

# **STORM WATER MANAGEMENT REPORT**

**Retail Development  
NE Douglas St.  
Lee Summit, Missouri**

**Pickering Job Number:  
27480.00**

**Prepared for:**

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**Prepared by:**



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**TABLE OF CONTENTS**

General Information.....2  
Design Methodology.....2  
Existing Conditions.....3  
Proposed Conditions.....4  
Detention Analysis.....7  
Water Quality – Macro Analysis.....7  
Conclusion / Recommendations.....8

**List of Tables:**

- Table 1 – Rainfall Depths for Jackson County, Missouri
- Table 2 – Existing Site Conditions
- Table 3 – Existing Peak Runoff Summary
- Table 4 – Allowable Peak Runoff Summary
- Table 5 – Proposed Site Conditions
- Table 6 – Proposed Peak Runoff Summary
- Table 7 – Extended Dry Detention Basin Volume
- Table 8 – Extended Dry Detention Basin Routing Results
- Table 9 – Release Rate Summary

**Appendices:**

- Appendix A – Site Location Map
- Appendix B – FEMA Firmette
- Appendix C – NRCS Soils Report
- Appendix D – Pre-Development Drainage Map
- Appendix E – Post-Development Drainage Map
- Appendix F – Existing and Proposed Conditions Analysis
- Appendix G – Water Quality Worksheets

## **Project Description**

The proposed site is located at the NW corner of NE Douglas Street and E Chipman Road in Lee Summit, Jackson County, Missouri. The 18.9 acre Property will be a commercial Development consisting of a grocery store, retail store, Parking lot, utilities, and ancillary stormwater facilities. The Property is in section 31, Township 48 North, Range 31 West.

## **Floodplain Information**

According to the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) map number 29095C0417G (dated: January 20, 2017) the site lies outside of the 100-year inundation zone, Zone X, defined to be an area of minimal flood hazard. Refer to Appendix A for site location map and Appendix B for the FEMA Firm Panel.

### **Soil Classification**

Soil classification published by the United States Department of Agriculture/Natural Resources Conservation Service (USDA/NRCS) website for Jackson County, MO on January 20, 2026, indicate the existing site is made up of two soil types:

10082            Arisburg-Urban land complex, 1 to 5 percent slopes

10180            Udarents- Urban land-Sampsel complex, 2 to 5 percent slopes

Refer to Appendix C for a detailed soil report.

## **Site Hydrology**

On-site stormwater runoff is collected on the property in an on-site dry detention basin on the west of the site. From there, runoff discharges into the existing storm pipe system that crosses NW Commerce drive on the west side of the lot. According to the Missouri Department of conservation, the entire property and contributing drainage areas are tributary to Blue River watershed.

## **Additional Permit Requirements**

USACE Jurisdictional Determination was not completed for this project; according to the EPA watershed map, there are no “Waters of the United States” on the property or adjacent properties. As referenced above, the site is not located within any Special Flood Hazard Areas (SFHA).

## **DESIGN METHODOLOGY**

Storm water runoff volumes and peak flow rates were calculated using the procedure defined in Technical Release 55 (TR-55) by the United States Department of Agriculture (USDA) Soil Conservation Service (SCS), now Natural Resources Conservation Service (NRCS). Hydrflow

Hydrographs was also utilized to establish the distribution of precipitation rates for the various design storms as well as the detention pond design. Hydraulic soil group determinations for the contributing drainage area were determined using the Web Soil Survey internet service provided by the USDA.

**Existing Conditions**

The 18.9-acre property is undeveloped, grassland and woodland area. Stormwater runoff currently flows from the east side of the property to either the north or the west sides of the property where it is collected by existing storm sewer crossing NW Main Street, respectively – drainage areas, time of concentration path, and discharge point are identified on the Pre-Development Drainage Map on Appendix D. There is a small stream located on the property but the stream is not subject to the stream buffer requirements.

According to NRCS Web Soil Survey, 34.3% of the property consists of 10082 – Arisburg-Urban land complex, 1 to 5 percent slopes in Hydrologic Soil Group (HSG) C, and 65.7% of the property consists of Udarents-Urban land-Sampsel complex, 2 to 5 percents slopes (HSG C). The existing site was broken into one drainage area. A CN was calculated for the pre-development area using the following land type: woods & grass combination with good coverage and a soil HSG Type C having a CN of 74. The existing conditions calculations are summarized in Tables 2 and 3 below.

**Table 2 – Existing Site Conditions**

	<b>West</b>
Area (Ac)	18.9
CN	74
Time of Concentration (Tc) (min)	9.00

**Table 3 – Existing Peak Runoff Summary**

<b>Storm Event</b>	<b>Peak Discharge (cfs)</b>
2-yr	10.37
10-yr	25.51
100-yr	58.70

Following the 6-hr storm method of mitigating additional runoff, the proposed development must meet the allowable release rate requirements. The requirements for the site are 0.2 cfs of runoff

per acre for the 2-year storm, 0.6 cfs per acre for the 10-year storm, and 3.0 cfs per acre for the 100-year storm. The allowable release rates for the 18.9 acre site can be seen in table 4 below.

**Table 4 – Allowable Peak Runoff Summary**

Storm Event	Peak Discharge (cfs)
2-yr	3.78
10-yr	11.33
100-yr	56.64

**Proposed Conditions**

Construction generated by the proposed project consists of a grocery store and retail store buildings with associated parking infrastructure, utilities, and drainage facilities. The 18.9-acre contributing drainage area is divided into two drainage types, detained and undetained. The undetained drainage area is 1.6 acres draining on to NW Main Street and existing storm systems and 0.1 acres draining on to the neighboring property. There will also be a conveyance of 8.6 acres of offsite drainage area to the existing storm system that crosses NW Main Street.

Stormwater runoff generated on site will be collected by curb and gutter, conveyed through a proposed storm pipe network, an upper detention pond and eventually discharged into a dry detention basin on the west side of the property. Runoff will ultimately be released into the existing storm system crossing NW Main Street. The proposed conditions calculations are summarized in Tables 5 and 6.

The proposed dry detention basin has one outfall. Proposed detention has been designed to meet the requirements for the 6-hr method prior to discharging into the existing storm sewer system. Composite CNs were utilized for the proposed site; land cover description for the proposed site is a combination of impervious area which has a CN of 98 for Soil HSG Type C and new grass cover which has a CN of 74 for Soil HSG Type C. The roofs of the buildings will route through downspouts, which are collected by pipes and into the proposed pipe network. Time of concentration for the site was set at the minimum of 5 minutes to obtain the most conservative values. The tables below show the peak runoff generated from the site for each design storm.

**Table 5 – Proposed Site Conditions**

	<b>West</b>
Area (Ac)	18.9
CN	87.77
Time of Concentration (Tc) (min)	5.00

**Table 6 – Proposed Peak Runoff Summary**

Storm Event	Peak Discharge (cfs)
2-yr Q <sub>out</sub> (cfs)	2.54
10-yr Q <sub>out</sub> (cfs)	7.70
100-yr Q <sub>out</sub> (cfs)	43.71

Refer to Appendix G for supporting runoff calculations for proposed conditions.

**Detention**

The proposed detention will include a single dry detention basin. Runoff accumulated into the dry detention basin will exit the system through a control structure. The control structure will be a riser top set at 1009.20'. The Riser will have 4 windows 12"x24" set at the elevation 1005.60. The riser will also have a 6" in diameter hole set at 1005.00. It will also have a 9' tall perforated riser set at 996.00 with 6 holes 3" in diameter. The runoff will exit the control structure through a proposed 42" concrete pipe connecting to the existing storm system crossing NW Main Street. There will also be a 20' wide emergency spillway set at 1006.80.

Table 7 outlines the stage-storage volume for the proposed dry detention basin:

**Table 7 – Dry Detention Basin Volume**

Elevation (FT)	Area (SF)	Cumulative Vol (CF)
996.00	0.00	0.00
997.00	3,073.00	1,024.00
998.00	3,992.00	4,546.00
999.00	5,011.00	9,038.00
1000.00	6,130.00	14,598.00
1001.00	7,351.00	21,328.00
1002.00	8,675.00	29,331.00

1003.00	10,108.00	38,713.00
1004.00	11,656.00	49,585.00
1005.00	13,333.00	62,068.00
1006.00	15,208.00	76,327.00
1007.00	17,084	92,445.00
1008.00	18,939.00	110,446.00
1008.20	19,415.00	114,281.00
1009.20	21,344.00	134,651.00

Stormwater Report

Below is a summary of the dry detention basin characteristics:

**Bottom Elevation – 996.00’ Top Elevation – 1008.20’**

**Outlet** –Riser structure with 4 windows 12”x24” set at the elevation 1005.60. The riser will also have a 6” in diameter hole at the bottom of the riser set at 996.00. The runoff will exit the control structure through a proposed 42” concrete pipe leading to the existing storm system.

**Primary Outfall – 42” RCP, 67.89 LF @ 1.00% FL Upstream – 996.00’**

FL Downstream – 989.05’

Tables 8 below give a summary of the peak basin stages for each design storm. Refer to the attached storm modeling results in Appendix G for supporting basin routing calculations.

**Table 8 – Dry Detention Basin Routing Results**

<b>Storm Event</b>	<b>Max Water Depth (ft)</b>	<b>WSE Proposed</b>	<b>Freeboard (ft)</b>	<b>Peak Qin (cfs)</b>	<b>Peak Qout (cfs)</b>
<b>1.37” Storm</b>	3.83	999.83	9.37	11.69	<b>0.70</b>
<b>2-yr</b>	8.43	1004.43	4.77	18.37	<b>2.54</b>
<b>10-yr</b>	9.86	1005.86	3.34	32.34	<b>7.70</b>
<b>100-yr</b>	10.97	1006.97	2.23	58.05	<b>43.71</b>

## Detention Analysis

The results of the dry detention basin routing were analyzed for the 2-yr, 10-yr and 100-yr design storms. The following Table 9 compares peak flows for the Allowable Release Rate requirements and Proposed Conditions. Detailed results of the routing analysis can be found in Appendix G. Proposed Out includes a combination of the peak outflows from the dry detention basin and the undetained areas.

**Table 9 - Release Rate Summary**

<b>Storm Event</b>	<b>Allowable Peak Runoff – Total Site(cfs)</b>	<b>Proposed Peak Runoff – Total Site(cfs)</b>	<b>Net Discharge Pre vs. Post – Total Site (cfs)</b>
2-yr	3.78	2.54	<b>-1.24</b>
10-yr	11.33	7.70	<b>-3.63</b>
100-yr	56.64	43.71	<b>-12.93</b>

## Water Quality – Macro Analysis

Along with the detention analysis, the site was also analyzed per the MARC BMP Manual to ensure that the quality of the stormwater would also be considered. The existing conditions of the site consist of woodlands and grass, with soil condition of HSG C, producing an existing area-weighted curve number for the property of 74. The proposed conditions of the site include urban commercial development leading to the detention basin and areas of undetained grass cover, both with soil conditions of HSG C, producing a proposed area-weighted curve number of 87.77. To meet water quality requirements the use of a combination of a BMP train of two Contech Hydrodynamic Separators running into a dry detention basin and the planting of native vegetation. See Appendix H to see the BMP Worksheets.

The outlet structure for the detention basin was designed using the Design Procedure Form: Dry Detention Basin Main Worksheet to ensure that the basin met water quality storage volume and release rates. Using the design storm of 1.37", the outlet structure was designed to release the storm. See Appendix G for the analysis of the 1.37" storm event and Appendix H.

## **Conclusion & Recommendations**

The proposed commercial development consists of a grocery store and retail store buildings, associated parking lots, utilities, and drainage facilities. The total property area consists of 18.9 acres of total area. Installation of a dry detention basin on the site is recommended to meet release rate and BMP requirements. As shown in Table 9 above and the supporting detention calculations, release rate is reduced for the 2-yr, 10-yr, and 100-yr storm events when comparing the post-development versus pre-development conditions and meets the allowable release rate requirements for detention as outlined in the 6-hr storm detention method found in APWA 5600. Therefore, we recommend approval of this Storm Drainage Study

Appendix A – Site Location Map



NORTH

0 500 1000 2000

1 INCH = 1000 FEET



Pickering Firm, Inc.  
Architecture • Engineering  
Planning • Surveying

1700 Kirk Road, Suite 120  
Little Rock, AR 72223  
501.246.3578

SITE LOCATION  
EXHIBIT A.1

LEE SUMMIT, JACKSON CO., MO  
02/05/2025

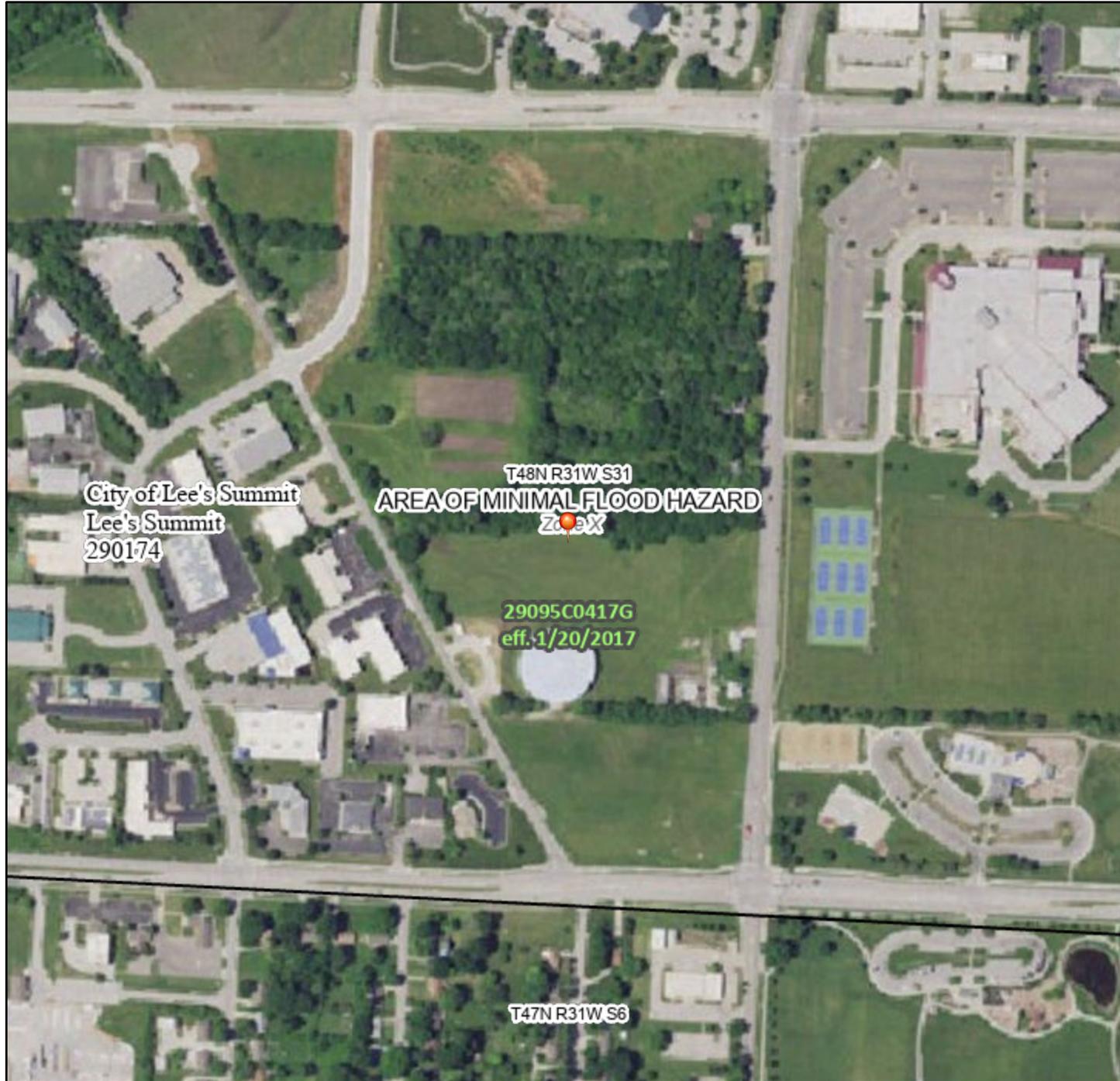
PROJECT NO: 27480.00

## Appendix B – FEMA Firmette

# National Flood Hazard Layer FIRMette



94°23'12"W 38°55'53"N



1:6,000

94°22'35"W 38°55'25"N

Basemap Imagery Source: USGS National Map 2023

## Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS		Without Base Flood Elevation (BFE) <i>Zone A, V, A99</i>
		With BFE or Depth <i>Zone AE, AO, AH, VE, AR</i>
		Regulatory Floodway
OTHER AREAS OF FLOOD HAZARD		0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile <i>Zone X</i>
		Future Conditions 1% Annual Chance Flood Hazard <i>Zone X</i>
		Area with Reduced Flood Risk due to Levee. See Notes. <i>Zone X</i>
		Area with Flood Risk due to Levee <i>Zone D</i>
OTHER AREAS		NO SCREEN Area of Minimal Flood Hazard <i>Zone X</i>
		Effective LOMRs
GENERAL STRUCTURES		Area of Undetermined Flood Hazard <i>Zone D</i>
		Channel, Culvert, or Storm Sewer
		Levee, Dike, or Floodwall
OTHER FEATURES		20.2 Cross Sections with 1% Annual Chance
		17.5 Water Surface Elevation
		Coastal Transect
		Base Flood Elevation Line (BFE)
		Limit of Study
MAP PANELS		Jurisdiction Boundary
		Coastal Transect Baseline
		Profile Baseline
		Hydrographic Feature
		Digital Data Available
		No Digital Data Available
		Unmapped
		The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.



This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 1/16/2026 at 2:22 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

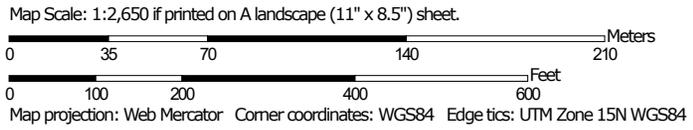
This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

Appendix C – NRCS Soils Report

Hydrologic Soil Group—Jackson County, Missouri



Soil Map may not be valid at this scale.



### MAP LEGEND

**Area of Interest (AOI)**

 Area of Interest (AOI)

**Soils**

**Soil Rating Polygons**

-  A
-  A/D
-  B
-  B/D
-  C
-  C/D
-  D
-  Not rated or not available

**Soil Rating Lines**

-  A
-  A/D
-  B
-  B/D
-  C
-  C/D
-  D
-  Not rated or not available

**Soil Rating Points**

-  A
-  A/D
-  B
-  B/D

-  C
-  C/D
-  D
-  Not rated or not available

**Water Features**

 Streams and Canals

**Transportation**

-  Rails
-  Interstate Highways
-  US Routes
-  Major Roads
-  Local Roads

**Background**

 Aerial Photography

### MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

**Warning:** Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service  
 Web Soil Survey URL:  
 Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Jackson County, Missouri  
 Survey Area Data: Version 28, Sep 2, 2025

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Aug 30, 2022—Sep 8, 2022

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

## Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
10082	Arisburg-Urban land complex, 1 to 5 percent slopes	C	6.7	34.3%
10180	Udarents-Urban land-Sampsel complex, 2 to 5 percent slopes	C	12.9	65.7%
<b>Totals for Area of Interest</b>			<b>19.7</b>	<b>100.0%</b>

### Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

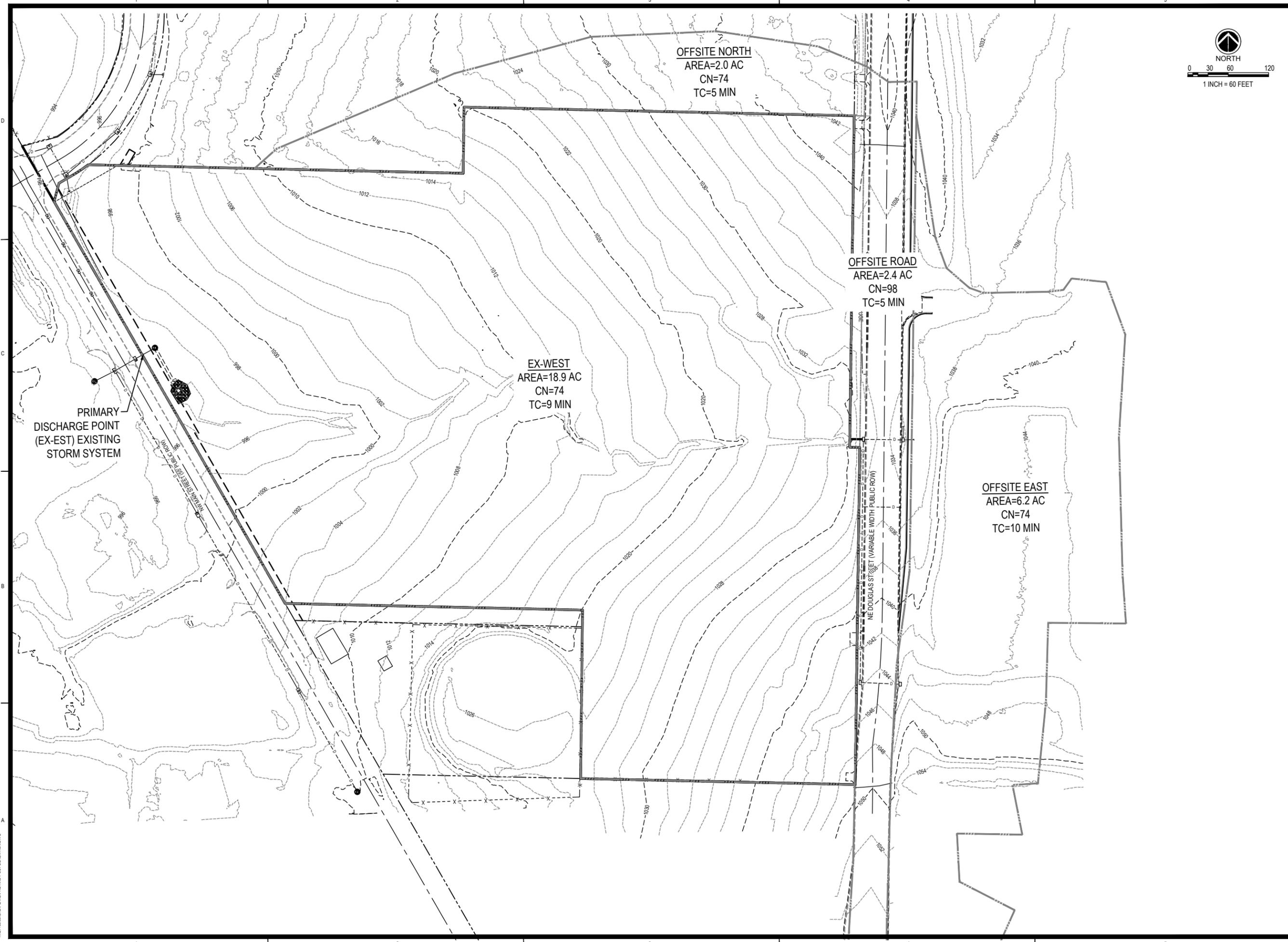
## Rating Options

*Aggregation Method:* Dominant Condition

*Component Percent Cutoff:* None Specified

*Tie-break Rule:* Higher

Appendix D – Pre-Development Drainage map



REVISIONS:


PROJECT #: 27480  
 DATE: FEBRUARY 05, 2026  
 DRAWN BY: E.J.H.  
 DESIGNER: J.P.M.  
 CHECKED BY: M.L.B.

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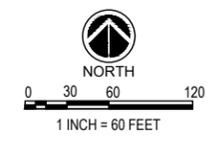
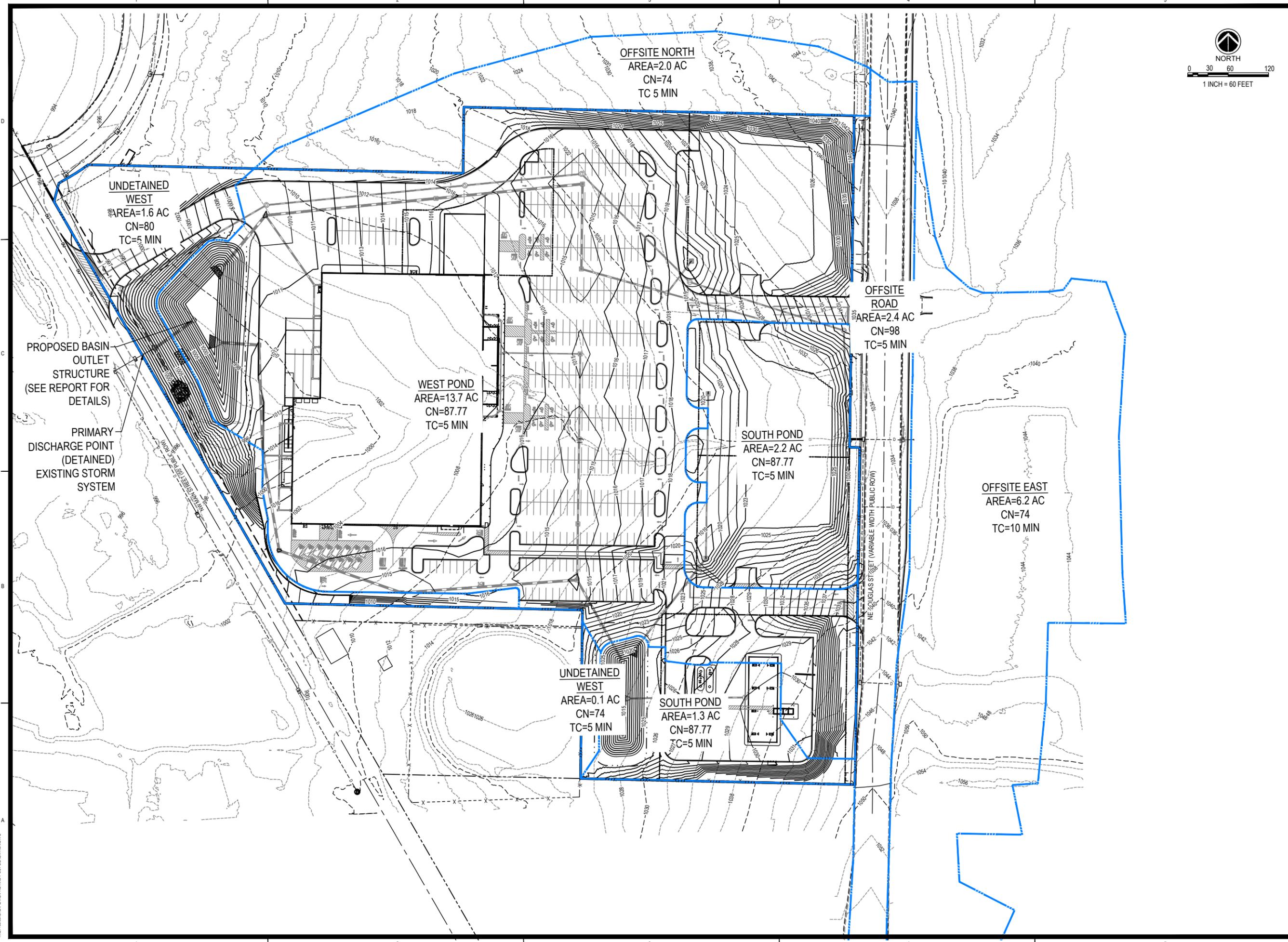
SEAL:  
**PRELIMINARY**  
**- NOT FOR**  
**CONSTRUCTION**

SHEET NUMBER:  
**C-120**

DESCRIPTION:  
 GRADING AND DRAINAGE PLAN

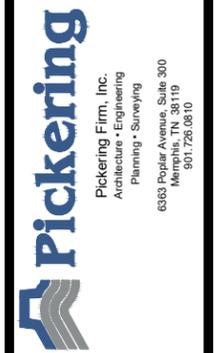
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Appendix E – Post-Development Drainage Map



REVISIONS:


PROJECT #: 27480  
 DATE: FEBRUARY 05, 2026  
 DRAWN BY: E.J.H.  
 DESIGNER: J.P.M.  
 CHECKED BY: M.L.B.



**DILLONS**  
 NE DOUGLAS ST.  
 LEE'S SUMMIT, MO



SEAL:  
**PRELIMINARY**  
**- NOT FOR**  
**CONSTRUCTION**

SHEET NUMBER:  
**C-120**

DESCRIPTION:  
 GRADING AND DRAINAGE PLAN

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Appendix F – Existing and Proposed Conditions Analysis

# Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2026

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description	
1	SCS Runoff	0.000	2	n/a	0	----	----	----	PRE SITE 18.9 AC	
2	SCS Runoff	0.000	2	n/a	0	----	----	----	OFFSITE EAST 6.2 AC	
3	SCS Runoff	0.000	2	n/a	0	----	----	----	OFFSITE ROAD 2.4 AC	
4	SCS Runoff	0.000	2	n/a	0	----	----	----	OFFSITE NORTH 2 AC	
5	Combine	0.000	2	n/a	0	2, 3, 4	----	----	OFFSITE	
8	SCS Runoff	0.000	2	n/a	0	----	----	----	direct west 1.7 AC 6hr	
9	SCS Runoff	0.000	2	n/a	0	----	----	----	POST WEST 13.7 AC 6 hr	
10	SCS Runoff	0.000	2	n/a	0	----	----	----	POST SOUTH 3.5 AC 6 hr	
13	Reservoir	0.000	2	n/a	0	10	1014.00	0.000	SOUTH POND	
14	Combine	0.000	2	n/a	0	9, 13	----	----	TO WEST POND	
15	Reservoir	0.000	2	n/a	0	14	996.00	0.000	WEST POND	
16	Combine	0.000	2	n/a	0	8, 15	----	----	POST WEST TOTAL	
18	Combine	0.000	2	n/a	0	2, 3, 4, 8, 9, 10,	----	----	TOTAL POST BEFORE DETENTION	
20	Reservoir	0.000	2	n/a	0	14	1007.00	92,445	EMERGENCY SPILLWAY	
23	SCS Runoff	0.575	2	718	1,299	----	----	----	direct west 1.7 AC 24 hr	
24	SCS Runoff	11.10	2	718	22,208	----	----	----	POST WEST 13.7 AC 24 hr	
25	SCS Runoff	2.836	2	718	5,673	----	----	----	POST SOUTH 3.5 AC 24 hr	
27	Reservoir	0.637	2	726	5,673	25	1016.70	1,501	SOUTH POND	
28	Combine	11.69	2	718	27,881	24, 27	----	----	TO WEST POND	
29	Reservoir	0.701	2	812	27,840	28	999.83	13,673	water quality design	
30	Combine	0.575	2	718	1,299	8, 15, 23,	----	----	POST WEST TOTAL	
DETENTION.gpw					Return Period: 1 Year			Wednesday, 01 / 21 / 2026		

# Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2026

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	10.37	2	150	48,027	-----	-----	-----	PRE SITE 18.9 AC	
2	SCS Runoff	3.373	2	152	16,247	-----	-----	-----	OFFSITE EAST 6.2 AC	
3	SCS Runoff	4.581	2	144	19,846	-----	-----	-----	OFFSITE ROAD 2.4 AC	
4	SCS Runoff	1.065	2	146	4,765	-----	-----	-----	OFFSITE NORTH 2 AC	
5	Combine	8.294	2	146	40,858	2, 3, 4	-----	-----	OFFSITE	
8	SCS Runoff	1.400	2	146	5,792	-----	-----	-----	direct west 1.7 AC 6hr	
9	SCS Runoff	17.59	2	144	69,798	-----	-----	-----	POST WEST 13.7 AC 6 hr	
10	SCS Runoff	4.495	2	144	17,832	-----	-----	-----	POST SOUTH 3.5 AC 6 hr	
13	Reservoir	0.893	2	216	17,831	10	1019.01	6,991	SOUTH POND	
14	Combine	18.37	2	144	87,630	9, 13	-----	-----	TO WEST POND	
15	Reservoir	2.333	2	362	87,589	14	1004.43	55,010	WEST POND	
16	Combine	2.544	2	360	93,382	8, 15	-----	-----	POST WEST TOTAL	
18	Combine	31.59	2	144	134,280	2, 3, 4, 8, 9, 10,	-----	-----	TOTAL POST BEFORE DETENTION	
20	Reservoir	16.77	2	148	87,629	14	1007.47	100,891	EMERGENCY SPILLWAY	
23	SCS Runoff	5.171	2	716	10,440	-----	-----	-----	direct west 1.7 AC 24 hr	
24	SCS Runoff	54.97	2	716	113,483	-----	-----	-----	POST WEST 13.7 AC 24 hr	
25	SCS Runoff	14.04	2	716	28,992	-----	-----	-----	POST SOUTH 3.5 AC 24 hr	
27	Reservoir	1.014	2	752	28,992	25	1020.35	12,603	SOUTH POND	
28	Combine	55.87	2	716	142,475	24, 27	-----	-----	TO WEST POND	
29	Reservoir	3.278	2	798	142,434	28	1005.52	69,550	water quality design	
30	Combine	6.305	2	716	103,822	8, 15, 23,	-----	-----	POST WEST TOTAL	
DETENTION.gpw					Return Period: 2 Year			Wednesday, 01 / 21 / 2026		

# Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2026

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	25.51	2	148	108,511	-----	-----	-----	PRE SITE 18.9 AC	
2	SCS Runoff	8.366	2	150	36,708	-----	-----	-----	OFFSITE EAST 6.2 AC	
3	SCS Runoff	6.926	2	144	30,588	-----	-----	-----	OFFSITE ROAD 2.4 AC	
4	SCS Runoff	2.620	2	146	10,765	-----	-----	-----	OFFSITE NORTH 2 AC	
5	Combine	17.11	2	146	78,061	2, 3, 4	-----	-----	OFFSITE	
8	SCS Runoff	2.936	2	144	11,716	-----	-----	-----	direct west 1.7 AC 6hr	
9	SCS Runoff	31.41	2	144	125,066	-----	-----	-----	POST WEST 13.7 AC 6 hr	
10	SCS Runoff	8.026	2	144	31,951	-----	-----	-----	POST SOUTH 3.5 AC 6 hr	
13	Reservoir	1.078	2	274	31,951	10	1021.12	16,549	SOUTH POND	
14	Combine	32.34	2	144	157,017	9, 13	-----	-----	TO WEST POND	
15	Reservoir	7.062	2	212	156,977	14	1005.86	74,266	WEST POND	
16	Combine	7.702	2	210	168,693	8, 15	-----	-----	POST WEST TOTAL	
18	Combine	59.29	2	144	246,795	2, 3, 4, 8, 9, 10,	-----	-----	TOTAL POST BEFORE DETENTION	
20	Reservoir	30.59	2	146	157,016	14	1007.70	105,084	EMERGENCY SPILLWAY	
23	SCS Runoff	9.877	2	716	20,213	-----	-----	-----	direct west 1.7 AC 24 hr	
24	SCS Runoff	93.91	2	716	199,834	-----	-----	-----	POST WEST 13.7 AC 24 hr	
25	SCS Runoff	23.99	2	716	51,052	-----	-----	-----	POST SOUTH 3.5 AC 24 hr	
27	Reservoir	1.178	2	776	51,052	25	1022.43	24,889	SOUTH POND	
28	Combine	94.95	2	716	250,885	24, 27	-----	-----	TO WEST POND	
29	Reservoir	43.80	2	722	250,845	28	1007.11	94,338	water quality design	
30	Combine	11.60	2	716	188,905	8, 15, 23,	-----	-----	POST WEST TOTAL	
DETENTION.gpw					Return Period: 10 Year			Wednesday, 01 / 21 / 2026		

# Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2026

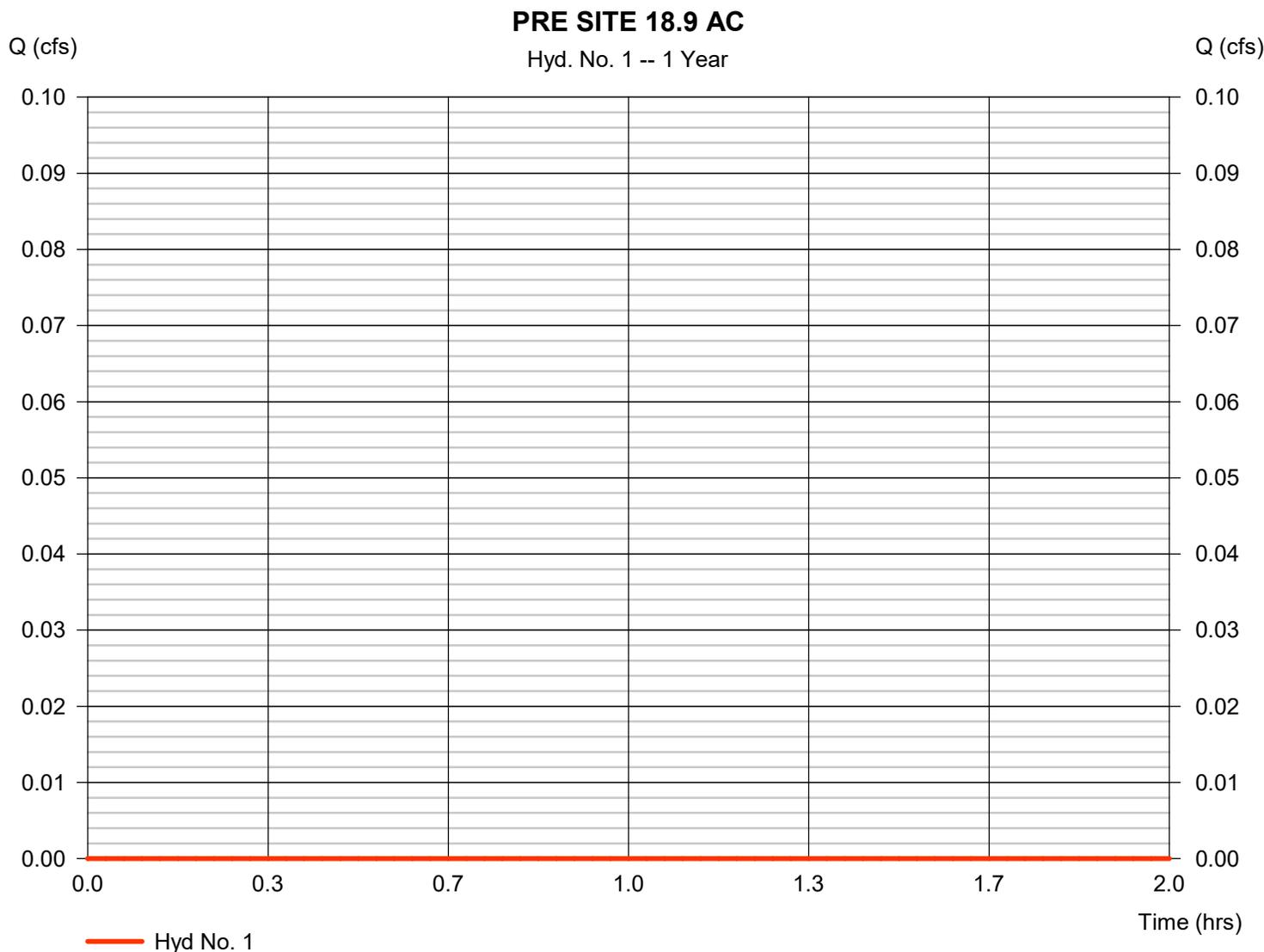
Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description	
1	SCS Runoff	58.70	2	146	241,187	-----	-----	-----	PRE SITE 18.9 AC	
2	SCS Runoff	19.29	2	150	81,592	-----	-----	-----	OFFSITE EAST 6.2 AC	
3	SCS Runoff	11.18	2	144	50,242	-----	-----	-----	OFFSITE ROAD 2.4 AC	
4	SCS Runoff	6.026	2	144	23,927	-----	-----	-----	OFFSITE NORTH 2 AC	
5	Combine	35.60	2	146	155,761	2, 3, 4	-----	-----	OFFSITE	
8	SCS Runoff	6.025	2	144	23,922	-----	-----	-----	direct west 1.7 AC 6hr	
9	SCS Runoff	56.94	2	144	231,659	-----	-----	-----	POST WEST 13.7 AC 6 hr	
10	SCS Runoff	14.55	2	144	59,183	-----	-----	-----	POST SOUTH 3.5 AC 6 hr	
13	Reservoir	2.654	2	210	59,183	10	1023.34	31,815	SOUTH POND	
14	Combine	58.05	2	144	290,841	9, 13	-----	-----	TO WEST POND	
15	Reservoir	39.26	2	154	290,801	14	1006.97	91,969	WEST POND	
16	Combine	43.71	2	152	314,723	8, 15	-----	-----	POST WEST TOTAL	
18	Combine	113.07	2	144	470,525	2, 3, 4, 8, 9, 10,	-----	-----	TOTAL POST BEFORE DETENTION	
20	Reservoir	56.35	2	146	290,840	14	1008.05	111,500	EMERGENCY SPILLWAY	
23	SCS Runoff	18.63	2	716	39,372	-----	-----	-----	direct west 1.7 AC 24 hr	
24	SCS Runoff	163.61	2	716	361,636	-----	-----	-----	POST WEST 13.7 AC 24 hr	
25	SCS Runoff	41.80	2	716	92,389	-----	-----	-----	POST SOUTH 3.5 AC 24 hr	
27	Reservoir	14.61	2	724	92,389	25	1024.19	39,161	SOUTH POND	
28	Combine	164.91	2	716	454,024	24, 27	-----	-----	TO WEST POND	
29	Reservoir	143.94	2	720	453,984	28	1008.35	117,434	water quality design	
30	Combine	43.71	2	152	354,095	8, 15, 23,	-----	-----	POST WEST TOTAL	
DETENTION.gpw					Return Period: 100 Year			Wednesday, 01 / 21 / 2026		

# Hydrograph Report

## Hyd. No. 1

PRE SITE 18.9 AC

Hydrograph type	= SCS Runoff	Peak discharge	= 0.000 cfs
Storm frequency	= 1 yrs	Time to peak	= n/a
Time interval	= 2 min	Hyd. volume	= 0 cuft
Drainage area	= 18.900 ac	Curve number	= 74
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 9.00 min
Total precip.	= 0.00 in	Distribution	= SCS 6-Hr
Storm duration	= 6.00 hrs	Shape factor	= 484

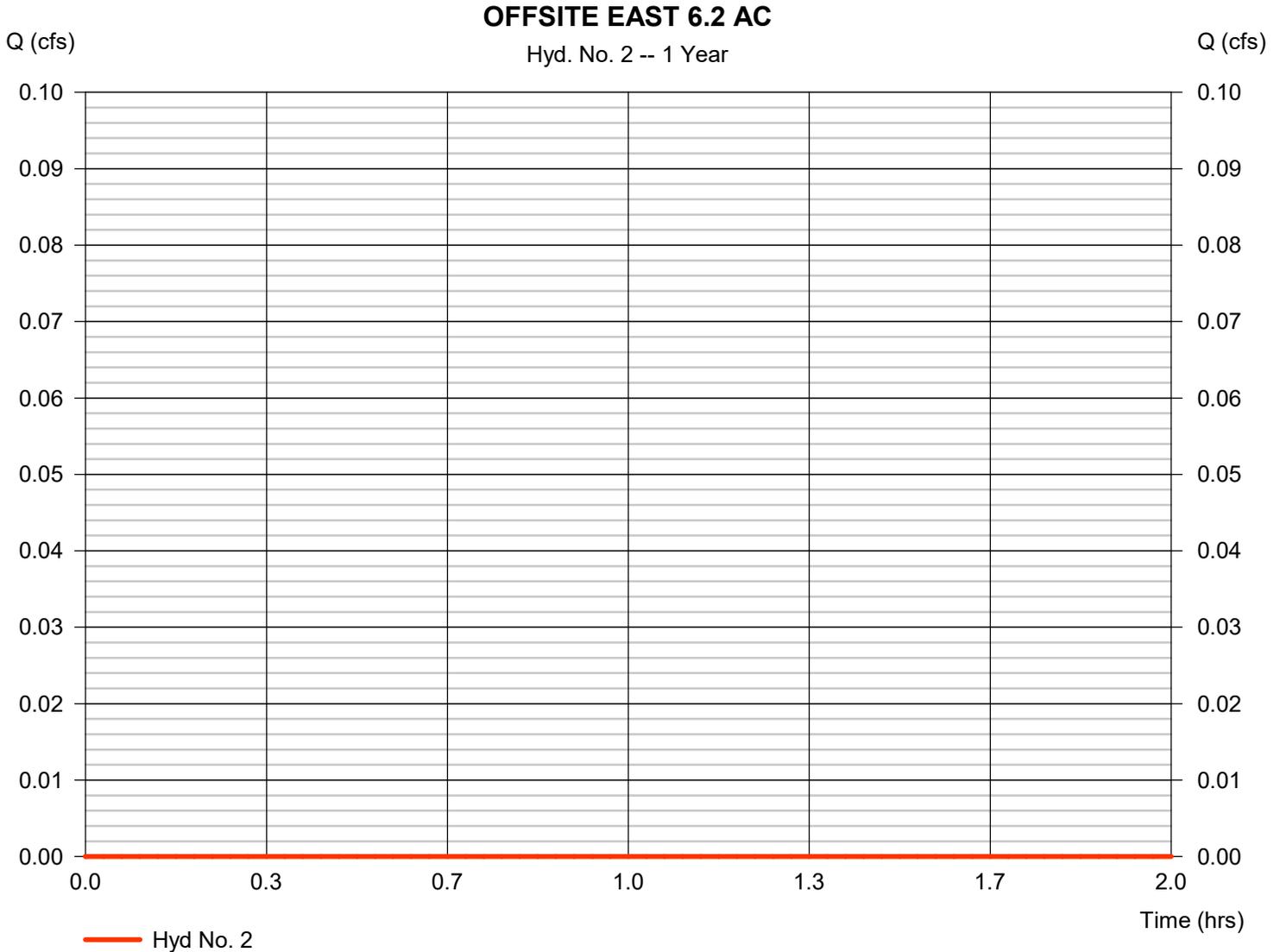


# Hydrograph Report

## Hyd. No. 2

### OFFSITE EAST 6.2 AC

Hydrograph type	= SCS Runoff	Peak discharge	= 0.000 cfs
Storm frequency	= 1 yrs	Time to peak	= n/a
Time interval	= 2 min	Hyd. volume	= 0 cuft
Drainage area	= 6.200 ac	Curve number	= 74
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 0.00 in	Distribution	= SCS 6-Hr
Storm duration	= 6.00 hrs	Shape factor	= 484

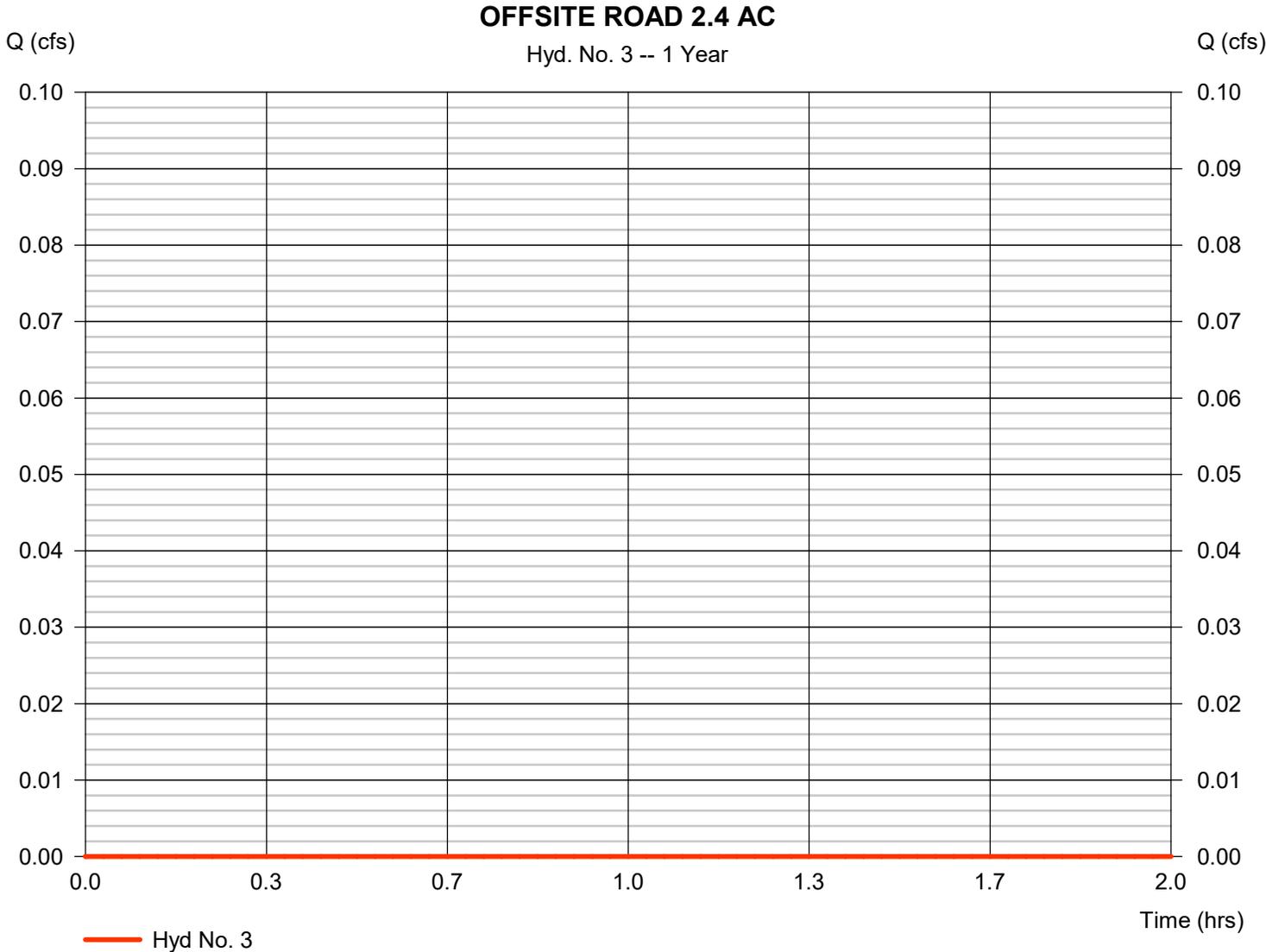


# Hydrograph Report

## Hyd. No. 3

### OFFSITE ROAD 2.4 AC

Hydrograph type	= SCS Runoff	Peak discharge	= 0.000 cfs
Storm frequency	= 1 yrs	Time to peak	= n/a
Time interval	= 2 min	Hyd. volume	= 0 cuft
Drainage area	= 2.400 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 0.00 in	Distribution	= SCS 6-Hr
Storm duration	= 6.00 hrs	Shape factor	= 484

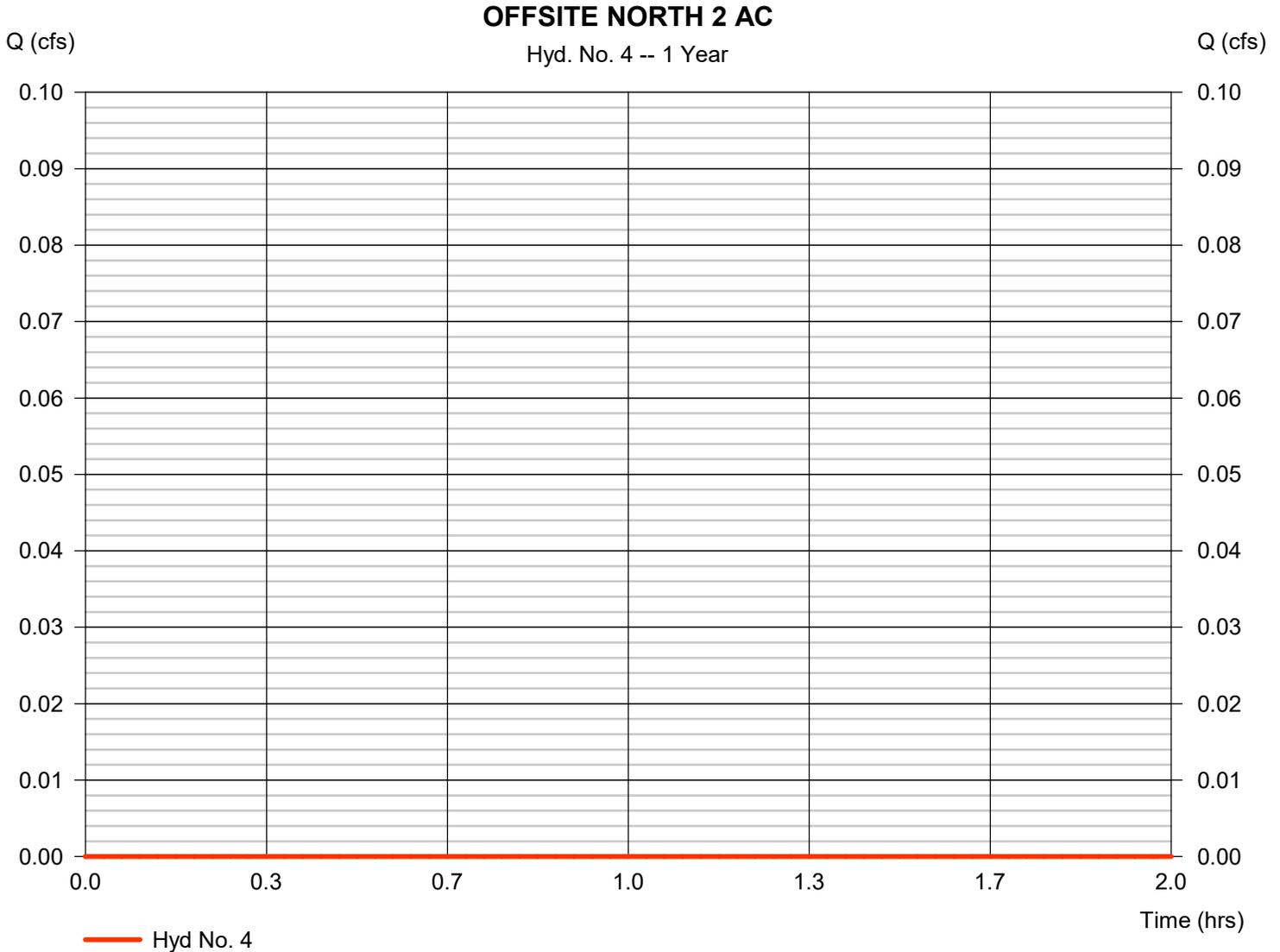


# Hydrograph Report

## Hyd. No. 4

### OFFSITE NORTH 2 AC

Hydrograph type	= SCS Runoff	Peak discharge	= 0.000 cfs
Storm frequency	= 1 yrs	Time to peak	= n/a
Time interval	= 2 min	Hyd. volume	= 0 cuft
Drainage area	= 2.000 ac	Curve number	= 74
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 0.00 in	Distribution	= SCS 6-Hr
Storm duration	= 6.00 hrs	Shape factor	= 484



# Hydrograph Report

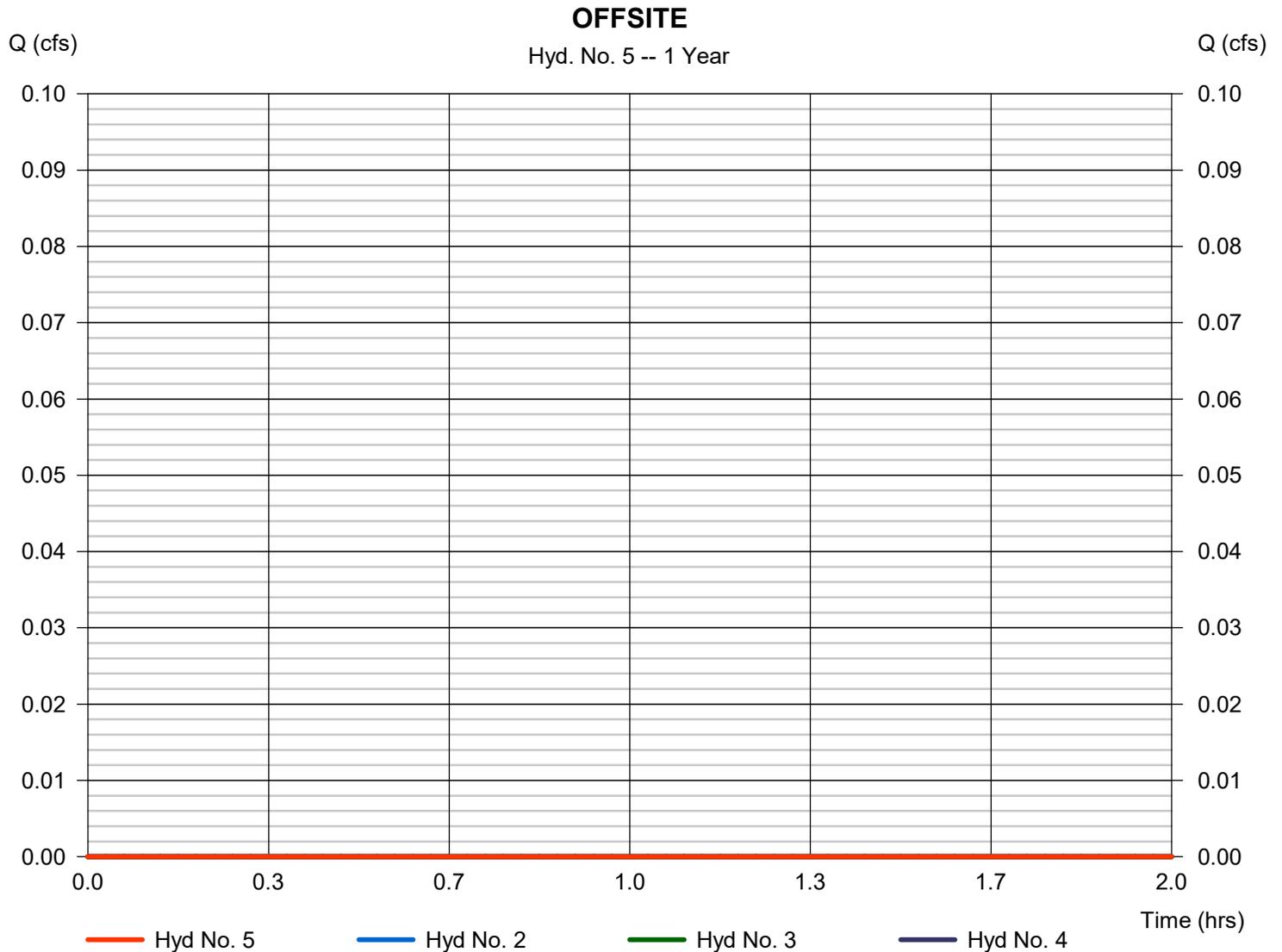
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Wednesday, 01 / 21 / 2026

## Hyd. No. 5

### OFFSITE

Hydrograph type	= Combine	Peak discharge	= 0.000 cfs
Storm frequency	= 1 yrs	Time to peak	= n/a
Time interval	= 2 min	Hyd. volume	= 0 cuft
Inflow hyds.	= 2, 3, 4	Contrib. drain. area	= 10.600 ac

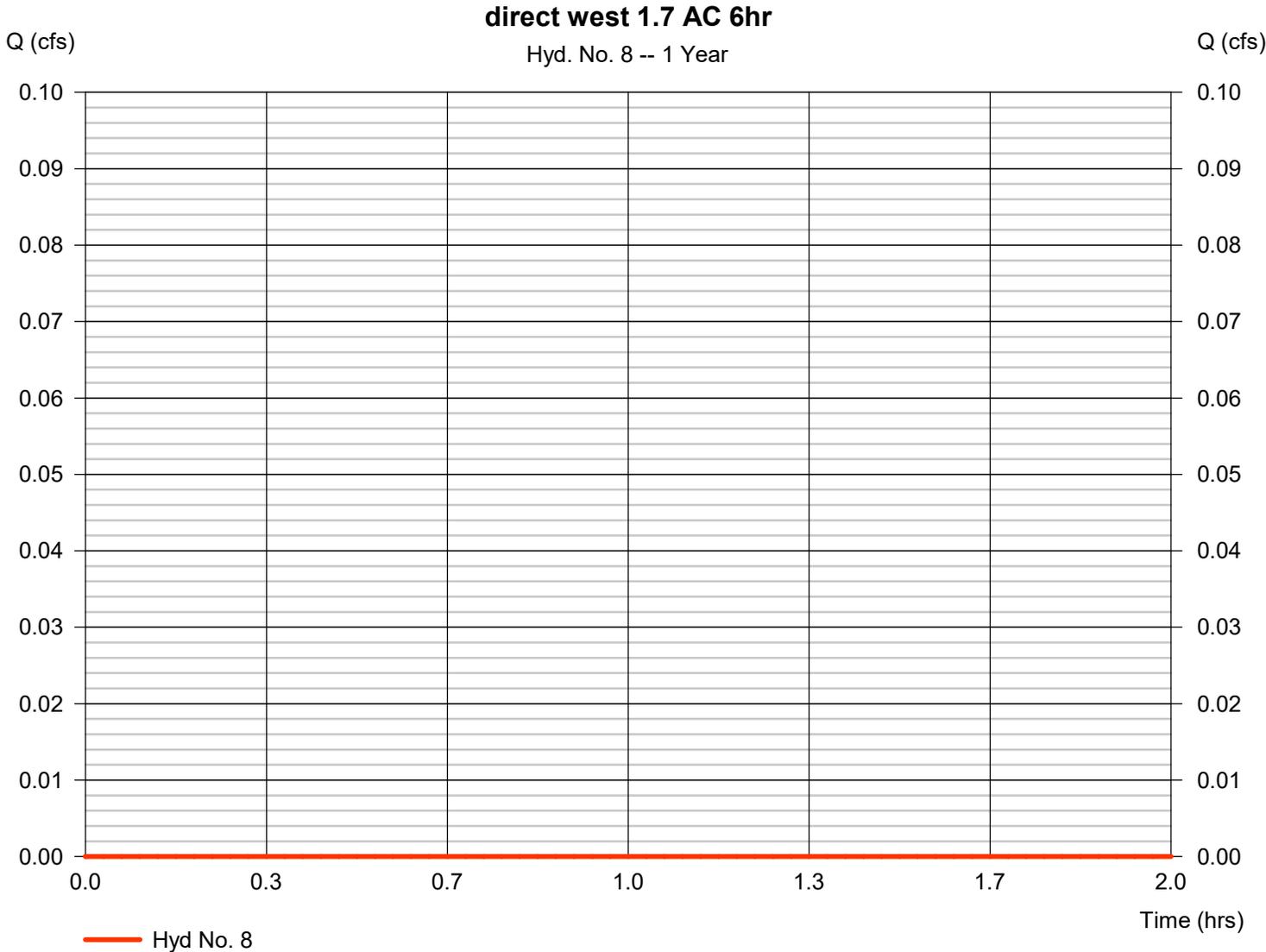


# Hydrograph Report

## Hyd. No. 8

direct west 1.7 AC 6hr

Hydrograph type	= SCS Runoff	Peak discharge	= 0.000 cfs
Storm frequency	= 1 yrs	Time to peak	= n/a
Time interval	= 2 min	Hyd. volume	= 0 cuft
Drainage area	= 1.700 ac	Curve number	= 80
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 0.00 in	Distribution	= SCS 6-Hr
Storm duration	= 6.00 hrs	Shape factor	= 484



# Hydrograph Report

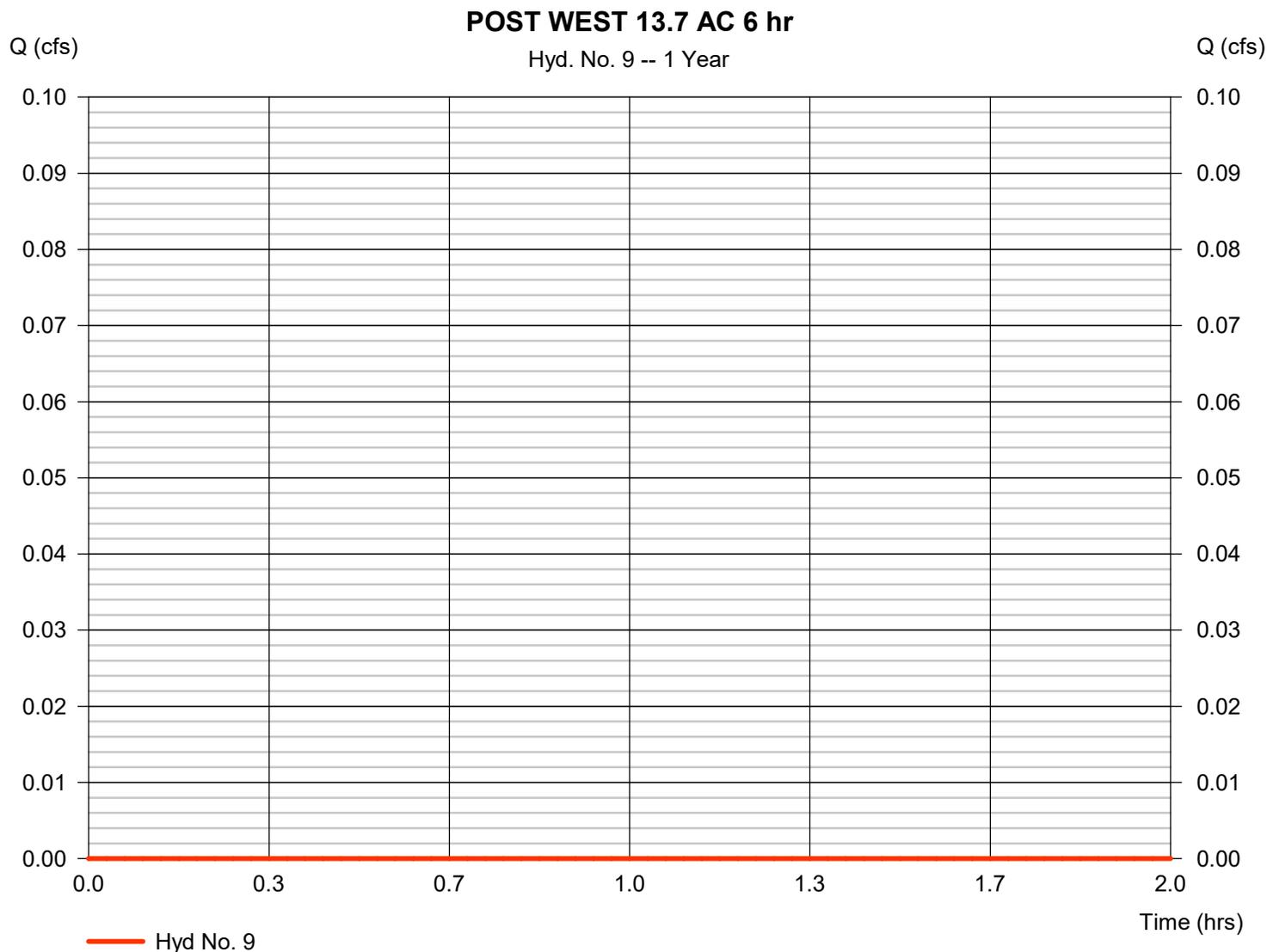
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Wednesday, 01 / 21 / 2026

## Hyd. No. 9

POST WEST 13.7 AC 6 hr

Hydrograph type	= SCS Runoff	Peak discharge	= 0.000 cfs
Storm frequency	= 1 yrs	Time to peak	= n/a
Time interval	= 2 min	Hyd. volume	= 0 cuft
Drainage area	= 13.700 ac	Curve number	= 87.7
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 0.00 in	Distribution	= SCS 6-Hr
Storm duration	= 6.00 hrs	Shape factor	= 484

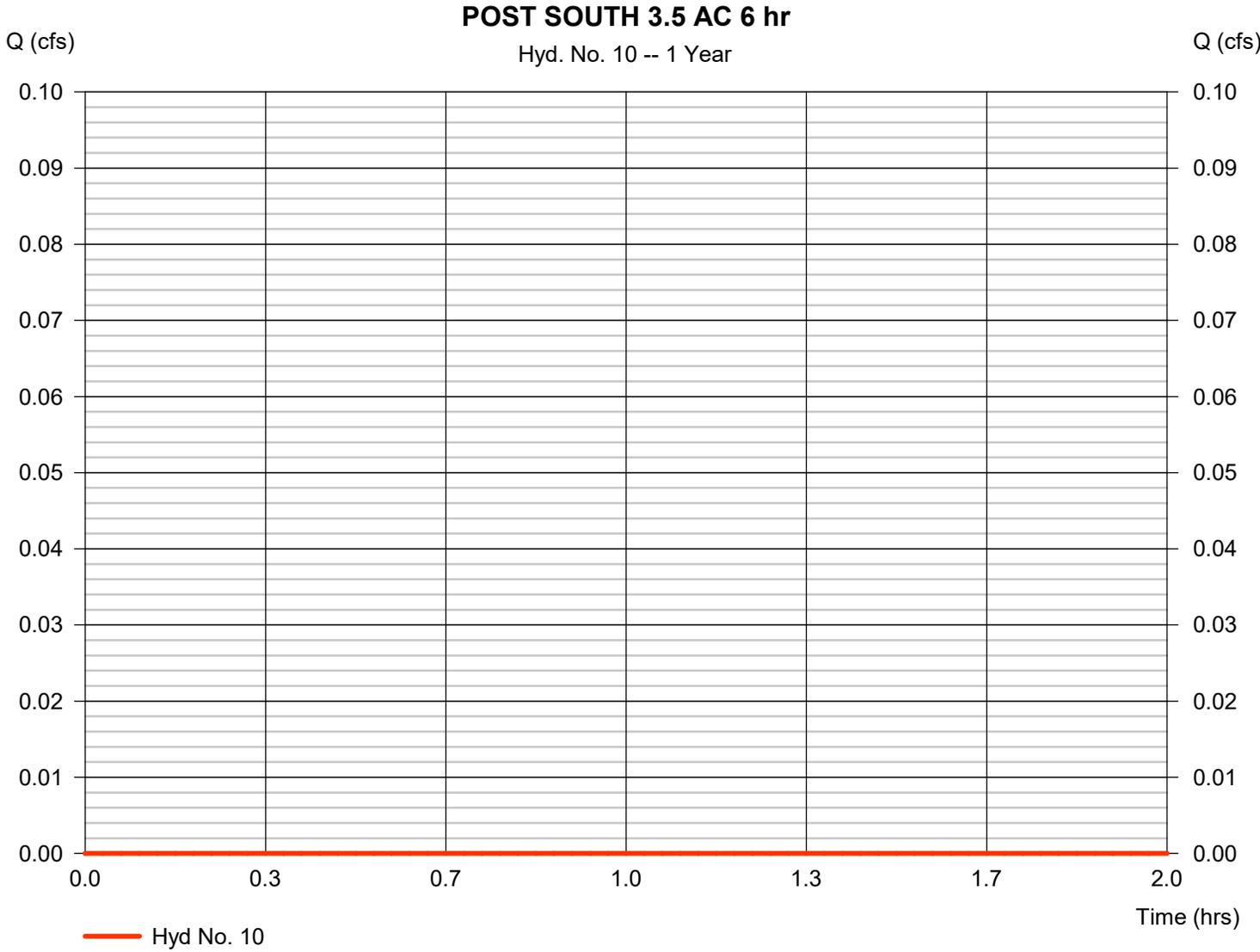


# Hydrograph Report

## Hyd. No. 10

POST SOUTH 3.5 AC 6 hr

Hydrograph type	= SCS Runoff	Peak discharge	= 0.000 cfs
Storm frequency	= 1 yrs	Time to peak	= n/a
Time interval	= 2 min	Hyd. volume	= 0 cuft
Drainage area	= 3.500 ac	Curve number	= 87.7
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 0.00 in	Distribution	= SCS 6-Hr
Storm duration	= 6.00 hrs	Shape factor	= 484



# Hydrograph Report

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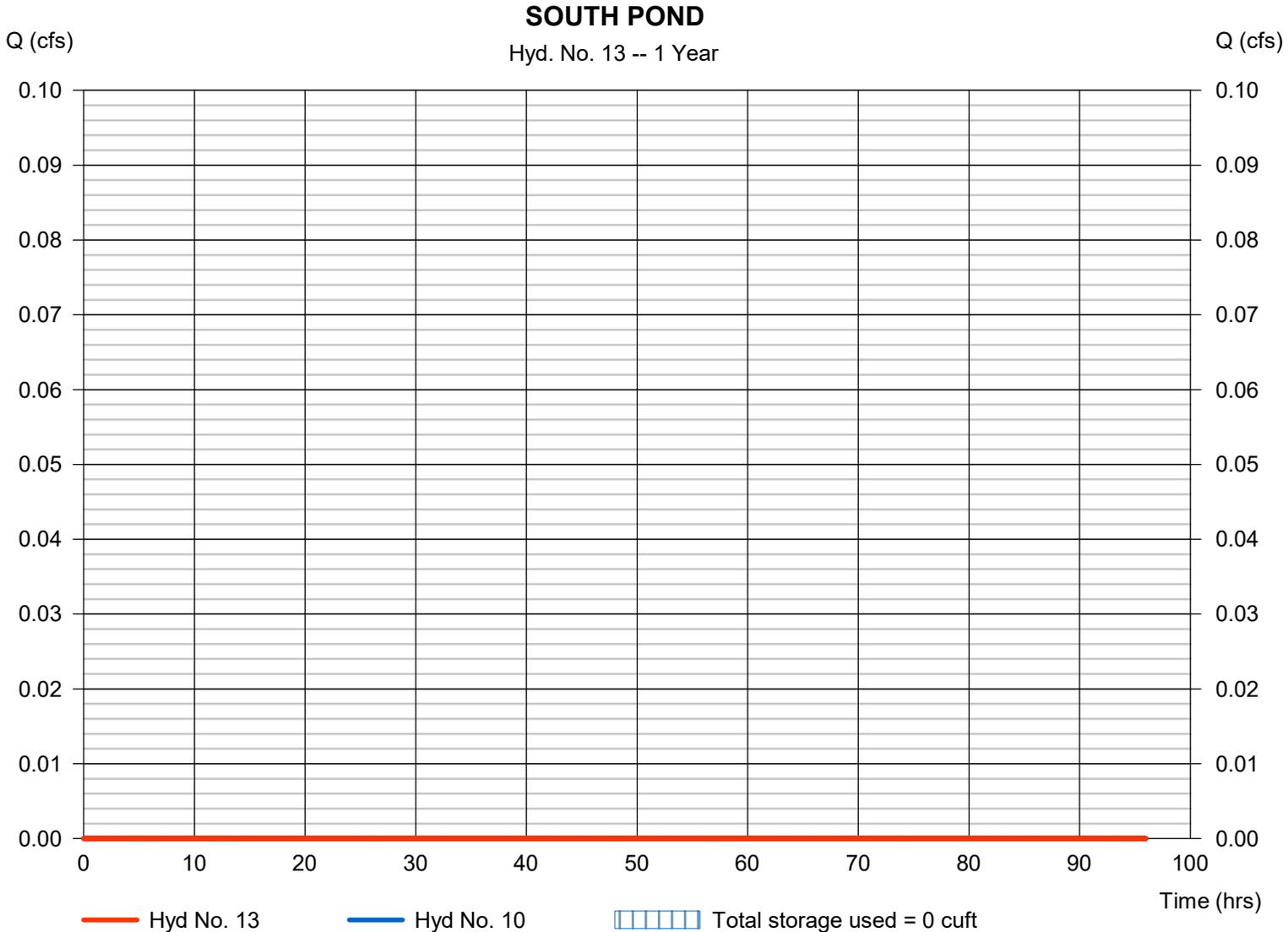
Wednesday, 01 / 21 / 2026

## Hyd. No. 13

### SOUTH POND

Hydrograph type	= Reservoir	Peak discharge	= 0.000 cfs
Storm frequency	= 1 yrs	Time to peak	= n/a
Time interval	= 2 min	Hyd. volume	= 0 cuft
Inflow hyd. No.	= 10 - POST SOUTH 3.5 AC 6 h	Max. Elevation	= 1014.00 ft
Reservoir name	= SOUTH	Max. Storage	= 0 cuft

Storage Indication method used.



# Hydrograph Report

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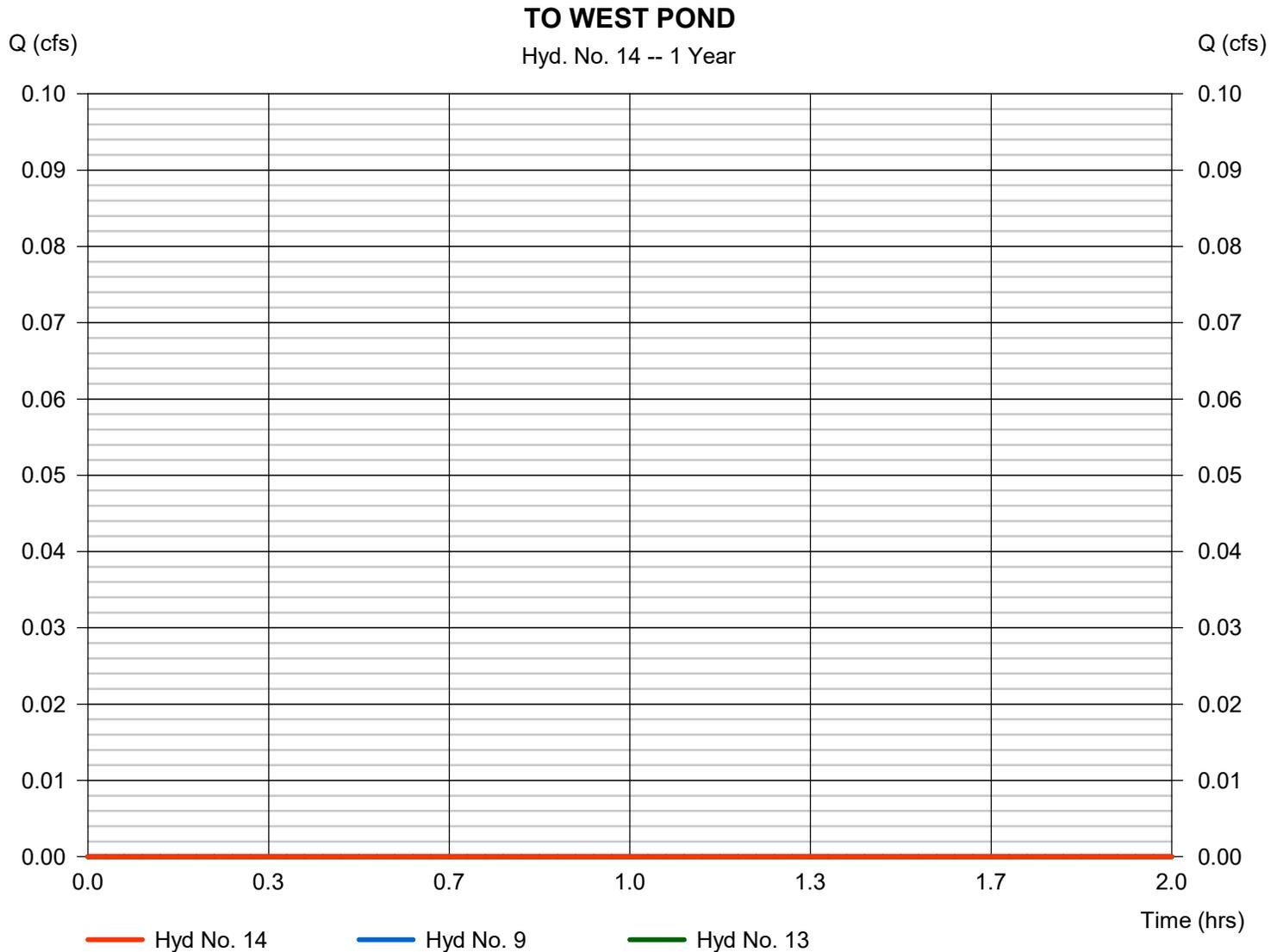
Wednesday, 01 / 21 / 2026

## Hyd. No. 14

TO WEST POND

Hydrograph type = Combine  
Storm frequency = 1 yrs  
Time interval = 2 min  
Inflow hyds. = 9, 13

Peak discharge = 0.000 cfs  
Time to peak = n/a  
Hyd. volume = 0 cuft  
Contrib. drain. area = 13.700 ac



# Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2026

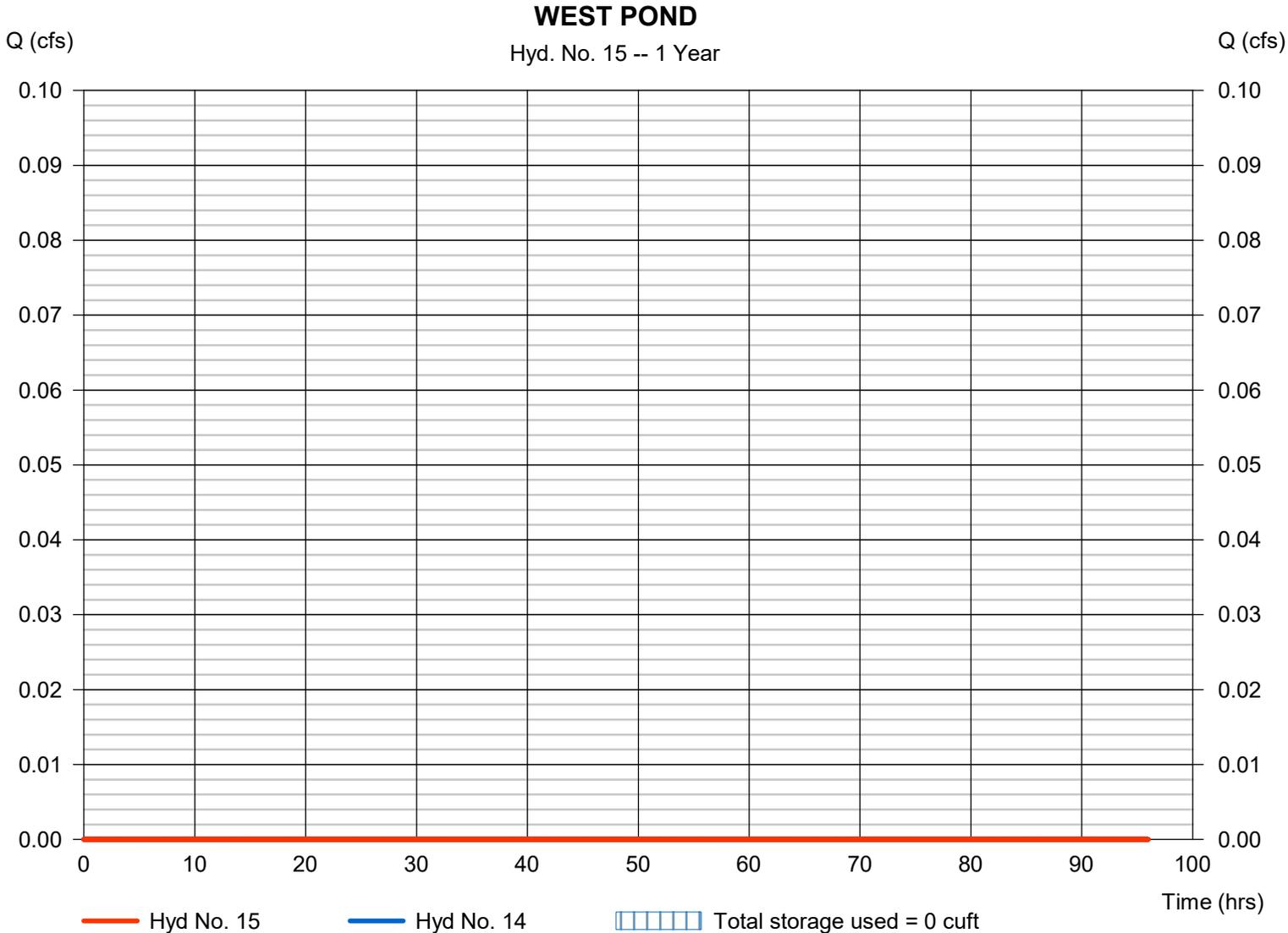
Wednesday, 01 / 21 / 2026

## Hyd. No. 15

### WEST POND

Hydrograph type	= Reservoir	Peak discharge	= 0.000 cfs
Storm frequency	= 1 yrs	Time to peak	= n/a
Time interval	= 2 min	Hyd. volume	= 0 cuft
Inflow hyd. No.	= 14 - TO WEST POND	Max. Elevation	= 996.00 ft
Reservoir name	= WEST POND retention	Max. Storage	= 0 cuft

Storage Indication method used.



# Hydrograph Report

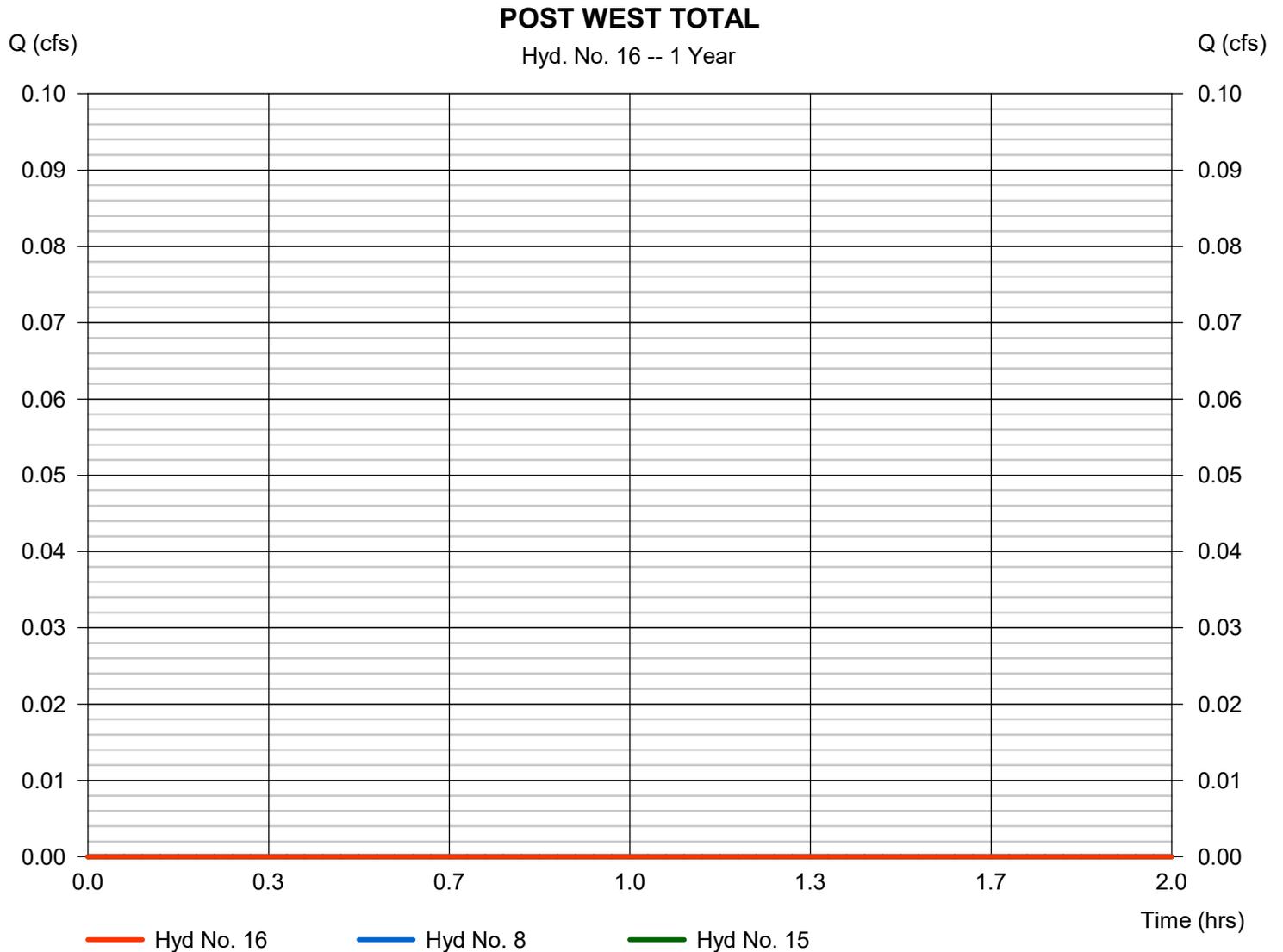
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Wednesday, 01 / 21 / 2026

## Hyd. No. 16

### POST WEST TOTAL

Hydrograph type	= Combine	Peak discharge	= 0.000 cfs
Storm frequency	= 1 yrs	Time to peak	= n/a
Time interval	= 2 min	Hyd. volume	= 0 cuft
Inflow hyds.	= 8, 15	Contrib. drain. area	= 1.700 ac



# Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2026

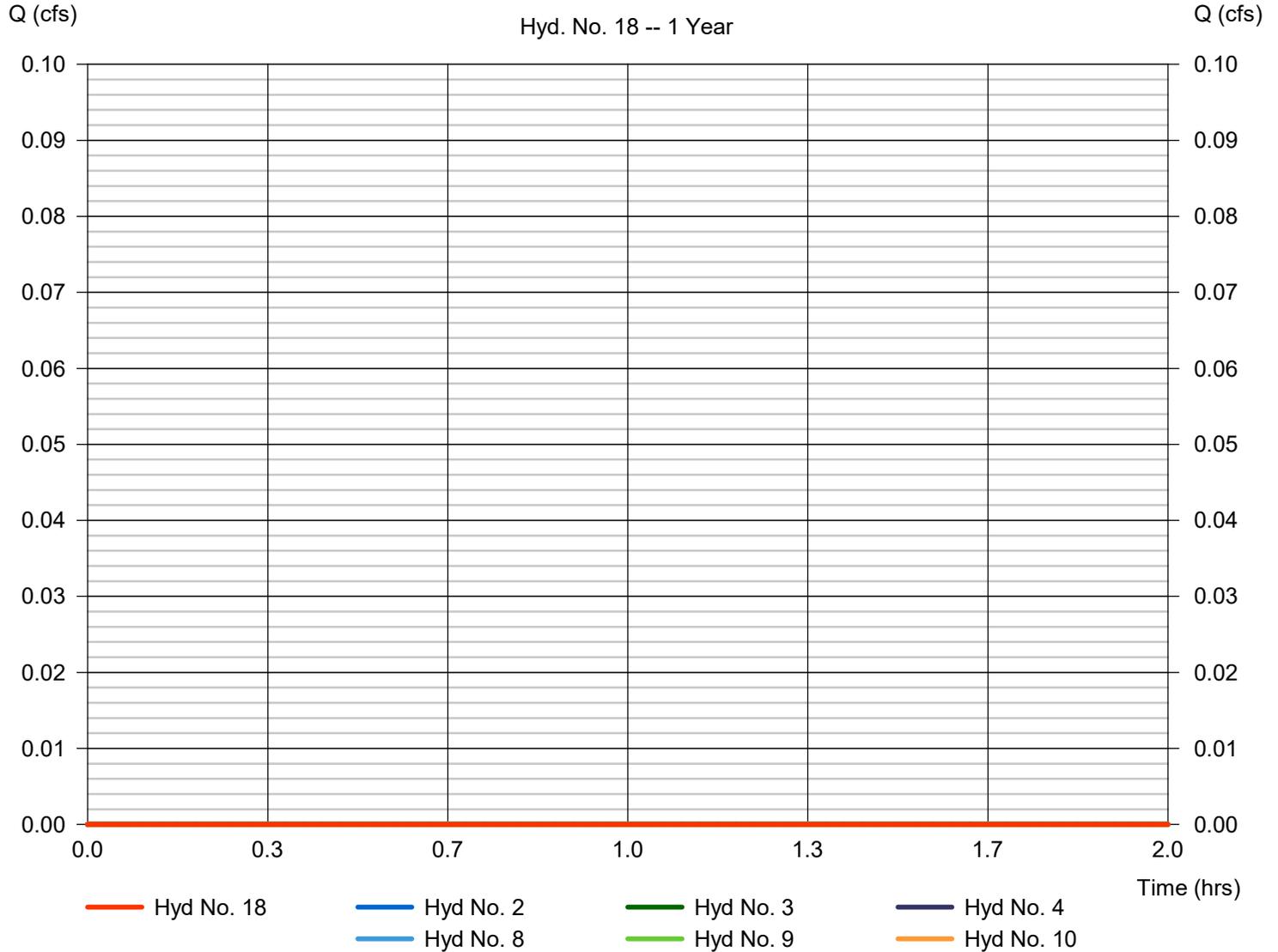
Wednesday, 01 / 21 / 2026

## Hyd. No. 18

### TOTAL POST BEFORE DETENTION

Hydrograph type	= Combine	Peak discharge	= 0.000 cfs
Storm frequency	= 1 yrs	Time to peak	= n/a
Time interval	= 2 min	Hyd. volume	= 0 cuft
Inflow hyds.	= 2, 3, 4, 8, 9, 10	Contrib. drain. area	= 29.500 ac

### TOTAL POST BEFORE DETENTION



# Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2026

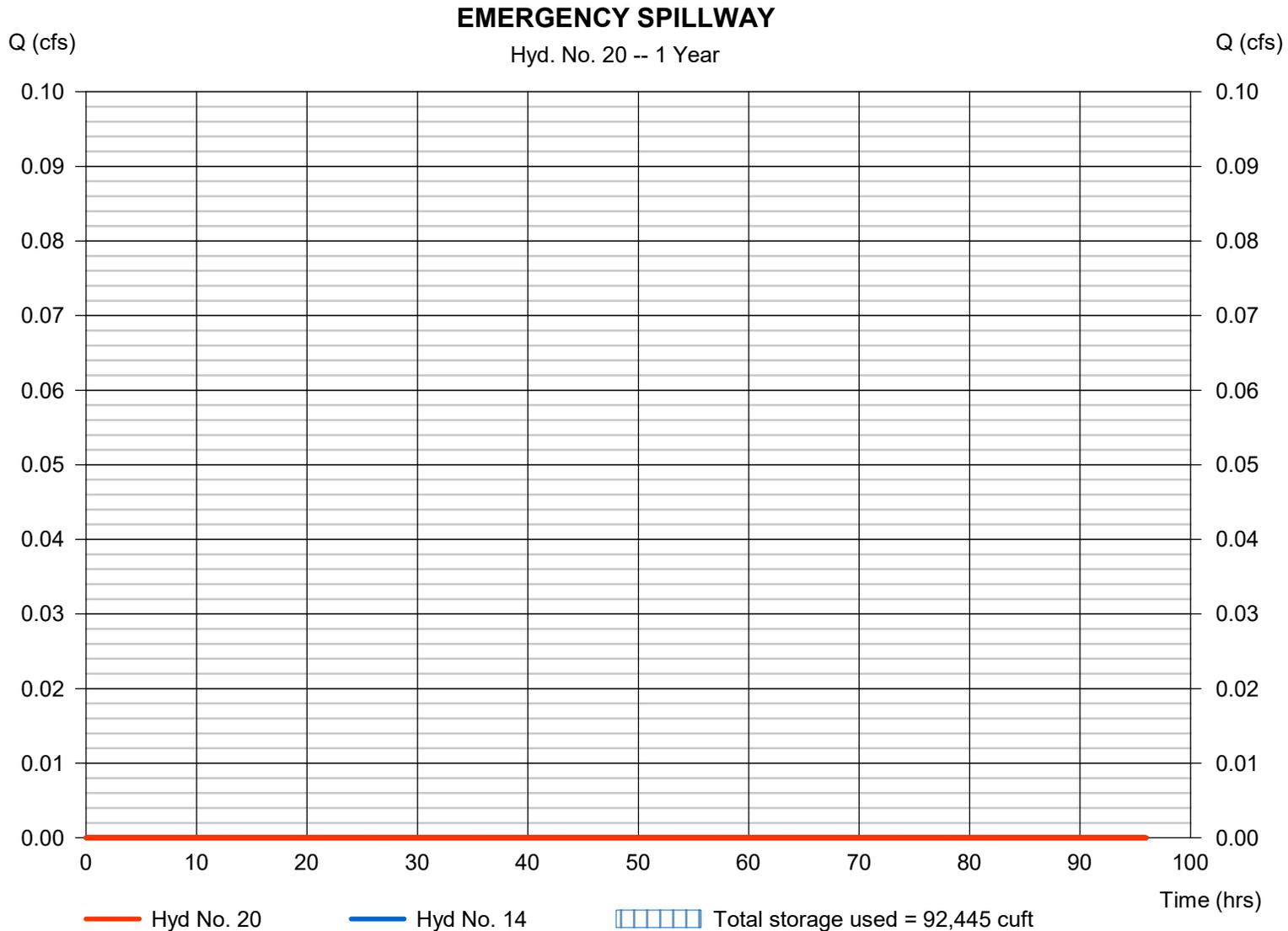
Wednesday, 01 / 21 / 2026

## Hyd. No. 20

### EMERGENCY SPILLWAY

Hydrograph type	= Reservoir	Peak discharge	= 0.000 cfs
Storm frequency	= 1 yrs	Time to peak	= n/a
Time interval	= 2 min	Hyd. volume	= 0 cuft
Inflow hyd. No.	= 14 - TO WEST POND	Max. Elevation	= 1007.00 ft
Reservoir name	= EMERGENCY SPILLWAY	Max. Storage	= 92,445 cuft

Storage Indication method used. Wet pond routing start elevation = 1007.00 ft.



# Hydrograph Report

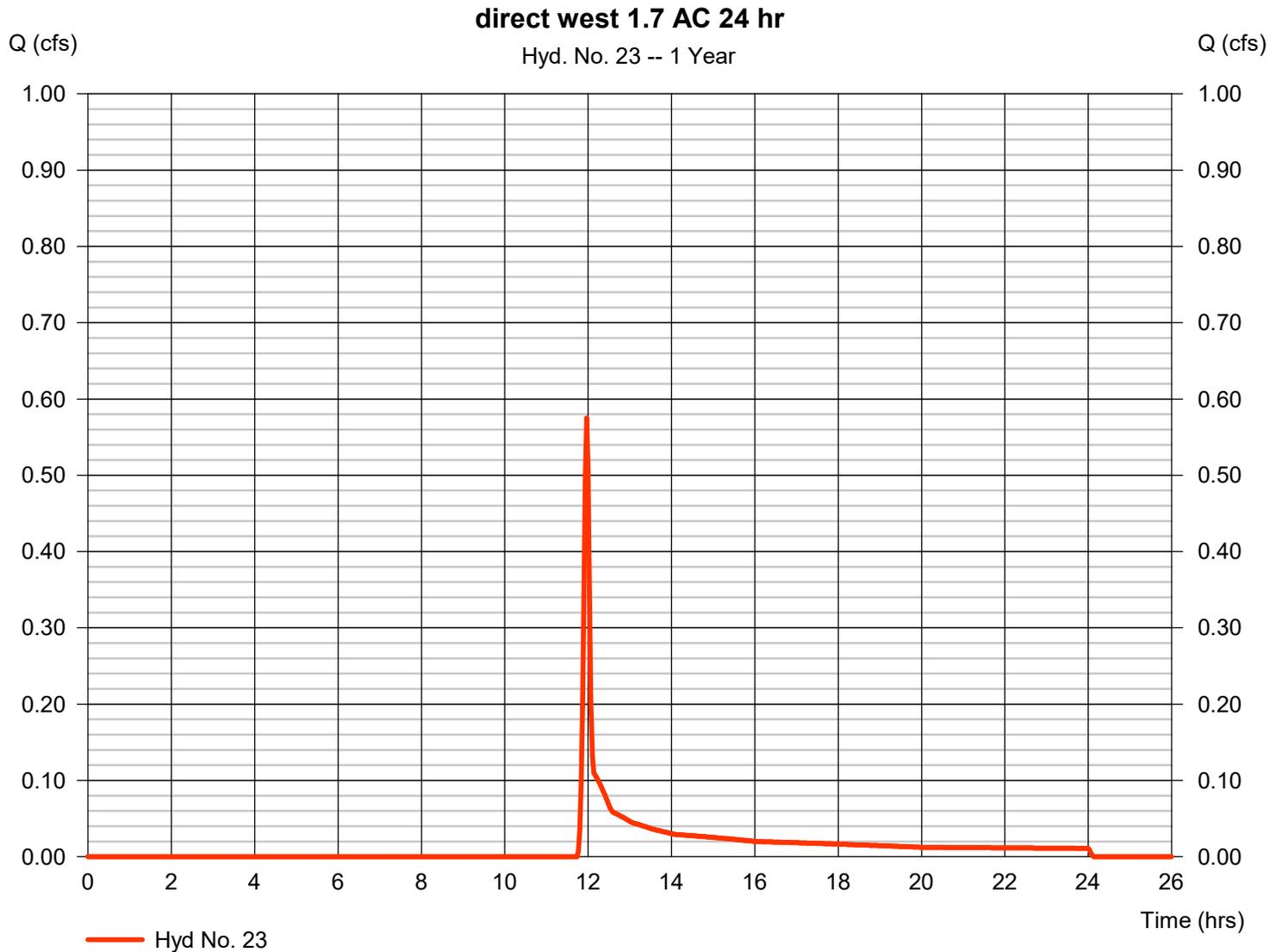
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Wednesday, 01 / 21 / 2026

## Hyd. No. 23

direct west 1.7 AC 24 hr

Hydrograph type	= SCS Runoff	Peak discharge	= 0.575 cfs
Storm frequency	= 1 yrs	Time to peak	= 11.97 hrs
Time interval	= 2 min	Hyd. volume	= 1,299 cuft
Drainage area	= 1.700 ac	Curve number	= 80
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 1.37 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



# Hydrograph Report

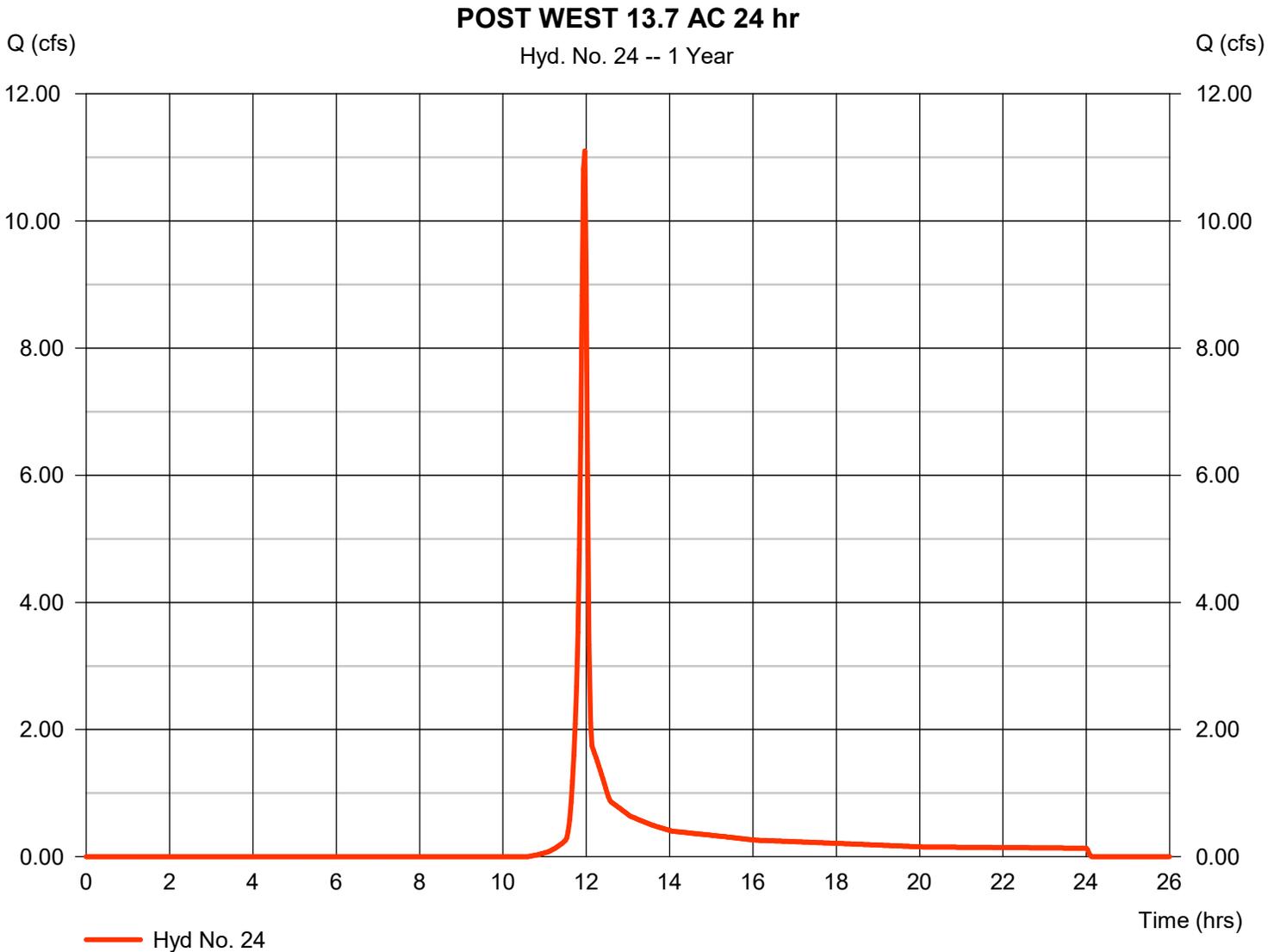
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Wednesday, 01 / 21 / 2026

## Hyd. No. 24

POST WEST 13.7 AC 24 hr

Hydrograph type	= SCS Runoff	Peak discharge	= 11.10 cfs
Storm frequency	= 1 yrs	Time to peak	= 11.97 hrs
Time interval	= 2 min	Hyd. volume	= 22,208 cuft
Drainage area	= 13.700 ac	Curve number	= 87.7
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 1.37 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



# Hydrograph Report

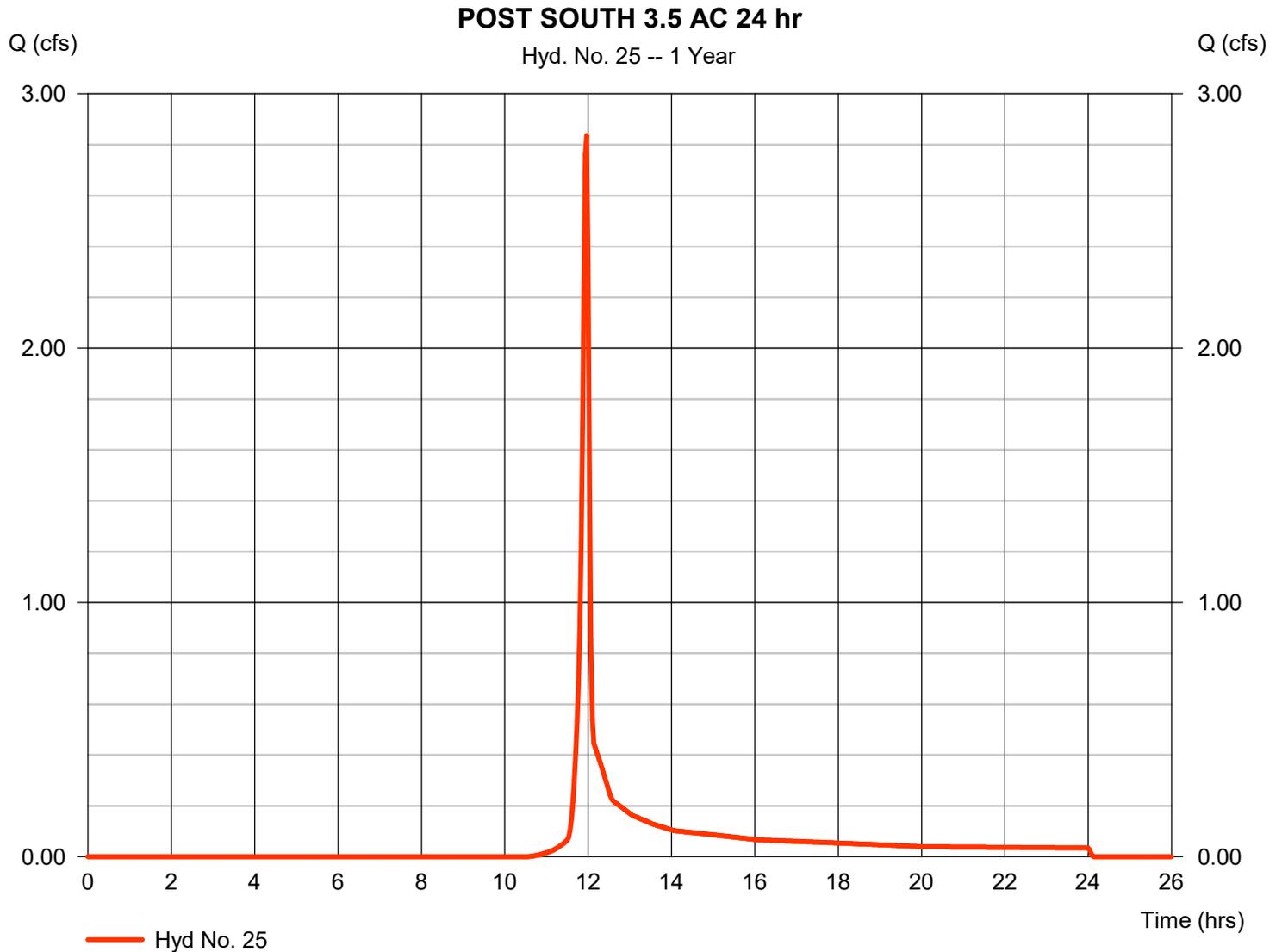
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Wednesday, 01 / 21 / 2026

## Hyd. No. 25

POST SOUTH 3.5 AC 24 hr

Hydrograph type	= SCS Runoff	Peak discharge	= 2.836 cfs
Storm frequency	= 1 yrs	Time to peak	= 11.97 hrs
Time interval	= 2 min	Hyd. volume	= 5,673 cuft
Drainage area	= 3.500 ac	Curve number	= 87.7
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 1.37 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



# Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2026

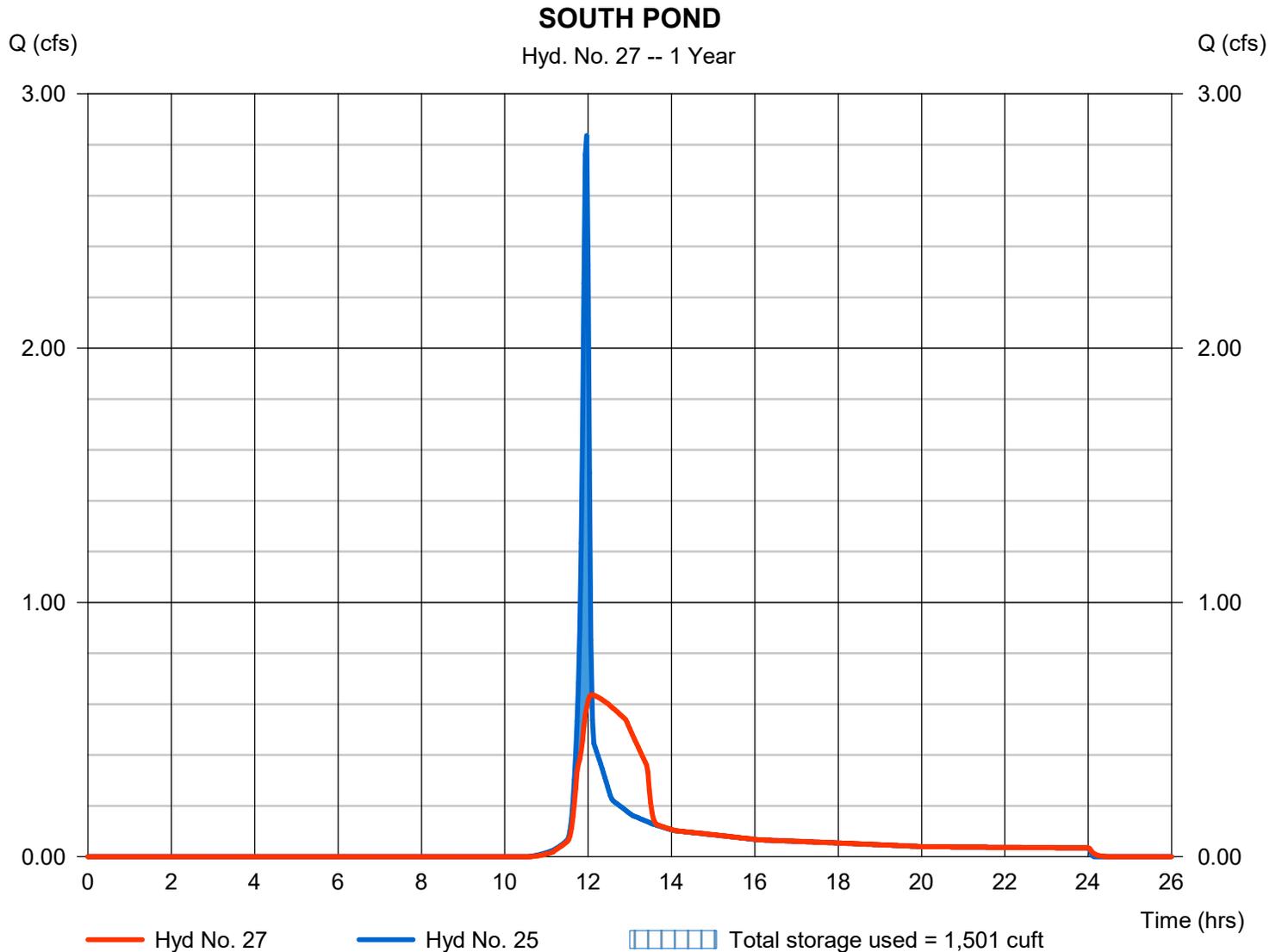
Wednesday, 01 / 21 / 2026

## Hyd. No. 27

### SOUTH POND

Hydrograph type	= Reservoir	Peak discharge	= 0.637 cfs
Storm frequency	= 1 yrs	Time to peak	= 12.10 hrs
Time interval	= 2 min	Hyd. volume	= 5,673 cuft
Inflow hyd. No.	= 25 - POST SOUTH 3.5 AC 24	Max. Elevation	= 1016.70 ft
Reservoir name	= SOUTH	Max. Storage	= 1,501 cuft

Storage Indication method used.



# Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2026

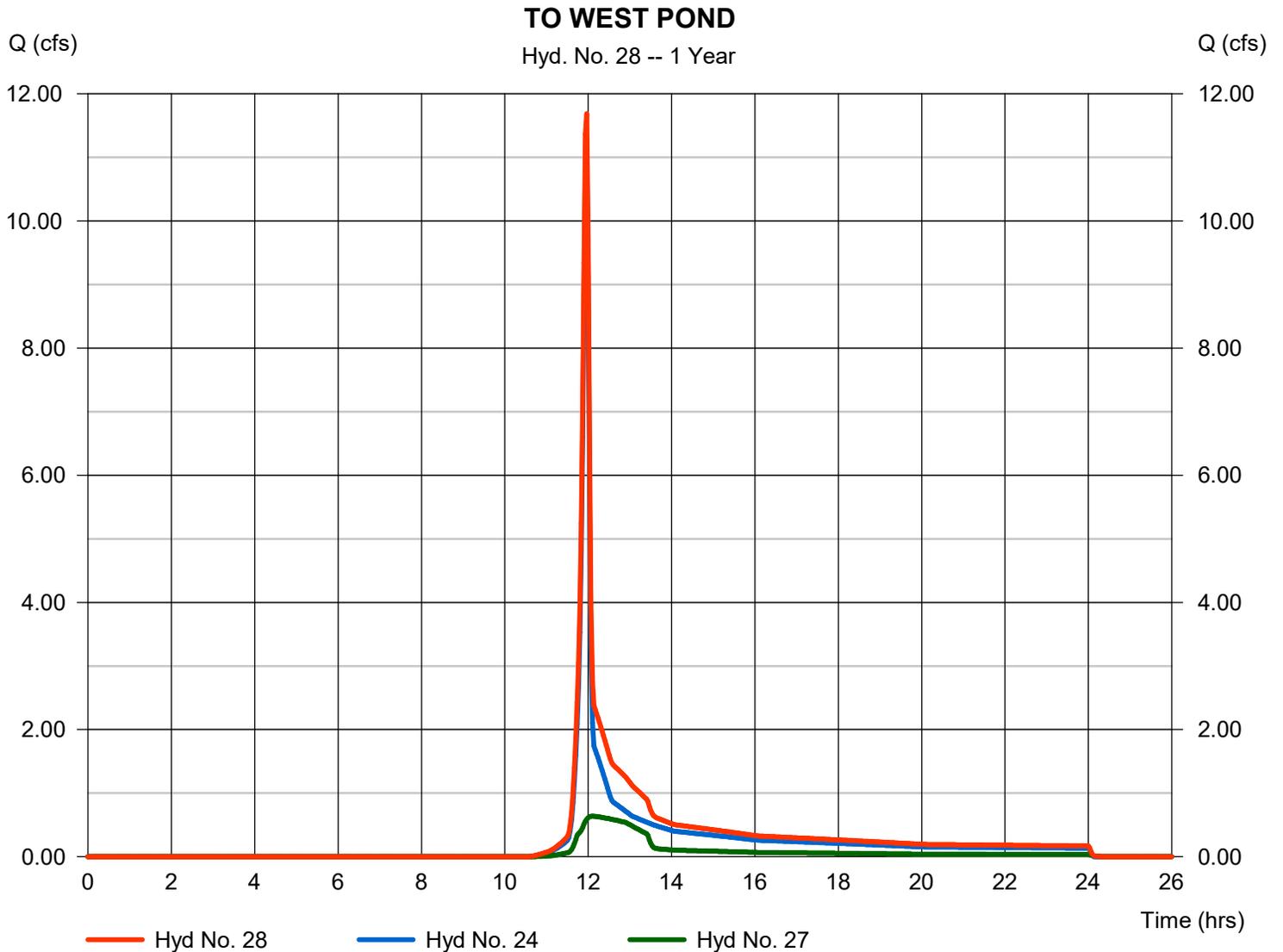
Wednesday, 01 / 21 / 2026

## Hyd. No. 28

TO WEST POND

Hydrograph type = Combine  
Storm frequency = 1 yrs  
Time interval = 2 min  
Inflow hyds. = 24, 27

Peak discharge = 11.69 cfs  
Time to peak = 11.97 hrs  
Hyd. volume = 27,881 cuft  
Contrib. drain. area = 13.700 ac



# Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2026

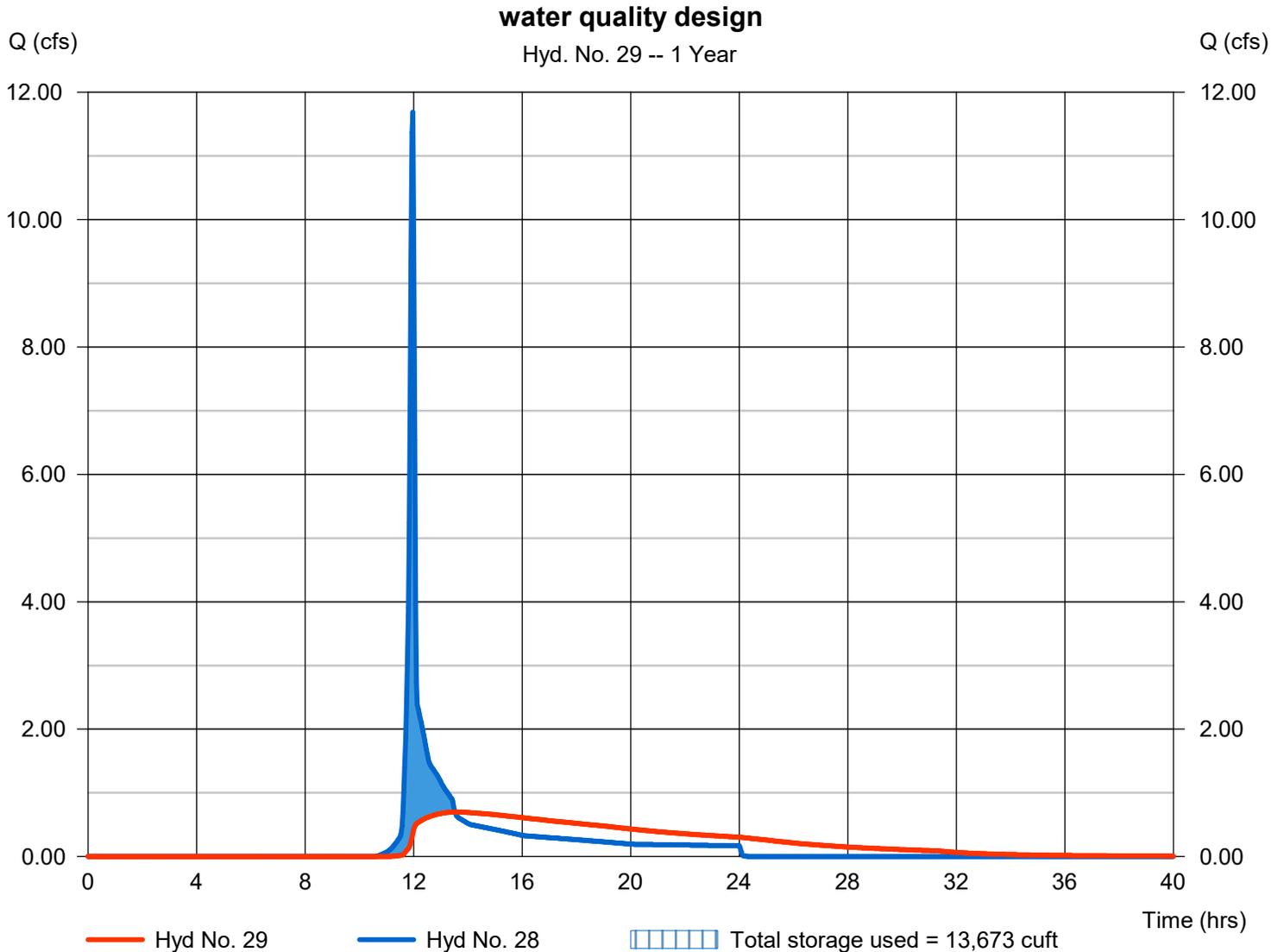
Wednesday, 01 / 21 / 2026

## Hyd. No. 29

water quality design

Hydrograph type	= Reservoir	Peak discharge	= 0.701 cfs
Storm frequency	= 1 yrs	Time to peak	= 13.53 hrs
Time interval	= 2 min	Hyd. volume	= 27,840 cuft
Inflow hyd. No.	= 28 - TO WEST POND	Max. Elevation	= 999.83 ft
Reservoir name	= WEST POND retention	Max. Storage	= 13,673 cuft

Storage Indication method used.



# Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2026

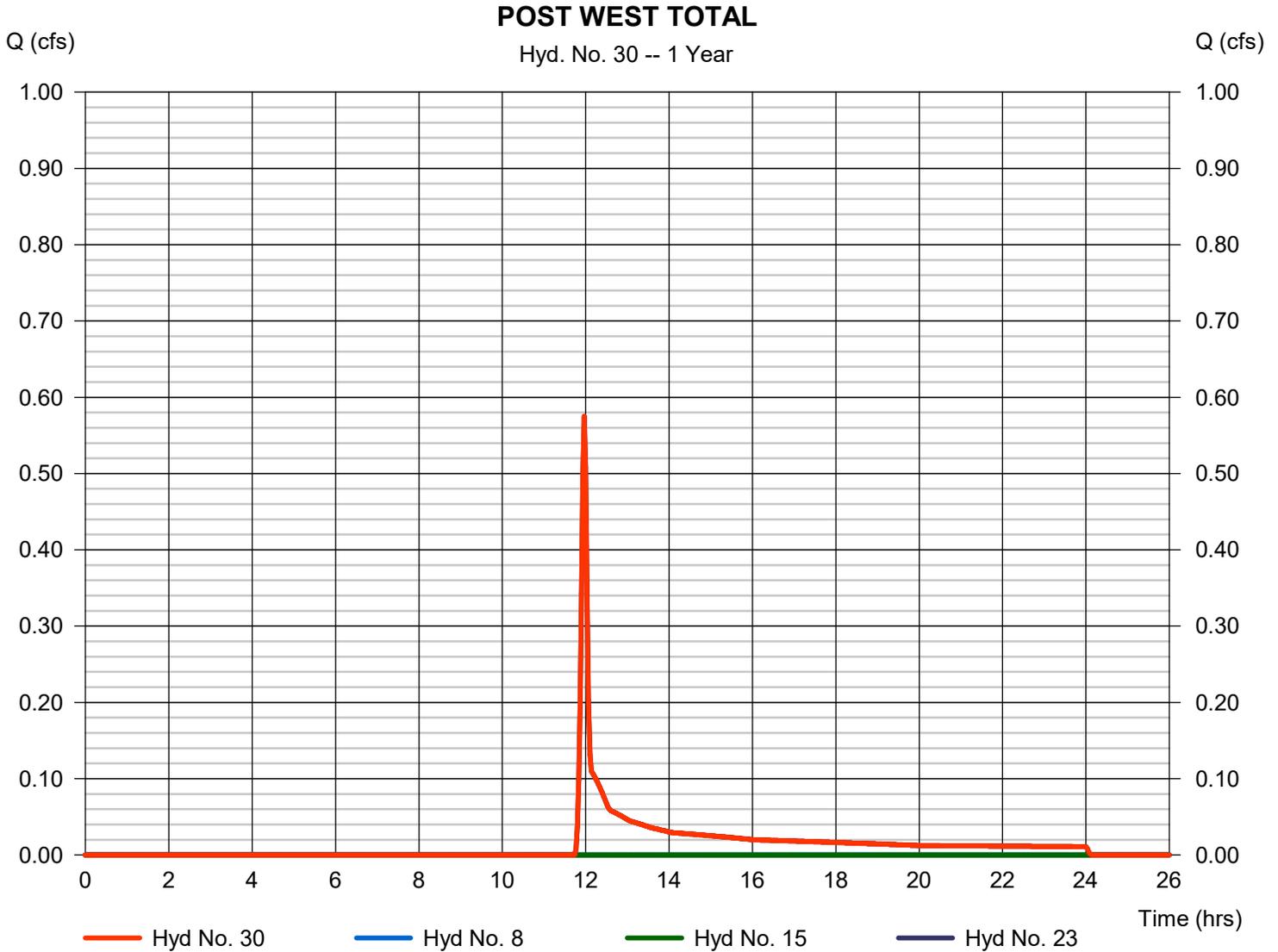
Wednesday, 01 / 21 / 2026

## Hyd. No. 30

### POST WEST TOTAL

Hydrograph type = Combine  
Storm frequency = 1 yrs  
Time interval = 2 min  
Inflow hyds. = 8, 15, 23

Peak discharge = 0.575 cfs  
Time to peak = 11.97 hrs  
Hyd. volume = 1,299 cuft  
Contrib. drain. area = 3.400 ac



# Hydrograph Report

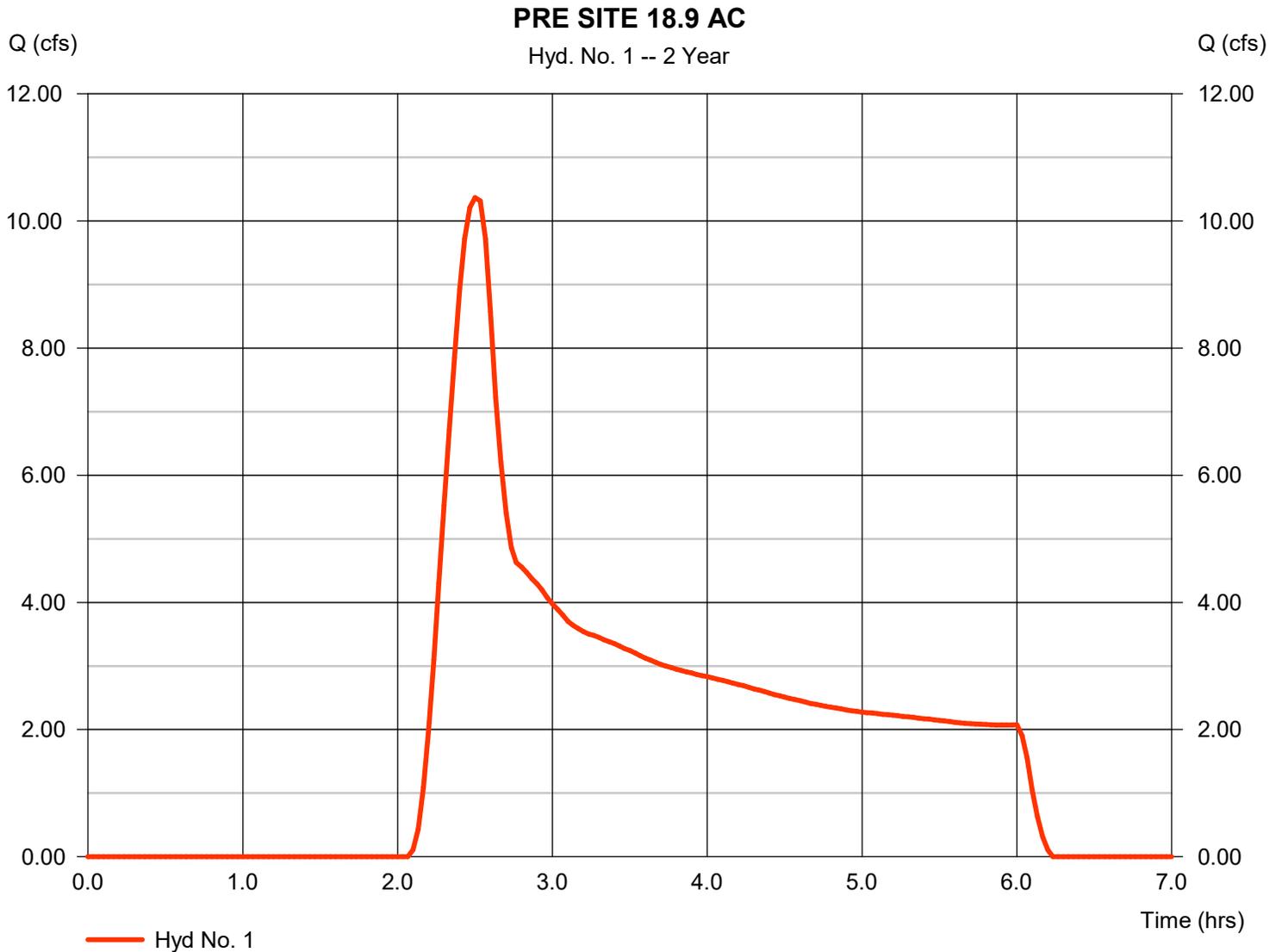
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Wednesday, 01 / 21 / 2026

## Hyd. No. 1

PRE SITE 18.9 AC

Hydrograph type	= SCS Runoff	Peak discharge	= 10.37 cfs
Storm frequency	= 2 yrs	Time to peak	= 2.50 hrs
Time interval	= 2 min	Hyd. volume	= 48,027 cuft
Drainage area	= 18.900 ac	Curve number	= 74
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 9.00 min
Total precip.	= 2.66 in	Distribution	= SCS 6-Hr
Storm duration	= 6.00 hrs	Shape factor	= 484



# Hydrograph Report

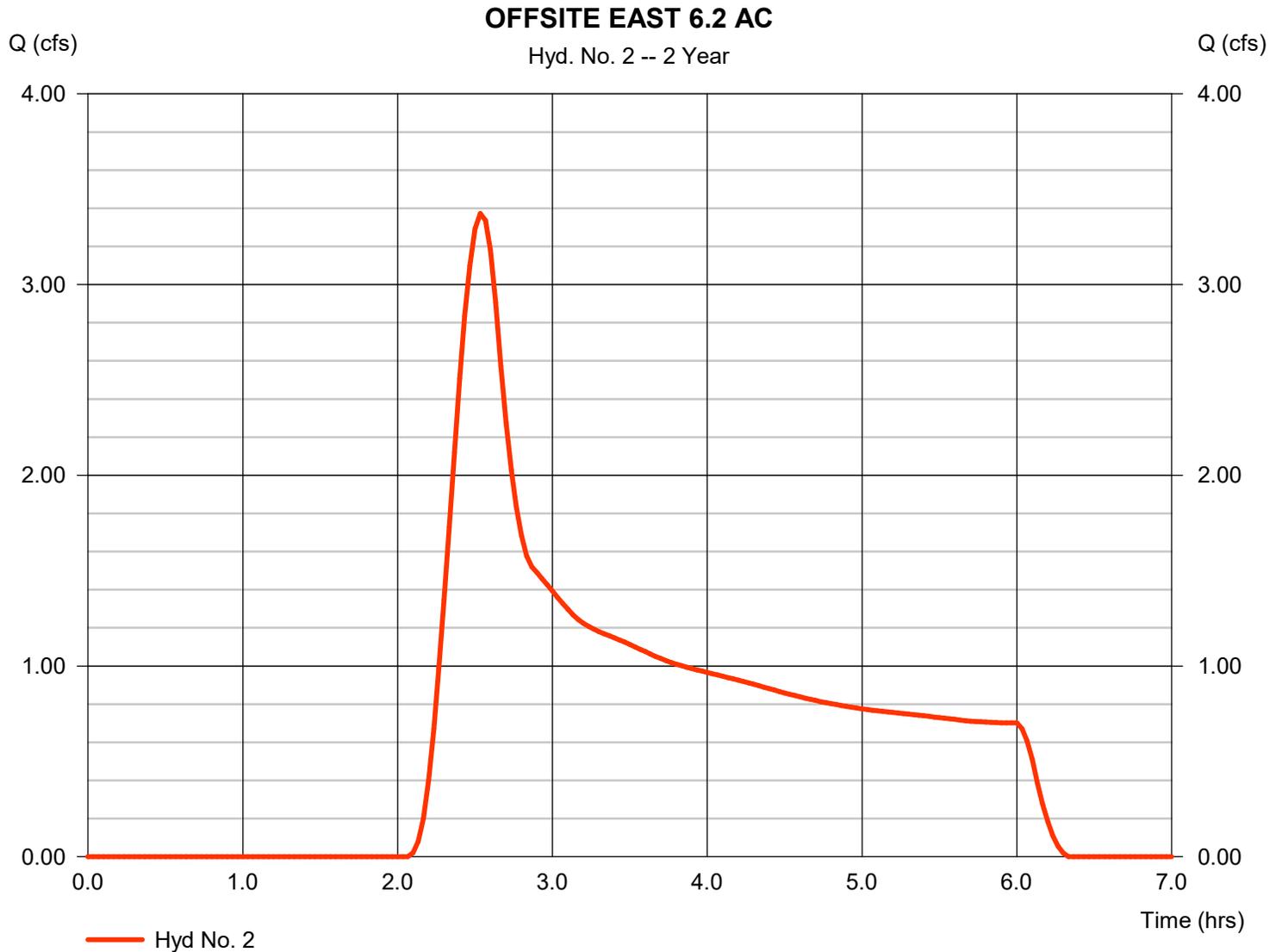
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2026

Wednesday, 01 / 21 / 2026

## Hyd. No. 2

### OFFSITE EAST 6.2 AC

Hydrograph type	= SCS Runoff	Peak discharge	= 3.373 cfs
Storm frequency	= 2 yrs	Time to peak	= 2.53 hrs
Time interval	= 2 min	Hyd. volume	= 16,247 cuft
Drainage area	= 6.200 ac	Curve number	= 74
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 2.66 in	Distribution	= SCS 6-Hr
Storm duration	= 6.00 hrs	Shape factor	= 484



# Hydrograph Report

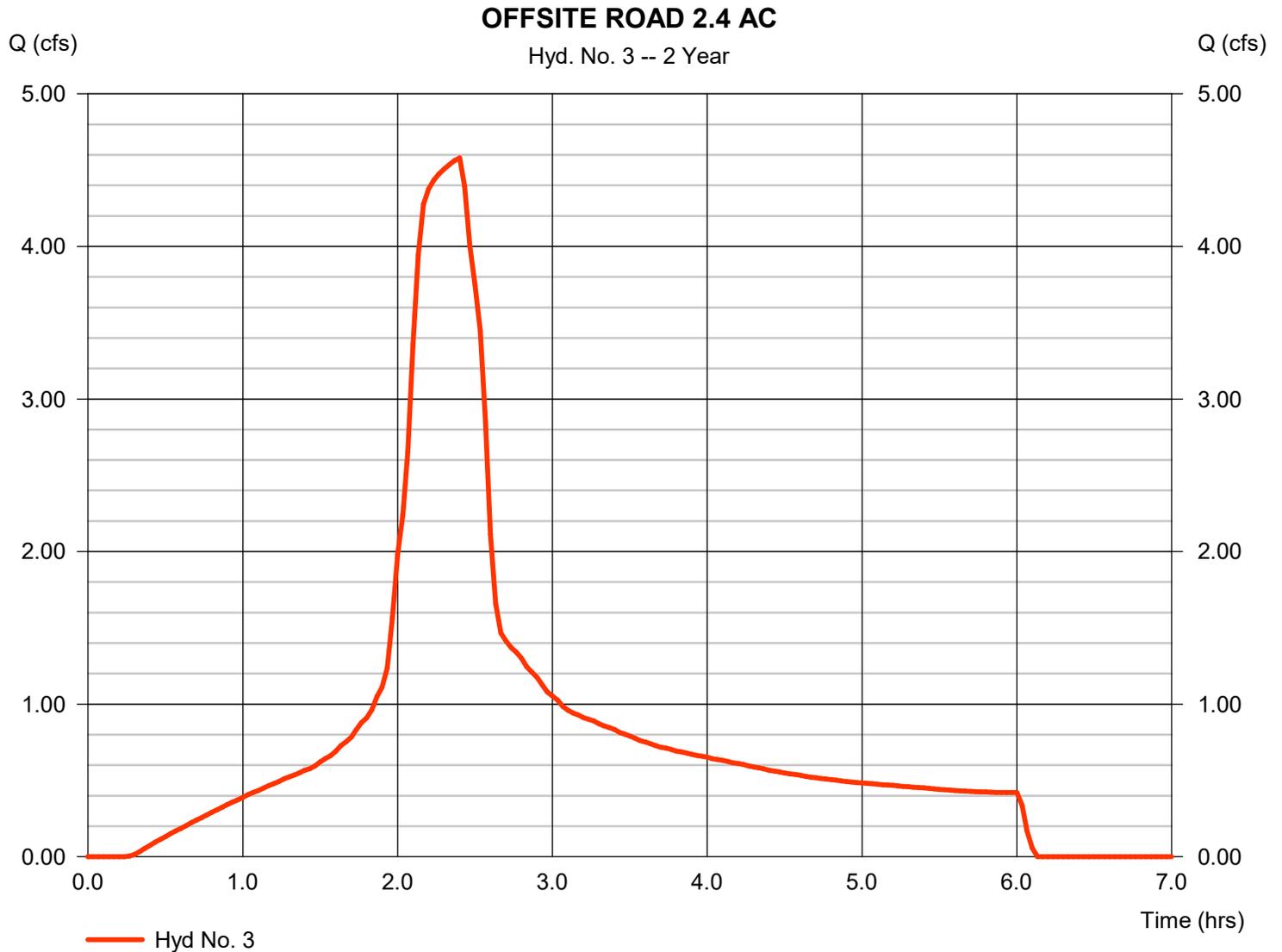
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2026

Wednesday, 01 / 21 / 2026

## Hyd. No. 3

### OFFSITE ROAD 2.4 AC

Hydrograph type	= SCS Runoff	Peak discharge	= 4.581 cfs
Storm frequency	= 2 yrs	Time to peak	= 2.40 hrs
Time interval	= 2 min	Hyd. volume	= 19,846 cuft
Drainage area	= 2.400 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 2.66 in	Distribution	= SCS 6-Hr
Storm duration	= 6.00 hrs	Shape factor	= 484



# Hydrograph Report

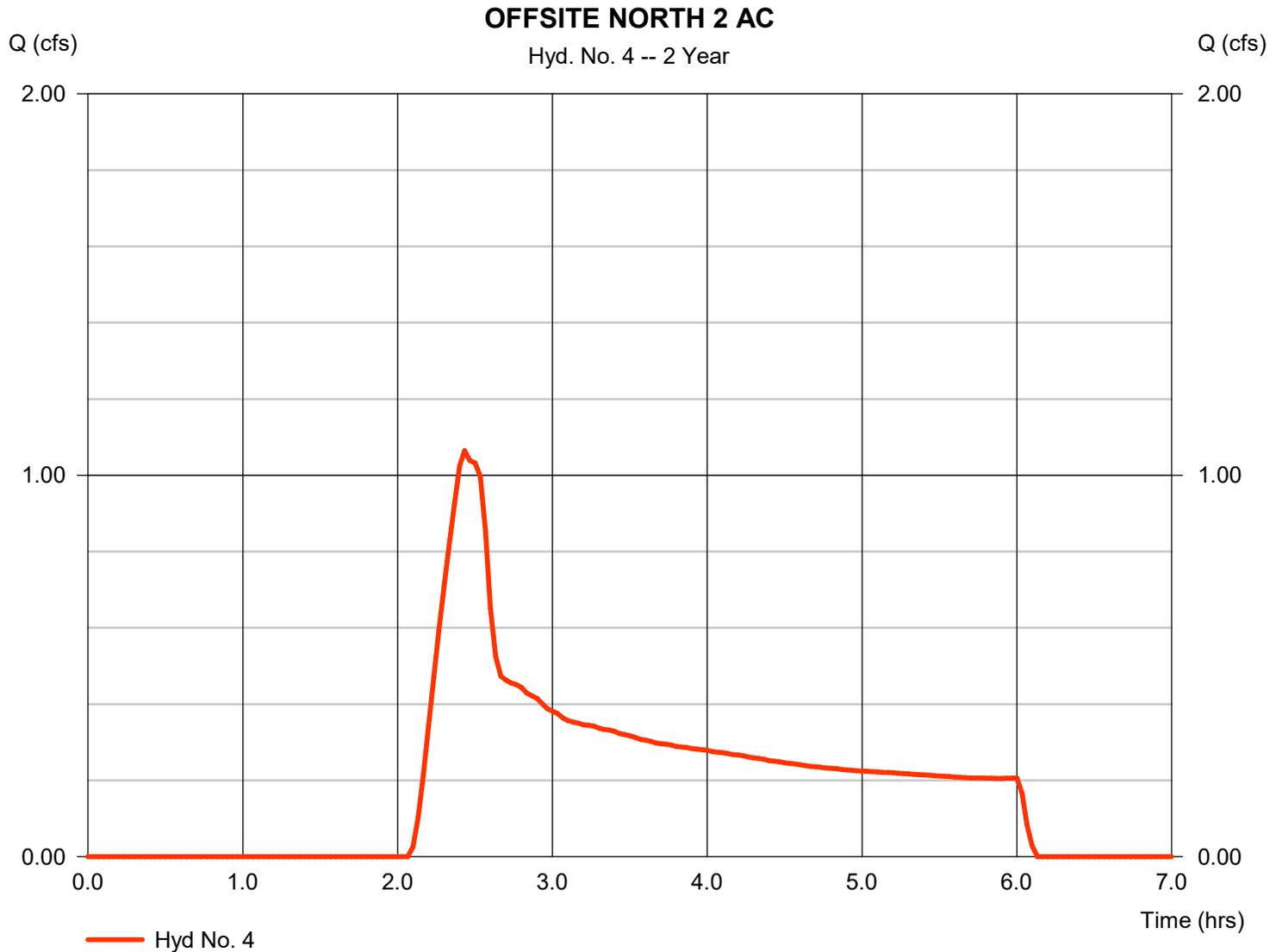
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2026

Wednesday, 01 / 21 / 2026

## Hyd. No. 4

### OFFSITE NORTH 2 AC

Hydrograph type	= SCS Runoff	Peak discharge	= 1.065 cfs
Storm frequency	= 2 yrs	Time to peak	= 2.43 hrs
Time interval	= 2 min	Hyd. volume	= 4,765 cuft
Drainage area	= 2.000 ac	Curve number	= 74
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 2.66 in	Distribution	= SCS 6-Hr
Storm duration	= 6.00 hrs	Shape factor	= 484



# Hydrograph Report

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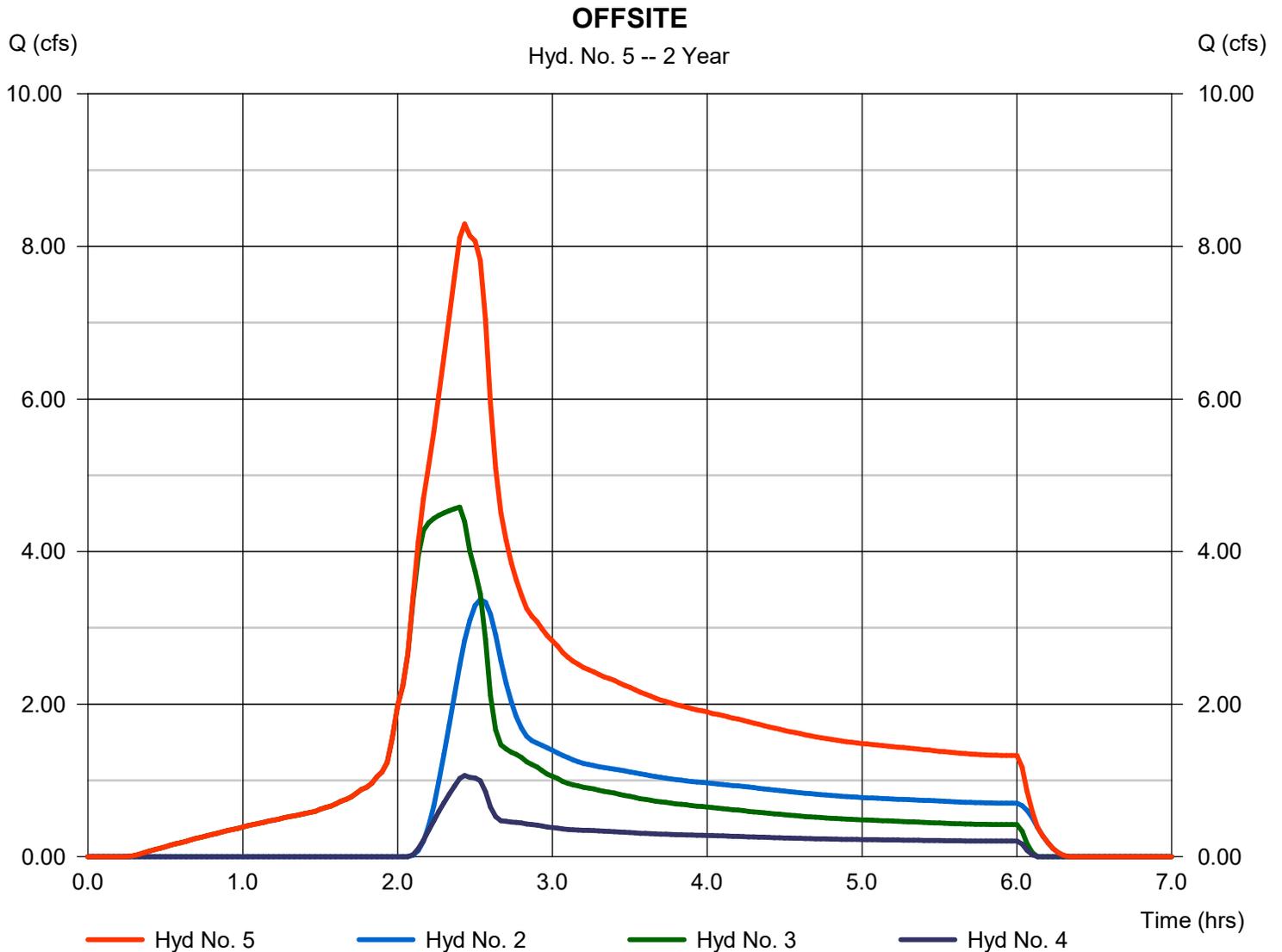
Wednesday, 01 / 21 / 2026

## Hyd. No. 5

OFFSITE

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

Peak discharge = 8.294 cfs  
Time to peak = 2.43 hrs  
Hyd. volume = 40,858 cuft  
Contrib. drain. area = 10.600 ac



# Hydrograph Report

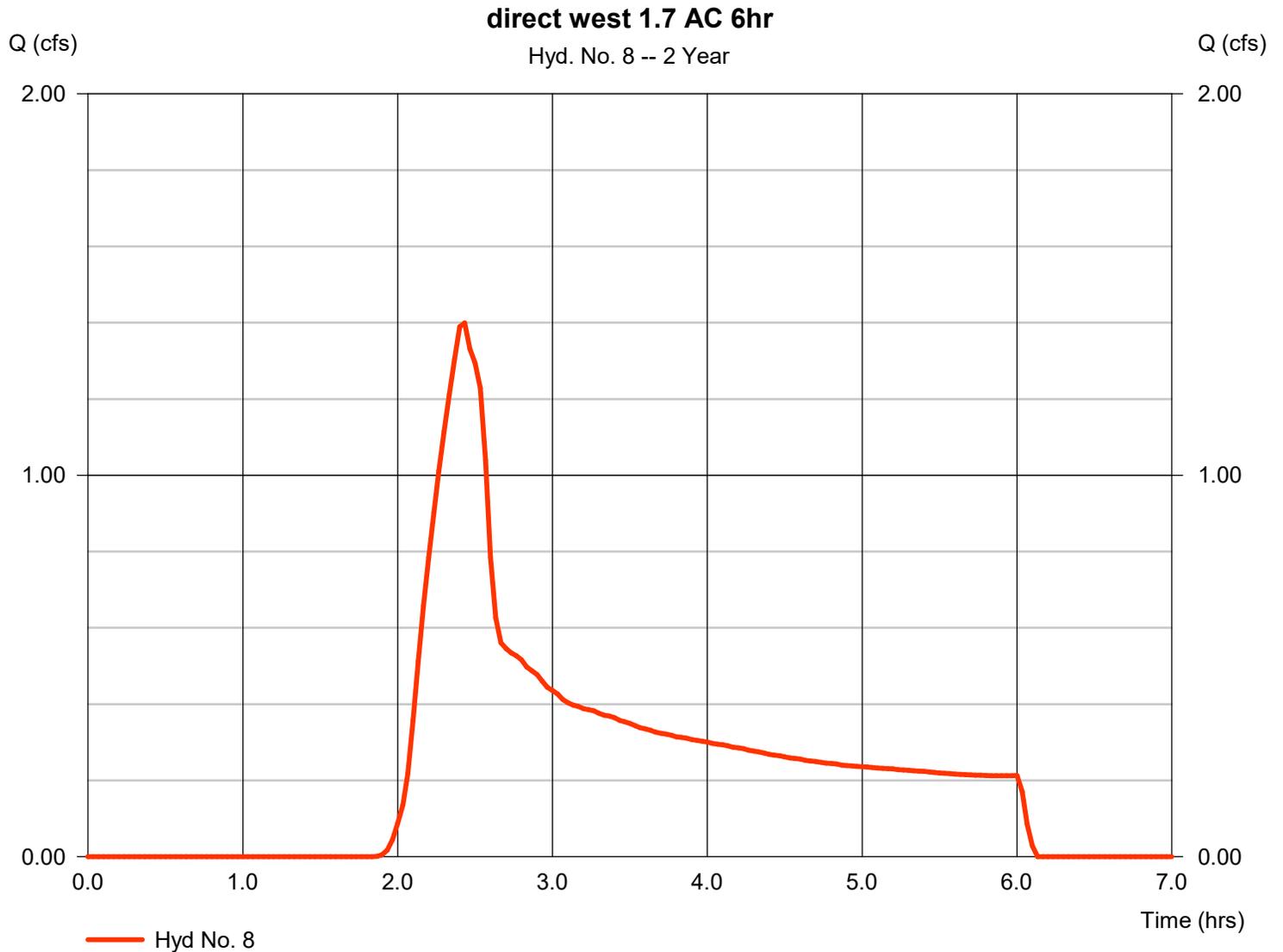
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Wednesday, 01 / 21 / 2026

## Hyd. No. 8

direct west 1.7 AC 6hr

Hydrograph type	= SCS Runoff	Peak discharge	= 1.400 cfs
Storm frequency	= 2 yrs	Time to peak	= 2.43 hrs
Time interval	= 2 min	Hyd. volume	= 5,792 cuft
Drainage area	= 1.700 ac	Curve number	= 80
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 2.66 in	Distribution	= SCS 6-Hr
Storm duration	= 6.00 hrs	Shape factor	= 484



# Hydrograph Report

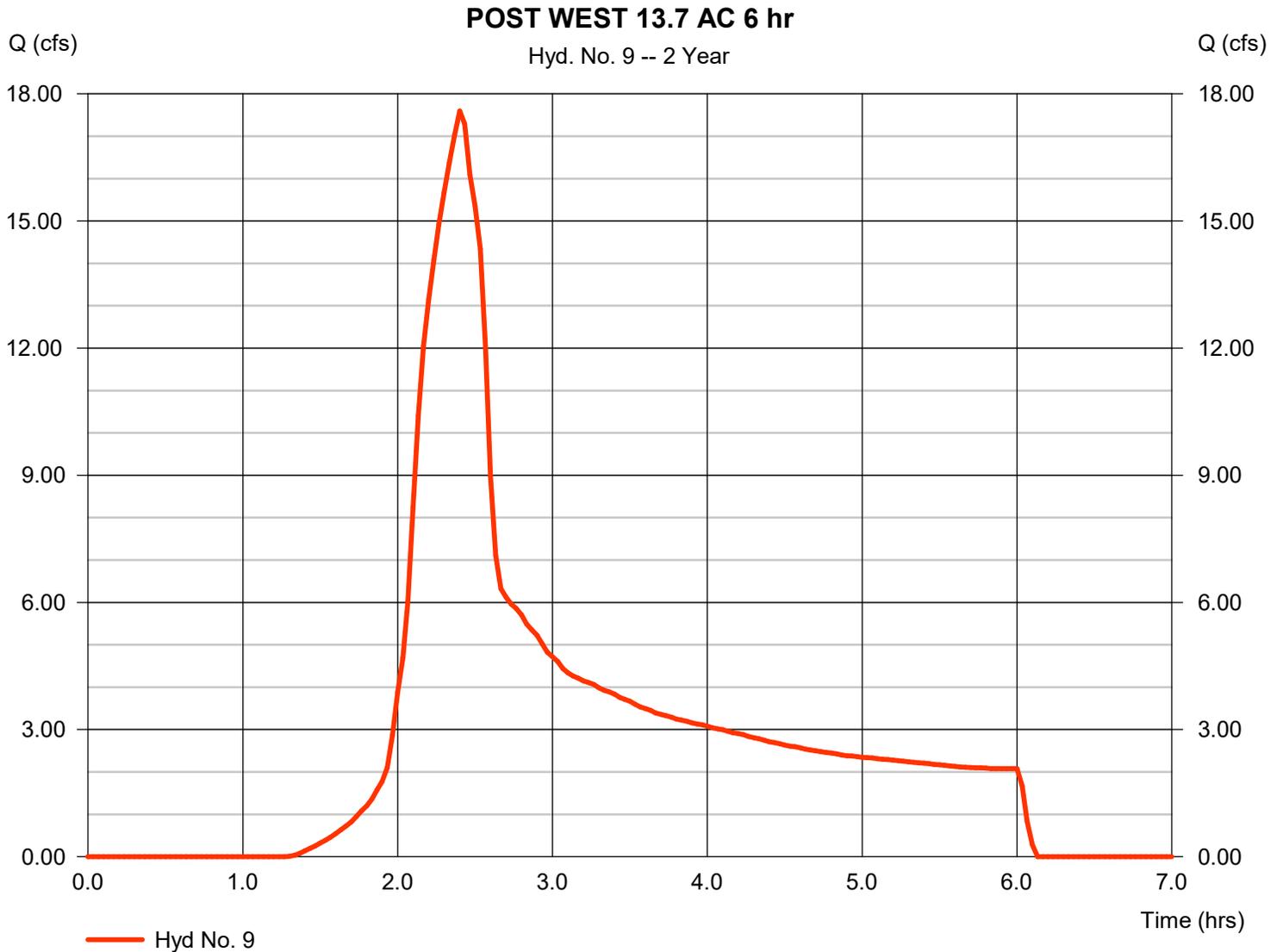
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Wednesday, 01 / 21 / 2026

## Hyd. No. 9

POST WEST 13.7 AC 6 hr

Hydrograph type	= SCS Runoff	Peak discharge	= 17.59 cfs
Storm frequency	= 2 yrs	Time to peak	= 2.40 hrs
Time interval	= 2 min	Hyd. volume	= 69,798 cuft
Drainage area	= 13.700 ac	Curve number	= 87.7
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 2.66 in	Distribution	= SCS 6-Hr
Storm duration	= 6.00 hrs	Shape factor	= 484



# Hydrograph Report

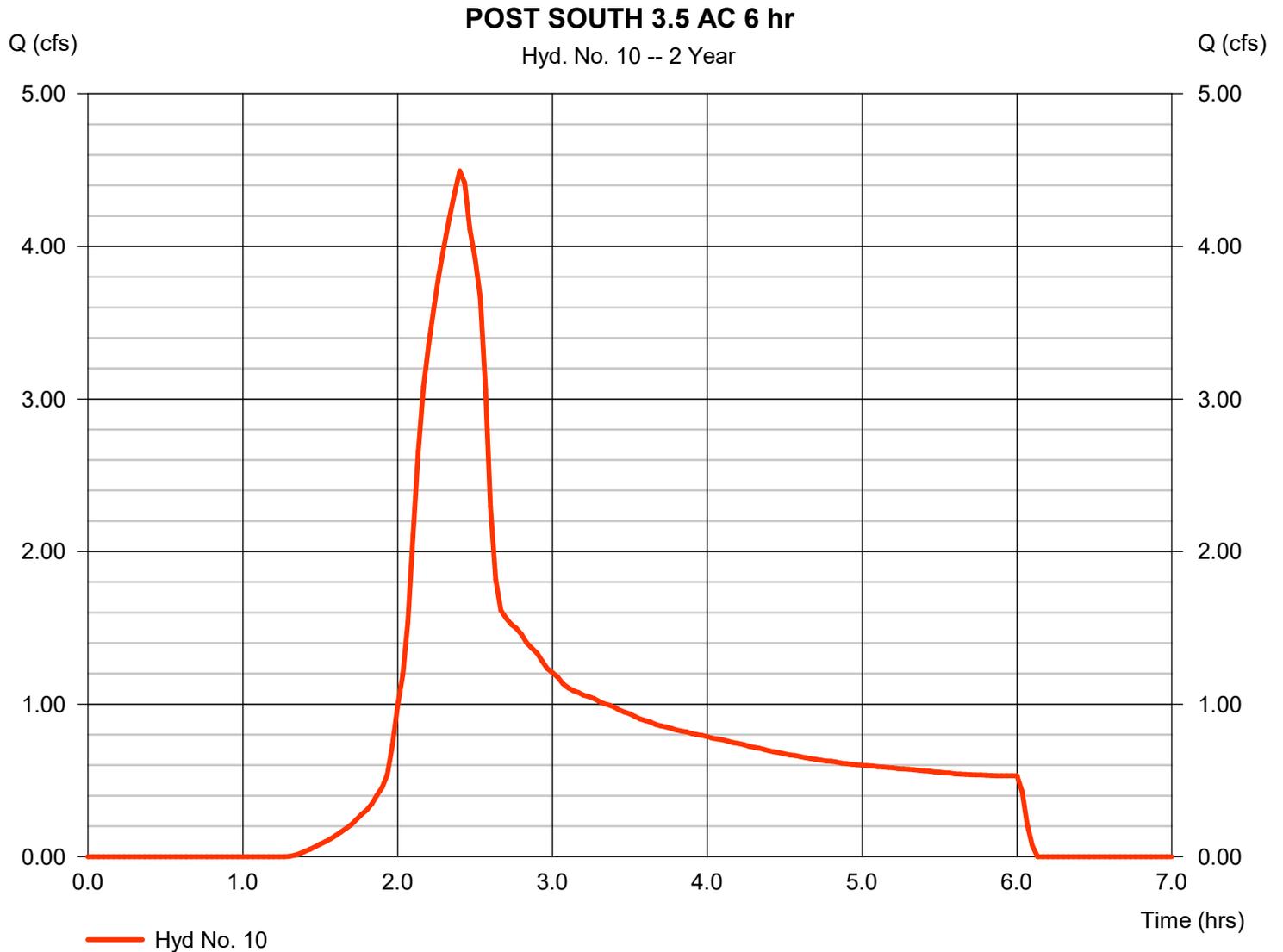
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Wednesday, 01 / 21 / 2026

## Hyd. No. 10

POST SOUTH 3.5 AC 6 hr

Hydrograph type	= SCS Runoff	Peak discharge	= 4.495 cfs
Storm frequency	= 2 yrs	Time to peak	= 2.40 hrs
Time interval	= 2 min	Hyd. volume	= 17,832 cuft
Drainage area	= 3.500 ac	Curve number	= 87.7
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 2.66 in	Distribution	= SCS 6-Hr
Storm duration	= 6.00 hrs	Shape factor	= 484



# Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2026

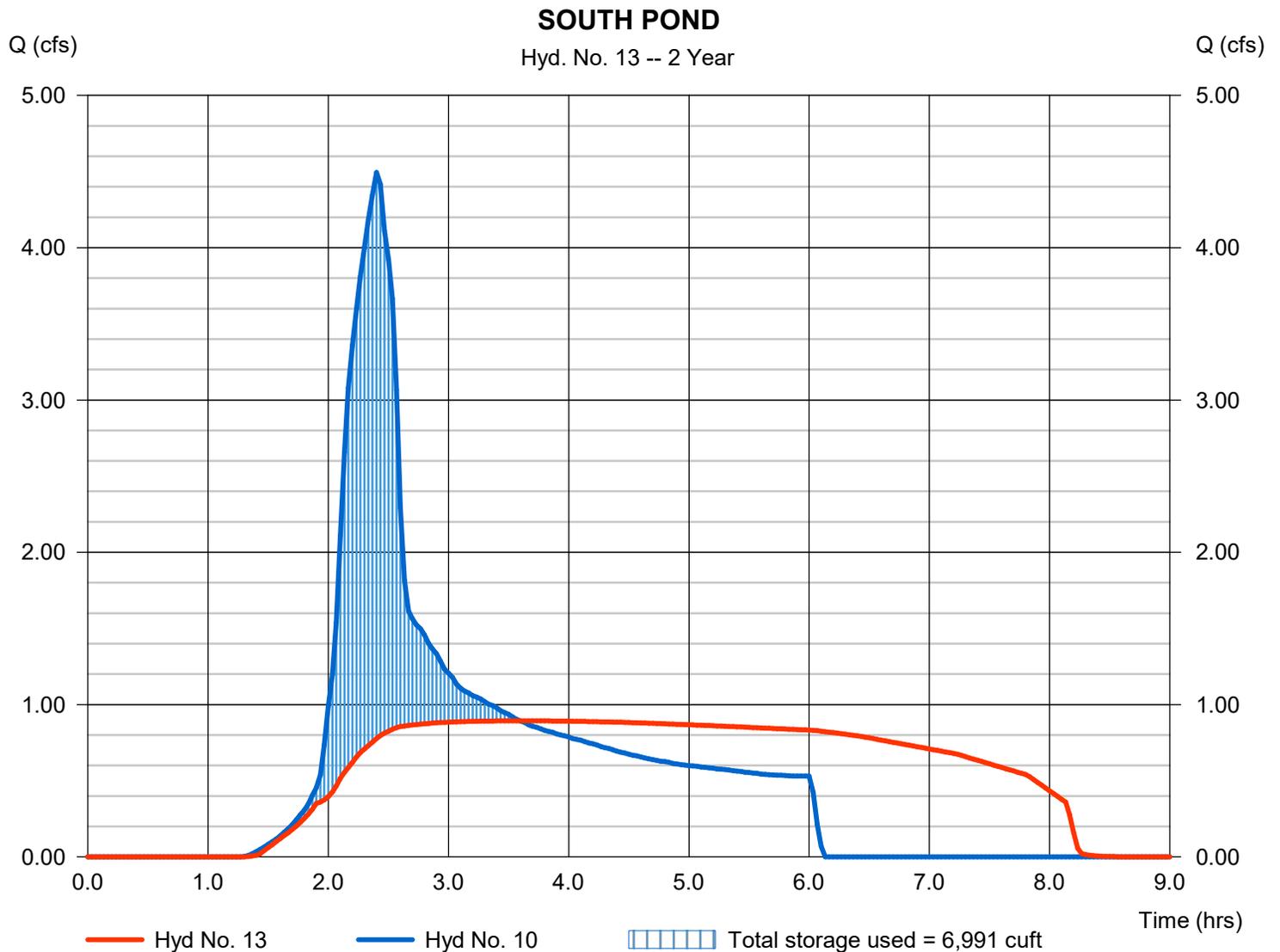
Wednesday, 01 / 21 / 2026

## Hyd. No. 13

### SOUTH POND

Hydrograph type	= Reservoir	Peak discharge	= 0.893 cfs
Storm frequency	= 2 yrs	Time to peak	= 3.60 hrs
Time interval	= 2 min	Hyd. volume	= 17,831 cuft
Inflow hyd. No.	= 10 - POST SOUTH 3.5 AC 6 h	Max. Elevation	= 1019.01 ft
Reservoir name	= SOUTH	Max. Storage	= 6,991 cuft

Storage Indication method used.



# Hydrograph Report

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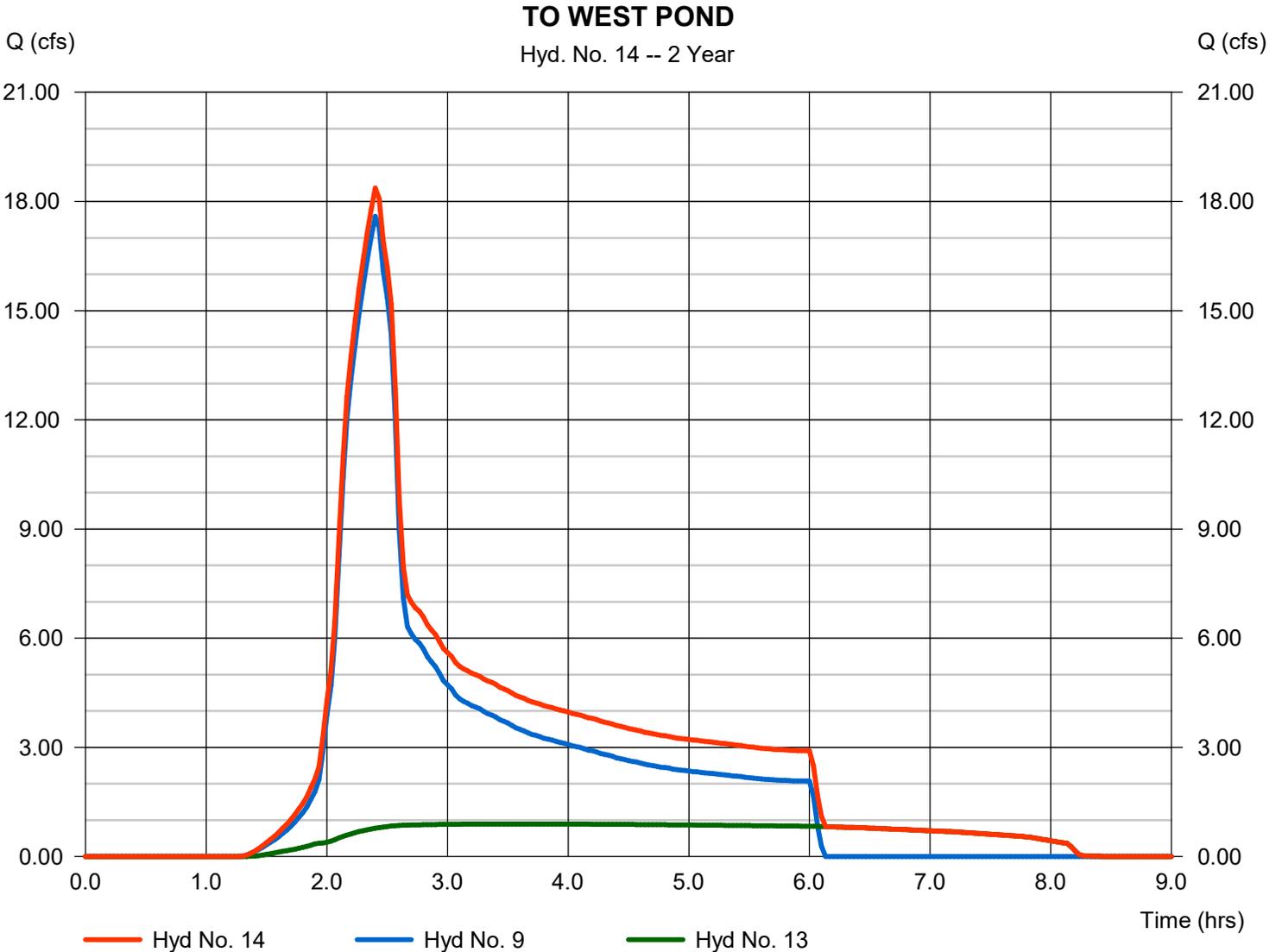
Wednesday, 01 / 21 / 2026

## Hyd. No. 14

TO WEST POND

Hydrograph type = Combine  
Storm frequency = 2 yrs  
Time interval = 2 min  
Inflow hyds. = 9, 13

Peak discharge = 18.37 cfs  
Time to peak = 2.40 hrs  
Hyd. volume = 87,630 cuft  
Contrib. drain. area = 13.700 ac



# Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2026

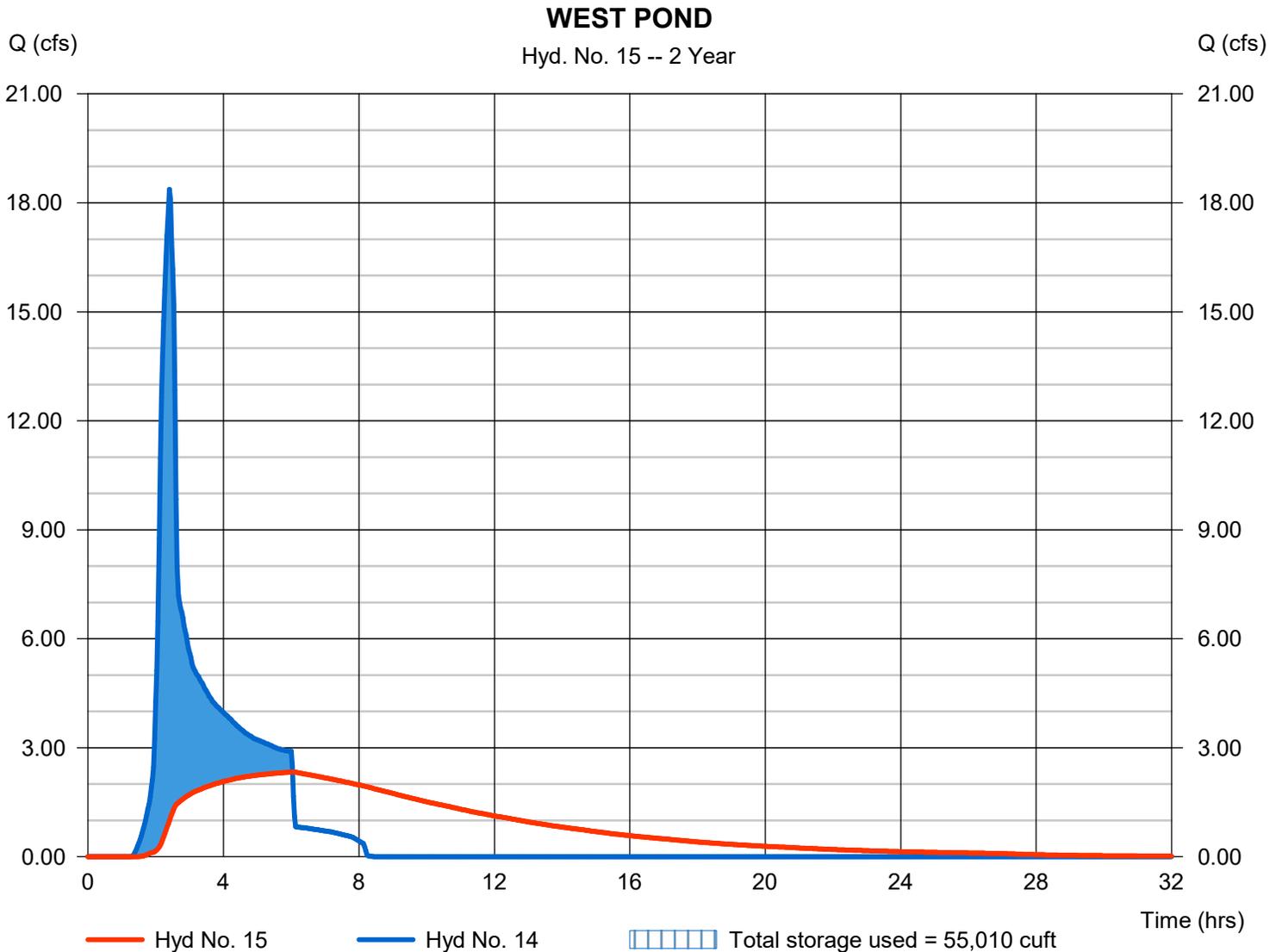
Wednesday, 01 / 21 / 2026

## Hyd. No. 15

### WEST POND

Hydrograph type	= Reservoir	Peak discharge	= 2.333 cfs
Storm frequency	= 2 yrs	Time to peak	= 6.03 hrs
Time interval	= 2 min	Hyd. volume	= 87,589 cuft
Inflow hyd. No.	= 14 - TO WEST POND	Max. Elevation	= 1004.43 ft
Reservoir name	= WEST POND retention	Max. Storage	= 55,010 cuft

Storage Indication method used.



# Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2026

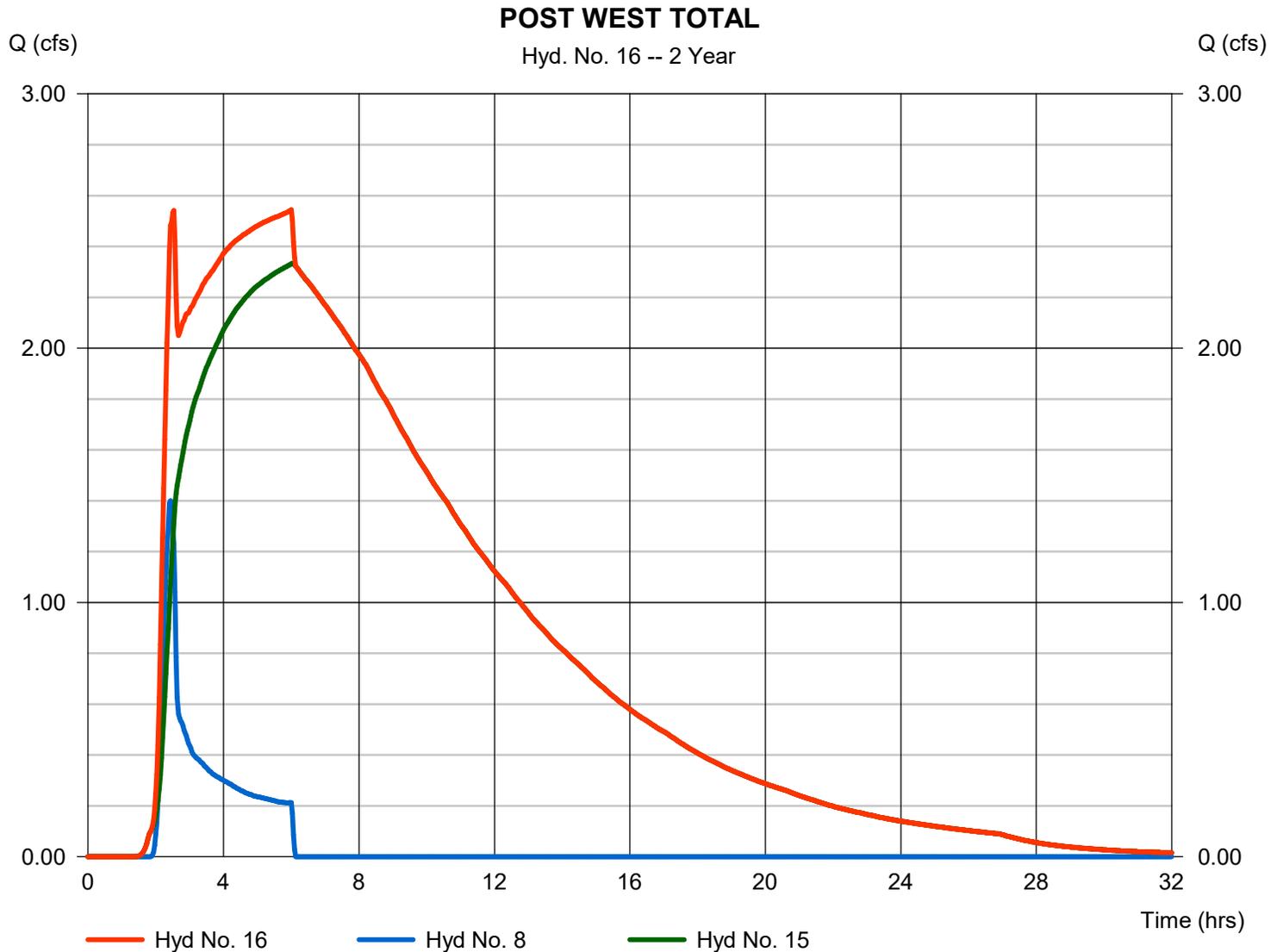
Wednesday, 01 / 21 / 2026

## Hyd. No. 16

### POST WEST TOTAL

Hydrograph type = Combine  
Storm frequency = 2 yrs  
Time interval = 2 min  
Inflow hyds. = 8, 15

Peak discharge = 2.544 cfs  
Time to peak = 6.00 hrs  
Hyd. volume = 93,382 cuft  
Contrib. drain. area = 1.700 ac





# Hydrograph Report

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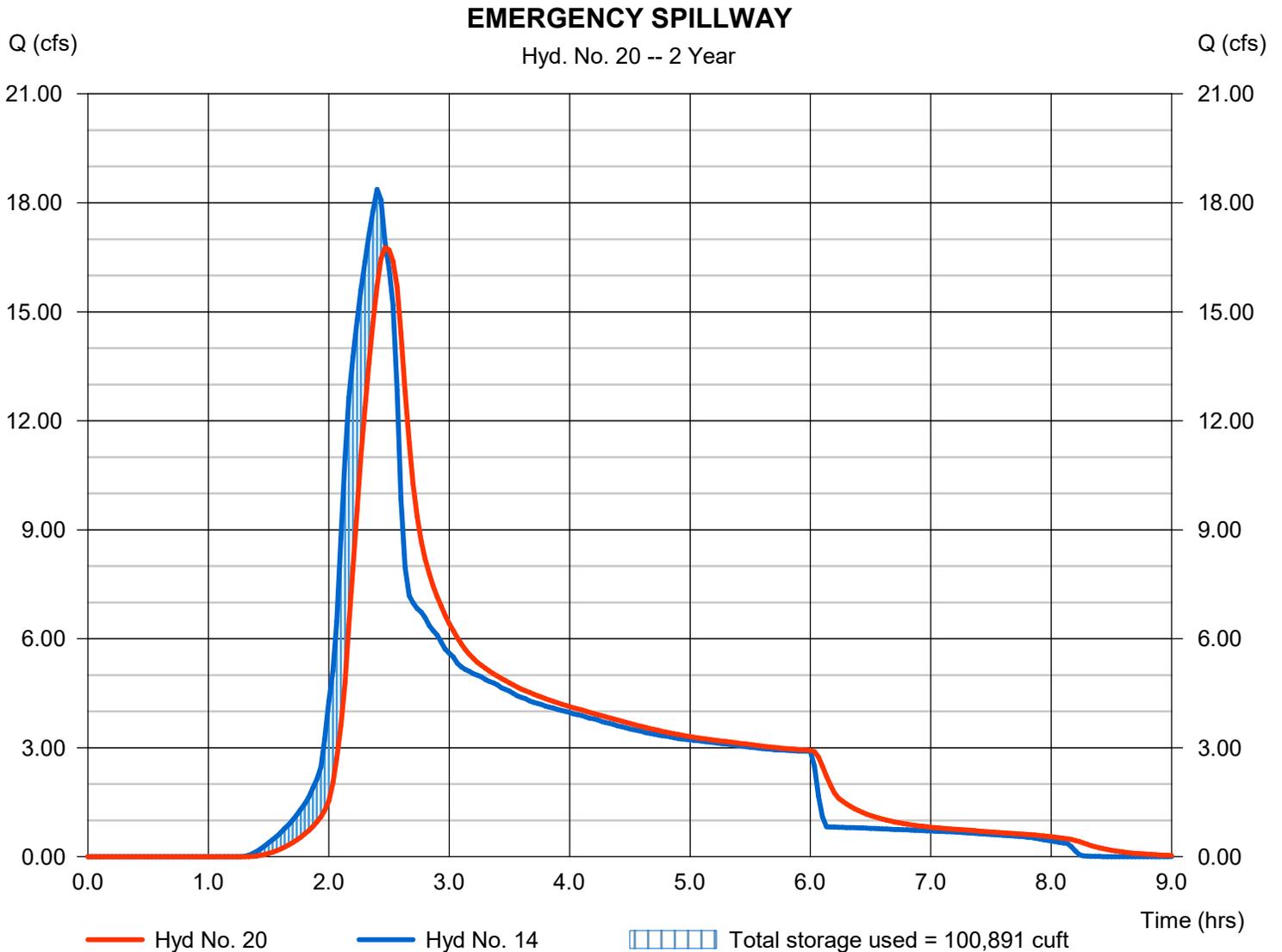
Wednesday, 01 / 21 / 2026

## Hyd. No. 20

### EMERGENCY SPILLWAY

Hydrograph type	= Reservoir	Peak discharge	= 16.77 cfs
Storm frequency	= 2 yrs	Time to peak	= 2.47 hrs
Time interval	= 2 min	Hyd. volume	= 87,629 cuft
Inflow hyd. No.	= 14 - TO WEST POND	Max. Elevation	= 1007.47 ft
Reservoir name	= EMERGENCY SPILLWAY	Max. Storage	= 100,891 cuft

Storage Indication method used. Wet pond routing start elevation = 1007.00 ft.



# Hydrograph Report

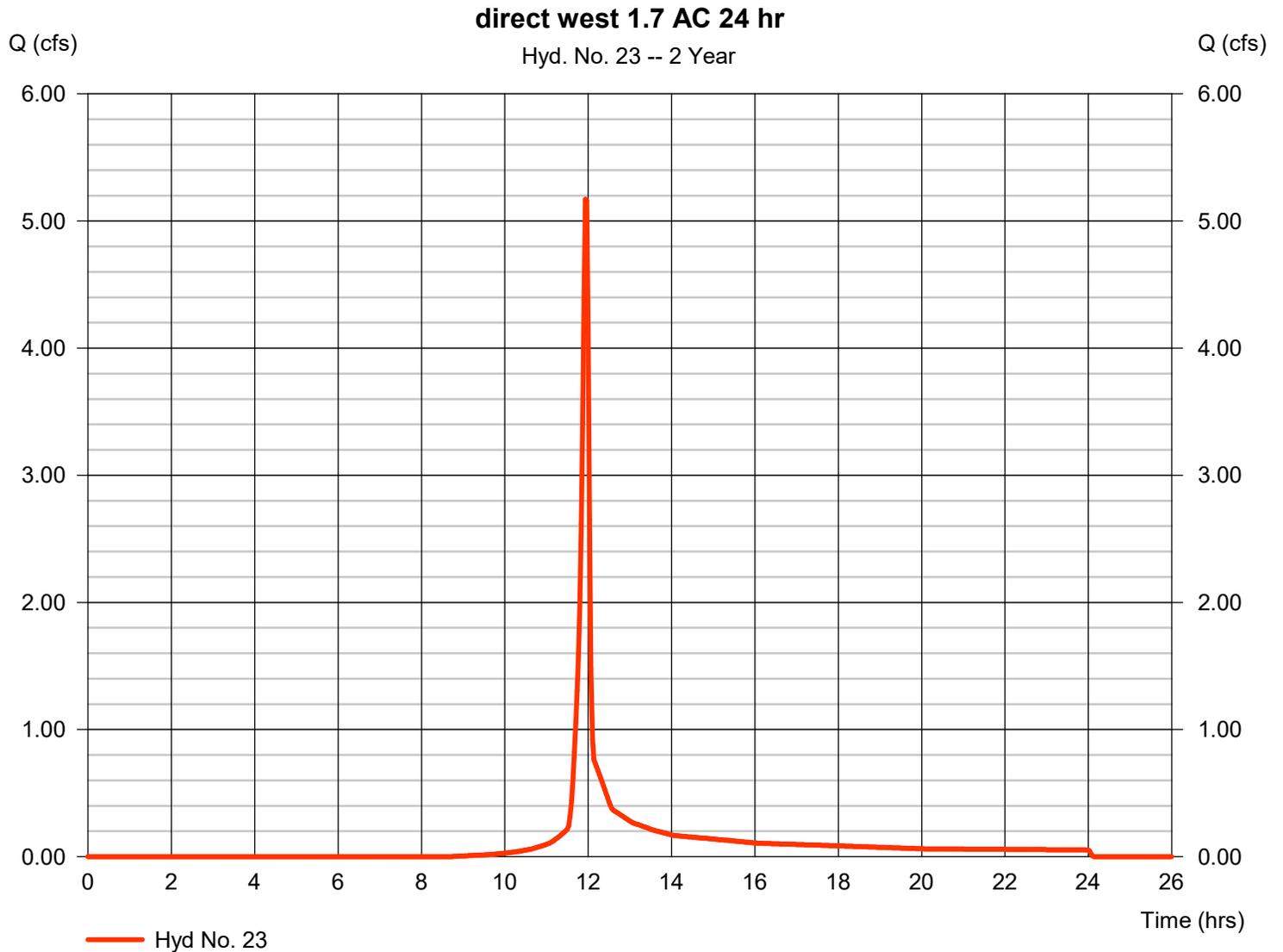
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Wednesday, 01 / 21 / 2026

## Hyd. No. 23

direct west 1.7 AC 24 hr

Hydrograph type	= SCS Runoff	Peak discharge	= 5.171 cfs
Storm frequency	= 2 yrs	Time to peak	= 11.93 hrs
Time interval	= 2 min	Hyd. volume	= 10,440 cuft
Drainage area	= 1.700 ac	Curve number	= 80
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.71 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



# Hydrograph Report

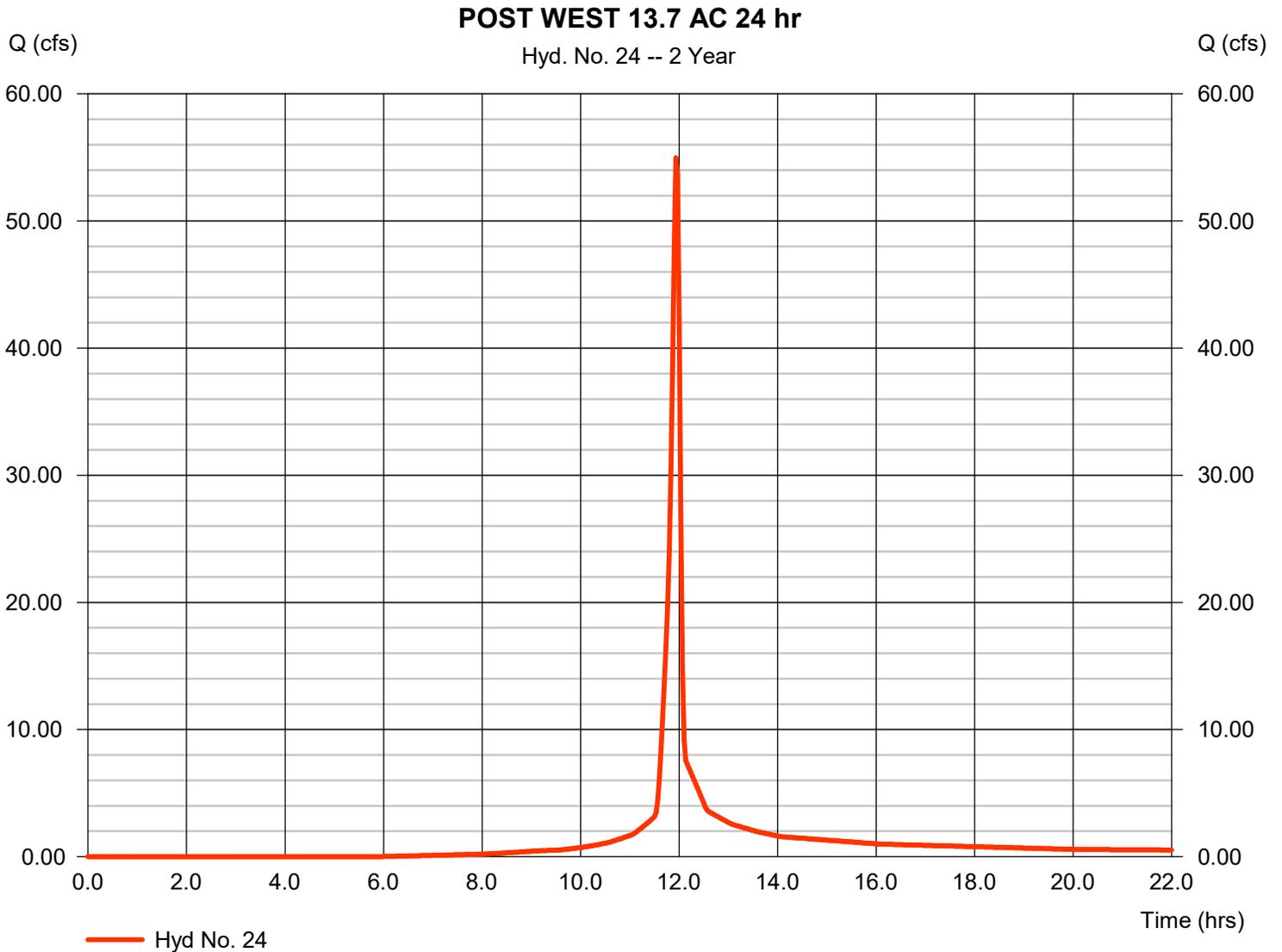
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Wednesday, 01 / 21 / 2026

## Hyd. No. 24

POST WEST 13.7 AC 24 hr

Hydrograph type	= SCS Runoff	Peak discharge	= 54.97 cfs
Storm frequency	= 2 yrs	Time to peak	= 11.93 hrs
Time interval	= 2 min	Hyd. volume	= 113,483 cuft
Drainage area	= 13.700 ac	Curve number	= 87.7
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.71 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



# Hydrograph Report

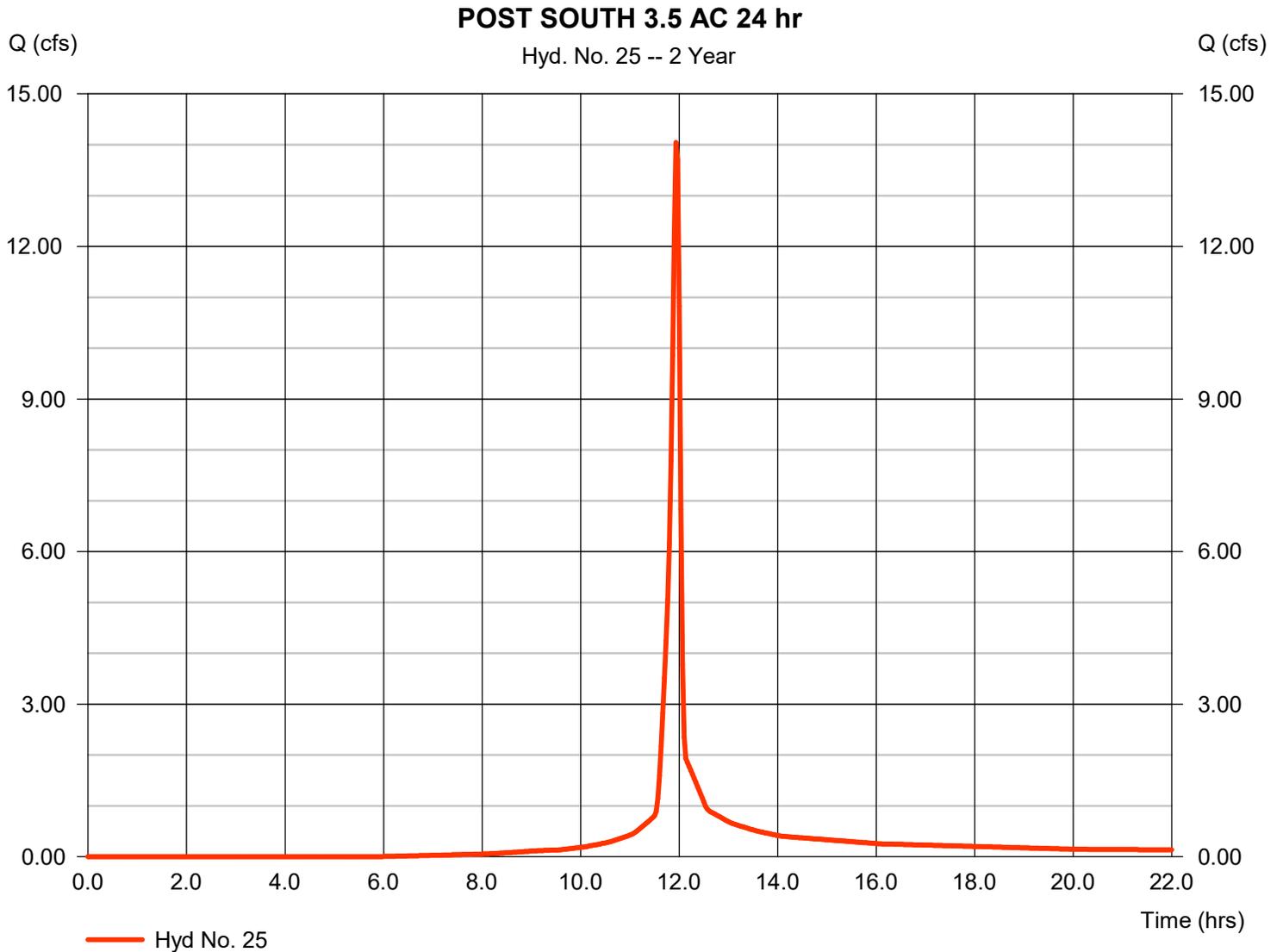
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Wednesday, 01 / 21 / 2026

## Hyd. No. 25

POST SOUTH 3.5 AC 24 hr

Hydrograph type	= SCS Runoff	Peak discharge	= 14.04 cfs
Storm frequency	= 2 yrs	Time to peak	= 11.93 hrs
Time interval	= 2 min	Hyd. volume	= 28,992 cuft
Drainage area	= 3.500 ac	Curve number	= 87.7
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.71 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



# Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2026

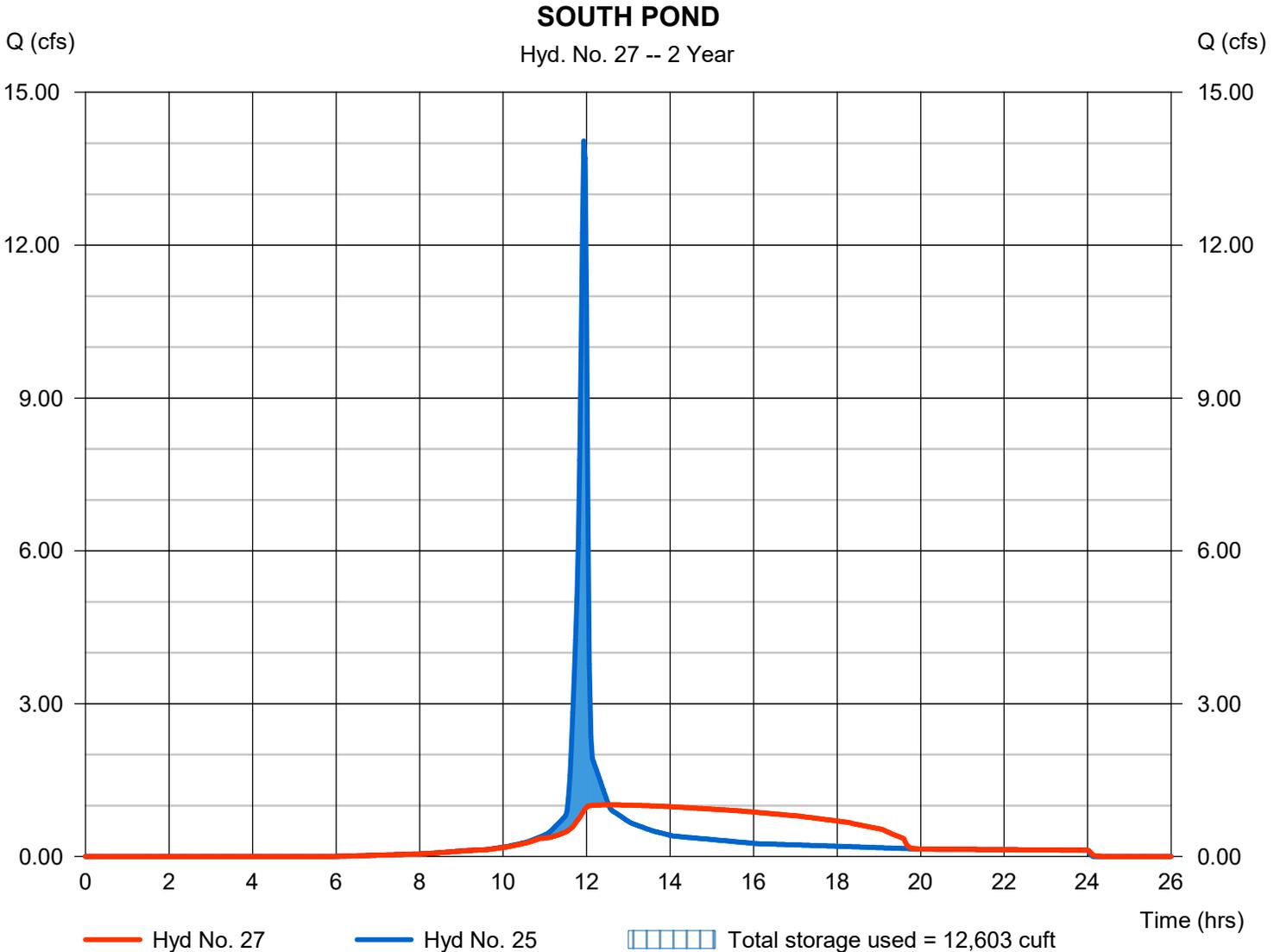
Wednesday, 01 / 21 / 2026

## Hyd. No. 27

### SOUTH POND

Hydrograph type	= Reservoir	Peak discharge	= 1.014 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.53 hrs
Time interval	= 2 min	Hyd. volume	= 28,992 cuft
Inflow hyd. No.	= 25 - POST SOUTH 3.5 AC 24	Max. Elevation	= 1020.35 ft
Reservoir name	= SOUTH	Max. Storage	= 12,603 cuft

Storage Indication method used.



# Hydrograph Report

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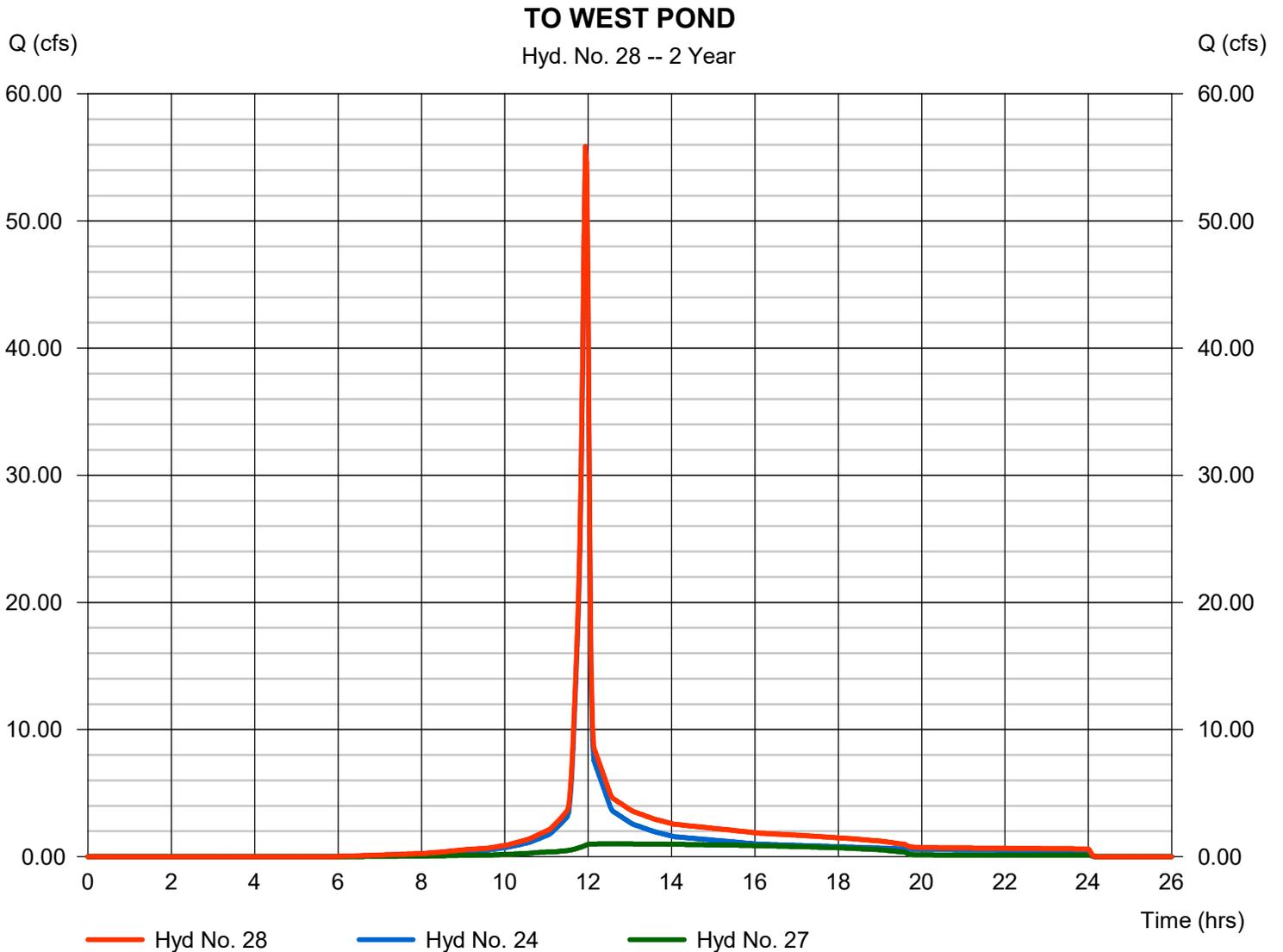
Wednesday, 01 / 21 / 2026

## Hyd. No. 28

TO WEST POND

Hydrograph type = Combine  
 Storm frequency = 2 yrs  
 Time interval = 2 min  
 Inflow hyds. = 24, 27

Peak discharge = 55.87 cfs  
 Time to peak = 11.93 hrs  
 Hyd. volume = 142,475 cuft  
 Contrib. drain. area = 13.700 ac



# Hydrograph Report

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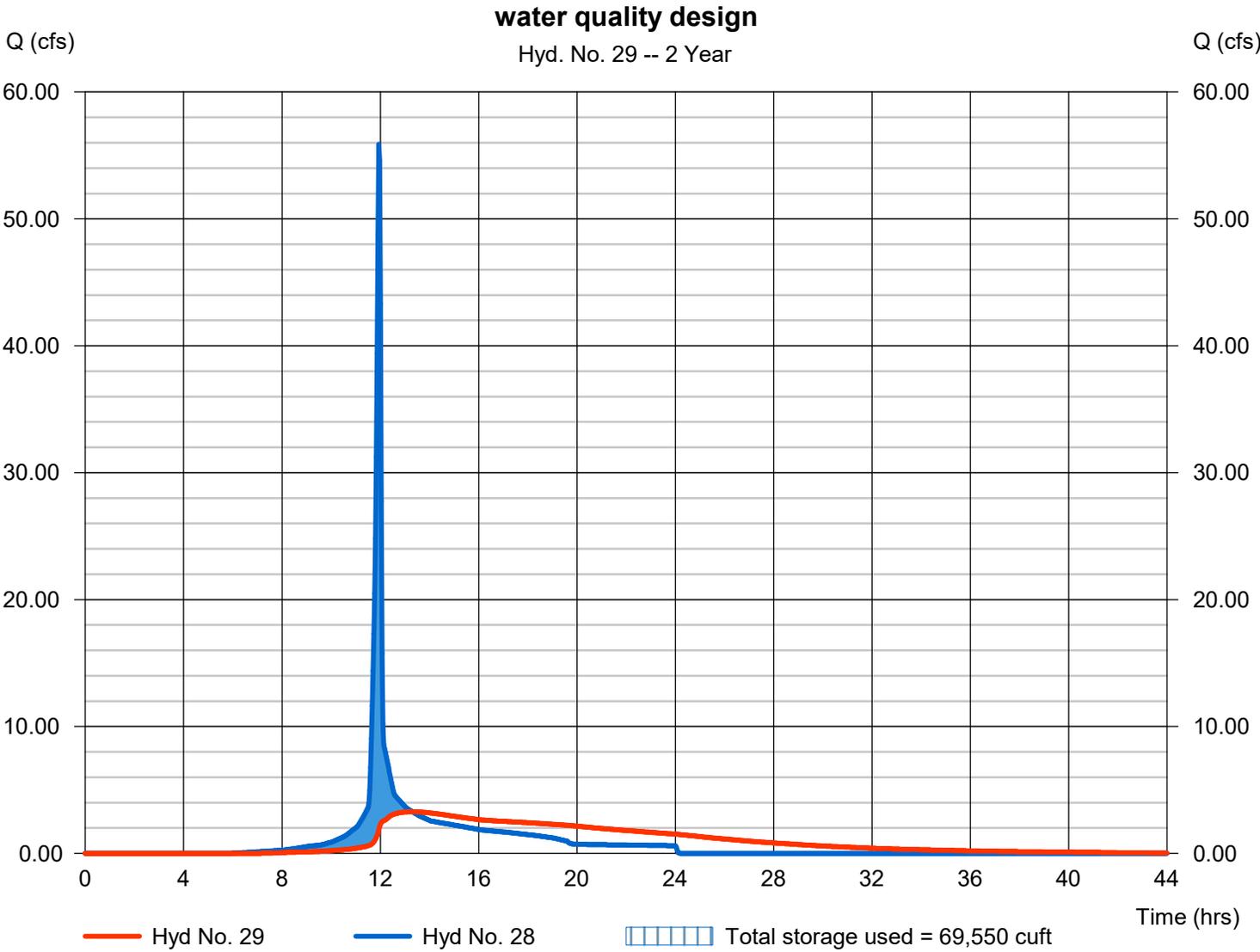
Wednesday, 01 / 21 / 2026

## Hyd. No. 29

water quality design

Hydrograph type	= Reservoir	Peak discharge	= 3.278 cfs
Storm frequency	= 2 yrs	Time to peak	= 13.30 hrs
Time interval	= 2 min	Hyd. volume	= 142,434 cuft
Inflow hyd. No.	= 28 - TO WEST POND	Max. Elevation	= 1005.52 ft
Reservoir name	= WEST POND retention	Max. Storage	= 69,550 cuft

Storage Indication method used.



# Hydrograph Report

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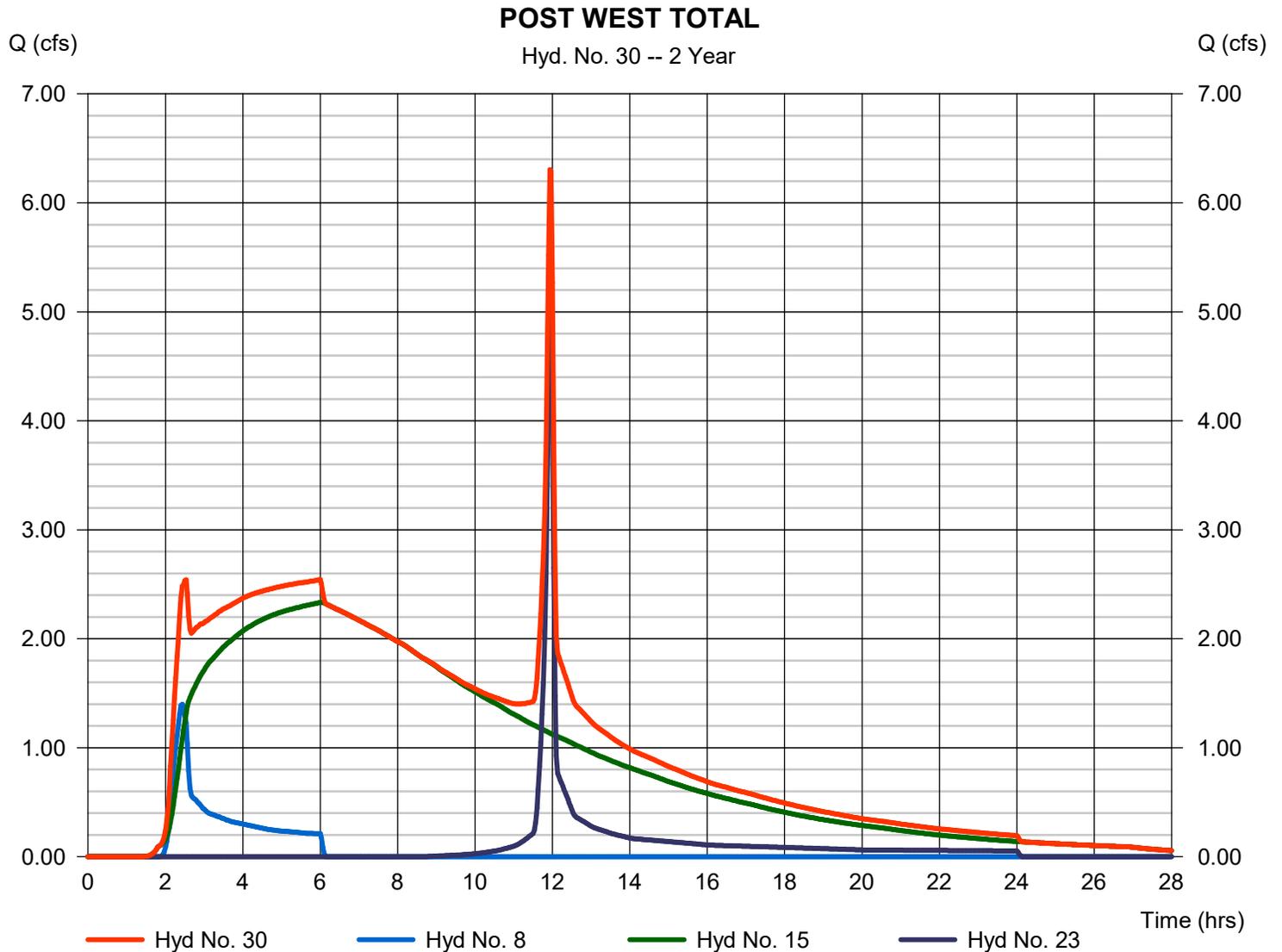
Wednesday, 01 / 21 / 2026

## Hyd. No. 30

### POST WEST TOTAL

Hydrograph type = Combine  
Storm frequency = 2 yrs  
Time interval = 2 min  
Inflow hyds. = 8, 15, 23

Peak discharge = 6.305 cfs  
Time to peak = 11.93 hrs  
Hyd. volume = 103,822 cuft  
Contrib. drain. area = 3.400 ac



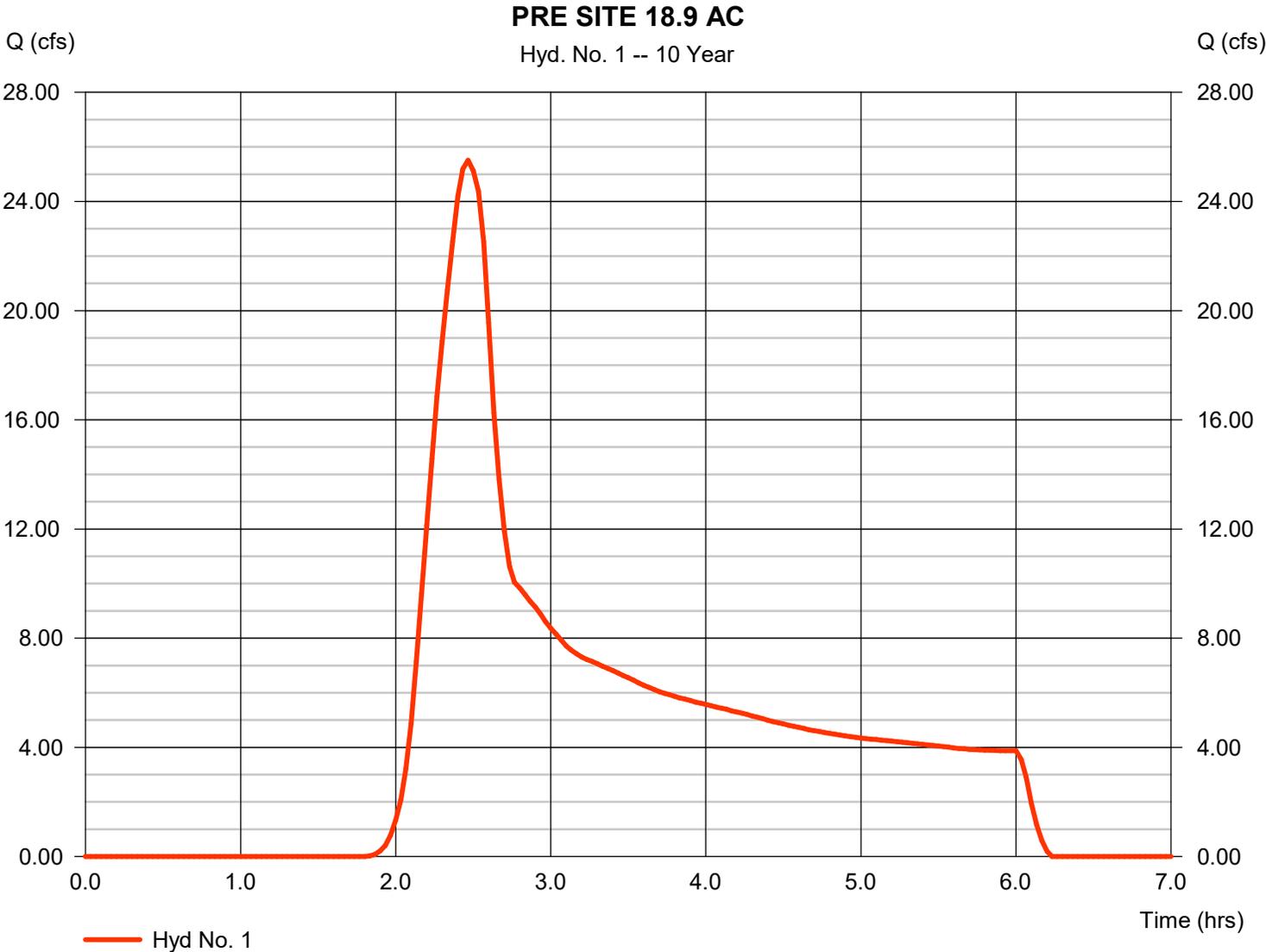
# Hydrograph Report

## Hyd. No. 1

PRE SITE 18.9 AC

Hydrograph type = SCS Runoff  
Storm frequency = 10 yrs  
Time interval = 2 min  
Drainage area = 18.900 ac  
Basin Slope = 0.0 %  
Tc method = TR55  
Total precip. = 3.98 in  
Storm duration = 6.00 hrs

Peak discharge = 25.51 cfs  
Time to peak = 2.47 hrs  
Hyd. volume = 108,511 cuft  
Curve number = 74  
Hydraulic length = 0 ft  
Time of conc. (Tc) = 9.00 min  
Distribution = SCS 6-Hr  
Shape factor = 484



# Hydrograph Report

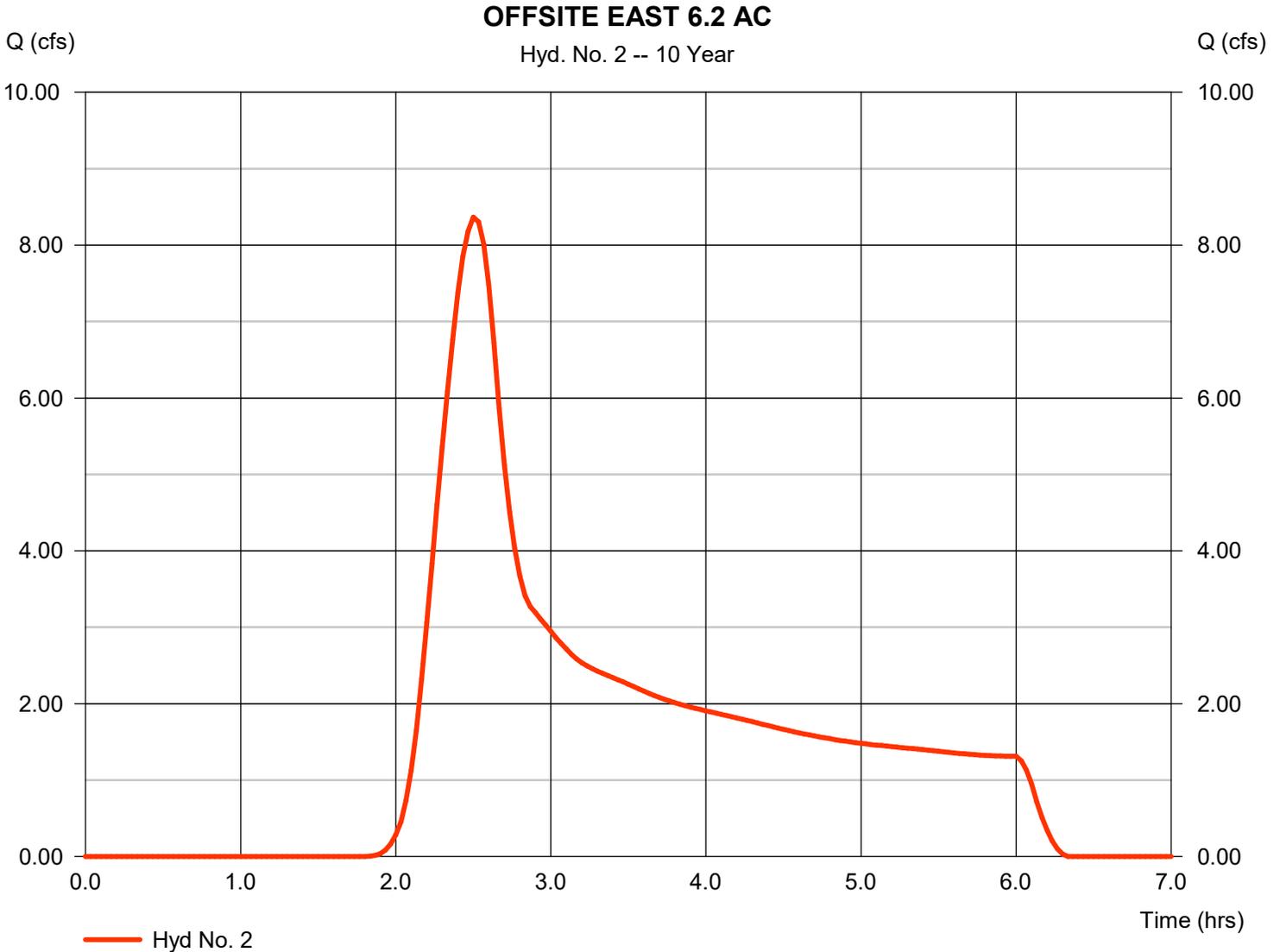
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Wednesday, 01 / 21 / 2026

## Hyd. No. 2

### OFFSITE EAST 6.2 AC

Hydrograph type	= SCS Runoff	Peak discharge	= 8.366 cfs
Storm frequency	= 10 yrs	Time to peak	= 2.50 hrs
Time interval	= 2 min	Hyd. volume	= 36,708 cuft
Drainage area	= 6.200 ac	Curve number	= 74
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 3.98 in	Distribution	= SCS 6-Hr
Storm duration	= 6.00 hrs	Shape factor	= 484



# Hydrograph Report

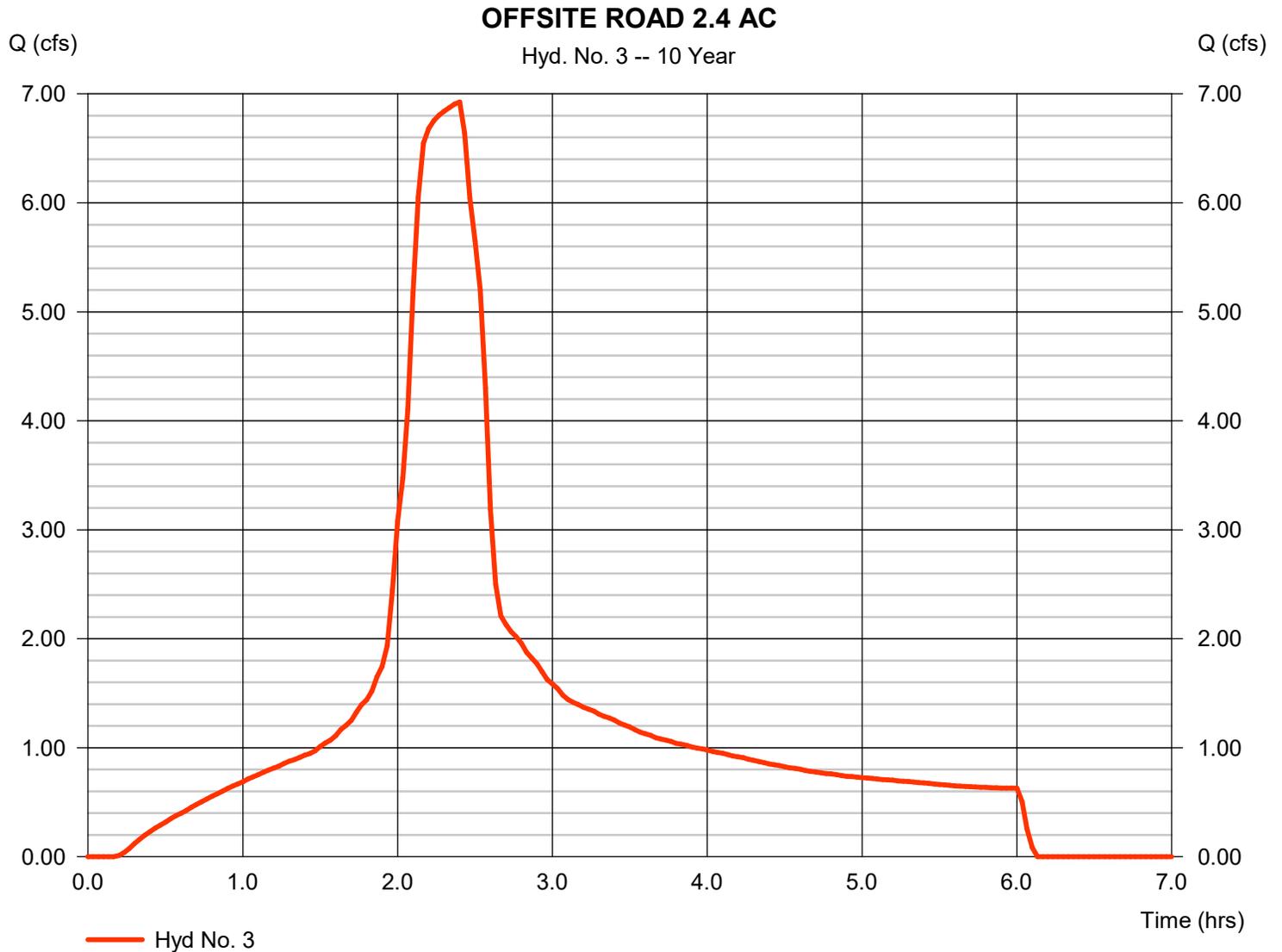
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Wednesday, 01 / 21 / 2026

## Hyd. No. 3

### OFFSITE ROAD 2.4 AC

Hydrograph type	= SCS Runoff	Peak discharge	= 6.926 cfs
Storm frequency	= 10 yrs	Time to peak	= 2.40 hrs
Time interval	= 2 min	Hyd. volume	= 30,588 cuft
Drainage area	= 2.400 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.98 in	Distribution	= SCS 6-Hr
Storm duration	= 6.00 hrs	Shape factor	= 484

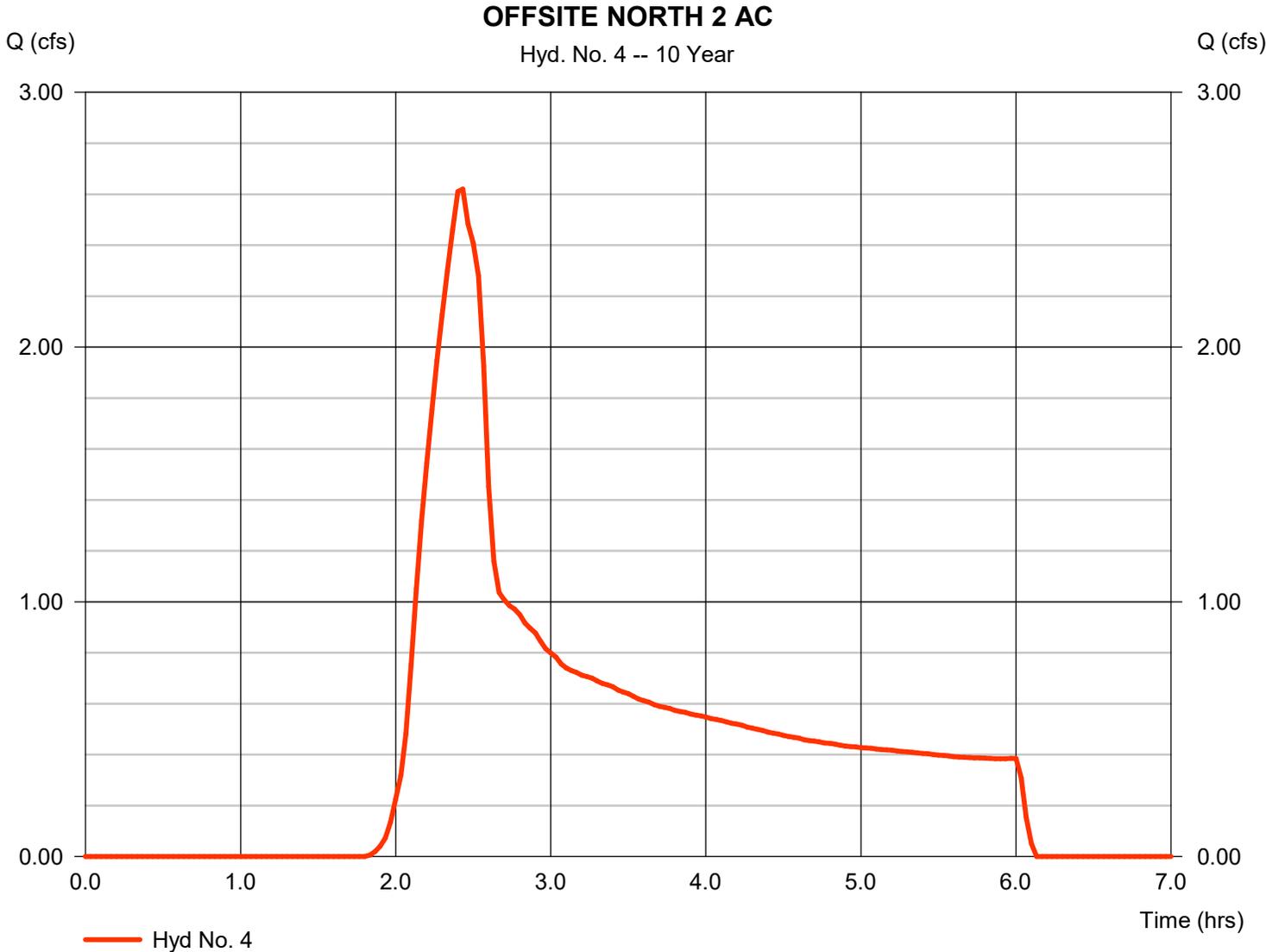


# Hydrograph Report

## Hyd. No. 4

### OFFSITE NORTH 2 AC

Hydrograph type	= SCS Runoff	Peak discharge	= 2.620 cfs
Storm frequency	= 10 yrs	Time to peak	= 2.43 hrs
Time interval	= 2 min	Hyd. volume	= 10,765 cuft
Drainage area	= 2.000 ac	Curve number	= 74
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.98 in	Distribution	= SCS 6-Hr
Storm duration	= 6.00 hrs	Shape factor	= 484



# Hydrograph Report

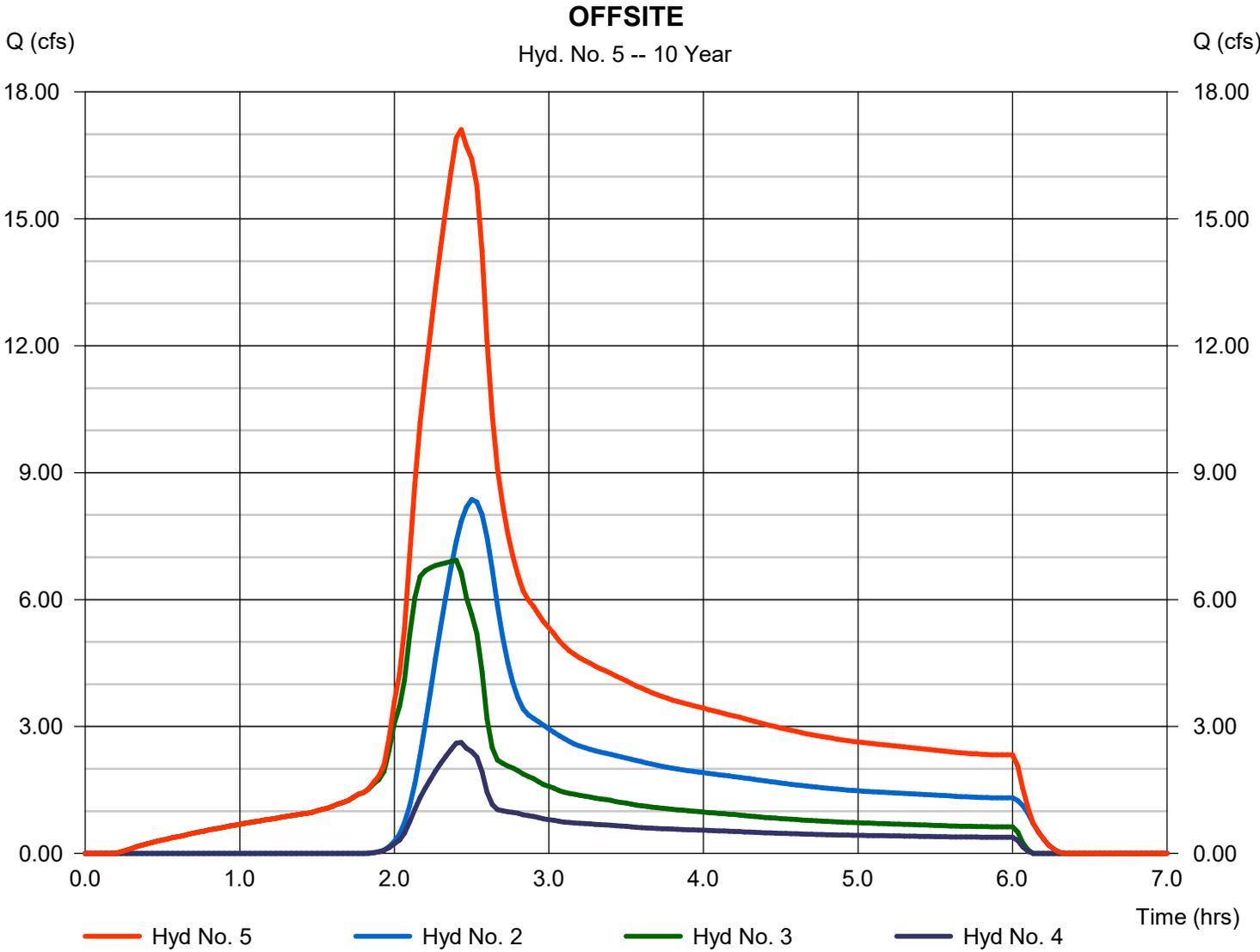
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Wednesday, 01 / 21 / 2026

## Hyd. No. 5

### OFFSITE

Hydrograph type	= Combine	Peak discharge	= 17.11 cfs
Storm frequency	= 10 yrs	Time to peak	= 2.43 hrs
Time interval	= 2 min	Hyd. volume	= 78,061 cuft
Inflow hyds.	= 2, 3, 4	Contrib. drain. area	= 10.600 ac

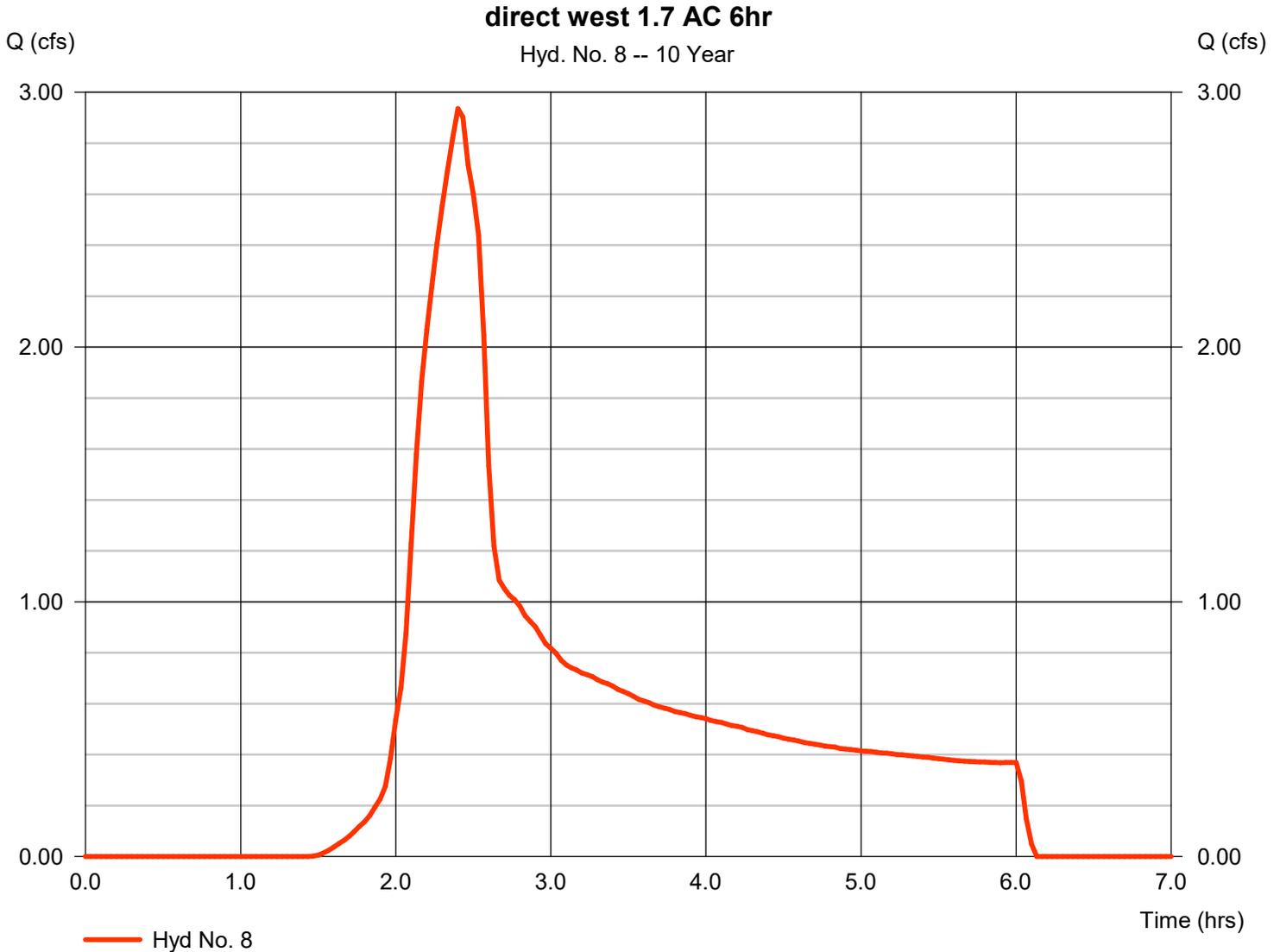


# Hydrograph Report

## Hyd. No. 8

direct west 1.7 AC 6hr

Hydrograph type	= SCS Runoff	Peak discharge	= 2.936 cfs
Storm frequency	= 10 yrs	Time to peak	= 2.40 hrs
Time interval	= 2 min	Hyd. volume	= 11,716 cuft
Drainage area	= 1.700 ac	Curve number	= 80
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.98 in	Distribution	= SCS 6-Hr
Storm duration	= 6.00 hrs	Shape factor	= 484



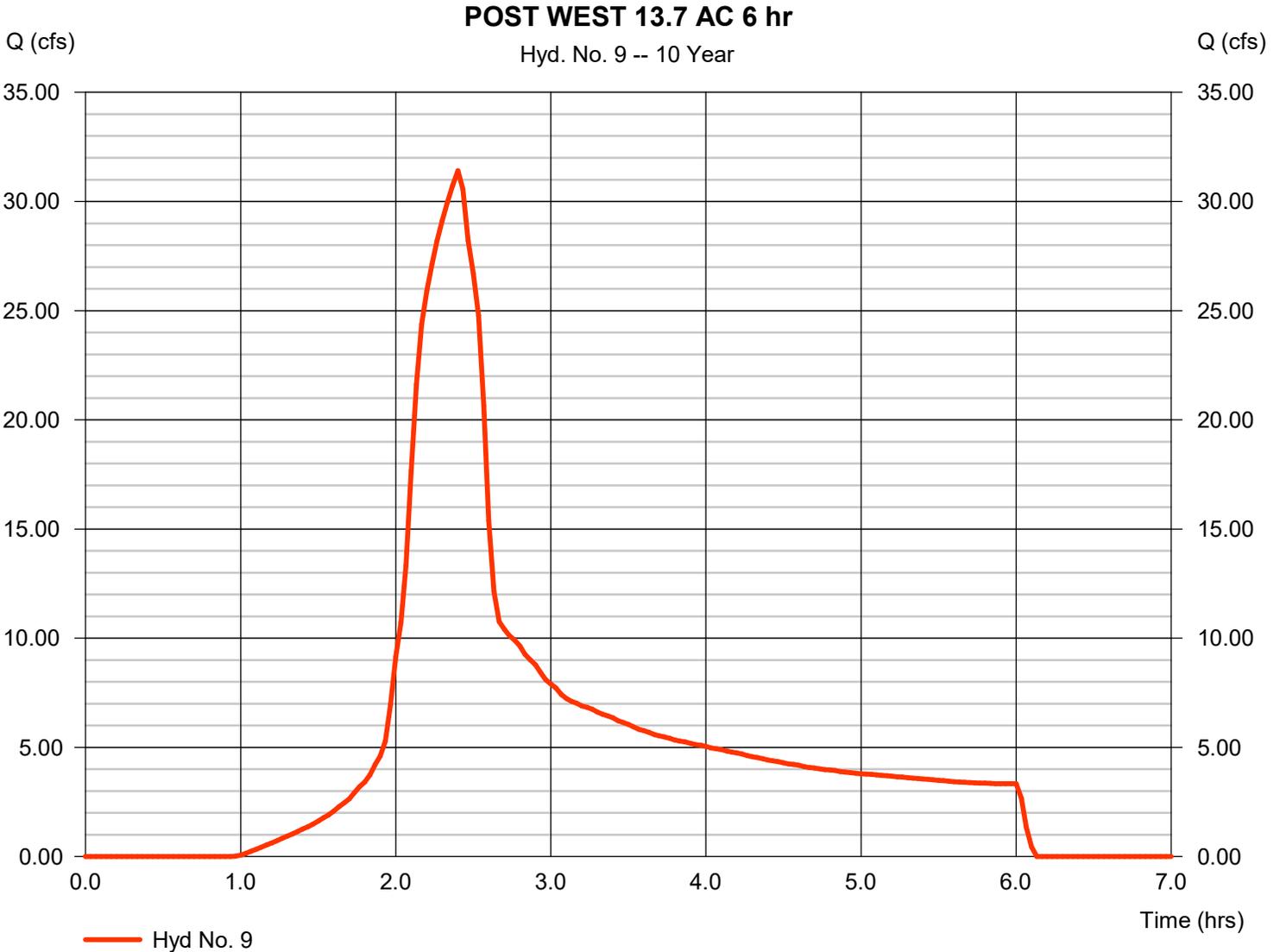
# Hydrograph Report

## Hyd. No. 9

POST WEST 13.7 AC 6 hr

Hydrograph type = SCS Runoff  
Storm frequency = 10 yrs  
Time interval = 2 min  
Drainage area = 13.700 ac  
Basin Slope = 0.0 %  
Tc method = User  
Total precip. = 3.98 in  
Storm duration = 6.00 hrs

Peak discharge = 31.41 cfs  
Time to peak = 2.40 hrs  
Hyd. volume = 125,066 cuft  
Curve number = 87.7  
Hydraulic length = 0 ft  
Time of conc. (Tc) = 5.00 min  
Distribution = SCS 6-Hr  
Shape factor = 484



# Hydrograph Report

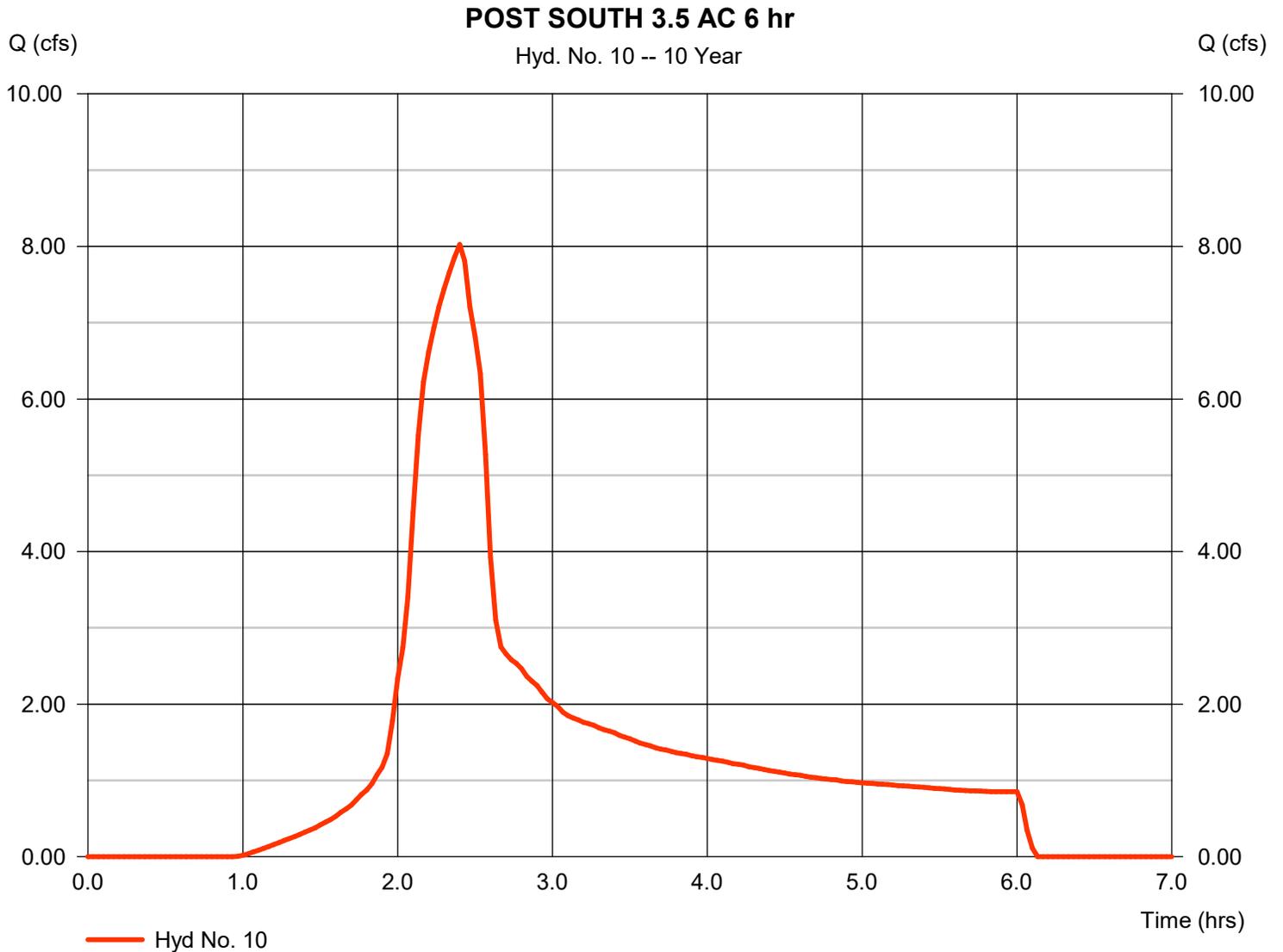
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Wednesday, 01 / 21 / 2026

## Hyd. No. 10

POST SOUTH 3.5 AC 6 hr

Hydrograph type	= SCS Runoff	Peak discharge	= 8.026 cfs
Storm frequency	= 10 yrs	Time to peak	= 2.40 hrs
Time interval	= 2 min	Hyd. volume	= 31,951 cuft
Drainage area	= 3.500 ac	Curve number	= 87.7
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.98 in	Distribution	= SCS 6-Hr
Storm duration	= 6.00 hrs	Shape factor	= 484



# Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2026

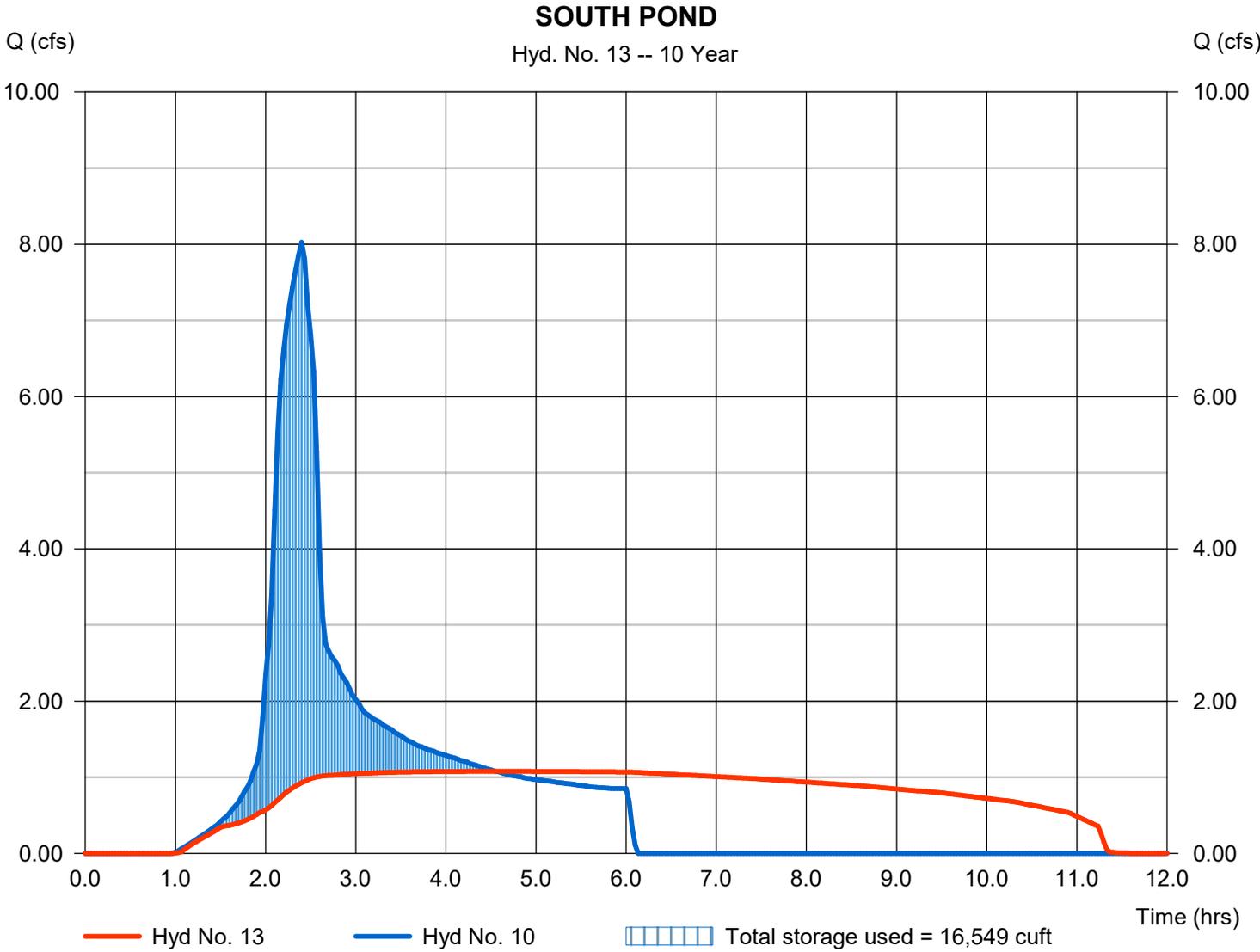
Wednesday, 01 / 21 / 2026

## Hyd. No. 13

### SOUTH POND

Hydrograph type	= Reservoir	Peak discharge	= 1.078 cfs
Storm frequency	= 10 yrs	Time to peak	= 4.57 hrs
Time interval	= 2 min	Hyd. volume	= 31,951 cuft
Inflow hyd. No.	= 10 - POST SOUTH 3.5 AC 6 h	Max. Elevation	= 1021.12 ft
Reservoir name	= SOUTH	Max. Storage	= 16,549 cuft

Storage Indication method used.



# Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2026

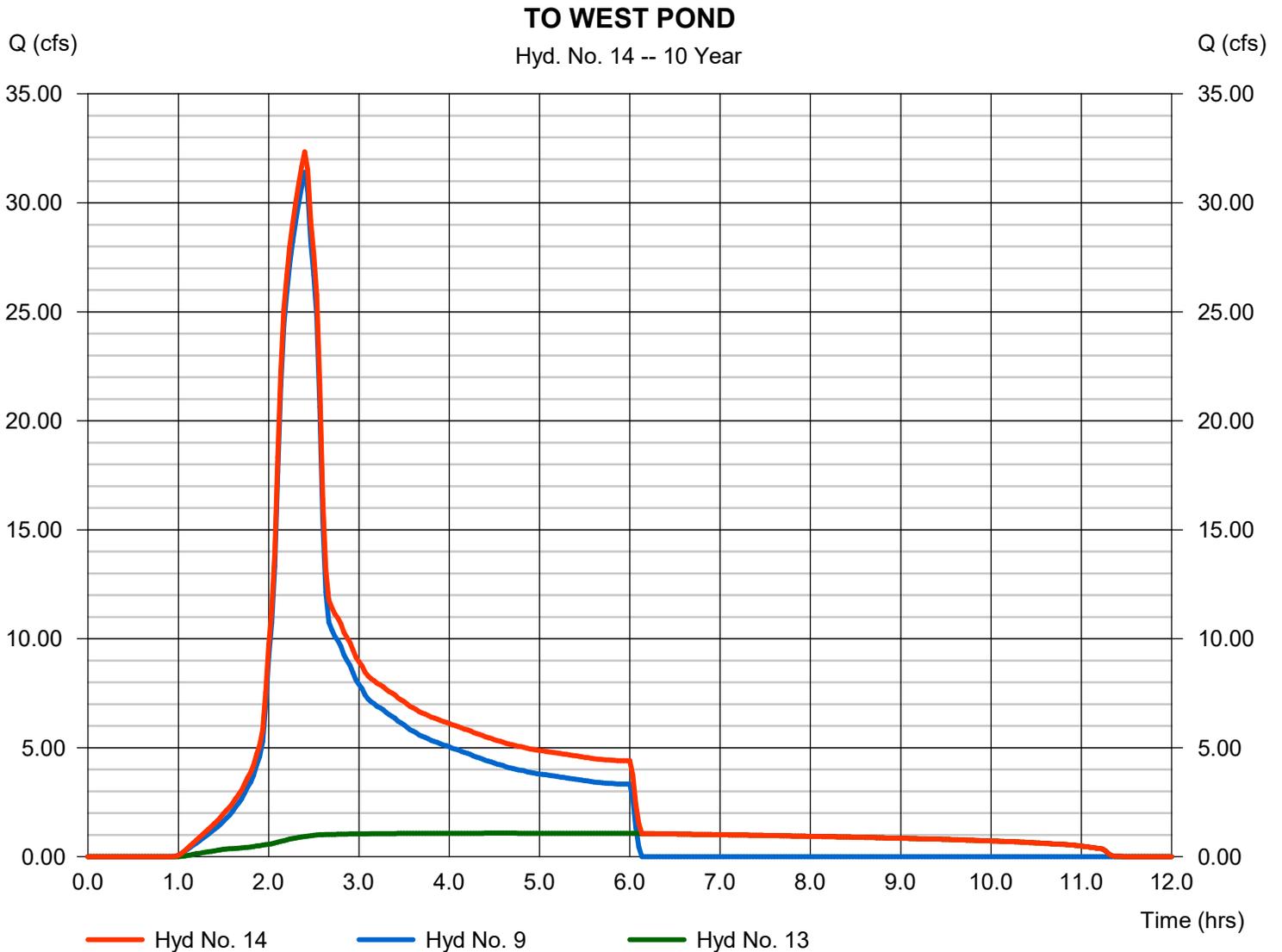
Wednesday, 01 / 21 / 2026

## Hyd. No. 14

TO WEST POND

Hydrograph type = Combine  
 Storm frequency = 10 yrs  
 Time interval = 2 min  
 Inflow hyds. = 9, 13

Peak discharge = 32.34 cfs  
 Time to peak = 2.40 hrs  
 Hyd. volume = 157,017 cuft  
 Contrib. drain. area = 13.700 ac



# Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2026

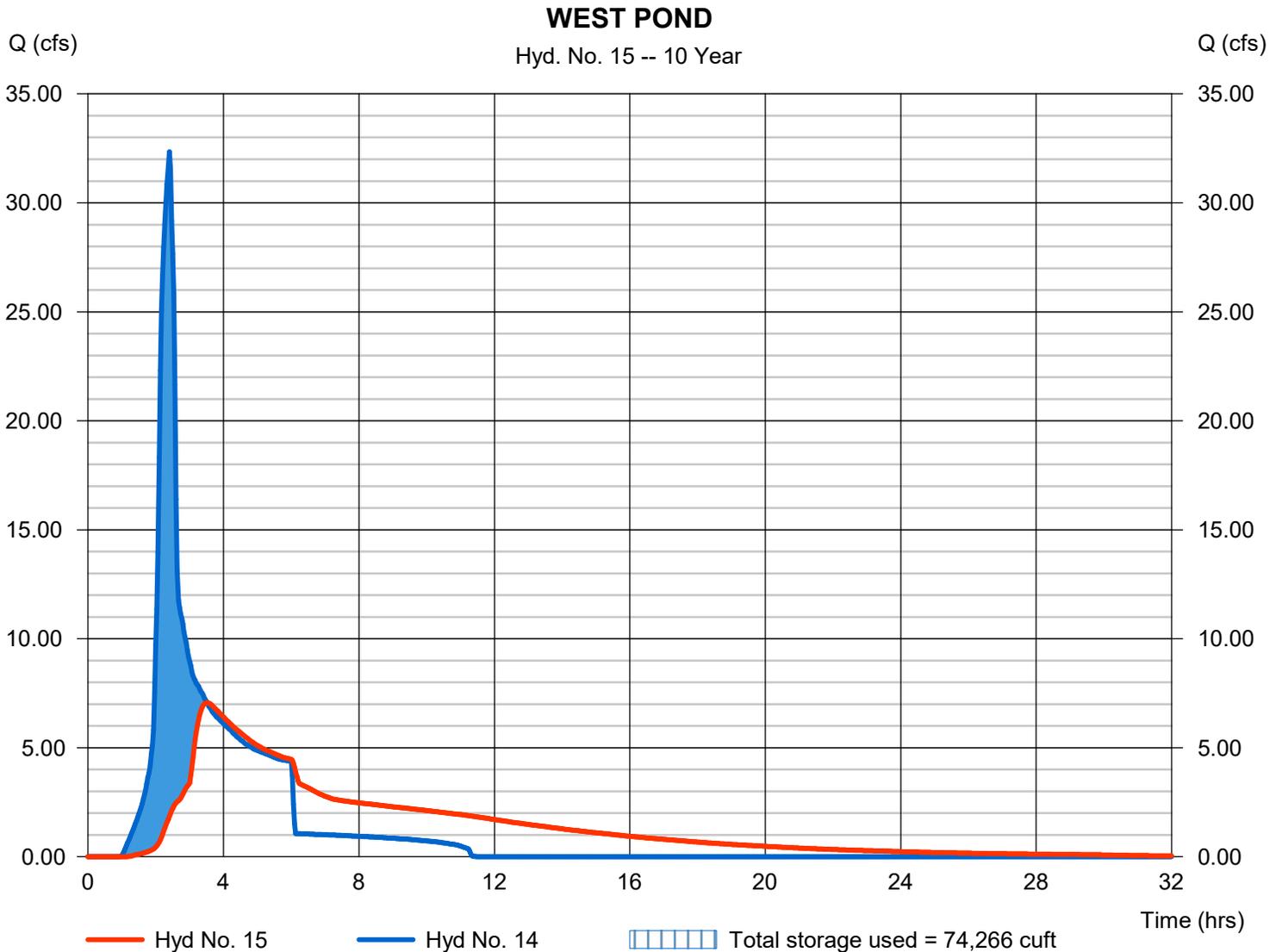
Wednesday, 01 / 21 / 2026

## Hyd. No. 15

### WEST POND

Hydrograph type	= Reservoir	Peak discharge	= 7.062 cfs
Storm frequency	= 10 yrs	Time to peak	= 3.53 hrs
Time interval	= 2 min	Hyd. volume	= 156,977 cuft
Inflow hyd. No.	= 14 - TO WEST POND	Max. Elevation	= 1005.86 ft
Reservoir name	= WEST POND retention	Max. Storage	= 74,266 cuft

Storage Indication method used.



# Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2026

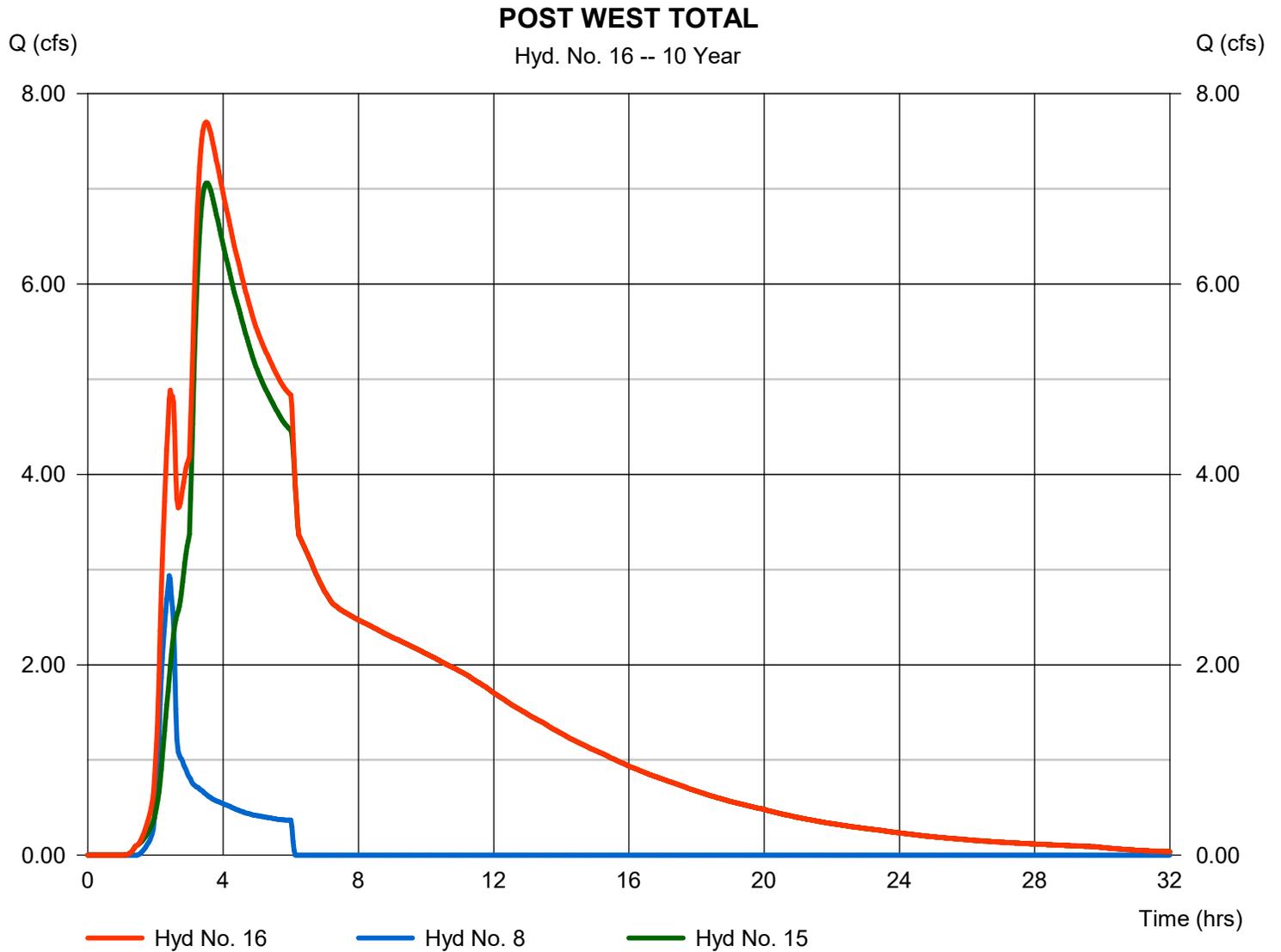
Wednesday, 01 / 21 / 2026

## Hyd. No. 16

### POST WEST TOTAL

Hydrograph type = Combine  
Storm frequency = 10 yrs  
Time interval = 2 min  
Inflow hyds. = 8, 15

Peak discharge = 7.702 cfs  
Time to peak = 3.50 hrs  
Hyd. volume = 168,693 cuft  
Contrib. drain. area = 1.700 ac





# Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2026

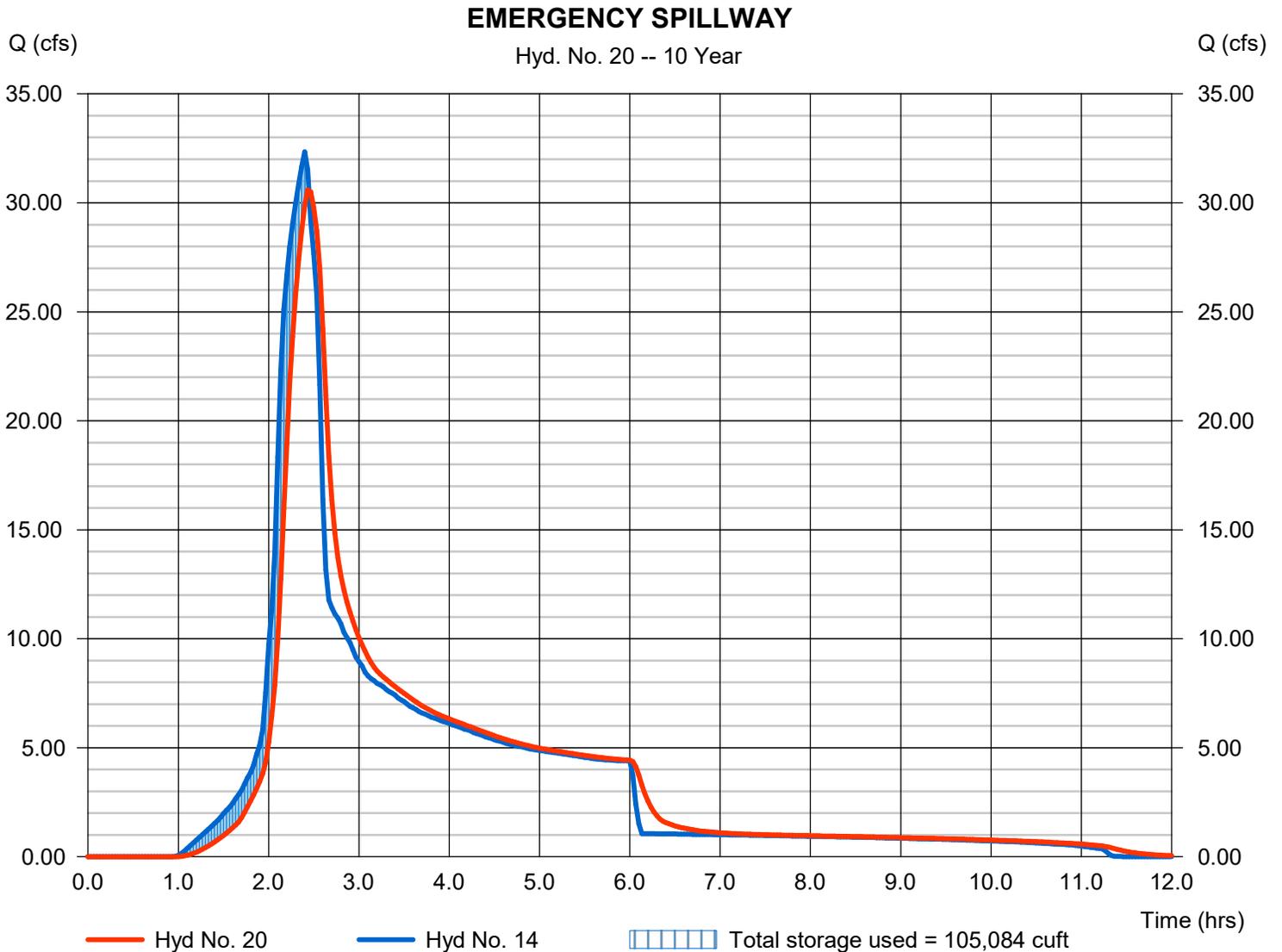
Wednesday, 01 / 21 / 2026

## Hyd. No. 20

### EMERGENCY SPILLWAY

Hydrograph type	= Reservoir	Peak discharge	= 30.59 cfs
Storm frequency	= 10 yrs	Time to peak	= 2.43 hrs
Time interval	= 2 min	Hyd. volume	= 157,016 cuft
Inflow hyd. No.	= 14 - TO WEST POND	Max. Elevation	= 1007.70 ft
Reservoir name	= EMERGENCY SPILLWAY	Max. Storage	= 105,084 cuft

Storage Indication method used. Wet pond routing start elevation = 1007.00 ft.



# Hydrograph Report

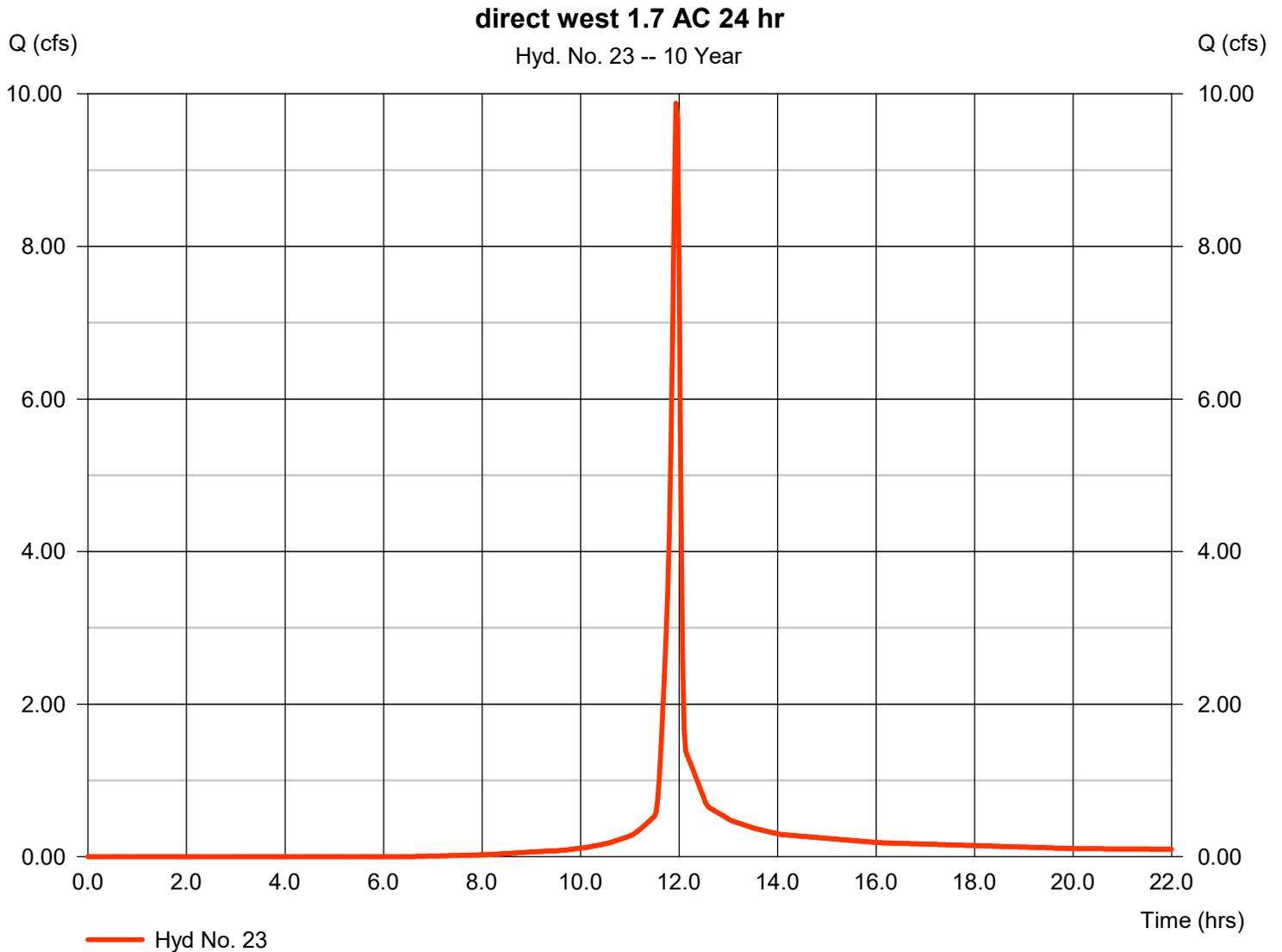
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2026

Wednesday, 01 / 21 / 2026

## Hyd. No. 23

direct west 1.7 AC 24 hr

Hydrograph type	= SCS Runoff	Peak discharge	= 9.877 cfs
Storm frequency	= 10 yrs	Time to peak	= 11.93 hrs
Time interval	= 2 min	Hyd. volume	= 20,213 cuft
Drainage area	= 1.700 ac	Curve number	= 80
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 5.68 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



# Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2026

Wednesday, 01 / 21 / 2026

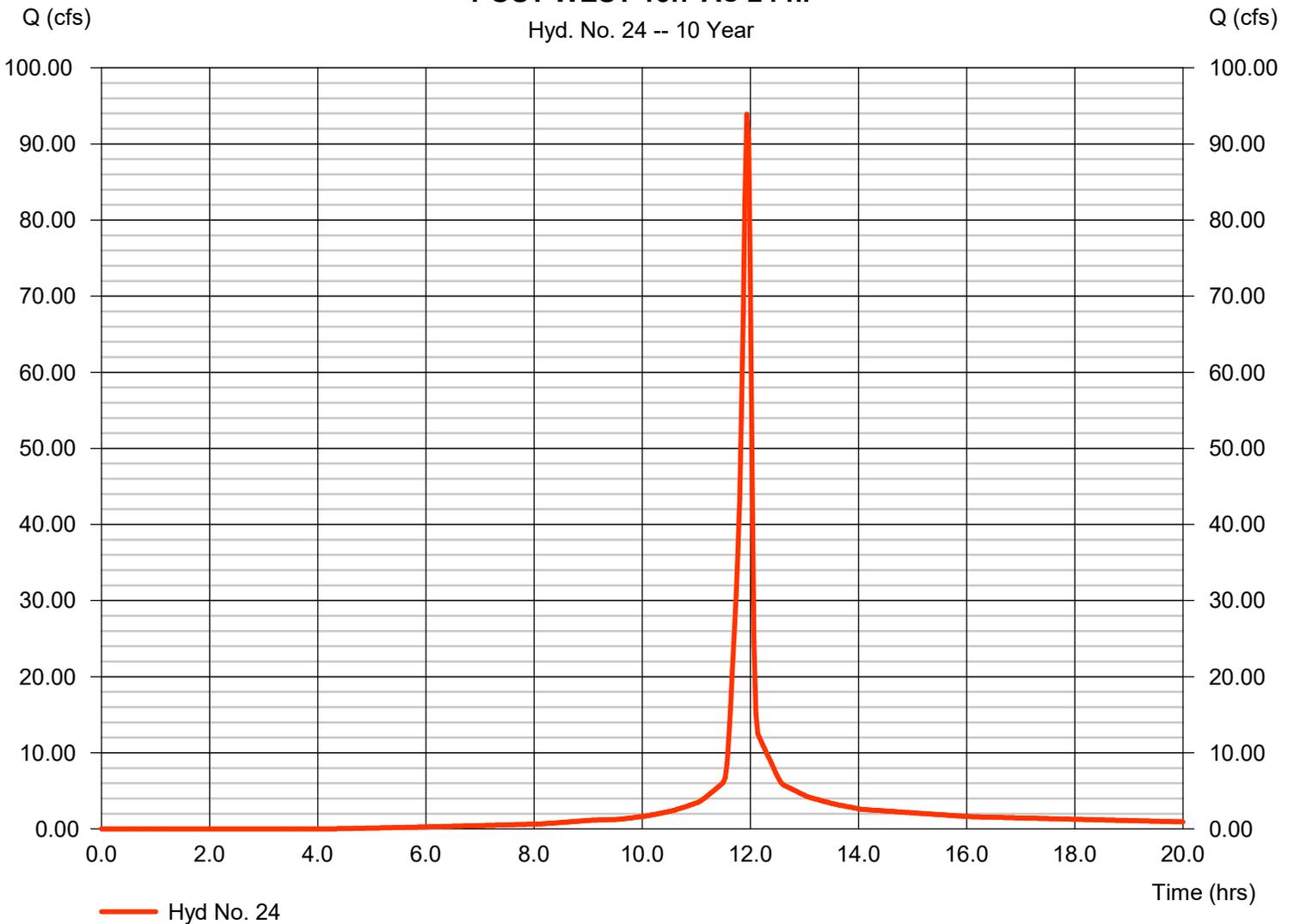
## Hyd. No. 24

POST WEST 13.7 AC 24 hr

Hydrograph type	= SCS Runoff	Peak discharge	= 93.91 cfs
Storm frequency	= 10 yrs	Time to peak	= 11.93 hrs
Time interval	= 2 min	Hyd. volume	= 199,834 cuft
Drainage area	= 13.700 ac	Curve number	= 87.7
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 5.68 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

### POST WEST 13.7 AC 24 hr

Hyd. No. 24 -- 10 Year



# Hydrograph Report

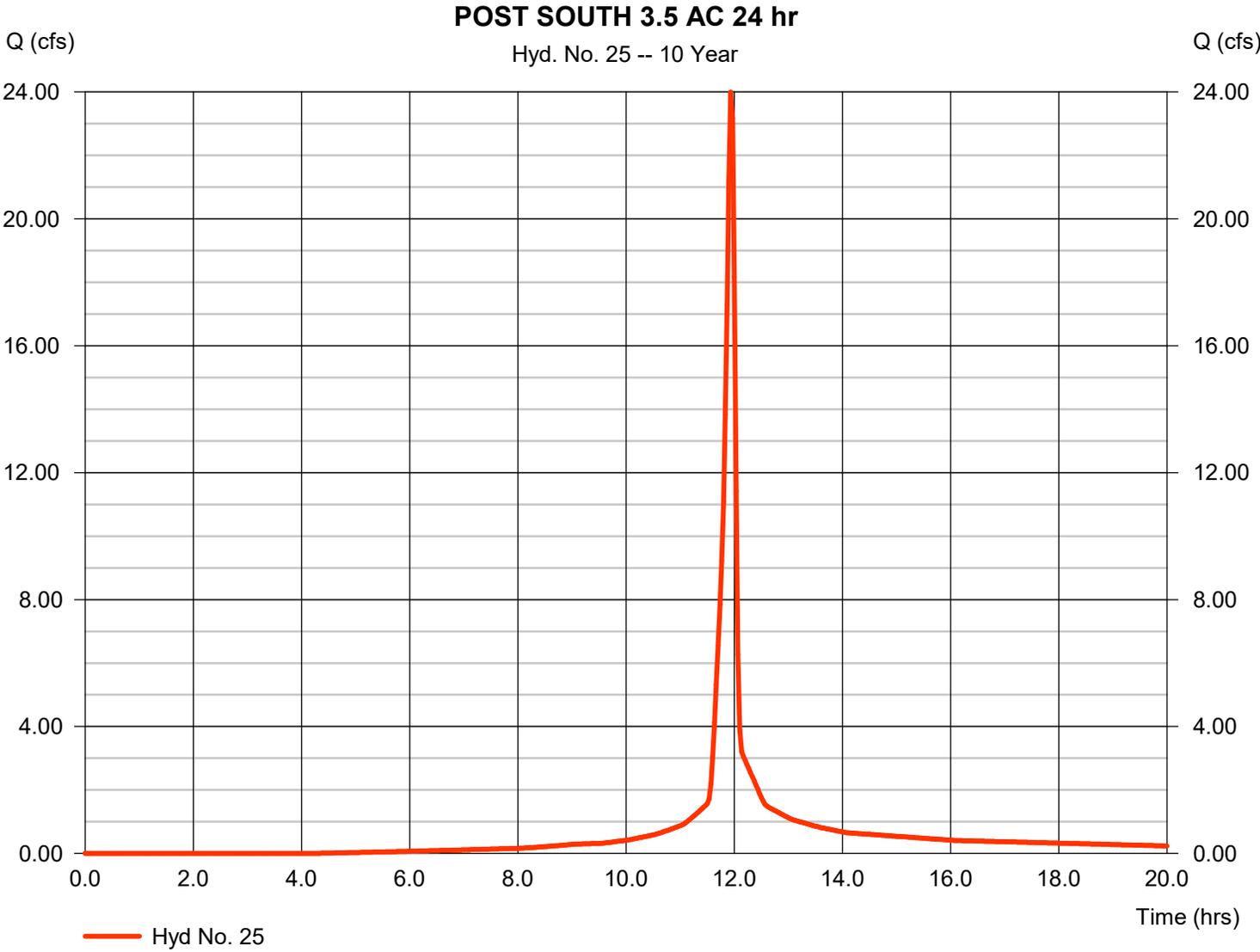
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2026

Wednesday, 01 / 21 / 2026

## Hyd. No. 25

POST SOUTH 3.5 AC 24 hr

Hydrograph type	= SCS Runoff	Peak discharge	= 23.99 cfs
Storm frequency	= 10 yrs	Time to peak	= 11.93 hrs
Time interval	= 2 min	Hyd. volume	= 51,052 cuft
Drainage area	= 3.500 ac	Curve number	= 87.7
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 5.68 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



# Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2026

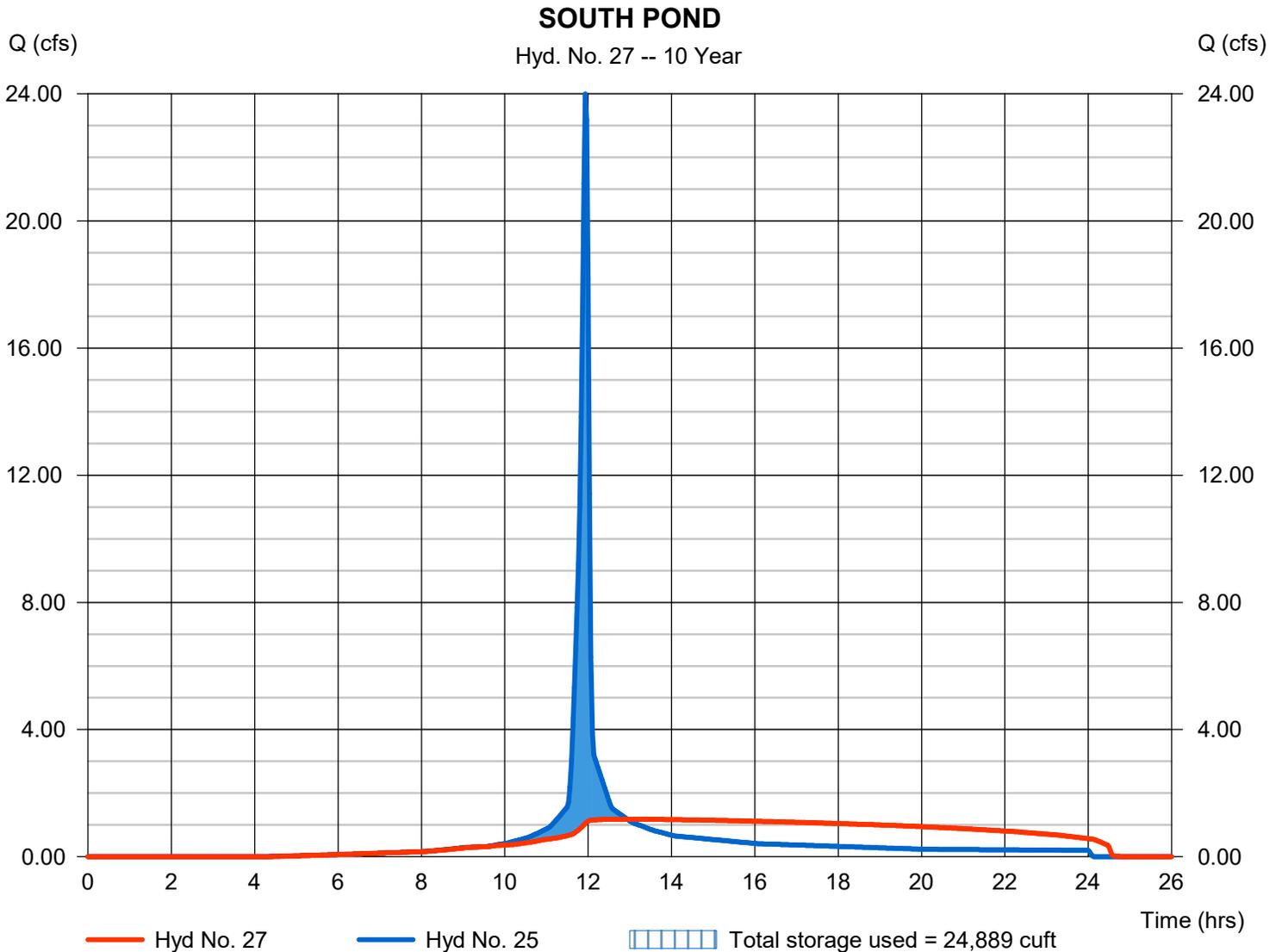
Wednesday, 01 / 21 / 2026

## Hyd. No. 27

### SOUTH POND

Hydrograph type	= Reservoir	Peak discharge	= 1.178 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.93 hrs
Time interval	= 2 min	Hyd. volume	= 51,052 cuft
Inflow hyd. No.	= 25 - POST SOUTH 3.5 AC 24	Max. Elevation	= 1022.43 ft
Reservoir name	= SOUTH	Max. Storage	= 24,889 cuft

Storage Indication method used.



# Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2026

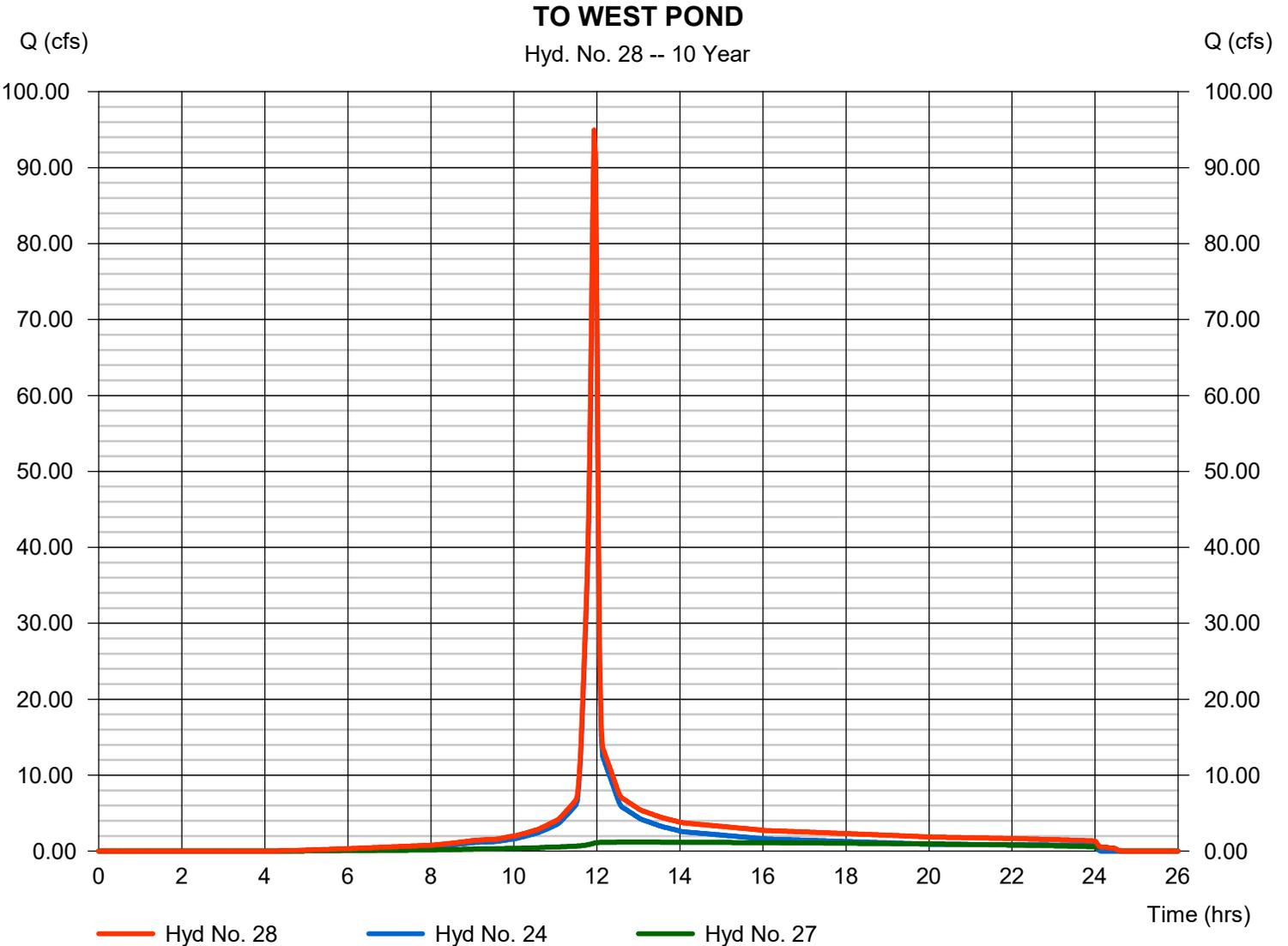
Wednesday, 01 / 21 / 2026

## Hyd. No. 28

TO WEST POND

Hydrograph type = Combine  
Storm frequency = 10 yrs  
Time interval = 2 min  
Inflow hyds. = 24, 27

Peak discharge = 94.95 cfs  
Time to peak = 11.93 hrs  
Hyd. volume = 250,885 cuft  
Contrib. drain. area = 13.700 ac



# Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2026

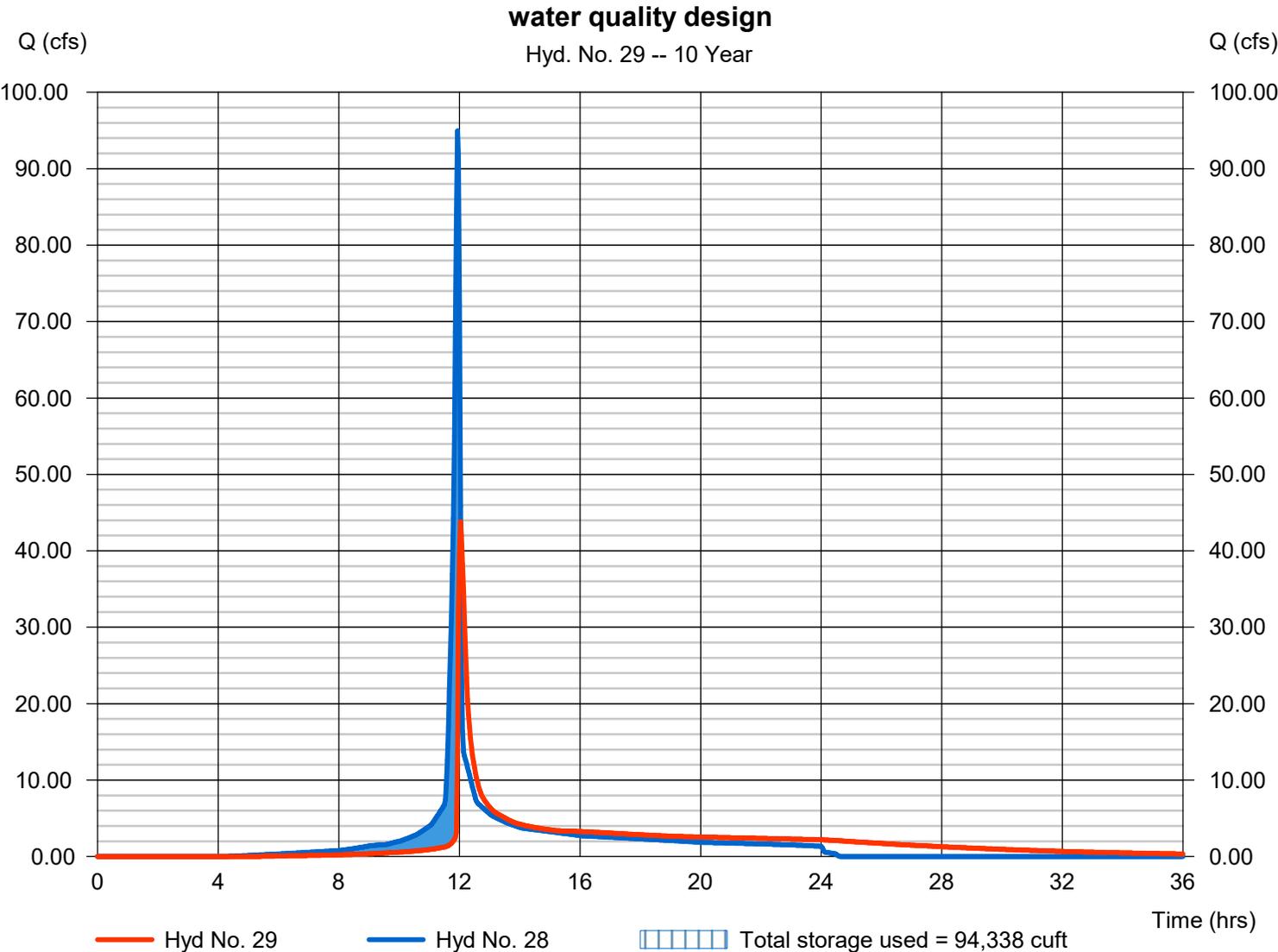
Wednesday, 01 / 21 / 2026

## Hyd. No. 29

water quality design

Hydrograph type	= Reservoir	Peak discharge	= 43.80 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.03 hrs
Time interval	= 2 min	Hyd. volume	= 250,845 cuft
Inflow hyd. No.	= 28 - TO WEST POND	Max. Elevation	= 1007.11 ft
Reservoir name	= WEST POND retention	Max. Storage	= 94,338 cuft

Storage Indication method used.



# Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2026

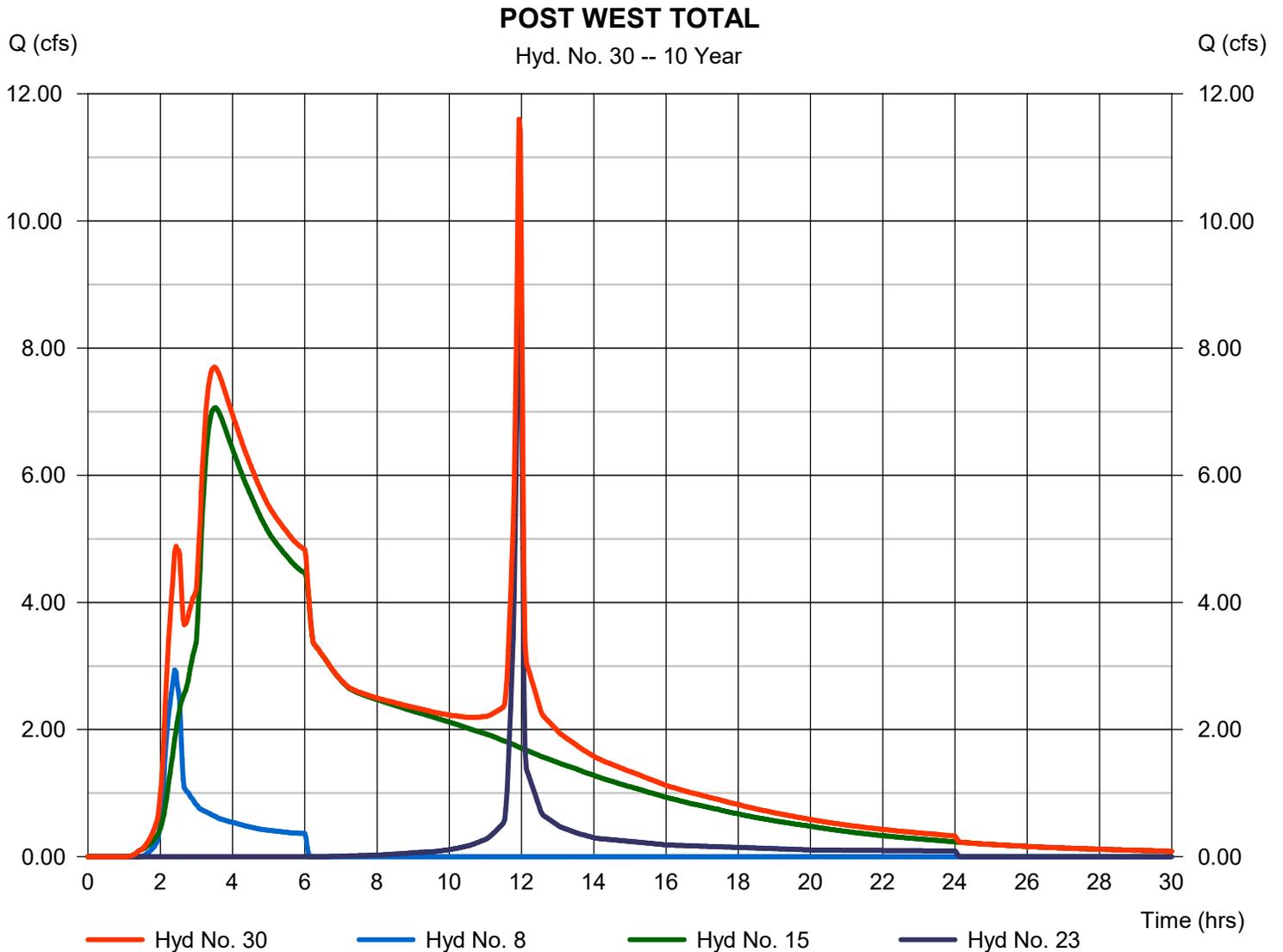
Wednesday, 01 / 21 / 2026

## Hyd. No. 30

### POST WEST TOTAL

Hydrograph type = Combine  
 Storm frequency = 10 yrs  
 Time interval = 2 min  
 Inflow hyds. = 8, 15, 23

Peak discharge = 11.60 cfs  
 Time to peak = 11.93 hrs  
 Hyd. volume = 188,905 cuft  
 Contrib. drain. area = 3.400 ac



# Hydrograph Report

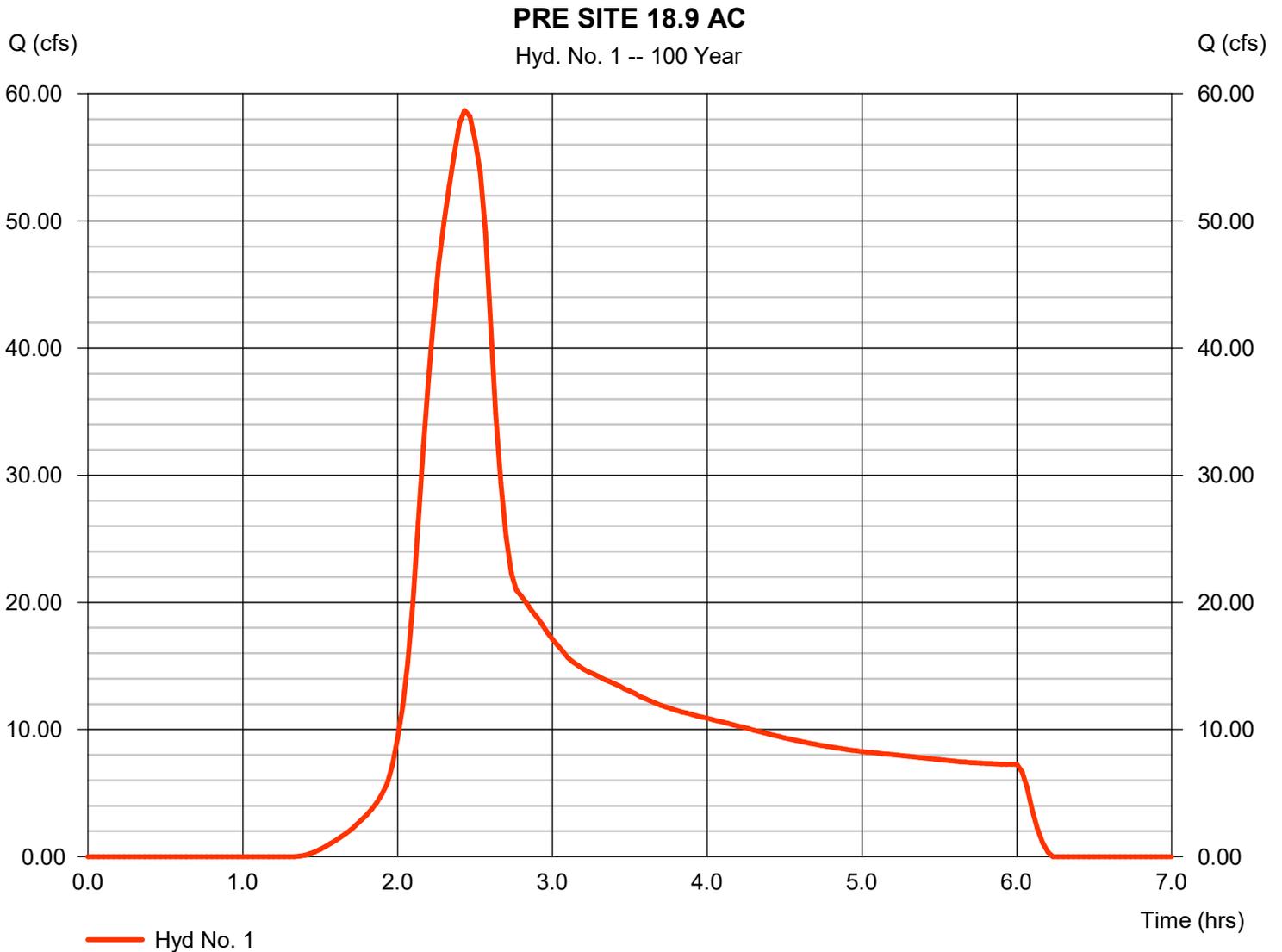
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2026

Wednesday, 01 / 21 / 2026

## Hyd. No. 1

PRE SITE 18.9 AC

Hydrograph type	= SCS Runoff	Peak discharge	= 58.70 cfs
Storm frequency	= 100 yrs	Time to peak	= 2.43 hrs
Time interval	= 2 min	Hyd. volume	= 241,187 cuft
Drainage area	= 18.900 ac	Curve number	= 74
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 9.00 min
Total precip.	= 6.39 in	Distribution	= SCS 6-Hr
Storm duration	= 6.00 hrs	Shape factor	= 484



# Hydrograph Report

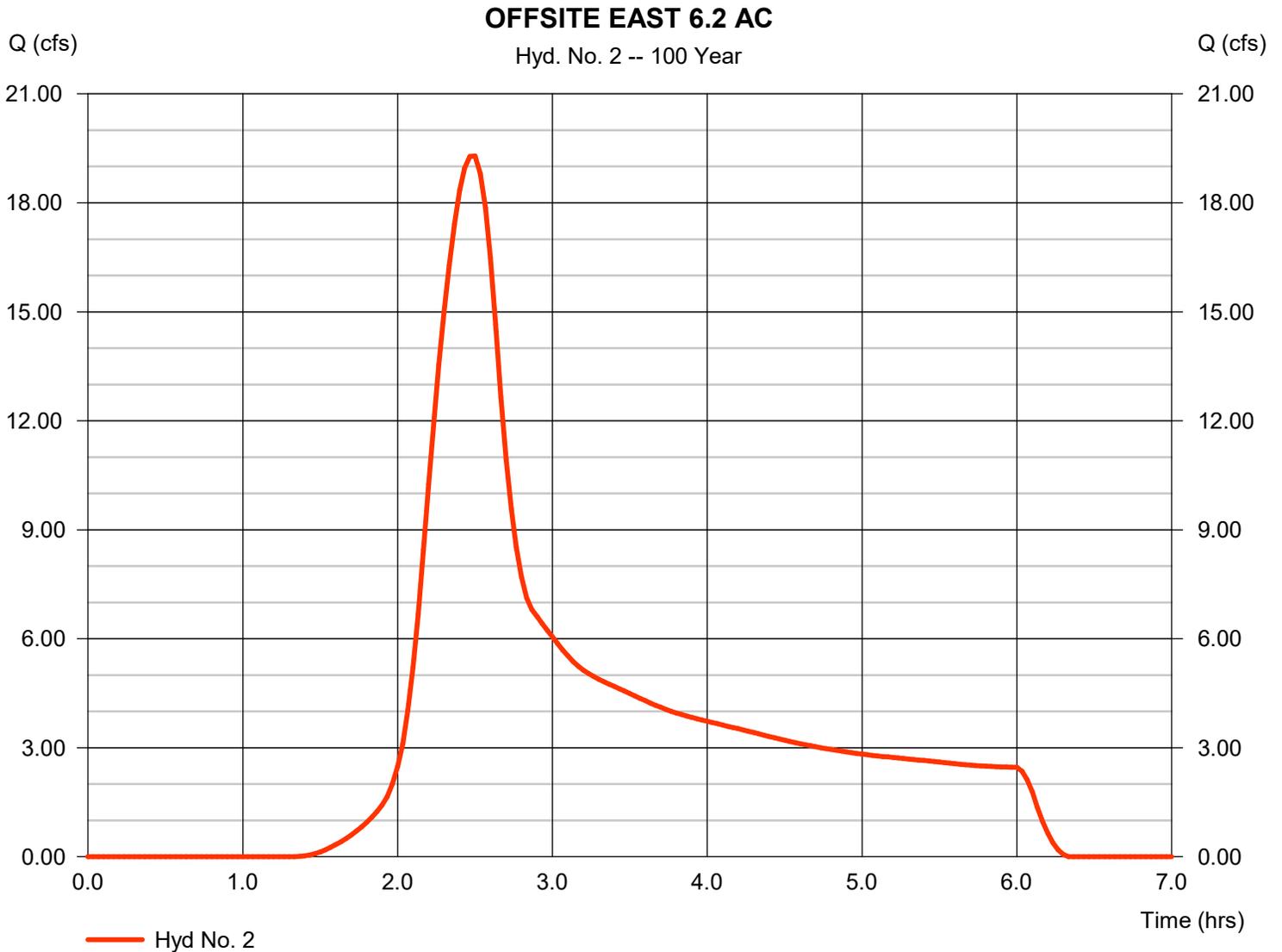
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2026

Wednesday, 01 / 21 / 2026

## Hyd. No. 2

### OFFSITE EAST 6.2 AC

Hydrograph type	= SCS Runoff	Peak discharge	= 19.29 cfs
Storm frequency	= 100 yrs	Time to peak	= 2.50 hrs
Time interval	= 2 min	Hyd. volume	= 81,592 cuft
Drainage area	= 6.200 ac	Curve number	= 74
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 6.39 in	Distribution	= SCS 6-Hr
Storm duration	= 6.00 hrs	Shape factor	= 484



# Hydrograph Report

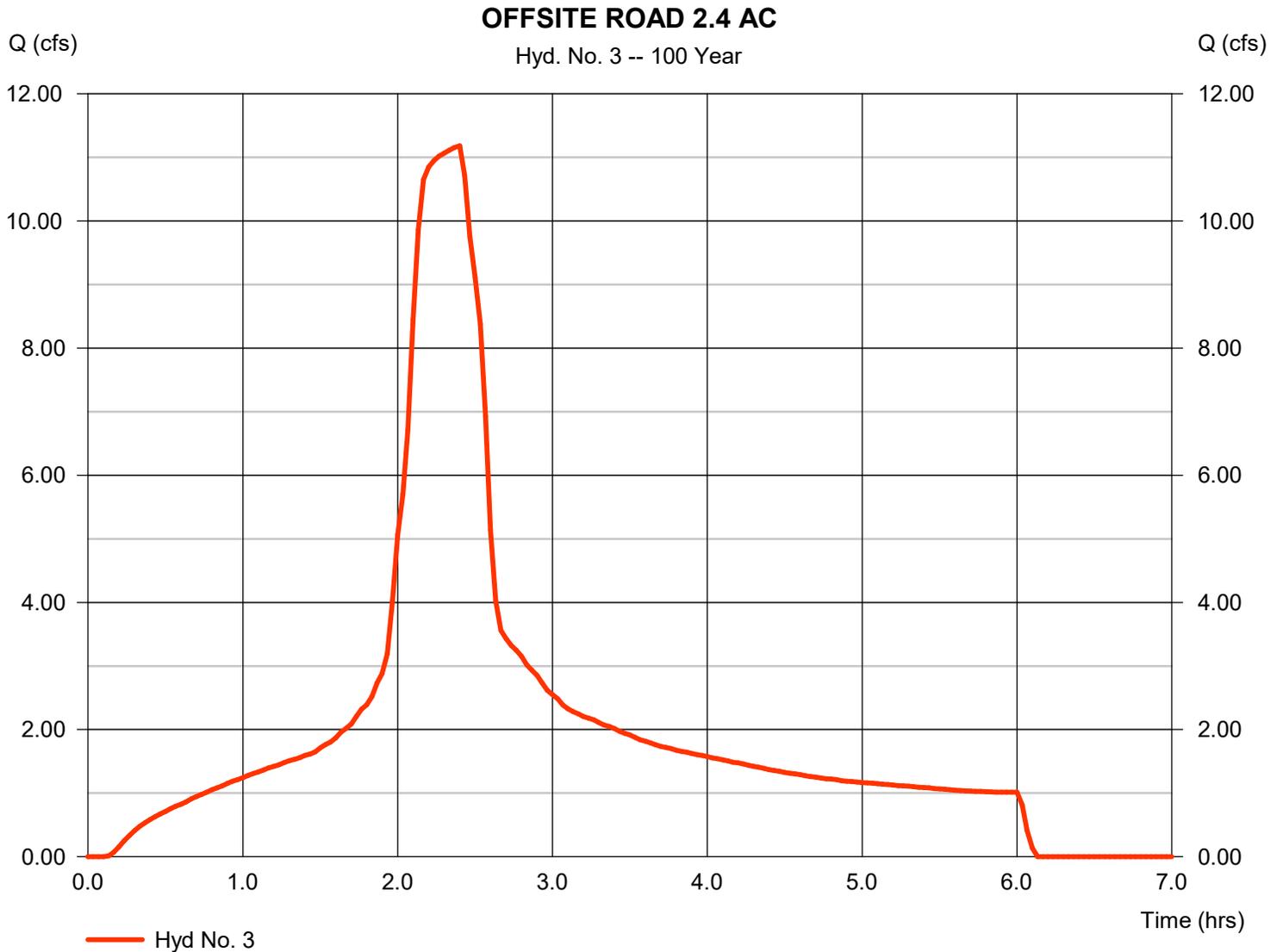
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2026

Wednesday, 01 / 21 / 2026

## Hyd. No. 3

### OFFSITE ROAD 2.4 AC

Hydrograph type	= SCS Runoff	Peak discharge	= 11.18 cfs
Storm frequency	= 100 yrs	Time to peak	= 2.40 hrs
Time interval	= 2 min	Hyd. volume	= 50,242 cuft
Drainage area	= 2.400 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 6.39 in	Distribution	= SCS 6-Hr
Storm duration	= 6.00 hrs	Shape factor	= 484



# Hydrograph Report

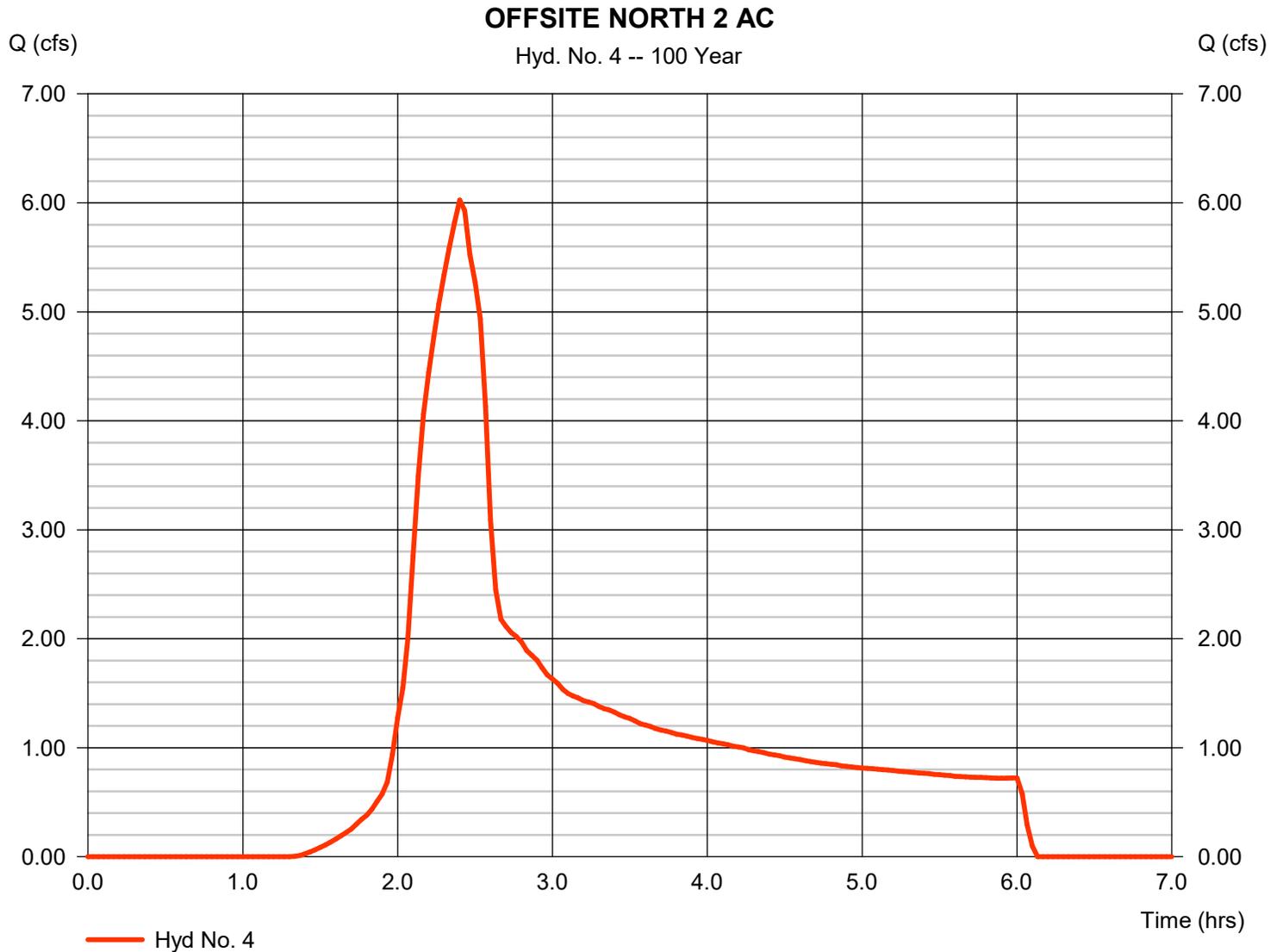
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2026

Wednesday, 01 / 21 / 2026

## Hyd. No. 4

### OFFSITE NORTH 2 AC

Hydrograph type	= SCS Runoff	Peak discharge	= 6.026 cfs
Storm frequency	= 100 yrs	Time to peak	= 2.40 hrs
Time interval	= 2 min	Hyd. volume	= 23,927 cuft
Drainage area	= 2.000 ac	Curve number	= 74
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 6.39 in	Distribution	= SCS 6-Hr
Storm duration	= 6.00 hrs	Shape factor	= 484



# Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2026

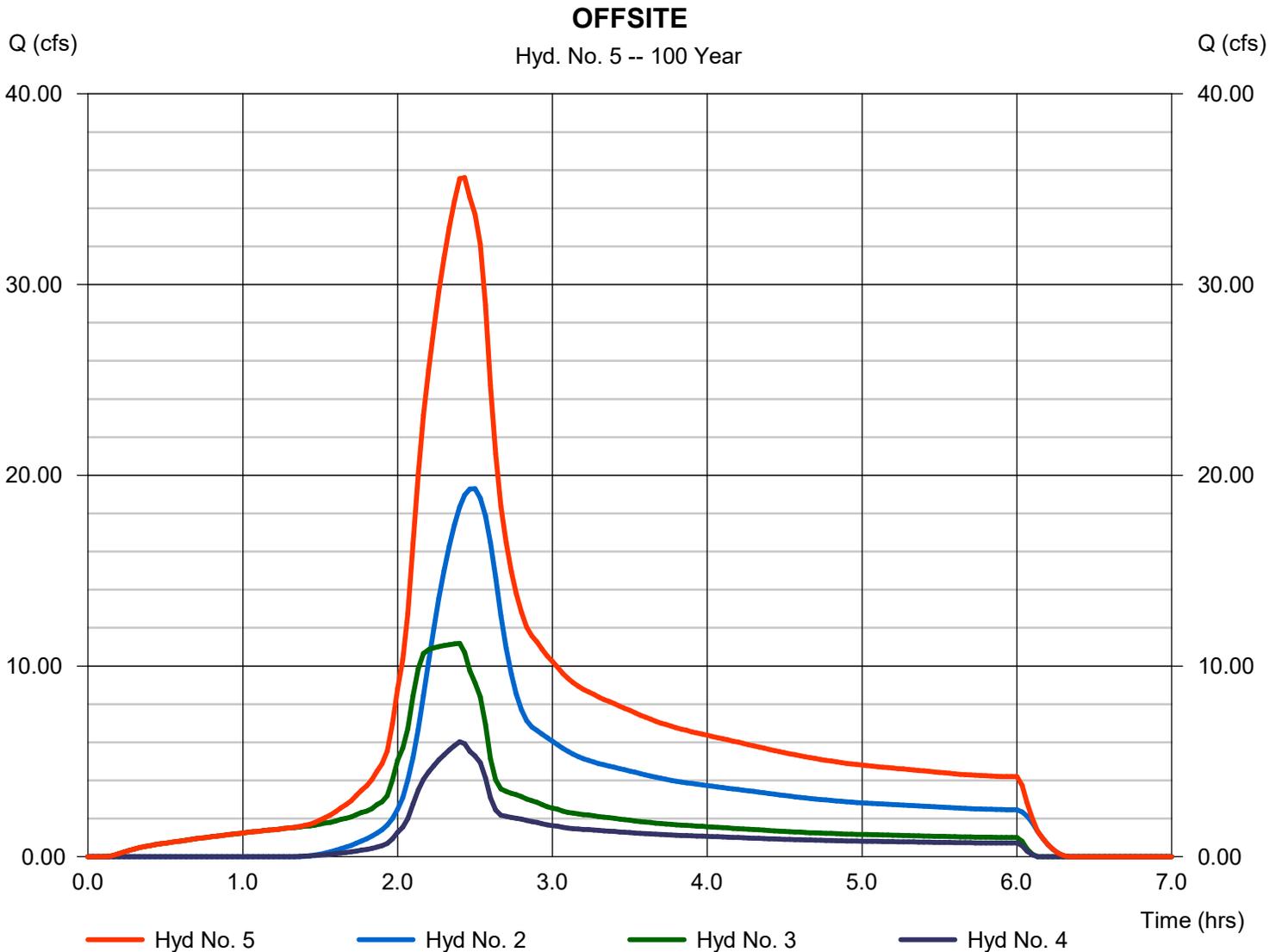
Wednesday, 01 / 21 / 2026

## Hyd. No. 5

### OFFSITE

Hydrograph type = Combine  
Storm frequency = 100 yrs  
Time interval = 2 min  
Inflow hyds. = 2, 3, 4

Peak discharge = 35.60 cfs  
Time to peak = 2.43 hrs  
Hyd. volume = 155,761 cuft  
Contrib. drain. area = 10.600 ac

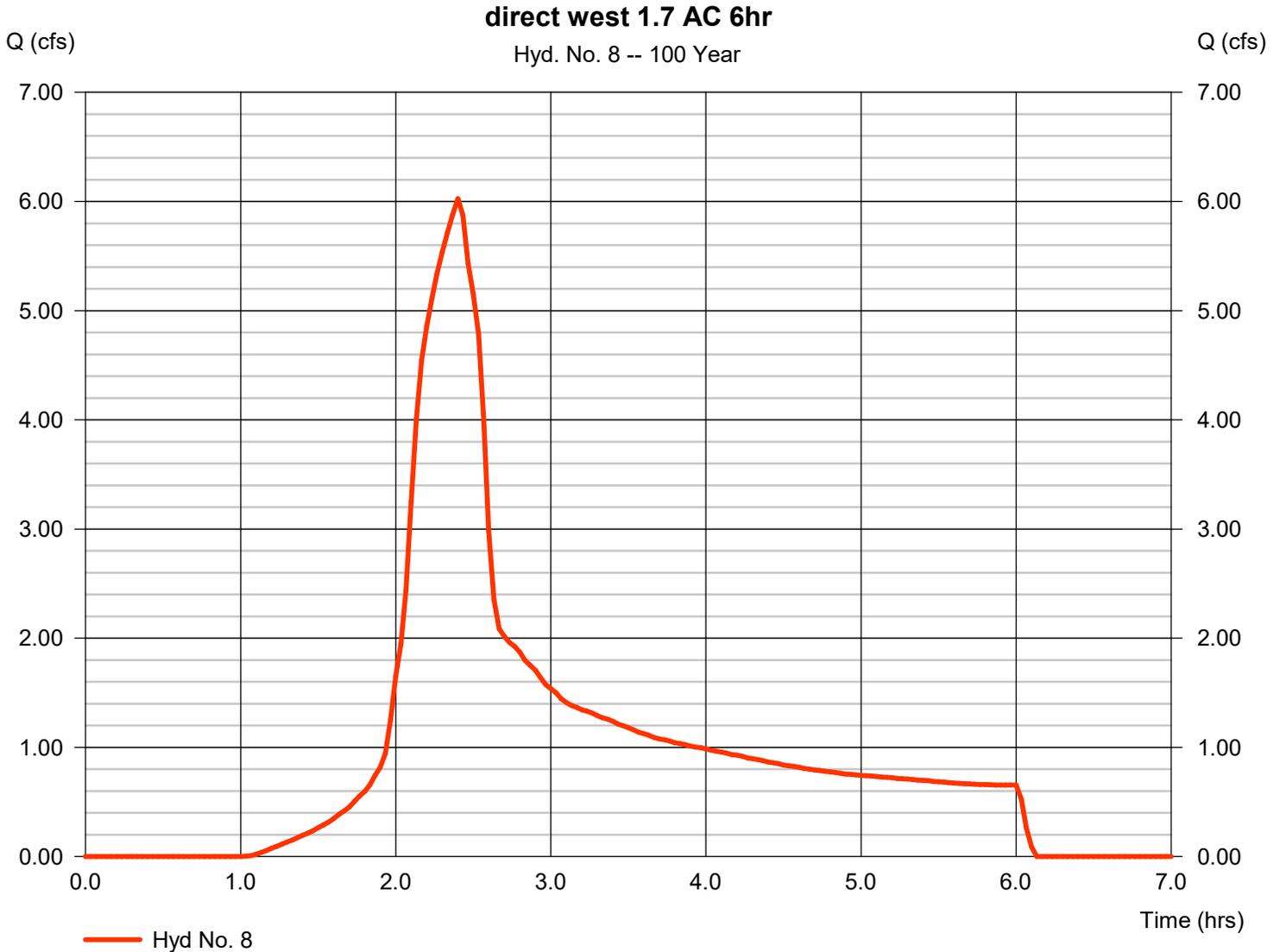


# Hydrograph Report

## Hyd. No. 8

direct west 1.7 AC 6hr

Hydrograph type	= SCS Runoff	Peak discharge	= 6.025 cfs
Storm frequency	= 100 yrs	Time to peak	= 2.40 hrs
Time interval	= 2 min	Hyd. volume	= 23,922 cuft
Drainage area	= 1.700 ac	Curve number	= 80
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 6.39 in	Distribution	= SCS 6-Hr
Storm duration	= 6.00 hrs	Shape factor	= 484



# Hydrograph Report

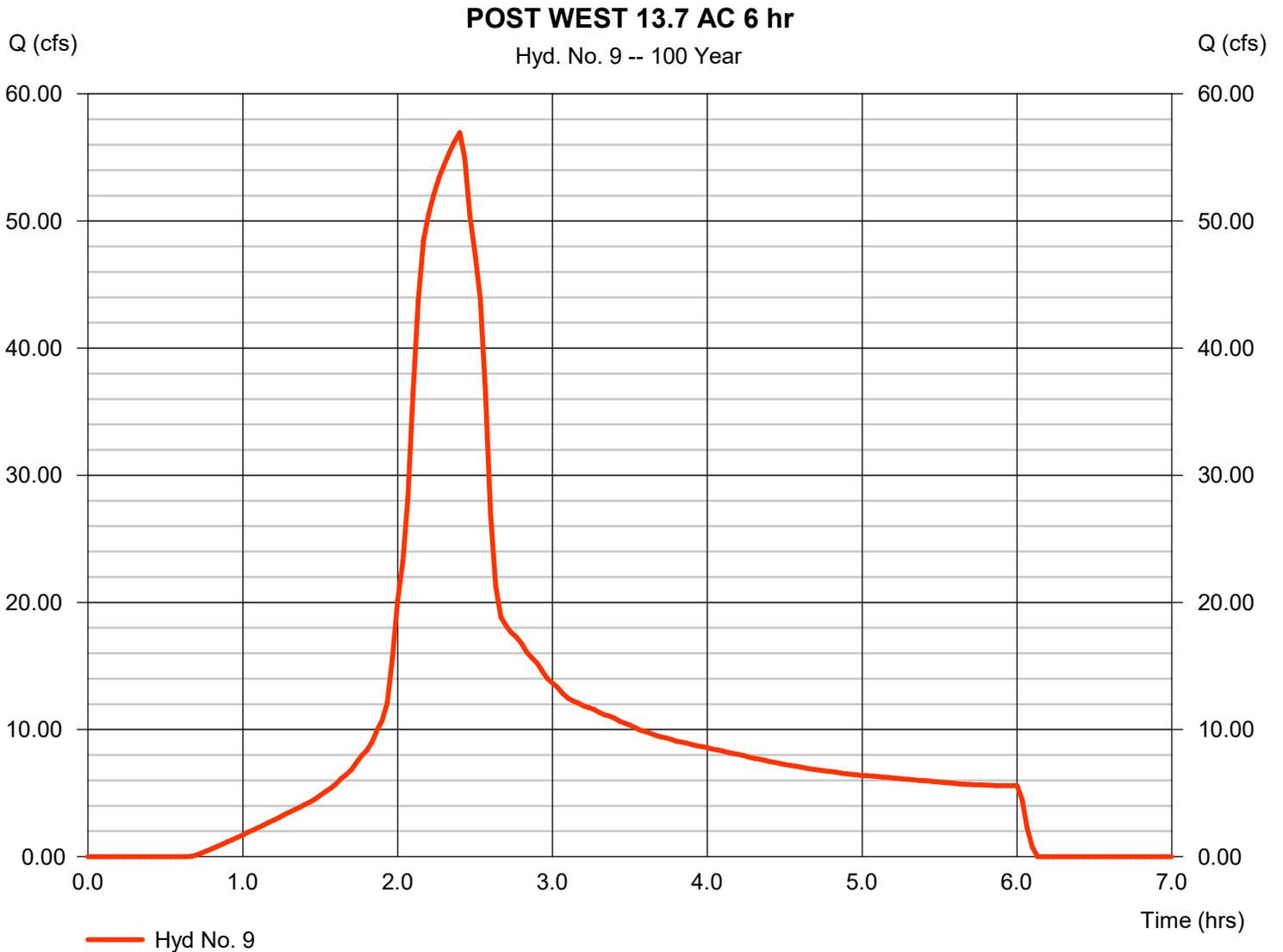
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2026

Wednesday, 01 / 21 / 2026

## Hyd. No. 9

POST WEST 13.7 AC 6 hr

Hydrograph type	= SCS Runoff	Peak discharge	= 56.94 cfs
Storm frequency	= 100 yrs	Time to peak	= 2.40 hrs
Time interval	= 2 min	Hyd. volume	= 231,659 cuft
Drainage area	= 13.700 ac	Curve number	= 87.7
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 6.39 in	Distribution	= SCS 6-Hr
Storm duration	= 6.00 hrs	Shape factor	= 484

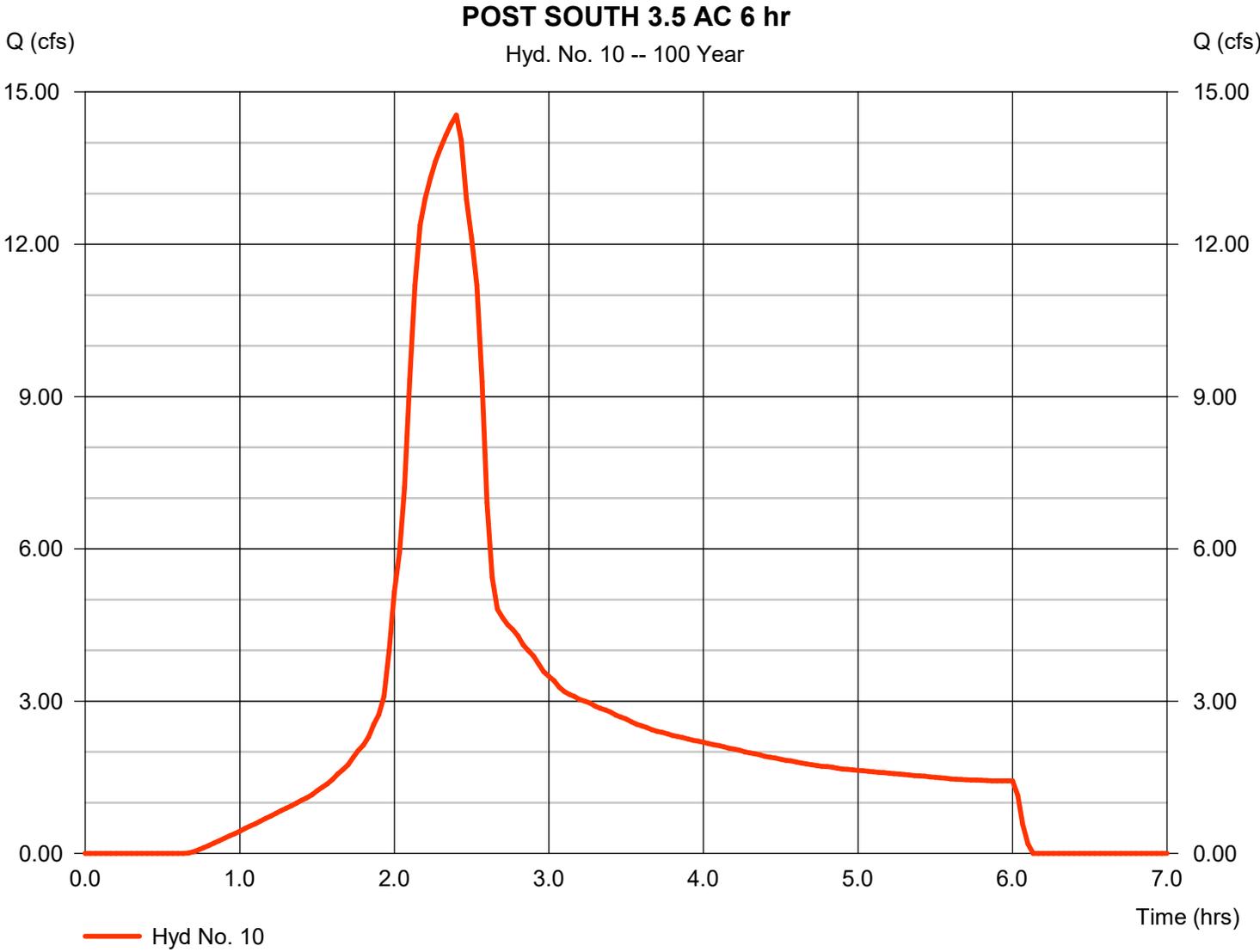


# Hydrograph Report

## Hyd. No. 10

POST SOUTH 3.5 AC 6 hr

Hydrograph type	= SCS Runoff	Peak discharge	= 14.55 cfs
Storm frequency	= 100 yrs	Time to peak	= 2.40 hrs
Time interval	= 2 min	Hyd. volume	= 59,183 cuft
Drainage area	= 3.500 ac	Curve number	= 87.7
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 6.39 in	Distribution	= SCS 6-Hr
Storm duration	= 6.00 hrs	Shape factor	= 484



# Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2026

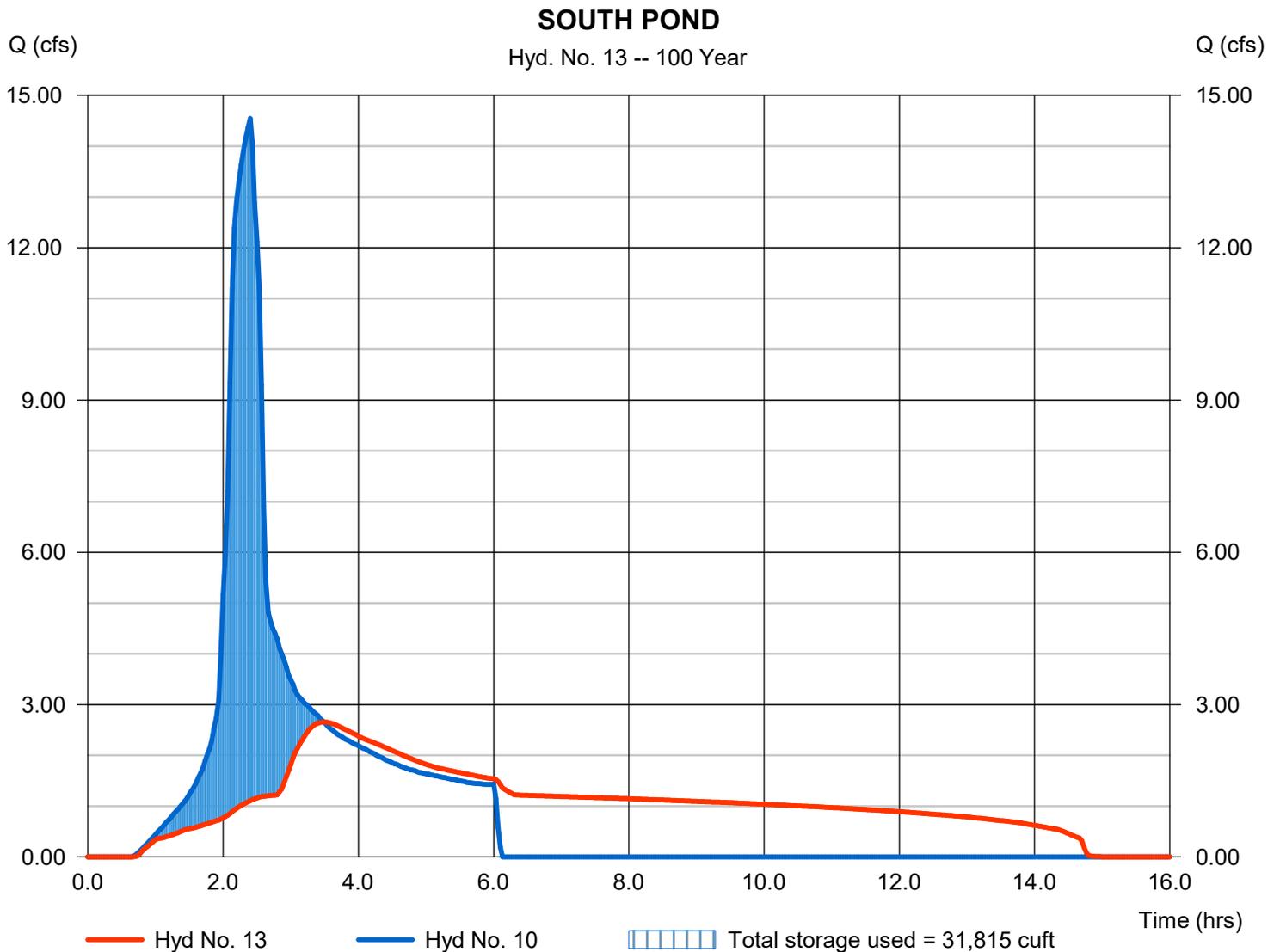
Wednesday, 01 / 21 / 2026

## Hyd. No. 13

### SOUTH POND

Hydrograph type	= Reservoir	Peak discharge	= 2.654 cfs
Storm frequency	= 100 yrs	Time to peak	= 3.50 hrs
Time interval	= 2 min	Hyd. volume	= 59,183 cuft
Inflow hyd. No.	= 10 - POST SOUTH 3.5 AC 6 h	Max. Elevation	= 1023.34 ft
Reservoir name	= SOUTH	Max. Storage	= 31,815 cuft

Storage Indication method used.



# Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2026

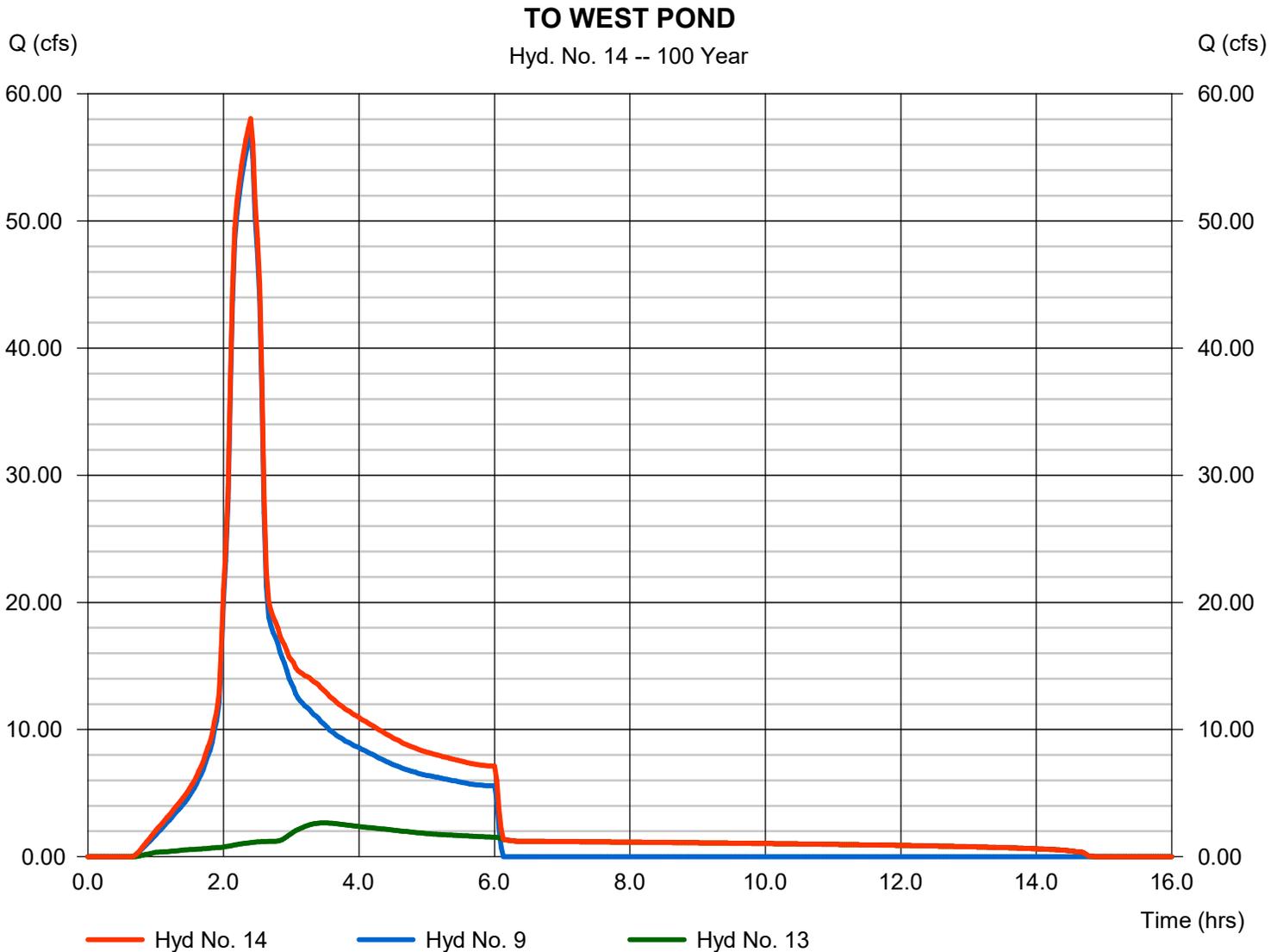
Wednesday, 01 / 21 / 2026

## Hyd. No. 14

TO WEST POND

Hydrograph type = Combine  
 Storm frequency = 100 yrs  
 Time interval = 2 min  
 Inflow hyds. = 9, 13

Peak discharge = 58.05 cfs  
 Time to peak = 2.40 hrs  
 Hyd. volume = 290,841 cuft  
 Contrib. drain. area = 13.700 ac



# Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2026

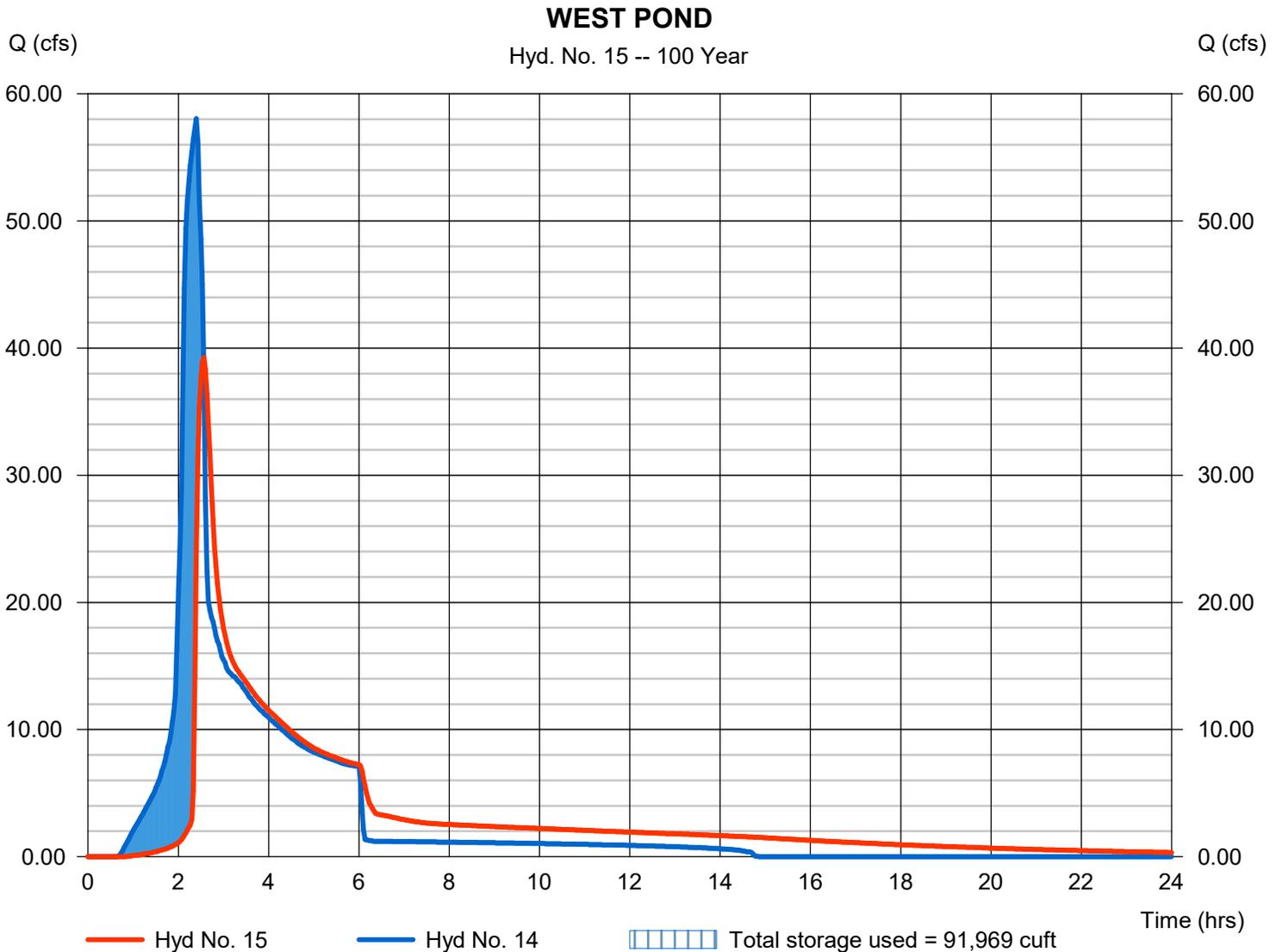
Wednesday, 01 / 21 / 2026

## Hyd. No. 15

### WEST POND

Hydrograph type	= Reservoir	Peak discharge	= 39.26 cfs
Storm frequency	= 100 yrs	Time to peak	= 2.57 hrs
Time interval	= 2 min	Hyd. volume	= 290,801 cuft
Inflow hyd. No.	= 14 - TO WEST POND	Max. Elevation	= 1006.97 ft
Reservoir name	= WEST POND retention	Max. Storage	= 91,969 cuft

Storage Indication method used.



# Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2026

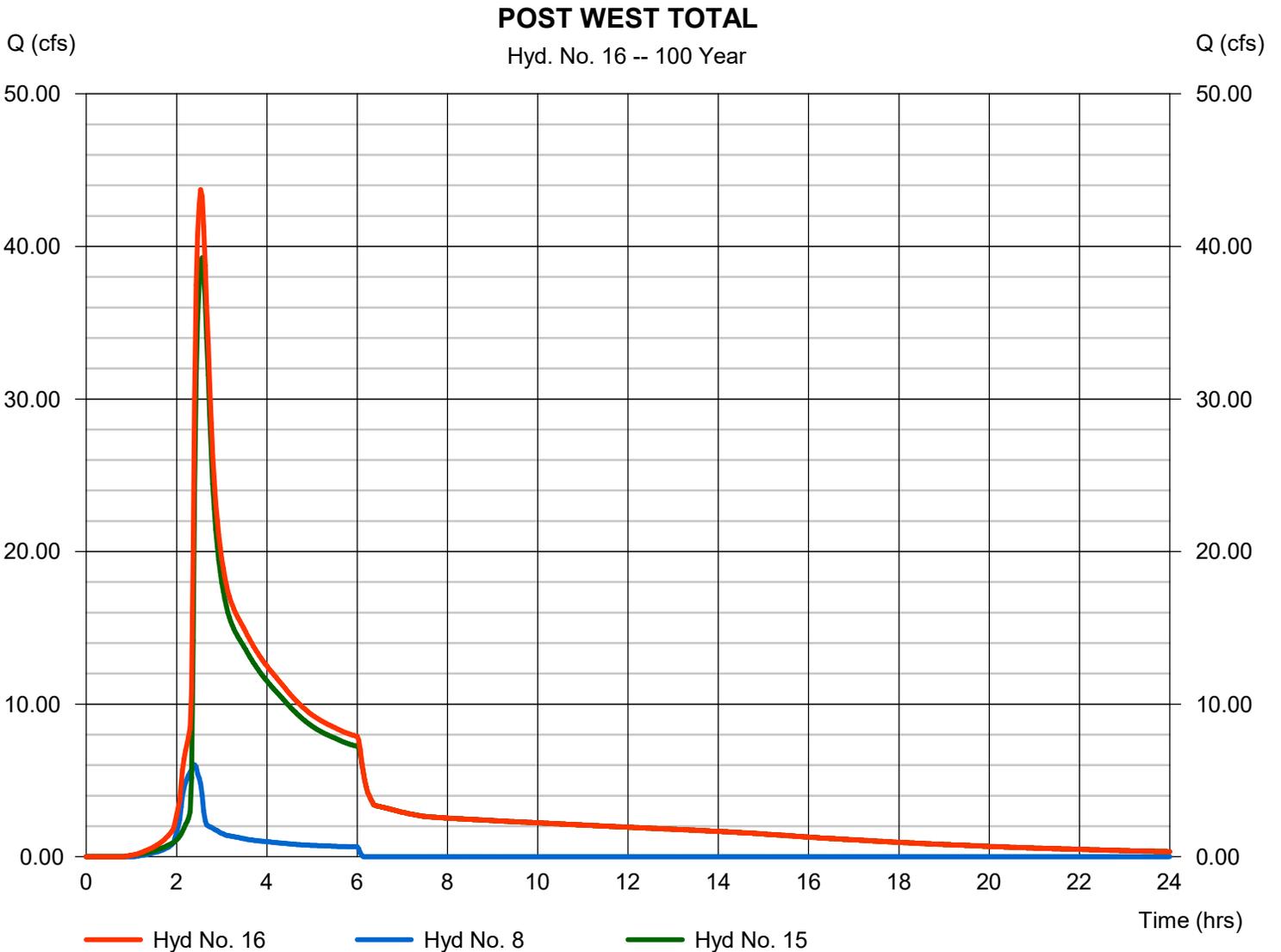
Wednesday, 01 / 21 / 2026

## Hyd. No. 16

### POST WEST TOTAL

Hydrograph type = Combine  
Storm frequency = 100 yrs  
Time interval = 2 min  
Inflow hyds. = 8, 15

Peak discharge = 43.71 cfs  
Time to peak = 2.53 hrs  
Hyd. volume = 314,723 cuft  
Contrib. drain. area = 1.700 ac



# Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2026

Wednesday, 01 / 21 / 2026

## Hyd. No. 18

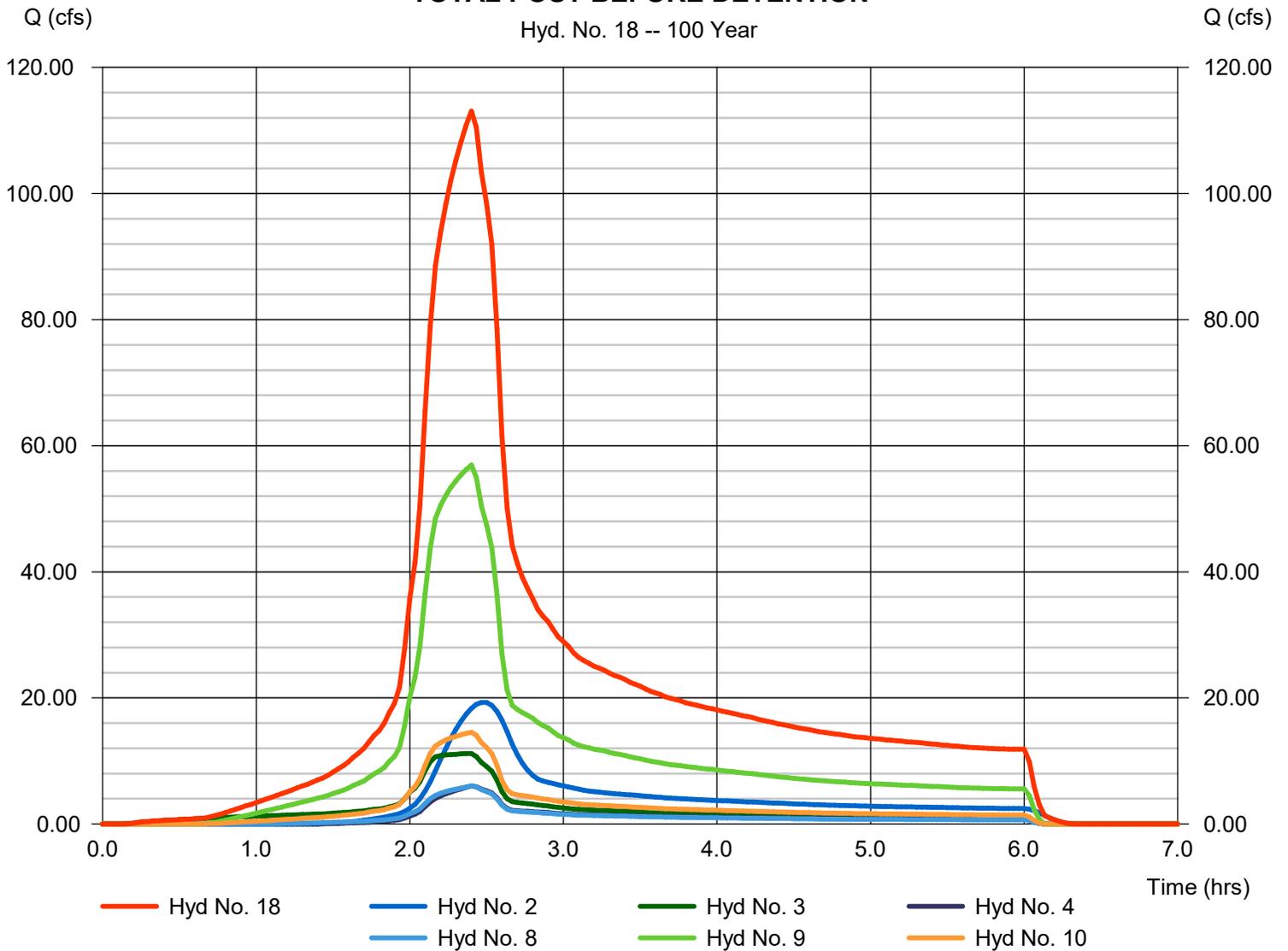
### TOTAL POST BEFORE DETENTION

Hydrograph type = Combine  
 Storm frequency = 100 yrs  
 Time interval = 2 min  
 Inflow hyds. = 2, 3, 4, 8, 9, 10

Peak discharge = 113.07 cfs  
 Time to peak = 2.40 hrs  
 Hyd. volume = 470,525 cuft  
 Contrib. drain. area = 29.500 ac

### TOTAL POST BEFORE DETENTION

Hyd. No. 18 -- 100 Year



# Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2026

Wednesday, 01 / 21 / 2026

## Hyd. No. 20

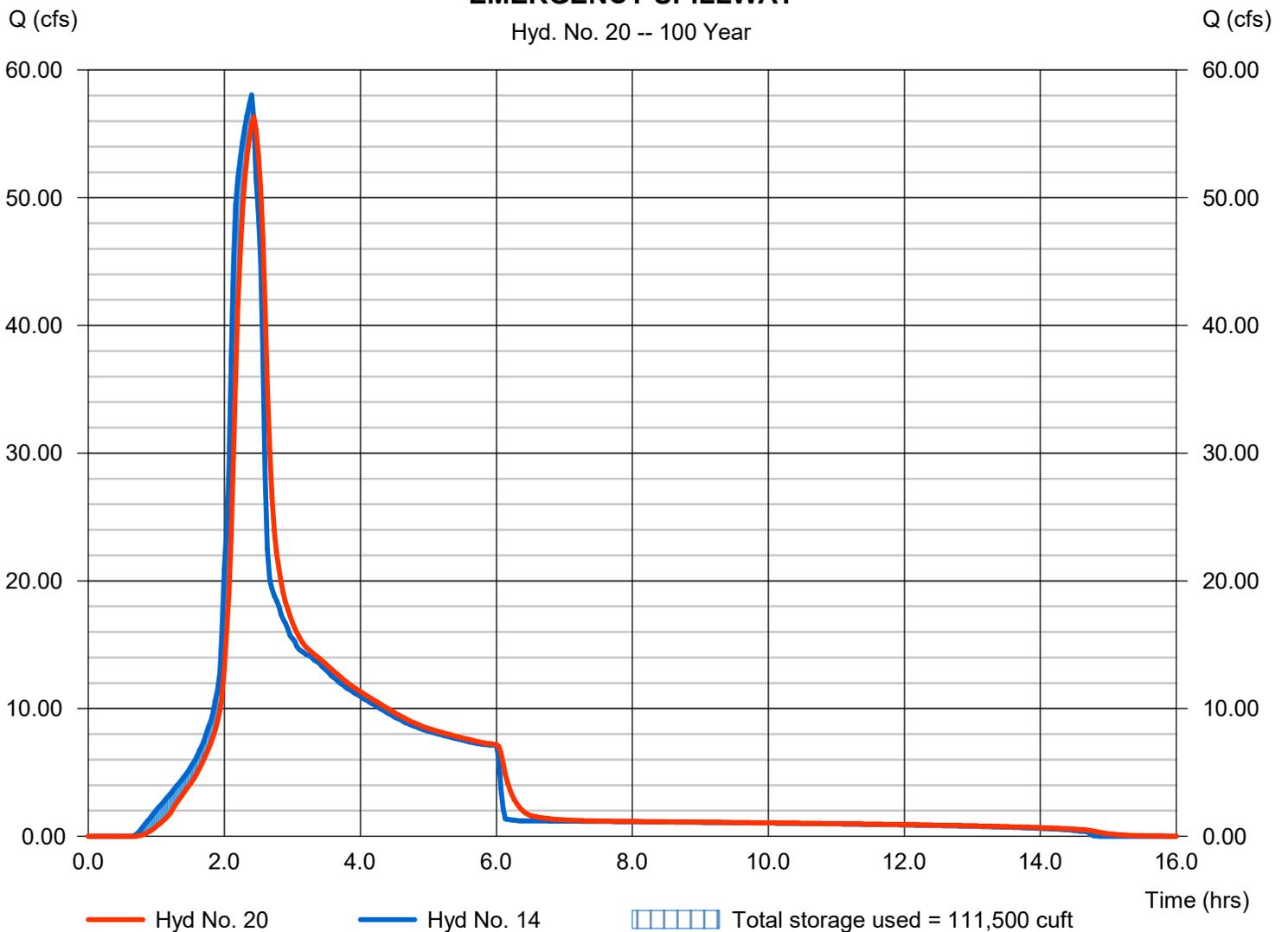
### EMERGENCY SPILLWAY

Hydrograph type	= Reservoir	Peak discharge	= 56.35 cfs
Storm frequency	= 100 yrs	Time to peak	= 2.43 hrs
Time interval	= 2 min	Hyd. volume	= 290,840 cuft
Inflow hyd. No.	= 14 - TO WEST POND	Max. Elevation	= 1008.05 ft
Reservoir name	= EMERGENCY SPILLWAY	Max. Storage	= 111,500 cuft

Storage Indication method used. Wet pond routing start elevation = 1007.00 ft.

### EMERGENCY SPILLWAY

Hyd. No. 20 -- 100 Year



# Hydrograph Report

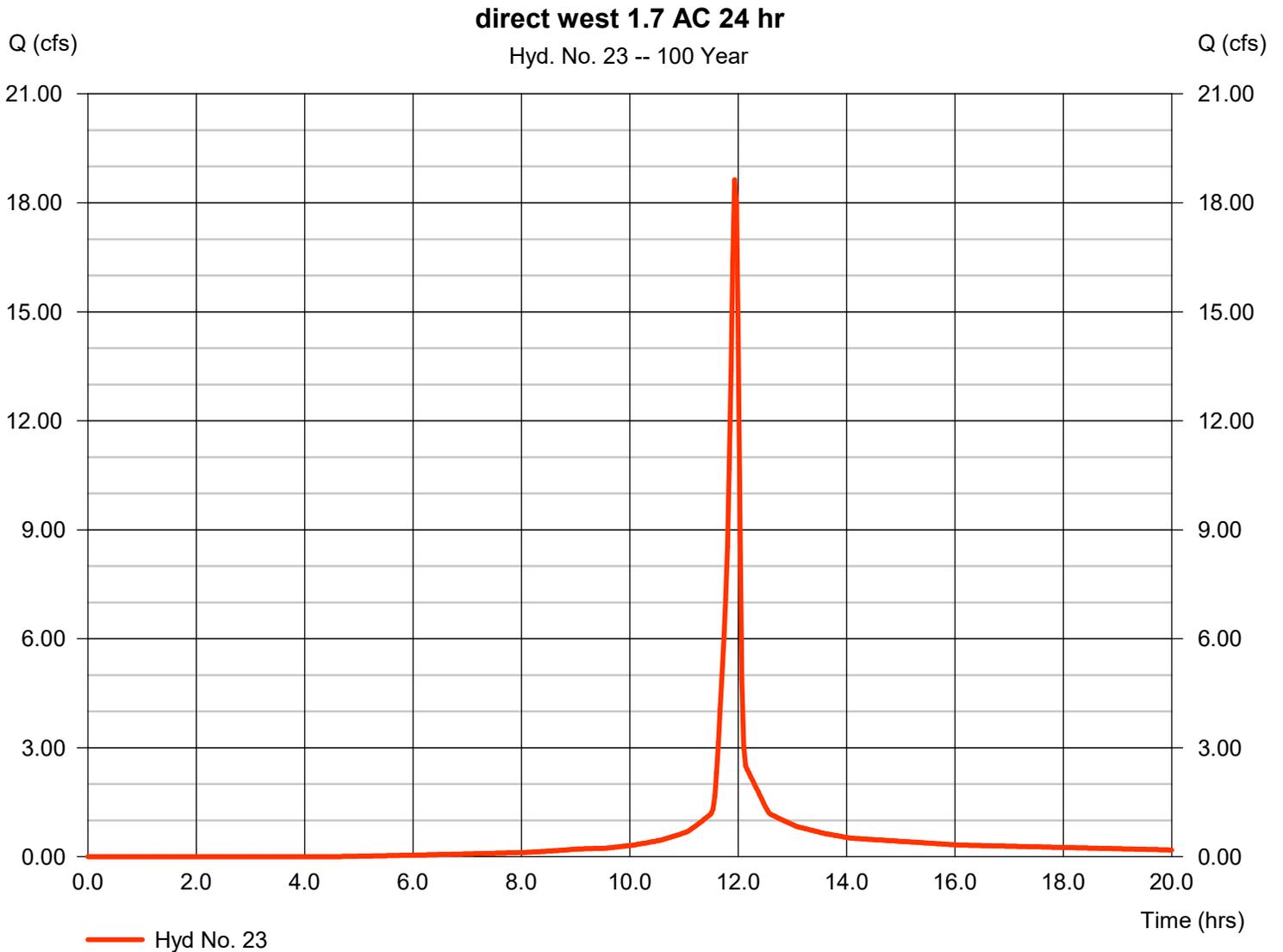
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2026

Wednesday, 01 / 21 / 2026

## Hyd. No. 23

direct west 1.7 AC 24 hr

Hydrograph type	= SCS Runoff	Peak discharge	= 18.63 cfs
Storm frequency	= 100 yrs	Time to peak	= 11.93 hrs
Time interval	= 2 min	Hyd. volume	= 39,372 cuft
Drainage area	= 1.700 ac	Curve number	= 80
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 9.25 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



# Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2026

Wednesday, 01 / 21 / 2026

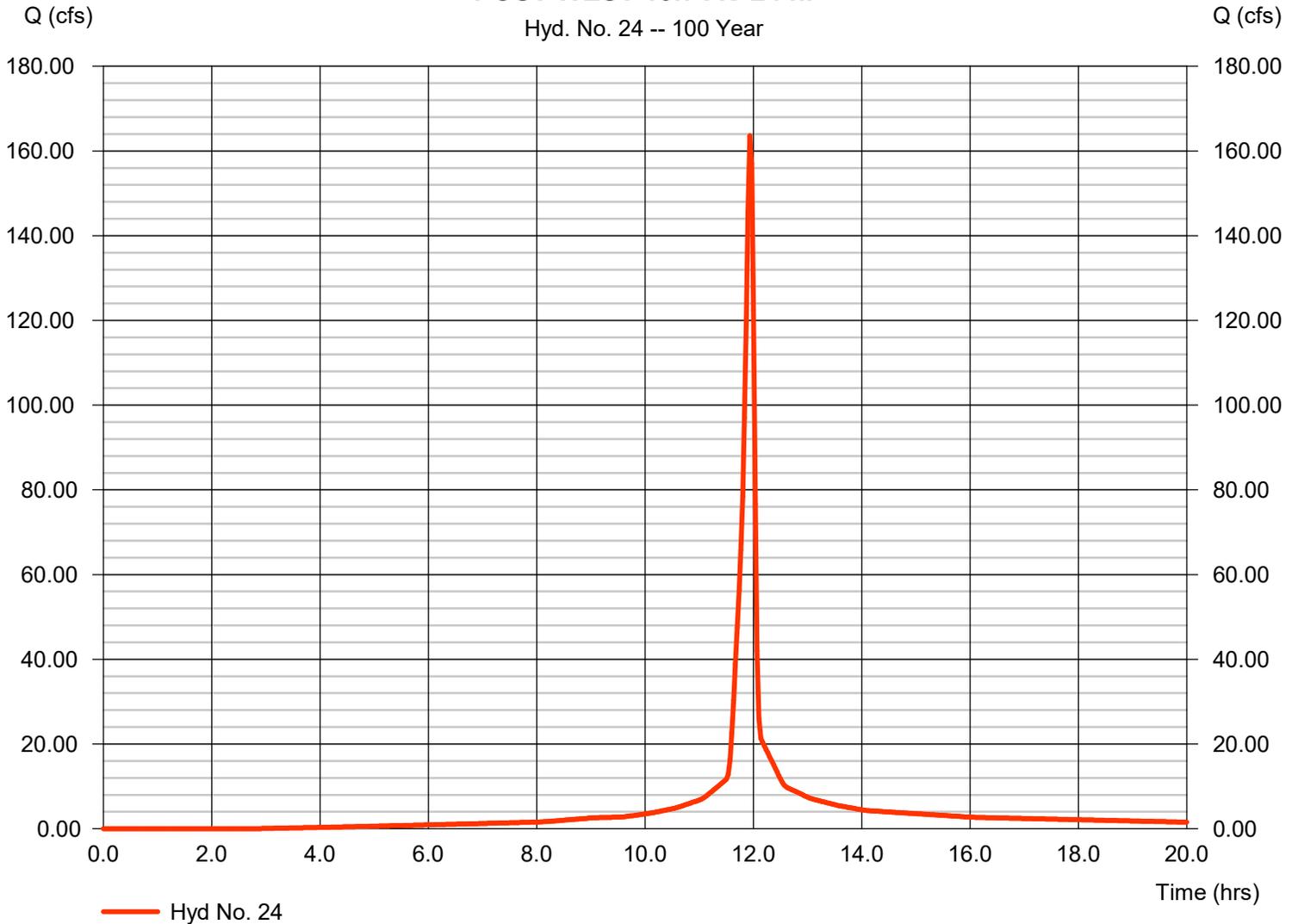
## Hyd. No. 24

POST WEST 13.7 AC 24 hr

Hydrograph type	= SCS Runoff	Peak discharge	= 163.61 cfs
Storm frequency	= 100 yrs	Time to peak	= 11.93 hrs
Time interval	= 2 min	Hyd. volume	= 361,636 cuft
Drainage area	= 13.700 ac	Curve number	= 87.7
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 9.25 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

### POST WEST 13.7 AC 24 hr

Hyd. No. 24 -- 100 Year

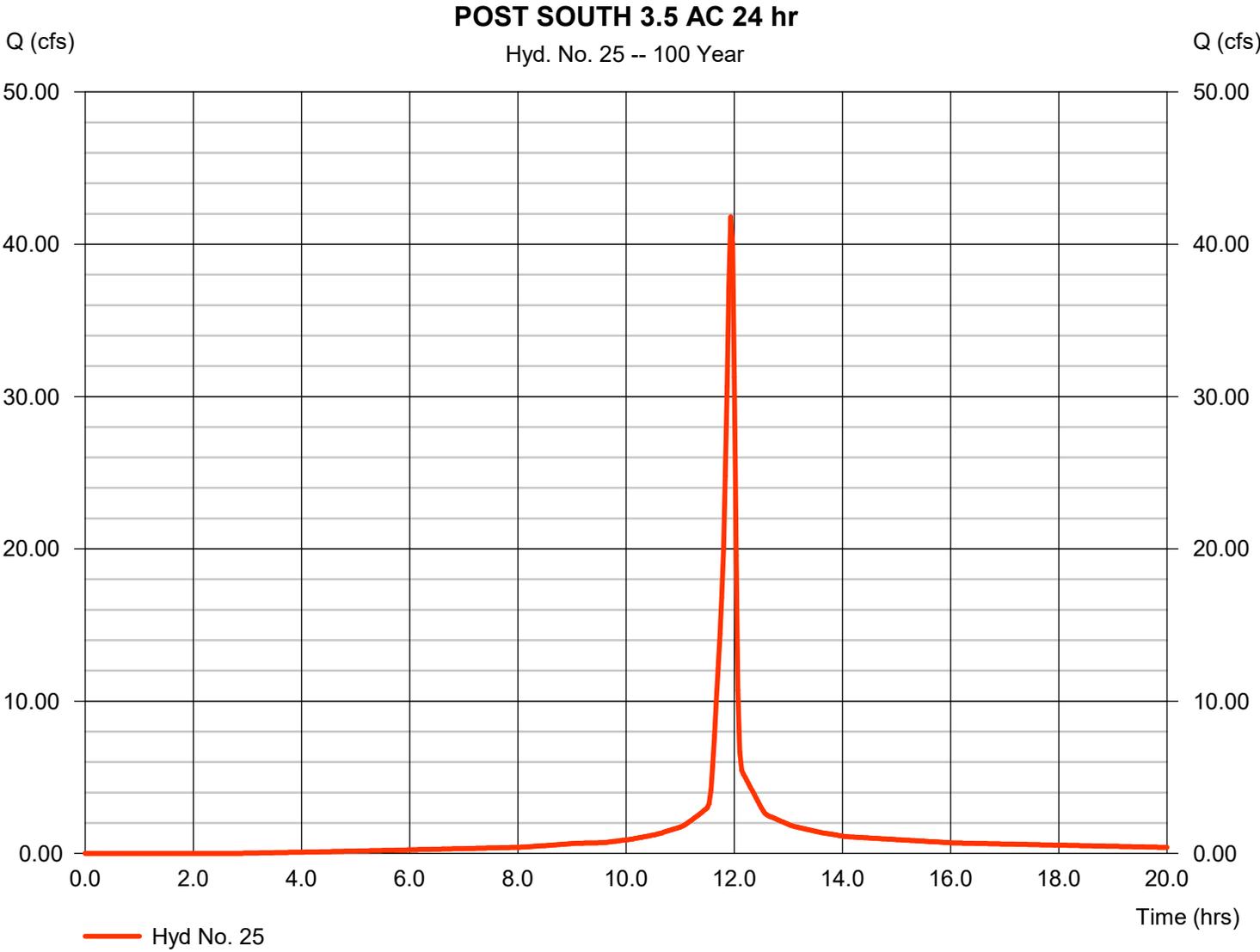


# Hydrograph Report

## Hyd. No. 25

POST SOUTH 3.5 AC 24 hr

Hydrograph type	= SCS Runoff	Peak discharge	= 41.80 cfs
Storm frequency	= 100 yrs	Time to peak	= 11.93 hrs
Time interval	= 2 min	Hyd. volume	= 92,389 cuft
Drainage area	= 3.500 ac	Curve number	= 87.7
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 9.25 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



# Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2026

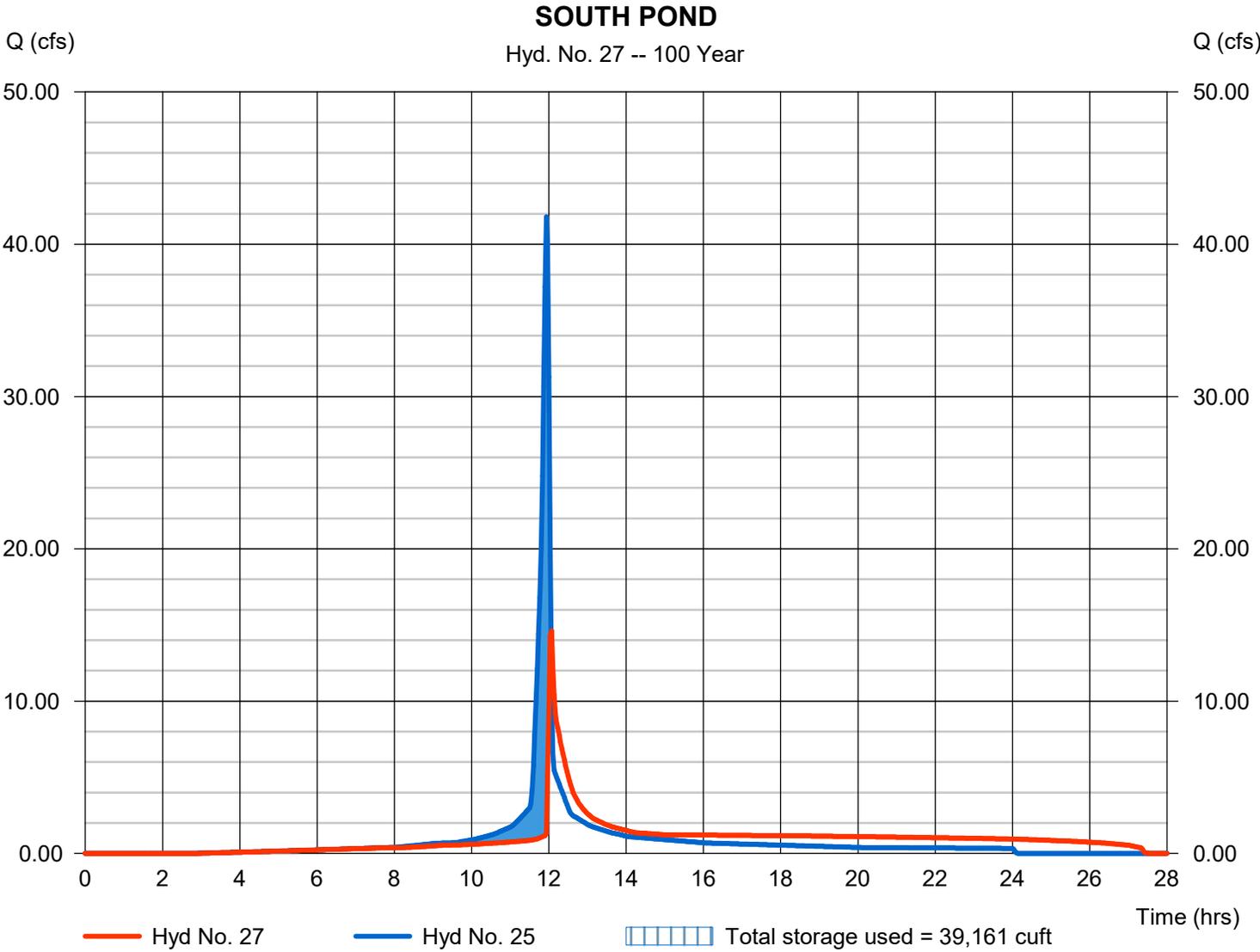
Wednesday, 01 / 21 / 2026

## Hyd. No. 27

### SOUTH POND

Hydrograph type	= Reservoir	Peak discharge	= 14.61 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 92,389 cuft
Inflow hyd. No.	= 25 - POST SOUTH 3.5 AC 24	Max. Elevation	= 1024.19 ft
Reservoir name	= SOUTH	Max. Storage	= 39,161 cuft

Storage Indication method used.



# Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2026

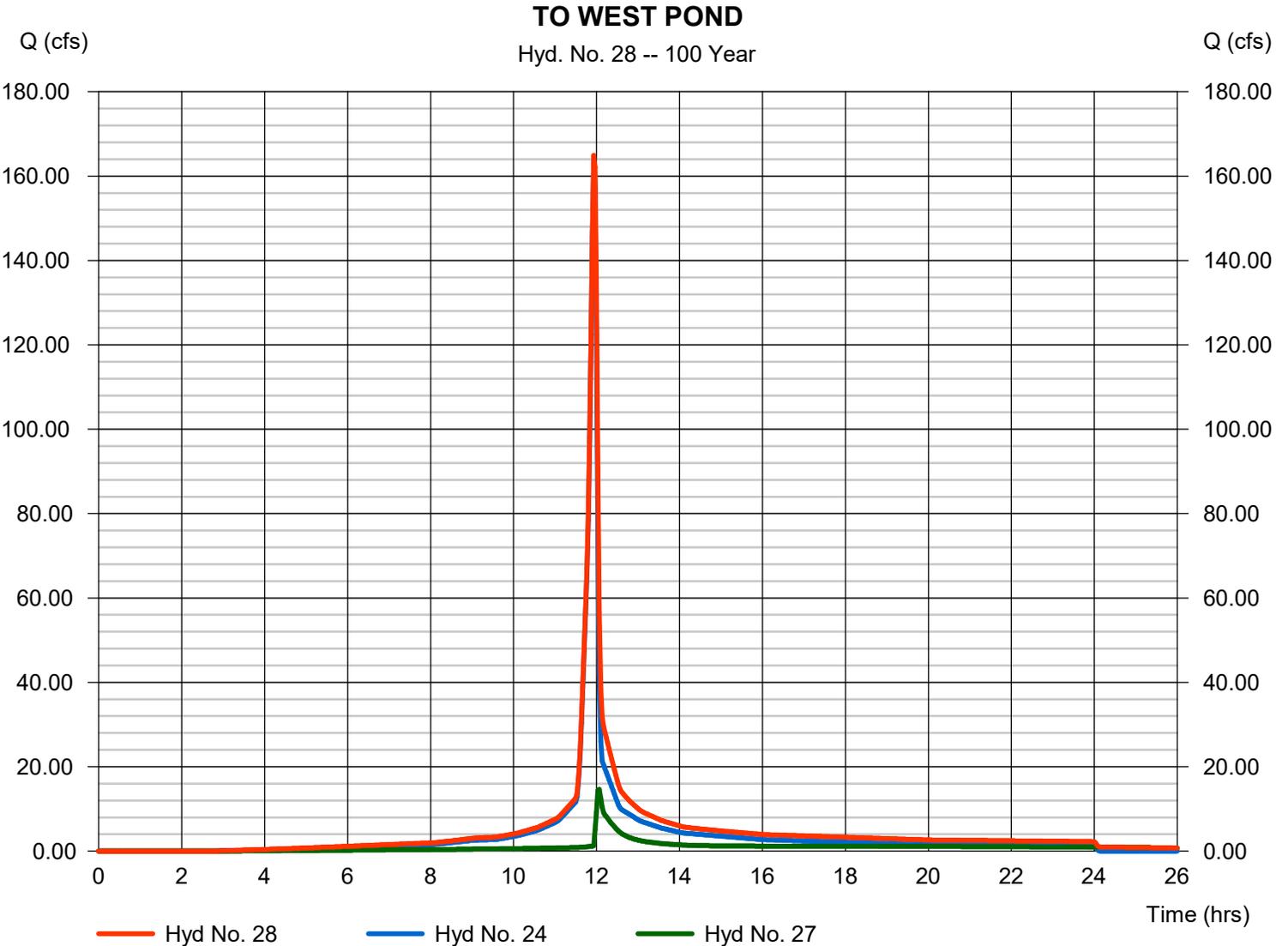
Wednesday, 01 / 21 / 2026

## Hyd. No. 28

TO WEST POND

Hydrograph type = Combine  
Storm frequency = 100 yrs  
Time interval = 2 min  
Inflow hyds. = 24, 27

Peak discharge = 164.91 cfs  
Time to peak = 11.93 hrs  
Hyd. volume = 454,024 cuft  
Contrib. drain. area = 13.700 ac



# Hydrograph Report

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Wednesday, 01 / 21 / 2026

## Hyd. No. 29

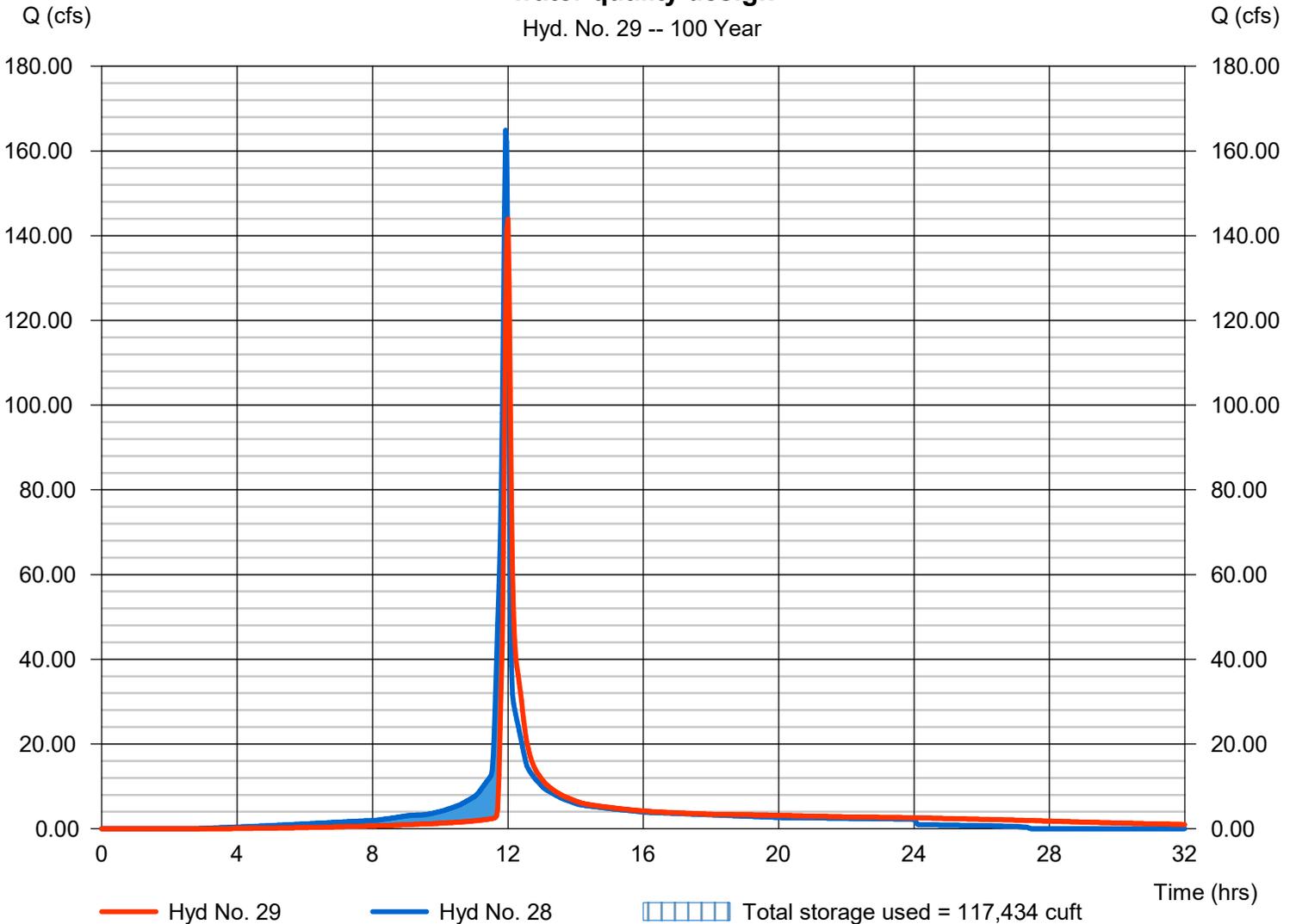
water quality design

Hydrograph type	= Reservoir	Peak discharge	= 143.94 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.00 hrs
Time interval	= 2 min	Hyd. volume	= 453,984 cuft
Inflow hyd. No.	= 28 - TO WEST POND	Max. Elevation	= 1008.35 ft
Reservoir name	= WEST POND retention	Max. Storage	= 117,434 cuft

Storage Indication method used.

### water quality design

Hyd. No. 29 -- 100 Year



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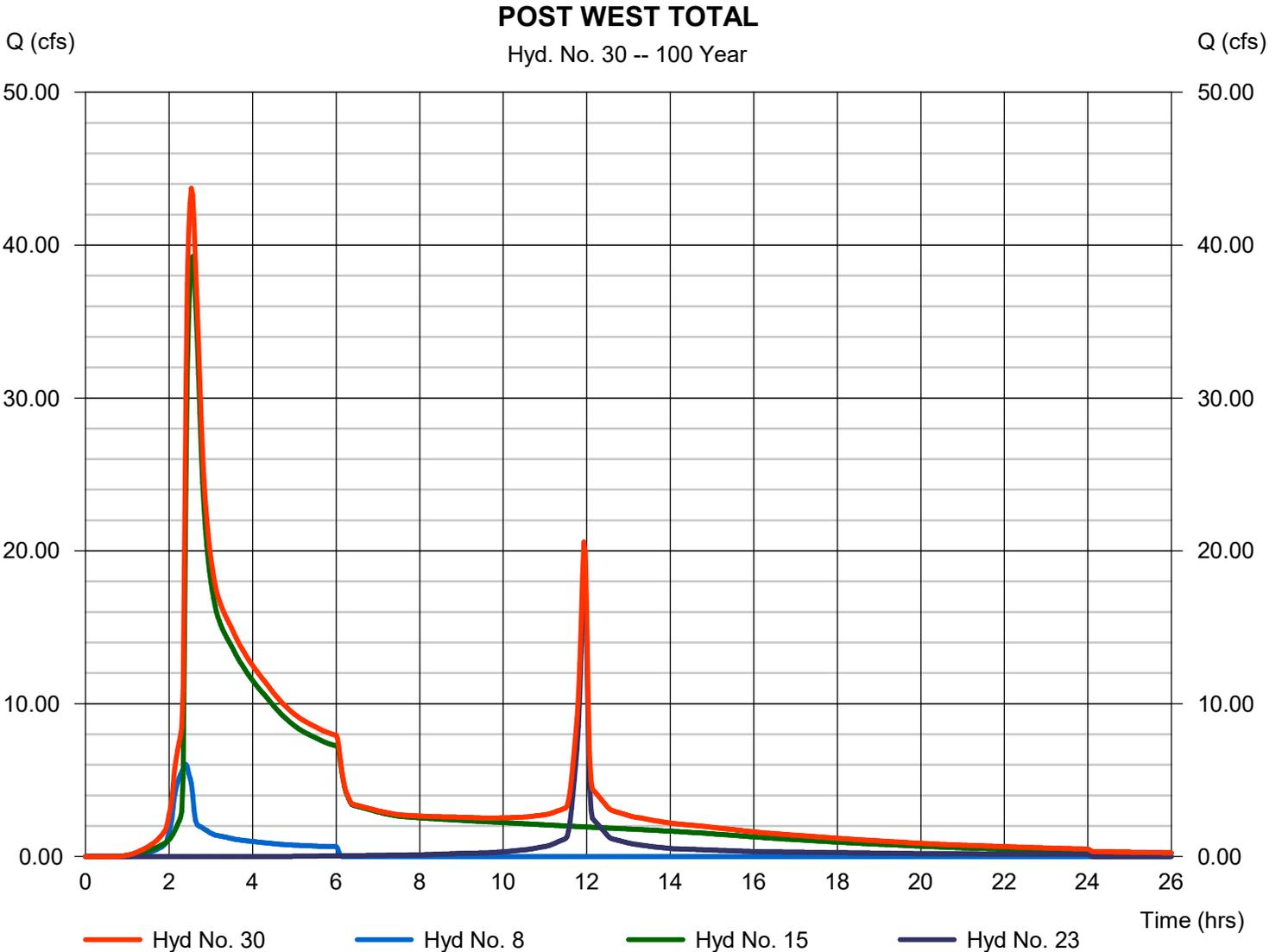
Wednesday, 01 / 21 / 2026

## Hyd. No. 30

### POST WEST TOTAL

Hydrograph type = Combine  
Storm frequency = 100 yrs  
Time interval = 2 min  
Inflow hyds. = 8, 15, 23

Peak discharge = 43.71 cfs  
Time to peak = 2.53 hrs  
Hyd. volume = 354,095 cuft  
Contrib. drain. area = 3.400 ac



## Appendix H – Water Quality Worksheets

## General Requirements

### Project Information

Project Name:	Grocery store
Date:	Feburary 5,2026
Address:	NE DOUGLAS ST
Nearest Intersection:	NE DOUGLAS ST AND NW CHIPMAN RD
Project Type:	Site Development - New Development
System Type:	Separate Storm Sewer System
Proposed Land Use:	Commercial
Input Value Basis:	Actual measured values based on improvement plans

### Site Parameters

Total Disturbed Area of Site	18.88	acres
Total Proposed Impervious Area	11	square feet
Effective FEMA floodplain?	Yes	(Select Yes/No)
Describe Known Stormwater Issues (if any):		

### Stormwater Management Requirements/Variance

Project required to meet stormwater management criteria?	Yes	
Request for Variance?	No	(Select Yes/No)
Why? Explain:		

## Landscape Professional Verification of Compliance with Design Criteria

### Preservation/Restoration

Requirements Met?	Design Criteria
FALSE Yes FALSE No TRUE N/A	Stream setbacks meet requirements of Section 5604 and placed within a separate dedicated tract of land restricted from future development?
TRUE Yes FALSE No TRUE Yes FALSE No FALSE N/A FALSE Yes FALSE No TRUE N/A	Project incorporates preservation or restoration of Natural Areas? Natural Area meets requirements of Section 5604? Natural Area placed within a separate dedicated tract of land restricted from future development?
FALSE Yes FALSE No FALSE N/A FALSE Yes FALSE No TRUE N/A FALSE Yes FALSE No TRUE N/A TRUE Yes FALSE No FALSE N/A	Project incorporates the following Sustainable Stormwater Management Practices and RRV reductions meeting requirements of Section 5602 and 5604 (select all that apply): Sheetflow to Natural Areas Sheetflow to Natural Areas Downspout Disconnection (not applicable for residential developments) Preservation of Existing Trees or Planting New Trees?

Total RRV Reductions:  (cf)

<p><b><i>I hereby certify, as a Landscape Professional, that the information in the Preservation/Restoration section of this form was assembled under my direct personal charge and is in compliance with the Stormwater Management Criteria.</i></b></p>		
<b>Cara L. Martin</b>	<b>PE-2008022443</b>	<b>MO</b>
Professional Name	License Number	State

## Professional Engineer Verification of Compliance with Design Criteria

### Retention

Requirements Met?	Design Criteria	Retention Volume (cf)	
TRUE Yes    FALSE No    FALSE N/A	Required Retention Volume met per Section 5602?		
FALSE Yes    FALSE No    FALSE N/A	Easement(s) provided?	<i>Required</i>	<i>Designed</i>
	RRV (prior to RRV Reductions)	51,998	66,150
	RRV (with RRV Reductions)	50,998	

### Detention

Requirements Met?	Design Criteria	Release Rates (cfs)	
FALSE Yes    FALSE No    TRUE N/A	Easement(s) provided?	<i>Maximum Allowable</i>	<i>Designed</i>
TRUE Yes    FALSE No    FALSE N/A	2-year peak outflow control achieved?	3.776	3.469
TRUE Yes    FALSE No    FALSE N/A	10-year peak outflow control achieved?	11.328	10.64
TRUE Yes    FALSE No    FALSE N/A	100-year peak outflow control achieved?	56.64	56.21

### Collection

Requirements Met?	Design Criteria		
TRUE Yes    FALSE No    FALSE N/A	Inlet placement and gutter spread per requirements of Section 5607?		

### Conveyance

Requirements Met?	Design Criteria		
FALSE Yes    FALSE No    TRUE N/A	Easement(s) provided?		
TRUE Yes    FALSE No    FALSE N/A	Enclosed pipe systems per requirements of 5608.2?		
FALSE Yes    FALSE No    TRUE N/A	Minor drainage systems per requirements of 5608.3 A?		
TRUE Yes    FALSE No    FALSE N/A	Designated overflow routes for 100-year design storm per requirements of Section 5608.3 B?		
FALSE Yes    FALSE No    TRUE N/A	Channel stabilization per requirements of 5608.4?		
TRUE Yes    FALSE No    FALSE N/A	Road crossings per requirements of 5608.5?		

*I hereby certify, as a Professional Engineer, that the information in the Retention, Detention, Collection, and Conveyance sections of this form were assembled under my direct personal charge and is in compliance with the Stormwater Management Criteria.*

**Cara L. Martin**

Professional Name

**PE-2008022443**

License Number

**MO**

State

## Required Maps

TRUE **Watershed Location Map.** Describes the project's location within the greater watershed depicting:

1. Watershed boundary and area (acres)
2. Delineated drainage area tributary to the project site (acres)
3. Natural overland drainage paths to, through and downstream of the project site to the downstream destination of runoff (whether open channel or enclosed system)
4. Water bodies & regulatory floodplain (lakes, rivers, streams, creeks, wetlands, etc.)
5. Existing stormwater retention/detention facility location(s) in upstream or downstream watershed affecting stormwater management at project site (if applicable)

TRUE **Existing Site Conditions Map.** Demonstrates existing conditions of the site depicting:

1. Existing contours
2. Aerial imagery
3. Water bodies & regulatory floodplain (lakes, rivers, streams, creeks, wetlands, etc.)
4. Natural overland drainage paths and discharge points from the site
5. Existing utilities, including existing stormwater infrastructure
6. Parcel boundaries
7. Existing impervious surfaces and types (i.e. building, parking lot, gravel, etc.)
8. Key statistics including total disturbed area, total impervious area, and lot size (if applicable)

TRUE **Proposed Site Conditions Map.** Demonstrates proposed conditions of the site depicting:

1. Proposed contours including finished floor elevation (FFE) and lowest opening elevation (LOE) information
2. Existing and proposed utilities, including existing stormwater infrastructure overland drainage paths
3. Designated overflow routes and discharge points from the site
4. Proposed drainage areas labeled with IDs and acreages correlating to the stormwater management calculator inputs, including uncontrolled drainage area
5. Parcel boundaries depicting required utility easements, stream setbacks identifying key features and statistics (top of bank or bank-full extents, centerline, Zone 1, and Zone 2, and dimensional offset), and Natural Areas with key statistics (total footprint, minimum length and width).
6. Impervious surfaces and types (i.e. building, parking lot, gravel, etc.)
7. Stormwater improvements including Natural Areas of preservation or restoration, preserved trees, new trees, retention practices, detention practices, collection and conveyance practices with labels correlating to the stormwater management calculator inputs

## Site Summary

<b>Project and Development Type:</b>	Site Development - New Development
<b>System Type:</b>	Separate Storm Sewer System
<b>Proposed Land Use:</b>	Commercial
<b>Input Value Basis:</b>	Actual measured values based on improvement plans
<b>Assumed Percent Impervious Coverage:</b>	NA
<b>Total Disturbed Area (sf):</b>	822,413

### Treatment Summary Table

Water Quality Storm Event (in) ( $P_{WQ}$ )	1.37
Percent of Water Quality Storm to be Retained (PT%)	85%
Total Controlled Disturbed Area (sf)	822,413
Controlled Area $R_v$ ( $R_{v_{controlled}}$ )	0.65
Total Uncontrolled Disturbed Area (sf)	0
Total Required Retention Volume (cf) (RRV)	51,998
Uncontrolled Retention Volume (cf)	0
Adjusted PT% within Controlled Drainage Areas	NA

*Uncontrolled area is within the limit to achieve the total site retention requirements.*

## Drainage Areas Worksheet

View Instructions

How many total drainage areas are included on the site?

Drainage Area Summary Table		
Unique Drainage Area Identifier (ID)	Can this drainage area be feasibly controlled?	Disturbed Drainage Area (sf)
1	Yes	822,413

Select post-development cover types within the disturbed area:	
Natural Area	FALSE
Pervious Area	TRUE
Impervious Area	TRUE
Solar Farm - Native	FALSE
Solar Farm - Gravel	FALSE
Gravel - Overflow Parking Lots, Trails/Maintenance Paths, Substations	FALSE
Gravel - Primary Parking Lots, Access Driveways, Railroad Ballasts	FALSE
Gravel - Public Road with Compacted Subgrade Material	FALSE
Artificial Turf - No Underdrain System	FALSE
Artificial Turf - Underdrain System	FALSE
Water Surfaces	FALSE

Generate Detailed Drainage Area Tables

Filter Cover Types

Generate Design Sheets

## Site Summary

Summary Table for Drainage Area ID:	1
Is this drainage area controlled?	Yes
Disturbed drainage area (sf)	822,413
RRV Prior to Reductions (cf)	<b>51,998</b>
Pervious Area Weighted Rv	0.25
Impervious Area Weighted Rv	0.95
Post-Development Condition Weighted CN	87.77

Cover Type Area Table for Drainage Area 1	Area (sf)									% Cover	Rv
	Soil Type A	CN	Soil Type B	CN	Soil Type C	CN	Soil Type D	CN	Total		
Natural Area		30		55		70		77	<b>0</b>	0%	0.00
Pervious Area		39		61	350,658	74		80	<b>350,658</b>	43%	0.25
Impervious Area		98		98	471,755	98		98	<b>471,755</b>	57%	0.95
Solar Farm - Native		62		76		84		88	<b>0</b>	0%	0.40
Solar Farm - Gravel		75		84		89		92	<b>0</b>	0%	0.60
Gravel - Overflow Parking Lots, Trails/Maintenance Paths, Substations		75		84		89		92	<b>0</b>	0%	0.60
Gravel - Primary Parking Lots, Access Driveways, Railroad Ballasts		88		92		94		96	<b>0</b>	0%	0.80
Gravel - Public Road with Compacted Subgrade Material		98		99		98		98	<b>0</b>	0%	0.95
Artificial Turf - No Underdrain System		66		78		85		89	<b>0</b>	0%	0.45
Artificial Turf - Underdrain System		88		92		94		96	<b>0</b>	0%	0.80
Water Surfaces		100		100		100		99	<b>0</b>	0%	1.00
<b>Total</b>		<b>0</b>		<b>0</b>	<b>822,413</b>			<b>0</b>	<b>822,413</b>	<b>100%</b>	<b>0.65</b>

Summary Table for Drainage Area ID:	-
Is this drainage area controlled?	-
Disturbed drainage area (sf)	0
RRV Prior to Reductions (cf)	<b>0</b>
Pervious Area Weighted Rv	-
Impervious Area Weighted Rv	-
Post-Development Condition Weighted CN	-

Cover Type Area Table for Drainage Area -	Area (sf)									% Cover	Rv
	Soil Type A	CN	Soil Type B	CN	Soil Type C	CN	Soil Type D	CN	Total		
Natural Area		30		55		70		77	<b>0</b>	0%	0.00
Pervious Area		39		61	0	74		80	<b>0</b>	0%	0.25
Impervious Area		98		98		98		98	<b>0</b>	0%	0.95
Solar Farm - Native		62		76		84		88	<b>0</b>	0%	0.40
Solar Farm - Gravel		75		84		89		92	<b>0</b>	0%	0.60
Gravel - Overflow Parking Lots, Trails/Maintenance Paths, Substations		75		84		89		92	<b>0</b>	0%	0.60
Gravel - Primary Parking Lots, Access Driveways, Railroad Ballasts		88		92		94		96	<b>0</b>	0%	0.80
Gravel - Public Road with Compacted Subgrade Material		98		99		98		98	<b>0</b>	0%	0.95
Artificial Turf - No Underdrain System		66		78		85		89	<b>0</b>	0%	0.45
Artificial Turf - Underdrain System		88		92		94		96	<b>0</b>	0%	0.80
Water Surfaces		100		100		100		99	<b>0</b>	0%	1.00
<b>Total</b>		<b>0</b>		<b>0</b>	<b>0</b>			<b>0</b>	<b>0</b>	<b>0%</b>	

### Design for Drainage Area 1

Drainage Area ID	1
Is this drainage area controlled?	Yes
Disturbed drainage area (sf)	822,413
RRV Prior to Reductions (cf)	51,998
Pervious Area Weighted Rv	0.25
Impervious Area Weighted Rv	0.95
Post-Development Condition Weighted CN	87.77

[View Instructions](#)

#### Required Retention Volume Reductions (RRV<sub>Reductions</sub>)

Preservation/Restoration, & Disconnection RRV <sub>Reductions</sub>	Natural or Pervious Area Footprint (sf)	Pervious Tributary Area (sf) (P <sub>Tributary Area</sub> )	Impervious Tributary Area (sf) (I <sub>Tributary Area</sub> )	Runoff Reduction Credit	Retention Volume Credited (cf) RRV <sub>Reduction</sub>
Sheetflow to Natural Area				100%	0
Sheetflow to Pervious Area				50%	0
Downspout Disconnection				25%	0

Tree RRV <sub>Reductions</sub>	Number of Trees (Each)	Runoff Reduction Credit (cf/tree)	Retention Volume Credited (cf) RRV <sub>Reduction</sub>
Existing Trees (Preserved)		20	0
New Trees	100	10	1,000

Total RRV <sub>Reductions</sub> (cf)	1,000
RRV After Reductions (cf)	50,998
% Reduction in RRV	1.9%

#### Retention Practices

Select material types and storage layers used for this design:	
Open Storage (Ponding Area)	TRUE
Bioretention Soil	FALSE
Structural Soil	FALSE
Sand	FALSE
Storage Aggregate Media	FALSE
Choker Course	FALSE
Green Roof Drainage Layer	FALSE
Green Roof Growing Media	FALSE
Storage Chamber(s)	FALSE

[Hide Blank Rows](#)

[Show Blank Rows](#)

PT% 85.00%

Retention Facility ID	Practice	Downstream Retention Facility ID	Pervious Drainage Area	Impervious Drainage Area	Approx. Target Retention Volume (cf)	Retention Volume Provided (cf) (V <sub>R</sub> )	Bypass RRV (cf)	Open Storage (Ponding)			Total Storage Volume (cf)	Runoff Reduction Factor (%)	Retention Volume Provided (cf)	Maximum Retention Credit Allowed
1	Dry Detention Basin, Controlled Release	1	350,658	471,755	51,999	66,150		10,500	10.5	110,250	110,250	60%	66,150	61,174

Required Retention Volume (cf)	50,998
Retention Volume Achieved (cf)	66,150 <input checked="" type="checkbox"/> You met the Required Retention Volume.

## Design for Drainage Area 1

### Detention Calculations

	2-year storm	10-year storm	25-year storm	50-year storm	100-year storm
Required Rainfall Event (in) - 6 hour Events	2.66	4.04	4.96	5.70	6.47

#### Post-Development Conditions

Weighted CN	87.77
S	1.39
Ia	0.07

	2-year storm	10-year storm	25-year storm	50-year storm	100-year storm
Pre-Development Runoff Volume (in)	0.14	0.75	1.31	1.81	2.38
Post-Development Runoff Volume (in) with no Retention	1.68	2.94	3.81	4.51	5.26
Post-Development Runoff Volume (in) with Retention	0.08	1.33	2.20	2.90	3.65
Retention Adjusted CN	52.6	69.5	72.3	73.6	74.6
Additional Detention Required?	No	Yes	Yes	Yes	Yes

Design Storm	Required Release Rate (cfs/acre)	Allowable Site Release (cfs)	Peak Outflow (cfs)	Max Ponding Depth (ft)	Achieved Release Rate (cfs/acre)	
2-Year, NOAA Atlas14 Median, First Quartile	0.20	3.78	3.469	7.14	0.18	Required release rate met.
10-Year, NOAA Atlas14 Median, First Quartile	0.60	11.33	10.64	9.01	0.56	Required release rate met.
100-Year, NOAA Atlas14 Median, First Quartile	3.00	56.64	56.21	10.13	2.98	Required release rate met.

## Verification of Required Retention Volume (RRV)

Total Site Summary	Total Disturbed Area (sf):	822,413	
	Total Site Rv:	0.65	
	Total RRV Prior to Reductions (cf)	51,998	
	Total RRV Reductions (cf)	1,000	
	Total RRV After Reductions (cf)	50,998	
	Total Retention Volume Achieved (cf)	66,150	<input checked="" type="checkbox"/> <i>Total Required Retention Volume achieved</i>
	Percent WQv Control Achieved	109.8%	<input checked="" type="checkbox"/> <i>Required percent site control achieved!</i>