

**DRAINAGE CALCULATIONS,
HYDRAULICS & HYDROLOGY REPORT**

**STONE RIDGE BUSINESS PARK
21 GURLEY ROAD**

**OCTOBER 2022
JULY 2022
APRIL 2022
MARCH 2022
JUNE 2021**

DRAINAGE HYDRAULICS AND HYDROLOGY REPORT

STONE RIDGE BUSINESS PARK

EXISTING CONDITIONS

The site is approximately 22.19 acres in area and is shown on the Existing Conditions Survey (Sheet 1 of the site plans). The site has frontage on Oil Mill Road and Gurley Road. There are approximately 3.75 acres of wetlands on the site.

PROPOSED DEVELOPMENT

The project proposes six new free standing buildings that will each be divided into multiple units. Half of the units will be used as office space, while the other half will be used as warehouse space. All buildings will have metal roofs treated with an elastomeric coating to prevent metals from leaching into stormwater runoff. The proper amount of parking has been provided for each building.

Building Number	Area (SF)
1	10,800
2	12,800
3	10,400
4	6,880
5	14,400
6	10,400

The approximately 22 acre site contains wetlands as shown on sheet 1. Of the 22.19 acres only 9.58 acres of the site will be disturbed during construction, leaving 12.61 acres of totally undisturbed land. And of the 9.58 acres of disturbance, half of that will be landscaped and planted, as shown on the landscape plan, once construction is completed. The site proposes only 4.6 acres of development area on a 22.19 acre site.

EXISTING AND PROPOSED HYDRAULICS

The stormwater management system has been designed to provide for zero increase in peak stormwater discharge from the site. The project has been designed to actually result in a relatively small decrease in the peak stormwater rates leaving the project site. The proposed stormwater forebays, water quality basins, rain gardens, and infiltration galleries will provide treatment of the runoff from the proposed pavement and roof areas.

The current site is divided into three, existing, drainage areas:

Existing Drainage Area 1	13.96 Acres
Existing Drainage Area 2	3.92 Acres
Existing Drainage Area 3	4.30 Acres

The development of the proposed site will result in three, similarly sized, drainage areas:

Proposed Drainage Area 1	11.60 Acres
Proposed Drainage Area 2	5.38 Acres
Proposed Drainage Area 3	4.27 Acres

Proposed Drainage Area 1 was divided into four separate sub catchment areas:

Proposed Drainage Area 1A	0.95 Acres
Proposed Drainage Area 1B	5.93 Acres
Proposed Drainage Area 1C	3.07 Acres
Proposed Drainage Area 1D	1.83 Acres

Proposed Drainage Area 1A contains the parking lot for Building 1. The runoff from the parking lot will be treated by a stormwater management system that consist of a forebay followed by a water quality basin. To reduce the volume of stormwater flowing into the stormwater management system, the roof leaders from Building 1 will flow into underground concrete leaching galleries. There will not be any roof top units.

Proposed Drainage Area 1B contains undeveloped land and grass on the east and west side of the access drive between Buildings 2 and 3. The stormwater runoff from the east side of the access drive will flow west towards the western most wetland into a rain garden. Three 12” HDPE culverts will act as outlets from the rain garden to allow the overflow water that does not infiltrate, to flow under the access drive without being contaminated. Because there is no impervious cover and ample overland flow over grass and wooded area, a stormwater treatment system is not necessary.

Proposed Drainage Area 1C contains the parking lots for Buildings 2 and 3 and the access drive that connects them. The runoff will be treated by a stormwater management system that consists of a forebay followed by a water quality basin. Several rain gardens and landscape patches are also to be installed throughout the parking area to decrease the amount of impervious cover. To reduce the volume of stormwater flowing into the stormwater management system, roof leaders from Buildings 2 and 3 will flow into underground concrete leaching galleries. There will be no roof top units.

Proposed Drainage Area 1D contains the shared parking lot between Buildings 4 and 5, the shared parking lot between Buildings 2 and 3, and half of the roof drainage from Building 5. The stormwater runoff will be treated by a stormwater management system that consists of a forebay and a water quality basin. After leaving the basin, the water has substantial overland travel over an undisturbed area before leaving the site. Several rain gardens and landscaped patches are also to be installed throughout the parking area to decrease the amount of impervious cover. In order to reduce the basin inflow, roof leaders for Building 4 will flow into underground concrete leaching galleries. There will be no roof top units.

All water quality basins, rain gardens, and infiltration galleries will be inspected annually by the design soil scientist and a report will be provided to the Town Planning Department.

Like Drainage Area 1, Proposed Drainage Area 2 was divided into several sub catchment areas:

Proposed Drainage Area 2A	2.45 Acres
Proposed Drainage Area 2B	0.85 Acres
Proposed Drainage Area 2C	1.91 Acres

Proposed Drainage Area 2A contains the parking lot shared by Buildings 5 and 6, along with half of the roof drainage from Buildings 5, the roof drainage from Building 6, and the parking lot to the east of Building 6. The stormwater runoff will be treated by a forebay followed by a water quality basin. Several rain gardens and landscape patches are also to be installed throughout the parking area to decrease the amount of impervious cover. Underground leaching galleries could not be used due to the elevation of mottling and ledge. There will be no roof top units.

Proposed Drainage Area 2B contains the eastern-most access drive on the site, which leads to the parking lot to the east of Building 6. The stormwater runoff will be treated by a forebay followed by a water quality basin. Several rain gardens and landscape patches are also to be installed throughout the parking area to decrease the amount of impervious cover. Like Drainage Area 2A, underground leaching chambers could not be used due to the elevation of mottling and ledge. There will be no roof top units.

Proposed Drainage Area 2C contains undeveloped land. There is no development occurring in this area so no stormwater treatment measures are required. Runoff from Drainage Areas 2A and 2B will be treated by water quality basins before flowing into Drainage Area 2C.

Proposed Drainage Area 3 contains all undeveloped land. The construction of the proposed development will reduce the size of Drainage Area 3 by about 0.03 acres, which will slightly reduce the amount of stormwater leaving the site. The undeveloped land and reduction in area allow for there to be no stormwater storage or treatment systems in this area.

Both the existing and the proposed conditions for the development site have been analyzed for the 2-year, 10-year, 25-year, 50-year, and 100 year design storms using the TR-55 SCS Runoff Method. The following is the summary table for the 2-year, 10-year, 25-year, 50-year, and 100-year design storms showing first the existing conditions and proposed conditions, after passing through the existing detention basin located within the wetland:

Drainage Area 1

	2 Year	10 Year	25 Year	50 Year	100 Year
Existing	1.44 cfs	6.99 cfs	11.84 cfs	15.83 cfs	20.44 cfs
Proposed Area 1A (WQ Basin 1)	0.00 cfs	0.00 cfs	0.00 cfs	0.00 cfs	0.00 cfs
Proposed Area 1B (No Basins)	0.56 cfs	2.44 cfs	4.06 cfs	5.40 cfs	6.93 cfs
Proposed Area 1C (WQ Basin 2)	0.00 cfs	0.19 cfs	0.79 cfs	1.73 cfs	3.16 cfs
Proposed Area 1D (WQ Basin 3)	0.00 cfs	0.00 cfs	0.00 cfs	0.12 cfs	0.35 cfs
Proposed	0.56 cfs	2.44 cfs	4.06 cfs	5.40 cfs	7.67 cfs

Drainage Area 2

	2 Year	10 Year	25 Year	50 Year	100 Year
Existing	0.45 cfs	2.21 cfs	3.73 cfs	4.98 cfs	6.43 cfs
Proposed Area 2A (WQ Basin 4)	0.00 cfs	0.00 cfs	0.33 cfs	2.06 cfs	4.53 cfs
Proposed Area 2B (WQ Basin 5)	0.00 cfs	0.00 cfs	0.00 cfs	0.00 cfs	0.00 cfs
Proposed Area 2C (No Basin)	0.24 cfs	1.16 cfs	1.95 cfs	2.61 cfs	3.37 cfs
Proposed	0.24 cfs	1.16 cfs	1.95 cfs	2.97 cfs	6.36 cfs

Drainage Area 3

	2 Year	10 Year	25 Year	50 Year	100 Year
Existing	0.61 cfs	2.99 cfs	5.06 cfs	6.77 cfs	8.74 cfs
Proposed	0.60 cfs	2.97 cfs	5.03 cfs	6.72 cfs	8.68 cfs

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 forebays and water quality basins have been designed to function as sedimentation traps during stabilization. When constructed, the five forebays are to be constructed to their intended depth. However, during construction, the 5 basins are to be constructed 2 ft shallower than the intended depth of the water quality basins. This will ensure that the water quality basins will function properly after the site development is complete.

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 required SSV calculations for the temporary sediment traps in each drainage area are shown below.

Drainage Area 1A

$$SSV = A(134CY/Acre)$$

$$A = 0.95 \text{ ACRE}$$

$$SSV = 127.3 \text{ CY} = \underline{\underline{3,440 \text{ CF}}}$$

Drainage Area 1C

$$SSV = A(134CY/Acre)$$

$$A = 3.07 \text{ ACRES}$$

$$SSV = 411.4 \text{ CY} = \underline{\underline{11,110 \text{ CF}}}$$

Drainage Area 1D

$$SSV = A(134CY/Acre)$$

$$A = 1.83 \text{ ACRE}$$

$$SSV = 245.2 \text{ CY} = \underline{\underline{6,620 \text{ CF}}}$$

Drainage Area 2A

$$SSV = A(134CY/Acre)$$

$$A = 2.45 \text{ ACRE}$$

$$SSV = 328.3 \text{ CY} = \underline{\underline{8,865 \text{ CF}}}$$

Drainage Area 2B

$$SSV = A(134CY/Acre)$$

$$A = 0.85 \text{ ACRES}$$

$$SSV = 113.9 \text{ CY} = \underline{\underline{3,075 \text{ CF}}}$$

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 bottom of the riprap for the level spreader outlet of the basin. The volume of the wet storage is required to be half of the required SSV. The required wet storage volumes for each drainage area are shown below along with the dry storage volumes (DSV).

Drainage Area 1A

$$\begin{aligned} \text{WSV} &= \text{DSV} = \text{SSV}/2 \\ &= \underline{\underline{1,720.0 \text{ CF}}} \end{aligned}$$

Drainage Area 1C

$$\begin{aligned} \text{WSV} &= \text{DSV} = \text{SSV}/2 \\ &= \underline{\underline{5,555.0 \text{ CF}}} \end{aligned}$$

Drainage Area 1D

$$\begin{aligned} \text{WSV} &= \text{DSV} = \text{SSV}/2 \\ &= \underline{\underline{3,310.0 \text{ CF}}} \end{aligned}$$

Drainage Area 2A

$$\begin{aligned} \text{WSV} &= \text{DSV} = \text{SSV}/2 \\ &= \underline{\underline{4,432.5 \text{ CF}}} \end{aligned}$$

Drainage Area 2B

$$\begin{aligned} \text{WSV} &= \text{DSV} = \text{SSV}/2 \\ &= \underline{\underline{1,537.5 \text{ CF}}} \end{aligned}$$

The required and provided storage for each basin are as follows:

Drainage Area 1A (Bottom of Riprap Elev. = 26.5)

Sedimentation Trap 1

1,720 CF of Wet Storage Volume Required	11,315 CF Provided
1,720 CF of Dry Storage Volume Required	16,285 CF Provided
3,440 CF of Sediment Storage Volume Required	27,600 CF Total Provided

Drainage Area 1C (Outlet Elev. = 26.0)

Sedimentation Trap 2

5,555 CF of Wet Storage Volume Required	10,045 CF Provided
5,555 CF of Dry Storage Volume Required	13,930 CF Provided
11,110 CF of Sediment Storage Volume Required	23,975 CF Total Provided

Drainage Area 1D (Bottom of Riprap Elev. = 36.5)

Sedimentation Trap 3

3,310 CF of Wet Storage Volume Required	15,160 CF Provided
3,310 CF of Dry Storage Volume Required	7,620 CF Provided
6,620 CF of Sediment Storage Volume Required	22,780 CF Total Provided

Drainage Area 2A (Bottom of Riprap Elev. = 56.5)

Sedimentation Trap 5

4,432.5 CF of Wet Storage Volume Required	18,720 CF Provided
4,432.5 CF of Dry Storage Volume Required	12,240 CF Provided
8,865 CF of Sediment Storage Volume Required	30,960 CF Total Provided

Drainage Area 2B (Bottom of Riprap Elev. = 66.5)

Sedimentation Trap 6

1,537.5 CF of Wet Storage Volume Required	3,070 CF Provided
1,537.5 CF of Dry Storage Volume Required	7,685 CF Provided
3,075 CF of Sediment Storage Volume Required	10,755 CF Total Provided

CONNECTICUT STORMWATER QUALITY MANUAL

The Connecticut 2004 Stormwater Quality Manual (Manual) applies to the post construction phase, for the operation of the facility. The temporary sediment traps have been designed to function as water quality basins after the site is stabilized. They all meet the criteria of the Connecticut Stormwater Quality Manual for a Water Quality Basin.

Drainage Area 1A

(Forebay & WQ Basin 1)

$$WQV = (1'')(R)(A)/12$$

$$A = 0.95 \text{ Acre}$$

$$R = 0.05 + 0.009(I)$$

$$I = 0.31 \text{ Acres} / 0.95 \text{ Acres} = 0.326 \quad (32.6\%)$$

$$R = 0.344$$

$$WQV = 0.027 \text{ Ac-Ft} = 1,185 \text{ CF} \quad (\text{Required})$$

$$13,130 \text{ CF} \quad (\text{Provided})$$

Drainage Area 1C

(Forebay & WQ Basin 2)

$$WQV = (1'')(R)(A)/12$$

$$A = 3.07 \text{ Acres}$$

$$R = 0.05 + 0.009(I)$$

$$I = 1.06 \text{ Acres} / 3.07 \text{ Acres} = 0.345 \quad (34.5\%)$$

$$R = 0.361$$

$$WQV = 0.092 \text{ Ac-Ft} = 4,020 \text{ CF} \quad (\text{Required})$$

$$13,435 \text{ CF} \quad (\text{Provided})$$

Drainage Area 1D

(Forebay & WQ Basin 3)

$$WQV = (1'')(R)(A)/12$$

$$A = 1.83 \text{ Acres}$$

$$R = 0.05 + 0.009(I)$$

$$I = 1.01 \text{ Acres} / 1.83 \text{ Acres} = 0.552 \quad (55.2\%)$$

$$R = 0.547$$

$$WQV = 0.083 \text{ Ac-Ft} = 3,630 \text{ CF} \quad (\text{Required})$$

$$17,890 \text{ CF} \quad (\text{Provided})$$

Drainage Area 2A

(Forebay & WQ Basin 4)

$$WQV = (1'')(R)(A)/12$$

$$A = 2.45 \text{ Acres}$$

$$R = 0.05 + 0.009(I)$$

$$I = 1.09 \text{ Acres} / 2.45 \text{ Acres} = 0.445 \quad (44.5\%)$$

$$R = 0.450$$

$$WQV = 0.092 \text{ Ac-Ft} = 4,005 \text{ CF} \quad (\text{Required})$$

$$24,860 \text{ CF} \quad (\text{Provided})$$

Drainage Area 2B

(Forebay & WQ Basin 5)

$$WQV = (1'')(R)(A)/12$$

$$A = 0.85 \text{ Acres}$$

$$R = 0.05 + 0.009(I)$$

$$I = 0.15 \text{ Acres} / 0.85 \text{ Acres} = 0.176 \quad (17.6\%)$$

$$R = 0.209$$

$$WQV = 0.015 \text{ Ac-Ft} = 644.3 \text{ CF} \quad (\text{Required})$$

$$8,180 \text{ CF} \quad (\text{Provided})$$

Once development of the site is completed, there will be a relatively small decrease in runoff from the site. All of the temporary sedimentation basins provide ample wet and dry volume storage to meet and exceed the requirements of the 2002 CT Guidelines for Soil & Sedimentation Control. Likewise, the five permanent Water Quality Basins meet and exceed the post construction requirements of the Connecticut 2004 Stormwater Quality Manual.

The CTDEEP 2004 Stormwater Manual prescribes means by which stormwater runoff from developed sites can be adequately treated. The method outlined in section 7.4.1 of the 2004 Manual, treating the WQV is employed on this site. As indicated in the calculations of WQV within this report, the stormwater treatment design exceeds treatment of the WQV required by the 2004 Manual for each stormwater treatment basin,. The range of over-treatment runs from three times that required for Basin 2 to nine times that required for Basin 1. Thus it is anticipated that the stormwater basins will provide a higher level of water quality renovation than required by CTDEEP. All of the basins are designed as wet bottom basins that will function as stormwater wetlands.

Also note that per the calculations in this report none of the stormwater basins will discharge in the 2 year storm event. Appendix D of wetland report includes data from the

University of New Hampshire Stormwater Center that indicate that retaining the two year storm provides extremely high levels of removal of pollutants of concern for commercial and industrial sites. Based on the UNH data, CLA anticipates levels of renovation that will be protective of water quality within local water bodies as well as the Niantic River,

CLA has reviewed the Niantic River watershed management plans to ensure that the site plans are consistent with those documents. Based on that review, additional measures beyond the water quality basins described above have been incorporated into the site plans.

1. There will be a 50 foot undisturbed vegetative buffer left in place around all wetlands and watercourses on the site. This will provide shade over streams, wildlife habitat and further treat discharge from the treatment basins.
2. Low Impact Development (LID) measures such as rain gardens have been incorporated. In total, nine rain gardens are proposed and each will provide bio-filtration to stormwater runoff before it enters the ground. This will provide treatment not accounted for in the WQV calculations and is described further in the wetland report.
3. Infiltration of stormwater is used whenever practical, in both the rain gardens and Basin 1, 2, and 3.
4. The plans are consistent with the CTDEEP 2002 and 2004 Manuals.

Based on the stormwater treatment design and the measures incorporated to be consistent with the watershed management plans, CLA believes that the design is protective of both onsite resources and the Niantic River.

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	1.438	1	767	16,593	-----	-----	-----	Existing Area 1
2	SCS Runoff	1.268	1	717	3,010	-----	-----	-----	Building 1
3	Reservoir(i)	0.000	1	n/a	0	2	33.83	1,110	Leaching Gallery 1
4	SCS Runoff	0.713	1	741	3,782	-----	-----	-----	Proposed Area 1A
5	Combine	0.713	1	741	3,782	3, 4	-----	-----	Roof overflow and Area 1A
6	Reservoir	0.000	1	n/a	0	5	25.18	3,782	Basin 1 Forebay
7	Reservoir	0.000	1	n/a	0	6	22.00	0.000	Basin 1
8	SCS Runoff	0.560	1	786	7,778	-----	-----	-----	Proposed Area 1B
9	SCS Runoff	1.471	1	717	3,492	-----	-----	-----	Building 2
10	Reservoir(i)	0.000	1	n/a	0	9	35.12	1,268	Leaching Gallery 2
11	SCS Runoff	1.218	1	717	2,890	-----	-----	-----	Building 3
12	Reservoir(i)	0.000	1	n/a	0	11	39.37	1,033	Leaching Gallery 3
13	SCS Runoff	1.703	1	757	12,076	-----	-----	-----	Proposed Area 1C
14	Combine	1.703	1	757	12,076	10, 12, 13	-----	-----	BLDG 2&3 & Area 1C
15	Reservoir(i)	0.074	1	1378	1,588	14	26.11	11,122	Basin 2 Forebay
16	Reservoir	0.000	1	n/a	0	15	23.14	1,588	Basin 2
17	SCS Runoff	0.913	1	717	2,167	-----	-----	-----	Building 4
18	Reservoir(i)	0.000	1	n/a	0	17	44.07	727	Leaching Gallery 4
19	SCS Runoff	2.434	1	735	11,188	-----	-----	-----	Proposed Area 1D
20	Combine	2.434	1	735	11,188	18, 19	-----	-----	BLDG 4 & AREA 1D
21	Reservoir(i)	0.000	1	n/a	0	20	35.18	11,257	Basin 3 Forebay
22	Reservoir	0.000	1	n/a	0	21	30.00	0.000	Basin 3
23	Combine	0.560	1	786	7,778	7, 8, 16, 22	-----	-----	Proposed Area 1
24	SCS Runoff	0.450	1	760	4,682	-----	-----	-----	Existing Area 2
25	SCS Runoff	2.045	1	746	11,821	-----	-----	-----	Proposed Area 2A
26	Reservoir	2.038	1	748	10,947	25	53.18	1,124	Basin 4 Forebay
27	Reservoir	0.000	1	750	0	26	53.57	4,711	Basin 4
28	SCS Runoff	0.515	1	735	2,508	-----	-----	-----	Proposed Area 2B
29	Reservoir	0.072	1	842	1,336	28	66.33	1,289	Basin 5 Forebay
30	Reservoir	0.000	1	947	0	29	64.16	369	Basin 5
31	SCS Runoff	0.236	1	756	2,281	-----	-----	-----	Proposed Area 2C
32	Combine	0.236	1	756	2,281	27, 30, 31	-----	-----	Proposed Area 2
33	SCS Runoff	0.608	1	749	5,185	-----	-----	-----	Existing Area 3
34	SCS Runoff	0.603	1	749	5,149	-----	-----	-----	Proposed Area 3
GSD 60 Drainage V13.gpw					Return Period: 2 Year			Monday, Oct 3, 2022	

Hydrograph Report

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

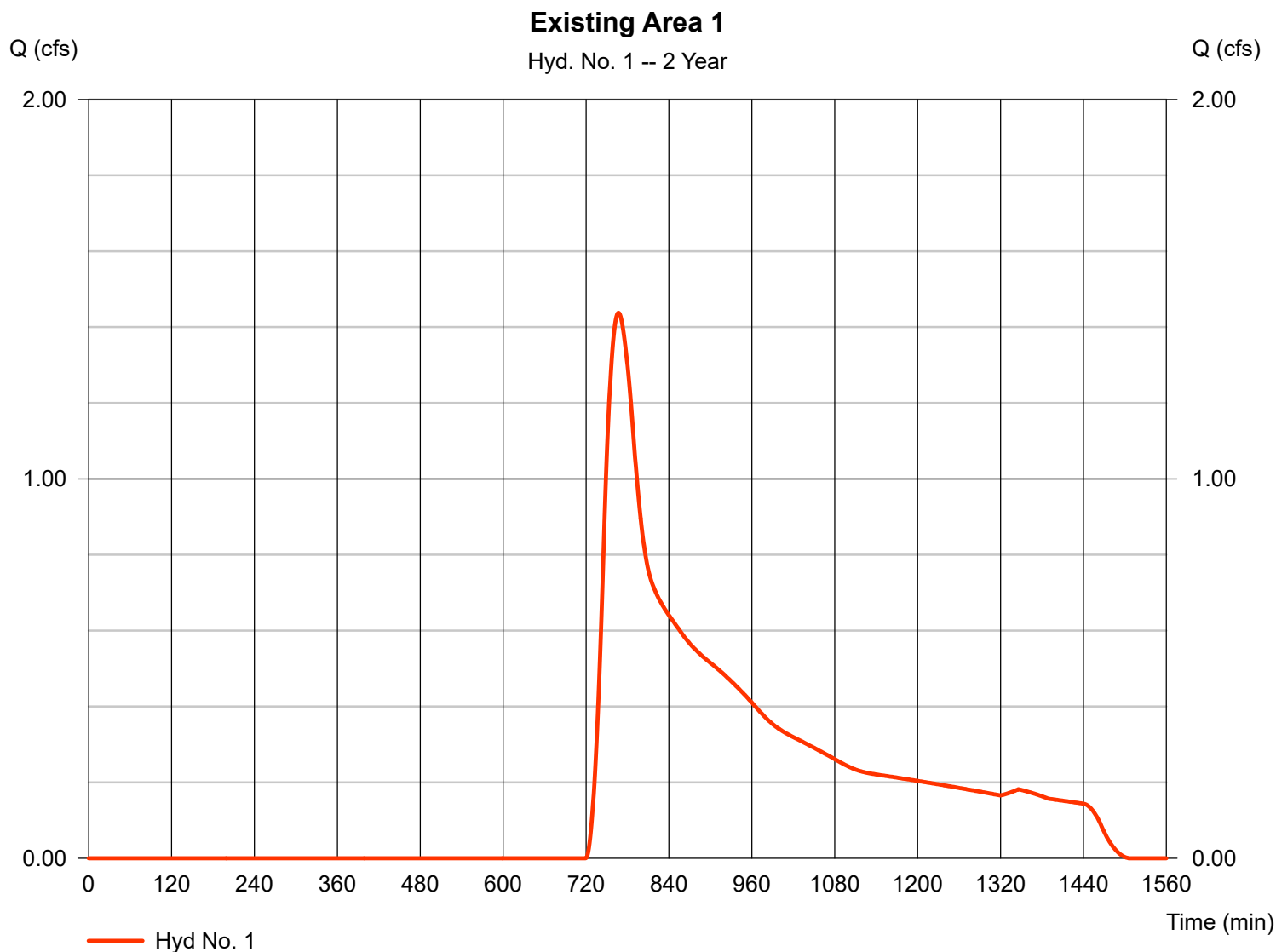
Monday, Oct 3, 2022

Hyd. No. 1

Existing Area 1

Hydrograph type = SCS Runoff
 Storm frequency = 2 yrs
 Time interval = 1 min
 Drainage area = 13.960 ac
 Basin Slope = 0.0 %
 Tc method = TR55
 Total precip. = 3.45 in
 Storm duration = 24 hrs

Peak discharge = 1.438 cfs
 Time to peak = 767 min
 Hyd. volume = 16,593 cuft
 Curve number = 55
 Hydraulic length = 0 ft
 Time of conc. (Tc) = 43.30 min
 Distribution = Type III
 Shape factor = 484



Hydrograph Report

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

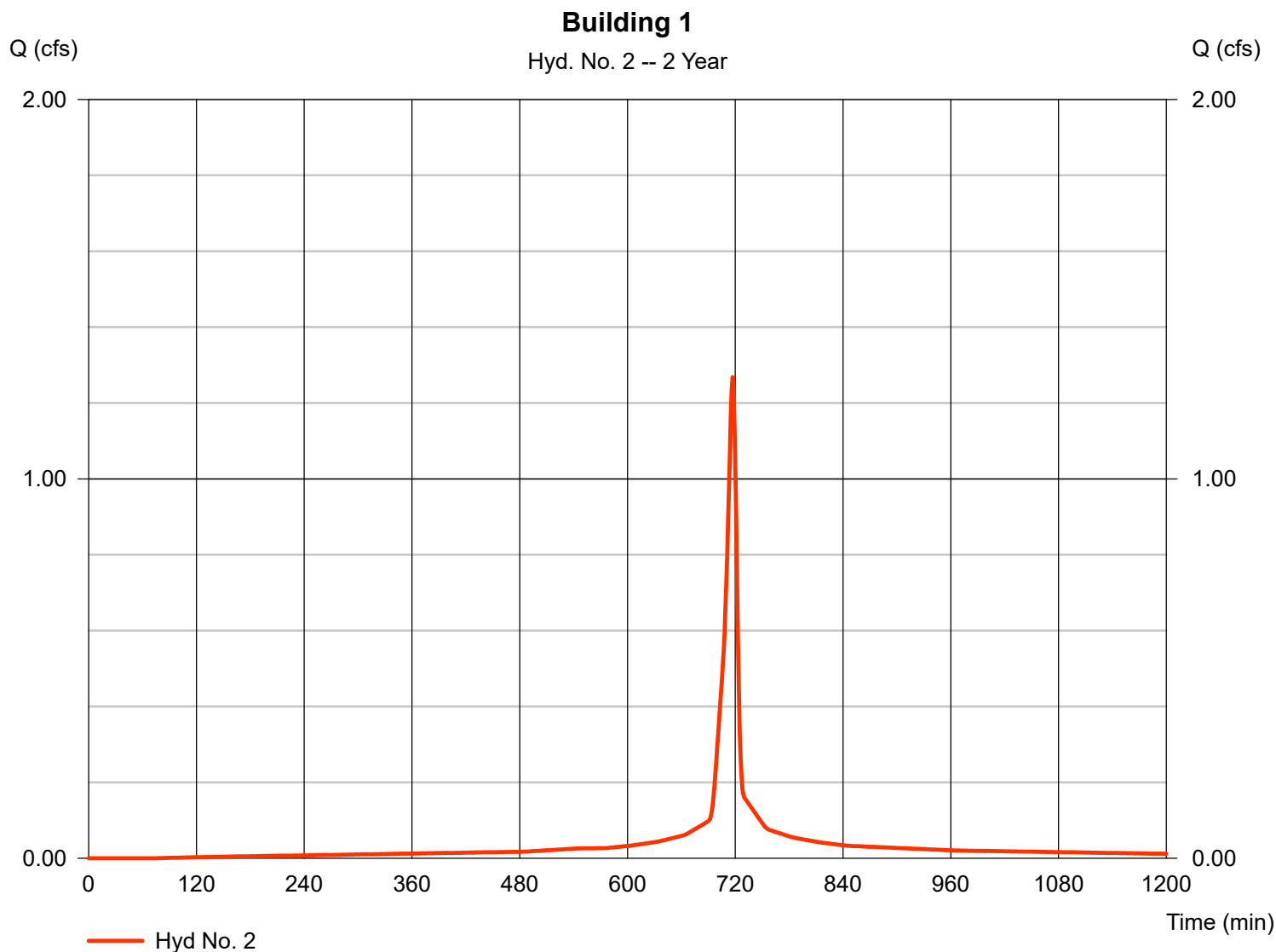
Monday, Oct 3, 2022

Hyd. No. 2

Building 1

Hydrograph type = SCS Runoff
 Storm frequency = 2 yrs
 Time interval = 1 min
 Drainage area = 0.250 ac
 Basin Slope = 0.0 %
 Tc method = USER
 Total precip. = 3.45 in
 Storm duration = 24 hrs

Peak discharge = 1.268 cfs
 Time to peak = 717 min
 Hyd. volume = 3,010 cuft
 Curve number = 98
 Hydraulic length = 0 ft
 Time of conc. (Tc) = 5.00 min
 Distribution = Type II
 Shape factor = 484



Hydrograph Report

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

Monday, Oct 3, 2022

Hyd. No. 3

Leaching Gallery 1

Hydrograph type = Reservoir (Interconnected)
 Storm frequency = 2 yrs
 Time interval = 1 min

Upper Pond

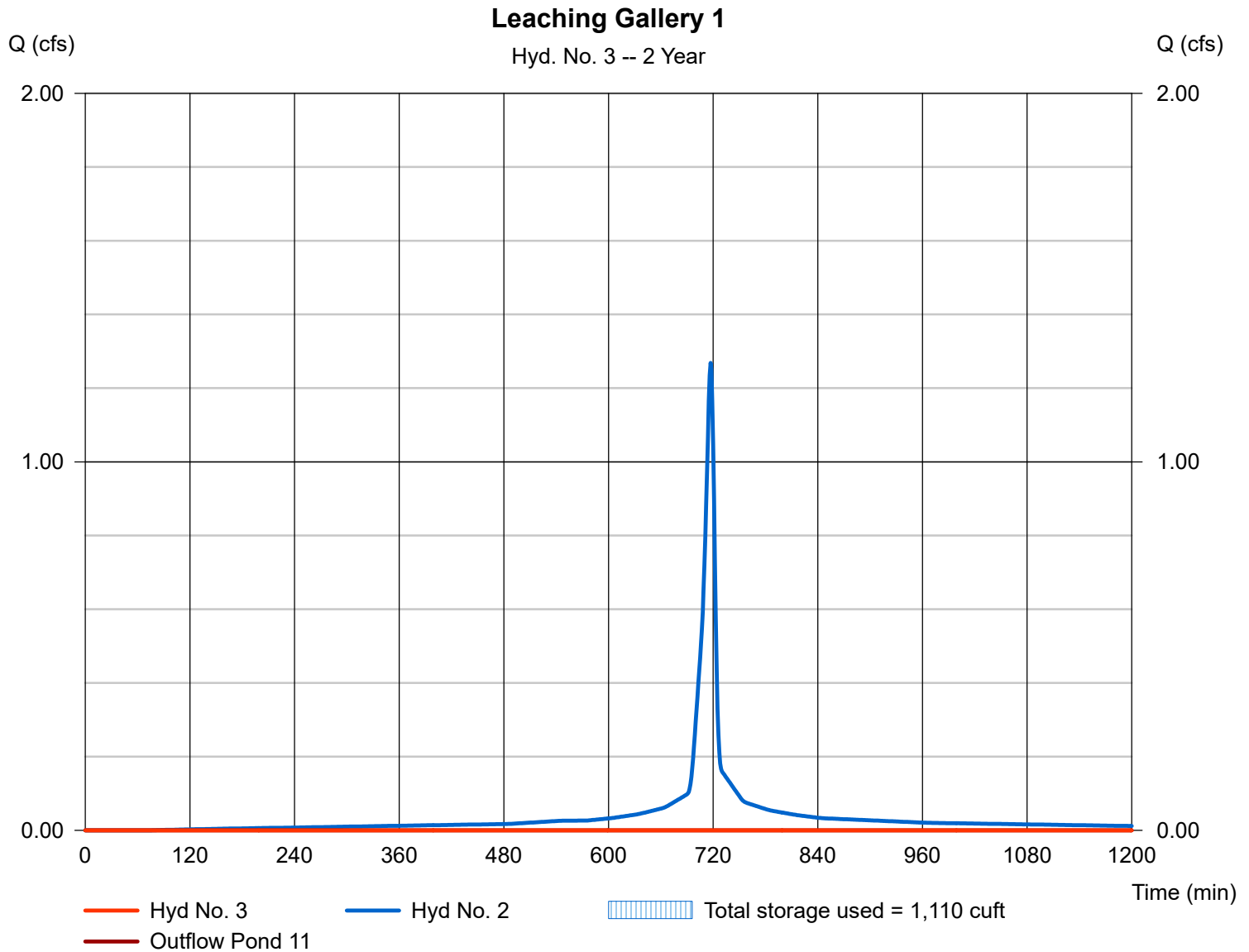
Pond name = Leaching Gallery 1
 Inflow hyd. = 2 - Building 1
 Max. Elevation = 33.83 ft
 Max. Storage = 1,110 cuft

Peak discharge = 0.000 cfs
 Time to peak = n/a
 Hyd. volume = 0 cuft

Lower Pond

Pond name = Basin 1 Forebay
 Other Inflow hyd. = None
 Max. Elevation = 22.00 ft
 Max. Storage = 0 cuft

Interconnected Pond Routing. Storage Indication method used.



Hydrograph Report

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

Monday, Oct 3, 2022

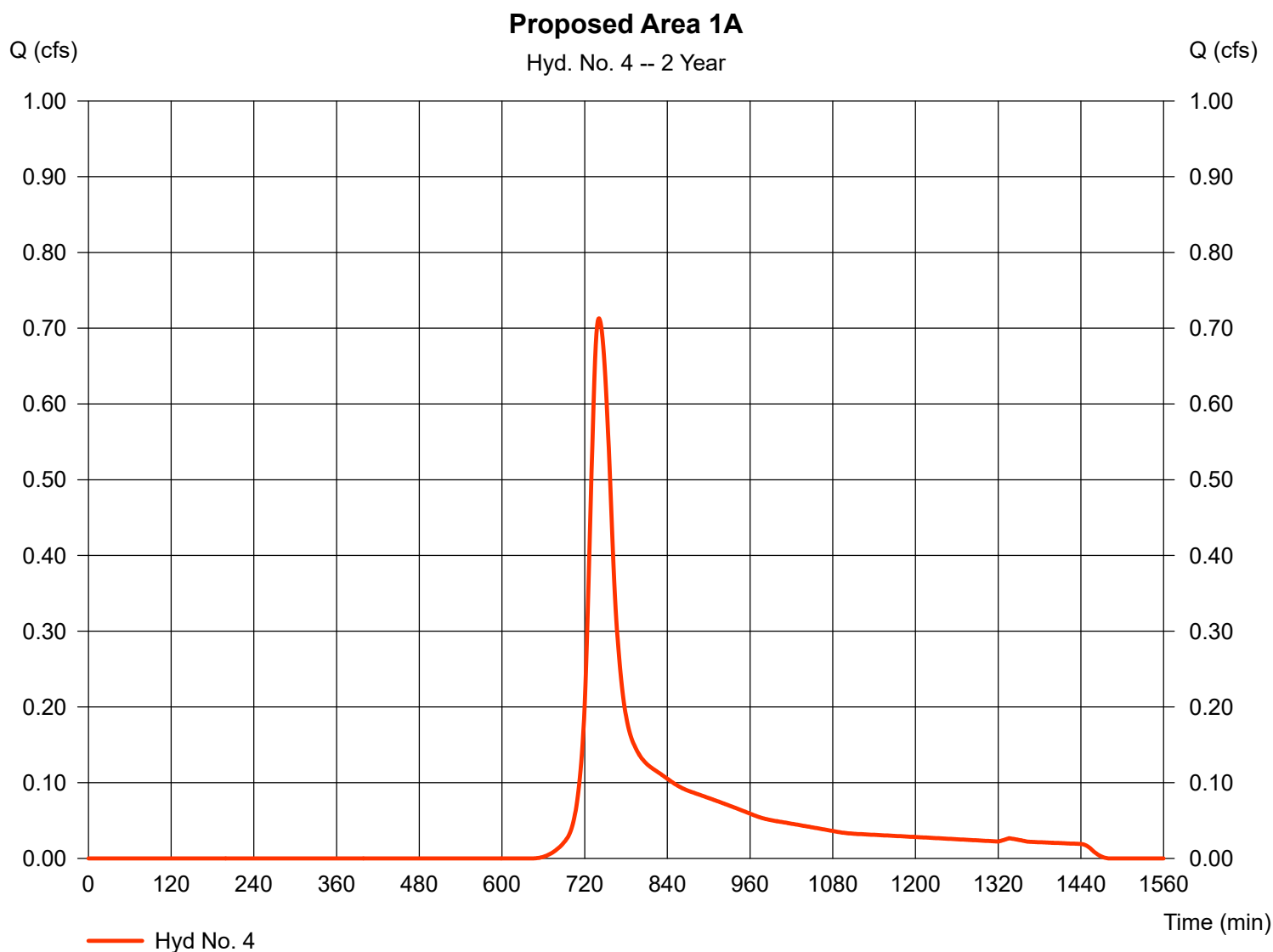
Hyd. No. 4

Proposed Area 1A

Hydrograph type = SCS Runoff
 Storm frequency = 2 yrs
 Time interval = 1 min
 Drainage area = 0.950 ac
 Basin Slope = 0.0 %
 Tc method = TR55
 Total precip. = 3.45 in
 Storm duration = 24 hrs

Peak discharge = 0.713 cfs
 Time to peak = 741 min
 Hyd. volume = 3,782 cuft
 Curve number = 72*
 Hydraulic length = 0 ft
 Time of conc. (Tc) = 26.10 min
 Distribution = Type III
 Shape factor = 484

* Composite (Area/CN) = $[(0.190 \times 55) + (0.450 \times 61) + (0.310 \times 98)] / 0.950$



Hydrograph Report

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

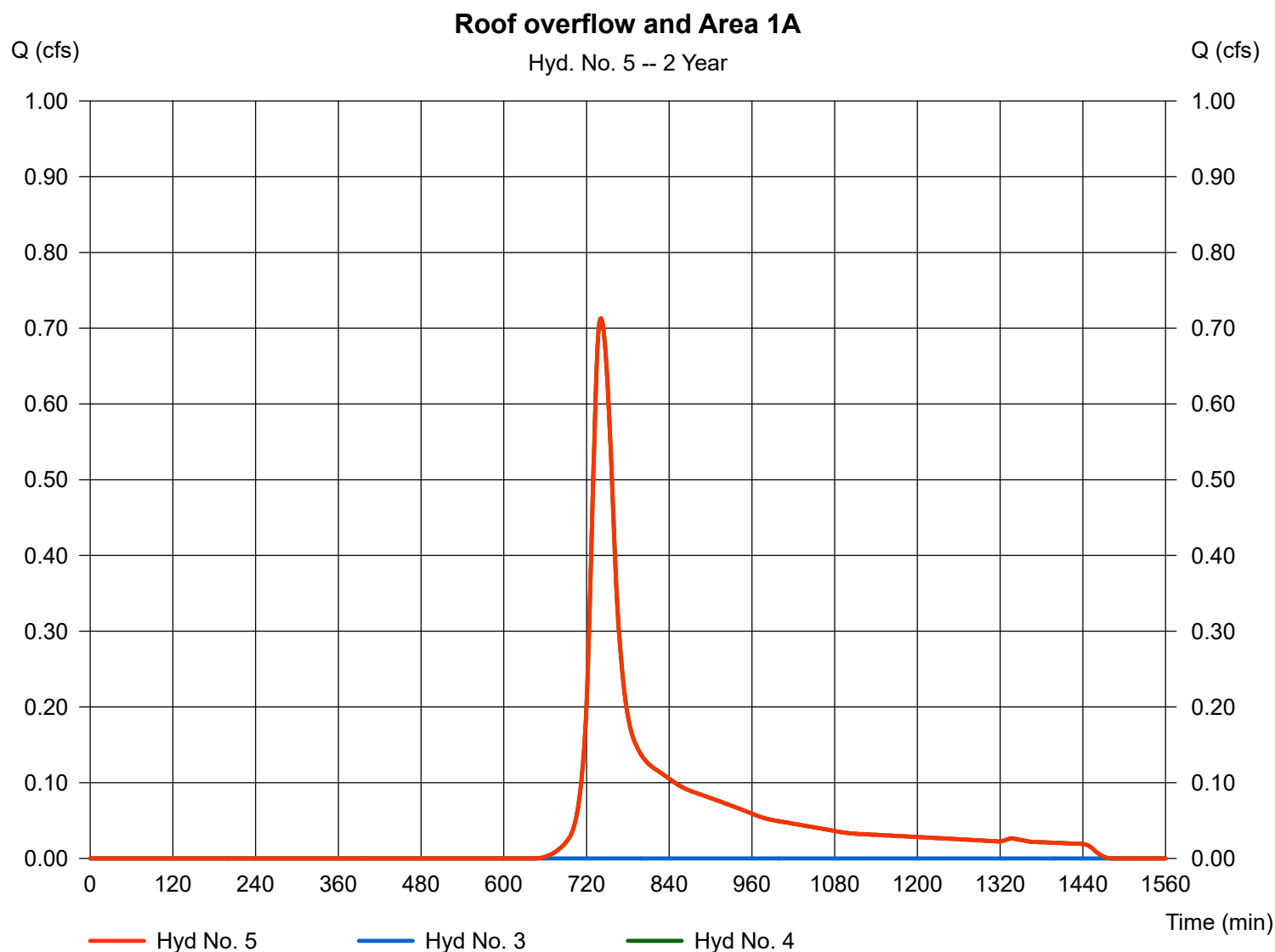
Monday, Oct 3, 2022

Hyd. No. 5

Roof overflow and Area 1A

Hydrograph type = Combine
Storm frequency = 2 yrs
Time interval = 1 min
Inflow hyds. = 3, 4

Peak discharge = 0.713 cfs
Time to peak = 741 min
Hyd. volume = 3,782 cuft
Contrib. drain. area = 0.950 ac



Hydrograph Report

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

Monday, Oct 3, 2022

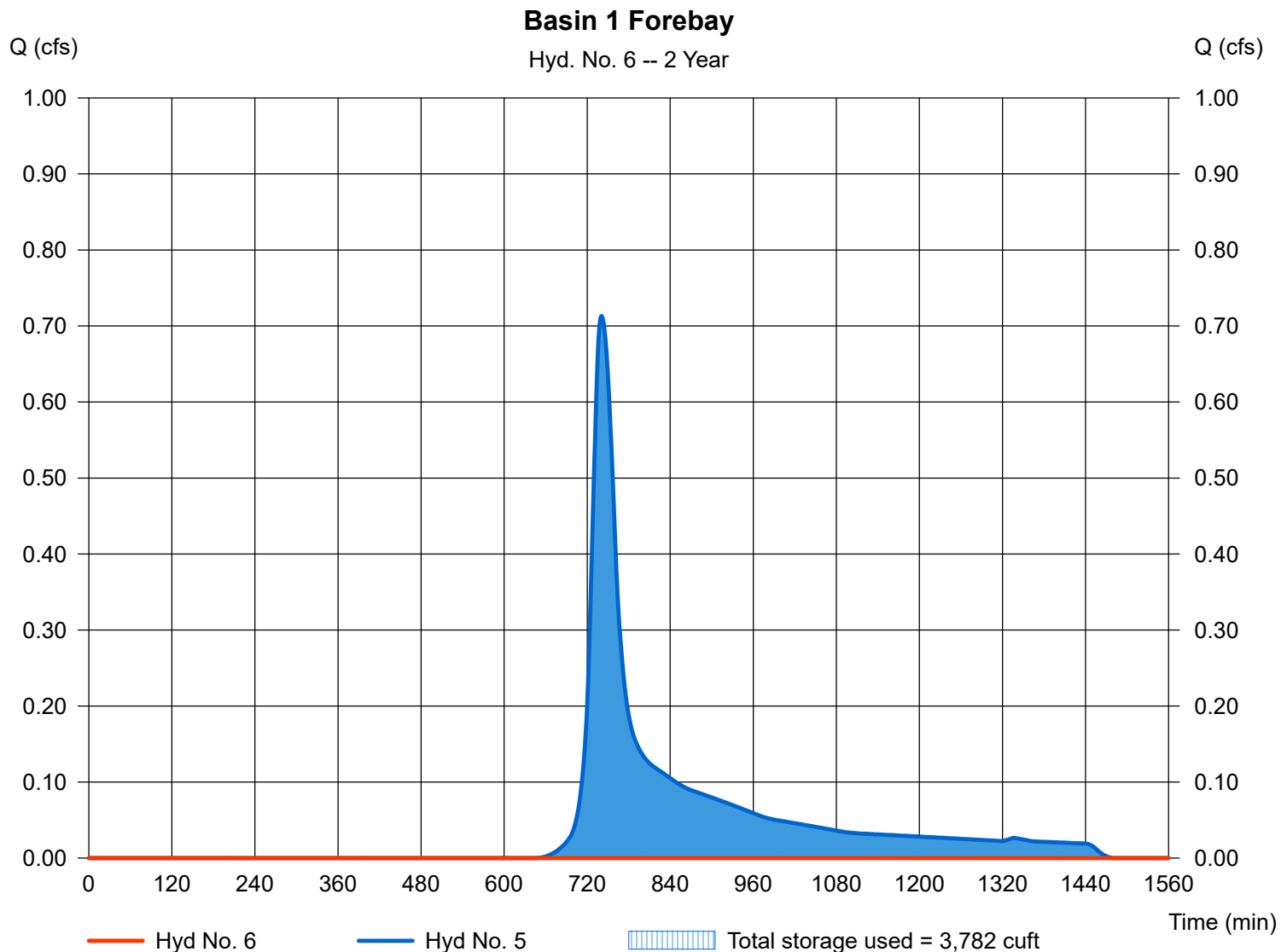
Hyd. No. 6

Basin 1 Forebay

Hydrograph type = Reservoir
 Storm frequency = 2 yrs
 Time interval = 1 min
 Inflow hyd. No. = 5 - Roof overflow and Area 1A
 Reservoir name = Basin 1 Forebay

Peak discharge = 0.000 cfs
 Time to peak = n/a
 Hyd. volume = 0 cuft
 Max. Elevation = 25.18 ft
 Max. Storage = 3,782 cuft

Storage Indication method used.



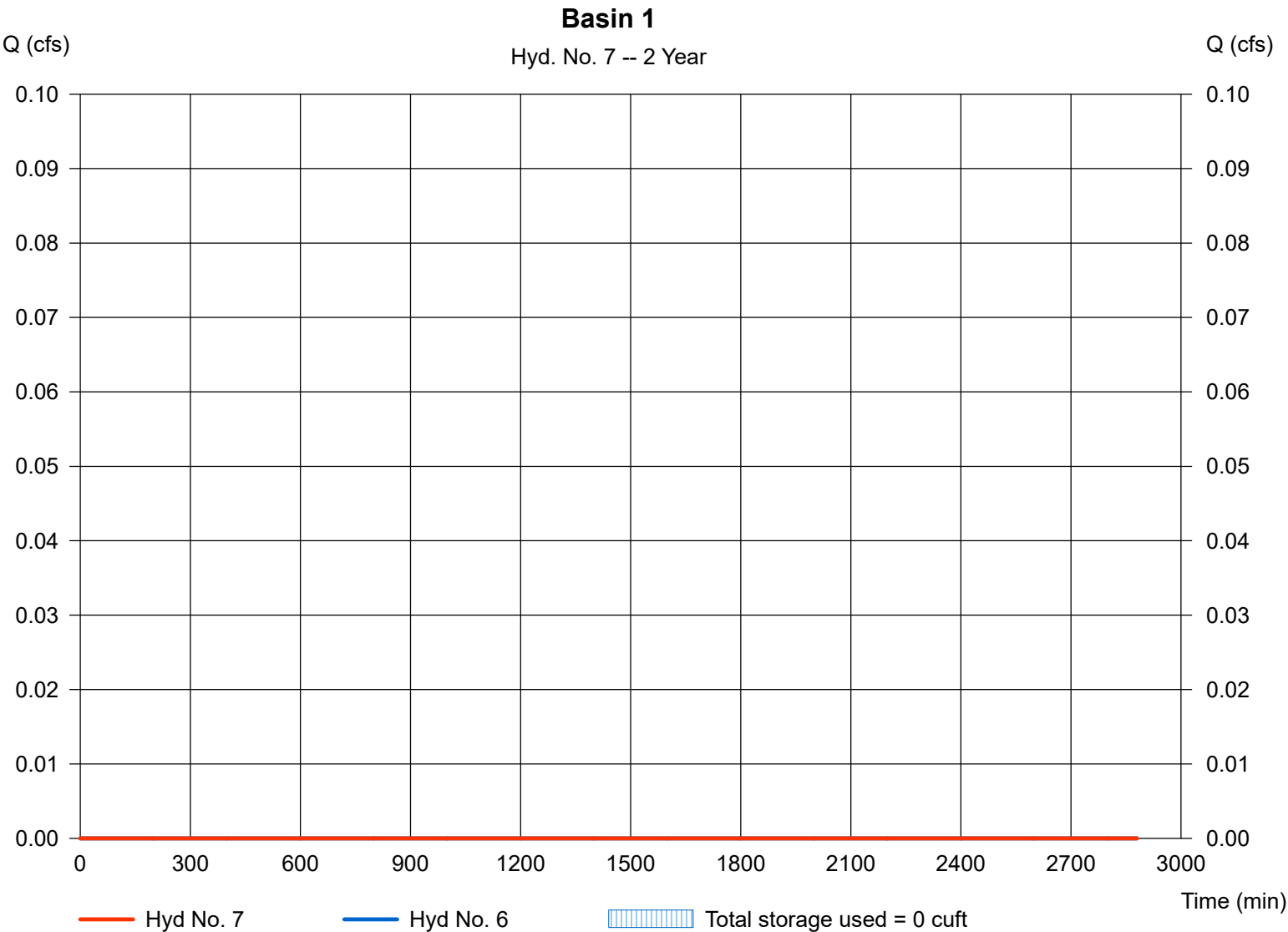
Hydrograph Report

Hyd. No. 7

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.	= 6 - Basin 1 Forebay	Max. Elevation	= 22.00 ft
Reservoir name	= Basin 1 Forebay	Max. Storage	= 0 cuft

Storage Indication method used.



Hydrograph Report

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

Monday, Oct 3, 2022

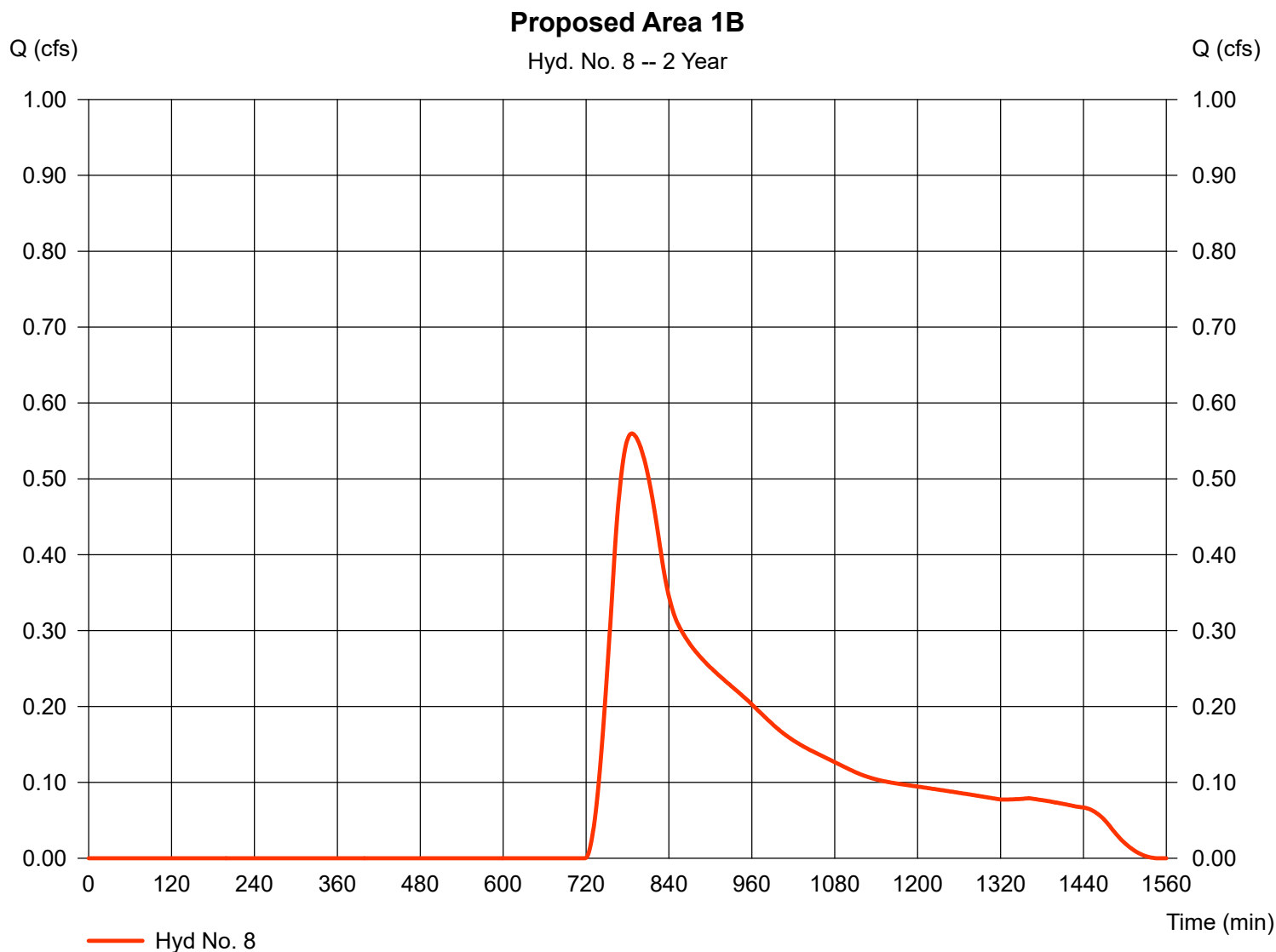
Hyd. No. 8

Proposed Area 1B

Hydrograph type = SCS Runoff
 Storm frequency = 2 yrs
 Time interval = 1 min
 Drainage area = 5.930 ac
 Basin Slope = 0.0 %
 Tc method = TR55
 Total precip. = 3.45 in
 Storm duration = 24 hrs

Peak discharge = 0.560 cfs
 Time to peak = 786 min
 Hyd. volume = 7,778 cuft
 Curve number = 56*
 Hydraulic length = 0 ft
 Time of conc. (Tc) = 69.10 min
 Distribution = Type III
 Shape factor = 484

* Composite (Area/CN) = $[(5.120 \times 55) + (0.810 \times 61)] / 5.930$



Hydrograph Report

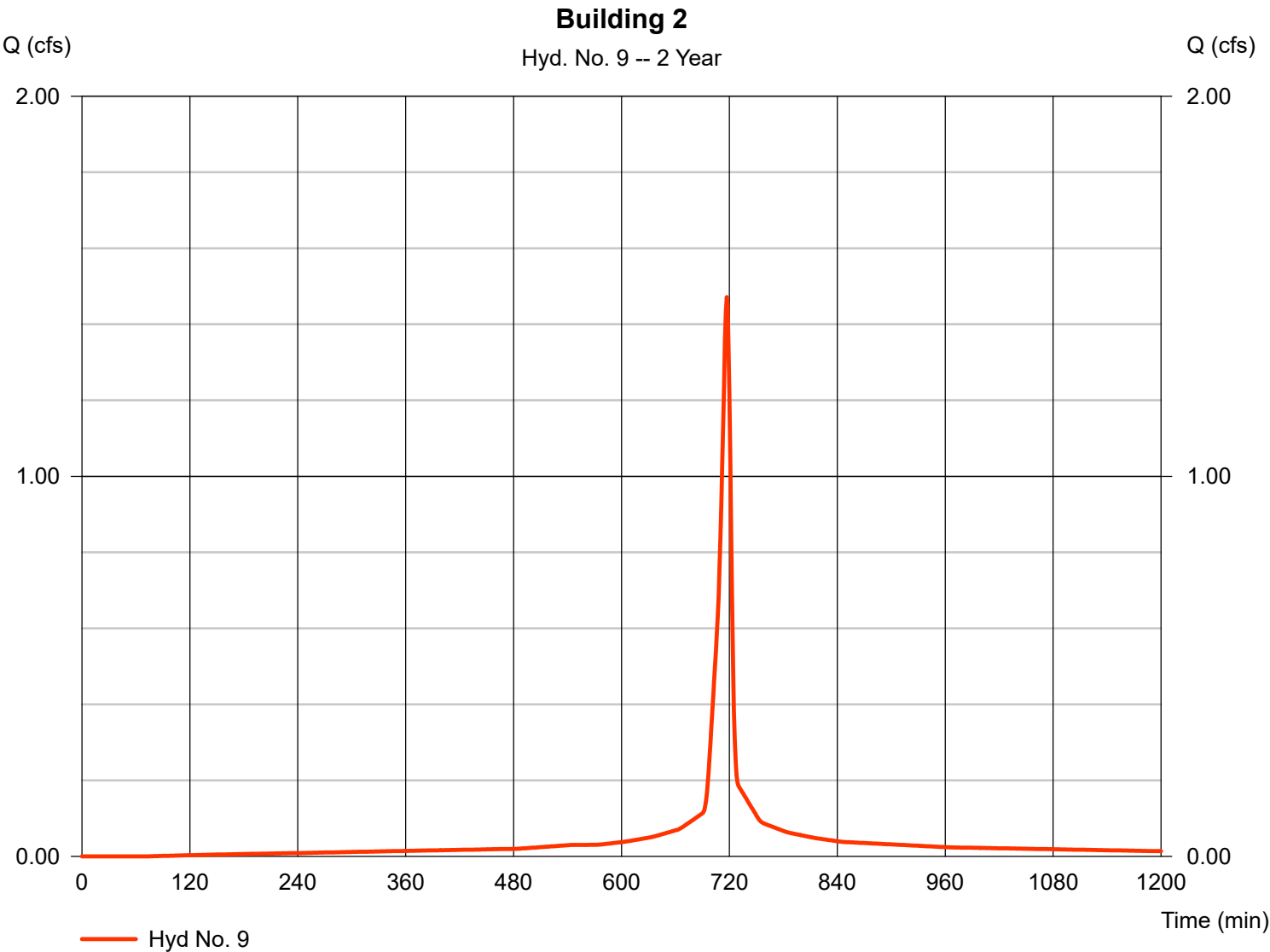
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2009 by Autodesk, Inc. v6.066

Monday, Oct 3, 2022

Hyd. No. 9

Building 2

Hydrograph type	=	SCS Runoff	Peak discharge	=	1.471 cfs
Storm frequency	=	2 yrs	Time to peak	=	717 min
Time interval	=	1 min	Hyd. volume	=	3,492 cuft
Drainage area	=	0.290 ac	Curve number	=	98
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	USER	Time of conc. (Tc)	=	5.00 min
Total precip.	=	3.45 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484



Hydrograph Report

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

Monday, Oct 3, 2022

Hyd. No. 10

Leaching Gallery 2

Hydrograph type = Reservoir (Interconnected)
 Storm frequency = 2 yrs
 Time interval = 1 min

Upper Pond

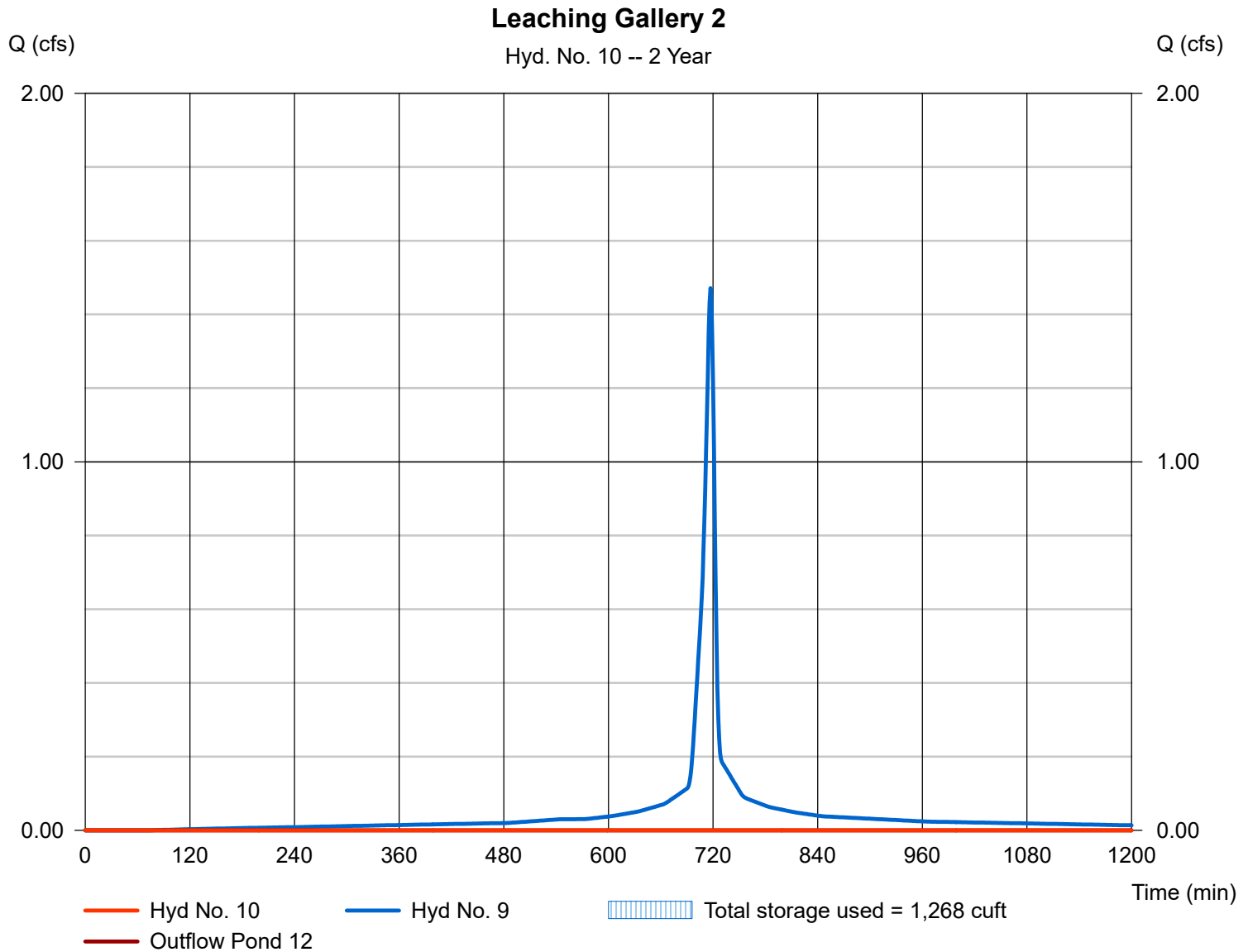
Pond name = Leaching Gallery 2
 Inflow hyd. = 9 - Building 2
 Max. Elevation = 35.12 ft
 Max. Storage = 1,268 cuft

Peak discharge = 0.000 cfs
 Time to peak = n/a
 Hyd. volume = 0 cuft

Lower Pond

Pond name = Basin 2 Forebay
 Other Inflow hyd. = None
 Max. Elevation = 22.00 ft
 Max. Storage = 0 cuft

Interconnected Pond Routing. Storage Indication method used.



Hydrograph Report

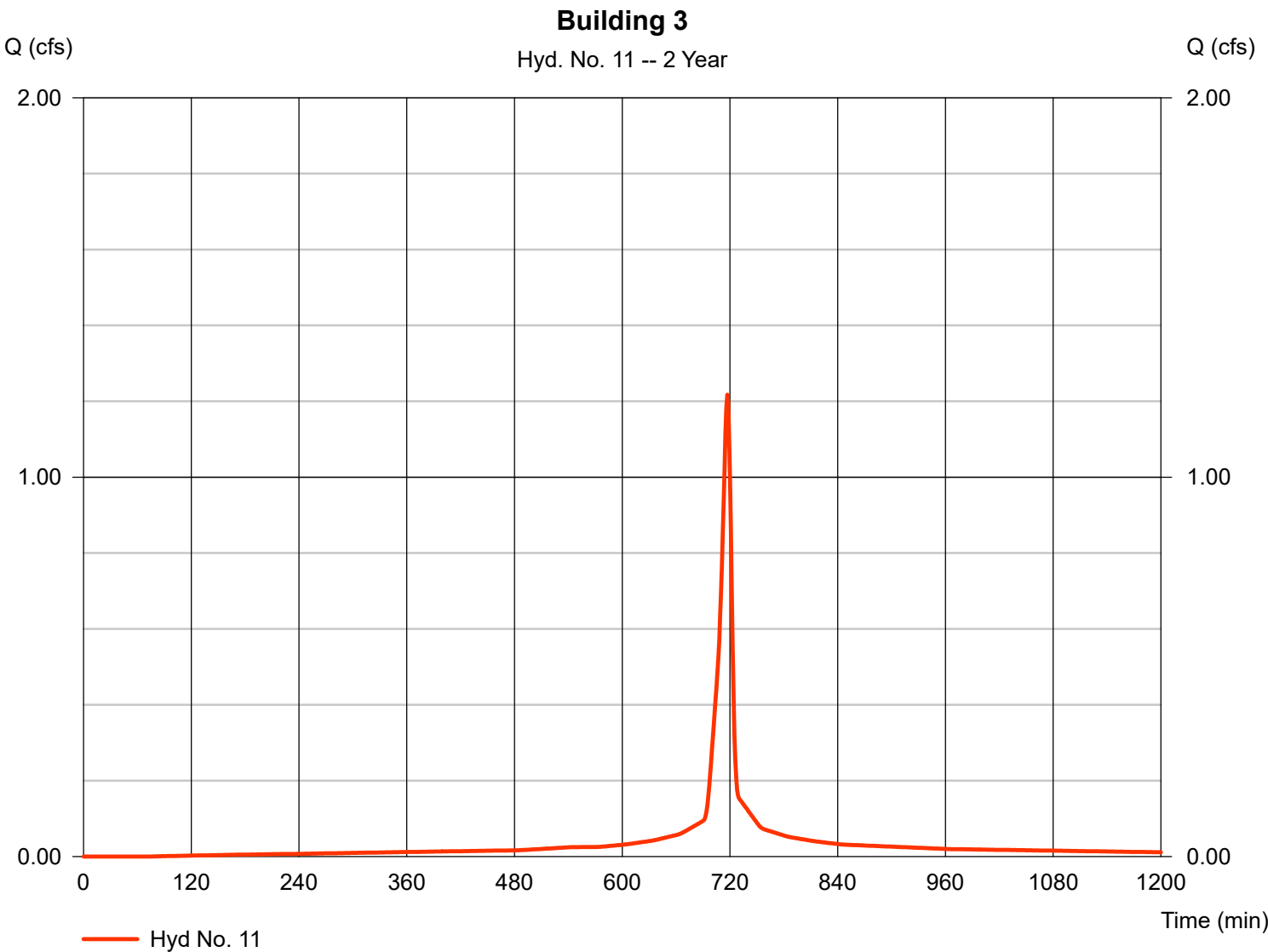
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2009 by Autodesk, Inc. v6.066

Monday, Oct 3, 2022

Hyd. No. 11

Building 3

Hydrograph type	=	SCS Runoff	Peak discharge	=	1.218 cfs
Storm frequency	=	2 yrs	Time to peak	=	717 min
Time interval	=	1 min	Hyd. volume	=	2,890 cuft
Drainage area	=	0.240 ac	Curve number	=	98
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	USER	Time of conc. (Tc)	=	5.00 min
Total precip.	=	3.45 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484



Hydrograph Report

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

Monday, Oct 3, 2022

Hyd. No. 12

Leaching Gallery 3

Hydrograph type = Reservoir (Interconnected)
 Storm frequency = 2 yrs
 Time interval = 1 min

Upper Pond

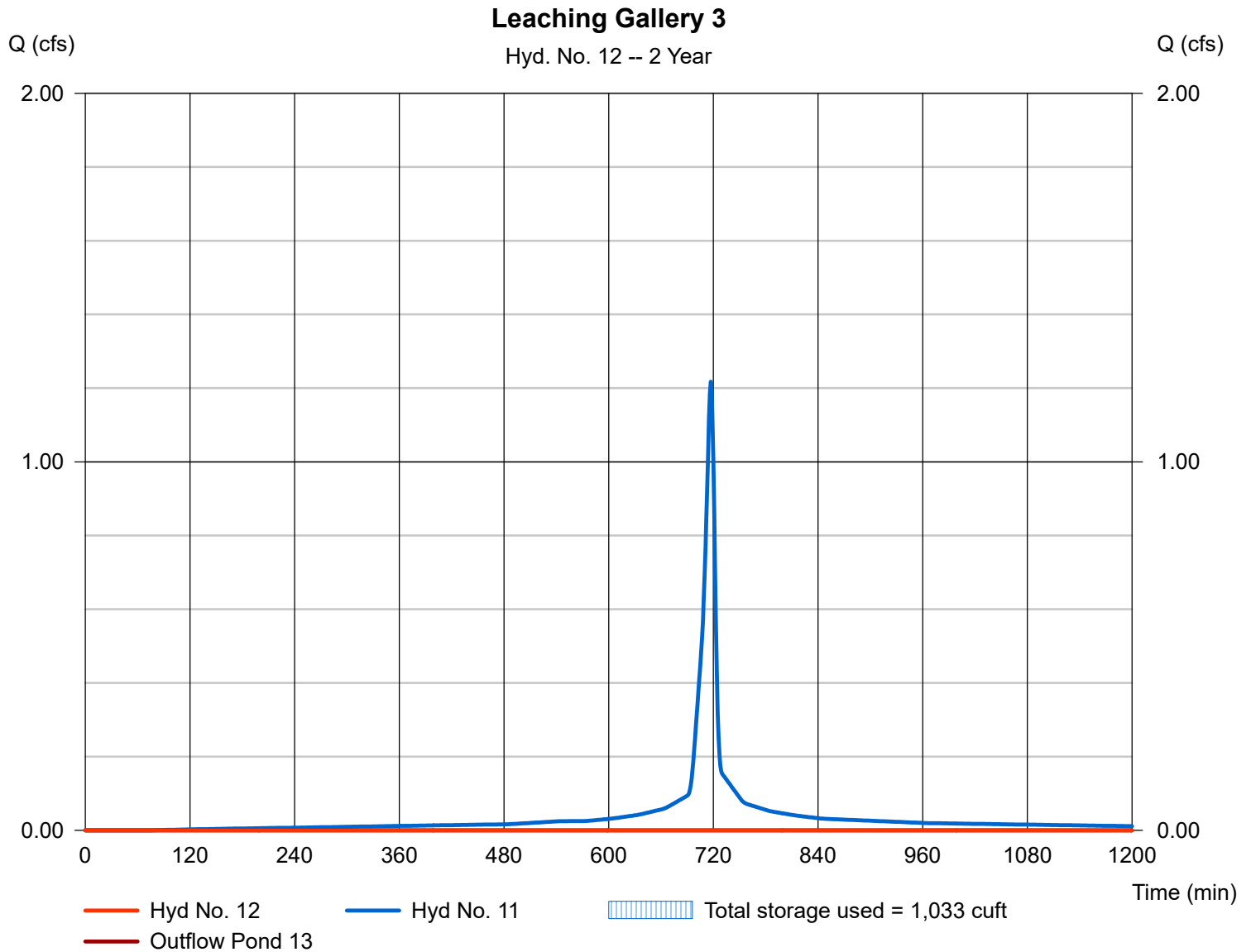
Pond name = Leaching Gallery 3
 Inflow hyd. = 11 - Building 3
 Max. Elevation = 39.37 ft
 Max. Storage = 1,033 cuft

Peak discharge = 0.000 cfs
 Time to peak = n/a
 Hyd. volume = 0 cuft

Lower Pond

Pond name = Basin 2 Forebay
 Other Inflow hyd. = None
 Max. Elevation = 22.00 ft
 Max. Storage = 0 cuft

Interconnected Pond Routing. Storage Indication method used.



Hydrograph Report

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

Monday, Oct 3, 2022

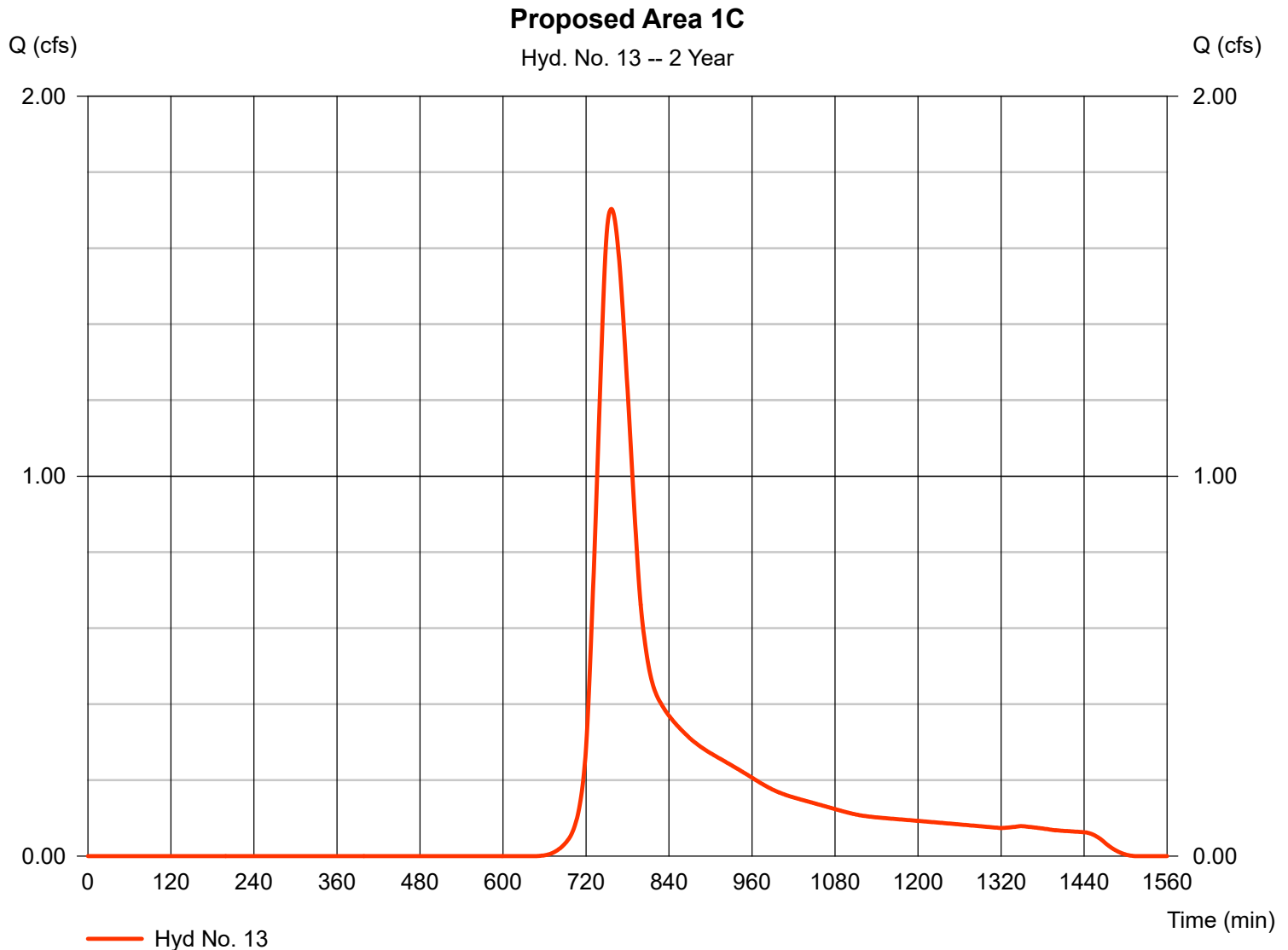
Hyd. No. 13

Proposed Area 1C

Hydrograph type = SCS Runoff
 Storm frequency = 2 yrs
 Time interval = 1 min
 Drainage area = 3.070 ac
 Basin Slope = 0.0 %
 Tc method = TR55
 Total precip. = 3.45 in
 Storm duration = 24 hrs

Peak discharge = 1.703 cfs
 Time to peak = 757 min
 Hyd. volume = 12,076 cuft
 Curve number = 72*
 Hydraulic length = 0 ft
 Time of conc. (Tc) = 48.50 min
 Distribution = Type III
 Shape factor = 484

* Composite (Area/CN) = $[(0.740 \times 55) + (1.060 \times 98) + (1.270 \times 61)] / 3.070$



Hydrograph Report

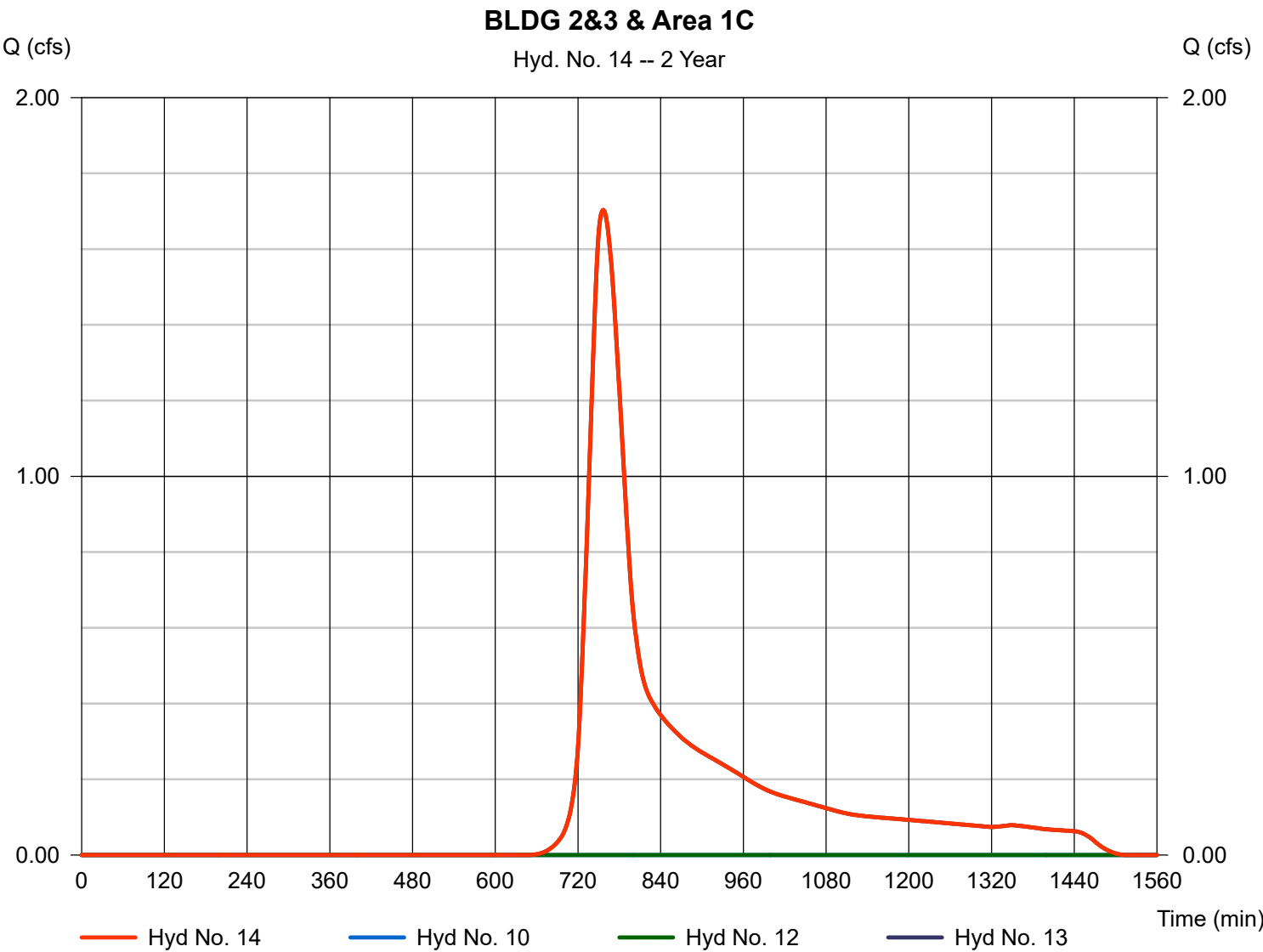
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2009 by Autodesk, Inc. v6.066

Monday, Oct 3, 2022

Hyd. No. 14

BLDG 2&3 & Area 1C

Hydrograph type	= Combine	Peak discharge	= 1.703 cfs
Storm frequency	= 2 yrs	Time to peak	= 757 min
Time interval	= 1 min	Hyd. volume	= 12,076 cuft
Inflow hyds.	= 10, 12, 13	Contrib. drain. area	= 3.070 ac



Hydrograph Report

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

Monday, Oct 3, 2022

Hyd. No. 15

Basin 2 Forebay

Hydrograph type = Reservoir (Interconnected)
 Storm frequency = 2 yrs
 Time interval = 1 min

Upper Pond

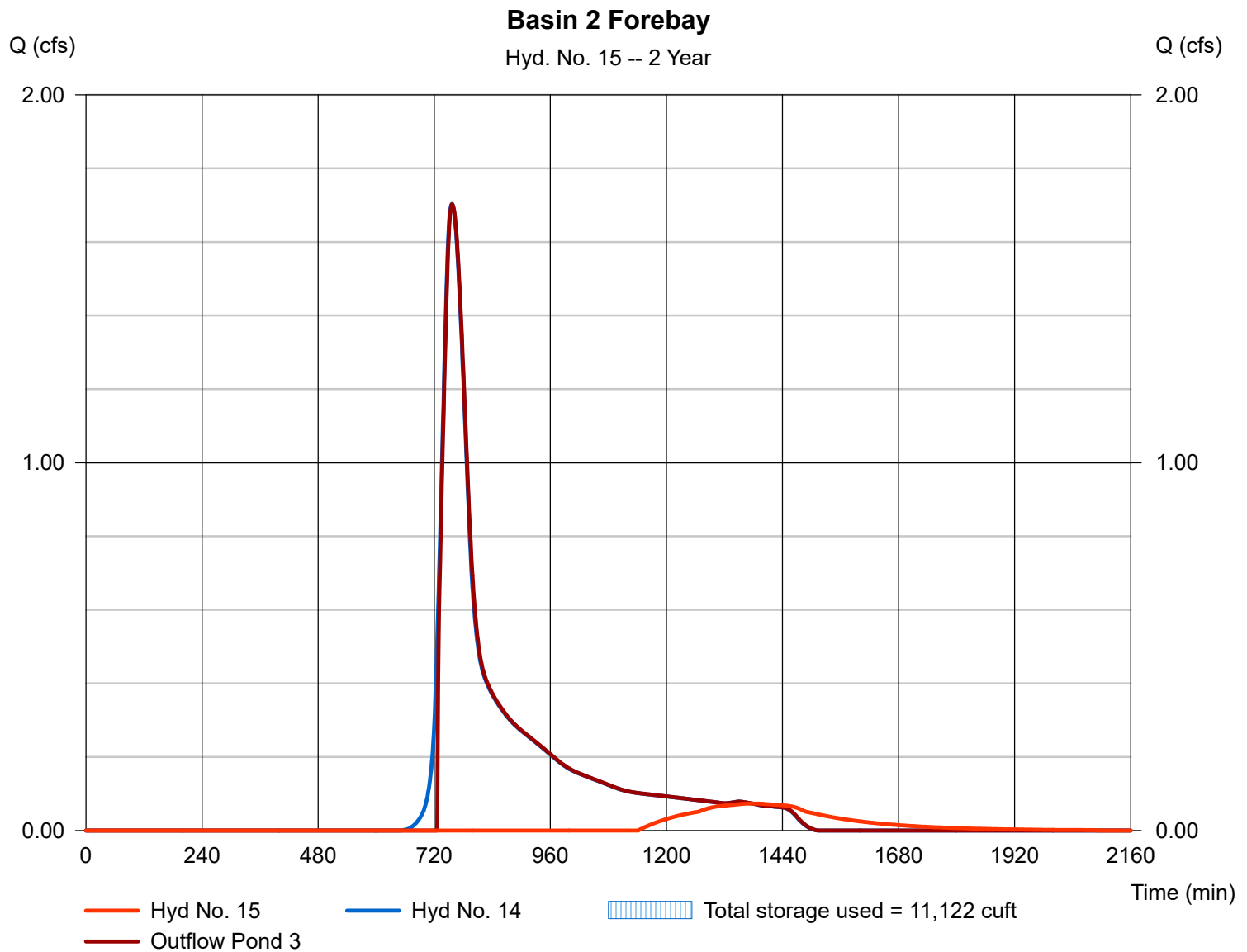
Pond name = Basin 2 Forebay
 Inflow hyd. = 14 - BLDG 2&3 & Area 1C
 Max. Elevation = 23.16 ft
 Max. Storage = 477 cuft

Peak discharge = 0.074 cfs
 Time to peak = 1378 min
 Hyd. volume = 1,588 cuft

Lower Pond

Pond name = Basin 2
 Other Inflow hyd. = None
 Max. Elevation = 26.11 ft
 Max. Storage = 10,645 cuft

Interconnected Pond Routing. Storage Indication method used.



Hydrograph Report

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

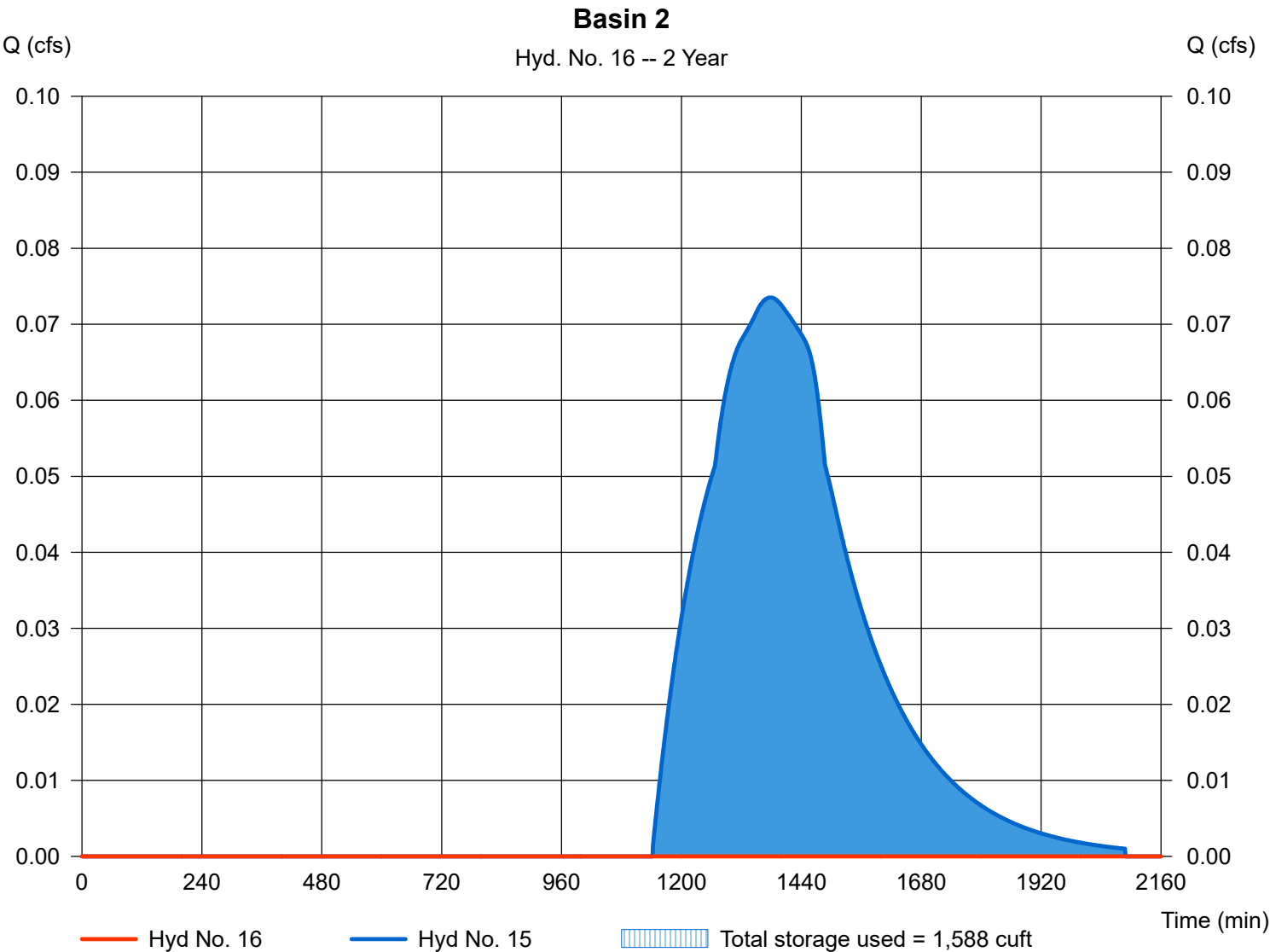
Monday, Oct 3, 2022

Hyd. No. 16

Basin 2

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.	= 15 - Basin 2 Forebay	Max. Elevation	= 23.14 ft
Reservoir name	= Basin 2	Max. Storage	= 1,588 cuft

Storage Indication method used.

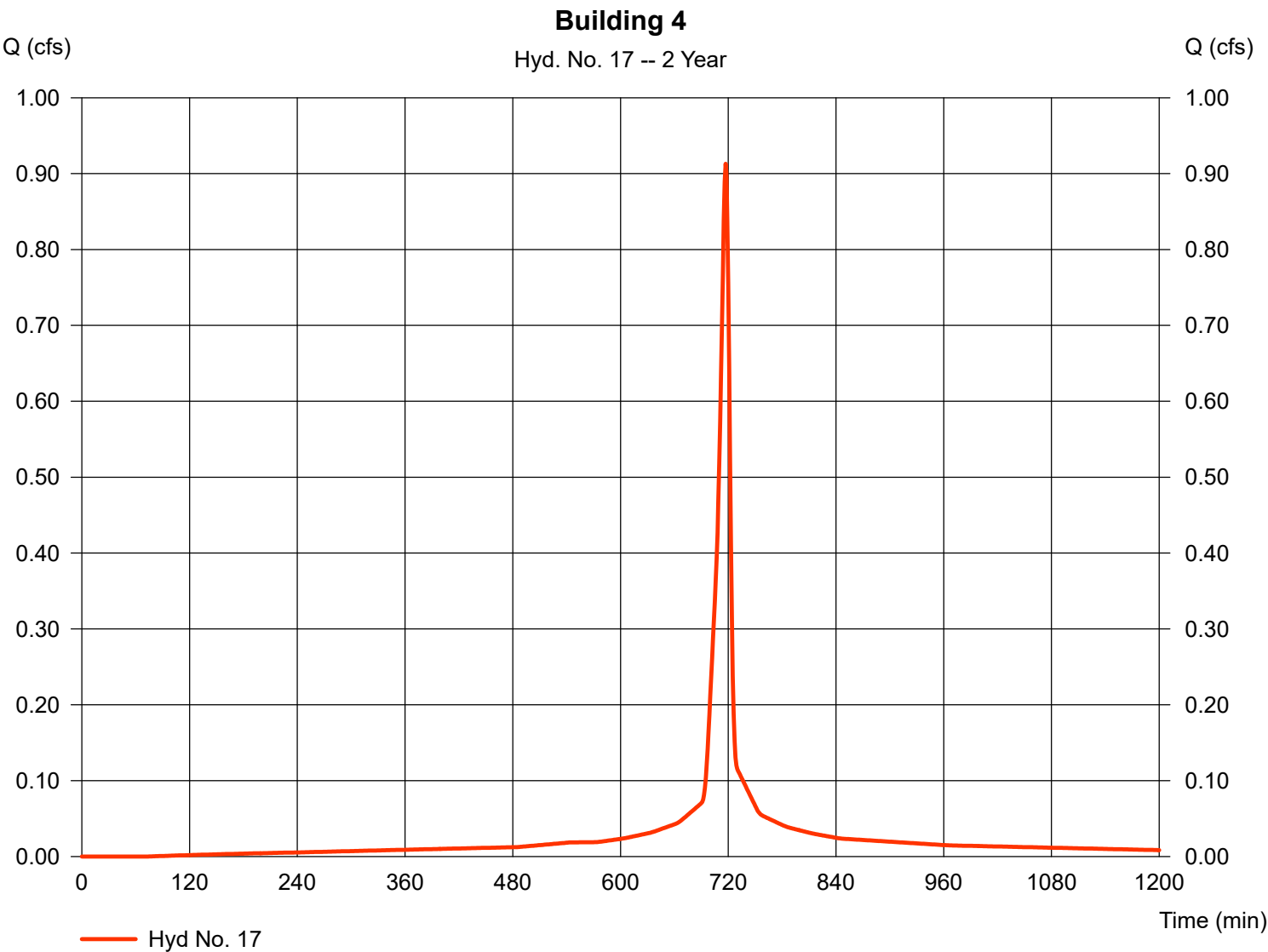


Hydrograph Report

Hyd. No. 17

Building 4

Hydrograph type	= SCS Runoff	Peak discharge	= 0.913 cfs
Storm frequency	= 2 yrs	Time to peak	= 717 min
Time interval	= 1 min	Hyd. volume	= 2,167 cuft
Drainage area	= 0.180 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.45 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



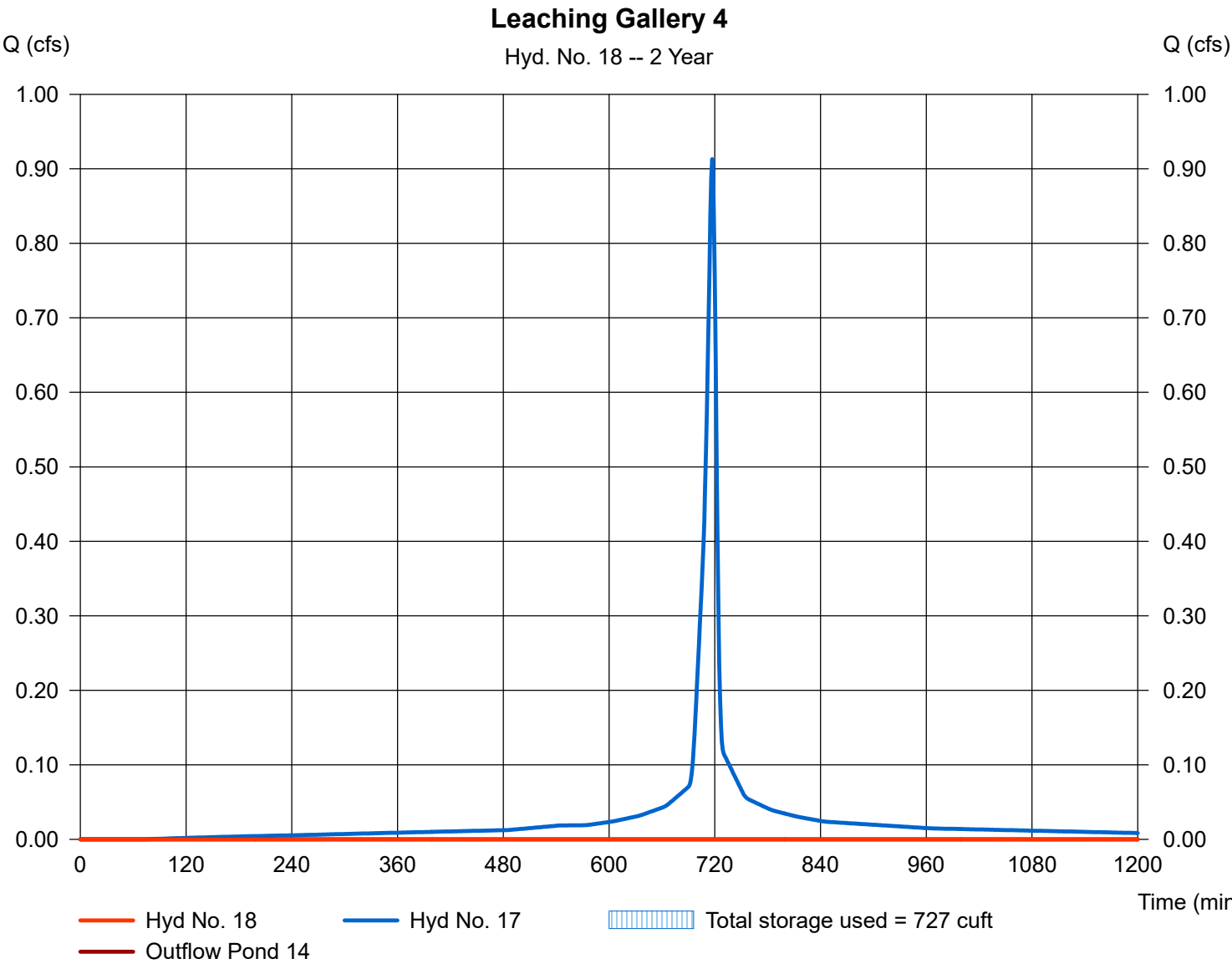
Hydrograph Report

Hyd. No. 18

Leaching Gallery 4

Hydrograph type	= Reservoir (Interconnected)	Peak discharge	= 0.000 cfs
Storm frequency	= 2 yrs	Time to peak	= n/a
Time interval	= 1 min	Hyd. volume	= 0 cuft
Upper Pond		Lower Pond	
Pond name	= Leaching Gallery 4	Pond name	= Basin 3 Forebay
Inflow hyd.	= 17 - Building 4	Other Inflow hyd.	= None
Max. Elevation	= 44.07 ft	Max. Elevation	= 32.00 ft
Max. Storage	= 727 cuft	Max. Storage	= 0 cuft

Interconnected Pond Routing. Storage Indication method used.



Hydrograph Report

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

Monday, Oct 3, 2022

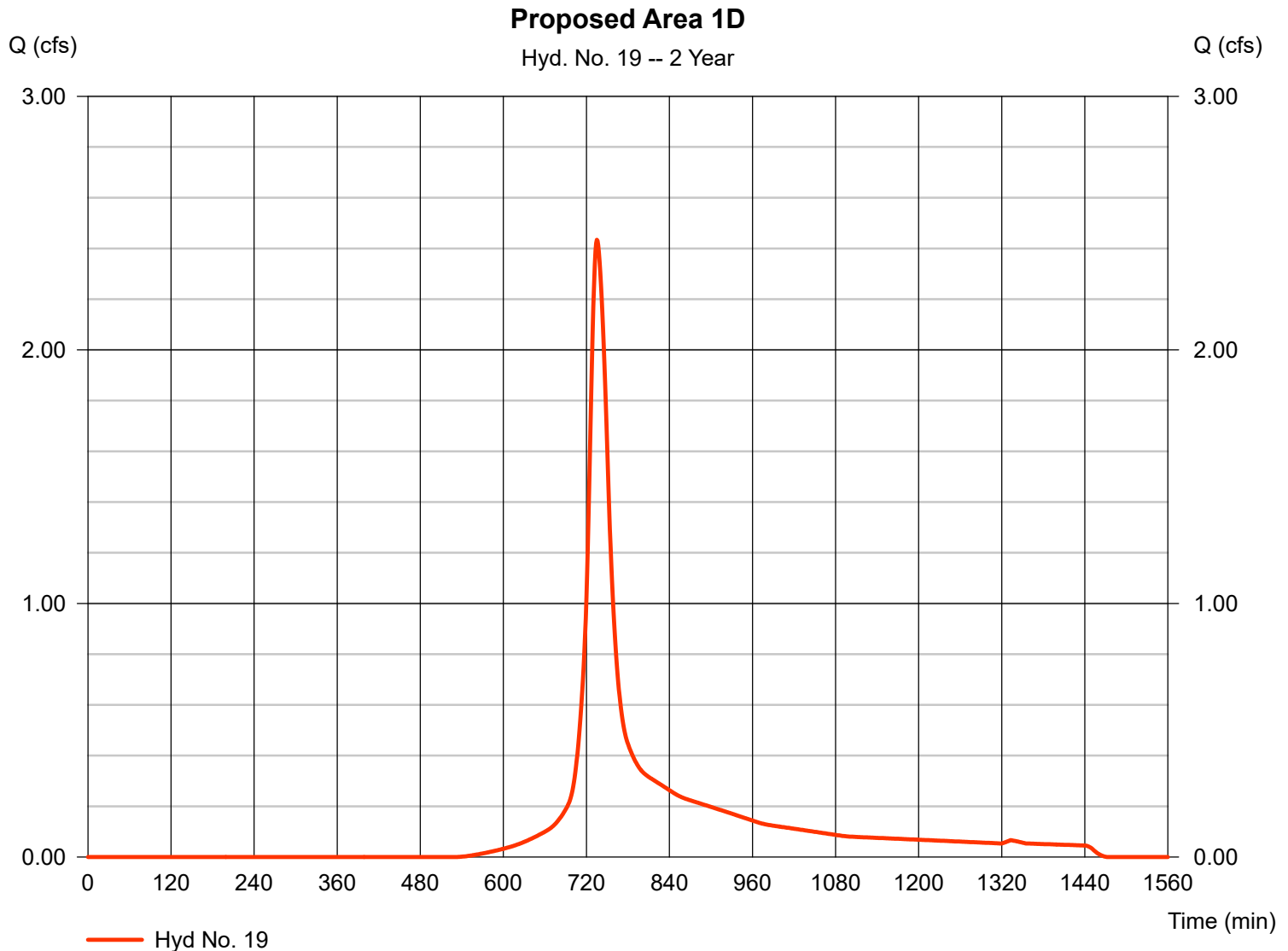
Hyd. No. 19

Proposed Area 1D

Hydrograph type = SCS Runoff
 Storm frequency = 2 yrs
 Time interval = 1 min
 Drainage area = 1.830 ac
 Basin Slope = 0.0 %
 Tc method = TR55
 Total precip. = 3.45 in
 Storm duration = 24 hrs

Peak discharge = 2.434 cfs
 Time to peak = 735 min
 Hyd. volume = 11,188 cuft
 Curve number = 81*
 Hydraulic length = 0 ft
 Time of conc. (Tc) = 21.50 min
 Distribution = Type III
 Shape factor = 484

* Composite (Area/CN) = $[(1.010 \times 98) + (0.820 \times 61)] / 1.830$

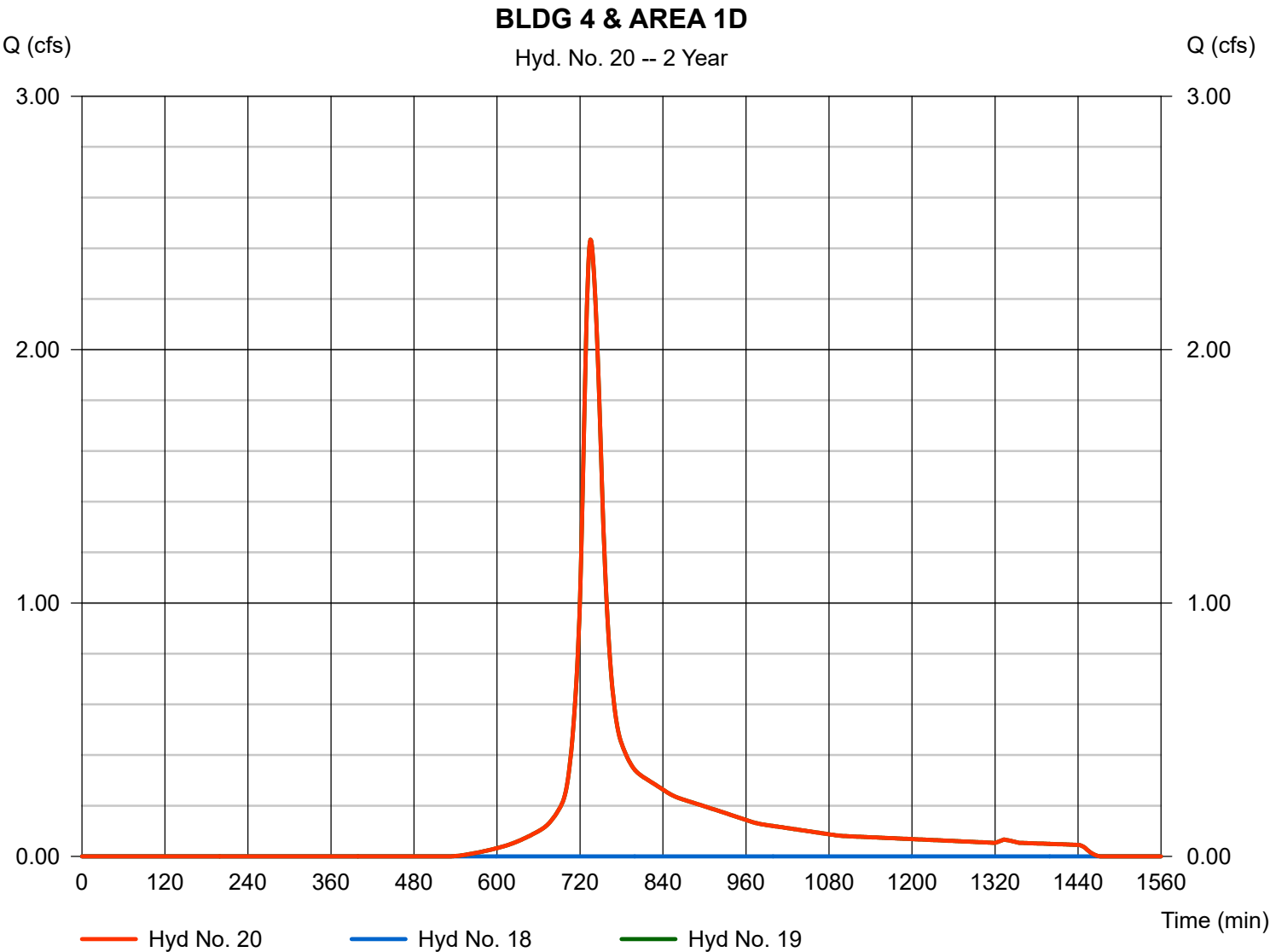


Hydrograph Report

Hyd. No. 20

BLDG 4 & AREA 1D

Hydrograph type	= Combine	Peak discharge	= 2.434 cfs
Storm frequency	= 2 yrs	Time to peak	= 735 min
Time interval	= 1 min	Hyd. volume	= 11,188 cuft
Inflow hyds.	= 18, 19	Contrib. drain. area	= 1.830 ac



Hydrograph Report

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

Monday, Oct 3, 2022

Hyd. No. 21

Basin 3 Forebay

Hydrograph type = Reservoir (Interconnected)
 Storm frequency = 2 yrs
 Time interval = 1 min

Upper Pond

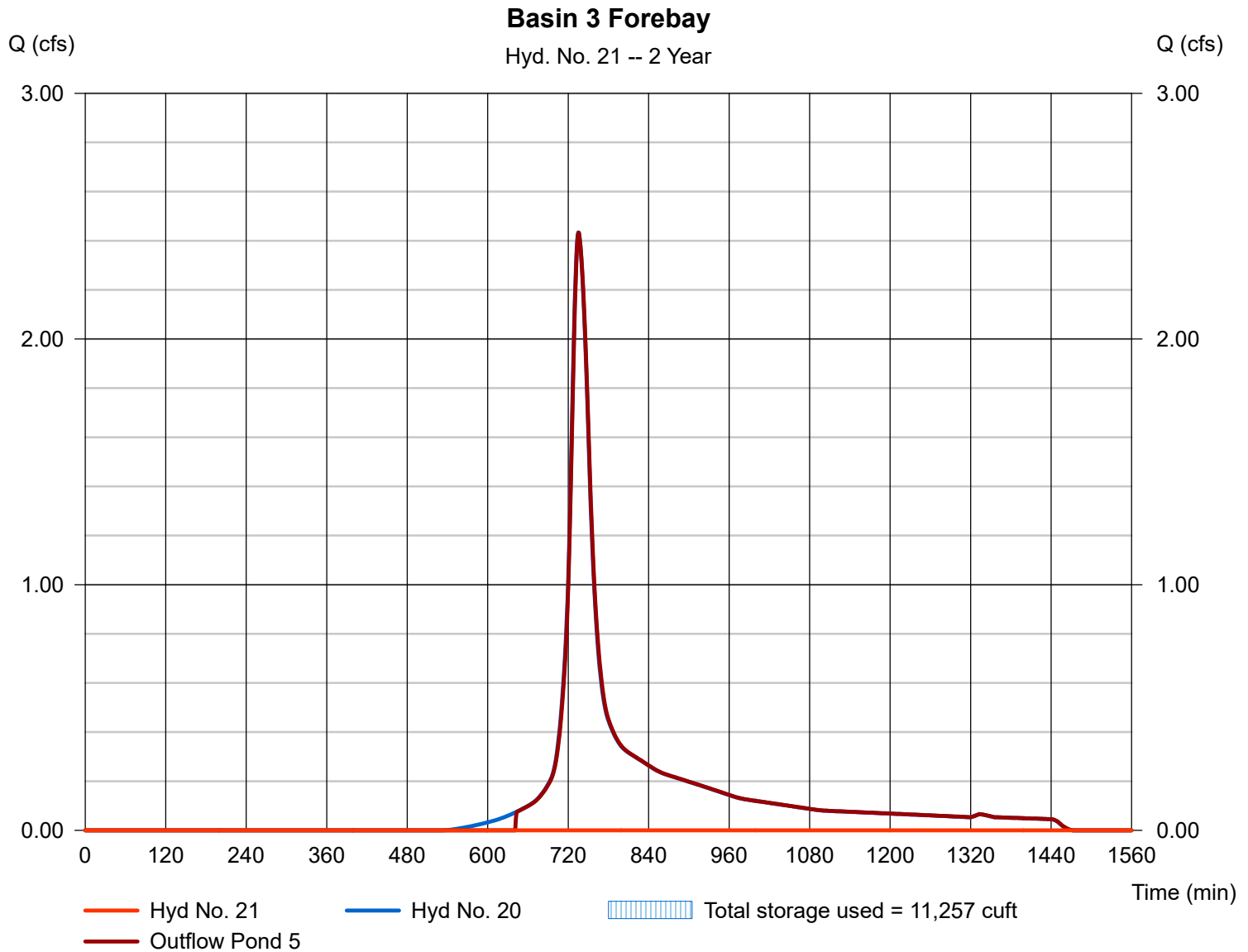
Pond name = Basin 3 Forebay
 Inflow hyd. = 20 - BLDG 4 & AREA 1D
 Max. Elevation = 33.21 ft
 Max. Storage = 248 cuft

Peak discharge = 0.000 cfs
 Time to peak = n/a
 Hyd. volume = 0 cuft

Lower Pond

Pond name = Basin 3
 Other Inflow hyd. = None
 Max. Elevation = 35.18 ft
 Max. Storage = 11,009 cuft

Interconnected Pond Routing. Storage Indication method used.



Hydrograph Report

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

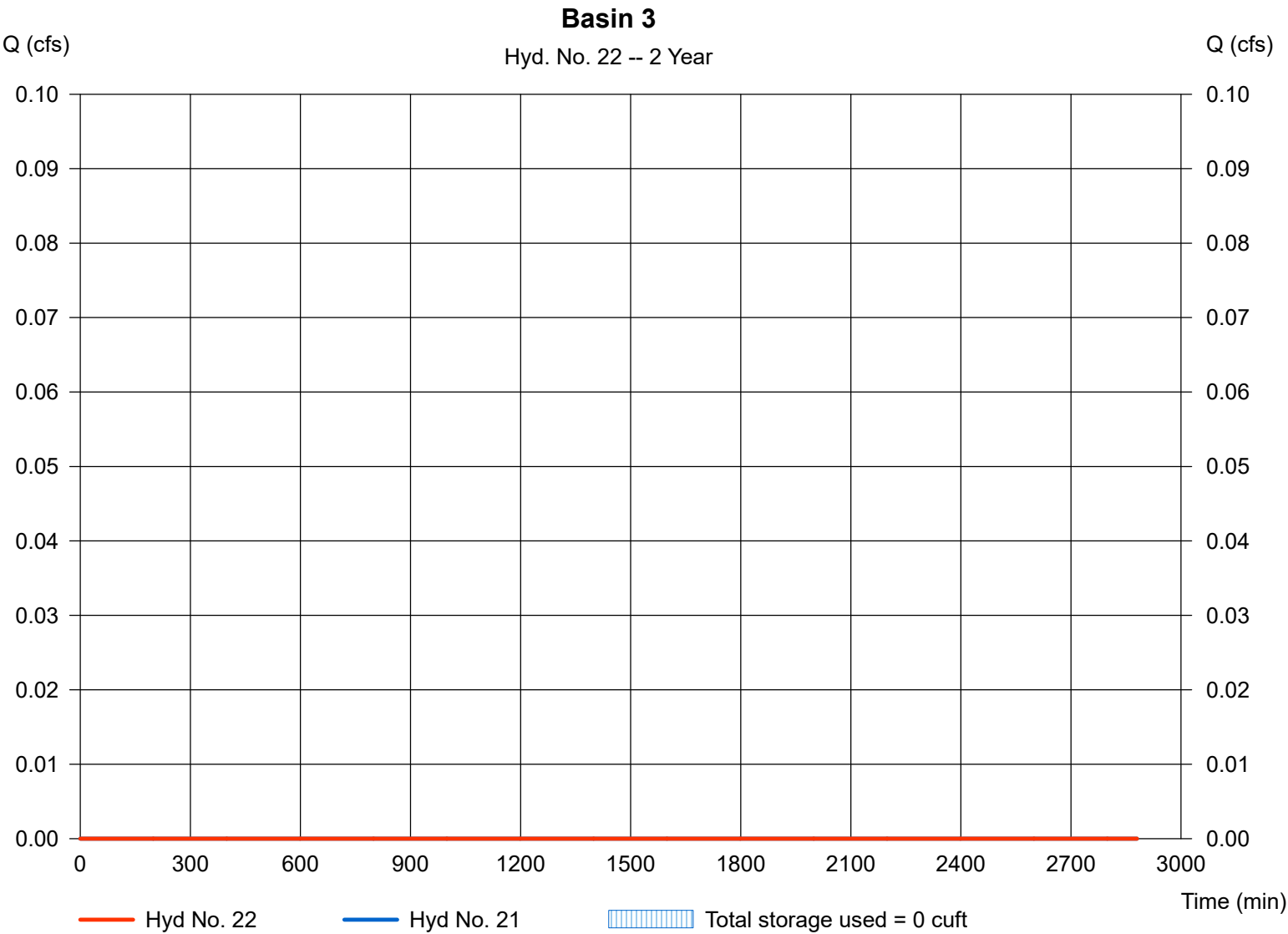
Monday, Oct 3, 2022

Hyd. No. 22

Basin 3

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.	= 21 - Basin 3 Forebay	Max. Elevation	= 30.00 ft
Reservoir name	= Basin 3	Max. Storage	= 0 cuft

Storage Indication method used.



Hydrograph Report

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

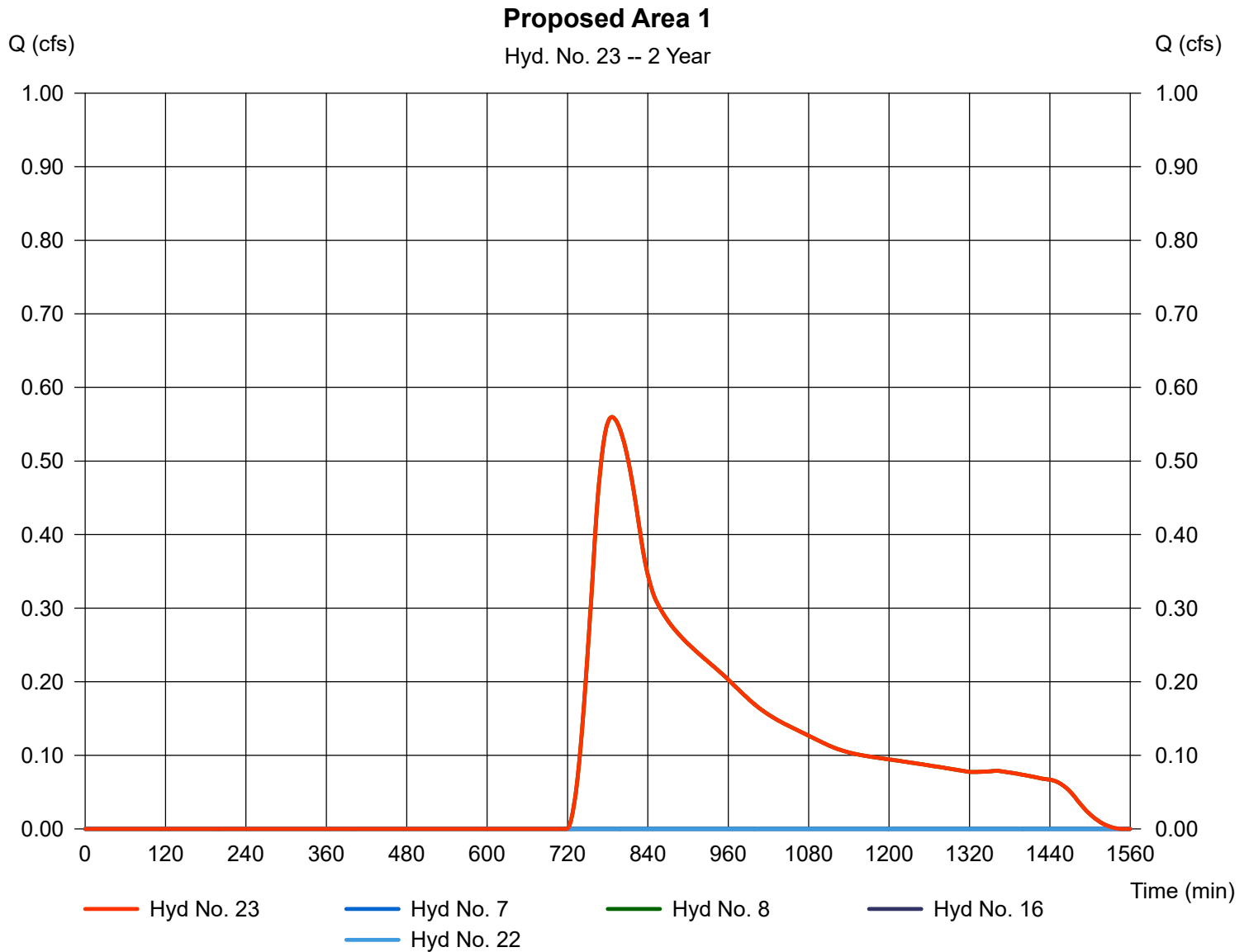
Monday, Oct 3, 2022

Hyd. No. 23

Proposed Area 1

Hydrograph type = Combine
 Storm frequency = 2 yrs
 Time interval = 1 min
 Inflow hyds. = 7, 8, 16, 22

Peak discharge = 0.560 cfs
 Time to peak = 786 min
 Hyd. volume = 7,778 cuft
 Contrib. drain. area = 5.930 ac



Hydrograph Report

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

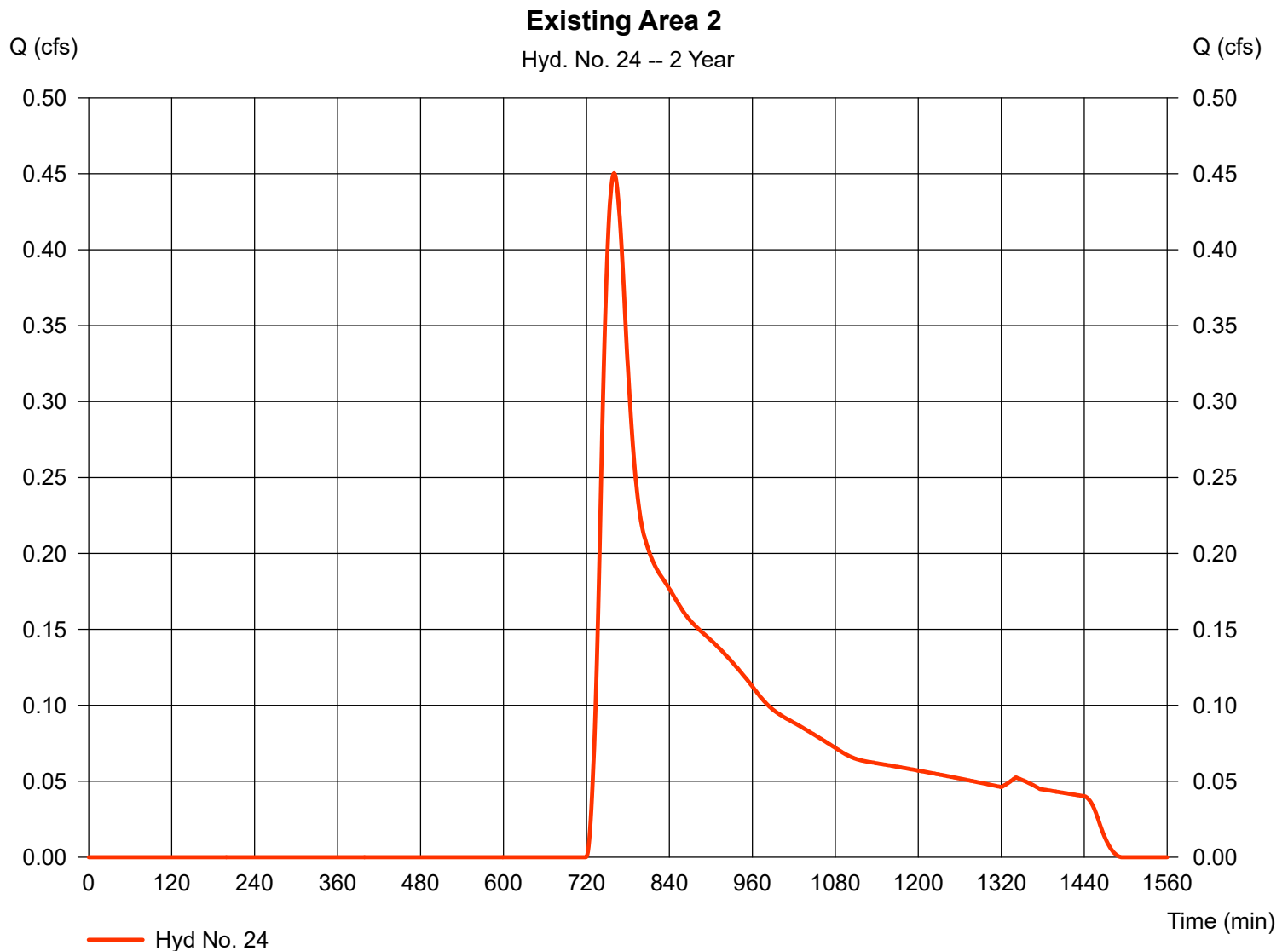
Monday, Oct 3, 2022

Hyd. No. 24

Existing Area 2

Hydrograph type = SCS Runoff
 Storm frequency = 2 yrs
 Time interval = 1 min
 Drainage area = 3.920 ac
 Basin Slope = 0.0 %
 Tc method = USER
 Total precip. = 3.45 in
 Storm duration = 24 hrs

Peak discharge = 0.450 cfs
 Time to peak = 760 min
 Hyd. volume = 4,682 cuft
 Curve number = 55
 Hydraulic length = 0 ft
 Time of conc. (Tc) = 35.00 min
 Distribution = Type III
 Shape factor = 484



Hydrograph Report

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

Monday, Oct 3, 2022

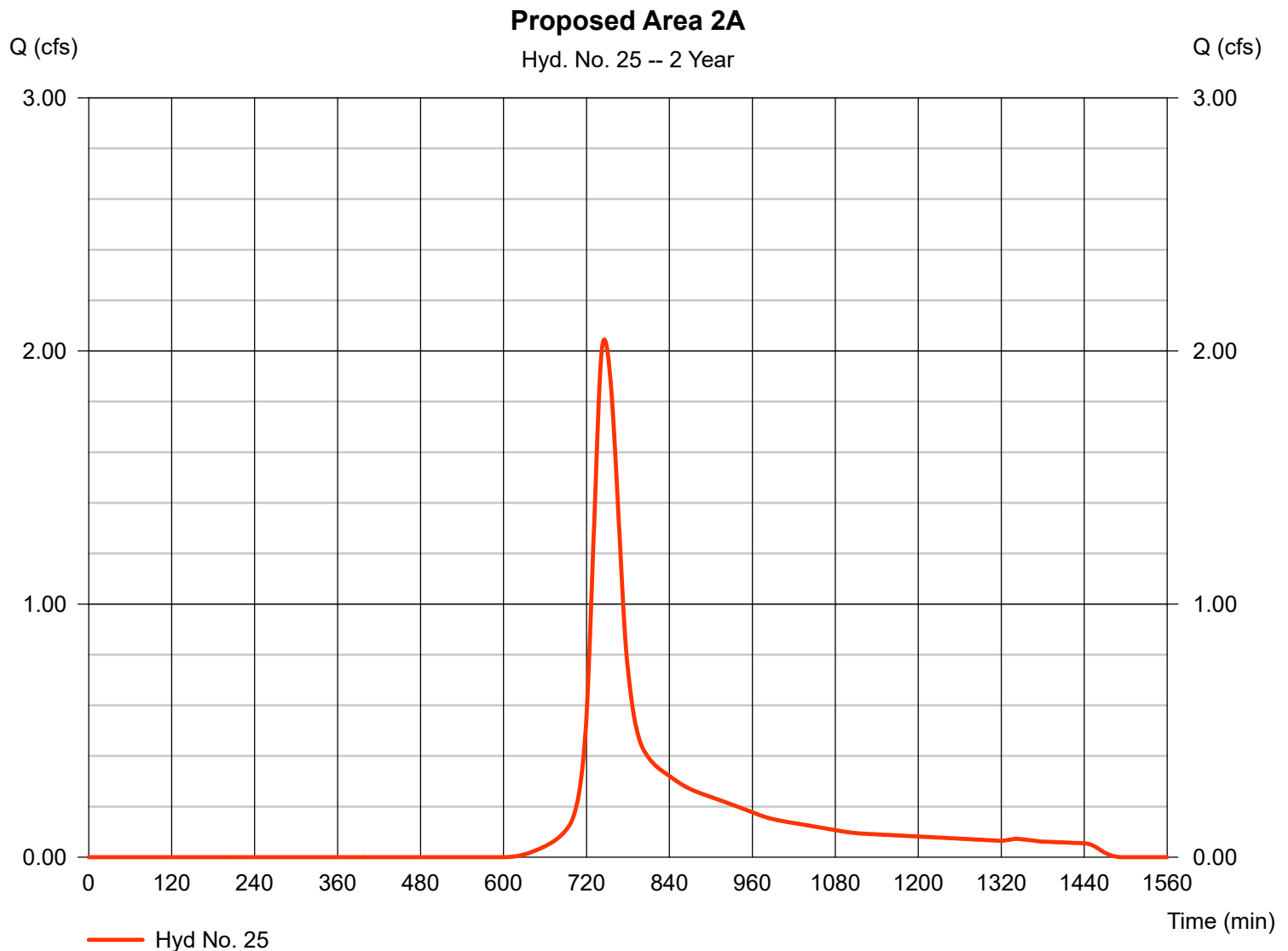
Hyd. No. 25

Proposed Area 2A

Hydrograph type = SCS Runoff
 Storm frequency = 2 yrs
 Time interval = 1 min
 Drainage area = 2.450 ac
 Basin Slope = 0.0 %
 Tc method = TR55
 Total precip. = 3.45 in
 Storm duration = 24 hrs

Peak discharge = 2.045 cfs
 Time to peak = 746 min
 Hyd. volume = 11,821 cuft
 Curve number = 76*
 Hydraulic length = 0 ft
 Time of conc. (Tc) = 34.80 min
 Distribution = Type III
 Shape factor = 484

* Composite (Area/CN) = $[(1.090 \times 98) + (0.870 \times 61) + (0.490 \times 55)] / 2.450$



Hydrograph Report

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

Monday, Oct 3, 2022

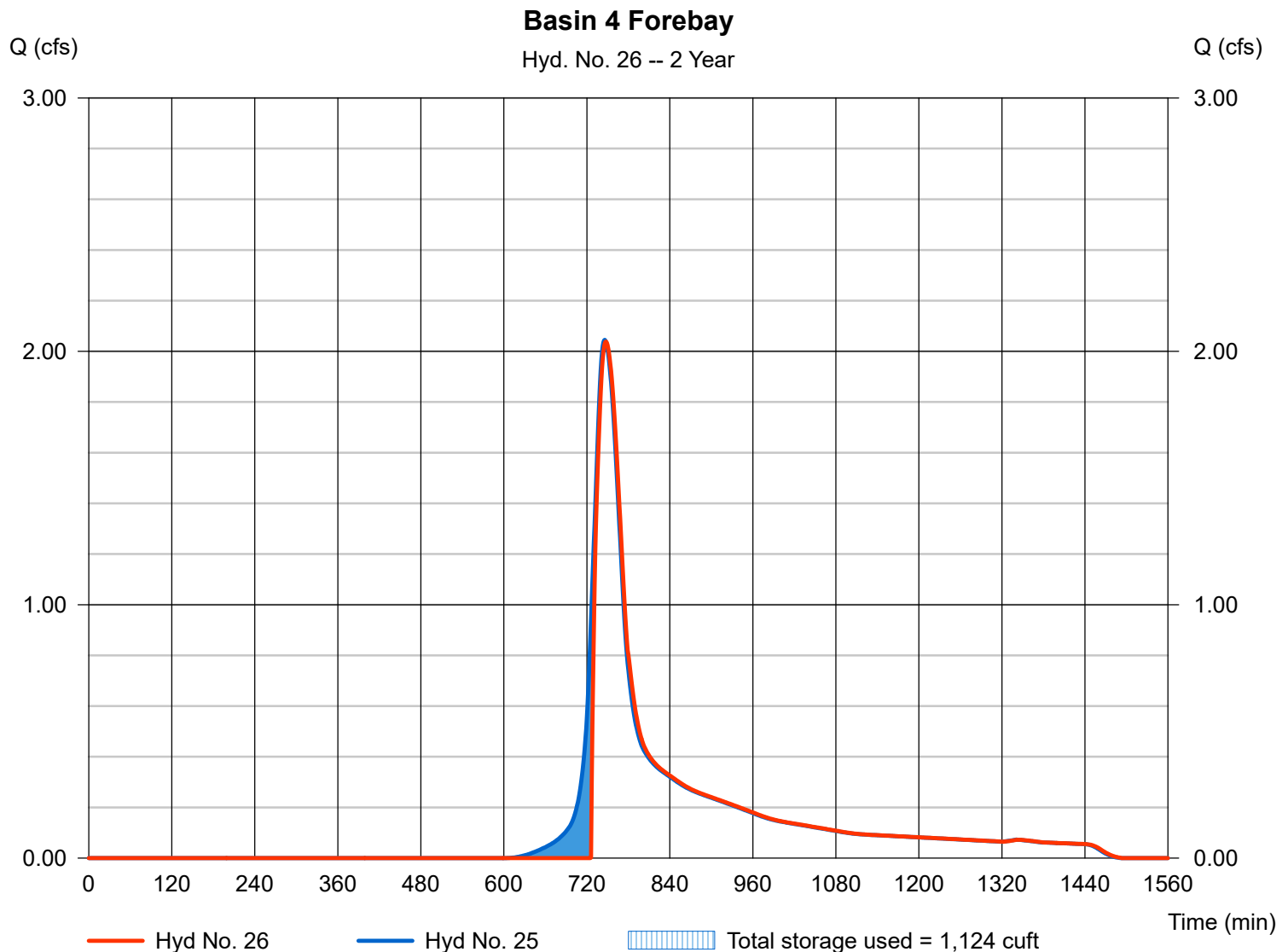
Hyd. No. 26

Basin 4 Forebay

Hydrograph type = Reservoir
 Storm frequency = 2 yrs
 Time interval = 1 min
 Inflow hyd. No. = 25 - Proposed Area 2A
 Reservoir name = Basin 4 Forebay

Peak discharge = 2.038 cfs
 Time to peak = 748 min
 Hyd. volume = 10,947 cuft
 Max. Elevation = 53.18 ft
 Max. Storage = 1,124 cuft

Storage Indication method used.



Hydrograph Report

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

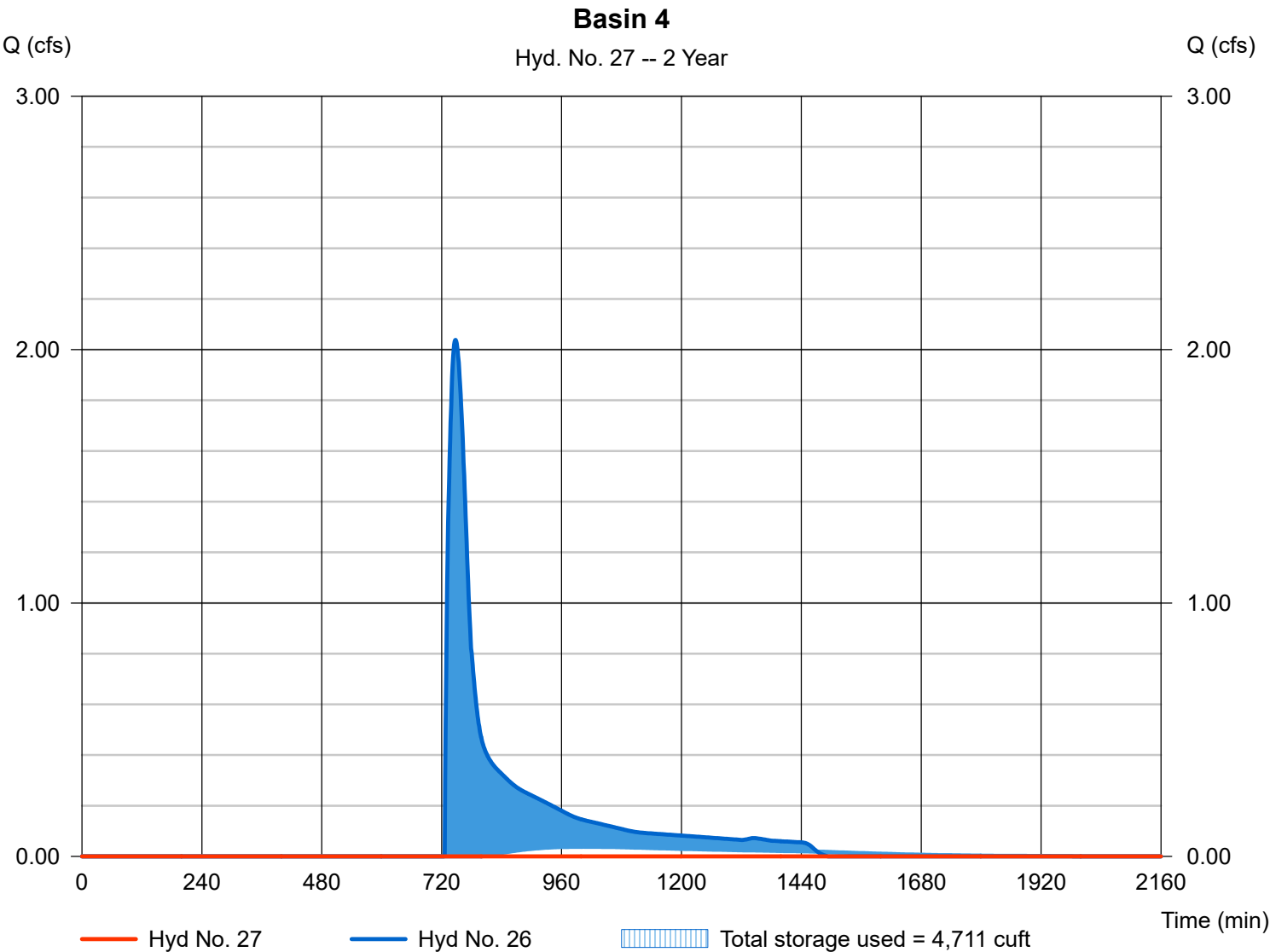
Monday, Oct 3, 2022

Hyd. No. 27

Basin 4

Hydrograph type	= Reservoir	Peak discharge	= 0.000 cfs
Storm frequency	= 2 yrs	Time to peak	= 750 min
Time interval	= 1 min	Hyd. volume	= 0 cuft
Inflow hyd. No.	= 26 - Basin 4 Forebay	Max. Elevation	= 53.57 ft
Reservoir name	= Basin 4	Max. Storage	= 4,711 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Hydrograph Report

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

Monday, Oct 3, 2022

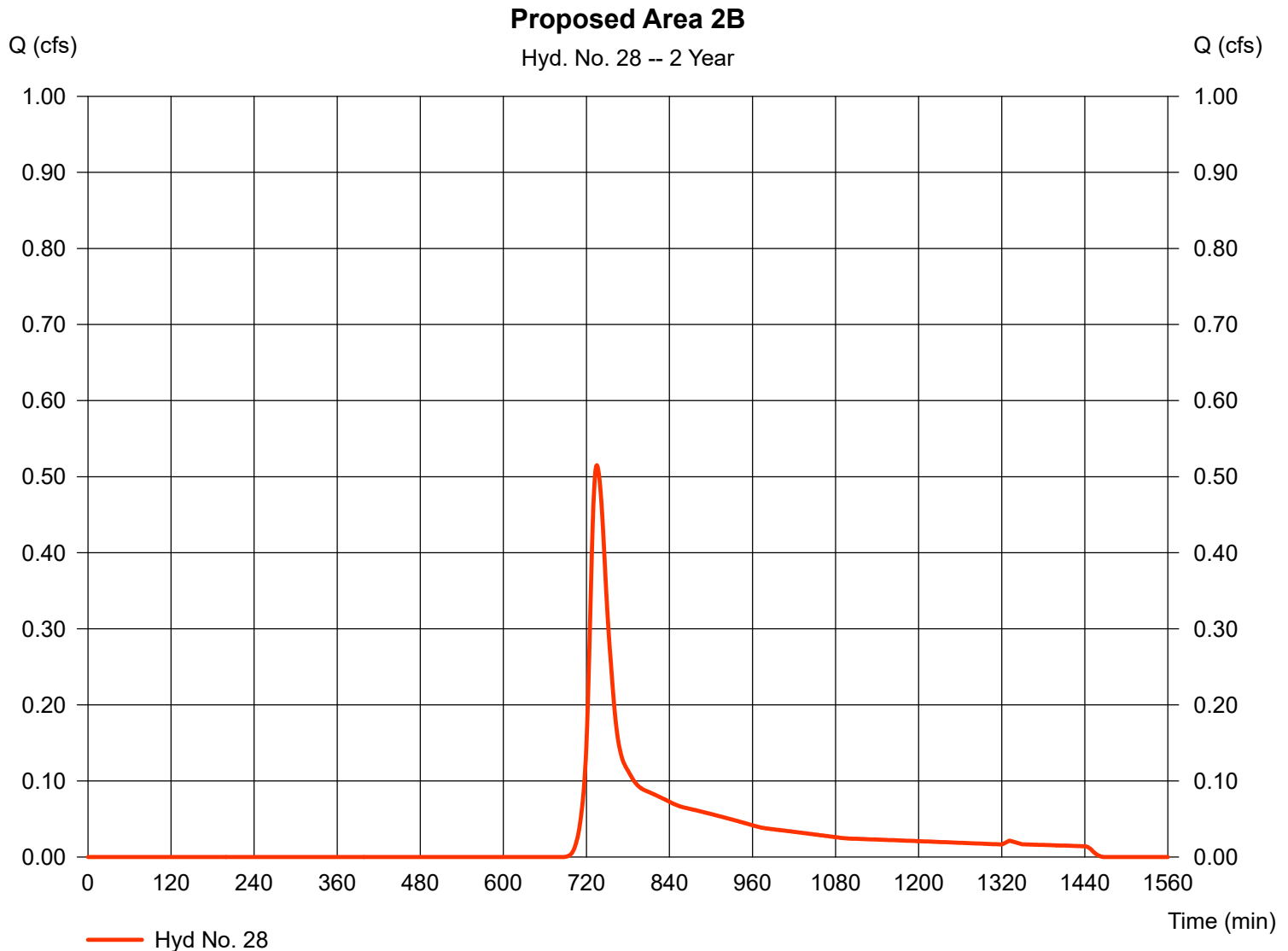
Hyd. No. 28

Proposed Area 2B

Hydrograph type = SCS Runoff
 Storm frequency = 2 yrs
 Time interval = 1 min
 Drainage area = 0.850 ac
 Basin Slope = 0.0 %
 Tc method = TR55
 Total precip. = 3.45 in
 Storm duration = 24 hrs

Peak discharge = 0.515 cfs
 Time to peak = 735 min
 Hyd. volume = 2,508 cuft
 Curve number = 67*
 Hydraulic length = 0 ft
 Time of conc. (Tc) = 17.10 min
 Distribution = Type III
 Shape factor = 484

* Composite (Area/CN) = $[(0.150 \times 98) + (0.640 \times 61) + (0.060 \times 55)] / 0.850$



Hydrograph Report

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

Monday, Oct 3, 2022

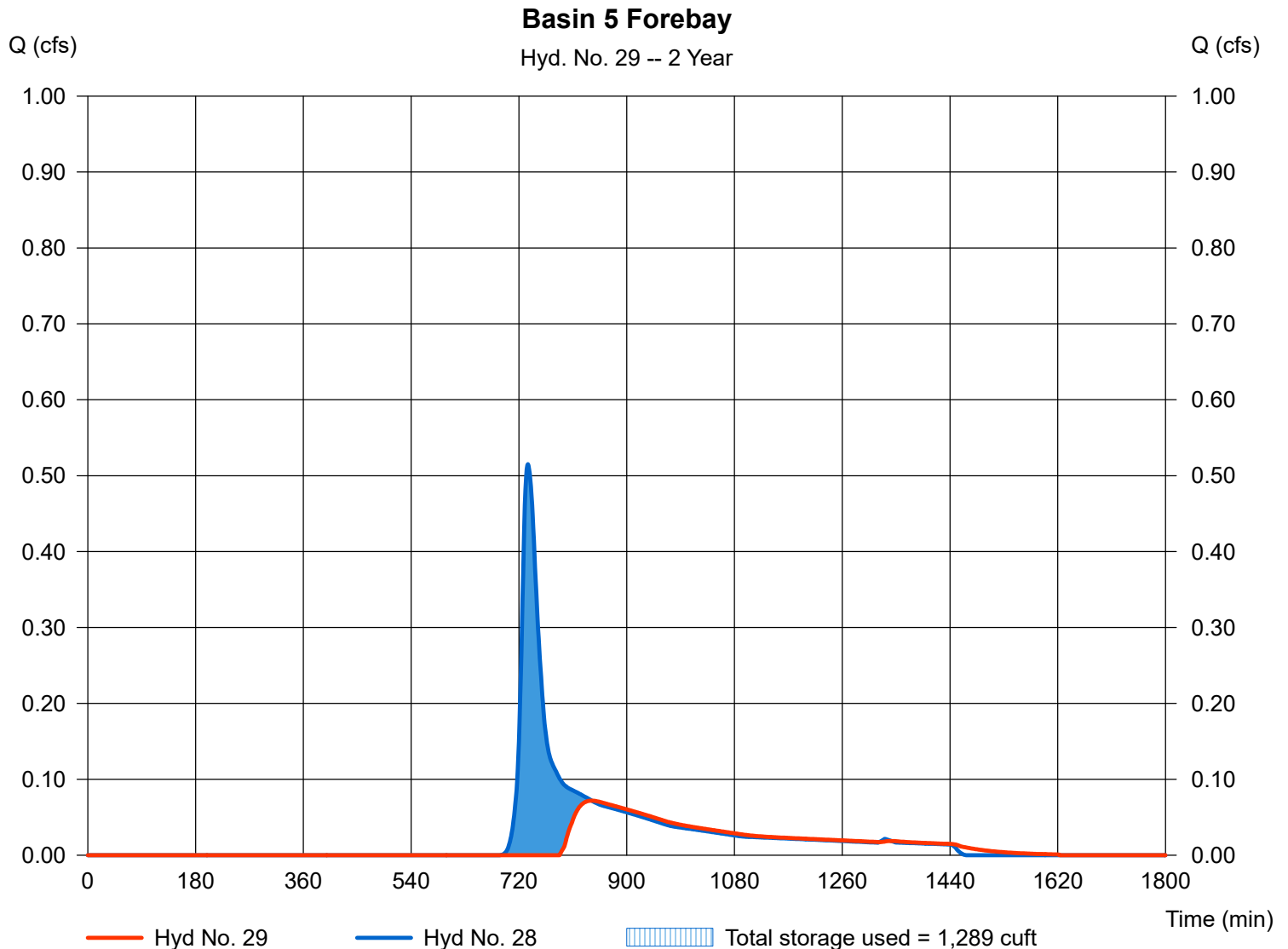
Hyd. No. 29

Basin 5 Forebay

Hydrograph type = Reservoir
 Storm frequency = 2 yrs
 Time interval = 1 min
 Inflow hyd. No. = 28 - Proposed Area 2B
 Reservoir name = Basin 5 Forebay

Peak discharge = 0.072 cfs
 Time to peak = 842 min
 Hyd. volume = 1,336 cuft
 Max. Elevation = 66.33 ft
 Max. Storage = 1,289 cuft

Storage Indication method used.



Hydrograph Report

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

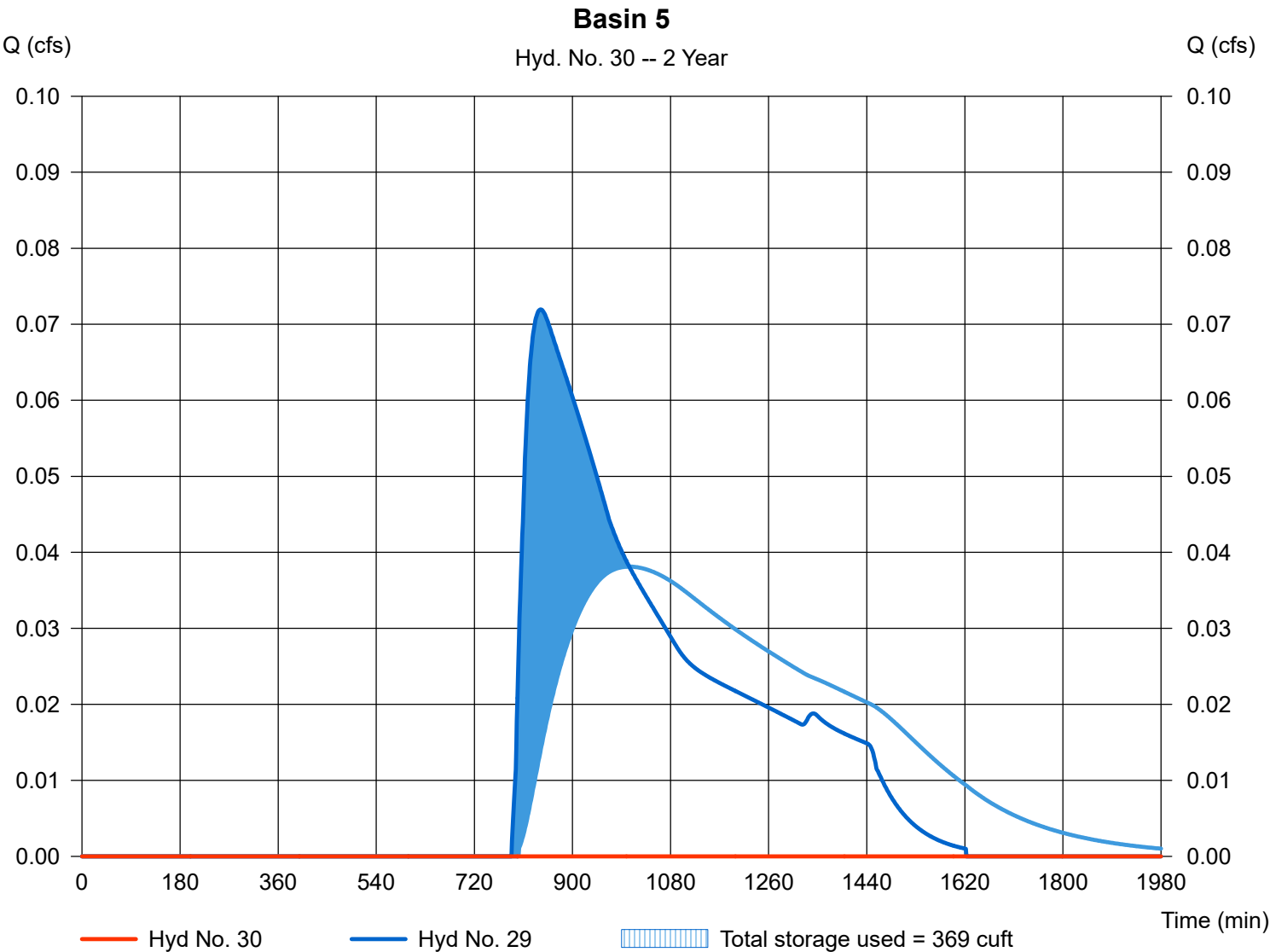
Monday, Oct 3, 2022

Hyd. No. 30

Basin 5

Hydrograph type	= Reservoir	Peak discharge	= 0.000 cfs
Storm frequency	= 2 yrs	Time to peak	= 947 min
Time interval	= 1 min	Hyd. volume	= 0 cuft
Inflow hyd. No.	= 29 - Basin 5 Forebay	Max. Elevation	= 64.16 ft
Reservoir name	= Basin 5	Max. Storage	= 369 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Hydrograph Report

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

Monday, Oct 3, 2022

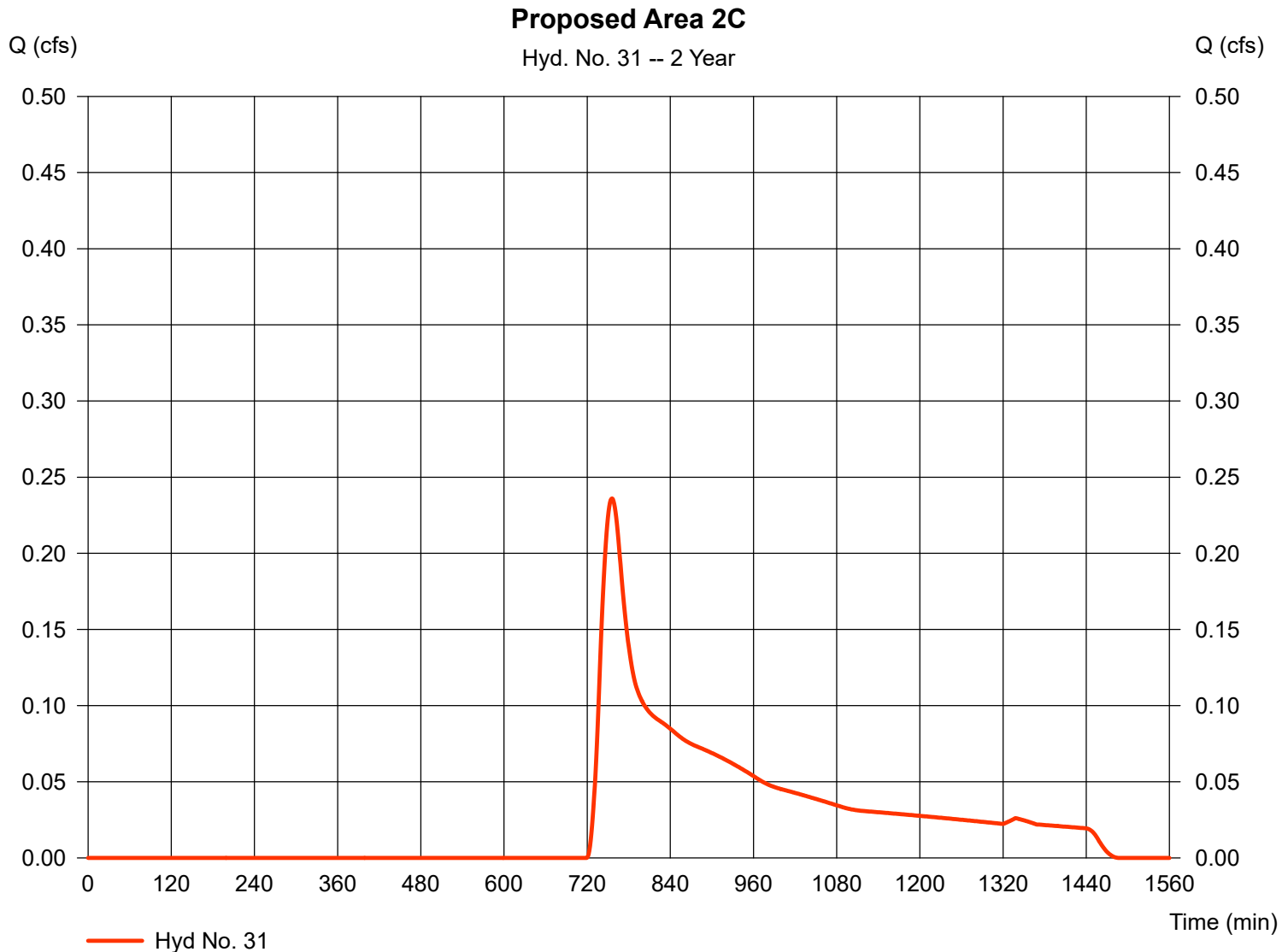
Hyd. No. 31

Proposed Area 2C

Hydrograph type = SCS Runoff
 Storm frequency = 2 yrs
 Time interval = 1 min
 Drainage area = 1.910 ac
 Basin Slope = 0.0 %
 Tc method = USER
 Total precip. = 3.45 in
 Storm duration = 24 hrs

Peak discharge = 0.236 cfs
 Time to peak = 756 min
 Hyd. volume = 2,281 cuft
 Curve number = 55*
 Hydraulic length = 0 ft
 Time of conc. (Tc) = 29.00 min
 Distribution = Type III
 Shape factor = 484

* Composite (Area/CN) = $[(1.850 \times 55) + (0.060 \times 61)] / 1.910$



Hydrograph Report

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

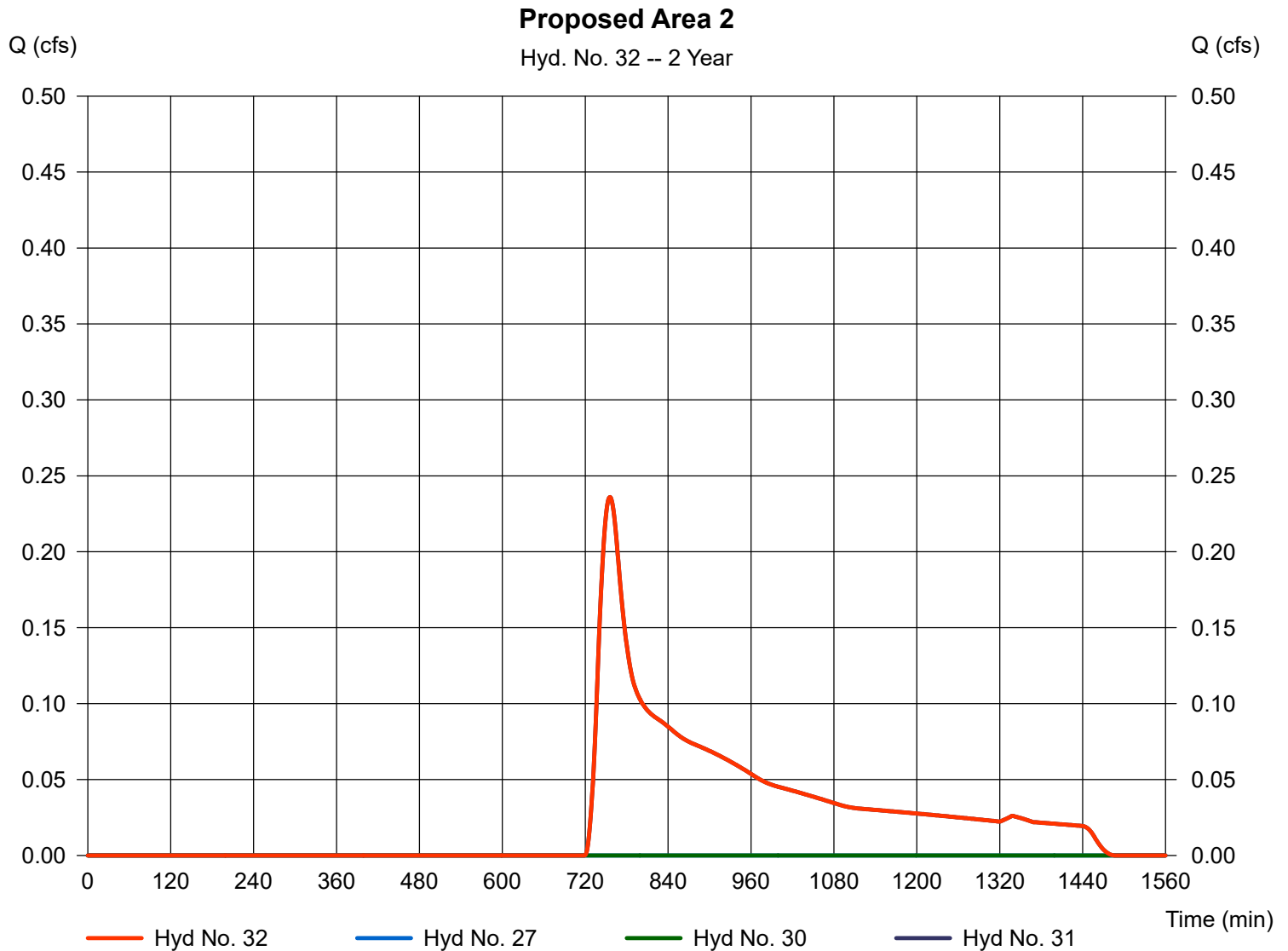
Monday, Oct 3, 2022

Hyd. No. 32

Proposed Area 2

Hydrograph type = Combine
Storm frequency = 2 yrs
Time interval = 1 min
Inflow hyds. = 27, 30, 31

Peak discharge = 0.236 cfs
Time to peak = 756 min
Hyd. volume = 2,281 cuft
Contrib. drain. area = 1.910 ac



Hydrograph Report

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

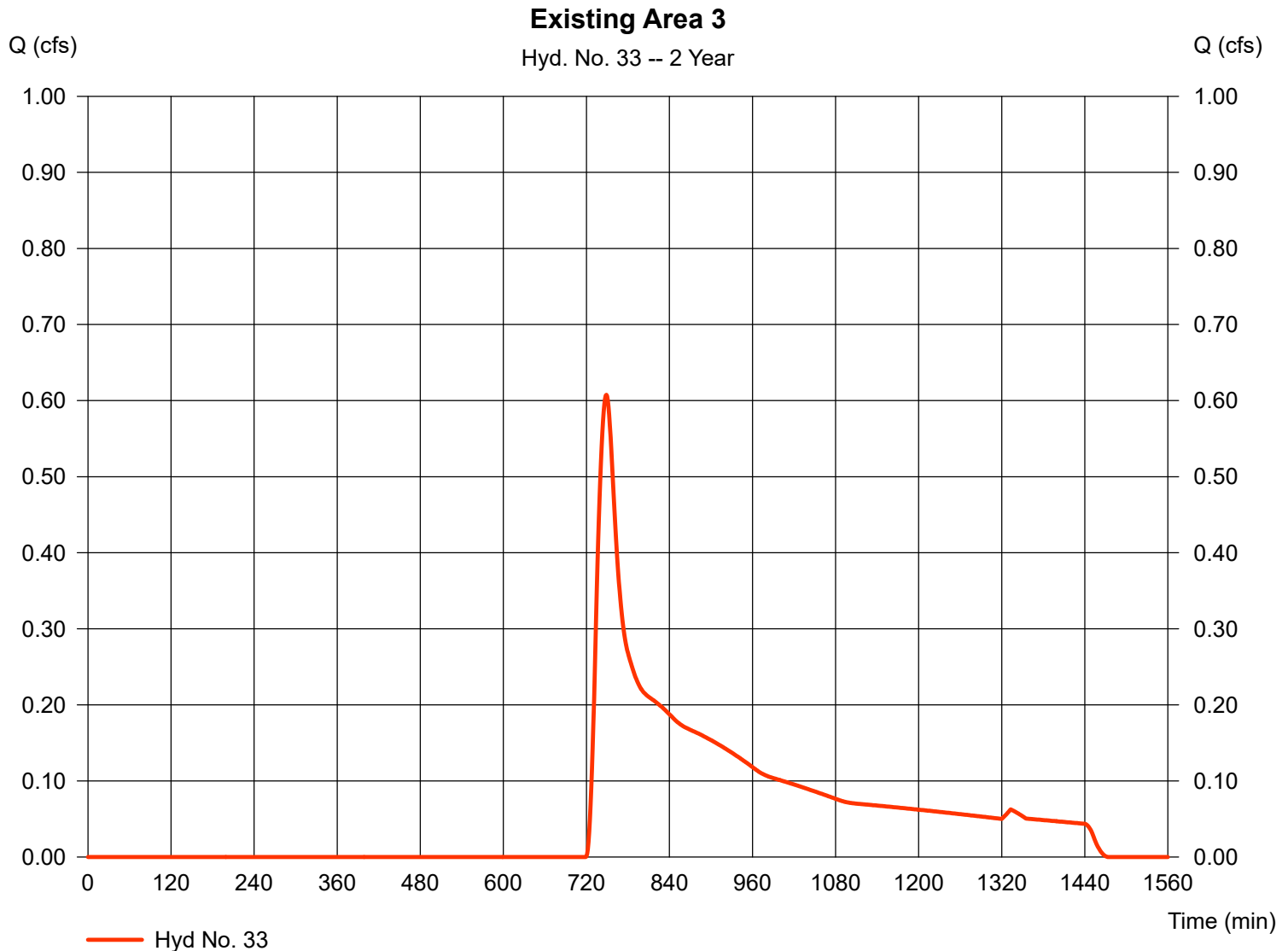
Monday, Oct 3, 2022

Hyd. No. 33

Existing Area 3

Hydrograph type = SCS Runoff
 Storm frequency = 2 yrs
 Time interval = 1 min
 Drainage area = 4.300 ac
 Basin Slope = 0.0 %
 Tc method = USER
 Total precip. = 3.45 in
 Storm duration = 24 hrs

Peak discharge = 0.608 cfs
 Time to peak = 749 min
 Hyd. volume = 5,185 cuft
 Curve number = 55
 Hydraulic length = 0 ft
 Time of conc. (Tc) = 21.00 min
 Distribution = Type III
 Shape factor = 484



Hydrograph Report

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

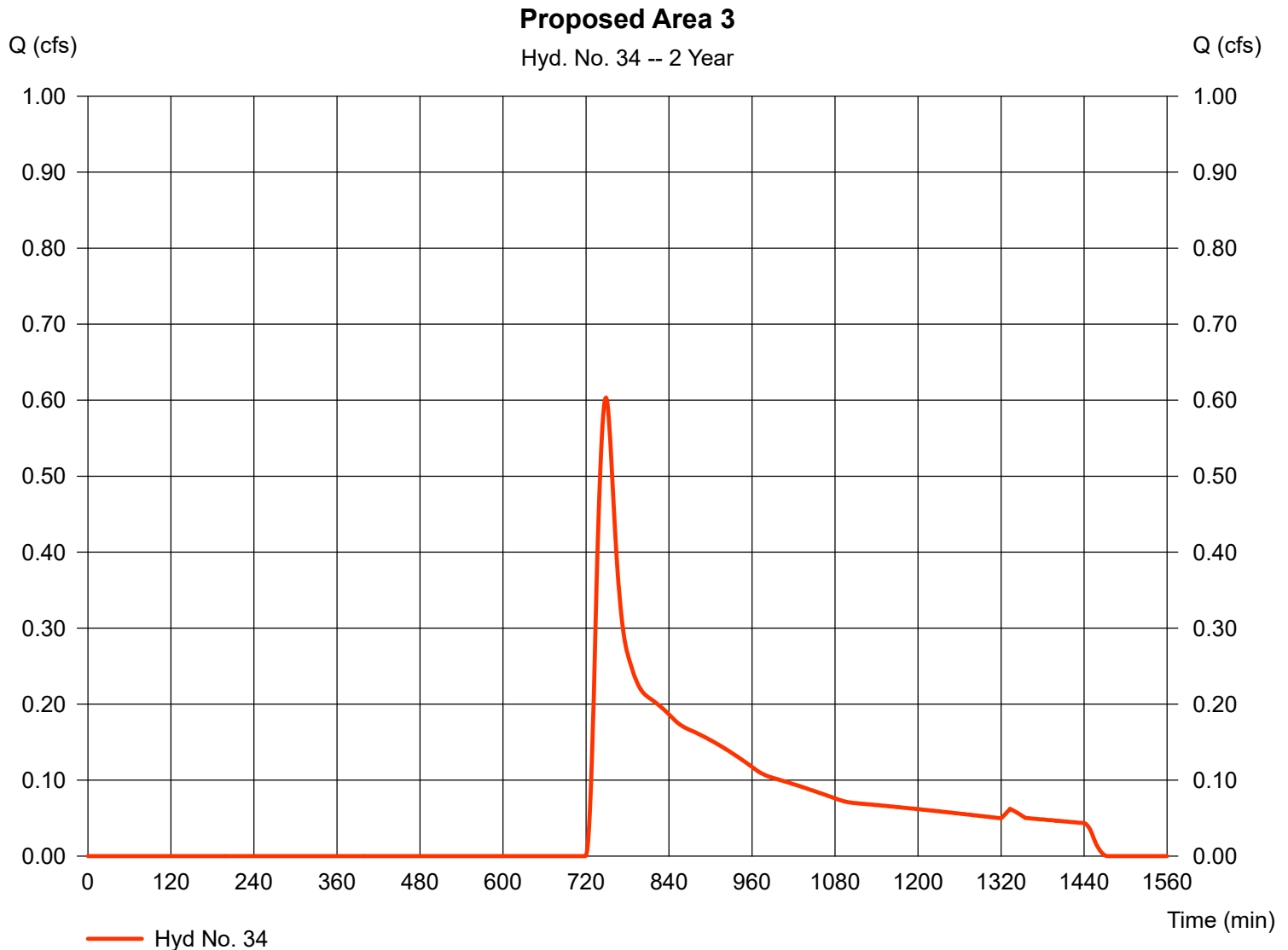
Monday, Oct 3, 2022

Hyd. No. 34

Proposed Area 3

Hydrograph type = SCS Runoff
 Storm frequency = 2 yrs
 Time interval = 1 min
 Drainage area = 4.270 ac
 Basin Slope = 0.0 %
 Tc method = USER
 Total precip. = 3.45 in
 Storm duration = 24 hrs

Peak discharge = 0.603 cfs
 Time to peak = 749 min
 Hyd. volume = 5,149 cuft
 Curve number = 55
 Hydraulic length = 0 ft
 Time of conc. (Tc) = 21.00 min
 Distribution = Type III
 Shape factor = 484



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	6.988	1	757	52,978	-----	-----	-----	Existing Area 1
2	SCS Runoff	1.900	1	717	4,588	-----	-----	-----	Building 1
3	Reservoir(i)	0.000	1	n/a	0	2	34.35	2,201	Leaching Gallery 1
4	SCS Runoff	1.591	1	739	8,015	-----	-----	-----	Proposed Area 1A
5	Combine	1.591	1	739	8,015	3, 4	-----	-----	Roof overflow and Area 1A
6	Reservoir	0.000	1	n/a	0	5	27.09	8,015	Basin 1 Forebay
7	Reservoir	0.000	1	n/a	0	6	22.00	0.000	Basin 1
8	SCS Runoff	2.439	1	775	23,919	-----	-----	-----	Proposed Area 1B
9	SCS Runoff	2.204	1	717	5,323	-----	-----	-----	Building 2
10	Reservoir(i)	0.194	1	745	172	9	35.75	2,274	Leaching Gallery 2
11	SCS Runoff	1.824	1	717	4,405	-----	-----	-----	Building 3
12	Reservoir(i)	0.000	1	n/a	0	11	40.80	1,851	Leaching Gallery 3
13	SCS Runoff	3.807	1	754	25,590	-----	-----	-----	Proposed Area 1C
14	Combine	3.926	1	752	25,762	10, 12, 13	-----	-----	BLDG 2&3 & Area 1C
15	Reservoir(i)	1.205	1	802	15,274	14	26.53	13,152	Basin 2 Forebay
16	Reservoir	0.185	1	1198	5,158	15	26.19	10,998	Basin 2
17	SCS Runoff	1.368	1	717	3,304	-----	-----	-----	Building 4
18	Reservoir(i)	0.000	1	n/a	0	17	45.69	1,165	Leaching Gallery 4
19	SCS Runoff	4.556	1	735	20,854	-----	-----	-----	Proposed Area 1D
20	Combine	4.556	1	735	20,854	18, 19	-----	-----	BLDG 4 & AREA 1D
21	Reservoir(i)	0.308	1	917	5,022	20	36.55	16,138	Basin 3 Forebay
22	Reservoir	0.000	1	n/a	0	21	33.04	5,022	Basin 3
23	Combine	2.439	1	775	29,077	7, 8, 16, 22	-----	-----	Proposed Area 1
24	SCS Runoff	2.207	1	751	14,948	-----	-----	-----	Existing Area 2
25	SCS Runoff	4.190	1	744	23,580	-----	-----	-----	Proposed Area 2A
26	Reservoir	4.180	1	746	22,706	25	53.30	1,282	Basin 4 Forebay
27	Reservoir	0.000	1	725	0	26	55.56	12,474	Basin 4
28	SCS Runoff	1.322	1	733	5,799	-----	-----	-----	Proposed Area 2B
29	Reservoir	0.841	1	747	4,628	28	66.77	1,736	Basin 5 Forebay
30	Reservoir	0.000	1	802	0	29	64.68	1,556	Basin 5
31	SCS Runoff	1.158	1	747	7,283	-----	-----	-----	Proposed Area 2C
32	Combine	1.158	1	747	7,283	27, 30, 31	-----	-----	Proposed Area 2
33	SCS Runoff	2.988	1	740	16,555	-----	-----	-----	Existing Area 3
34	SCS Runoff	2.967	1	740	16,439	-----	-----	-----	Proposed Area 3
GSD 60 Drainage V13.gpw					Return Period: 10 Year			Monday, Oct 3, 2022	

Hydrograph Report

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

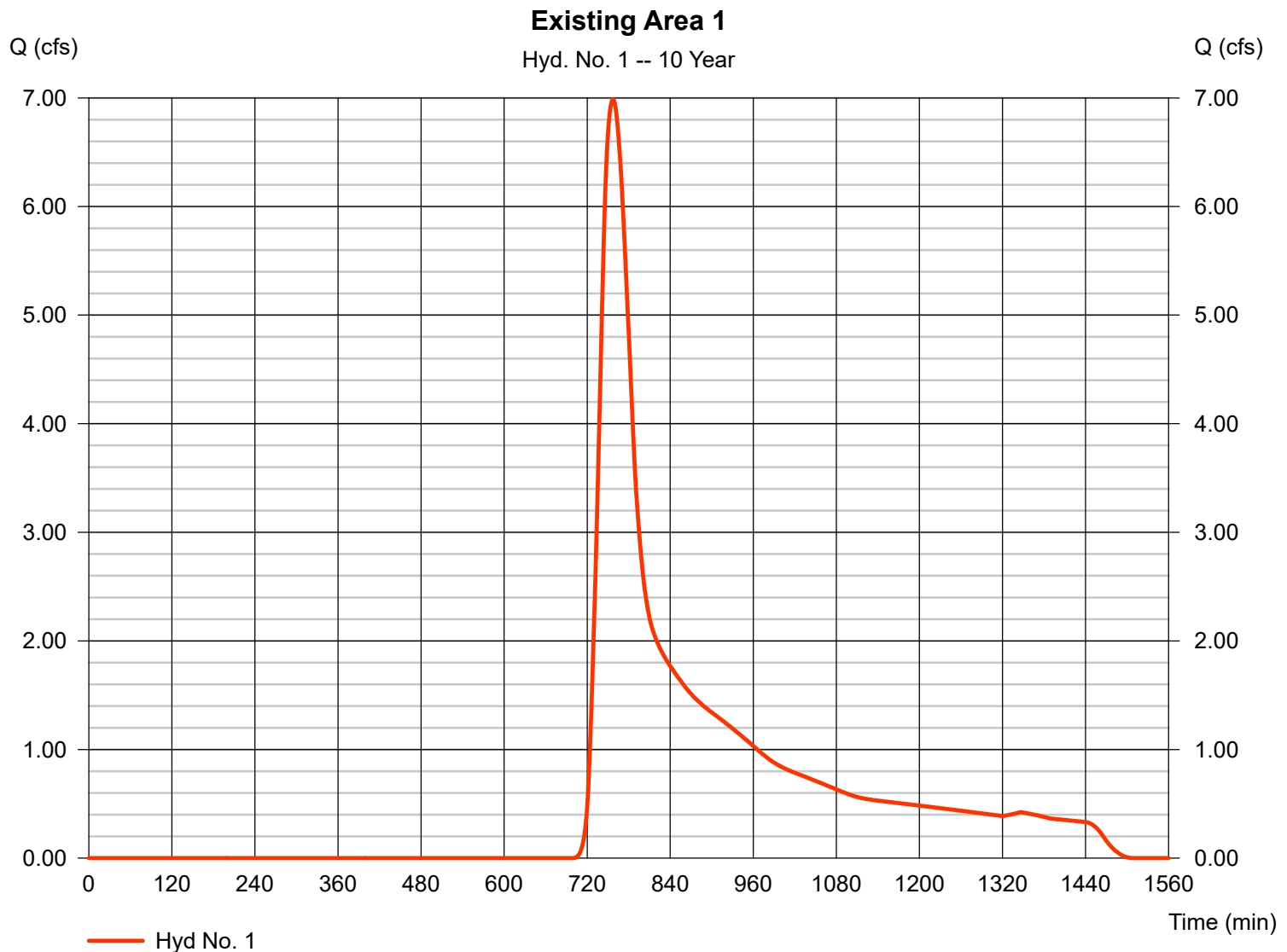
Monday, Oct 3, 2022

Hyd. No. 1

Existing Area 1

Hydrograph type = SCS Runoff
 Storm frequency = 10 yrs
 Time interval = 1 min
 Drainage area = 13.960 ac
 Basin Slope = 0.0 %
 Tc method = TR55
 Total precip. = 5.14 in
 Storm duration = 24 hrs

Peak discharge = 6.988 cfs
 Time to peak = 757 min
 Hyd. volume = 52,978 cuft
 Curve number = 55
 Hydraulic length = 0 ft
 Time of conc. (Tc) = 43.30 min
 Distribution = Type III
 Shape factor = 484

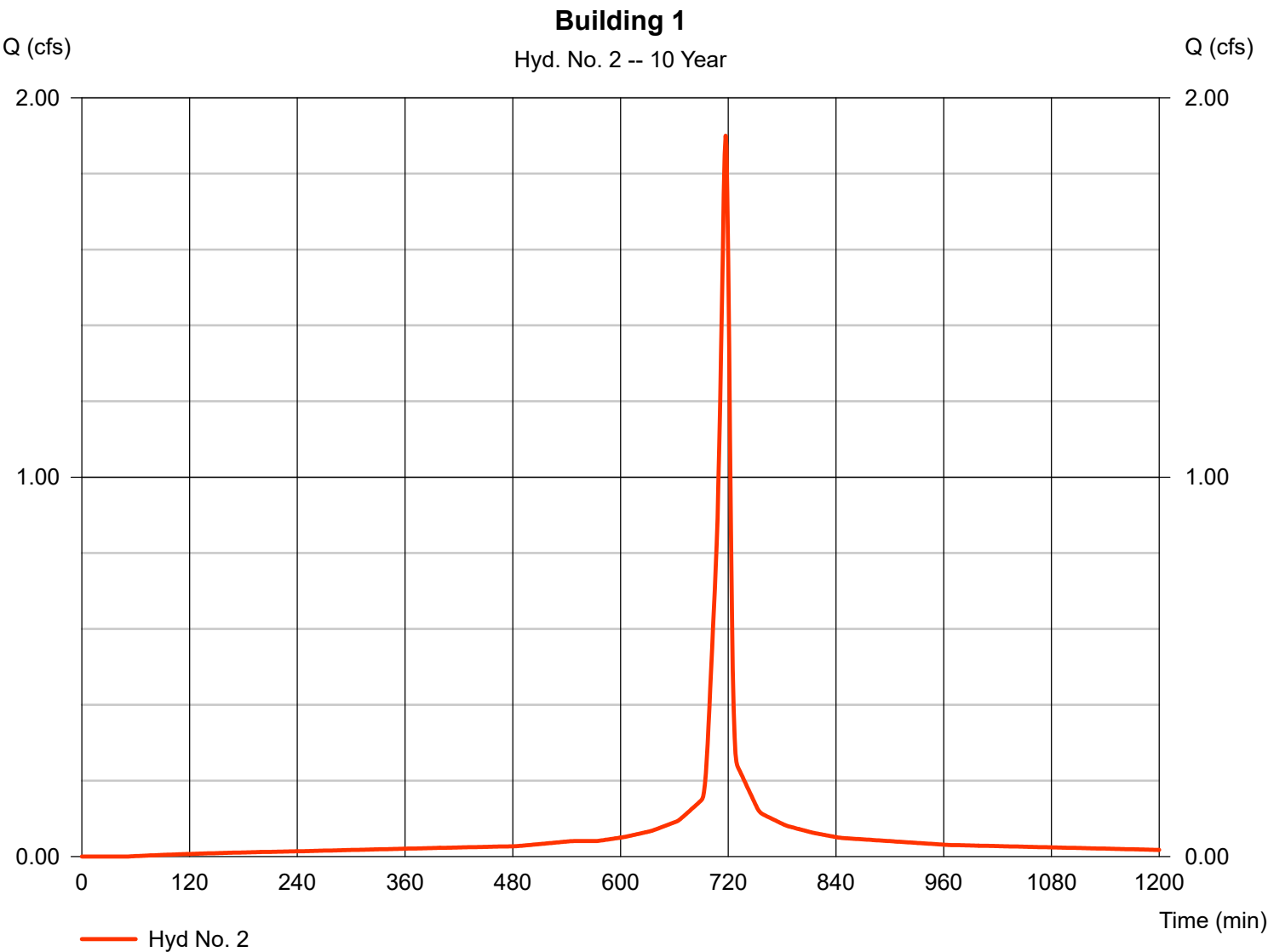


Hydrograph Report

Hyd. No. 2

Building 1

Hydrograph type	= SCS Runoff	Peak discharge	= 1.900 cfs
Storm frequency	= 10 yrs	Time to peak	= 717 min
Time interval	= 1 min	Hyd. volume	= 4,588 cuft
Drainage area	= 0.250 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 5.00 min
Total precip.	= 5.14 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

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

Monday, Oct 3, 2022

Hyd. No. 3

Leaching Gallery 1

Hydrograph type = Reservoir (Interconnected)
 Storm frequency = 10 yrs
 Time interval = 1 min

Upper Pond

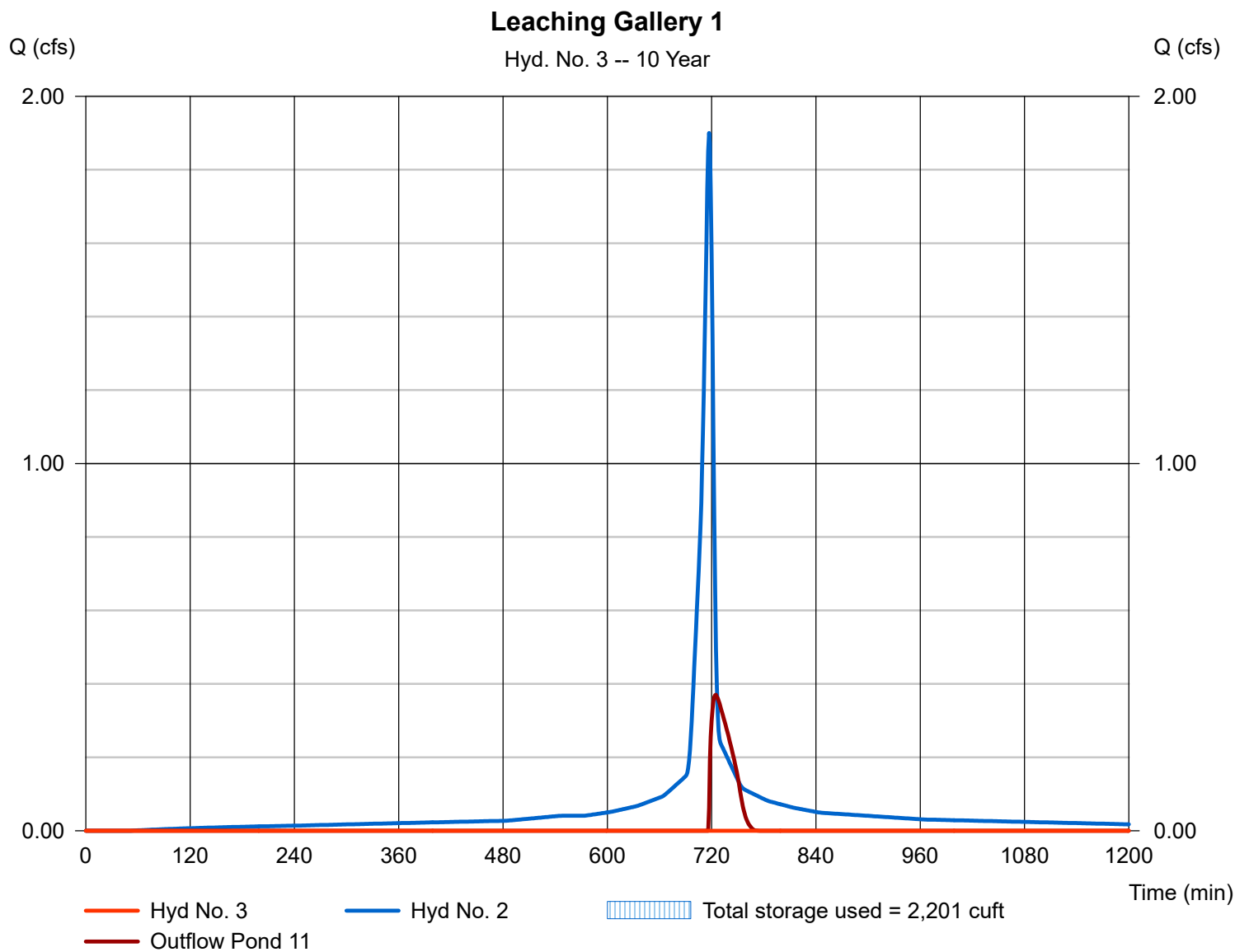
Pond name = Leaching Gallery 1
 Inflow hyd. = 2 - Building 1
 Max. Elevation = 34.35 ft
 Max. Storage = 1,594 cuft

Peak discharge = 0.000 cfs
 Time to peak = n/a
 Hyd. volume = 0 cuft

Lower Pond

Pond name = Basin 1 Forebay
 Other Inflow hyd. = None
 Max. Elevation = 22.76 ft
 Max. Storage = 607 cuft

Interconnected Pond Routing. Storage Indication method used.



Hydrograph Report

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

Monday, Oct 3, 2022

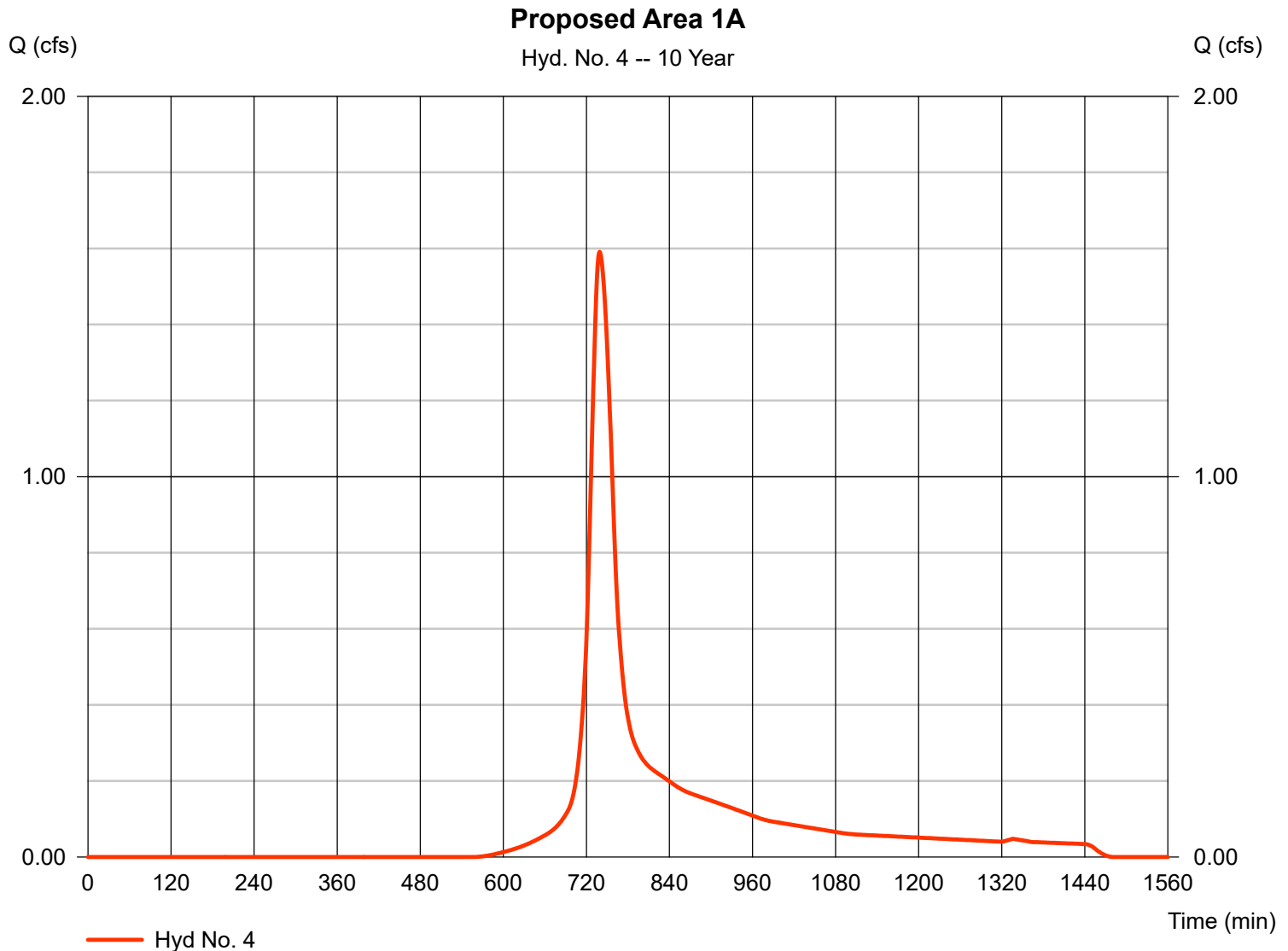
Hyd. No. 4

Proposed Area 1A

Hydrograph type = SCS Runoff
 Storm frequency = 10 yrs
 Time interval = 1 min
 Drainage area = 0.950 ac
 Basin Slope = 0.0 %
 Tc method = TR55
 Total precip. = 5.14 in
 Storm duration = 24 hrs

Peak discharge = 1.591 cfs
 Time to peak = 739 min
 Hyd. volume = 8,015 cuft
 Curve number = 72*
 Hydraulic length = 0 ft
 Time of conc. (Tc) = 26.10 min
 Distribution = Type III
 Shape factor = 484

* Composite (Area/CN) = $[(0.190 \times 55) + (0.450 \times 61) + (0.310 \times 98)] / 0.950$



Hydrograph Report

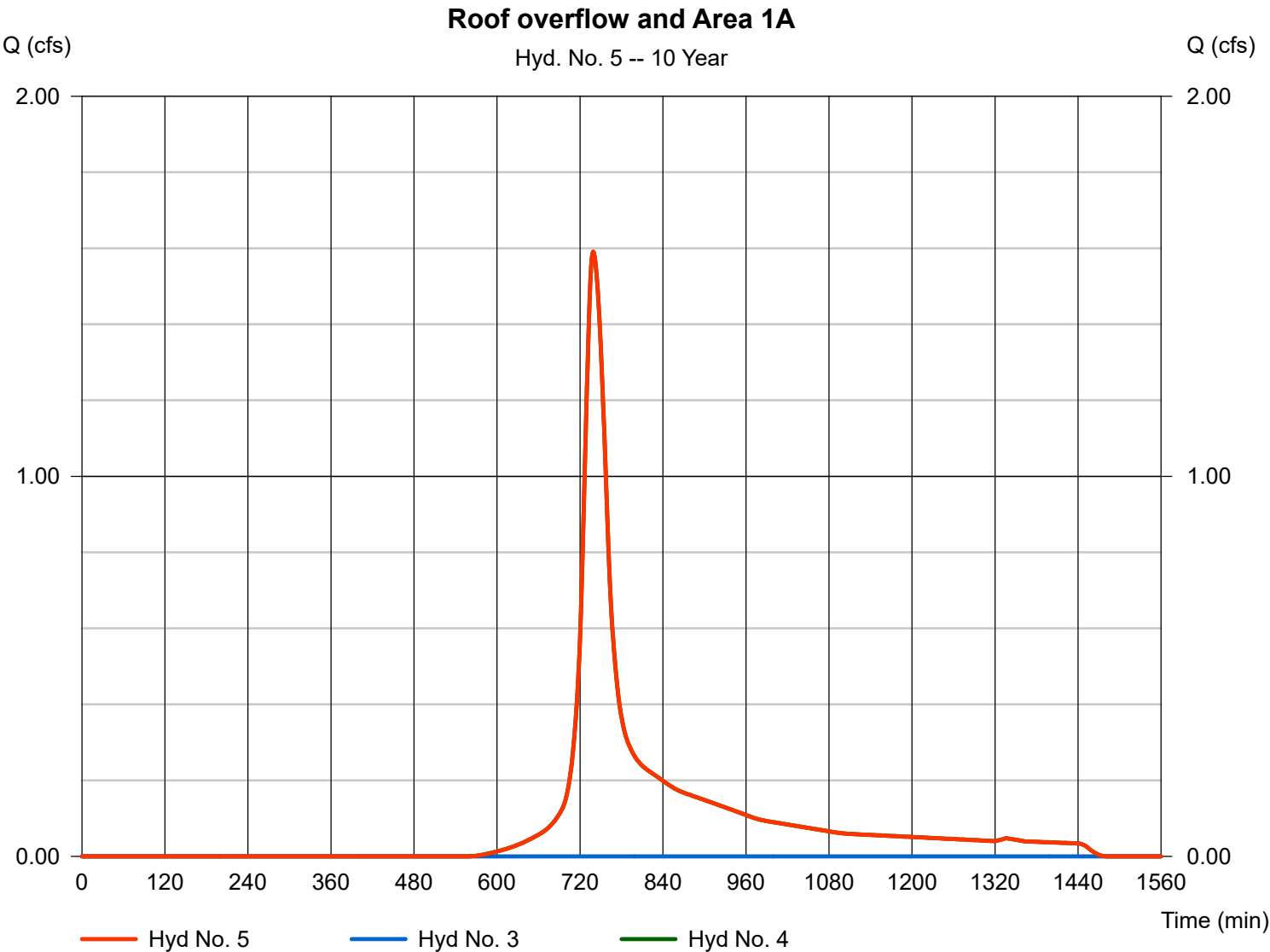
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2009 by Autodesk, Inc. v6.066

Monday, Oct 3, 2022

Hyd. No. 5

Roof overflow and Area 1A

Hydrograph type	= Combine	Peak discharge	= 1.591 cfs
Storm frequency	= 10 yrs	Time to peak	= 739 min
Time interval	= 1 min	Hyd. volume	= 8,015 cuft
Inflow hyds.	= 3, 4	Contrib. drain. area	= 0.950 ac



Hydrograph Report

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

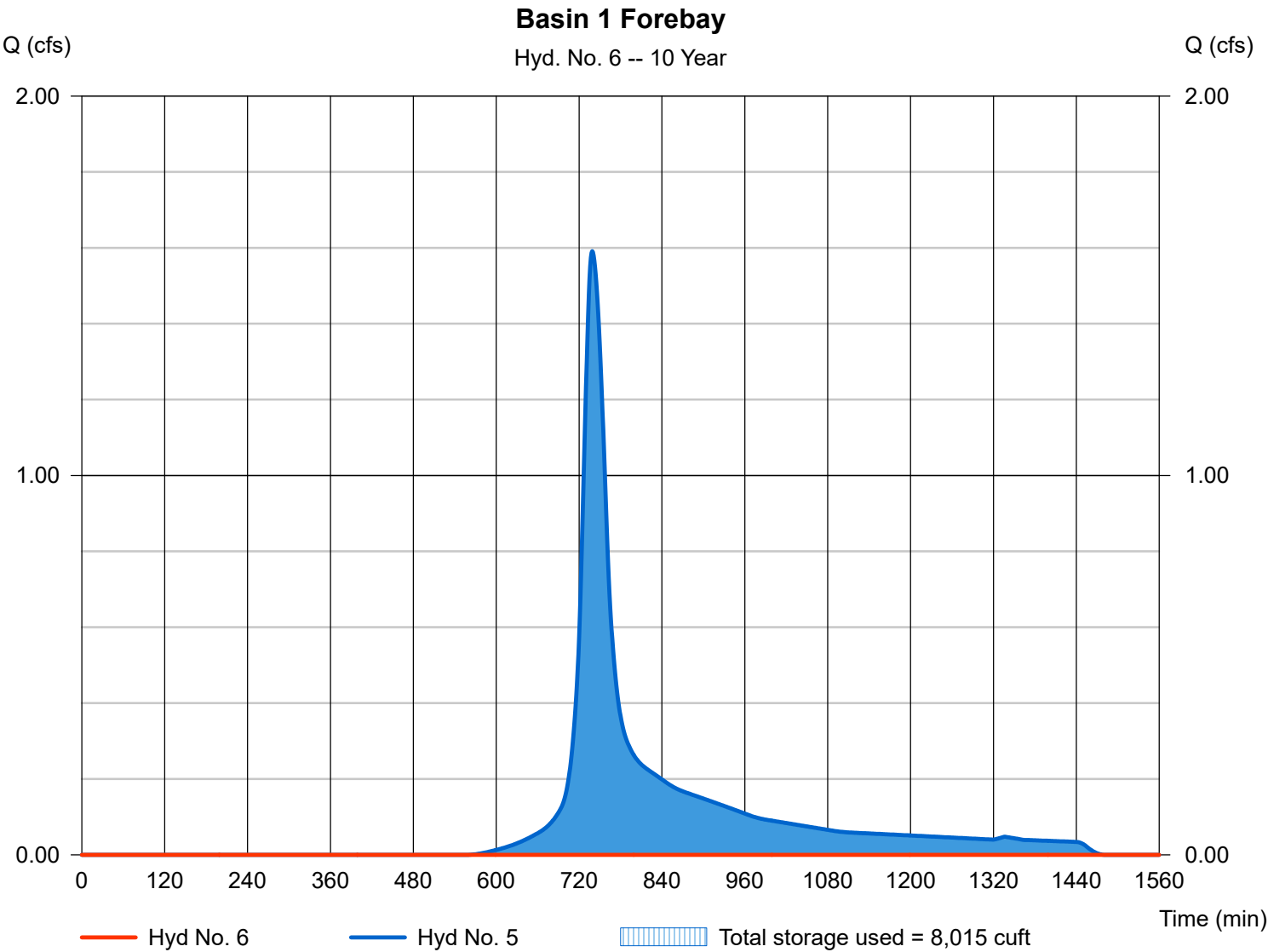
Monday, Oct 3, 2022

Hyd. No. 6

Basin 1 Forebay

Hydrograph type	= Reservoir	Peak discharge	= 0.000 cfs
Storm frequency	= 10 yrs	Time to peak	= n/a
Time interval	= 1 min	Hyd. volume	= 0 cuft
Inflow hyd. No.	= 5 - Roof overflow and Area 1A	Max. Elevation	= 27.09 ft
Reservoir name	= Basin 1 Forebay	Max. Storage	= 8,015 cuft

Storage Indication method used.



Hydrograph Report

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

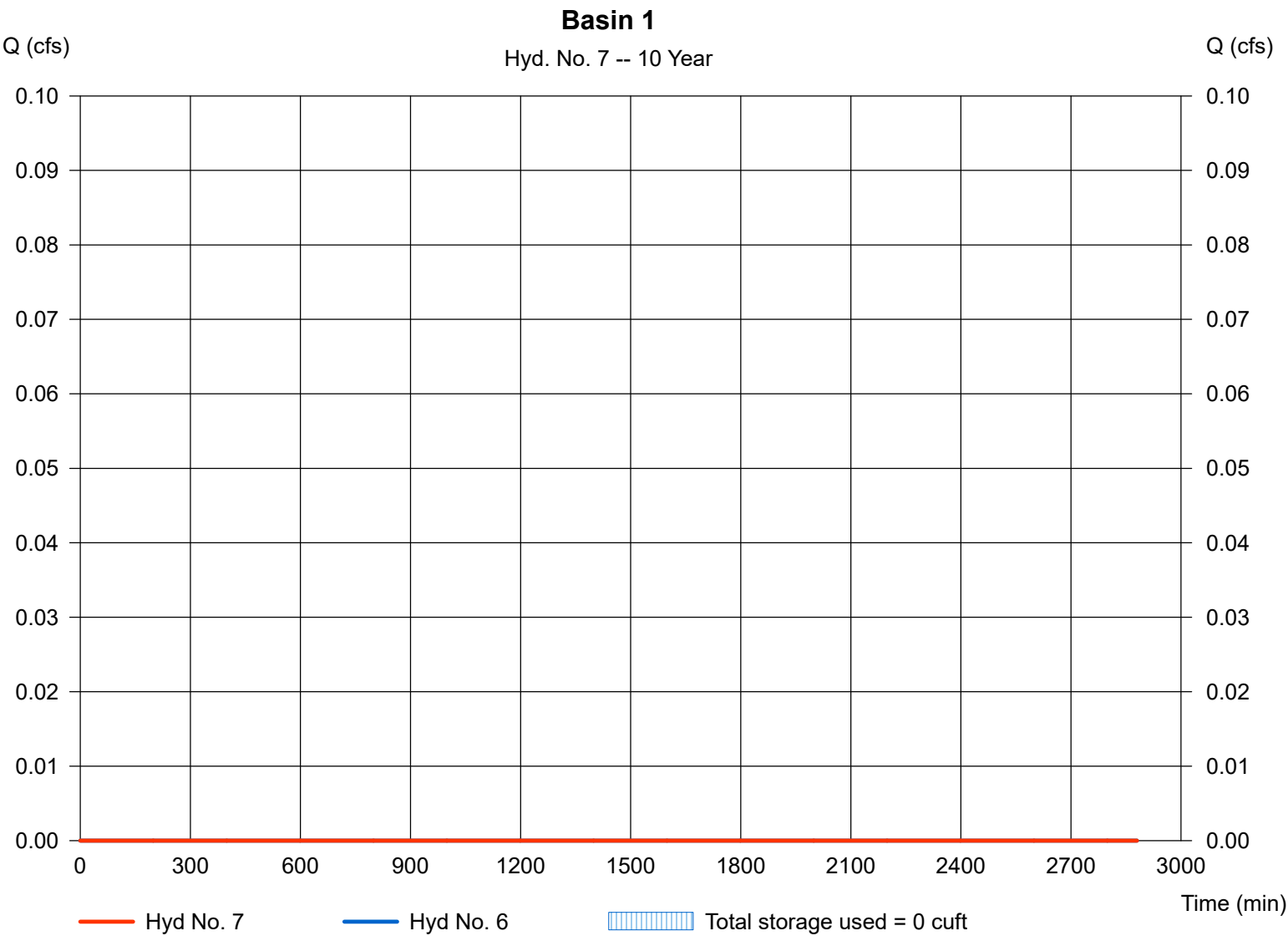
Monday, Oct 3, 2022

Hyd. No. 7

Basin 1

Hydrograph type	= Reservoir	Peak discharge	= 0.000 cfs
Storm frequency	= 10 yrs	Time to peak	= n/a
Time interval	= 1 min	Hyd. volume	= 0 cuft
Inflow hyd. No.	= 6 - Basin 1 Forebay	Max. Elevation	= 22.00 ft
Reservoir name	= Basin 1 Forebay	Max. Storage	= 0 cuft

Storage Indication method used.



Hydrograph Report

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

Monday, Oct 3, 2022

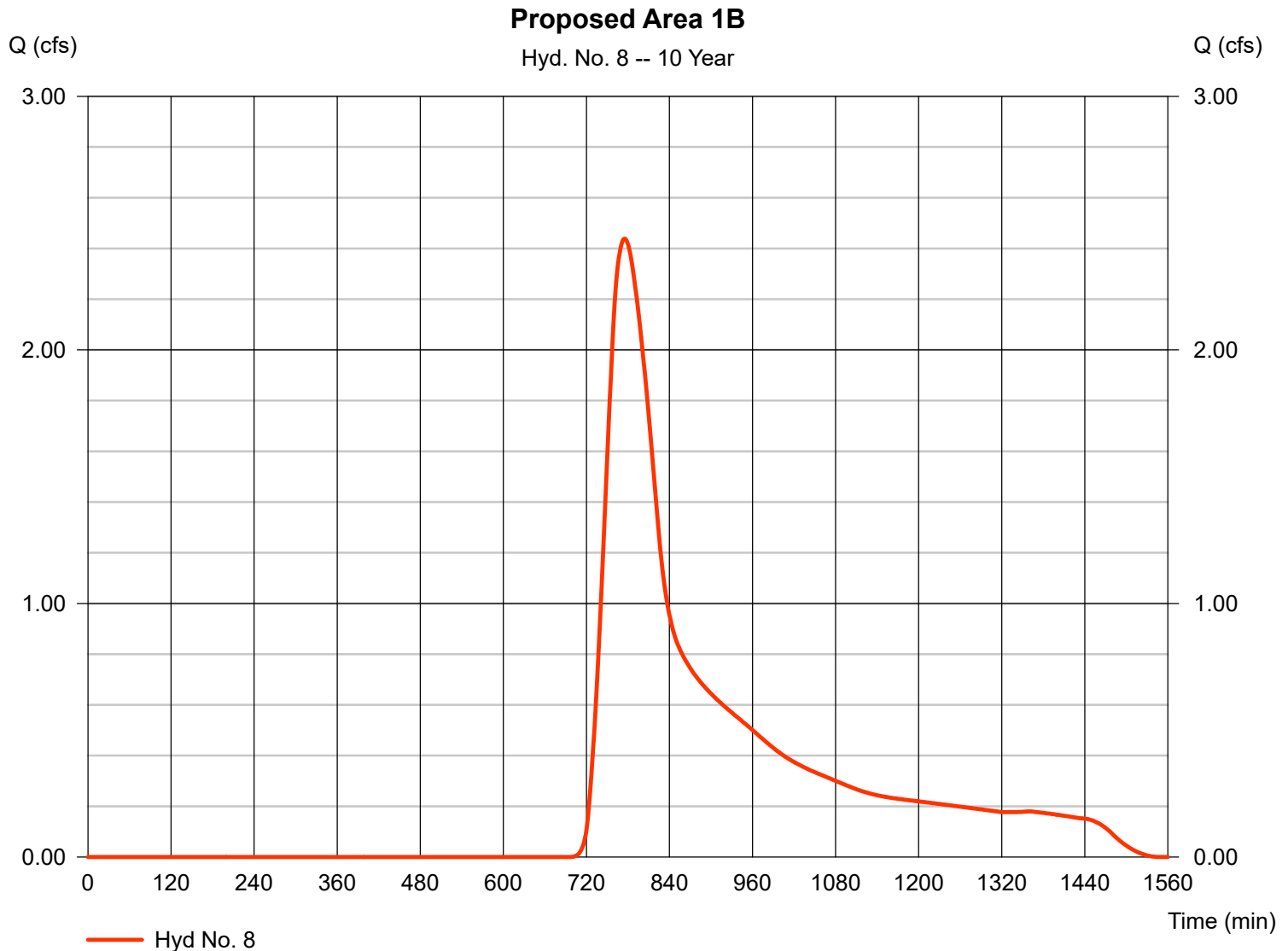
Hyd. No. 8

Proposed Area 1B

Hydrograph type = SCS Runoff
 Storm frequency = 10 yrs
 Time interval = 1 min
 Drainage area = 5.930 ac
 Basin Slope = 0.0 %
 Tc method = TR55
 Total precip. = 5.14 in
 Storm duration = 24 hrs

Peak discharge = 2.439 cfs
 Time to peak = 775 min
 Hyd. volume = 23,919 cuft
 Curve number = 56*
 Hydraulic length = 0 ft
 Time of conc. (Tc) = 69.10 min
 Distribution = Type III
 Shape factor = 484

* Composite (Area/CN) = $[(5.120 \times 55) + (0.810 \times 61)] / 5.930$



Hydrograph Report

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

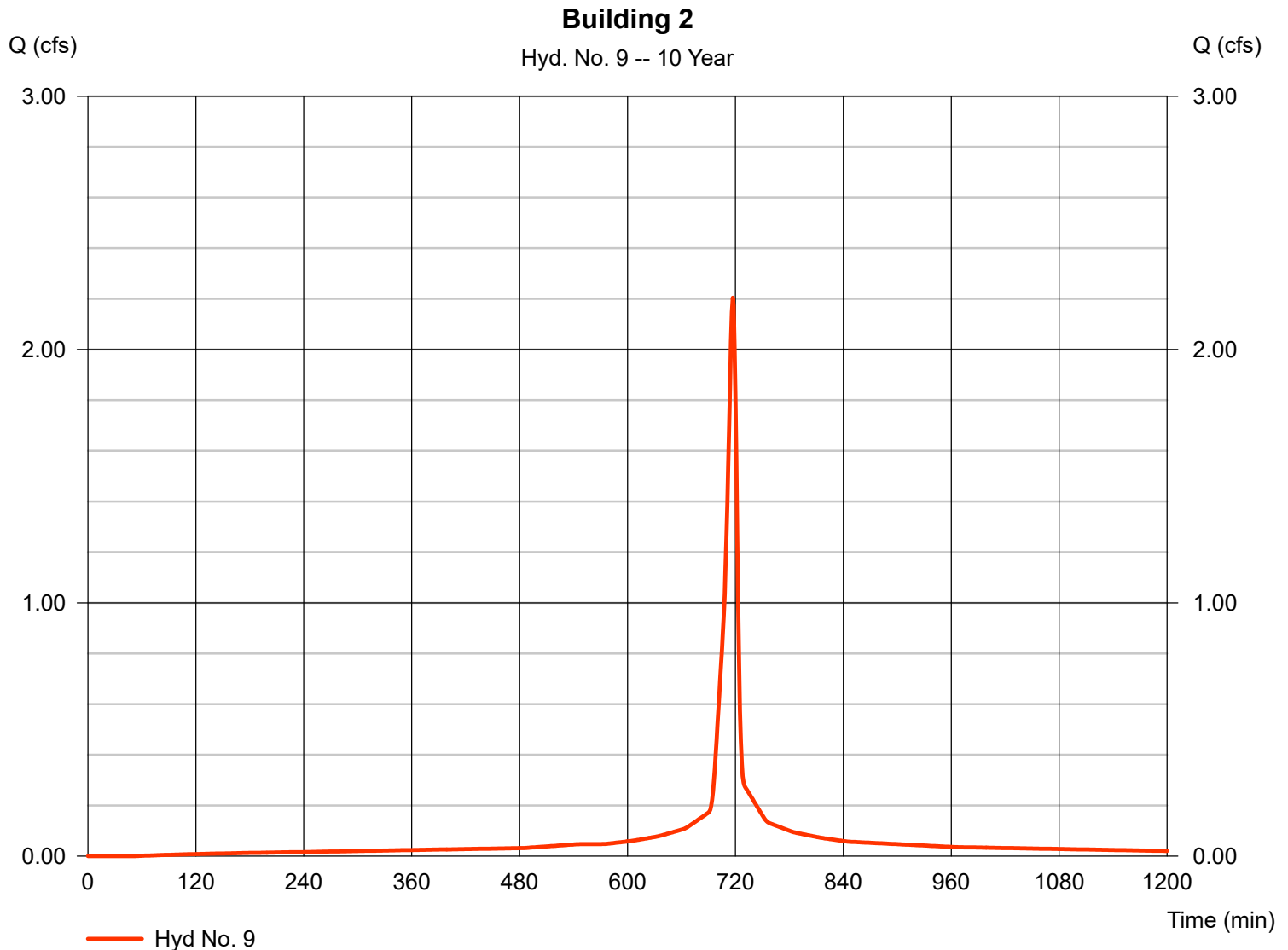
Monday, Oct 3, 2022

Hyd. No. 9

Building 2

Hydrograph type = SCS Runoff
 Storm frequency = 10 yrs
 Time interval = 1 min
 Drainage area = 0.290 ac
 Basin Slope = 0.0 %
 Tc method = USER
 Total precip. = 5.14 in
 Storm duration = 24 hrs

Peak discharge = 2.204 cfs
 Time to peak = 717 min
 Hyd. volume = 5,323 cuft
 Curve number = 98
 Hydraulic length = 0 ft
 Time of conc. (Tc) = 5.00 min
 Distribution = Type II
 Shape factor = 484



Hydrograph Report

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

Monday, Oct 3, 2022

Hyd. No. 10

Leaching Gallery 2

Hydrograph type = Reservoir (Interconnected)
 Storm frequency = 10 yrs
 Time interval = 1 min

Upper Pond

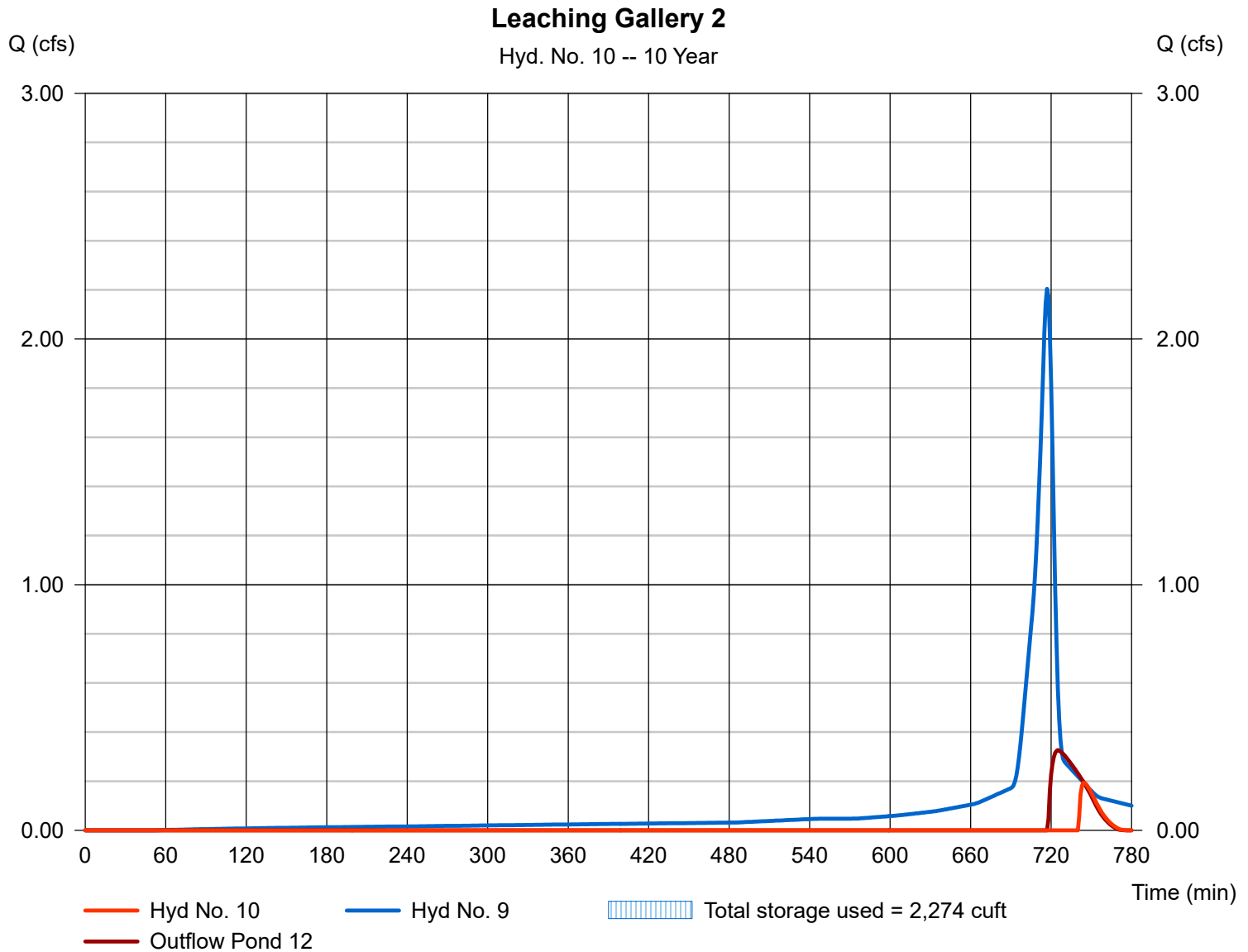
Pond name = Leaching Gallery 2
 Inflow hyd. = 9 - Building 2
 Max. Elevation = 35.75 ft
 Max. Storage = 1,886 cuft

Peak discharge = 0.194 cfs
 Time to peak = 745 min
 Hyd. volume = 172 cuft

Lower Pond

Pond name = Basin 2 Forebay
 Other Inflow hyd. = None
 Max. Elevation = 23.02 ft
 Max. Storage = 388 cuft

Interconnected Pond Routing. Storage Indication method used.



Hydrograph Report

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

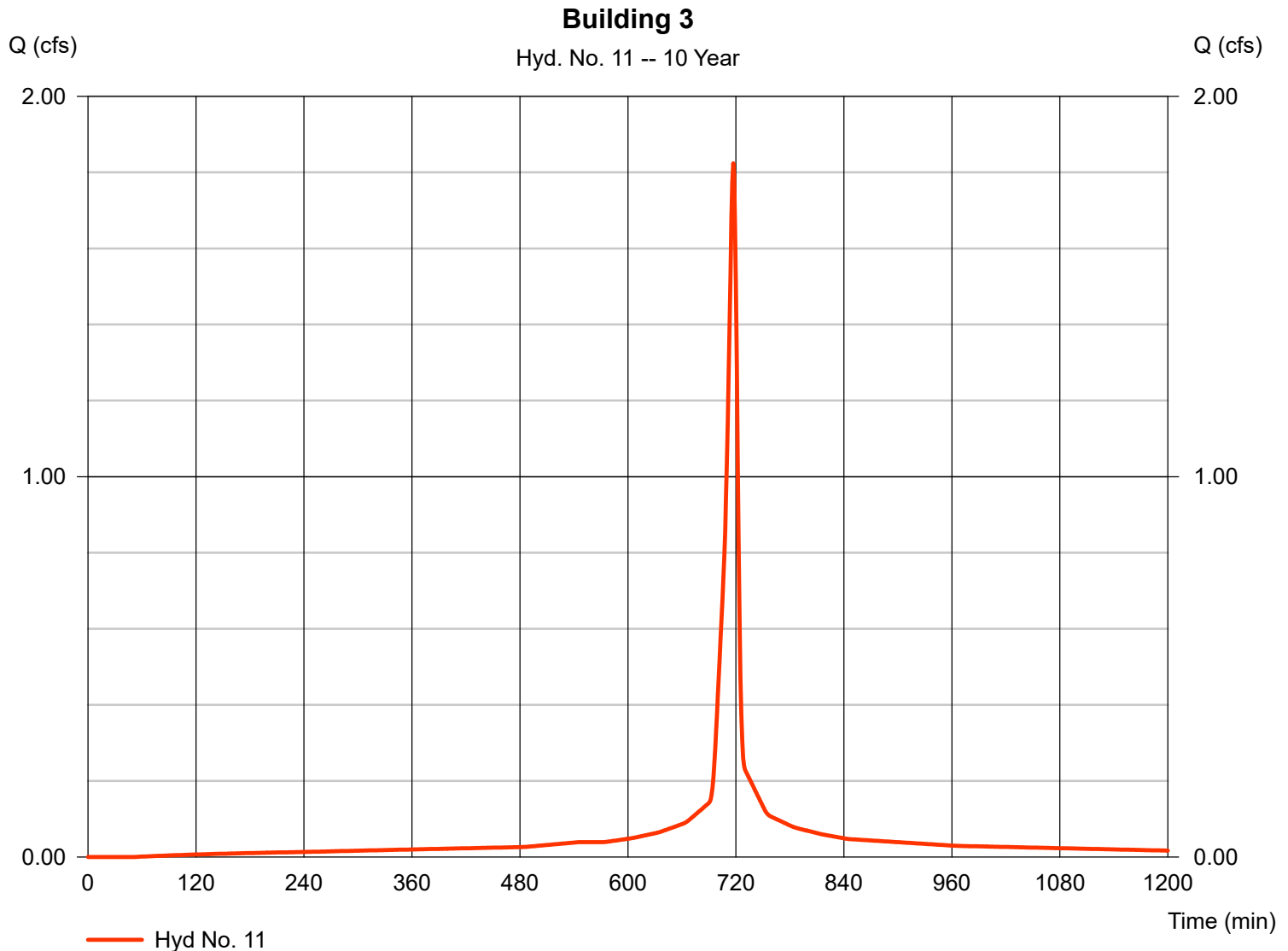
Monday, Oct 3, 2022

Hyd. No. 11

Building 3

Hydrograph type = SCS Runoff
 Storm frequency = 10 yrs
 Time interval = 1 min
 Drainage area = 0.240 ac
 Basin Slope = 0.0 %
 Tc method = USER
 Total precip. = 5.14 in
 Storm duration = 24 hrs

Peak discharge = 1.824 cfs
 Time to peak = 717 min
 Hyd. volume = 4,405 cuft
 Curve number = 98
 Hydraulic length = 0 ft
 Time of conc. (Tc) = 5.00 min
 Distribution = Type II
 Shape factor = 484



Hydrograph Report

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

Monday, Oct 3, 2022

Hyd. No. 12

Leaching Gallery 3

Hydrograph type = Reservoir (Interconnected)
 Storm frequency = 10 yrs
 Time interval = 1 min

Upper Pond

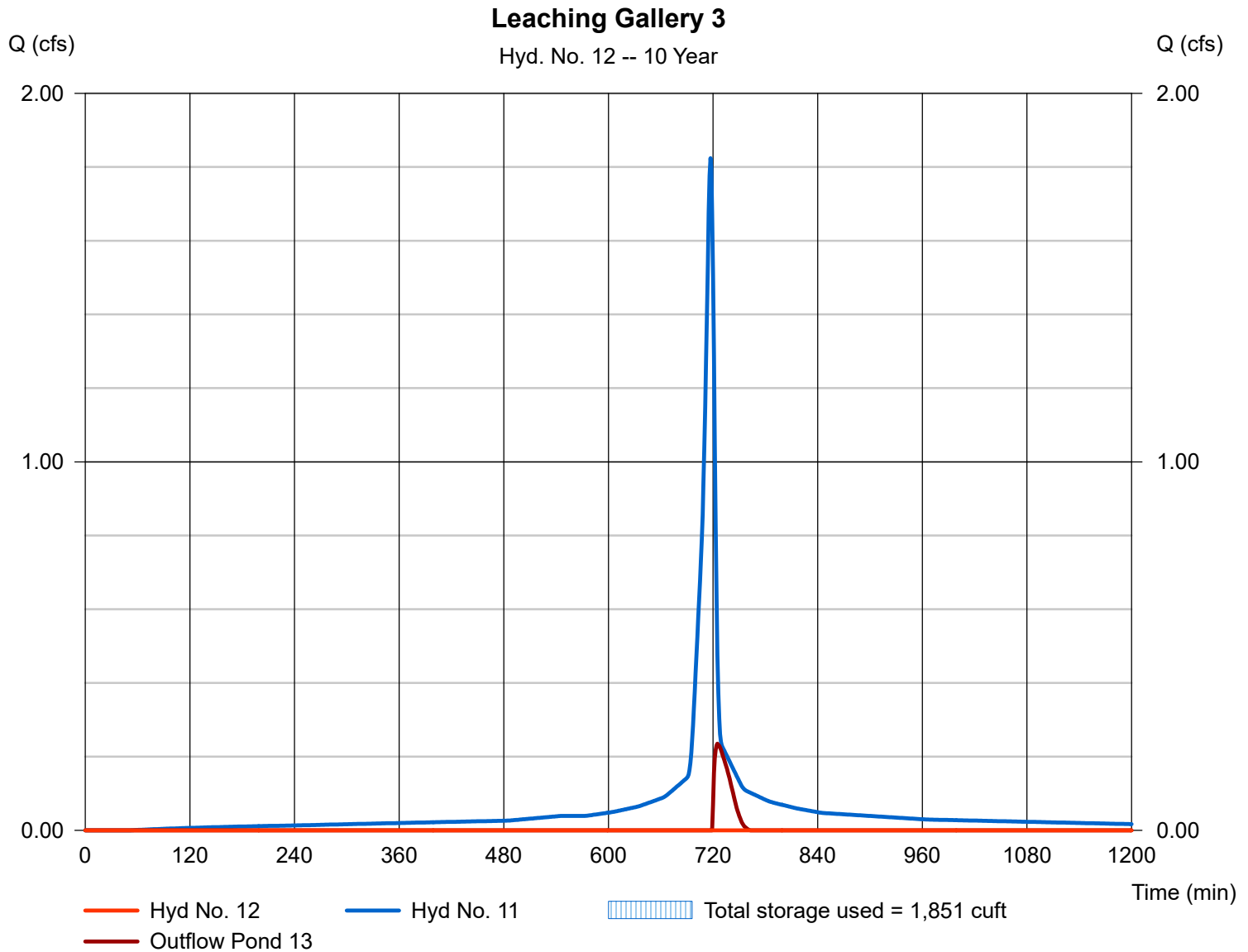
Pond name = Leaching Gallery 3
 Inflow hyd. = 11 - Building 3
 Max. Elevation = 40.80 ft
 Max. Storage = 1,561 cuft

Peak discharge = 0.000 cfs
 Time to peak = n/a
 Hyd. volume = 0 cuft

Lower Pond

Pond name = Basin 2 Forebay
 Other Inflow hyd. = None
 Max. Elevation = 22.78 ft
 Max. Storage = 290 cuft

Interconnected Pond Routing. Storage Indication method used.



Hydrograph Report

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

Monday, Oct 3, 2022

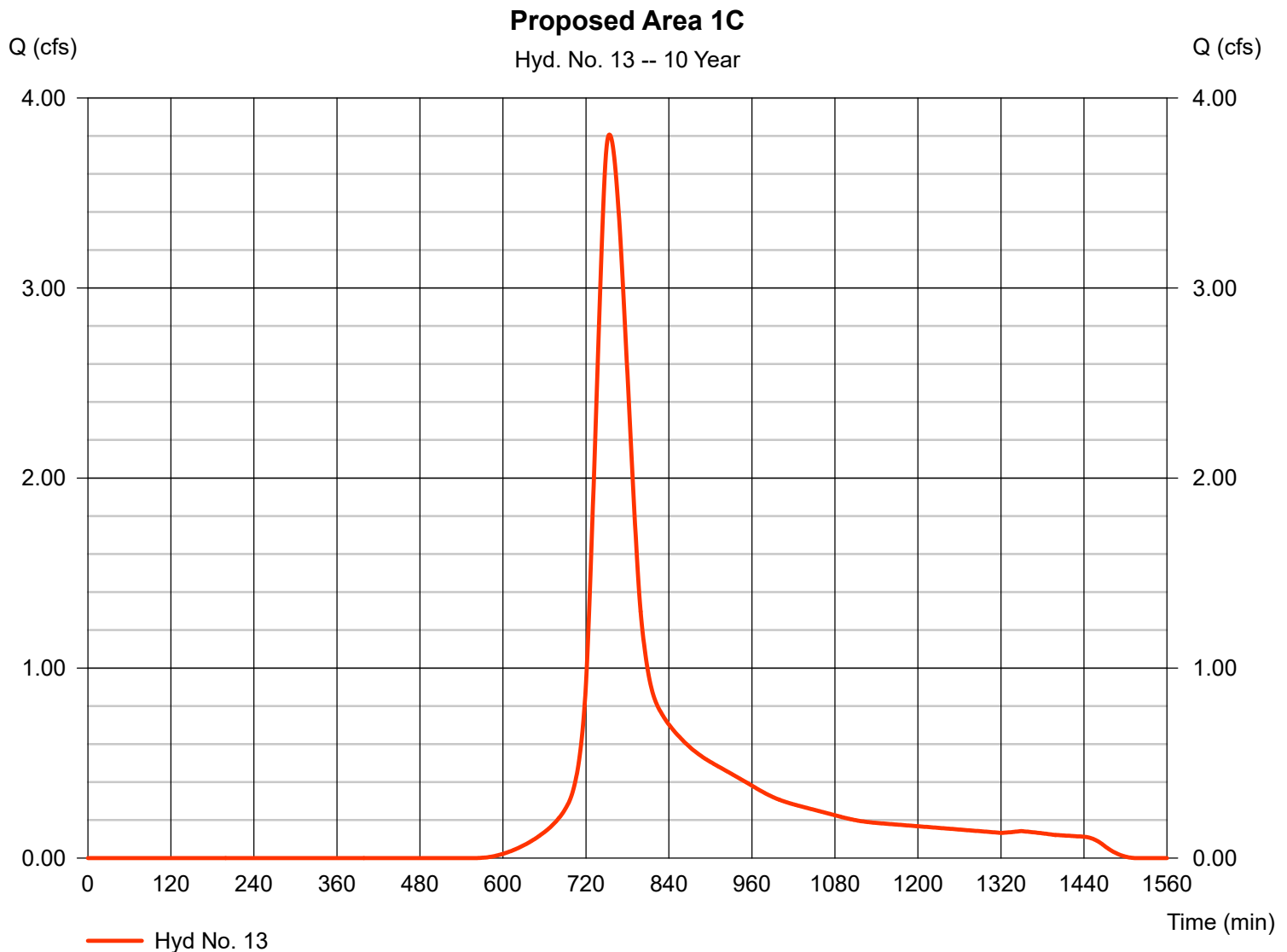
Hyd. No. 13

Proposed Area 1C

Hydrograph type = SCS Runoff
 Storm frequency = 10 yrs
 Time interval = 1 min
 Drainage area = 3.070 ac
 Basin Slope = 0.0 %
 Tc method = TR55
 Total precip. = 5.14 in
 Storm duration = 24 hrs

Peak discharge = 3.807 cfs
 Time to peak = 754 min
 Hyd. volume = 25,590 cuft
 Curve number = 72*
 Hydraulic length = 0 ft
 Time of conc. (Tc) = 48.50 min
 Distribution = Type III
 Shape factor = 484

* Composite (Area/CN) = $[(0.740 \times 55) + (1.060 \times 98) + (1.270 \times 61)] / 3.070$



Hydrograph Report

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

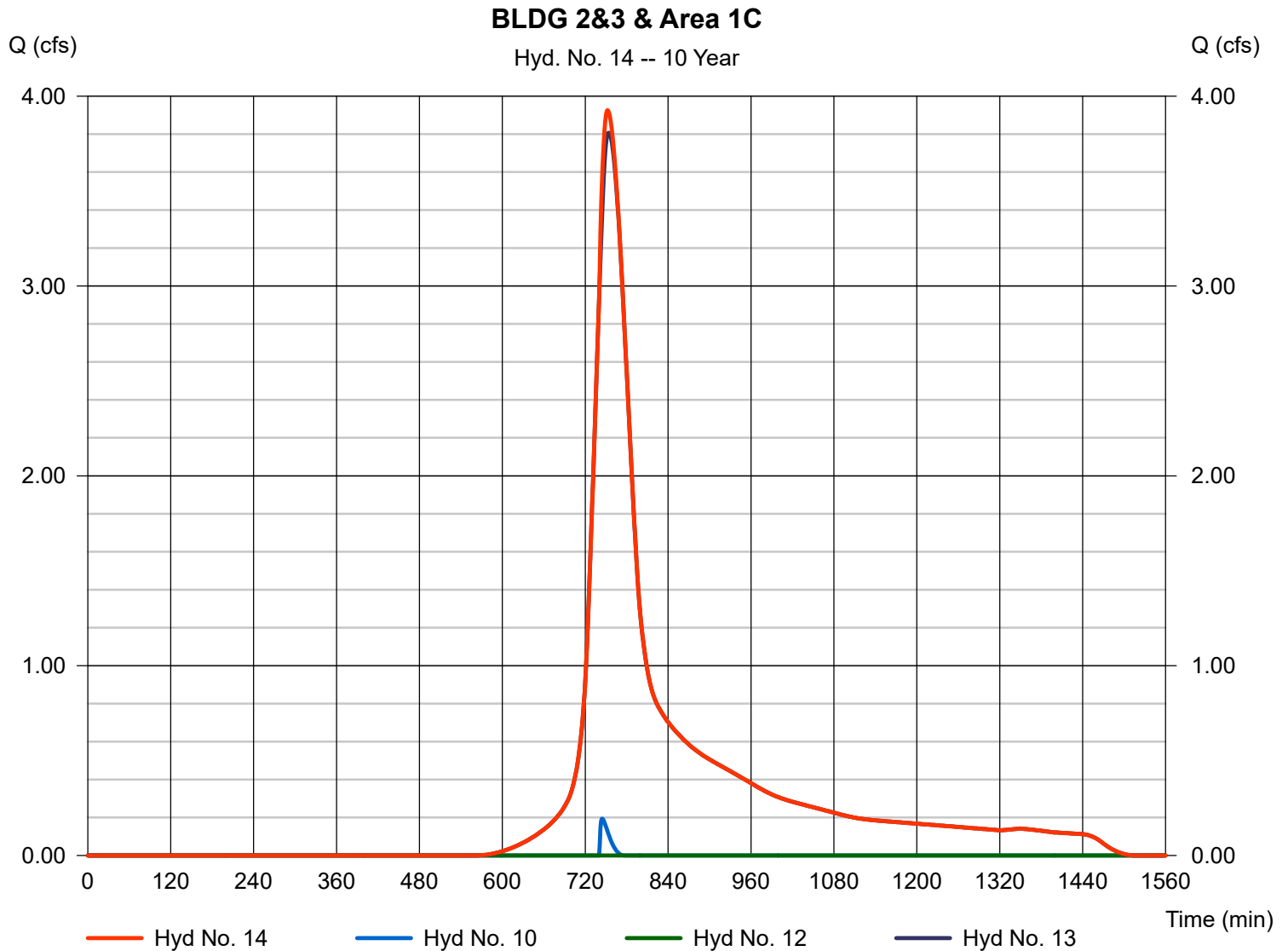
Monday, Oct 3, 2022

Hyd. No. 14

BLDG 2&3 & Area 1C

Hydrograph type = Combine
Storm frequency = 10 yrs
Time interval = 1 min
Inflow hyds. = 10, 12, 13

Peak discharge = 3.926 cfs
Time to peak = 752 min
Hyd. volume = 25,762 cuft
Contrib. drain. area = 3.070 ac



Hydrograph Report

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

Monday, Oct 3, 2022

Hyd. No. 15

Basin 2 Forebay

Hydrograph type = Reservoir (Interconnected)
 Storm frequency = 10 yrs
 Time interval = 1 min

Upper Pond

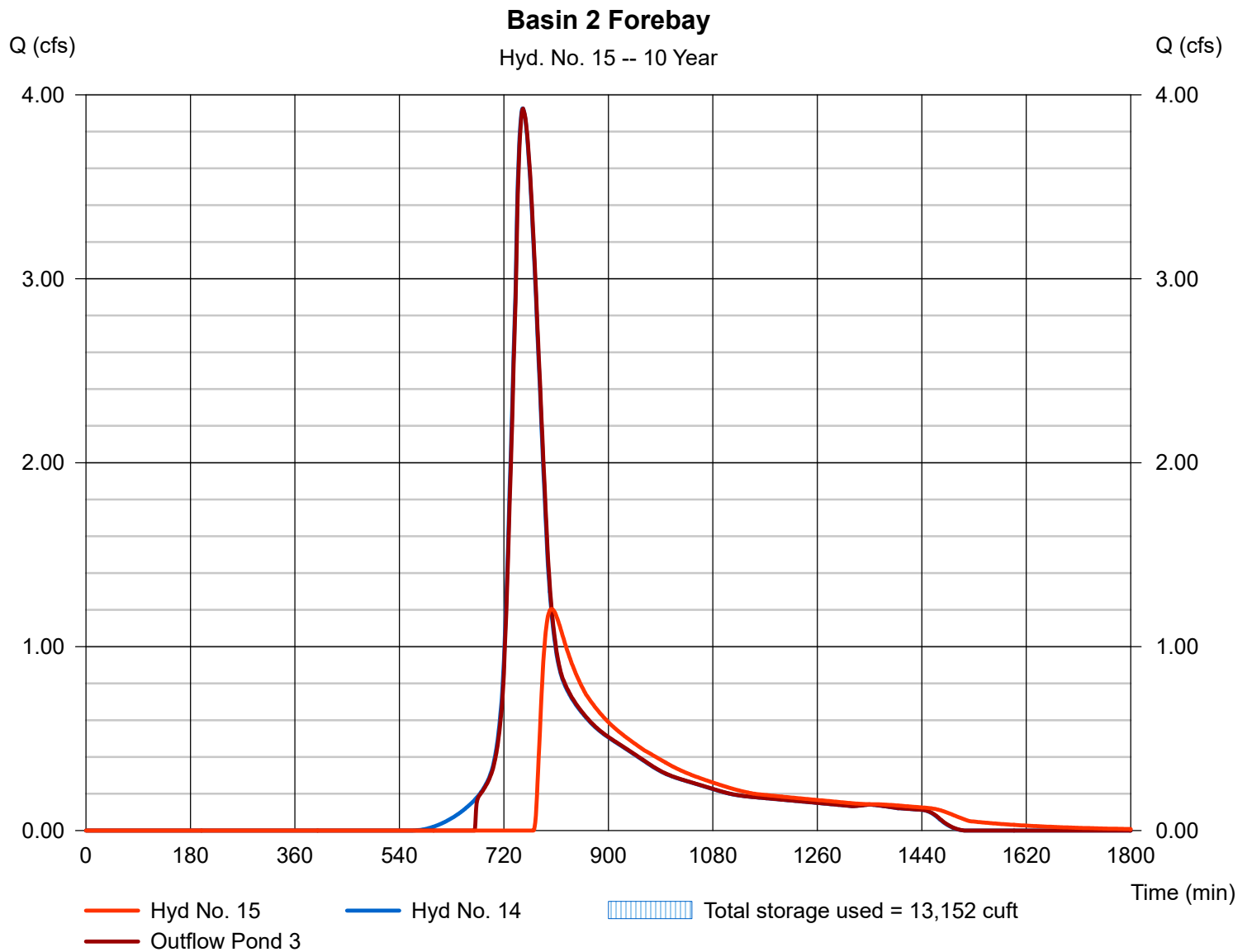
Pond name = Basin 2 Forebay
 Inflow hyd. = 14 - BLDG 2&3 & Area 1C
 Max. Elevation = 23.28 ft
 Max. Storage = 558 cuft

Peak discharge = 1.205 cfs
 Time to peak = 802 min
 Hyd. volume = 15,274 cuft

Lower Pond

Pond name = Basin 2
 Other Inflow hyd. = None
 Max. Elevation = 26.53 ft
 Max. Storage = 12,594 cuft

Interconnected Pond Routing. Storage Indication method used.



Hydrograph Report

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

Monday, Oct 3, 2022

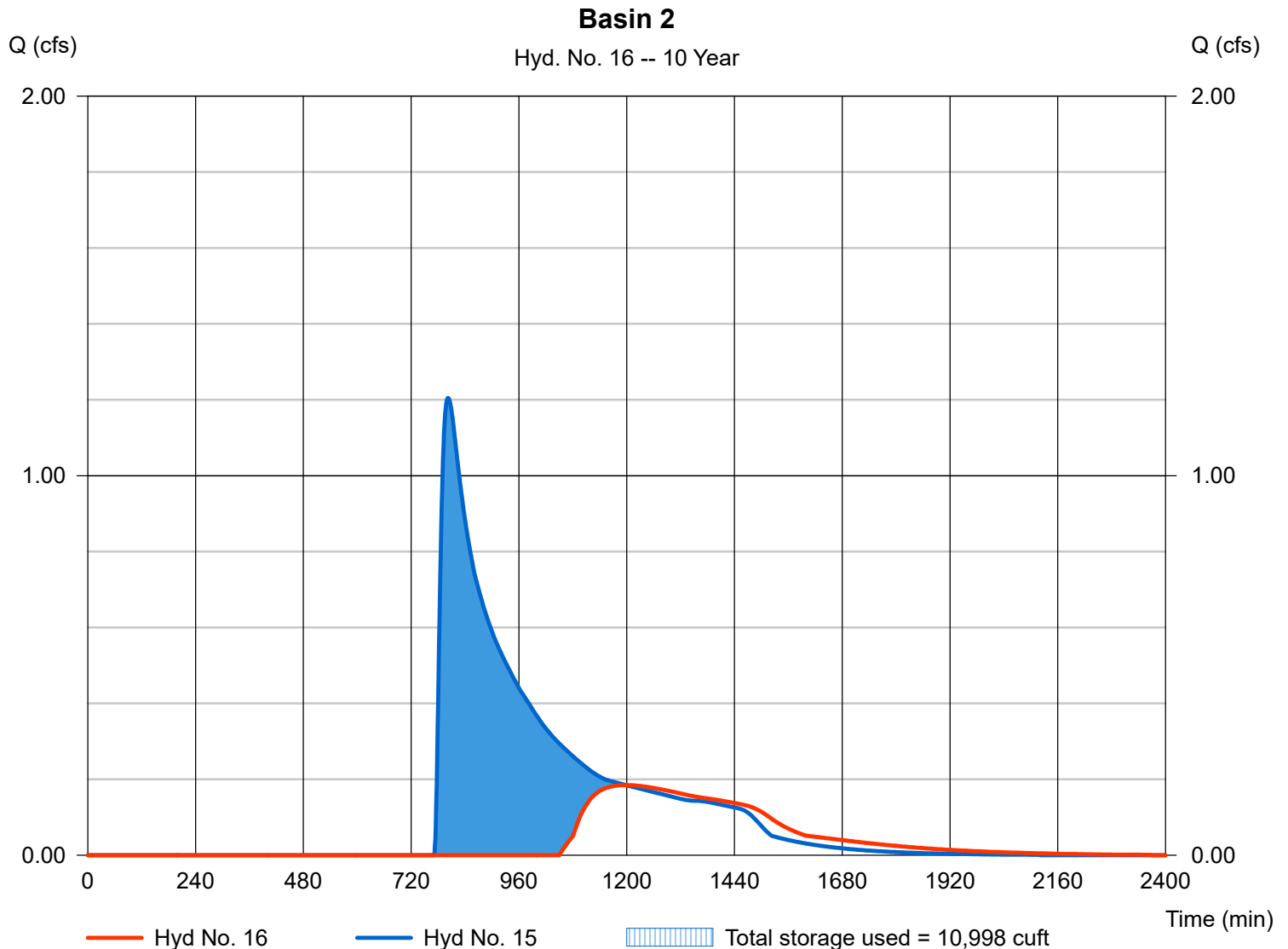
Hyd. No. 16

Basin 2

Hydrograph type = Reservoir
 Storm frequency = 10 yrs
 Time interval = 1 min
 Inflow hyd. No. = 15 - Basin 2 Forebay
 Reservoir name = Basin 2

Peak discharge = 0.185 cfs
 Time to peak = 1198 min
 Hyd. volume = 5,158 cuft
 Max. Elevation = 26.19 ft
 Max. Storage = 10,998 cuft

Storage Indication method used.



Hydrograph Report

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

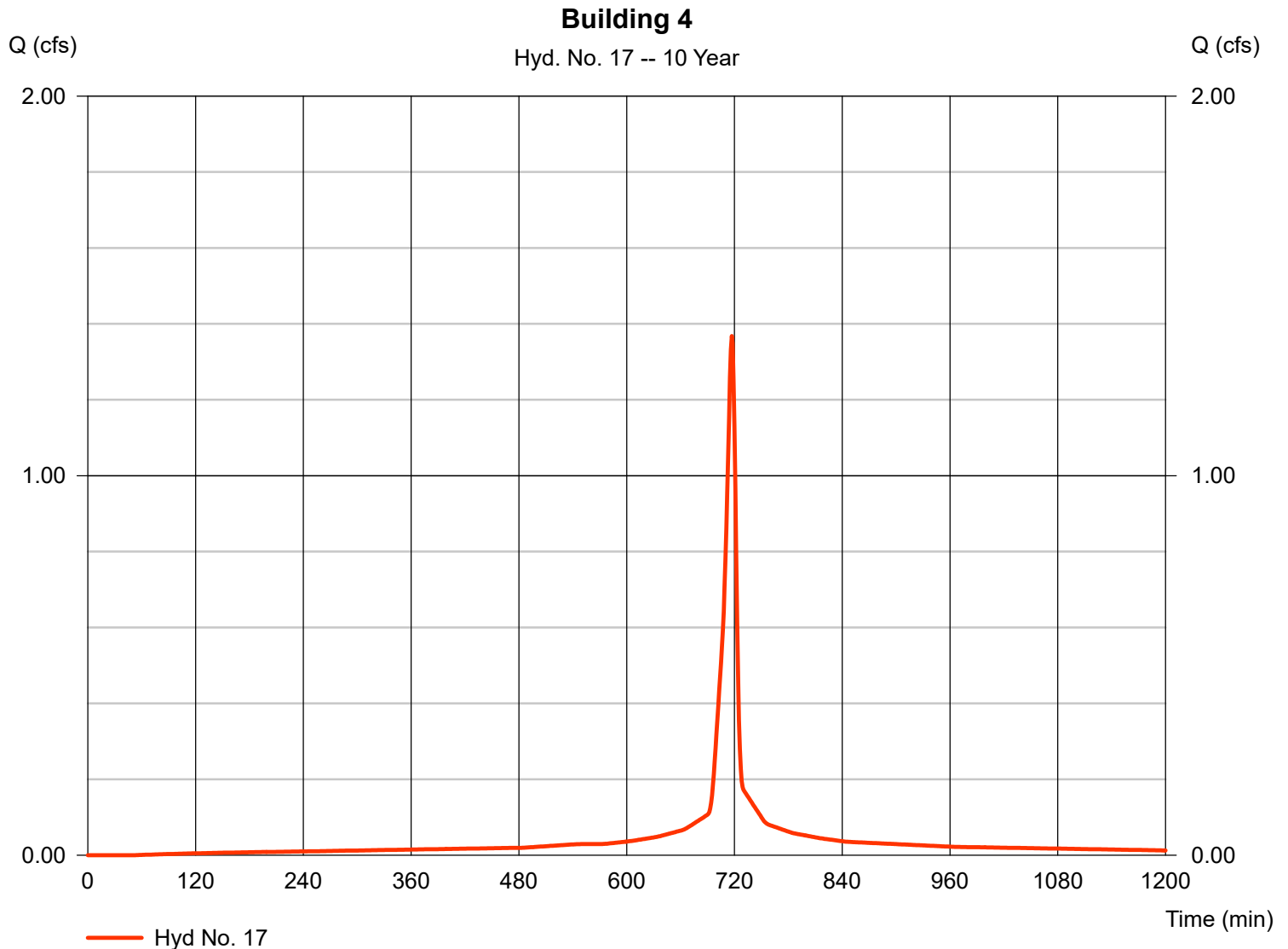
Monday, Oct 3, 2022

Hyd. No. 17

Building 4

Hydrograph type = SCS Runoff
 Storm frequency = 10 yrs
 Time interval = 1 min
 Drainage area = 0.180 ac
 Basin Slope = 0.0 %
 Tc method = USER
 Total precip. = 5.14 in
 Storm duration = 24 hrs

Peak discharge = 1.368 cfs
 Time to peak = 717 min
 Hyd. volume = 3,304 cuft
 Curve number = 98
 Hydraulic length = 0 ft
 Time of conc. (Tc) = 5.00 min
 Distribution = Type II
 Shape factor = 484



Hydrograph Report

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

Monday, Oct 3, 2022

Hyd. No. 18

Leaching Gallery 4

Hydrograph type = Reservoir (Interconnected)
 Storm frequency = 10 yrs
 Time interval = 1 min

Upper Pond

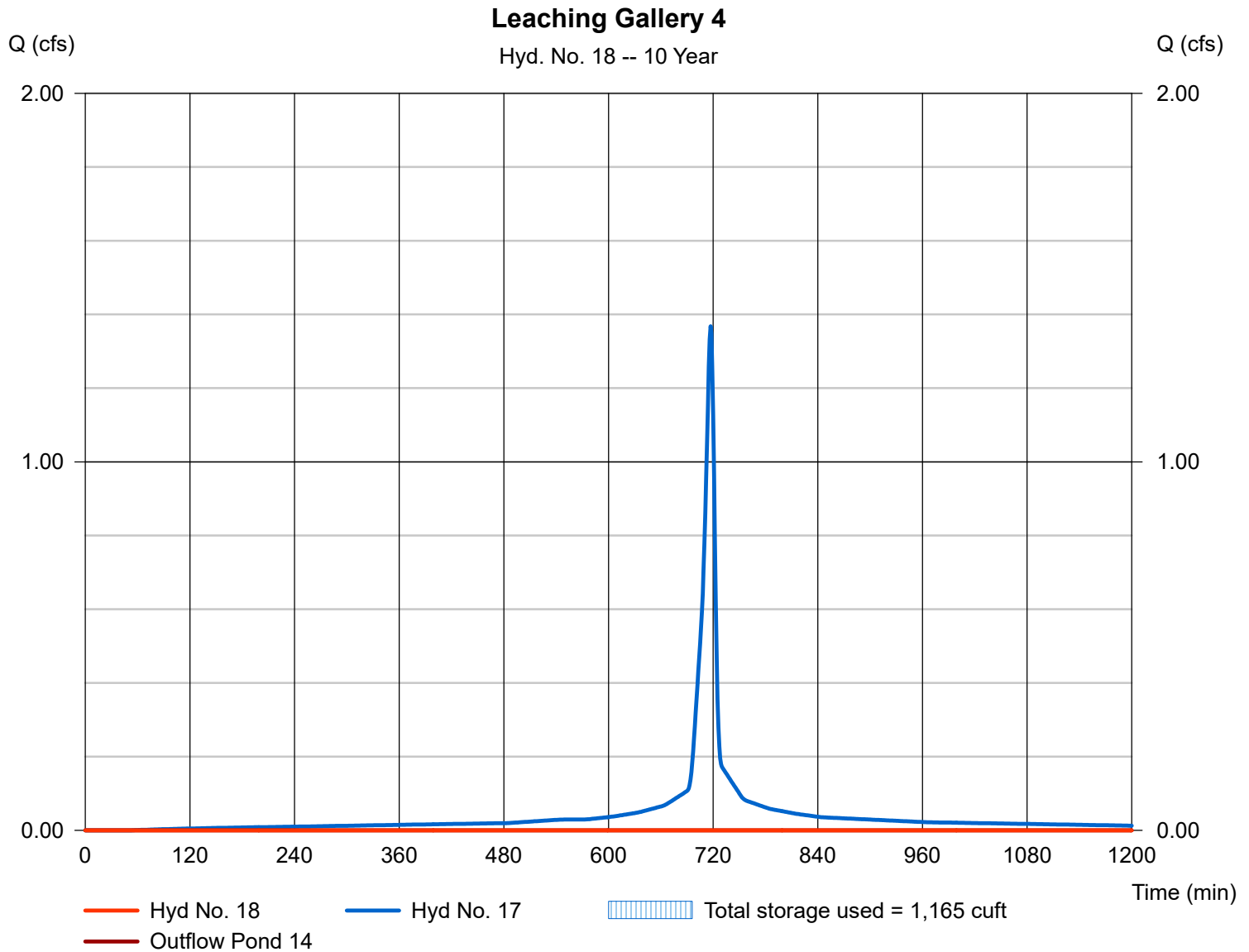
Pond name = Leaching Gallery 4
 Inflow hyd. = 17 - Building 4
 Max. Elevation = 45.69 ft
 Max. Storage = 1,165 cuft

Peak discharge = 0.000 cfs
 Time to peak = n/a
 Hyd. volume = 0 cuft

Lower Pond

Pond name = Basin 3 Forebay
 Other Inflow hyd. = None
 Max. Elevation = 32.00 ft
 Max. Storage = 0 cuft

Interconnected Pond Routing. Storage Indication method used.



Hydrograph Report

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

Monday, Oct 3, 2022

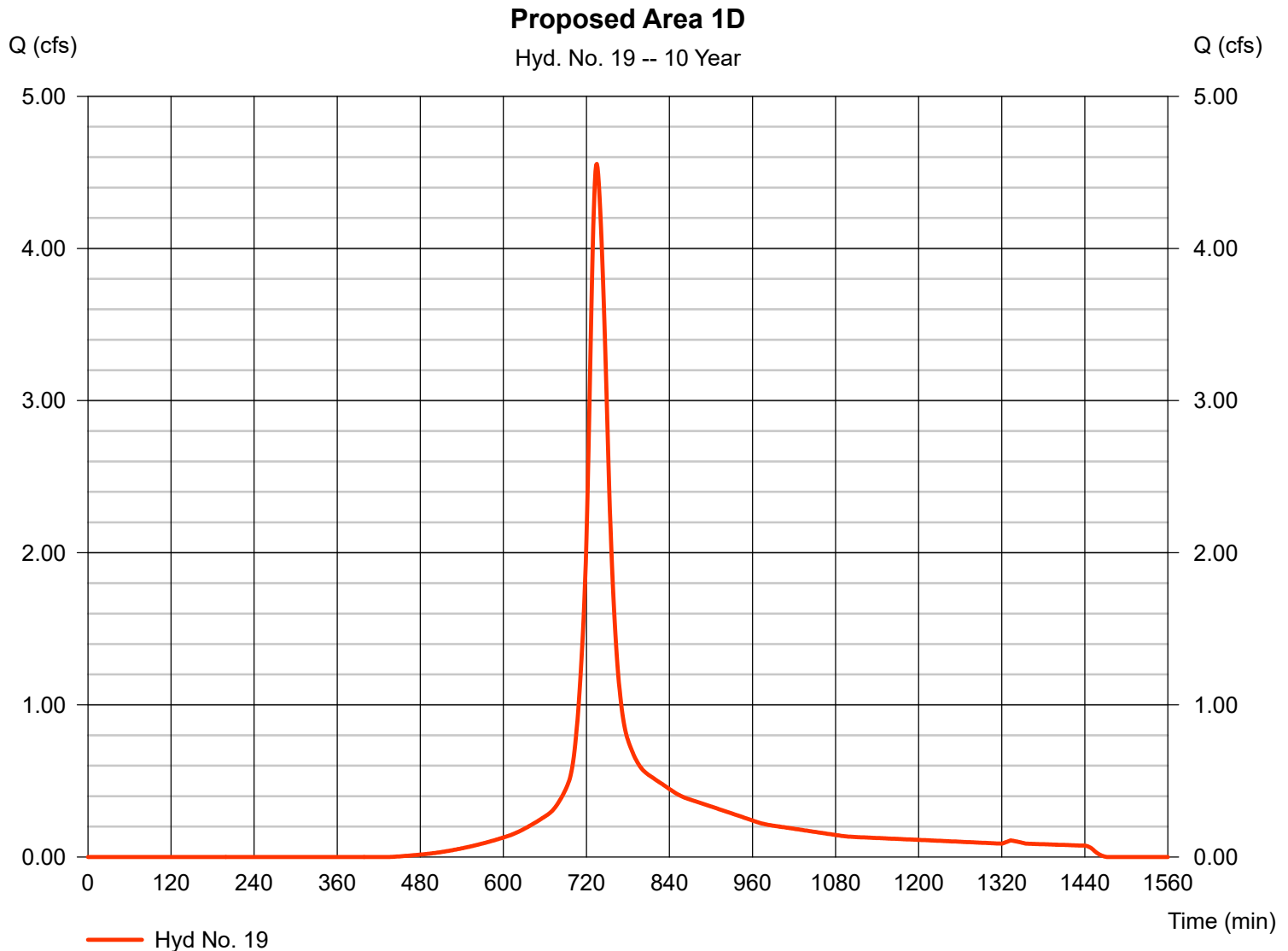
Hyd. No. 19

Proposed Area 1D

Hydrograph type = SCS Runoff
 Storm frequency = 10 yrs
 Time interval = 1 min
 Drainage area = 1.830 ac
 Basin Slope = 0.0 %
 Tc method = TR55
 Total precip. = 5.14 in
 Storm duration = 24 hrs

Peak discharge = 4.556 cfs
 Time to peak = 735 min
 Hyd. volume = 20,854 cuft
 Curve number = 81*
 Hydraulic length = 0 ft
 Time of conc. (Tc) = 21.50 min
 Distribution = Type III
 Shape factor = 484

* Composite (Area/CN) = $[(1.010 \times 98) + (0.820 \times 61)] / 1.830$



Hydrograph Report

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

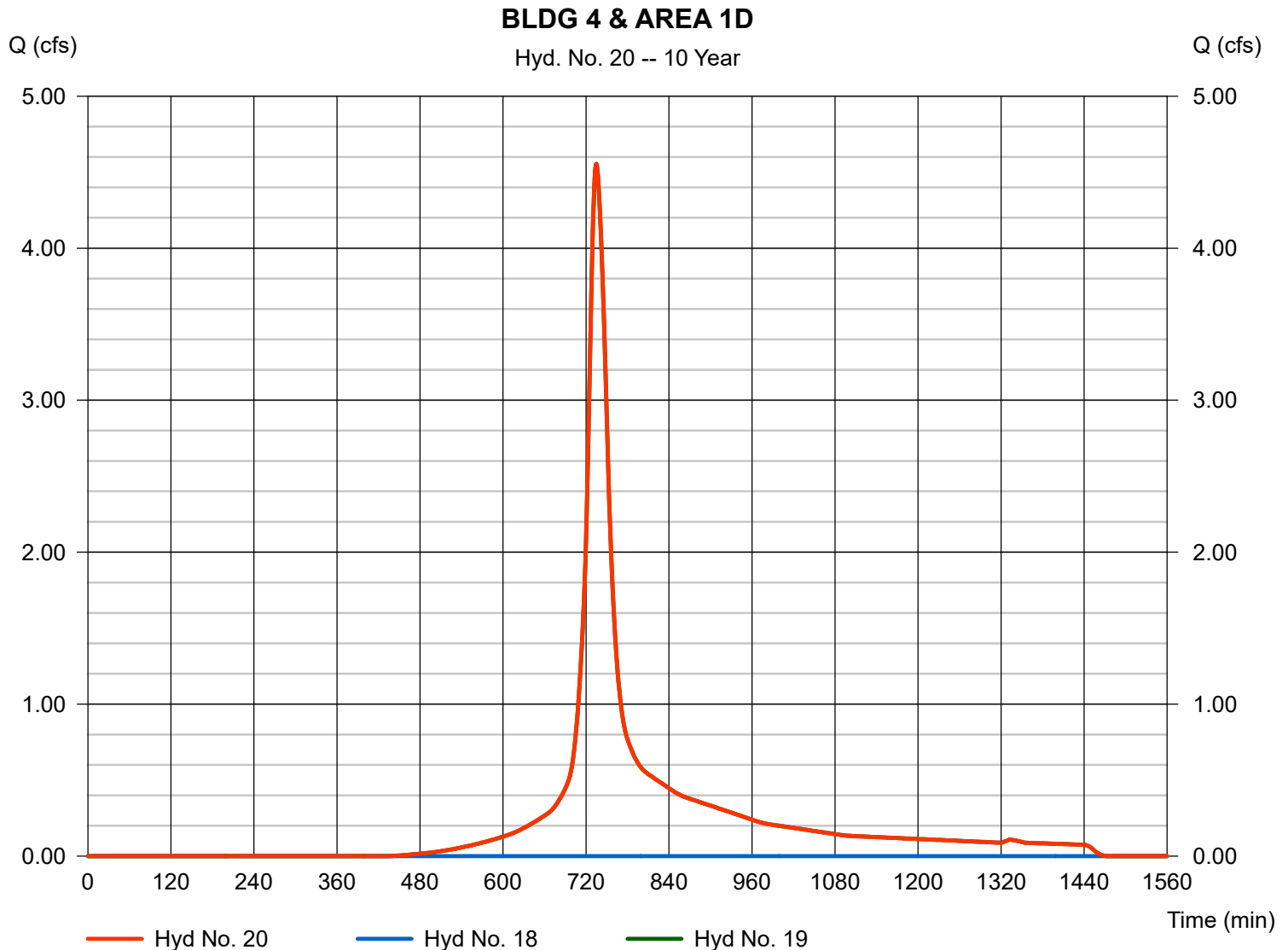
Monday, Oct 3, 2022

Hyd. No. 20

BLDG 4 & AREA 1D

Hydrograph type = Combine
Storm frequency = 10 yrs
Time interval = 1 min
Inflow hyds. = 18, 19

Peak discharge = 4.556 cfs
Time to peak = 735 min
Hyd. volume = 20,854 cuft
Contrib. drain. area = 1.830 ac



Hydrograph Report

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

Monday, Oct 3, 2022

Hyd. No. 21

Basin 3 Forebay

Hydrograph type = Reservoir (Interconnected)
 Storm frequency = 10 yrs
 Time interval = 1 min

Upper Pond

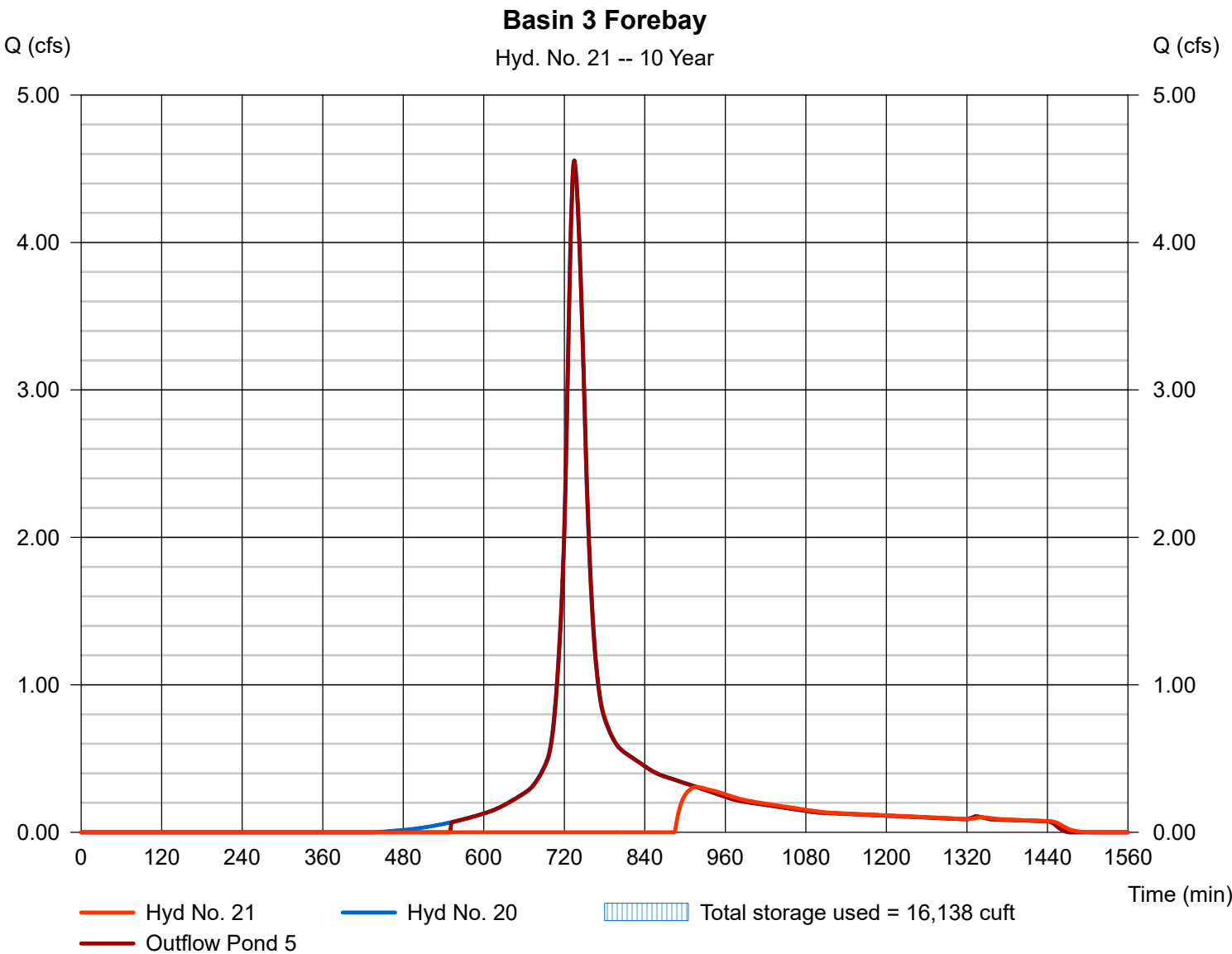
Pond name = Basin 3 Forebay
 Inflow hyd. = 20 - BLDG 4 & AREA 1D
 Max. Elevation = 33.31 ft
 Max. Storage = 284 cuft

Peak discharge = 0.308 cfs
 Time to peak = 917 min
 Hyd. volume = 5,022 cuft

Lower Pond

Pond name = Basin 3
 Other Inflow hyd. = None
 Max. Elevation = 36.55 ft
 Max. Storage = 15,854 cuft

Interconnected Pond Routing. Storage Indication method used.



Hydrograph Report

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

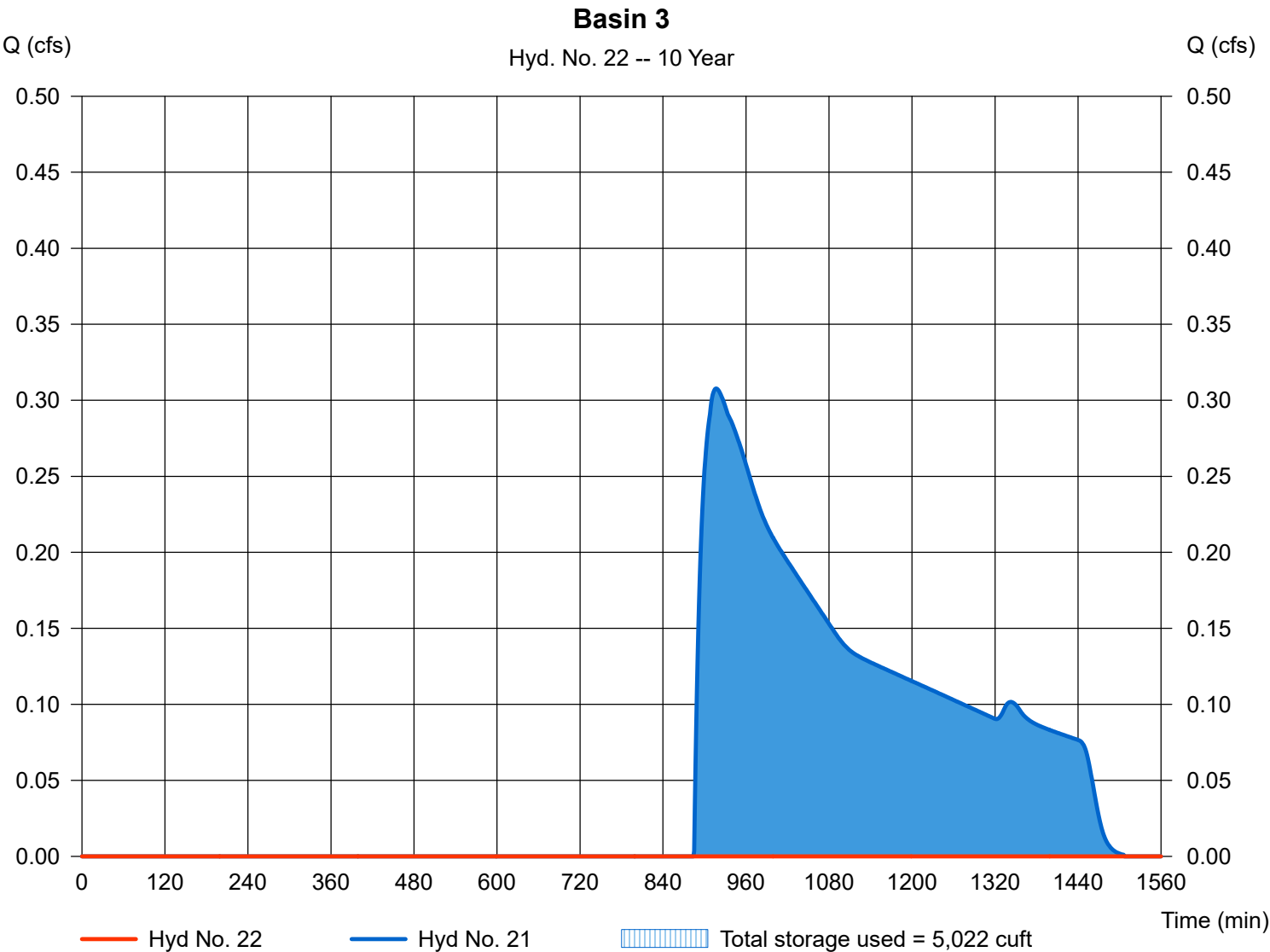
Monday, Oct 3, 2022

Hyd. No. 22

Basin 3

Hydrograph type	= Reservoir	Peak discharge	= 0.000 cfs
Storm frequency	= 10 yrs	Time to peak	= n/a
Time interval	= 1 min	Hyd. volume	= 0 cuft
Inflow hyd. No.	= 21 - Basin 3 Forebay	Max. Elevation	= 33.04 ft
Reservoir name	= Basin 3	Max. Storage	= 5,022 cuft

Storage Indication method used.



Hydrograph Report

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

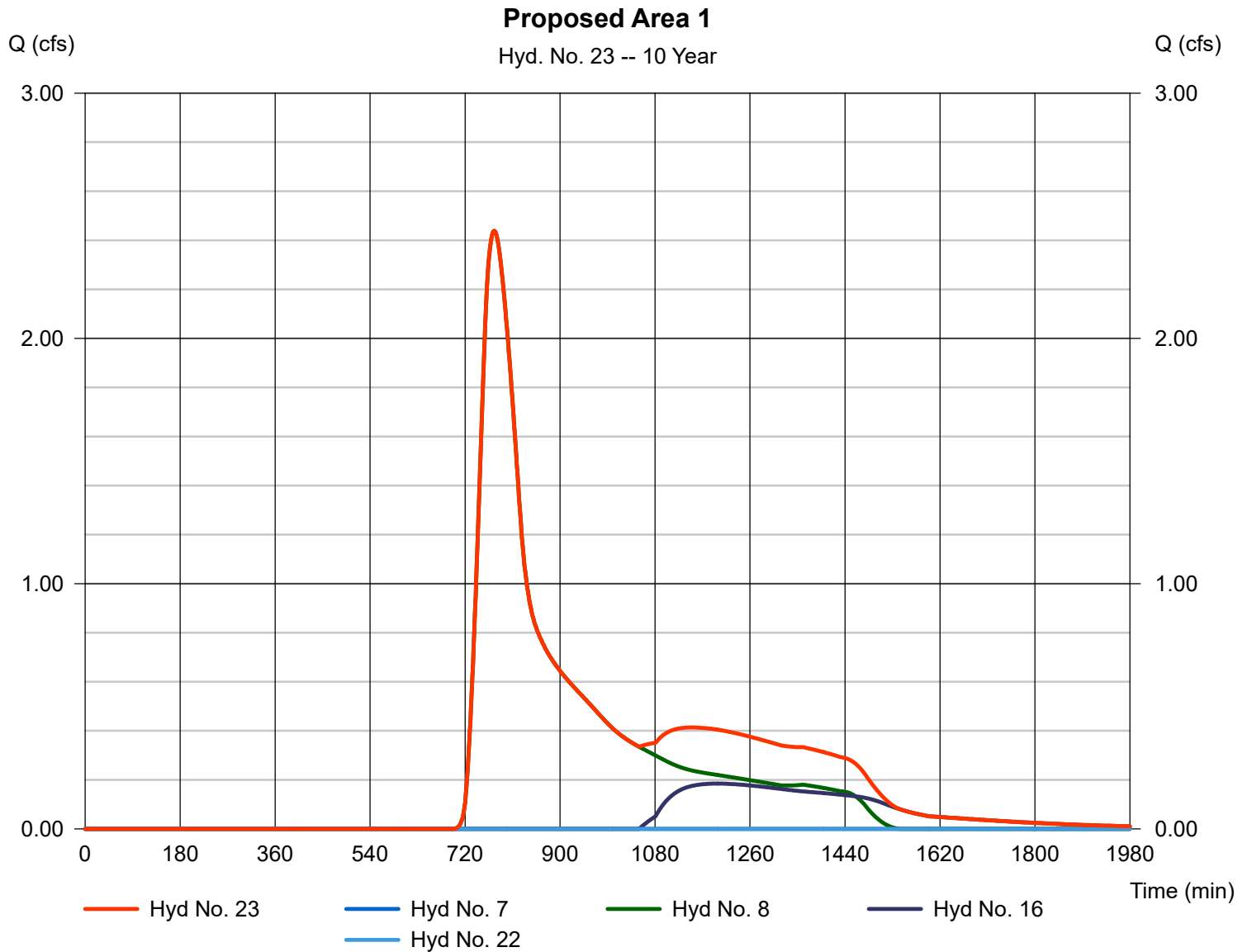
Monday, Oct 3, 2022

Hyd. No. 23

Proposed Area 1

Hydrograph type = Combine
 Storm frequency = 10 yrs
 Time interval = 1 min
 Inflow hyds. = 7, 8, 16, 22

Peak discharge = 2.439 cfs
 Time to peak = 775 min
 Hyd. volume = 29,077 cuft
 Contrib. drain. area = 5.930 ac



Hydrograph Report

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

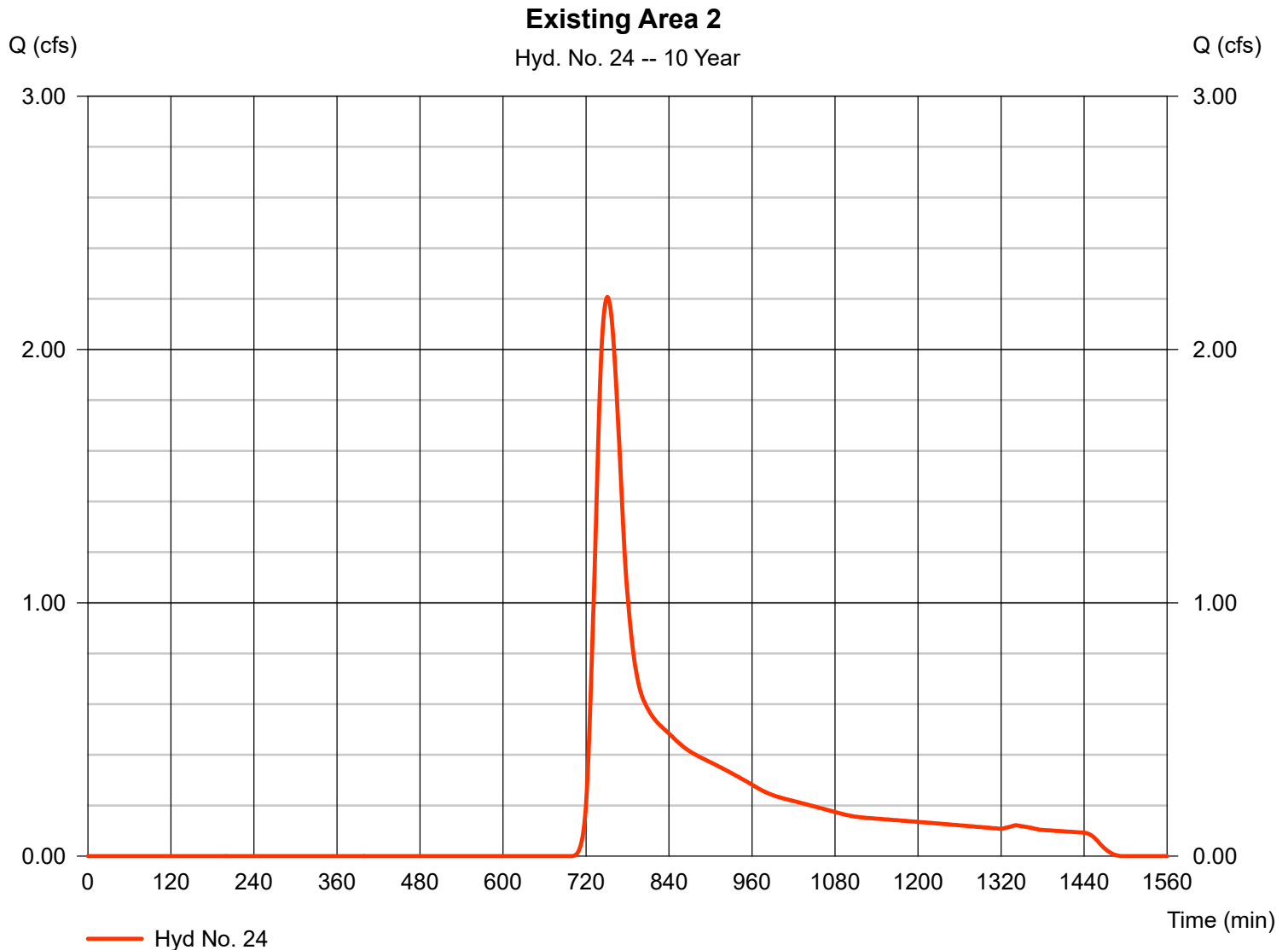
Monday, Oct 3, 2022

Hyd. No. 24

Existing Area 2

Hydrograph type = SCS Runoff
 Storm frequency = 10 yrs
 Time interval = 1 min
 Drainage area = 3.920 ac
 Basin Slope = 0.0 %
 Tc method = USER
 Total precip. = 5.14 in
 Storm duration = 24 hrs

Peak discharge = 2.207 cfs
 Time to peak = 751 min
 Hyd. volume = 14,948 cuft
 Curve number = 55
 Hydraulic length = 0 ft
 Time of conc. (Tc) = 35.00 min
 Distribution = Type III
 Shape factor = 484



Hydrograph Report

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

Monday, Oct 3, 2022

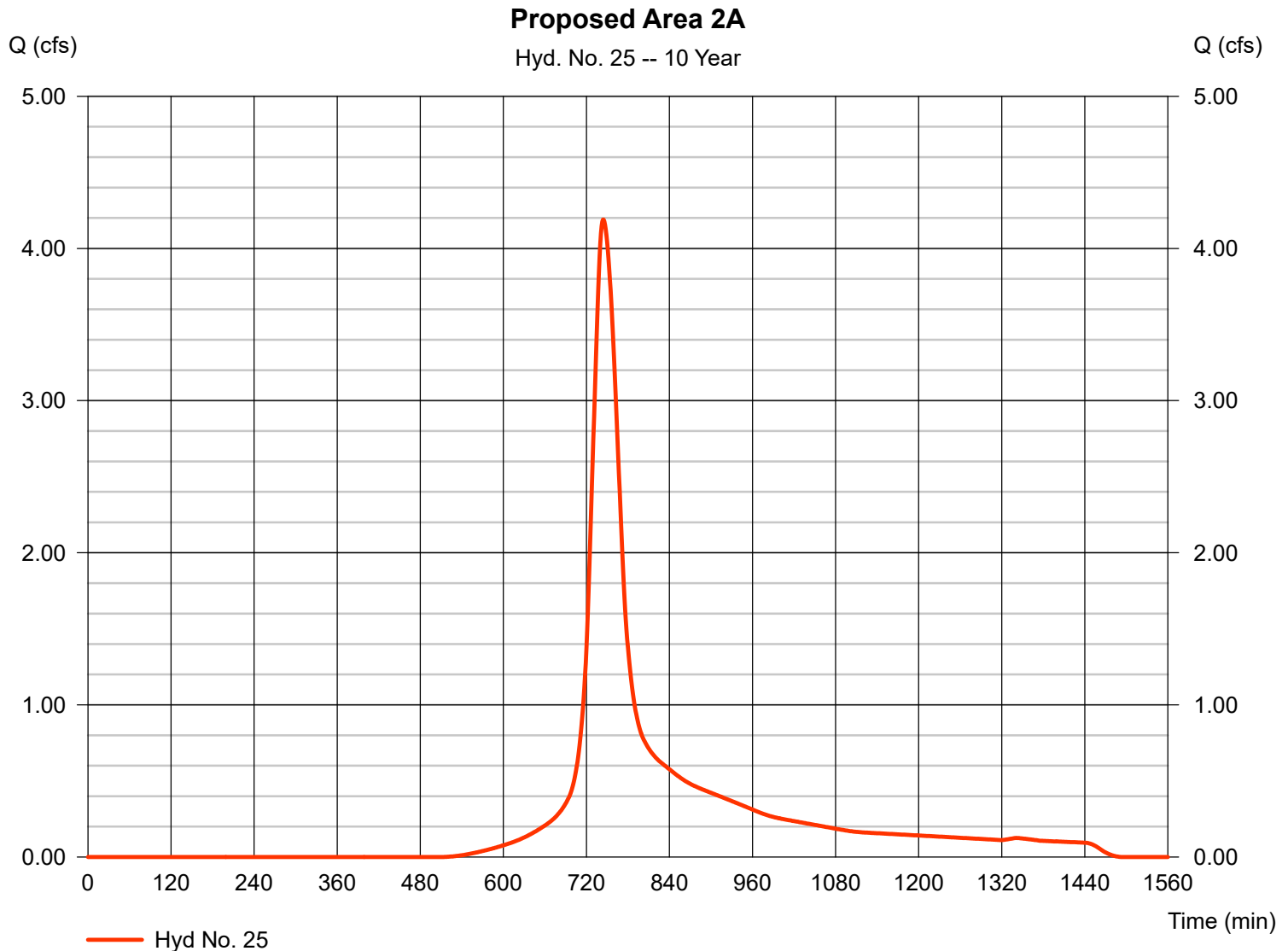
Hyd. No. 25

Proposed Area 2A

Hydrograph type = SCS Runoff
 Storm frequency = 10 yrs
 Time interval = 1 min
 Drainage area = 2.450 ac
 Basin Slope = 0.0 %
 Tc method = TR55
 Total precip. = 5.14 in
 Storm duration = 24 hrs

Peak discharge = 4.190 cfs
 Time to peak = 744 min
 Hyd. volume = 23,580 cuft
 Curve number = 76*
 Hydraulic length = 0 ft
 Time of conc. (Tc) = 34.80 min
 Distribution = Type III
 Shape factor = 484

* Composite (Area/CN) = $[(1.090 \times 98) + (0.870 \times 61) + (0.490 \times 55)] / 2.450$



Hydrograph Report

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

Monday, Oct 3, 2022

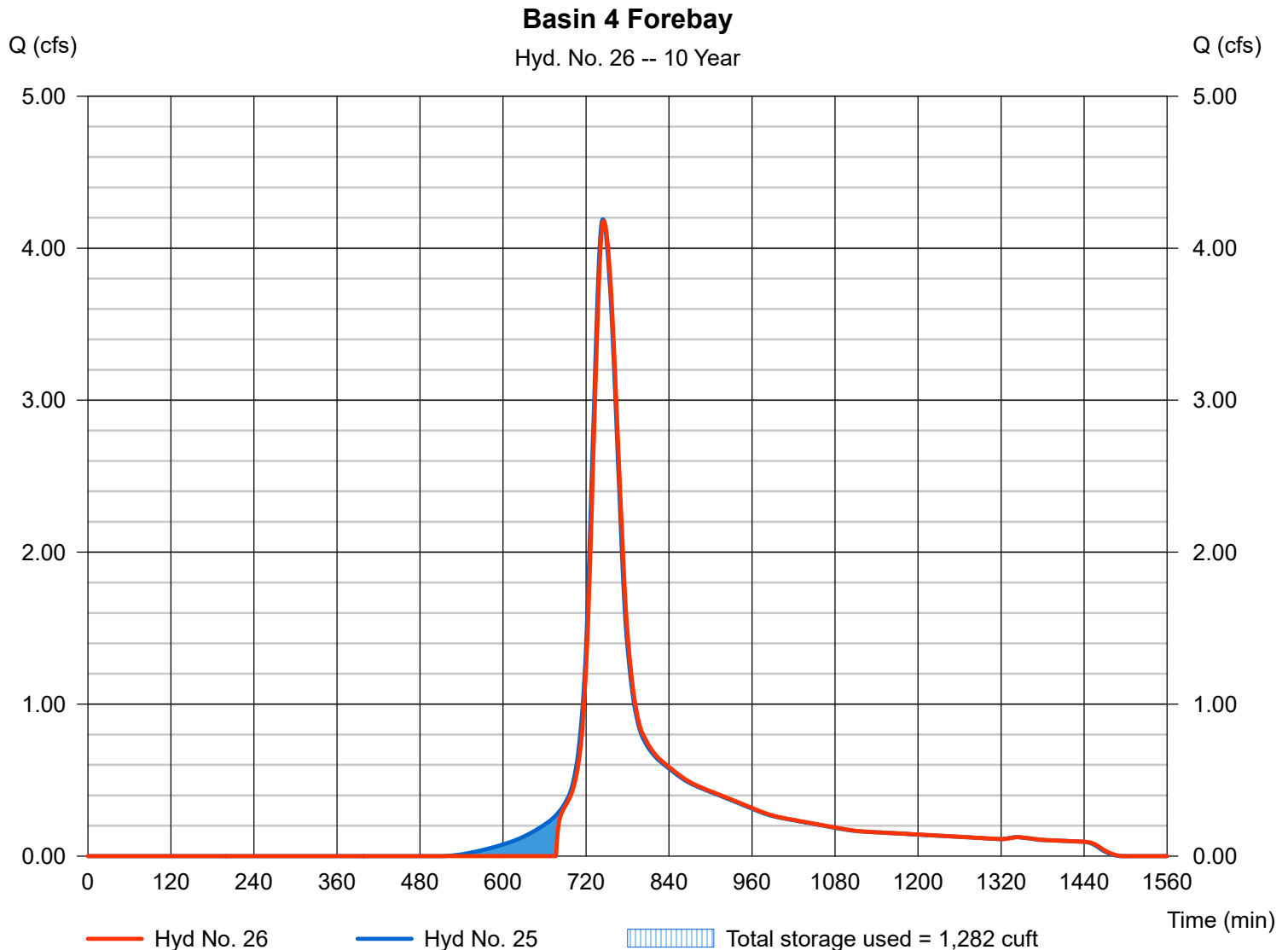
Hyd. No. 26

Basin 4 Forebay

Hydrograph type = Reservoir
 Storm frequency = 10 yrs
 Time interval = 1 min
 Inflow hyd. No. = 25 - Proposed Area 2A
 Reservoir name = Basin 4 Forebay

Peak discharge = 4.180 cfs
 Time to peak = 746 min
 Hyd. volume = 22,706 cuft
 Max. Elevation = 53.30 ft
 Max. Storage = 1,282 cuft

Storage Indication method used.



Hydrograph Report

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

Monday, Oct 3, 2022

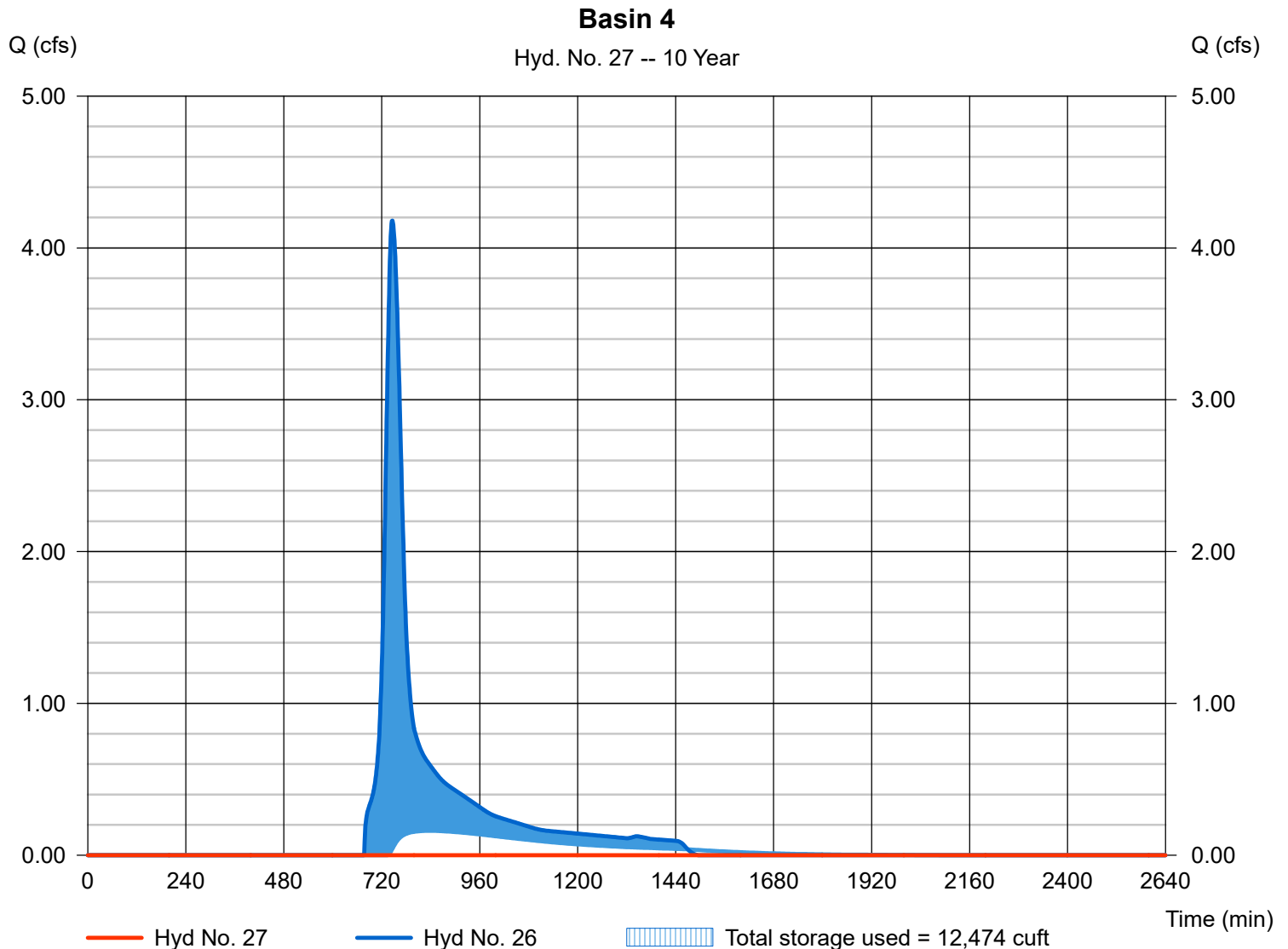
Hyd. No. 27

Basin 4

Hydrograph type = Reservoir
 Storm frequency = 10 yrs
 Time interval = 1 min
 Inflow hyd. No. = 26 - Basin 4 Forebay
 Reservoir name = Basin 4

Peak discharge = 0.000 cfs
 Time to peak = 725 min
 Hyd. volume = 0 cuft
 Max. Elevation = 55.56 ft
 Max. Storage = 12,474 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Hydrograph Report

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

Monday, Oct 3, 2022

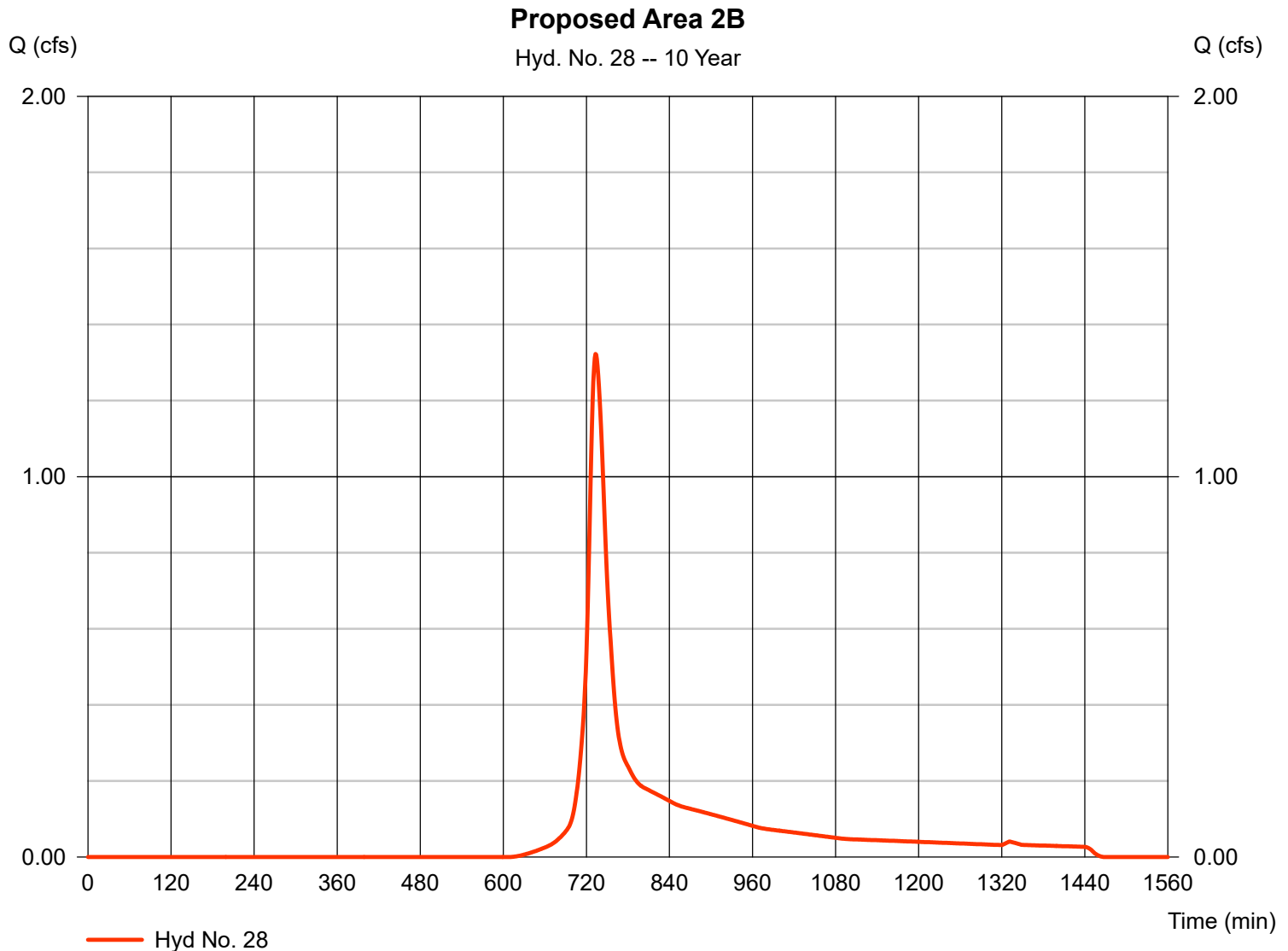
Hyd. No. 28

Proposed Area 2B

Hydrograph type = SCS Runoff
 Storm frequency = 10 yrs
 Time interval = 1 min
 Drainage area = 0.850 ac
 Basin Slope = 0.0 %
 Tc method = TR55
 Total precip. = 5.14 in
 Storm duration = 24 hrs

Peak discharge = 1.322 cfs
 Time to peak = 733 min
 Hyd. volume = 5,799 cuft
 Curve number = 67*
 Hydraulic length = 0 ft
 Time of conc. (Tc) = 17.10 min
 Distribution = Type III
 Shape factor = 484

* Composite (Area/CN) = $[(0.150 \times 98) + (0.640 \times 61) + (0.060 \times 55)] / 0.850$



Hydrograph Report

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

Monday, Oct 3, 2022

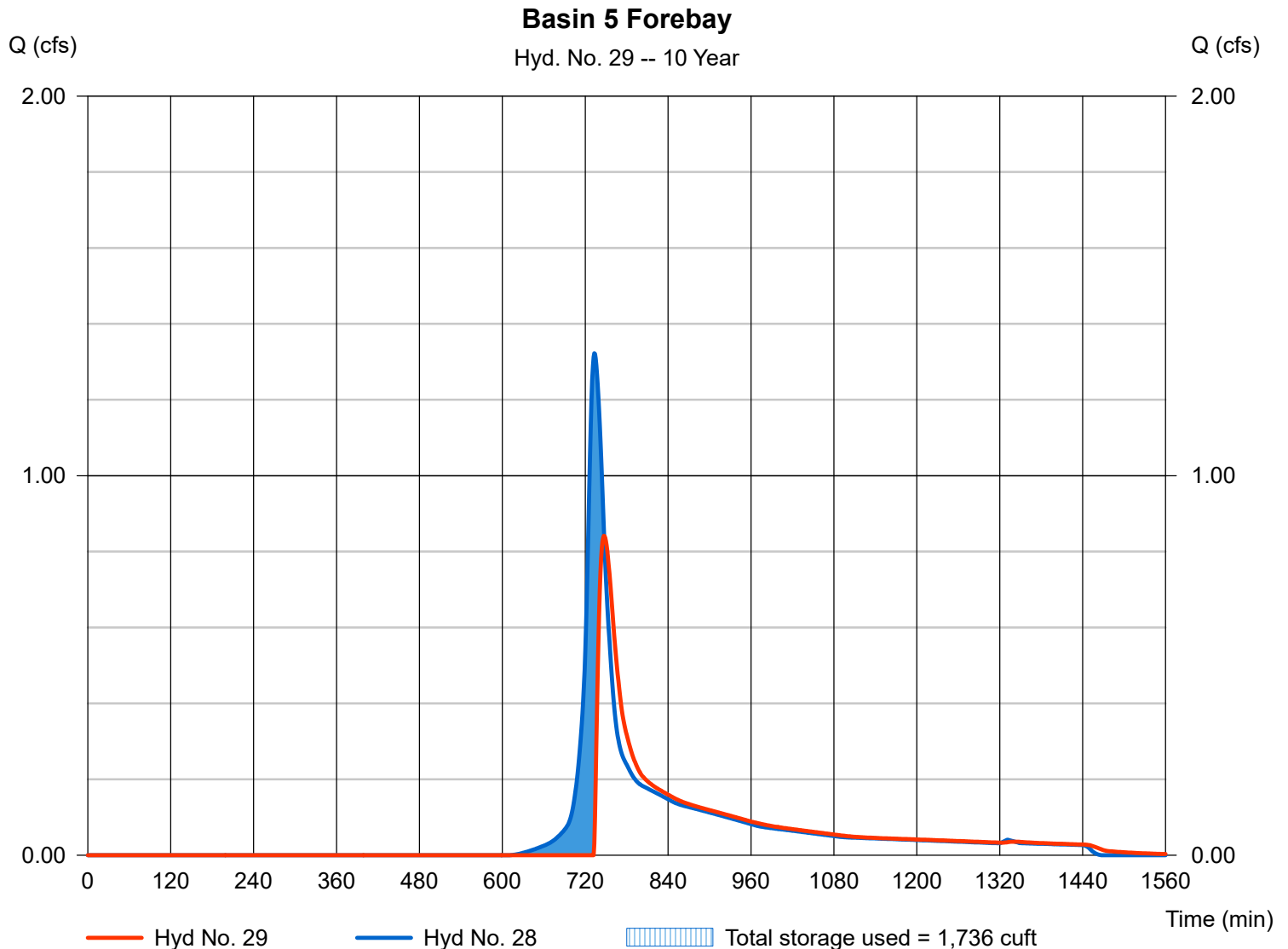
Hyd. No. 29

Basin 5 Forebay

Hydrograph type = Reservoir
 Storm frequency = 10 yrs
 Time interval = 1 min
 Inflow hyd. No. = 28 - Proposed Area 2B
 Reservoir name = Basin 5 Forebay

Peak discharge = 0.841 cfs
 Time to peak = 747 min
 Hyd. volume = 4,628 cuft
 Max. Elevation = 66.77 ft
 Max. Storage = 1,736 cuft

Storage Indication method used.



Hydrograph Report

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

Monday, Oct 3, 2022

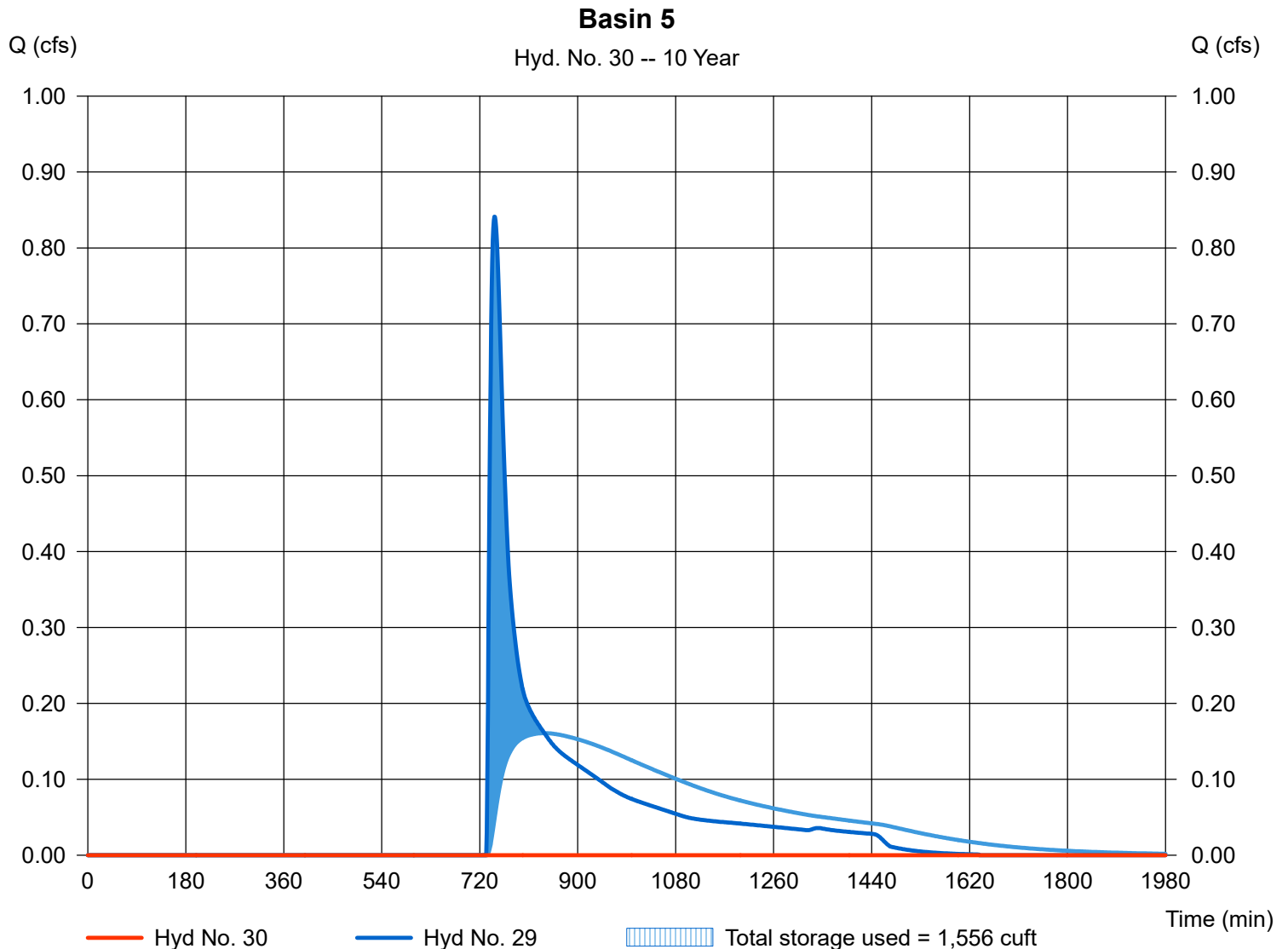
Hyd. No. 30

Basin 5

Hydrograph type = Reservoir
 Storm frequency = 10 yrs
 Time interval = 1 min
 Inflow hyd. No. = 29 - Basin 5 Forebay
 Reservoir name = Basin 5

Peak discharge = 0.000 cfs
 Time to peak = 802 min
 Hyd. volume = 0 cuft
 Max. Elevation = 64.68 ft
 Max. Storage = 1,556 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Hydrograph Report

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

Monday, Oct 3, 2022

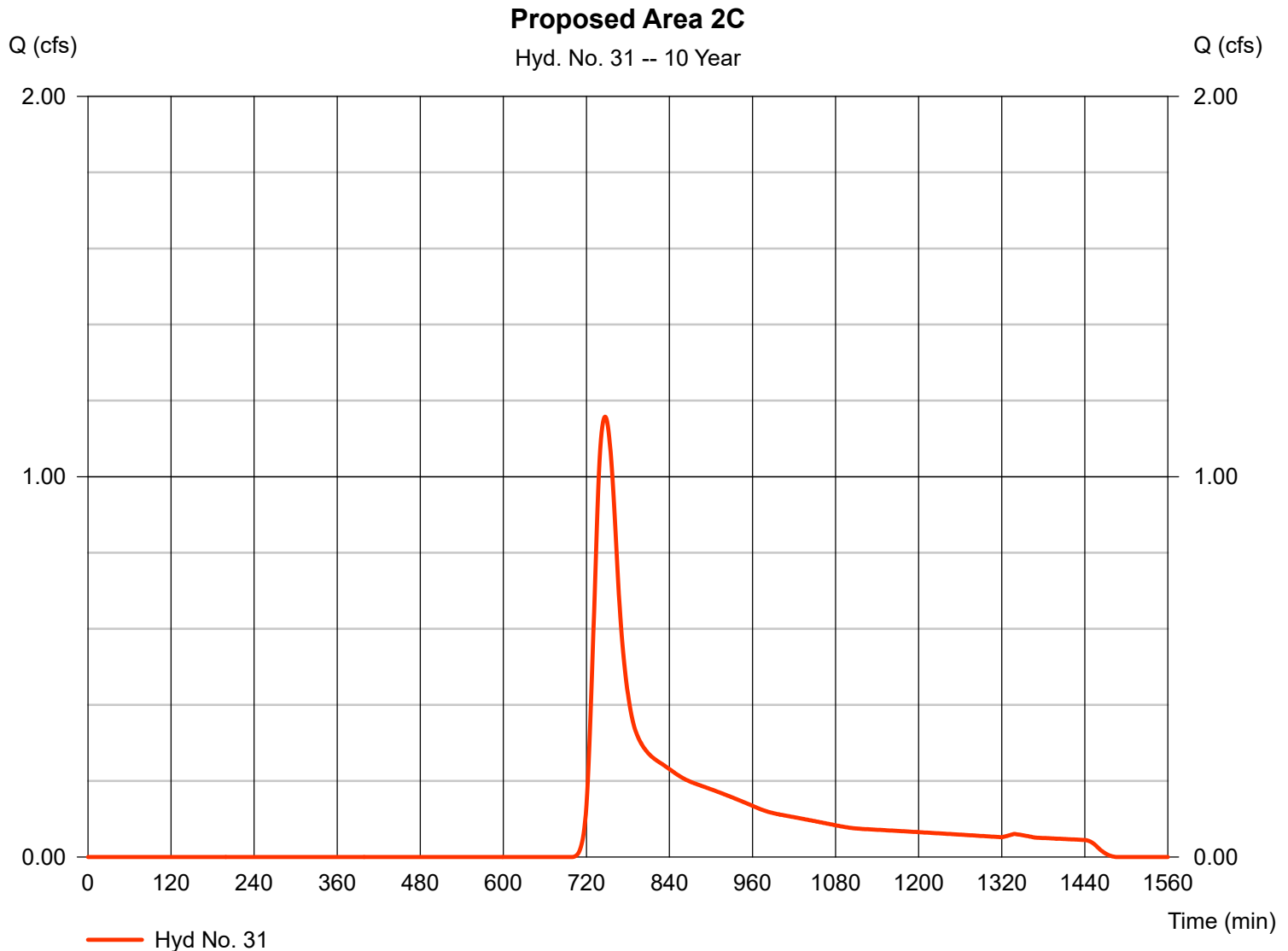
Hyd. No. 31

Proposed Area 2C

Hydrograph type = SCS Runoff
 Storm frequency = 10 yrs
 Time interval = 1 min
 Drainage area = 1.910 ac
 Basin Slope = 0.0 %
 Tc method = USER
 Total precip. = 5.14 in
 Storm duration = 24 hrs

Peak discharge = 1.158 cfs
 Time to peak = 747 min
 Hyd. volume = 7,283 cuft
 Curve number = 55*
 Hydraulic length = 0 ft
 Time of conc. (Tc) = 29.00 min
 Distribution = Type III
 Shape factor = 484

* Composite (Area/CN) = $[(1.850 \times 55) + (0.060 \times 61)] / 1.910$



Hydrograph Report

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

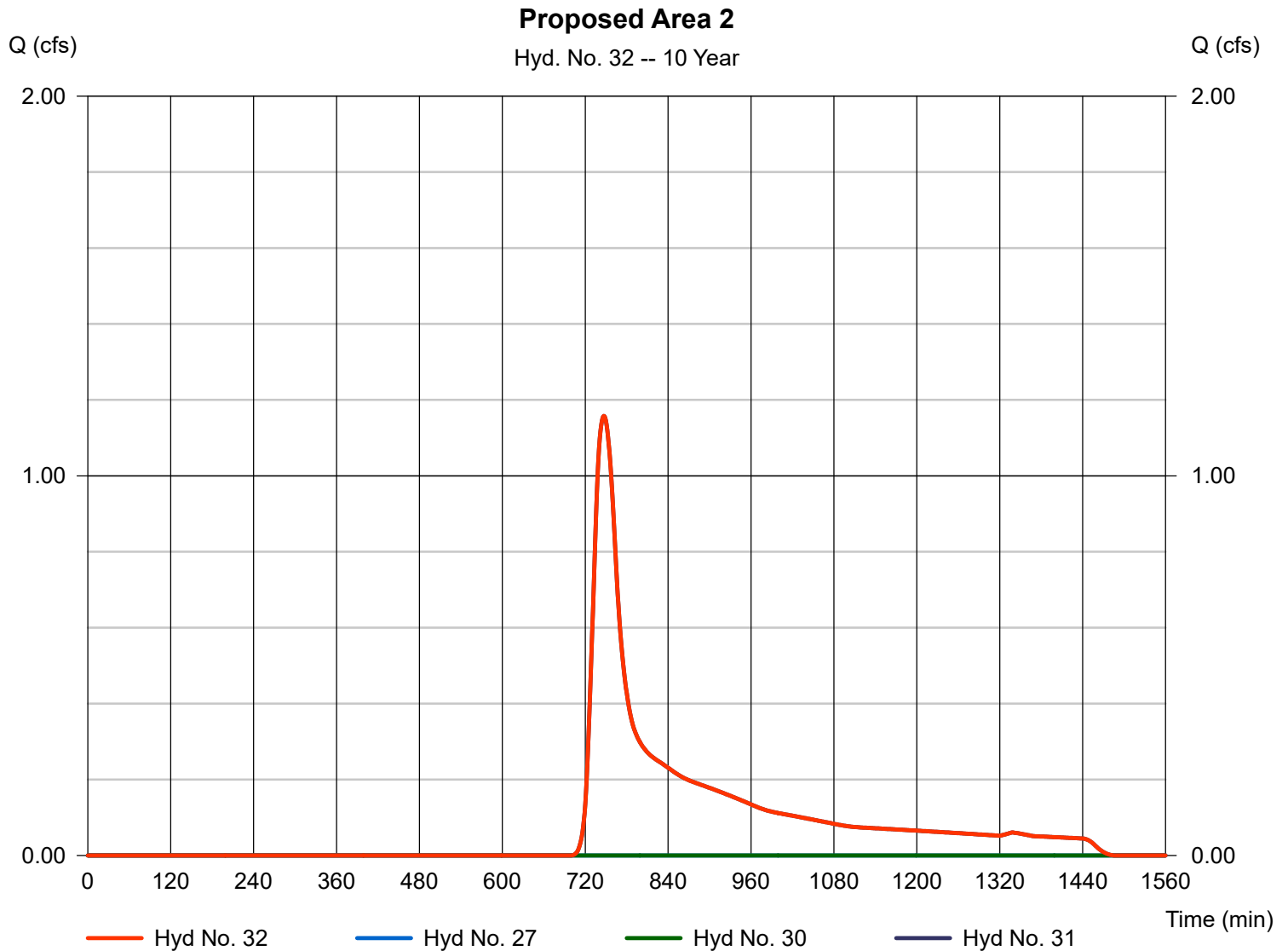
Monday, Oct 3, 2022

Hyd. No. 32

Proposed Area 2

Hydrograph type = Combine
 Storm frequency = 10 yrs
 Time interval = 1 min
 Inflow hyds. = 27, 30, 31

Peak discharge = 1.158 cfs
 Time to peak = 747 min
 Hyd. volume = 7,283 cuft
 Contrib. drain. area = 1.910 ac



Hydrograph Report

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

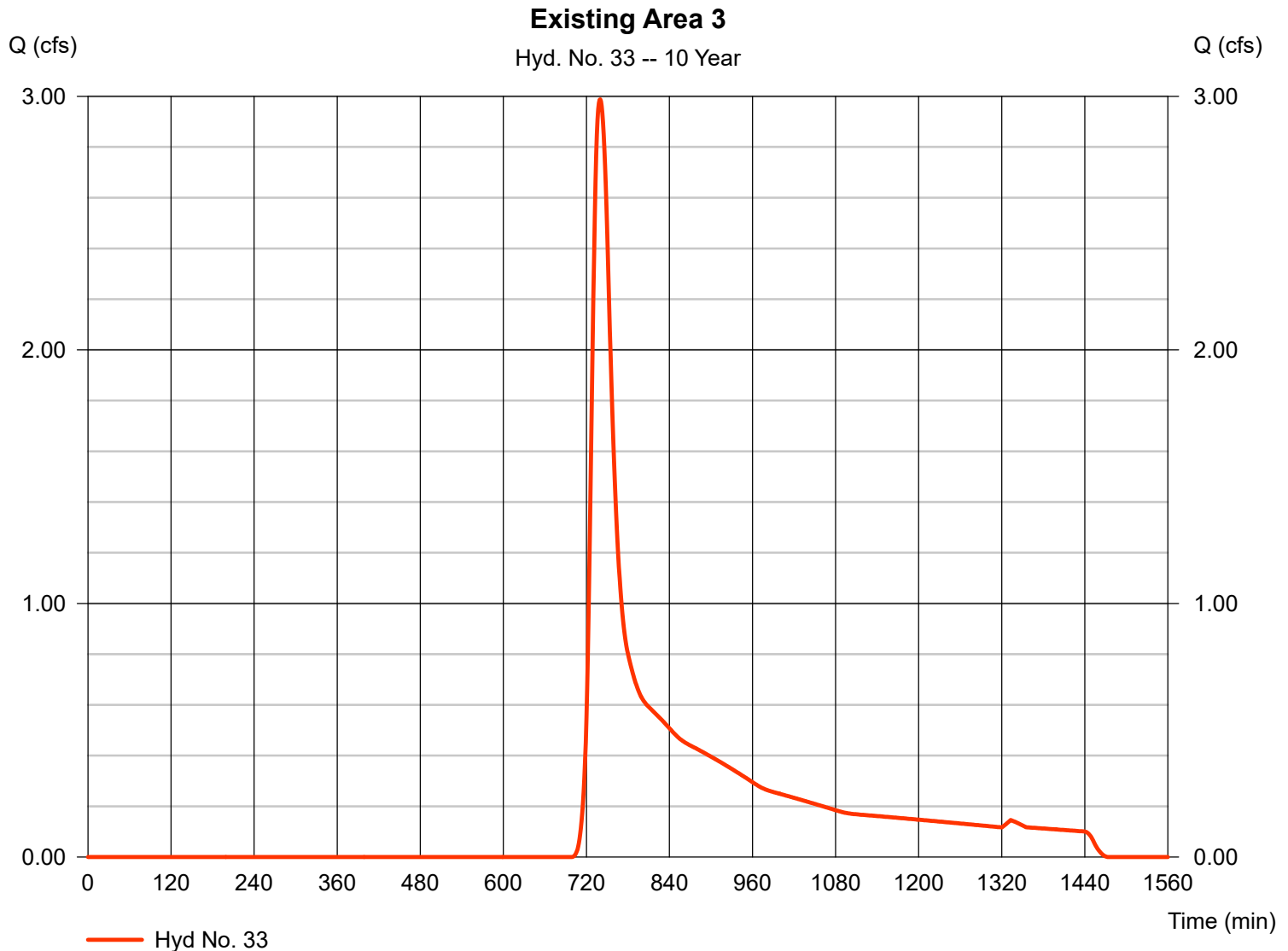
Monday, Oct 3, 2022

Hyd. No. 33

Existing Area 3

Hydrograph type = SCS Runoff
 Storm frequency = 10 yrs
 Time interval = 1 min
 Drainage area = 4.300 ac
 Basin Slope = 0.0 %
 Tc method = USER
 Total precip. = 5.14 in
 Storm duration = 24 hrs

Peak discharge = 2.988 cfs
 Time to peak = 740 min
 Hyd. volume = 16,555 cuft
 Curve number = 55
 Hydraulic length = 0 ft
 Time of conc. (Tc) = 21.00 min
 Distribution = Type III
 Shape factor = 484



Hydrograph Report

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

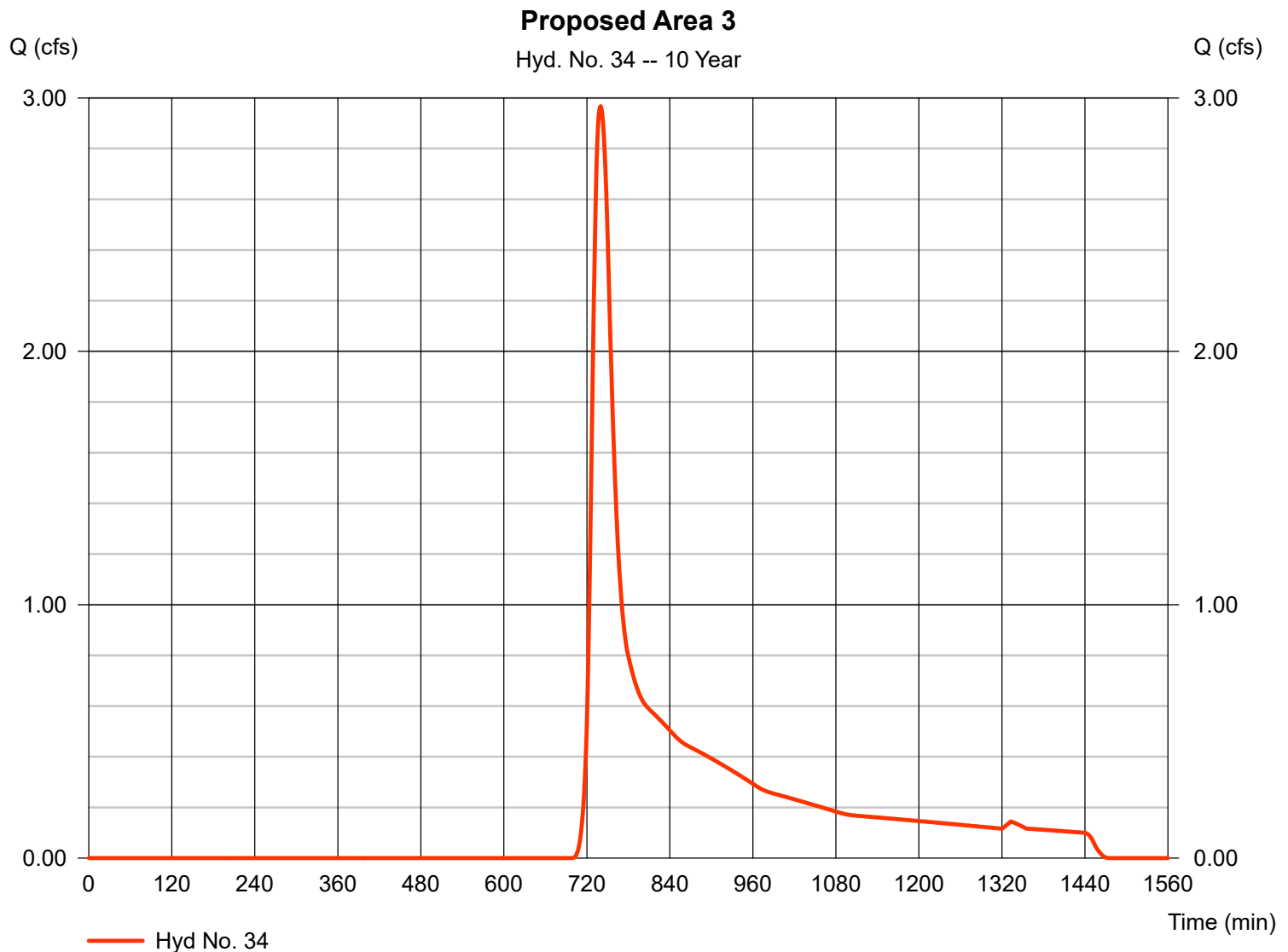
Monday, Oct 3, 2022

Hyd. No. 34

Proposed Area 3

Hydrograph type = SCS Runoff
 Storm frequency = 10 yrs
 Time interval = 1 min
 Drainage area = 4.270 ac
 Basin Slope = 0.0 %
 Tc method = USER
 Total precip. = 5.14 in
 Storm duration = 24 hrs

Peak discharge = 2.967 cfs
 Time to peak = 740 min
 Hyd. volume = 16,439 cuft
 Curve number = 55
 Hydraulic length = 0 ft
 Time of conc. (Tc) = 21.00 min
 Distribution = Type III
 Shape factor = 484



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	11.84	1	755	82,407	-----	-----	-----	Existing Area 1
2	SCS Runoff	2.295	1	717	5,579	-----	-----	-----	Building 1
3	Reservoir(i)	0.000	1	n/a	0	2	34.35	2,980	Leaching Gallery 1
4	SCS Runoff	2.197	1	739	10,974	-----	-----	-----	Proposed Area 1A
5	Combine	2.197	1	739	10,974	3, 4	-----	-----	Roof overflow and Area 1A
6	Reservoir	0.071	1	1154	1,749	5	27.61	9,536	Basin 1 Forebay
7	Reservoir	0.000	1	n/a	0	6	23.84	1,749	Basin 1
8	SCS Runoff	4.064	1	772	36,823	-----	-----	-----	Proposed Area 1B
9	SCS Runoff	2.663	1	717	6,472	-----	-----	-----	Building 2
10	Reservoir(i)	0.402	1	737	677	9	35.75	2,685	Leaching Gallery 2
11	SCS Runoff	2.204	1	717	5,356	-----	-----	-----	Building 3
12	Reservoir(i)	0.281	1	740	320	11	40.79	2,262	Leaching Gallery 3
13	SCS Runoff	5.263	1	753	35,037	-----	-----	-----	Proposed Area 1C
14	Combine	5.727	1	752	36,034	10, 12, 13	-----	-----	BLDG 2&3 & Area 1C
15	Reservoir(i)	3.130	1	784	25,546	14	27.00	15,429	Basin 2 Forebay
16	Reservoir	0.792	1	894	15,431	15	26.41	12,049	Basin 2
17	SCS Runoff	1.653	1	717	4,017	-----	-----	-----	Building 4
18	Reservoir(i)	0.000	1	n/a	0	17	46.54	1,532	Leaching Gallery 4
19	SCS Runoff	5.929	1	735	27,273	-----	-----	-----	Proposed Area 1D
20	Combine	5.929	1	735	27,273	18, 19	-----	-----	BLDG 4 & AREA 1D
21	Reservoir(i)	1.084	1	776	11,442	20	36.62	16,421	Basin 3 Forebay
22	Reservoir	0.000	1	n/a	0	21	35.31	11,442	Basin 3
23	Combine	4.064	1	772	52,254	7, 8, 16, 22	-----	-----	Proposed Area 1
24	SCS Runoff	3.729	1	749	23,252	-----	-----	-----	Existing Area 2
25	SCS Runoff	5.630	1	744	31,601	-----	-----	-----	Proposed Area 2A
26	Reservoir	5.620	1	745	30,728	25	53.36	1,370	Basin 4 Forebay
27	Reservoir	0.327	1	837	1,504	26	56.55	17,014	Basin 4
28	SCS Runoff	1.903	1	733	8,181	-----	-----	-----	Proposed Area 2B
29	Reservoir	1.439	1	743	7,009	28	67.07	2,066	Basin 5 Forebay
30	Reservoir	0.000	1	755	0	29	65.14	2,679	Basin 5
31	SCS Runoff	1.953	1	745	11,329	-----	-----	-----	Proposed Area 2C
32	Combine	1.953	1	745	12,833	27, 30, 31	-----	-----	Proposed Area 2
33	SCS Runoff	5.060	1	737	25,751	-----	-----	-----	Existing Area 3
34	SCS Runoff	5.025	1	737	25,572	-----	-----	-----	Proposed Area 3
GSD 60 Drainage V13.gpw					Return Period: 25 Year			Monday, Oct 3, 2022	

Hydrograph Report

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

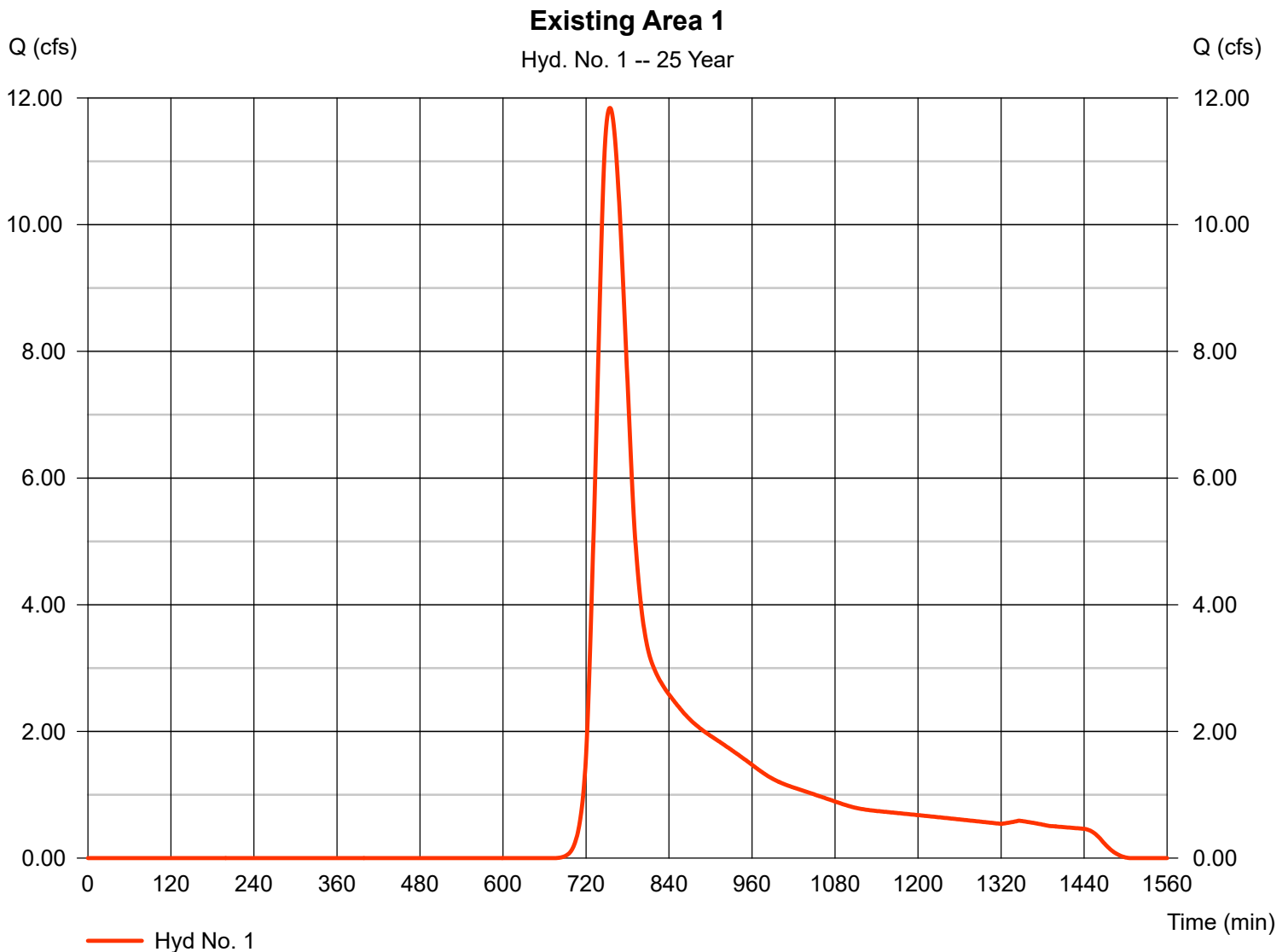
Monday, Oct 3, 2022

Hyd. No. 1

Existing Area 1

Hydrograph type = SCS Runoff
 Storm frequency = 25 yrs
 Time interval = 1 min
 Drainage area = 13.960 ac
 Basin Slope = 0.0 %
 Tc method = TR55
 Total precip. = 6.20 in
 Storm duration = 24 hrs

Peak discharge = 11.84 cfs
 Time to peak = 755 min
 Hyd. volume = 82,407 cuft
 Curve number = 55
 Hydraulic length = 0 ft
 Time of conc. (Tc) = 43.30 min
 Distribution = Type III
 Shape factor = 484



Hydrograph Report

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

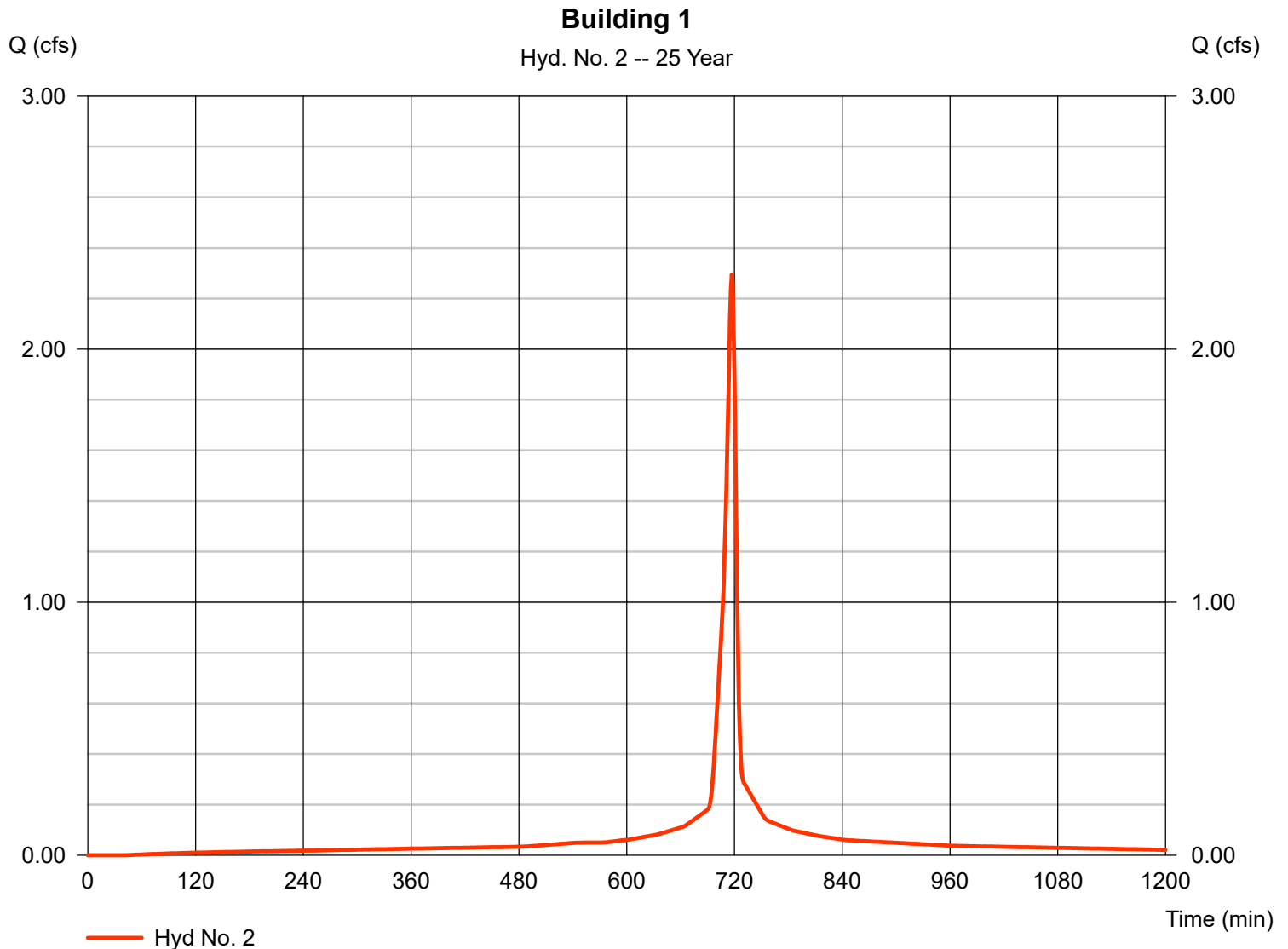
Monday, Oct 3, 2022

Hyd. No. 2

Building 1

Hydrograph type = SCS Runoff
 Storm frequency = 25 yrs
 Time interval = 1 min
 Drainage area = 0.250 ac
 Basin Slope = 0.0 %
 Tc method = USER
 Total precip. = 6.20 in
 Storm duration = 24 hrs

Peak discharge = 2.295 cfs
 Time to peak = 717 min
 Hyd. volume = 5,579 cuft
 Curve number = 98
 Hydraulic length = 0 ft
 Time of conc. (Tc) = 5.00 min
 Distribution = Type II
 Shape factor = 484



Hydrograph Report

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

Monday, Oct 3, 2022

Hyd. No. 3

Leaching Gallery 1

Hydrograph type = Reservoir (Interconnected)
 Storm frequency = 25 yrs
 Time interval = 1 min

Upper Pond

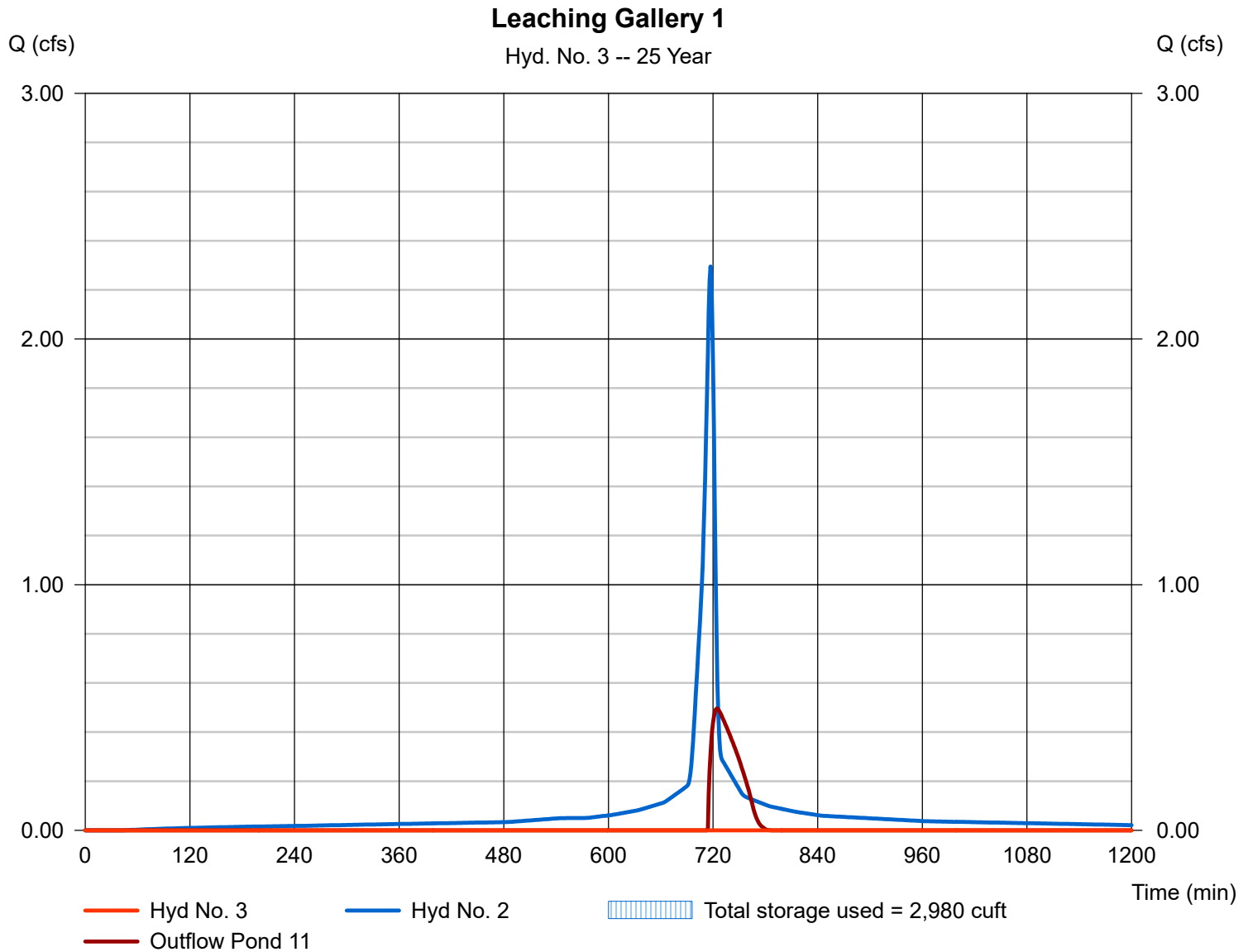
Pond name = Leaching Gallery 1
 Inflow hyd. = 2 - Building 1
 Max. Elevation = 34.35 ft
 Max. Storage = 1,917 cuft

Peak discharge = 0.000 cfs
 Time to peak = n/a
 Hyd. volume = 0 cuft

Lower Pond

Pond name = Basin 1 Forebay
 Other Inflow hyd. = None
 Max. Elevation = 23.23 ft
 Max. Storage = 1,062 cuft

Interconnected Pond Routing. Storage Indication method used.



Hydrograph Report

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

Monday, Oct 3, 2022

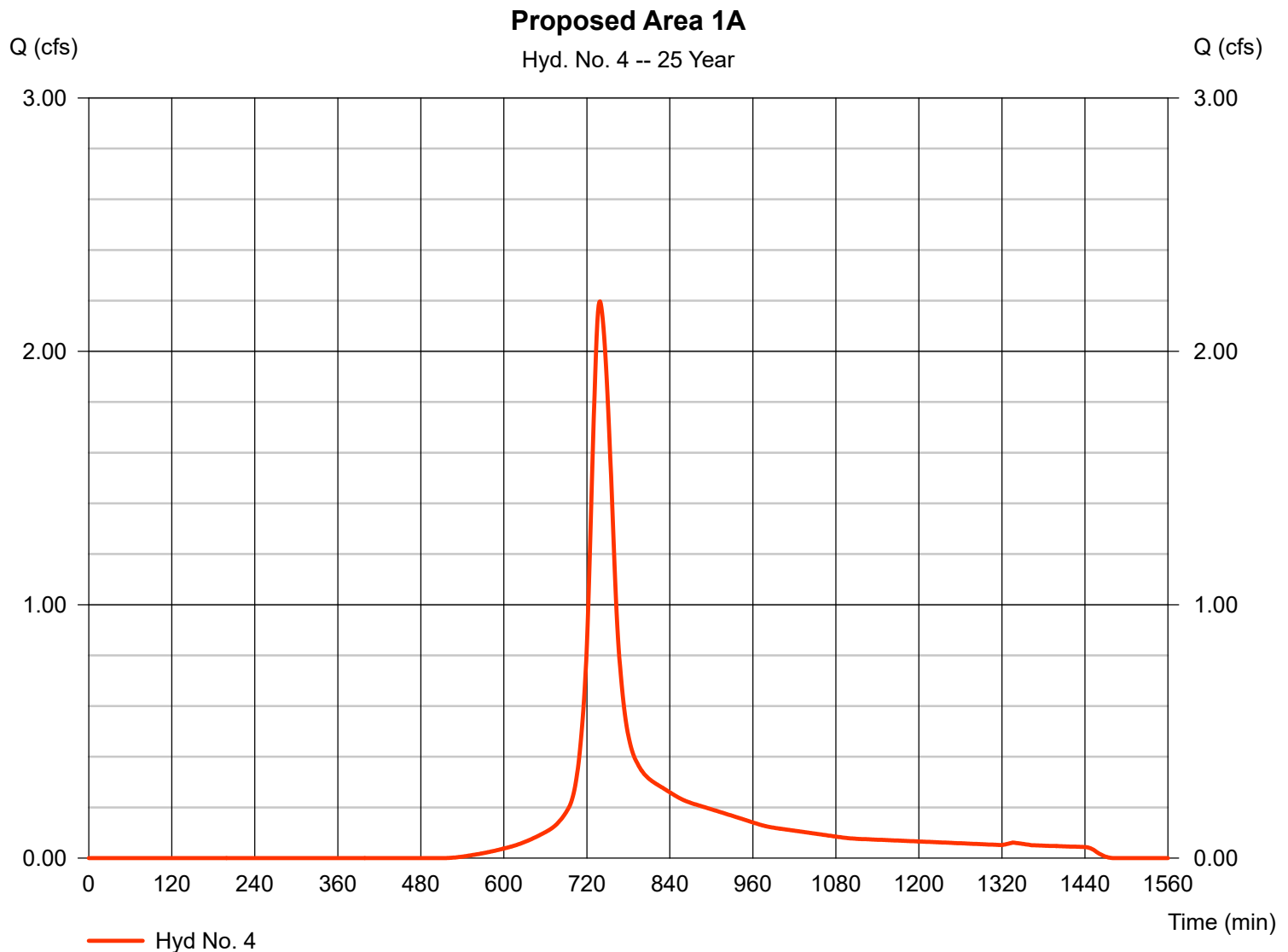
Hyd. No. 4

Proposed Area 1A

Hydrograph type = SCS Runoff
 Storm frequency = 25 yrs
 Time interval = 1 min
 Drainage area = 0.950 ac
 Basin Slope = 0.0 %
 Tc method = TR55
 Total precip. = 6.20 in
 Storm duration = 24 hrs

Peak discharge = 2.197 cfs
 Time to peak = 739 min
 Hyd. volume = 10,974 cuft
 Curve number = 72*
 Hydraulic length = 0 ft
 Time of conc. (Tc) = 26.10 min
 Distribution = Type III
 Shape factor = 484

* Composite (Area/CN) = $[(0.190 \times 55) + (0.450 \times 61) + (0.310 \times 98)] / 0.950$



Hydrograph Report

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

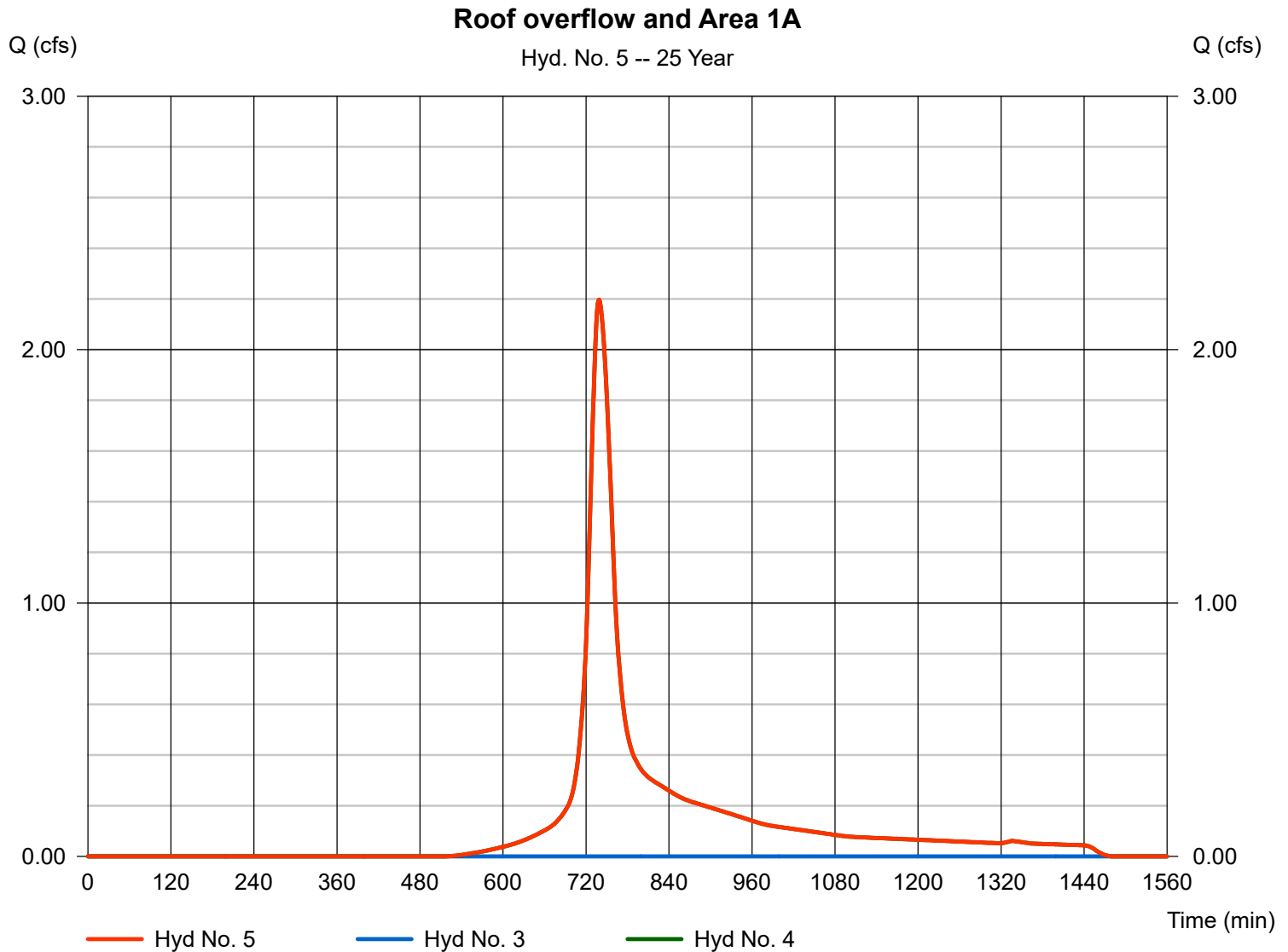
Monday, Oct 3, 2022

Hyd. No. 5

Roof overflow and Area 1A

Hydrograph type = Combine
 Storm frequency = 25 yrs
 Time interval = 1 min
 Inflow hyds. = 3, 4

Peak discharge = 2.197 cfs
 Time to peak = 739 min
 Hyd. volume = 10,974 cuft
 Contrib. drain. area = 0.950 ac



Hydrograph Report

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

Monday, Oct 3, 2022

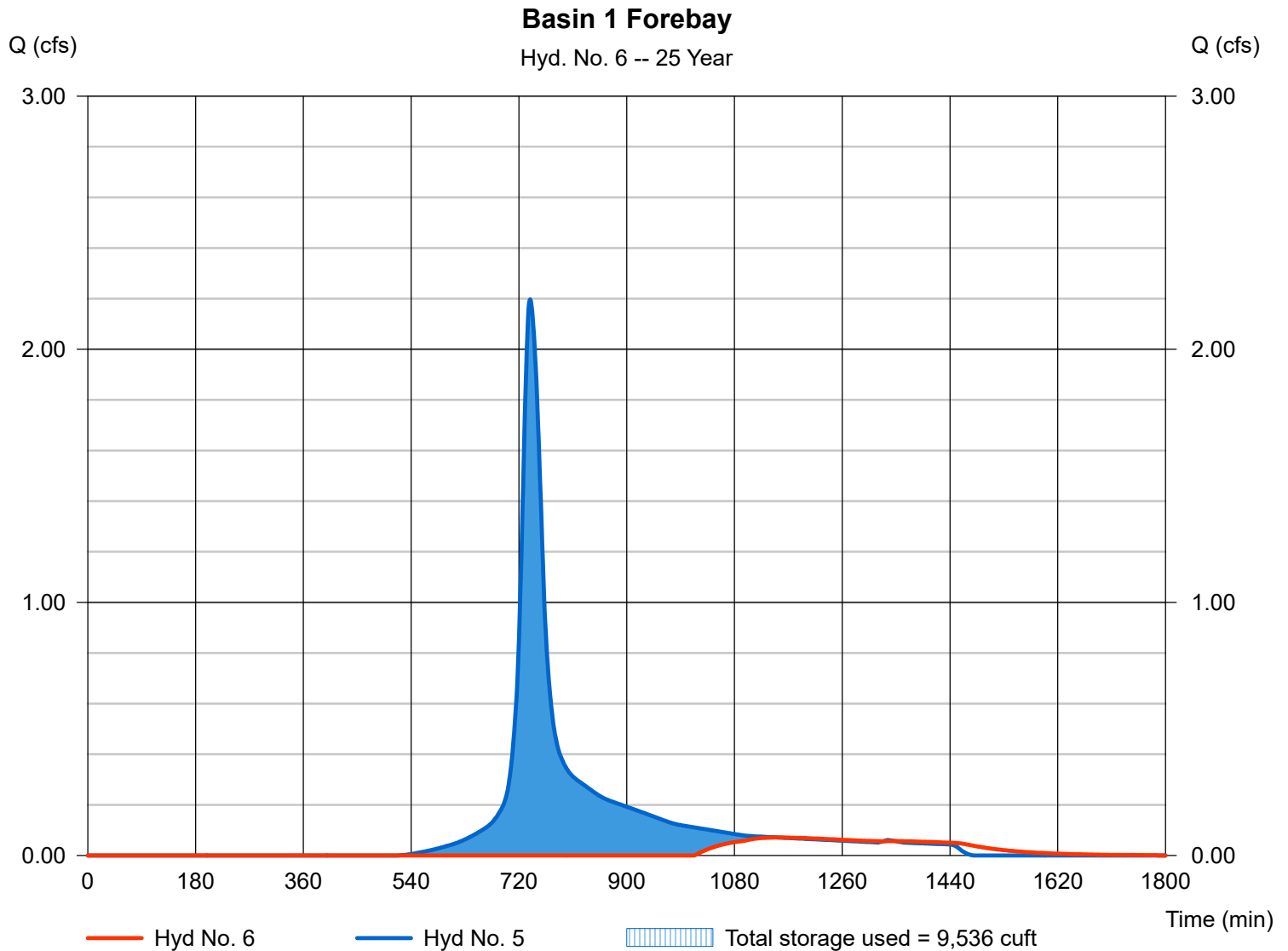
Hyd. No. 6

Basin 1 Forebay

Hydrograph type = Reservoir
 Storm frequency = 25 yrs
 Time interval = 1 min
 Inflow hyd. No. = 5 - Roof overflow and Area 1A
 Reservoir name = Basin 1 Forebay

Peak discharge = 0.071 cfs
 Time to peak = 1154 min
 Hyd. volume = 1,749 cuft
 Max. Elevation = 27.61 ft
 Max. Storage = 9,536 cuft

Storage Indication method used.



Hydrograph Report

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

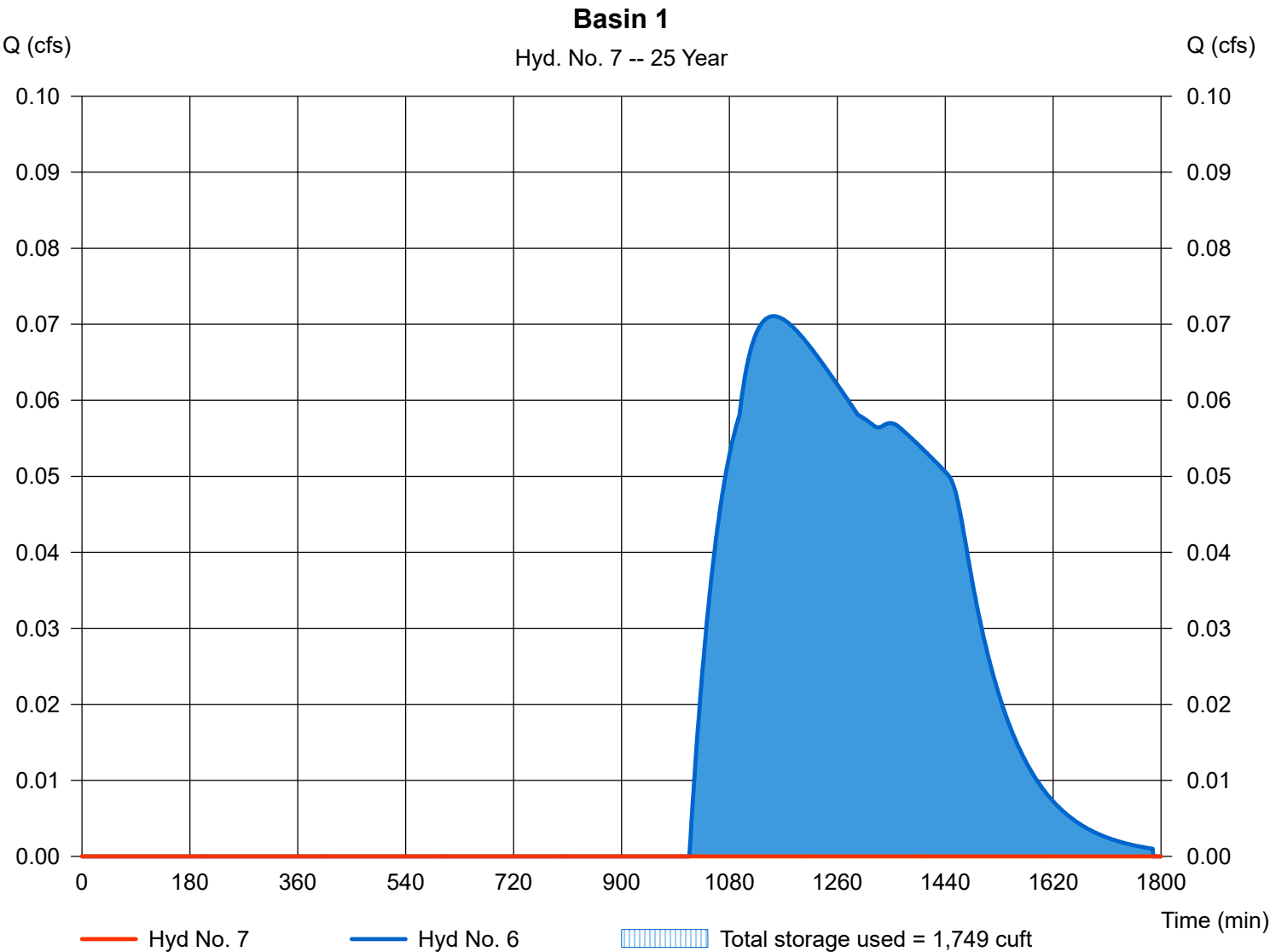
Monday, Oct 3, 2022

Hyd. No. 7

Basin 1

Hydrograph type	= Reservoir	Peak discharge	= 0.000 cfs
Storm frequency	= 25 yrs	Time to peak	= n/a
Time interval	= 1 min	Hyd. volume	= 0 cuft
Inflow hyd. No.	= 6 - Basin 1 Forebay	Max. Elevation	= 23.84 ft
Reservoir name	= Basin 1 Forebay	Max. Storage	= 1,749 cuft

Storage Indication method used.



Hydrograph Report

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

Monday, Oct 3, 2022

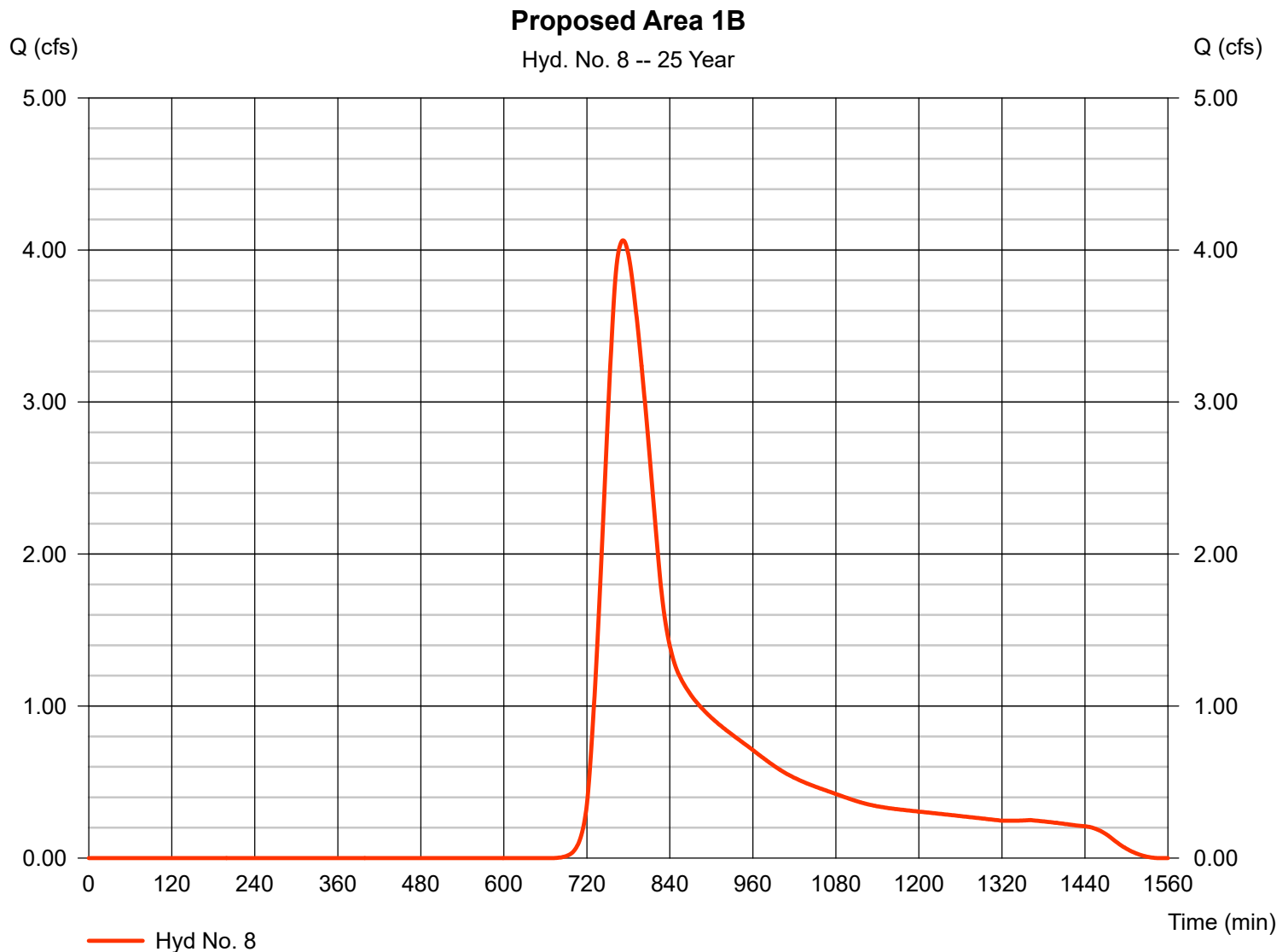
Hyd. No. 8

Proposed Area 1B

Hydrograph type = SCS Runoff
 Storm frequency = 25 yrs
 Time interval = 1 min
 Drainage area = 5.930 ac
 Basin Slope = 0.0 %
 Tc method = TR55
 Total precip. = 6.20 in
 Storm duration = 24 hrs

Peak discharge = 4.064 cfs
 Time to peak = 772 min
 Hyd. volume = 36,823 cuft
 Curve number = 56*
 Hydraulic length = 0 ft
 Time of conc. (Tc) = 69.10 min
 Distribution = Type III
 Shape factor = 484

* Composite (Area/CN) = $[(5.120 \times 55) + (0.810 \times 61)] / 5.930$

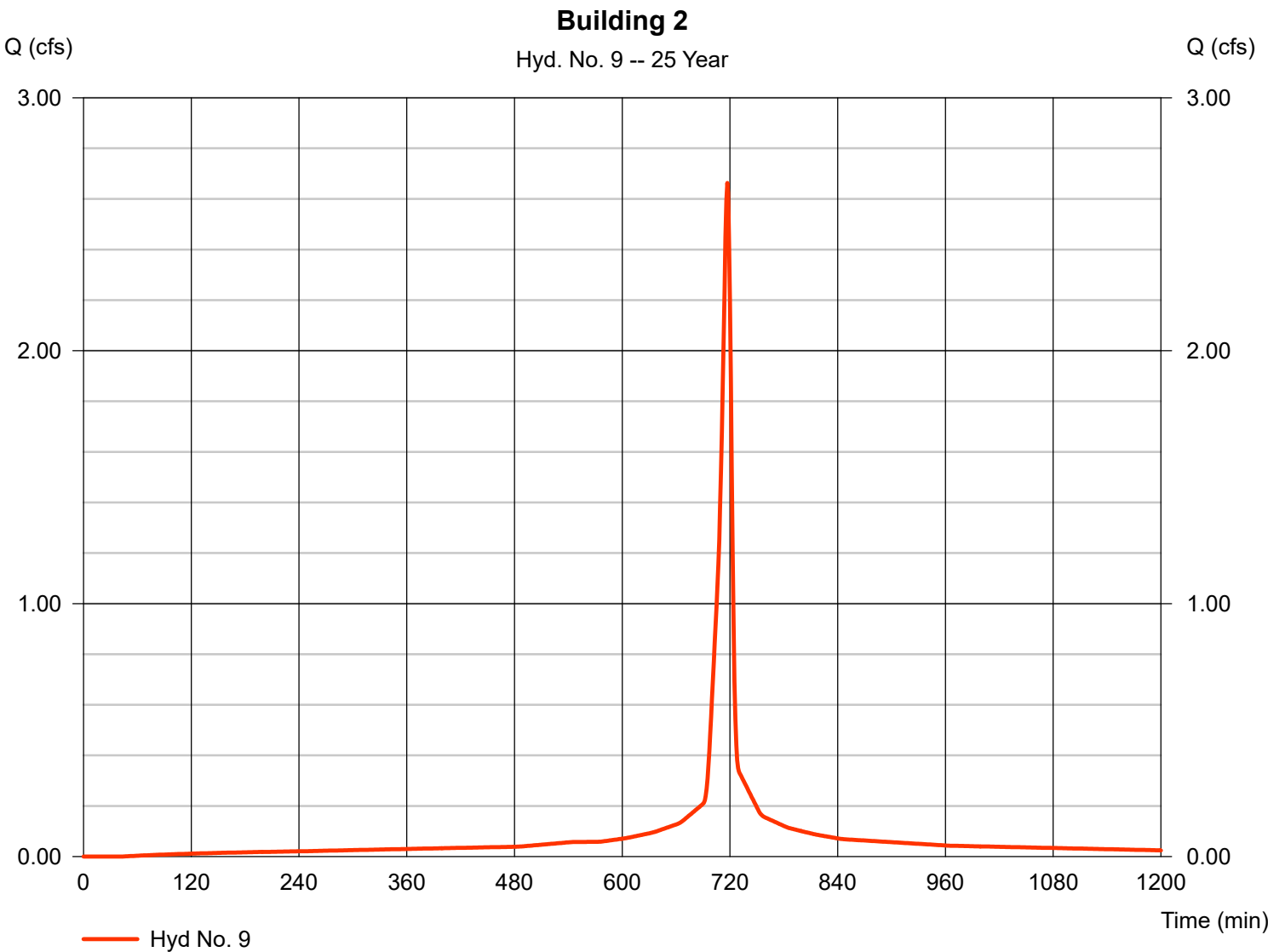


Hydrograph Report

Hyd. No. 9

Building 2

Hydrograph type	= SCS Runoff	Peak discharge	= 2.663 cfs
Storm frequency	= 25 yrs	Time to peak	= 717 min
Time interval	= 1 min	Hyd. volume	= 6,472 cuft
Drainage area	= 0.290 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 5.00 min
Total precip.	= 6.20 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

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

Monday, Oct 3, 2022

Hyd. No. 10

Leaching Gallery 2

Hydrograph type = Reservoir (Interconnected)
 Storm frequency = 25 yrs
 Time interval = 1 min

Upper Pond

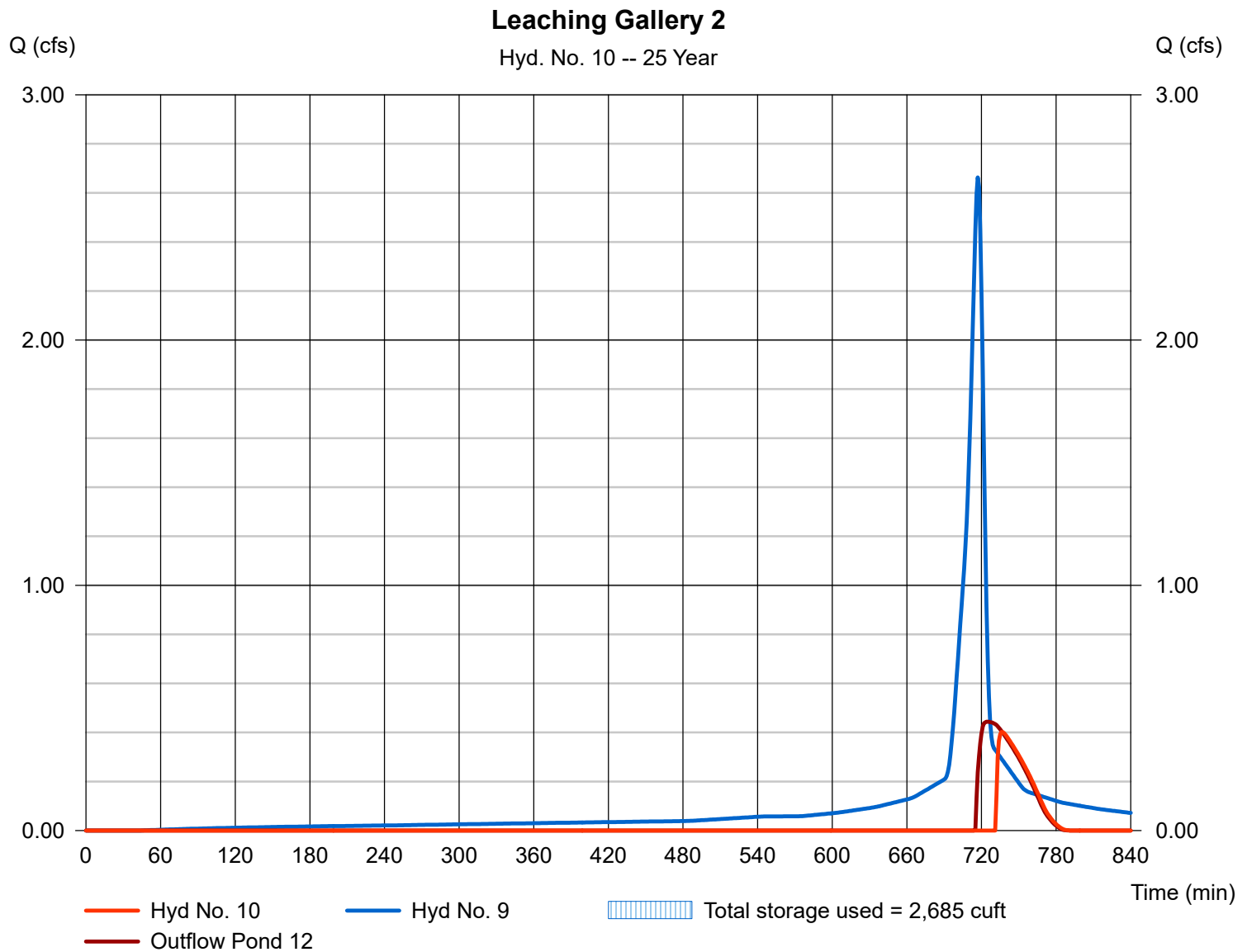
Pond name = Leaching Gallery 2
 Inflow hyd. = 9 - Building 2
 Max. Elevation = 35.75 ft
 Max. Storage = 2,281 cuft

Peak discharge = 0.402 cfs
 Time to peak = 737 min
 Hyd. volume = 677 cuft

Lower Pond

Pond name = Basin 2 Forebay
 Other Inflow hyd. = None
 Max. Elevation = 23.05 ft
 Max. Storage = 405 cuft

Interconnected Pond Routing. Storage Indication method used.



Hydrograph Report

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

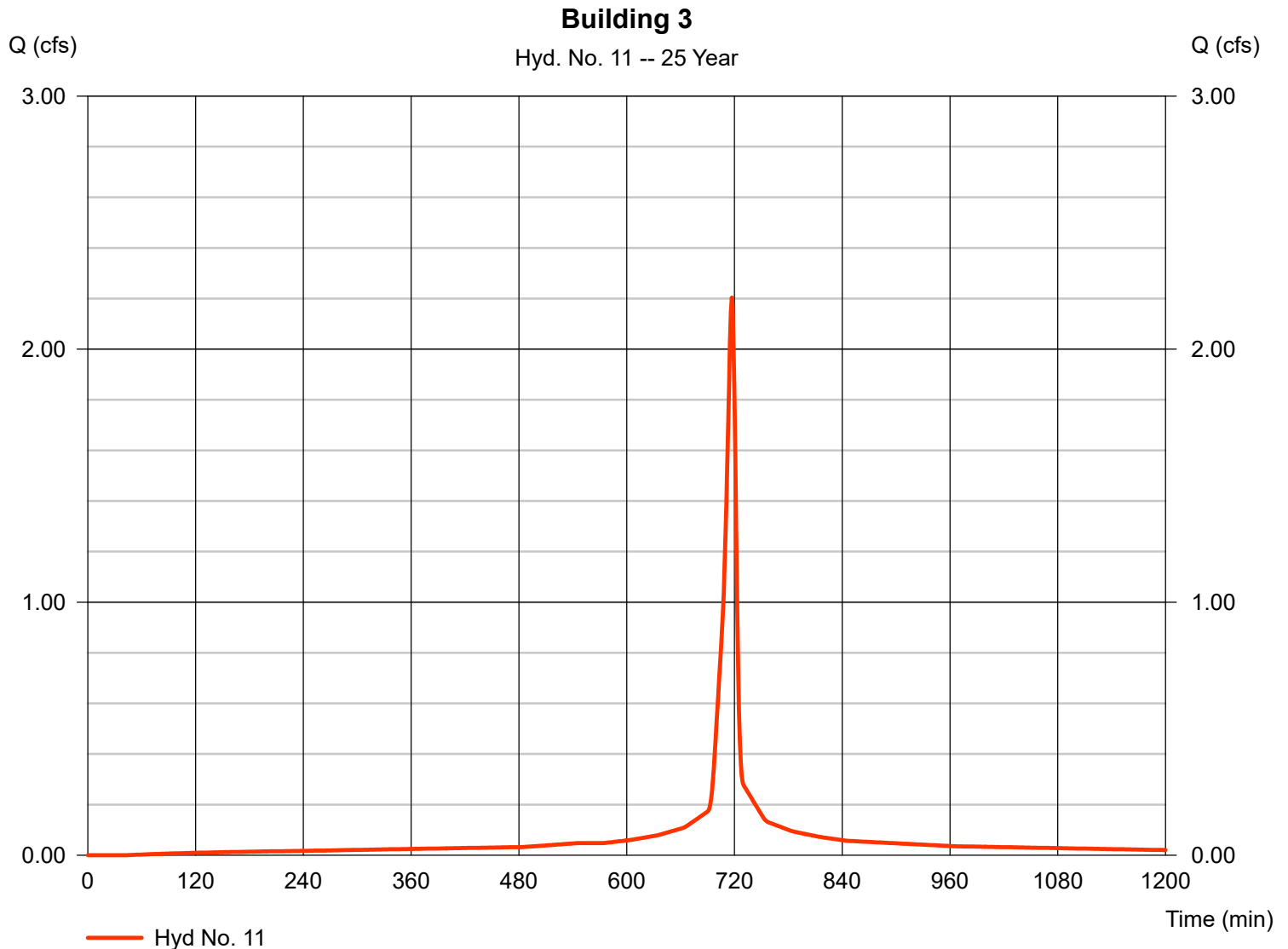
Monday, Oct 3, 2022

Hyd. No. 11

Building 3

Hydrograph type = SCS Runoff
 Storm frequency = 25 yrs
 Time interval = 1 min
 Drainage area = 0.240 ac
 Basin Slope = 0.0 %
 Tc method = USER
 Total precip. = 6.20 in
 Storm duration = 24 hrs

Peak discharge = 2.204 cfs
 Time to peak = 717 min
 Hyd. volume = 5,356 cuft
 Curve number = 98
 Hydraulic length = 0 ft
 Time of conc. (Tc) = 5.00 min
 Distribution = Type II
 Shape factor = 484



Hydrograph Report

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

Monday, Oct 3, 2022

Hyd. No. 12

Leaching Gallery 3

Hydrograph type = Reservoir (Interconnected)
 Storm frequency = 25 yrs
 Time interval = 1 min

Upper Pond

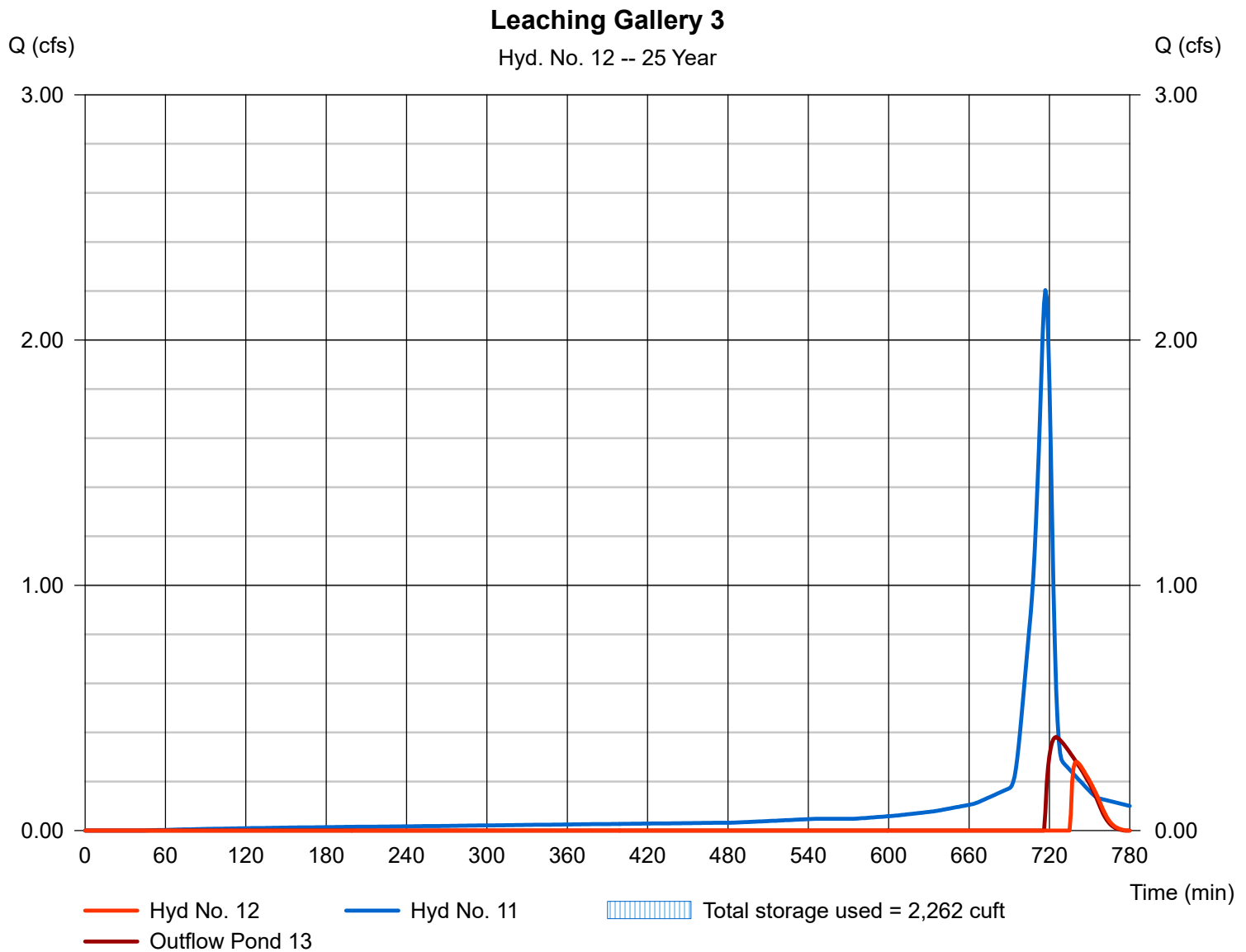
Pond name = Leaching Gallery 3
 Inflow hyd. = 11 - Building 3
 Max. Elevation = 40.79 ft
 Max. Storage = 1,867 cuft

Peak discharge = 0.281 cfs
 Time to peak = 740 min
 Hyd. volume = 320 cuft

Lower Pond

Pond name = Basin 2 Forebay
 Other Inflow hyd. = None
 Max. Elevation = 23.03 ft
 Max. Storage = 395 cuft

Interconnected Pond Routing. Storage Indication method used.



Hydrograph Report

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

Monday, Oct 3, 2022

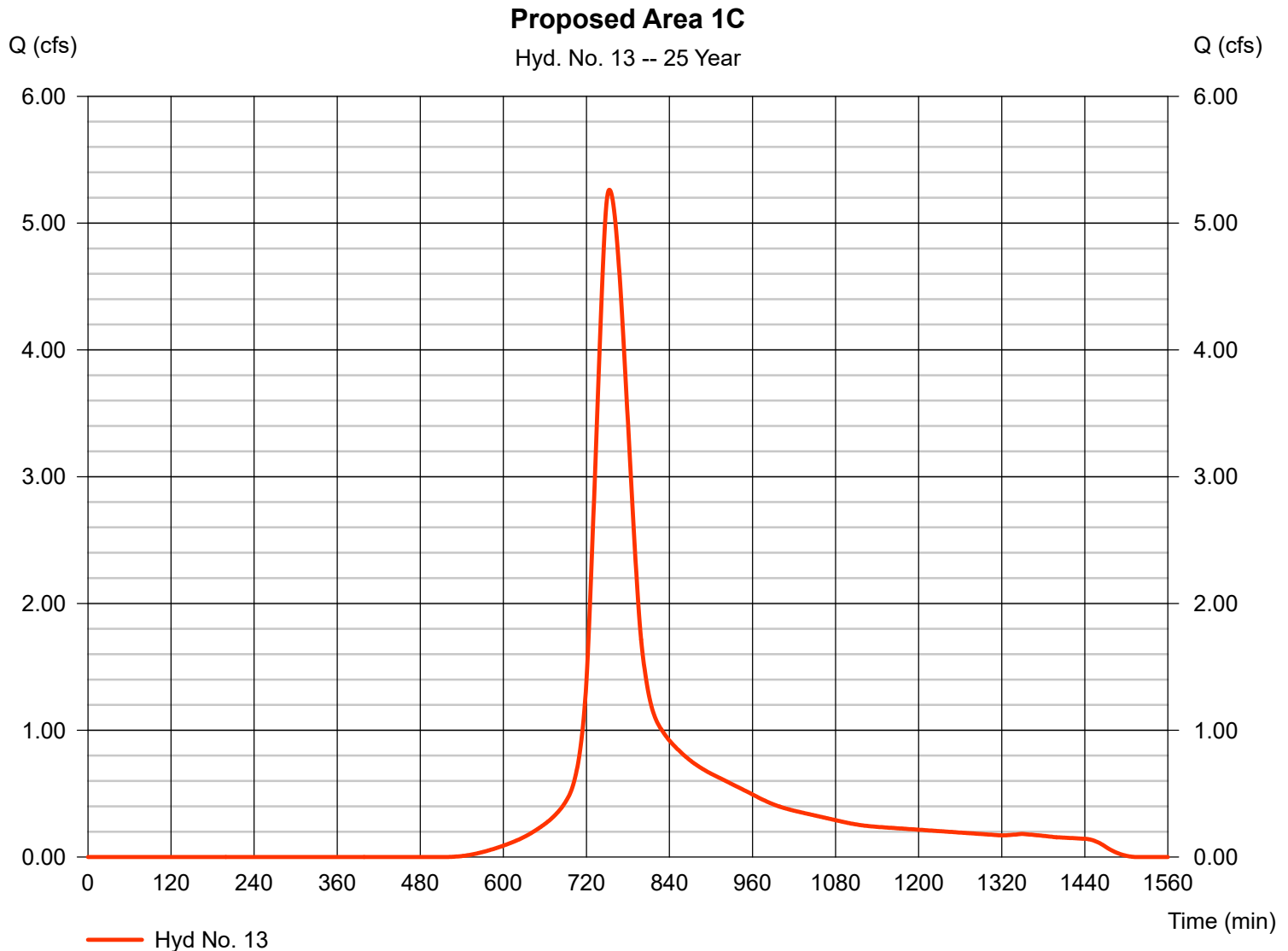
Hyd. No. 13

Proposed Area 1C

Hydrograph type = SCS Runoff
 Storm frequency = 25 yrs
 Time interval = 1 min
 Drainage area = 3.070 ac
 Basin Slope = 0.0 %
 Tc method = TR55
 Total precip. = 6.20 in
 Storm duration = 24 hrs

Peak discharge = 5.263 cfs
 Time to peak = 753 min
 Hyd. volume = 35,037 cuft
 Curve number = 72*
 Hydraulic length = 0 ft
 Time of conc. (Tc) = 48.50 min
 Distribution = Type III
 Shape factor = 484

* Composite (Area/CN) = $[(0.740 \times 55) + (1.060 \times 98) + (1.270 \times 61)] / 3.070$



Hydrograph Report

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

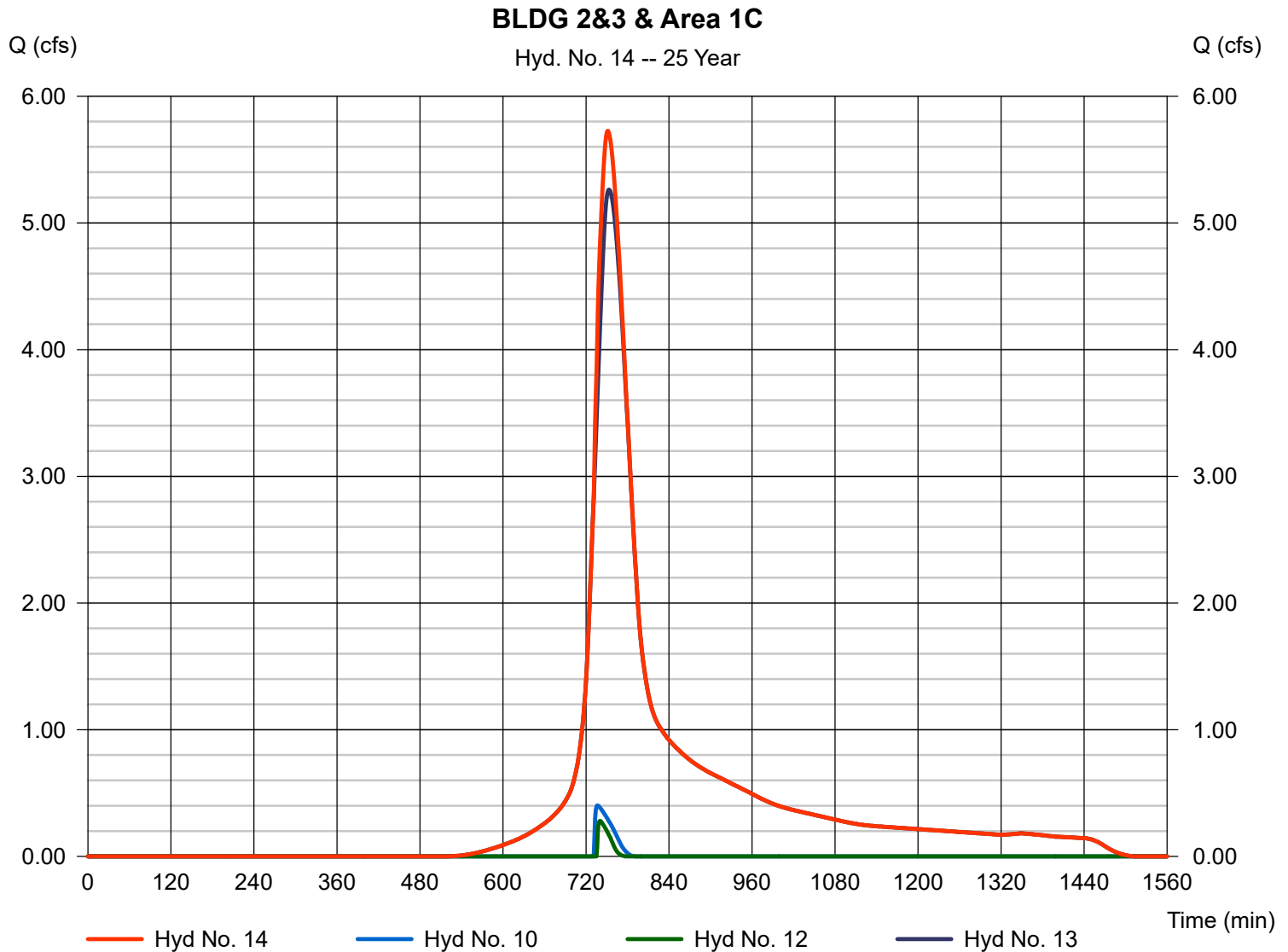
Monday, Oct 3, 2022

Hyd. No. 14

BLDG 2&3 & Area 1C

Hydrograph type = Combine
Storm frequency = 25 yrs
Time interval = 1 min
Inflow hyds. = 10, 12, 13

Peak discharge = 5.727 cfs
Time to peak = 752 min
Hyd. volume = 36,034 cuft
Contrib. drain. area = 3.070 ac



Hydrograph Report

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

Monday, Oct 3, 2022

Hyd. No. 15

Basin 2 Forebay

Hydrograph type = Reservoir (Interconnected)
 Storm frequency = 25 yrs
 Time interval = 1 min

Upper Pond

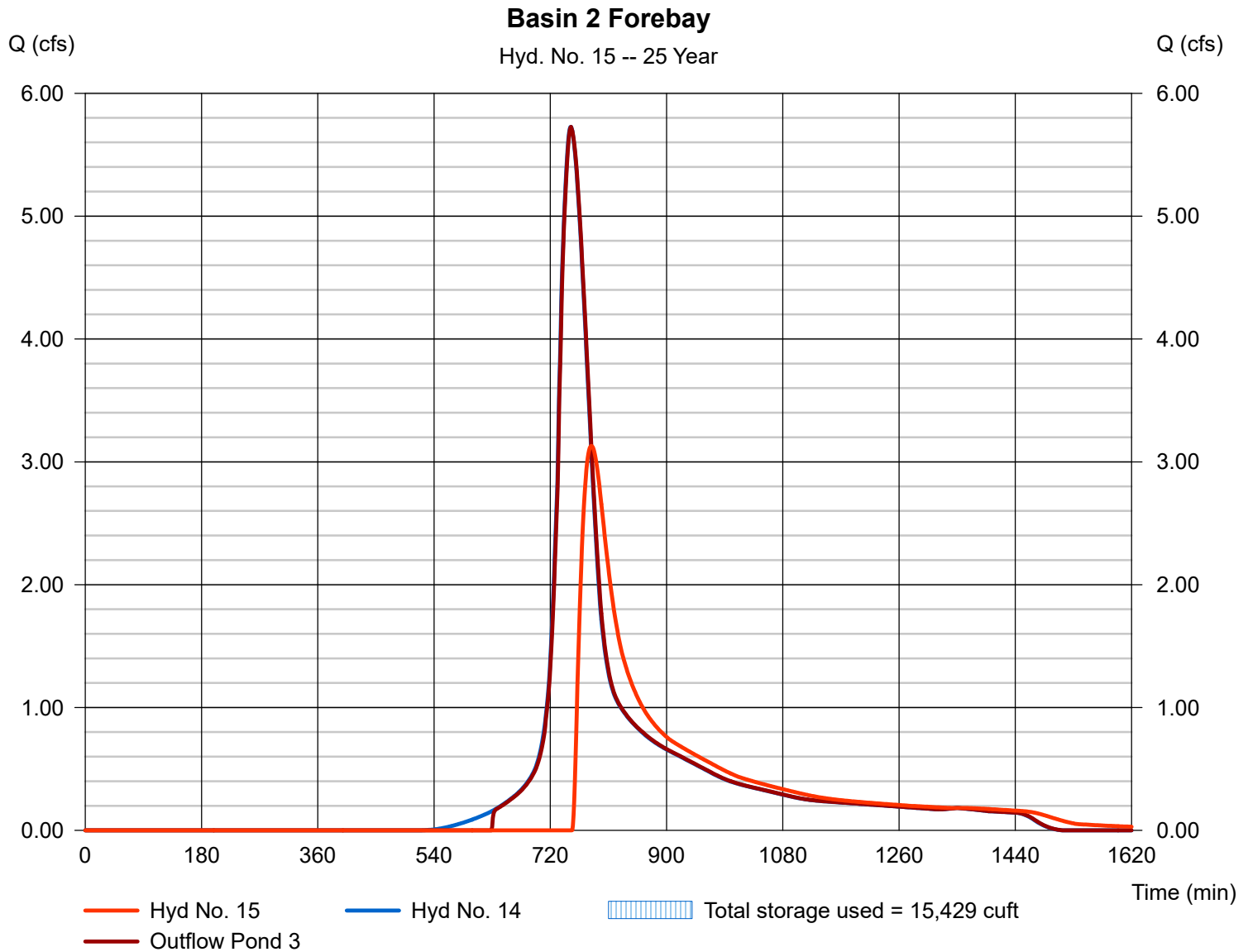
Pond name = Basin 2 Forebay
 Inflow hyd. = 14 - BLDG 2&3 & Area 1C
 Max. Elevation = 23.36 ft
 Max. Storage = 612 cuft

Peak discharge = 3.130 cfs
 Time to peak = 784 min
 Hyd. volume = 25,546 cuft

Lower Pond

Pond name = Basin 2
 Other Inflow hyd. = None
 Max. Elevation = 27.00 ft
 Max. Storage = 14,817 cuft

Interconnected Pond Routing. Storage Indication method used.



Hydrograph Report

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

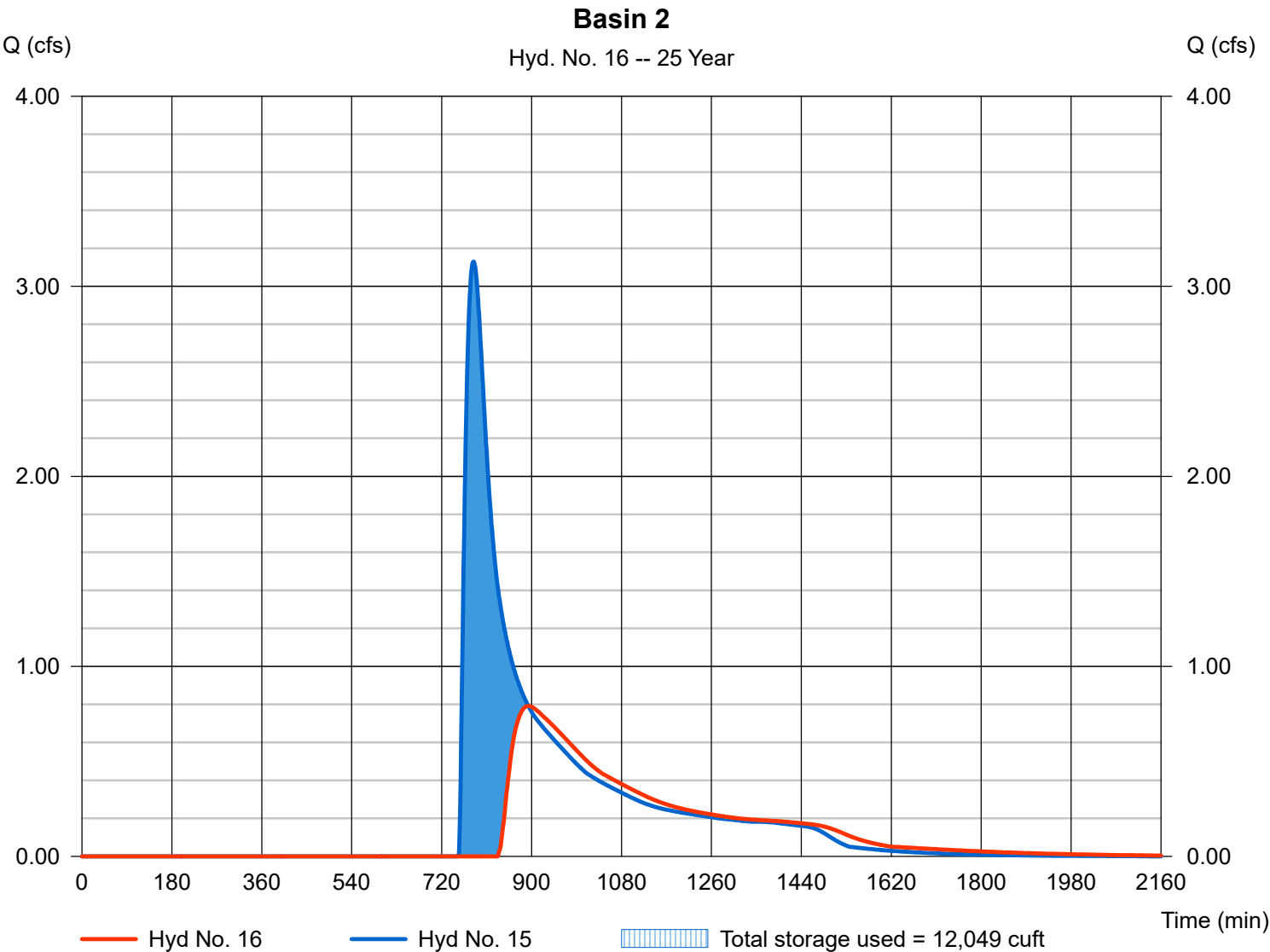
Monday, Oct 3, 2022

Hyd. No. 16

Basin 2

Hydrograph type	= Reservoir	Peak discharge	= 0.792 cfs
Storm frequency	= 25 yrs	Time to peak	= 894 min
Time interval	= 1 min	Hyd. volume	= 15,431 cuft
Inflow hyd. No.	= 15 - Basin 2 Forebay	Max. Elevation	= 26.41 ft
Reservoir name	= Basin 2	Max. Storage	= 12,049 cuft

Storage Indication method used.



Hydrograph Report

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

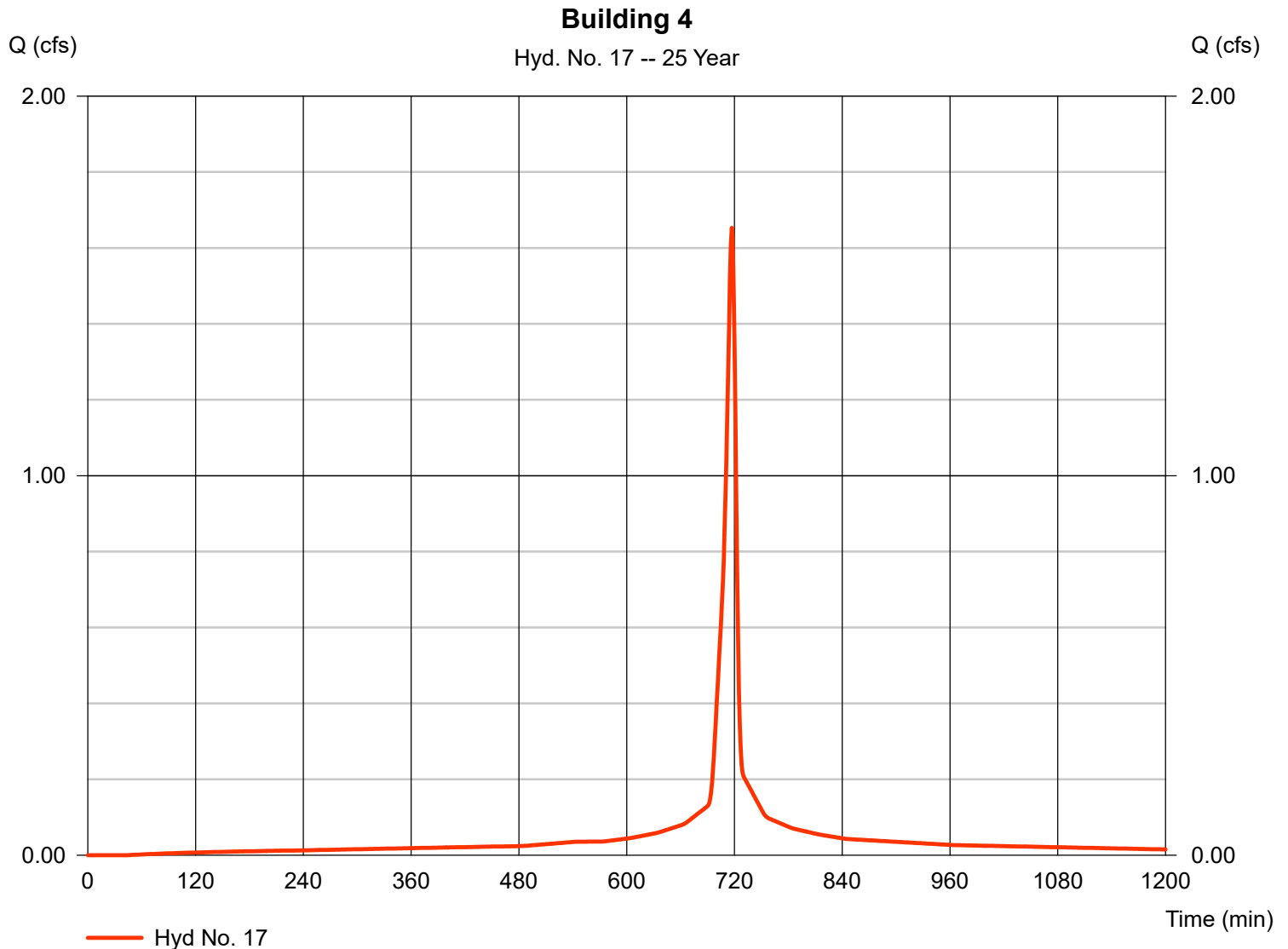
Monday, Oct 3, 2022

Hyd. No. 17

Building 4

Hydrograph type = SCS Runoff
 Storm frequency = 25 yrs
 Time interval = 1 min
 Drainage area = 0.180 ac
 Basin Slope = 0.0 %
 Tc method = USER
 Total precip. = 6.20 in
 Storm duration = 24 hrs

Peak discharge = 1.653 cfs
 Time to peak = 717 min
 Hyd. volume = 4,017 cuft
 Curve number = 98
 Hydraulic length = 0 ft
 Time of conc. (Tc) = 5.00 min
 Distribution = Type II
 Shape factor = 484



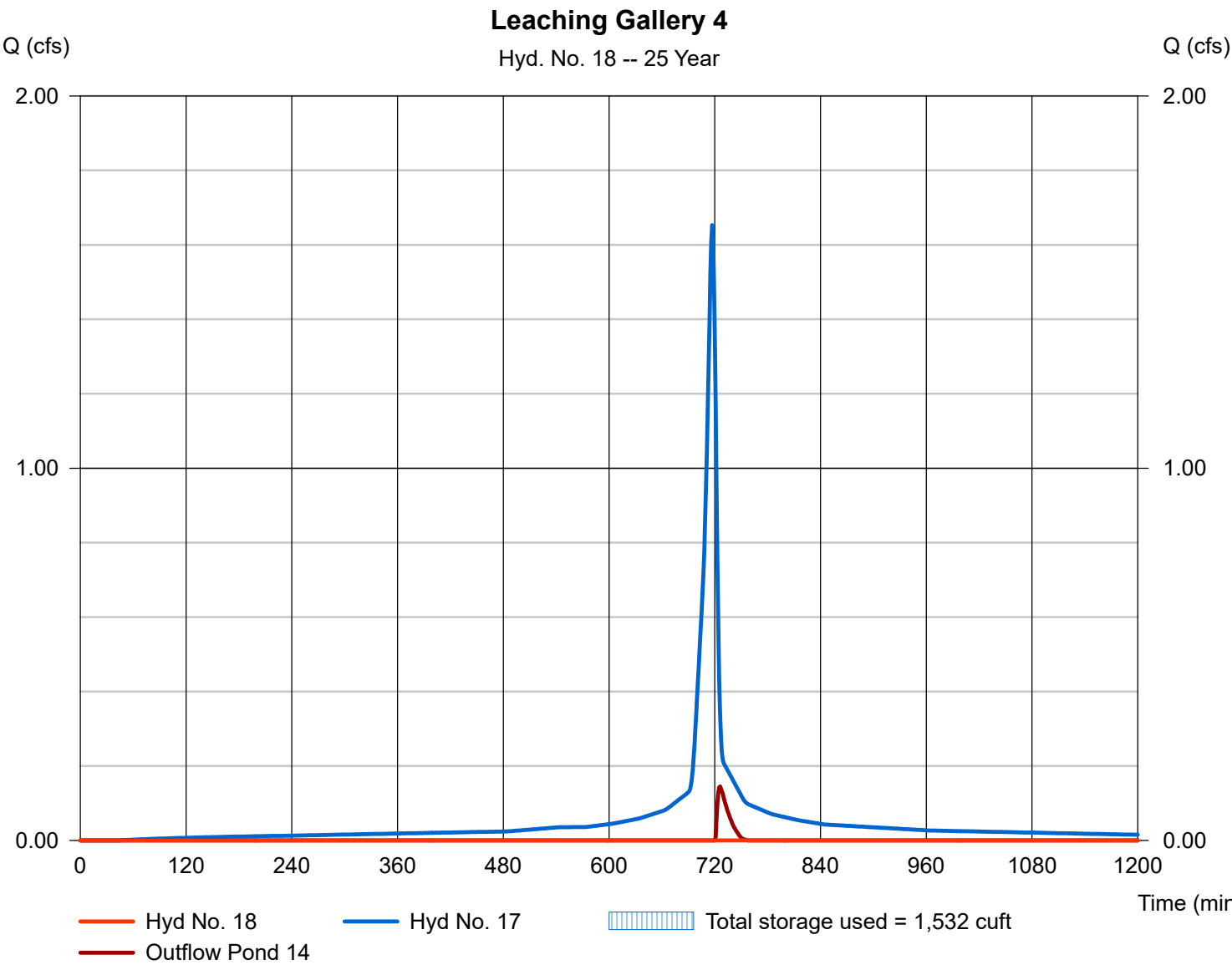
Hydrograph Report

Hyd. No. 18

Leaching Gallery 4

Hydrograph type	= Reservoir (Interconnected)	Peak discharge	= 0.000 cfs
Storm frequency	= 25 yrs	Time to peak	= n/a
Time interval	= 1 min	Hyd. volume	= 0 cuft
Upper Pond		Lower Pond	
Pond name	= Leaching Gallery 4	Pond name	= Basin 3 Forebay
Inflow hyd.	= 17 - Building 4	Other Inflow hyd.	= None
Max. Elevation	= 46.54 ft	Max. Elevation	= 32.69 ft
Max. Storage	= 1,407 cuft	Max. Storage	= 125 cuft

Interconnected Pond Routing. Storage Indication method used.



Hydrograph Report

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

Monday, Oct 3, 2022

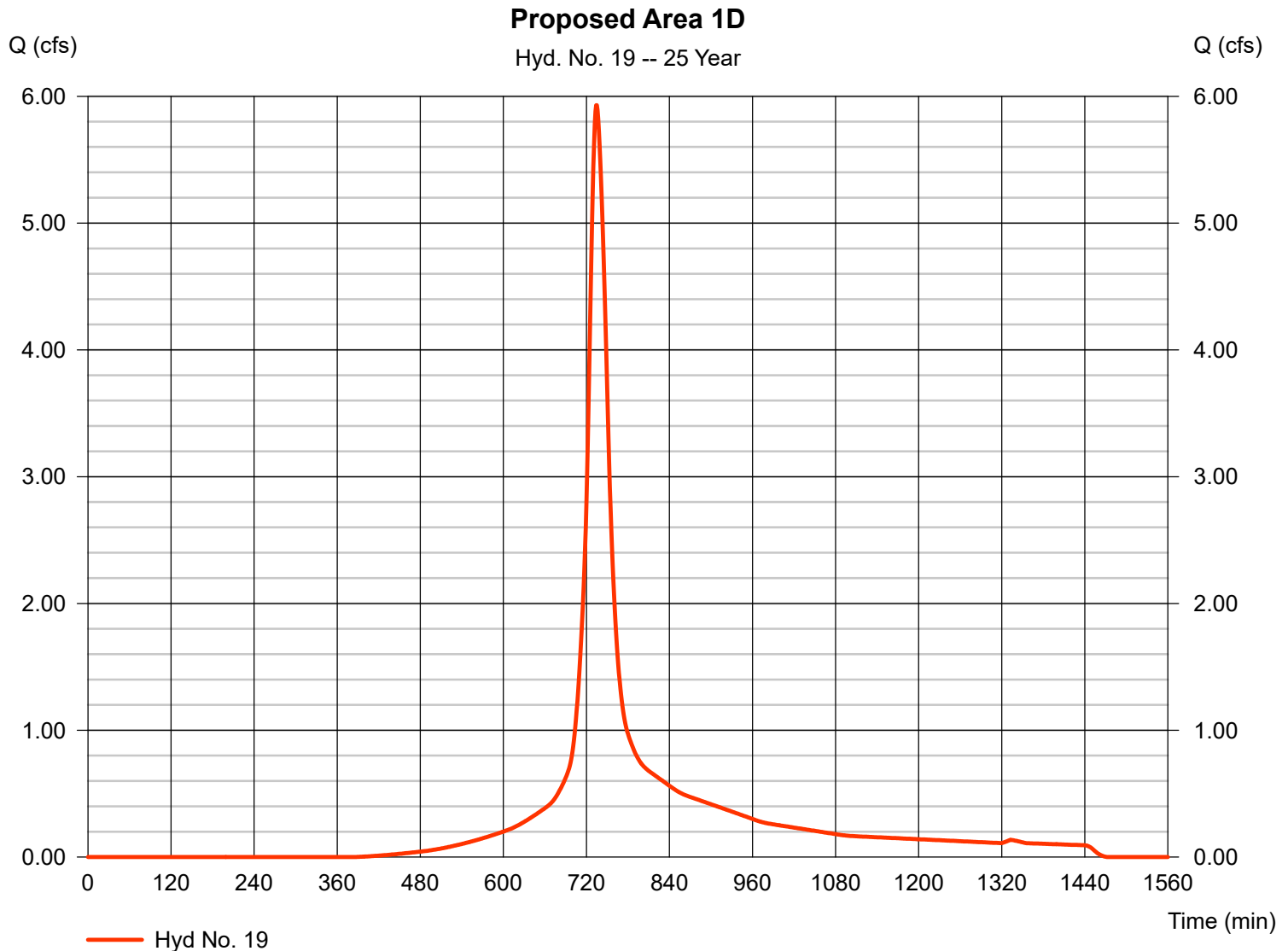
Hyd. No. 19

Proposed Area 1D

Hydrograph type = SCS Runoff
 Storm frequency = 25 yrs
 Time interval = 1 min
 Drainage area = 1.830 ac
 Basin Slope = 0.0 %
 Tc method = TR55
 Total precip. = 6.20 in
 Storm duration = 24 hrs

Peak discharge = 5.929 cfs
 Time to peak = 735 min
 Hyd. volume = 27,273 cuft
 Curve number = 81*
 Hydraulic length = 0 ft
 Time of conc. (Tc) = 21.50 min
 Distribution = Type III
 Shape factor = 484

* Composite (Area/CN) = $[(1.010 \times 98) + (0.820 \times 61)] / 1.830$

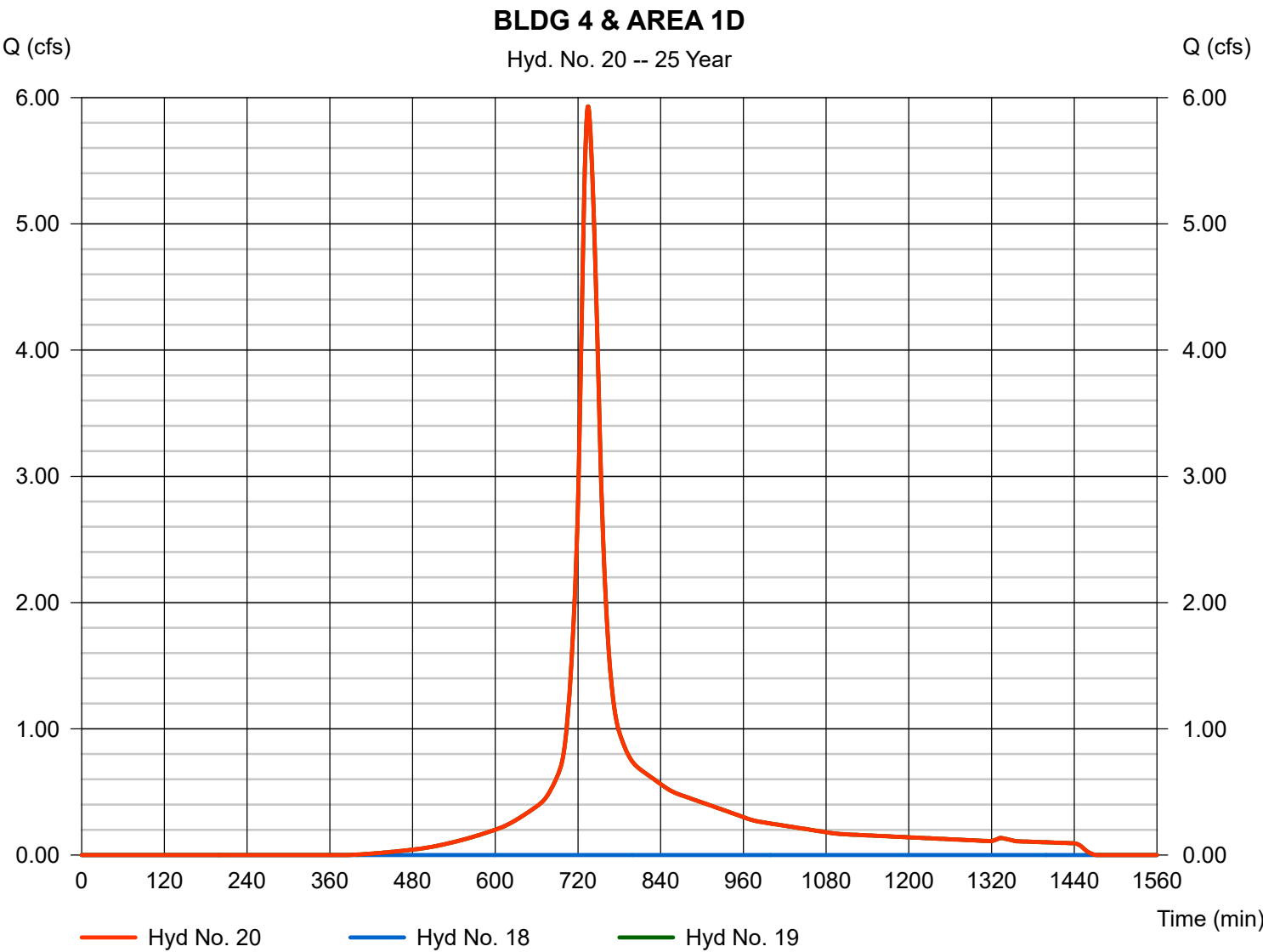


Hydrograph Report

Hyd. No. 20

BLDG 4 & AREA 1D

Hydrograph type	= Combine	Peak discharge	= 5.929 cfs
Storm frequency	= 25 yrs	Time to peak	= 735 min
Time interval	= 1 min	Hyd. volume	= 27,273 cuft
Inflow hyds.	= 18, 19	Contrib. drain. area	= 1.830 ac



Hydrograph Report

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

Monday, Oct 3, 2022

Hyd. No. 21

Basin 3 Forebay

Hydrograph type = Reservoir (Interconnected)
 Storm frequency = 25 yrs
 Time interval = 1 min

Upper Pond

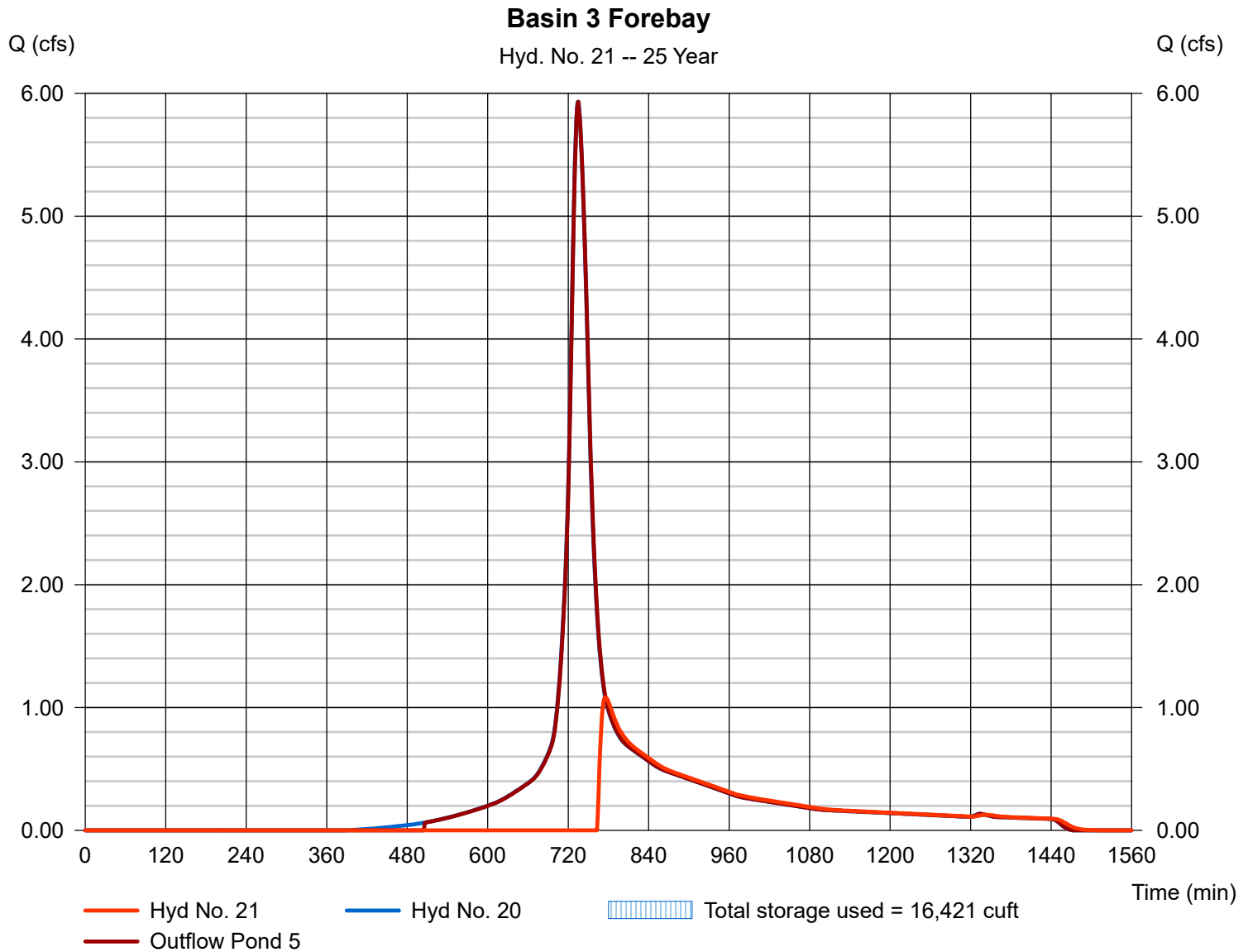
Pond name = Basin 3 Forebay
 Inflow hyd. = 20 - BLDG 4 & AREA 1D
 Max. Elevation = 33.37 ft
 Max. Storage = 304 cuft

Peak discharge = 1.084 cfs
 Time to peak = 776 min
 Hyd. volume = 11,442 cuft

Lower Pond

Pond name = Basin 3
 Other Inflow hyd. = None
 Max. Elevation = 36.62 ft
 Max. Storage = 16,118 cuft

Interconnected Pond Routing. Storage Indication method used.



Hydrograph Report

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

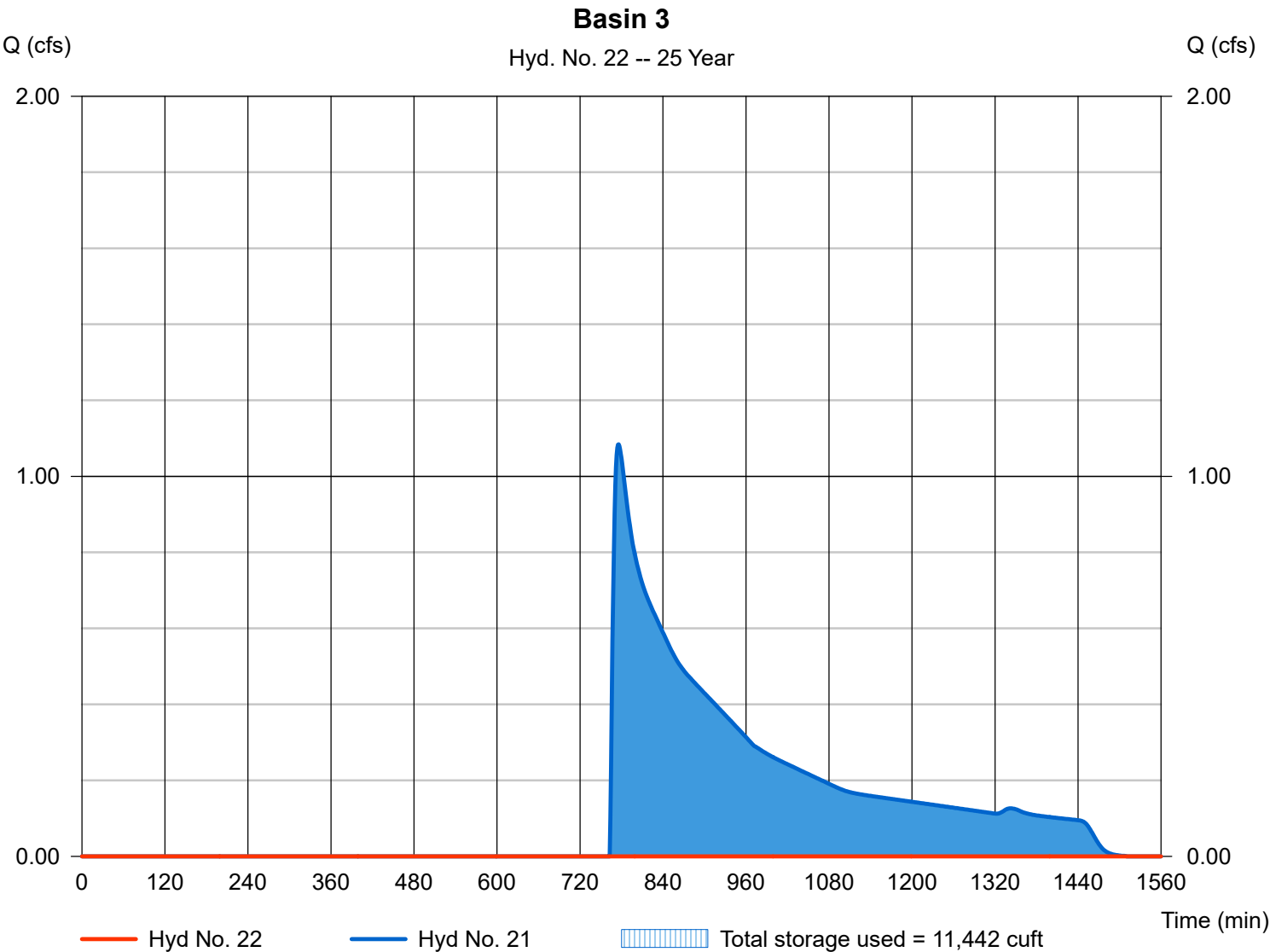
Monday, Oct 3, 2022

Hyd. No. 22

Basin 3

Hydrograph type	= Reservoir	Peak discharge	= 0.000 cfs
Storm frequency	= 25 yrs	Time to peak	= n/a
Time interval	= 1 min	Hyd. volume	= 0 cuft
Inflow hyd. No.	= 21 - Basin 3 Forebay	Max. Elevation	= 35.31 ft
Reservoir name	= Basin 3	Max. Storage	= 11,442 cuft

Storage Indication method used.



Hydrograph Report

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

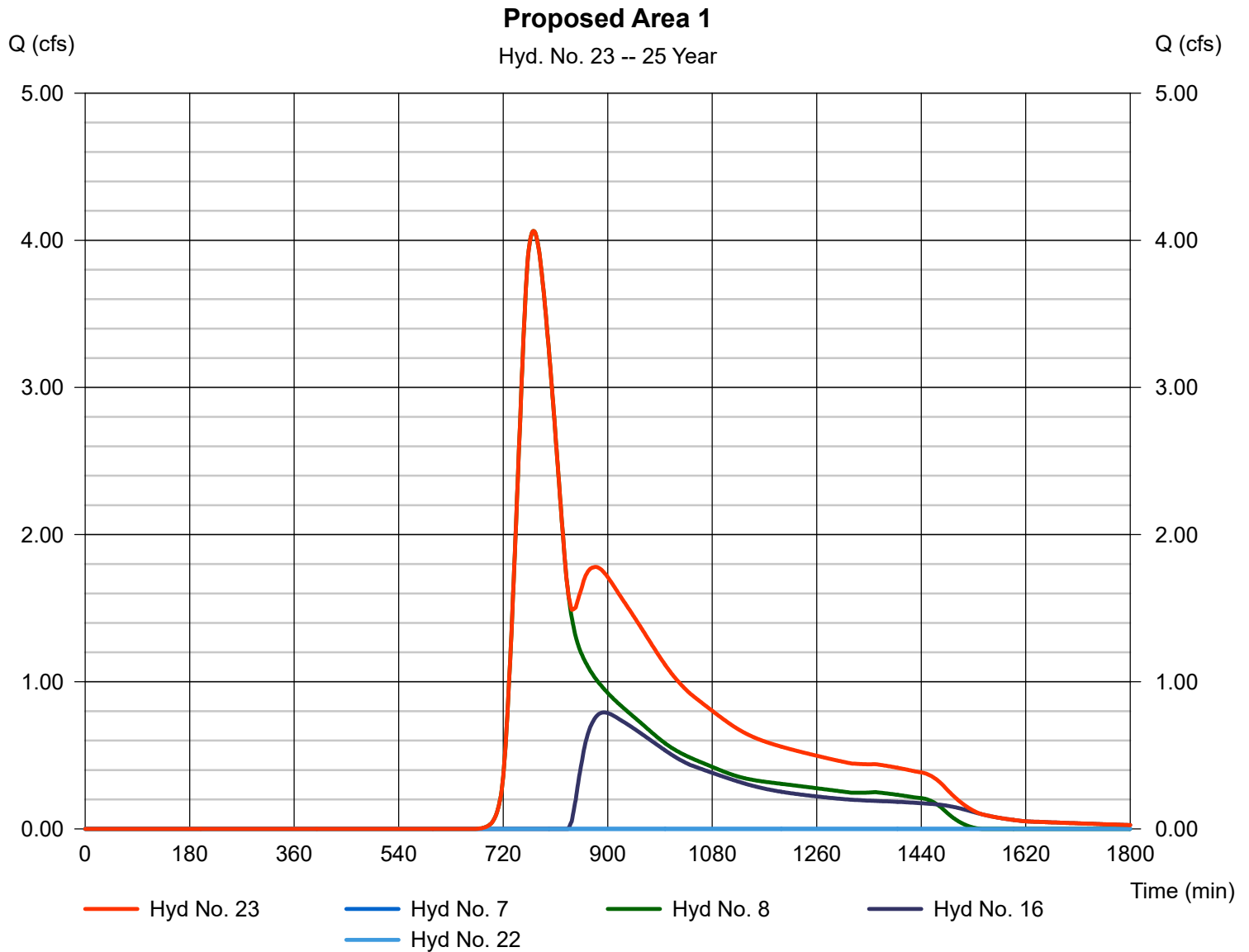
Monday, Oct 3, 2022

Hyd. No. 23

Proposed Area 1

Hydrograph type = Combine
 Storm frequency = 25 yrs
 Time interval = 1 min
 Inflow hyds. = 7, 8, 16, 22

Peak discharge = 4.064 cfs
 Time to peak = 772 min
 Hyd. volume = 52,254 cuft
 Contrib. drain. area = 5.930 ac



Hydrograph Report

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

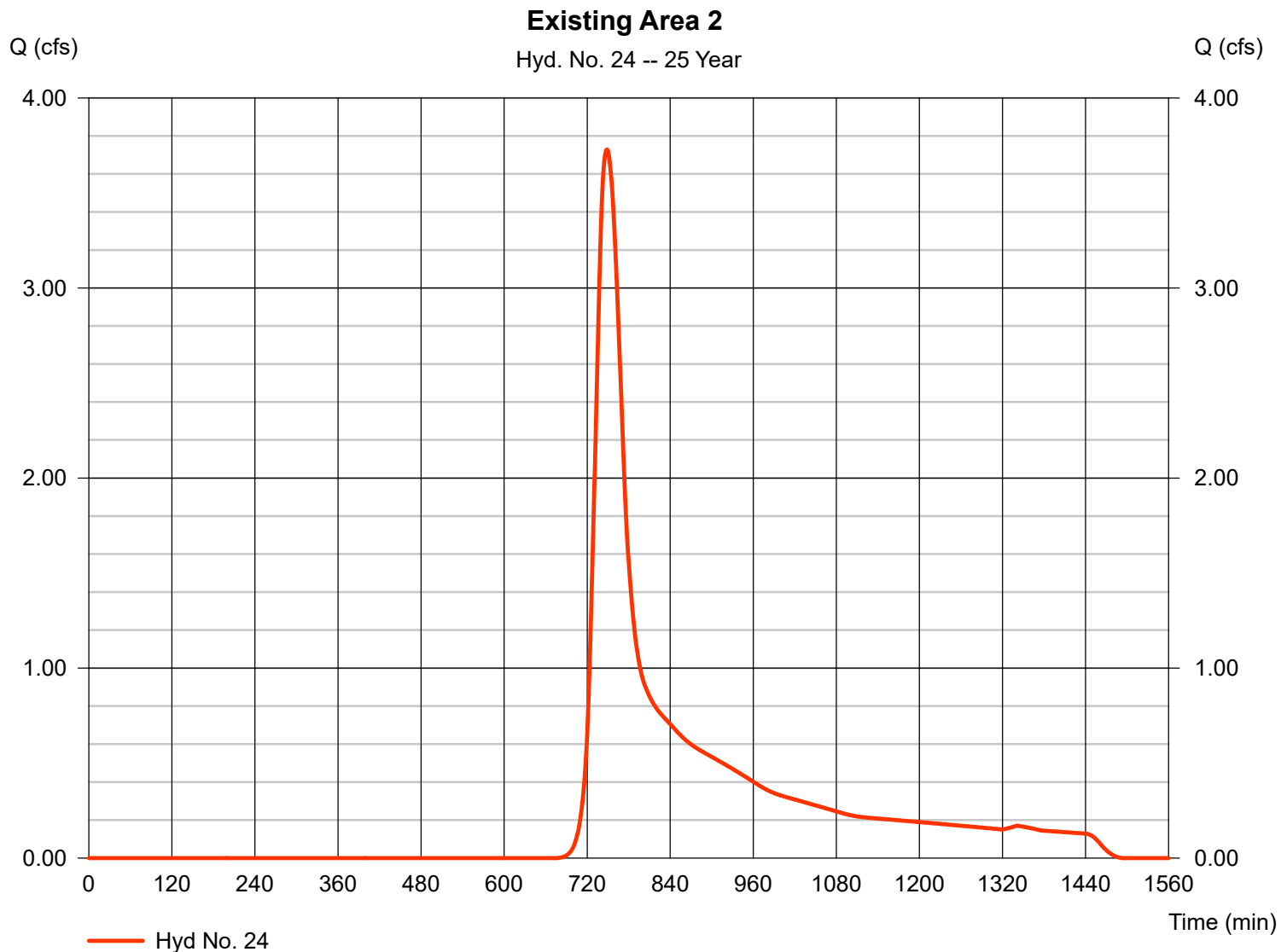
Monday, Oct 3, 2022

Hyd. No. 24

Existing Area 2

Hydrograph type = SCS Runoff
 Storm frequency = 25 yrs
 Time interval = 1 min
 Drainage area = 3.920 ac
 Basin Slope = 0.0 %
 Tc method = USER
 Total precip. = 6.20 in
 Storm duration = 24 hrs

Peak discharge = 3.729 cfs
 Time to peak = 749 min
 Hyd. volume = 23,252 cuft
 Curve number = 55
 Hydraulic length = 0 ft
 Time of conc. (Tc) = 35.00 min
 Distribution = Type III
 Shape factor = 484



Hydrograph Report

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

Monday, Oct 3, 2022

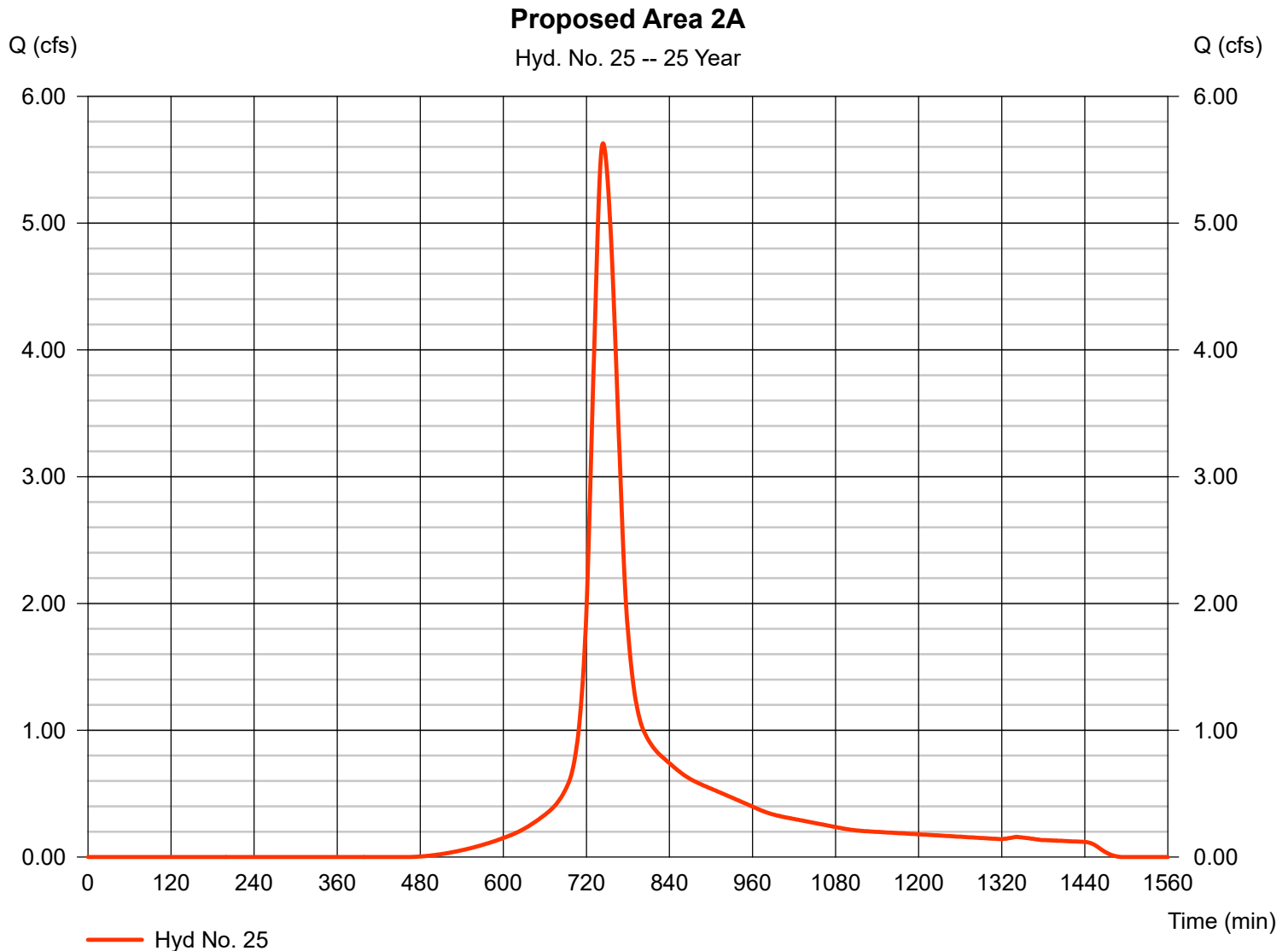
Hyd. No. 25

Proposed Area 2A

Hydrograph type = SCS Runoff
 Storm frequency = 25 yrs
 Time interval = 1 min
 Drainage area = 2.450 ac
 Basin Slope = 0.0 %
 Tc method = TR55
 Total precip. = 6.20 in
 Storm duration = 24 hrs

Peak discharge = 5.630 cfs
 Time to peak = 744 min
 Hyd. volume = 31,601 cuft
 Curve number = 76*
 Hydraulic length = 0 ft
 Time of conc. (Tc) = 34.80 min
 Distribution = Type III
 Shape factor = 484

* Composite (Area/CN) = $[(1.090 \times 98) + (0.870 \times 61) + (0.490 \times 55)] / 2.450$



Hydrograph Report

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

Monday, Oct 3, 2022

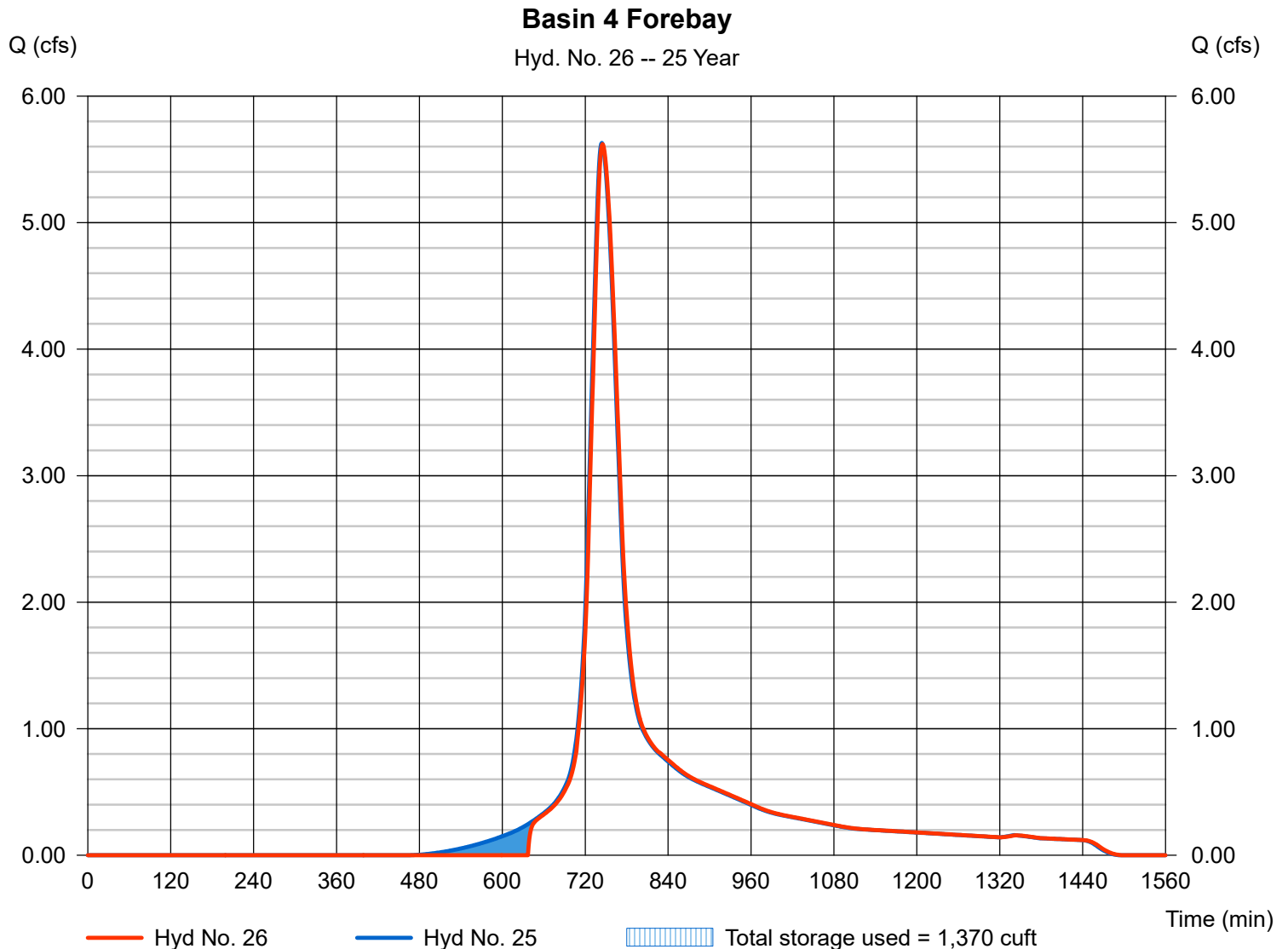
Hyd. No. 26

Basin 4 Forebay

Hydrograph type = Reservoir
 Storm frequency = 25 yrs
 Time interval = 1 min
 Inflow hyd. No. = 25 - Proposed Area 2A
 Reservoir name = Basin 4 Forebay

Peak discharge = 5.620 cfs
 Time to peak = 745 min
 Hyd. volume = 30,728 cuft
 Max. Elevation = 53.36 ft
 Max. Storage = 1,370 cuft

Storage Indication method used.



Hydrograph Report

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

Monday, Oct 3, 2022

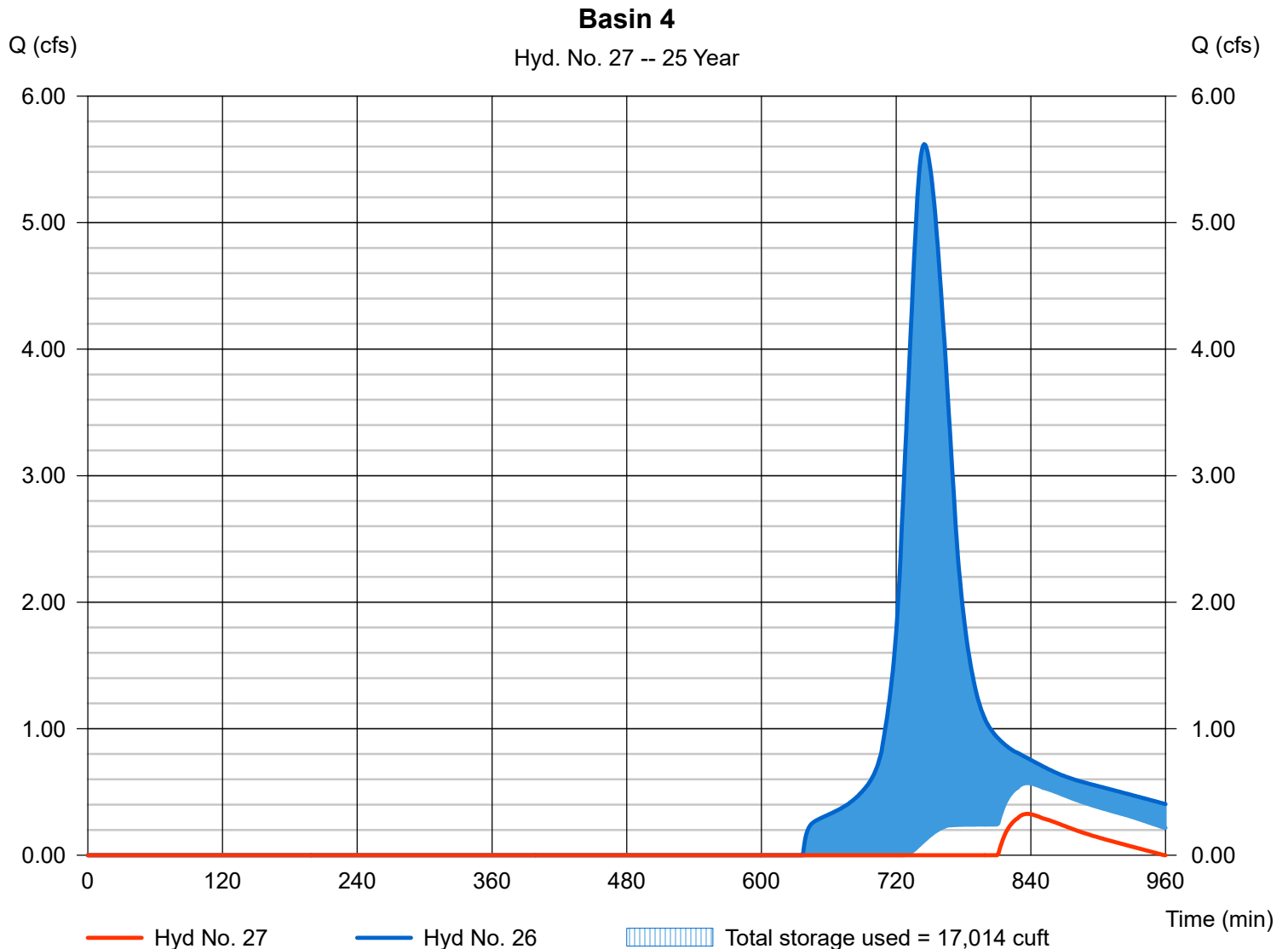
Hyd. No. 27

Basin 4

Hydrograph type = Reservoir
 Storm frequency = 25 yrs
 Time interval = 1 min
 Inflow hyd. No. = 26 - Basin 4 Forebay
 Reservoir name = Basin 4

Peak discharge = 0.327 cfs
 Time to peak = 837 min
 Hyd. volume = 1,504 cuft
 Max. Elevation = 56.55 ft
 Max. Storage = 17,014 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Hydrograph Report

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

Monday, Oct 3, 2022

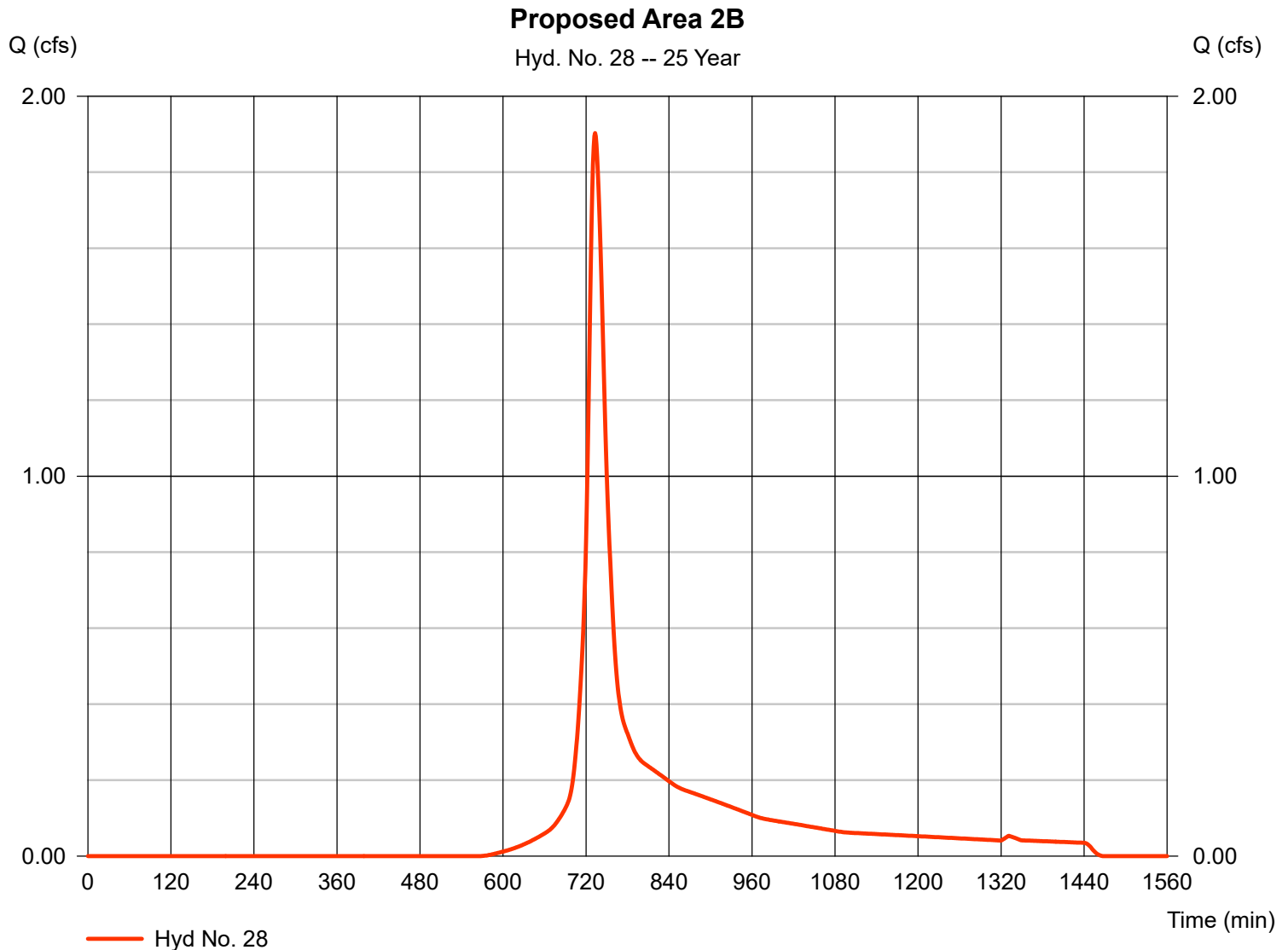
Hyd. No. 28

Proposed Area 2B

Hydrograph type = SCS Runoff
 Storm frequency = 25 yrs
 Time interval = 1 min
 Drainage area = 0.850 ac
 Basin Slope = 0.0 %
 Tc method = TR55
 Total precip. = 6.20 in
 Storm duration = 24 hrs

Peak discharge = 1.903 cfs
 Time to peak = 733 min
 Hyd. volume = 8,181 cuft
 Curve number = 67*
 Hydraulic length = 0 ft
 Time of conc. (Tc) = 17.10 min
 Distribution = Type III
 Shape factor = 484

* Composite (Area/CN) = $[(0.150 \times 98) + (0.640 \times 61) + (0.060 \times 55)] / 0.850$



Hydrograph Report

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

Monday, Oct 3, 2022

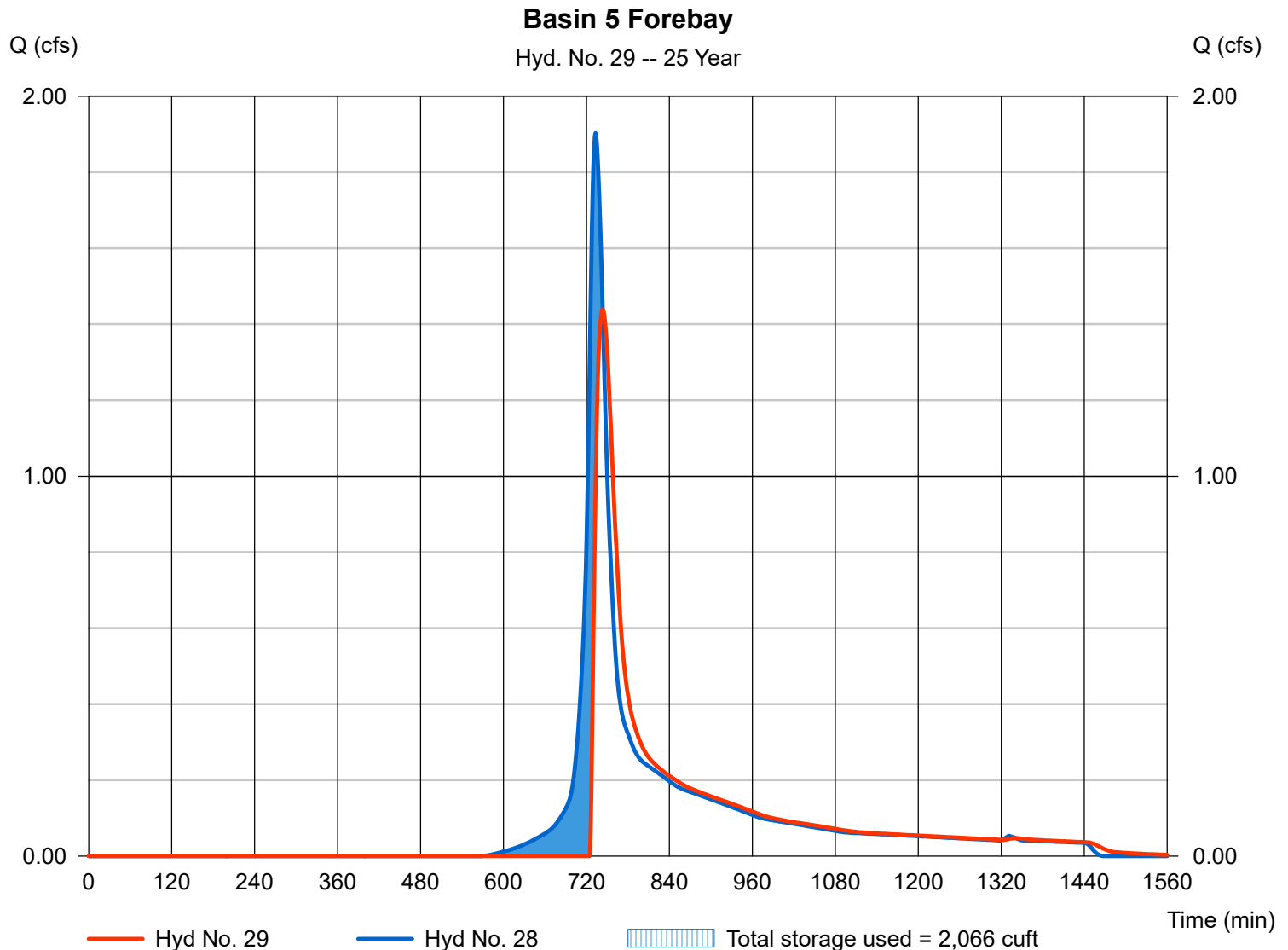
Hyd. No. 29

Basin 5 Forebay

Hydrograph type = Reservoir
 Storm frequency = 25 yrs
 Time interval = 1 min
 Inflow hyd. No. = 28 - Proposed Area 2B
 Reservoir name = Basin 5 Forebay

Peak discharge = 1.439 cfs
 Time to peak = 743 min
 Hyd. volume = 7,009 cuft
 Max. Elevation = 67.07 ft
 Max. Storage = 2,066 cuft

Storage Indication method used.



Hydrograph Report

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

Monday, Oct 3, 2022

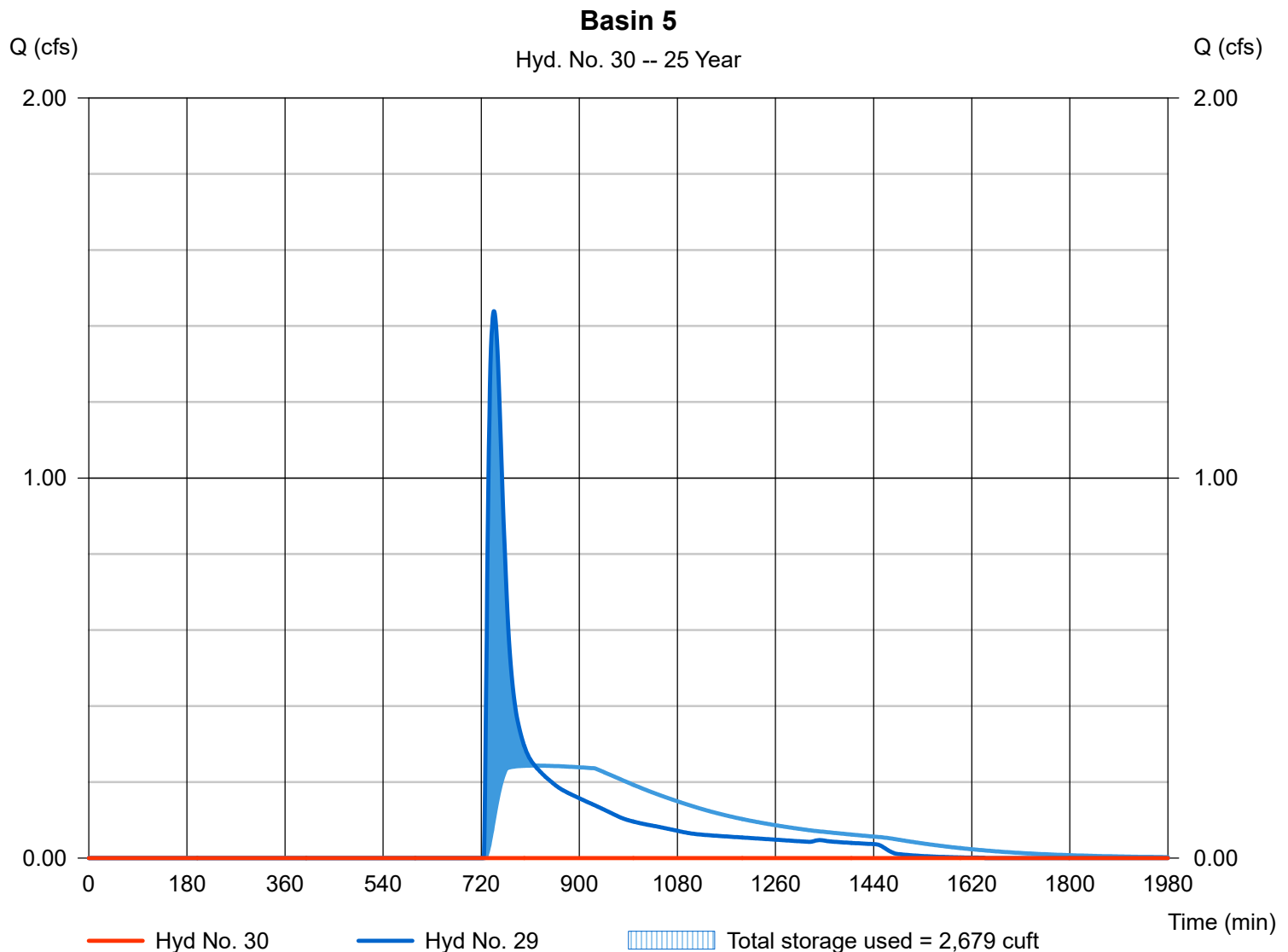
Hyd. No. 30

Basin 5

Hydrograph type = Reservoir
 Storm frequency = 25 yrs
 Time interval = 1 min
 Inflow hyd. No. = 29 - Basin 5 Forebay
 Reservoir name = Basin 5

Peak discharge = 0.000 cfs
 Time to peak = 755 min
 Hyd. volume = 0 cuft
 Max. Elevation = 65.14 ft
 Max. Storage = 2,679 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Hydrograph Report

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

Monday, Oct 3, 2022

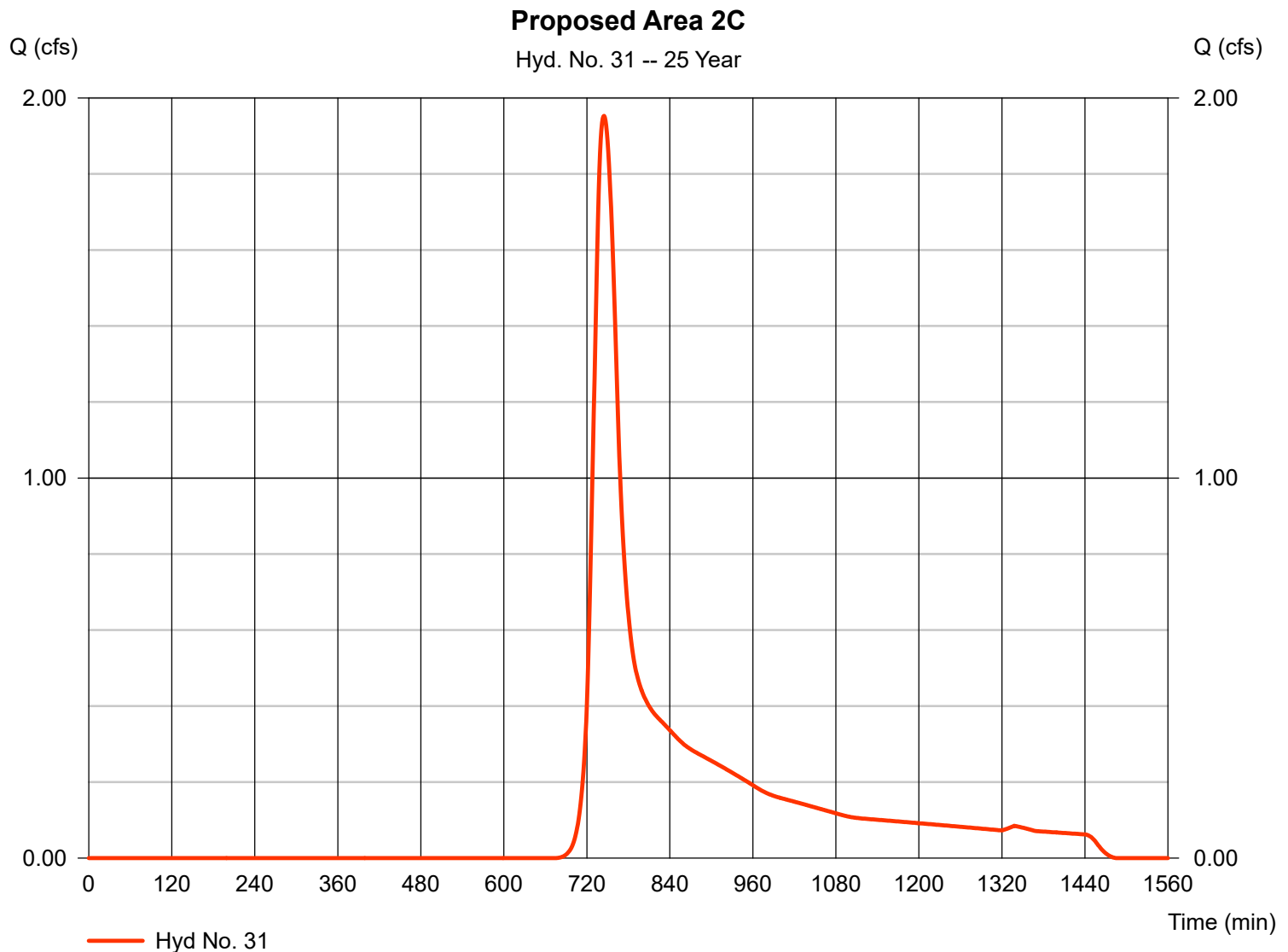
Hyd. No. 31

Proposed Area 2C

Hydrograph type = SCS Runoff
 Storm frequency = 25 yrs
 Time interval = 1 min
 Drainage area = 1.910 ac
 Basin Slope = 0.0 %
 Tc method = USER
 Total precip. = 6.20 in
 Storm duration = 24 hrs

Peak discharge = 1.953 cfs
 Time to peak = 745 min
 Hyd. volume = 11,329 cuft
 Curve number = 55*
 Hydraulic length = 0 ft
 Time of conc. (Tc) = 29.00 min
 Distribution = Type III
 Shape factor = 484

* Composite (Area/CN) = $[(1.850 \times 55) + (0.060 \times 61)] / 1.910$



Hydrograph Report

103

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

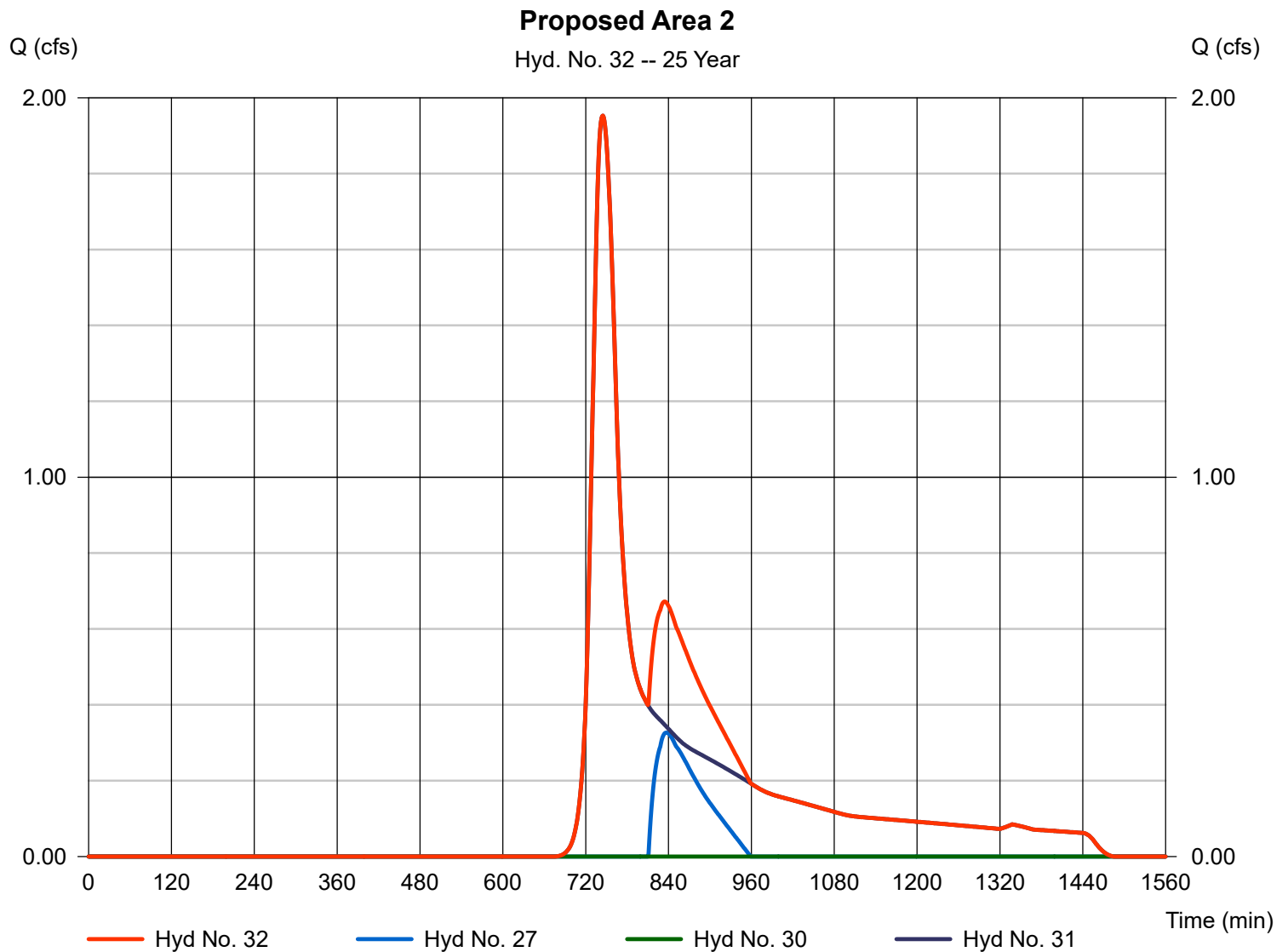
Monday, Oct 3, 2022

Hyd. No. 32

Proposed Area 2

Hydrograph type = Combine
Storm frequency = 25 yrs
Time interval = 1 min
Inflow hyds. = 27, 30, 31

Peak discharge = 1.953 cfs
Time to peak = 745 min
Hyd. volume = 12,833 cuft
Contrib. drain. area = 1.910 ac



Hydrograph Report

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

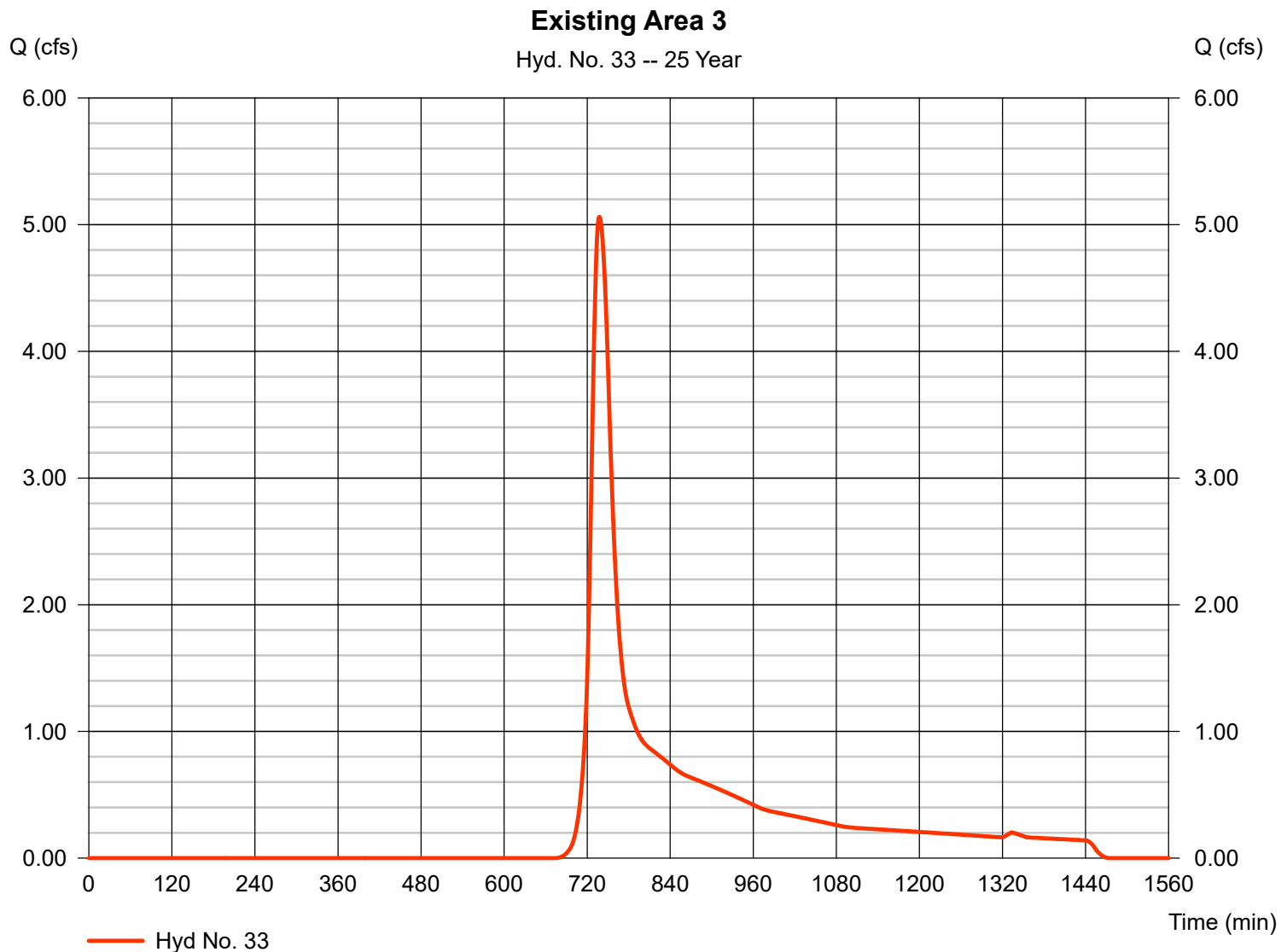
Monday, Oct 3, 2022

Hyd. No. 33

Existing Area 3

Hydrograph type = SCS Runoff
 Storm frequency = 25 yrs
 Time interval = 1 min
 Drainage area = 4.300 ac
 Basin Slope = 0.0 %
 Tc method = USER
 Total precip. = 6.20 in
 Storm duration = 24 hrs

Peak discharge = 5.060 cfs
 Time to peak = 737 min
 Hyd. volume = 25,751 cuft
 Curve number = 55
 Hydraulic length = 0 ft
 Time of conc. (Tc) = 21.00 min
 Distribution = Type III
 Shape factor = 484



Hydrograph Report

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

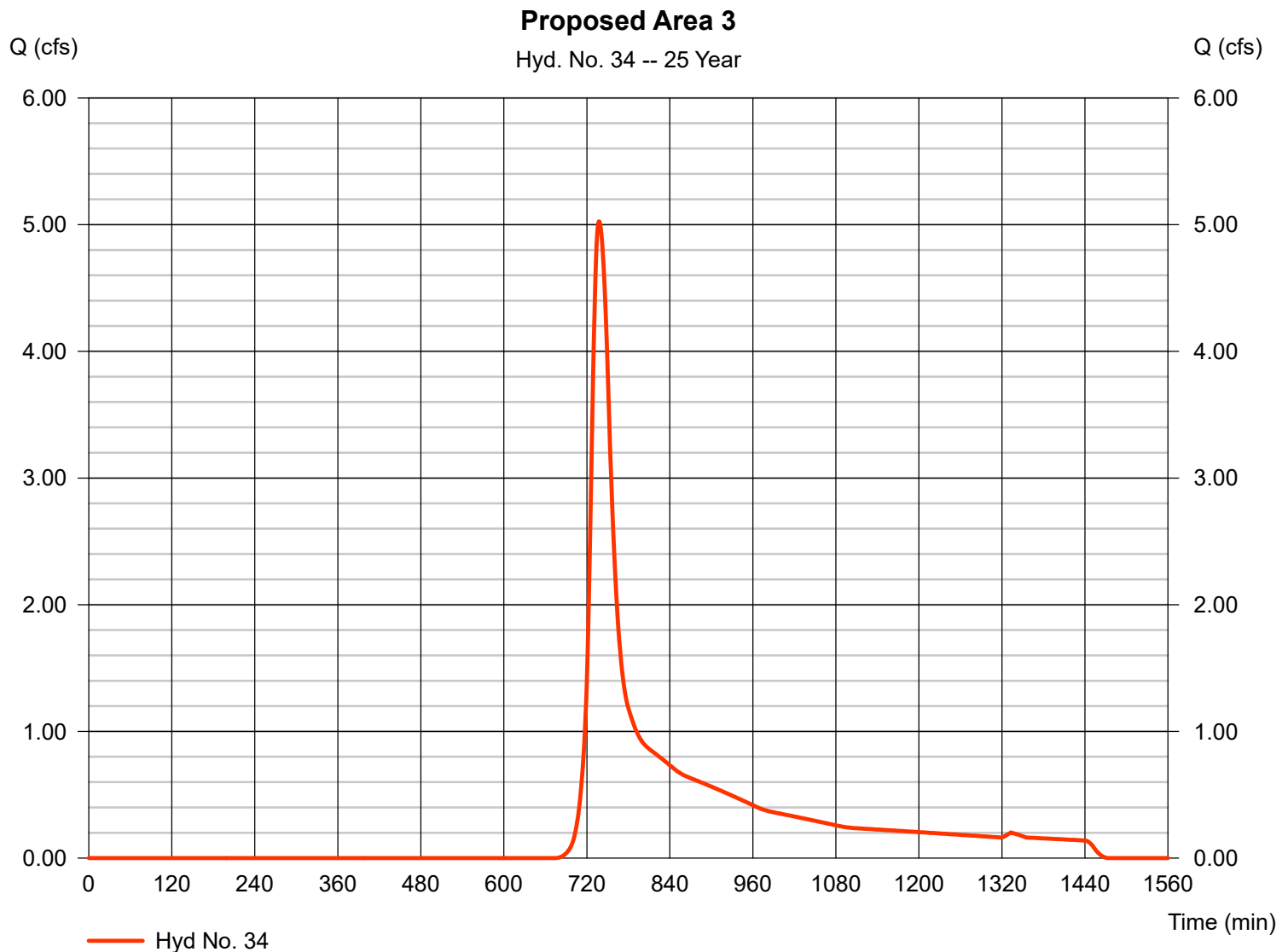
Monday, Oct 3, 2022

Hyd. No. 34

Proposed Area 3

Hydrograph type = SCS Runoff
 Storm frequency = 25 yrs
 Time interval = 1 min
 Drainage area = 4.270 ac
 Basin Slope = 0.0 %
 Tc method = USER
 Total precip. = 6.20 in
 Storm duration = 24 hrs

Peak discharge = 5.025 cfs
 Time to peak = 737 min
 Hyd. volume = 25,572 cuft
 Curve number = 55
 Hydraulic length = 0 ft
 Time of conc. (Tc) = 21.00 min
 Distribution = Type III
 Shape factor = 484



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	15.83	1	753	106,469	-----	-----	-----	Existing Area 1
2	SCS Runoff	2.586	1	717	6,309	-----	-----	-----	Building 1
3	Reservoir(i)	0.000	1	n/a	0	2	34.32	3,576	Leaching Gallery 1
4	SCS Runoff	2.658	1	738	13,248	-----	-----	-----	Proposed Area 1A
5	Combine	2.658	1	738	13,248	3, 4	-----	-----	Roof overflow and Area 1A
6	Reservoir	0.198	1	928	4,023	5	27.69	9,767	Basin 1 Forebay
7	Reservoir	0.000	1	n/a	0	6	25.31	4,023	Basin 1
8	SCS Runoff	5.396	1	771	47,323	-----	-----	-----	Proposed Area 1B
9	SCS Runoff	3.000	1	717	7,318	-----	-----	-----	Building 2
10	Reservoir(i)	0.456	1	736	1,057	9	35.65	3,004	Leaching Gallery 2
11	SCS Runoff	2.483	1	717	6,056	-----	-----	-----	Building 3
12	Reservoir(i)	0.397	1	736	633	11	40.80	2,507	Leaching Gallery 3
13	SCS Runoff	6.373	1	753	42,299	-----	-----	-----	Proposed Area 1C
14	Combine	7.035	1	752	43,989	10, 12, 13	-----	-----	BLDG 2&3 & Area 1C
15	Reservoir(i)	4.283	1	780	33,501	14	27.33	17,275	Basin 2 Forebay
16	Reservoir	1.727	1	833	23,386	15	26.67	13,252	Basin 2
17	SCS Runoff	1.862	1	717	4,542	-----	-----	-----	Building 4
18	Reservoir(i)	0.202	1	734	146	17	47.05	1,746	Leaching Gallery 4
19	SCS Runoff	6.951	1	734	32,102	-----	-----	-----	Proposed Area 1D
20	Combine	7.153	1	734	32,248	18, 19	-----	-----	BLDG 4 & AREA 1D
21	Reservoir(i)	3.252	1	755	16,414	20	36.75	16,950	Basin 3 Forebay
22	Reservoir	0.118	1	1400	762	21	36.52	15,732	Basin 3
23	Combine	5.396	1	771	71,470	7, 8, 16, 22	-----	-----	Proposed Area 1
24	SCS Runoff	4.979	1	747	30,041	-----	-----	-----	Existing Area 2
25	SCS Runoff	6.713	1	744	37,704	-----	-----	-----	Proposed Area 2A
26	Reservoir	6.703	1	745	36,831	25	53.40	1,434	Basin 4 Forebay
27	Reservoir	2.057	1	777	6,252	26	56.68	17,644	Basin 4
28	SCS Runoff	2.352	1	733	10,039	-----	-----	-----	Proposed Area 2B
29	Reservoir	1.745	1	744	8,867	28	67.31	2,369	Basin 5 Forebay
30	Reservoir	0.000	1	1080	0	29	65.54	3,800	Basin 5
31	SCS Runoff	2.607	1	744	14,637	-----	-----	-----	Proposed Area 2C
32	Combine	2.967	1	776	20,889	27, 30, 31	-----	-----	Proposed Area 2
33	SCS Runoff	6.771	1	737	33,270	-----	-----	-----	Existing Area 3
34	SCS Runoff	6.724	1	737	33,038	-----	-----	-----	Proposed Area 3
GSD 60 Drainage V13.gpw					Return Period: 50 Year			Monday, Oct 3, 2022	

Hydrograph Report

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

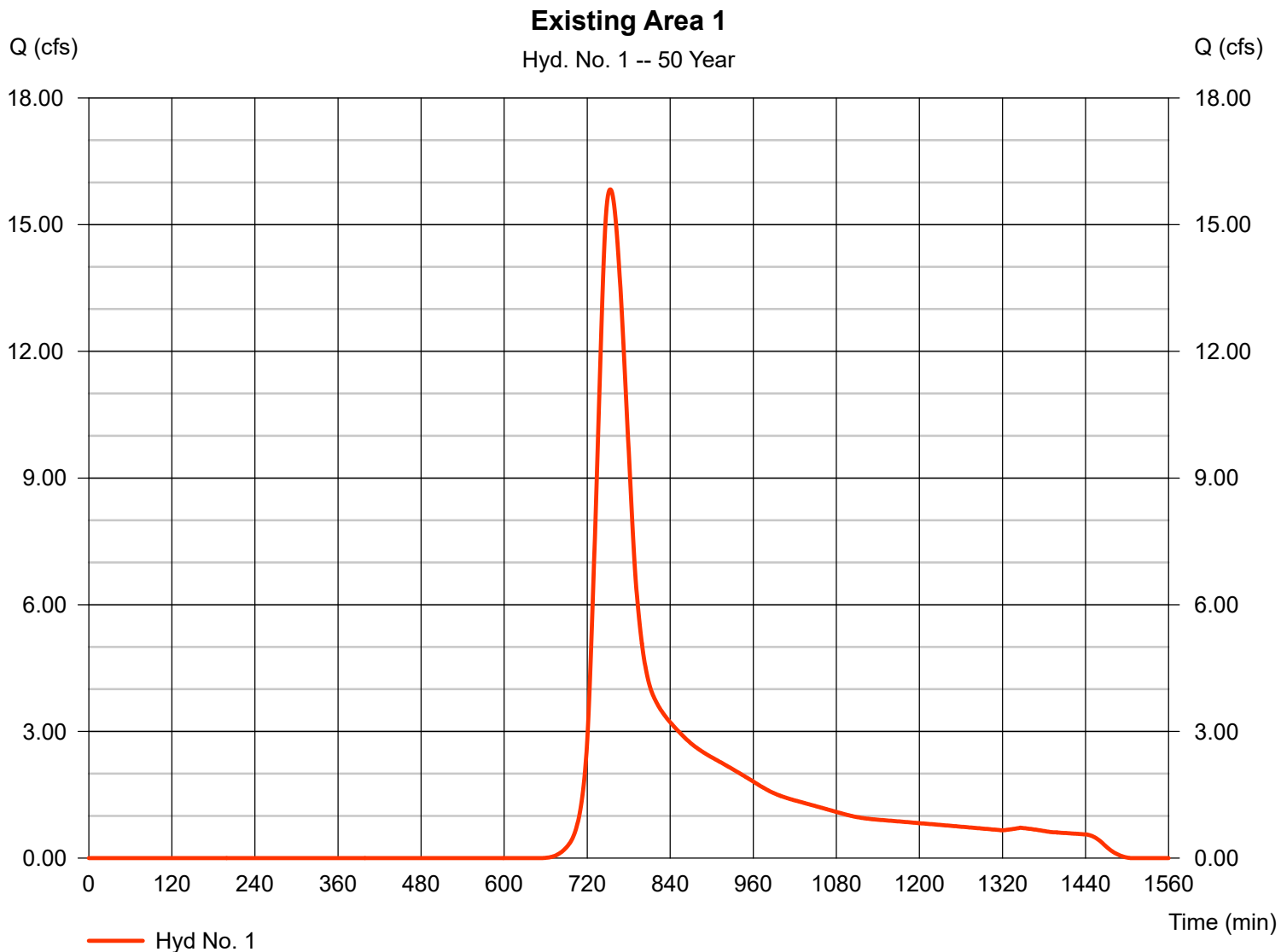
Monday, Oct 3, 2022

Hyd. No. 1

Existing Area 1

Hydrograph type = SCS Runoff
 Storm frequency = 50 yrs
 Time interval = 1 min
 Drainage area = 13.960 ac
 Basin Slope = 0.0 %
 Tc method = TR55
 Total precip. = 6.98 in
 Storm duration = 24 hrs

Peak discharge = 15.83 cfs
 Time to peak = 753 min
 Hyd. volume = 106,469 cuft
 Curve number = 55
 Hydraulic length = 0 ft
 Time of conc. (Tc) = 43.30 min
 Distribution = Type III
 Shape factor = 484



Hydrograph Report

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

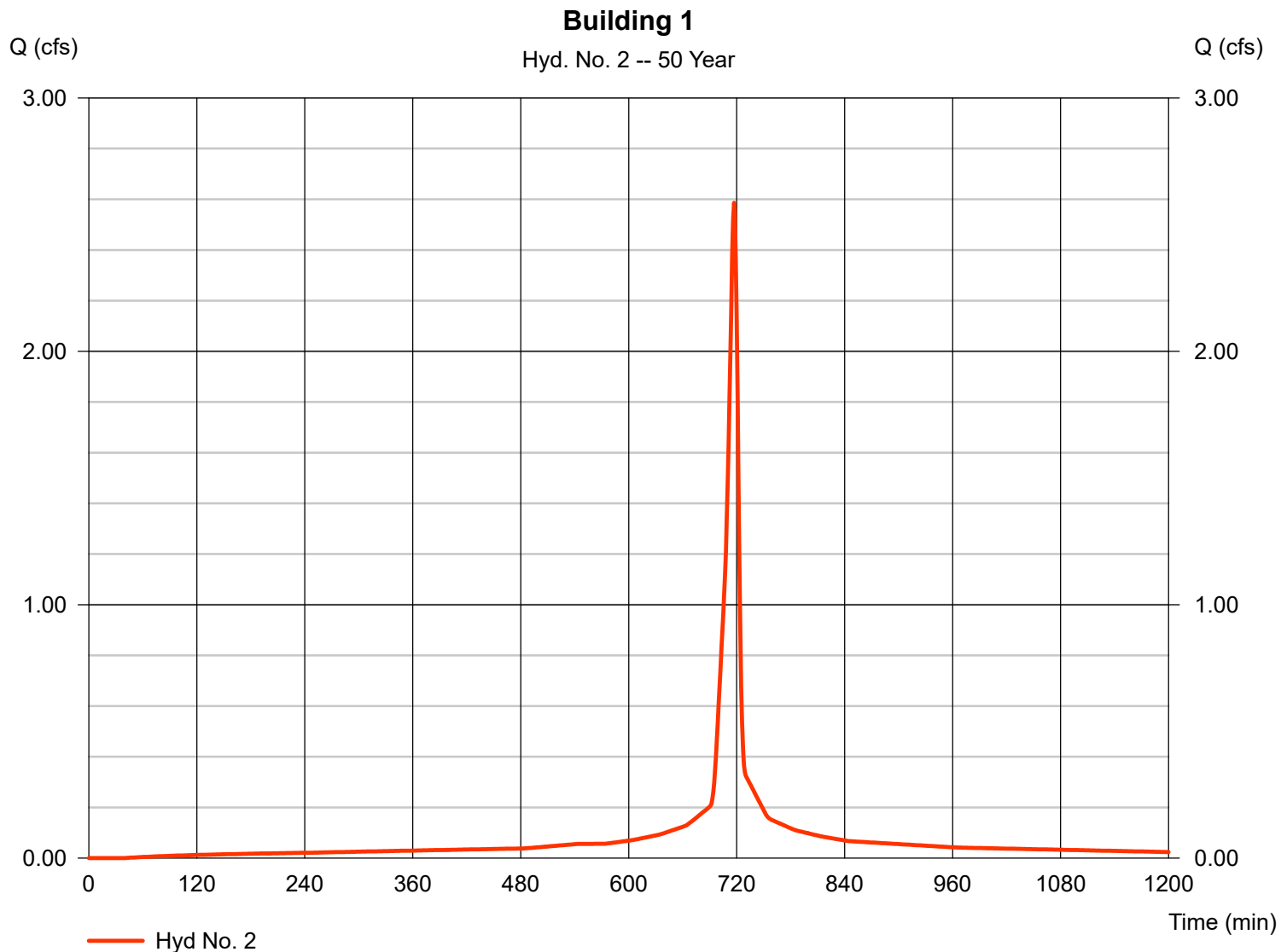
Monday, Oct 3, 2022

Hyd. No. 2

Building 1

Hydrograph type = SCS Runoff
 Storm frequency = 50 yrs
 Time interval = 1 min
 Drainage area = 0.250 ac
 Basin Slope = 0.0 %
 Tc method = USER
 Total precip. = 6.98 in
 Storm duration = 24 hrs

Peak discharge = 2.586 cfs
 Time to peak = 717 min
 Hyd. volume = 6,309 cuft
 Curve number = 98
 Hydraulic length = 0 ft
 Time of conc. (Tc) = 5.00 min
 Distribution = Type II
 Shape factor = 484



Hydrograph Report

109

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

Monday, Oct 3, 2022

Hyd. No. 3

Leaching Gallery 1

Hydrograph type = Reservoir (Interconnected)
Storm frequency = 50 yrs
Time interval = 1 min

Upper Pond

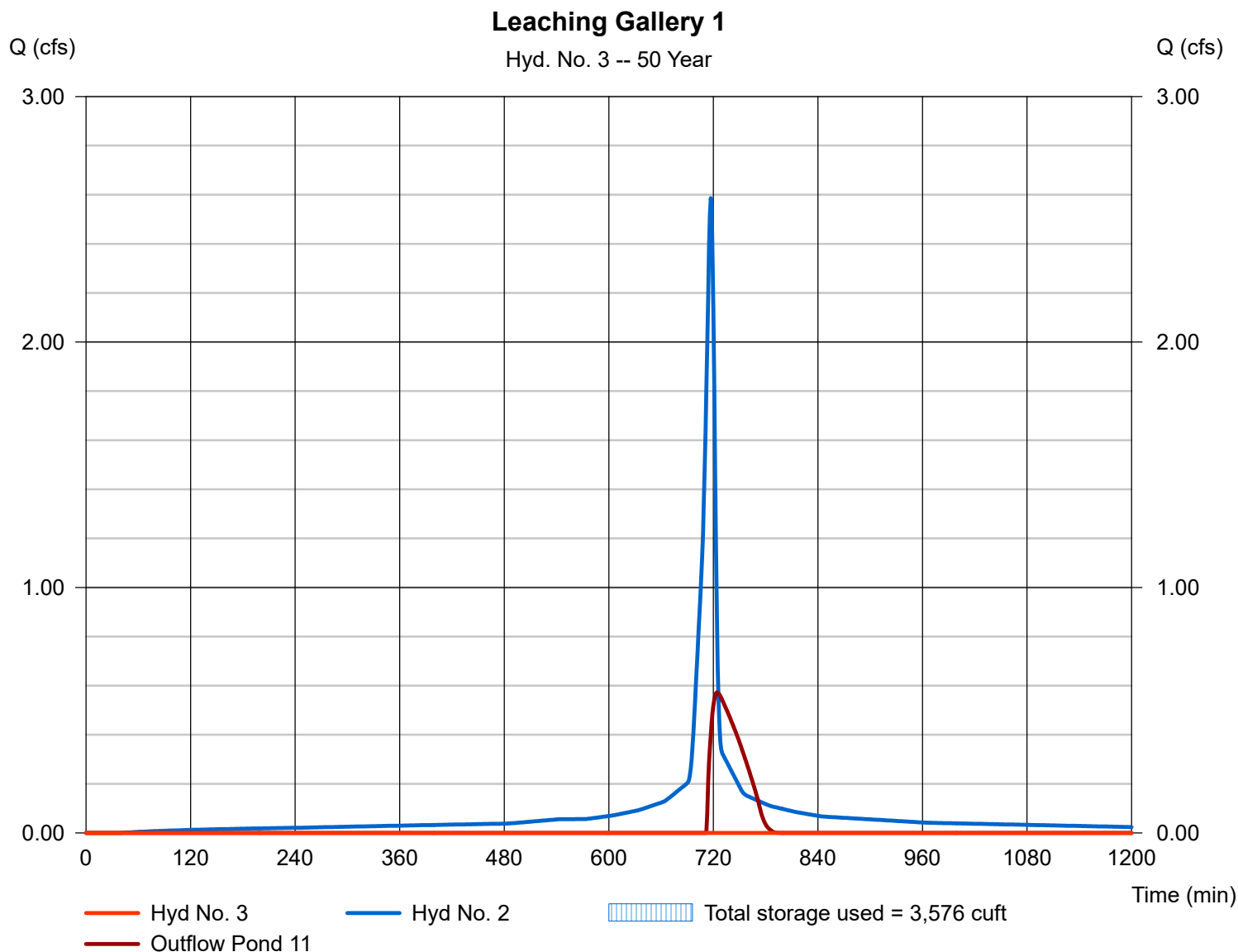
Pond name = Leaching Gallery 1
Inflow hyd. = 2 - Building 1
Max. Elevation = 34.32 ft
Max. Storage = 2,163 cuft

Peak discharge = 0.000 cfs
Time to peak = n/a
Hyd. volume = 0 cuft

Lower Pond

Pond name = Basin 1 Forebay
Other Inflow hyd. = None
Max. Elevation = 23.54 ft
Max. Storage = 1,412 cuft

Interconnected Pond Routing. Storage Indication method used.



Hydrograph Report

110

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

Monday, Oct 3, 2022

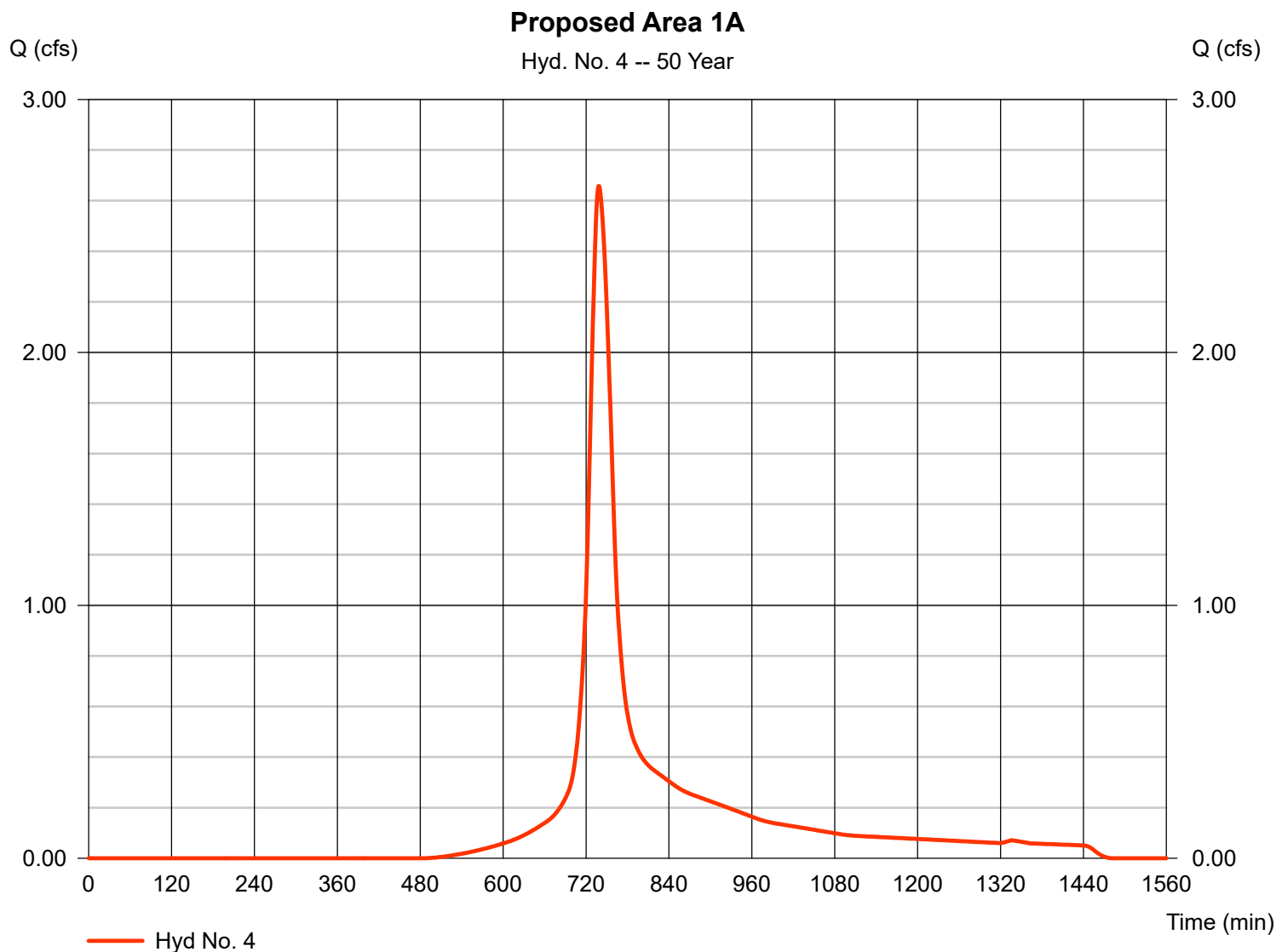
Hyd. No. 4

Proposed Area 1A

Hydrograph type = SCS Runoff
Storm frequency = 50 yrs
Time interval = 1 min
Drainage area = 0.950 ac
Basin Slope = 0.0 %
Tc method = TR55
Total precip. = 6.98 in
Storm duration = 24 hrs

Peak discharge = 2.658 cfs
Time to peak = 738 min
Hyd. volume = 13,248 cuft
Curve number = 72*
Hydraulic length = 0 ft
Time of conc. (Tc) = 26.10 min
Distribution = Type III
Shape factor = 484

* Composite (Area/CN) = $[(0.190 \times 55) + (0.450 \times 61) + (0.310 \times 98)] / 0.950$



Hydrograph Report

111

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

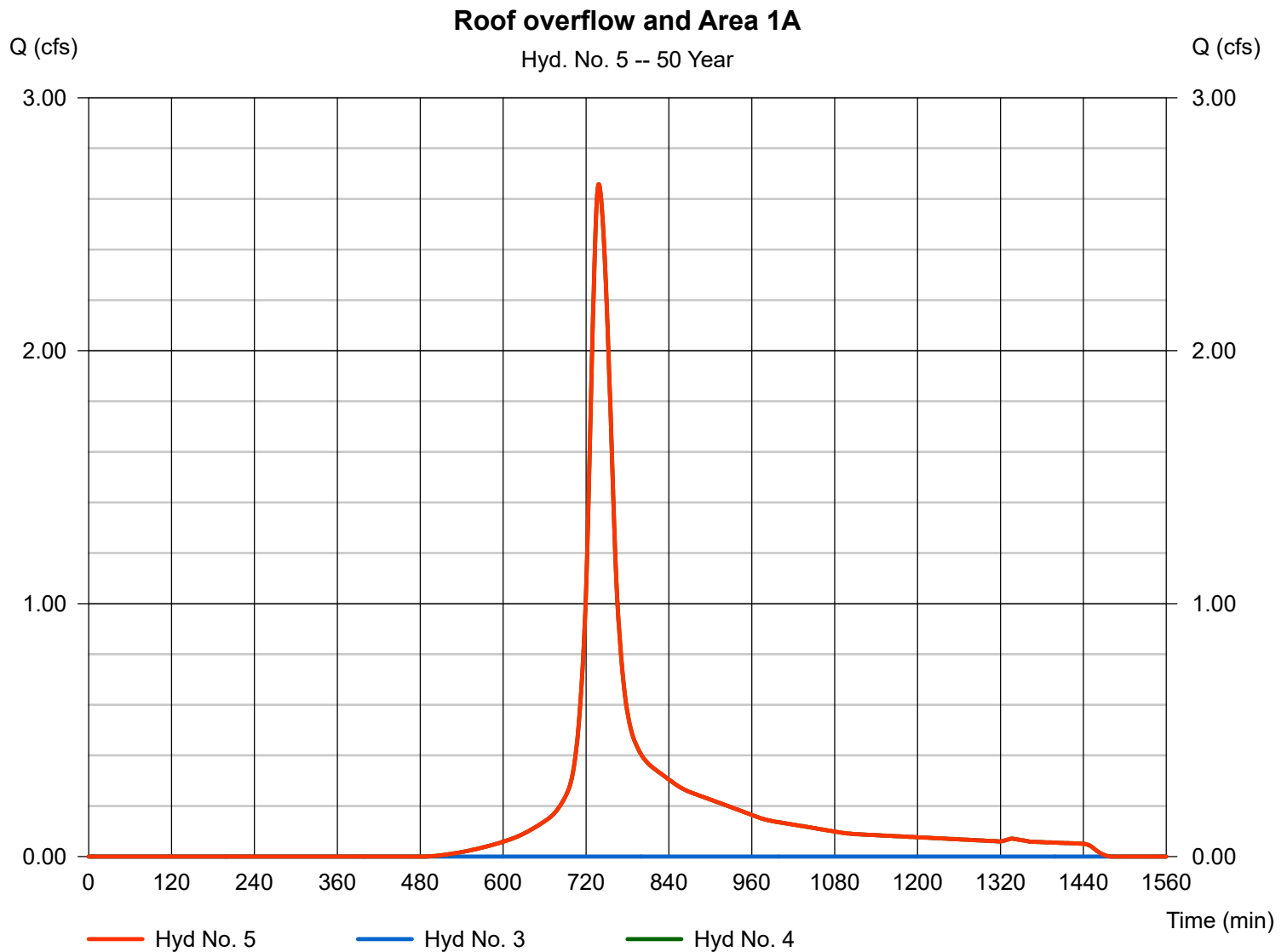
Monday, Oct 3, 2022

Hyd. No. 5

Roof overflow and Area 1A

Hydrograph type = Combine
Storm frequency = 50 yrs
Time interval = 1 min
Inflow hyds. = 3, 4

Peak discharge = 2.658 cfs
Time to peak = 738 min
Hyd. volume = 13,248 cuft
Contrib. drain. area = 0.950 ac



Hydrograph Report

112

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

Monday, Oct 3, 2022

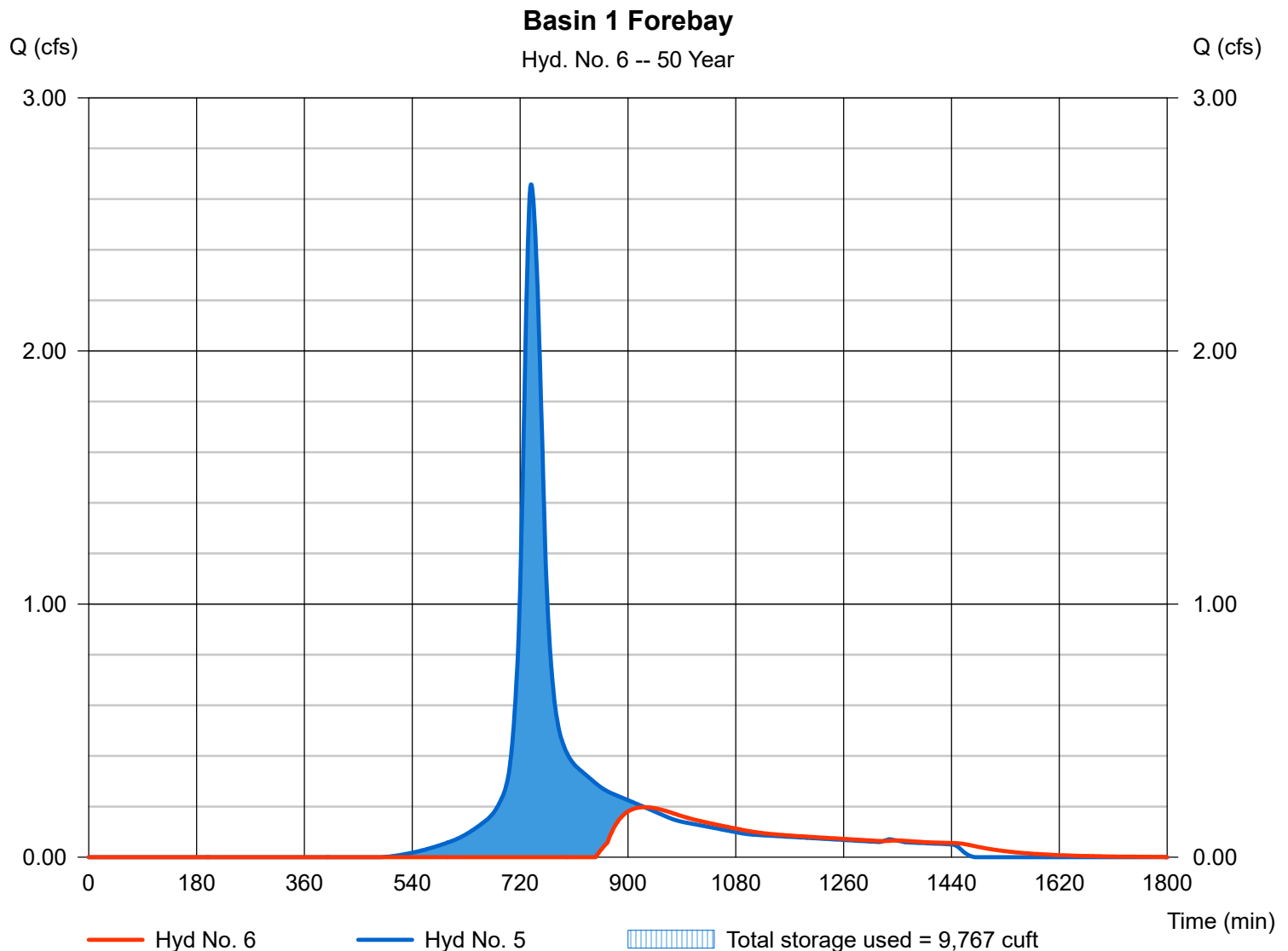
Hyd. No. 6

Basin 1 Forebay

Hydrograph type = Reservoir
Storm frequency = 50 yrs
Time interval = 1 min
Inflow hyd. No. = 5 - Roof overflow and Area 1A
Reservoir name = Basin 1 Forebay

Peak discharge = 0.198 cfs
Time to peak = 928 min
Hyd. volume = 4,023 cuft
Max. Elevation = 27.69 ft
Max. Storage = 9,767 cuft

Storage Indication method used.



Hydrograph Report

113

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

Monday, Oct 3, 2022

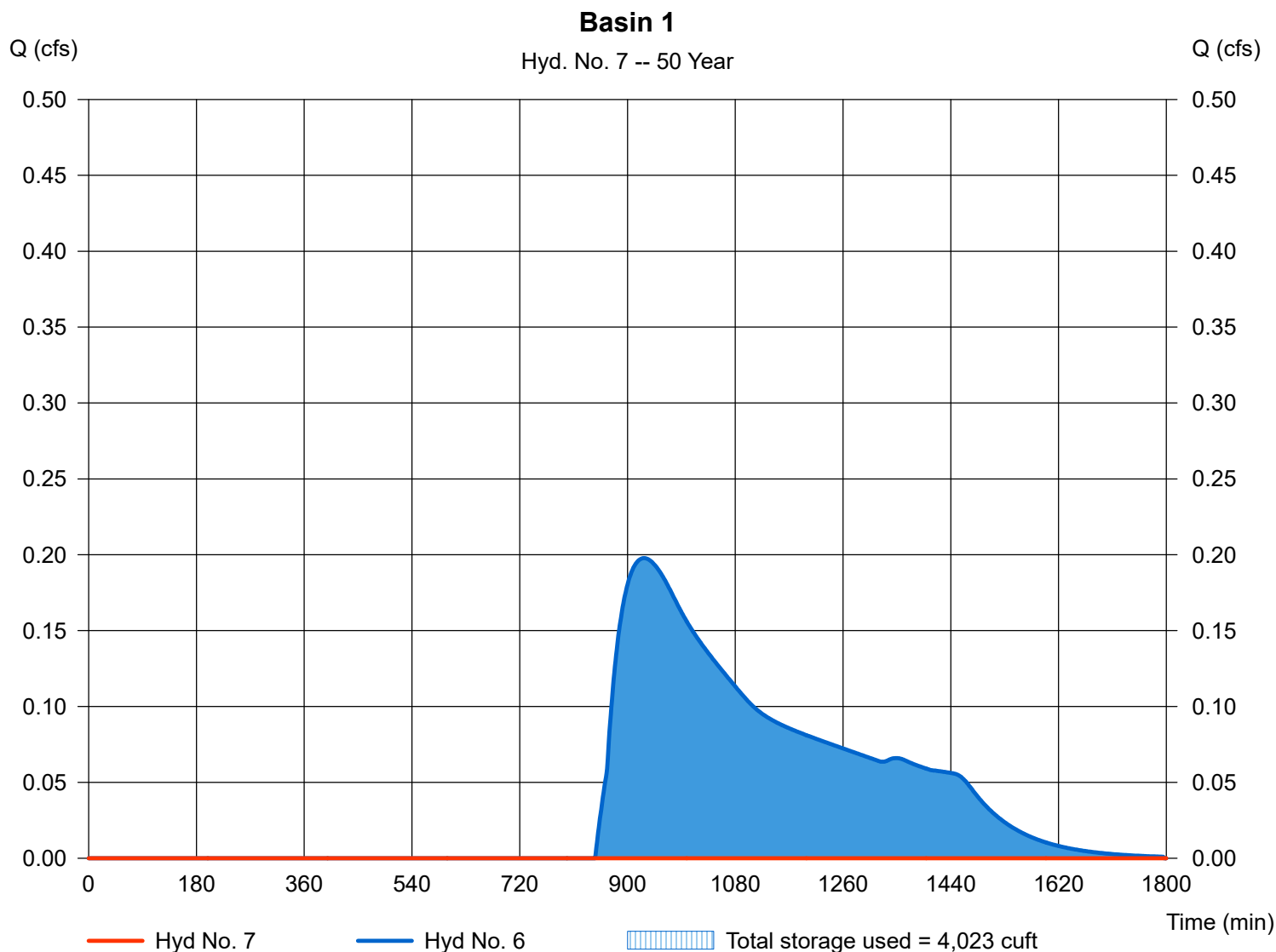
Hyd. No. 7

Basin 1

Hydrograph type = Reservoir
Storm frequency = 50 yrs
Time interval = 1 min
Inflow hyd. No. = 6 - Basin 1 Forebay
Reservoir name = Basin 1 Forebay

Peak discharge = 0.000 cfs
Time to peak = n/a
Hyd. volume = 0 cuft
Max. Elevation = 25.31 ft
Max. Storage = 4,023 cuft

Storage Indication method used.



Hydrograph Report

114

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

Monday, Oct 3, 2022

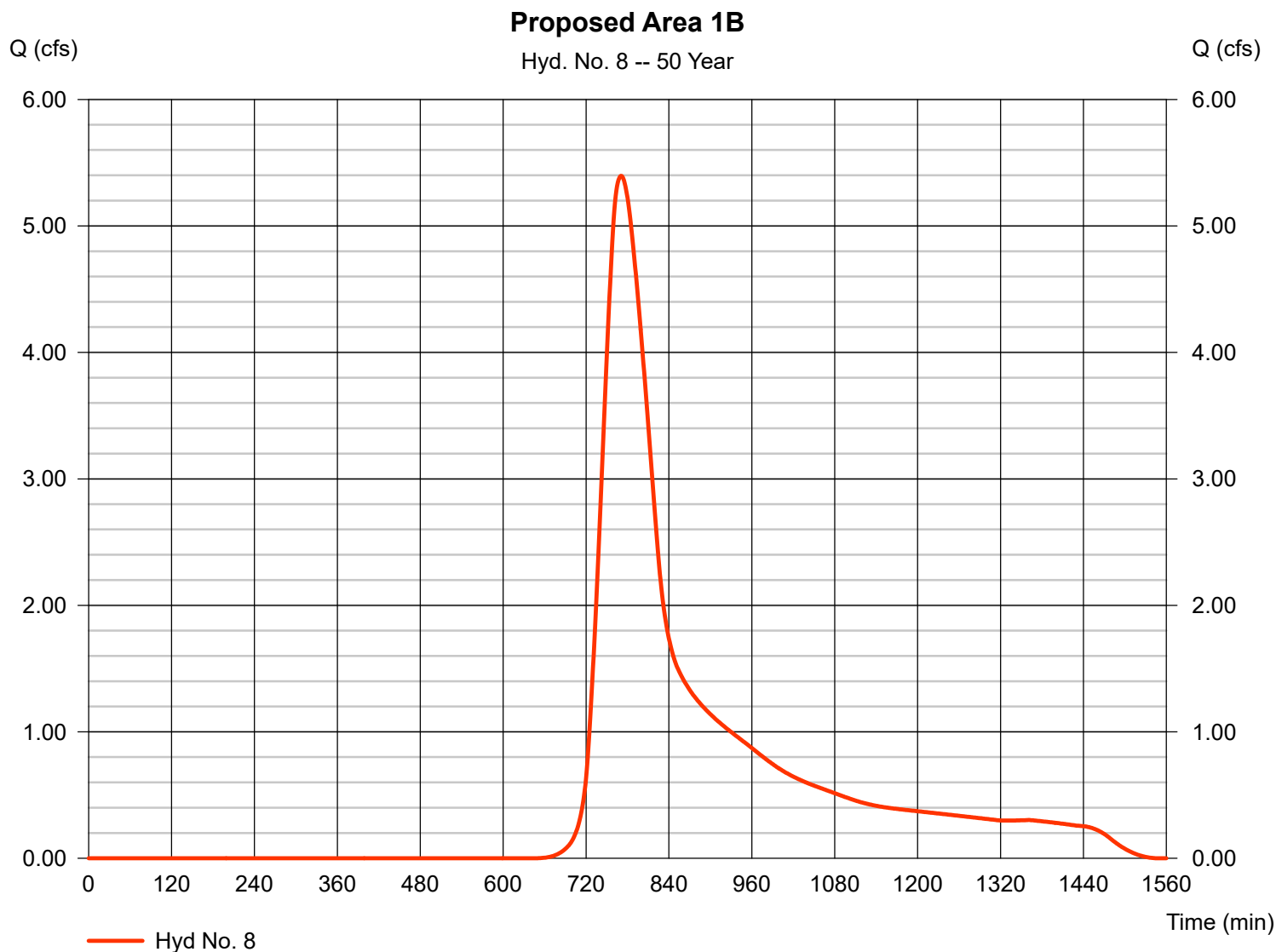
Hyd. No. 8

Proposed Area 1B

Hydrograph type = SCS Runoff
Storm frequency = 50 yrs
Time interval = 1 min
Drainage area = 5.930 ac
Basin Slope = 0.0 %
Tc method = TR55
Total precip. = 6.98 in
Storm duration = 24 hrs

Peak discharge = 5.396 cfs
Time to peak = 771 min
Hyd. volume = 47,323 cuft
Curve number = 56*
Hydraulic length = 0 ft
Time of conc. (Tc) = 69.10 min
Distribution = Type III
Shape factor = 484

* Composite (Area/CN) = $[(5.120 \times 55) + (0.810 \times 61)] / 5.930$



Hydrograph Report

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

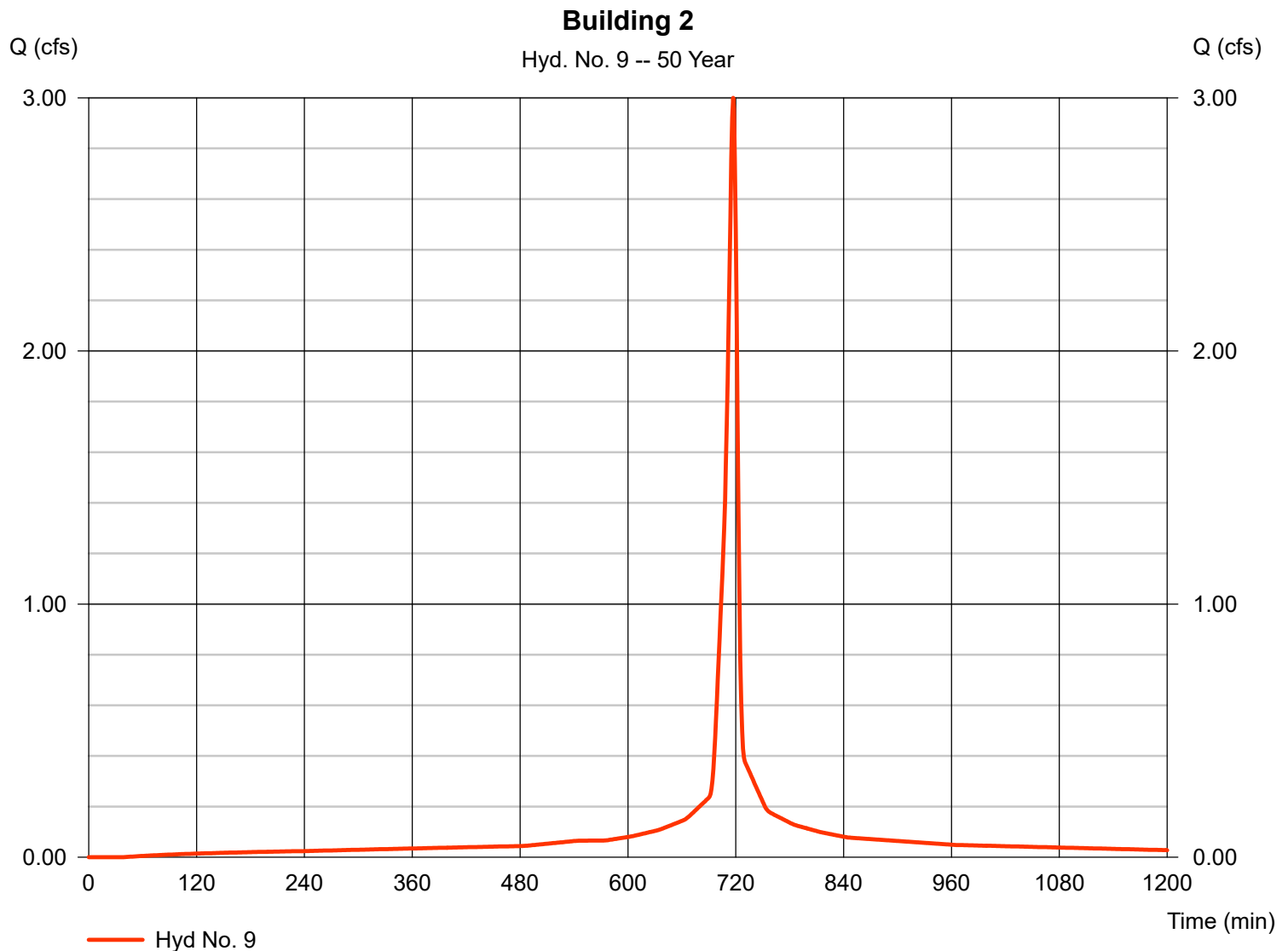
Monday, Oct 3, 2022

Hyd. No. 9

Building 2

Hydrograph type = SCS Runoff
 Storm frequency = 50 yrs
 Time interval = 1 min
 Drainage area = 0.290 ac
 Basin Slope = 0.0 %
 Tc method = USER
 Total precip. = 6.98 in
 Storm duration = 24 hrs

Peak discharge = 3.000 cfs
 Time to peak = 717 min
 Hyd. volume = 7,318 cuft
 Curve number = 98
 Hydraulic length = 0 ft
 Time of conc. (Tc) = 5.00 min
 Distribution = Type II
 Shape factor = 484



Hydrograph Report

116

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

Monday, Oct 3, 2022

Hyd. No. 10

Leaching Gallery 2

Hydrograph type = Reservoir (Interconnected)
Storm frequency = 50 yrs
Time interval = 1 min

Upper Pond

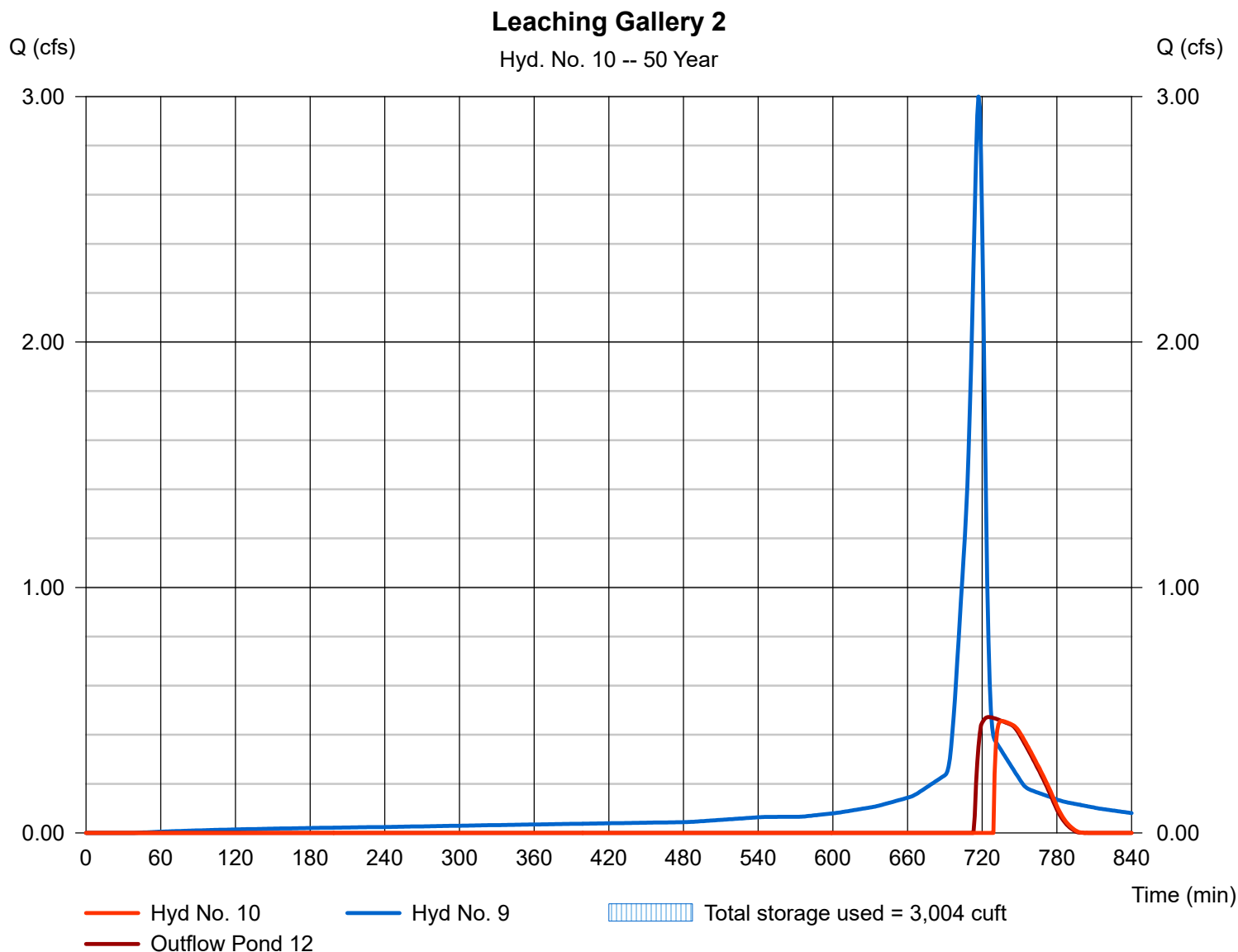
Pond name = Leaching Gallery 2
Inflow hyd. = 9 - Building 2
Max. Elevation = 35.65 ft
Max. Storage = 2,595 cuft

Peak discharge = 0.456 cfs
Time to peak = 736 min
Hyd. volume = 1,057 cuft

Lower Pond

Pond name = Basin 2 Forebay
Other Inflow hyd. = None
Max. Elevation = 23.06 ft
Max. Storage = 409 cuft

Interconnected Pond Routing. Storage Indication method used.



Hydrograph Report

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

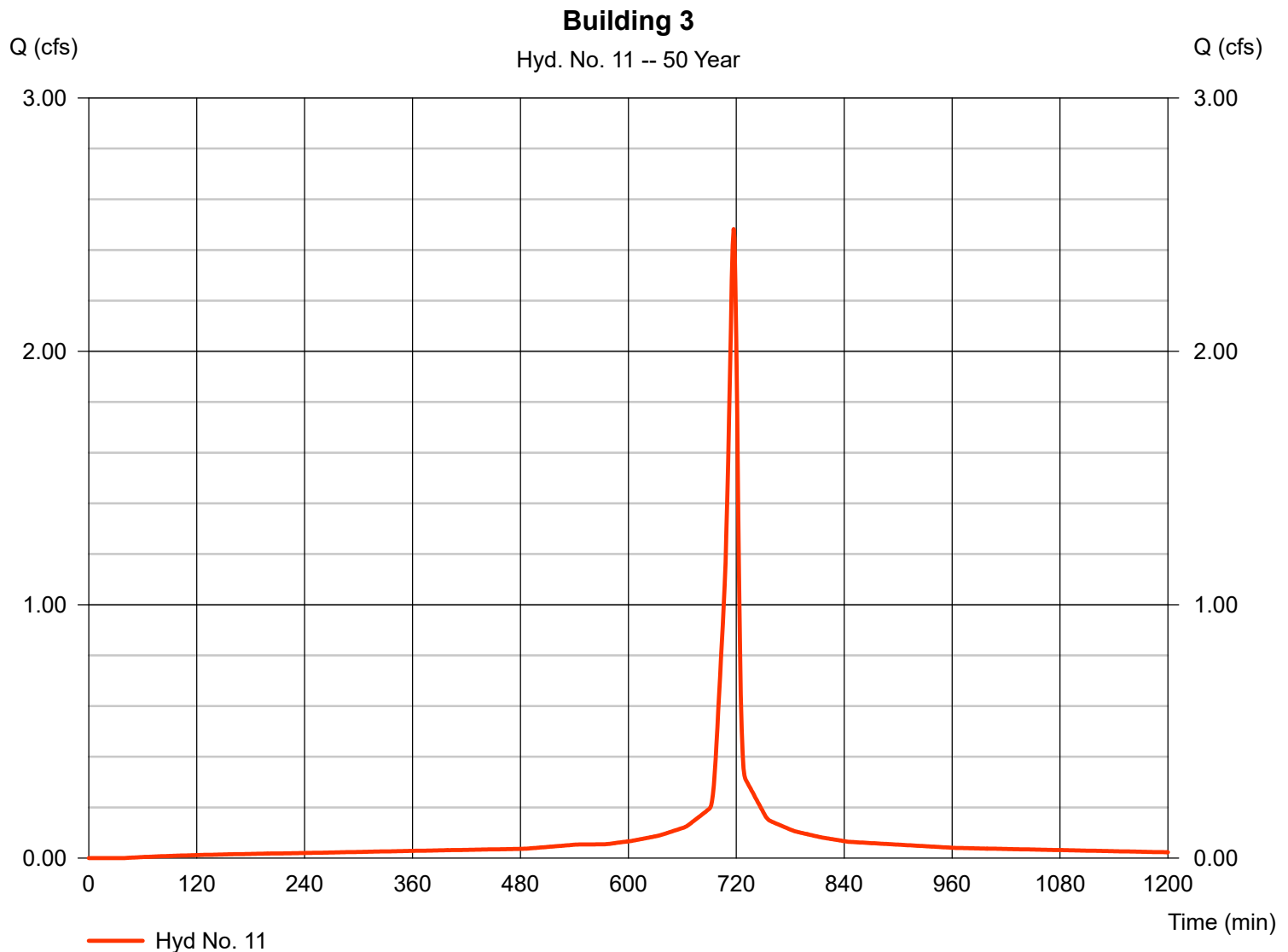
Monday, Oct 3, 2022

Hyd. No. 11

Building 3

Hydrograph type = SCS Runoff
 Storm frequency = 50 yrs
 Time interval = 1 min
 Drainage area = 0.240 ac
 Basin Slope = 0.0 %
 Tc method = USER
 Total precip. = 6.98 in
 Storm duration = 24 hrs

Peak discharge = 2.483 cfs
 Time to peak = 717 min
 Hyd. volume = 6,056 cuft
 Curve number = 98
 Hydraulic length = 0 ft
 Time of conc. (Tc) = 5.00 min
 Distribution = Type II
 Shape factor = 484



Hydrograph Report

118

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

Monday, Oct 3, 2022

Hyd. No. 12

Leaching Gallery 3

Hydrograph type = Reservoir (Interconnected)
Storm frequency = 50 yrs
Time interval = 1 min

Upper Pond

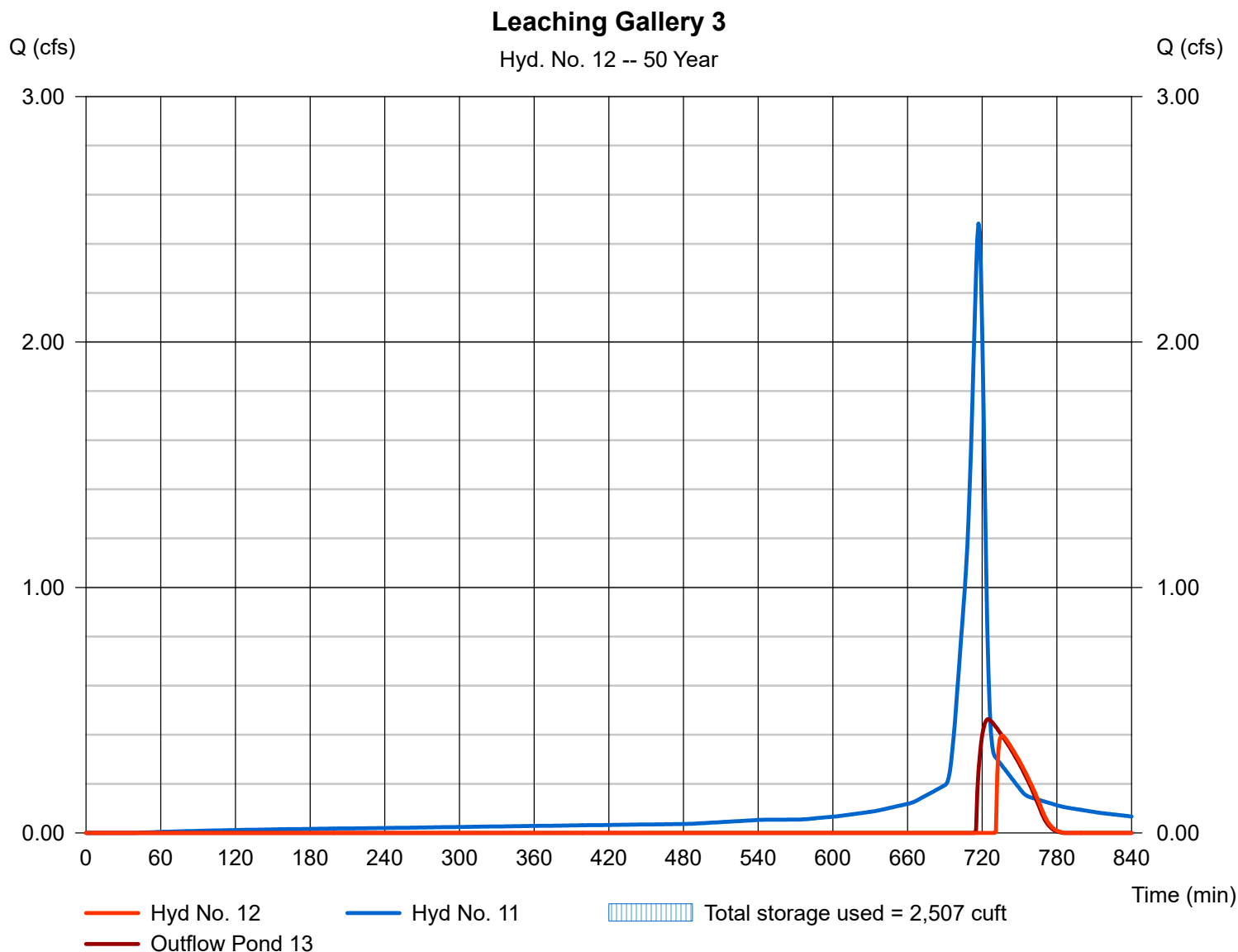
Pond name = Leaching Gallery 3
Inflow hyd. = 11 - Building 3
Max. Elevation = 40.80 ft
Max. Storage = 2,103 cuft

Peak discharge = 0.397 cfs
Time to peak = 736 min
Hyd. volume = 633 cuft

Lower Pond

Pond name = Basin 2 Forebay
Other Inflow hyd. = None
Max. Elevation = 23.05 ft
Max. Storage = 404 cuft

Interconnected Pond Routing. Storage Indication method used.



Hydrograph Report

119

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

Monday, Oct 3, 2022

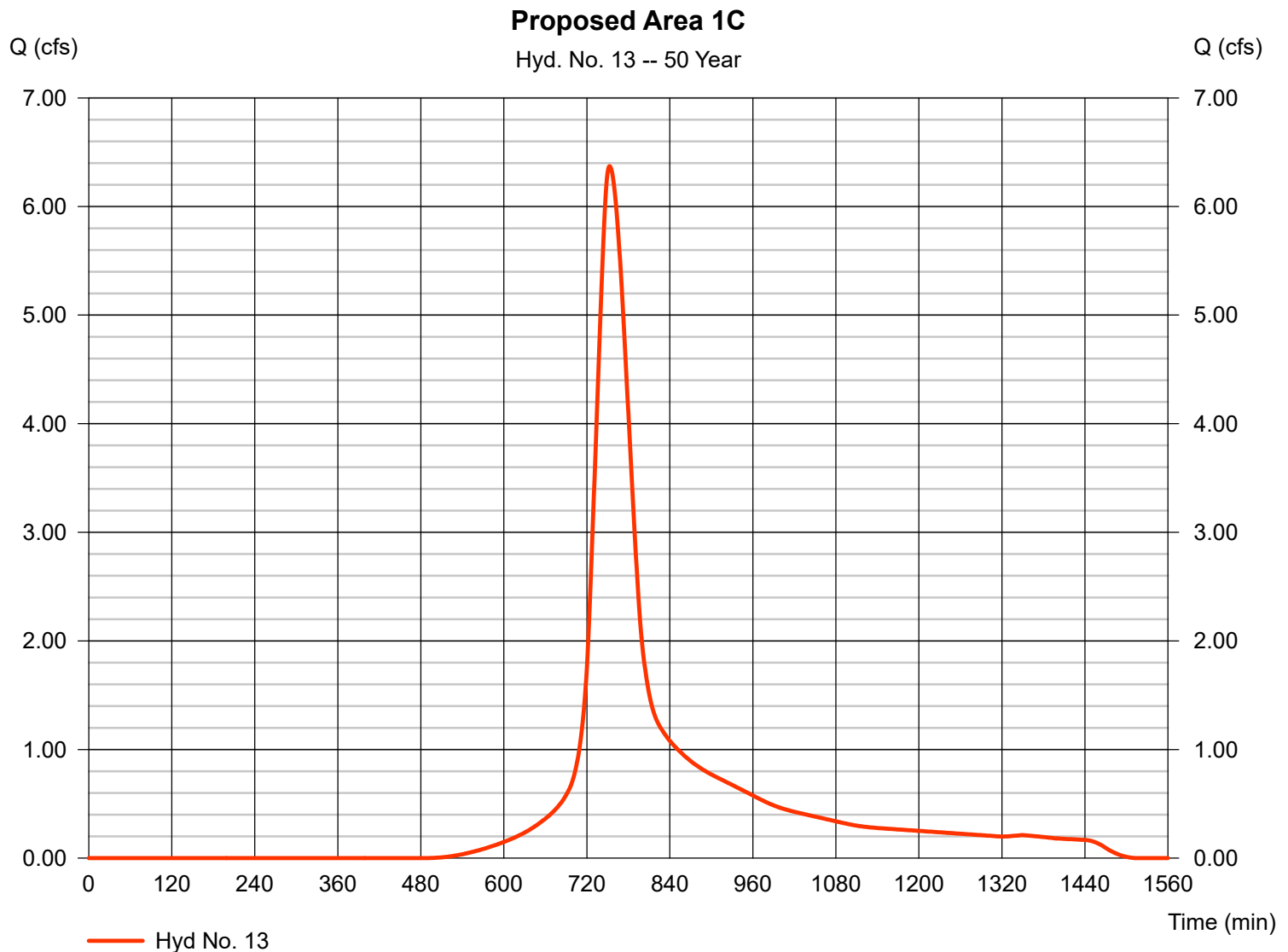
Hyd. No. 13

Proposed Area 1C

Hydrograph type = SCS Runoff
Storm frequency = 50 yrs
Time interval = 1 min
Drainage area = 3.070 ac
Basin Slope = 0.0 %
Tc method = TR55
Total precip. = 6.98 in
Storm duration = 24 hrs

Peak discharge = 6.373 cfs
Time to peak = 753 min
Hyd. volume = 42,299 cuft
Curve number = 72*
Hydraulic length = 0 ft
Time of conc. (Tc) = 48.50 min
Distribution = Type III
Shape factor = 484

* Composite (Area/CN) = $[(0.740 \times 55) + (1.060 \times 98) + (1.270 \times 61)] / 3.070$



Hydrograph Report

120

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

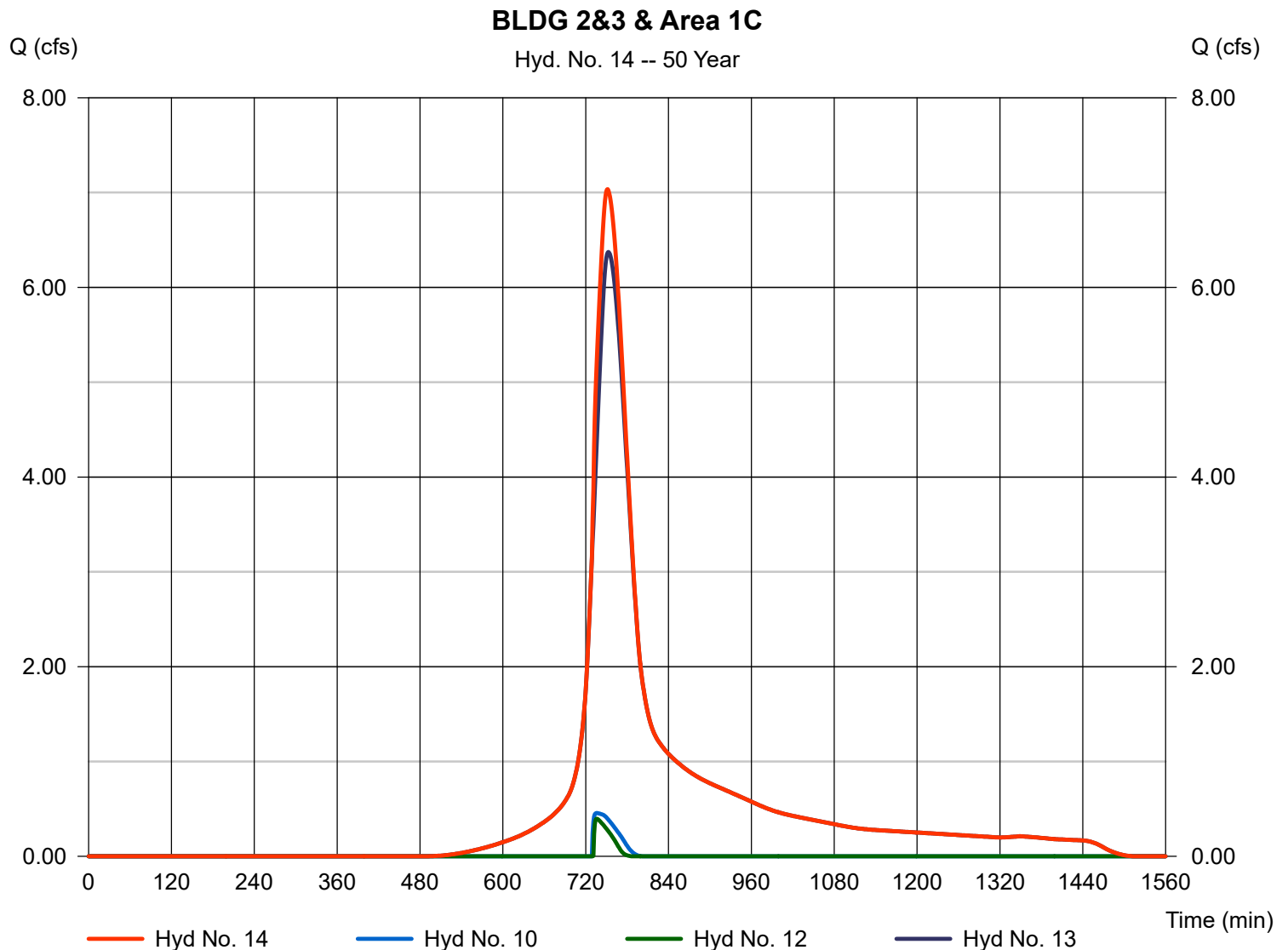
Monday, Oct 3, 2022

Hyd. No. 14

BLDG 2&3 & Area 1C

Hydrograph type = Combine
Storm frequency = 50 yrs
Time interval = 1 min
Inflow hyds. = 10, 12, 13

Peak discharge = 7.035 cfs
Time to peak = 752 min
Hyd. volume = 43,989 cuft
Contrib. drain. area = 3.070 ac



Hydrograph Report

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

Monday, Oct 3, 2022

Hyd. No. 15

Basin 2 Forebay

Hydrograph type = Reservoir (Interconnected)
 Storm frequency = 50 yrs
 Time interval = 1 min

Upper Pond

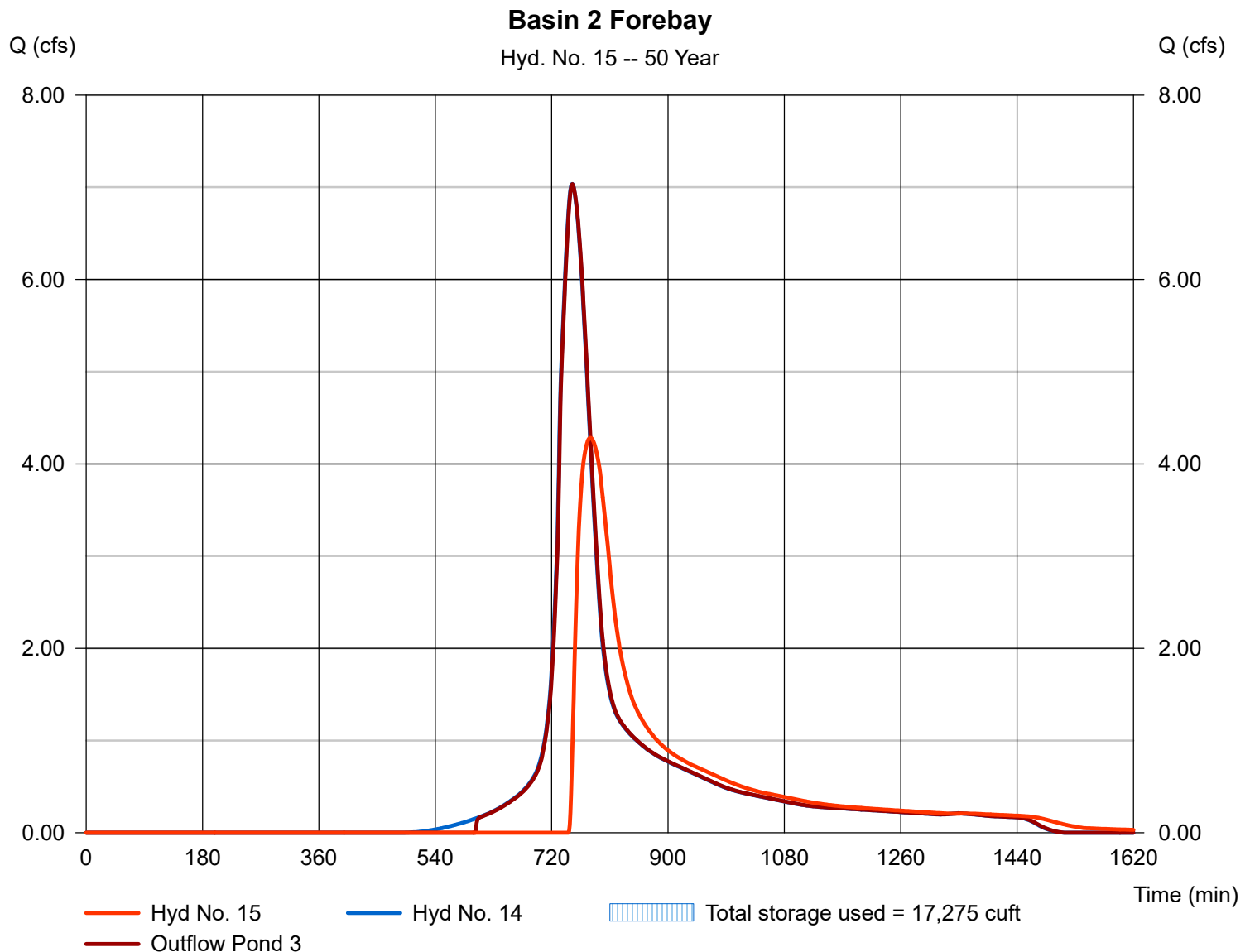
Pond name = Basin 2 Forebay
 Inflow hyd. = 14 - BLDG 2&3 & Area 1C
 Max. Elevation = 23.42 ft
 Max. Storage = 647 cuft

Peak discharge = 4.283 cfs
 Time to peak = 780 min
 Hyd. volume = 33,501 cuft

Lower Pond

Pond name = Basin 2
 Other Inflow hyd. = None
 Max. Elevation = 27.33 ft
 Max. Storage = 16,628 cuft

Interconnected Pond Routing. Storage Indication method used.



Hydrograph Report

122

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

Monday, Oct 3, 2022

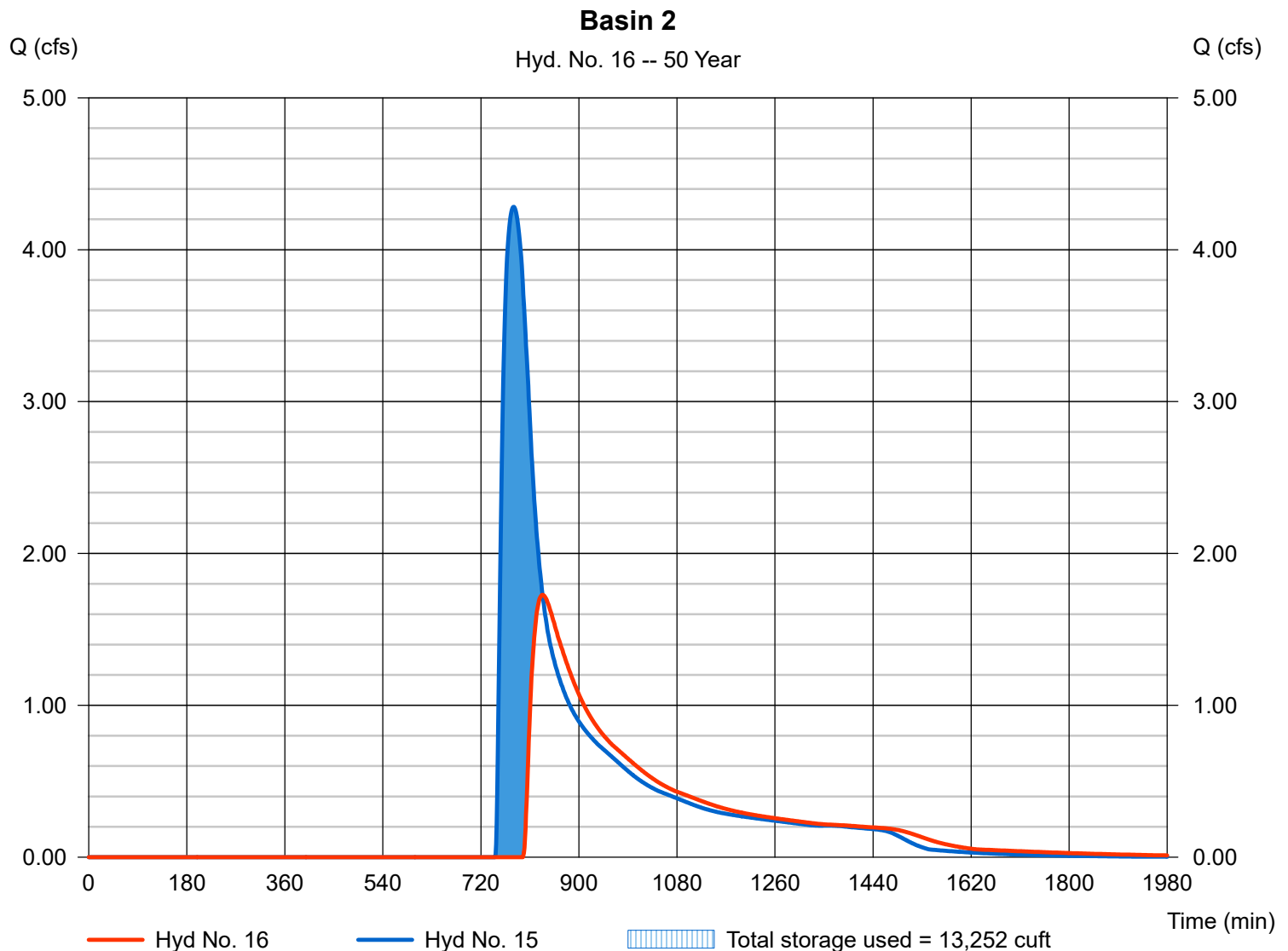
Hyd. No. 16

Basin 2

Hydrograph type = Reservoir
Storm frequency = 50 yrs
Time interval = 1 min
Inflow hyd. No. = 15 - Basin 2 Forebay
Reservoir name = Basin 2

Peak discharge = 1.727 cfs
Time to peak = 833 min
Hyd. volume = 23,386 cuft
Max. Elevation = 26.67 ft
Max. Storage = 13,252 cuft

Storage Indication method used.



Hydrograph Report

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

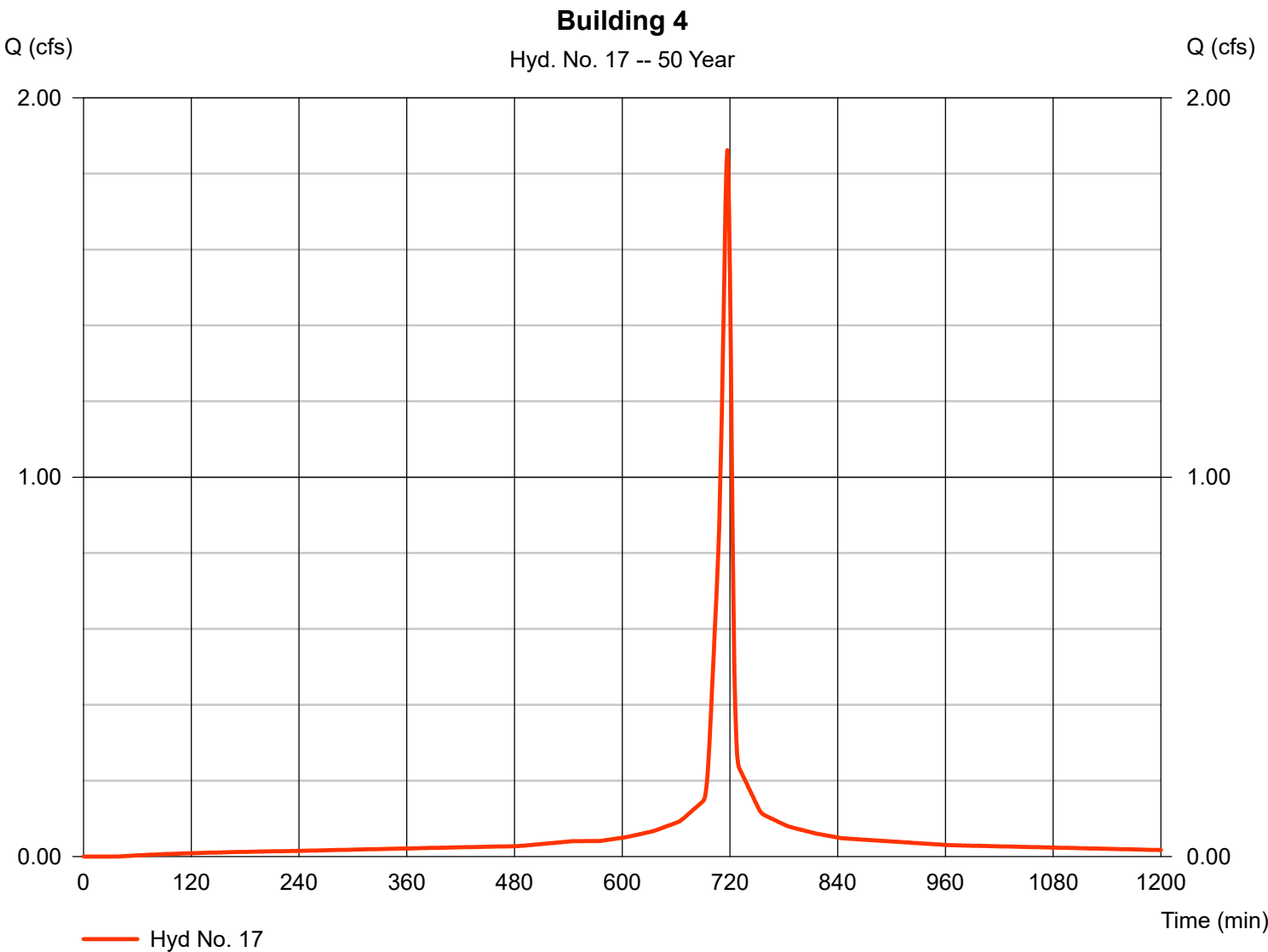
Monday, Oct 3, 2022

Hyd. No. 17

Building 4

Hydrograph type = SCS Runoff
 Storm frequency = 50 yrs
 Time interval = 1 min
 Drainage area = 0.180 ac
 Basin Slope = 0.0 %
 Tc method = USER
 Total precip. = 6.98 in
 Storm duration = 24 hrs

Peak discharge = 1.862 cfs
 Time to peak = 717 min
 Hyd. volume = 4,542 cuft
 Curve number = 98
 Hydraulic length = 0 ft
 Time of conc. (Tc) = 5.00 min
 Distribution = Type II
 Shape factor = 484



Hydrograph Report

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

Monday, Oct 3, 2022

Hyd. No. 18

Leaching Gallery 4

Hydrograph type = Reservoir (Interconnected)
 Storm frequency = 50 yrs
 Time interval = 1 min

Upper Pond

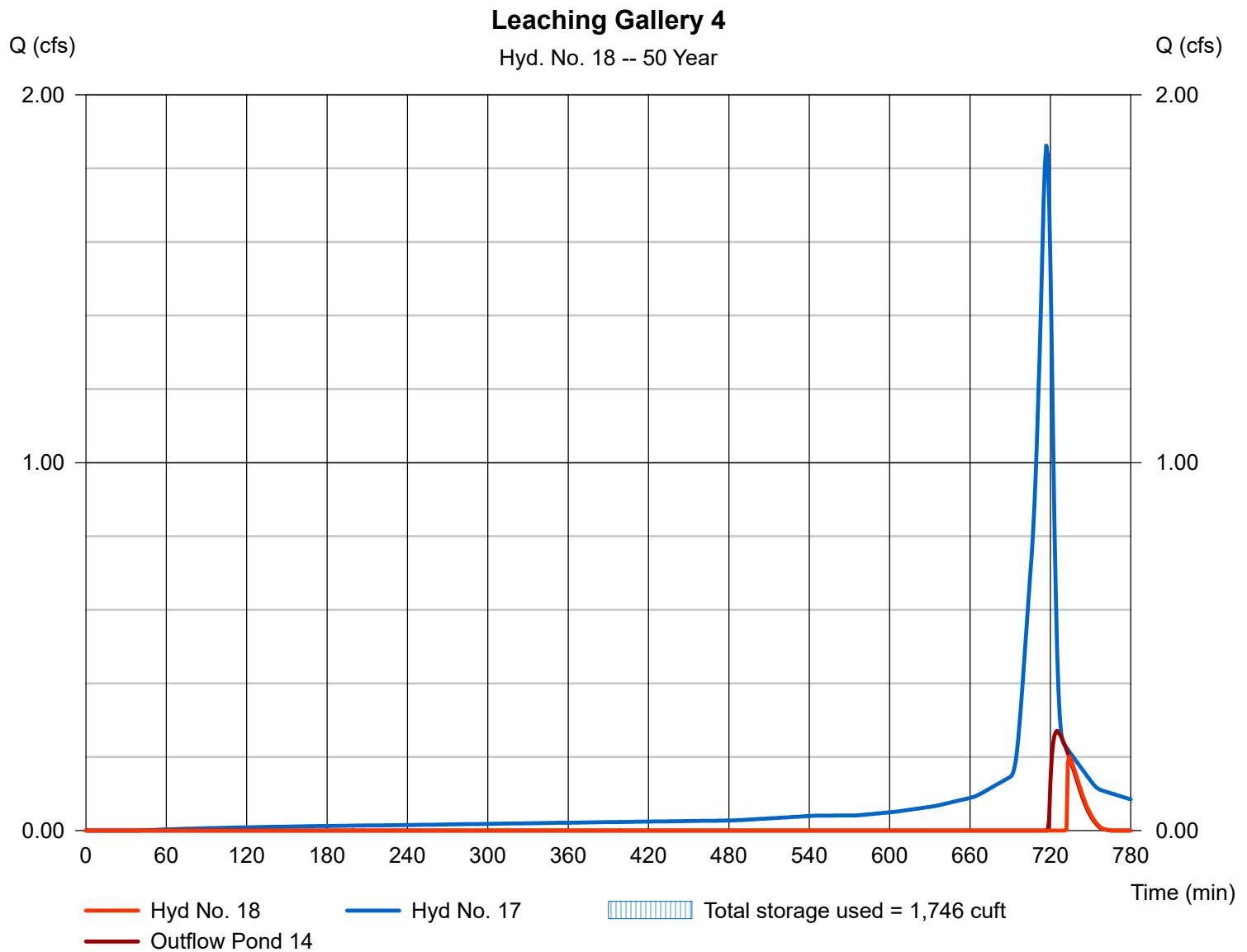
Pond name = Leaching Gallery 4
 Inflow hyd. = 17 - Building 4
 Max. Elevation = 47.05 ft
 Max. Storage = 1,558 cuft

Peak discharge = 0.202 cfs
 Time to peak = 734 min
 Hyd. volume = 146 cuft

Lower Pond

Pond name = Basin 3 Forebay
 Other Inflow hyd. = None
 Max. Elevation = 33.02 ft
 Max. Storage = 188 cuft

Interconnected Pond Routing. Storage Indication method used.



Hydrograph Report

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

Monday, Oct 3, 2022

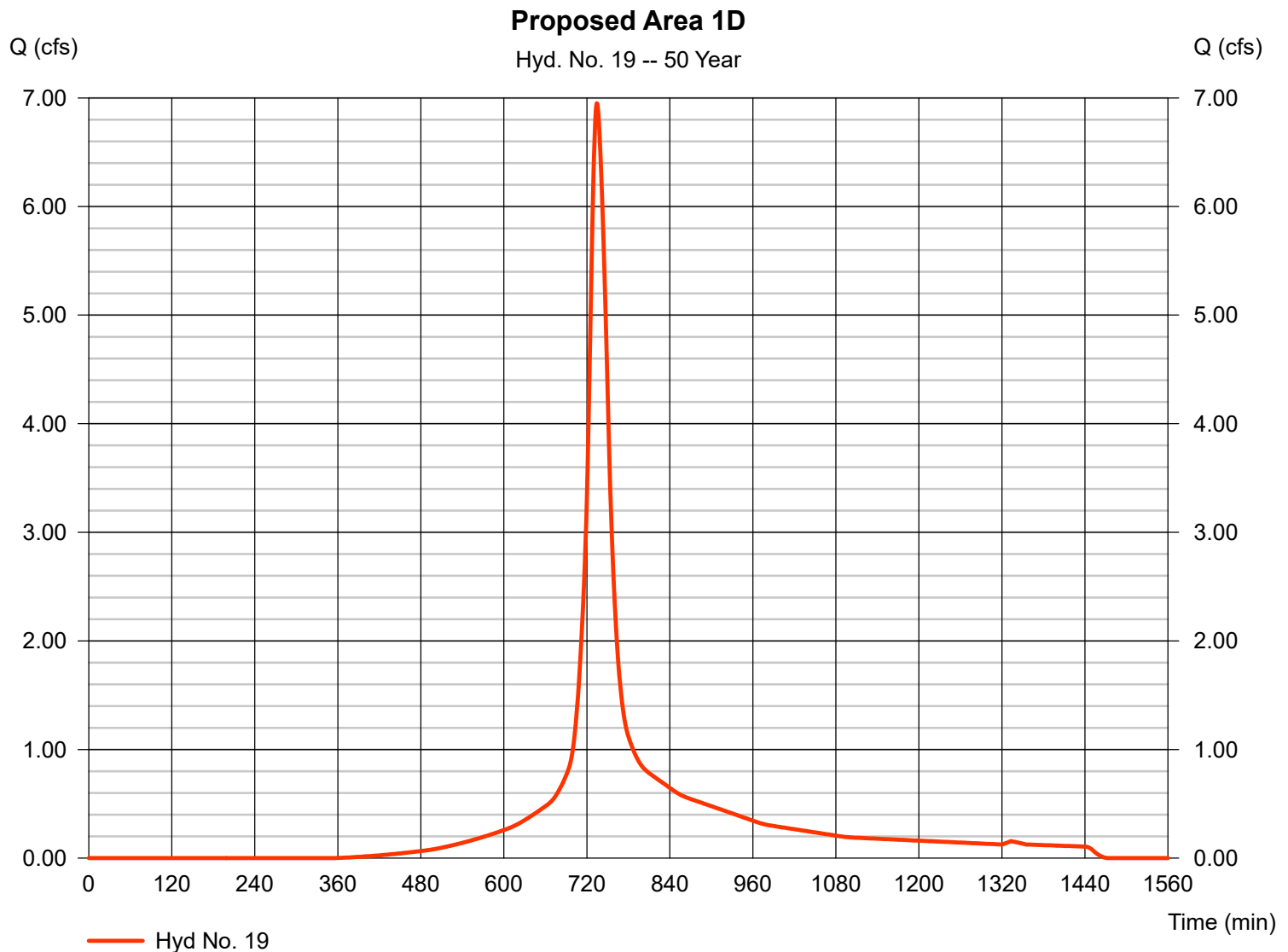
Hyd. No. 19

Proposed Area 1D

Hydrograph type = SCS Runoff
 Storm frequency = 50 yrs
 Time interval = 1 min
 Drainage area = 1.830 ac
 Basin Slope = 0.0 %
 Tc method = TR55
 Total precip. = 6.98 in
 Storm duration = 24 hrs

Peak discharge = 6.951 cfs
 Time to peak = 734 min
 Hyd. volume = 32,102 cuft
 Curve number = 81*
 Hydraulic length = 0 ft
 Time of conc. (Tc) = 21.50 min
 Distribution = Type III
 Shape factor = 484

* Composite (Area/CN) = $[(1.010 \times 98) + (0.820 \times 61)] / 1.830$



Hydrograph Report

126

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

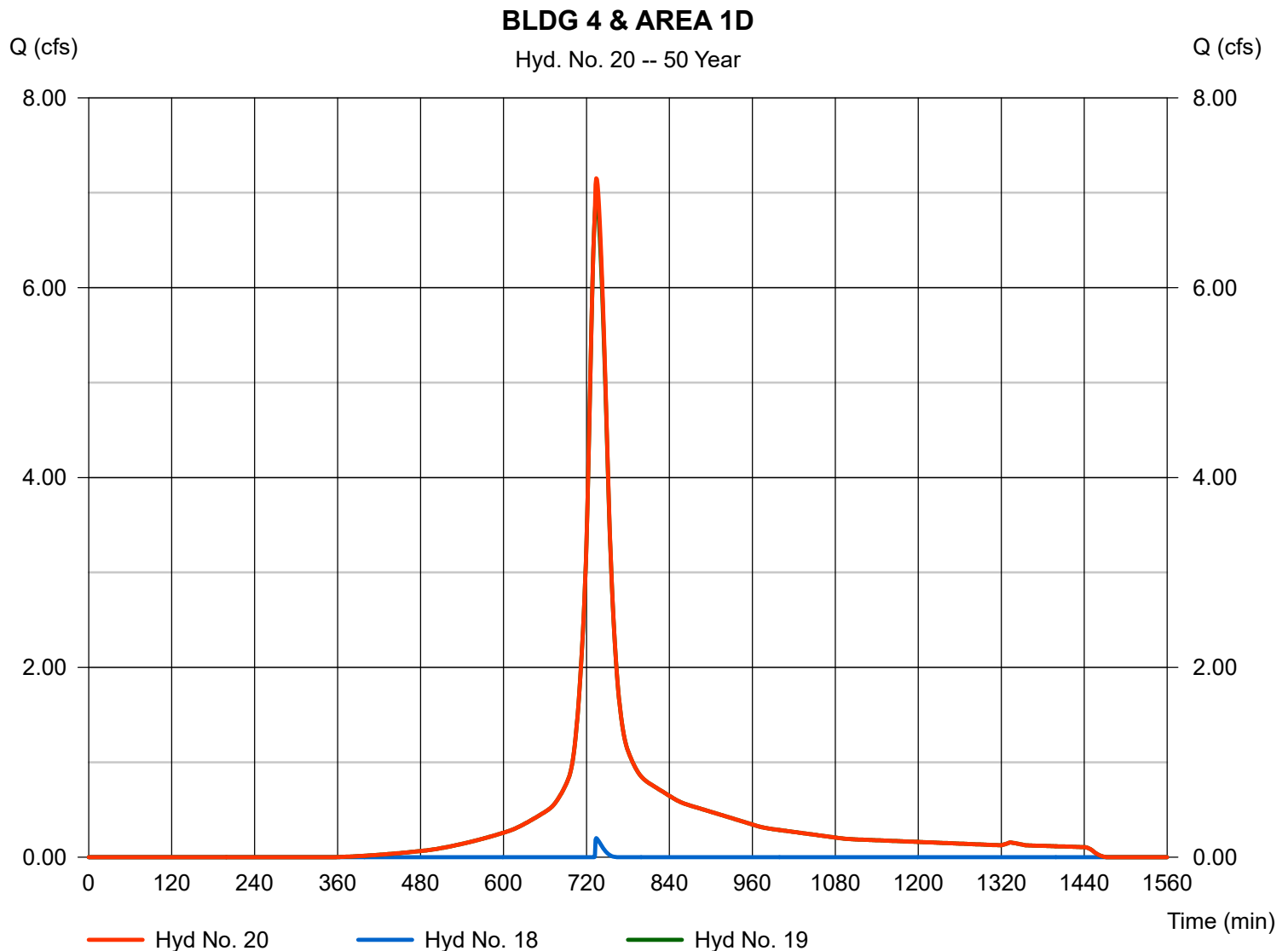
Monday, Oct 3, 2022

Hyd. No. 20

BLDG 4 & AREA 1D

Hydrograph type = Combine
Storm frequency = 50 yrs
Time interval = 1 min
Inflow hyds. = 18, 19

Peak discharge = 7.153 cfs
Time to peak = 734 min
Hyd. volume = 32,248 cuft
Contrib. drain. area = 1.830 ac



Hydrograph Report

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

Monday, Oct 3, 2022

Hyd. No. 21

Basin 3 Forebay

Hydrograph type = Reservoir (Interconnected)
 Storm frequency = 50 yrs
 Time interval = 1 min

Upper Pond

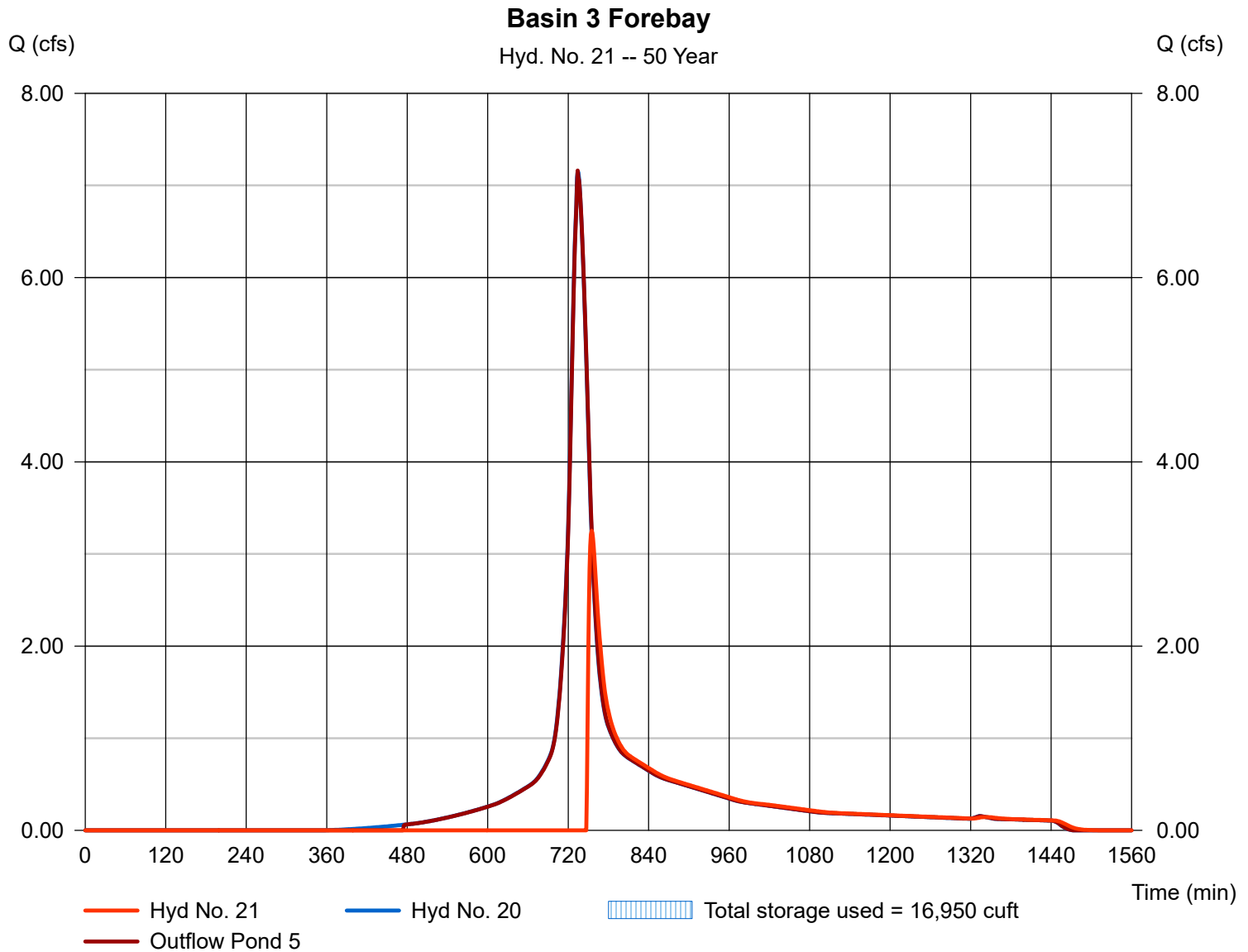
Pond name = Basin 3 Forebay
 Inflow hyd. = 20 - BLDG 4 & AREA 1D
 Max. Elevation = 33.42 ft
 Max. Storage = 320 cuft

Peak discharge = 3.252 cfs
 Time to peak = 755 min
 Hyd. volume = 16,414 cuft

Lower Pond

Pond name = Basin 3
 Other Inflow hyd. = None
 Max. Elevation = 36.75 ft
 Max. Storage = 16,630 cuft

Interconnected Pond Routing. Storage Indication method used.



Hydrograph Report

128

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

Monday, Oct 3, 2022

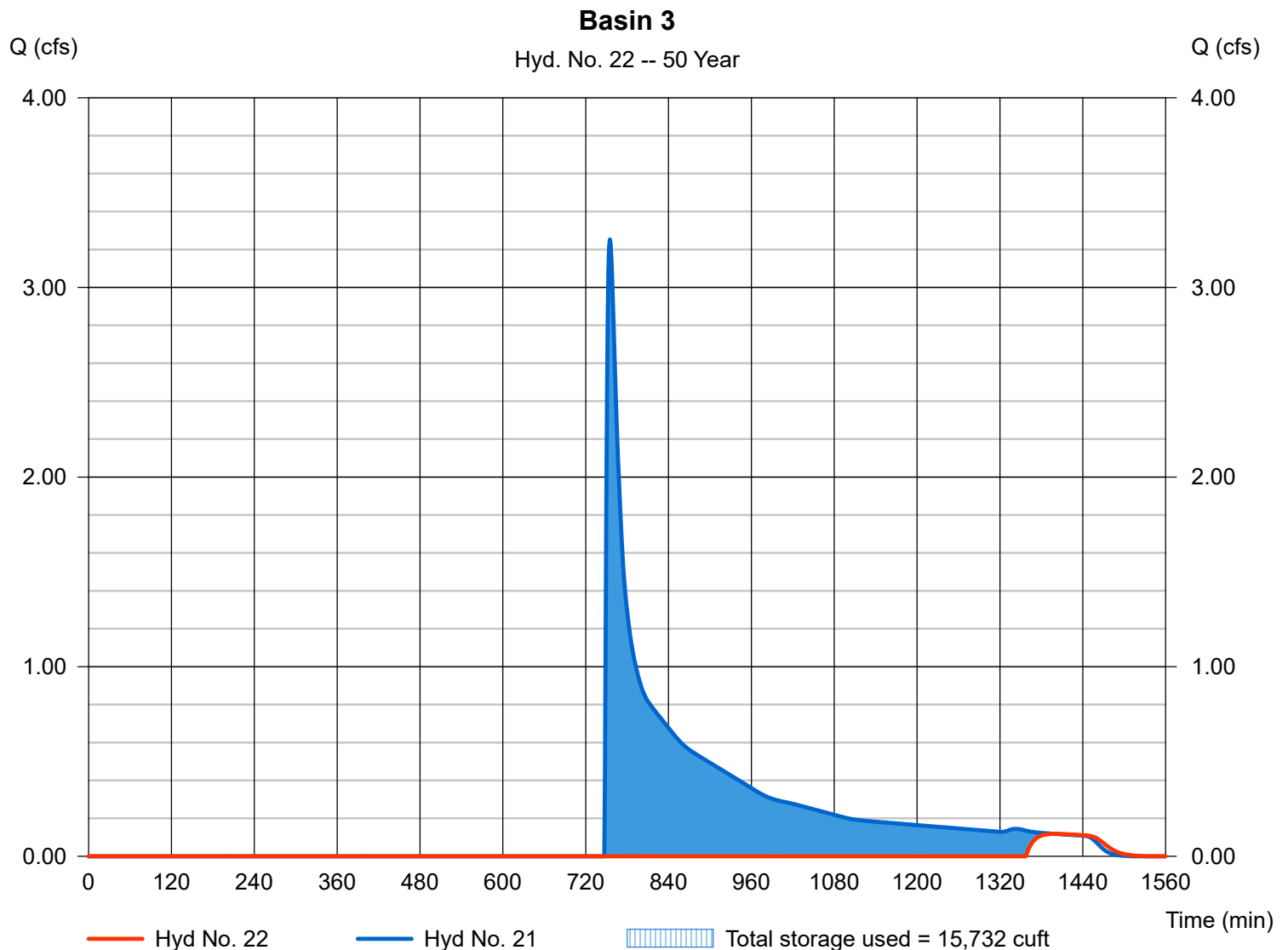
Hyd. No. 22

Basin 3

Hydrograph type = Reservoir
Storm frequency = 50 yrs
Time interval = 1 min
Inflow hyd. No. = 21 - Basin 3 Forebay
Reservoir name = Basin 3

Peak discharge = 0.118 cfs
Time to peak = 1400 min
Hyd. volume = 762 cuft
Max. Elevation = 36.52 ft
Max. Storage = 15,732 cuft

Storage Indication method used.



Hydrograph Report

129

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

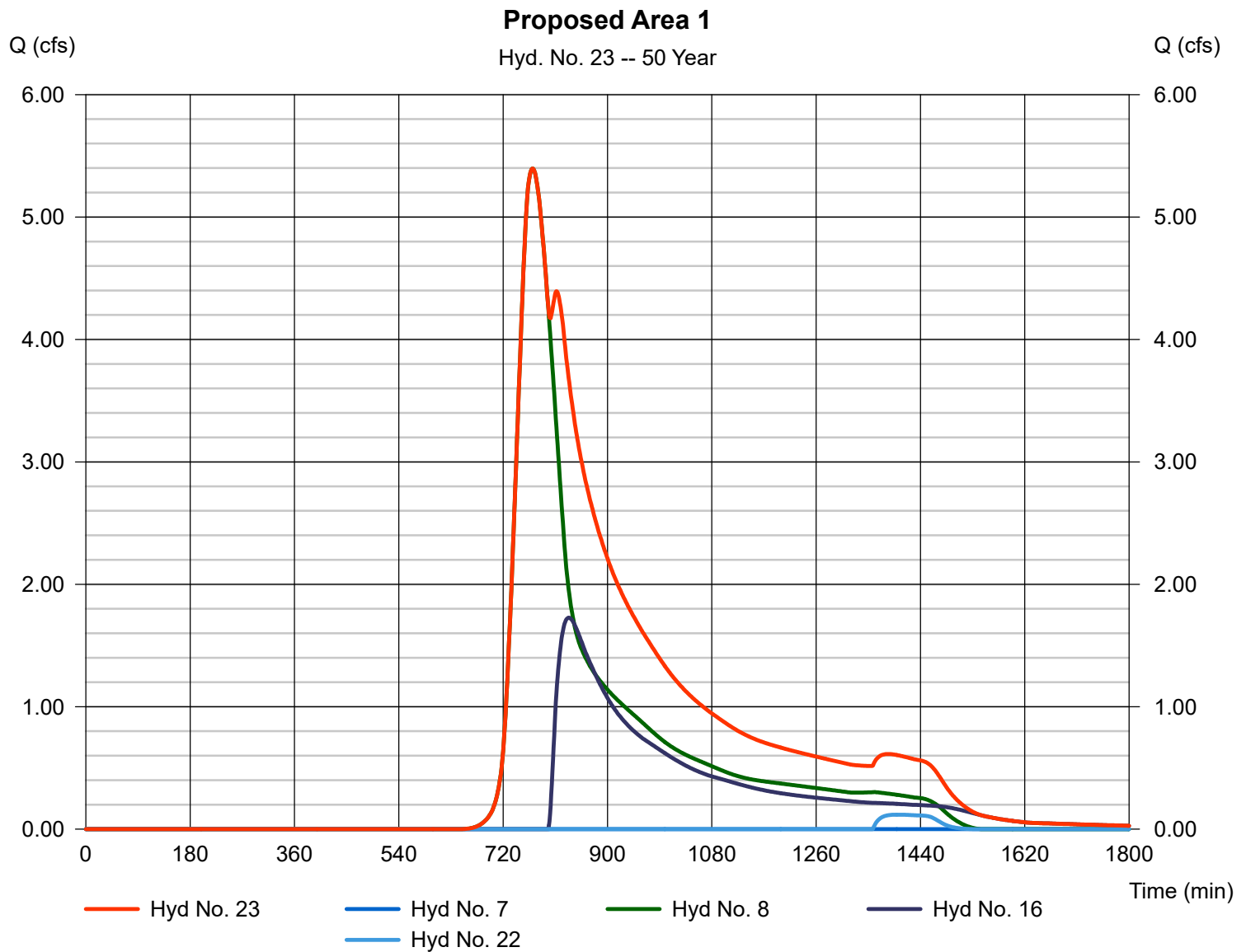
Monday, Oct 3, 2022

Hyd. No. 23

Proposed Area 1

Hydrograph type = Combine
Storm frequency = 50 yrs
Time interval = 1 min
Inflow hyds. = 7, 8, 16, 22

Peak discharge = 5.396 cfs
Time to peak = 771 min
Hyd. volume = 71,470 cuft
Contrib. drain. area = 5.930 ac



Hydrograph Report

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

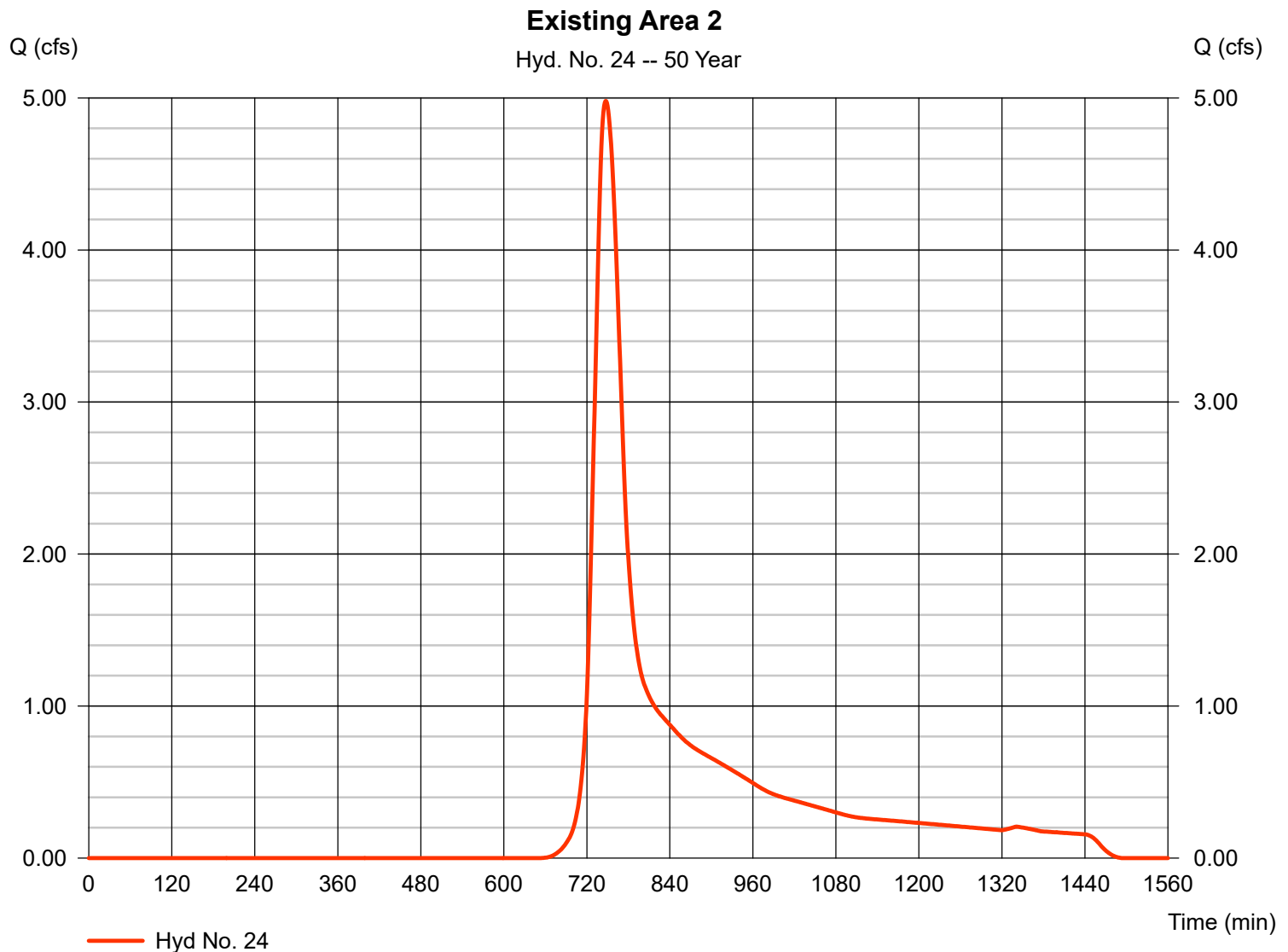
Monday, Oct 3, 2022

Hyd. No. 24

Existing Area 2

Hydrograph type = SCS Runoff
 Storm frequency = 50 yrs
 Time interval = 1 min
 Drainage area = 3.920 ac
 Basin Slope = 0.0 %
 Tc method = USER
 Total precip. = 6.98 in
 Storm duration = 24 hrs

Peak discharge = 4.979 cfs
 Time to peak = 747 min
 Hyd. volume = 30,041 cuft
 Curve number = 55
 Hydraulic length = 0 ft
 Time of conc. (Tc) = 35.00 min
 Distribution = Type III
 Shape factor = 484



Hydrograph Report

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

Monday, Oct 3, 2022

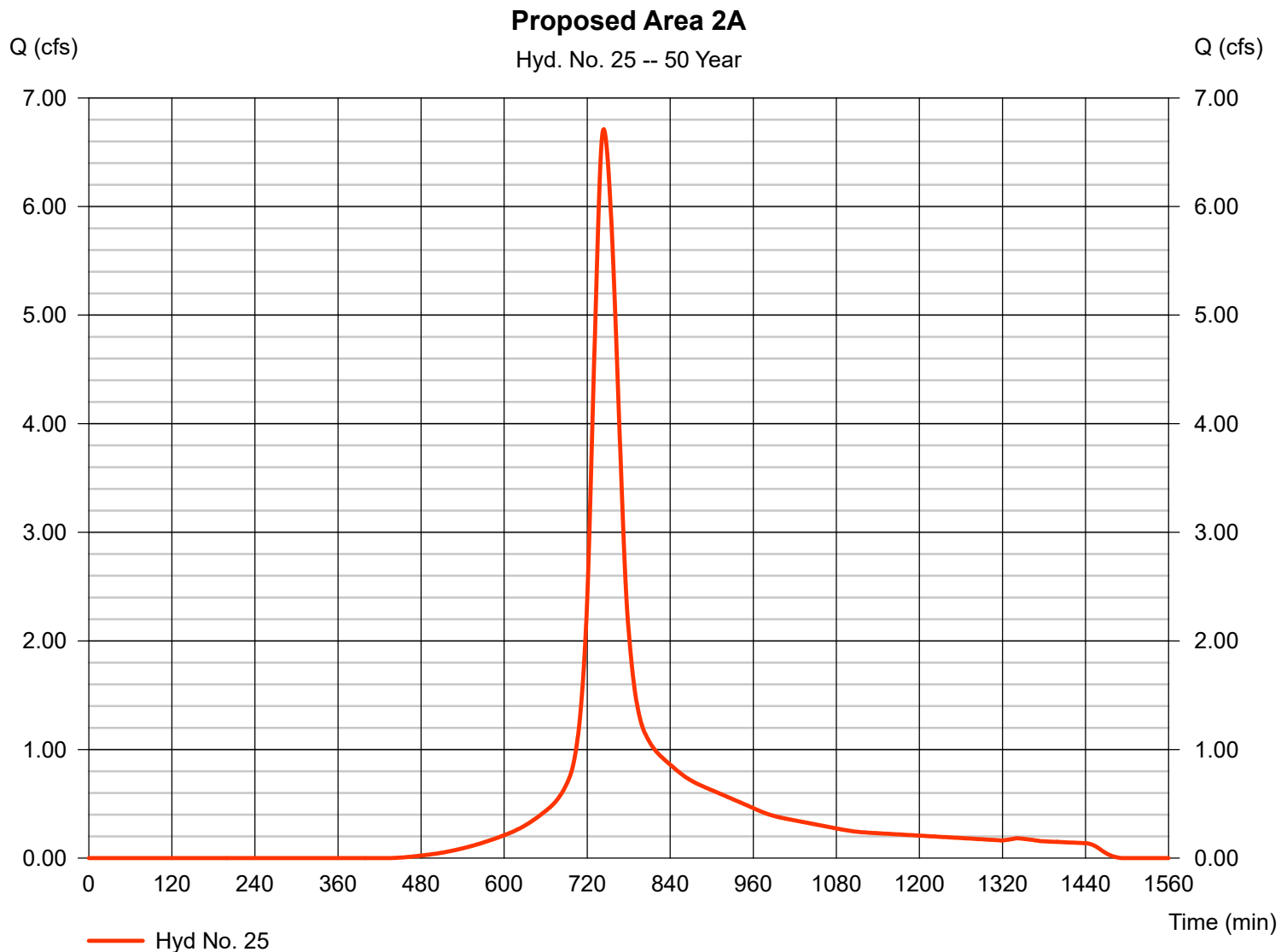
Hyd. No. 25

Proposed Area 2A

Hydrograph type = SCS Runoff
 Storm frequency = 50 yrs
 Time interval = 1 min
 Drainage area = 2.450 ac
 Basin Slope = 0.0 %
 Tc method = TR55
 Total precip. = 6.98 in
 Storm duration = 24 hrs

Peak discharge = 6.713 cfs
 Time to peak = 744 min
 Hyd. volume = 37,704 cuft
 Curve number = 76*
 Hydraulic length = 0 ft
 Time of conc. (Tc) = 34.80 min
 Distribution = Type III
 Shape factor = 484

* Composite (Area/CN) = $[(1.090 \times 98) + (0.870 \times 61) + (0.490 \times 55)] / 2.450$



Hydrograph Report

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

Monday, Oct 3, 2022

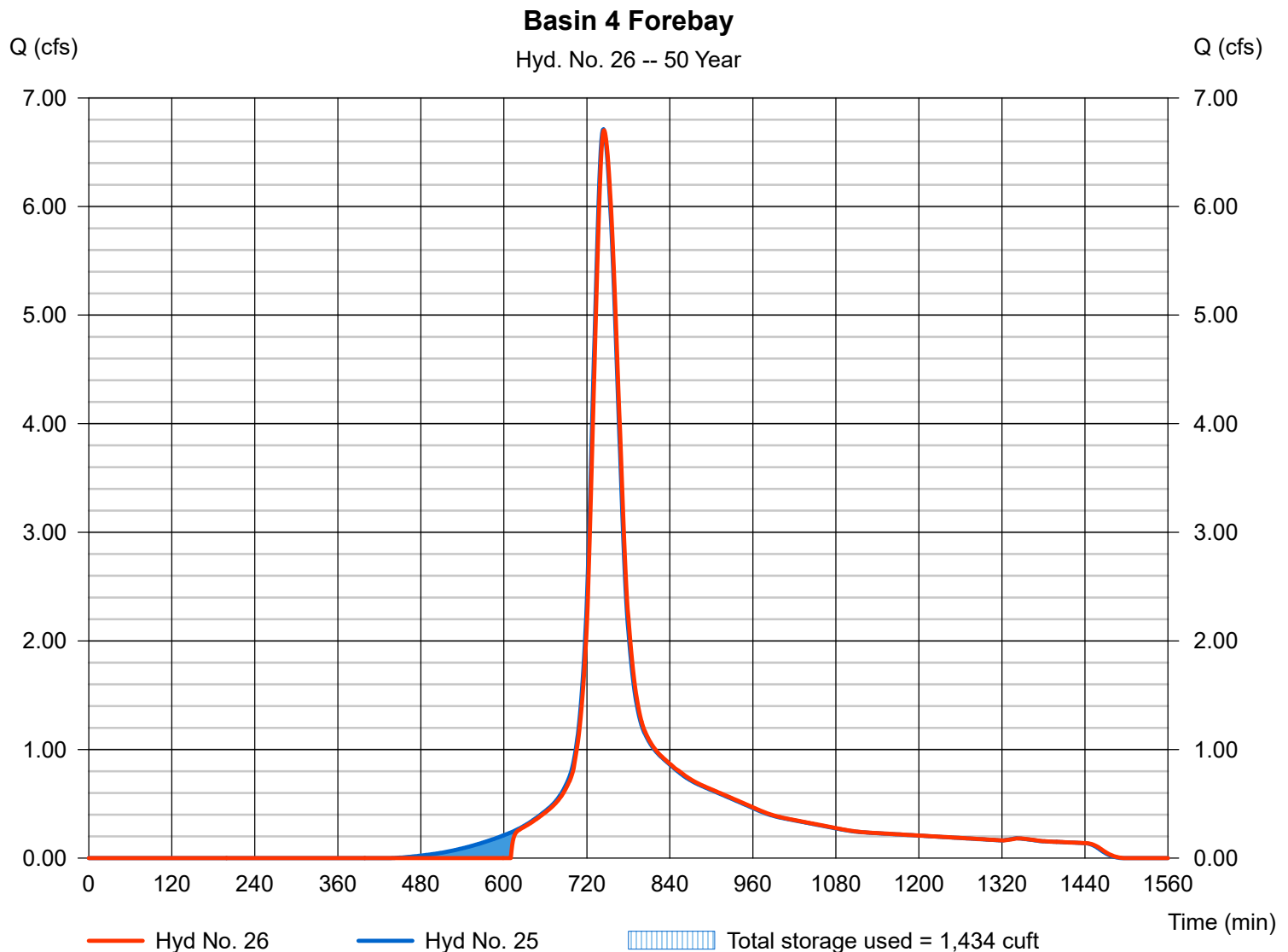
Hyd. No. 26

Basin 4 Forebay

Hydrograph type = Reservoir
 Storm frequency = 50 yrs
 Time interval = 1 min
 Inflow hyd. No. = 25 - Proposed Area 2A
 Reservoir name = Basin 4 Forebay

Peak discharge = 6.703 cfs
 Time to peak = 745 min
 Hyd. volume = 36,831 cuft
 Max. Elevation = 53.40 ft
 Max. Storage = 1,434 cuft

Storage Indication method used.



Hydrograph Report

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

Monday, Oct 3, 2022

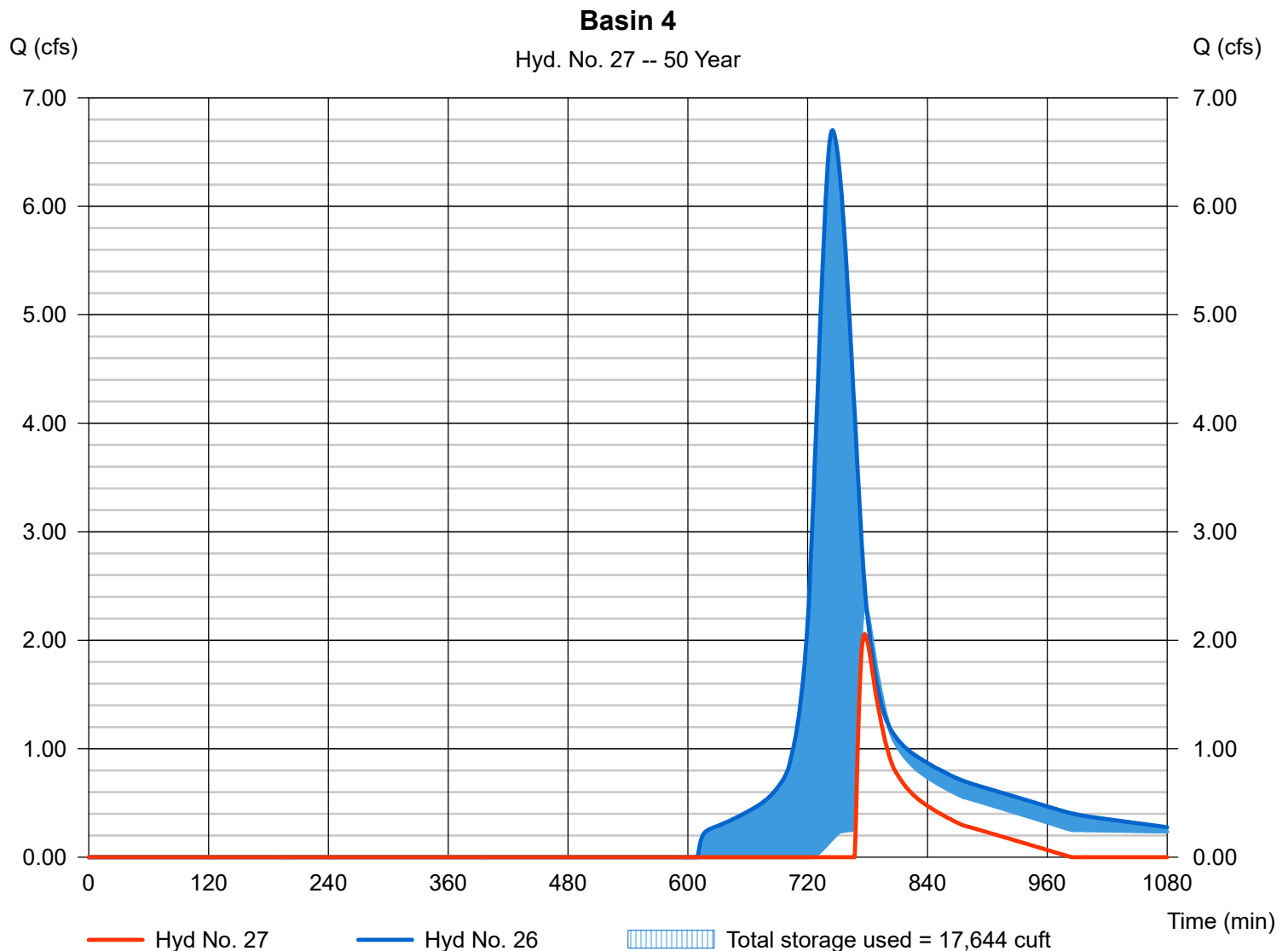
Hyd. No. 27

Basin 4

Hydrograph type = Reservoir
 Storm frequency = 50 yrs
 Time interval = 1 min
 Inflow hyd. No. = 26 - Basin 4 Forebay
 Reservoir name = Basin 4

Peak discharge = 2.057 cfs
 Time to peak = 777 min
 Hyd. volume = 6,252 cuft
 Max. Elevation = 56.68 ft
 Max. Storage = 17,644 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Hydrograph Report

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

Monday, Oct 3, 2022

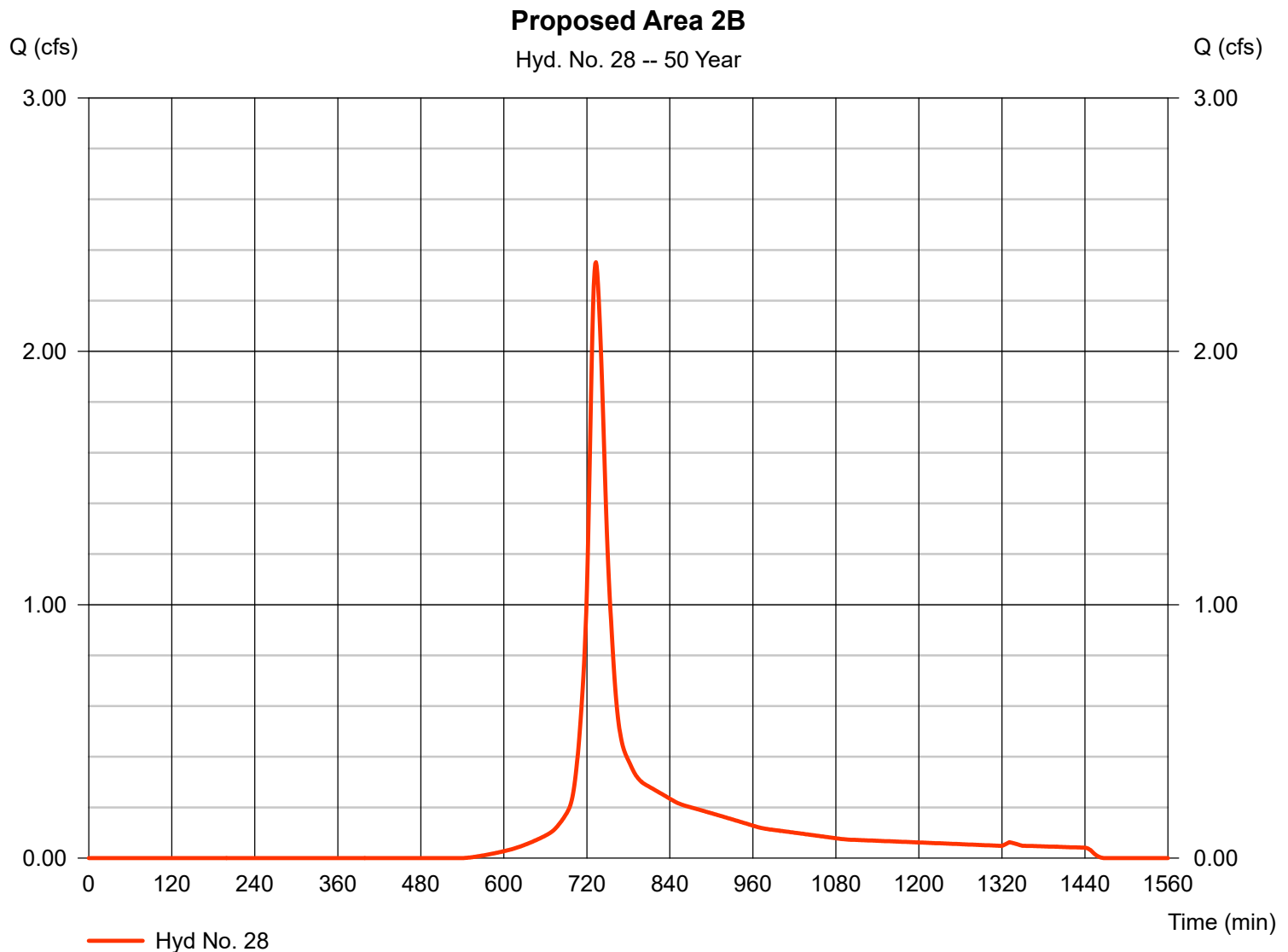
Hyd. No. 28

Proposed Area 2B

Hydrograph type = SCS Runoff
 Storm frequency = 50 yrs
 Time interval = 1 min
 Drainage area = 0.850 ac
 Basin Slope = 0.0 %
 Tc method = TR55
 Total precip. = 6.98 in
 Storm duration = 24 hrs

Peak discharge = 2.352 cfs
 Time to peak = 733 min
 Hyd. volume = 10,039 cuft
 Curve number = 67*
 Hydraulic length = 0 ft
 Time of conc. (Tc) = 17.10 min
 Distribution = Type III
 Shape factor = 484

* Composite (Area/CN) = $[(0.150 \times 98) + (0.640 \times 61) + (0.060 \times 55)] / 0.850$



Hydrograph Report

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

Monday, Oct 3, 2022

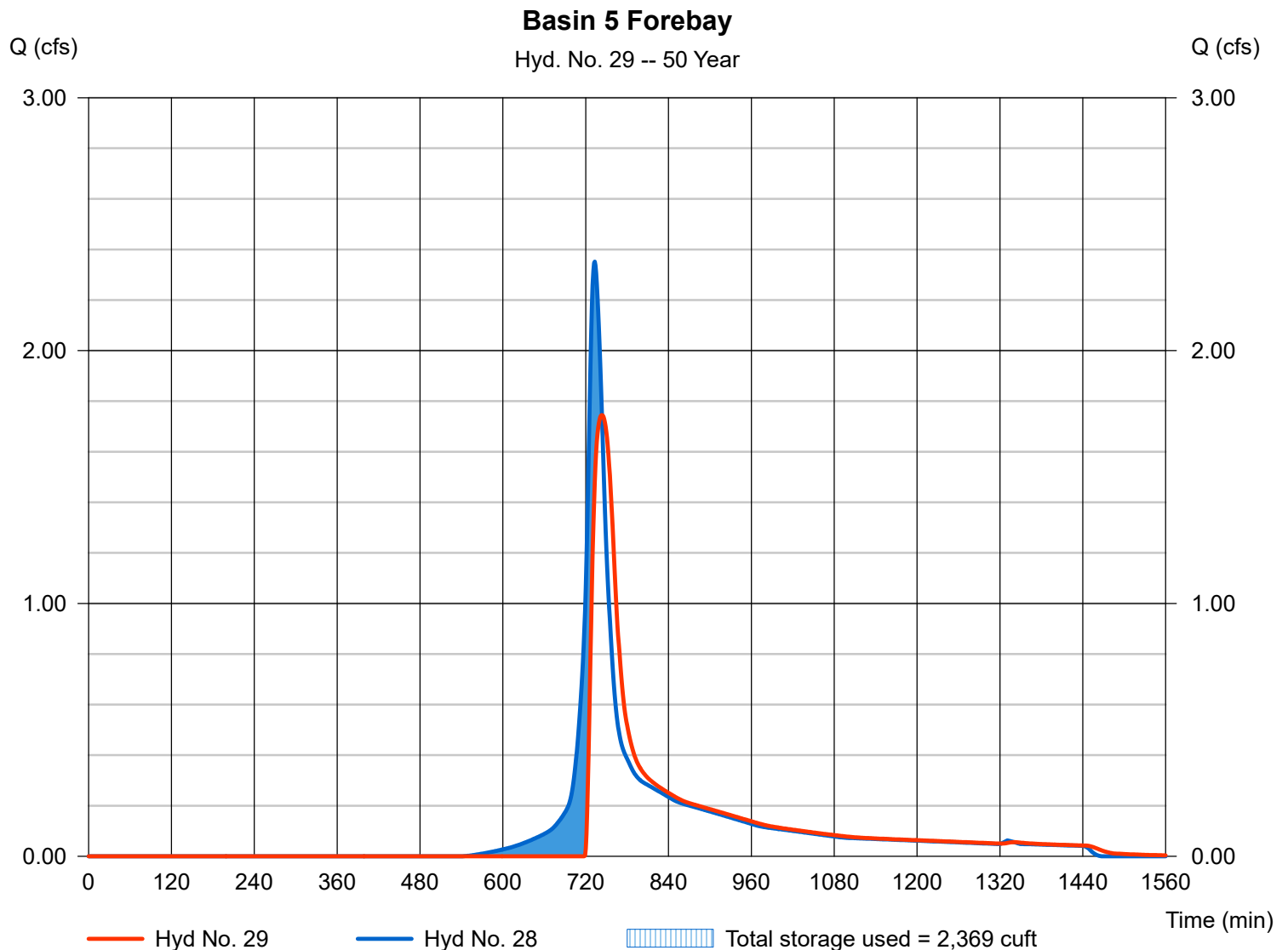
Hyd. No. 29

Basin 5 Forebay

Hydrograph type = Reservoir
 Storm frequency = 50 yrs
 Time interval = 1 min
 Inflow hyd. No. = 28 - Proposed Area 2B
 Reservoir name = Basin 5 Forebay

Peak discharge = 1.745 cfs
 Time to peak = 744 min
 Hyd. volume = 8,867 cuft
 Max. Elevation = 67.31 ft
 Max. Storage = 2,369 cuft

Storage Indication method used.



Hydrograph Report

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

Monday, Oct 3, 2022

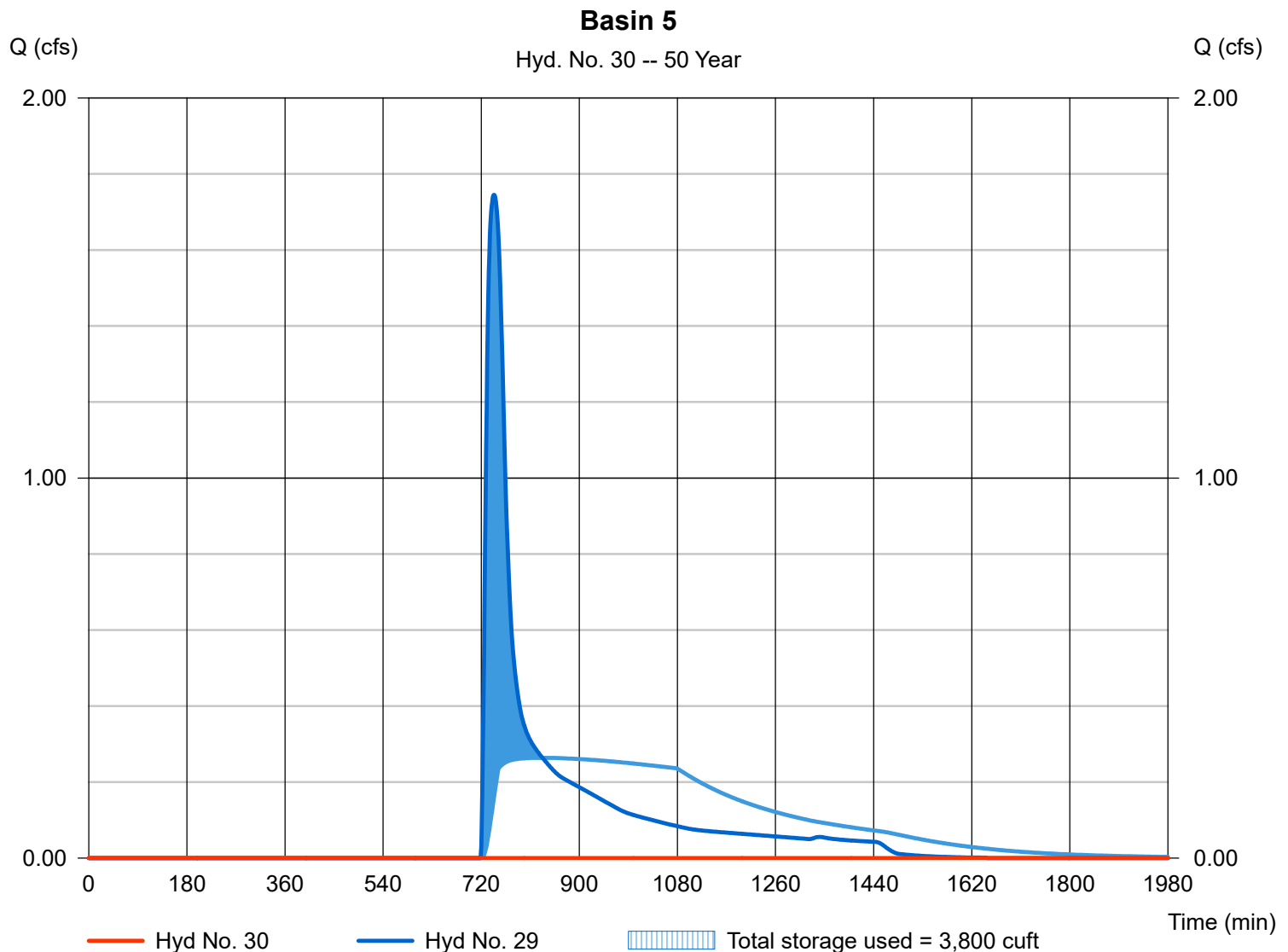
Hyd. No. 30

Basin 5

Hydrograph type = Reservoir
 Storm frequency = 50 yrs
 Time interval = 1 min
 Inflow hyd. No. = 29 - Basin 5 Forebay
 Reservoir name = Basin 5

Peak discharge = 0.000 cfs
 Time to peak = 1080 min
 Hyd. volume = 0 cuft
 Max. Elevation = 65.54 ft
 Max. Storage = 3,800 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Hydrograph Report

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

Monday, Oct 3, 2022

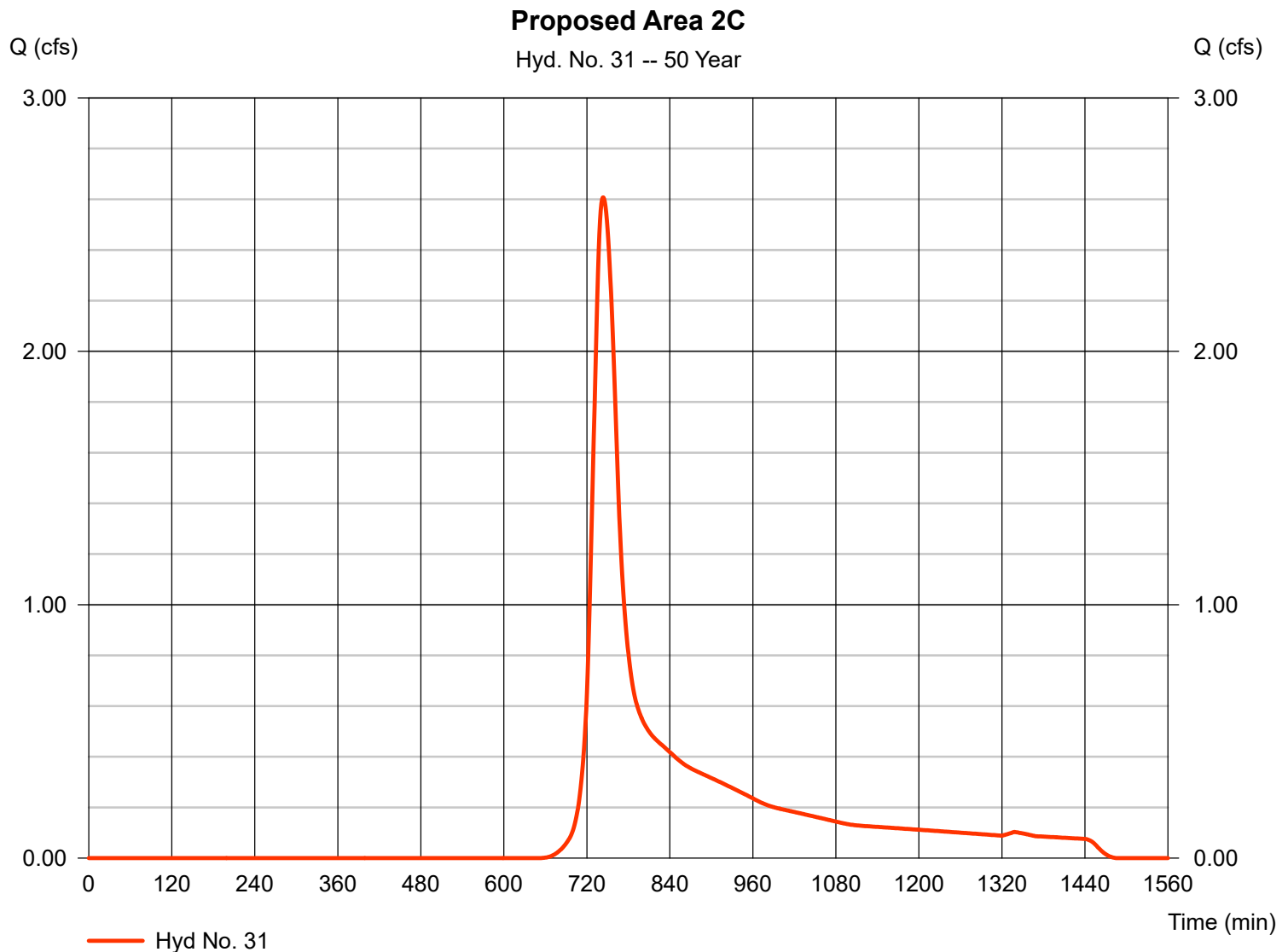
Hyd. No. 31

Proposed Area 2C

Hydrograph type = SCS Runoff
 Storm frequency = 50 yrs
 Time interval = 1 min
 Drainage area = 1.910 ac
 Basin Slope = 0.0 %
 Tc method = USER
 Total precip. = 6.98 in
 Storm duration = 24 hrs

Peak discharge = 2.607 cfs
 Time to peak = 744 min
 Hyd. volume = 14,637 cuft
 Curve number = 55*
 Hydraulic length = 0 ft
 Time of conc. (Tc) = 29.00 min
 Distribution = Type III
 Shape factor = 484

* Composite (Area/CN) = $[(1.850 \times 55) + (0.060 \times 61)] / 1.910$



Hydrograph Report

138

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

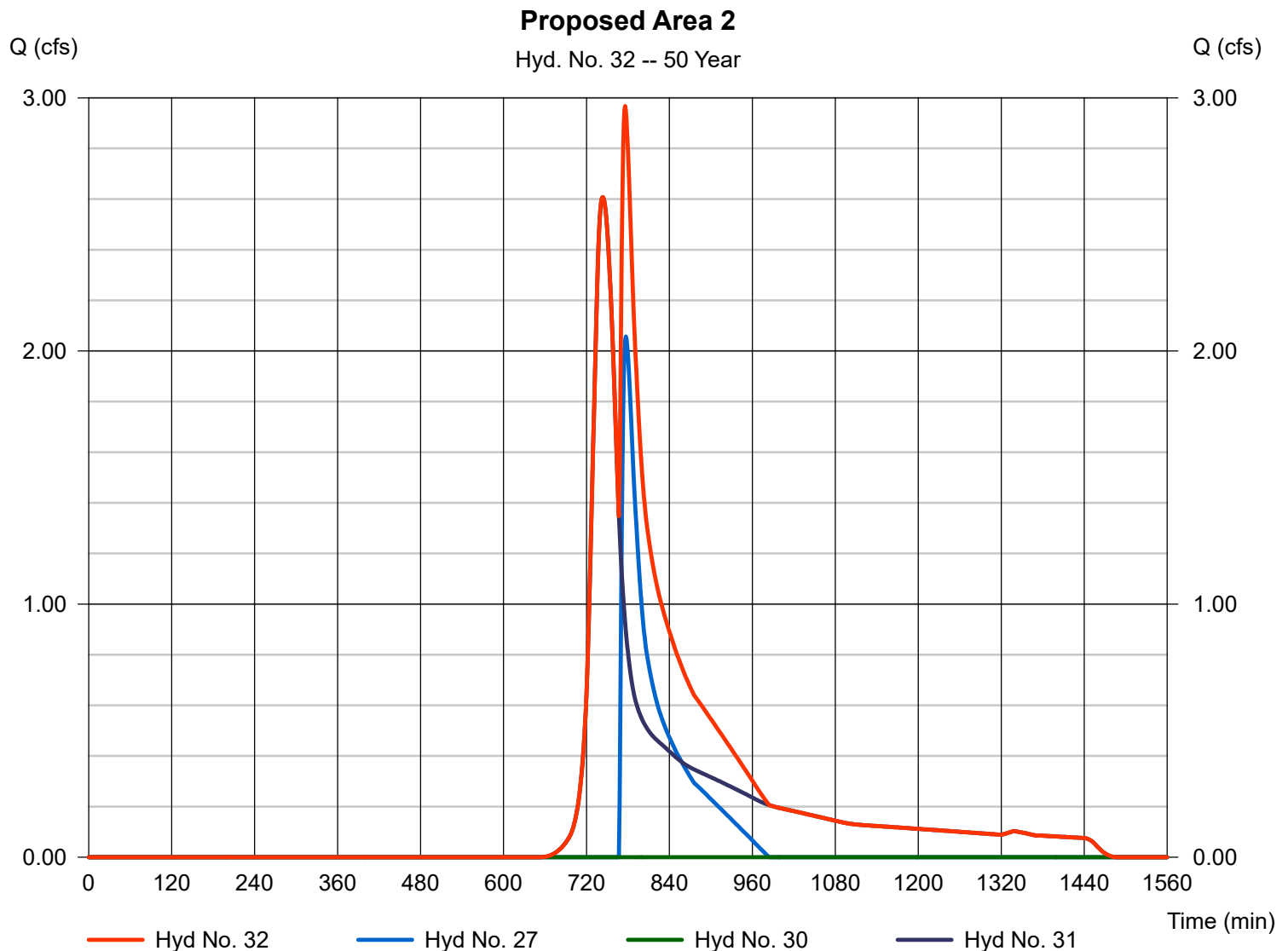
Monday, Oct 3, 2022

Hyd. No. 32

Proposed Area 2

Hydrograph type = Combine
Storm frequency = 50 yrs
Time interval = 1 min
Inflow hyds. = 27, 30, 31

Peak discharge = 2.967 cfs
Time to peak = 776 min
Hyd. volume = 20,889 cuft
Contrib. drain. area = 1.910 ac



Hydrograph Report

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

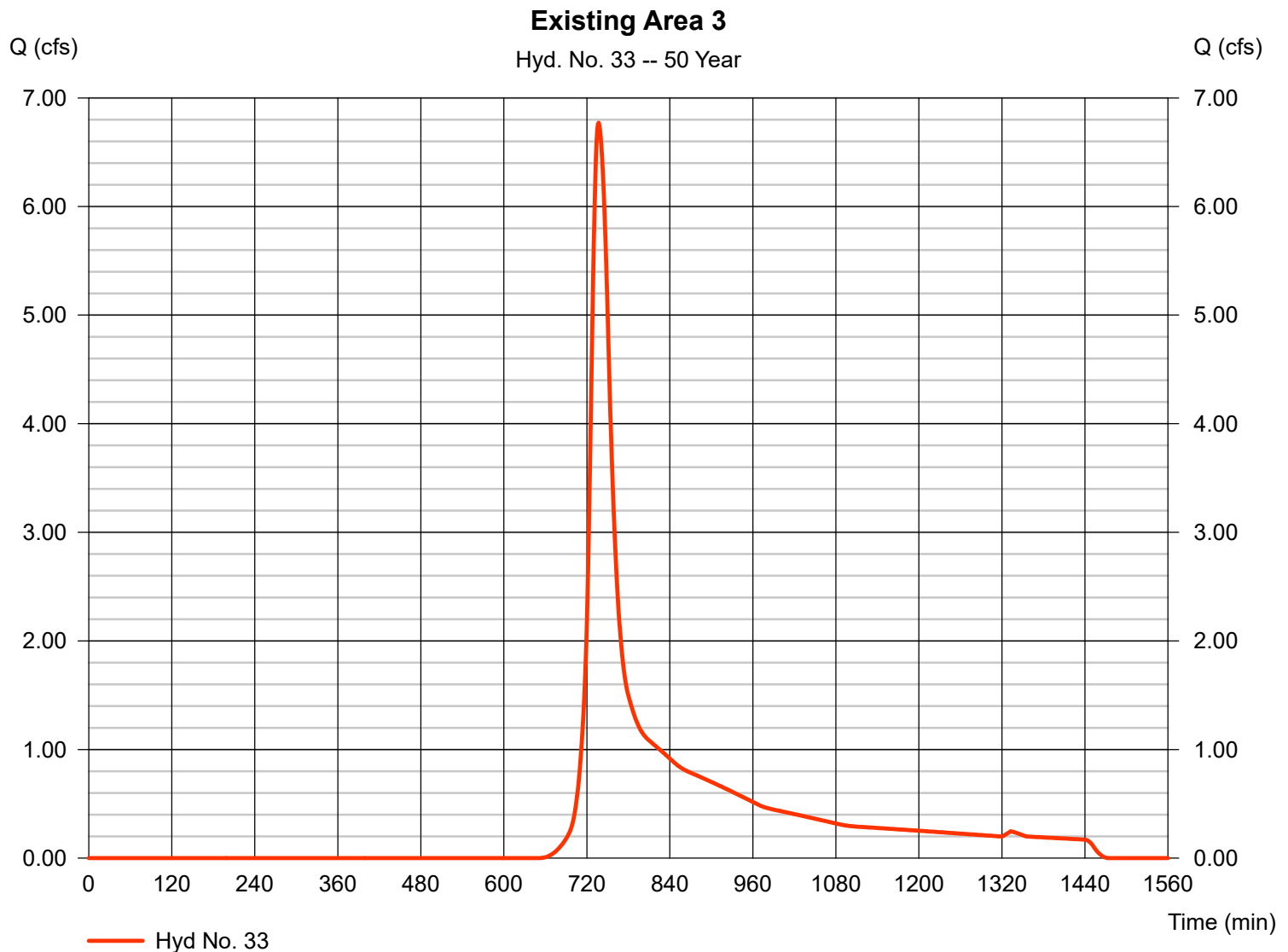
Monday, Oct 3, 2022

Hyd. No. 33

Existing Area 3

Hydrograph type = SCS Runoff
 Storm frequency = 50 yrs
 Time interval = 1 min
 Drainage area = 4.300 ac
 Basin Slope = 0.0 %
 Tc method = USER
 Total precip. = 6.98 in
 Storm duration = 24 hrs

Peak discharge = 6.771 cfs
 Time to peak = 737 min
 Hyd. volume = 33,270 cuft
 Curve number = 55
 Hydraulic length = 0 ft
 Time of conc. (Tc) = 21.00 min
 Distribution = Type III
 Shape factor = 484



Hydrograph Report

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

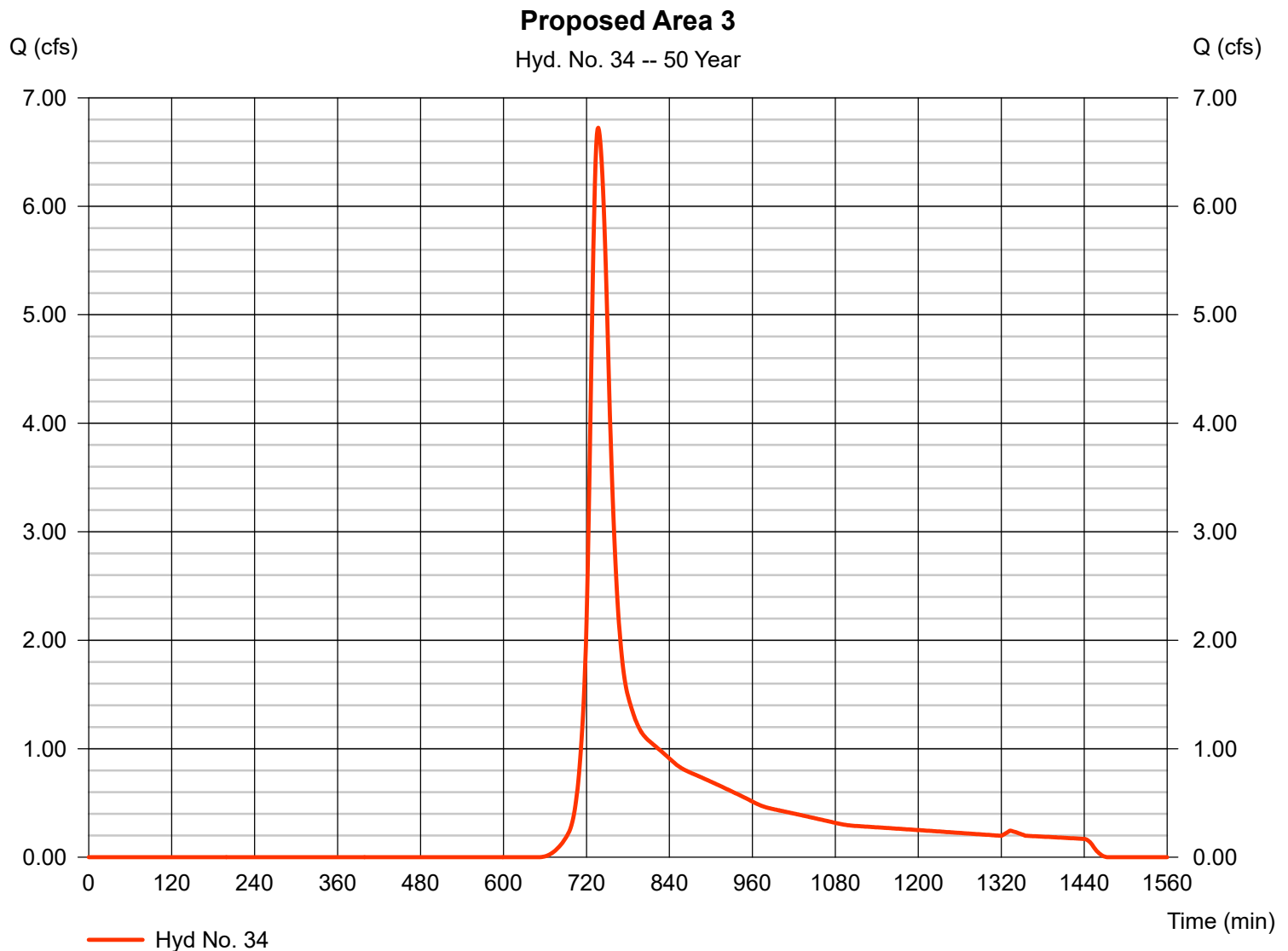
Monday, Oct 3, 2022

Hyd. No. 34

Proposed Area 3

Hydrograph type = SCS Runoff
Storm frequency = 50 yrs
Time interval = 1 min
Drainage area = 4.270 ac
Basin Slope = 0.0 %
Tc method = USER
Total precip. = 6.98 in
Storm duration = 24 hrs

Peak discharge = 6.724 cfs
Time to peak = 737 min
Hyd. volume = 33,038 cuft
Curve number = 55
Hydraulic length = 0 ft
Time of conc. (Tc) = 21.00 min
Distribution = Type III
Shape factor = 484



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	20.44	1	752	134,236	-----	-----	-----	Existing Area 1
2	SCS Runoff	2.899	1	717	7,094	-----	-----	-----	Building 1
3	Reservoir(i)	0.000	1	n/a	0	2	34.23	4,235	Leaching Gallery 1
4	SCS Runoff	3.166	1	738	15,768	-----	-----	-----	Proposed Area 1A
5	Combine	3.166	1	738	15,768	3, 4	-----	-----	Roof overflow and Area 1A
6	Reservoir	0.378	1	829	6,542	5	27.76	9,977	Basin 1 Forebay
7	Reservoir	0.000	1	n/a	0	6	26.49	6,542	Basin 1
8	SCS Runoff	6.928	1	770	59,402	-----	-----	-----	Proposed Area 1B
9	SCS Runoff	3.363	1	717	8,229	-----	-----	-----	Building 2
10	Reservoir(i)	0.490	1	734	1,472	9	35.55	3,357	Leaching Gallery 2
11	SCS Runoff	2.783	1	717	6,810	-----	-----	-----	Building 3
12	Reservoir(i)	0.494	1	733	983	11	40.75	2,775	Leaching Gallery 3
13	SCS Runoff	7.591	1	753	50,341	-----	-----	-----	Proposed Area 1C
14	Combine	8.399	1	752	52,796	10, 12, 13	-----	-----	BLDG 2&3 & Area 1C
15	Reservoir(i)	6.438	1	773	42,308	14	27.61	18,898	Basin 2 Forebay
16	Reservoir	3.162	1	816	32,192	15	27.01	14,861	Basin 2
17	SCS Runoff	2.087	1	717	5,108	-----	-----	-----	Building 4
18	Reservoir(i)	0.331	1	730	374	17	47.25	1,925	Leaching Gallery 4
19	SCS Runoff	8.055	1	734	37,374	-----	-----	-----	Proposed Area 1D
20	Combine	8.357	1	734	37,748	18, 19	-----	-----	BLDG 4 & AREA 1D
21	Reservoir(i)	5.867	1	748	21,915	20	36.87	17,435	Basin 3 Forebay
22	Reservoir	0.352	1	986	6,263	21	36.56	15,870	Basin 3
23	Combine	7.666	1	801	97,857	7, 8, 16, 22	-----	-----	Proposed Area 1
24	SCS Runoff	6.425	1	747	37,876	-----	-----	-----	Existing Area 2
25	SCS Runoff	7.891	1	744	44,418	-----	-----	-----	Proposed Area 2A
26	Reservoir	7.879	1	745	43,544	25	53.45	1,496	Basin 4 Forebay
27	Reservoir	4.525	1	766	11,614	26	56.81	18,263	Basin 4
28	SCS Runoff	2.849	1	733	12,117	-----	-----	-----	Proposed Area 2B
29	Reservoir	2.375	1	741	10,946	28	67.53	2,655	Basin 5 Forebay
30	Reservoir	0.000	1	1304	0	29	66.00	5,110	Basin 5
31	SCS Runoff	3.365	1	743	18,455	-----	-----	-----	Proposed Area 2C
32	Combine	6.361	1	764	30,069	27, 30, 31	-----	-----	Proposed Area 2
33	SCS Runoff	8.743	1	736	41,947	-----	-----	-----	Existing Area 3
34	SCS Runoff	8.682	1	736	41,654	-----	-----	-----	Proposed Area 3
GSD 60 Drainage V13.gpw					Return Period: 100 Year			Monday, Oct 3, 2022	

Hydrograph Report

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

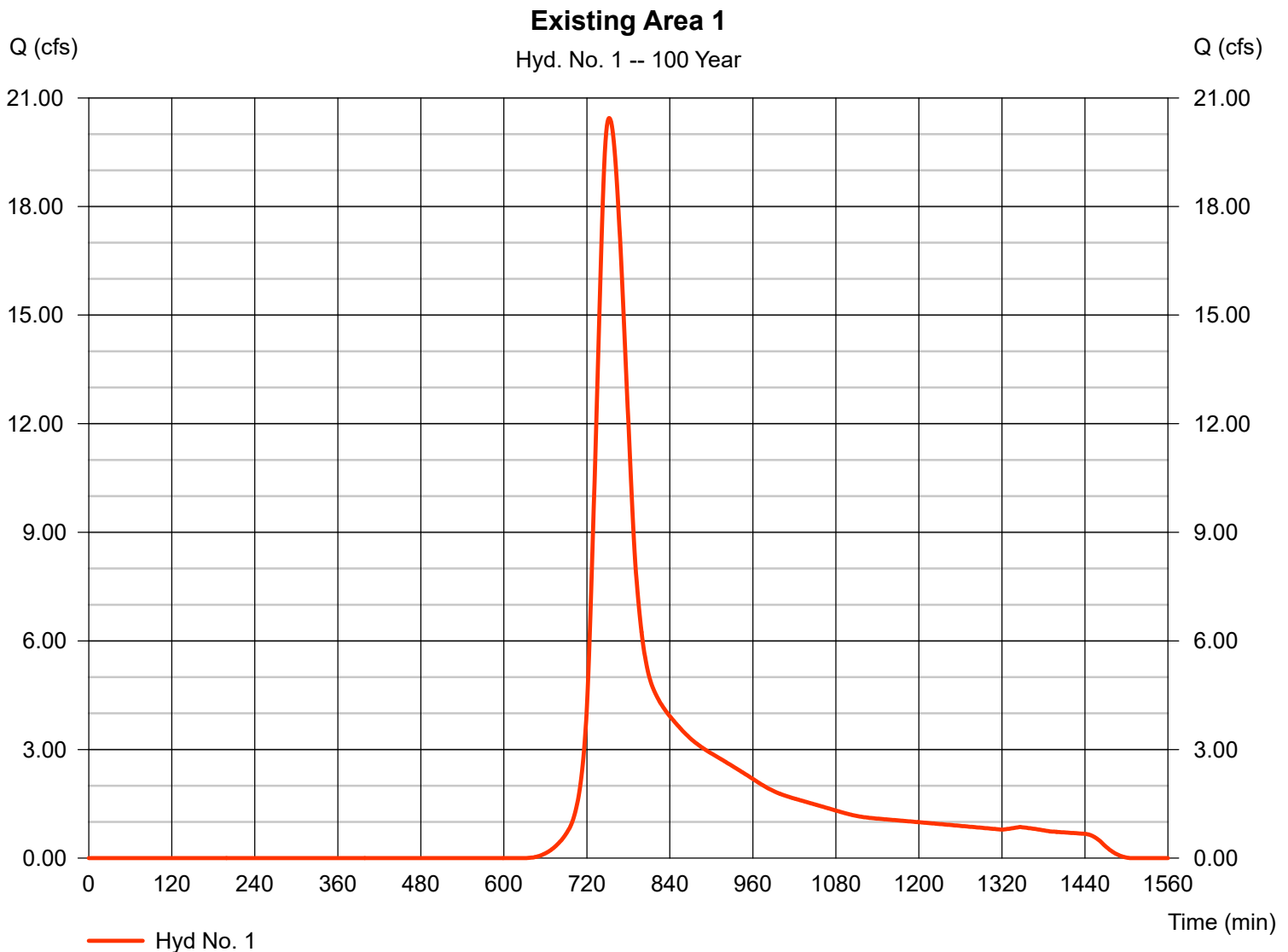
Monday, Oct 3, 2022

Hyd. No. 1

Existing Area 1

Hydrograph type = SCS Runoff
Storm frequency = 100 yrs
Time interval = 1 min
Drainage area = 13.960 ac
Basin Slope = 0.0 %
Tc method = TR55
Total precip. = 7.82 in
Storm duration = 24 hrs

Peak discharge = 20.44 cfs
Time to peak = 752 min
Hyd. volume = 134,236 cuft
Curve number = 55
Hydraulic length = 0 ft
Time of conc. (Tc) = 43.30 min
Distribution = Type III
Shape factor = 484



Hydrograph Report

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

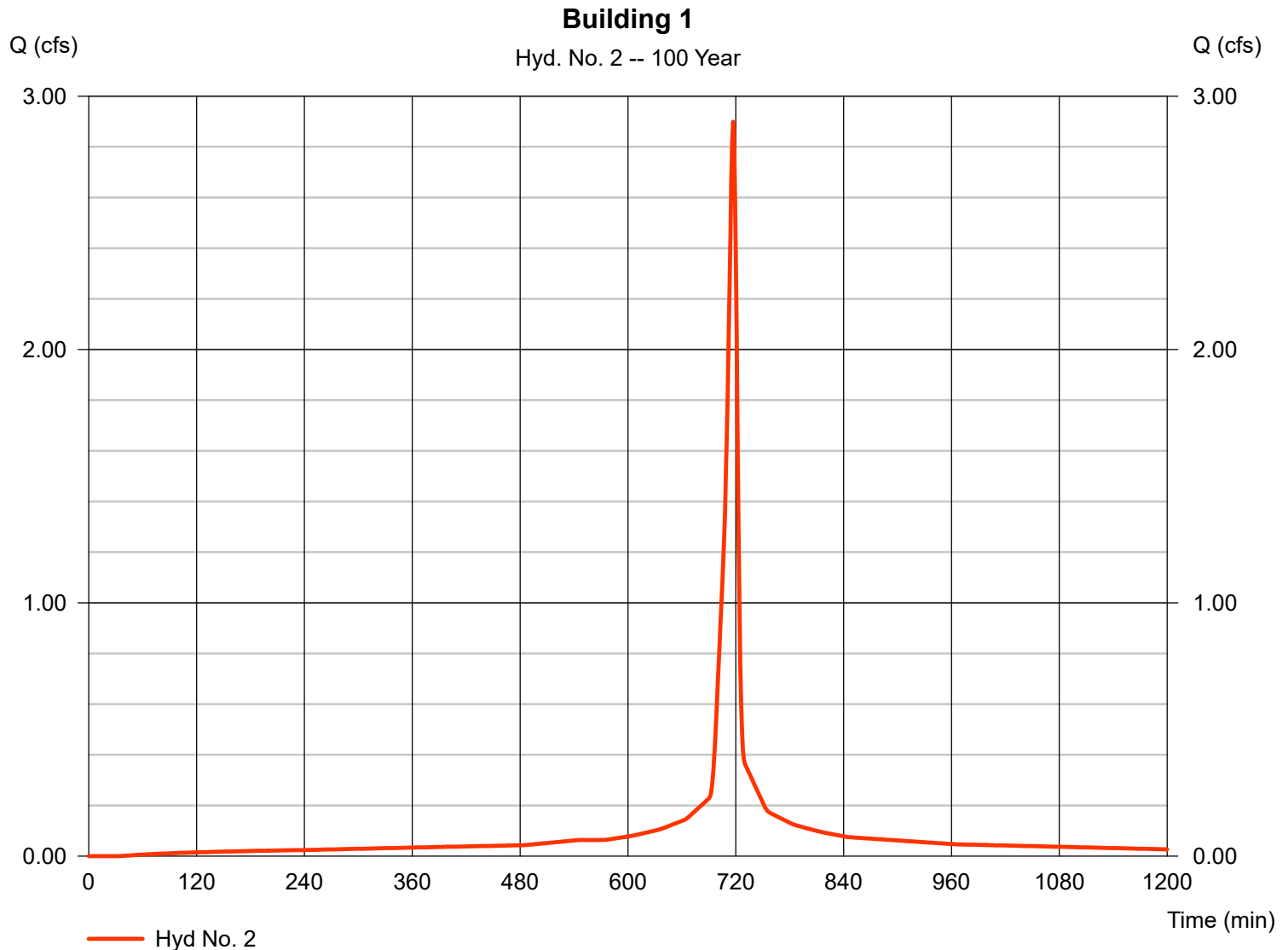
Monday, Oct 3, 2022

Hyd. No. 2

Building 1

Hydrograph type = SCS Runoff
 Storm frequency = 100 yrs
 Time interval = 1 min
 Drainage area = 0.250 ac
 Basin Slope = 0.0 %
 Tc method = USER
 Total precip. = 7.82 in
 Storm duration = 24 hrs

Peak discharge = 2.899 cfs
 Time to peak = 717 min
 Hyd. volume = 7,094 cuft
 Curve number = 98
 Hydraulic length = 0 ft
 Time of conc. (Tc) = 5.00 min
 Distribution = Type II
 Shape factor = 484



Hydrograph Report

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

Monday, Oct 3, 2022

Hyd. No. 3

Leaching Gallery 1

Hydrograph type = Reservoir (Interconnected)
 Storm frequency = 100 yrs
 Time interval = 1 min

Upper Pond

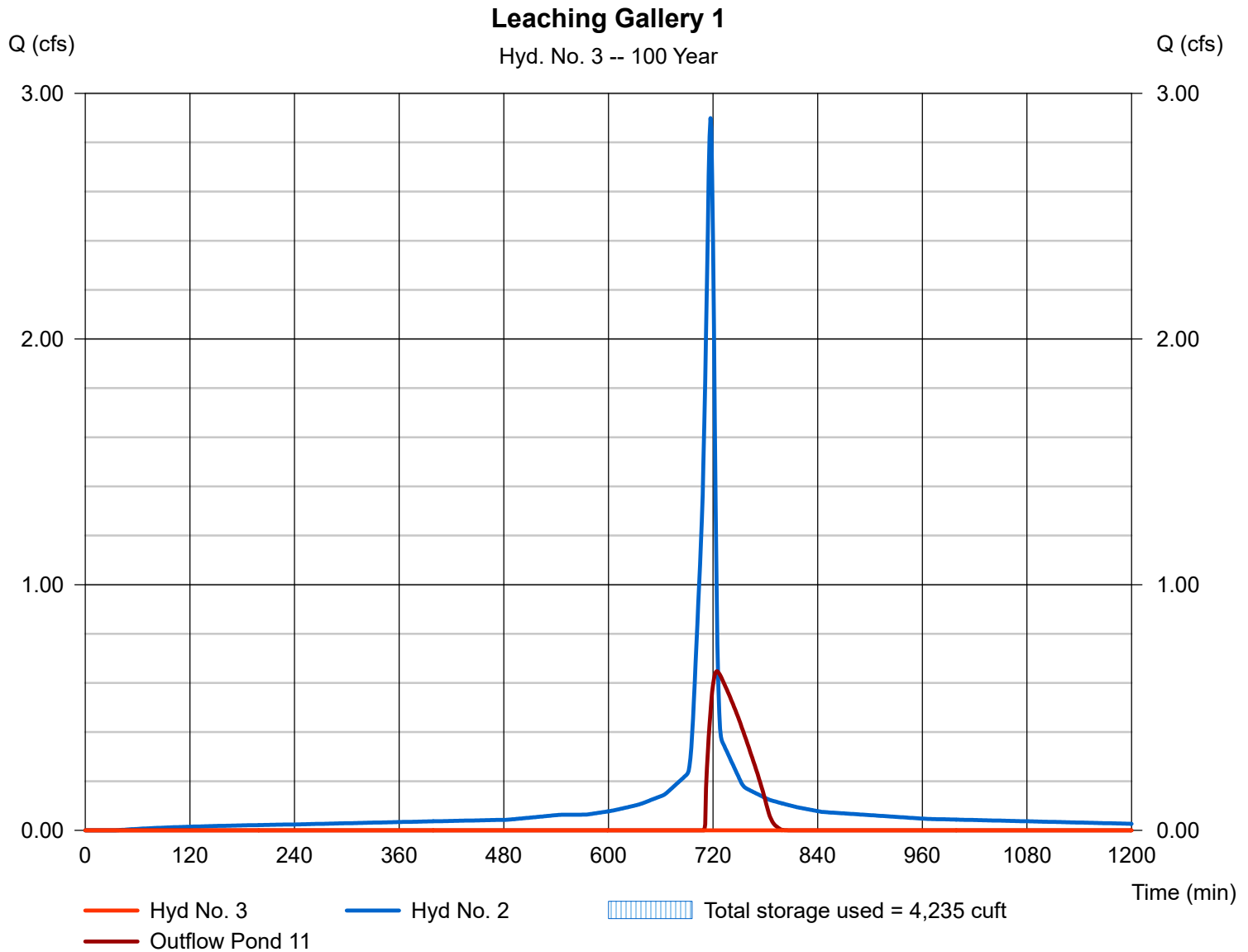
Pond name = Leaching Gallery 1
 Inflow hyd. = 2 - Building 1
 Max. Elevation = 34.23 ft
 Max. Storage = 2,434 cuft

Peak discharge = 0.000 cfs
 Time to peak = n/a
 Hyd. volume = 0 cuft

Lower Pond

Pond name = Basin 1 Forebay
 Other Inflow hyd. = None
 Max. Elevation = 23.89 ft
 Max. Storage = 1,801 cuft

Interconnected Pond Routing. Storage Indication method used.



Hydrograph Report

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

Monday, Oct 3, 2022

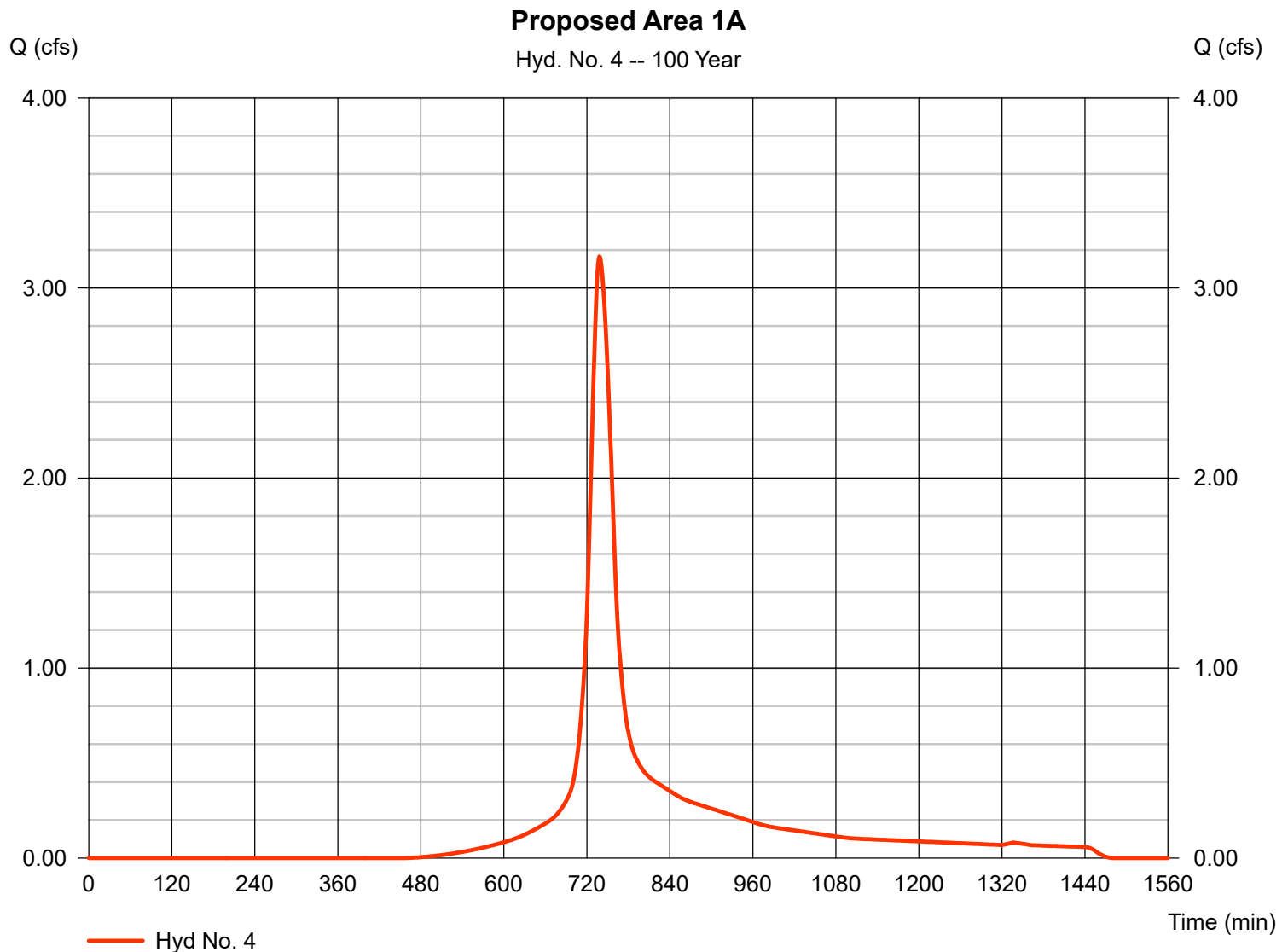
Hyd. No. 4

Proposed Area 1A

Hydrograph type = SCS Runoff
 Storm frequency = 100 yrs
 Time interval = 1 min
 Drainage area = 0.950 ac
 Basin Slope = 0.0 %
 Tc method = TR55
 Total precip. = 7.82 in
 Storm duration = 24 hrs

Peak discharge = 3.166 cfs
 Time to peak = 738 min
 Hyd. volume = 15,768 cuft
 Curve number = 72*
 Hydraulic length = 0 ft
 Time of conc. (Tc) = 26.10 min
 Distribution = Type III
 Shape factor = 484

* Composite (Area/CN) = $[(0.190 \times 55) + (0.450 \times 61) + (0.310 \times 98)] / 0.950$



Hydrograph Report

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

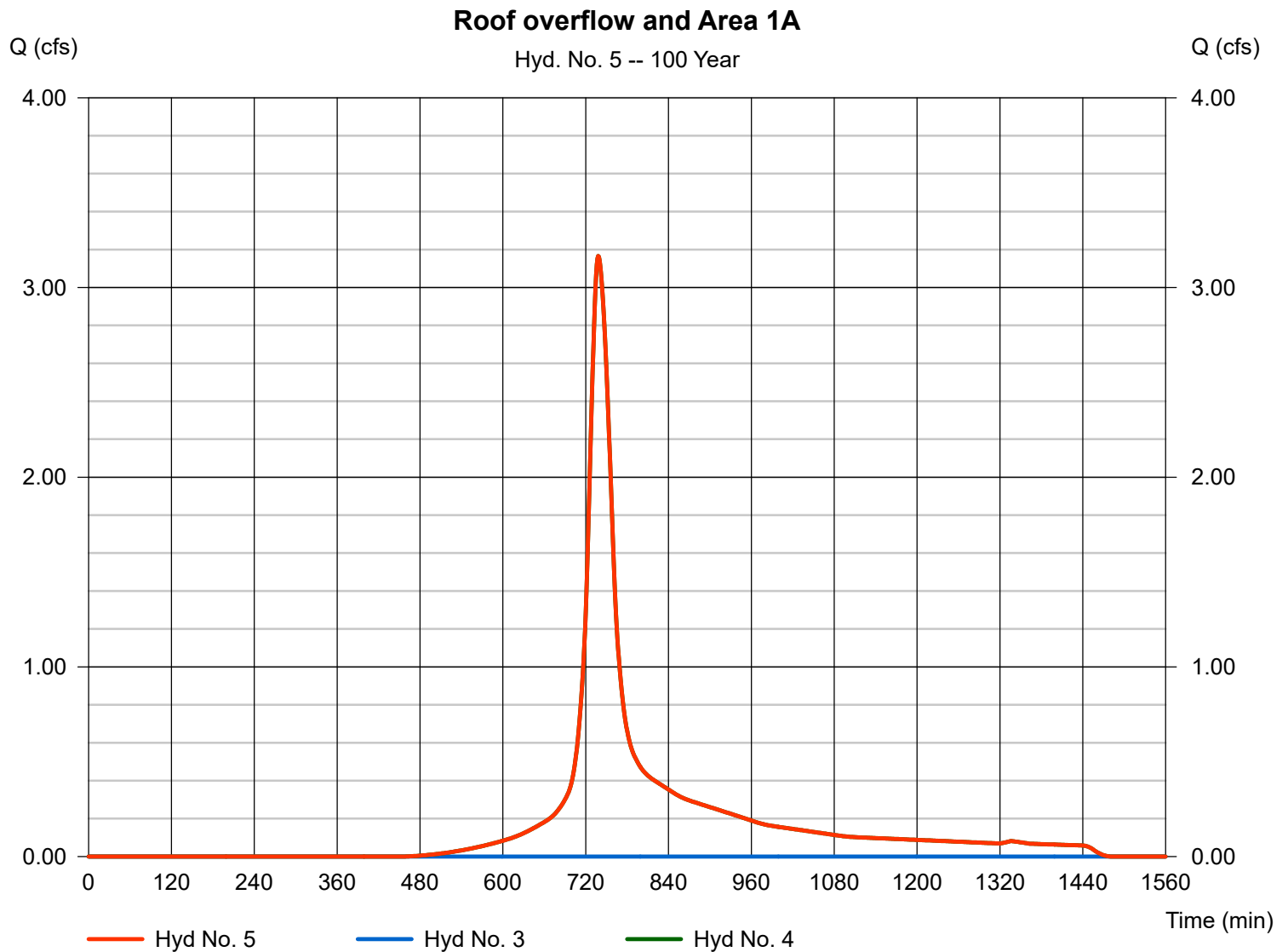
Monday, Oct 3, 2022

Hyd. No. 5

Roof overflow and Area 1A

Hydrograph type = Combine
Storm frequency = 100 yrs
Time interval = 1 min
Inflow hyds. = 3, 4

Peak discharge = 3.166 cfs
Time to peak = 738 min
Hyd. volume = 15,768 cuft
Contrib. drain. area = 0.950 ac



Hydrograph Report

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

Monday, Oct 3, 2022

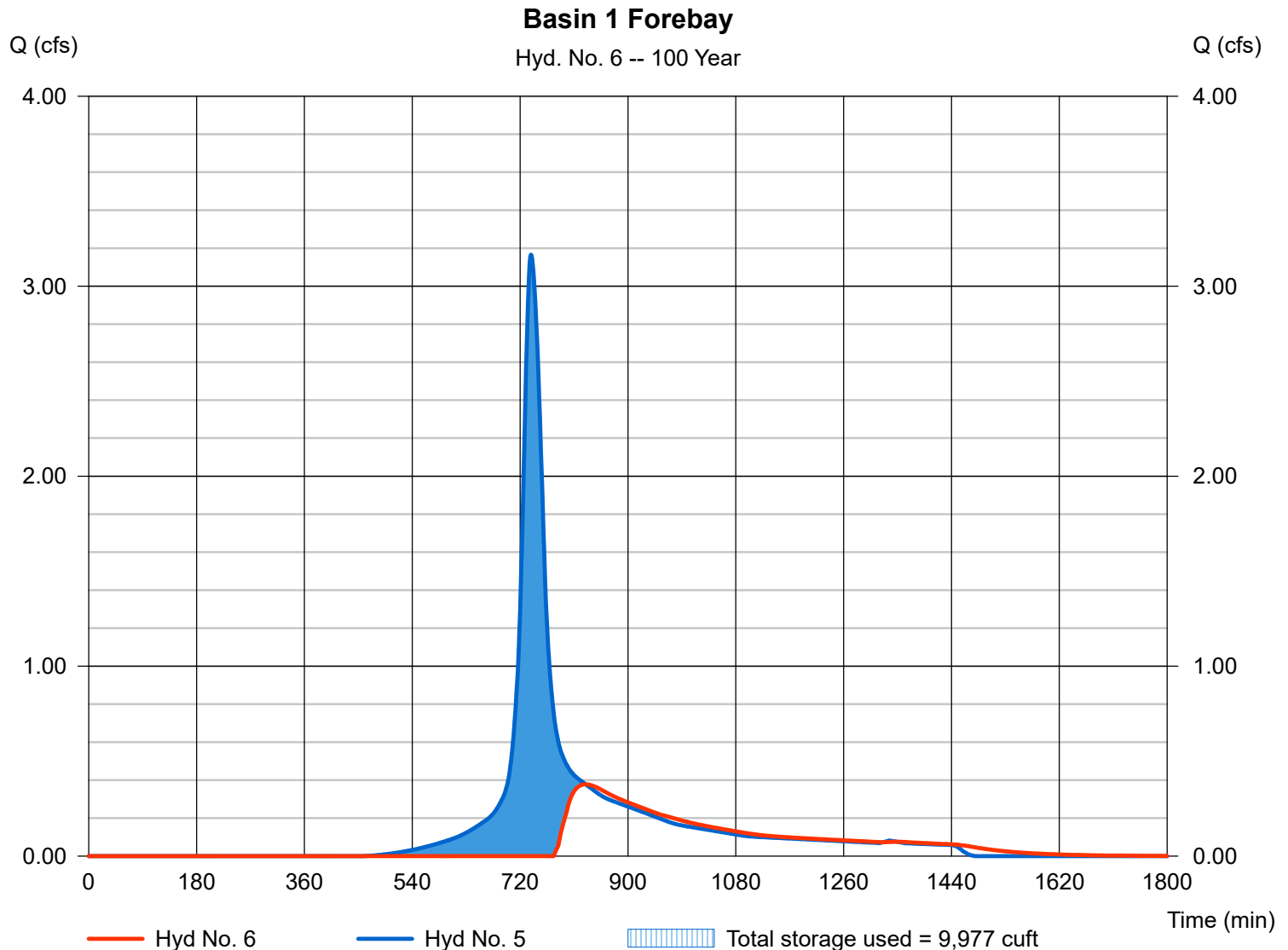
Hyd. No. 6

Basin 1 Forebay

Hydrograph type = Reservoir
 Storm frequency = 100 yrs
 Time interval = 1 min
 Inflow hyd. No. = 5 - Roof overflow and Area 1A
 Reservoir name = Basin 1 Forebay

Peak discharge = 0.378 cfs
 Time to peak = 829 min
 Hyd. volume = 6,542 cuft
 Max. Elevation = 27.76 ft
 Max. Storage = 9,977 cuft

Storage Indication method used.



Hydrograph Report

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

Monday, Oct 3, 2022

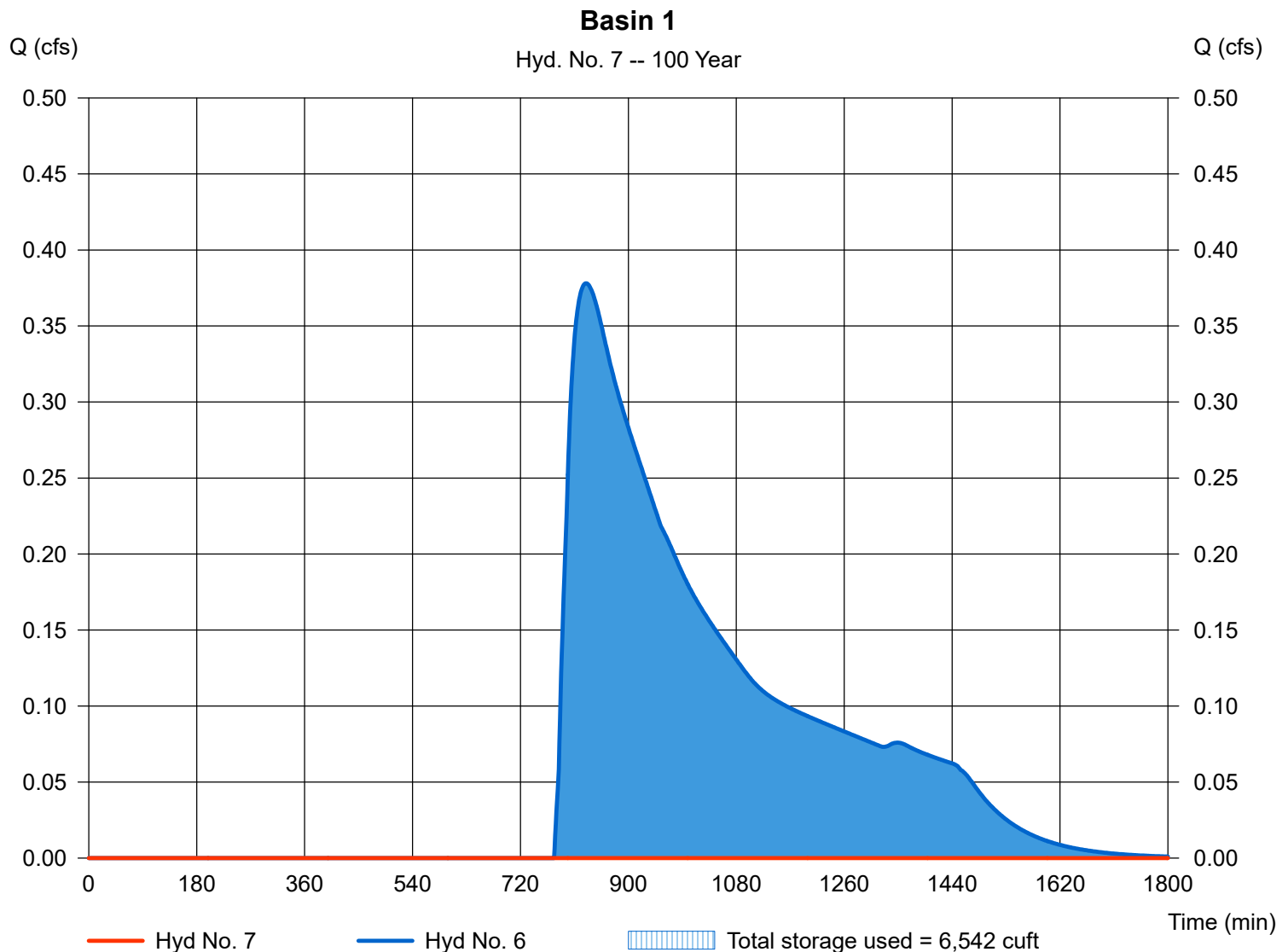
Hyd. No. 7

Basin 1

Hydrograph type = Reservoir
 Storm frequency = 100 yrs
 Time interval = 1 min
 Inflow hyd. No. = 6 - Basin 1 Forebay
 Reservoir name = Basin 1 Forebay

Peak discharge = 0.000 cfs
 Time to peak = n/a
 Hyd. volume = 0 cuft
 Max. Elevation = 26.49 ft
 Max. Storage = 6,542 cuft

Storage Indication method used.



Hydrograph Report

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

Monday, Oct 3, 2022

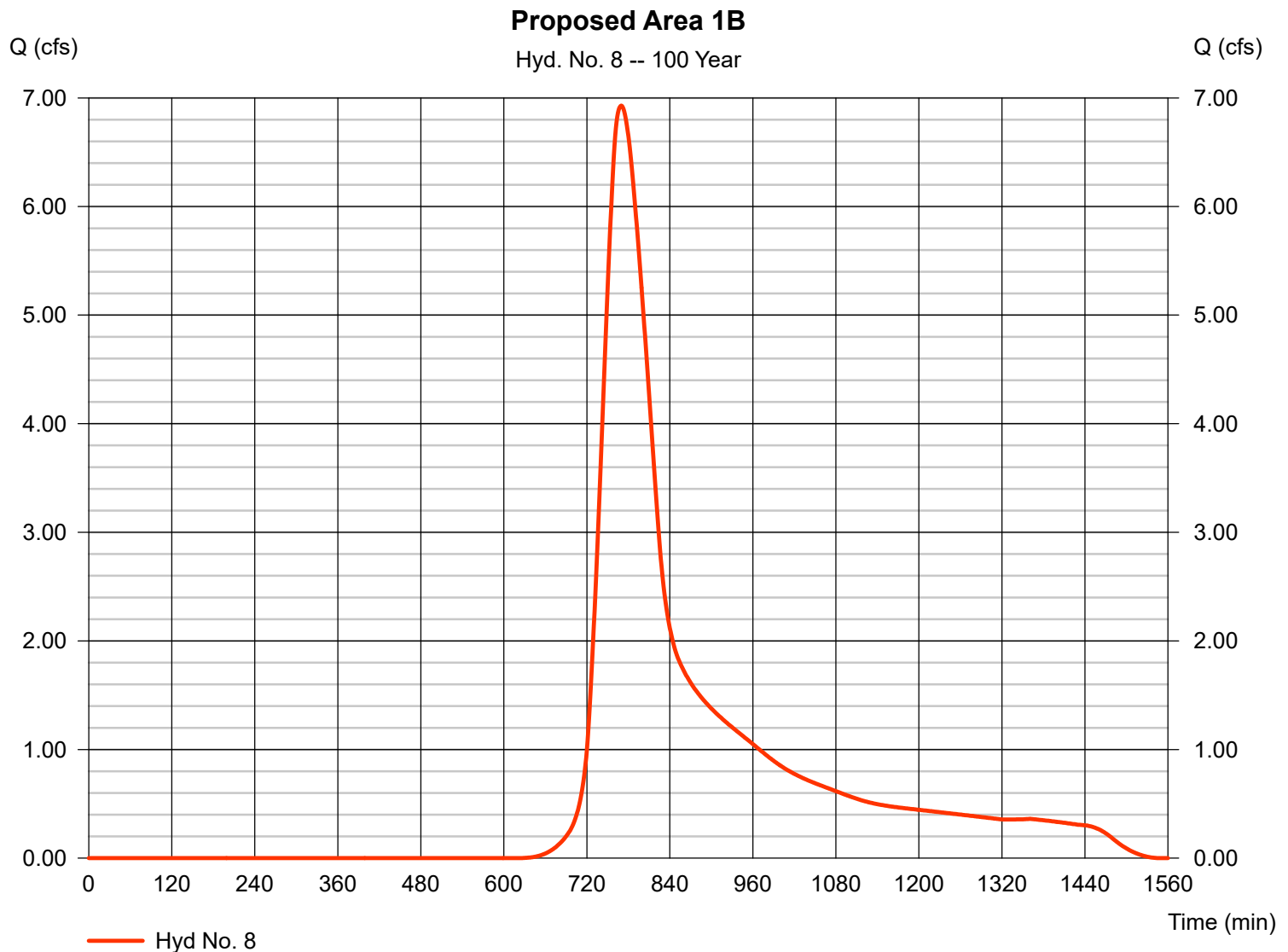
Hyd. No. 8

Proposed Area 1B

Hydrograph type = SCS Runoff
 Storm frequency = 100 yrs
 Time interval = 1 min
 Drainage area = 5.930 ac
 Basin Slope = 0.0 %
 Tc method = TR55
 Total precip. = 7.82 in
 Storm duration = 24 hrs

Peak discharge = 6.928 cfs
 Time to peak = 770 min
 Hyd. volume = 59,402 cuft
 Curve number = 56*
 Hydraulic length = 0 ft
 Time of conc. (Tc) = 69.10 min
 Distribution = Type III
 Shape factor = 484

* Composite (Area/CN) = $[(5.120 \times 55) + (0.810 \times 61)] / 5.930$



Hydrograph Report

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

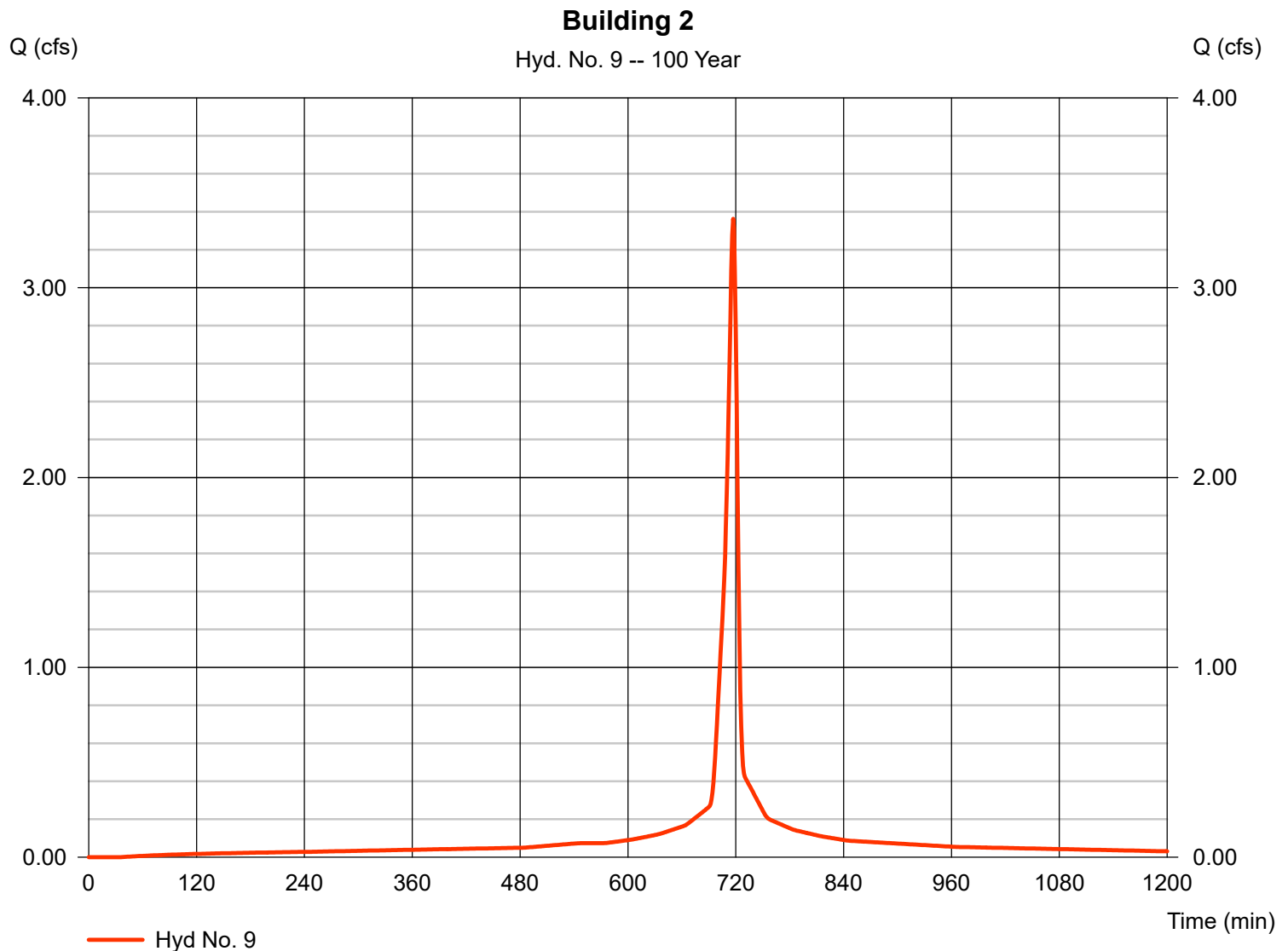
Monday, Oct 3, 2022

Hyd. No. 9

Building 2

Hydrograph type = SCS Runoff
Storm frequency = 100 yrs
Time interval = 1 min
Drainage area = 0.290 ac
Basin Slope = 0.0 %
Tc method = USER
Total precip. = 7.82 in
Storm duration = 24 hrs

Peak discharge = 3.363 cfs
Time to peak = 717 min
Hyd. volume = 8,229 cuft
Curve number = 98
Hydraulic length = 0 ft
Time of conc. (Tc) = 5.00 min
Distribution = Type II
Shape factor = 484



Hydrograph Report

151

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

Monday, Oct 3, 2022

Hyd. No. 10

Leaching Gallery 2

Hydrograph type = Reservoir (Interconnected)
Storm frequency = 100 yrs
Time interval = 1 min

Upper Pond

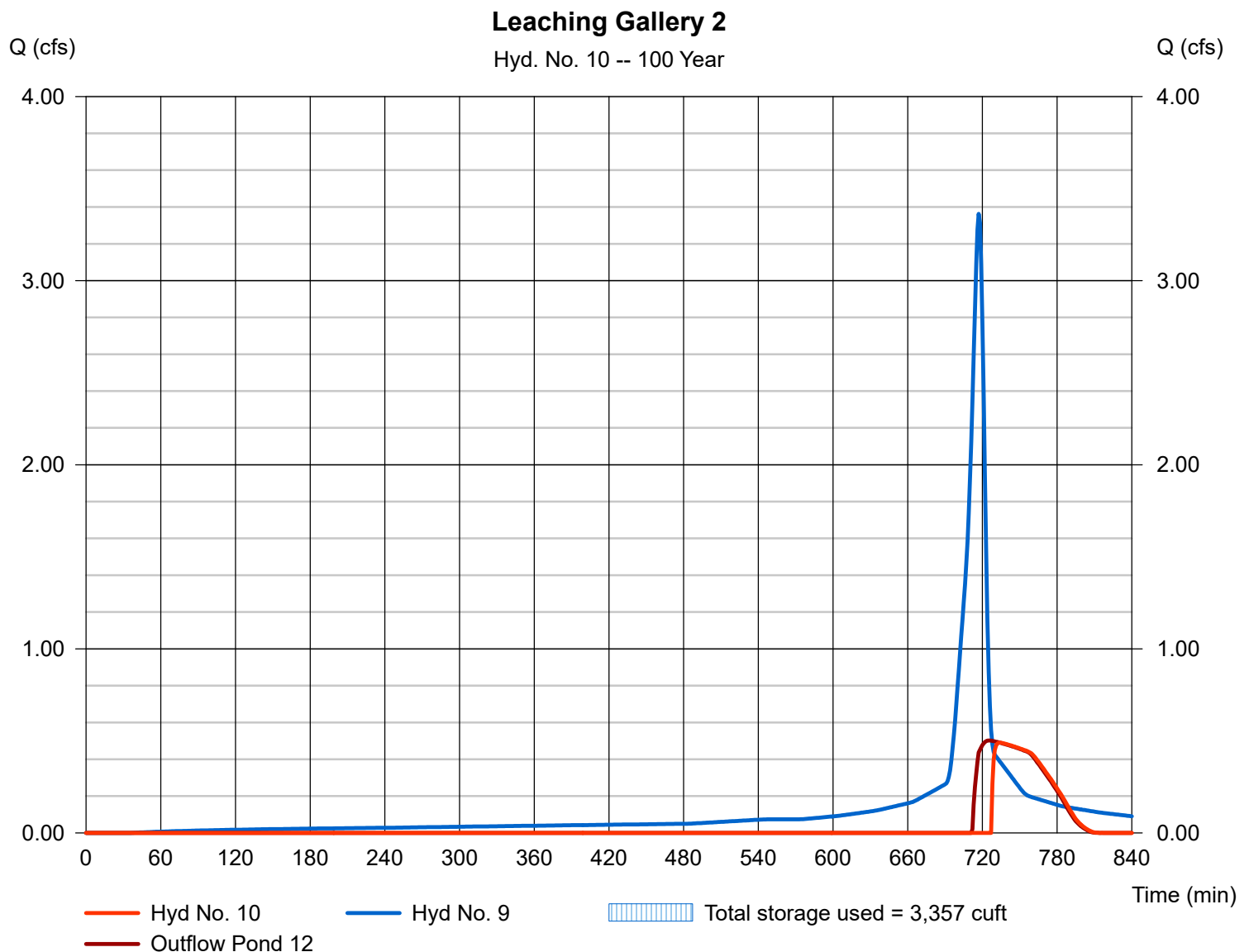
Pond name = Leaching Gallery 2
Inflow hyd. = 9 - Building 2
Max. Elevation = 35.55 ft
Max. Storage = 2,946 cuft

Peak discharge = 0.490 cfs
Time to peak = 734 min
Hyd. volume = 1,472 cuft

Lower Pond

Pond name = Basin 2 Forebay
Other Inflow hyd. = None
Max. Elevation = 23.06 ft
Max. Storage = 412 cuft

Interconnected Pond Routing. Storage Indication method used.



Hydrograph Report

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

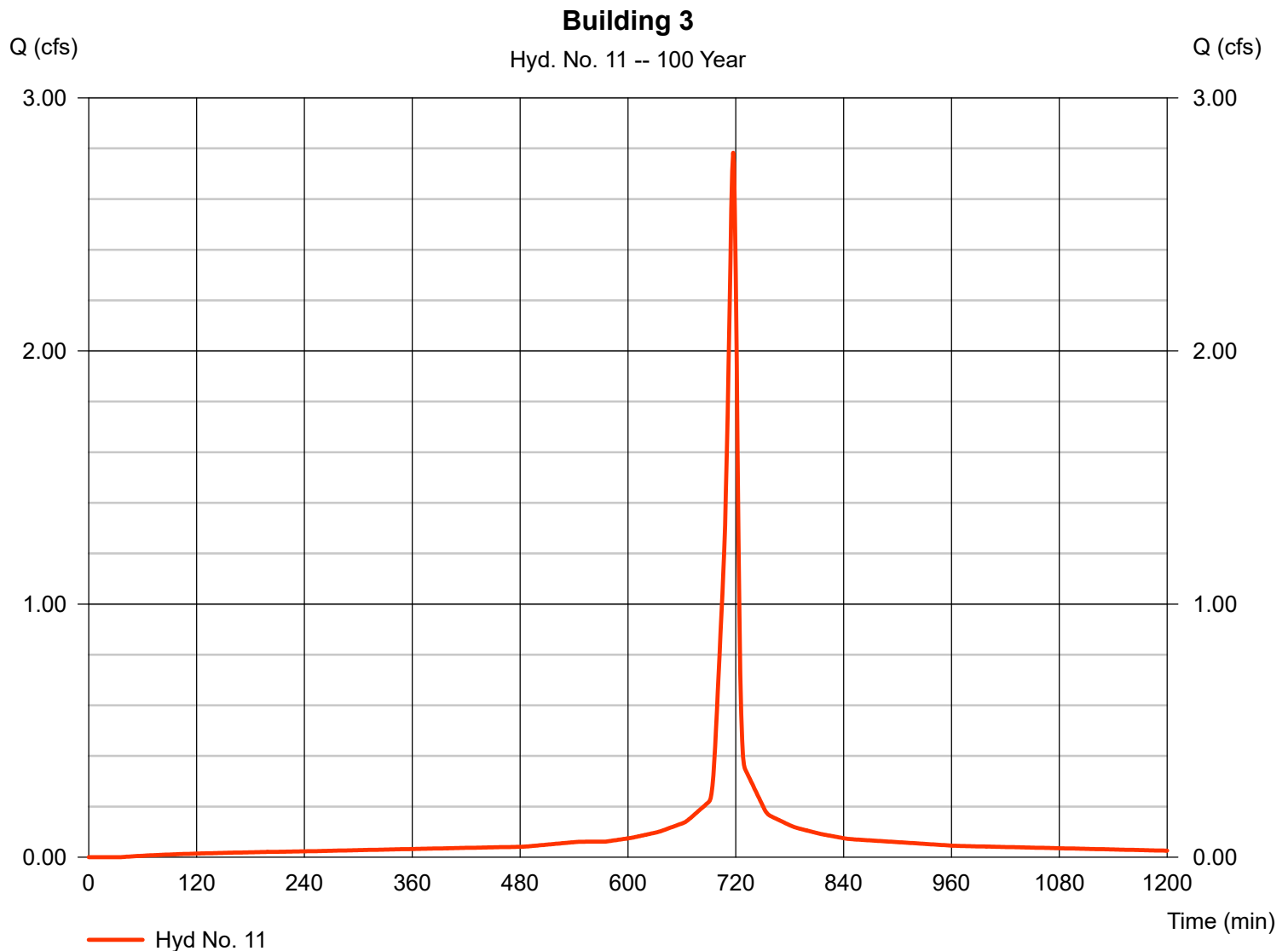
Monday, Oct 3, 2022

Hyd. No. 11

Building 3

Hydrograph type = SCS Runoff
Storm frequency = 100 yrs
Time interval = 1 min
Drainage area = 0.240 ac
Basin Slope = 0.0 %
Tc method = USER
Total precip. = 7.82 in
Storm duration = 24 hrs

Peak discharge = 2.783 cfs
Time to peak = 717 min
Hyd. volume = 6,810 cuft
Curve number = 98
Hydraulic length = 0 ft
Time of conc. (Tc) = 5.00 min
Distribution = Type II
Shape factor = 484



Hydrograph Report

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

Monday, Oct 3, 2022

Hyd. No. 12

Leaching Gallery 3

Hydrograph type = Reservoir (Interconnected)
 Storm frequency = 100 yrs
 Time interval = 1 min

Upper Pond

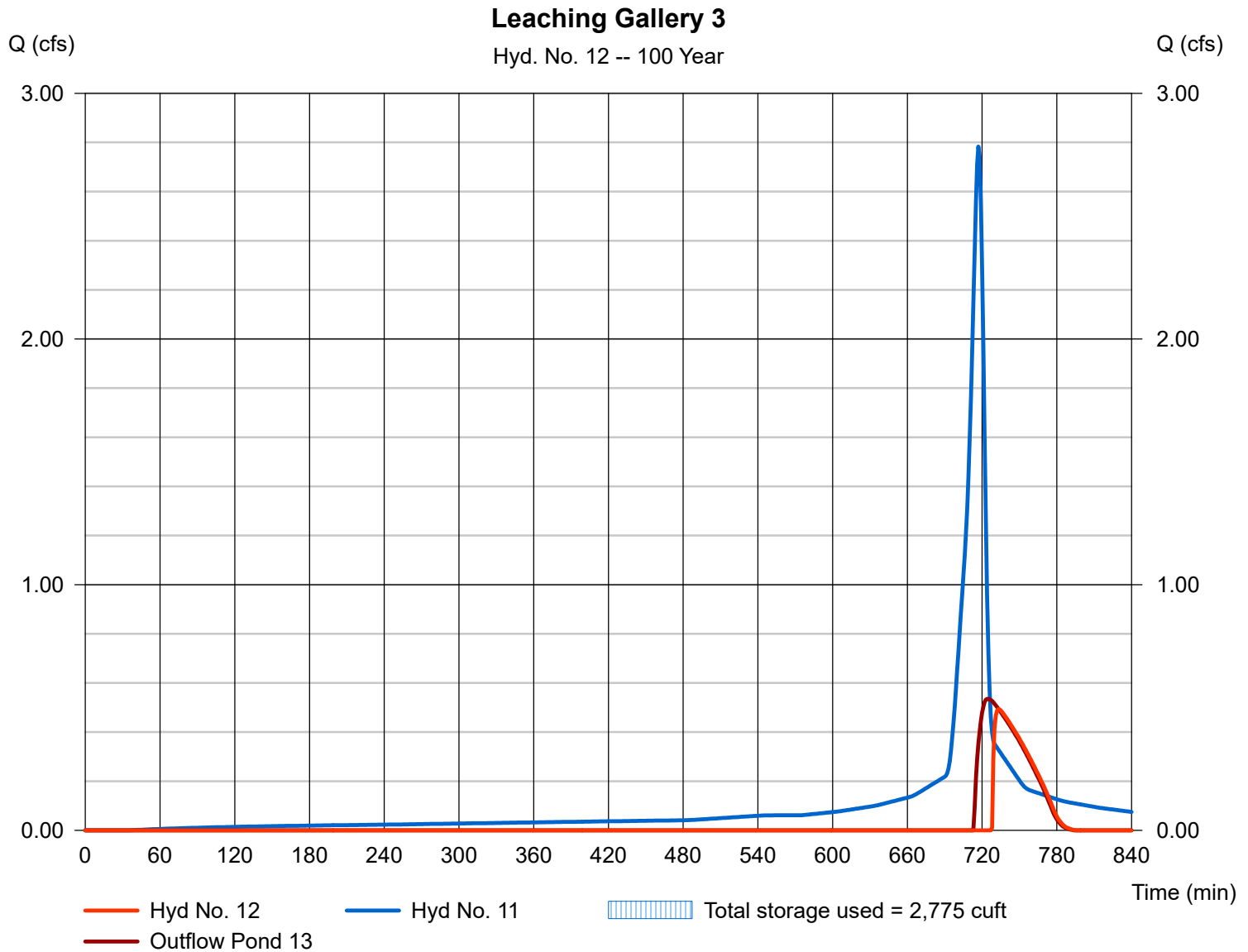
Pond name = Leaching Gallery 3
 Inflow hyd. = 11 - Building 3
 Max. Elevation = 40.75 ft
 Max. Storage = 2,363 cuft

Peak discharge = 0.494 cfs
 Time to peak = 733 min
 Hyd. volume = 983 cuft

Lower Pond

Pond name = Basin 2 Forebay
 Other Inflow hyd. = None
 Max. Elevation = 23.06 ft
 Max. Storage = 412 cuft

Interconnected Pond Routing. Storage Indication method used.



Hydrograph Report

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

Monday, Oct 3, 2022

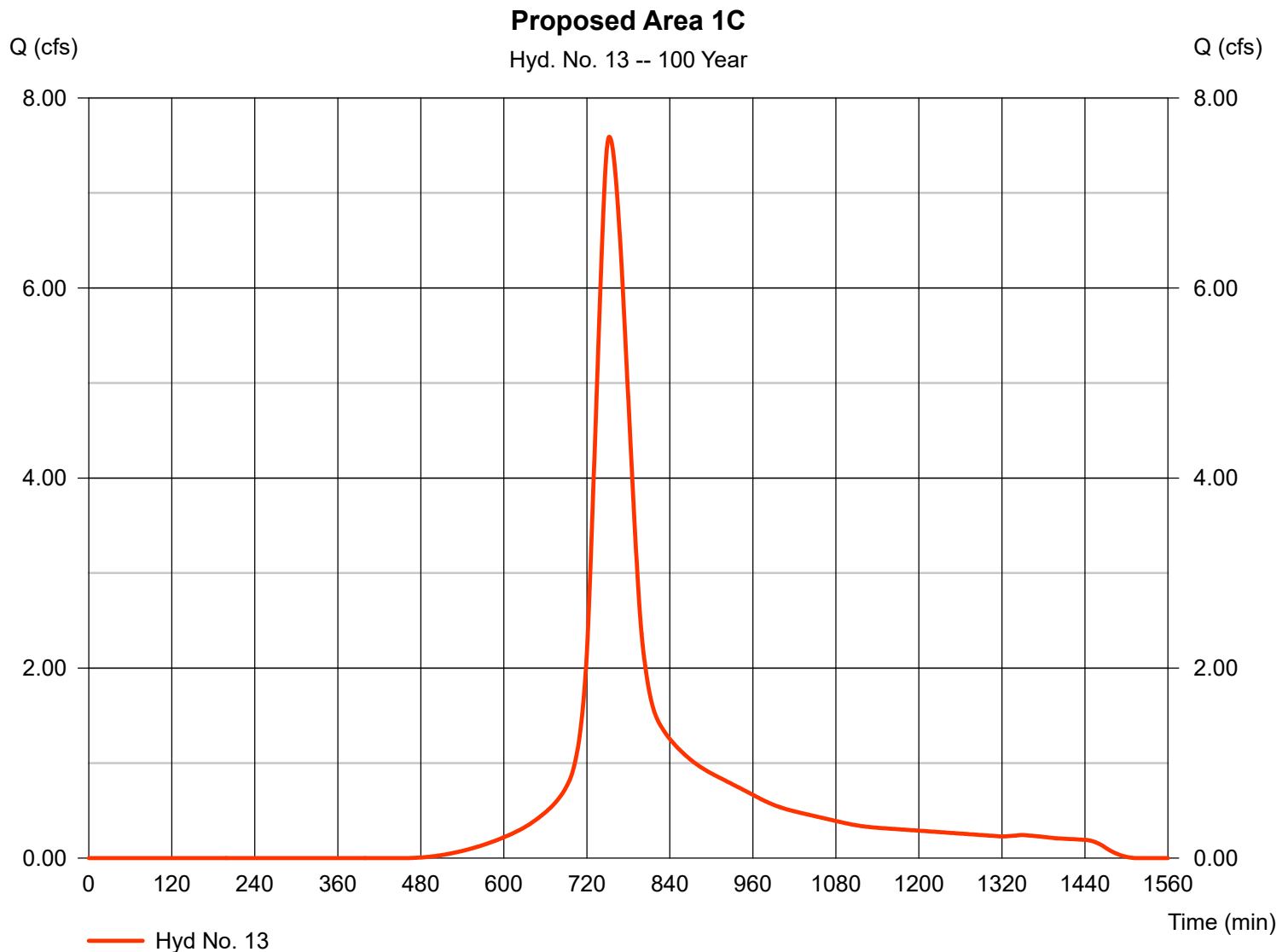
Hyd. No. 13

Proposed Area 1C

Hydrograph type = SCS Runoff
 Storm frequency = 100 yrs
 Time interval = 1 min
 Drainage area = 3.070 ac
 Basin Slope = 0.0 %
 Tc method = TR55
 Total precip. = 7.82 in
 Storm duration = 24 hrs

Peak discharge = 7.591 cfs
 Time to peak = 753 min
 Hyd. volume = 50,341 cuft
 Curve number = 72*
 Hydraulic length = 0 ft
 Time of conc. (Tc) = 48.50 min
 Distribution = Type III
 Shape factor = 484

* Composite (Area/CN) = $[(0.740 \times 55) + (1.060 \times 98) + (1.270 \times 61)] / 3.070$



Hydrograph Report

155

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

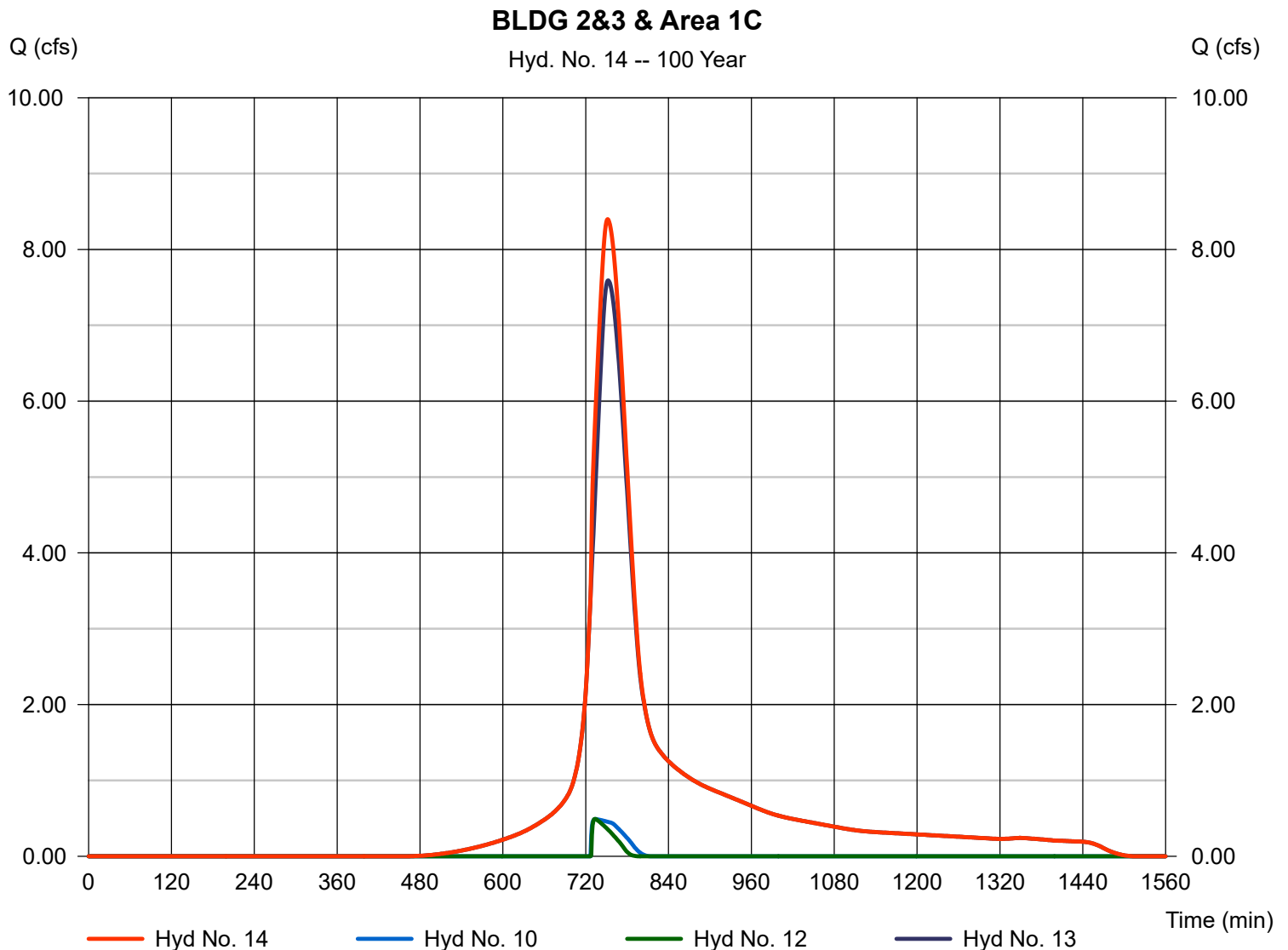
Monday, Oct 3, 2022

Hyd. No. 14

BLDG 2&3 & Area 1C

Hydrograph type = Combine
Storm frequency = 100 yrs
Time interval = 1 min
Inflow hyds. = 10, 12, 13

Peak discharge = 8.399 cfs
Time to peak = 752 min
Hyd. volume = 52,796 cuft
Contrib. drain. area = 3.070 ac



Hydrograph Report

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

Monday, Oct 3, 2022

Hyd. No. 15

Basin 2 Forebay

Hydrograph type = Reservoir (Interconnected)
 Storm frequency = 100 yrs
 Time interval = 1 min

Upper Pond

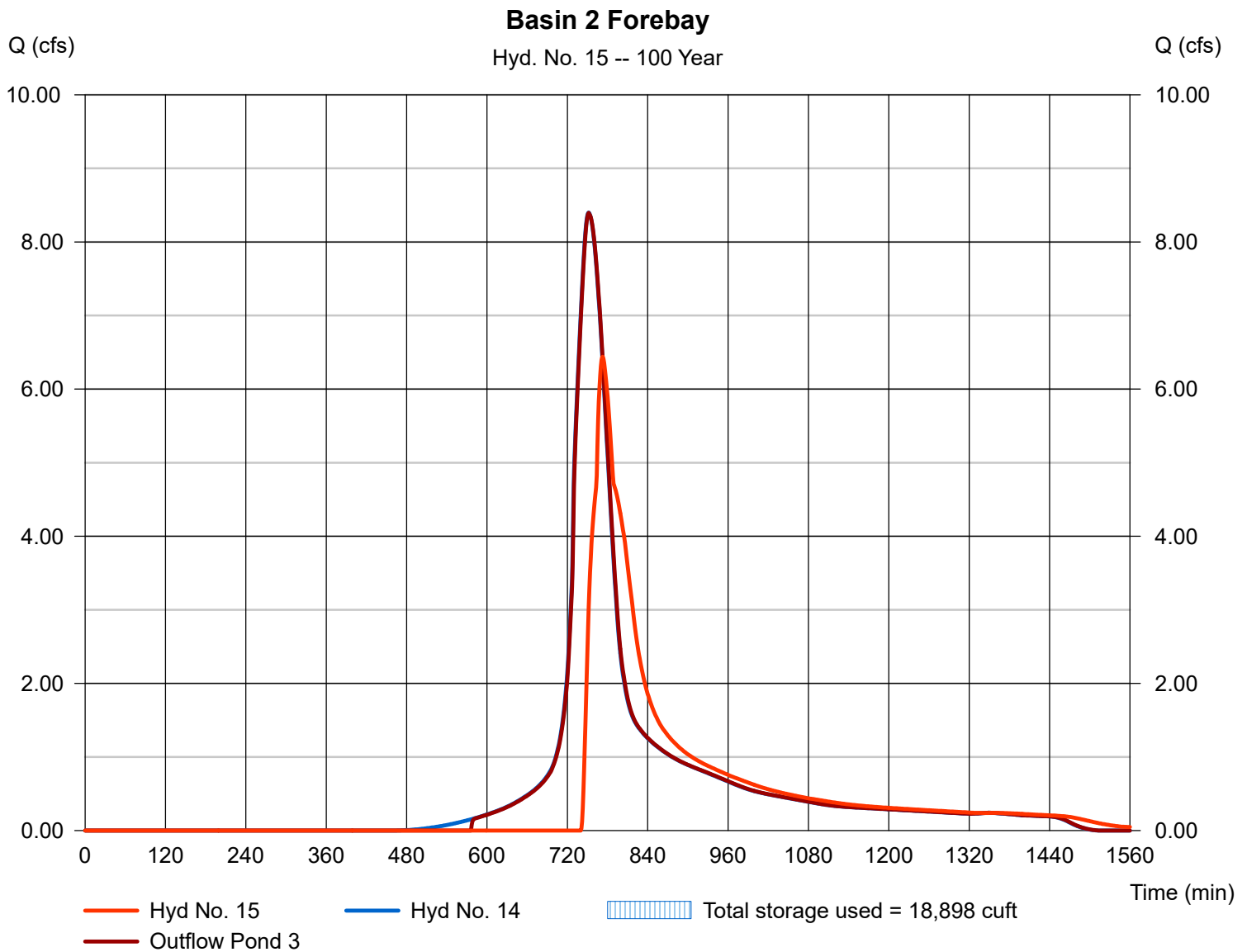
Pond name = Basin 2 Forebay
 Inflow hyd. = 14 - BLDG 2&3 & Area 1C
 Max. Elevation = 23.47 ft
 Max. Storage = 682 cuft

Peak discharge = 6.438 cfs
 Time to peak = 773 min
 Hyd. volume = 42,308 cuft

Lower Pond

Pond name = Basin 2
 Other Inflow hyd. = None
 Max. Elevation = 27.61 ft
 Max. Storage = 18,216 cuft

Interconnected Pond Routing. Storage Indication method used.



Hydrograph Report

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

Monday, Oct 3, 2022

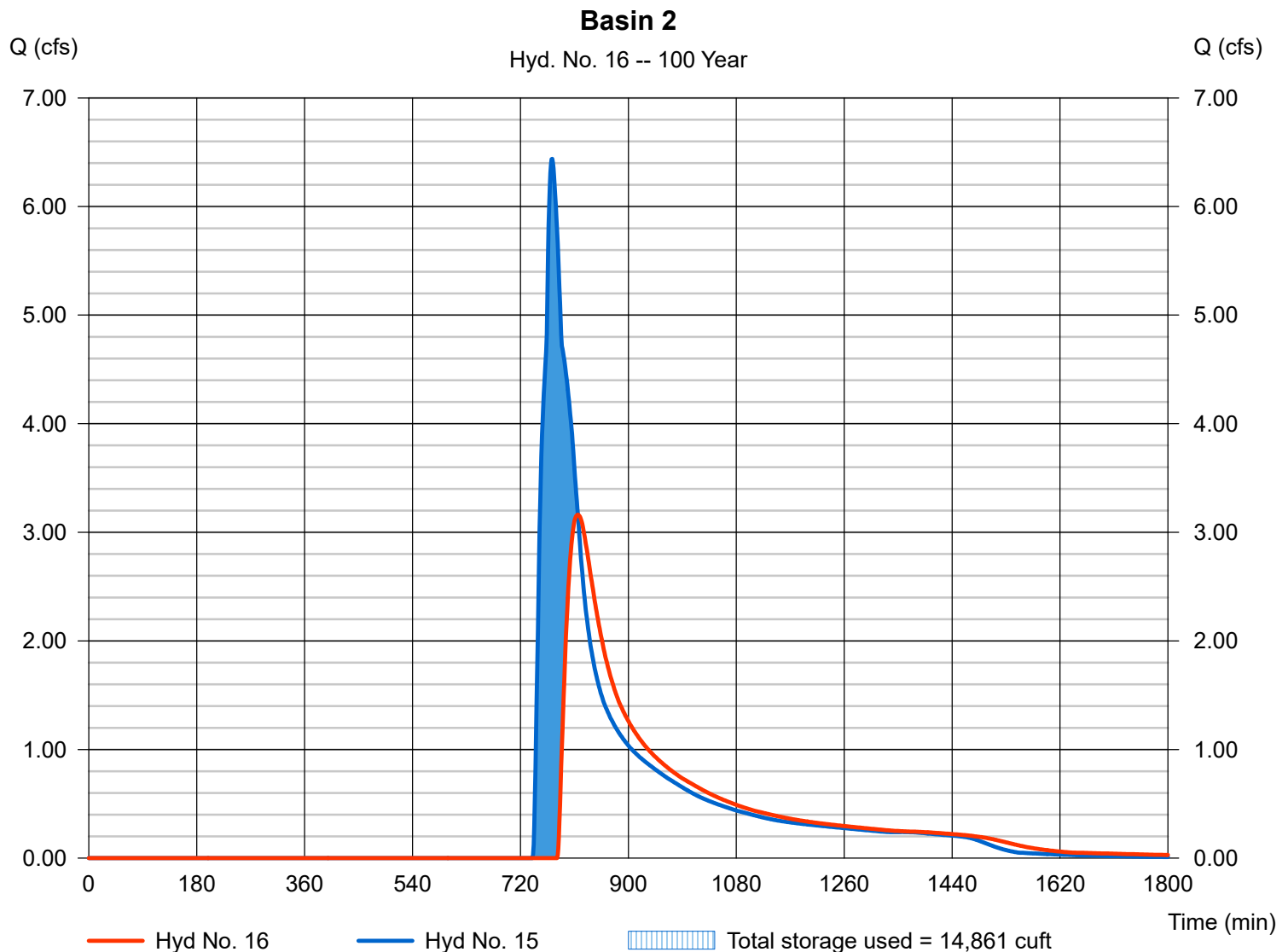
Hyd. No. 16

Basin 2

Hydrograph type = Reservoir
 Storm frequency = 100 yrs
 Time interval = 1 min
 Inflow hyd. No. = 15 - Basin 2 Forebay
 Reservoir name = Basin 2

Peak discharge = 3.162 cfs
 Time to peak = 816 min
 Hyd. volume = 32,192 cuft
 Max. Elevation = 27.01 ft
 Max. Storage = 14,861 cuft

Storage Indication method used.



Hydrograph Report

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

Monday, Oct 3, 2022

Hyd. No. 17

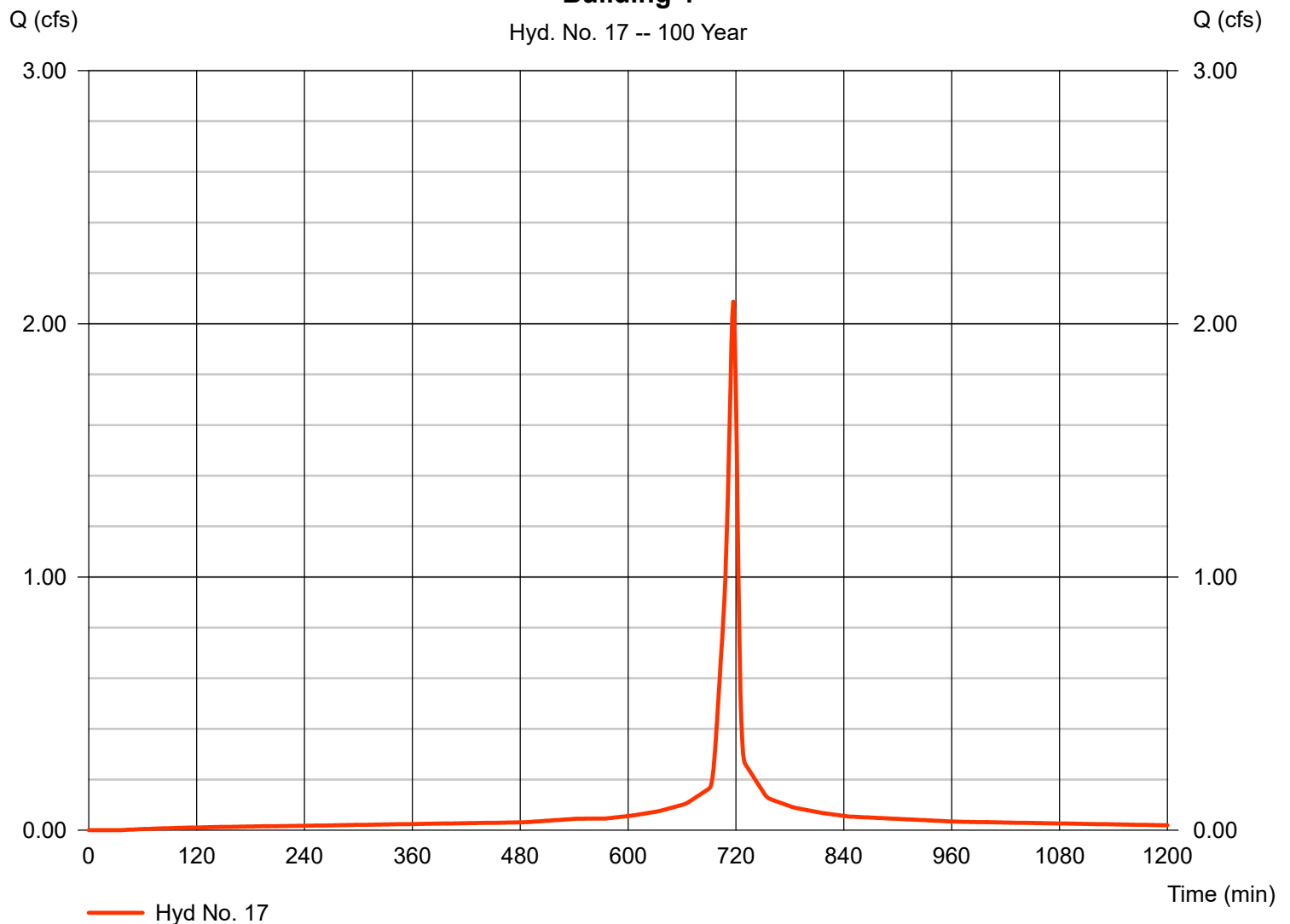
Building 4

Hydrograph type = SCS Runoff
 Storm frequency = 100 yrs
 Time interval = 1 min
 Drainage area = 0.180 ac
 Basin Slope = 0.0 %
 Tc method = USER
 Total precip. = 7.82 in
 Storm duration = 24 hrs

Peak discharge = 2.087 cfs
 Time to peak = 717 min
 Hyd. volume = 5,108 cuft
 Curve number = 98
 Hydraulic length = 0 ft
 Time of conc. (Tc) = 5.00 min
 Distribution = Type II
 Shape factor = 484

Building 4

Hyd. No. 17 -- 100 Year



Hydrograph Report

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

Monday, Oct 3, 2022

Hyd. No. 18

Leaching Gallery 4

Hydrograph type = Reservoir (Interconnected)
 Storm frequency = 100 yrs
 Time interval = 1 min

Upper Pond

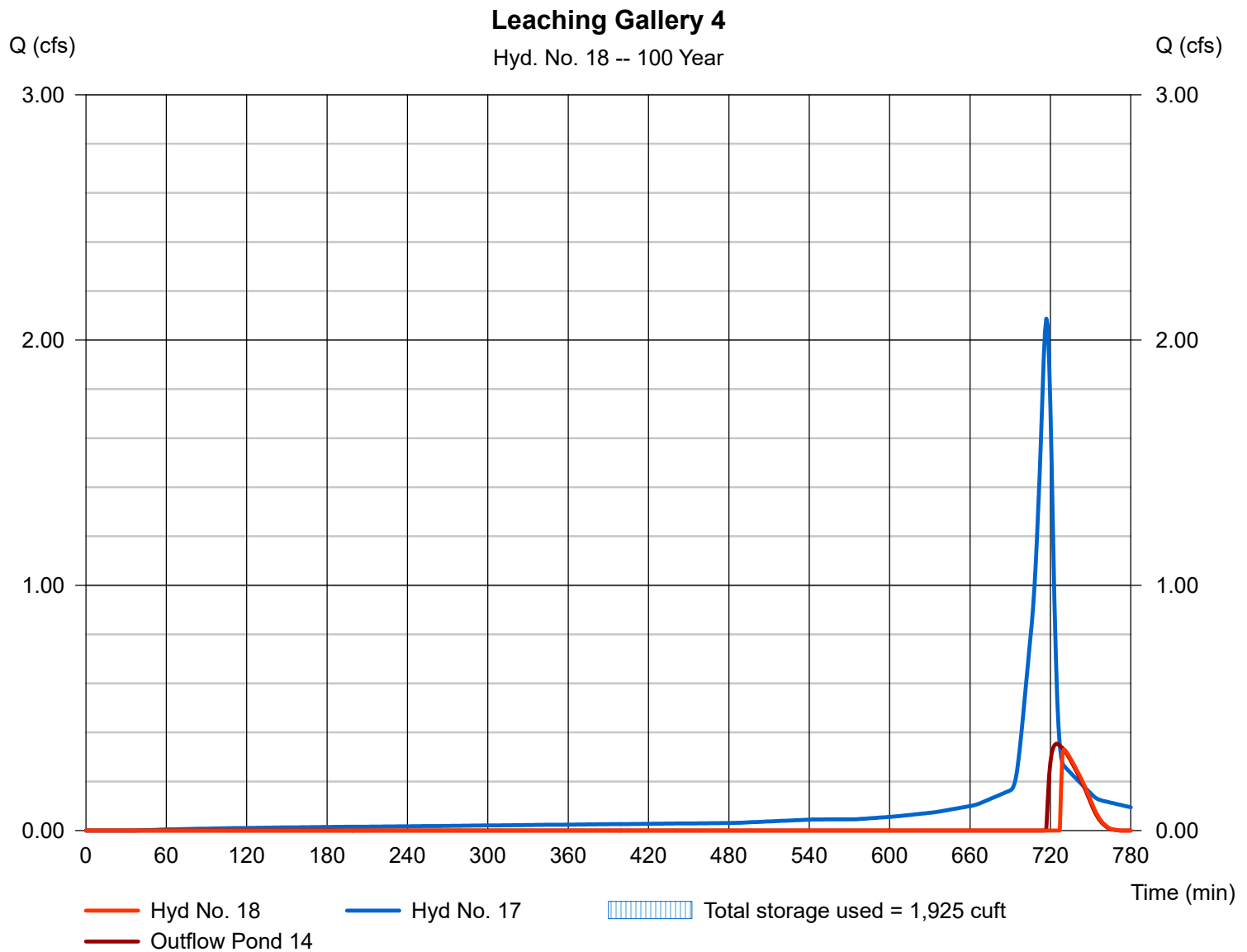
Pond name = Leaching Gallery 4
 Inflow hyd. = 17 - Building 4
 Max. Elevation = 47.25 ft
 Max. Storage = 1,732 cuft

Peak discharge = 0.331 cfs
 Time to peak = 730 min
 Hyd. volume = 374 cuft

Lower Pond

Pond name = Basin 3 Forebay
 Other Inflow hyd. = None
 Max. Elevation = 33.04 ft
 Max. Storage = 193 cuft

Interconnected Pond Routing. Storage Indication method used.



Hydrograph Report

160

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

Monday, Oct 3, 2022

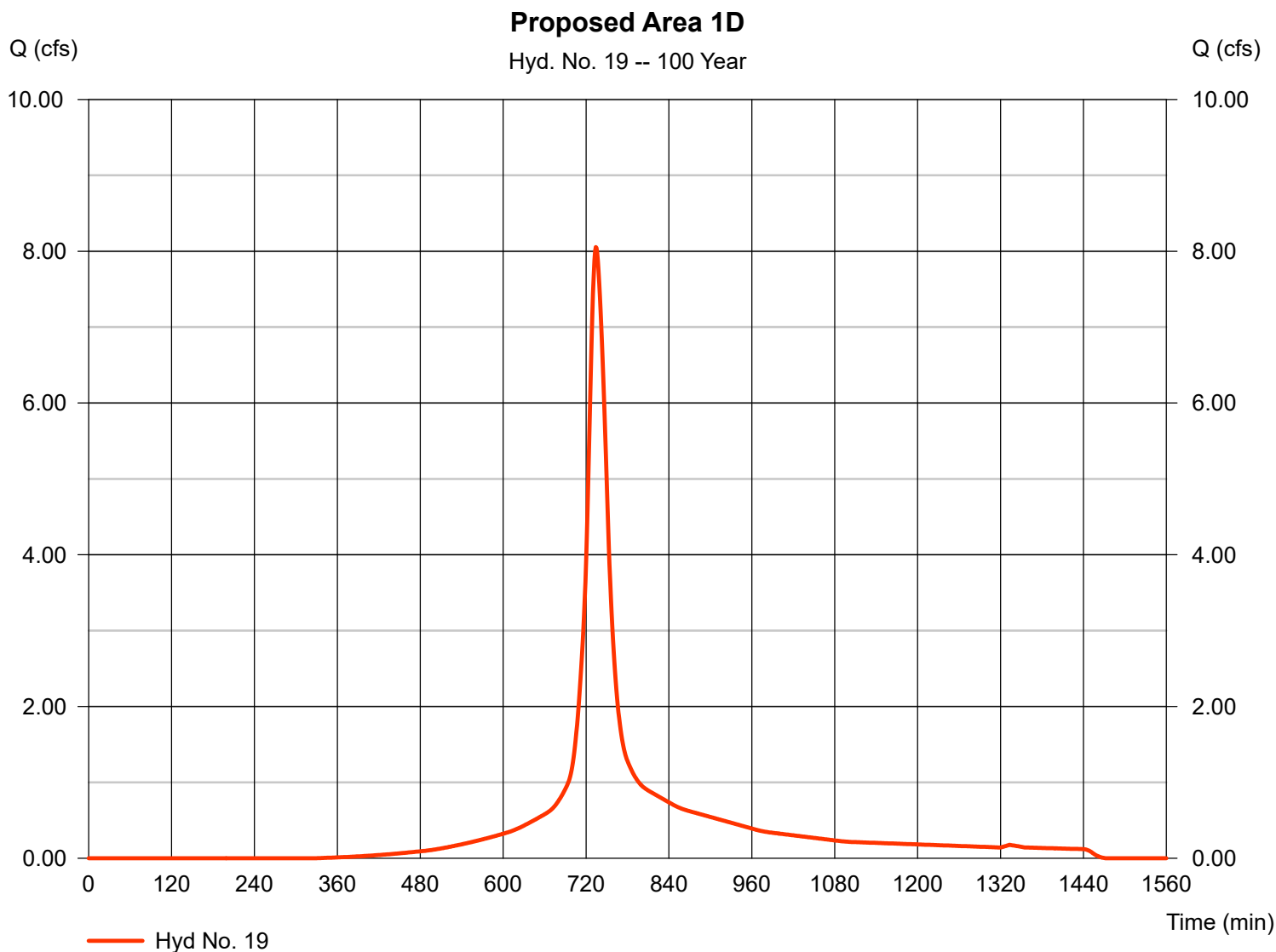
Hyd. No. 19

Proposed Area 1D

Hydrograph type = SCS Runoff
Storm frequency = 100 yrs
Time interval = 1 min
Drainage area = 1.830 ac
Basin Slope = 0.0 %
Tc method = TR55
Total precip. = 7.82 in
Storm duration = 24 hrs

Peak discharge = 8.055 cfs
Time to peak = 734 min
Hyd. volume = 37,374 cuft
Curve number = 81*
Hydraulic length = 0 ft
Time of conc. (Tc) = 21.50 min
Distribution = Type III
Shape factor = 484

* Composite (Area/CN) = $[(1.010 \times 98) + (0.820 \times 61)] / 1.830$



Hydrograph Report

161

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

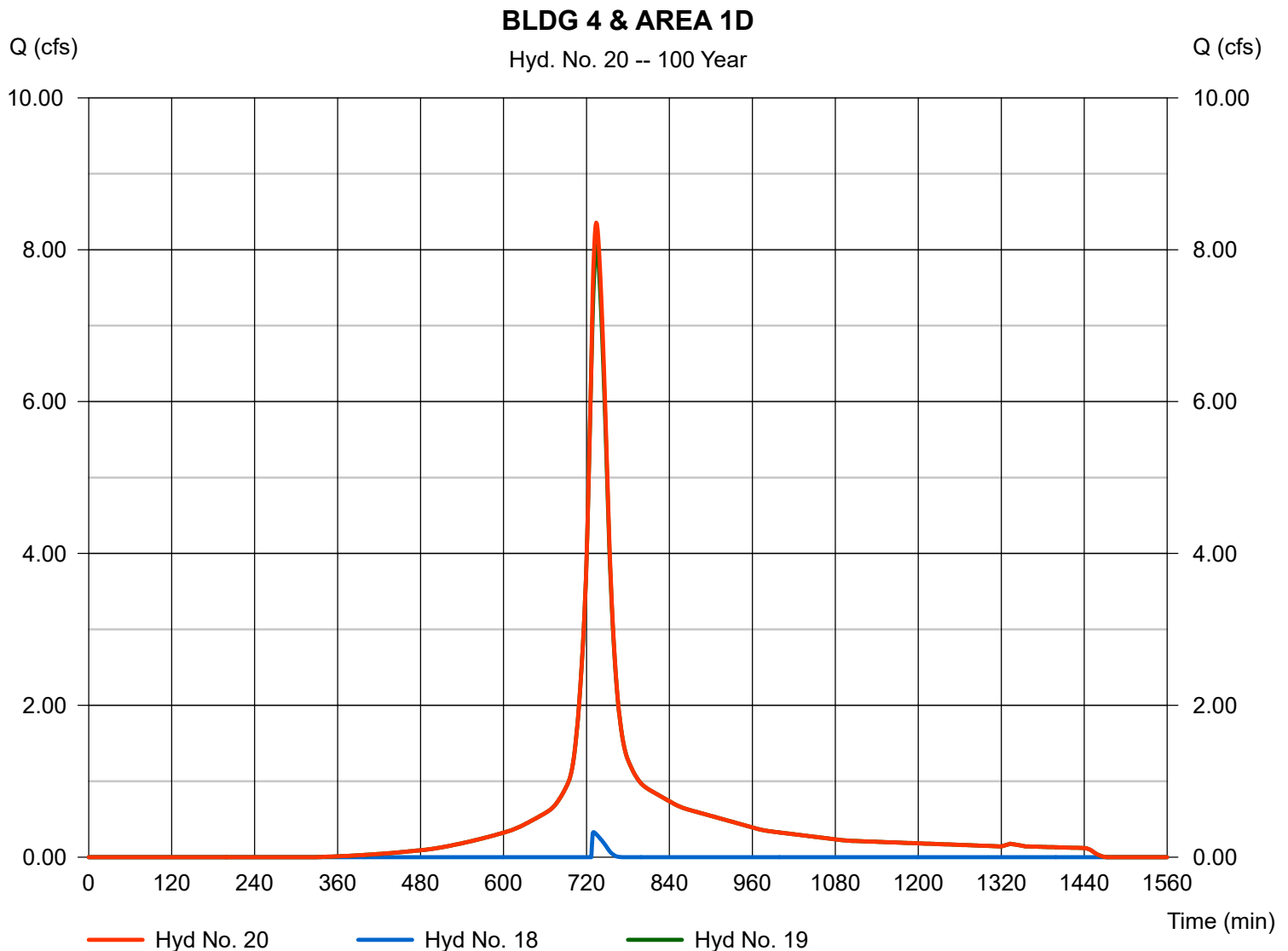
Monday, Oct 3, 2022

Hyd. No. 20

BLDG 4 & AREA 1D

Hydrograph type = Combine
Storm frequency = 100 yrs
Time interval = 1 min
Inflow hyds. = 18, 19

Peak discharge = 8.357 cfs
Time to peak = 734 min
Hyd. volume = 37,748 cuft
Contrib. drain. area = 1.830 ac



Hydrograph Report

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

Monday, Oct 3, 2022

Hyd. No. 21

Basin 3 Forebay

Hydrograph type = Reservoir (Interconnected)
 Storm frequency = 100 yrs
 Time interval = 1 min

Upper Pond

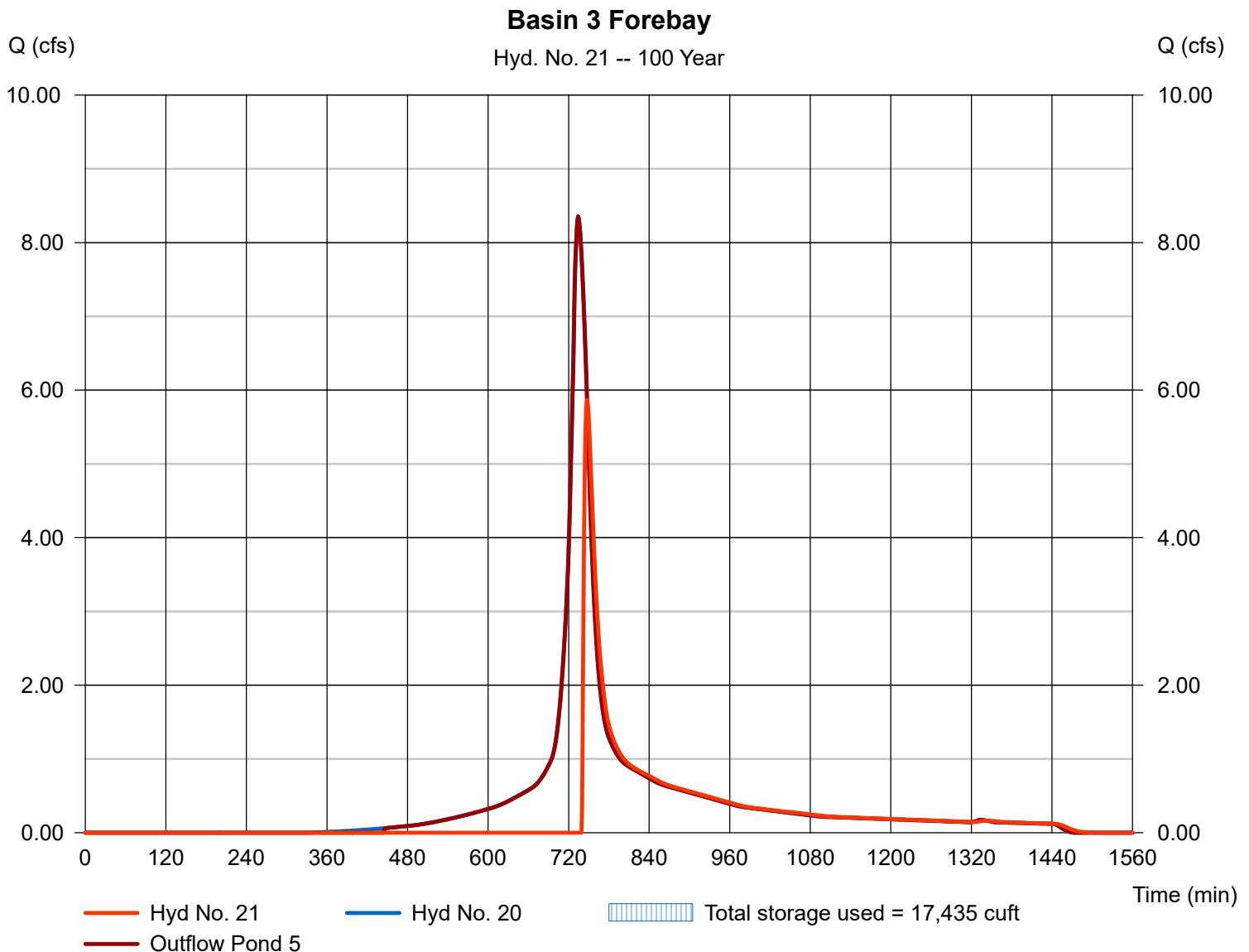
Pond name = Basin 3 Forebay
 Inflow hyd. = 20 - BLDG 4 & AREA 1D
 Max. Elevation = 33.47 ft
 Max. Storage = 335 cuft

Peak discharge = 5.867 cfs
 Time to peak = 748 min
 Hyd. volume = 21,915 cuft

Lower Pond

Pond name = Basin 3
 Other Inflow hyd. = None
 Max. Elevation = 36.87 ft
 Max. Storage = 17,100 cuft

Interconnected Pond Routing. Storage Indication method used.



Hydrograph Report

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

Monday, Oct 3, 2022

Hyd. No. 22

Basin 3

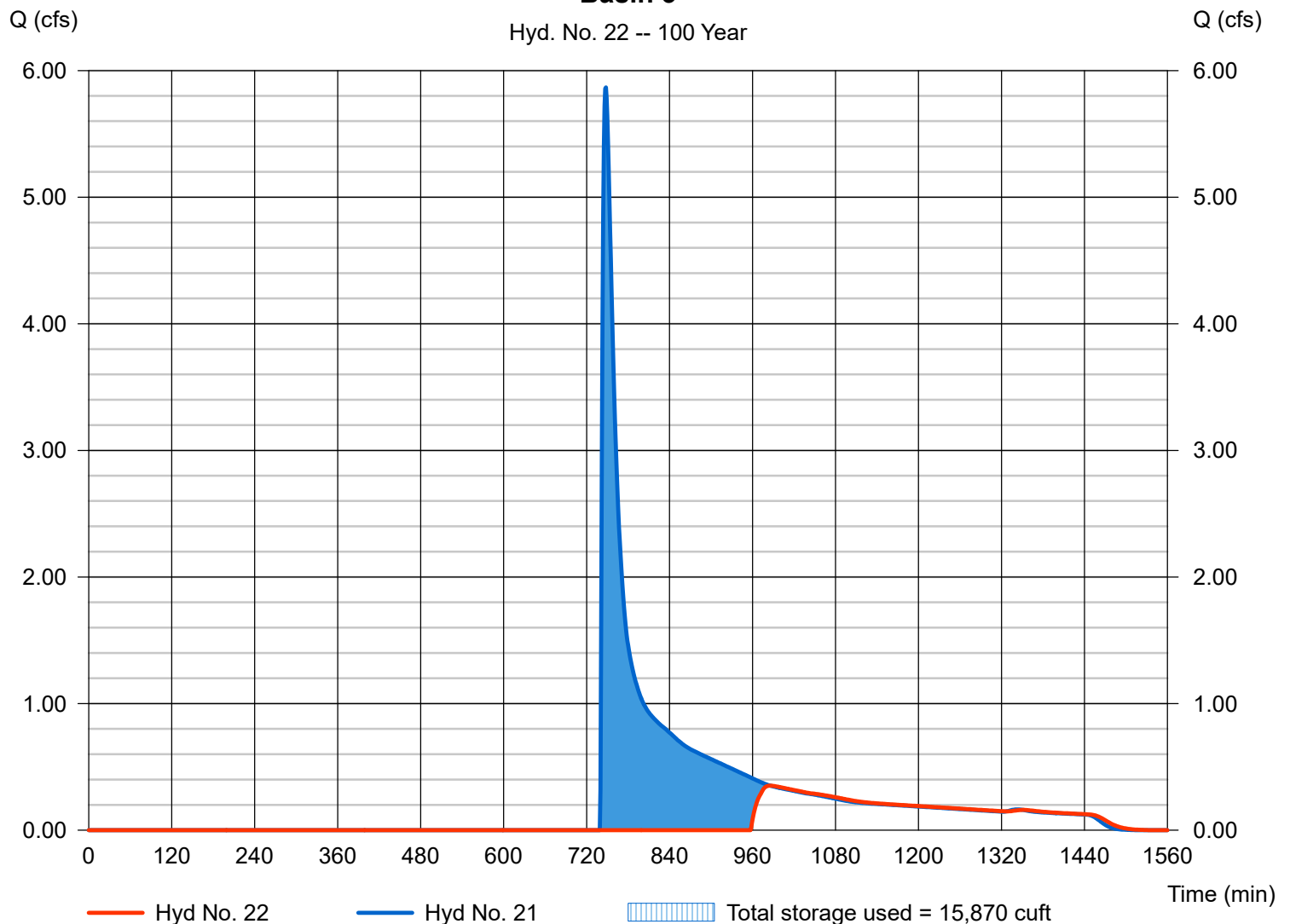
Hydrograph type = Reservoir
 Storm frequency = 100 yrs
 Time interval = 1 min
 Inflow hyd. No. = 21 - Basin 3 Forebay
 Reservoir name = Basin 3

Peak discharge = 0.352 cfs
 Time to peak = 986 min
 Hyd. volume = 6,263 cuft
 Max. Elevation = 36.56 ft
 Max. Storage = 15,870 cuft

Storage Indication method used.

Basin 3

Hyd. No. 22 -- 100 Year



Hydrograph Report

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

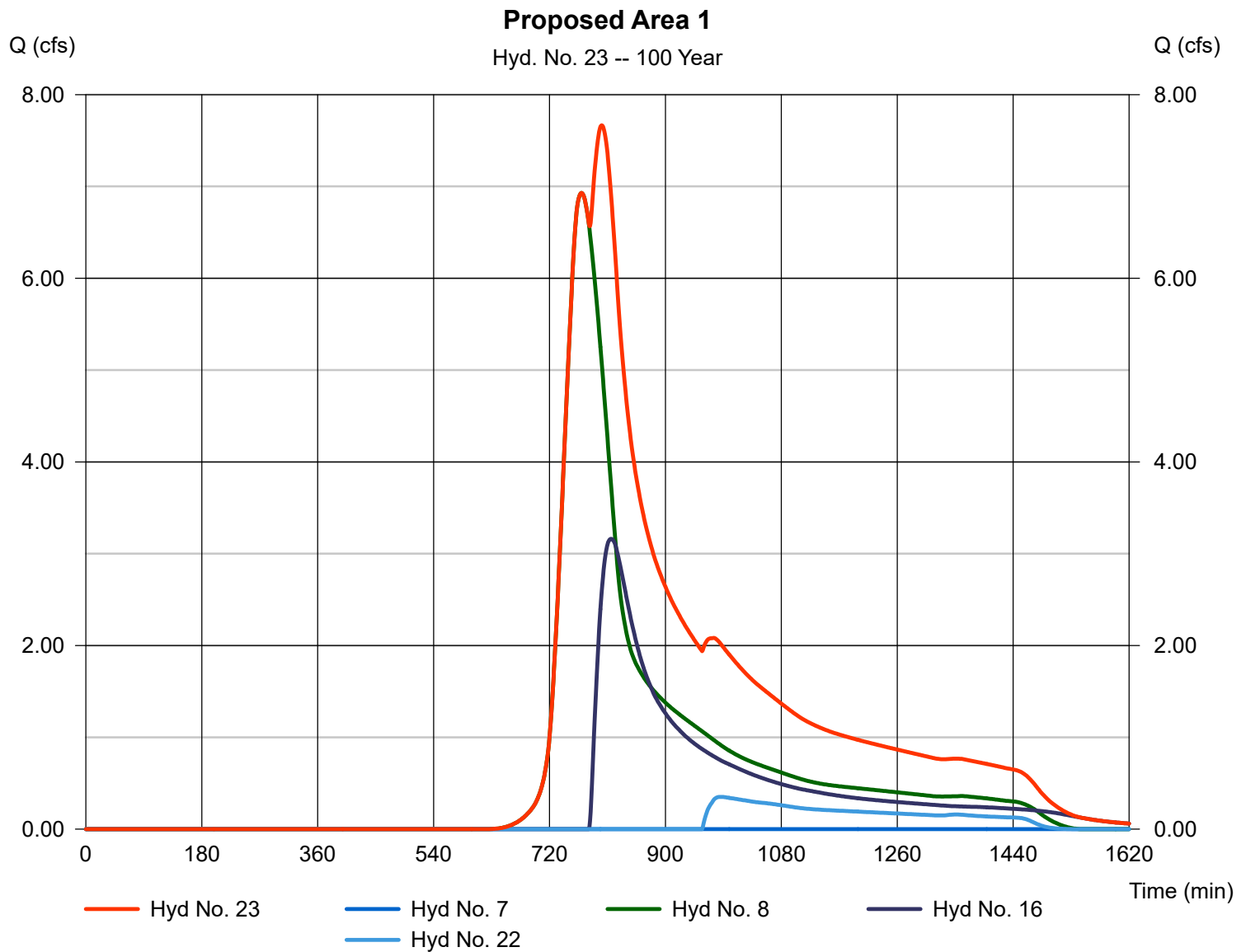
Monday, Oct 3, 2022

Hyd. No. 23

Proposed Area 1

Hydrograph type = Combine
 Storm frequency = 100 yrs
 Time interval = 1 min
 Inflow hyds. = 7, 8, 16, 22

Peak discharge = 7.666 cfs
 Time to peak = 801 min
 Hyd. volume = 97,857 cuft
 Contrib. drain. area = 5.930 ac



Hydrograph Report

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

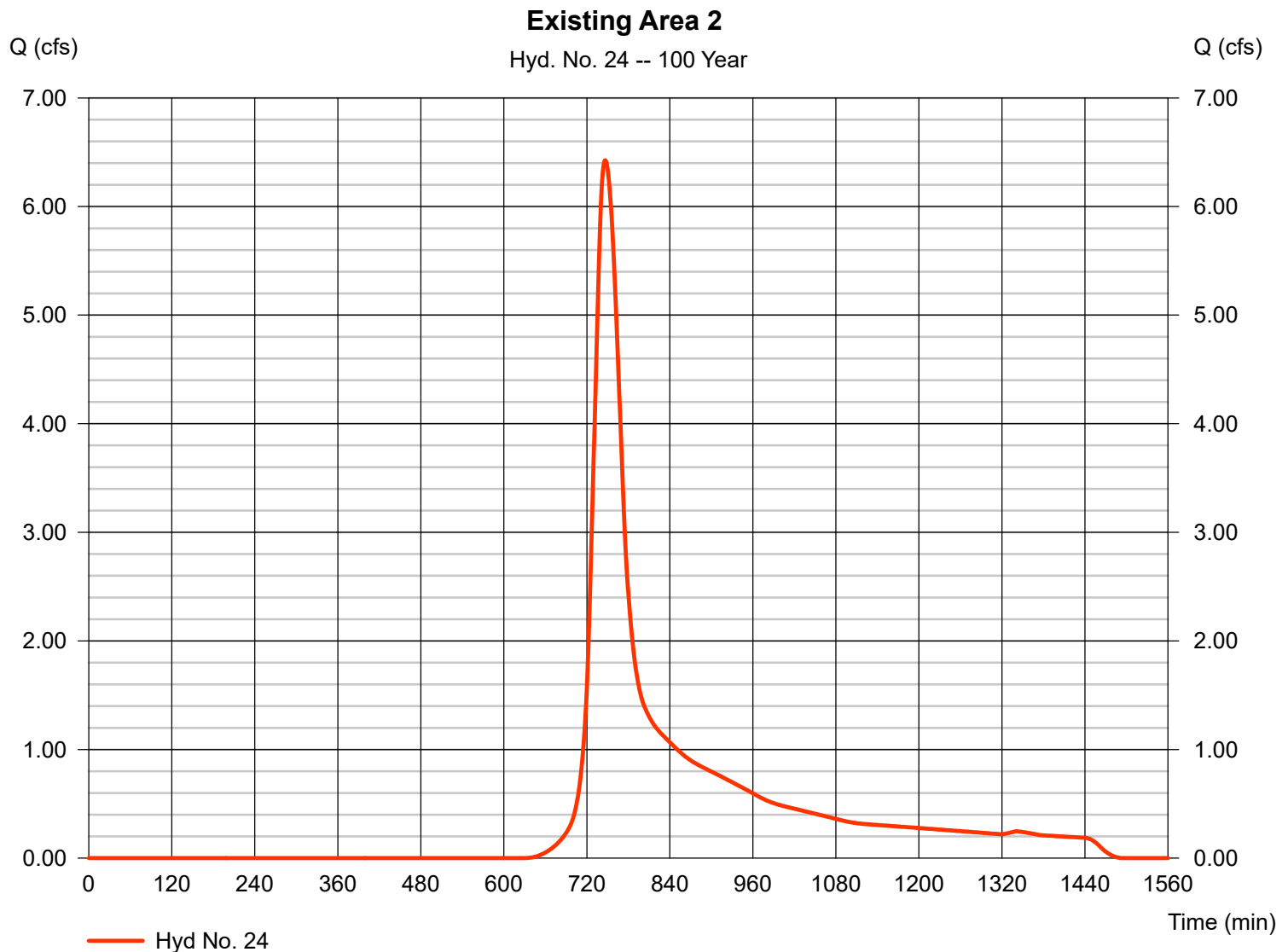
Monday, Oct 3, 2022

Hyd. No. 24

Existing Area 2

Hydrograph type = SCS Runoff
 Storm frequency = 100 yrs
 Time interval = 1 min
 Drainage area = 3.920 ac
 Basin Slope = 0.0 %
 Tc method = USER
 Total precip. = 7.82 in
 Storm duration = 24 hrs

Peak discharge = 6.425 cfs
 Time to peak = 747 min
 Hyd. volume = 37,876 cuft
 Curve number = 55
 Hydraulic length = 0 ft
 Time of conc. (Tc) = 35.00 min
 Distribution = Type III
 Shape factor = 484



Hydrograph Report

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

Monday, Oct 3, 2022

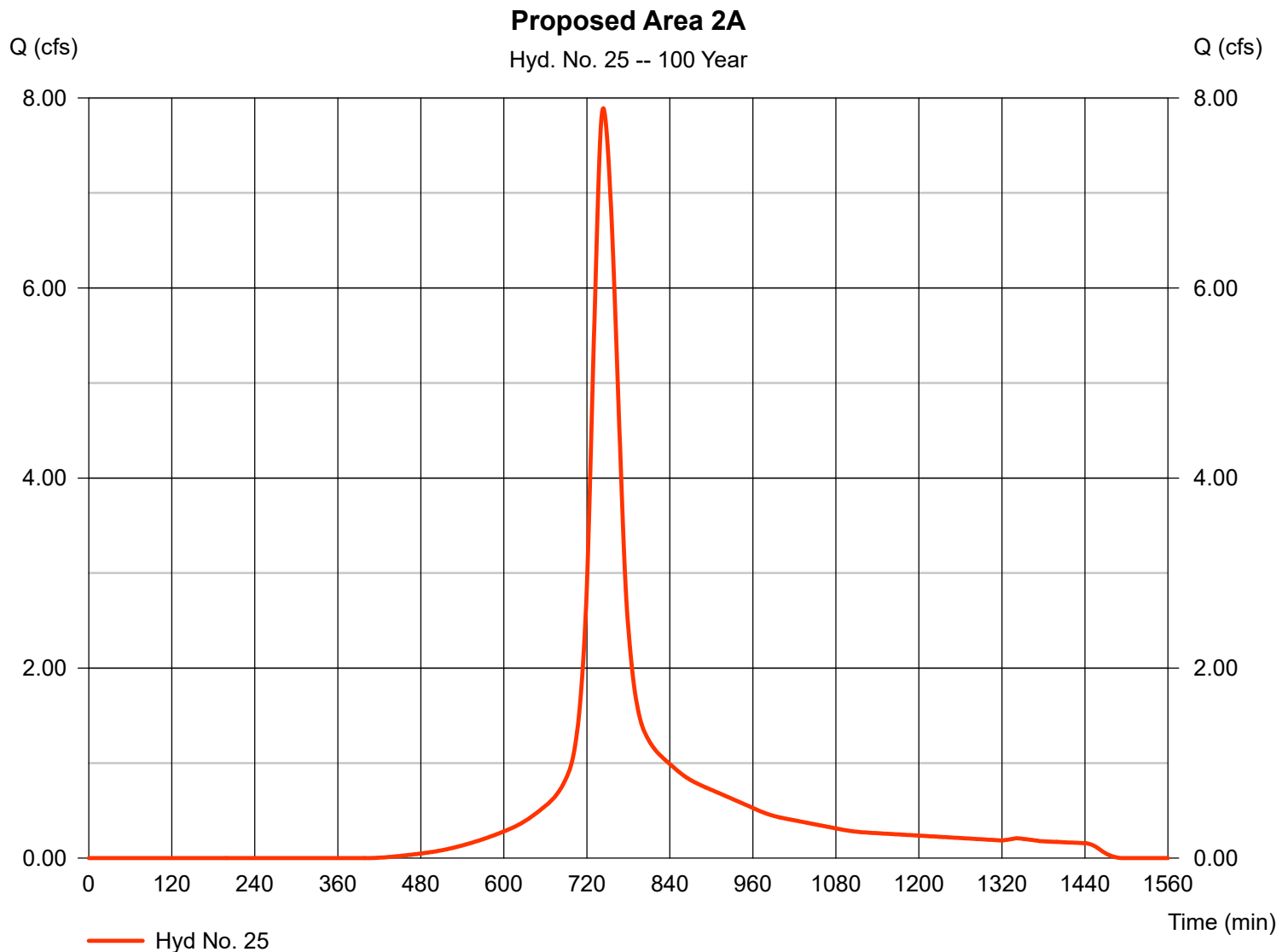
Hyd. No. 25

Proposed Area 2A

Hydrograph type = SCS Runoff
 Storm frequency = 100 yrs
 Time interval = 1 min
 Drainage area = 2.450 ac
 Basin Slope = 0.0 %
 Tc method = TR55
 Total precip. = 7.82 in
 Storm duration = 24 hrs

Peak discharge = 7.891 cfs
 Time to peak = 744 min
 Hyd. volume = 44,418 cuft
 Curve number = 76*
 Hydraulic length = 0 ft
 Time of conc. (Tc) = 34.80 min
 Distribution = Type III
 Shape factor = 484

* Composite (Area/CN) = $[(1.090 \times 98) + (0.870 \times 61) + (0.490 \times 55)] / 2.450$



Hydrograph Report

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

Monday, Oct 3, 2022

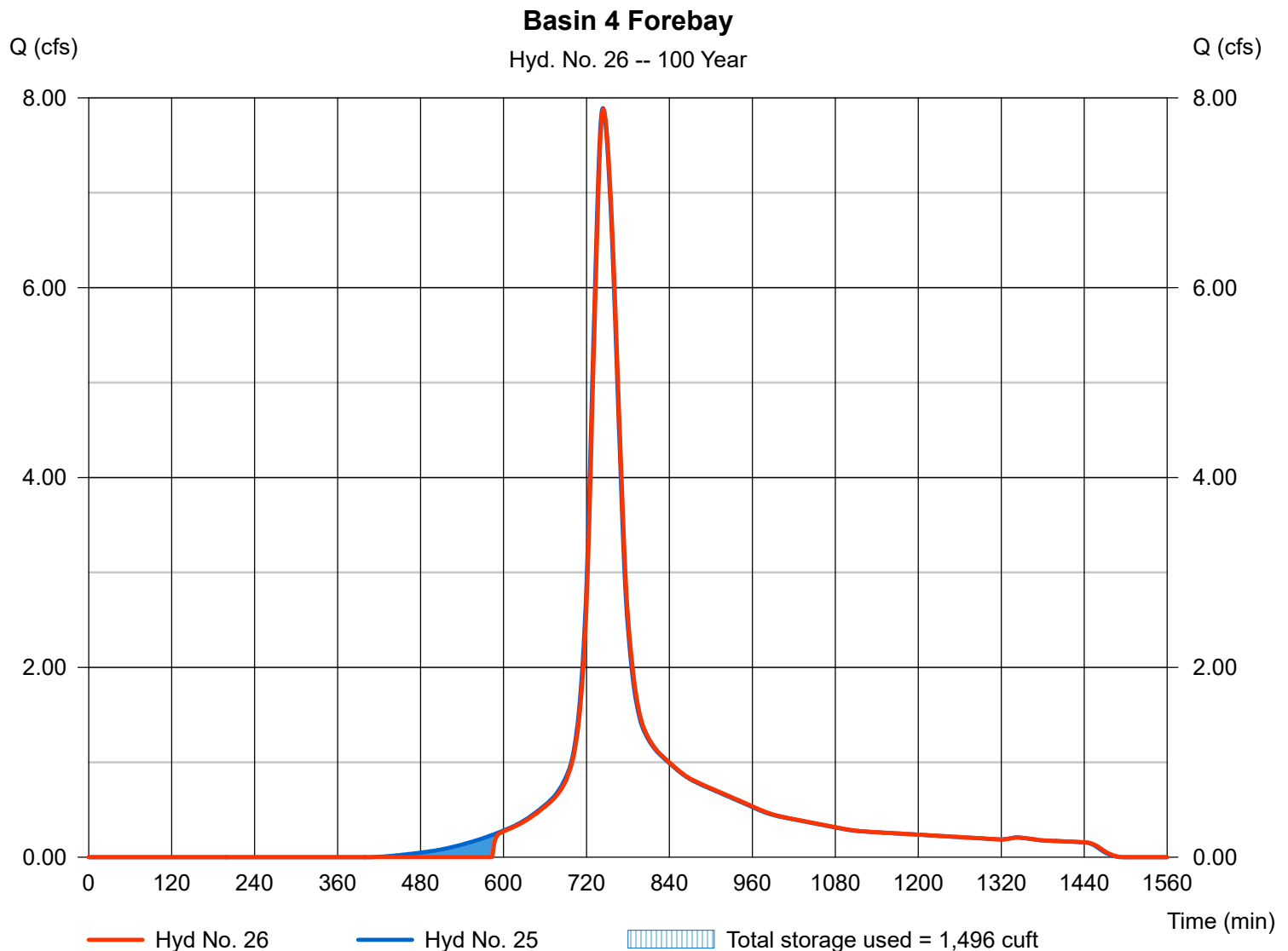
Hyd. No. 26

Basin 4 Forebay

Hydrograph type = Reservoir
 Storm frequency = 100 yrs
 Time interval = 1 min
 Inflow hyd. No. = 25 - Proposed Area 2A
 Reservoir name = Basin 4 Forebay

Peak discharge = 7.879 cfs
 Time to peak = 745 min
 Hyd. volume = 43,544 cuft
 Max. Elevation = 53.45 ft
 Max. Storage = 1,496 cuft

Storage Indication method used.



Hydrograph Report

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

Monday, Oct 3, 2022

Hyd. No. 27

Basin 4

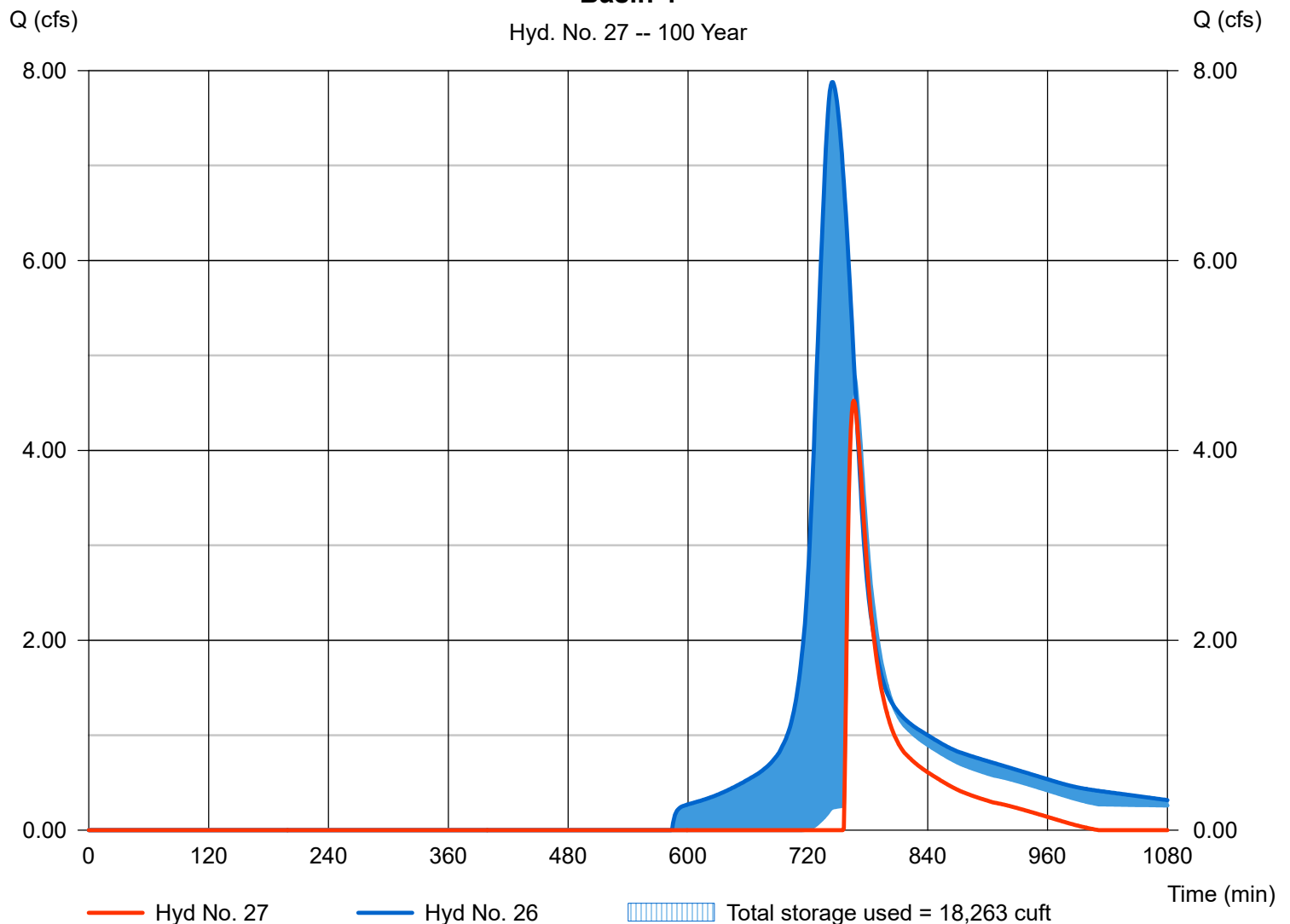
Hydrograph type = Reservoir
 Storm frequency = 100 yrs
 Time interval = 1 min
 Inflow hyd. No. = 26 - Basin 4 Forebay
 Reservoir name = Basin 4

Peak discharge = 4.525 cfs
 Time to peak = 766 min
 Hyd. volume = 11,614 cuft
 Max. Elevation = 56.81 ft
 Max. Storage = 18,263 cuft

Storage Indication method used. Exfiltration extracted from Outflow.

Basin 4

Hyd. No. 27 -- 100 Year



Hydrograph Report

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

Monday, Oct 3, 2022

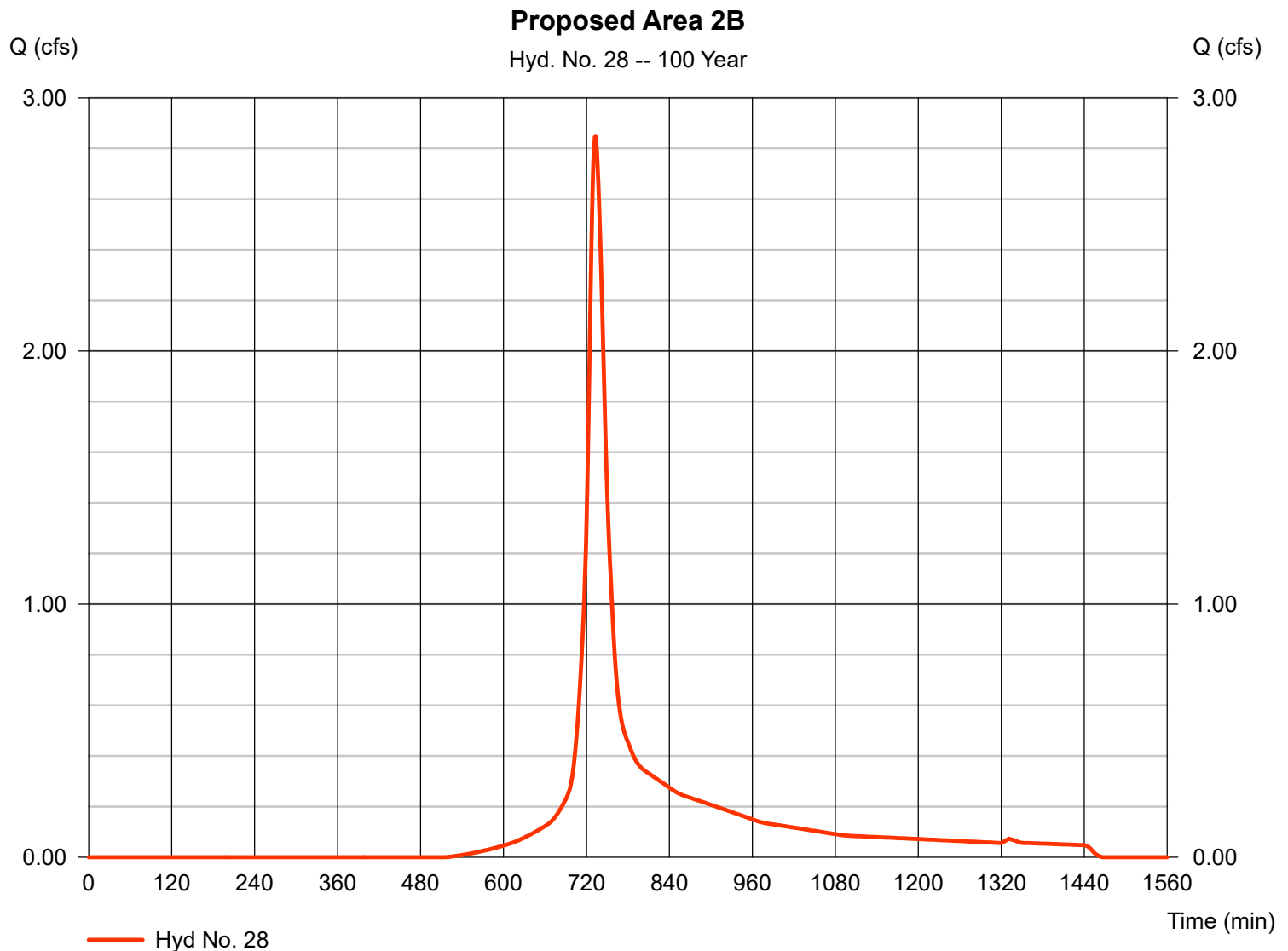
Hyd. No. 28

Proposed Area 2B

Hydrograph type = SCS Runoff
 Storm frequency = 100 yrs
 Time interval = 1 min
 Drainage area = 0.850 ac
 Basin Slope = 0.0 %
 Tc method = TR55
 Total precip. = 7.82 in
 Storm duration = 24 hrs

Peak discharge = 2.849 cfs
 Time to peak = 733 min
 Hyd. volume = 12,117 cuft
 Curve number = 67*
 Hydraulic length = 0 ft
 Time of conc. (Tc) = 17.10 min
 Distribution = Type III
 Shape factor = 484

* Composite (Area/CN) = $[(0.150 \times 98) + (0.640 \times 61) + (0.060 \times 55)] / 0.850$



Hydrograph Report

170

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

Monday, Oct 3, 2022

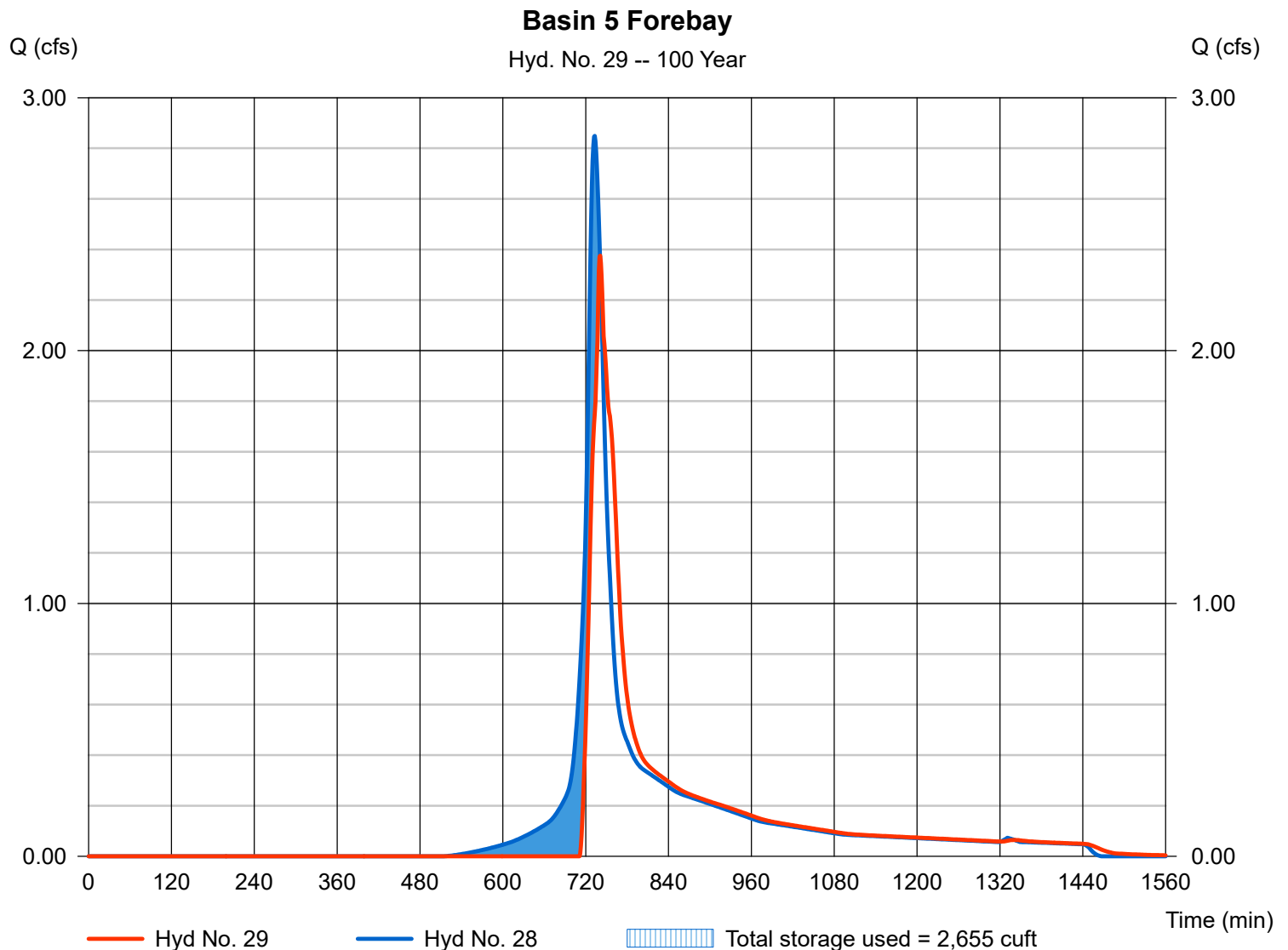
Hyd. No. 29

Basin 5 Forebay

Hydrograph type = Reservoir
Storm frequency = 100 yrs
Time interval = 1 min
Inflow hyd. No. = 28 - Proposed Area 2B
Reservoir name = Basin 5 Forebay

Peak discharge = 2.375 cfs
Time to peak = 741 min
Hyd. volume = 10,946 cuft
Max. Elevation = 67.53 ft
Max. Storage = 2,655 cuft

Storage Indication method used.



Hydrograph Report

171

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

Monday, Oct 3, 2022

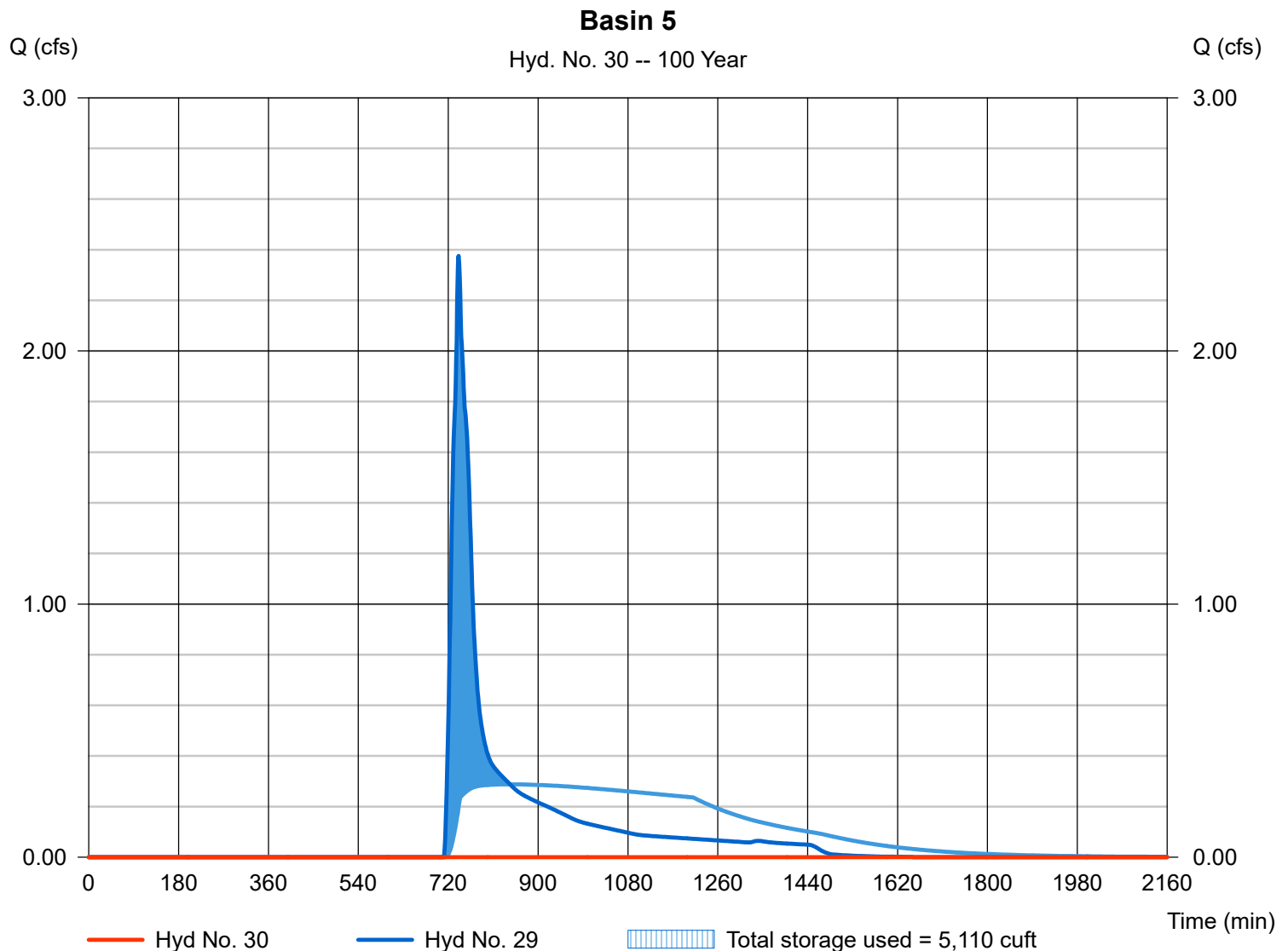
Hyd. No. 30

Basin 5

Hydrograph type = Reservoir
Storm frequency = 100 yrs
Time interval = 1 min
Inflow hyd. No. = 29 - Basin 5 Forebay
Reservoir name = Basin 5

Peak discharge = 0.000 cfs
Time to peak = 1304 min
Hyd. volume = 0 cuft
Max. Elevation = 66.00 ft
Max. Storage = 5,110 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Hydrograph Report

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

Monday, Oct 3, 2022

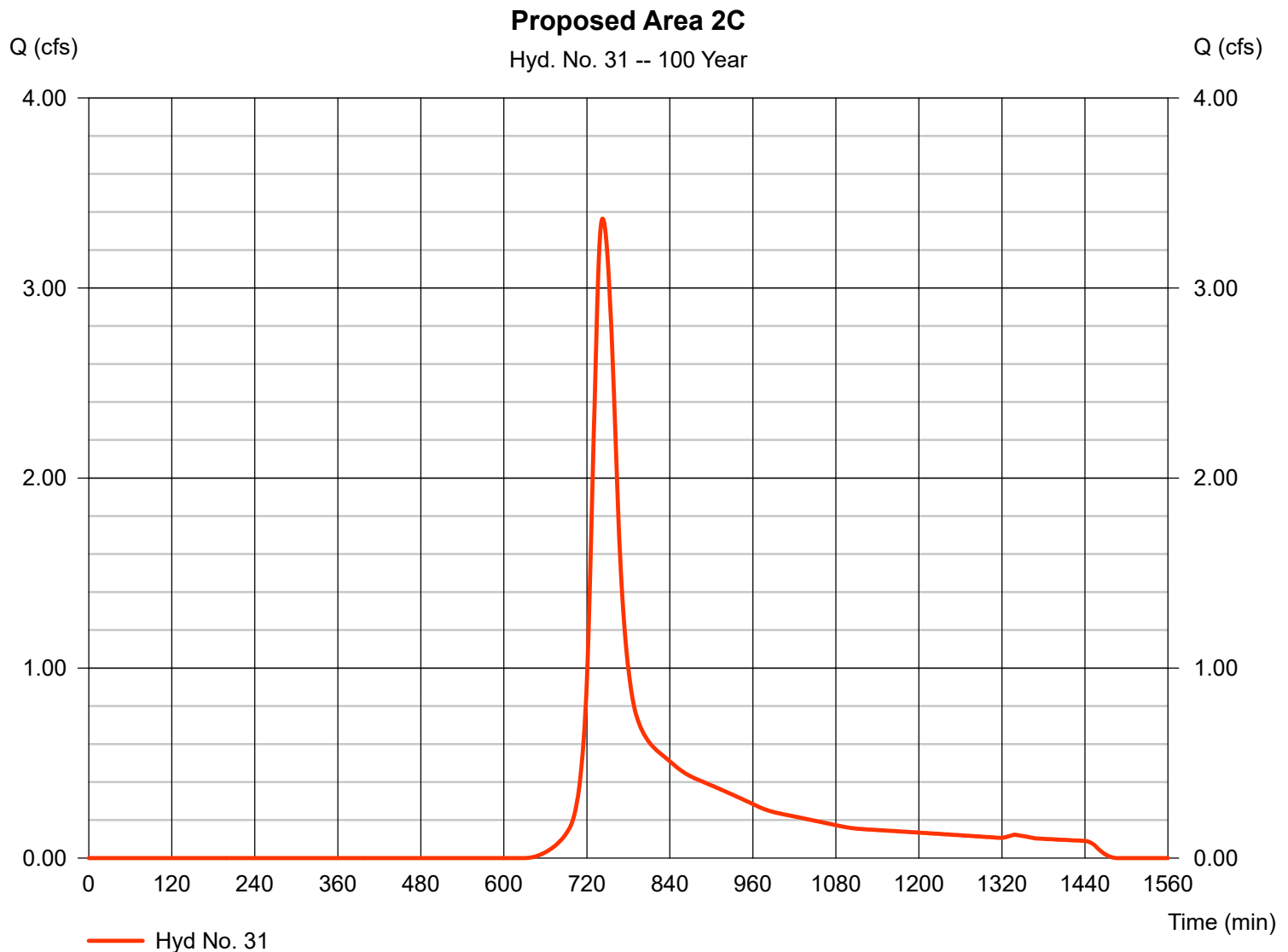
Hyd. No. 31

Proposed Area 2C

Hydrograph type = SCS Runoff
 Storm frequency = 100 yrs
 Time interval = 1 min
 Drainage area = 1.910 ac
 Basin Slope = 0.0 %
 Tc method = USER
 Total precip. = 7.82 in
 Storm duration = 24 hrs

Peak discharge = 3.365 cfs
 Time to peak = 743 min
 Hyd. volume = 18,455 cuft
 Curve number = 55*
 Hydraulic length = 0 ft
 Time of conc. (Tc) = 29.00 min
 Distribution = Type III
 Shape factor = 484

* Composite (Area/CN) = $[(1.850 \times 55) + (0.060 \times 61)] / 1.910$



Hydrograph Report

173

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

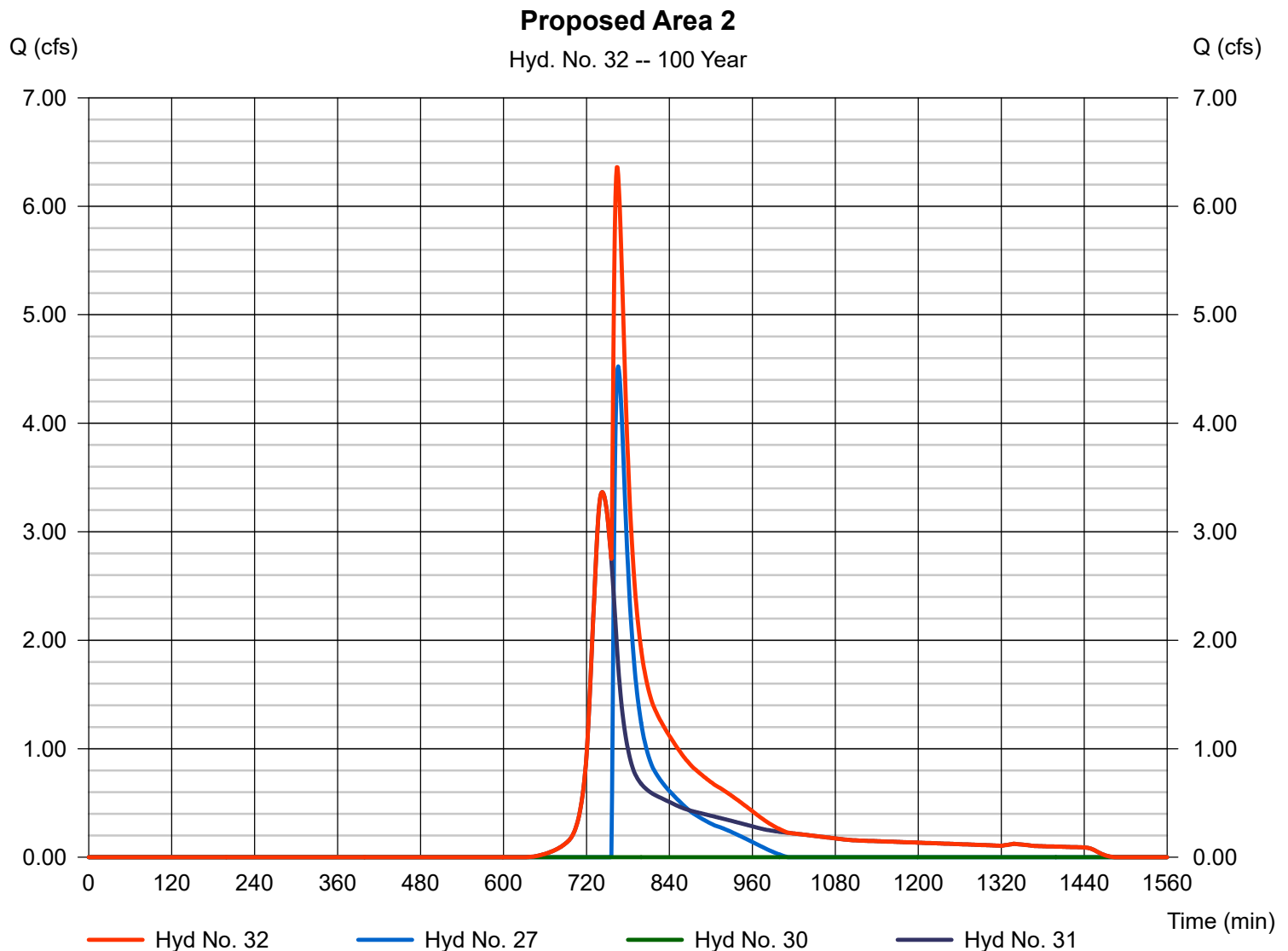
Monday, Oct 3, 2022

Hyd. No. 32

Proposed Area 2

Hydrograph type = Combine
Storm frequency = 100 yrs
Time interval = 1 min
Inflow hyds. = 27, 30, 31

Peak discharge = 6.361 cfs
Time to peak = 764 min
Hyd. volume = 30,069 cuft
Contrib. drain. area = 1.910 ac



Hydrograph Report

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

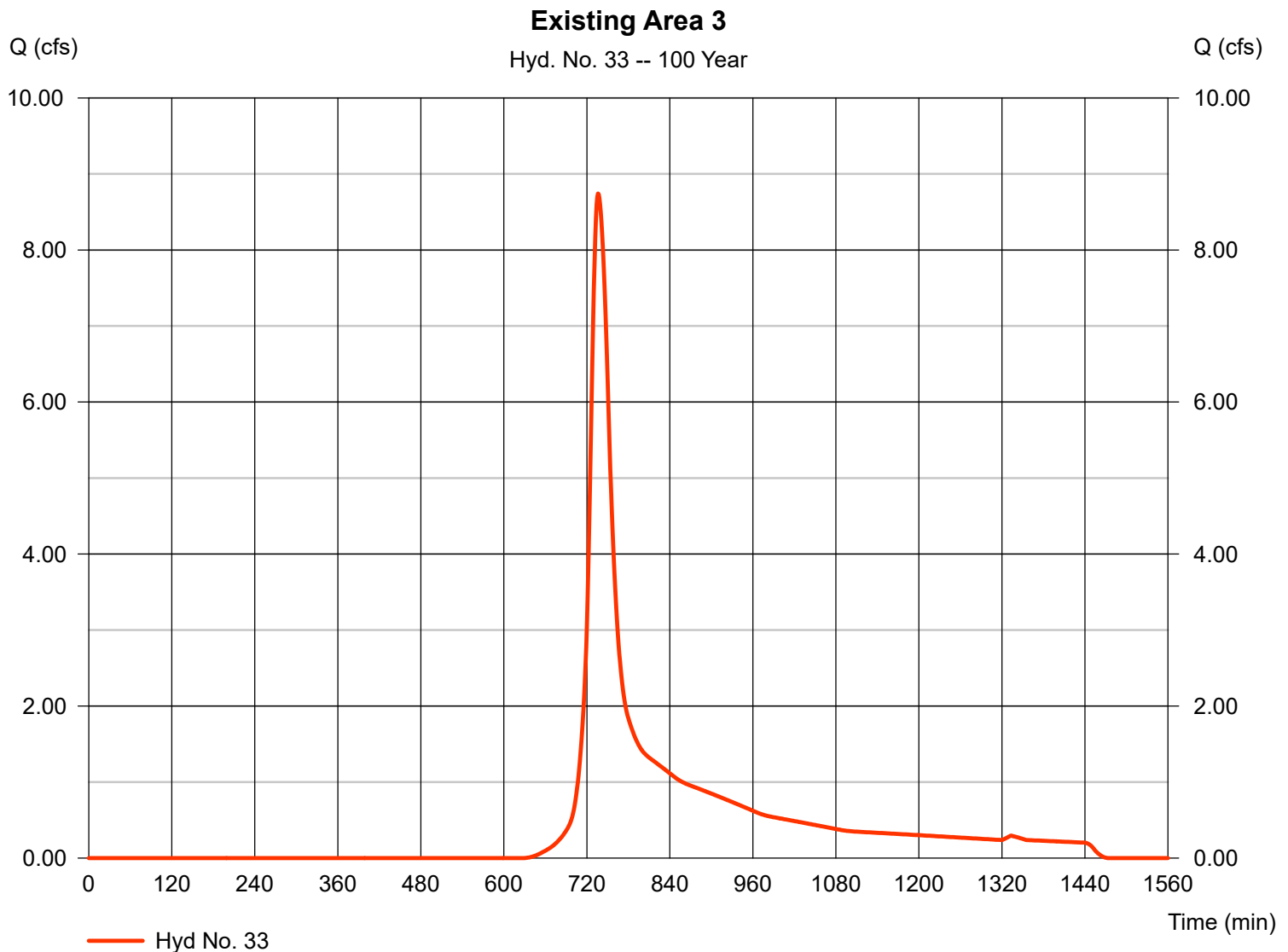
Monday, Oct 3, 2022

Hyd. No. 33

Existing Area 3

Hydrograph type = SCS Runoff
 Storm frequency = 100 yrs
 Time interval = 1 min
 Drainage area = 4.300 ac
 Basin Slope = 0.0 %
 Tc method = USER
 Total precip. = 7.82 in
 Storm duration = 24 hrs

Peak discharge = 8.743 cfs
 Time to peak = 736 min
 Hyd. volume = 41,947 cuft
 Curve number = 55
 Hydraulic length = 0 ft
 Time of conc. (Tc) = 21.00 min
 Distribution = Type III
 Shape factor = 484



Hydrograph Report

175

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

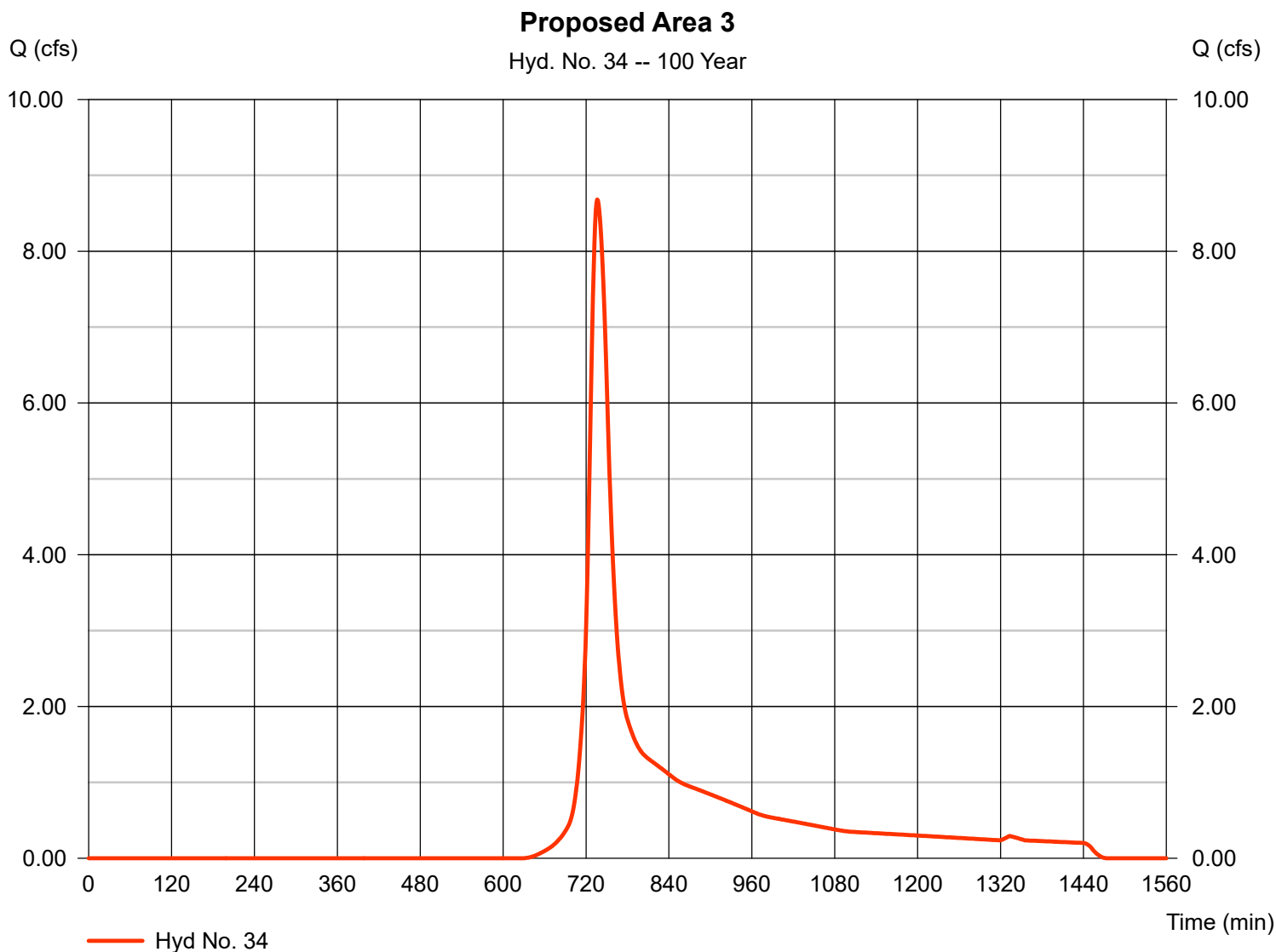
Monday, Oct 3, 2022

Hyd. No. 34

Proposed Area 3

Hydrograph type = SCS Runoff
Storm frequency = 100 yrs
Time interval = 1 min
Drainage area = 4.270 ac
Basin Slope = 0.0 %
Tc method = USER
Total precip. = 7.82 in
Storm duration = 24 hrs

Peak discharge = 8.682 cfs
Time to peak = 736 min
Hyd. volume = 41,654 cuft
Curve number = 55
Hydraulic length = 0 ft
Time of conc. (Tc) = 21.00 min
Distribution = Type III
Shape factor = 484



Structure Report

Struct No.	Structure ID	Junction Type	Rim Elev. (ft)	Structure			Line Out			Line In		
				Shape	Length (ft)	Width (ft)	Size (in)	Shape	Invert (ft)	Size (in)	Shape	Invert (ft)
1	CB Type CL #3	Grate	31.30	Cir	4.00	3.00	12	Cir	22.65	12	Cir	22.65
2	CB Type CL #2	Grate	31.55	Rect	4.00	3.00	12	Cir	23.45	12	Cir	23.45
3	CB Type CL #1	Grate	31.20	Rect	4.00	3.00	12	Cir	24.15			
Project File: CB 1-3.stm							Number of Structures: 3			Run Date: 04-22-2022		

Storm Sewer Summary Report

Line No.	Line ID	Flow rate (cfs)	Line size (in)	Line shape	Line length (ft)	Invert EL Dn (ft)	Invert EL Up (ft)	Line slope (%)	HGL down (ft)	HGL up (ft)	Minor loss (ft)	HGL Junct (ft)	Dns line No.	Junction Type
1	12 HDPE	1.75	12	Cir	62.500	22.00	22.65	1.040	22.56	23.21	n/a	23.21	End	Grate
2	12 HDPE	0.70	12	Cir	76.000	22.65	23.45	1.053	23.21	23.81	n/a	23.81 j	1	Grate
3	12 HDPE	0.32	12	Cir	67.000	23.45	24.15	1.045	23.81	24.39	n/a	24.39 j	2	Grate
Project File: CB 1-3.stm									Number of lines: 3			Run Date: 04-22-2022		
NOTES: Return period = 25 Yrs. ; j - Line contains hyd. jump.														

Storm Sewer Tabulation

Station		Len (ft)	Drng Area		Rnoff coeff (C)	Area x C		Tc		Rain (l) (in/hr)	Total flow (cfs)	Cap full (cfs)	Vel (ft/s)	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID							
Line	To Line		Incr (ac)	Total (ac)		Incr (min)	Total (min)	Inlet (min)	Syst (min)					Size (in)	Slope (%)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)								
1	End	62.500	0.26	0.48	0.63	0.16	0.26	5.0	8.9	6.7	1.75	3.63	3.86	12	1.04	22.00	22.65	22.56	23.21	23.00	31.30	12 HDPE							
2	1	76.000	0.07	0.22	0.86	0.06	0.10	5.0	7.7	7.2	0.70	3.65	2.18	12	1.05	22.65	23.45	23.21	23.81	31.30	31.55	12 HDPE							
3	2	67.000	0.15	0.15	0.25	0.04	0.04	5.0	5.0	8.7	0.32	3.64	1.76	12	1.04	23.45	24.15	23.81	24.39	31.55	31.20	12 HDPE							

Structure Report

Struct No.	Structure ID	Junction Type	Rim Elev. (ft)	Structure			Line Out			Line In		
				Shape	Length (ft)	Width (ft)	Size (in)	Shape	Invert (ft)	Size (in)	Shape	Invert (ft)
1	CB Type C #10	Combination	31.30	Rect	6.54	3.00	18	Cir	24.40	15 15 15	Cir Cir Cir	24.40 24.40 24.40
2	CB Type C #7	Combination	33.00	Rect	4.00	3.00	15	Cir	26.05	15	Cir	26.05
3	CB Type CL #6	Grate	32.75	Rect	4.00	3.00	15	Cir	26.75	12	Cir	26.75
4	CB Type CL #5	Grate	32.70	Rect	4.00	3.00	12	Cir	27.50	12	Cir	27.50
5	CB Type CL #4	Grate	32.75	Rect	4.00	3.00	12	Cir	28.25			
6	CB Type CL #9	Grate	31.10	Rect	4.00	3.00	15	Cir	25.15	12	Cir	25.15
7	CB Type CL #8	Grate	32.00	Rect	4.00	3.00	12	Cir	25.60			
8	SMH #2	Manhole	33.75	Cir	4.00	4.00	15	Cir	25.50	15	Cir	25.50
9	CB Type C #11	Combination	33.00	Rect	4.00	3.00	15	Cir	26.15	12	Cir	26.15
10	CB Type C #12	Combination	36.05	Rect	4.00	3.00	12	Cir	27.65	12	Cir	27.65
11	CB Type C #13	Combination	39.20	Rect	4.00	3.00	12	Cir	34.35			
CB 4-13							Number of Structures: 11			Run Date: 04-22-2022		

Storm Sewer Summary Report

Line No.	Line ID	Flow rate (cfs)	Line size (in)	Line shape	Line length (ft)	Invert EL Dn (ft)	Invert EL Up (ft)	Line slope (%)	HGL down (ft)	HGL up (ft)	Minor loss (ft)	HGL Junct (ft)	Dns line No.	Junction Type
1	18 HDPE	10.46	18	Cir	24.000	22.00	24.40	10.000	23.23	25.63	1.03	25.63	End	Combination
2	15 HDPE	4.25	15	Cir	163.500	24.40	26.05	1.009	25.63	26.87	n/a	26.87 j	1	Combination
3	15 HDPE	3.85	15	Cir	64.500	26.05	26.75	1.085	26.87	27.54	n/a	27.54 j	2	Grate
4	12 HDPE	3.02	12	Cir	74.000	26.75	27.50	1.014	27.54	28.24	n/a	28.24 j	3	Grate
5	12 HDPE	2.08	12	Cir	71.500	27.50	28.25	1.049	28.24	28.86	n/a	28.86 j	4	Grate
6	15 HDPE	1.53	15	Cir	72.000	24.40	25.15	1.042	25.63	25.68	0.08	25.75	1	Grate
7	12 HDPE	0.81	12	Cir	43.000	25.15	25.60	1.047	25.75	25.98	n/a	25.98 j	6	Grate
8	15 HDPE	3.63	15	Cir	107.000	24.40	25.50	1.028	25.63	26.26	n/a	26.26 j	1	Manhole
9	15 HDPE	3.70	15	Cir	64.000	25.50	26.15	1.016	26.26	26.92	n/a	26.92	8	Combination
10	12 HDPE	2.69	12	Cir	120.000	26.15	27.65	1.250	26.92	28.35	n/a	28.35 j	9	Combination
11	12 HDPE	1.49	12	Cir	195.000	27.65	34.35	3.436	28.35	34.87	n/a	34.87 j	10	Combination
CB 4-13									Number of lines: 11				Run Date: 04-22-2022	
NOTES: Return period = 25 Yrs. ; j - Line contains hyd. jump.														

Storm Sewer Tabulation

Station		Len	Drng Area		Rnoff coeff	Area x C		Tc		Rain (l)	Total flow	Cap full	Vel	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
Line	To Line		Incr	Total		Incr	Total	Inlet	Syst					Size	Slope	Dn	Up	Dn	Up	Dn	Up	
		(ft)	(ac)	(ac)	(C)			(min)	(min)	(in/hr)	(cfs)	(cfs)	(ft/s)	(in)	(%)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	
1	End	24.000	0.65	3.25	0.42	0.27	1.49	5.0	8.1	7.0	10.46	33.21	6.72	18	10.00	22.00	24.40	23.23	25.63	23.50	31.30	18 HDPE
2	1	163.500	0.13	1.38	0.47	0.06	0.53	5.0	6.1	8.0	4.25	6.49	4.21	15	1.01	24.40	26.05	25.63	26.87	31.30	33.00	15 HDPE
3	2	64.500	0.21	1.25	0.53	0.11	0.47	5.0	5.8	8.2	3.85	6.73	4.62	15	1.09	26.05	26.75	26.87	27.54	33.00	32.75	15 HDPE
4	3	74.000	0.21	1.04	0.57	0.12	0.36	5.0	5.4	8.4	3.02	3.59	4.71	12	1.01	26.75	27.50	27.54	28.24	32.75	32.70	12 HDPE
5	4	71.500	0.83	0.83	0.29	0.24	0.24	5.0	5.0	8.7	2.08	3.65	3.75	12	1.05	27.50	28.25	28.24	28.86	32.70	32.75	12 HDPE
6	1	72.000	0.11	0.37	0.84	0.09	0.19	5.0	5.7	8.2	1.53	6.59	2.18	15	1.04	24.40	25.15	25.63	25.68	31.30	31.10	15 HDPE
7	6	43.000	0.26	0.26	0.36	0.09	0.09	5.0	5.0	8.7	0.81	3.64	2.29	12	1.05	25.15	25.60	25.75	25.98	31.10	32.00	12 HDPE
8	1	107.000	0.00	0.85	0.00	0.00	0.50	0.0	7.5	7.3	3.63	6.55	3.80	15	1.03	24.40	25.50	25.63	26.26	31.30	33.75	15 HDPE
9	8	64.000	0.45	0.85	0.33	0.15	0.50	5.0	7.3	7.4	3.70	6.51	4.69	15	1.02	25.50	26.15	26.26	26.92	33.75	33.00	15 HDPE
10	9	120.000	0.20	0.40	0.90	0.18	0.35	5.0	6.7	7.7	2.69	3.98	4.39	12	1.25	26.15	27.65	26.92	28.35	33.00	36.05	12 HDPE
11	10	195.000	0.20	0.20	0.86	0.17	0.17	5.0	5.0	8.7	1.49	6.60	3.09	12	3.44	27.65	34.35	28.35	34.87	36.05	39.20	12 HDPE
CB 4-13																Number of lines: 11				Run Date: 04-22-2022		
NOTES: Intensity = 38.40 / (Inlet time + 3.70) ^ 0.69; Return period = 25 Yrs. ; c = cir e = ellip b = box																						

Structure Report

Struct No.	Structure ID	Junction Type	Rim Elev. (ft)	Structure			Line Out			Line In		
				Shape	Length (ft)	Width (ft)	Size (in)	Shape	Invert (ft)	Size (in)	Shape	Invert (ft)
1	CB Type C #16	Grate	44.25	Rect	4.00	3.00	15	Cir	34.90	15 12	Cir Cir	34.90 34.90
2	SMH #3	Manhole	43.00	Cir	4.00	4.00	15	Cir	40.55	15	Cir	40.55
3	CB Type C #18	Combination	51.75	Rect	4.00	3.00	15	Cir	45.00	12	Cir	45.00
4	CB Type CL #17	Grate	53.45	Rect	4.00	3.00	12	Cir	48.00			
5	CB Type C #15	Grate	43.90	Rect	4.00	3.00	12	Cir	36.60	12	Cir	36.60
6	CB Type C #14	Grate	45.55	Rect	4.00	3.00	12	Cir	40.50			
CB 14-18							Number of Structures: 6			Run Date: 06-21-2022		

Storm Sewer Summary Report

Line No.	Line ID	Flow rate (cfs)	Line size (in)	Line shape	Line length (ft)	Invert EL Dn (ft)	Invert EL Up (ft)	Line slope (%)	HGL down (ft)	HGL up (ft)	Minor loss (ft)	HGL Junct (ft)	Dns line No.	Junction Type
1	15 HDPE	7.37	15	Cir	37.500	32.00	34.90	7.733	33.08	35.98	0.88	35.98	End	Grate
2	15 HDPE	4.80	15	Cir	64.500	34.90	40.55	8.760	35.98	41.43	n/a	41.43 j	1	Manhole
3	15 HDPE	4.94	15	Cir	109.000	40.55	45.00	4.083	41.43	45.89	n/a	45.89	2	Combination
4	12 HDPE	1.40	12	Cir	126.500	45.00	48.00	2.372	45.89	48.50	n/a	48.50 j	3	Grate
5	12 HDPE	2.70	12	Cir	34.000	34.90	36.60	5.000	35.98	37.30	n/a	37.30 j	1	Grate
6	12 HDPE	1.52	12	Cir	101.500	36.60	40.50	3.842	37.30	41.02	n/a	41.02 j	5	Grate
CB 14-18									Number of lines: 6			Run Date: 06-21-2022		
NOTES: Return period = 25 Yrs. ; j - Line contains hyd. jump.														

Storm Sewer Tabulation

Station		Len (ft)	Drng Area		Rnoff coeff (C)	Area x C		Tc		Rain (l) (in/hr)	Total flow (cfs)	Cap full (cfs)	Vel (ft/s)	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
Line	To Line		Incr (ac)	Total (ac)		Incr (min)	Total (min)	Inlet (min)	Syst (min)					Size (in)	Slope (%)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	
1	End	37.500	0.02	1.32	0.90	0.02	0.97	5.0	6.9	7.6	7.37	17.96	6.52	15	7.73	32.00	34.90	33.08	35.98	33.25	44.25	15 HDPE
2	1	64.500	0.00	0.86	0.00	0.00	0.62	0.0	6.6	7.7	4.80	19.11	4.73	15	8.76	34.90	40.55	35.98	41.43	44.25	43.00	15 HDPE
3	2	109.000	0.55	0.86	0.84	0.46	0.62	5.0	6.2	7.9	4.94	13.05	5.33	15	4.08	40.55	45.00	41.43	45.89	43.00	51.75	15 HDPE
4	3	126.500	0.31	0.31	0.52	0.16	0.16	5.0	5.0	8.7	1.40	5.48	2.72	12	2.37	45.00	48.00	45.89	48.50	51.75	53.45	12 HDPE
5	1	34.000	0.19	0.44	0.83	0.16	0.33	5.0	5.9	8.1	2.70	7.96	4.03	12	5.00	34.90	36.60	35.98	37.30	44.25	43.90	12 HDPE
6	5	101.500	0.25	0.25	0.70	0.18	0.18	5.0	5.0	8.7	1.52	6.98	3.12	12	3.84	36.60	40.50	37.30	41.02	43.90	45.55	12 HDPE
CB 14-18																Number of lines: 6				Run Date: 06-21-2022		
NOTES: Intensity = 38.40 / (Inlet time + 3.70) ^ 0.69; Return period = 25 Yrs. ; c = cir e = ellip b = box																						

Structure Report

Struct No.	Structure ID	Junction Type	Rim Elev. (ft)	Structure			Line Out			Line In		
				Shape	Length (ft)	Width (ft)	Size (in)	Shape	Invert (ft)	Size (in)	Shape	Invert (ft)
1	Double CB Type C #20	Combination	59.05	Rect	4.00	3.00	18	Cir	54.25	15 15	Cir Cir	54.25 54.25
2	CB Type C #19	Combination	62.30	Rect	4.00	3.00	15	Cir	56.60			
3	Drainage Manhole #4	Manhole	68.00	Cir	4.00	4.00	15	Cir	60.80	15	Cir	60.80
4	Double CB Type C #20	Grate	67.20	Rect	4.00	3.00	15	Cir	63.20			
CB 19-20							Number of Structures: 4			Run Date: 06-21-2022		

Storm Sewer Summary Report

Line No.	Line ID	Flow rate (cfs)	Line size (in)	Line shape	Line length (ft)	Invert EL Dn (ft)	Invert EL Up (ft)	Line slope (%)	HGL down (ft)	HGL up (ft)	Minor loss (ft)	HGL Junct (ft)	Dns line No.	Junction Type
1	18 HDPE	9.03	18	Cir	40.000	52.00	54.25	5.625	53.15	55.40	n/a	55.40	End	Combination
2	15 HDPE	2.03	15	Cir	195.000	54.25	56.60	1.205	55.40	57.17	n/a	57.17 j	1	Combination
3	15 HDPE	2.54	15	Cir	125.000	54.25	60.80	5.240	55.40	61.44	n/a	61.44 j	1	Manhole
4	15 HDPE	2.61	15	Cir	44.000	60.80	63.20	5.455	61.44	63.85	n/a	63.85	3	Grate
CB 19-20									Number of lines: 4			Run Date: 06-21-2022		
NOTES: Return period = 25 Yrs. ; j - Line contains hyd. jump.														

Storm Sewer Tabulation

Station		Len (ft)	Drng Area		Rnoff coeff (C)	Area x C		Tc		Rain (l) (in/hr)	Total flow (cfs)	Cap full (cfs)	Vel (ft/s)	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID								
Line	To Line		Incr (ac)	Total (ac)		Incr 	Total 	Inlet (min)	Syst (min)					Size (in)	Slope (%)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)									
1	End	40.000	0.82	2.17	0.81	0.66	1.20	5.0	7.0	7.5	9.03	24.91	6.23	18	5.63	52.00	54.25	53.15	55.40	53.25	59.05	18 HDPE								
2	1	195.000	0.90	0.90	0.26	0.23	0.23	5.0	5.0	8.7	2.03	7.09	2.72	15	1.21	54.25	56.60	55.40	57.17	59.05	62.30	15 HDPE								
3	1	125.000	0.00	0.45	0.00	0.00	0.30	5.0	5.3	8.4	2.54	14.78	3.10	15	5.24	54.25	60.80	55.40	61.44	59.05	68.00	15 HDPE								
4	3	44.000	0.45	0.45	0.67	0.30	0.30	5.0	5.0	8.7	2.61	15.08	4.11	15	5.45	60.80	63.20	61.44	63.85	68.00	67.20	15 HDPE								

Structure Report

Struct No.	Structure ID	Junction Type	Rim Elev. (ft)	Structure			Line Out			Line In		
				Shape	Length (ft)	Width (ft)	Size (in)	Shape	Invert (ft)	Size (in)	Shape	Invert (ft)
1	Double CB Type C #22	Combination	68.80	Rect	6.54	3.00	18	Cir	64.80			
CB 24							Number of Structures: 1			Run Date: 04-22-2022		

Storm Sewer Summary Report

Line No.	Line ID	Flow rate (cfs)	Line size (in)	Line shape	Line length (ft)	Invert EL Dn (ft)	Invert EL Up (ft)	Line slope (%)	HGL down (ft)	HGL up (ft)	Minor loss (ft)	HGL Junct (ft)	Dns line No.	Junction Type
1	18 HDPE	1.71	18	Cir	26.700	64.50	64.80	1.124	65.00	65.30	n/a	65.30	End	Combination
CB 24									Number of lines: 1			Run Date: 04-22-2022		
NOTES: Return period = 25 Yrs.														

Storm Sewer Tabulation

Station		Len	Drng Area		Rnoff coeff	Area x C		Tc		Rain (I)	Total flow	Cap full	Vel	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
Line	To Line		Incr	Total		Incr	Total	Inlet	Syst					Size	Slope	Dn	Up	Dn	Up	Dn	Up	
		(ft)	(ac)	(ac)	(C)			(min)	(min)	(in/hr)	(cfs)	(cfs)	(ft/s)	(in)	(%)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	
1	End	26.700	0.47	0.47	0.42	0.20	0.20	5.0	5.0	8.7	1.71	11.13	3.32	18	1.12	64.50	64.80	65.00	65.30	66.00	68.80	18 HDPE
CB 24																Number of lines: 1				Run Date: 04-22-2022		
NOTES: Intensity = 38.40 / (Inlet time + 3.70) ^ 0.69; Return period = 25 Yrs. ; c = cir e = ellip b = box																						

Splash Pad Calculations

Basin 1 Forebay Inlet

Sedimentation Basin Sizing	
Splash Pad Length = $(1.7*Q)/(D^{(3/2)}) + (8*D)$ Splash Pad Width = $(3*D) + (0.4*L)$ D50 = $(0.02/(0.5*D))*(Q/D)^{(4/3)}$	
Flow (cfs)	1.75
Pipe Diameter (ft)	1
Splash Pad Length (ft)	11.0
Splash Pad Width (ft)	7.4
D50 (ft)	0.084
D50 (in)	1

Basin 1 Inlet

Sedimentation Basin Sizing	
Splash Pad Length = $(1.7*Q)/(D^{(3/2)}) + (8*D)$ Splash Pad Width = $(3*D) + (0.4*L)$ D50 = $(0.02/(0.5*D))*(Q/D)^{(4/3)}$	
Flow (cfs)	0.16
Pipe Diameter (ft)	1.5
Splash Pad Length (ft)	12.1
Splash Pad Width (ft)	9.4
D50 (ft)	0.001
D50 (in)	0

Basin 2 Forebay Inlet

Sedimentation Basin Sizing	
Splash Pad Length = $(1.7*Q)/(D^{(3/2)}) + (8*D)$ Splash Pad Width = $(3*D) + (0.4*L)$ D50 = $(0.02/(0.5*D))*(Q/D)^{(4/3)}$	
Flow (cfs)	10.46
Pipe Diameter (ft)	1.5
Splash Pad Length (ft)	21.7
Splash Pad Width (ft)	13.2
D50 (ft)	0.355
D50 (in)	4

Basin 2 Outlet

Sedimentation Basin Sizing	
Splash Pad Length = $(1.7*Q)/(D^{(3/2)}) + (8*D)$ Splash Pad Width = $(3*D) + (0.4*L)$ D50 = $(0.02/(0.5*D))*(Q/D)^{(4/3)}$	
Flow (cfs)	2
Pipe Diameter (ft)	1.5
Splash Pad Length (ft)	13.9
Splash Pad Width (ft)	10.0
D50 (ft)	0.039
D50 (in)	0

Basin 3 Forebay Inlet

Sedimentation Basin Sizing	
Splash Pad Length = $(1.7*Q)/(D^{(3/2)}) + (8*D)$ Splash Pad Width = $(3*D) + (0.4*L)$ D50 = $(0.02/(0.5*D))*(Q/D)^{(4/3)}$	
Flow (cfs)	7.37
Pipe Diameter (ft)	1.25
Splash Pad Length (ft)	19.0
Splash Pad Width (ft)	11.3
D50 (ft)	0.341
D50 (in)	4

Basin 4 Forebay Inlet

Sedimentation Basin Sizing	
Splash Pad Length = $(1.7*Q)/(D^{(3/2)}) + (8*D)$ Splash Pad Width = $(3*D) + (0.4*L)$ D50 = $(0.02/(0.5*D))*(Q/D)^{(4/3)}$	
Flow (cfs)	9.03
Pipe Diameter (ft)	1.5
Splash Pad Length (ft)	20.4
Splash Pad Width (ft)	12.6
D50 (ft)	0.292
D50 (in)	4

Basin 5 Forebay Inlet

Sedimentation Basin Sizing	
Splash Pad Length = $(1.7*Q)/(D^{(3/2)}) + (8*D)$ Splash Pad Width = $(3*D) + (0.4*L)$ D50 = $(0.02/(0.5*D))*(Q/D)^{(4/3)}$	
Flow (cfs)	1.71
Pipe Diameter (ft)	1.5
Splash Pad Length (ft)	13.6
Splash Pad Width (ft)	9.9
D50 (ft)	0.032
D50 (in)	0

Basin 5 Inlet

Sedimentation Basin Sizing	
Splash Pad Length = $(1.7*Q)/(D^{(3/2)}) + (8*D)$ Splash Pad Width = $(3*D) + (0.4*L)$ D50 = $(0.02/(0.5*D))*(Q/D)^{(4/3)}$	
Flow (cfs)	1.05
Pipe Diameter (ft)	1.5
Splash Pad Length (ft)	13.0
Splash Pad Width (ft)	9.7
D50 (ft)	0.017
D50 (in)	0



NOAA Atlas 14, Volume 10, Version 3
Location name: Waterford, Connecticut, USA*
Latitude: 41.3731°, Longitude: -72.1861°
Elevation: 95.1 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 & aerals](#)

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches/hour) ¹										
Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	4.04 (3.16-5.04)	4.84 (3.77-6.04)	6.13 (4.75-7.68)	7.21 (5.56-9.07)	8.69 (6.49-11.4)	9.79 (7.18-13.0)	11.0 (7.82-15.1)	12.3 (8.29-17.2)	14.3 (9.25-20.5)	15.9 (10.1-23.2)
10-min	2.87 (2.23-3.58)	3.43 (2.66-4.28)	4.34 (3.37-5.44)	5.11 (3.94-6.42)	6.16 (4.60-8.04)	6.94 (5.08-9.23)	7.77 (5.54-10.7)	8.72 (5.87-12.2)	10.1 (6.55-14.5)	11.3 (7.13-16.5)
15-min	2.25 (1.75-2.80)	2.69 (2.09-3.36)	3.41 (2.64-4.26)	4.00 (3.09-5.04)	4.83 (3.61-6.31)	5.44 (3.99-7.24)	6.10 (4.34-8.38)	6.84 (4.61-9.54)	7.94 (5.14-11.4)	8.84 (5.60-12.9)
30-min	1.59 (1.24-1.98)	1.90 (1.48-2.37)	2.41 (1.87-3.01)	2.83 (2.18-3.56)	3.41 (2.55-4.46)	3.85 (2.82-5.12)	4.31 (3.07-5.92)	4.83 (3.26-6.74)	5.60 (3.63-8.04)	6.23 (3.94-9.10)
60-min	1.03 (0.801-1.28)	1.23 (0.956-1.53)	1.56 (1.21-1.95)	1.83 (1.41-2.30)	2.21 (1.65-2.88)	2.49 (1.82-3.31)	2.78 (1.98-3.82)	3.12 (2.10-4.35)	3.61 (2.34-5.19)	4.02 (2.54-5.87)
2-hr	0.676 (0.531-0.836)	0.808 (0.634-1.00)	1.02 (0.800-1.27)	1.20 (0.934-1.50)	1.45 (1.09-1.88)	1.63 (1.21-2.16)	1.83 (1.31-2.50)	2.05 (1.39-2.84)	2.39 (1.56-3.40)	2.67 (1.70-3.86)
3-hr	0.523 (0.413-0.644)	0.624 (0.492-0.770)	0.790 (0.621-0.978)	0.928 (0.725-1.15)	1.12 (0.846-1.44)	1.26 (0.933-1.66)	1.41 (1.02-1.92)	1.59 (1.08-2.18)	1.85 (1.21-2.61)	2.07 (1.32-2.97)
6-hr	0.333 (0.265-0.408)	0.397 (0.316-0.486)	0.501 (0.397-0.615)	0.587 (0.463-0.725)	0.706 (0.539-0.904)	0.795 (0.594-1.04)	0.890 (0.646-1.20)	1.00 (0.683-1.36)	1.16 (0.763-1.63)	1.30 (0.832-1.85)
12-hr	0.205 (0.164-0.249)	0.243 (0.195-0.296)	0.307 (0.245-0.374)	0.359 (0.285-0.440)	0.432 (0.332-0.548)	0.486 (0.365-0.627)	0.543 (0.396-0.724)	0.609 (0.418-0.821)	0.707 (0.466-0.979)	0.789 (0.507-1.11)
24-hr	0.120 (0.098-0.145)	0.144 (0.116-0.174)	0.182 (0.147-0.221)	0.214 (0.172-0.260)	0.258 (0.200-0.325)	0.291 (0.221-0.373)	0.326 (0.240-0.431)	0.367 (0.253-0.489)	0.428 (0.283-0.586)	0.479 (0.309-0.666)
2-day	0.067 (0.055-0.080)	0.081 (0.066-0.097)	0.104 (0.085-0.125)	0.123 (0.100-0.149)	0.149 (0.117-0.187)	0.169 (0.129-0.215)	0.190 (0.141-0.250)	0.215 (0.149-0.284)	0.253 (0.168-0.343)	0.286 (0.185-0.393)
3-day	0.049 (0.040-0.058)	0.059 (0.048-0.070)	0.075 (0.062-0.090)	0.089 (0.072-0.107)	0.108 (0.085-0.134)	0.122 (0.094-0.154)	0.137 (0.102-0.179)	0.155 (0.108-0.204)	0.183 (0.122-0.246)	0.207 (0.134-0.282)
4-day	0.039 (0.032-0.046)	0.047 (0.039-0.056)	0.060 (0.049-0.072)	0.071 (0.058-0.085)	0.086 (0.067-0.106)	0.097 (0.074-0.122)	0.108 (0.081-0.141)	0.123 (0.086-0.160)	0.144 (0.096-0.194)	0.163 (0.106-0.221)
7-day	0.027 (0.022-0.031)	0.032 (0.026-0.037)	0.040 (0.033-0.047)	0.046 (0.038-0.055)	0.055 (0.044-0.068)	0.062 (0.048-0.078)	0.070 (0.052-0.090)	0.078 (0.055-0.101)	0.091 (0.061-0.121)	0.102 (0.067-0.138)
10-day	0.022 (0.018-0.025)	0.025 (0.021-0.030)	0.031 (0.026-0.037)	0.036 (0.030-0.043)	0.043 (0.034-0.052)	0.048 (0.037-0.059)	0.053 (0.040-0.068)	0.059 (0.042-0.076)	0.068 (0.046-0.090)	0.076 (0.050-0.101)
20-day	0.015 (0.013-0.018)	0.017 (0.015-0.020)	0.020 (0.017-0.024)	0.023 (0.019-0.027)	0.027 (0.021-0.032)	0.029 (0.023-0.036)	0.032 (0.024-0.040)	0.035 (0.025-0.045)	0.039 (0.027-0.051)	0.042 (0.028-0.056)
30-day	0.013 (0.011-0.015)	0.014 (0.012-0.016)	0.016 (0.014-0.019)	0.018 (0.015-0.021)	0.021 (0.017-0.025)	0.023 (0.018-0.027)	0.024 (0.018-0.030)	0.026 (0.019-0.033)	0.029 (0.020-0.037)	0.031 (0.020-0.040)
45-day	0.011 (0.009-0.012)	0.012 (0.010-0.013)	0.013 (0.011-0.015)	0.014 (0.012-0.017)	0.016 (0.013-0.019)	0.017 (0.014-0.021)	0.019 (0.014-0.023)	0.020 (0.014-0.025)	0.021 (0.015-0.028)	0.022 (0.015-0.029)
60-day	0.009 (0.008-0.011)	0.010 (0.009-0.012)	0.011 (0.010-0.013)	0.012 (0.010-0.014)	0.014 (0.011-0.016)	0.015 (0.012-0.018)	0.016 (0.012-0.019)	0.017 (0.012-0.021)	0.018 (0.012-0.023)	0.018 (0.012-0.024)

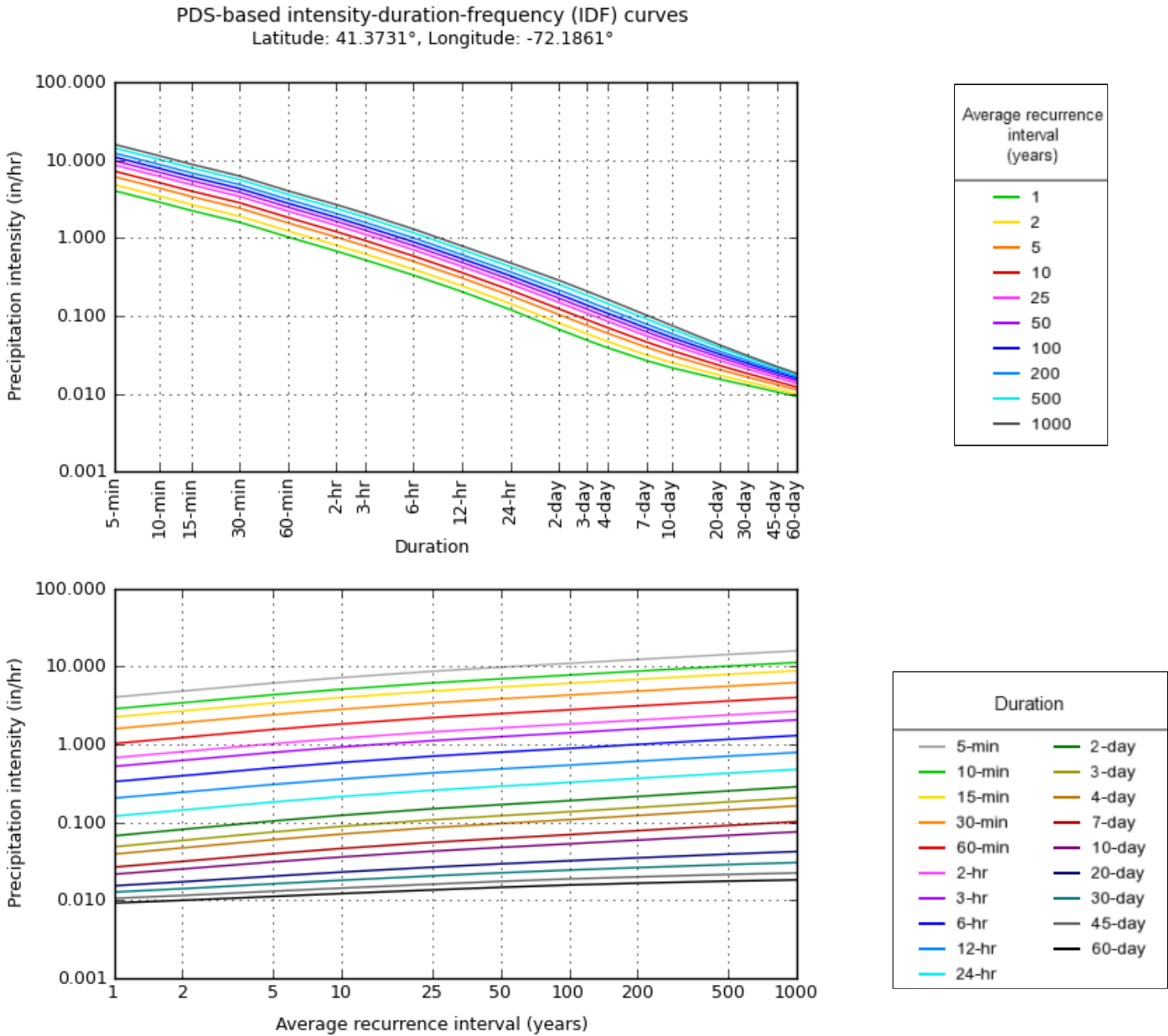
¹ Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

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



NOAA Atlas 14, Volume 10, Version 3

Created (GMT): Tue Oct 4 17:30:21 2022

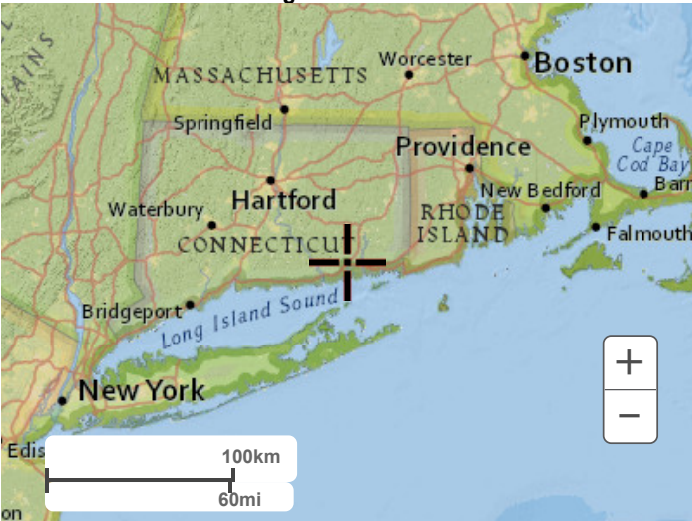
[Back to Top](#)

Maps & aerials

Small scale terrain



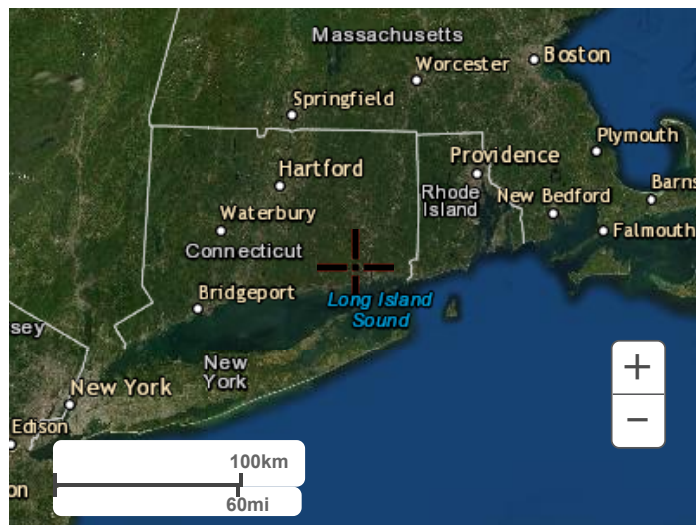
Large scale terrain



Large scale map



Large scale aerial



[Back to Top](#)

[US Department of Commerce](#)
[National Oceanic and Atmospheric Administration](#)
[National Weather Service](#)
[National Water Center](#)
1325 East West Highway
Silver Spring, MD 20910
Questions?: HDSC.Questions@noaa.gov

[Disclaimer](#)