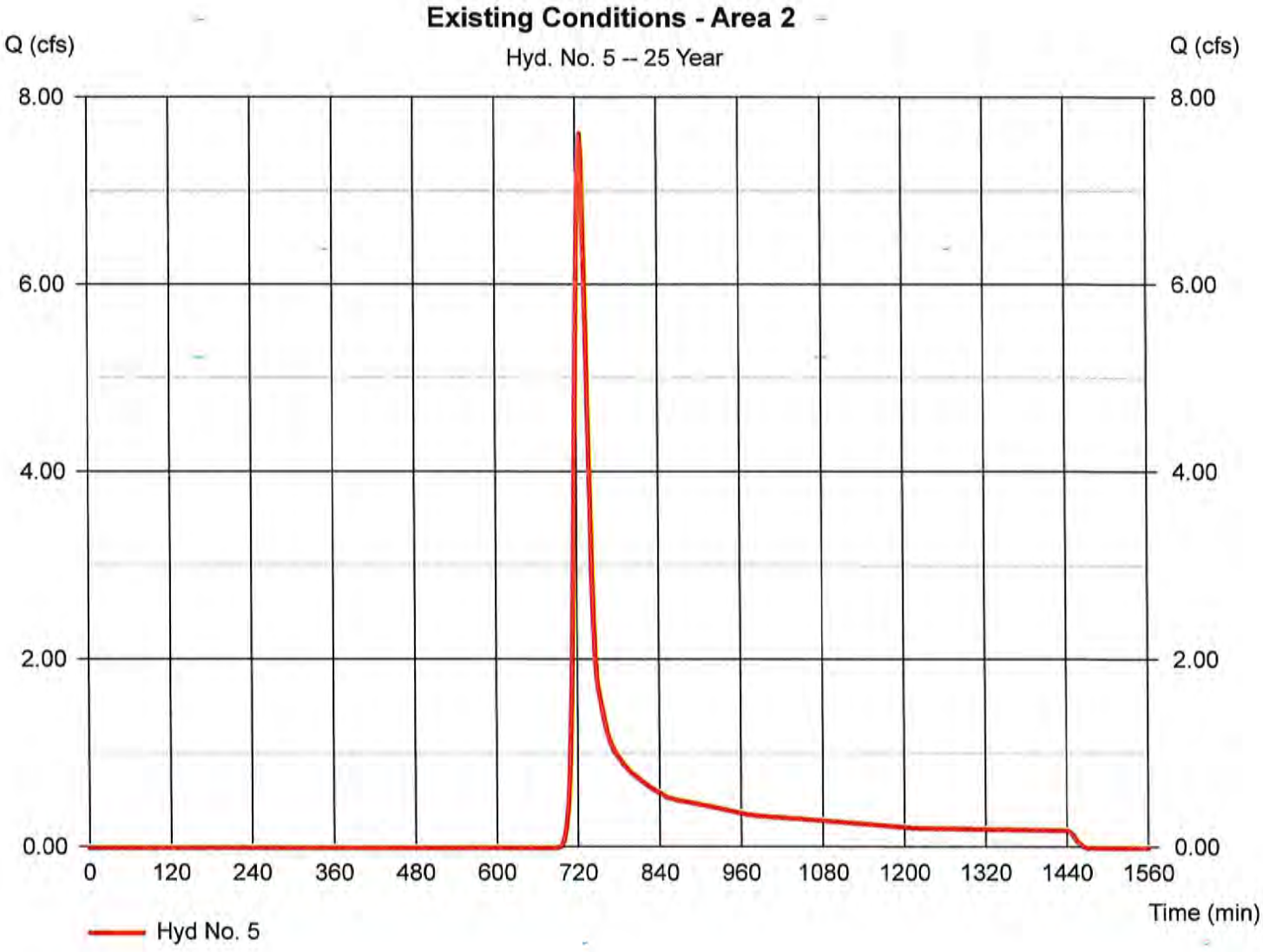
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2009 by Autodesk, Inc. v6.066 Thursday, May 25, 2023

Hyd. No. 5

Existing Conditions - Area 2

Hydrograph type	= SCS Runoff	Peak discharge	= 7.626 cfs
Storm frequency	= 25 yrs	Time to peak	= 726 min
Time interval	= 2 min	Hyd. volume	= 26,485 cuft
Drainage area	= 4.700 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) = [(4.700 x 55)] / 4.700



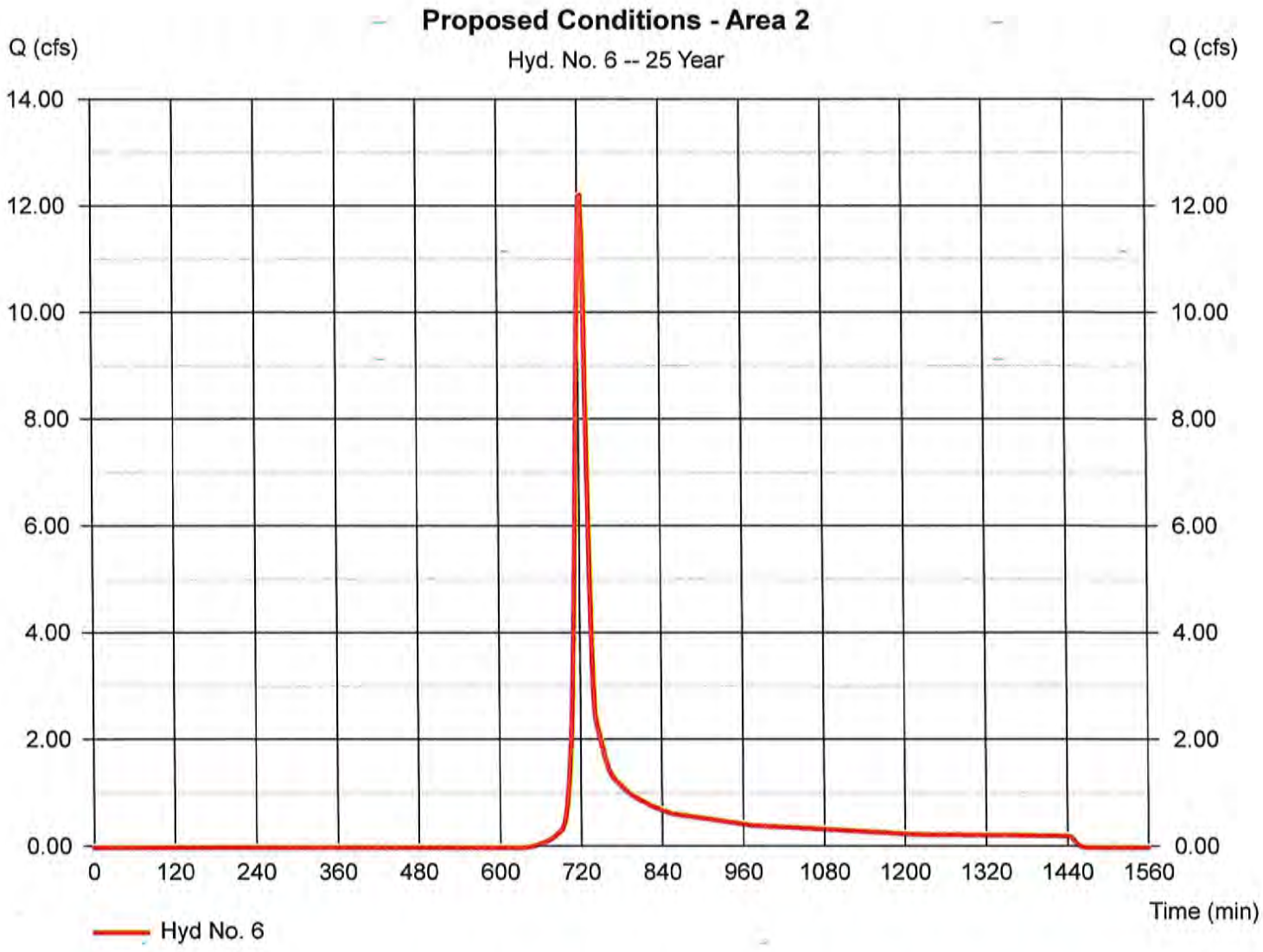
Hydrograph Report

Hyd. No. 6

Proposed Conditions - Area 2

Hydrograph type	= SCS Runoff	Peak discharge	= 12.23 cfs
Storm frequency	= 25 yrs	Time to peak	= 724 min
Time interval	= 2 min	Hyd. volume	= 35,458 cuft
Drainage area	= 4.700 ac	Curve number	= 62*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 16.50 min
Total precip.	= 6.06 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(1.200 x 83) + (3.500 x 55)] / 4.700



Hydrograph Report

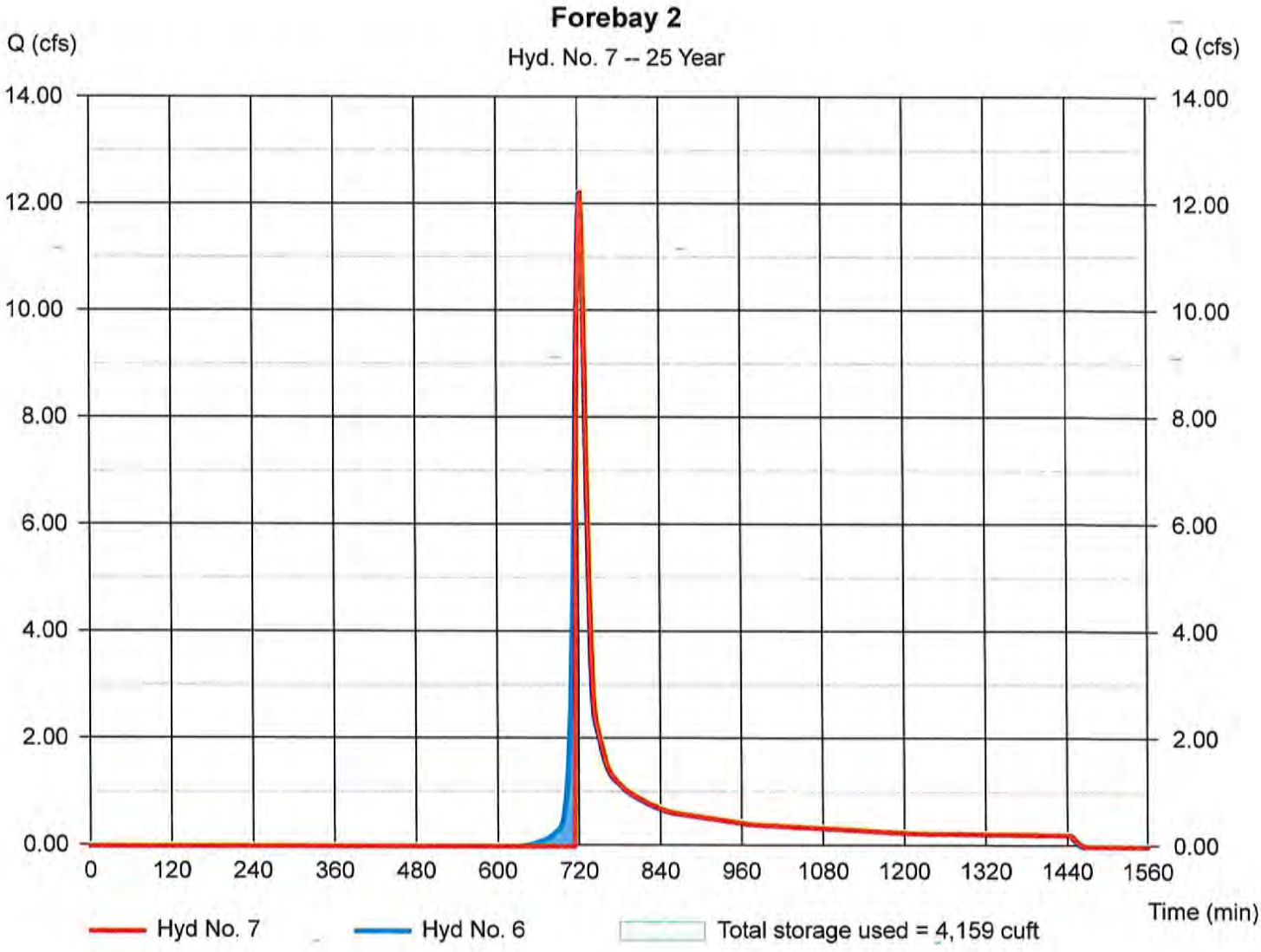
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2009 by Autodesk, Inc. v6.066 Thursday, May 25, 2023

Hyd. No. 7

Forebay 2

Hydrograph type	= Reservoir	Peak discharge	= 12.21 cfs
Storm frequency	= 25 yrs	Time to peak	= 724 min
Time interval	= 2 min	Hyd. volume	= 32,261 cuft
Inflow hyd. No.	= 6 - Proposed Conditions - Area 2	Max. Elevation	= 39.01 ft
Reservoir name	= Forbay #2	Max. Storage	= 4,159 cuft

Storage Indication method used.



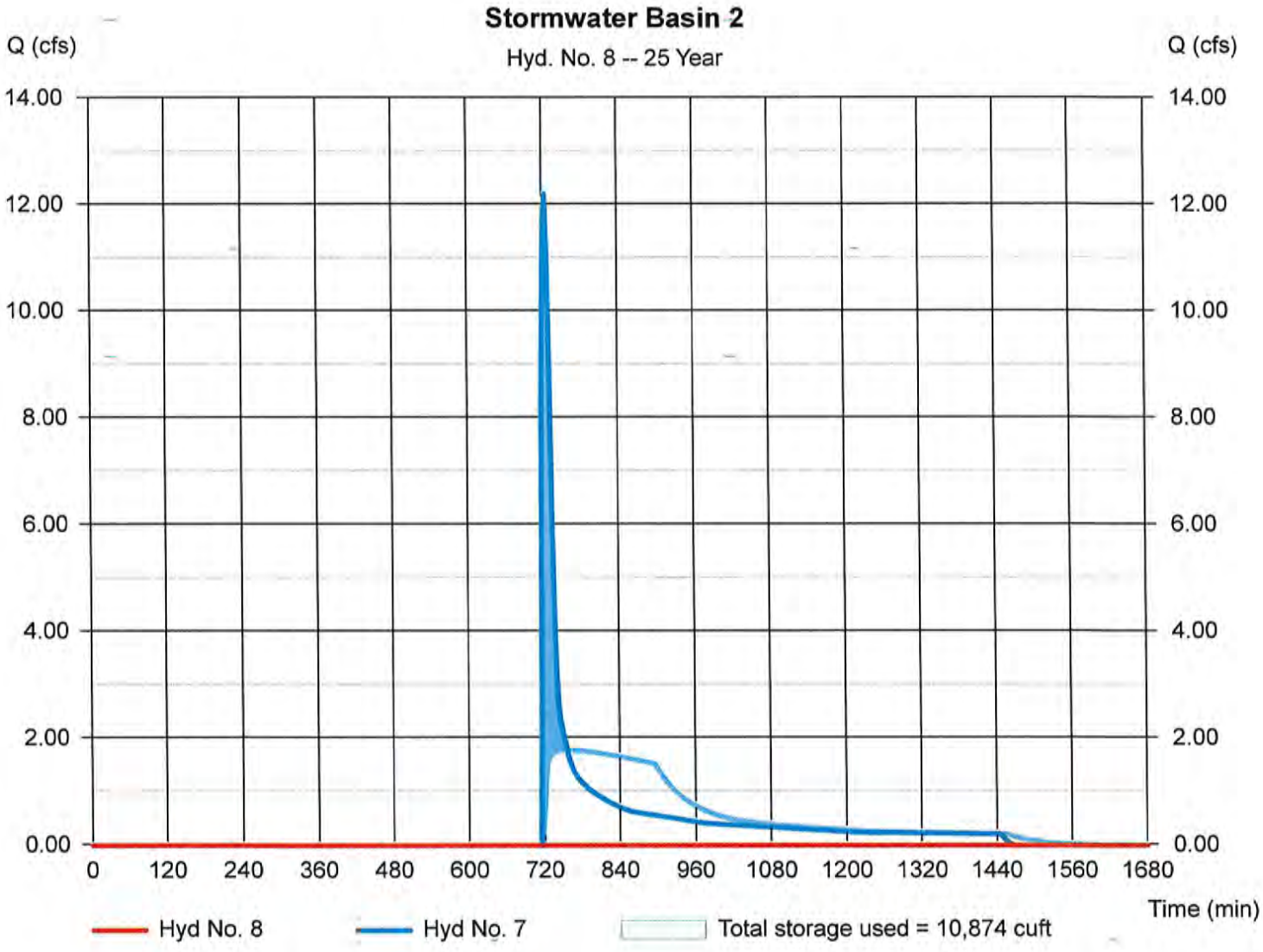
Hydrograph Report

Hyd. No. 8

Stormwater Basin 2

Hydrograph type	= Reservoir	Peak discharge	= 0.000 cfs
Storm frequency	= 25 yrs	Time to peak	= 940 min
Time interval	= 2 min	Hyd. volume	= 0 cuft
Inflow hyd. No.	= 7 - Forebay 2	Max. Elevation	= 38.39 ft
Reservoir name	= Stormwater Basin 2	Max. Storage	= 10,874 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	16.38	1	725	52,727	------	------	------	Existing Conditions - Areas 1
2	SCS Runoff	24.89	1	723	72,456	------	------	------	Proposed Conditions - Area 1
3	Reservoir	18.96	1	727	58,229	2	39.19	19,164	Forebay 1
4	Reservoir	6.813	1	749	43,375	3	38.91	17,643	Stormwater Basin 1
5	SCS Runoff	13.34	2	726	43,692	------	------	------	Existing Conditions - Area 2
6	SCS Runoff	19.40	2	722	54,941	------	------	------	Proposed Conditions - Area 2
7	Reservoir	19.33	2	724	51,744	6	39.20	4,580	Forebay 2
8	Reservoir	11.54	2	730	10,709	7	39.00	13,989	Stormwater Basin 2

Hydrograph Report

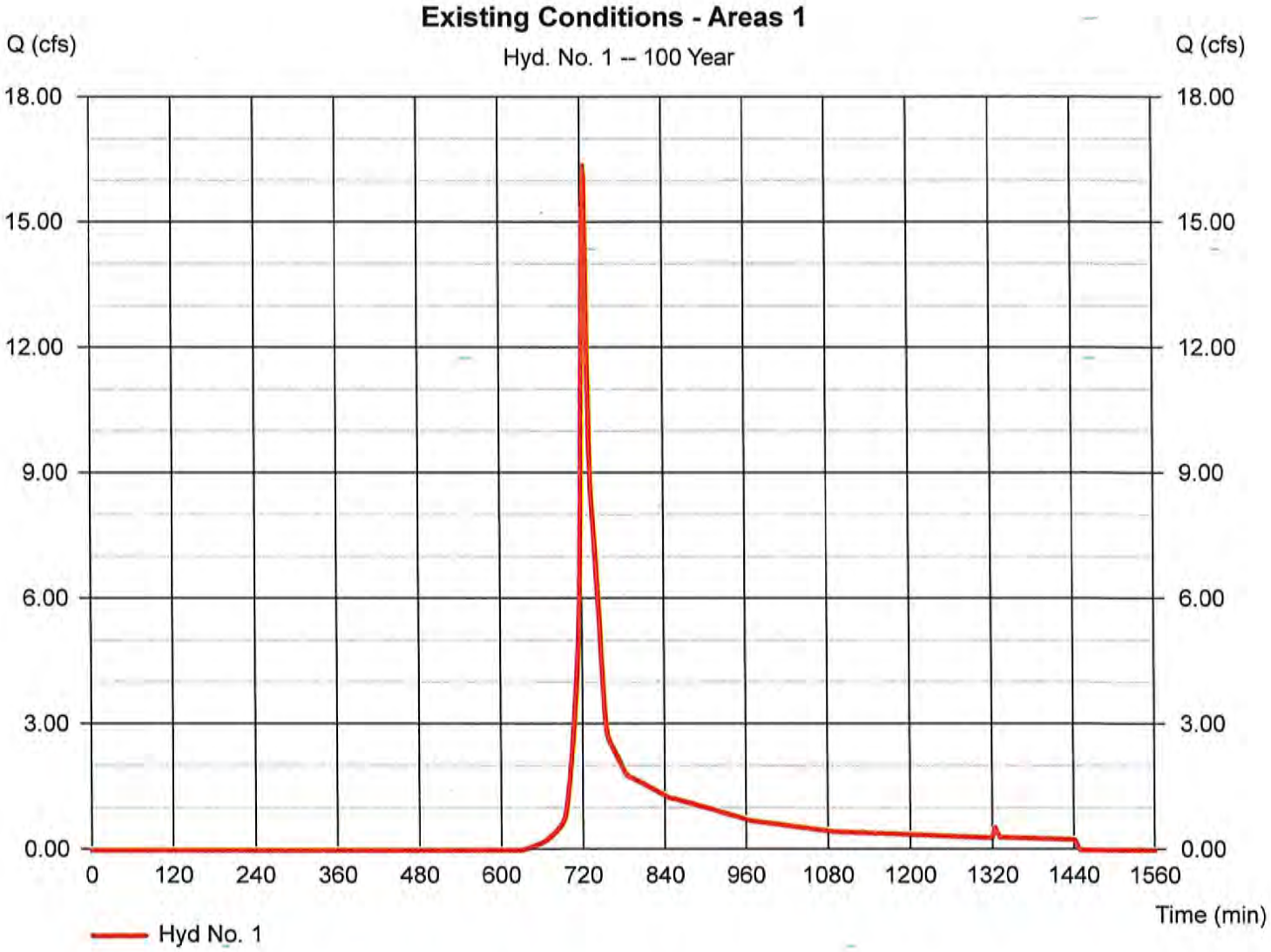
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2009 by Autodesk, Inc. v6.066 Thursday, May 25, 2023

Hyd. No. 1

Existing Conditions - Areas 1

Hydrograph type	= SCS Runoff	Peak discharge	= 16.38 cfs
Storm frequency	= 100 yrs	Time to peak	= 725 min
Time interval	= 1 min	Hyd. volume	= 52,727 cuft
Drainage area	= 5.500 ac	Curve number	= 55*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 5.30 min
Total precip.	= 7.67 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(5.300 x 55)] / 5.500



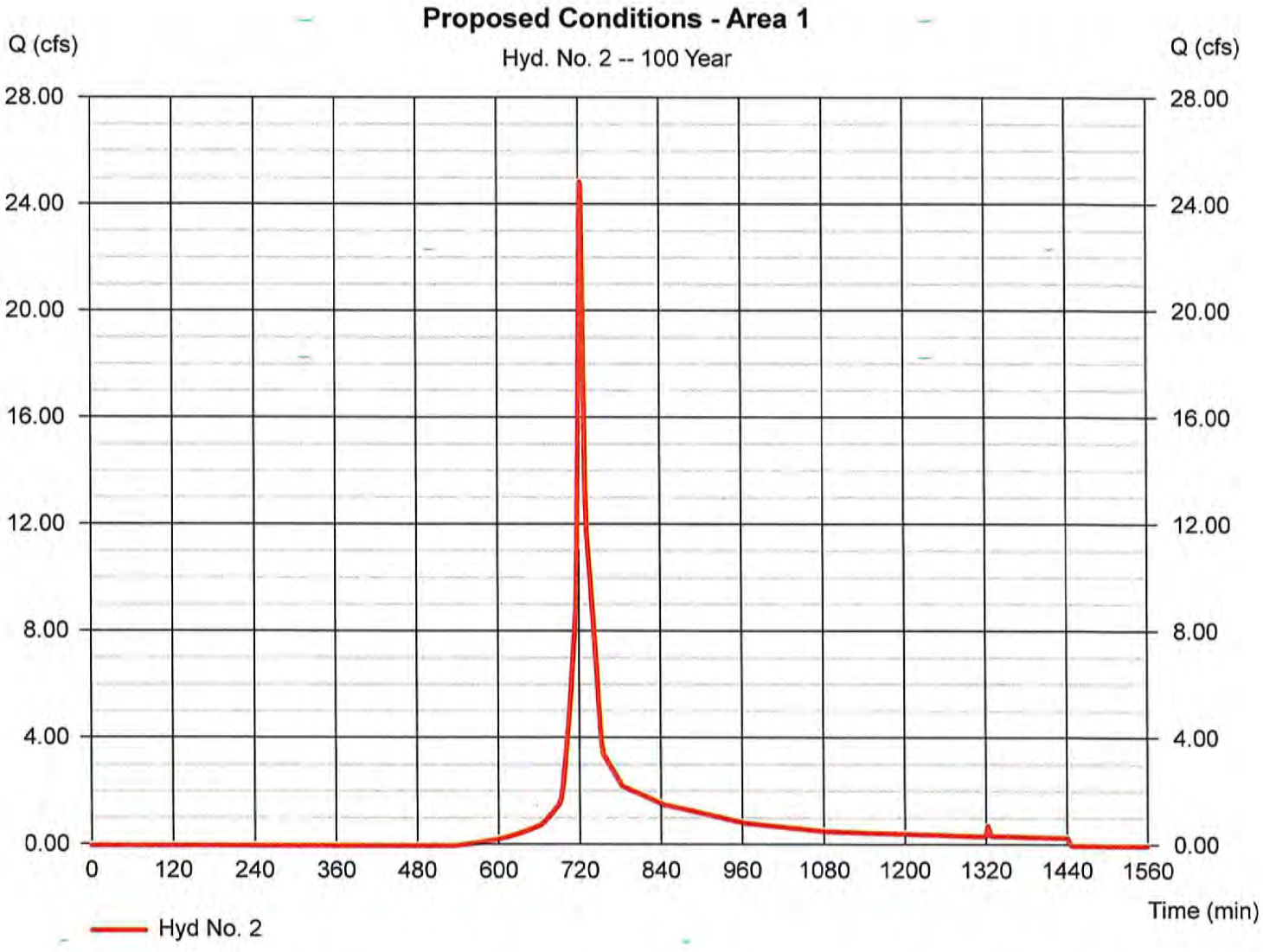
Hydrograph Report

Hyd. No. 2

Proposed Conditions - Area 1

Hydrograph type	= SCS Runoff	Peak discharge	= 24.89 cfs
Storm frequency	= 100 yrs	Time to peak	= 723 min
Time interval	= 1 min	Hyd. volume	= 72,456 cuft
Drainage area	= 5.500 ac	Curve number	= 65*
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) = [(1.900 x 83) + (3.600 x 55)] / 5.500



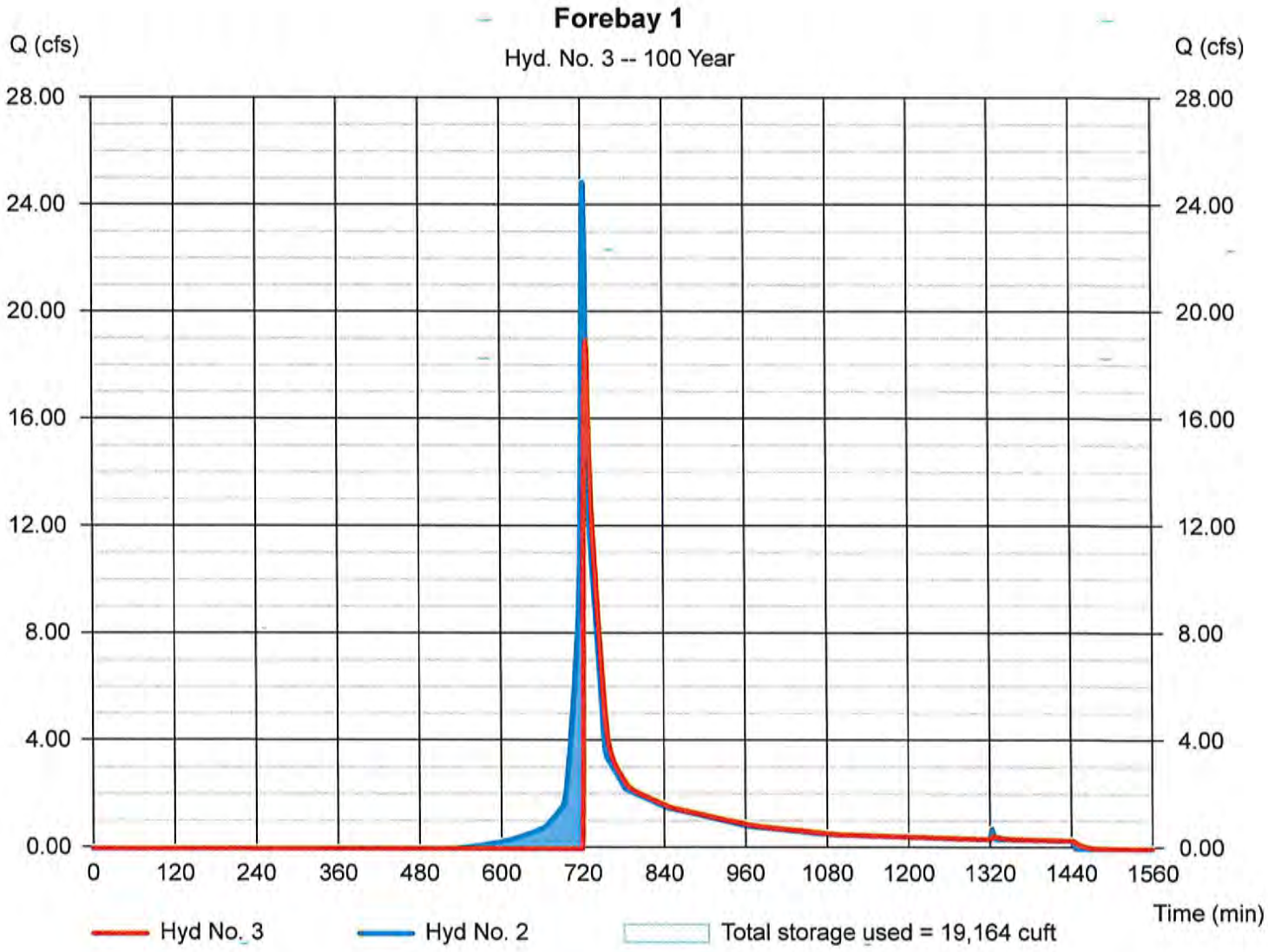
Hydrograph Report

Hyd. No. 3

Forebay 1

Hydrograph type	= Reservoir	Peak discharge	= 18.96 cfs
Storm frequency	= 100 yrs	Time to peak	= 727 min
Time interval	= 1 min	Hyd. volume	= 58,229 cuft
Inflow hyd. No.	= 2 - Proposed Conditions - Area 1	Max. Elevation	= 39.19 ft
Reservoir name	= Forebay #1	Max. Storage	= 19,164 cuft

Storage Indication method used.



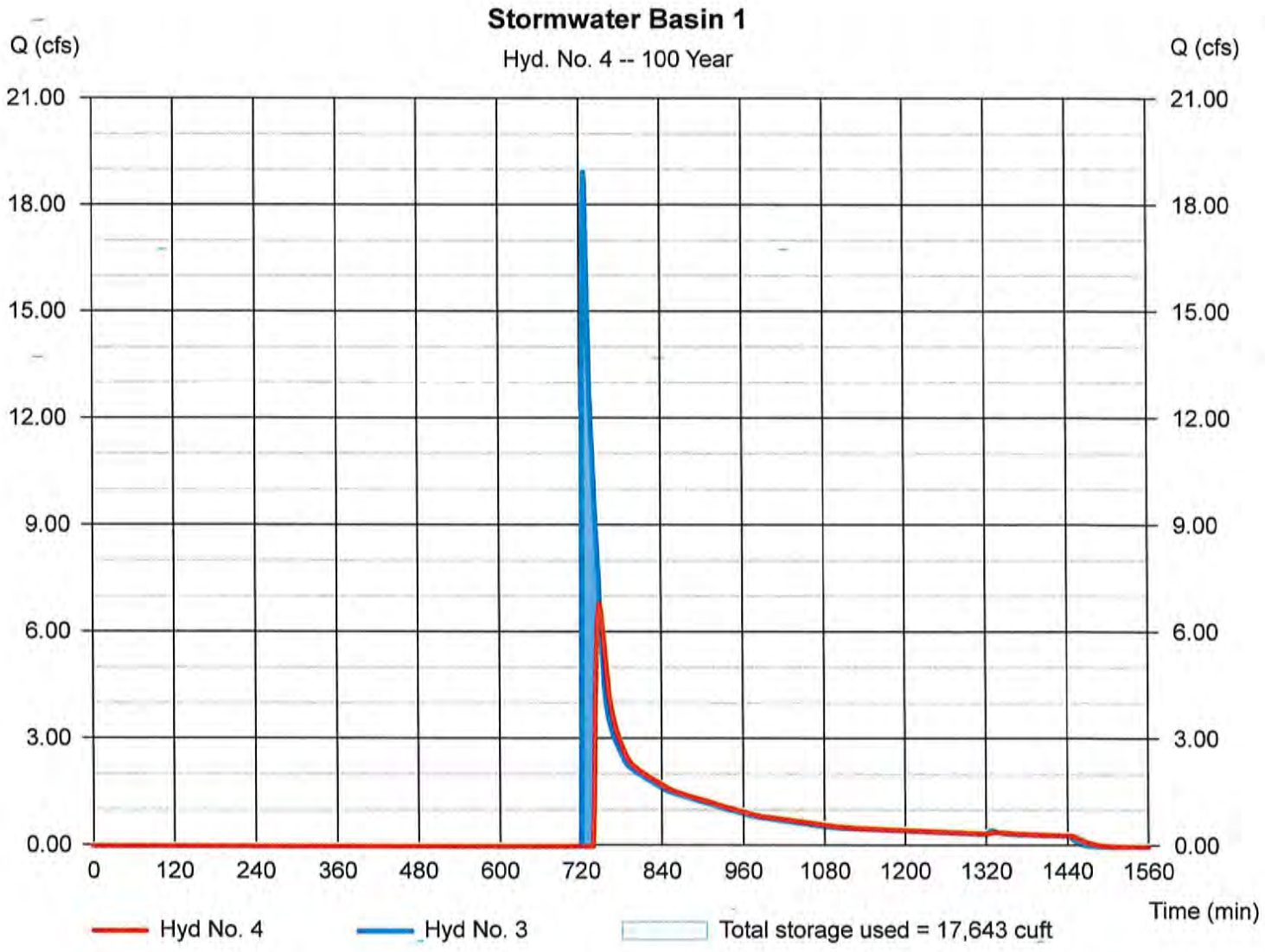
Hydrograph Report

Hyd. No. 4

Stormwater Basin 1

Hydrograph type	= Reservoir	Peak discharge	= 6.813 cfs
Storm frequency	= 100 yrs	Time to peak	= 749 min
Time interval	= 1 min	Hyd. volume	= 43,375 cuft
Inflow hyd. No.	= 3 - Forebay 1	Max. Elevation	= 38.91 ft
Reservoir name	= Stormwater Basin 1	Max. Storage	= 17,643 cuft

Storage Indication method used.



Hydrograph Report

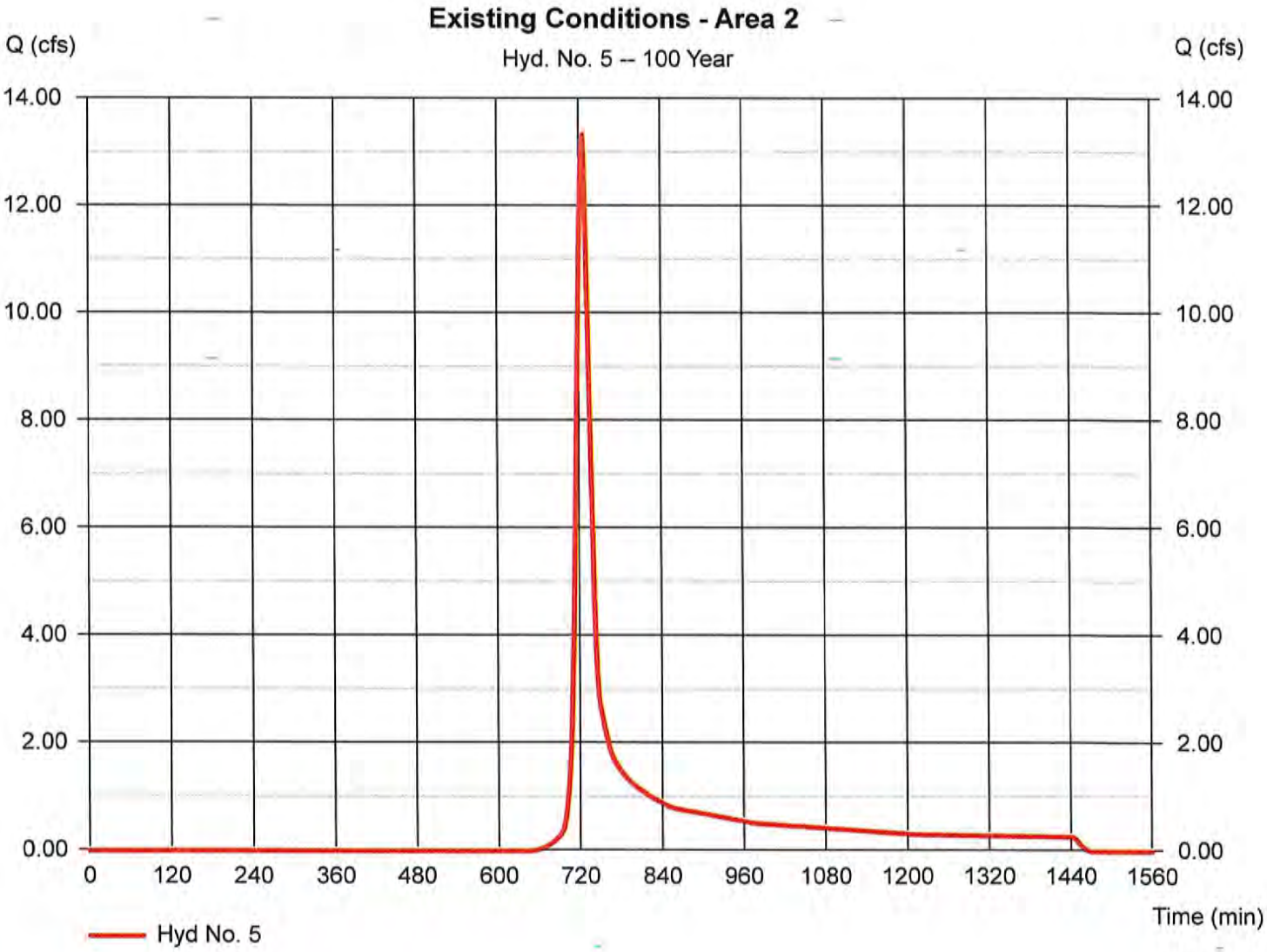
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2009 by Autodesk, Inc. v6.066 Thursday, May 25, 2023

Hyd. No. 5

Existing Conditions - Area 2

Hydrograph type	= SCS Runoff	Peak discharge	= 13.34 cfs
Storm frequency	= 100 yrs	Time to peak	= 726 min
Time interval	= 2 min	Hyd. volume	= 43,692 cuft
Drainage area	= 4.700 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) = [(4.700 x 55)] / 4.700



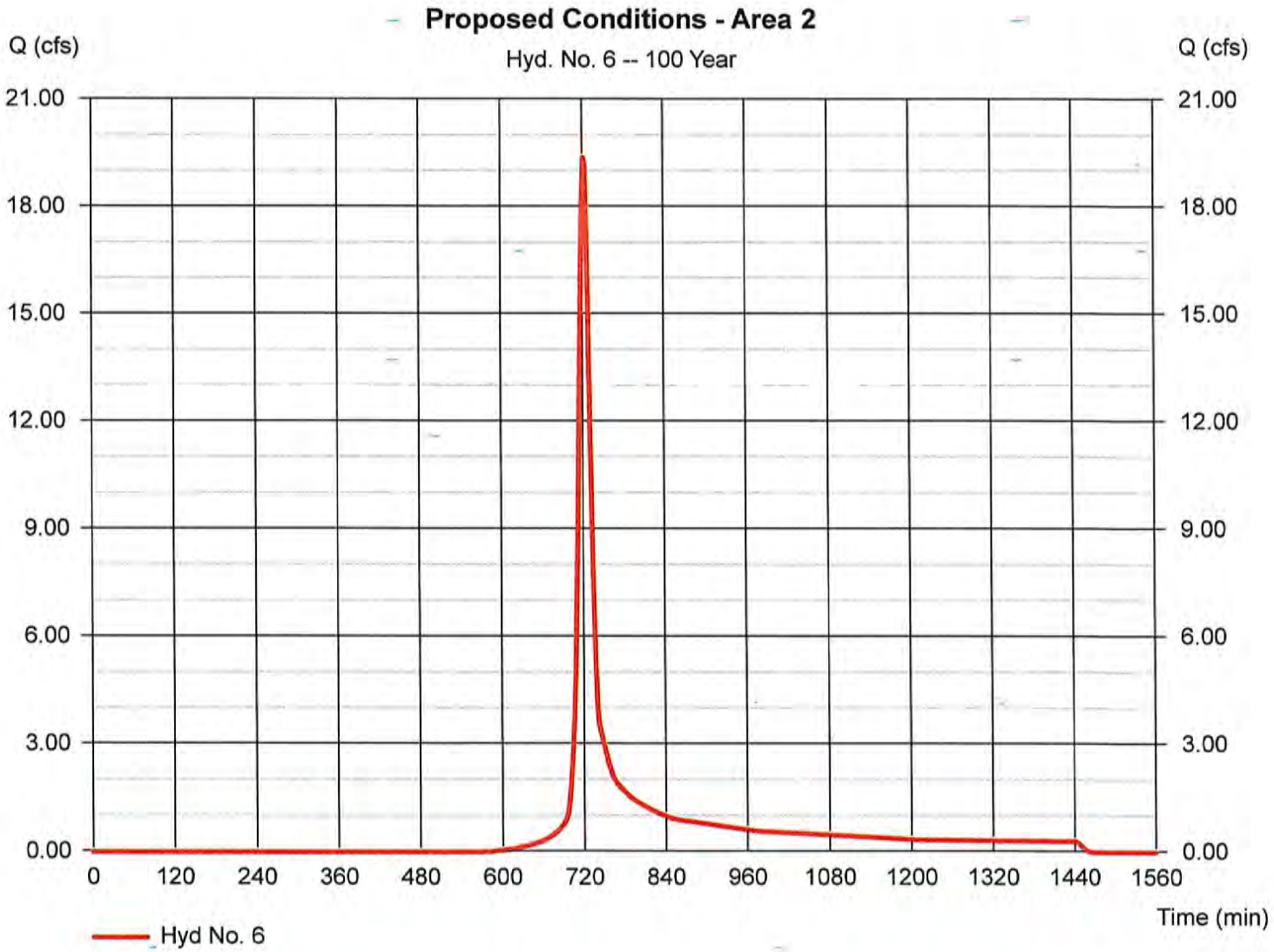
Hydrograph Report

Hyd. No. 6

Proposed Conditions - Area 2

Hydrograph type	= SCS Runoff	Peak discharge	= 19.40 cfs
Storm frequency	= 100 yrs	Time to peak	= 722 min
Time interval	= 2 min	Hyd. volume	= 54,941 cuft
Drainage area	= 4.700 ac	Curve number	= 62*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 16.50 min
Total precip.	= 7.67 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(1.200 x 83) + (3.500 x 55)] / 4.700



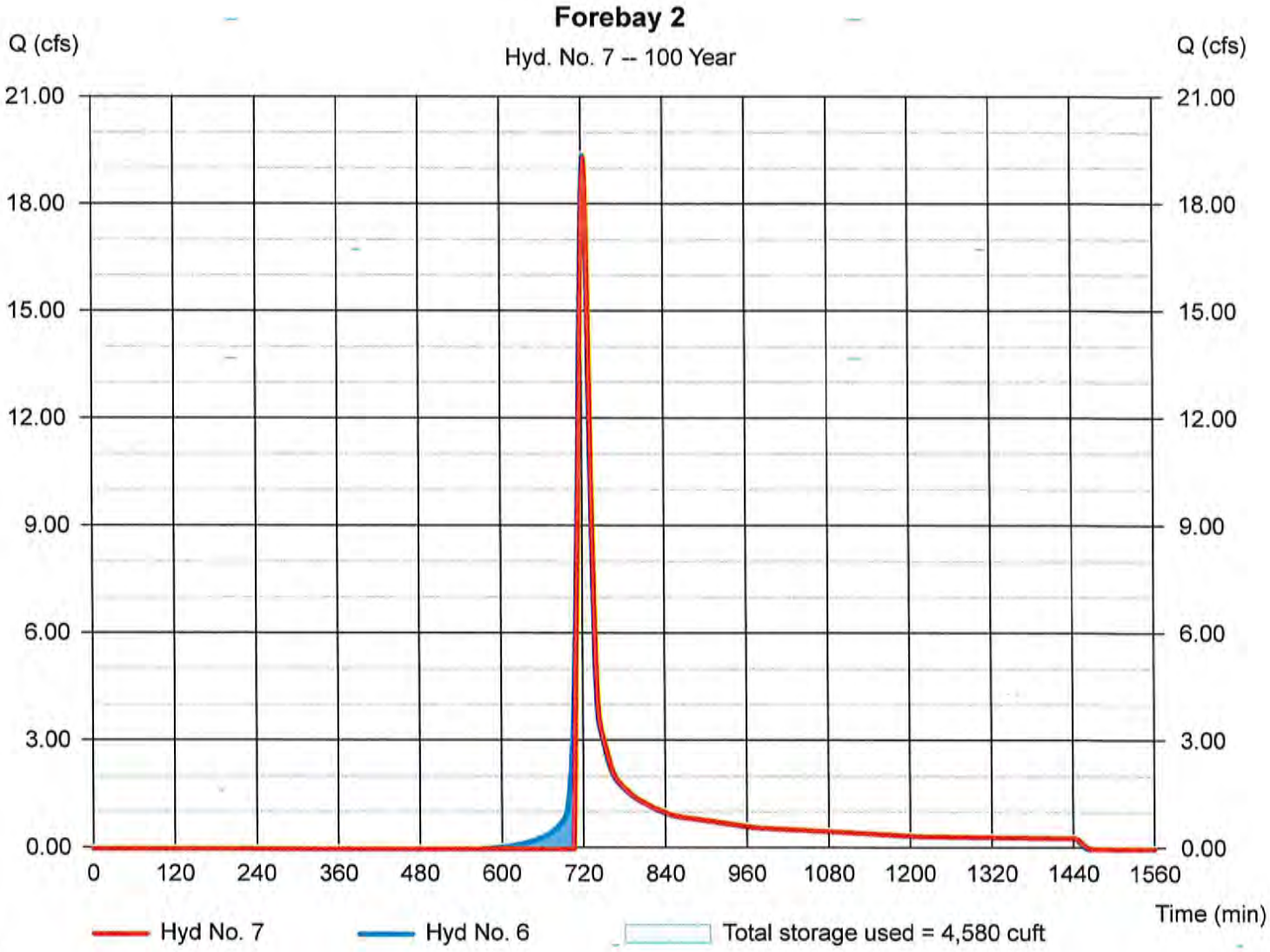
Hydrograph Report

Hyd. No. 7

Forebay 2

Hydrograph type	= Reservoir	Peak discharge	= 19.33 cfs
Storm frequency	= 100 yrs	Time to peak	= 724 min
Time interval	= 2 min	Hyd. volume	= 51,744 cuft
Inflow hyd. No.	= 6 - Proposed Conditions - Area 2	Max. Elevation	= 39.20 ft
Reservoir name	= Forbay #2	Max. Storage	= 4,580 cuft

Storage Indication method used.



Hydrograph Report

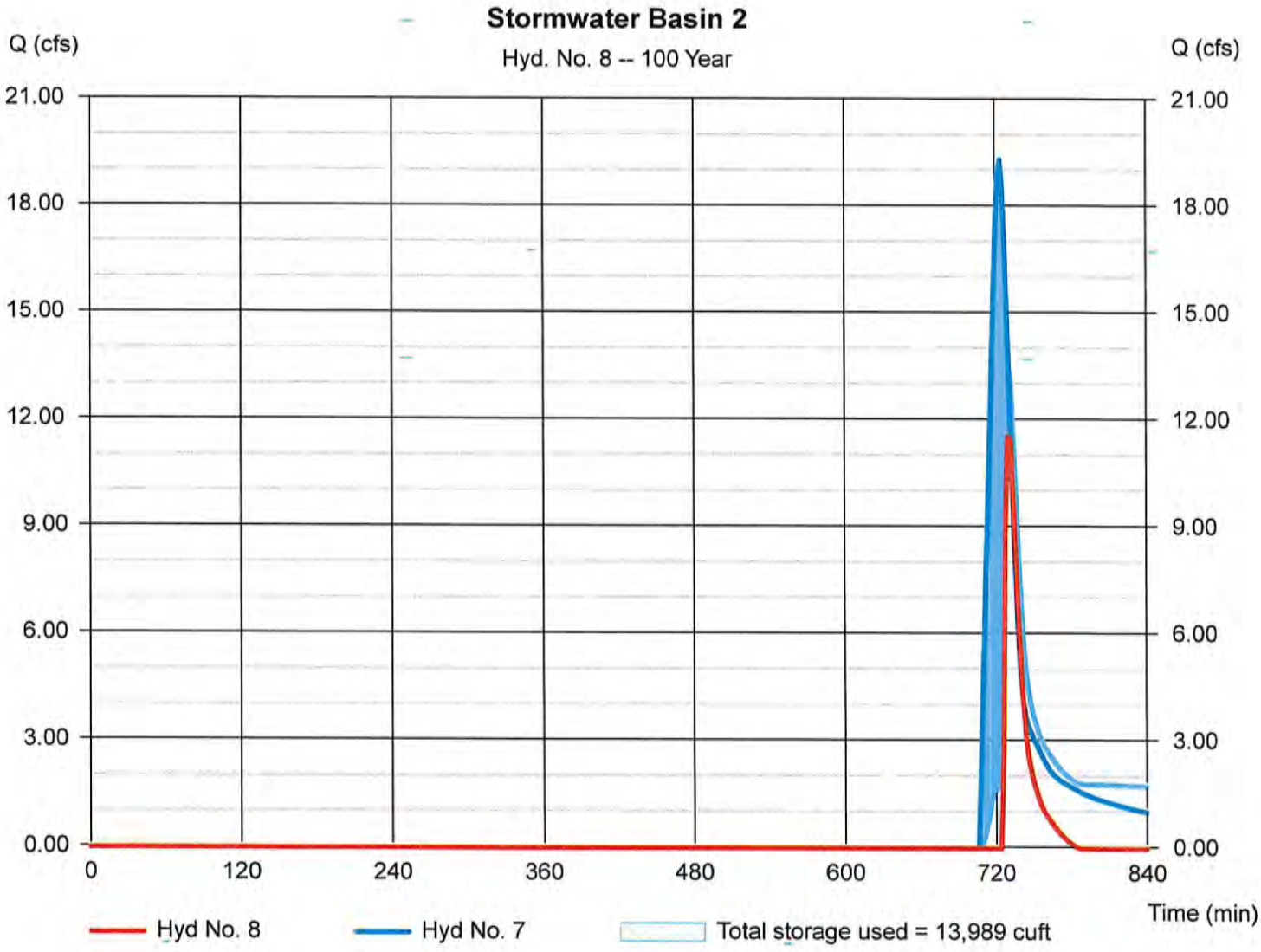
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2009 by Autodesk, Inc. v6.066 Thursday, May 25, 2023

Hyd. No. 8

Stormwater Basin 2

Hydrograph type	= Reservoir	Peak discharge	= 11.54 cfs
Storm frequency	= 100 yrs	Time to peak	= 730 min
Time interval	= 2 min	Hyd. volume	= 10,709 cuft
Inflow hyd. No.	= 7 - Forebay 2	Max. Elevation	= 39.00 ft
Reservoir name	= Stormwater Basin 2	Max. Storage	= 13,989 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Pond Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2009 by Autodesk, Inc. v6.066 Thursday, May 25, 2023

Pond No. 4 - Forebay #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	4,365	0	0
1.00	37.00	5,392	4,869	4,869
2.00	38.00	6,420	5,898	10,767
3.00	39.00	7,430	6,918	17,685
4.00	40.00	8,440	7,929	25,614

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	= Rect	---	---	---
Multi-Stage	= No	No	No	No

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

TW Elev. (ft) = 0.00

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

Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
0.00	0	36.00	---	---	---	---	0.00	---	---	---	---	---	0.000
1.00	4,869	37.00	---	---	---	---	0.00	---	---	---	---	---	0.000
2.00	10,767	38.00	---	---	---	---	0.00	---	---	---	---	---	0.000
3.00	17,685	39.00	---	---	---	---	11.77	---	---	---	---	---	11.77
4.00	25,614	40.00	---	---	---	---	61.18	---	---	---	---	---	61.18

Pond Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2009 by Autodesk, Inc. v6.066 Thursday, May 25, 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	5,072	0	0
1.00	37.00	5,725	5,395	5,395
2.00	38.00	6,377	6,047	11,442
3.00	39.00	7,278	6,822	18,264
4.00	40.00	8,180	7,724	25,988

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) = 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	36.00	---	---	---	---	0.00	---	---	---	---	---	0.000
1.00	5,395	37.00	---	---	---	---	0.00	---	---	---	---	---	0.000
2.00	11,442	38.00	---	---	---	---	0.00	---	---	---	---	---	0.000
3.00	18,264	39.00	---	---	---	---	9.19	---	---	---	---	---	9.192
4.00	25,988	40.00	---	---	---	---	47.77	---	---	---	---	---	47.77

Pond Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2009 by Autodesk, Inc. v6.066 — Thursday, May 25, 2023

Pond No. 5 - Forbay #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	622	0	0
1.00	37.00	1,142	869	869
2.00	38.00	1,663	1,394	2,263
3.00	39.00	2,083	1,869	4,132
4.00	40.00	2,504	2,290	6,422

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	= Rect	---	---	---
Multi-Stage	= No	No	No	No

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

TW Elev. (ft) = 0.00

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

Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
0.00	0	36.00	---	---	---	---	0.00	---	---	---	---	---	0.000
1.00	869	37.00	---	---	---	---	0.00	---	---	---	---	---	0.000
2.00	2,263	38.00	---	---	---	---	0.00	---	---	---	---	---	0.000
3.00	4,132	39.00	---	---	---	---	11.77	---	---	---	---	---	11.77
4.00	6,422	40.00	---	---	---	---	61.18	---	---	---	---	---	61.18

Pond Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2009 by Autodesk, Inc. v6.066 Thursday, May 25, 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	3,890	0	0
1.00	37.00	4,410	4,147	4,147
2.00	38.00	4,940	4,672	8,819
3.00	39.00	5,478	5,206	14,025
4.00	40.00	6,024	5,748	19,773

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	4,147	37.00	---	---	---	---	0.00	---	---	---	1.531	---	1.531
2.00	8,819	38.00	---	---	---	---	0.00	---	---	---	1.715	---	1.715
3.00	14,025	39.00	---	---	---	---	11.77	---	---	---	1.902	---	13.68
4.00	19,773	40.00	---	---	---	---	61.18	---	---	---	2.092	---	63.27

GREEN SITE DESIGN LLC
Civil • Structural • Survey
317 Main Street
NORWICH, CONNECTICUT 06360
(860) 892-1380

PROJECT NAME: _____

PROJECT NO: _____ SHEET NO. _____ OF _____

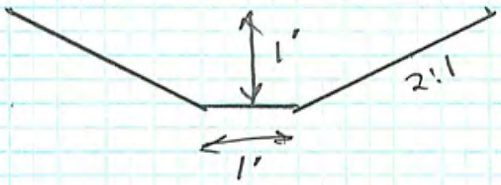
BY: _____ DATE _____

SCALE: _____

SWALE ABOVE RETAINING WALL:

AREA = 2.0 ACRES
C = 0.2 (GOLF COURSE)
T_c = 10 MINUTES
I_{25} = 6.15

Q_{25} = 2.5 CFS



S = 4% = 0.04
N = 0.04

WHEN THE SWALE IS HALF FULL%

A = 1 SF P = 3.2 FT

MANNINGS:

$$Q = A\left(\frac{1.486}{n}\right) R^{2/3} S^{1/2}$$

$$Q = 1\left(\frac{1.486}{0.04}\right)\left(\frac{1}{3.2}\right)^{2/3}\left(0.04\right)^{1/2}$$

Q = 3.4 CFS ∴ SWALE HAS CAPACITY TO HANDLE THE 25 YEAR STORM

NOAA Atlas 14, Volume 10, Version 3
Location name: Uncasville, Connecticut, USA*
Latitude: 41.496°, Longitude: -72.1077°
Elevation: 85 ft**
* source: ESRI Maps
** source: USGS

POINT PRECIPITATION FREQUENCY ESTIMATES

Sanja Perica, Sandra Pavlovic, Michael St. Laurent, Carl Trypaluk, Dale Unruh, Orlan Wilhite

NOAA, National Weather Service, Silver Spring, Maryland

PF_tabular | PF_graphical | Maps_&_aerials

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches)[1]

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	0.341 (0.266-0.430)	0.407 (0.317-0.514)	0.515 (0.399-0.652)	0.605 (0.466-0.769)	0.728 (0.544-0.958)	0.821 (0.600-1.10)	0.918 (0.652-1.26)	1.03 (0.691-1.43)	1.18 (0.767-1.70)	1.31 (0.830-1.91)
10-min	0.483 (0.376-0.610)	0.577 (0.449-0.728)	0.730 (0.566-0.924)	0.857 (0.660-1.09)	1.03 (0.770-1.36)	1.16 (0.851-1.56)	1.30 (0.924-1.79)	1.46 (0.980-2.03)	1.68 (1.09-2.40)	1.86 (1.18-2.71)
15-min	0.569 (0.443-0.717)	0.679 (0.528-0.857)	0.859 (0.666-1.09)	1.01 (0.777-1.28)	1.21 (0.906-1.60)	1.37 (1.00-1.83)	1.53 (1.09-2.11)	1.71 (1.15-2.39)	1.97 (1.28-2.83)	2.18 (1.38-3.18)
30-min	0.798 (0.621-1.01)	0.952 (0.740-1.20)	1.20 (0.932-1.52)	1.41 (1.09-1.80)	1.70 (1.27-2.24)	1.92 (1.40-2.56)	2.15 (1.52-2.95)	2.40 (1.62-3.35)	2.76 (1.79-3.97)	3.06 (1.94-4.46)
60-min	1.03 (0.799-1.30)	1.23 (0.953-1.55)	1.55 (1.20-1.96)	1.82 (1.40-2.31)	2.19 (1.64-2.88)	2.47 (1.80-3.30)	2.76 (1.96-3.80)	3.09 (2.08-4.31)	3.56 (2.30-5.10)	3.94 (2.49-5.74)
2-hr	1.35 (1.06-1.69)	1.60 (1.26-2.01)	2.02 (1.58-2.54)	2.37 (1.84-3.00)	2.85 (2.14-3.73)	3.21 (2.36-4.27)	3.59 (2.57-4.92)	4.03 (2.72-5.58)	4.66 (3.03-6.64)	5.19 (3.30-7.50)
3-hr	1.56 (1.23-1.95)	1.86 (1.46-2.32)	2.34 (1.84-2.94)	2.74 (2.14-3.45)	3.30 (2.49-4.29)	3.71 (2.74-4.91)	4.15 (2.98-5.67)	4.65 (3.16-6.42)	5.40 (3.52-7.65)	6.02 (3.83-8.66)
6-hr	1.99 (1.58-2.47)	2.36 (1.87-2.93)	2.97 (2.34-3.69)	3.47 (2.72-4.33)	4.16 (3.15-5.38)	4.67 (3.47-6.15)	5.22 (3.77-7.08)	5.86 (3.99-8.03)	6.80 (4.45-9.56)	7.58 (4.84-10.8)
12-hr	2.47 (1.97-3.04)	2.92 (2.33-3.60)	3.67 (2.91-4.53)	4.28 (3.38-5.32)	5.14 (3.92-6.59)	5.77 (4.31-7.53)	6.44 (4.68-8.67)	7.22 (4.94-9.82)	8.37 (5.50-11.7)	9.32 (5.98-13.2)
24-hr	2.90 (2.33-3.55)	3.46 (2.77-4.23)	4.36 (3.48-5.35)	5.11 (4.06-6.30)	6.15 (4.72-7.84)	6.92 (5.20-8.98)	7.74 (5.66-10.4)	8.70 (5.98-11.7)	10.1 (6.68-14.0)	11.3 (7.28-15.9)
2-day	3.26 (2.63-3.96)	3.92 (3.16-4.77)	5.00 (4.02-6.10)	5.90 (4.71-7.22)	7.14 (5.52-9.06)	8.06 (6.10-10.4)	9.05 (6.66-12.1)	10.2 (7.06-13.7)	12.0 (7.95-16.5)	13.5 (8.73-18.8)
3-day	3.54 (2.87-4.28)	4.26 (3.45-5.16)	5.44 (4.38-6.60)	6.41 (5.14-7.81)	7.76 (6.02-9.80)	8.75 (6.65-11.3)	9.83 (7.26-13.0)	11.1 (7.69-14.8)	13.1 (8.67-17.9)	14.7 (9.53-20.4)
4-day	3.80 (3.09-4.59)	4.56 (3.70-5.51)	5.80 (4.69-7.02)	6.83 (5.49-8.30)	8.25 (6.42-10.4)	9.30 (7.08-11.9)	10.4 (7.73-13.8)	11.8 (8.17-15.7)	13.8 (9.20-18.8)	15.6 (10.1-21.5)
7-day	4.54 (3.71-5.45)	5.38 (4.39-6.46)	6.75 (5.48-8.12)	7.88 (6.37-9.52)	9.44 (7.38-11.8)	10.6 (8.11-13.5)	11.8 (8.79-15.5)	13.3 (9.27-17.6)	15.5 (10.4-21.0)	17.4 (11.3-23.8)
10-day	5.27 (4.32-6.30)	6.15 (5.04-7.36)	7.59 (6.19-9.10)	8.78 (7.11-10.6)	10.4 (8.16-13.0)	11.6 (8.92-14.7)	12.9 (9.61-16.8)	14.5 (10.1-19.0)	16.7 (11.1-22.4)	18.5 (12.1-25.3)
20-day	7.51 (6.19-8.91)	8.44 (6.96-10.0)	9.97 (8.18-11.9)	11.2 (9.16-13.4)	13.0 (10.2-15.9)	14.3 (11.0-17.8)	15.7 (11.6-20.0)	17.1 (12.0-22.2)	19.0 (12.8-25.4)	20.6 (13.5-27.9)
30-day	9.36 (7.76-11.1)	10.3 (8.54-12.2)	11.9 (9.81-14.1)	13.2 (10.8-15.7)	15.0 (11.8-18.3)	16.4 (12.6-20.2)	17.8 (13.1-22.4)	19.1 (13.5-24.8)	20.8 (14.1-27.7)	22.1 (14.5-29.8)
45-day	11.6 (9.69-13.7)	12.7 (10.5-14.9)	14.3 (11.8-16.9)	15.7 (12.9-18.6)	17.6 (13.9-21.2)	19.1 (14.6-23.3)	20.5 (15.1-25.5)	21.7 (15.4-27.9)	23.2 (15.7-30.6)	24.2 (15.9-32.5)
60-day	13.5 (11.3-15.9)	14.6 (12.2-17.1)	16.3 (13.5-19.2)	17.8 (14.6-21.0)	19.7 (15.6-23.8)	21.3 (16.4-25.9)	22.7 (16.8-28.2)	24.0 (17.0-30.7)	25.4 (17.2-33.4)	26.2 (17.3-35.1)

[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

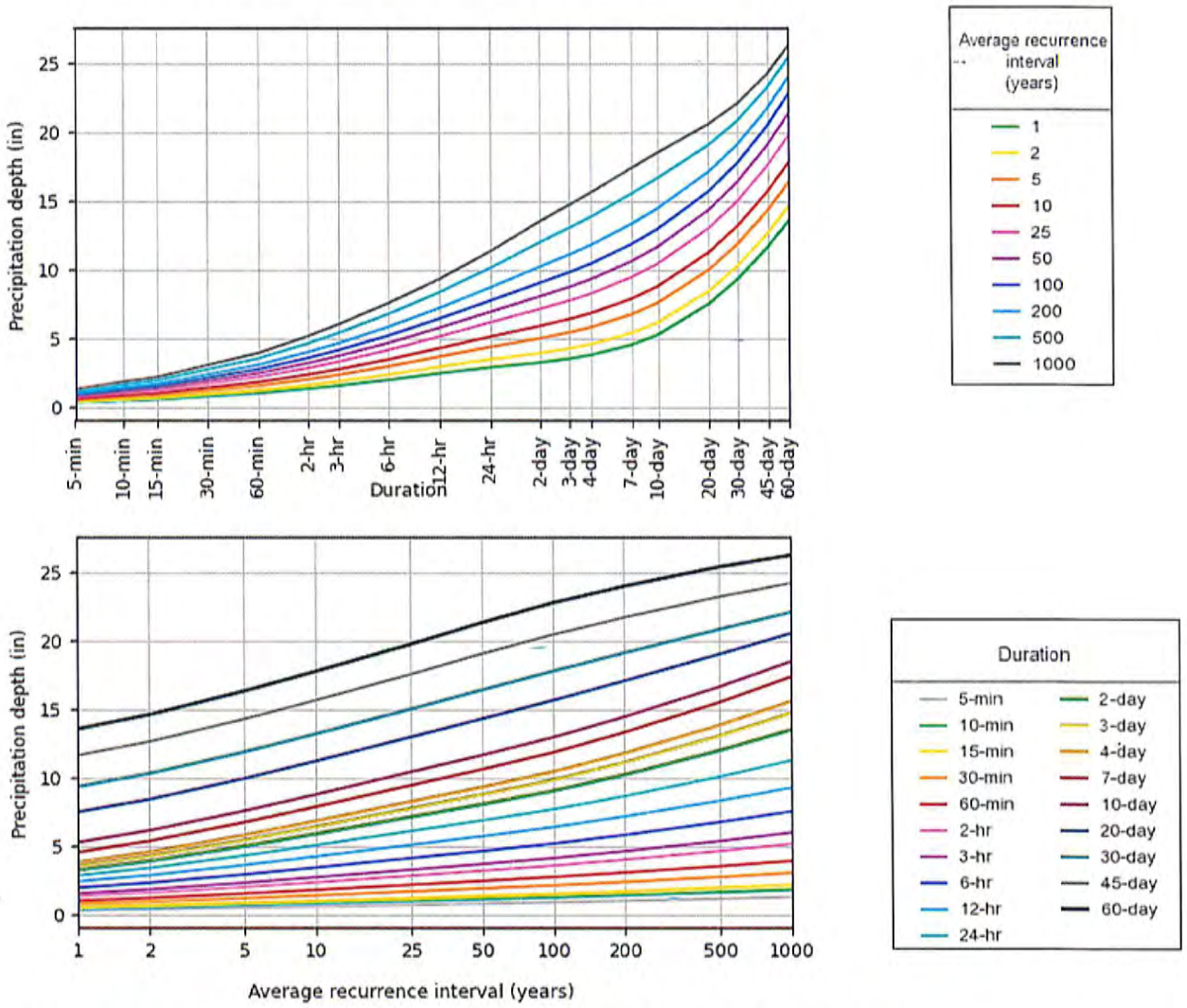
Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.

Please refer to NOAA Atlas 14 document for more information.

Back to Top

PF graphical

PDS-based depth-duration-frequency (DDF) curves
Latitude: 41.4960°, Longitude: -72.1077°



NOAA Atlas 14, Volume 10, Version 3

Created (GMT): Thu May 25 13:32:00 2023

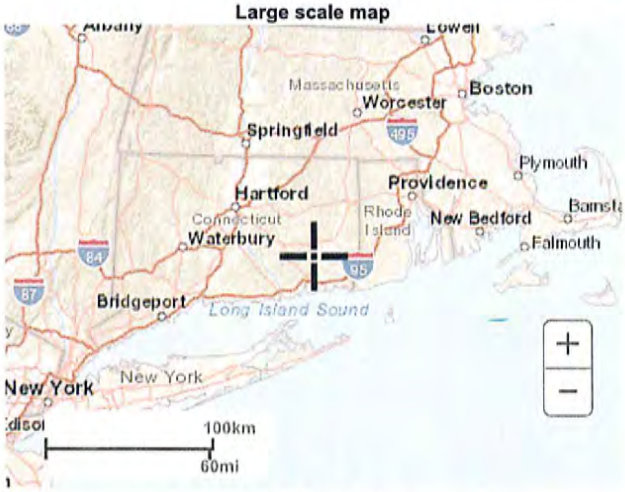
Back to Top

Maps & aerials

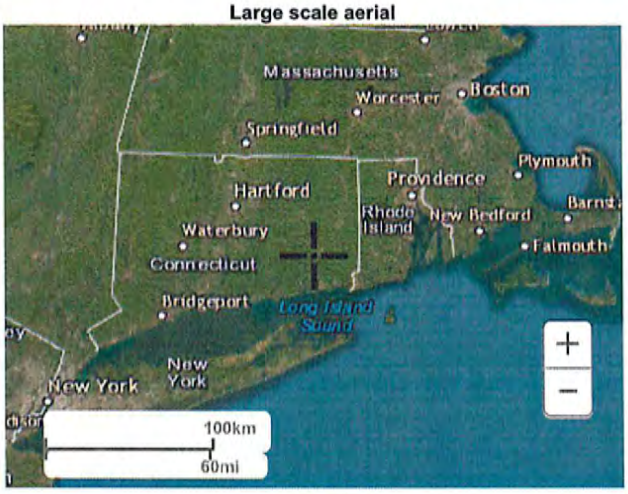
Small scale terrain

Large scale terrain

Large scale map



Large scale aerial



Back to Top

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