INLAND DESIGN

Civil Engineers, Surveyors & Land Development Consultants

Post Construction
Stormwater Management Report
For

438 Webb Road
Chadds Ford, PA 19317

Chadds Ford Township, Delaware County

January 15, 2024

[Professional Engineer seal: COMMONWEALTH OF PENNSYLVANIA, REGISTERED PROFESSIONAL ENGINEER, JOEL D. COMANDA, PE070740]

Prepared on Behalf of: Jennifer Devlin
                         438 Webb Road
                         Chadds Ford, Pa 19317

Prepared By: InLand Design, LLC
                         16 Hagerty Boulevard
                         West Chester, PA 19382
                         Inland Design Project No. 11711

Plan Reference: Preliminary/Final Subdivision Plan for 438 Webb Road
                         Dated 01/15/2024 or last revised.

INLAND DESIGN

Table of Contents

SECTION 1

Introduction

The applicant is proposing to subdivide the existing 4.375 acre property, located at 438 Webb Road, into two (2) separate lots in order to create a new 2.010 acre lot to be used for the construction of a new single family detached dwelling.

The purpose of this project narrative is to describe the proposed modifications to the property and to detail how the additional stormwater runoff resulting from the proposed impervious surfaces will be managed.

Existing Conditions

The project site is located within the R-1 Residential Zoning District. The site has residential uses to the north and west, and commercial spaces to the east and south. The portion of the site to be subdivided and developed is currently grassed with several trees. The site slopes is two separate directions down to the north and south, toward two of sections of Harvey Run..

Proposed Development

The applicant is proposing to construct a single family residence and shared driveway which will connect to the existing driveway on Lot 1. Stormwater management will be accomplished through the use of an Infiltration BMP to be located on Lot 2, and an Infiltration trench along a portion of the Lot 2 driveway.

Water Supply Facilities

The site has a proposed on-lot well to supply water.

Sanitary Sewer Facilities

The property has a proposed on-lot septic system.

Soils

The site is comprised of two soil types as follows:

SOILS TYPE	SOILS DESCRIPTION	SLOPE	DEPTH TO SEASONAL HIGHWATER TABLE	DEPTH TO BEDROCK	DRAINAGE CLASS	Hydrologic Soil Group
CdB	Chester Silt Loam	3% - 8%	More than 80 inches	More than 80 inches	Well drained	D
GaC	Gaila Silt Loam	8% - 15%	More than 80 inches	More than 80 inches	Well drained	B
GdB	Gladstone Gravelly Loam	3% - 8%	More than 80 inches	More than 80 inches	Well drained	C

It is noted that the topographic character of the site is consistent with the slopes that are found in these soils types.

Geology

The geology of the site is underlain by one formation which is described by the DCNR as:

Mgh- Mafic Gneiss

Receiving Watersheds

The property is located within the Brandywine Creek watershed; PA Ch. 93 designation Warm Water Fishes, Migratory Fish (MF/WWF).

SECTION 2

Stormwater Management

Stormwater drainage analysis was completed using Hydraflow Stormwater Analysis Software. The SCS TR-55 method was used to determine the predeveloped and post-developed runoff rates from the site.

The drainage area was analyzed using storm intensities derived from NOAA Atlas 14 storm intensities as follows:

2 Year Rainfall	3.27 in
5 Year Rainfall	4.11 in
10 Year Rainfall	4.81 in
25 Year Rainfall	5.83 in
50 Year Rainfall	6.69 in
100 Year Rainfall	7.61 in

In addition to analyzing the peak runoff from the site after the development is completed, the additional volume generated by the proposed impervious will be infiltrated into the ground via the proposed Infiltration Facilities. In order to evaluate the volume of runoff from the site, the SCS TR-55 methodology was used to compare the difference in volume of runoff from the 2 year post-developed storm and the 2 year predeveloped storm. The soils on the site within the study area are classified as hydrologic soil groups B, C, and D. The land cover coefficients used were as follows:

Land Cover	SCS Curve Number		
	B Soil	C Soil	D Soil
Woods (pre & post)	55	70	77
Meadow (pre & post)	58	58	58
Lawn (pre & post)	61	74	80
Impervious (pre & post)	98	98	98

Predeveloped Stormwater Analysis

For the purposes of this report, the predeveloped areas were modelled as two separate watersheds called "Watershed 1" and "Watershed 2" encompassing all of the areas to be disturbed, and the areas tributary to them. The existing site was modelled using a ground cover of Woods, Meadow, Lawn, and Impervious for undisturbed areas; Meadow and Impervious were used for disturbed areas. A time of concentration path is shown, and calculations are provided. The rear of the property was modelled as meadow in the pre-developed condition based on available aerial imagery and a site visit.

Post-Developed Stormwater Analysis

Post-Developed ground covers were modelled as Wooded, Meadow, Lawn, and Impervious. The proposed BMP outflows are directed toward the low point located along Webb Road. There is also a bypass areas for each watershed. Time of concentration paths are shown, and calculations are provided.

Infiltration Testing

Infiltration testing was performed on the site by Environmental management and Consulting Inc. to determine the rates of infiltration within the infiltration facility area. The infiltration test was completed using a double ring infiltrometer as mandated by the PADEP BMP Manual. A summary of the test is provided as follows:

Test Pit #	Existing Elevation at Test Pit locations	Depth of Infiltration Test	Elevation of Infiltration Test	Infiltration Test Results	Limiting Zone	Design Infiltration Rate
SW1	476.00	60"	471.00	7.75 in/hr	>84"	3.88 in/hr
SW2	461.00	60"	456.00	6.50 in/hr	>84"	3.25 in/hr

Infiltration Volume Requirements (§105-305) and Water Quality Requirements (§105-306)
The Chadds Ford Township Stormwater Management Ordinance requires that infiltration facilities be provided to treat runoff for water quality. In order to meet this requirement, the 2-year storm runoff volumes for the disturbed areas were calculated in the predeveloped and post-developed conditions using the SCS Method. The infiltration facilities were sized to ensure that the increase in runoff volume for the 2-Yr storm is being captured and infiltrated.

	WS 1		WS 2
Predeveloped	2,026 cf		802 cf
Post-Developed	4,897 cf		472 cf
Increase	2,871 cf		-330 cf
BMP	BMP 1	BMP 2	NA
Infiltration Volume Provided	3,023 cf	1,032 cf	NA
(Volume in 2-YR Hydrograph)	4,055 cf		
Infiltration Depth	1.9 ft	3.5 ft	NA
Design Infiltration Rate	3.88 in/hr	3.25 in/hr	NA
Dewatering Time (72 hr Max)	5.88 Hr	12.9 Hr.	NA

Supporting Calculations are found in Sections 6 and 7.

Stream Bank Erosion Requirements (§105-307)

The Chadds Ford Township Stormwater Management Ordinance requires that the proposed 2-year design storm to the existing 1-year flow using the SCS Type II distribution. In order to demonstrate compliance with this requirement, the pre and post-developed hydrographs were run for the 2-year SCS Type II distribution storm. The results are shown in the charts below and the detailed calculations are included in Section 7. The allowable flows for the 2-year storm are determined by adding the 2 YR Pre-Undisturbed Flow + 1 YR Pre- Disturbed Area Flow.

The post-developed area which drains toward the north discharge point is controlled by two BMPs, the remaining area is bypassed. The total outflow from the BMPs and bypass area is less than the predeveloped 1-yr/24 hr storm (within the limit of disturbance) + predeveloped 2-yr/24 hr storm (outside the disturbed area).

Watershed 1					
Storm Event	Pre-Disturbed Flow (CFS)	Pre-Undisturbed Flow (CFS)	Allowable Flow (CFS)	Total Post-Dev Runoff (CFS)	% of Allowable
1 Year	0.276				
2 Year		2.645	2.921	2.748	94%

The post-developed areas which drain toward the south discharge point bypasses the proposed BMPs but is less than the predeveloped 1-yr/24 hr storm (within the limit of disturbance) + predeveloped 2-yr/24 hr storm (outside the disturbed area).

Watershed 2					
Storm Event	Pre-Disturbed Flow (CFS)	Pre-Undisturbed Flow (CFS)	Allowable Flow (CFS)	Total Post-Dev Runoff (CFS)	% of Allowable
1 Year	0.161				
2 Year		0.666	0.827	0.736	89%

Stormwater Peak Rate Control Requirements (§308)

According to the Stormwater Management Ordinance, since this site located in the Brandywine Creek Watershed, runoff rates from the site must be controlled as follows:

Table 308.2		
Peak Rate Control Standards in the Brandywine Creek Watersheds		
Proposed Condition Design Storm	**Reduce to**	**Existing Condition Design Storm**
2 - year		50% of the pre 1 - year
5 - year		50% of the pre 5 - year
10 - year		50% of the pre 10 - year
25 - year		50% of the pre 25 - year
50 - year		50% of the pre 50 - year
100 - year		50% of the pre 100 - year

Post-development peak discharge for all design storms must be no greater than 50% of the predevelopment peak discharges.

Summary of Predeveloped vs. Post-Developed Runoff Rates

The allowable flows for each year storm are determined by adding the Pre (Undisturbed) flow for each specified year storm, as shown in Table 308.2, with 50% of the Pre (Disturbed) flow from the target year storm. (i.e. 10 YR allowable storm = 10 YR Pre-Undisturbed Flow + 50% 10 YR Pre- Disturbed Flow). In the post-developed condition, the runoff from the proposed developed areas have been controlled in the Infiltration Facility. Detailed calculations are found in sections 4 and 5.

Watershed 1					
Storm Event	Pre-Undisturbed Flow (CFS)	Pre-Disturbed Flow (CFS)	Allowable Flow (CFS)	Total Post-Dev Runoff (CFS)	% of Allowable
1 Year	1.638	0.276			
2 Year	2.645	0.498	2.783	2.748	99%
5 Year	4.369	0.893	4.816	4.506	94%
10 Year	5.925	1.259	6.555	6.090	93%
25 Year	8.348	1.832	9.264	9.065	98%
50 Year	10.480	2.346	11.653	11.520	99%
100 Year	12.830	2.919	14.290	14.040	98%

Watershed 2					
Storm Event	Pre-Undisturbed Flow (CFS)	Pre-Disturbed Flow (CFS)	Allowable Flow (CFS)	Total Post-Dev Runoff (CFS)	% of Allowable
1 Year	0.421	0.161			
2 Year	0.666	0.261	0.747	0.736	99%
5 Year	1.084	0.432	1.300	1.189	91%
10 Year	1.467	0.589	1.762	1.603	91%
25 Year	2.058	0.834	2.475	2.239	90%
50 Year	2.574	1.049	3.099	2.795	90%
100 Year	3.139	1.285	3.782	3.401	90%

Erosion Control

As part of the earth moving activities erosion control measures will be taken to mitigate the discharge of sediment from the site. Standard erosion control measures including compost filter socks, stabilized constructions entrance, erosion control matting, seeding and mulching and a detailed sequence of construction will be used as part of the site development. Because the site is less than 1 acre an NPDES permit is not required.

Post Construction Stormwater Management

The Post-Construction Stormwater Management Plan has been designed to preserve the integrity of stream channels and maintain and protect the physical, thermal, biological and chemical qualities of the receiving streams. This will be done by installing post-construction BMP's, which will filter, detain, and infiltrate stormwater runoff prior to release to the receiving stream. This process will enable contaminants to be removed from stormwater runoff, thereby protecting the physical, biological, thermal, and chemical quality of the receiving stream.

The Post-Construction Stormwater Management Plan has been designed to prevent an increase in the rate of stormwater runoff. The installation of the Infiltration Facility will detain the runoff and release it at controlled rates. As shown on the Stormwater Management Peak Runoff Rate Summary table on the PCSWM plan, the post-development runoff rates are less than the pre-development runoff rates.

The Post Construction Stormwater Management (PCSM) Plan has been designed to prevent an increase in the amount of stormwater runoff volume. The installation of the Infiltration Facilities will detain the runoff and allow it to infiltrate. All of the runoff volume from the impervious areas drain to Infiltration Facilities. As shown on the Stormwater Management Runoff Volume Summary table, the 2-year post-development runoff volume with BMP's installed is less than the 2-year pre-development runoff volume.

The Post-Construction Stormwater Management Plan has been designed to minimize impervious areas. Large portions of the site will remain as pervious in the post-developed conditions.

The Post-Construction Stormwater Management Plan has been designed to maximize the protection of existing drainage features and existing vegetation. The existing drainage patterns for the site are being maintained and where possible, the existing vegetation is being retained.

The Post-Construction Stormwater Management Plan has been designed to minimize land clearing and grading. The limit of disturbance area is shown on the Post-Construction Stormwater Management Plan. The grading shown on the plan is the minimal amount needed to construct the improvements and BMPs. The limit of disturbance is located immediately outside of the grading and also is the minimal amount needed to complete the proposed improvements shown on the plan.

The Post-Construction Stormwater Management Plan has been designed to minimize soil compaction. The grading has been limited to the extents required for the construction. Outside of these areas, the soil will not be compacted.

SECTION 3
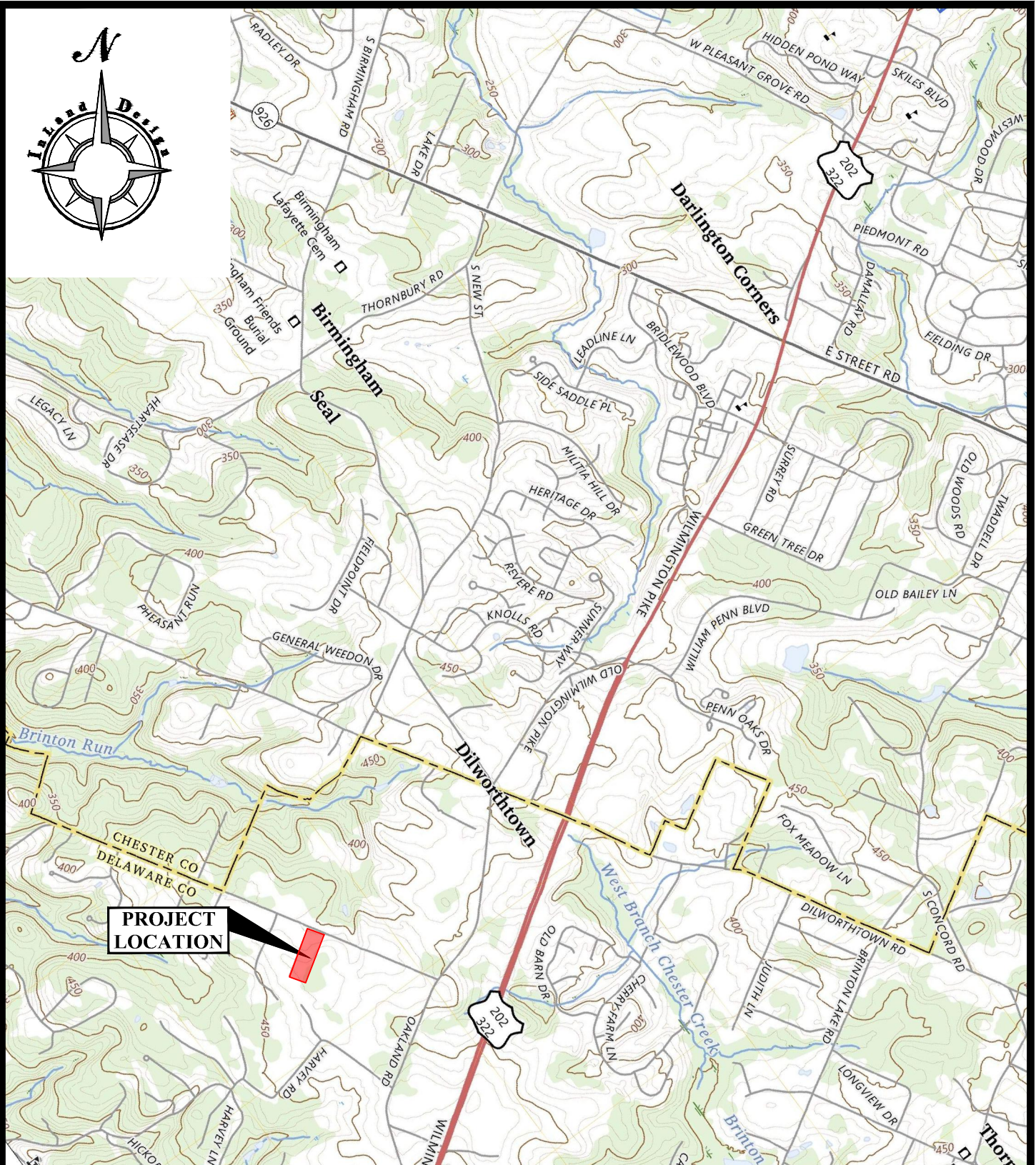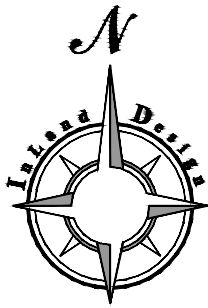
N:\11700\11711\DWG\MAPPING\USGS\11711- USGS MAP.DWG

NOAA Atlas 14, Volume 2, Version 3
Location name: Chadds Ford, Pennsylvania, USA*
Latitude: 39.8895°, Longitude: -75.5655°
Elevation: 479 ft**
* source: ESRI Maps
** source: USGS

POINT PRECIPITATION FREQUENCY ESTIMATES

G.M. Bonnin, D. Martin, B. Lin, T. Parzybok, M.Yekta, and D. Riley

NOAA, National Weather Service, Silver Spring, Maryland

PF_tabular | PF_graphical | Maps_&_aerials

PF tabular

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

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	0.353 (0.323-0.387)	0.421 (0.385-0.461)	0.493 (0.450-0.539)	0.543 (0.494-0.594)	0.602 (0.546-0.659)	0.642 (0.579-0.703)	0.682 (0.612-0.748)	0.715 (0.638-0.787)	0.754 (0.666-0.833)	0.783 (0.686-0.869)
10-min	0.564 (0.516-0.618)	0.673 (0.616-0.737)	0.789 (0.720-0.863)	0.868 (0.791-0.950)	0.960 (0.870-1.05)	1.02 (0.922-1.12)	1.08 (0.972-1.19)	1.13 (1.01-1.25)	1.19 (1.05-1.32)	1.23 (1.08-1.37)
15-min	0.706 (0.645-0.773)	0.846 (0.774-0.926)	0.998 (0.911-1.09)	1.10 (1.00-1.20)	1.22 (1.10-1.33)	1.30 (1.17-1.42)	1.37 (1.23-1.50)	1.43 (1.28-1.57)	1.50 (1.33-1.66)	1.55 (1.36-1.72)
30-min	0.967 (0.884-1.06)	1.17 (1.07-1.28)	1.42 (1.29-1.55)	1.59 (1.45-1.74)	1.80 (1.63-1.97)	1.95 (1.76-2.14)	2.10 (1.88-2.30)	2.23 (1.99-2.45)	2.39 (2.11-2.64)	2.51 (2.20-2.78)
60-min	1.21 (1.10-1.32)	1.47 (1.34-1.60)	1.82 (1.66-1.99)	2.07 (1.89-2.27)	2.40 (2.17-2.62)	2.64 (2.38-2.89)	2.89 (2.59-3.17)	3.12 (2.79-3.44)	3.43 (3.03-3.79)	3.66 (3.21-4.06)
2-hr	1.44 (1.30-1.59)	1.75 (1.59-1.94)	2.18 (1.98-2.41)	2.51 (2.26-2.77)	2.94 (2.64-3.24)	3.28 (2.92-3.62)	3.62 (3.21-4.00)	3.96 (3.48-4.38)	4.42 (3.84-4.90)	4.77 (4.10-5.32)
3-hr	1.57 (1.42-1.73)	1.90 (1.73-2.10)	2.37 (2.15-2.62)	2.74 (2.47-3.02)	3.22 (2.89-3.55)	3.60 (3.21-3.96)	3.98 (3.53-4.39)	4.37 (3.84-4.83)	4.90 (4.24-5.43)	5.30 (4.55-5.90)
6-hr	1.93 (1.75-2.14)	2.33 (2.12-2.59)	2.90 (2.63-3.22)	3.36 (3.04-3.72)	4.00 (3.59-4.43)	4.52 (4.02-5.00)	5.07 (4.46-5.60)	5.64 (4.91-6.24)	6.43 (5.50-7.16)	7.07 (5.96-7.90)
12-hr	2.35 (2.13-2.63)	2.84 (2.57-3.17)	3.56 (3.21-3.97)	4.15 (3.73-4.62)	5.02 (4.46-5.57)	5.74 (5.06-6.37)	6.52 (5.68-7.26)	7.37 (6.33-8.21)	8.60 (7.23-9.62)	9.62 (7.94-10.8)
24-hr	2.72 (2.50-2.97)	3.27 (3.01-3.58)	4.11 (3.78-4.50)	4.81 (4.40-5.25)	5.83 (5.31-6.35)	6.69 (6.06-7.27)	7.61 (6.85-8.26)	8.62 (7.70-9.35)	10.1 (8.91-10.9)	11.3 (9.90-12.2)
2-day	3.14 (2.88-3.44)	3.79 (3.48-4.15)	4.77 (4.38-5.22)	5.58 (5.10-6.10)	6.72 (6.12-7.34)	7.67 (6.96-8.38)	8.68 (7.83-9.48)	9.76 (8.75-10.7)	11.3 (10.1-12.4)	12.6 (11.1-13.7)
3-day	3.31 (3.04-3.63)	4.00 (3.67-4.37)	5.02 (4.61-5.48)	5.85 (5.36-6.39)	7.03 (6.41-7.68)	8.02 (7.28-8.74)	9.06 (8.18-9.87)	10.2 (9.13-11.1)	11.8 (10.5-12.8)	13.1 (11.5-14.3)
4-day	3.49 (3.21-3.81)	4.20 (3.86-4.59)	5.26 (4.83-5.74)	6.12 (5.61-6.68)	7.35 (6.71-8.01)	8.37 (7.60-9.10)	9.44 (8.54-10.3)	10.6 (9.51-11.5)	12.2 (10.9-13.3)	13.6 (12.0-14.8)
7-day	4.08 (3.79-4.42)	4.89 (4.54-5.30)	6.05 (5.61-6.56)	7.01 (6.49-7.59)	8.38 (7.73-9.06)	9.52 (8.73-10.3)	10.7 (9.79-11.6)	12.0 (10.9-13.0)	13.9 (12.4-15.0)	15.4 (13.7-16.6)
10-day	4.64 (4.32-5.00)	5.54 (5.16-5.97)	6.76 (6.30-7.28)	7.75 (7.20-8.34)	9.12 (8.45-9.81)	10.2 (9.45-11.0)	11.4 (10.5-12.2)	12.6 (11.5-13.5)	14.3 (13.0-15.4)	15.7 (14.1-16.9)
20-day	6.26 (5.87-6.71)	7.43 (6.96-7.96)	8.87 (8.30-9.50)	10.0 (9.35-10.7)	11.5 (10.8-12.3)	12.7 (11.8-13.6)	14.0 (12.9-14.9)	15.2 (14.0-16.3)	16.8 (15.4-18.1)	18.1 (16.5-19.5)
30-day	7.80 (7.34-8.28)	9.19 (8.66-9.76)	10.7 (10.1-11.4)	11.9 (11.2-12.7)	13.5 (12.7-14.3)	14.7 (13.8-15.6)	15.9 (14.8-16.9)	17.0 (15.8-18.1)	18.6 (17.2-19.8)	19.7 (18.2-21.0)
45-day	9.90 (9.39-10.5)	11.6 (11.0-12.3)	13.4 (12.7-14.1)	14.7 (13.9-15.5)	16.4 (15.5-17.3)	17.6 (16.7-18.6)	18.8 (17.7-19.9)	19.9 (18.8-21.1)	21.3 (20.0-22.6)	22.3 (20.9-23.7)
60-day	11.9 (11.3-12.5)	13.9 (13.2-14.6)	15.9 (15.1-16.7)	17.3 (16.5-18.2)	19.2 (18.2-20.2)	20.5 (19.4-21.6)	21.8 (20.6-22.9)	22.9 (21.7-24.1)	24.3 (23.0-25.7)	25.4 (23.9-26.8)

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

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

Please refer to NOAA Atlas 14 document for more information.

Back to Top

PF graphical

PDS-based depth-duration-frequency (DDF) curves
Latitude: 39.8895°, Longitude: -75.5655°
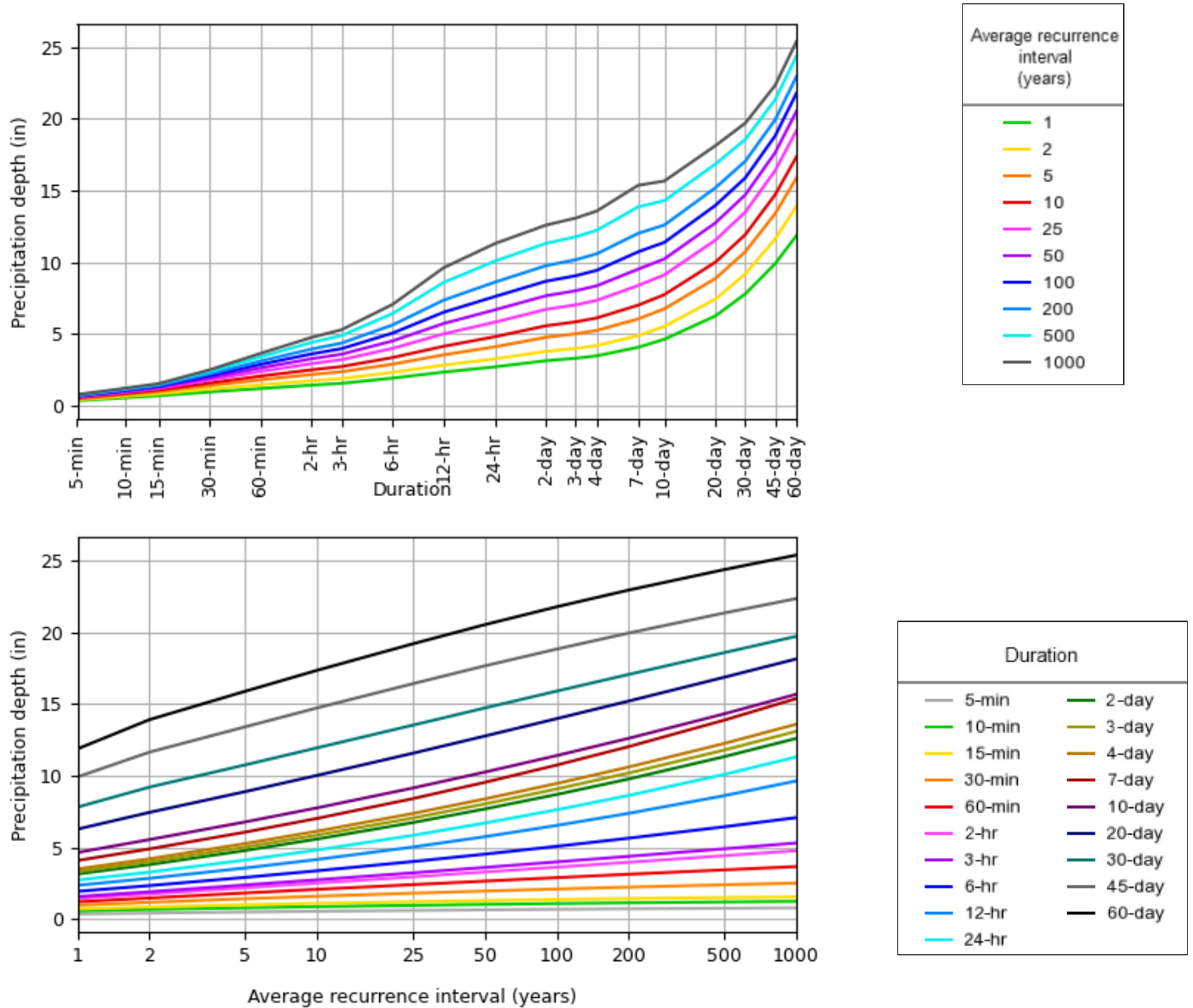
NOAA Atlas 14, Volume 2, Version 3   Created (GMT): Mon Oct 30 15:30:14 2023

[Back to Top](#)

Maps & aerials

Small scale terrain
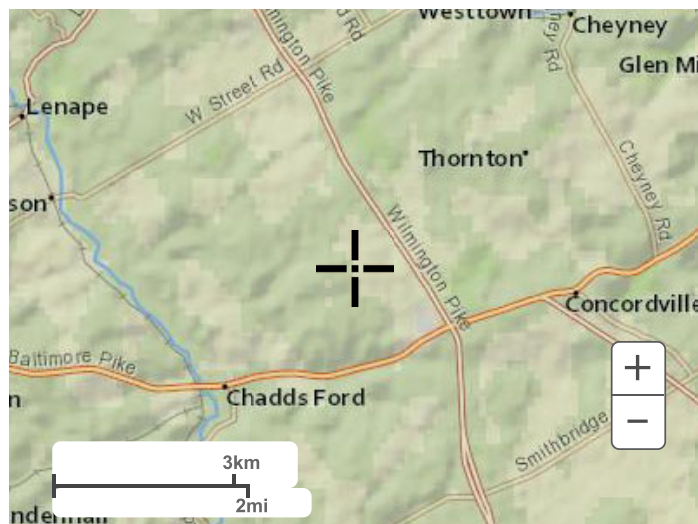
Large scale terrain

Large scale map
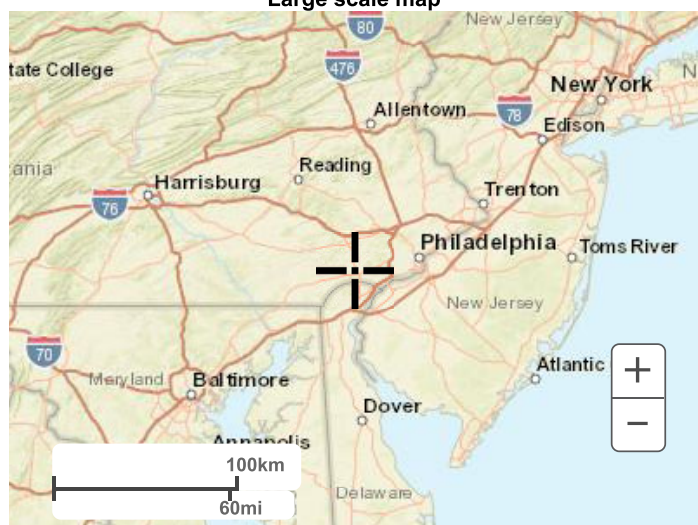
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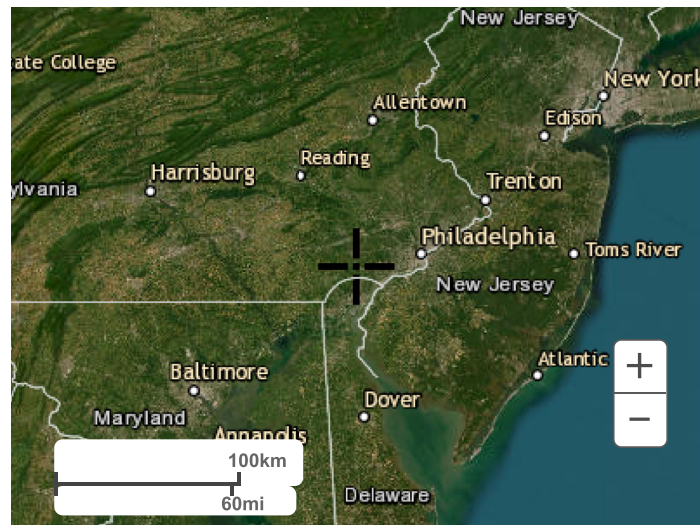
Back to Top

Disclaimer

USDA United States Department of Agriculture

NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for
Delaware County, Pennsylvania

438 Webb Rd
Chadds Ford, PA 19317

(InLand prj #11711)

December 5, 2023

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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Contents

How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Map Scale: 1:1,410 if printed on A portrait (8.5" x 11") sheet.

Meters
0   20   40   80   120

Feet
0   50   100   200   300

Map projection: Web Mercator   Corner coordinates: WGS84   Edge tics: UTM Zone 18N WGS84
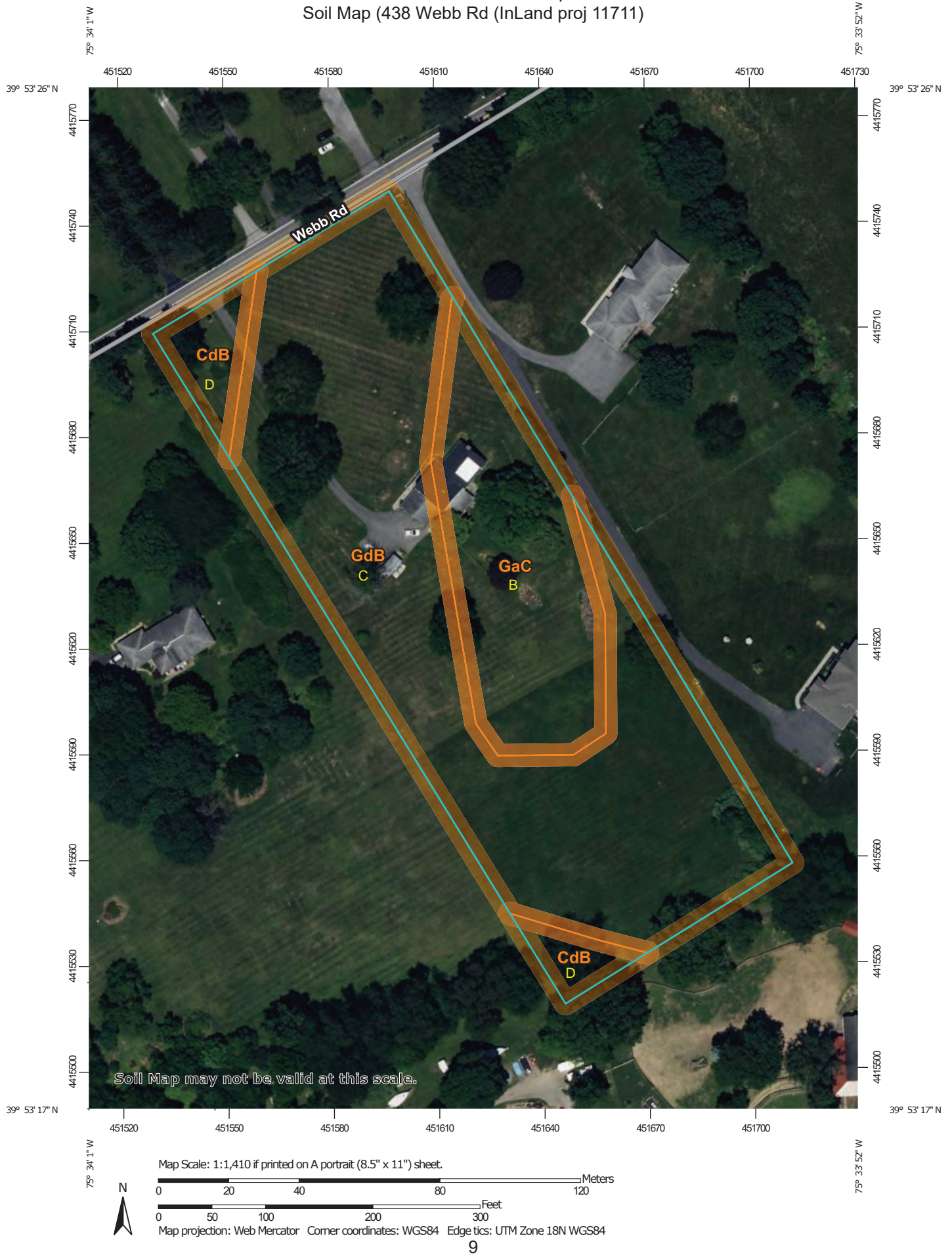
MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot

- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

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 1:20,000.

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: Delaware County, Pennsylvania
Survey Area Data: Version 21, Sep 4, 2023

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

Date(s) aerial images were photographed: Jun 5, 2022—Jul 4, 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.

Map Unit Legend (438 Webb Rd (InLand proj 11711)

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
CdB	Chester silt loam, 3 to 8 percent slopes	0.3	6.5%
GaC	Gaila silt loam, 8 to 15 percent slopes	1.0	23.4%
GdB	Gladstone gravelly loam, 3 to 8 percent slopes	3.0	70.1%
Totals for Area of Interest		**4.3**	**100.0%**

Map Unit Descriptions (438 Webb Rd (InLand proj 11711)

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Delaware County, Pennsylvania

CdB—Chester silt loam, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 30ynl
Elevation: 20 to 160 feet
Mean annual precipitation: 39 to 53 inches
Mean annual air temperature: 48 to 57 degrees F
Frost-free period: 190 to 240 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Chester and similar soils: 91 percent
Minor components: 9 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Chester

Setting

Landform: Hillslopes
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex, linear
Across-slope shape: Linear, convex
Parent material: Residuum weathered from mica schist

Typical profile

Ap - 0 to 10 inches: silt loam
BE - 10 to 17 inches: silt loam
Bt1 - 17 to 22 inches: clay loam
Bt2 - 22 to 30 inches: clay loam
Bt3 - 30 to 38 inches: clay loam
Bt4 - 38 to 56 inches: loam
C - 56 to 92 inches: fine sandy loam

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.01 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: High (about 10.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 1
Hydrologic Soil Group: D
Ecological site: F148XY024PA - Moist, Piedmont - felsic, Upland, Mixed Oak - Hardwood - Conifer Forest
Hydric soil rating: No

Minor Components

Glenville, sil surface
Percent of map unit: 9 percent
Landform: Swales, drainageways
Landform position (two-dimensional): Backslope, footslope
Landform position (three-dimensional): Interfluve, head slope, base slope
Down-slope shape: Concave, linear
Across-slope shape: Linear, concave
Ecological site: F148XY024PA - Moist, Piedmont - felsic, Upland, Mixed Oak - Hardwood - Conifer Forest
Hydric soil rating: No

GaC—Gaila silt loam, 8 to 15 percent slopes

Map Unit Setting
National map unit symbol: 30cf8
Elevation: 20 to 160 feet
Mean annual precipitation: 39 to 53 inches
Mean annual air temperature: 48 to 57 degrees F
Frost-free period: 190 to 240 days
Farmland classification: Not prime farmland

Map Unit Composition
Gaila and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Gaila

Setting
Landform: Hillslopes
Landform position (two-dimensional): Shoulder, backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Residuum weathered from muscovite schist

Typical profile
Ap - 0 to 8 inches: silt loam
Bt - 8 to 17 inches: loam
BC - 17 to 20 inches: loam
C - 20 to 80 inches: sandy loam

Properties and qualities
Slope: 8 to 15 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Very high

Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.14 to 1.42 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Moderate (about 8.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: B
Ecological site: F148XY024PA - Moist, Piedmont - felsic, Upland, Mixed Oak - Hardwood - Conifer Forest
Hydric soil rating: No

Minor Components

Chester

Percent of map unit: 8 percent
Landform: Hillslopes
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex, linear
Across-slope shape: Linear, convex
Ecological site: F148XY024PA - Moist, Piedmont - felsic, Upland, Mixed Oak - Hardwood - Conifer Forest
Hydric soil rating: No

Glenville, sil surface

Percent of map unit: 7 percent
Landform: Swales, drainageways
Landform position (two-dimensional): Backslope, footslope
Landform position (three-dimensional): Interfluve, head slope, base slope
Down-slope shape: Concave, linear
Across-slope shape: Linear, concave
Ecological site: F148XY024PA - Moist, Piedmont - felsic, Upland, Mixed Oak - Hardwood - Conifer Forest
Hydric soil rating: No

GdB—Gladstone gravelly loam, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 312p4
Elevation: 20 to 160 feet
Mean annual precipitation: 39 to 53 inches
Mean annual air temperature: 48 to 57 degrees F
Frost-free period: 190 to 240 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Gladstone and similar soils: 93 percent
Minor components: 7 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Gladstone

Setting

Landform: Hills
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Convex
Parent material: Loamy colluvium derived from granite and gneiss and/or loamy residuum weathered from granite and gneiss

Typical profile

Ap - 0 to 10 inches: gravelly loam
Bt1 - 10 to 22 inches: sandy clay loam
Bt2 - 22 to 37 inches: loam
C - 37 to 66 inches: sandy loam
R - 66 to 80 inches: bedrock

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: 61 to 67 inches to lithic bedrock
Drainage class: Well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low to low (0.00 to 0.01 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Moderate (about 7.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: C
Ecological site: F148XY024PA - Moist, Piedmont - felsic, Upland, Mixed Oak - Hardwood - Conifer Forest
Hydric soil rating: No

Minor Components

Califon

Percent of map unit: 4 percent
Landform: Hills
Landform position (two-dimensional): Backslope, footslope
Landform position (three-dimensional): Head slope
Down-slope shape: Concave, linear
Across-slope shape: Concave, linear
Ecological site: F148XY024PA - Moist, Piedmont - felsic, Upland, Mixed Oak - Hardwood - Conifer Forest
Hydric soil rating: No

Cokesbury

Percent of map unit: 3 percent
Landform: Depressions
Landform position (two-dimensional): Footslope, toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Concave
Ecological site: F148XY030PA - Hydric, Piedmont - felsic, Riparian Zone, Swamp
     Meadow-Shrub-Forest
Hydric soil rating: Yes

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Environmental Management & Consulting, Inc.

INFILTRATION TEST REPORT FOR ON-LOT
DISPOSAL OF STORMWATER

Applicant/Client: **Inland Design/Devlin**   Date of Test: **11/30/2023**

Site Address/Location.: **438 Webb Road**   Municipality: **Chadd Ford Twp.**

Person Conducting Test: **Mark A. Bryan**   County: **Delaware**

Weather Conditions: **Sunny**
32°+
Dry last 24 Hours   Location: **SW1/SW2**

Test Method: Double-Ring Infiltrometer

Profile Descriptions:

Horizon	Depth (in.)	Description
SW1		
A	0-12	Dark brown silt loam, moderate granular, very friable, clear boundary
B	12-28	Brown silt loam, moderate subangular blocky/granular, very friable, gradual boundary
C	28-84	Grey/Yellow/Brown variegated fine sandy loam, moderate granular, very friable

No Limiting Zone encountered to 84"+

Horizon	Depth (in.)	Description
SW2		
A	0-10	Dark brown silt loam, moderate granular, very friable, clear boundary
B	10-33	Light Brown silt loam, moderate subangular blocky, sticky/friable, gradual boundary
C	33-84	Black/Brown variegated fine sandy loam, moderate granular, very friable

No Limiting Zone encountered to 84"+

Hole No.	Test Depth (in.)	Start Depth (in.)	Drop (in.)							
			PS1	PS2	1	2	3	4	5	6
SW1A	60	12	5 1/2	5	4 1/2	4 3/8	4 1/4	4 1/4		
Time:			:30	:30	:30	:30	:30	:30		
SW1B	60	12	4 1/4	3 3/4	3 5/8	3 1/2	3 1/2	3 1/2		
Time:			:30	:30	:30	:30	:30	:30		
SW2A	60	12	4	3 1/2	3 1/4	3 1/4	3	3		
Time:			:30	:30	:30	:30	:30	:30		
SW2B	60	12	4 1/2	4	3 3/4	3 5/8	3 5/8	3 1/2		
Time:			:30	:30	:30	:30	:30	:30		

Calculation of Infiltration Rate:

Hole No.	Drop in Final Per.	Reading Interval	Minutes/ Inch	Inches/ Hour		Avg. In./Hr.
SW1A	4 1/4	30	7.06	**8.50**	**SW1**	**7.75**
SW1B	3 1/2	30	8.57	**7.00**		
SW2A	3	30	10.00	**6.00**	**SW2**	**6.50**
SW2B	3 1/2	30	8.57	**7.00**		

SECTION 4

PREDEVELOPED
UNDISTURBED
DRAINAGE AREA
(TO WS1)

PREDEVELOPED
UNDISTURBED
DRAINAGE AREA
(TO WS2)

LIMIT OF DISTURBANCE
BOUNDARY LINE

S32°31'56"E

750.05'

GROUND COVER
DIVIDE LINE

DRAINAGE DIVIDE

WOODLAND

LAWN MEADOW

N56°50'34"E 258.25'

WEBB ROAD (SR 4022)

S56°50'34"E 250.00'

PRE Tc:
13.5 MIN.
(TO WS2)

PRE Tc:
22.3 MIN.
(TO WS1)

750.00'

N33°09'46"W

PREDEVELOPED
DISTURBED
DRAINAGE AREA
(TO WS1)

PREDEVELOPED
DISTURBED
DRAINAGE AREA
(TO WS2)

PREDEVELOPED DRAINAGE AREA MAP
FOR

**438 WEBB ROAD
CHADDS FORD, PA 19317**

CHADDS FORD TOWNSHIP - DELAWARE COUNTY - PENNSYLVANIA

Date:
1/09/2023

Scale:
1" = 100'

Project No.
1

OF 1

InLand Design

Project Number: 11711
Project Name: 438 Webb Road
Drainage area: **WS1**

PRE DEVELOPMENT - UNDISTURBED AREA

DRAINAGE AREA: **2.76**   **Acs.**

RUNOFF COEFFICIENT:	HSG	Rational 'C'	CN	AREA AC	S	Ia	Q(in)	2-YR RUNOFF (CF)
OFF-SITE LAWN	B	0.25	61	0.00	6.39	1.28	0.47	0
OFF-SITE LAWN	C	0.51	74	0.00	3.51	0.70	1.08	0
OFF-SITE IMPERVIOUS		0.99	98	0.00	0.20	0.04	3.04	0
WOODS	B	0.41	55	0.00	8.18	1.64	0.27	0
MEADOW	B	0.35	58	0.08	7.24	1.45	0.37	106
LAWN	B	0.25	61	0.69	6.39	1.28	0.47	1185
WOODS	C	0.45	70	0.01	4.29	0.86	0.87	32
MEADOW	C	0.44	71	0.29	4.08	0.82	0.92	969
LAWN	C	0.51	74	1.36	3.51	0.70	1.08	5351
WOODS	D	0.59	77	0.00	2.99	0.60	1.26	0
MEADOW	D	0.61	78	0.00	2.82	0.56	1.32	0
LAWN	D	0.65	80	0.14	2.50	0.50	1.46	740
UNDISTURBED IMPERVIOUS		0.99	98	0.00	0.20	0.04	3.04	0
IMPERVIOUS		0.99	98	0.19	0.20	0.04	3.04	2095

weighted CN=   **71.9**
weighted 'C"=   **0.47**

Total 2 year runoff volume=   10477

TIME OF CONCENTRATION: **USE:**   **22.3**   **Min.**

1) Sheet Flow   **18.6** Min.

Seg	L(ft)	El_1	El_2	S (%)	n	P (in/hr)	T_t (min)
1	100	484.0	483.0	1%	0.24	3.27	18.63
2				0%		3.27	0.00
3				0%		3.27	0.00

2) Shallow Concentrated Flow   **3.7 Min**

Seg	L(ft)	El_1	El_2	S (%)	Paved	V (ft/s)	T_t (min)
1	300	483.0	470.0	4%	NO	3.4	1.49
2	365	470.0	459.0	3%	NO	2.8	2.17
3				0%		0.0	0.00
4				0%		0.0	0.00
5				0%		0.0	0.00
6				0%		0.0	0.00
7				0%		0.0	0.00
8				0%		0.0	0.00
9				0%		0.0	0.00
10				0%		0.0	0.00

3) Channel Flow   **0.0 Min.**

Seg	L(ft)	El_1	El_2	S (%)	n	X Sec. Area (sf)	Wetted Per. (ft)	V (ft/s)	T_t (min)
1				0%				0.0	0.00
2				0%				0.0	0.00
3				0%				0.0	0.00

Total T_t: **22.29**   **Min.**

PRE DEVELOPMENT - DISTURBED AREA

DRAINAGE AREA: 0.70 **Acs.**

RUNOFF COEFFICIENT:

	HSG	Rational 'C'	CN	AREA AC	S	Ia	Q(in)	2-YR RUNOFF (CF)
OFF-SITE LAWN	B	0.25	61	0.00	6.39	1.28	0.47	0
OFF-SITE LAWN	C	0.51	74	0.00	3.51	0.70	1.08	0
OFF-SITE IMPERVIOUS		0.99	98	0.00	0.20	0.04	3.04	0
WOODS	B	0.41	55	0.00	8.18	1.64	0.27	0
MEADOW	B	0.35	58	0.17	7.24	1.45	0.37	226
LAWN	B	0.25	61	0.00	6.39	1.28	0.47	0
WOODS	C	0.45	70	0.00	4.29	0.86	0.87	0
MEADOW	C	0.44	71	0.51	4.08	0.82	0.92	1704
LAWN	C	0.51	74	0.00	3.51	0.70	1.08	0
WOODS	D	0.59	77	0.00	2.99	0.60	1.26	0
MEADOW	D	0.61	78	0.02	2.82	0.56	1.32	96
LAWN	D	0.65	80	0.00	2.50	0.50	1.46	0
UNDISTURBED IMPERVIOUS		0.99	98	0.00	0.20	0.04	3.04	0
IMPERVIOUS		0.99	98	0.00	0.20	0.04	3.04	0

weighted CN= 68.0
weighted 'C''= 0.42

Total 2 year runoff volume= 2026

TIME OF CONCENTRATION: **USE:** 22.3 **Min.**

1) Sheet Flow 18.6 Min.

Seg	L(ft)	El$_1$	El$_2$	S (%)	n	P (in/hr)	T$_t$ (min)
1	100	484	483	1%	0.24	3.27	18.63
2				0%		3.27	0.00
3				0%		3.27	0.00

2) Shallow Concentrated Flow 3.7 Min

Seg	L(ft)	El$_1$	El$_2$	S (%)	Paved	V (ft/s)	T$_t$ (min)
1	300	483	470	4%	NO	3.4	1.49
2	365	470	459	3%	NO	2.8	2.17
3				0%		0.0	0.00
4				0%		0.0	0.00
5				0%		0.0	0.00
6				0%		0.0	0.00
7				0%		0.0	0.00
8				0%		0.0	0.00
9				0%		0.0	0.00
10				0%		0.0	0.00

3) Channel Flow 0.0 Min.

Seg	L(ft)	El$_1$	El$_2$	S (%)	n	X Sec. Area (sf)	Wetted Per. (ft)	V (ft/s)	T$_t$ (min)
1				0%				0.0	0.00
2				0%				0.0	0.00
3				0%				0.0	0.00

Total T$_t$: 22.29 **Min.**

Project Number: 11711
Project Name: 438 Webb Road
Drainage area: **WS2**

PRE DEVELOPMENT - UNDISTURBED AREA

DRAINAGE AREA: **0.57** **Acs.**

RUNOFF COEFFICIENT:	HSG	Rational 'C'	CN	AREA AC	S	Ia	Q(in)	2-YR RUNOFF (CF)
OFF-SITE LAWN	B	0.25	61	0.00	6.39	1.28	0.47	0
OFF-SITE LAWN	C	0.51	74	0.00	3.51	0.70	1.08	0
OFF-SITE IMPERVIOUS		0.99	98	0.00	0.20	0.04	3.04	0
WOODS	B	0.41	55	0.00	8.18	1.64	0.27	0
MEADOW	B	0.35	58	0.00	7.24	1.45	0.37	0
LAWN	B	0.25	61	0.00	6.39	1.28	0.47	0
WOODS	C	0.45	70	0.08	4.29	0.86	0.87	252
MEADOW	C	0.44	71	0.39	4.08	0.82	0.92	1303
LAWN	C	0.51	74	0.00	3.51	0.70	1.08	0
WOODS	D	0.59	77	0.00	2.99	0.60	1.26	0
MEADOW	D	0.61	78	0.10	2.82	0.56	1.32	481
LAWN	D	0.65	80	0.00	2.50	0.50	1.46	0
UNDISTURBED IMPERVIOUS		0.99	98	0.00	0.20	0.04	3.04	0
IMPERVIOUS		0.99	98	0.00	0.20	0.04	3.04	0

weighted CN= **72.1**
weighted 'C"= **0.47**

Total 2 year runoff volume= 2036

TIME OF CONCENTRATION: **USE:** **13.5** **Min.**

1) Sheet Flow **12.9** Min.

Seg	L(ft)	El$_1$	El$_2$	S (%)	n	P (in/hr)	T$_t$ (min)
1	100	484.5	482.0	3%	0.24	3.27	12.91
2				0%		3.27	0.00
3				0%		3.27	0.00

2) Shallow Concentrated Flow **0.6** Min

Seg	L(ft)	El$_1$	El$_2$	S (%)	Paved	V (ft/s)	T$_t$ (min)
1	110	482.0	478.0	4%	NO	3.1	0.60
2				0%		0.0	0.00
3				0%		0.0	0.00
4				0%		0.0	0.00
5				0%		0.0	0.00
6				0%		0.0	0.00
7				0%		0.0	0.00
8				0%		0.0	0.00
9				0%		0.0	0.00
10				0%		0.0	0.00

3) Channel Flow **0.0** Min.

Seg	L(ft)	El$_1$	El$_2$	S (%)	n	X Sec. Area (sf)	Wetted Per. (ft)	V (ft/s)	T$_t$ (min)
1				0%				0.0	0.00
2				0%				0.0	0.00
3				0%				0.0	0.00

Total T$_t$: **13.51** **Min.**

Project Number:	11711
Project Name:	438 Webb Road
Drainage area:	**WS2**

PRE DEVELOPMENT - DISTURBED AREA

DRAINAGE AREA: 0.24 Acs.

RUNOFF COEFFICIENT:

	HSG	Rational 'C'	CN	AREA AC	S	Ia	Q(in)	2-YR RUNOFF (CF)
OFF-SITE LAWN	B	0.25	61	0.00	6.39	1.28	0.47	0
OFF-SITE LAWN	C	0.51	74	0.00	3.51	0.70	1.08	0
OFF-SITE IMPERVIOUS		0.99	98	0.00	0.20	0.04	3.04	0
WOODS	B	0.41	55	0.00	8.18	1.64	0.27	0
MEADOW	B	0.35	58	0.00	7.24	1.45	0.37	0
LAWN	B	0.25	61	0.00	6.39	1.28	0.47	0
WOODS	C	0.45	70	0.00	4.29	0.86	0.87	0
MEADOW	C	0.44	71	0.24	4.08	0.82	0.92	802
LAWN	C	0.51	74	0.00	3.51	0.70	1.08	0
WOODS	D	0.59	77	0.00	2.99	0.60	1.26	0
MEADOW	D	0.61	78	0.00	2.82	0.56	1.32	0
LAWN	D	0.65	80	0.00	2.50	0.50	1.46	0
UNDISTURBED IMPERVIOUS		0.99	98	0.00	0.20	0.04	3.04	0
IMPERVIOUS		0.99	98	0.00	0.20	0.04	3.04	0

weighted CN= 71.0
weighted 'C''= 0.44

Total 2 year runoff volume= 802

TIME OF CONCENTRATION: USE: 13.5 Min.

1) Sheet Flow   12.9 Min.

Seg	L(ft)	El$_1$	El$_2$	S (%)	n	P (in/hr)	T$_t$ (min)
1	100	484.5	482	3%	0.24	3.27	12.91
2				0%		3.27	0.00
3				0%		3.27	0.00

2) Shallow Concentrated Flow   0.6 Min

Seg	L(ft)	El$_1$	El$_2$	S (%)	Paved	V (ft/s)	T$_t$ (min)
1	110	482	478	4%	NO	3.1	0.60
2				0%		0.0	0.00
3				0%		0.0	0.00
4				0%		0.0	0.00
5				0%		0.0	0.00
6				0%		0.0	0.00
7				0%		0.0	0.00
8				0%		0.0	0.00
9				0%		0.0	0.00
10				0%		0.0	0.00

3) Channel Flow   0.0 Min.

Seg	L(ft)	El$_1$	El$_2$	S (%)	n	X Sec. Area (sf)	Wetted Per. (ft)	V (ft/s)	T$_t$ (min)
1				0%				0.0	0.00
2				0%				0.0	0.00
3				0%				0.0	0.00

Total T$_t$:   13.51 Min.

SECTION 5

POST-DEVELOPED BYPASS DRAINAGE AREA (TO WS1)

POST-DEVELOPED BYPASS DRAINAGE AREA (TO WS2)

LIMIT OF DISTURBANCE BOUNDARY LINE

GROUND COVER DIVIDE LINE

LAWN MEADOW

WOODLAND

S32°31'56"E

750.05'

S56°50'34"E 250.00'

N56°50'34"E 258.25'

WEBB ROAD (S.R. 4022)

2.194 AC. (GROSS)
2.010 AC. (NET)

2.181 (GROSS)
2.000 (NET)

N33°09'45"W

750.00'

POST-DEVELOPED BMP-2 CAPTURED DRAINAGE AREA (TO WS1)

POST-DEVELOPED BMP-1 CAPTURED DRAINAGE AREA (TO WS1)

INLAND DESIGN

Civil Engineers, Surveyors & Land Development Consultants

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POST-DEVELOPED DRAINAGE AREA MAP FOR

**438 WEBB ROAD
CHADDS FORD, PA 19317**

CHADDS FORD TOWNSHIP - DELAWARE COUNTY - PENNSYLVANIA

Date: **1/09/2024**

Scale: **1" = 100'**

Project No. **1**

OF 1

Project Number:	11711
Project Name:	438 Webb Road
Drainage area:	**WS1**

POST DEVELOPMENT BYPASS

DRAINAGE AREA: 2.79 Acs.

RUNOFF COEFFICIENT:	HSG	Rational 'C'	CN	AC	S	Ia	Q(in)	2-YR RUNOFF (CF)
OFF-SITE LAWN	B	0.25	61	0.00	6.39	1.28	0.47	0
OFF-SITE LAWN	C	0.51	74	0.00	3.51	0.70	1.08	0
OFF-SITE IMPERVIOUS		0.99	98	0.00	0.20	0.04	3.04	0
WOODS	B	0.41	55	0.00	8.18	1.64	0.27	0
MEADOW	B	0.35	58	0.02	7.24	1.45	0.37	27
LAWN	B	0.25	61	0.76	6.39	1.28	0.47	1305
WOODS	C	0.45	70	0.00	4.29	0.86	0.87	0
MEADOW	C	0.44	71	0.20	4.08	0.82	0.92	668
LAWN	C	0.51	74	1.44	3.51	0.70	1.08	5666
WOODS	D	0.59	77	0.00	2.99	0.60	1.26	0
MEADOW	D	0.61	78	0.00	2.82	0.56	1.32	0
LAWN	D	0.65	80	0.15	2.50	0.50	1.46	793
UNDISTURBED IMPERVIOUS		0.99	98	0.19	0.20	0.04	3.04	2095
IMPERVIOUS ROOFTOPS		0.99	98	0.00	0.20	0.04	3.04	0
IMPERVIOUS ROADWAY		0.99	98	0.00	0.20	0.04	3.04	0
IMPERVIOUS ON-SITE		0.99	98	0.03	0.20	0.04	3.04	331
IMPERVIOUS FUTURE		0.99	98	0.00	0.20	0.04	3.04	0

weighted CN= 72.3
weighted 'C'= 0.48

Total 2 year runoff volume= 10884

TIME OF CONCENTRATION: USE: 22.3 Min.

1) Sheet Flow 18.6 Min.

Seg	L(ft)	El$_1$	El$_2$	S (%)	n	P (in/hr)	T$_t$ (min)
1	100	484	483	1%	0.24	3.27	18.63
2				0%		3.27	0.00
3				0%		3.27	0.00

2) Shallow Concentrated Flow 3.7 Min

Seg	L(ft)	El$_1$	El$_2$	S (%)	Paved	V (ft/s)	T$_t$ (min)
1	300	483	470	4%	NO	3.4	1.49
2	365	470	459	3%	NO	2.8	2.17
3				0%		0.0	0.00
4				0%		0.0	0.00
5				0%		0.0	0.00

3) Channel Flow 0.0 Min.

Seg	L(ft)	El$_1$	El$_2$	S (%)	n	X Sec. Area (sf)	Wetted Per. (ft)	V (ft/s)	T$_t$ (min)
1				0%				0.0	0.00
2				0%				0.0	0.00
3				0%				0.0	0.00

Total T$_t$: 22.3 Min.

Project Number:	11711
Project Name:	438 Webb Road
Drainage area:	**WS1**

POST DEVELOPED CAPTURED BMP 1

DRAINAGE AREA: 0.68 Acs.

RUNOFF COEFFICIENT:

	HSG	Rational 'C'	CN	AC	S	Ia	Q(in)	2-YR RUNOFF (CF)
OFF-SITE LAWN	B	0.25	61	0.00	6.39	1.28	0.47	0
OFF-SITE LAWN	C	0.51	74	0.00	3.51	0.70	1.08	0
OFF-SITE IMPERVIOUS		0.99	98	0.00	0.20	0.04	3.04	0
WOODS	B	0.41	55	0.00	8.18	1.64	0.27	0
MEADOW	B	0.35	58	0.06	7.24	1.45	0.37	80
LAWN	B	0.25	61	0.10	6.39	1.28	0.47	172
WOODS	C	0.45	70	0.00	4.29	0.86	0.87	0
MEADOW	C	0.44	71	0.21	4.08	0.82	0.92	702
LAWN	C	0.51	74	0.13	3.51	0.70	1.08	511
WOODS	D	0.59	77	0.00	2.99	0.60	1.26	0
MEADOW	D	0.61	78	0.00	2.82	0.56	1.32	0
LAWN	D	0.65	80	0.00	2.50	0.50	1.46	0
UNDISTURBED IMPERVIOUS		0.99	98	0.00	0.20	0.04	3.04	0
IMPERVIOUS ROOFTOPS		0.99	98	0.00	0.20	0.04	3.04	0
IMPERVIOUS ROADWAY		0.99	98	0.00	0.20	0.04	3.04	0
IMPERVIOUS ON-SITE		0.99	98	0.13	0.20	0.04	3.04	1433
IMPERVIOUS FUTURE		0.99	98	0.05	0.20	0.04	3.04	551

weighted CN= 76.1
weighted 'C'= 0.56

Total 2 year runoff volume= 3449

TIME OF CONCENTRATION: USE: 19.6 Min.

1) Sheet Flow 18.6 Min.

Seg	L(ft)	El$_1$	El$_2$	S (%)	n	P (in/hr)	T$_t$ (min)
1	100	484	483	1%	0.24	3.27	18.63
2				0%		3.27	0.00
3				0%		3.27	0.00

2) Shallow Concentrated Flow 0.9 Min

Seg	L(ft)	El$_1$	El$_2$	S (%)	Paved	V (ft/s)	T$_t$ (min)
1	180	483	476	4%	NO	3.2	0.94
2				0%		0.0	0.00
3				0%		0.0	0.00
4				0%		0.0	0.00
5				0%		0.0	0.00
6				0%		0.0	0.00
7				0%		0.0	0.00
8				0%		0.0	0.00
9				0%		0.0	0.00
10				0%		0.0	0.00

3) Channel Flow 0.00 Min.

Seg	L(ft)	El$_1$	El$_2$	S (%)	n	X Sec. Area (sf)	Wetted Per. (ft)	V (ft/s)	T$_t$ (min)
1				0%				0.0	0.00
2				0%				0.0	0.00
3				0%				0.0	0.00

Total T$_t$: 19.57 Min.

InLand Design

POST DEVELOPED CAPTURED BMP 2

DRAINAGE AREA: 0.16 Acs.

RUNOFF COEFFICIENT:	HSG	Rational 'C'	CN	AC	S	Ia	Q(in)	2-YR RUNOFF (CF)
OFF-SITE LAWN	B	0.25	61	0.00	6.39	1.28	0.47	0
OFF-SITE LAWN	C	0.51	74	0.00	3.51	0.70	1.08	0
OFF-SITE IMPERVIOUS		0.99	98	0.00	0.20	0.04	3.04	0
WOODS	B	0.41	55	0.00	8.18	1.64	0.27	0
MEADOW	B	0.35	58	0.00	7.24	1.45	0.37	0
LAWN	B	0.25	61	0.00	6.39	1.28	0.47	0
WOODS	C	0.45	70	0.00	4.29	0.86	0.87	0
MEADOW	C	0.44	71	0.00	4.08	0.82	0.92	0
LAWN	C	0.51	74	0.08	3.51	0.70	1.08	315
WOODS	D	0.59	77	0.00	2.99	0.60	1.26	0
MEADOW	D	0.61	78	0.00	2.82	0.56	1.32	0
LAWN	D	0.65	80	0.00	2.50	0.50	1.46	0
UNDISTURBED IMPERVIOUS		0.99	98	0.00	0.20	0.04	3.04	0
IMPERVIOUS ROOFTOPS		0.99	98	0.00	0.20	0.04	3.04	0
IMPERVIOUS ROADWAY		0.99	98	0.00	0.20	0.04	3.04	0
IMPERVIOUS ON-SITE		0.99	98	0.08	0.20	0.04	3.04	882
IMPERVIOUS FUTURE		0.99	98	0.00	0.20	0.04	3.04	0

weighted CN= 86.0
weighted 'C'= 0.75

Total 2 year runoff volume=   1197

TIME OF CONCENTRATION: USE: 5.0   Min.

1) Sheet Flow   0.0 Min.

Seg	L(ft)	El$_1$	El$_2$	S (%)	n	P (in/hr)	T$_t$(min)
1				0%		3.27	0.00
2				0%		3.27	0.00
3				0%		3.27	0.00

2) Shallow Concentrated Flow   0.0 Min

Seg	L(ft)	El$_1$	El$_2$	S (%)	Paved	V (ft/s)	T$_t$(min)
1				0%		0.0	0.00
2				0%		0.0	0.00
3				0%		0.0	0.00
4				0%		0.0	0.00
5				0%		0.0	0.00
6				0%		0.0	0.00
7				0%		0.0	0.00
8				0%		0.0	0.00
9				0%		0.0	0.00
10				0%		0.0	0.00

3) Channel Flow   0.00 Min.

Seg	L(ft)	El$_1$	El$_2$	S (%)	n	X Sec. Area (sf)	Wetted Per. (ft)	V (ft/s)	T$_t$(min)
1				0%				0.0	0.00
2				0%				0.0	0.00
3				0%				0.0	0.00

Total T$_t$:   0.00   **Min.**

Project Number:	11711
Project Name:	438 Webb Road
Drainage area:	**WS2**

POST DEVELOPMENT BYPASS

DRAINAGE AREA: 0.61 Acs.

RUNOFF COEFFICIENT:

	HSG	Rational 'C'	CN	AC	S	Ia	Q(in)	2-YR RUNOFF (CF)
OFF-SITE LAWN	B	0.25	61	0.00	6.39	1.28	0.47	0
OFF-SITE LAWN	C	0.51	74	0.00	3.51	0.70	1.08	0
OFF-SITE IMPERVIOUS		0.99	98	0.00	0.20	0.04	3.04	0
WOODS	B	0.41	55	0.00	8.18	1.64	0.27	0
MEADOW	B	0.35	58	0.00	7.24	1.45	0.37	0
LAWN	B	0.25	61	0.00	6.39	1.28	0.47	0
WOODS	C	0.45	70	0.08	4.29	0.86	0.87	252
MEADOW	C	0.44	71	0.31	4.08	0.82	0.92	1036
LAWN	C	0.51	74	0.12	3.51	0.70	1.08	472
WOODS	D	0.59	77	0.00	2.99	0.60	1.26	0
MEADOW	D	0.61	78	0.10	2.82	0.56	1.32	481
LAWN	D	0.65	80	0.00	2.50	0.50	1.46	0
UNDISTURBED IMPERVIOUS		0.99	98	0.00	0.20	0.04	3.04	0
IMPERVIOUS ROOFTOPS		0.99	98	0.00	0.20	0.04	3.04	0
IMPERVIOUS ROADWAY		0.99	98	0.00	0.20	0.04	3.04	0
IMPERVIOUS ON-SITE		0.99	98	0.00	0.20	0.04	3.04	0
IMPERVIOUS FUTURE		0.99	98	0.00	0.20	0.04	3.04	0

weighted CN= 72.6
weighted 'C'= 0.48

Total 2 year runoff volume= 2241

TIME OF CONCENTRATION: USE: 13.5   Min.

1) Sheet Flow   12.9 Min.

Seg	L(ft)	El$_1$	El$_2$	S (%)	n	P (in/hr)	T$_t$ (min)
1	100	484.5	482	3%	0.24	3.27	12.91
2				0%		3.27	0.00
3				0%		3.27	0.00

2) Shallow Concentrated Flow   0.6 Min

Seg	L(ft)	El$_1$	El$_2$	S (%)	Paved	V (ft/s)	T$_t$ (min)
1	110	482	478	4%	NO	3.1	0.60
2				0%		0.0	0.00
3				0%		0.0	0.00
4				0%		0.0	0.00
5				0%		0.0	0.00

3) Channel Flow   0.0 Min.

Seg	L(ft)	El$_1$	El$_2$	S (%)	n	X Sec. Area (sf)	Wetted Per. (ft)	V (ft/s)	T$_t$ (min)
1				0%				0.0	0.00
2				0%				0.0	0.00
3				0%				0.0	0.00

Total T$_t$:   13.5   Min.

SECTION 6

Worksheet 4. Change in Runoff Volume for 2-YR Storm Event

PROJECT: 438 Webb Road

Drainage Area: **WS1**

2 Year Rainfall: 3.27 in

Total Site Area: 3.46 acres
Protected Site Area: 2.76 acres
Managed area: 0.70 acres

Existing Conditions:

Cover Type/Condition	Soil Type	Area (Ac)	CN	S	Ia (0.2*S)	Q Runoff (in)	Runoff Volume (ft^3)
WOODS	B	0.00	55	8.1818	1.6364	0.2719	0
MEADOW	B	0.17	58	7.2414	1.4483	0.3662	226
WOODS	C	0.00	70	4.2857	0.8571	0.8691	0
MEADOW	C	0.51	71	4.0845	0.8169	0.9205	1704
WOODS	D	0.00	77	2.9870	0.5974	1.2621	0
MEADOW	D	0.02	78	2.8205	0.5641	1.3249	96
Impervious		0.00	98	0.2041	0.0408	3.0372	0
TOTAL:		0.70				8.0518	2026

Developed Conditions:

Cover Type/Condition	Soil Type	Area (Ac)	CN	S	Ia (0.2*S)	Q Runoff (in)	Runoff Volume (ft^3)
Lawn	B	0.18	61	6.3934	1.2787	0.4729	309
Lawn	C	0.34	74	3.5135	0.7027	1.0839	1338
Lawn	D	0.01	80	2.5000	0.5000	1.4560	53
Impervious Rooftops		0.00	98	0.2041	0.0408	3.0372	0
Impervious Roadway		0.00	98	0.2041	0.0408	3.0372	0
Impervious On Site		0.24	98	0.2041	0.0408	3.0372	2646
Impervious Misc		0.05	98	0.2041	0.0408	3.0372	551
TOTAL:		0.82				15.1617	4897

2-Year Volume Increase (ft^3): 2871

2-Year Volume Increase = Developed Conditions Runoff Volume - Existing Conditions Runoff Volume

1. Runoff (in) = Q= (P-0.2S)^2 / (P+0.8S) where
   P = 2-Year Rainfall (in)
   S = (1000/CN)-10

2. Runoff Volume (CF) = Q x Area x 1/12
   Q = Runoff (in)
   Area = Land use area (sq. ft)

Note: Runoff Volume must be calcualted for EACH land use type/condition and HSGI. The use of a weighted CN value for volume calculations is not acceptable.

Worksheet 4. Change in Runoff Volume for 2-YR Storm Event

PROJECT: 438 Webb Road

Drainage Area: **WS2**

2 Year Rainfall: 3.27 in

Total Site Area: 0.81 acres
Protected Site Area: 0.57 acres
Managed area: 0.24 acres

Existing Conditions:

Cover Type/Condition	Soil Type	Area (Ac)	CN	S	Ia (0.2*S)	Q Runoff (in)	Runoff Volume (ft³)
WOODS	B	0.00	55	8.1818	1.6364	0.2719	0
MEADOW	B	0.00	58	7.2414	1.4483	0.3662	0
WOODS	C	0.00	70	4.2857	0.8571	0.8691	0
MEADOW	C	0.24	71	4.0845	0.8169	0.9205	802
WOODS	D	0.00	77	2.9870	0.5974	1.2621	0
MEADOW	D	0.00	78	2.8205	0.5641	1.3249	0
Impervious		0.00	98	0.2041	0.0408	3.0372	0
TOTAL:		0.24				8.0518	802

Developed Conditions:

Cover Type/Condition	Soil Type	Area (Ac)	CN	S	Ia (0.2*S)	Q Runoff (in)	Runoff Volume (ft³)
Lawn	B	0.00	61	6.3934	1.2787	0.4729	0
Lawn	C	0.12	74	3.5135	0.7027	1.0839	472
Lawn	D	0.00	80	2.5000	0.5000	1.4560	0
Impervious Rooftops		0.00	98	0.2041	0.0408	3.0372	0
Impervious Roadway		0.00	98	0.2041	0.0408	3.0372	0
Impervious On Site		0.00	98	0.2041	0.0408	3.0372	0
Impervious Misc		0.00	98	0.2041	0.0408	3.0372	0
TOTAL:		0.12				15.1617	472

2-Year Volume Increase (ft³): **-330**

2-Year Volume Increase = Developed Conditions Runoff Volume - Existing Conditions Runoff Volume

1. Runoff (in) = Q= $(P-0.2S)^2$ / (P+0.8S) where
    P = 2-Year Rainfall (in)
    S = (1000/CN)-10

2. Runoff Volume (CF) = Q x Area x 1/12
    Q = Runoff (in)
    Area = Land use area (sq. ft)

Note: Runoff Volume must be calcualted for EACH land use type/condition and HSGI. The use of a weighted CN value for volume calculations is not acceptable.

SECTION 7

Hydraflow Table of Contents

Contents continued...

Watershed Model Schematic
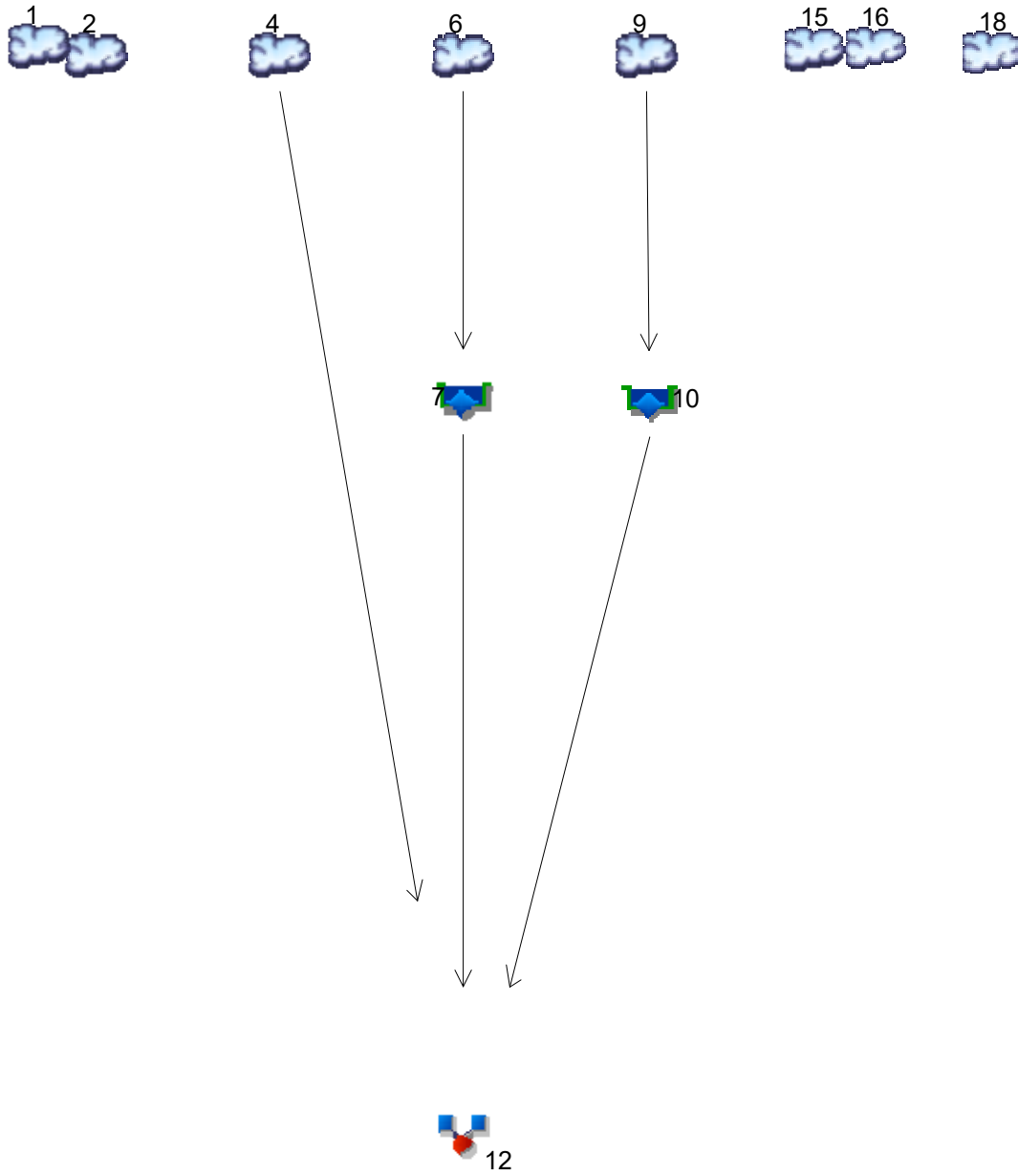
Legend

Hyd.	Origin	Description
1	SCS Runoff	WS1 - PRE-UNDISTURBED
2	SCS Runoff	WS1 - PRE-DISTURBED
4	SCS Runoff	WS1 - POST BYPASS
6	SCS Runoff	BMP 1 CAPTURED
7	Reservoir	BMP 1 ROUTED
9	SCS Runoff	BMP 2 CAPTURED
10	Reservoir	BMP 2 ROUTED
12	Combine	WS1 POST TOTAL
15	SCS Runoff	WS2 - PRE-UNDISTURBED
16	SCS Runoff	WS2 - PRE-DISTURBED
18	SCS Runoff	WS2 - POST BYPASS

Project: 11711 (SCS only).gpw

Wednesday, 01 / 10 / 2024

Hydrograph Return Period Recap

Hyd. No.	Hydrograph type (origin)	Inflow hyd(s)	Peak Outflow (cfs)								Hydrograph Description
			1-yr	2-yr	3-yr	5-yr	10-yr	25-yr	50-yr	100-yr	
1	SCS Runoff	------	1.638	2.645	-------	4.369	5.925	8.348	10.48	12.83	WS1 - PRE-UNDISTURBED
2	SCS Runoff	------	0.276	0.498	-------	0.893	1.259	1.832	2.346	2.919	WS1 - PRE-DISTURBED
4	SCS Runoff	------	1.717	2.748	-------	4.506	6.090	8.557	10.73	13.10	WS1 - POST BYPASS
6	SCS Runoff	------	0.630	0.936	-------	1.450	1.907	2.599	3.197	3.845	BMP 1 CAPTURED
7	Reservoir	6	0.000	0.000	-------	0.003	0.441	0.855	1.019	1.184	BMP 1 ROUTED
9	SCS Runoff	------	0.384	0.507	-------	0.700	0.862	1.097	1.295	1.507	BMP 2 CAPTURED
10	Reservoir	9	0.000	0.000	-------	0.000	0.000	0.000	0.000	0.000	BMP 2 ROUTED
12	Combine	4, 7, 10,	1.717	2.748	-------	4.506	6.090	9.065	11.52	14.04	WS1 POST TOTAL
15	SCS Runoff	------	0.421	0.666	-------	1.084	1.467	2.058	2.574	3.139	WS2 - PRE-UNDISTURBED
16	SCS Runoff	------	0.161	0.261	-------	0.432	0.589	0.834	1.049	1.285	WS2 - PRE-DISTURBED
18	SCS Runoff	------	0.486	0.755	-------	1.213	1.630	2.269	2.826	3.435	WS2 - POST BYPASS

Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	1.638	2	728	6,553	------	------	------	WS1 - PRE-UNDISTURBED
2	SCS Runoff	0.276	2	730	1,262	------	------	------	WS1 - PRE-DISTURBED
4	SCS Runoff	1.717	2	728	6,802	------	------	------	WS1 - POST BYPASS
6	SCS Runoff	0.630	2	726	2,095	------	------	------	BMP 1 CAPTURED
7	Reservoir	0.000	2	800	0	6	471.63	574	BMP 1 ROUTED
9	SCS Runoff	0.384	2	716	776	------	------	------	BMP 2 CAPTURED
10	Reservoir	0.000	2	850	0	9	468.69	248	BMP 2 ROUTED
12	Combine	1.717	2	728	6,802	4, 7, 10,	------	------	WS1 POST TOTAL
15	SCS Runoff	0.421	2	724	1,314	------	------	------	WS2 - PRE-UNDISTURBED
16	SCS Runoff	0.161	2	724	514	------	------	------	WS2 - PRE-DISTURBED
18	SCS Runoff	0.486	2	724	1,491	------	------	------	WS2 - POST BYPASS

11711 (SCS only).gpw	Return Period: 1 Year	Wednesday, 01 / 10 / 2024

Hydrograph Report

Hyd. No. 1

WS1 - PRE-UNDISTURBED

Hydrograph type	= SCS Runoff		Peak discharge	= 1.638 cfs
Storm frequency	= 1 yrs		Time to peak	= 12.13 hrs
Time interval	= 2 min		Hyd. volume	= 6,553 cuft
Drainage area	= 2.760 ac		Curve number	= 71.9
Basin Slope	= 0.0 %		Hydraulic length	= 0 ft
Tc method	= User		Time of conc. (Tc)	= 22.30 min
Total precip.	= 2.72 in		Distribution	= Type II
Storm duration	= 24 hrs		Shape factor	= 484

WS1 - PRE-UNDISTURBED

Hyd. No. 1 -- 1 Year
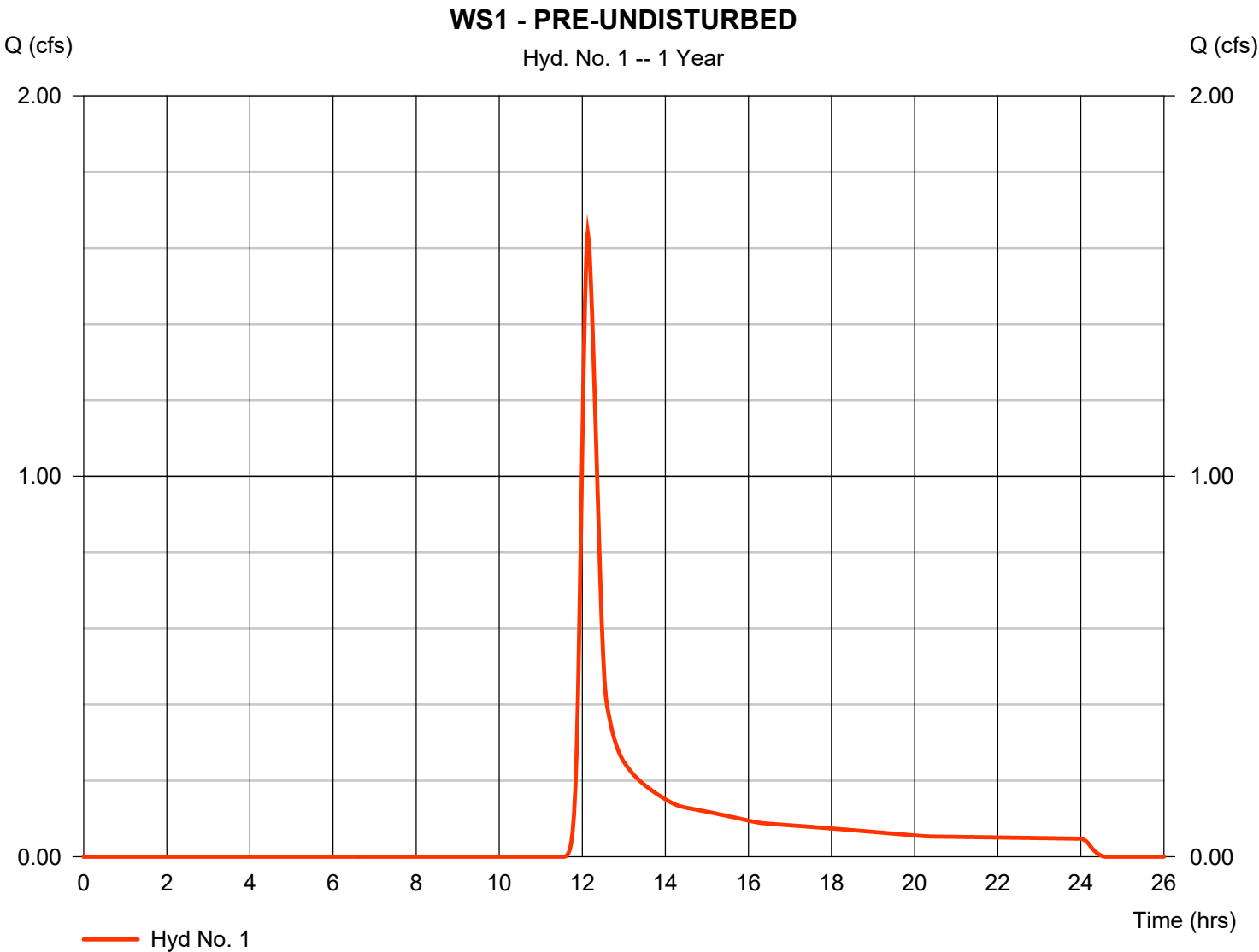
Hydrograph Report

Hyd. No. 2

WS1 - PRE-DISTURBED

Hydrograph type	= SCS Runoff	Peak discharge	= 0.276 cfs
Storm frequency	= 1 yrs	Time to peak	= 12.17 hrs
Time interval	= 2 min	Hyd. volume	= 1,262 cuft
Drainage area	= 0.700 ac	Curve number	= 68
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 22.30 min
Total precip.	= 2.72 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

WS1 - PRE-DISTURBED

Hyd. No. 2 -- 1 Year
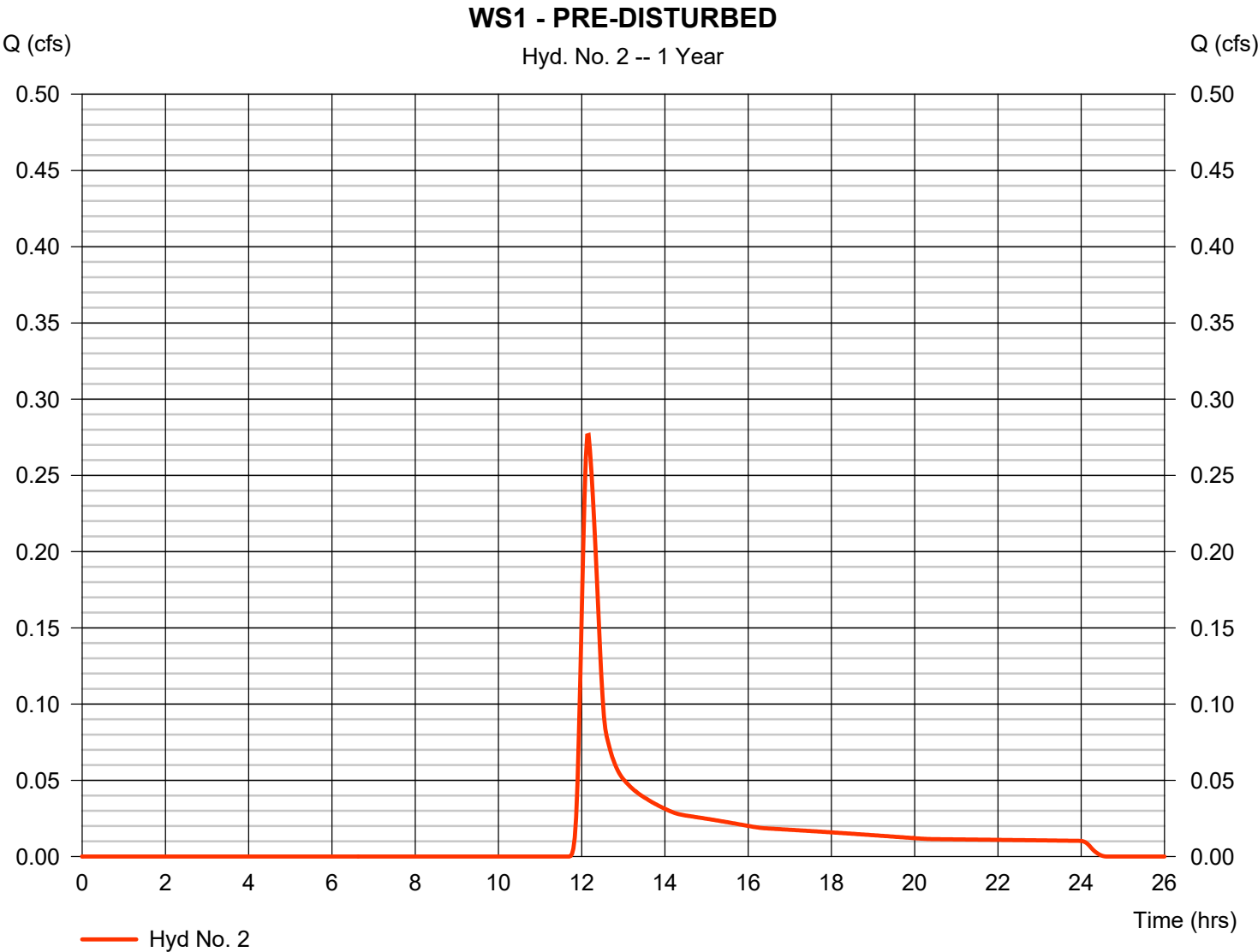
Hyd No. 2

Hydrograph Report

Hyd. No. 4

WS1 - POST BYPASS

Hydrograph type	= SCS Runoff		Peak discharge	= 1.717 cfs
Storm frequency	= 1 yrs		Time to peak	= 12.13 hrs
Time interval	= 2 min		Hyd. volume	= 6,802 cuft
Drainage area	= 2.790 ac		Curve number	= 72.3
Basin Slope	= 0.0 %		Hydraulic length	= 0 ft
Tc method	= User		Time of conc. (Tc)	= 22.30 min
Total precip.	= 2.72 in		Distribution	= Type II
Storm duration	= 24 hrs		Shape factor	= 484

WS1 - POST BYPASS

Hyd. No. 4 -- 1 Year

Hyd No. 4

Hydrograph Report

Hyd. No. 6

BMP 1 CAPTURED

Hydrograph type	= SCS Runoff		Peak discharge	= 0.630 cfs
Storm frequency	= 1 yrs		Time to peak	= 12.10 hrs
Time interval	= 2 min		Hyd. volume	= 2,095 cuft
Drainage area	= 0.690 ac		Curve number	= 76.1
Basin Slope	= 0.0 %		Hydraulic length	= 0 ft
Tc method	= User		Time of conc. (Tc)	= 19.60 min
Total precip.	= 2.72 in		Distribution	= Type II
Storm duration	= 24 hrs		Shape factor	= 484

BMP 1 CAPTURED

Hyd. No. 6 -- 1 Year

Q (cfs)

Time (hrs)

Hyd No. 6

Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024   Wednesday, 01 / 10 / 2024

Hyd. No. 7

BMP 1 ROUTED

Hydrograph type	= Reservoir		Peak discharge	= 0.000 cfs
Storm frequency	= 1 yrs		Time to peak	= 13.33 hrs
Time interval	= 2 min		Hyd. volume	= 0 cuft
Inflow hyd. No.	= 6 - BMP 1 CAPTURED		Max. Elevation	= 471.63 ft
Reservoir name	= BMP 1		Max. Storage	= 574 cuft

Storage Indication method used. Exfiltration extracted from Outflow.

BMP 1 ROUTED

Hyd. No. 7 -- 1 Year

Q (cfs)

Q (cfs)

Time (hrs)

Hyd No. 7   Hyd No. 6   Total storage used = 574 cuft

Pond Report

Wednesday, 01 / 10 / 2024
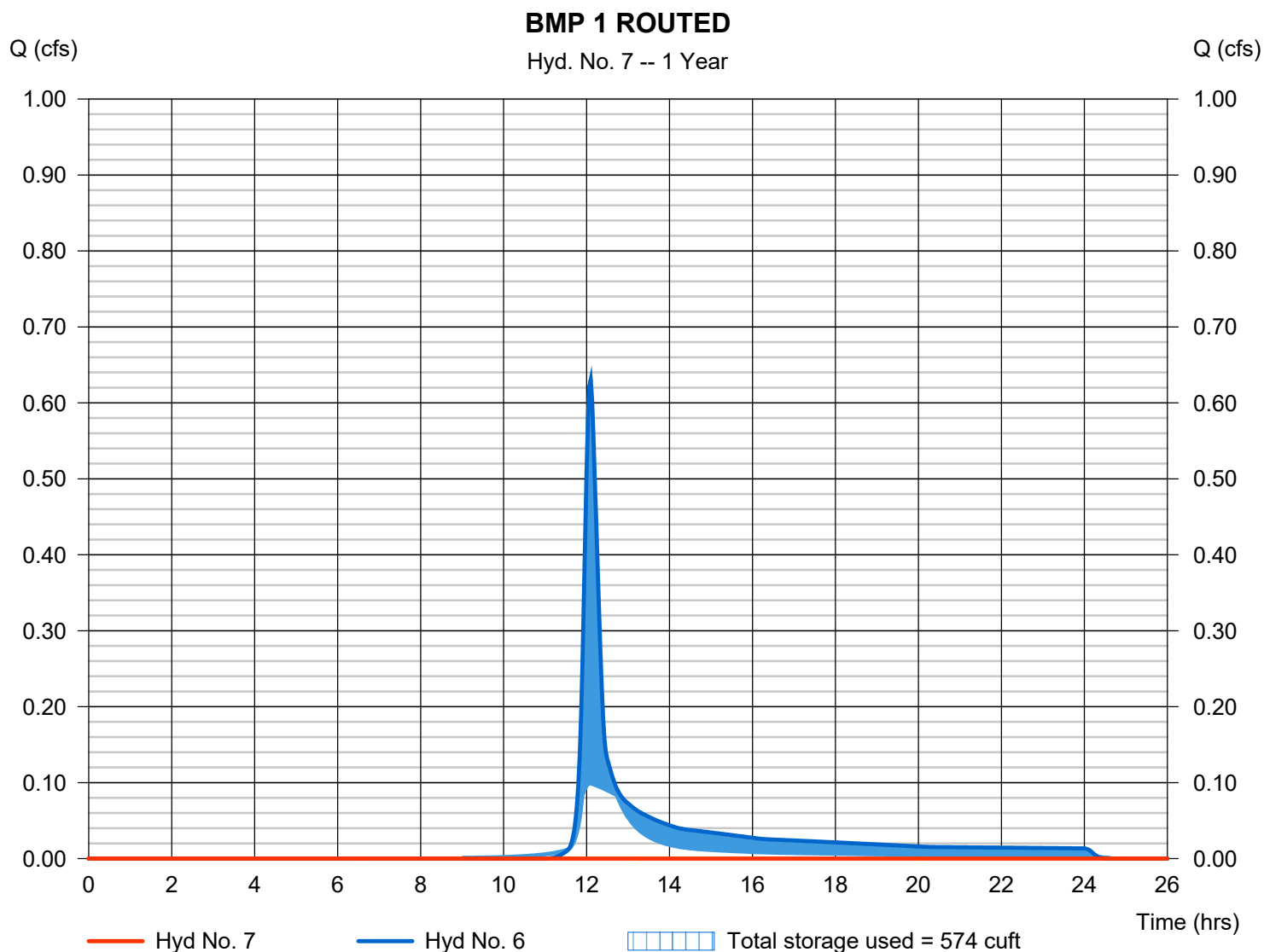
Pond No. 1 - BMP 1
Pond Data

Trapezoid -Bottom L x W = 60.0 x 38.0 ft, Side slope = 0.00:1, Bottom elev. = 471.00 ft, Depth = 4.50 ft, Voids = 40.00%

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	471.00	2,280	0	0
0.45	471.45	2,280	410	410
0.90	471.90	2,280	410	821
1.35	472.35	2,280	410	1,231
1.80	472.80	2,280	410	1,642
2.25	473.25	2,280	410	2,052
2.70	473.70	2,280	410	2,462
3.15	474.15	2,280	410	2,873
3.60	474.60	2,280	410	3,283
4.05	475.05	2,280	410	3,694
4.50	475.50	2,280	410	4,104

Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 6.00	0.00	0.00	0.00
Span (in)	= 6.00	0.00	0.00	0.00
No. Barrels	= 1	0	0	0
Invert El. (ft)	= 472.90	0.00	0.00	0.00
Length (ft)	= 50.00	0.00	0.00	0.00
Slope (%)	= 2.00	0.00	0.00	n/a
N-Value	= .013	.013	.013	n/a
Orifice Coeff.	= 0.60	0.60	0.60	0.60
Multi-Stage	= n/a	No	No	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 0.00	0.00	0.00	0.00
Crest El. (ft)	= 0.00	0.00	0.00	0.00
Weir Coeff.	= 3.33	3.33	3.33	3.33
Weir Type	= ---	---	---	---
Multi-Stage	= No	No	No	No
Exfil.(in/hr)	= 3.880 (by Wet area)			
TW Elev. (ft)	= 0.00			

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

Stage / Discharge

Stage (ft) vs Discharge (cfs) / Elev (ft) — Total Q
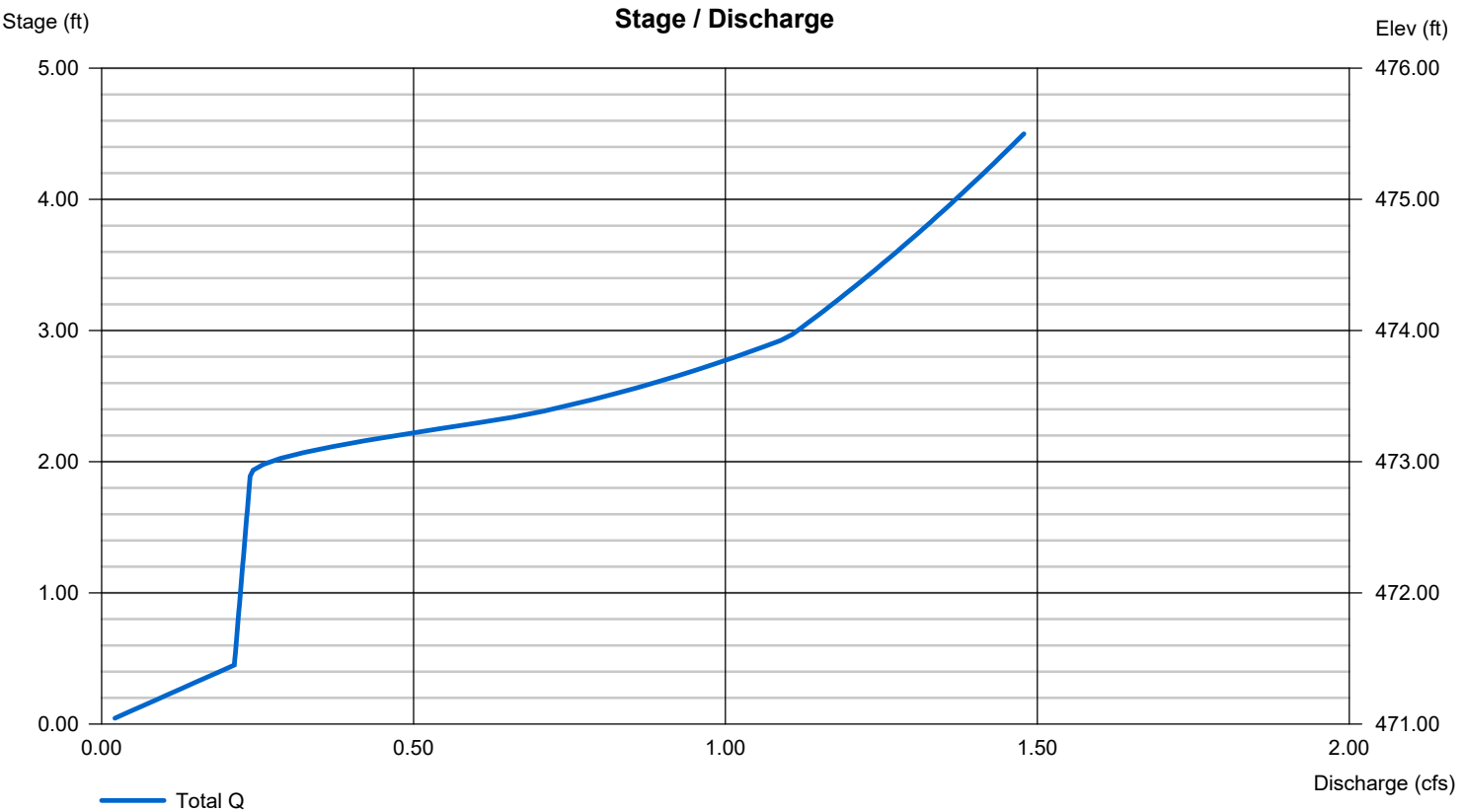
Hydrograph Report

Hyd. No. 9

BMP 2 CAPTURED

Hydrograph type	= SCS Runoff		Peak discharge	= 0.384 cfs
Storm frequency	= 1 yrs		Time to peak	= 11.93 hrs
Time interval	= 2 min		Hyd. volume	= 776 cuft
Drainage area	= 0.160 ac		Curve number	= 86
Basin Slope	= 0.0 %		Hydraulic length	= 0 ft
Tc method	= User		Time of conc. (Tc)	= 6.00 min
Total precip.	= 2.72 in		Distribution	= Type II
Storm duration	= 24 hrs		Shape factor	= 484

BMP 2 CAPTURED

Hyd. No. 9 -- 1 Year

Q (cfs)

Time (hrs)

—— Hyd No. 9

Hydrograph Report

Hyd. No. 10

BMP 2 ROUTED

Hydrograph type	= Reservoir		Peak discharge	= 0.000 cfs
Storm frequency	= 1 yrs		Time to peak	= 14.17 hrs
Time interval	= 2 min		Hyd. volume	= 0 cuft
Inflow hyd. No.	= 9 - BMP 2 CAPTURED		Max. Elevation	= 468.69 ft
Reservoir name	= BMP 2		Max. Storage	= 248 cuft

Storage Indication method used. Exfiltration extracted from Outflow.

BMP 2 ROUTED

Hyd. No. 10 -- 1 Year

Hyd No. 10   Hyd No. 9   Total storage used = 248 cuft

Pond Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024   Wednesday, 01 / 10 / 2024
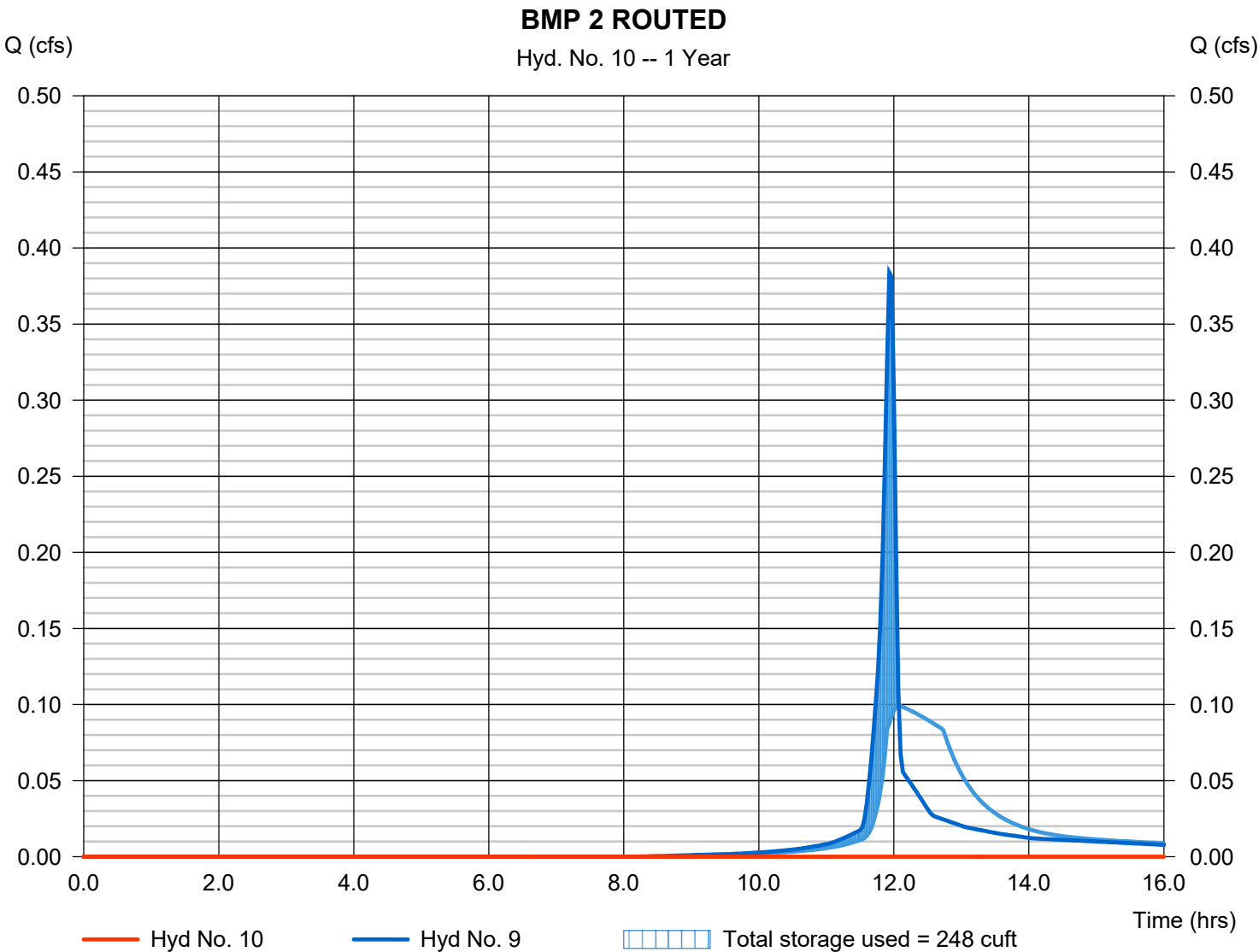
Pond No. 3 - BMP 2

Pond Data

Trapezoid -Bottom L x W = 300.0 x 3.0 ft, Side slope = 0.00:1, Bottom elev. = 468.00 ft, Depth = 3.50 ft, Voids = 40.00%

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	468.00	900	0	0
0.35	468.35	900	126	126
0.70	468.70	900	126	252
1.05	469.05	900	126	378
1.40	469.40	900	126	504
1.75	469.75	900	126	630
2.10	470.10	900	126	756
2.45	470.45	900	126	882
2.80	470.80	900	126	1,008
3.15	471.15	900	126	1,134
3.50	471.50	900	126	1,260

Culvert / Orifice Structures

	[A]	**[B]**	**[C]**	**[PrfRsr]**
Rise (in)	= 0.00	0.00	0.00	0.00
Span (in)	= 0.00	0.00	0.00	0.00
No. Barrels	= 0	0	0	0
Invert El. (ft)	= 0.00	0.00	0.00	0.00
Length (ft)	= 0.00	0.00	0.00	0.00
Slope (%)	= 0.00	0.00	0.00	n/a
N-Value	= .013	.013	.013	n/a
Orifice Coeff.	= 0.60	0.60	0.60	0.60
Multi-Stage	= n/a	No	No	No

Weir Structures

	[A]	**[B]**	**[C]**	**[D]**
Crest Len (ft)	= 0.00	0.00	0.00	0.00
Crest El. (ft)	= 0.00	0.00	0.00	0.00
Weir Coeff.	= 3.33	3.33	3.33	3.33
Weir Type	= ---	---	---	---
Multi-Stage	= No	No	No	No
Exfil.(in/hr)	= 3.250 (by Wet area)			
TW Elev. (ft)	= 0.00			

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

Stage / Discharge
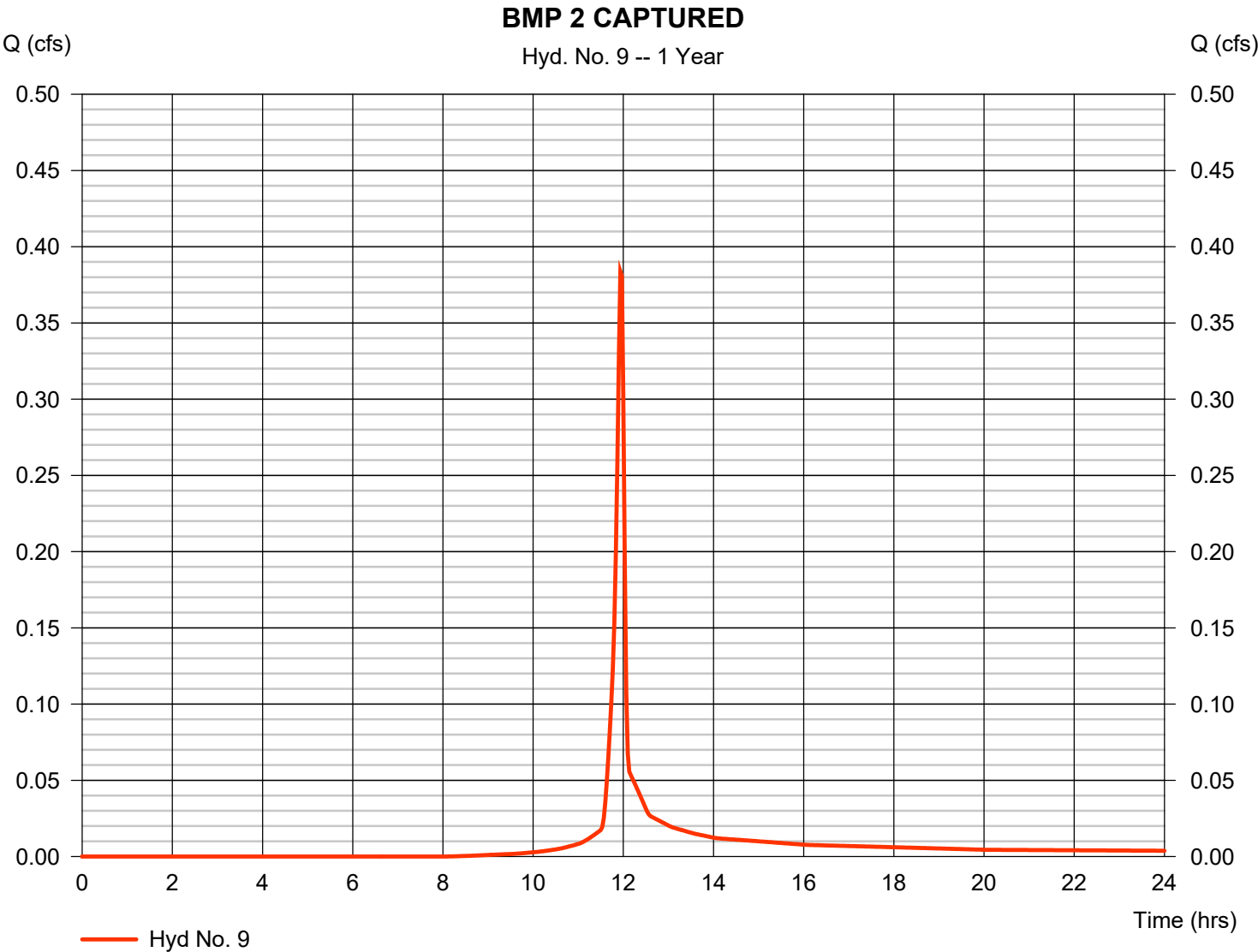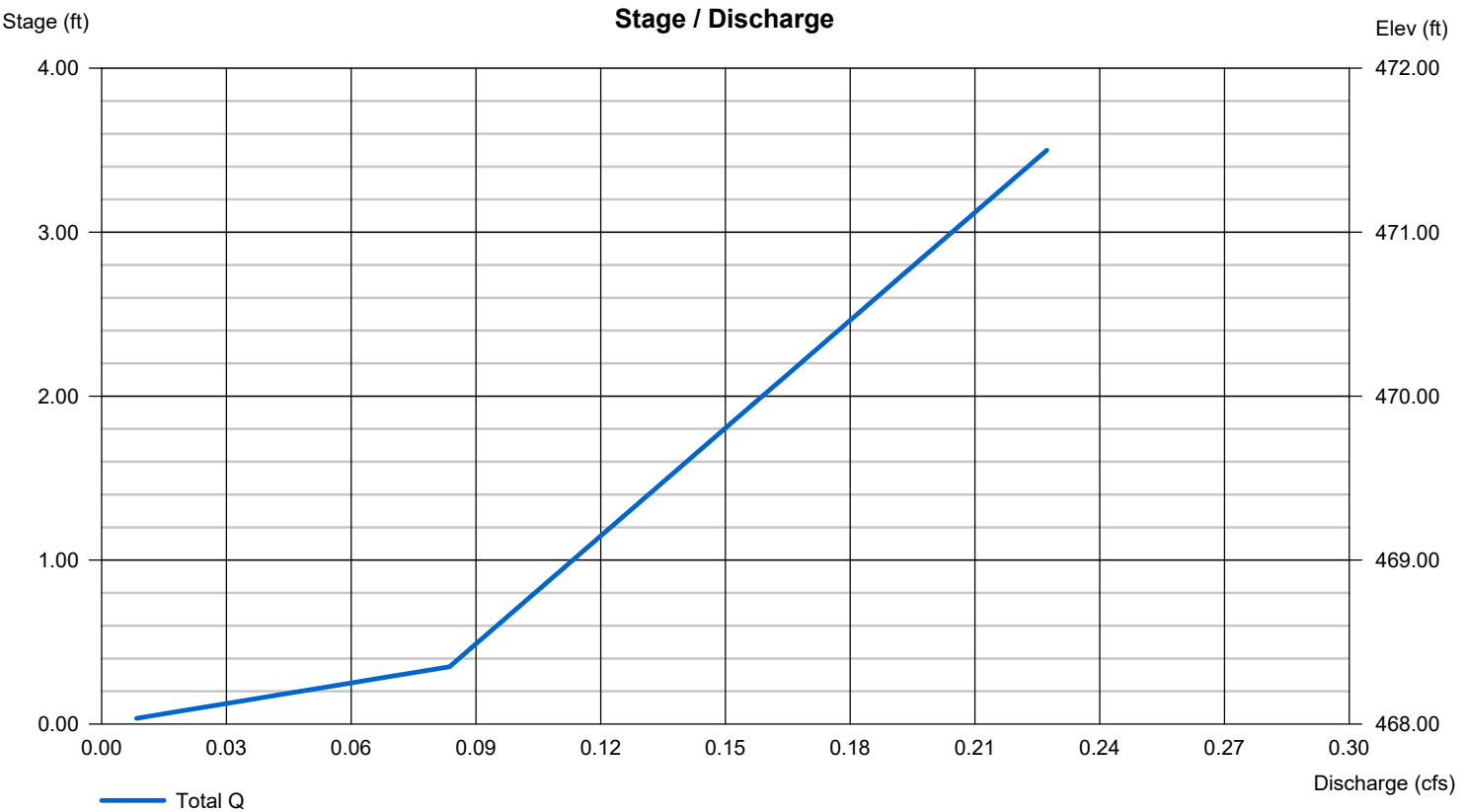
Hydrograph Report

Hyd. No. 12

WS1 POST TOTAL

Hydrograph type	= Combine	Peak discharge	= 1.717 cfs
Storm frequency	= 1 yrs	Time to peak	= 12.13 hrs
Time interval	= 2 min	Hyd. volume	= 6,802 cuft
Inflow hyds.	= 4, 7, 10	Contrib. drain. area	= 2.790 ac
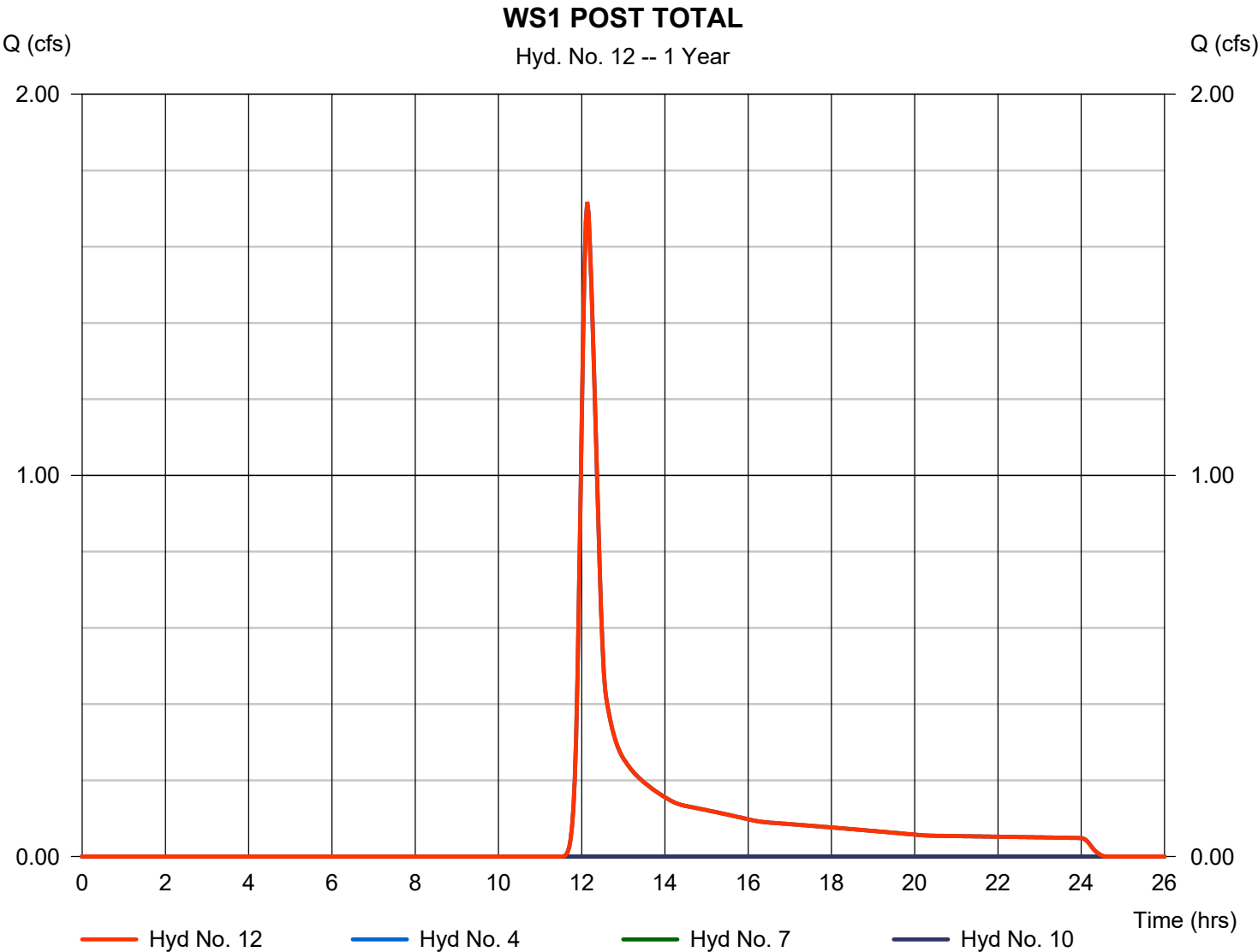
WS1 POST TOTAL

Hyd. No. 12 -- 1 Year

Q (cfs)

Time (hrs)

Hyd No. 12   Hyd No. 4   Hyd No. 7   Hyd No. 10

Hydrograph Report

Hyd. No. 15

WS2 - PRE-UNDISTURBED

Hydrograph type	= SCS Runoff		Peak discharge	= 0.421 cfs
Storm frequency	= 1 yrs		Time to peak	= 12.07 hrs
Time interval	= 2 min		Hyd. volume	= 1,314 cuft
Drainage area	= 0.570 ac		Curve number	= 72.1
Basin Slope	= 0.0 %		Hydraulic length	= 0 ft
Tc method	= User		Time of conc. (Tc)	= 13.50 min
Total precip.	= 2.72 in		Distribution	= Type II
Storm duration	= 24 hrs		Shape factor	= 484

WS2 - PRE-UNDISTURBED

Hyd. No. 15 -- 1 Year
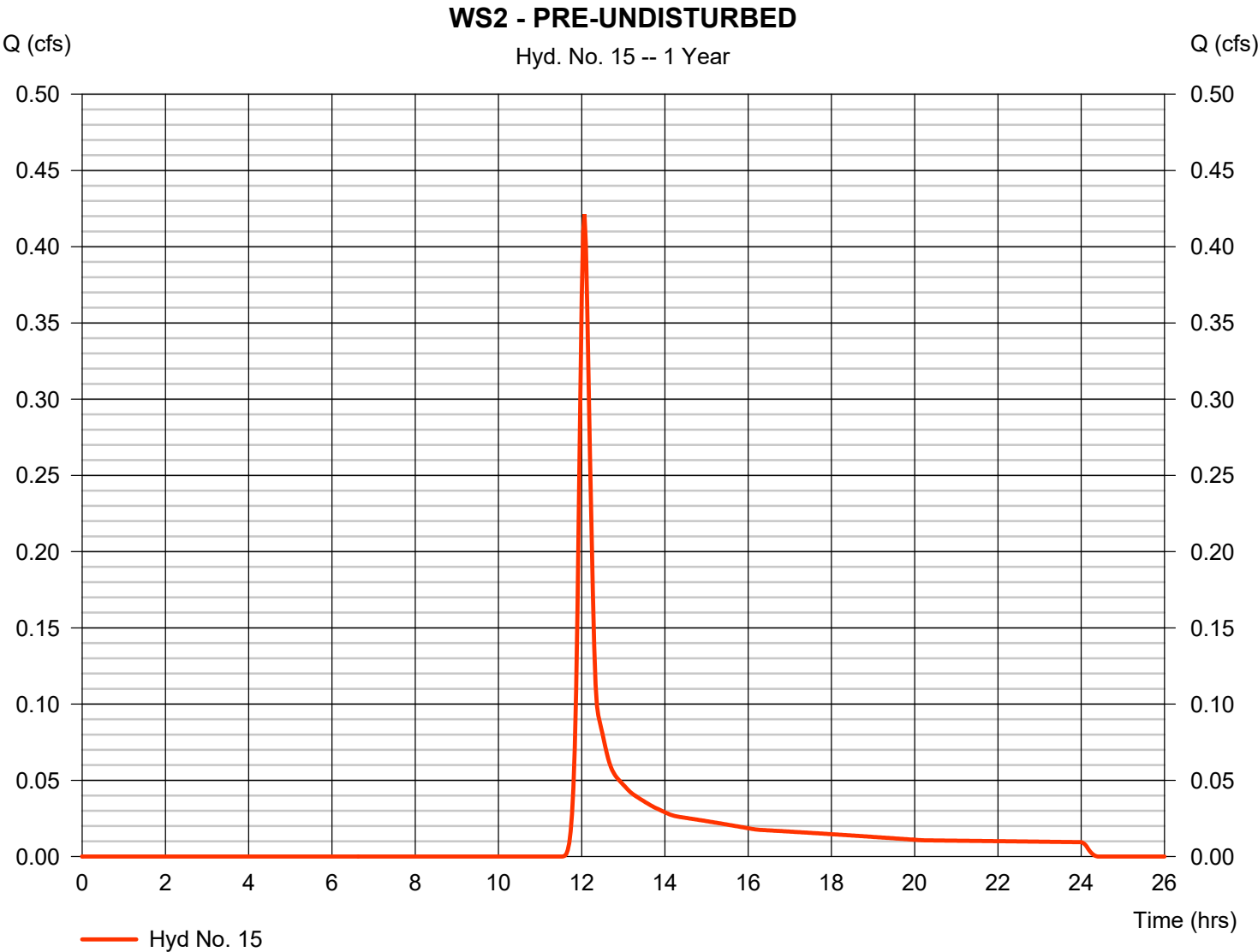
Hyd No. 15

Hydrograph Report

Hyd. No. 16

WS2 - PRE-DISTURBED

Hydrograph type	= SCS Runoff	Peak discharge	= 0.161 cfs
Storm frequency	= 1 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 514 cuft
Drainage area	= 0.240 ac	Curve number	= 71
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 13.50 min
Total precip.	= 2.72 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

WS2 - PRE-DISTURBED

Hyd. No. 16 -- 1 Year
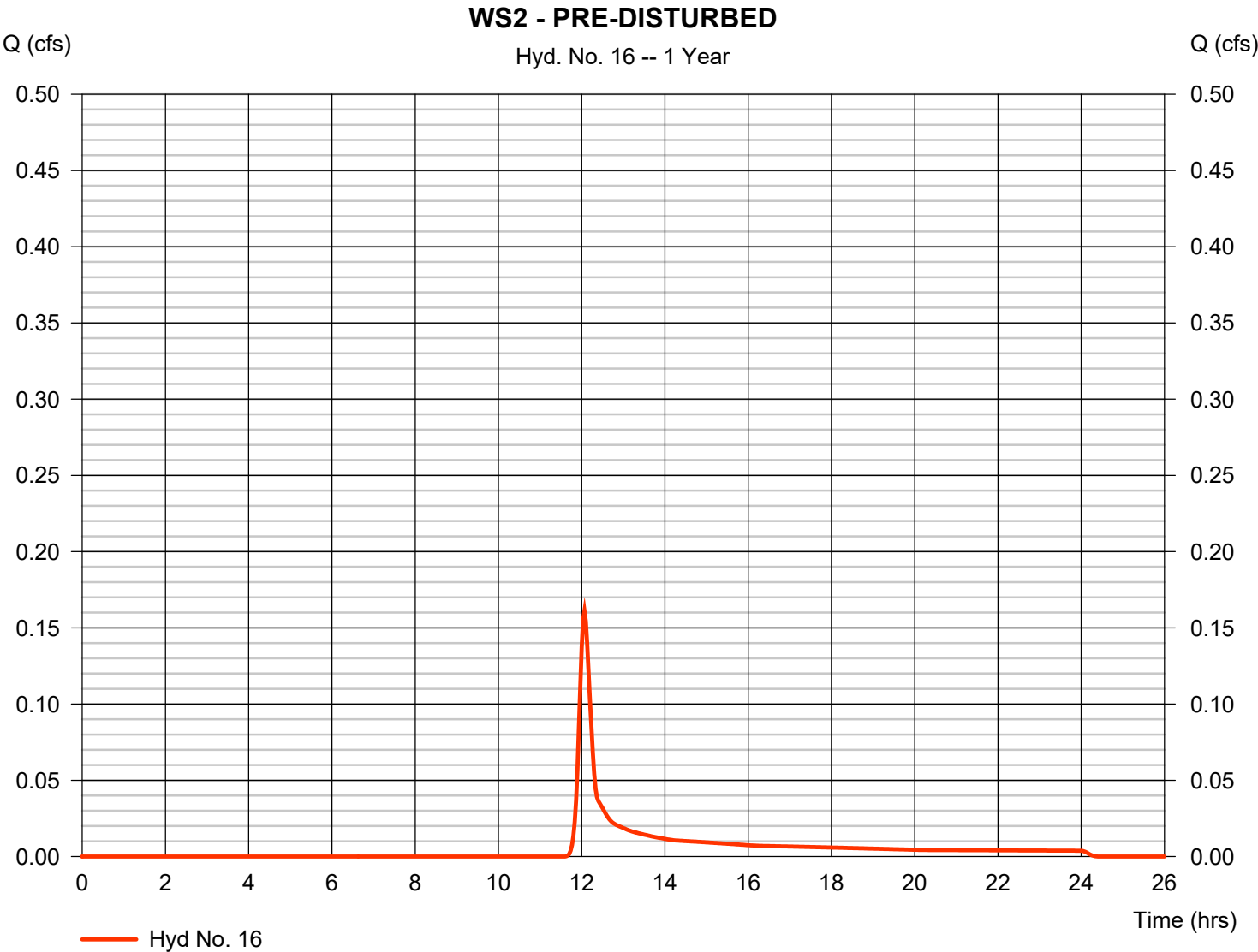
Hydrograph Report

Hyd. No. 18

WS2 - POST BYPASS

Hydrograph type	= SCS Runoff		Peak discharge	= 0.486 cfs
Storm frequency	= 1 yrs		Time to peak	= 12.07 hrs
Time interval	= 2 min		Hyd. volume	= 1,491 cuft
Drainage area	= 0.610 ac		Curve number	= 73
Basin Slope	= 0.0 %		Hydraulic length	= 0 ft
Tc method	= User		Time of conc. (Tc)	= 13.50 min
Total precip.	= 2.72 in		Distribution	= Type II
Storm duration	= 24 hrs		Shape factor	= 484

WS2 - POST BYPASS
Hyd. No. 18 -- 1 Year

Q (cfs)

Hyd No. 18

Time (hrs)
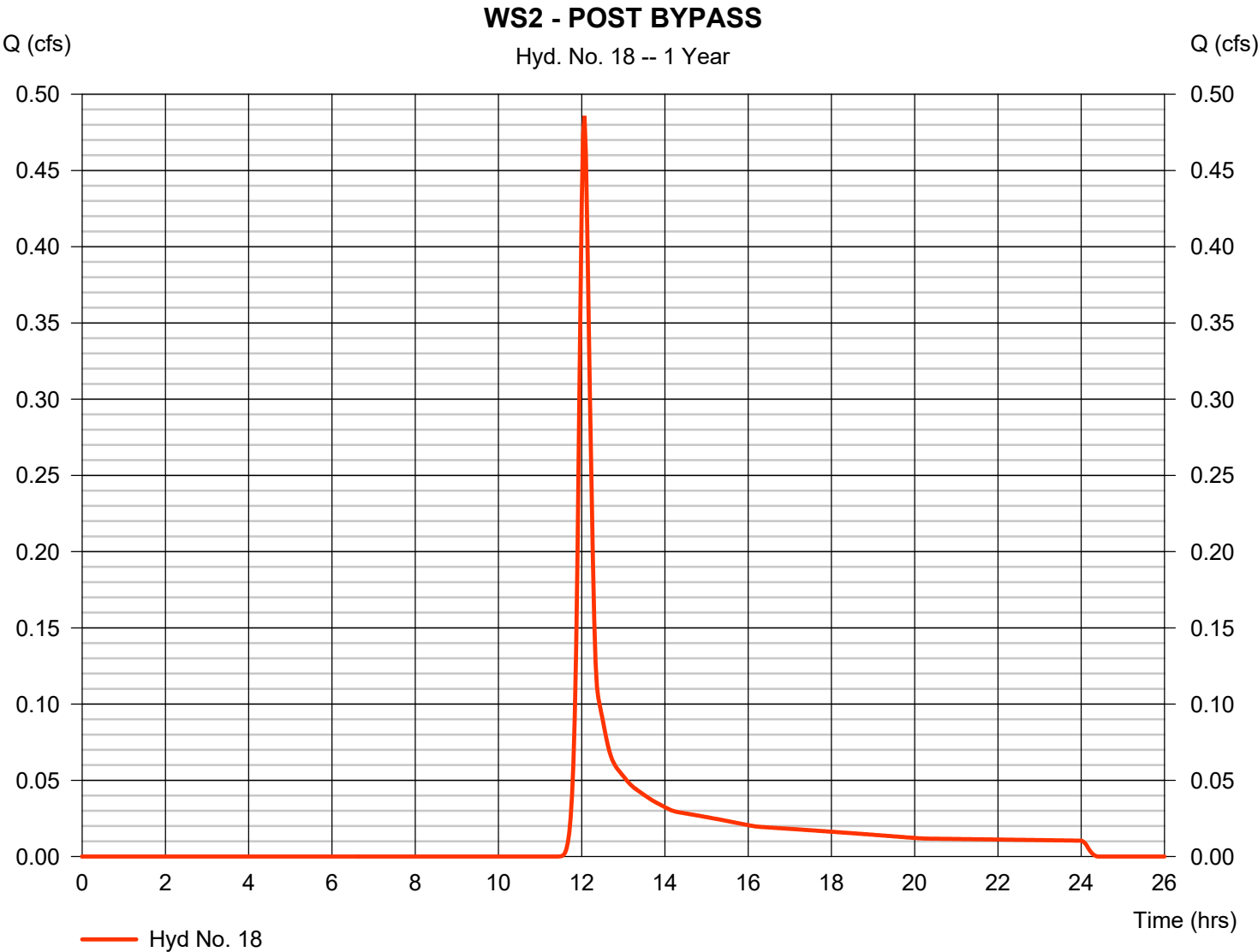
Hydrograph Summary Report

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	2.645	2	728	9,871	------	------	------	WS1 - PRE-UNDISTURBED
2	SCS Runoff	0.498	2	728	1,994	------	------	------	WS1 - PRE-DISTURBED
4	SCS Runoff	2.748	2	728	10,201	------	------	------	WS1 - POST BYPASS
6	SCS Runoff	0.936	2	726	3,023	------	------	------	BMP 1 CAPTURED
7	Reservoir	0.000	2	840	0	6	472.08	988	BMP 1 ROUTED
9	SCS Runoff	0.507	2	716	1,032	------	------	------	BMP 2 CAPTURED
10	Reservoir	0.000	2	802	0	9	468.97	349	BMP 2 ROUTED
12	Combine	2.748	2	728	10,201	4, 7, 10,	------	------	WS1 POST TOTAL
15	SCS Runoff	0.666	2	724	1,974	------	------	------	WS2 - PRE-UNDISTURBED
16	SCS Runoff	0.261	2	724	782	------	------	------	WS2 - PRE-DISTURBED
18	SCS Runoff	0.755	2	724	2,219	------	------	------	WS2 - POST BYPASS

11711 (SCS only).gpw	Return Period: 2 Year	Wednesday, 01 / 10 / 2024

Hydrograph Report

Wednesday, 01 / 10 / 2024

Hyd. No. 1

WS1 - PRE-UNDISTURBED

Hydrograph type	= SCS Runoff	Peak discharge	= 2.645 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.13 hrs
Time interval	= 2 min	Hyd. volume	= 9,871 cuft
Drainage area	= 2.760 ac	Curve number	= 71.9
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 22.30 min
Total precip.	= 3.27 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

WS1 - PRE-UNDISTURBED

Hyd. No. 1 -- 2 Year

Q (cfs)

Time (hrs)
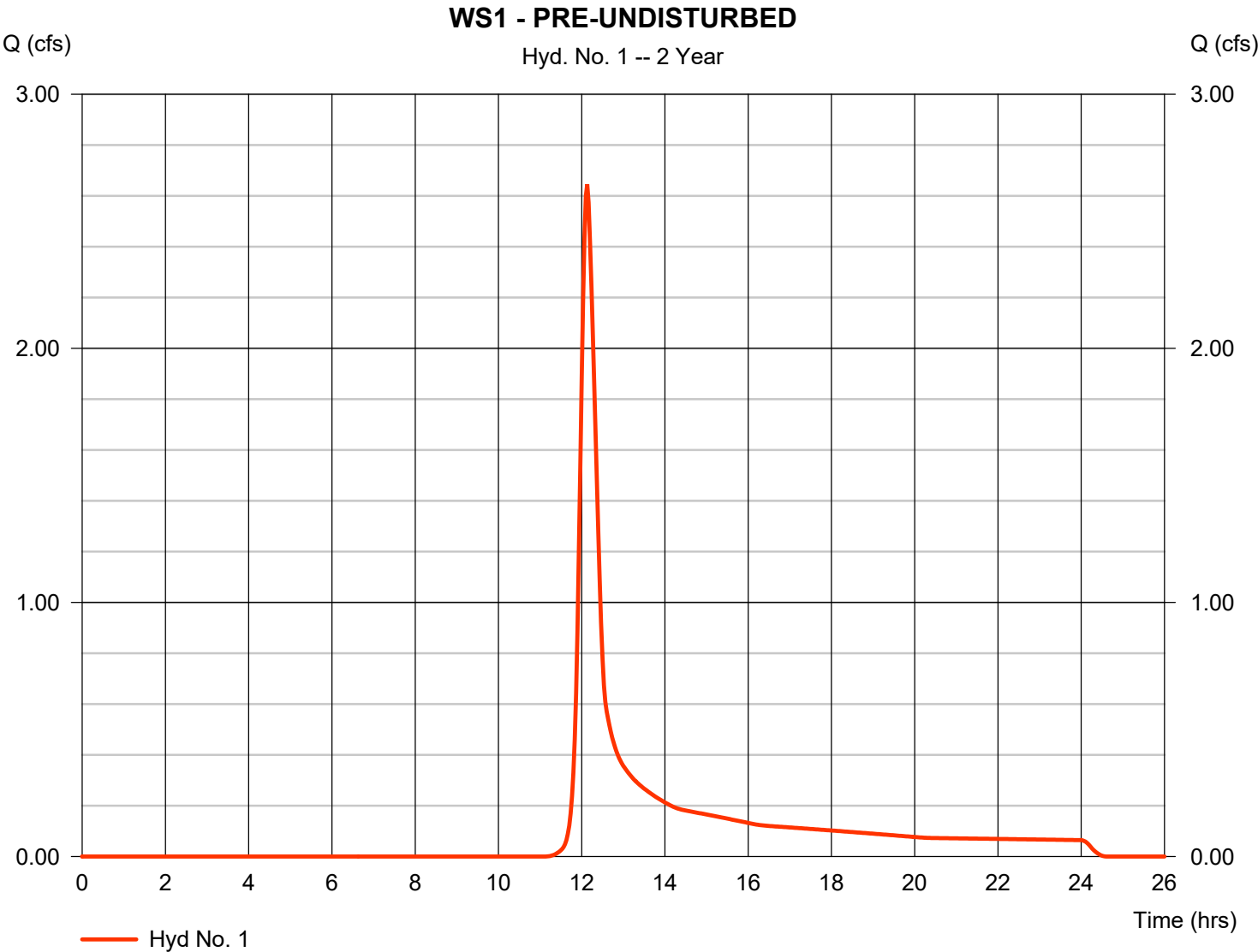
— Hyd No. 1

Hydrograph Report

Hyd. No. 2

WS1 - PRE-DISTURBED

Hydrograph type	= SCS Runoff		Peak discharge	= 0.498 cfs
Storm frequency	= 2 yrs		Time to peak	= 12.13 hrs
Time interval	= 2 min		Hyd. volume	= 1,994 cuft
Drainage area	= 0.700 ac		Curve number	= 68
Basin Slope	= 0.0 %		Hydraulic length	= 0 ft
Tc method	= User		Time of conc. (Tc)	= 22.30 min
Total precip.	= 3.27 in		Distribution	= Type II
Storm duration	= 24 hrs		Shape factor	= 484

WS1 - PRE-DISTURBED

Hyd. No. 2 -- 2 Year
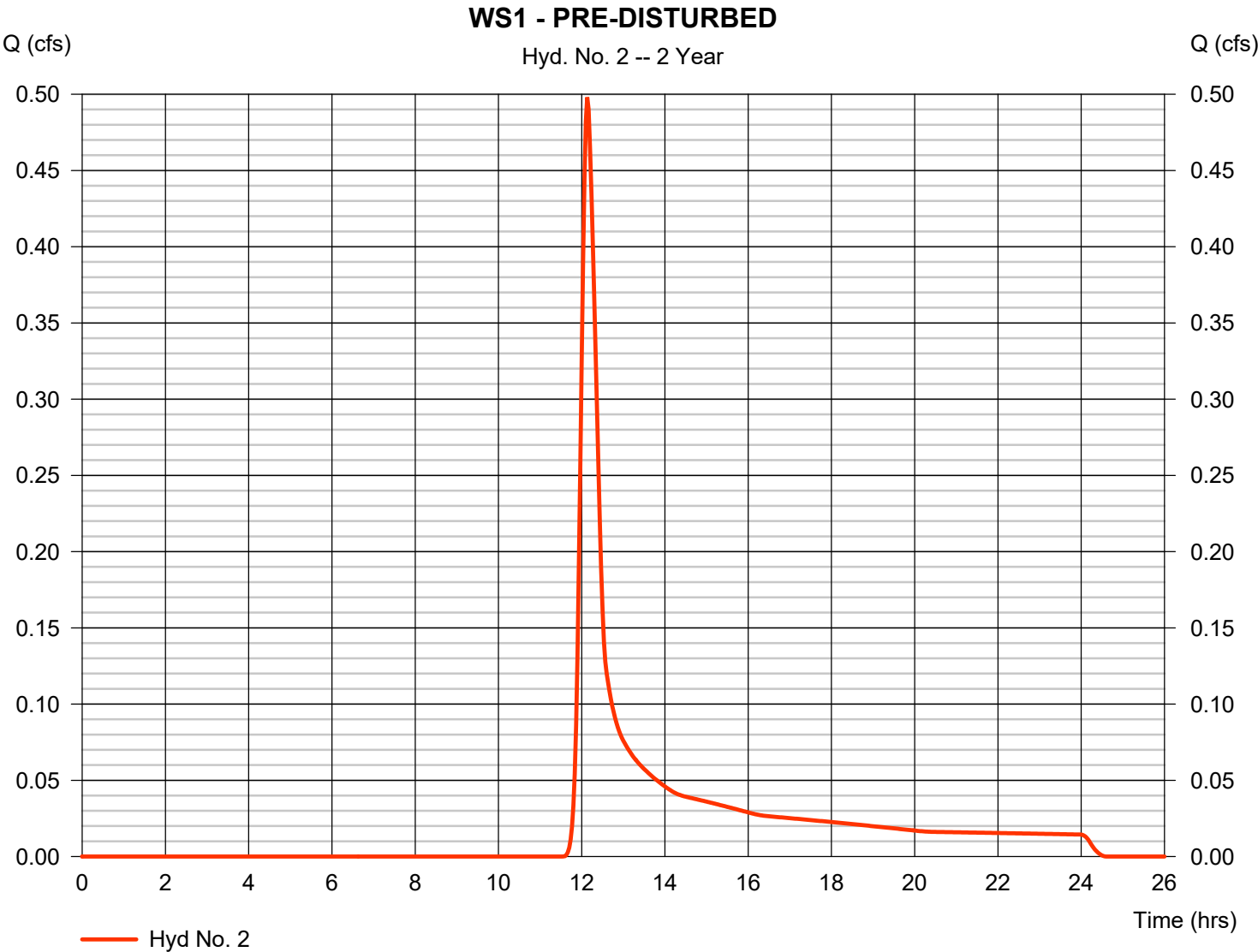
Hydrograph Report

Hyd. No. 4

WS1 - POST BYPASS

Hydrograph type	= SCS Runoff		Peak discharge	= 2.748 cfs
Storm frequency	= 2 yrs		Time to peak	= 12.13 hrs
Time interval	= 2 min		Hyd. volume	= 10,201 cuft
Drainage area	= 2.790 ac		Curve number	= 72.3
Basin Slope	= 0.0 %		Hydraulic length	= 0 ft
Tc method	= User		Time of conc. (Tc)	= 22.30 min
Total precip.	= 3.27 in		Distribution	= Type II
Storm duration	= 24 hrs		Shape factor	= 484

WS1 - POST BYPASS

Hyd. No. 4 -- 2 Year
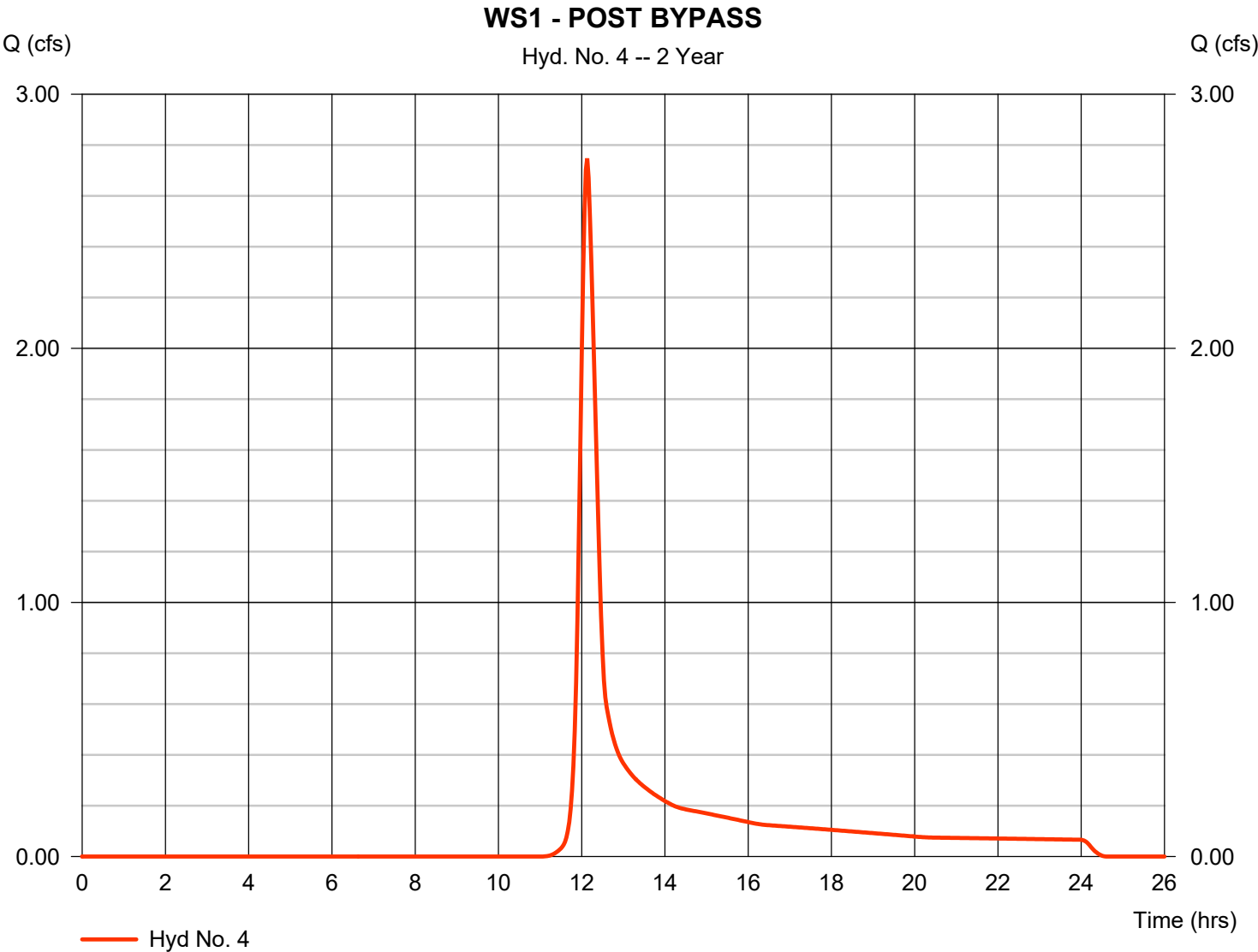
Hyd No. 4

Hydrograph Report

Hyd. No. 6

BMP 1 CAPTURED

Hydrograph type	= SCS Runoff		Peak discharge	= 0.936 cfs
Storm frequency	= 2 yrs		Time to peak	= 12.10 hrs
Time interval	= 2 min		Hyd. volume	= 3,023 cuft
Drainage area	= 0.690 ac		Curve number	= 76.1
Basin Slope	= 0.0 %		Hydraulic length	= 0 ft
Tc method	= User		Time of conc. (Tc)	= 19.60 min
Total precip.	= 3.27 in		Distribution	= Type II
Storm duration	= 24 hrs		Shape factor	= 484

BMP 1 CAPTURED

Hyd. No. 6 -- 2 Year

Q (cfs)

Q (cfs)

Time (hrs)
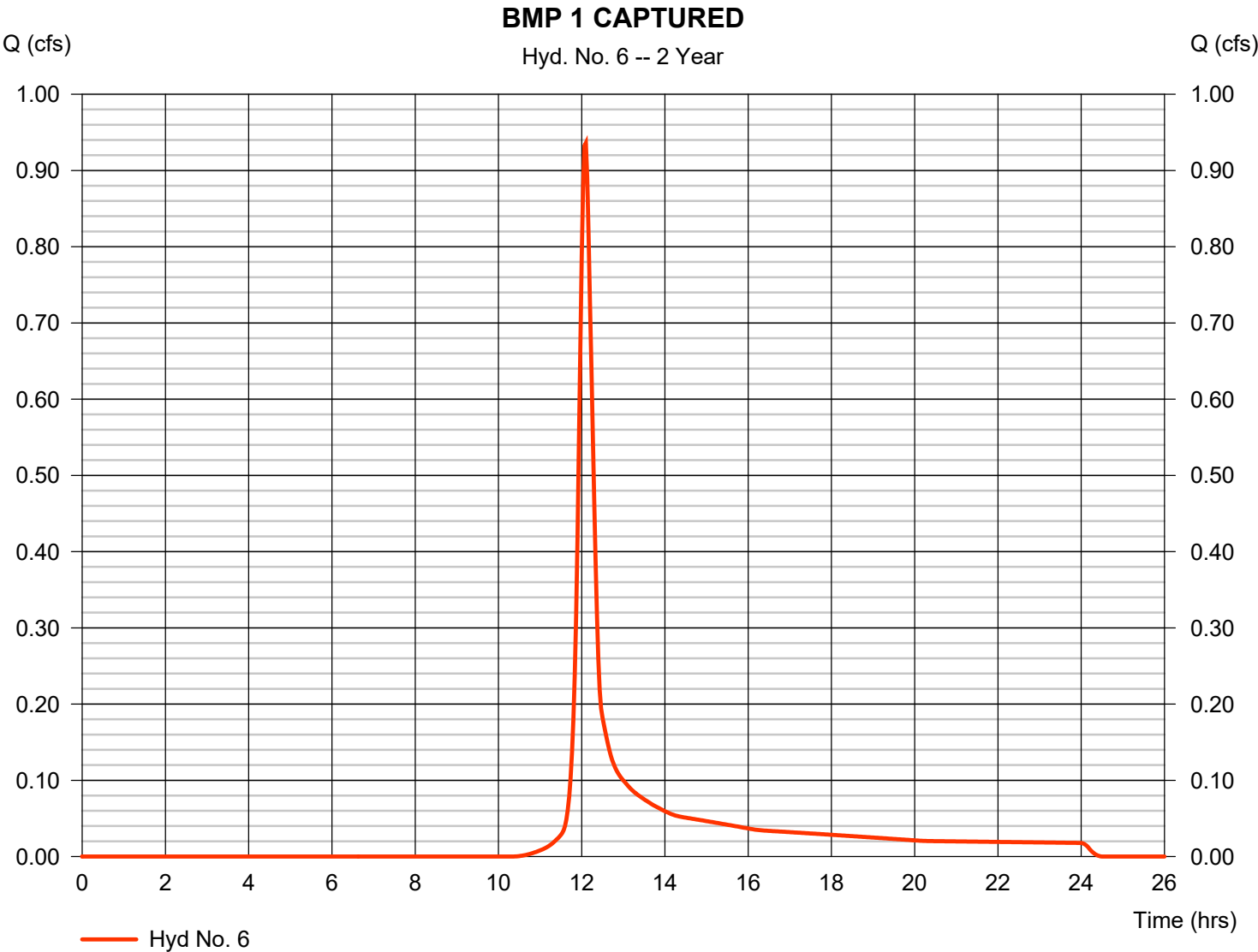
Hyd No. 6

Hydrograph Report

Hyd. No. 7

BMP 1 ROUTED

Hydrograph type	= Reservoir		Peak discharge	= 0.000 cfs
Storm frequency	= 2 yrs		Time to peak	= 14.00 hrs
Time interval	= 2 min		Hyd. volume	= 0 cuft
Inflow hyd. No.	= 6 - BMP 1 CAPTURED		Max. Elevation	= 472.08 ft
Reservoir name	= BMP 1		Max. Storage	= 988 cuft

Storage Indication method used. Exfiltration extracted from Outflow.
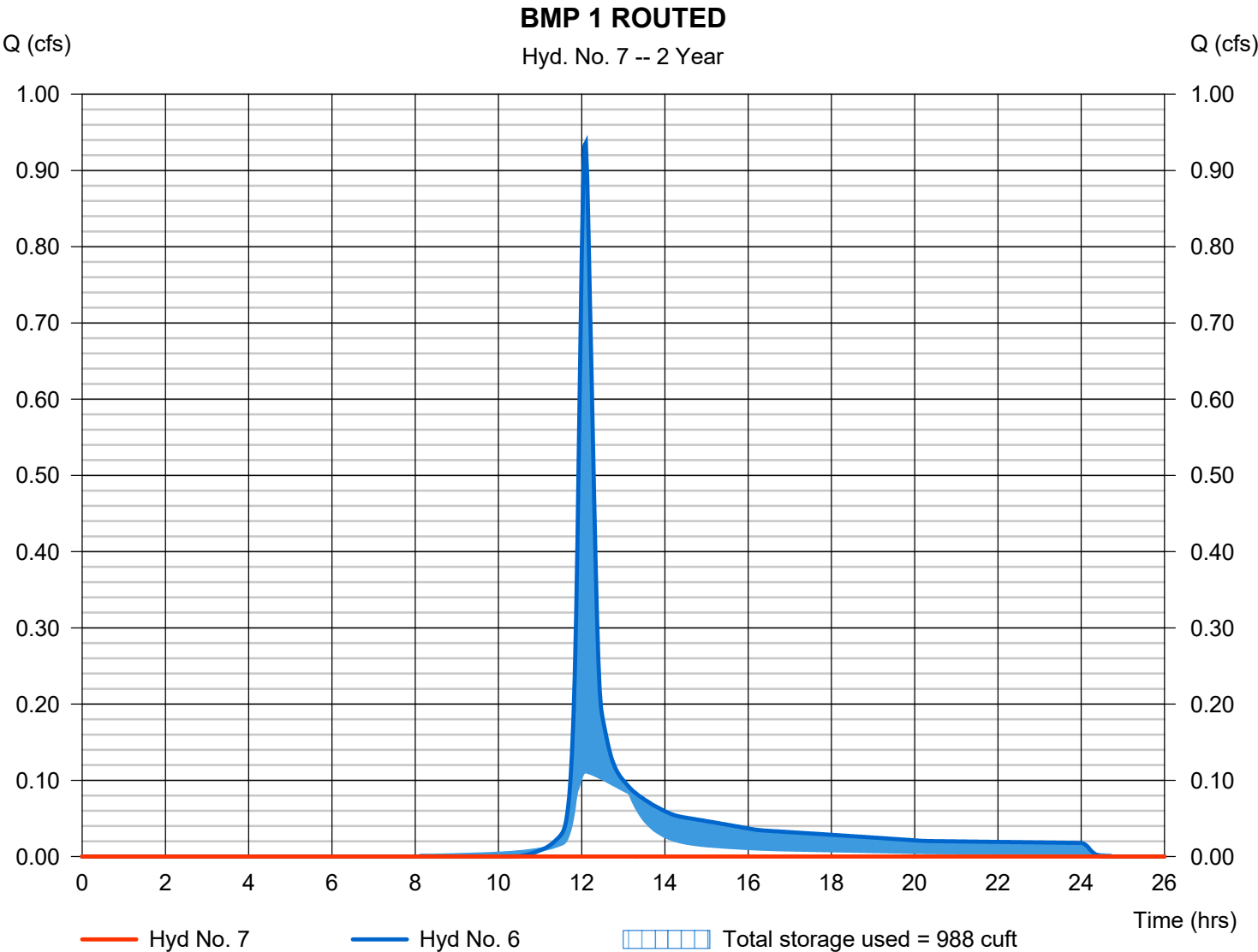
BMP 1 ROUTED
Hyd. No. 7 -- 2 Year

Legend: Hyd No. 7 — Hyd No. 6 — Total storage used = 988 cuft

Hydrograph Report

Hyd. No. 9

BMP 2 CAPTURED

Hydrograph type	= SCS Runoff		Peak discharge	= 0.507 cfs
Storm frequency	= 2 yrs		Time to peak	= 11.93 hrs
Time interval	= 2 min		Hyd. volume	= 1,032 cuft
Drainage area	= 0.160 ac		Curve number	= 86
Basin Slope	= 0.0 %		Hydraulic length	= 0 ft
Tc method	= User		Time of conc. (Tc)	= 6.00 min
Total precip.	= 3.27 in		Distribution	= Type II
Storm duration	= 24 hrs		Shape factor	= 484

BMP 2 CAPTURED

Hyd. No. 9 -- 2 Year

Q (cfs)

Time (hrs)
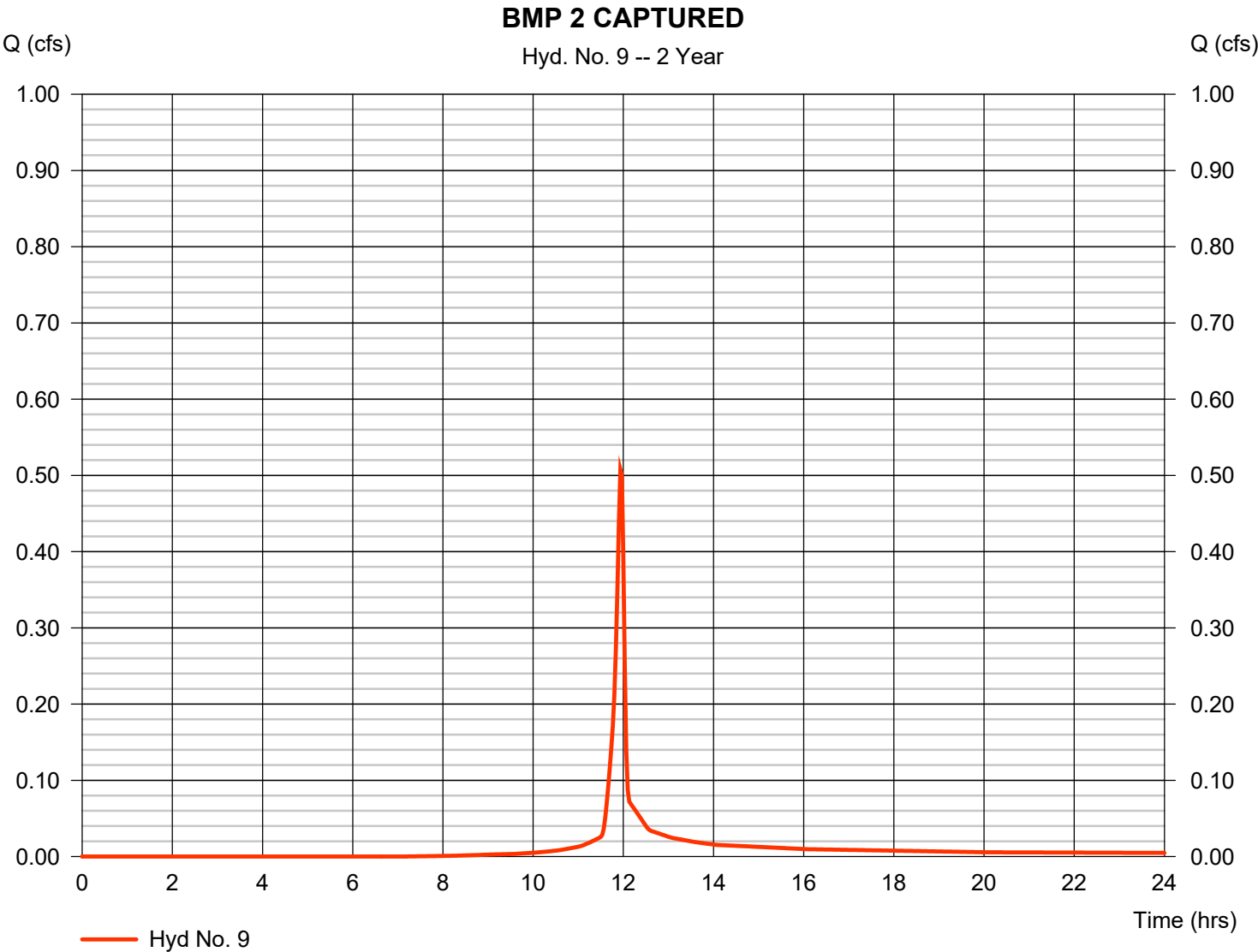
Hyd No. 9

Hydrograph Report

Wednesday, 01 / 10 / 2024

Hyd. No. 10

BMP 2 ROUTED

Hydrograph type	= Reservoir	Peak discharge	= 0.000 cfs
Storm frequency	= 2 yrs	Time to peak	= 13.37 hrs
Time interval	= 2 min	Hyd. volume	= 0 cuft
Inflow hyd. No.	= 9 - BMP 2 CAPTURED	Max. Elevation	= 468.97 ft
Reservoir name	= BMP 2	Max. Storage	= 349 cuft

Storage Indication method used. Exfiltration extracted from Outflow.
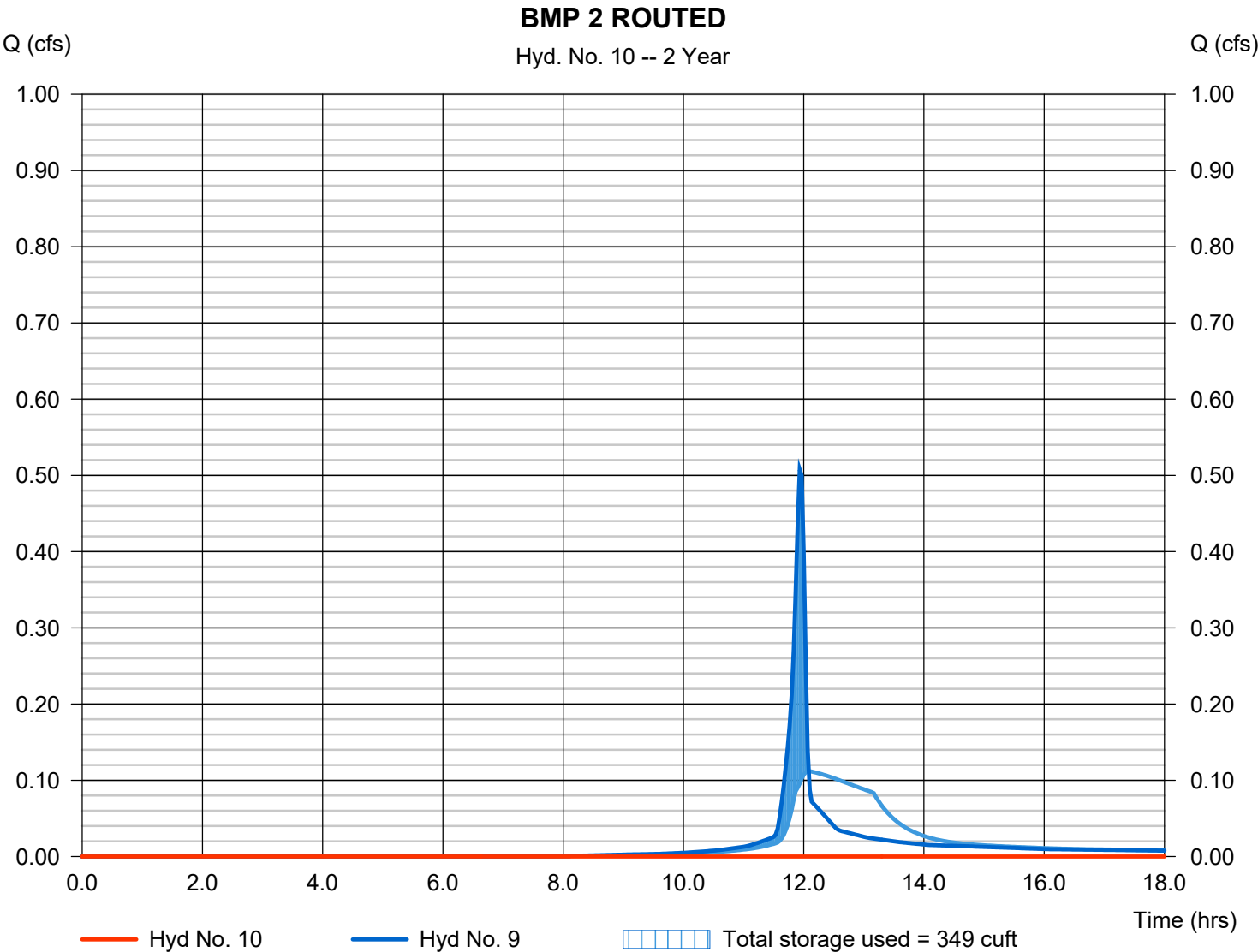
BMP 2 ROUTED

Hyd. No. 10 -- 2 Year

Hyd No. 10   Hyd No. 9   Total storage used = 349 cuft

Hydrograph Report

Hyd. No. 12

WS1 POST TOTAL

Hydrograph type	= Combine	Peak discharge	= 2.748 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.13 hrs
Time interval	= 2 min	Hyd. volume	= 10,201 cuft
Inflow hyds.	= 4, 7, 10	Contrib. drain. area	= 2.790 ac
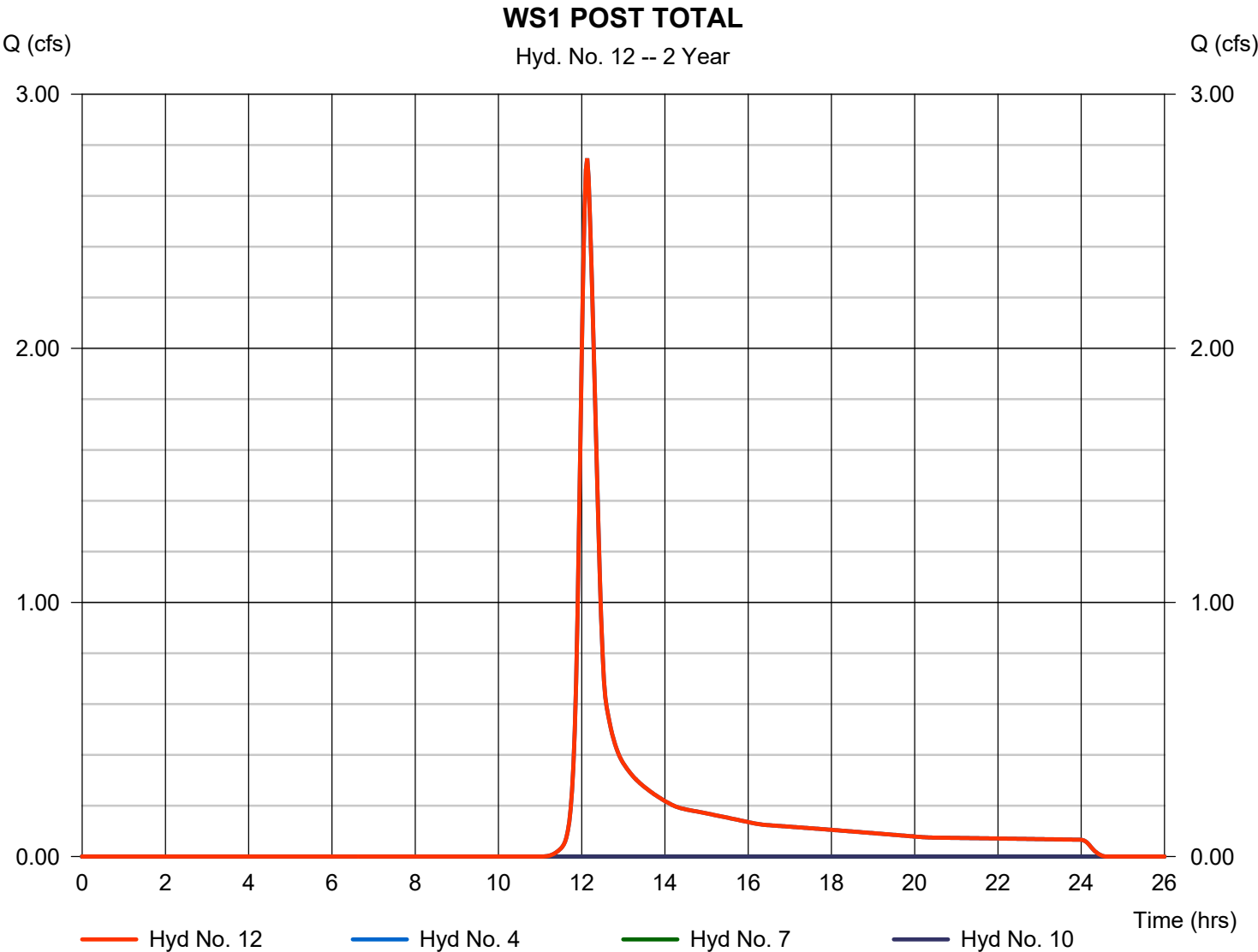
WS1 POST TOTAL

Hyd. No. 12 -- 2 Year

Hydrograph Report

Hyd. No. 15

WS2 - PRE-UNDISTURBED

Hydrograph type	= SCS Runoff		Peak discharge	= 0.666 cfs
Storm frequency	= 2 yrs		Time to peak	= 12.07 hrs
Time interval	= 2 min		Hyd. volume	= 1,974 cuft
Drainage area	= 0.570 ac		Curve number	= 72.1
Basin Slope	= 0.0 %		Hydraulic length	= 0 ft
Tc method	= User		Time of conc. (Tc)	= 13.50 min
Total precip.	= 3.27 in		Distribution	= Type II
Storm duration	= 24 hrs		Shape factor	= 484

WS2 - PRE-UNDISTURBED

Hyd. No. 15 -- 2 Year
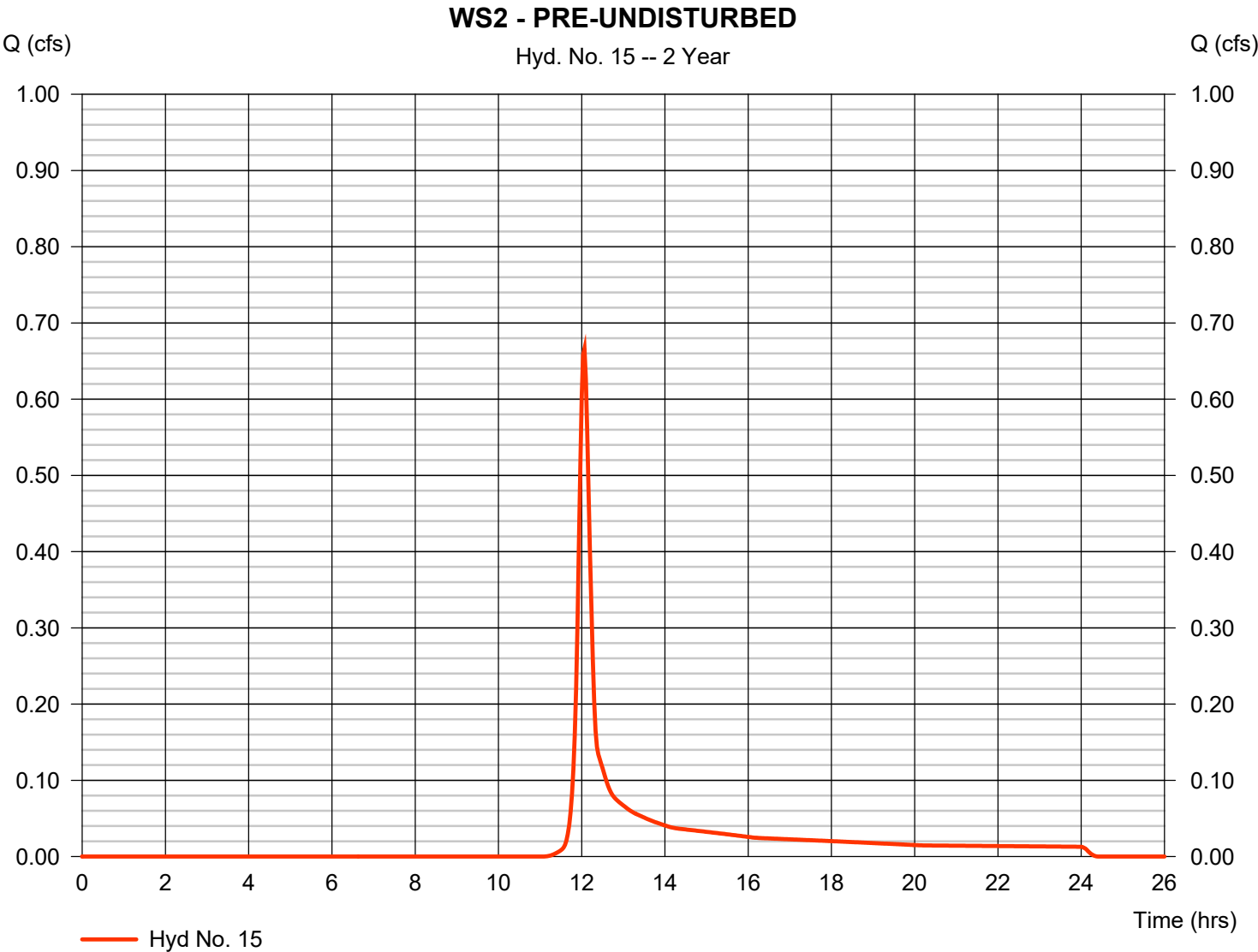
Hyd No. 15

Hydrograph Report

Hyd. No. 16

WS2 - PRE-DISTURBED

Hydrograph type	= SCS Runoff		Peak discharge	= 0.261 cfs
Storm frequency	= 2 yrs		Time to peak	= 12.07 hrs
Time interval	= 2 min		Hyd. volume	= 782 cuft
Drainage area	= 0.240 ac		Curve number	= 71
Basin Slope	= 0.0 %		Hydraulic length	= 0 ft
Tc method	= User		Time of conc. (Tc)	= 13.50 min
Total precip.	= 3.27 in		Distribution	= Type II
Storm duration	= 24 hrs		Shape factor	= 484

WS2 - PRE-DISTURBED

Hyd. No. 16 -- 2 Year
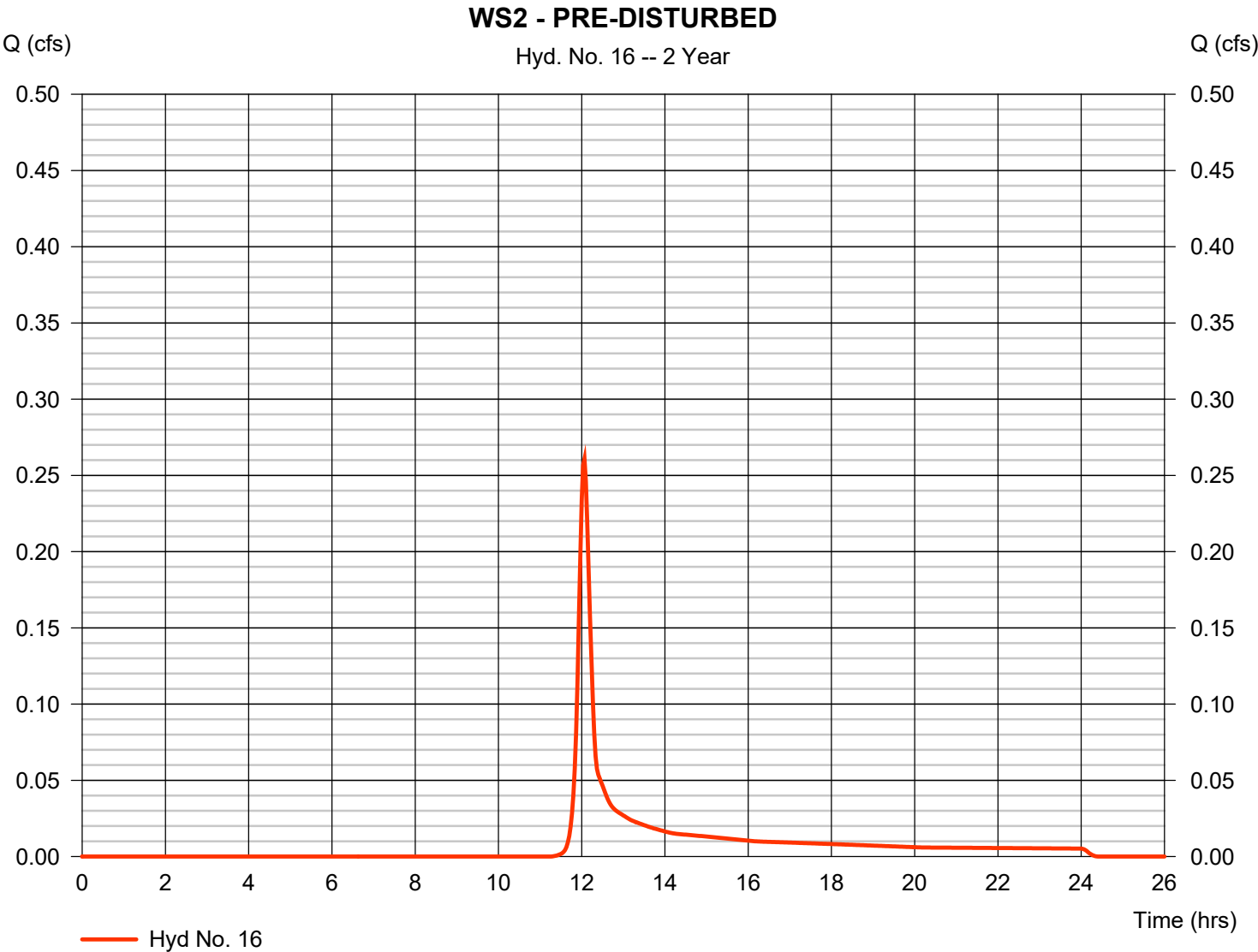
Hyd No. 16

Hydrograph Report

Hyd. No. 18

WS2 - POST BYPASS

Hydrograph type	= SCS Runoff		Peak discharge	= 0.755 cfs	
Storm frequency	= 2 yrs		Time to peak	= 12.07 hrs	
Time interval	= 2 min		Hyd. volume	= 2,219 cuft	
Drainage area	= 0.610 ac		Curve number	= 73	
Basin Slope	= 0.0 %		Hydraulic length	= 0 ft	
Tc method	= User		Time of conc. (Tc)	= 13.50 min	
Total precip.	= 3.27 in		Distribution	= Type II	
Storm duration	= 24 hrs		Shape factor	= 484	

WS2 - POST BYPASS
Hyd. No. 18 -- 2 Year

Hyd No. 18
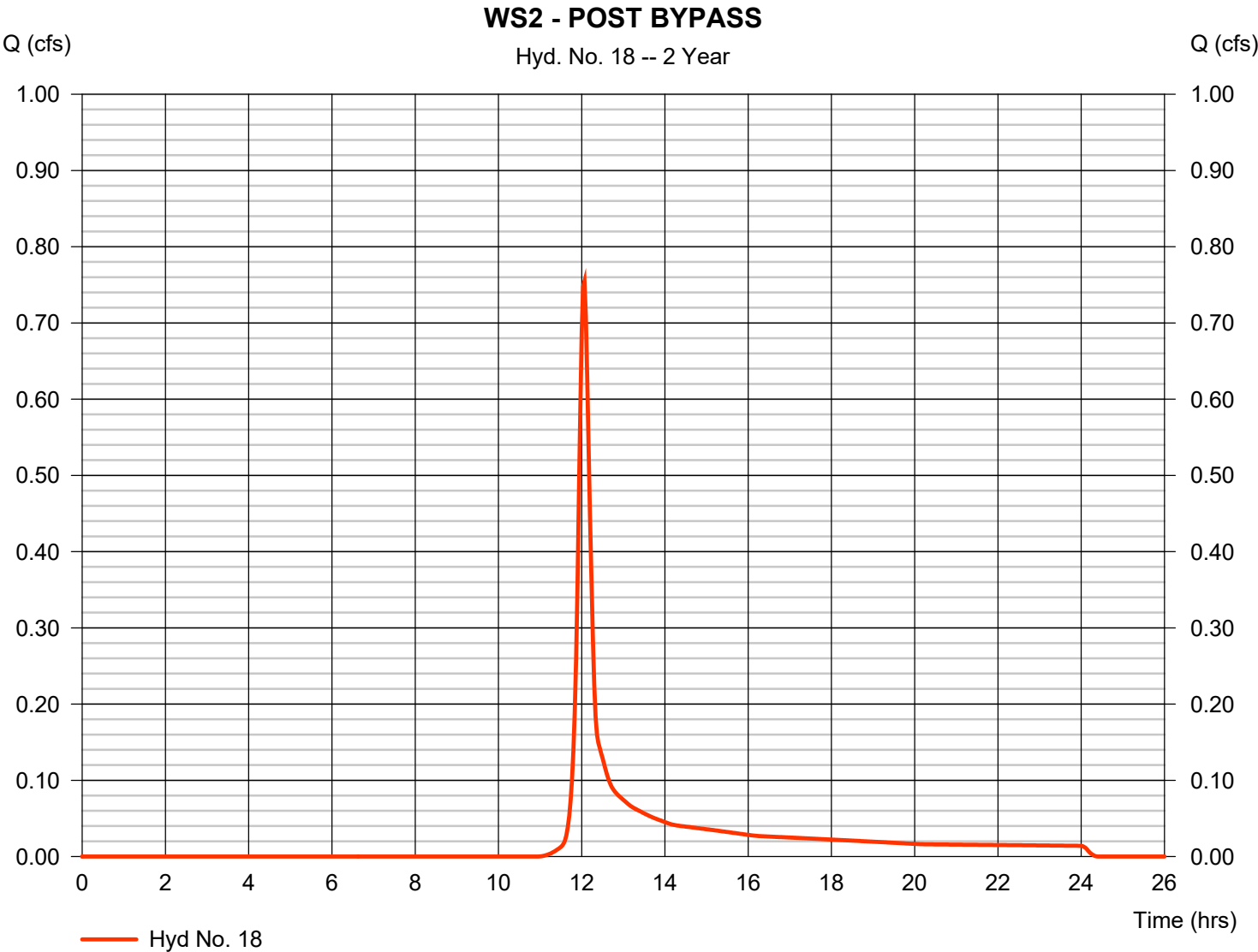
Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024

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	4.369	2	728	15,611	------	------	------	WS1 - PRE-UNDISTURBED
2	SCS Runoff	0.893	2	728	3,298	------	------	------	WS1 - PRE-DISTURBED
4	SCS Runoff	4.506	2	728	16,064	------	------	------	WS1 - POST BYPASS
6	SCS Runoff	1.450	2	724	4,585	------	------	------	BMP 1 CAPTURED
7	Reservoir	0.003	2	754	3	6	472.92	1,754	BMP 1 ROUTED
9	SCS Runoff	0.700	2	716	1,441	------	------	------	BMP 2 CAPTURED
10	Reservoir	0.000	2	834	0	9	469.43	514	BMP 2 ROUTED
12	Combine	4.506	2	728	16,066	4, 7, 10,	------	------	WS1 POST TOTAL
15	SCS Runoff	1.084	2	722	3,116	------	------	------	WS2 - PRE-UNDISTURBED
16	SCS Runoff	0.432	2	724	1,249	------	------	------	WS2 - PRE-DISTURBED
18	SCS Runoff	1.213	2	722	3,469	------	------	------	WS2 - POST BYPASS

11711 (SCS only).gpw	Return Period: 5 Year	Wednesday, 01 / 10 / 2024

Hydrograph Report

Hyd. No. 1

WS1 - PRE-UNDISTURBED

Hydrograph type	= SCS Runoff		Peak discharge	= 4.369 cfs
Storm frequency	= 5 yrs		Time to peak	= 12.13 hrs
Time interval	= 2 min		Hyd. volume	= 15,611 cuft
Drainage area	= 2.760 ac		Curve number	= 71.9
Basin Slope	= 0.0 %		Hydraulic length	= 0 ft
Tc method	= User		Time of conc. (Tc)	= 22.30 min
Total precip.	= 4.11 in		Distribution	= Type II
Storm duration	= 24 hrs		Shape factor	= 484

WS1 - PRE-UNDISTURBED
Hyd. No. 1 -- 5 Year
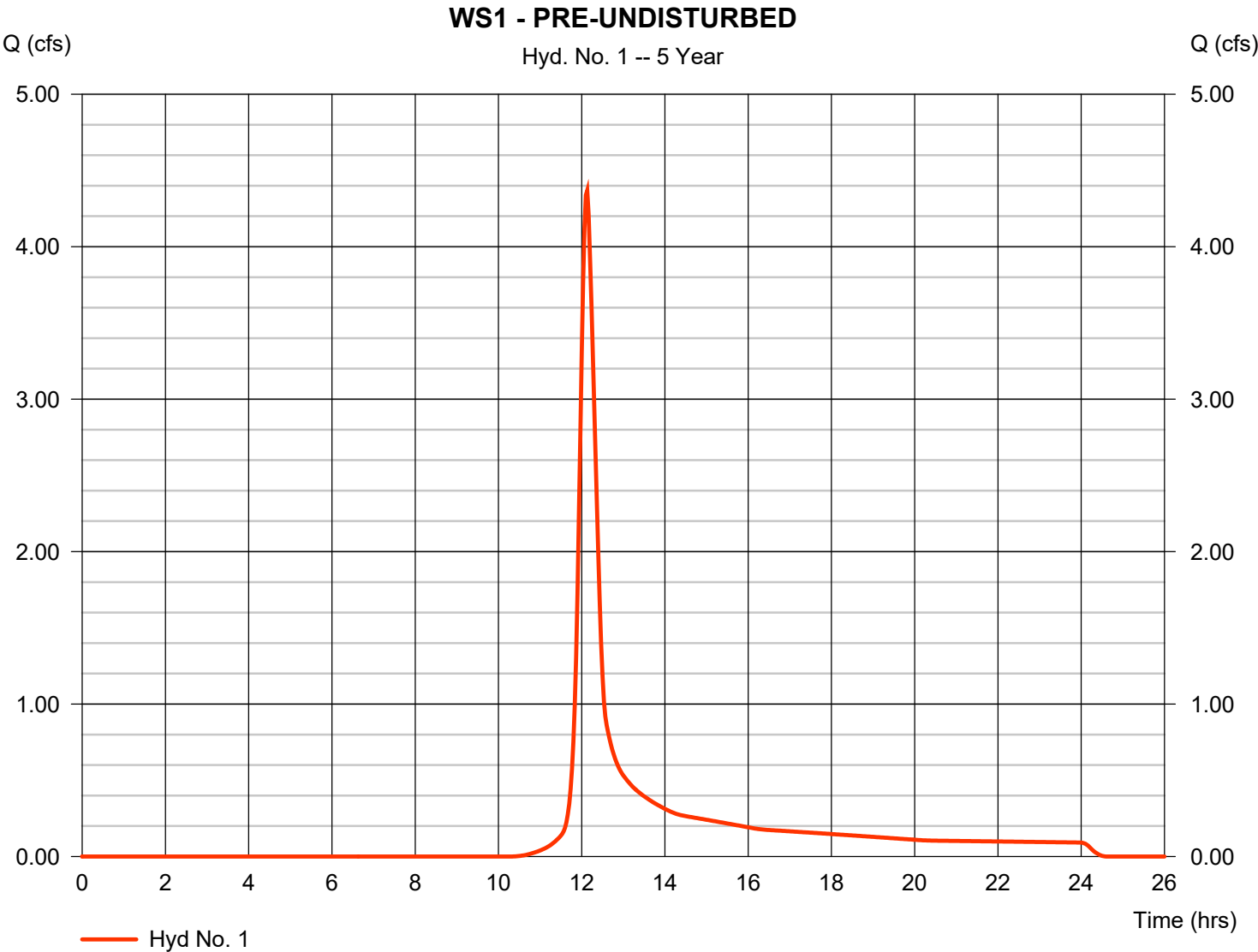
Hyd No. 1

Hydrograph Report

Hyd. No. 2

WS1 - PRE-DISTURBED

Hydrograph type	= SCS Runoff		Peak discharge	= 0.893 cfs
Storm frequency	= 5 yrs		Time to peak	= 12.13 hrs
Time interval	= 2 min		Hyd. volume	= 3,298 cuft
Drainage area	= 0.700 ac		Curve number	= 68
Basin Slope	= 0.0 %		Hydraulic length	= 0 ft
Tc method	= User		Time of conc. (Tc)	= 22.30 min
Total precip.	= 4.11 in		Distribution	= Type II
Storm duration	= 24 hrs		Shape factor	= 484

WS1 - PRE-DISTURBED

Hyd. No. 2 -- 5 Year
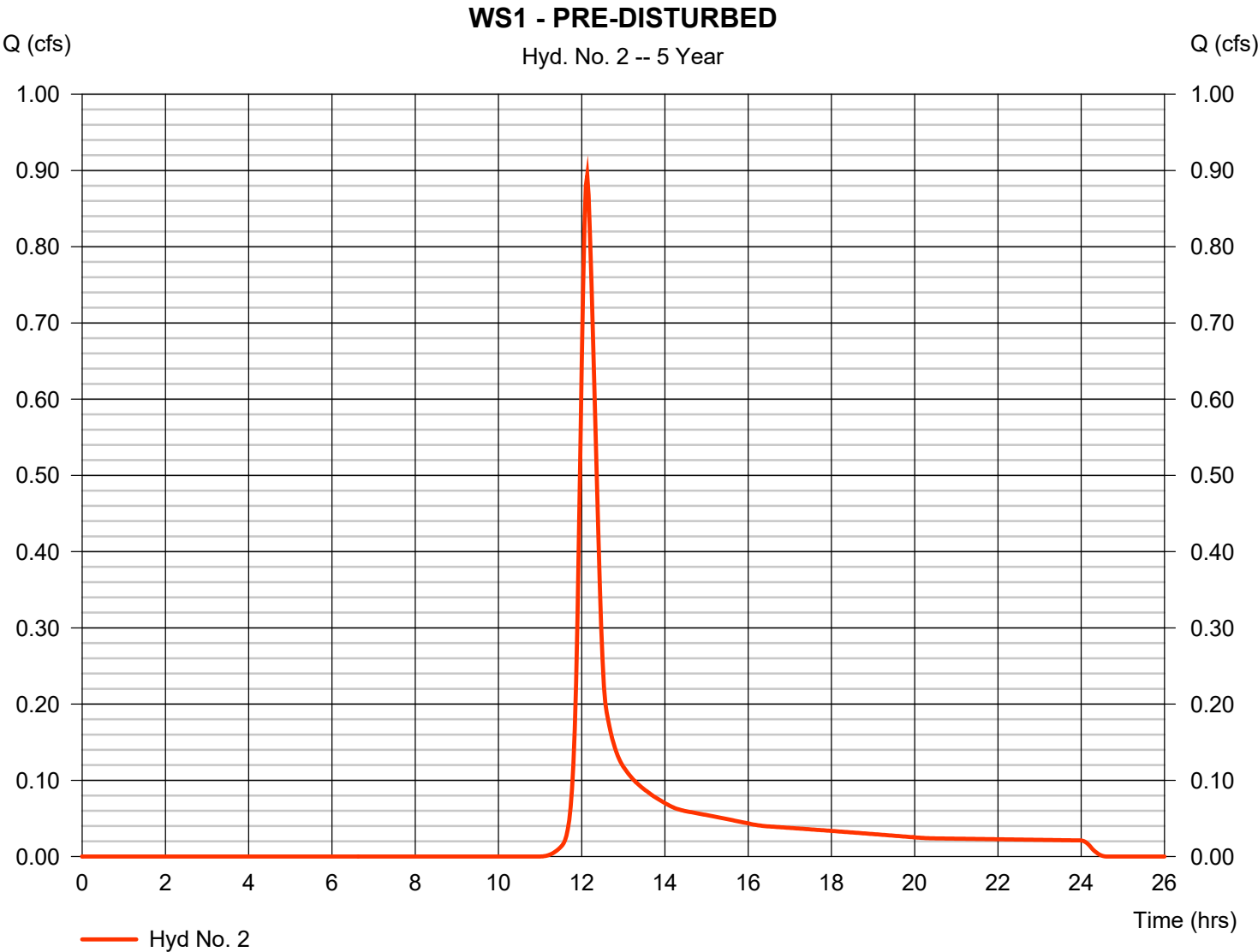
Hyd No. 2

Hydrograph Report

Hyd. No. 4

WS1 - POST BYPASS

Hydrograph type	= SCS Runoff		Peak discharge	= 4.506 cfs
Storm frequency	= 5 yrs		Time to peak	= 12.13 hrs
Time interval	= 2 min		Hyd. volume	= 16,064 cuft
Drainage area	= 2.790 ac		Curve number	= 72.3
Basin Slope	= 0.0 %		Hydraulic length	= 0 ft
Tc method	= User		Time of conc. (Tc)	= 22.30 min
Total precip.	= 4.11 in		Distribution	= Type II
Storm duration	= 24 hrs		Shape factor	= 484

WS1 - POST BYPASS

Hyd. No. 4 -- 5 Year

Hyd No. 4

Hydrograph Report

Wednesday, 01 / 10 / 2024
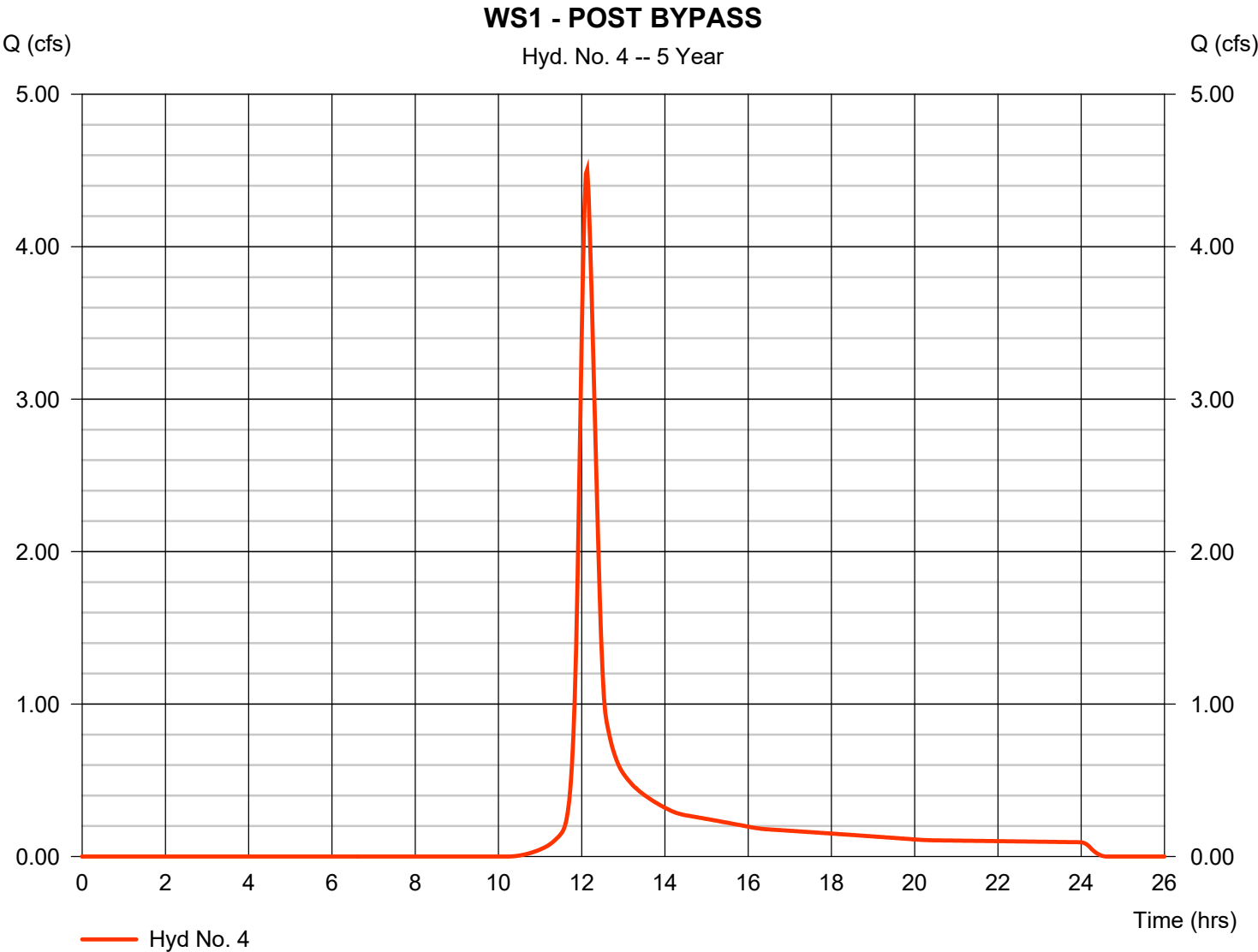
Hyd. No. 6

BMP 1 CAPTURED

Hydrograph type	= SCS Runoff		Peak discharge	= 1.450 cfs
Storm frequency	= 5 yrs		Time to peak	= 12.07 hrs
Time interval	= 2 min		Hyd. volume	= 4,585 cuft
Drainage area	= 0.690 ac		Curve number	= 76.1
Basin Slope	= 0.0 %		Hydraulic length	= 0 ft
Tc method	= User		Time of conc. (Tc)	= 19.60 min
Total precip.	= 4.11 in		Distribution	= Type II
Storm duration	= 24 hrs		Shape factor	= 484

BMP 1 CAPTURED

Hyd. No. 6 -- 5 Year
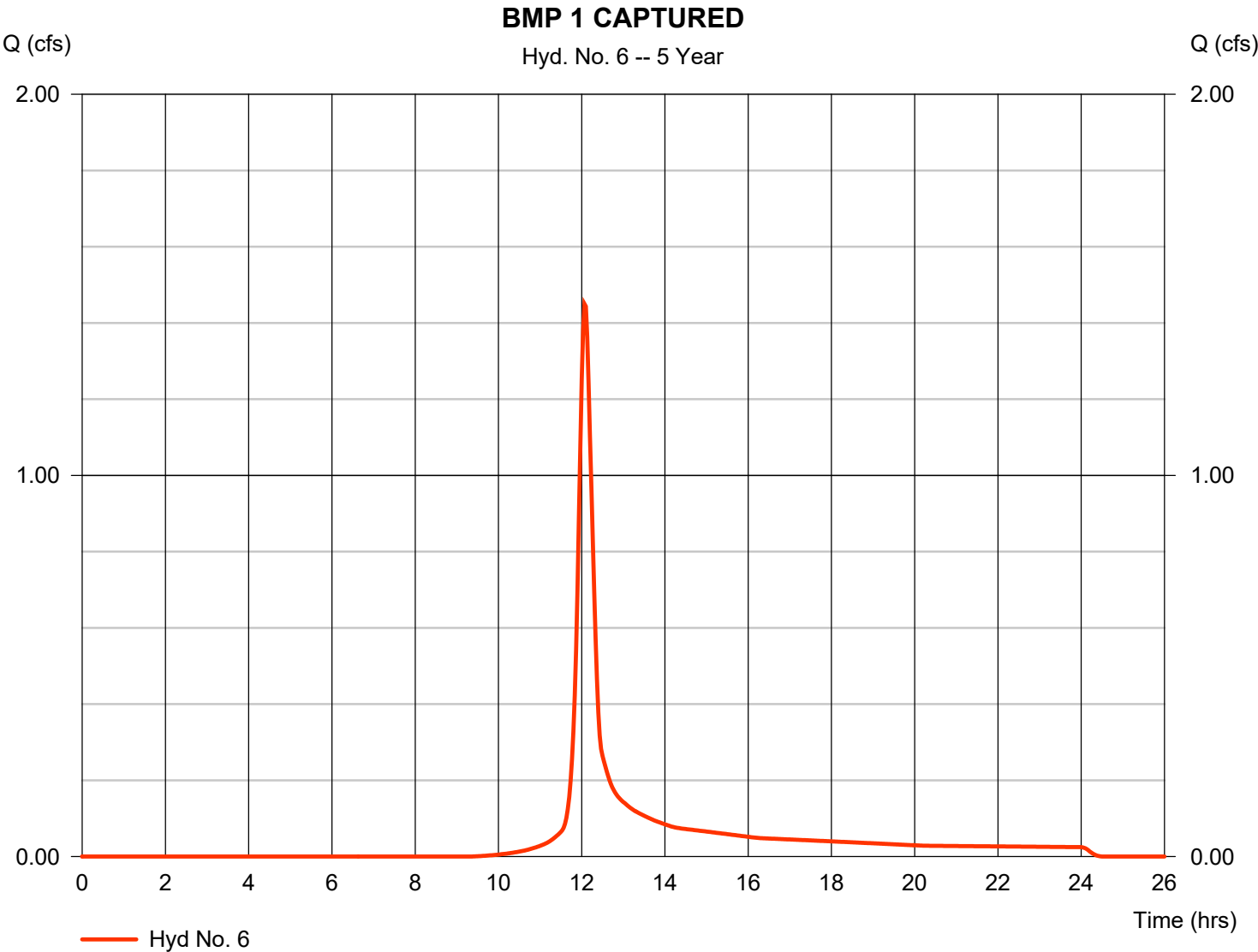
Hyd No. 6

Hydrograph Report

Hyd. No. 7

BMP 1 ROUTED

Hydrograph type	= Reservoir		Peak discharge	= 0.003 cfs
Storm frequency	= 5 yrs		Time to peak	= 12.57 hrs
Time interval	= 2 min		Hyd. volume	= 3 cuft
Inflow hyd. No.	= 6 - BMP 1 CAPTURED		Max. Elevation	= 472.92 ft
Reservoir name	= BMP 1		Max. Storage	= 1,754 cuft

Storage Indication method used. Exfiltration extracted from Outflow.
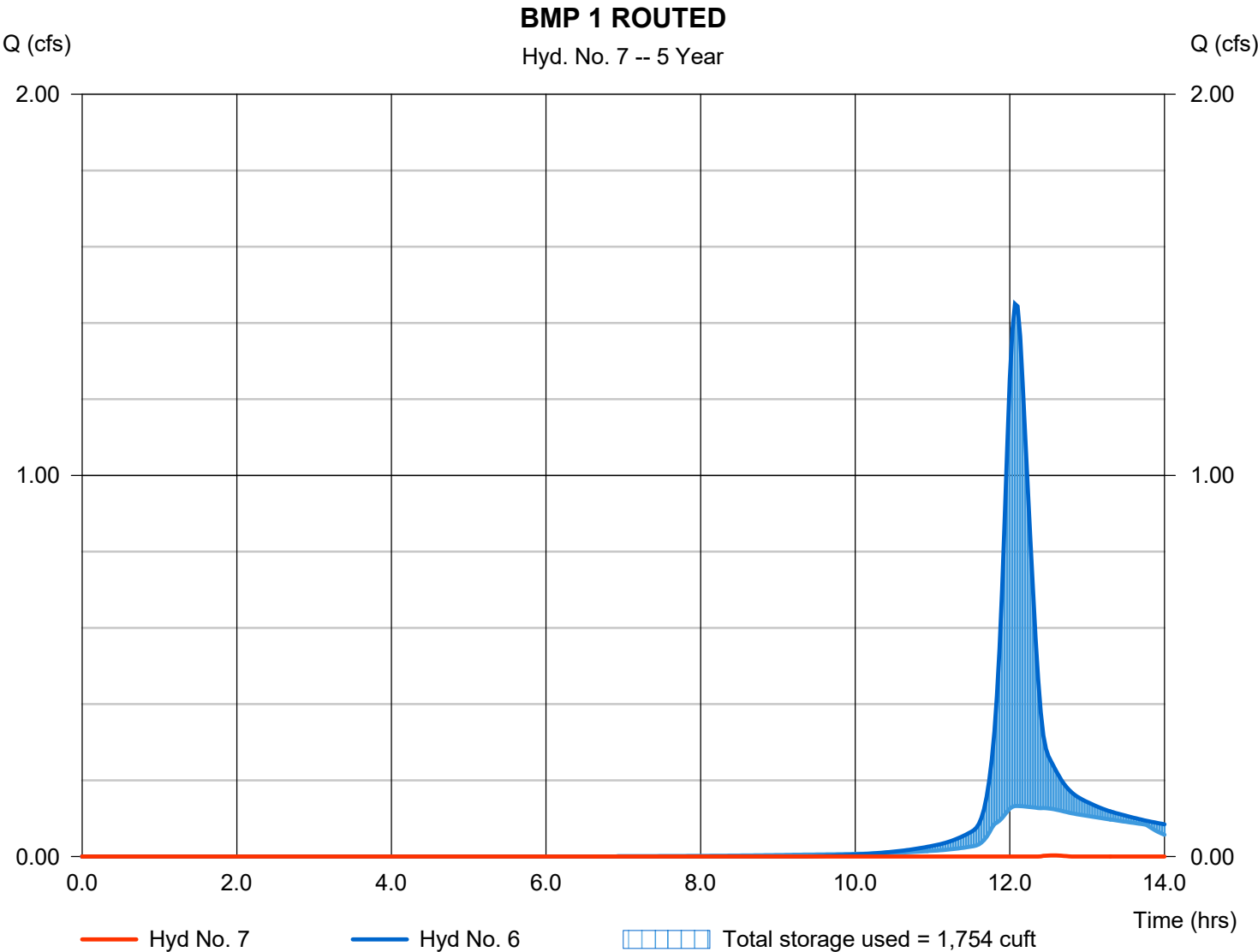
BMP 1 ROUTED

Hyd. No. 7 -- 5 Year

Q (cfs)

Q (cfs)

Time (hrs)

Hyd No. 7   Hyd No. 6   Total storage used = 1,754 cuft

Hydrograph Report

Hyd. No. 9

BMP 2 CAPTURED

Hydrograph type	= SCS Runoff		Peak discharge	= 0.700 cfs
Storm frequency	= 5 yrs		Time to peak	= 11.93 hrs
Time interval	= 2 min		Hyd. volume	= 1,441 cuft
Drainage area	= 0.160 ac		Curve number	= 86
Basin Slope	= 0.0 %		Hydraulic length	= 0 ft
Tc method	= User		Time of conc. (Tc)	= 6.00 min
Total precip.	= 4.11 in		Distribution	= Type II
Storm duration	= 24 hrs		Shape factor	= 484

BMP 2 CAPTURED

Hyd. No. 9 -- 5 Year
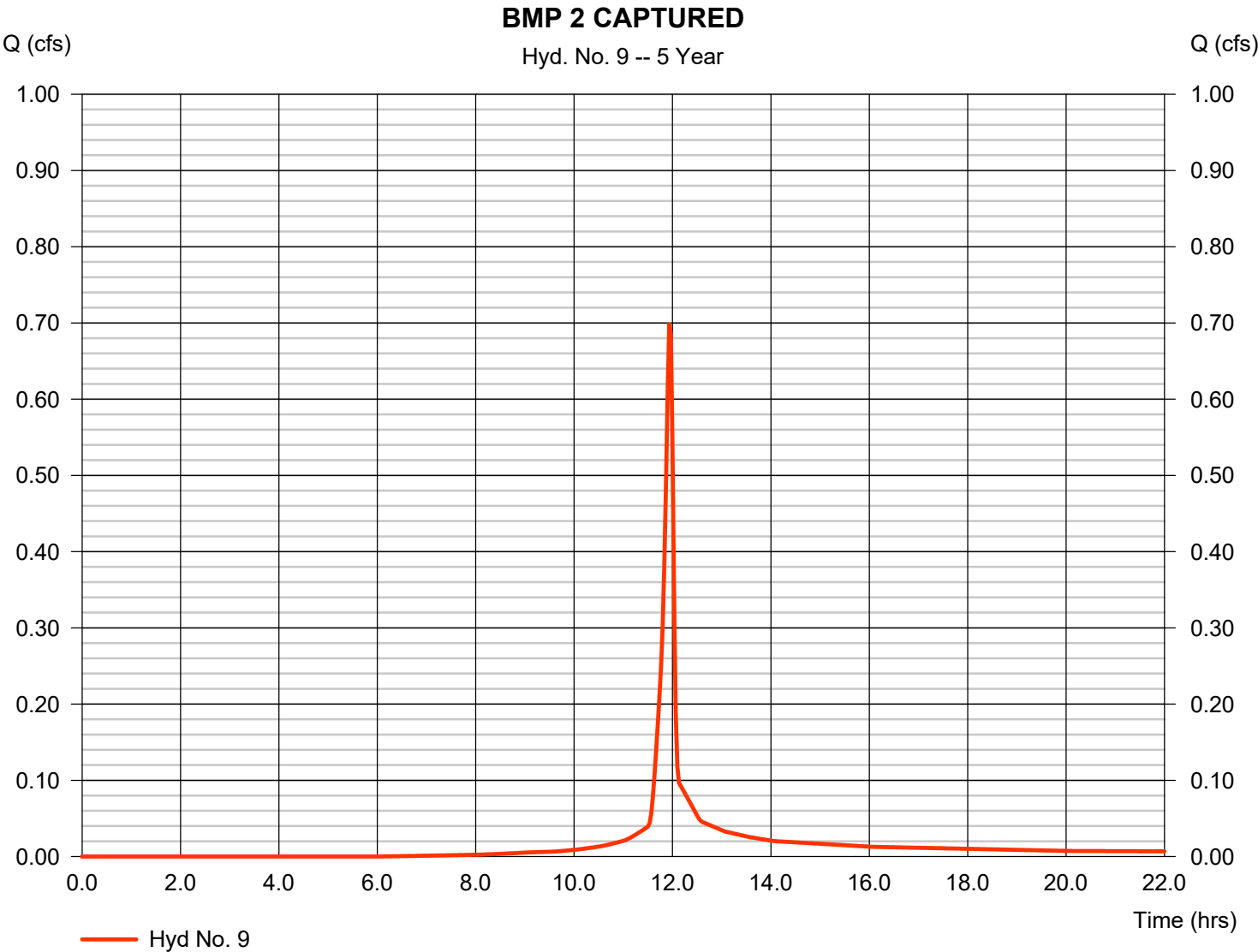
Hyd No. 9

Hydrograph Report

Hyd. No. 10

BMP 2 ROUTED

Hydrograph type	= Reservoir	Peak discharge	= 0.000 cfs
Storm frequency	= 5 yrs	Time to peak	= 13.90 hrs
Time interval	= 2 min	Hyd. volume	= 0 cuft
Inflow hyd. No.	= 9 - BMP 2 CAPTURED	Max. Elevation	= 469.43 ft
Reservoir name	= BMP 2	Max. Storage	= 514 cuft

Storage Indication method used. Exfiltration extracted from Outflow.
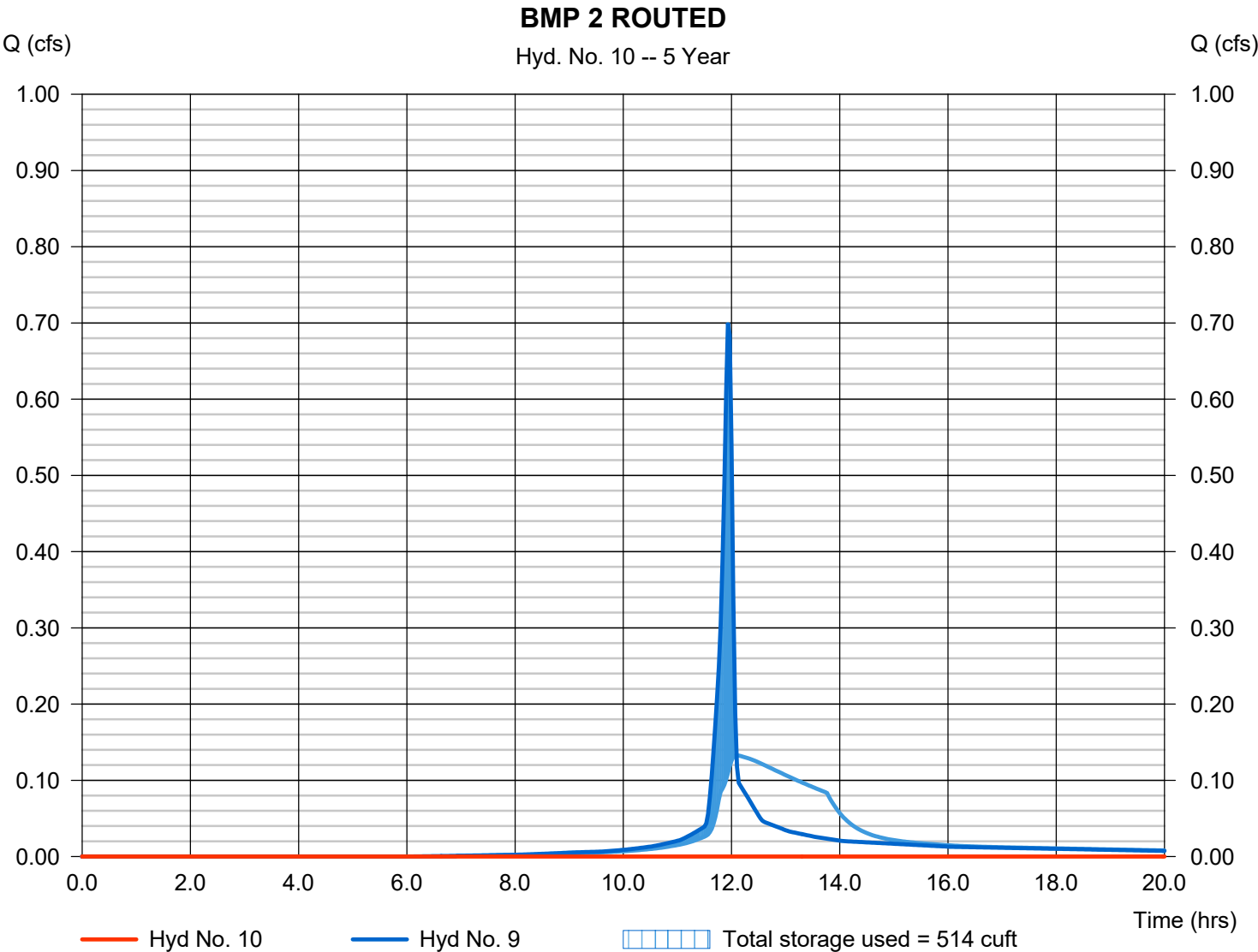
BMP 2 ROUTED

Hyd. No. 10 -- 5 Year

Legend: Hyd No. 10 | Hyd No. 9 | Total storage used = 514 cuft

Hydrograph Report

Hyd. No. 12

WS1 POST TOTAL

Hydrograph type	= Combine	Peak discharge	= 4.506 cfs
Storm frequency	= 5 yrs	Time to peak	= 12.13 hrs
Time interval	= 2 min	Hyd. volume	= 16,066 cuft
Inflow hyds.	= 4, 7, 10	Contrib. drain. area	= 2.790 ac
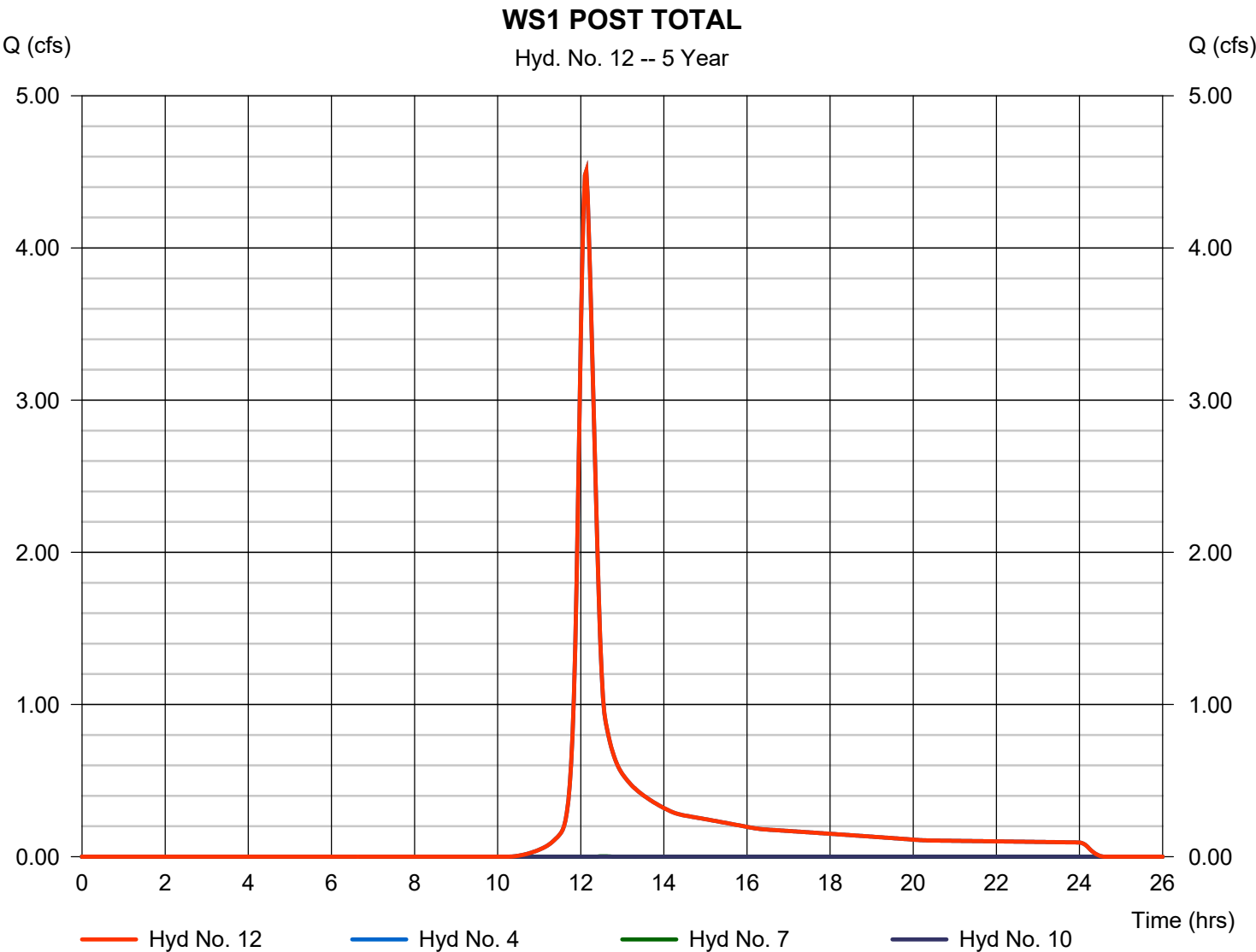
WS1 POST TOTAL

Hyd. No. 12 -- 5 Year

Q (cfs)

Time (hrs)

Hyd No. 12   Hyd No. 4   Hyd No. 7   Hyd No. 10

Hydrograph Report

Hyd. No. 15

WS2 - PRE-UNDISTURBED

Hydrograph type	= SCS Runoff		Peak discharge	= 1.084 cfs
Storm frequency	= 5 yrs		Time to peak	= 12.03 hrs
Time interval	= 2 min		Hyd. volume	= 3,116 cuft
Drainage area	= 0.570 ac		Curve number	= 72.1
Basin Slope	= 0.0 %		Hydraulic length	= 0 ft
Tc method	= User		Time of conc. (Tc)	= 13.50 min
Total precip.	= 4.11 in		Distribution	= Type II
Storm duration	= 24 hrs		Shape factor	= 484

WS2 - PRE-UNDISTURBED

Hyd. No. 15 -- 5 Year
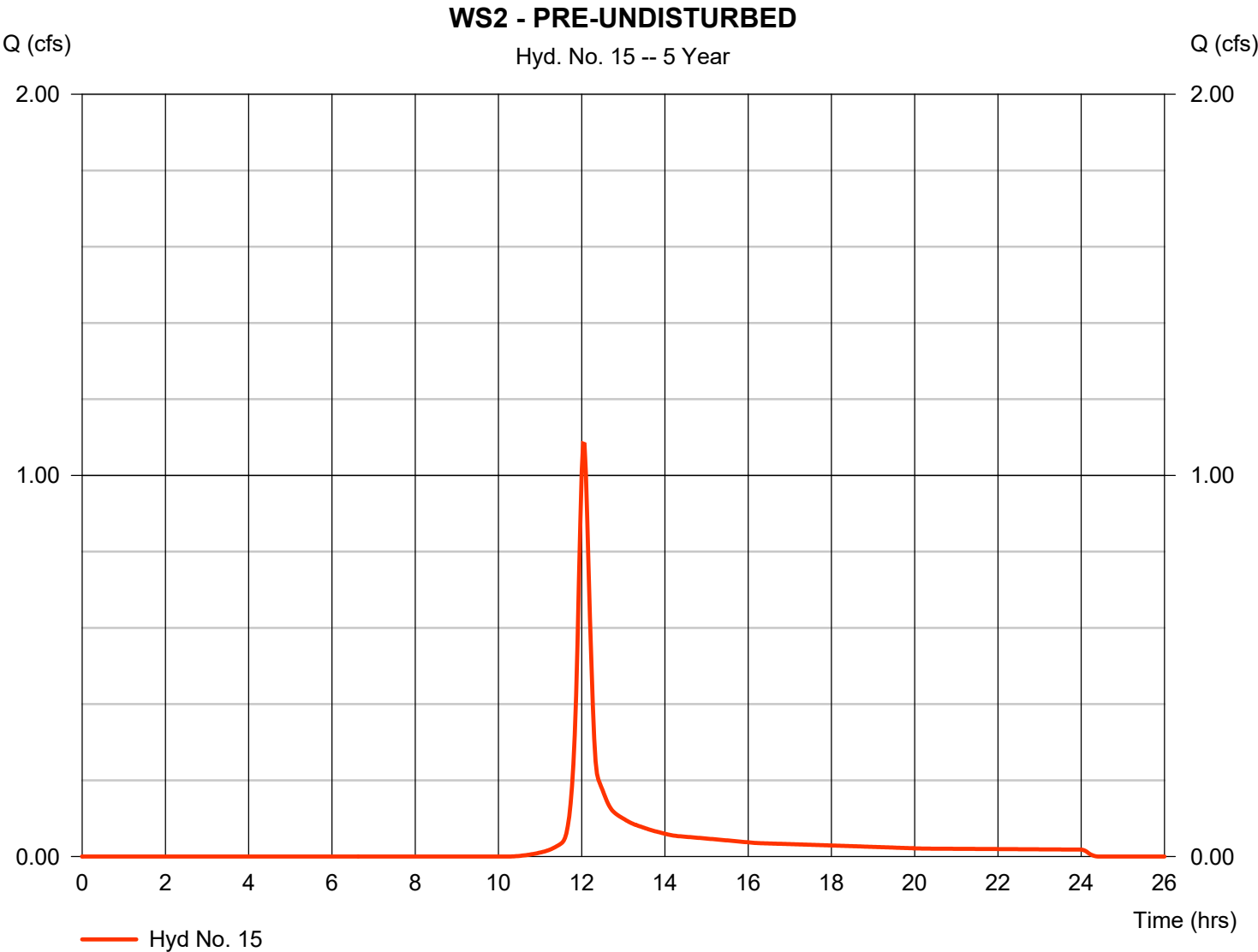
Hyd No. 15

Hydrograph Report

Hyd. No. 16

WS2 - PRE-DISTURBED

Hydrograph type	= SCS Runoff		Peak discharge	= 0.432 cfs
Storm frequency	= 5 yrs		Time to peak	= 12.07 hrs
Time interval	= 2 min		Hyd. volume	= 1,249 cuft
Drainage area	= 0.240 ac		Curve number	= 71
Basin Slope	= 0.0 %		Hydraulic length	= 0 ft
Tc method	= User		Time of conc. (Tc)	= 13.50 min
Total precip.	= 4.11 in		Distribution	= Type II
Storm duration	= 24 hrs		Shape factor	= 484

WS2 - PRE-DISTURBED

Hyd. No. 16 -- 5 Year
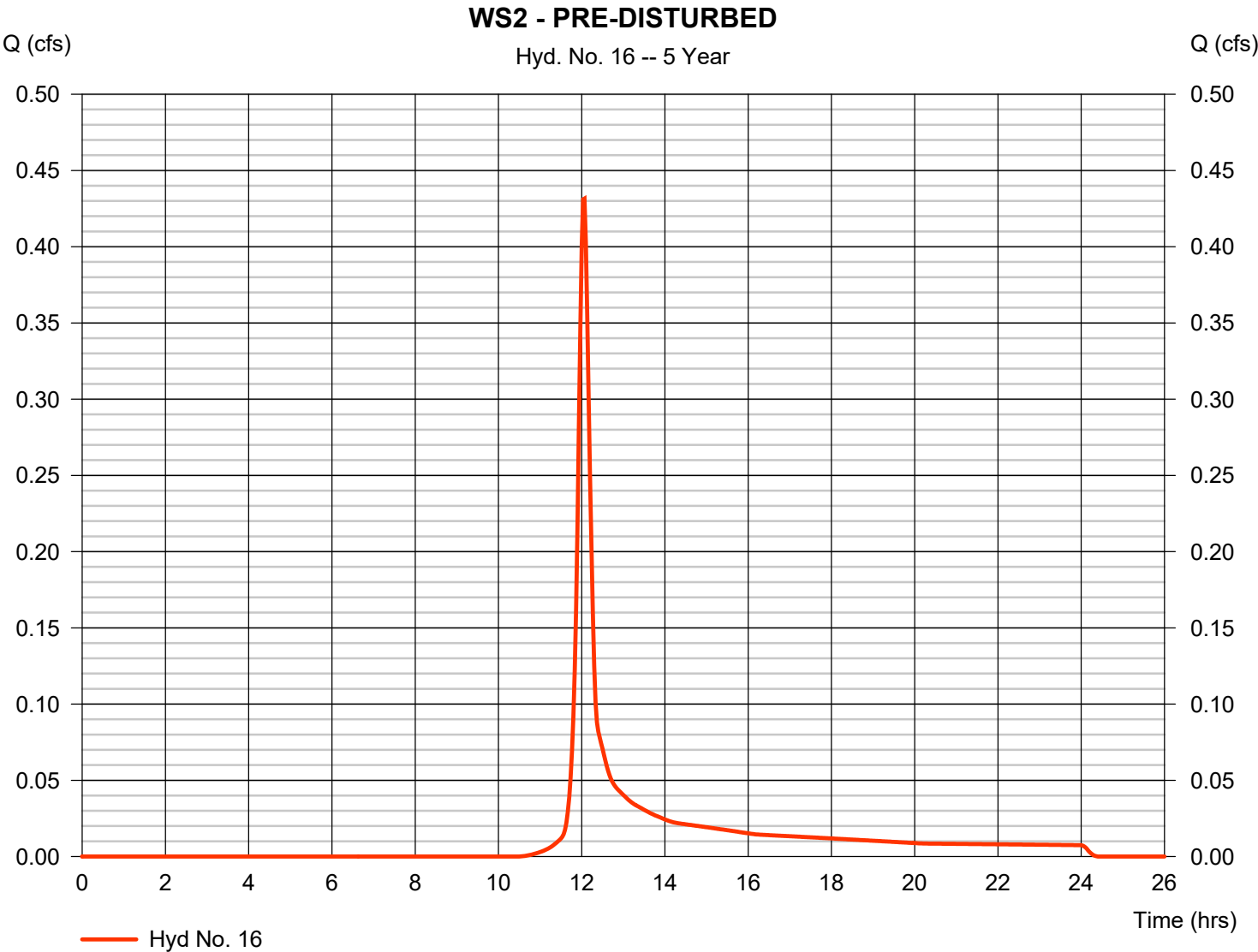
Hyd No. 16

Hydrograph Report

Hyd. No. 18

WS2 - POST BYPASS

Hydrograph type	= SCS Runoff		Peak discharge	= 1.213 cfs
Storm frequency	= 5 yrs		Time to peak	= 12.03 hrs
Time interval	= 2 min		Hyd. volume	= 3,469 cuft
Drainage area	= 0.610 ac		Curve number	= 73
Basin Slope	= 0.0 %		Hydraulic length	= 0 ft
Tc method	= User		Time of conc. (Tc)	= 13.50 min
Total precip.	= 4.11 in		Distribution	= Type II
Storm duration	= 24 hrs		Shape factor	= 484

WS2 - POST BYPASS

Hyd. No. 18 -- 5 Year

Hyd No. 18
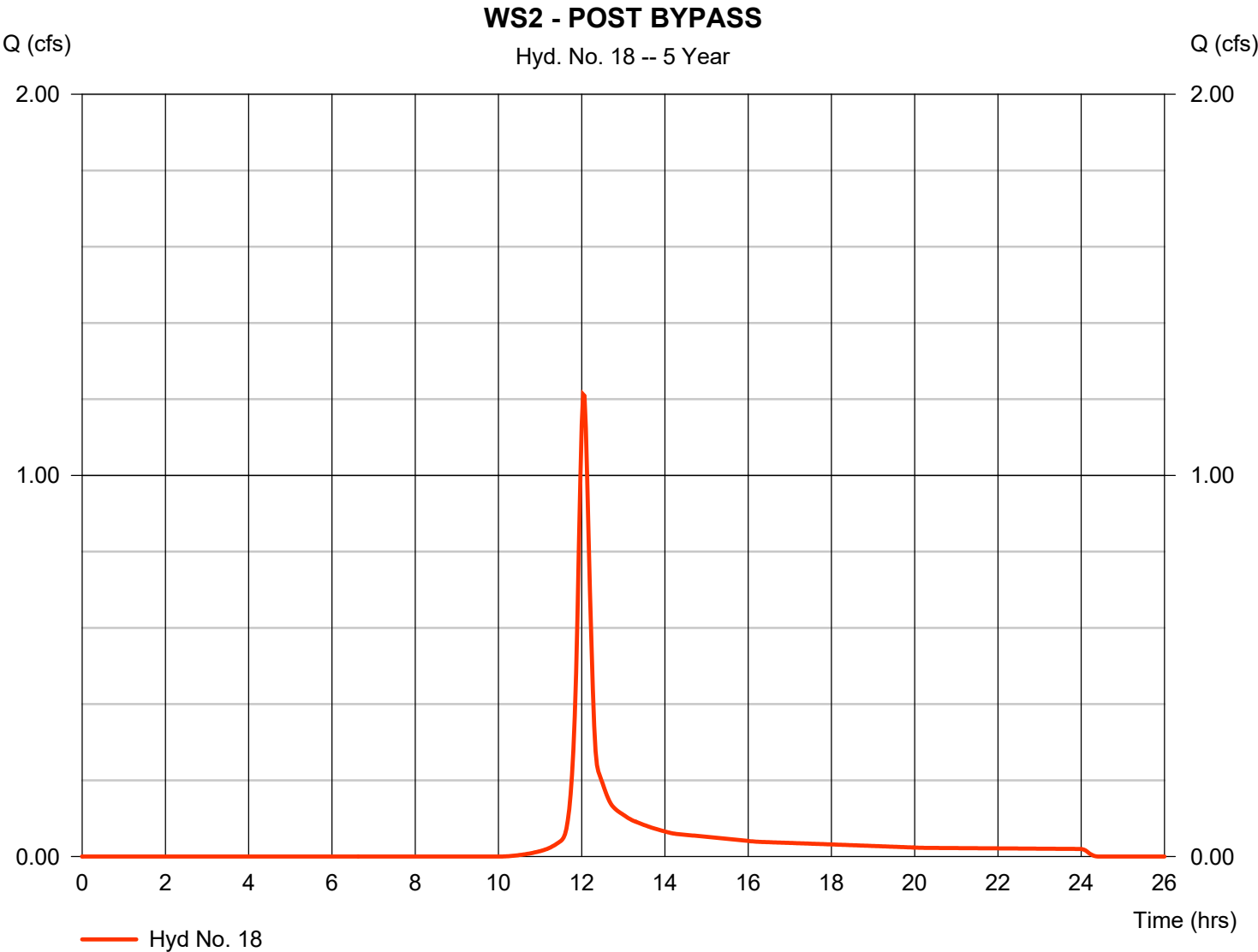
Hydrograph Summary Report

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	5.925	2	728	20,851	------	------	------	WS1 - PRE-UNDISTURBED
2	SCS Runoff	1.259	2	728	4,515	------	------	------	WS1 - PRE-DISTURBED
4	SCS Runoff	6.090	2	728	21,405	------	------	------	WS1 - POST BYPASS
6	SCS Runoff	1.907	2	724	5,982	------	------	------	BMP 1 CAPTURED
7	Reservoir	0.441	2	740	644	6	473.37	2,158	BMP 1 ROUTED
9	SCS Runoff	0.862	2	716	1,791	------	------	------	BMP 2 CAPTURED
10	Reservoir	0.000	2	882	0	9	469.83	657	BMP 2 ROUTED
12	Combine	6.090	2	728	22,049	4, 7, 10,	------	------	WS1 POST TOTAL
15	SCS Runoff	1.467	2	722	4,157	------	------	------	WS2 - PRE-UNDISTURBED
16	SCS Runoff	0.589	2	722	1,677	------	------	------	WS2 - PRE-DISTURBED
18	SCS Runoff	1.630	2	722	4,604	------	------	------	WS2 - POST BYPASS

11711 (SCS only).gpw	Return Period: 10 Year	Wednesday, 01 / 10 / 2024

Hydrograph Report

Hyd. No. 1

WS1 - PRE-UNDISTURBED

Hydrograph type	= SCS Runoff		Peak discharge	= 5.925 cfs
Storm frequency	= 10 yrs		Time to peak	= 12.13 hrs
Time interval	= 2 min		Hyd. volume	= 20,851 cuft
Drainage area	= 2.760 ac		Curve number	= 71.9
Basin Slope	= 0.0 %		Hydraulic length	= 0 ft
Tc method	= User		Time of conc. (Tc)	= 22.30 min
Total precip.	= 4.81 in		Distribution	= Type II
Storm duration	= 24 hrs		Shape factor	= 484

WS1 - PRE-UNDISTURBED

Hyd. No. 1 -- 10 Year
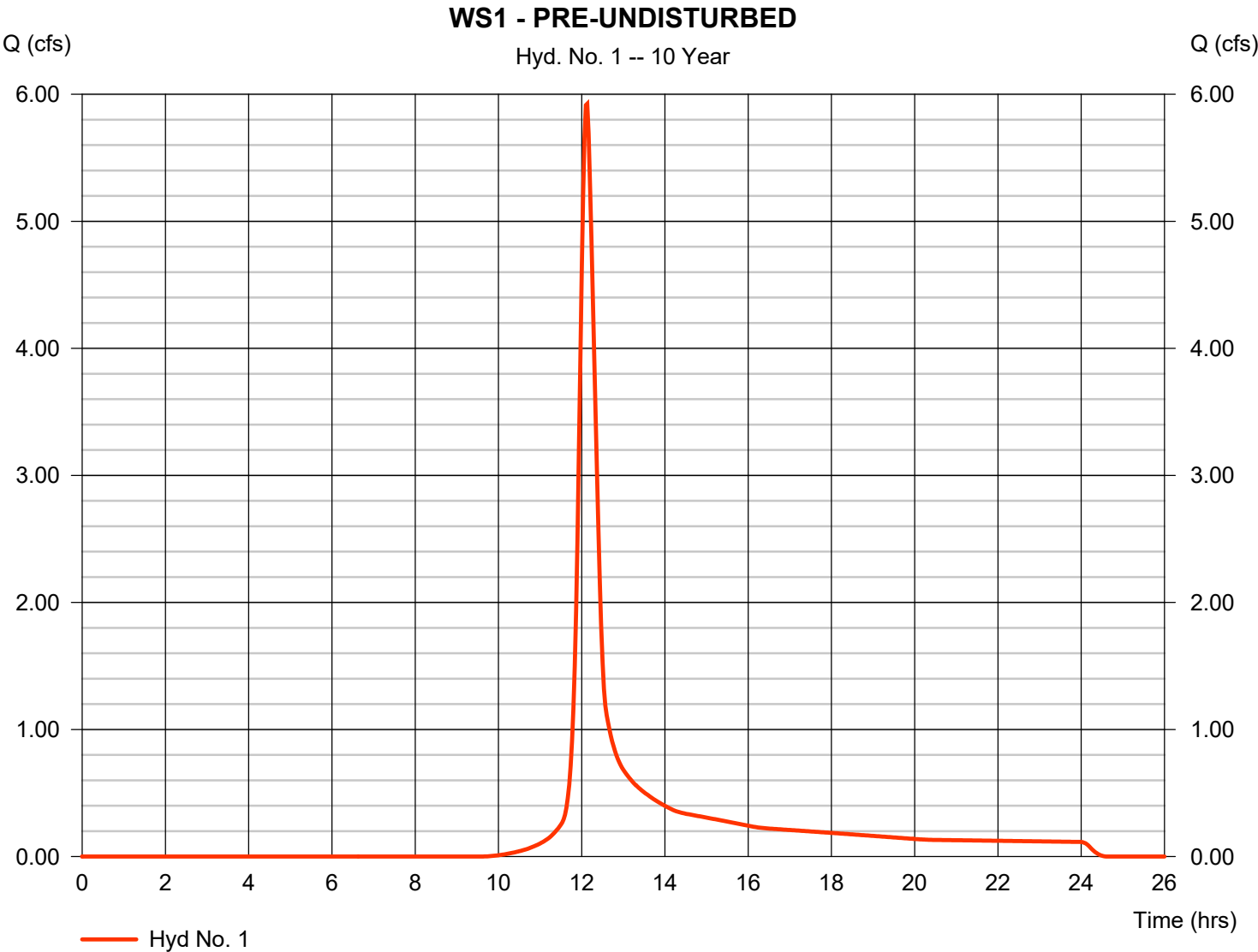
Hyd No. 1

Hydrograph Report

Hyd. No. 2

WS1 - PRE-DISTURBED

Hydrograph type	= SCS Runoff	Peak discharge	= 1.259 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.13 hrs
Time interval	= 2 min	Hyd. volume	= 4,515 cuft
Drainage area	= 0.700 ac	Curve number	= 68
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 22.30 min
Total precip.	= 4.81 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

WS1 - PRE-DISTURBED

Hyd. No. 2 -- 10 Year
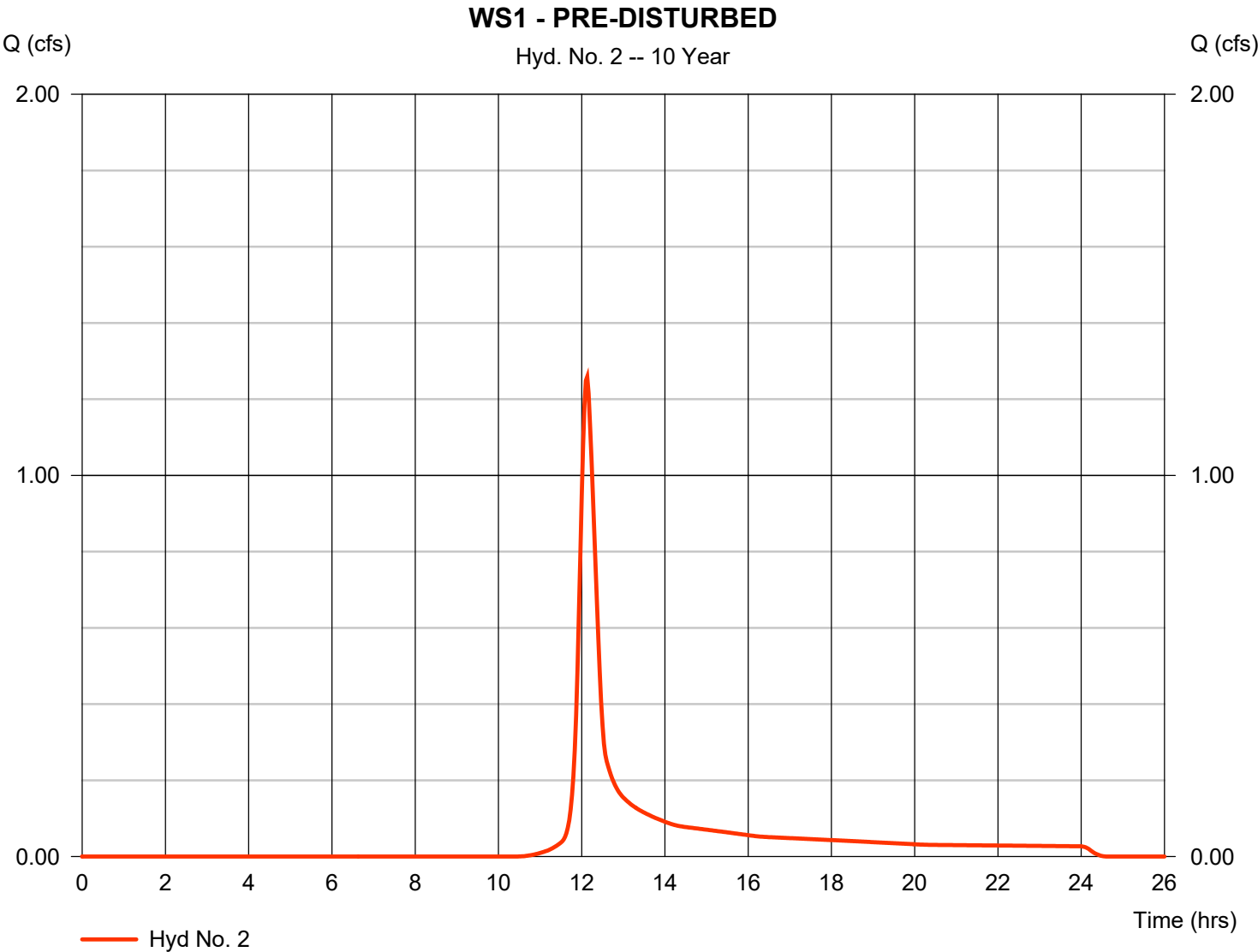
Hydrograph Report

Hyd. No. 4

WS1 - POST BYPASS

Hydrograph type	= SCS Runoff		Peak discharge	= 6.090 cfs
Storm frequency	= 10 yrs		Time to peak	= 12.13 hrs
Time interval	= 2 min		Hyd. volume	= 21,405 cuft
Drainage area	= 2.790 ac		Curve number	= 72.3
Basin Slope	= 0.0 %		Hydraulic length	= 0 ft
Tc method	= User		Time of conc. (Tc)	= 22.30 min
Total precip.	= 4.81 in		Distribution	= Type II
Storm duration	= 24 hrs		Shape factor	= 484

WS1 - POST BYPASS

Hyd. No. 4 -- 10 Year
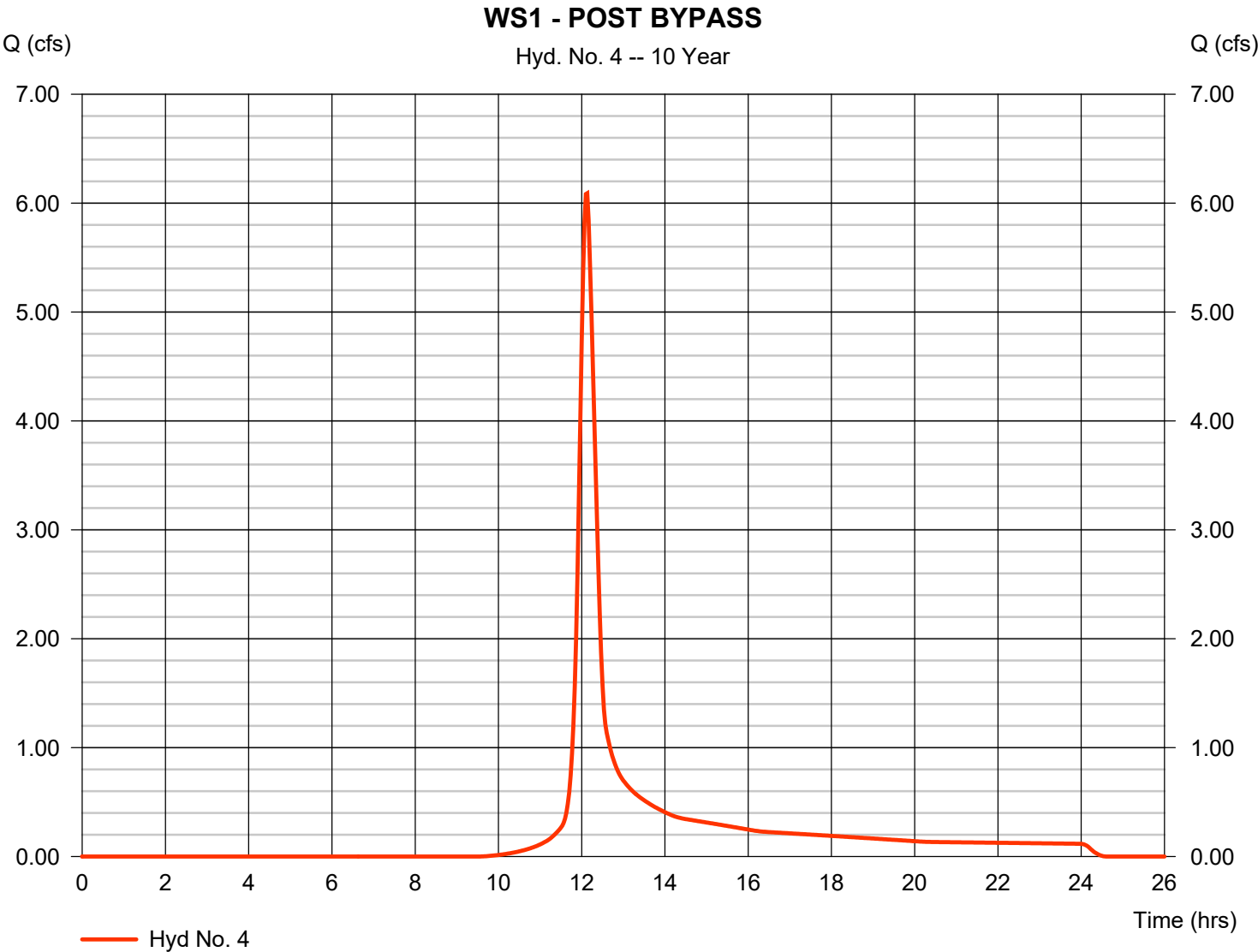
Hydrograph Report

Hyd. No. 6

BMP 1 CAPTURED

Hydrograph type	= SCS Runoff	Peak discharge	= 1.907 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 5,982 cuft
Drainage area	= 0.690 ac	Curve number	= 76.1
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 19.60 min
Total precip.	= 4.81 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

BMP 1 CAPTURED

Hyd. No. 6 -- 10 Year

Hyd No. 6

Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024   Wednesday, 01 / 10 / 2024
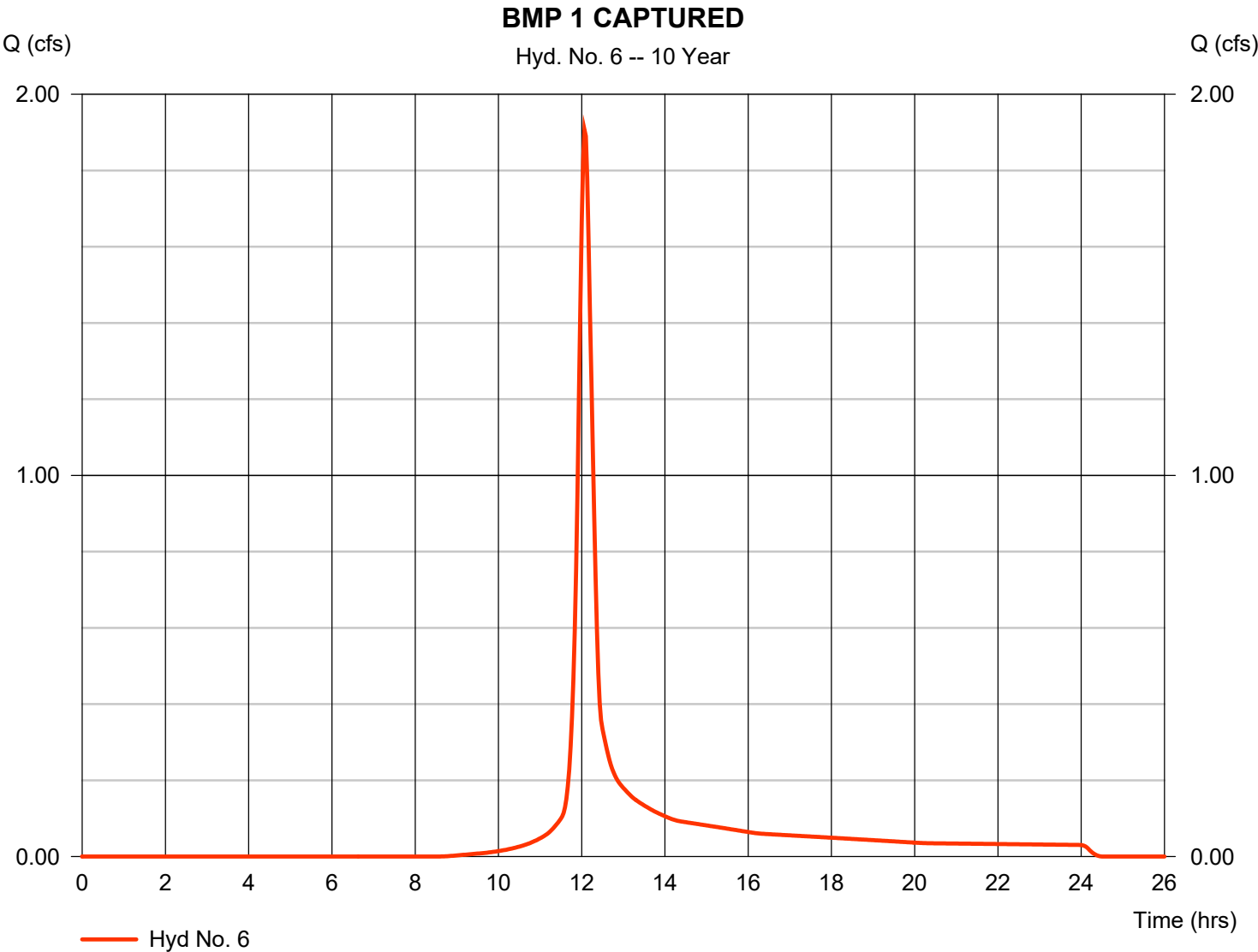
Hyd. No. 7

BMP 1 ROUTED

Hydrograph type	= Reservoir	Peak discharge	= 0.441 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.33 hrs
Time interval	= 2 min	Hyd. volume	= 644 cuft
Inflow hyd. No.	= 6 - BMP 1 CAPTURED	Max. Elevation	= 473.37 ft
Reservoir name	= BMP 1	Max. Storage	= 2,158 cuft

Storage Indication method used. Exfiltration extracted from Outflow.

BMP 1 ROUTED

Hyd. No. 7 -- 10 Year

Hyd No. 7   Hyd No. 6   Total storage used = 2,158 cuft
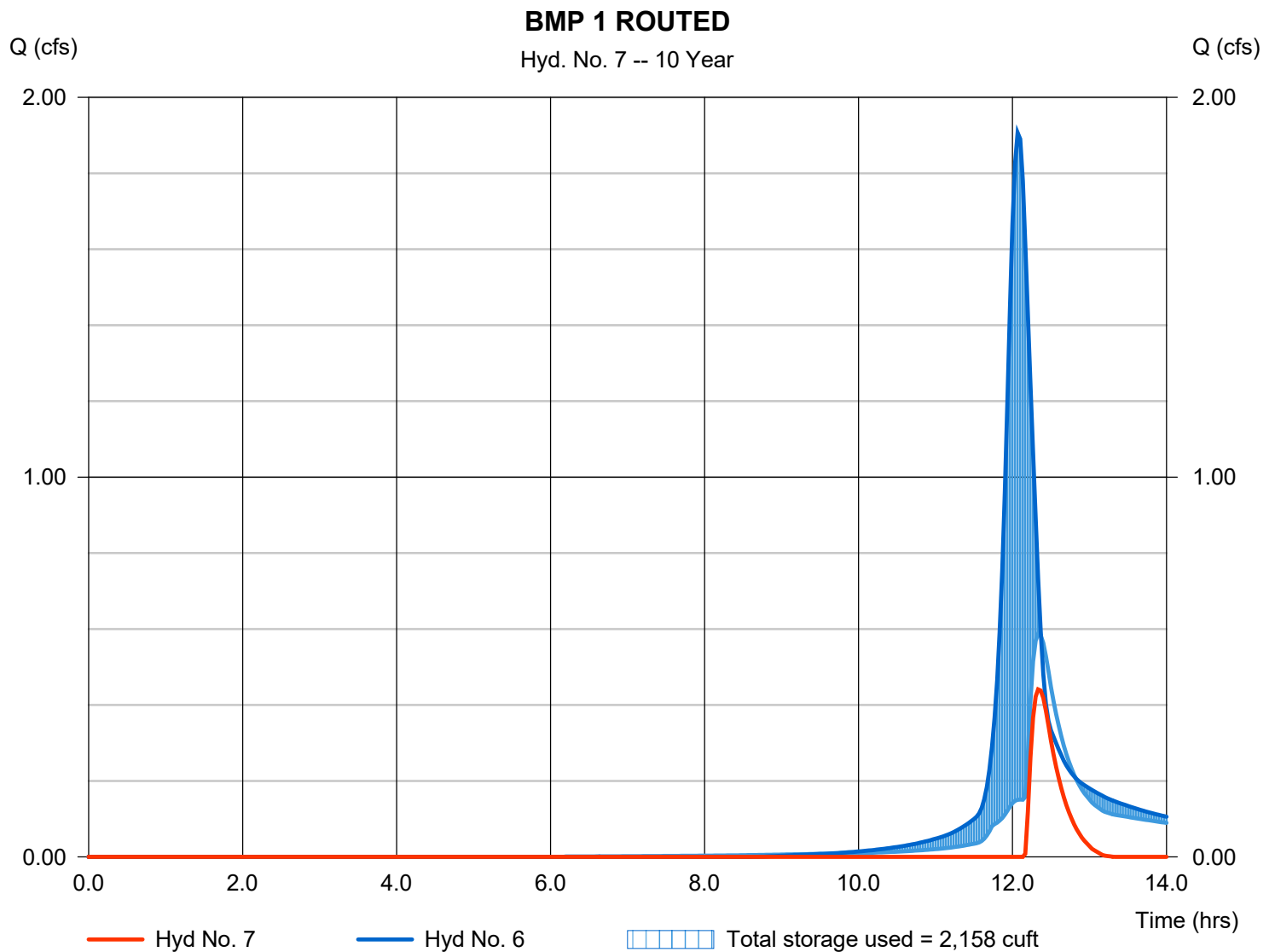
Hydrograph Report

Hyd. No. 9

BMP 2 CAPTURED

Hydrograph type	= SCS Runoff		Peak discharge	= 0.862 cfs
Storm frequency	= 10 yrs		Time to peak	= 11.93 hrs
Time interval	= 2 min		Hyd. volume	= 1,791 cuft
Drainage area	= 0.160 ac		Curve number	= 86
Basin Slope	= 0.0 %		Hydraulic length	= 0 ft
Tc method	= User		Time of conc. (Tc)	= 6.00 min
Total precip.	= 4.81 in		Distribution	= Type II
Storm duration	= 24 hrs		Shape factor	= 484

BMP 2 CAPTURED

Hyd. No. 9 -- 10 Year

Hyd No. 9

Hydrograph Report

Wednesday, 01 / 10 / 2024

Hyd. No. 10

BMP 2 ROUTED

Hydrograph type	= Reservoir	Peak discharge	= 0.000 cfs
Storm frequency	= 10 yrs	Time to peak	= 14.70 hrs
Time interval	= 2 min	Hyd. volume	= 0 cuft
Inflow hyd. No.	= 9 - BMP 2 CAPTURED	Max. Elevation	= 469.83 ft
Reservoir name	= BMP 2	Max. Storage	= 657 cuft

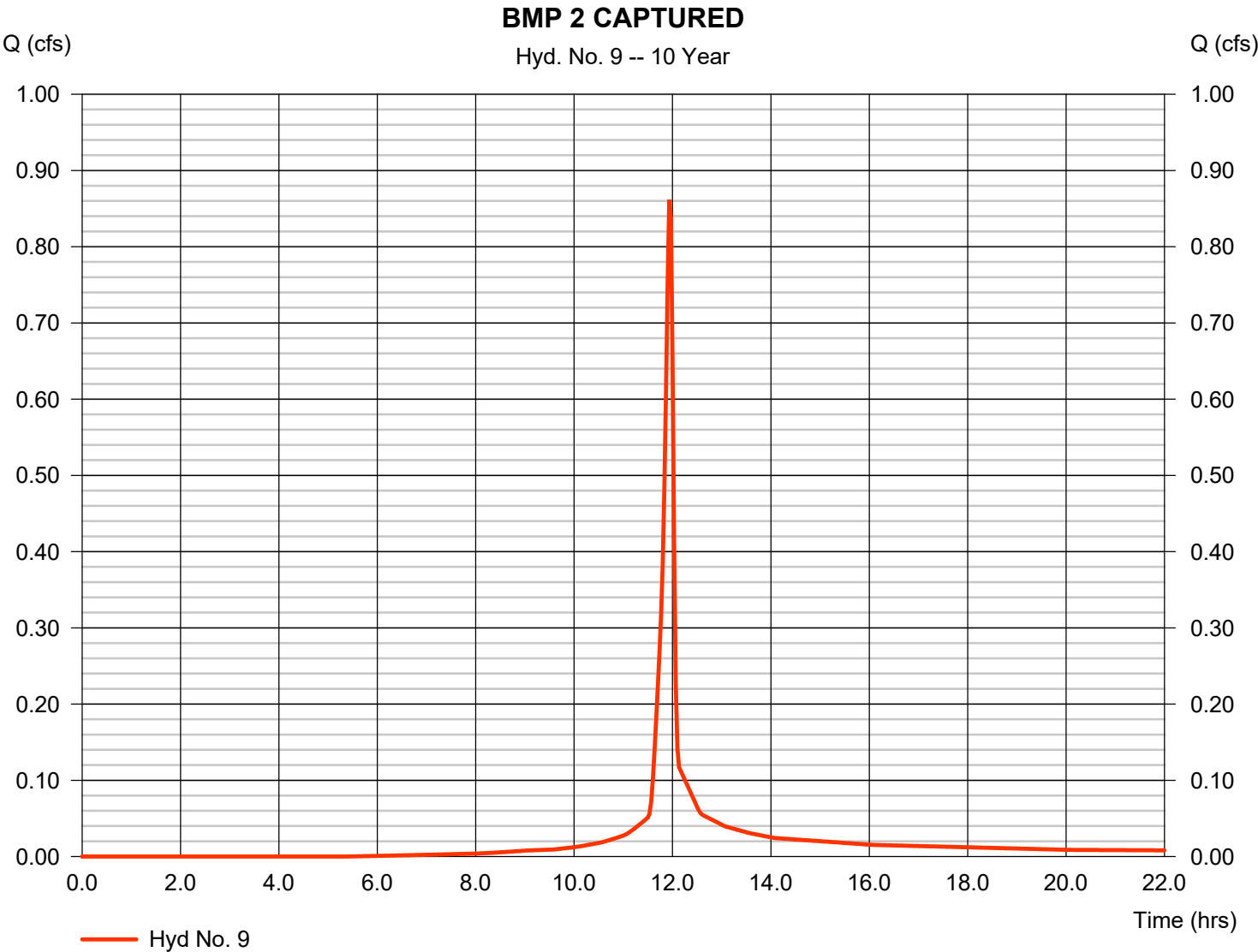Storage Indication method used. Exfiltration extracted from Outflow.

BMP 2 ROUTED

Hyd. No. 10 -- 10 Year

Legend: Hyd No. 10 — Hyd No. 9 — Total storage used = 657 cuft
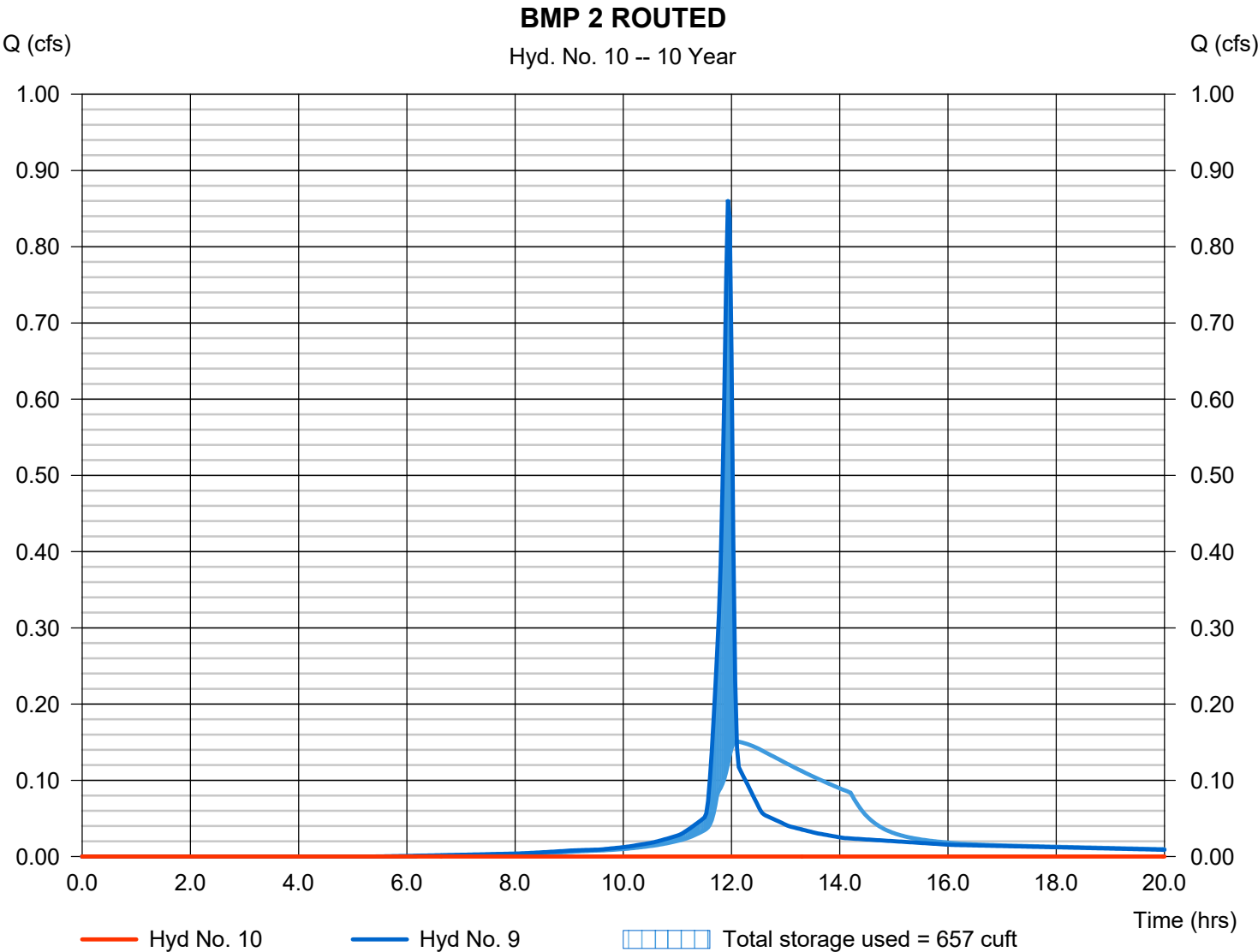
Hydrograph Report

Hyd. No. 12

WS1 POST TOTAL

Hydrograph type	= Combine	Peak discharge	= 6.090 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.13 hrs
Time interval	= 2 min	Hyd. volume	= 22,049 cuft
Inflow hyds.	= 4, 7, 10	Contrib. drain. area	= 2.790 ac
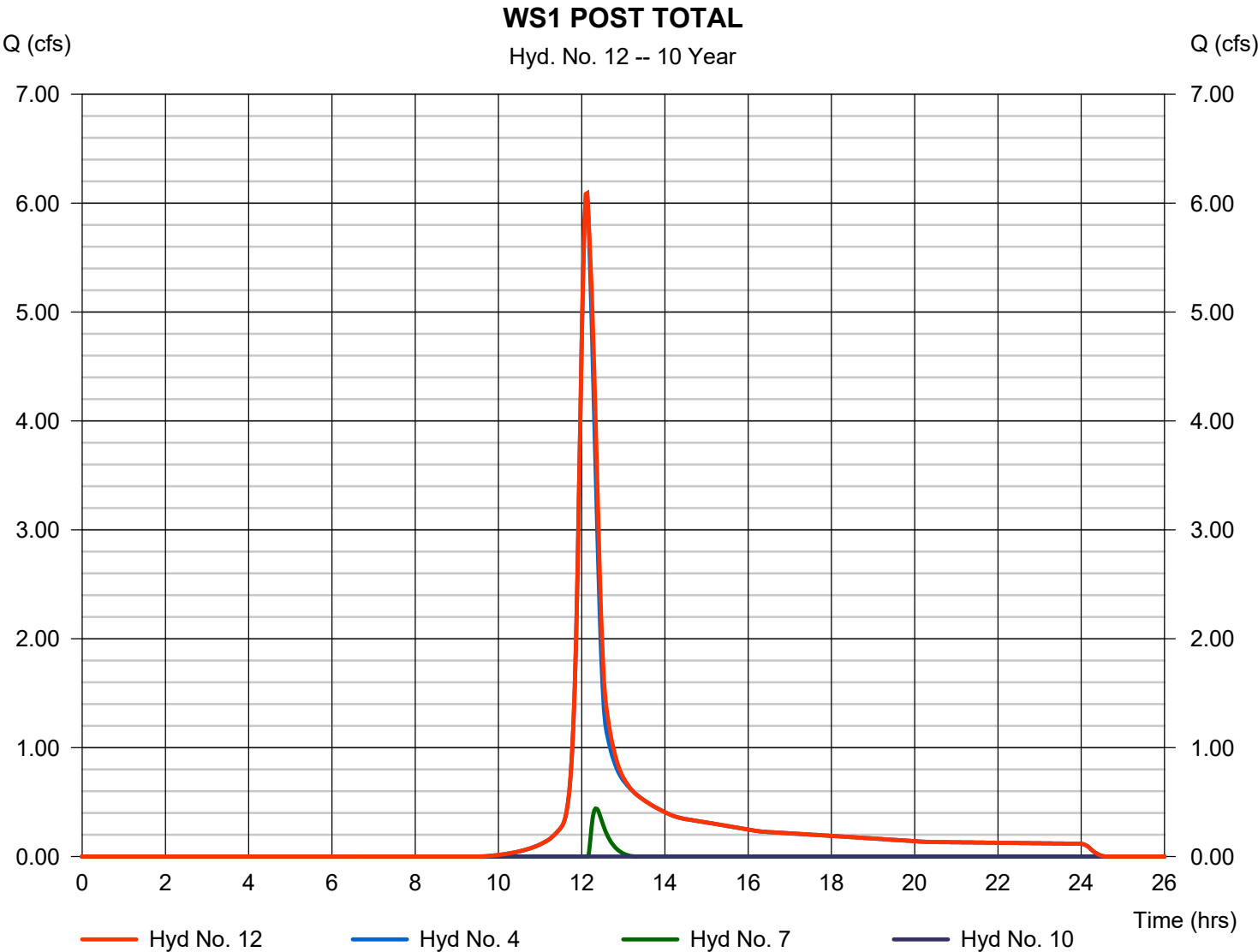
WS1 POST TOTAL

Hyd. No. 12 -- 10 Year

Q (cfs)

Time (hrs)			
—— Hyd No. 12	—— Hyd No. 4	—— Hyd No. 7	—— Hyd No. 10

Hydrograph Report

Hyd. No. 15

WS2 - PRE-UNDISTURBED

Hydrograph type	= SCS Runoff		Peak discharge	= 1.467 cfs
Storm frequency	= 10 yrs		Time to peak	= 12.03 hrs
Time interval	= 2 min		Hyd. volume	= 4,157 cuft
Drainage area	= 0.570 ac		Curve number	= 72.1
Basin Slope	= 0.0 %		Hydraulic length	= 0 ft
Tc method	= User		Time of conc. (Tc)	= 13.50 min
Total precip.	= 4.81 in		Distribution	= Type II
Storm duration	= 24 hrs		Shape factor	= 484

WS2 - PRE-UNDISTURBED

Hyd. No. 15 -- 10 Year
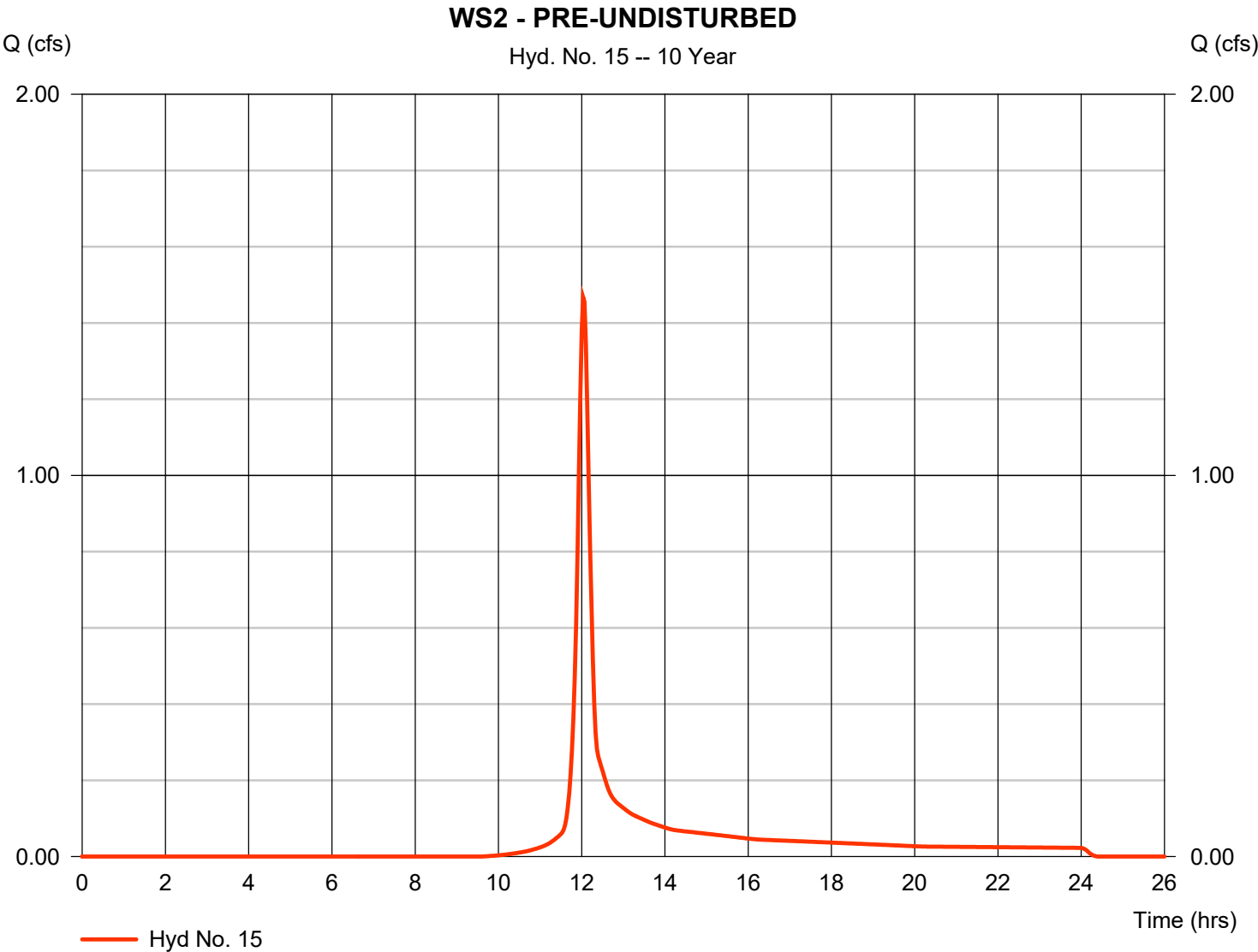
Hyd No. 15

Hydrograph Report

Hyd. No. 16

WS2 - PRE-DISTURBED

Hydrograph type	= SCS Runoff		Peak discharge	= 0.589 cfs
Storm frequency	= 10 yrs		Time to peak	= 12.03 hrs
Time interval	= 2 min		Hyd. volume	= 1,677 cuft
Drainage area	= 0.240 ac		Curve number	= 71
Basin Slope	= 0.0 %		Hydraulic length	= 0 ft
Tc method	= User		Time of conc. (Tc)	= 13.50 min
Total precip.	= 4.81 in		Distribution	= Type II
Storm duration	= 24 hrs		Shape factor	= 484

WS2 - PRE-DISTURBED

Hyd. No. 16 -- 10 Year
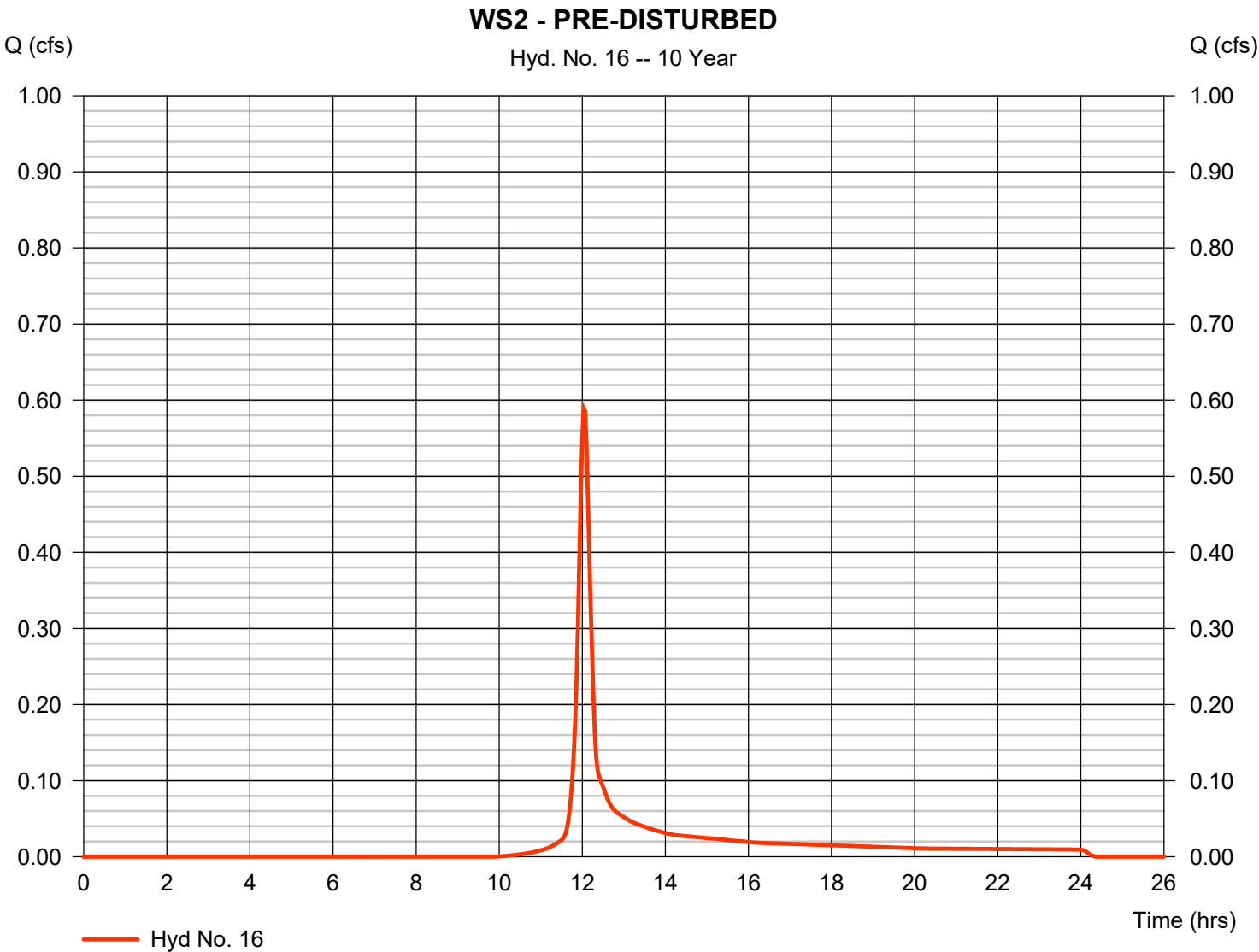
Hyd No. 16

Hydrograph Report

Hyd. No. 18

WS2 - POST BYPASS

Hydrograph type	= SCS Runoff	Peak discharge	= 1.630 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.03 hrs
Time interval	= 2 min	Hyd. volume	= 4,604 cuft
Drainage area	= 0.610 ac	Curve number	= 73
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 13.50 min
Total precip.	= 4.81 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

WS2 - POST BYPASS

Hyd. No. 18 -- 10 Year

Hyd No. 18
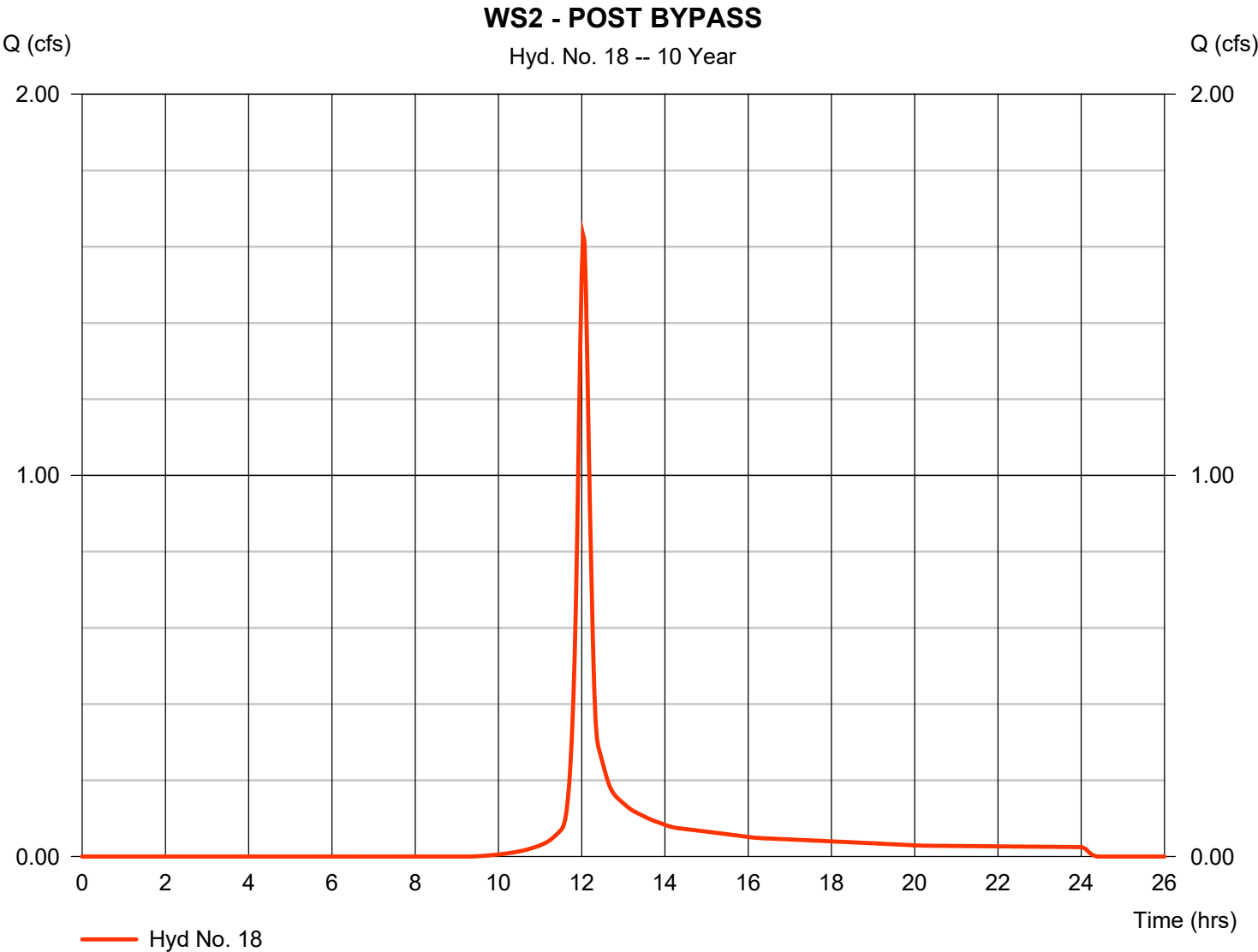
Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024

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	8.348	2	726	29,018	------	------	------	WS1 - PRE-UNDISTURBED
2	SCS Runoff	1.832	2	728	6,443	------	------	------	WS1 - PRE-DISTURBED
4	SCS Runoff	8.557	2	726	29,716	------	------	------	WS1 - POST BYPASS
6	SCS Runoff	2.599	2	724	8,124	------	------	------	BMP 1 CAPTURED
7	Reservoir	0.855	2	738	1,847	6	473.99	2,726	BMP 1 ROUTED
9	SCS Runoff	1.097	2	716	2,313	------	------	------	BMP 2 CAPTURED
10	Reservoir	0.000	2	938	0	9	470.42	871	BMP 2 ROUTED
12	Combine	9.065	2	728	31,563	4, 7, 10,	------	------	WS1 POST TOTAL
15	SCS Runoff	2.058	2	722	5,778	------	------	------	WS2 - PRE-UNDISTURBED
16	SCS Runoff	0.834	2	722	2,346	------	------	------	WS2 - PRE-DISTURBED
18	SCS Runoff	2.269	2	722	6,365	------	------	------	WS2 - POST BYPASS

| 11711 (SCS only).gpw | Return Period: 25 Year | Wednesday, 01 / 10 / 2024 |

Hydrograph Report

Hyd. No. 1

WS1 - PRE-UNDISTURBED

Hydrograph type	= SCS Runoff		Peak discharge	= 8.348 cfs
Storm frequency	= 25 yrs		Time to peak	= 12.10 hrs
Time interval	= 2 min		Hyd. volume	= 29,018 cuft
Drainage area	= 2.760 ac		Curve number	= 71.9
Basin Slope	= 0.0 %		Hydraulic length	= 0 ft
Tc method	= User		Time of conc. (Tc)	= 22.30 min
Total precip.	= 5.83 in		Distribution	= Type II
Storm duration	= 24 hrs		Shape factor	= 484

WS1 - PRE-UNDISTURBED
Hyd. No. 1 -- 25 Year

Q (cfs)

Hyd No. 1

Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024   Wednesday, 01 / 10 / 2024
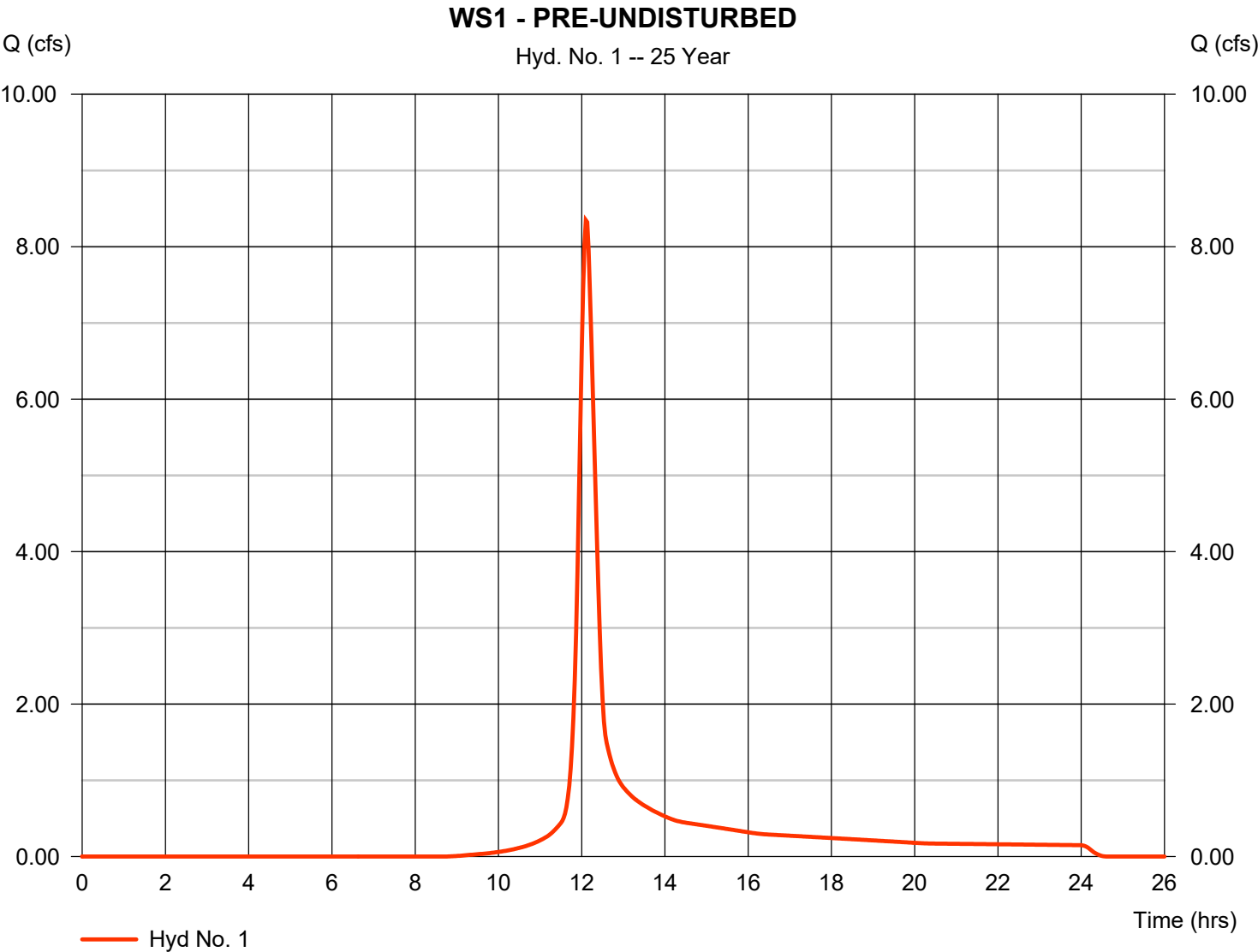
Hyd. No. 2

WS1 - PRE-DISTURBED

Hydrograph type	= SCS Runoff		Peak discharge	= 1.832 cfs
Storm frequency	= 25 yrs		Time to peak	= 12.13 hrs
Time interval	= 2 min		Hyd. volume	= 6,443 cuft
Drainage area	= 0.700 ac		Curve number	= 68
Basin Slope	= 0.0 %		Hydraulic length	= 0 ft
Tc method	= User		Time of conc. (Tc)	= 22.30 min
Total precip.	= 5.83 in		Distribution	= Type II
Storm duration	= 24 hrs		Shape factor	= 484

WS1 - PRE-DISTURBED

Hyd. No. 2 -- 25 Year

Q (cfs)

Time (hrs)
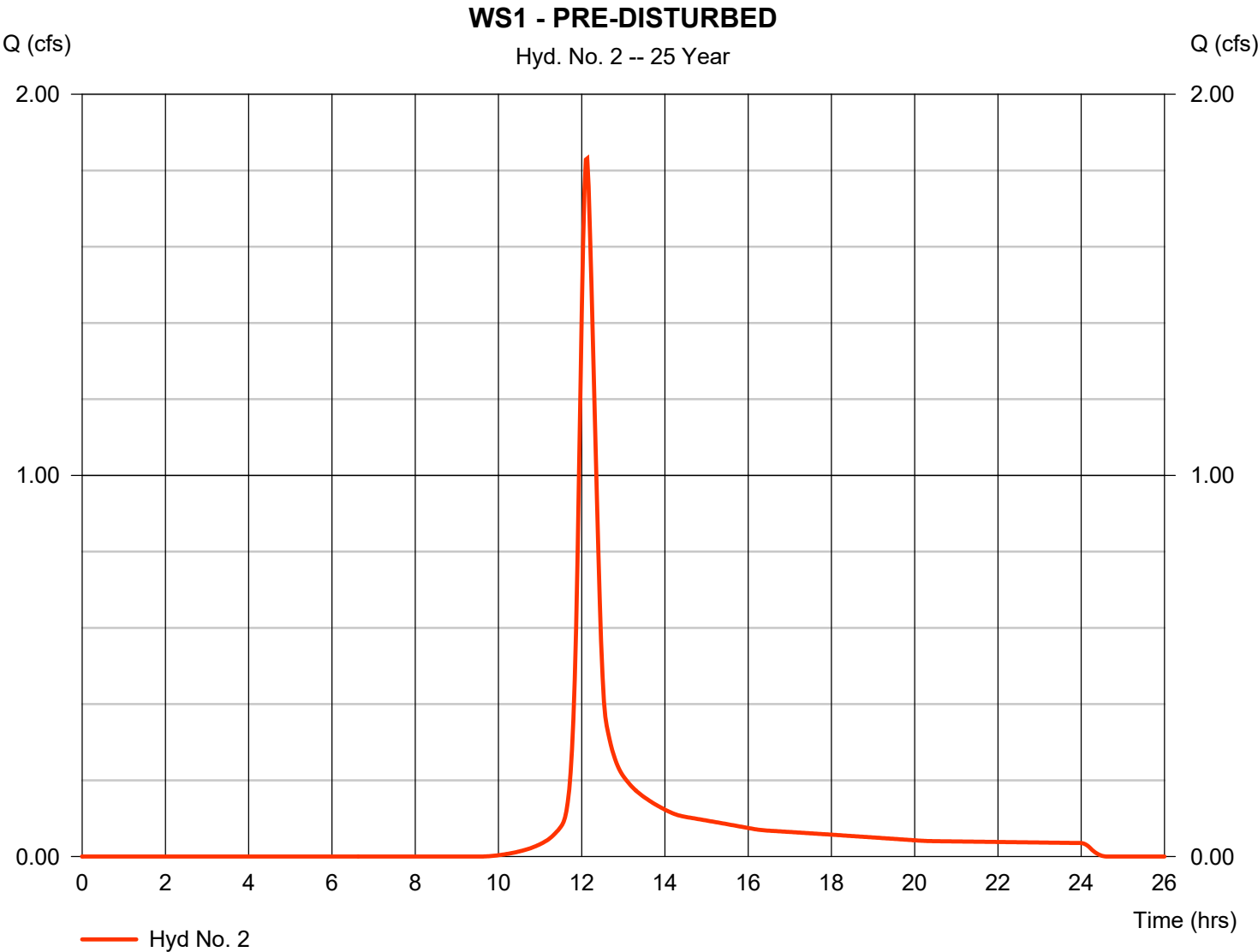
— Hyd No. 2

Hydrograph Report

Hyd. No. 4

WS1 - POST BYPASS

Hydrograph type	= SCS Runoff	Peak discharge	= 8.557 cfs
Storm frequency	= 25 yrs	Time to peak	= 12.10 hrs
Time interval	= 2 min	Hyd. volume	= 29,716 cuft
Drainage area	= 2.790 ac	Curve number	= 72.3
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 22.30 min
Total precip.	= 5.83 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

WS1 - POST BYPASS

Hyd. No. 4 -- 25 Year
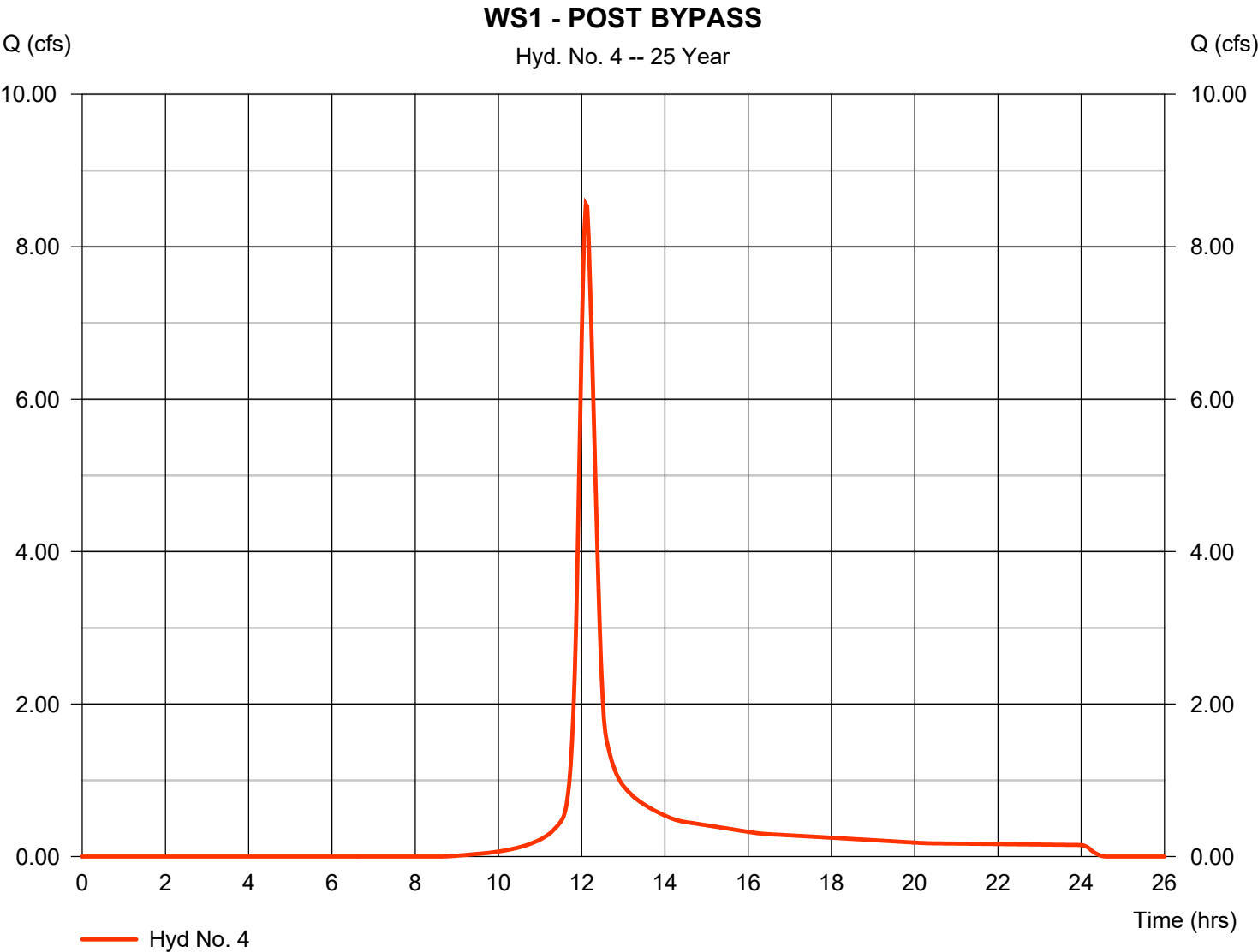
Hyd No. 4

Hydrograph Report

Hyd. No. 6

BMP 1 CAPTURED

Hydrograph type	= SCS Runoff		Peak discharge	= 2.599 cfs
Storm frequency	= 25 yrs		Time to peak	= 12.07 hrs
Time interval	= 2 min		Hyd. volume	= 8,124 cuft
Drainage area	= 0.690 ac		Curve number	= 76.1
Basin Slope	= 0.0 %		Hydraulic length	= 0 ft
Tc method	= User		Time of conc. (Tc)	= 19.60 min
Total precip.	= 5.83 in		Distribution	= Type II
Storm duration	= 24 hrs		Shape factor	= 484

BMP 1 CAPTURED

Hyd. No. 6 -- 25 Year

Q (cfs)

Time (hrs)

Hyd No. 6

Hydrograph Report

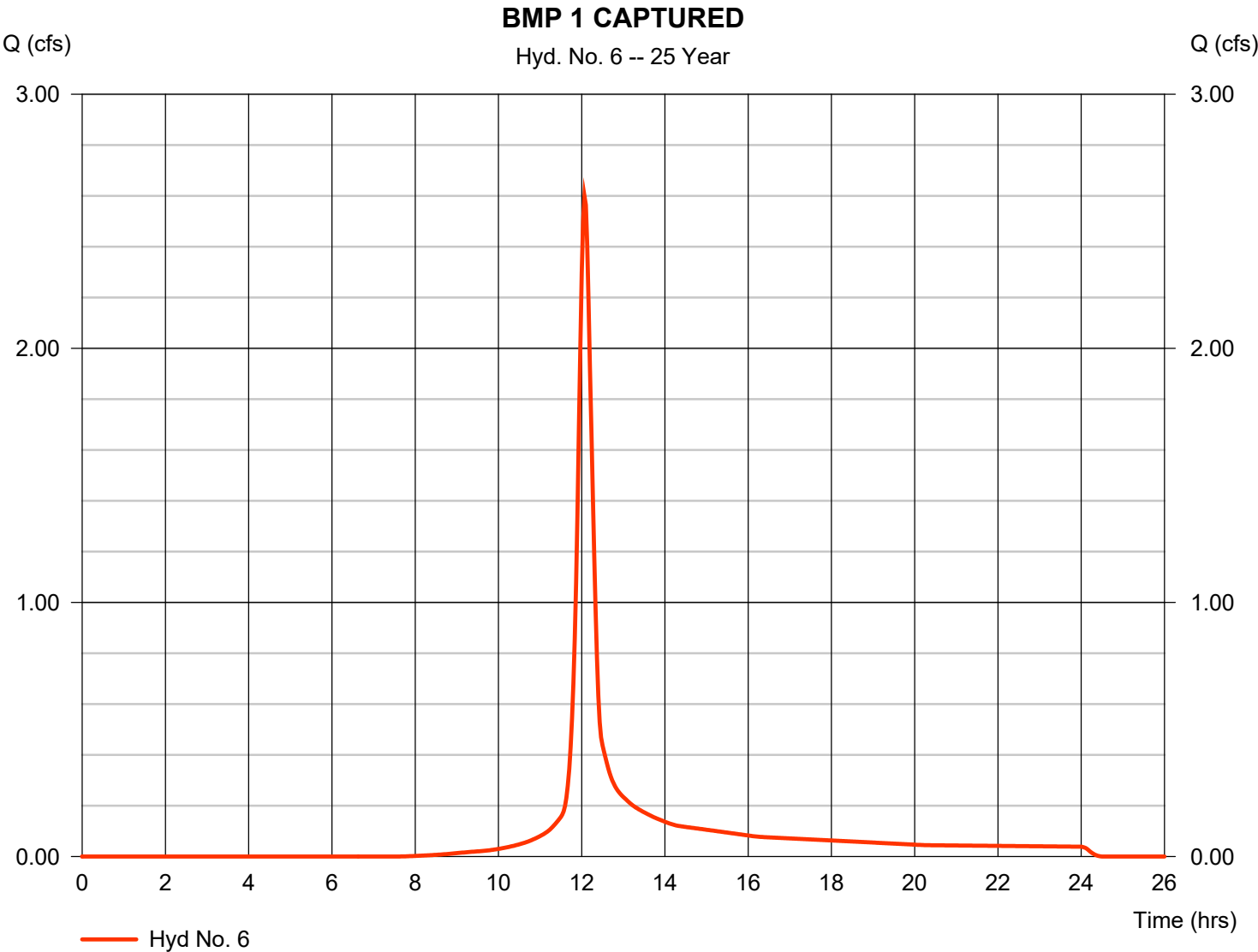Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024   Wednesday, 01 / 10 / 2024

Hyd. No. 7

BMP 1 ROUTED

Hydrograph type	= Reservoir	Peak discharge	= 0.855 cfs
Storm frequency	= 25 yrs	Time to peak	= 12.30 hrs
Time interval	= 2 min	Hyd. volume	= 1,847 cuft
Inflow hyd. No.	= 6 - BMP 1 CAPTURED	Max. Elevation	= 473.99 ft
Reservoir name	= BMP 1	Max. Storage	= 2,726 cuft

Storage Indication method used. Exfiltration extracted from Outflow.

BMP 1 ROUTED

Hyd. No. 7 -- 25 Year

Q (cfs) ... Q (cfs)

Time (hrs)

Hyd No. 7   Hyd No. 6   Total storage used = 2,726 cuft
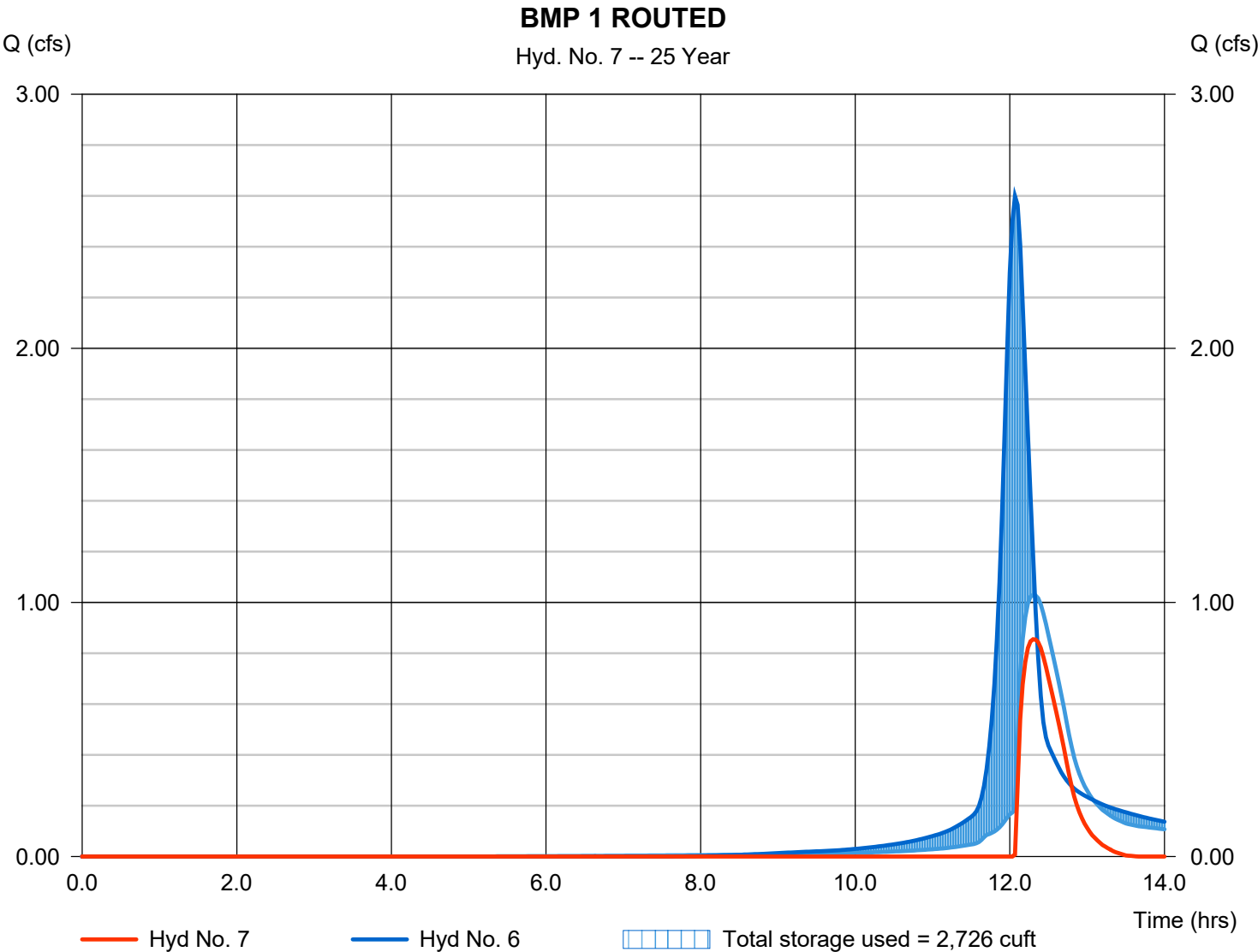
Hydrograph Report

Hyd. No. 9

BMP 2 CAPTURED

Hydrograph type	= SCS Runoff	Peak discharge	= 1.097 cfs
Storm frequency	= 25 yrs	Time to peak	= 11.93 hrs
Time interval	= 2 min	Hyd. volume	= 2,313 cuft
Drainage area	= 0.160 ac	Curve number	= 86
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 6.00 min
Total precip.	= 5.83 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

BMP 2 CAPTURED

Hyd. No. 9 -- 25 Year

Hydrograph Report

Wednesday, 01 / 10 / 2024

Hyd. No. 10

BMP 2 ROUTED

Hydrograph type	= Reservoir	Peak discharge	= 0.000 cfs
Storm frequency	= 25 yrs	Time to peak	= 15.63 hrs
Time interval	= 2 min	Hyd. volume	= 0 cuft
Inflow hyd. No.	= 9 - BMP 2 CAPTURED	Max. Elevation	= 470.42 ft
Reservoir name	= BMP 2	Max. Storage	= 871 cuft

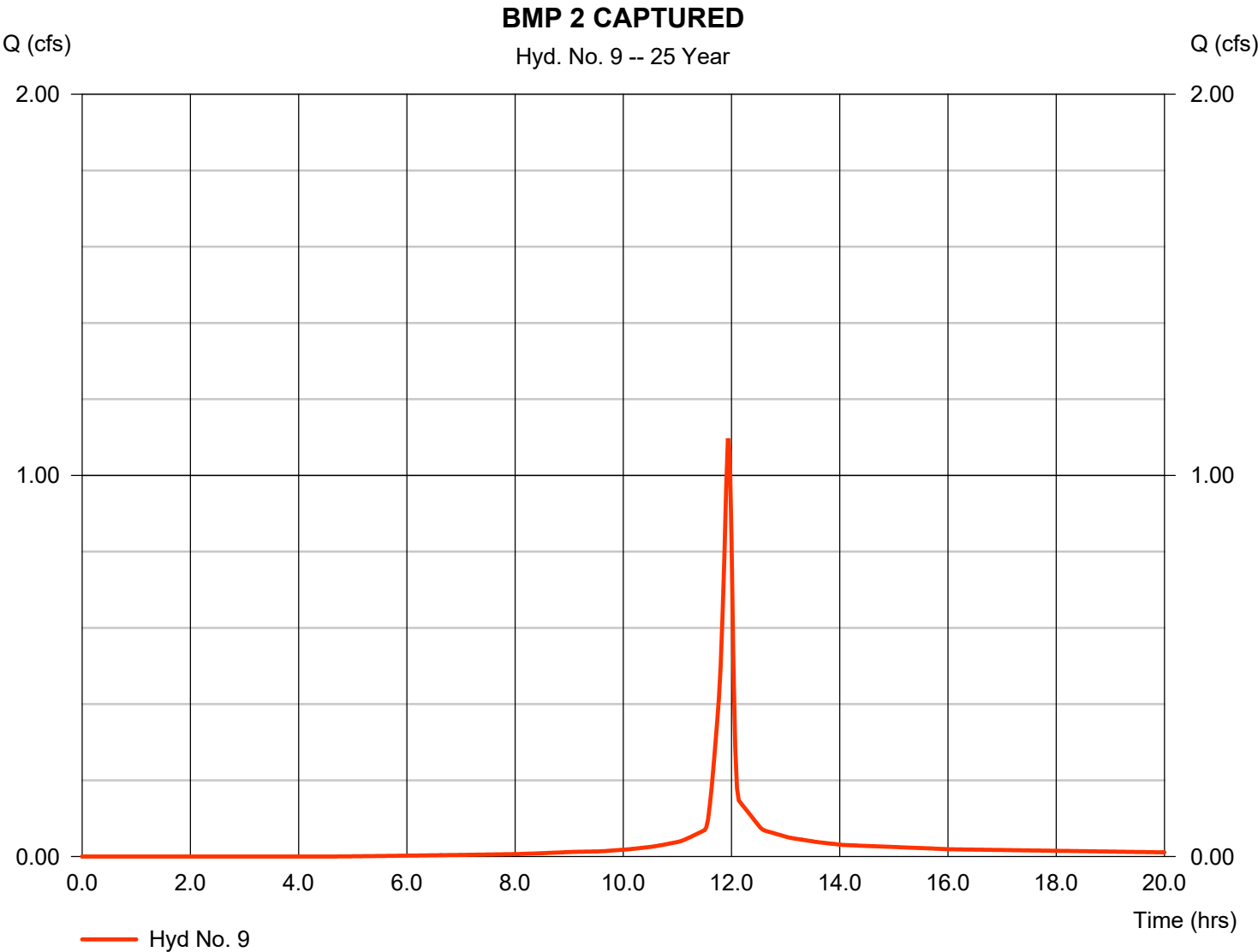Storage Indication method used. Exfiltration extracted from Outflow.
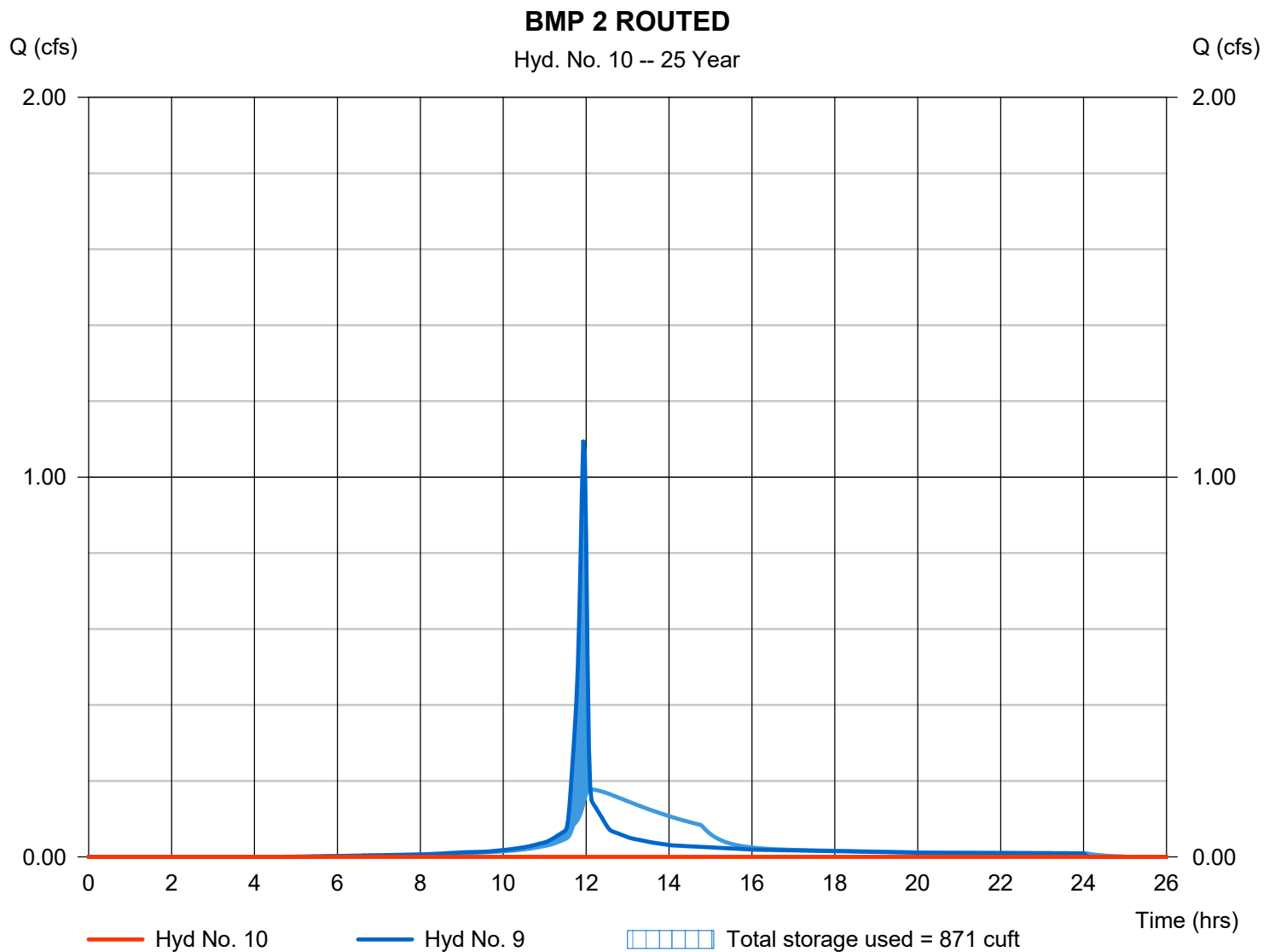

BMP 2 ROUTED

Hyd. No. 10 -- 25 Year

Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024   Wednesday, 01 / 10 / 2024

Hyd. No. 12

WS1 POST TOTAL

Hydrograph type	= Combine	Peak discharge	= 9.065 cfs
Storm frequency	= 25 yrs	Time to peak	= 12.13 hrs
Time interval	= 2 min	Hyd. volume	= 31,563 cuft
Inflow hyds.	= 4, 7, 10	Contrib. drain. area	= 2.790 ac

WS1 POST TOTAL

Hyd. No. 12 -- 25 Year

Q (cfs)   Q (cfs)

Time (hrs)

Hyd No. 12 — Hyd No. 4 — Hyd No. 7 — Hyd No. 10

Hydrograph Report

Hyd. No. 15

WS2 - PRE-UNDISTURBED

Hydrograph type	= SCS Runoff	Peak discharge	= 2.058 cfs
Storm frequency	= 25 yrs	Time to peak	= 12.03 hrs
Time interval	= 2 min	Hyd. volume	= 5,778 cuft
Drainage area	= 0.570 ac	Curve number	= 72.1
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 13.50 min
Total precip.	= 5.83 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

WS2 - PRE-UNDISTURBED

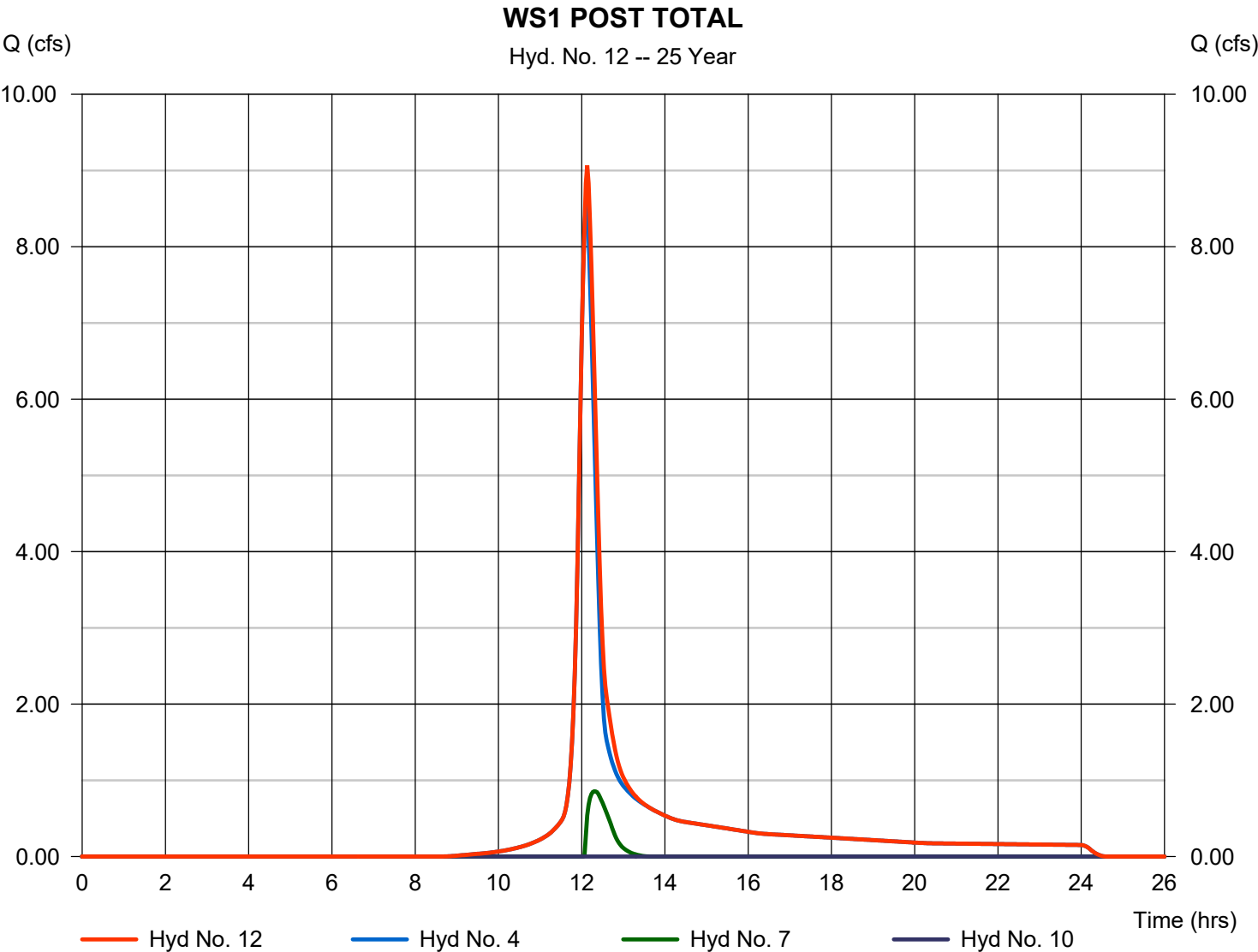Hyd. No. 15 -- 25 Year

Hyd No. 15

Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024   Wednesday, 01 / 10 / 2024
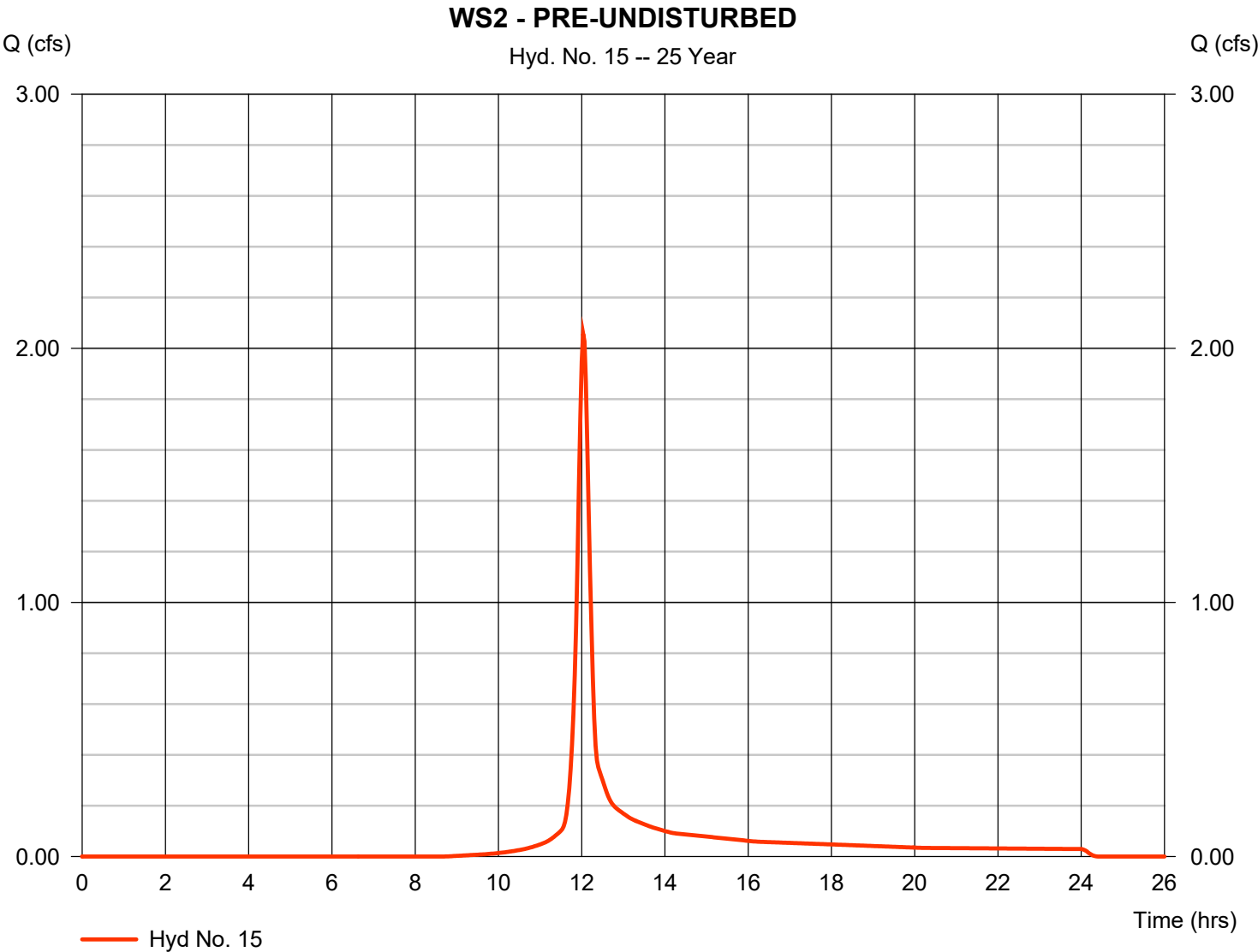
Hyd. No. 16

WS2 - PRE-DISTURBED

Hydrograph type	= SCS Runoff	Peak discharge	= 0.834 cfs
Storm frequency	= 25 yrs	Time to peak	= 12.03 hrs
Time interval	= 2 min	Hyd. volume	= 2,346 cuft
Drainage area	= 0.240 ac	Curve number	= 71
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 13.50 min
Total precip.	= 5.83 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

WS2 - PRE-DISTURBED

Hyd. No. 16 -- 25 Year
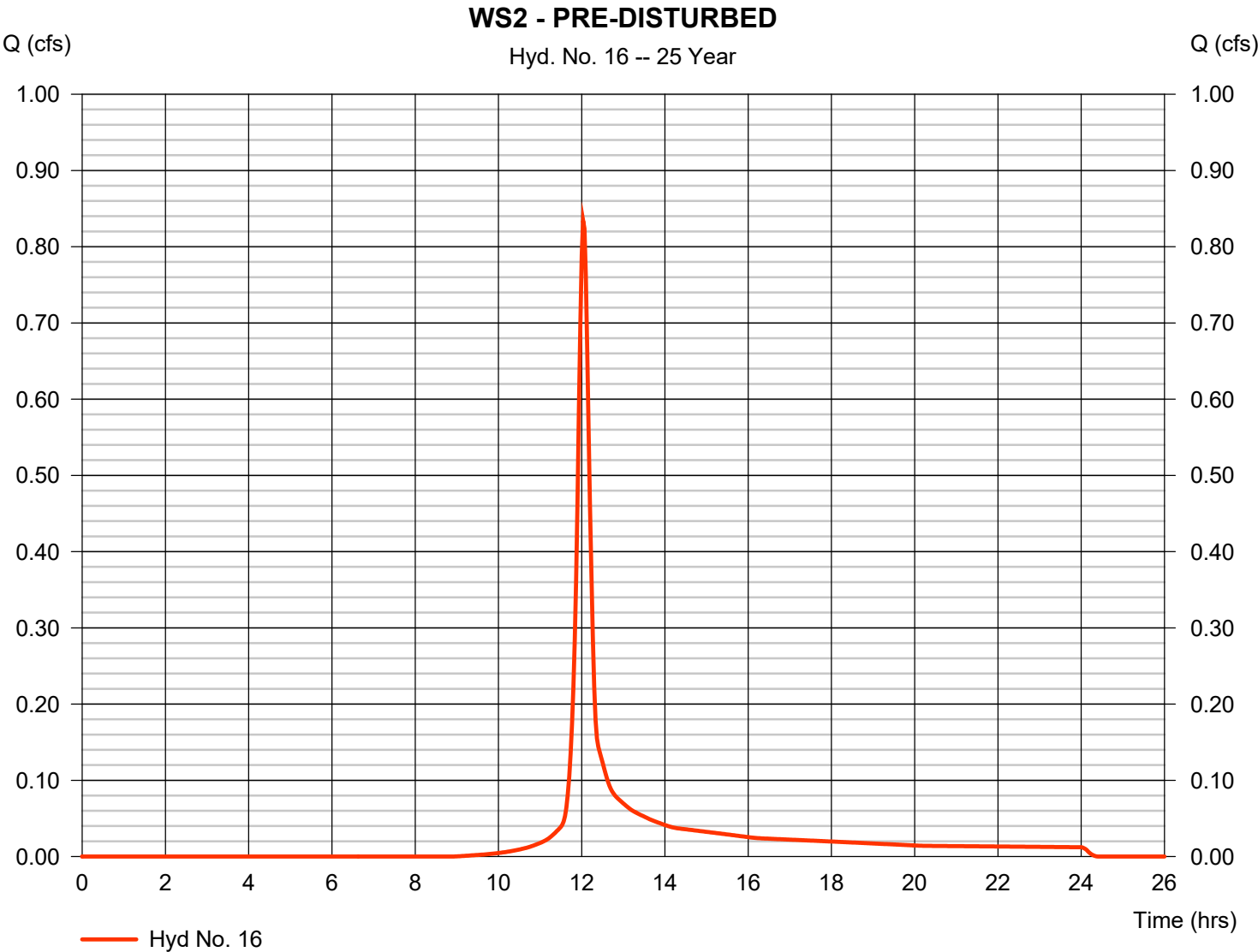
Hyd No. 16

Hydrograph Report

Hyd. No. 18

WS2 - POST BYPASS

Hydrograph type	= SCS Runoff		Peak discharge	= 2.269 cfs
Storm frequency	= 25 yrs		Time to peak	= 12.03 hrs
Time interval	= 2 min		Hyd. volume	= 6,365 cuft
Drainage area	= 0.610 ac		Curve number	= 73
Basin Slope	= 0.0 %		Hydraulic length	= 0 ft
Tc method	= User		Time of conc. (Tc)	= 13.50 min
Total precip.	= 5.83 in		Distribution	= Type II
Storm duration	= 24 hrs		Shape factor	= 484

WS2 - POST BYPASS

Hyd. No. 18 -- 25 Year
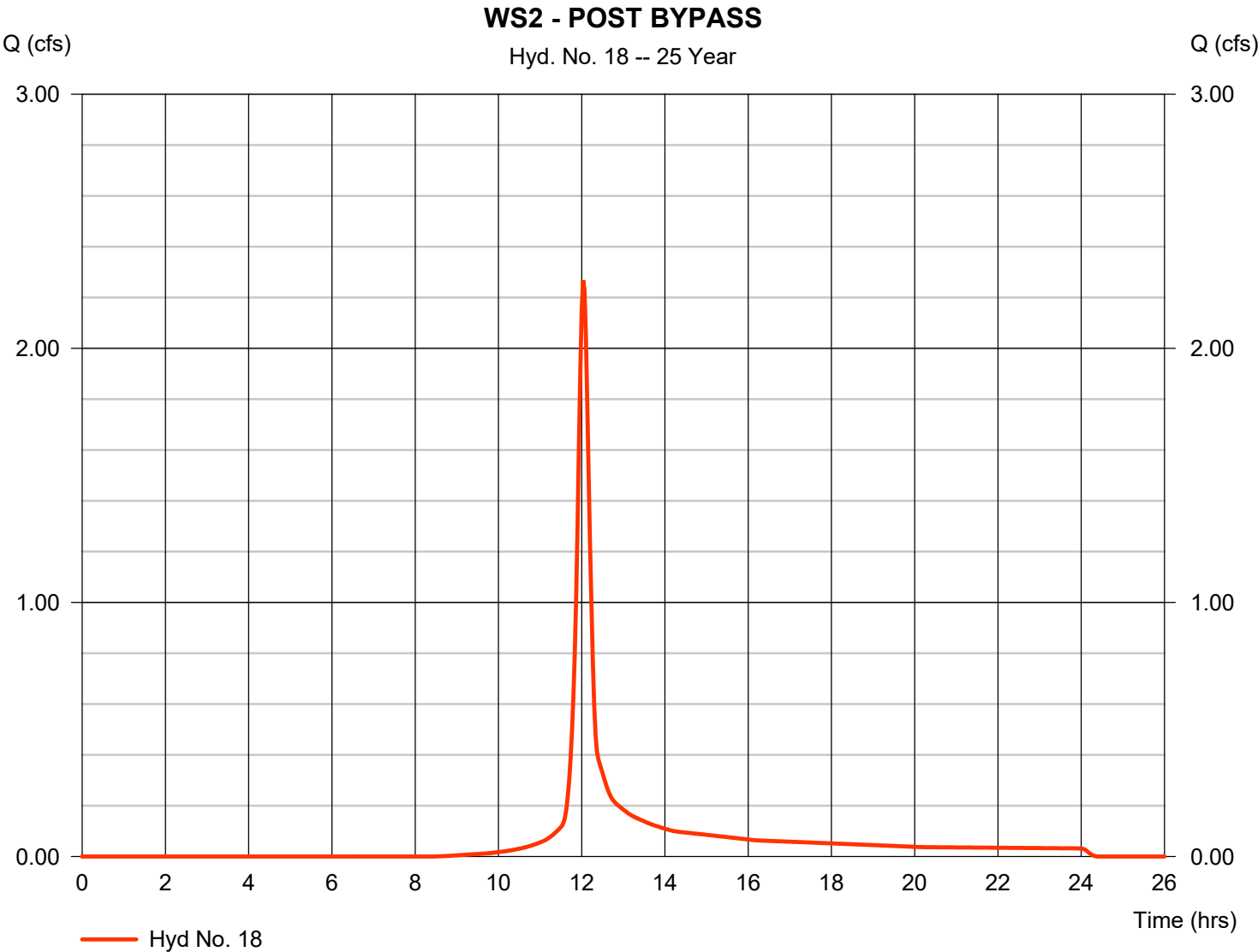
Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024

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	10.48	2	726	36,264	------	------	------	WS1 - PRE-UNDISTURBED
2	SCS Runoff	2.346	2	726	8,176	------	------	------	WS1 - PRE-DISTURBED
4	SCS Runoff	10.73	2	726	37,082	------	------	------	WS1 - POST BYPASS
6	SCS Runoff	3.197	2	724	10,002	------	------	------	BMP 1 CAPTURED
7	Reservoir	1.019	2	740	2,943	6	474.66	3,334	BMP 1 ROUTED
9	SCS Runoff	1.295	2	716	2,760	------	------	------	BMP 2 CAPTURED
10	Reservoir	0.000	2	926	0	9	470.93	1,054	BMP 2 ROUTED
12	Combine	11.52	2	728	40,025	4, 7, 10,	------	------	WS1 POST TOTAL
15	SCS Runoff	2.574	2	722	7,215	------	------	------	WS2 - PRE-UNDISTURBED
16	SCS Runoff	1.049	2	722	2,942	------	------	------	WS2 - PRE-DISTURBED
18	SCS Runoff	2.826	2	722	7,922	------	------	------	WS2 - POST BYPASS

11711 (SCS only).gpw | Return Period: 50 Year | Wednesday, 01 / 10 / 2024

Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024   Wednesday, 01 / 10 / 2024

Hyd. No. 1

WS1 - PRE-UNDISTURBED

Hydrograph type	= SCS Runoff	Peak discharge	= 10.48 cfs
Storm frequency	= 50 yrs	Time to peak	= 12.10 hrs
Time interval	= 2 min	Hyd. volume	= 36,264 cuft
Drainage area	= 2.760 ac	Curve number	= 71.9
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 22.30 min
Total precip.	= 6.69 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

WS1 - PRE-UNDISTURBED

Hyd. No. 1 -- 50 Year
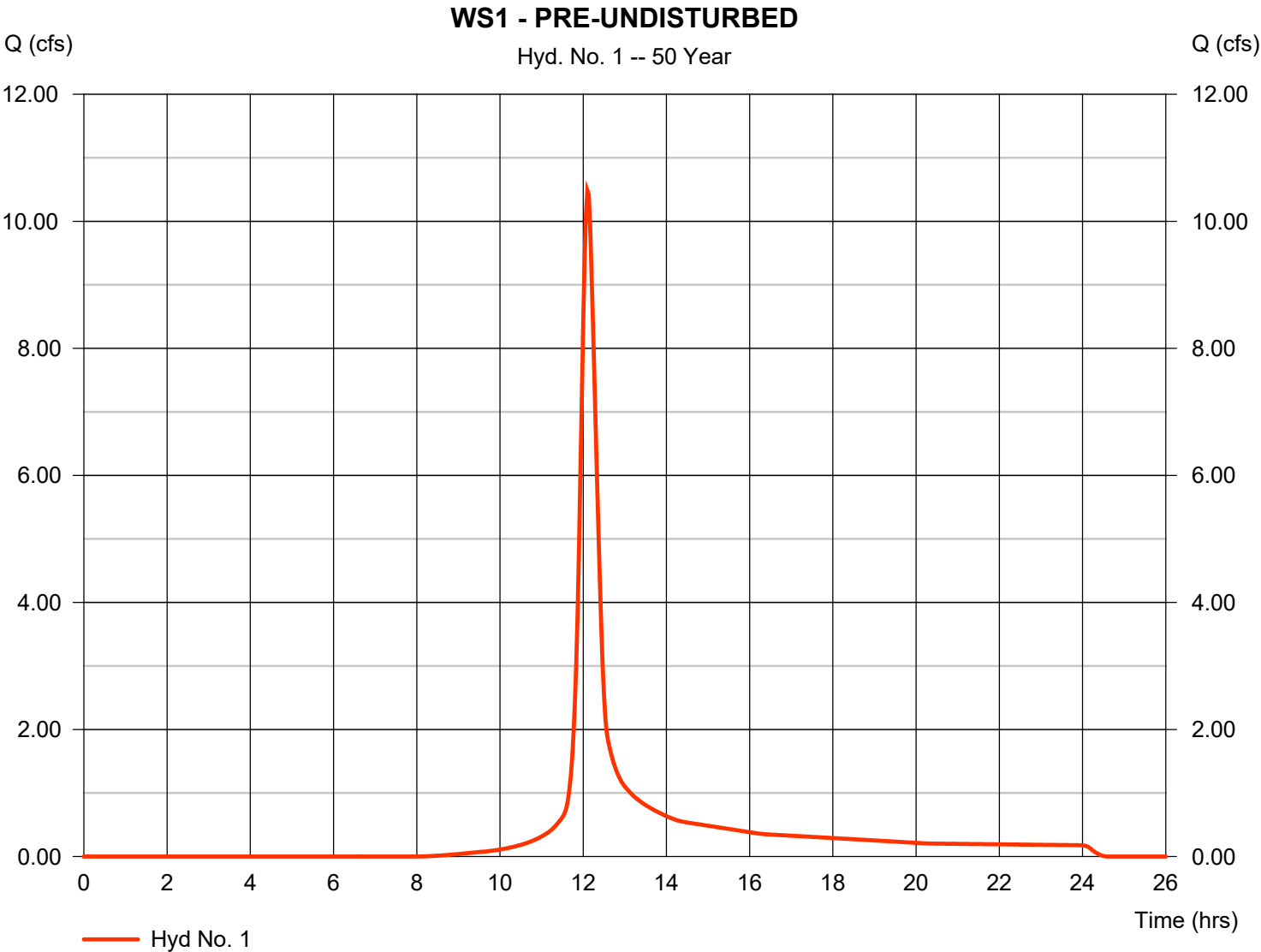
Hyd No. 1

Hydrograph Report

Hyd. No. 2

WS1 - PRE-DISTURBED

Hydrograph type	= SCS Runoff	Peak discharge	= 2.346 cfs
Storm frequency	= 50 yrs	Time to peak	= 12.10 hrs
Time interval	= 2 min	Hyd. volume	= 8,176 cuft
Drainage area	= 0.700 ac	Curve number	= 68
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 22.30 min
Total precip.	= 6.69 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

WS1 - PRE-DISTURBED

Hyd. No. 2 -- 50 Year
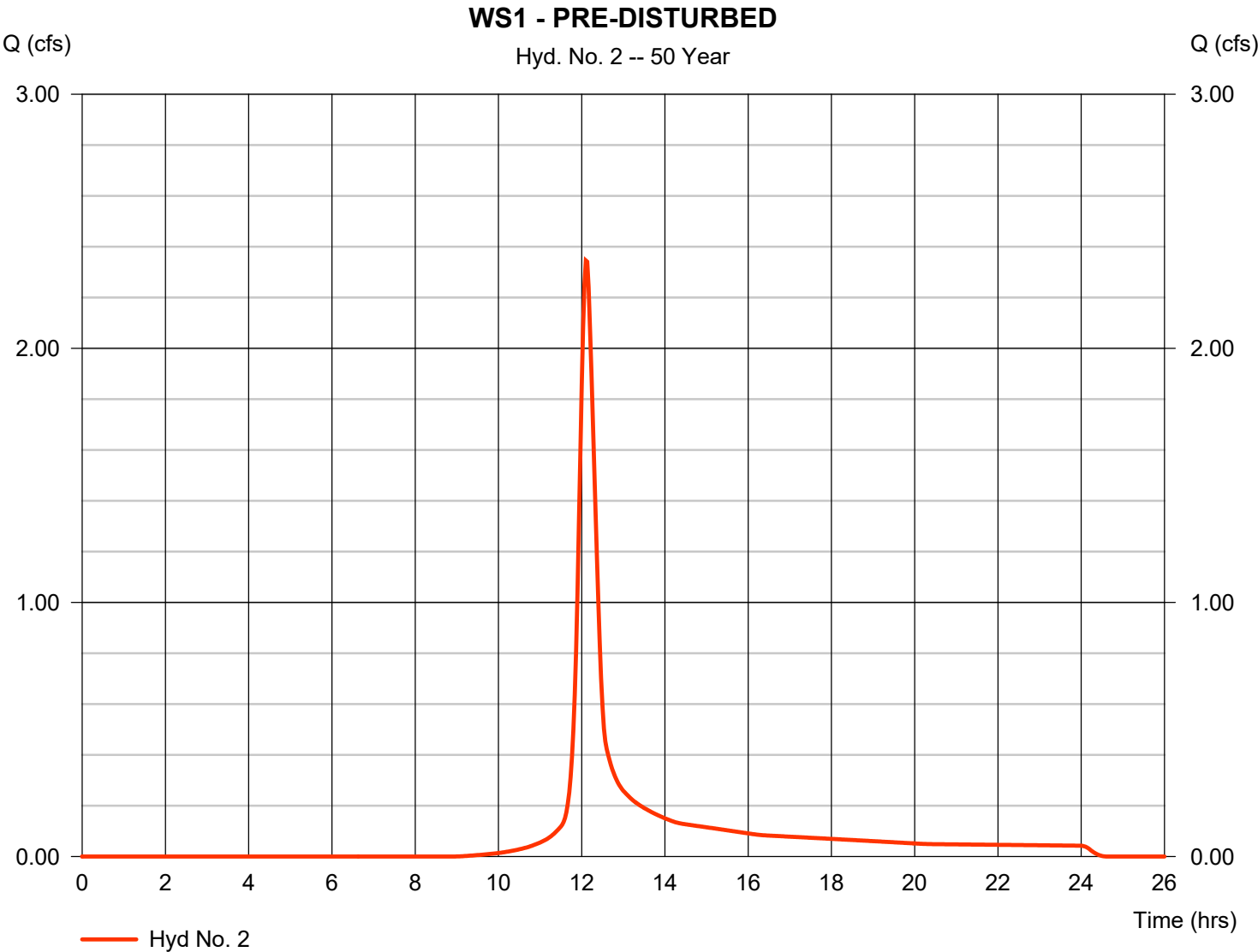
Hyd No. 2

Hydrograph Report

Hyd. No. 4

WS1 - POST BYPASS

Hydrograph type	= SCS Runoff	Peak discharge	= 10.73 cfs
Storm frequency	= 50 yrs	Time to peak	= 12.10 hrs
Time interval	= 2 min	Hyd. volume	= 37,082 cuft
Drainage area	= 2.790 ac	Curve number	= 72.3
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 22.30 min
Total precip.	= 6.69 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

WS1 - POST BYPASS

Hyd. No. 4 -- 50 Year
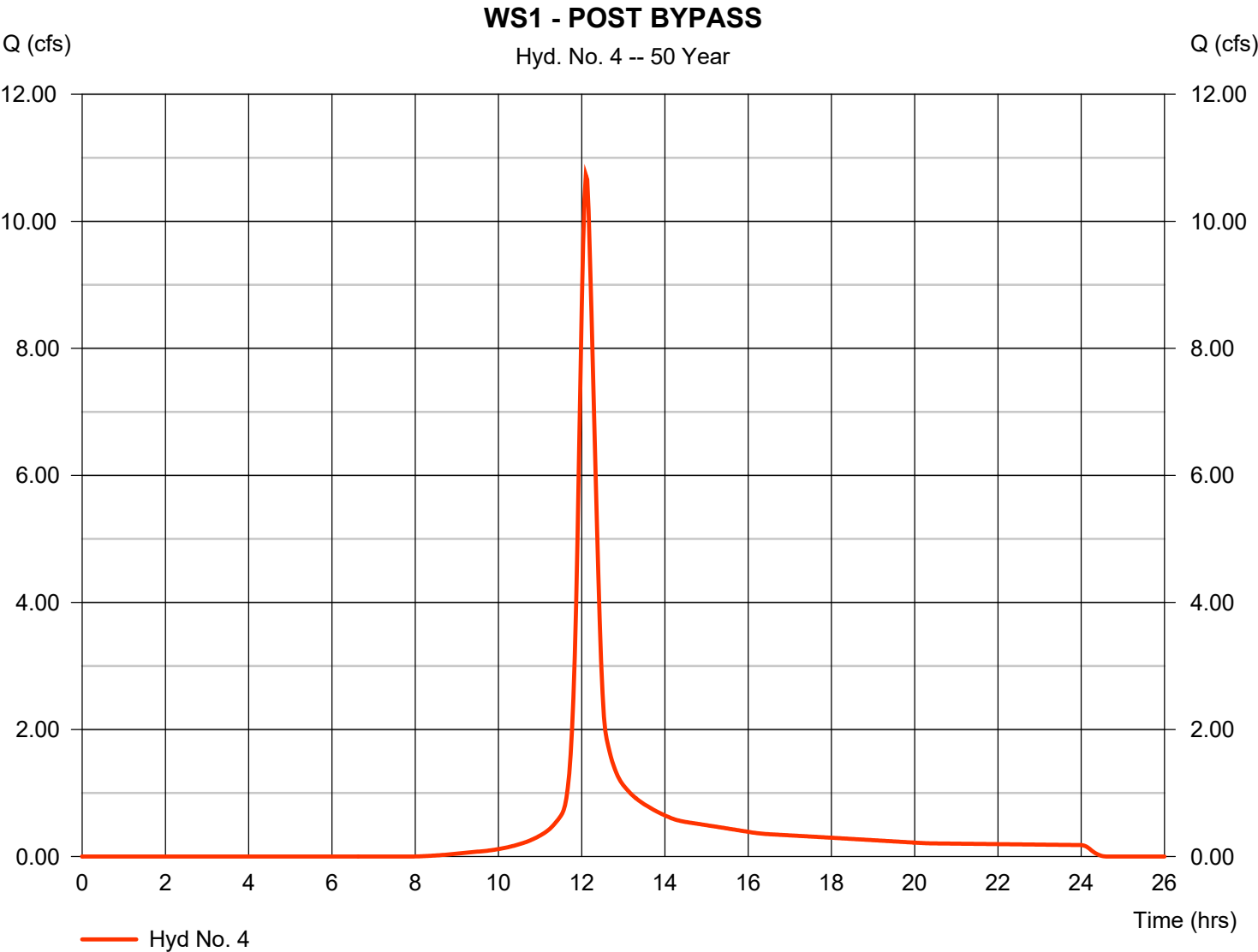
Hyd No. 4

Hydrograph Report

Hyd. No. 6

BMP 1 CAPTURED

Hydrograph type	= SCS Runoff		Peak discharge	= 3.197 cfs
Storm frequency	= 50 yrs		Time to peak	= 12.07 hrs
Time interval	= 2 min		Hyd. volume	= 10,002 cuft
Drainage area	= 0.690 ac		Curve number	= 76.1
Basin Slope	= 0.0 %		Hydraulic length	= 0 ft
Tc method	= User		Time of conc. (Tc)	= 19.60 min
Total precip.	= 6.69 in		Distribution	= Type II
Storm duration	= 24 hrs		Shape factor	= 484

BMP 1 CAPTURED

Hyd. No. 6 -- 50 Year

Q (cfs)

Q (cfs)

Time (hrs)
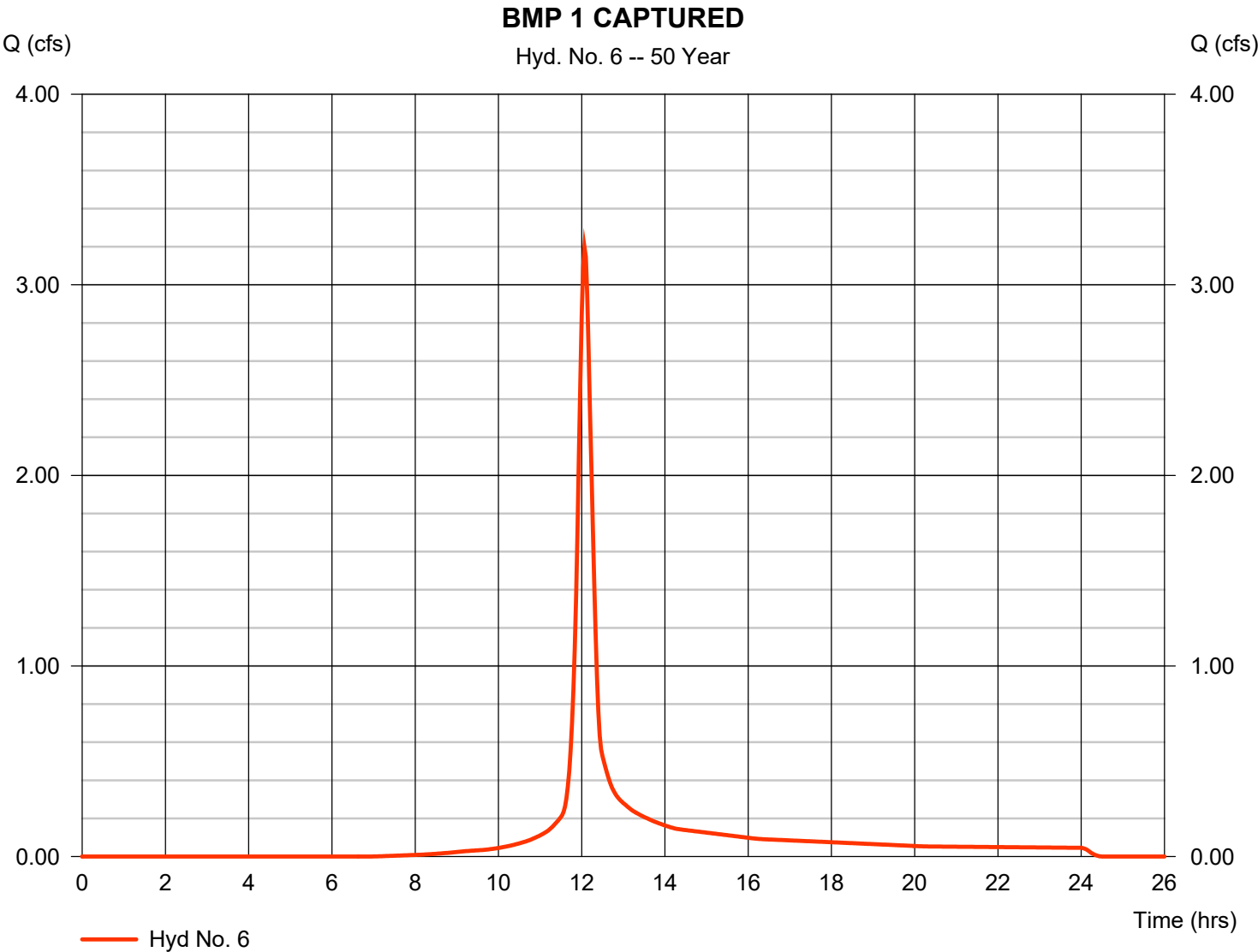
— Hyd No. 6

Hydrograph Report

Hyd. No. 7

BMP 1 ROUTED

Hydrograph type	= Reservoir		Peak discharge	= 1.019 cfs
Storm frequency	= 50 yrs		Time to peak	= 12.33 hrs
Time interval	= 2 min		Hyd. volume	= 2,943 cuft
Inflow hyd. No.	= 6 - BMP 1 CAPTURED		Max. Elevation	= 474.66 ft
Reservoir name	= BMP 1		Max. Storage	= 3,334 cuft

Storage Indication method used. Exfiltration extracted from Outflow.

BMP 1 ROUTED

Hyd. No. 7 -- 50 Year

Hyd No. 7   Hyd No. 6   Total storage used = 3,334 cuft

Hydrograph Report

Wednesday, 01 / 10 / 2024
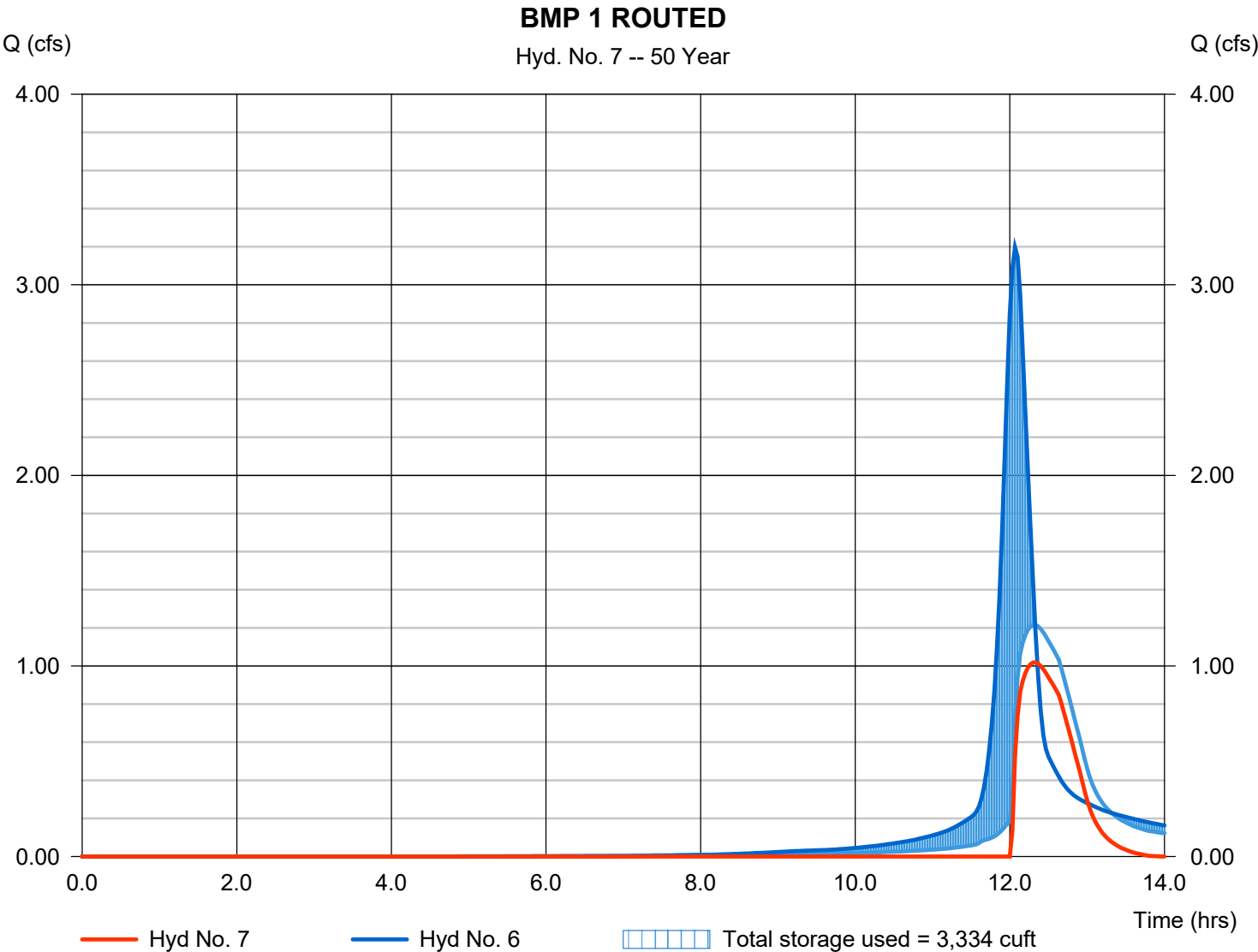
Hyd. No. 9

BMP 2 CAPTURED

Hydrograph type	= SCS Runoff		Peak discharge	= 1.295 cfs
Storm frequency	= 50 yrs		Time to peak	= 11.93 hrs
Time interval	= 2 min		Hyd. volume	= 2,760 cuft
Drainage area	= 0.160 ac		Curve number	= 86
Basin Slope	= 0.0 %		Hydraulic length	= 0 ft
Tc method	= User		Time of conc. (Tc)	= 6.00 min
Total precip.	= 6.69 in		Distribution	= Type II
Storm duration	= 24 hrs		Shape factor	= 484

BMP 2 CAPTURED

Hyd. No. 9 -- 50 Year

Hyd No. 9

Hydrograph Report

Hyd. No. 10

BMP 2 ROUTED

Hydrograph type	= Reservoir	Peak discharge	= 0.000 cfs
Storm frequency	= 50 yrs	Time to peak	= 15.43 hrs
Time interval	= 2 min	Hyd. volume	= 0 cuft
Inflow hyd. No.	= 9 - BMP 2 CAPTURED	Max. Elevation	= 470.93 ft
Reservoir name	= BMP 2	Max. Storage	= 1,054 cuft

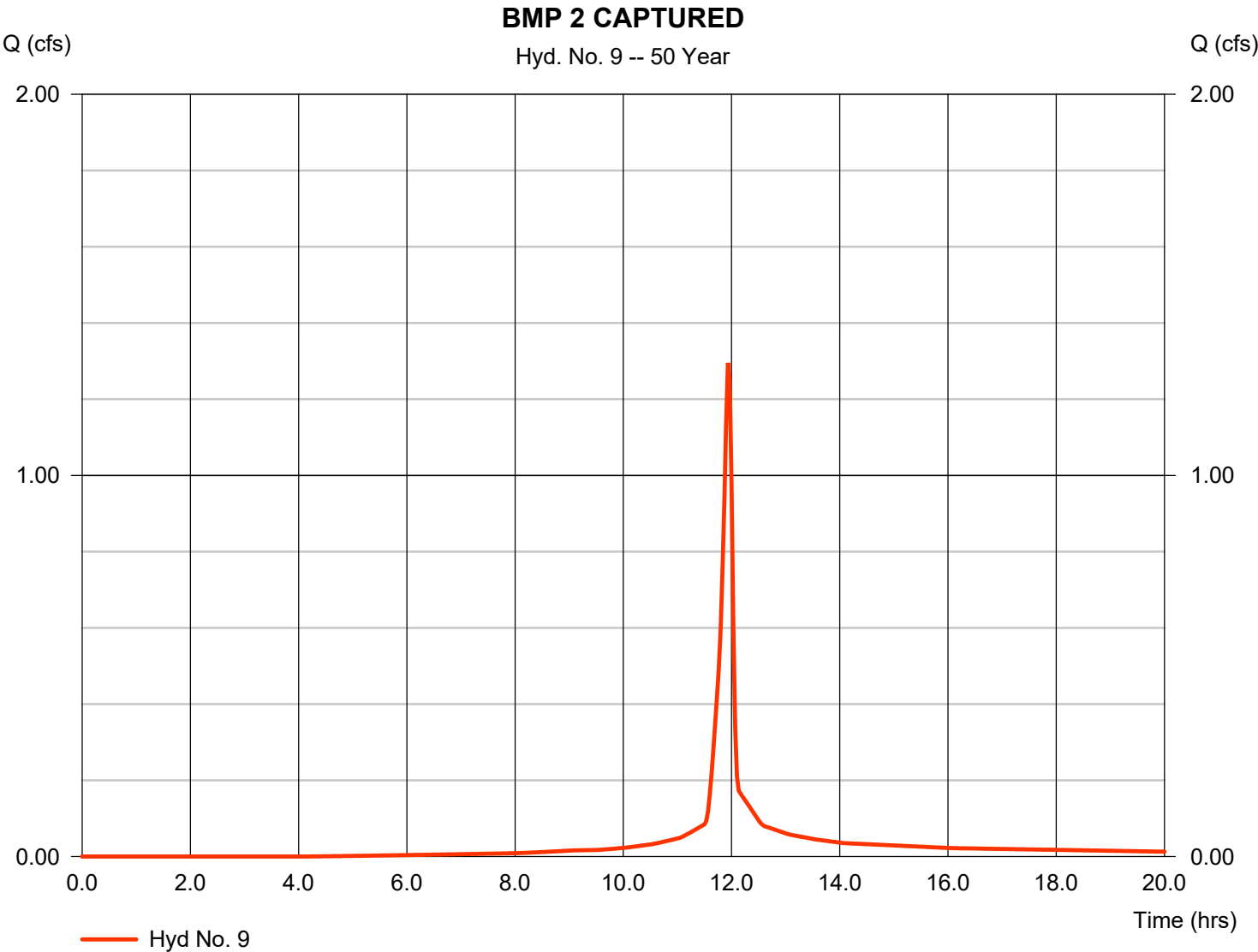Storage Indication method used. Exfiltration extracted from Outflow.
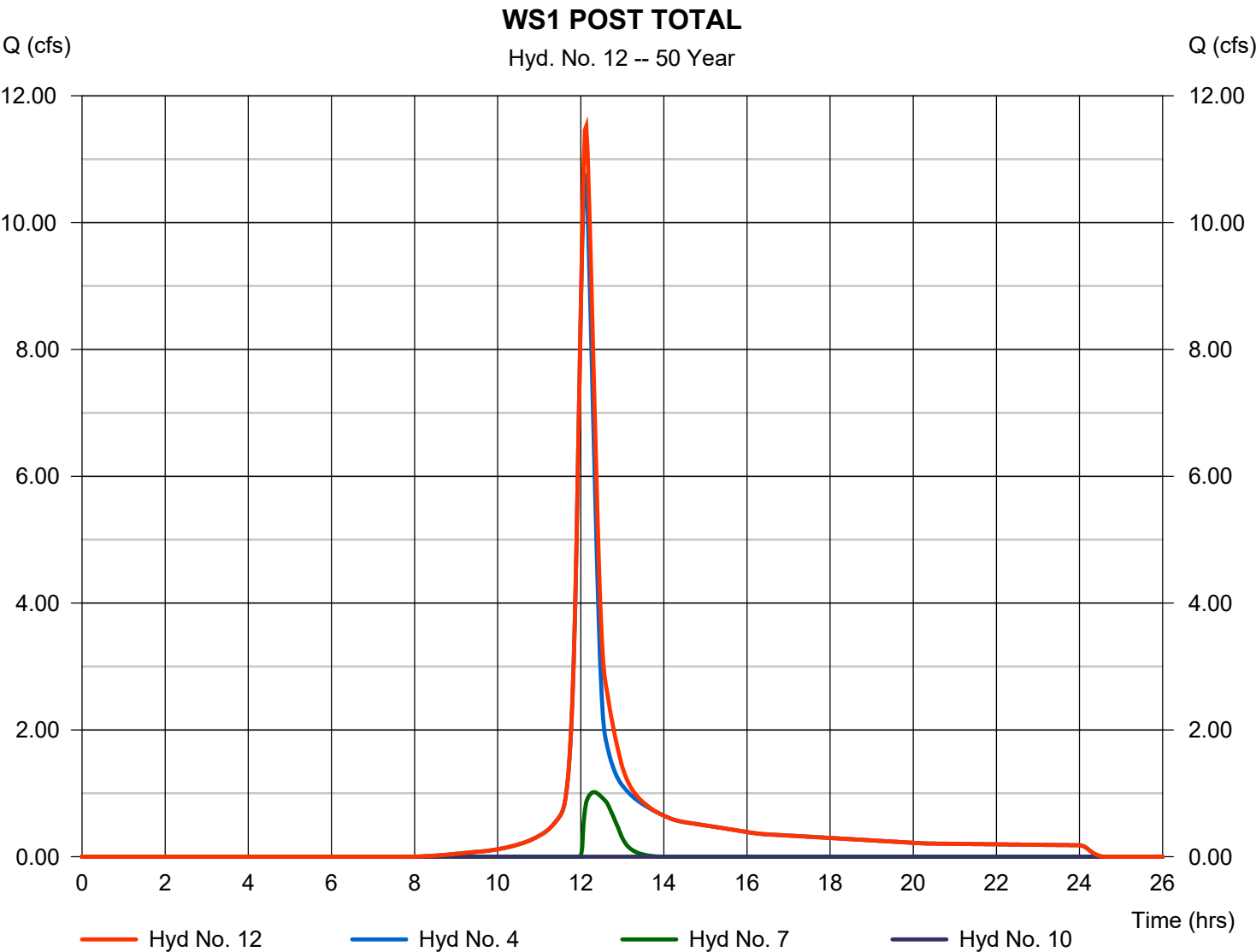

BMP 2 ROUTED

Hyd. No. 10 -- 50 Year

Q (cfs)

Q (cfs)

Time (hrs)

Hyd No. 10   Hyd No. 9   Total storage used = 1,054 cuft
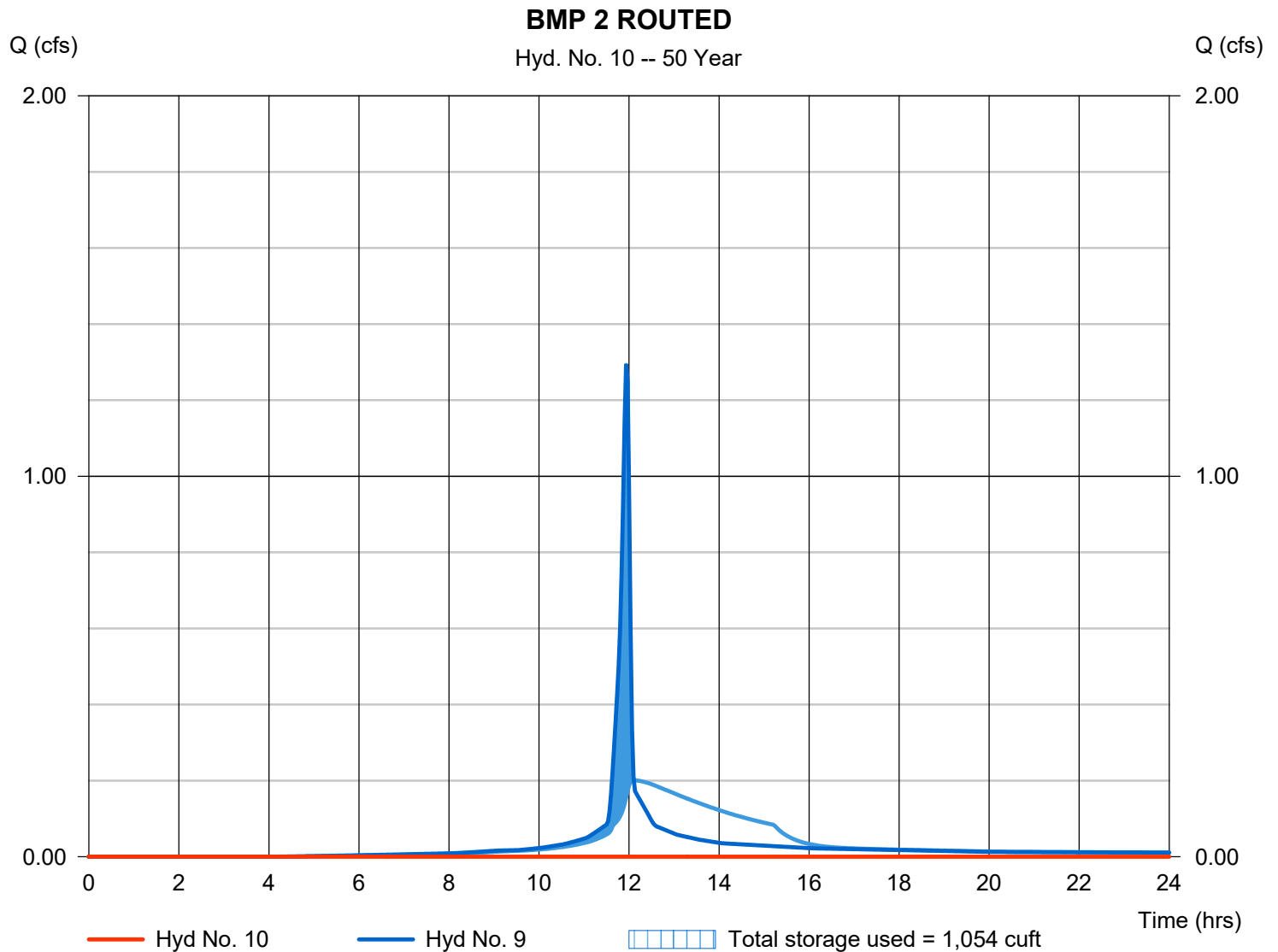
Hydrograph Report

Hyd. No. 12

WS1 POST TOTAL

Hydrograph type	= Combine		Peak discharge	= 11.52 cfs
Storm frequency	= 50 yrs		Time to peak	= 12.13 hrs
Time interval	= 2 min		Hyd. volume	= 40,025 cuft
Inflow hyds.	= 4, 7, 10		Contrib. drain. area	= 2.790 ac

WS1 POST TOTAL

Hyd. No. 12 -- 50 Year

Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024   Wednesday, 01 / 10 / 2024

Hyd. No. 15

WS2 - PRE-UNDISTURBED

Hydrograph type	= SCS Runoff	Peak discharge	= 2.574 cfs
Storm frequency	= 50 yrs	Time to peak	= 12.03 hrs
Time interval	= 2 min	Hyd. volume	= 7,215 cuft
Drainage area	= 0.570 ac	Curve number	= 72.1
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 13.50 min
Total precip.	= 6.69 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

WS2 - PRE-UNDISTURBED

Hyd. No. 15 -- 50 Year

Hyd No. 15

Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024

Wednesday, 01 / 10 / 2024
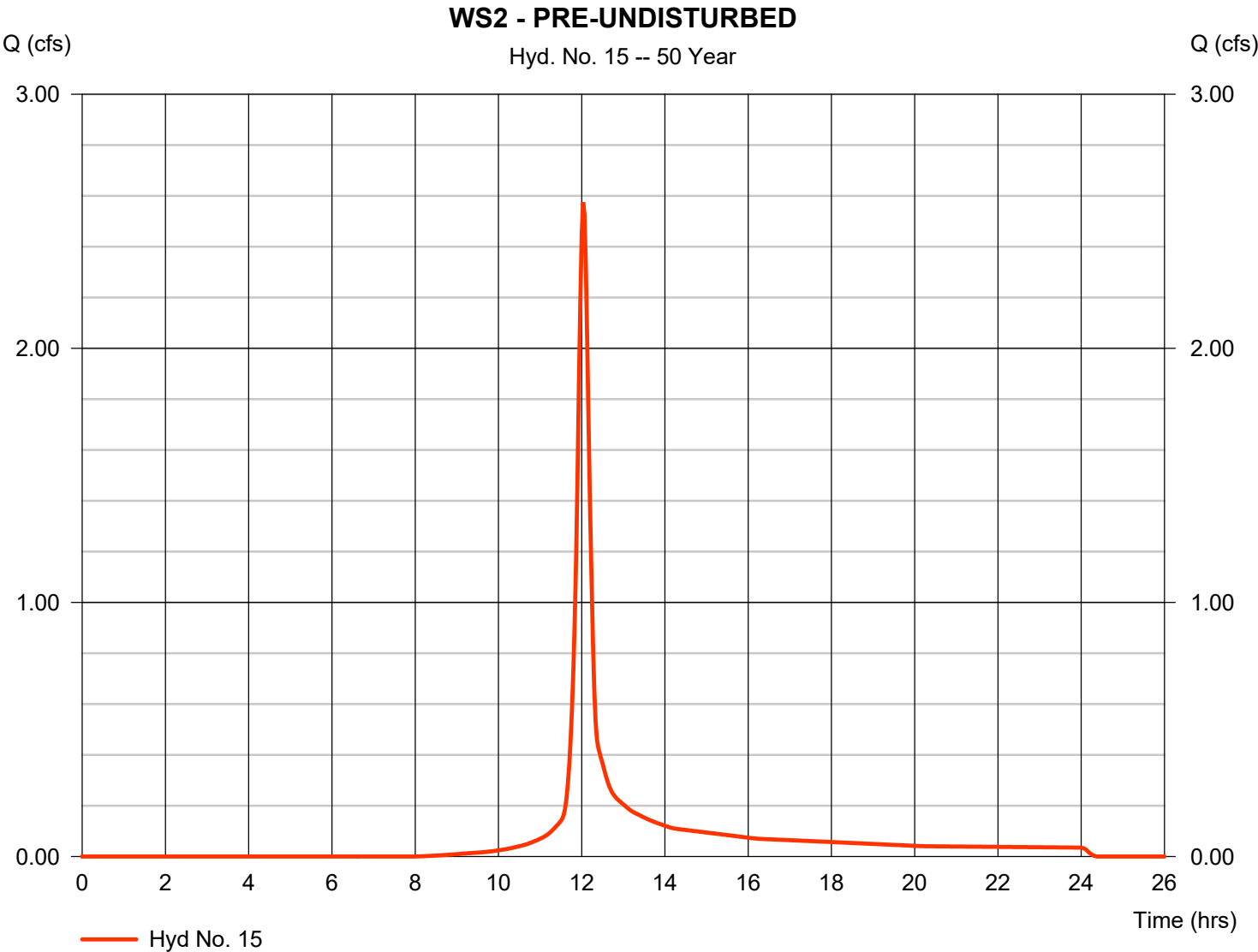
Hyd. No. 16

WS2 - PRE-DISTURBED

Hydrograph type	= SCS Runoff	Peak discharge	= 1.049 cfs
Storm frequency	= 50 yrs	Time to peak	= 12.03 hrs
Time interval	= 2 min	Hyd. volume	= 2,942 cuft
Drainage area	= 0.240 ac	Curve number	= 71
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 13.50 min
Total precip.	= 6.69 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

WS2 - PRE-DISTURBED

Hyd. No. 16 -- 50 Year

Hyd No. 16

Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024   Wednesday, 01 / 10 / 2024
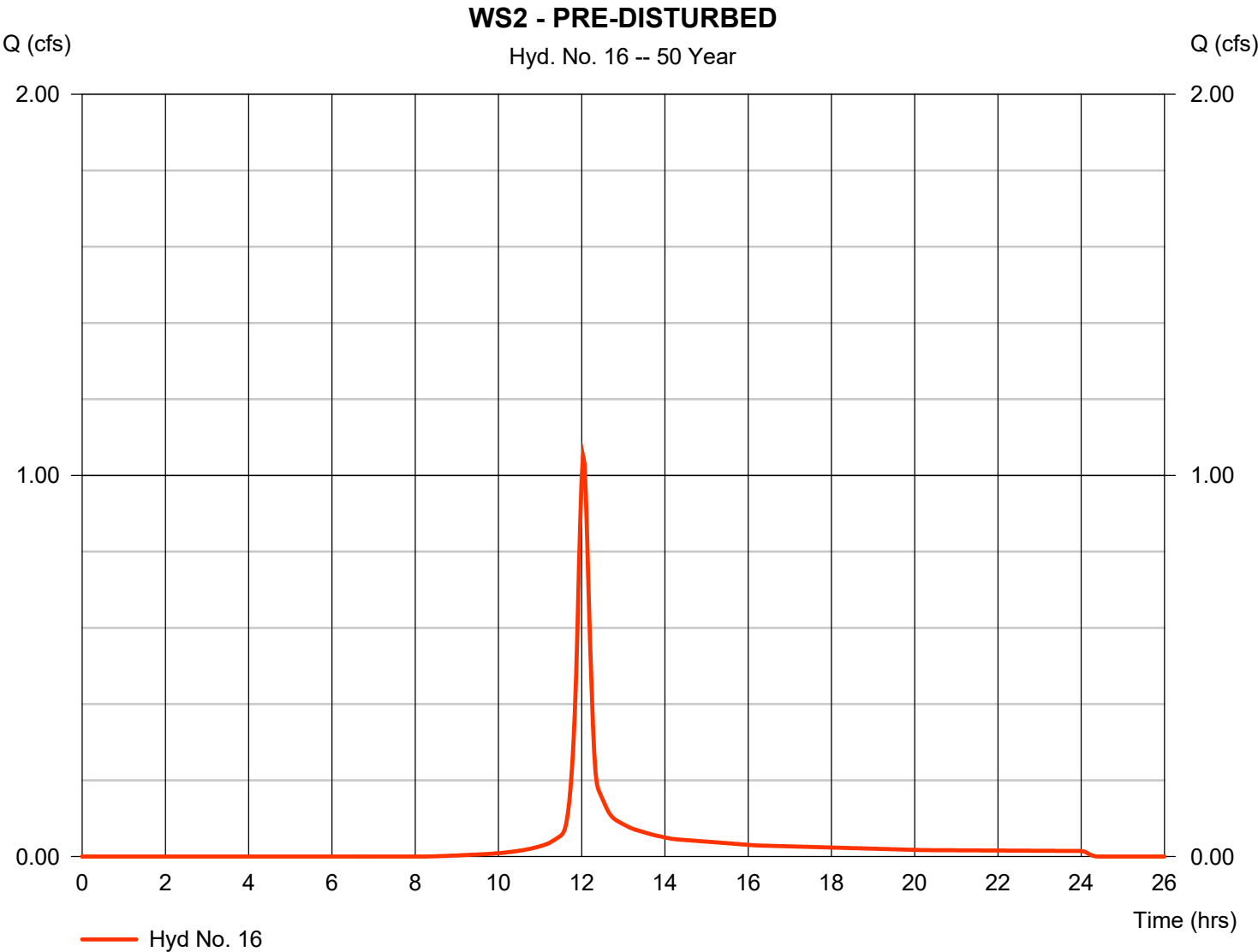
Hyd. No. 18

WS2 - POST BYPASS

Hydrograph type	= SCS Runoff		Peak discharge	= 2.826 cfs
Storm frequency	= 50 yrs		Time to peak	= 12.03 hrs
Time interval	= 2 min		Hyd. volume	= 7,922 cuft
Drainage area	= 0.610 ac		Curve number	= 73
Basin Slope	= 0.0 %		Hydraulic length	= 0 ft
Tc method	= User		Time of conc. (Tc)	= 13.50 min
Total precip.	= 6.69 in		Distribution	= Type II
Storm duration	= 24 hrs		Shape factor	= 484

WS2 - POST BYPASS

Hyd. No. 18 -- 50 Year

Hyd No. 18
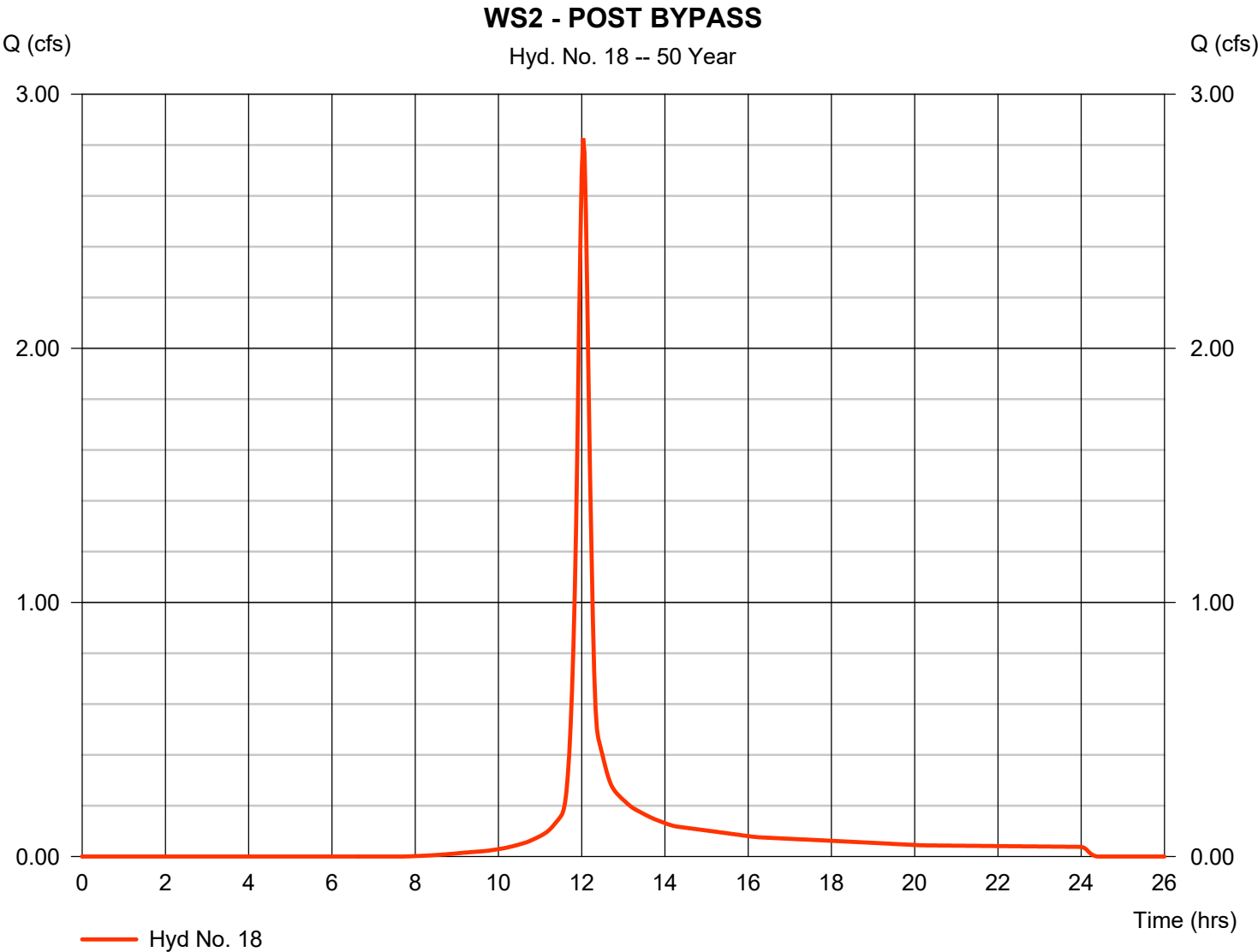
Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024

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	12.83	2	726	44,286	------	------	------	WS1 - PRE-UNDISTURBED
2	SCS Runoff	2.919	2	726	10,112	------	------	------	WS1 - PRE-DISTURBED
4	SCS Runoff	13.10	2	726	45,229	------	------	------	WS1 - POST BYPASS
6	SCS Runoff	3.845	2	724	12,062	------	------	------	BMP 1 CAPTURED
7	Reservoir	1.184	2	740	4,178	6	475.45	4,056	BMP 1 ROUTED
9	SCS Runoff	1.507	2	716	3,242	------	------	------	BMP 2 CAPTURED
10	Reservoir	0.000	2	668	0	9	471.48	1,251	BMP 2 ROUTED
12	Combine	14.04	2	726	49,407	4, 7, 10,	------	------	WS1 POST TOTAL
15	SCS Runoff	3.139	2	722	8,806	------	------	------	WS2 - PRE-UNDISTURBED
16	SCS Runoff	1.285	2	722	3,604	------	------	------	WS2 - PRE-DISTURBED
18	SCS Runoff	3.435	2	722	9,642	------	------	------	WS2 - POST BYPASS

11711 (SCS only).gpw | Return Period: 100 Year | Wednesday, 01 / 10 / 2024

Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024   Wednesday, 01 / 10 / 2024

Hyd. No. 1

WS1 - PRE-UNDISTURBED

Hydrograph type	= SCS Runoff	Peak discharge	= 12.83 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.10 hrs
Time interval	= 2 min	Hyd. volume	= 44,286 cuft
Drainage area	= 2.760 ac	Curve number	= 71.9
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 22.30 min
Total precip.	= 7.61 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

WS1 - PRE-UNDISTURBED

Hyd. No. 1 -- 100 Year

Q (cfs)

Time (hrs)
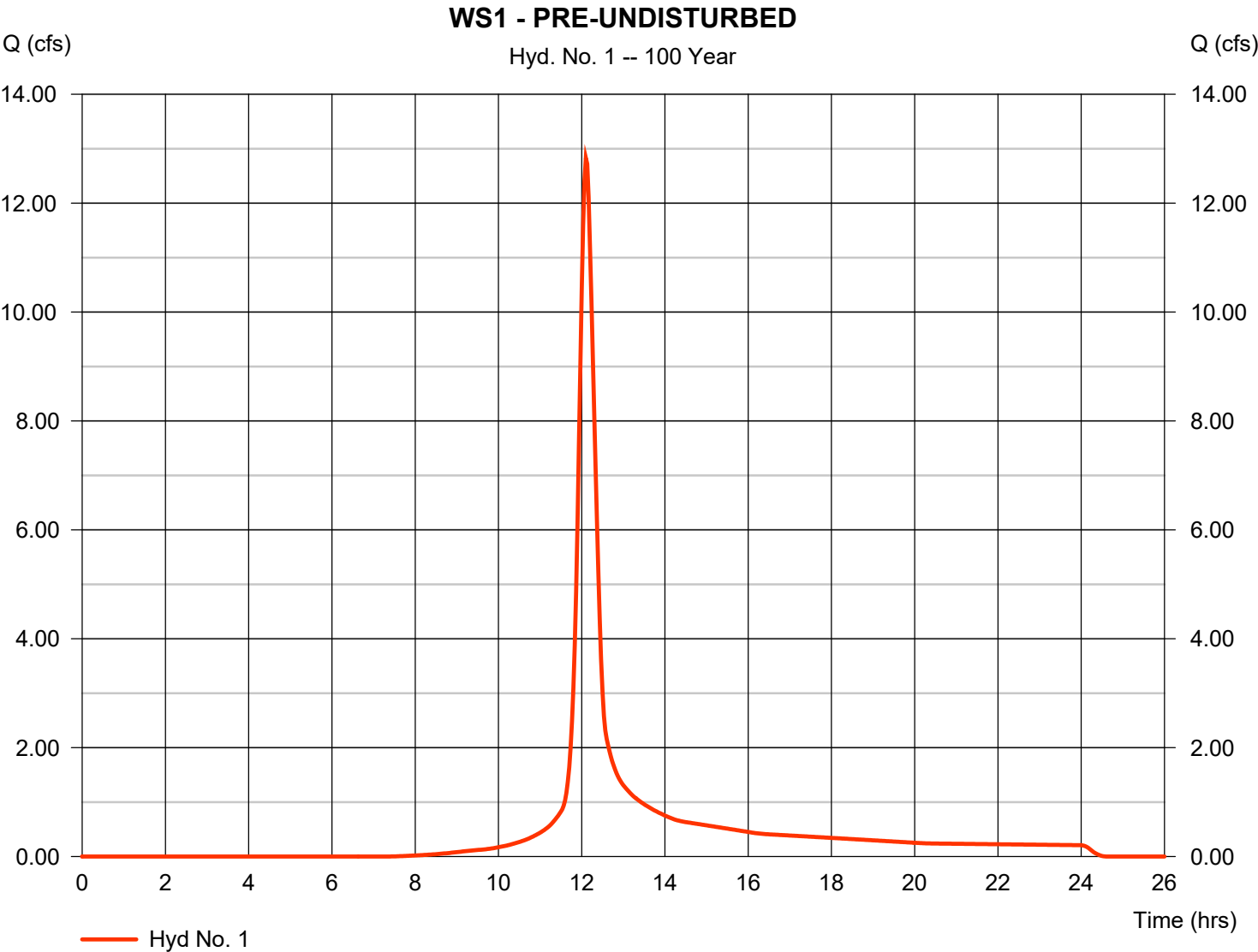
Hyd No. 1

Hydrograph Report

Hyd. No. 2

WS1 - PRE-DISTURBED

Hydrograph type	= SCS Runoff		Peak discharge	= 2.919 cfs
Storm frequency	= 100 yrs		Time to peak	= 12.10 hrs
Time interval	= 2 min		Hyd. volume	= 10,112 cuft
Drainage area	= 0.700 ac		Curve number	= 68
Basin Slope	= 0.0 %		Hydraulic length	= 0 ft
Tc method	= User		Time of conc. (Tc)	= 22.30 min
Total precip.	= 7.61 in		Distribution	= Type II
Storm duration	= 24 hrs		Shape factor	= 484

WS1 - PRE-DISTURBED

Hyd. No. 2 -- 100 Year

Q (cfs)   Q (cfs)

—— Hyd No. 2

Time (hrs)
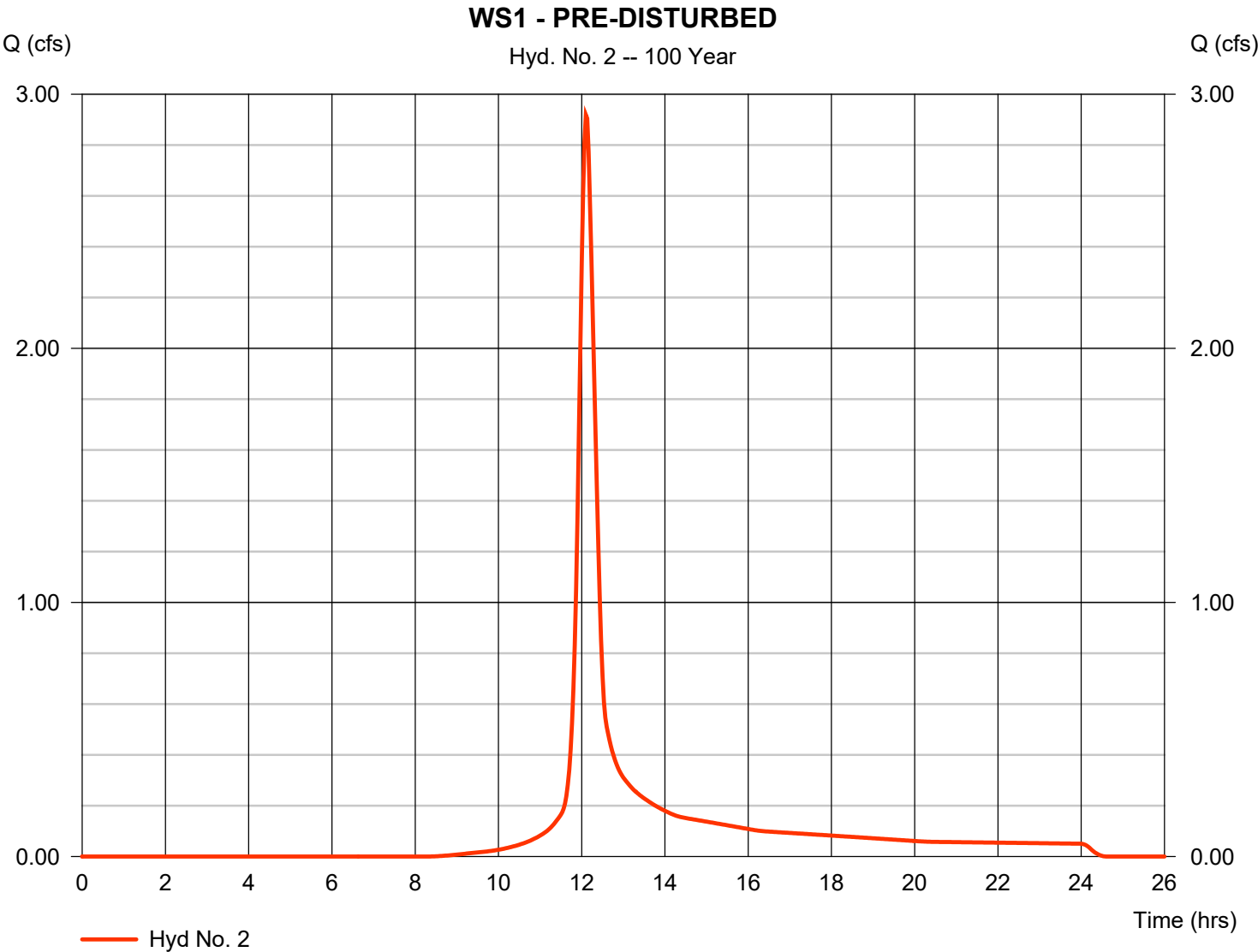
Hydrograph Report

Wednesday, 01 / 10 / 2024

Hyd. No. 4

WS1 - POST BYPASS

Hydrograph type	= SCS Runoff		Peak discharge	= 13.10 cfs
Storm frequency	= 100 yrs		Time to peak	= 12.10 hrs
Time interval	= 2 min		Hyd. volume	= 45,229 cuft
Drainage area	= 2.790 ac		Curve number	= 72.3
Basin Slope	= 0.0 %		Hydraulic length	= 0 ft
Tc method	= User		Time of conc. (Tc)	= 22.30 min
Total precip.	= 7.61 in		Distribution	= Type II
Storm duration	= 24 hrs		Shape factor	= 484

WS1 - POST BYPASS

Hyd. No. 4 -- 100 Year
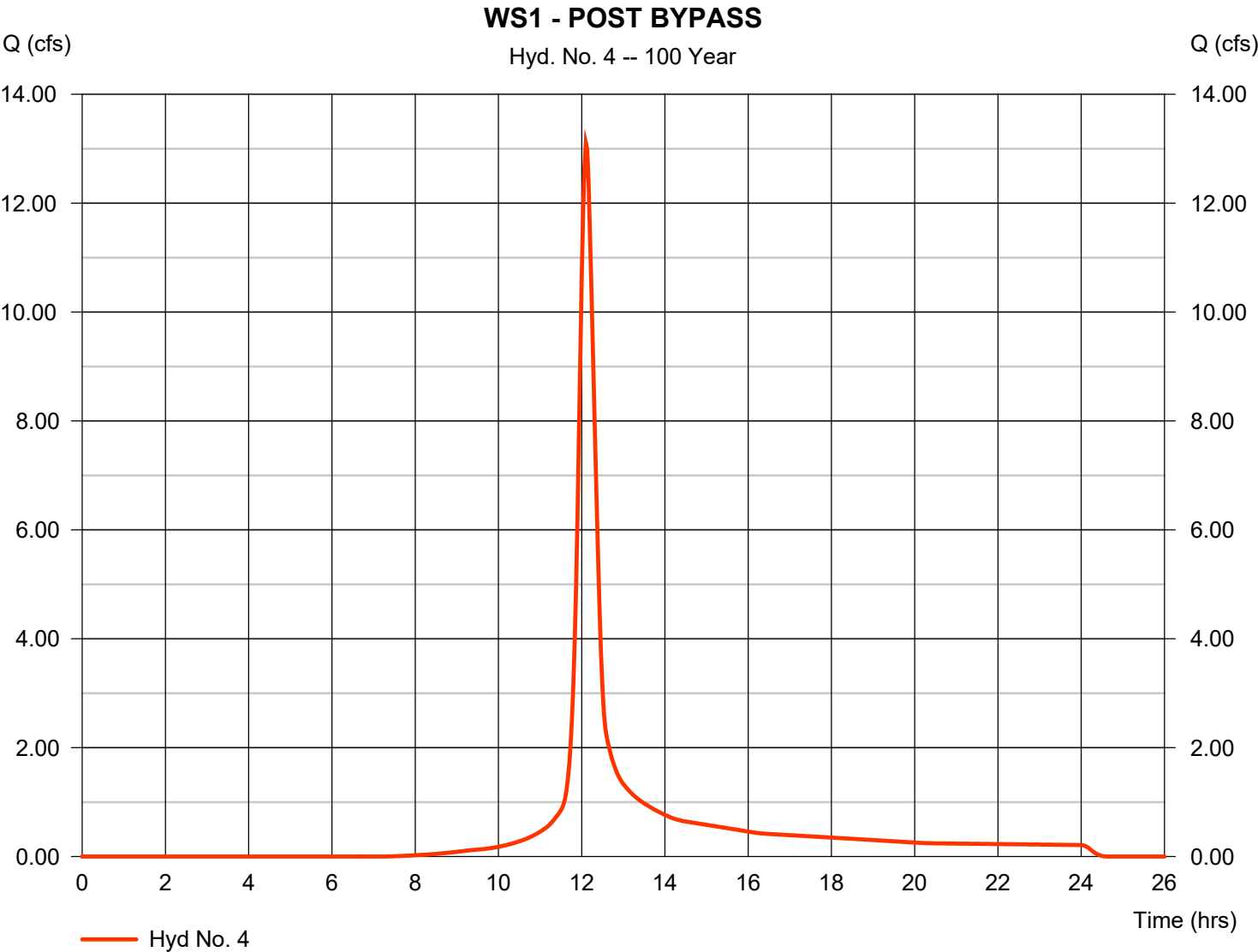
Hyd No. 4

Hydrograph Report

Hyd. No. 6

BMP 1 CAPTURED

Hydrograph type	= SCS Runoff		Peak discharge	= 3.845 cfs
Storm frequency	= 100 yrs		Time to peak	= 12.07 hrs
Time interval	= 2 min		Hyd. volume	= 12,062 cuft
Drainage area	= 0.690 ac		Curve number	= 76.1
Basin Slope	= 0.0 %		Hydraulic length	= 0 ft
Tc method	= User		Time of conc. (Tc)	= 19.60 min
Total precip.	= 7.61 in		Distribution	= Type II
Storm duration	= 24 hrs		Shape factor	= 484

BMP 1 CAPTURED

Hyd. No. 6 -- 100 Year
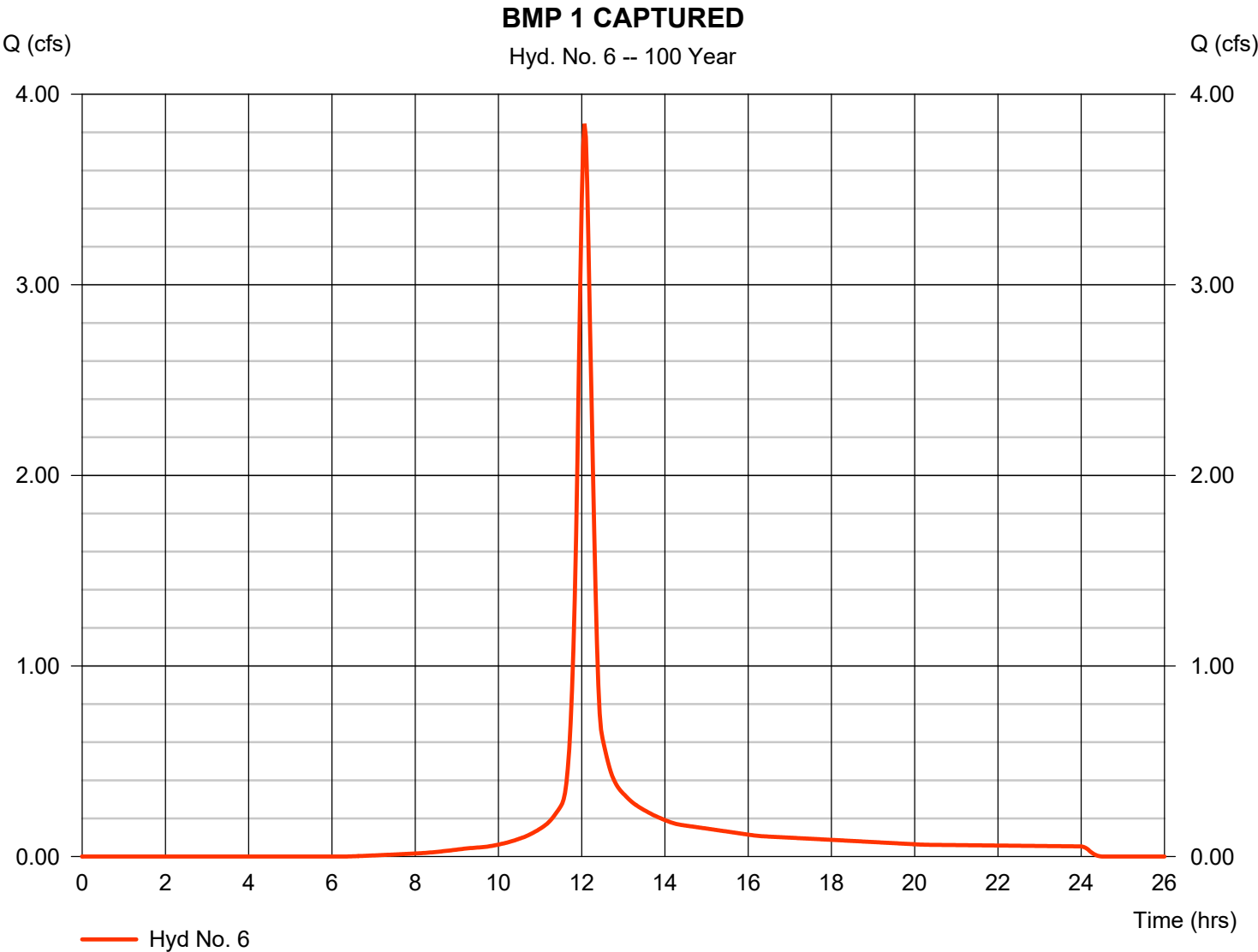
Hyd No. 6

Hydrograph Report

Hyd. No. 7

BMP 1 ROUTED

Hydrograph type	= Reservoir		Peak discharge	= 1.184 cfs
Storm frequency	= 100 yrs		Time to peak	= 12.33 hrs
Time interval	= 2 min		Hyd. volume	= 4,178 cuft
Inflow hyd. No.	= 6 - BMP 1 CAPTURED		Max. Elevation	= 475.45 ft
Reservoir name	= BMP 1		Max. Storage	= 4,056 cuft

Storage Indication method used. Exfiltration extracted from Outflow.
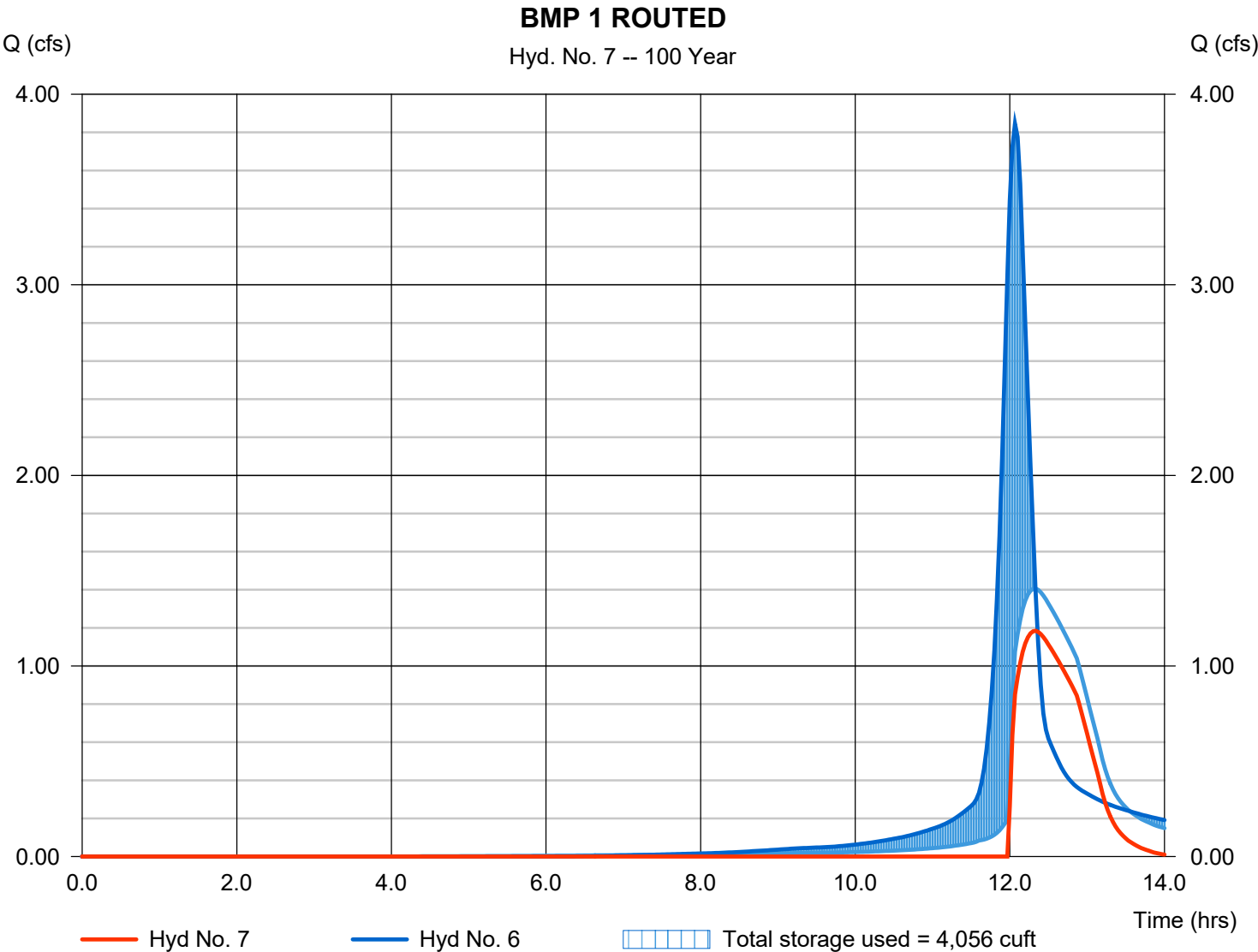
BMP 1 ROUTED

Hyd. No. 7 -- 100 Year

Hydrograph Report

Wednesday, 01 / 10 / 2024

Hyd. No. 9

BMP 2 CAPTURED

Hydrograph type	= SCS Runoff	Peak discharge	= 1.507 cfs
Storm frequency	= 100 yrs	Time to peak	= 11.93 hrs
Time interval	= 2 min	Hyd. volume	= 3,242 cuft
Drainage area	= 0.160 ac	Curve number	= 86
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 6.00 min
Total precip.	= 7.61 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

BMP 2 CAPTURED

Hyd. No. 9 -- 100 Year
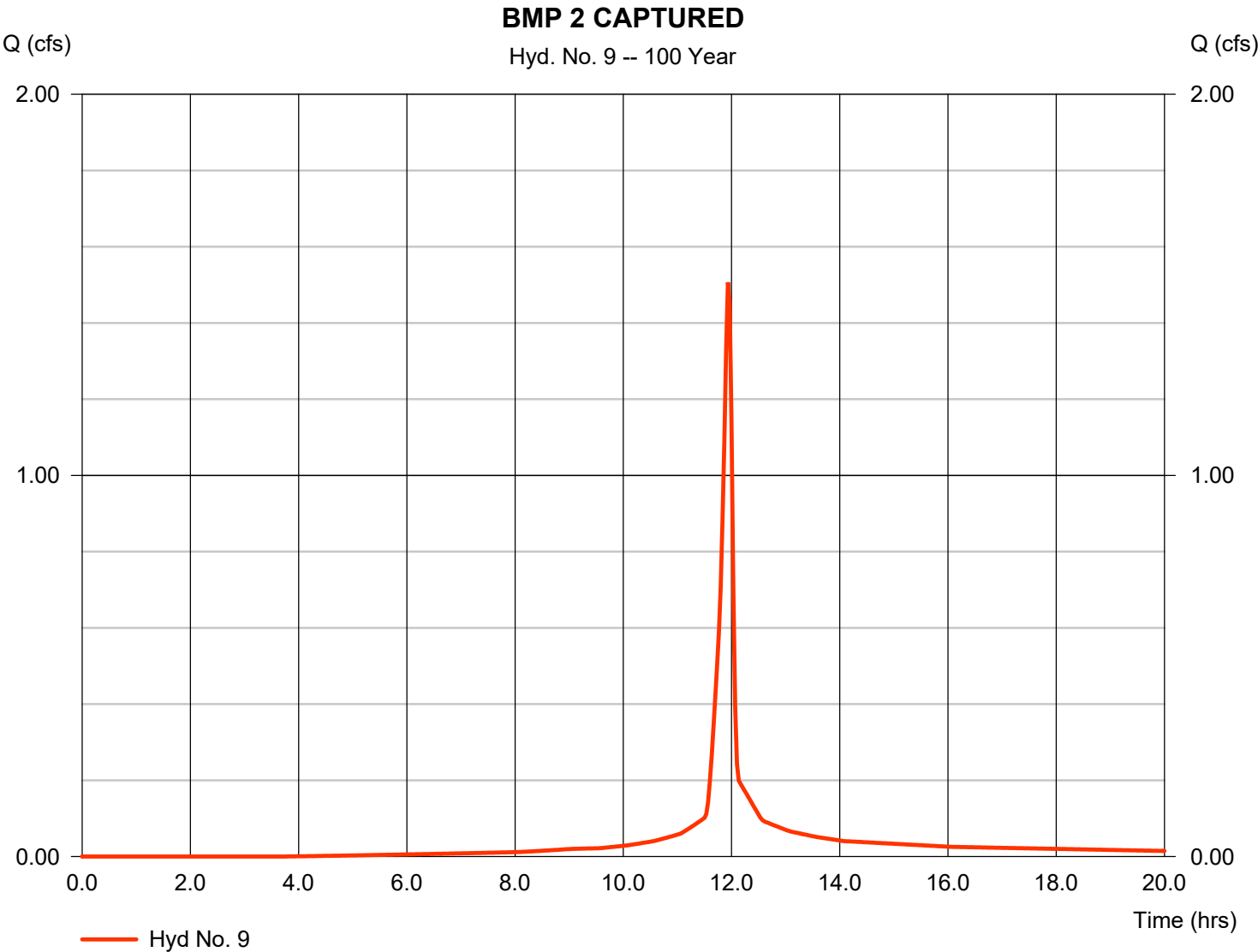
Hyd No. 9

Hydrograph Report

Hyd. No. 10

BMP 2 ROUTED

Hydrograph type	= Reservoir	Peak discharge	= 0.000 cfs
Storm frequency	= 100 yrs	Time to peak	= 11.13 hrs
Time interval	= 2 min	Hyd. volume	= 0 cuft
Inflow hyd. No.	= 9 - BMP 2 CAPTURED	Max. Elevation	= 471.48 ft
Reservoir name	= BMP 2	Max. Storage	= 1,251 cuft

Storage Indication method used. Exfiltration extracted from Outflow.
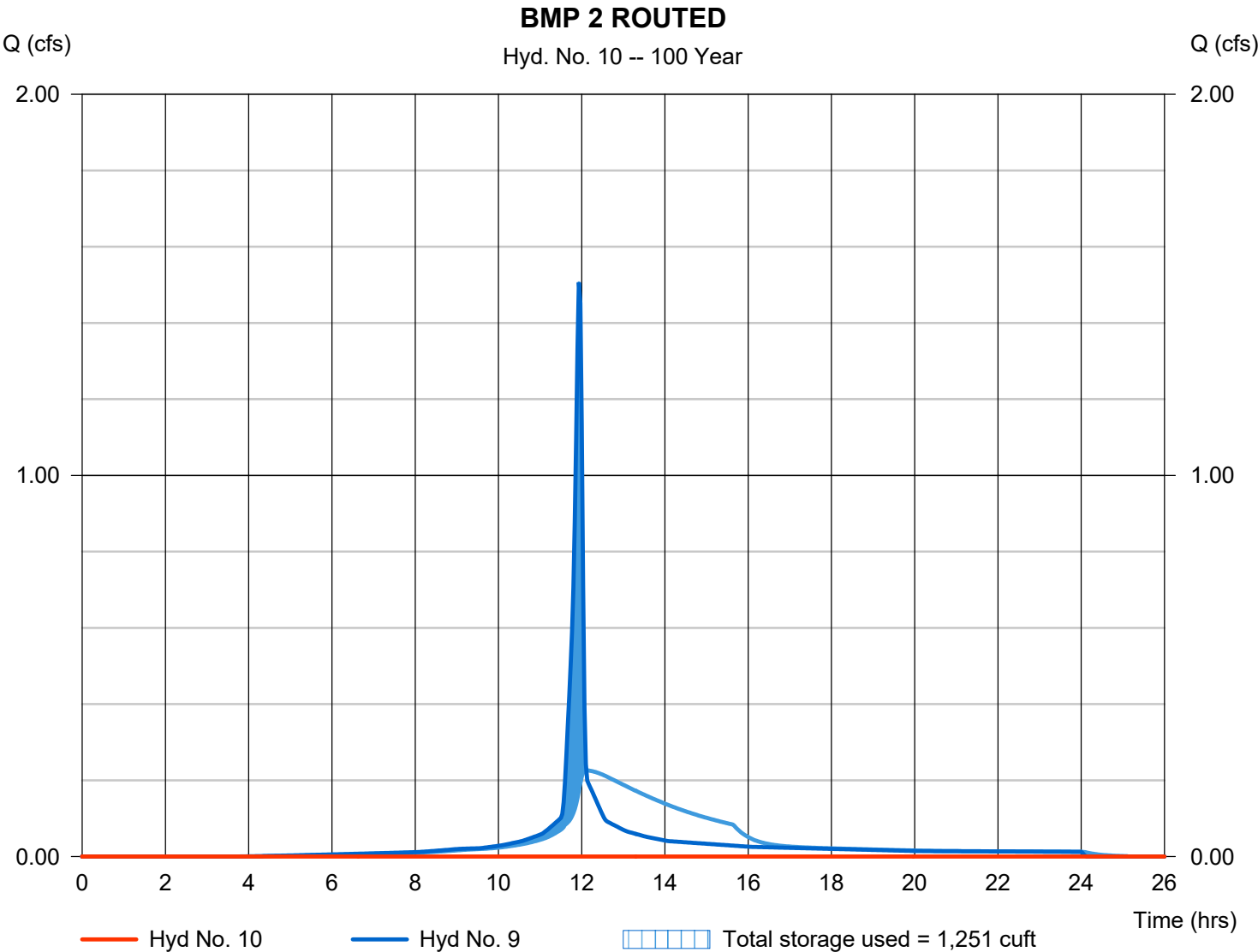
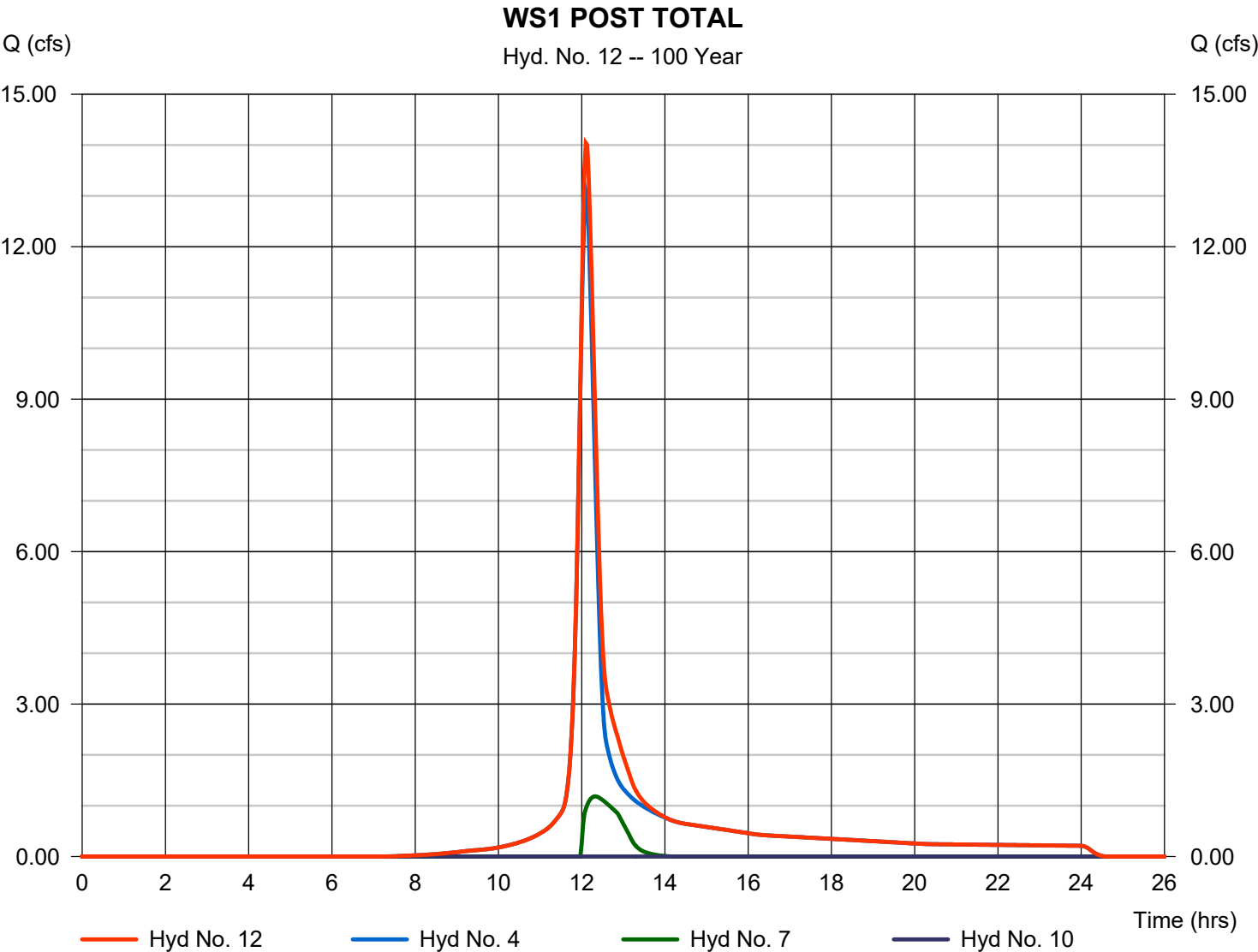**BMP 2 ROUTED**

Hyd. No. 10 -- 100 Year

Hydrograph Report

Hyd. No. 12

WS1 POST TOTAL

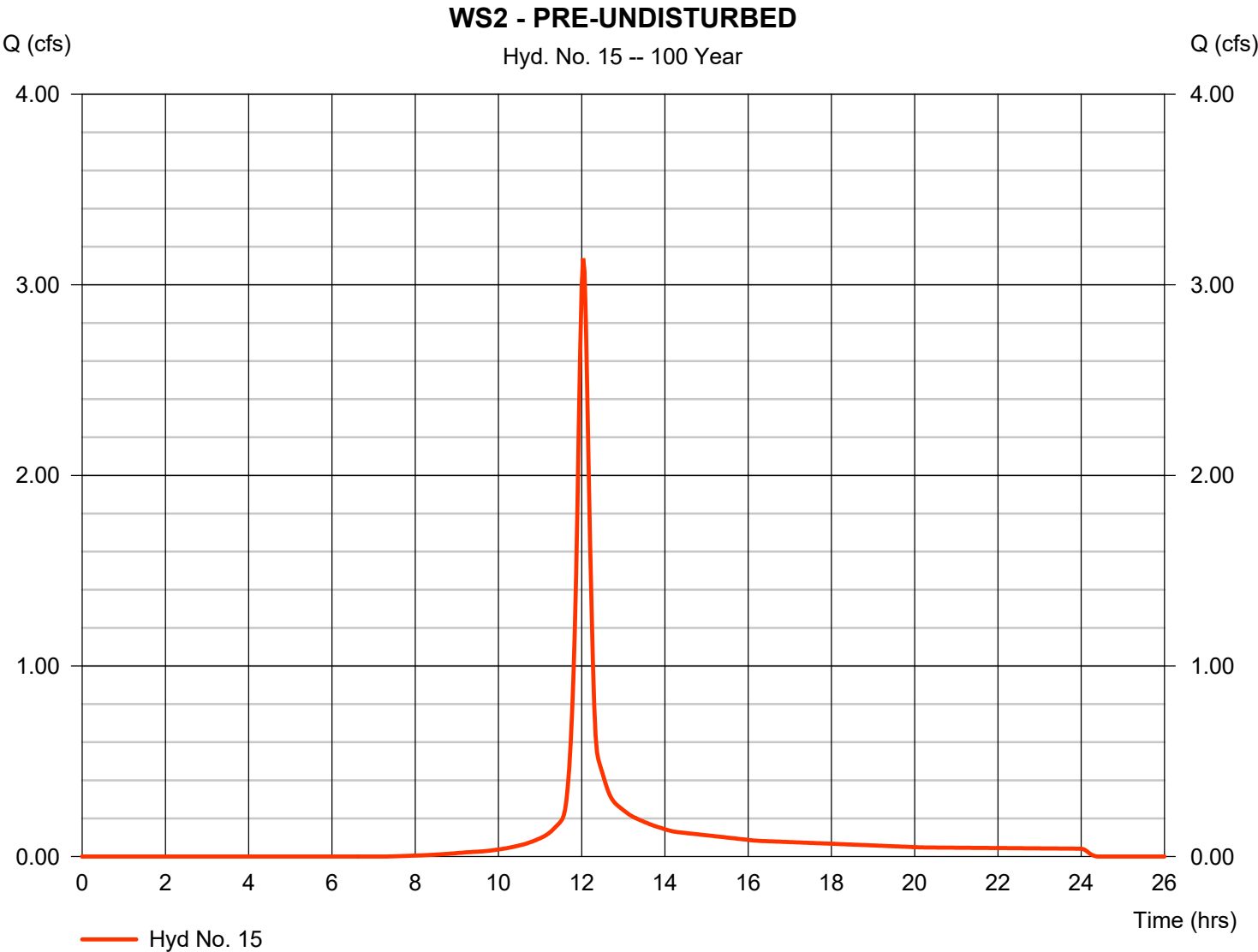|			
Hydrograph type	= Combine	Peak discharge	= 14.04 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.10 hrs
Time interval	= 2 min	Hyd. volume	= 49,407 cuft
Inflow hyds.	= 4, 7, 10	Contrib. drain. area	= 2.790 ac

WS1 POST TOTAL

Hyd. No. 12 -- 100 Year

Legend: Hyd No. 12 — Hyd No. 4 — Hyd No. 7 — Hyd No. 10

Hydrograph Report

Hyd. No. 15

WS2 - PRE-UNDISTURBED

Hydrograph type	= SCS Runoff	Peak discharge	= 3.139 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.03 hrs
Time interval	= 2 min	Hyd. volume	= 8,806 cuft
Drainage area	= 0.570 ac	Curve number	= 72.1
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 13.50 min
Total precip.	= 7.61 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

WS2 - PRE-UNDISTURBED

Hyd. No. 15 -- 100 Year

Hyd No. 15

Hydrograph Report

Wednesday, 01 / 10 / 2024

Hyd. No. 16

WS2 - PRE-DISTURBED

Hydrograph type	= SCS Runoff	Peak discharge	= 1.285 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.03 hrs
Time interval	= 2 min	Hyd. volume	= 3,604 cuft
Drainage area	= 0.240 ac	Curve number	= 71
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 13.50 min
Total precip.	= 7.61 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

WS2 - PRE-DISTURBED

Hyd. No. 16 -- 100 Year

— Hyd No. 16

Hydrograph Report

Wednesday, 01 / 10 / 2024
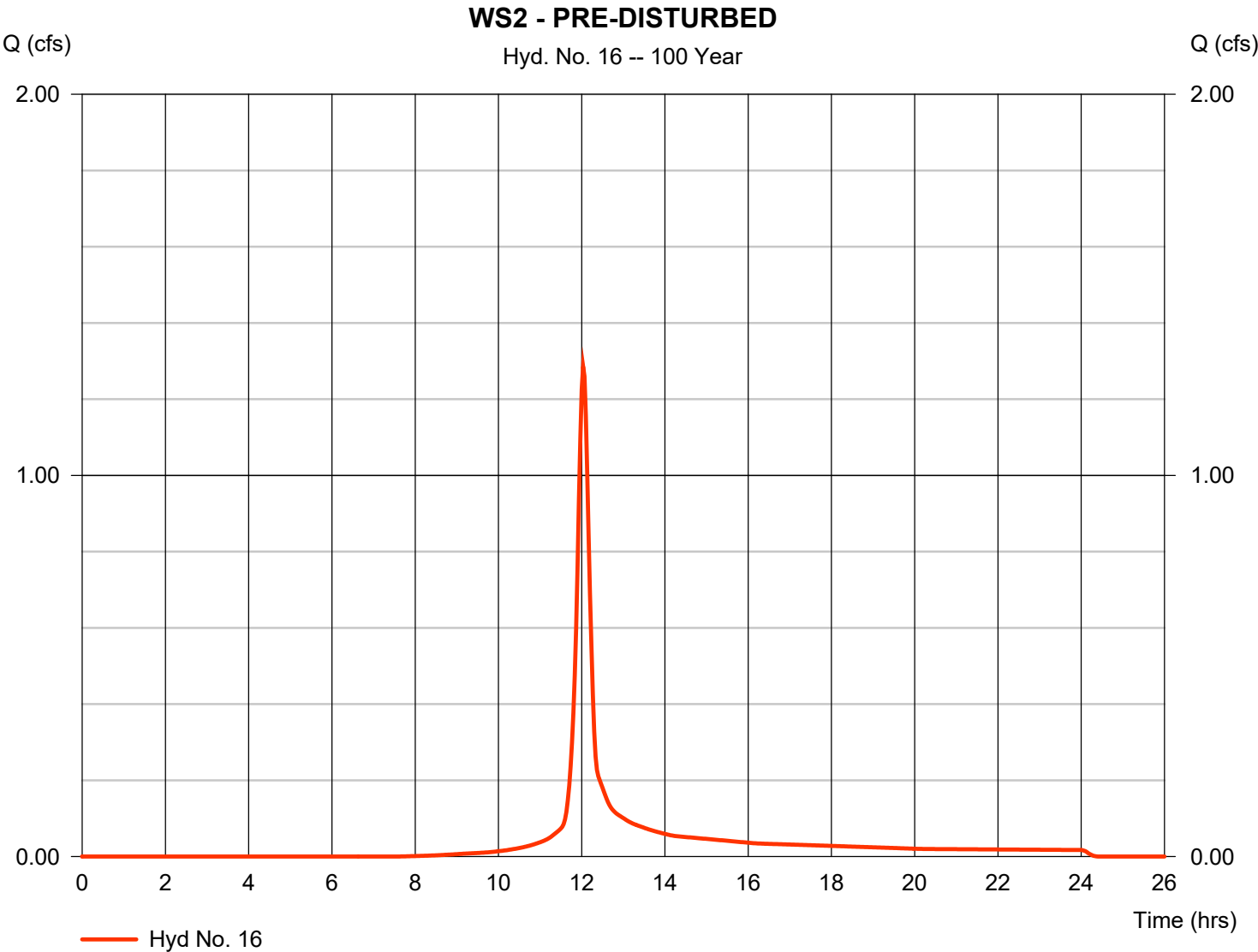
Hyd. No. 18

WS2 - POST BYPASS

Hydrograph type	= SCS Runoff		Peak discharge	= 3.435 cfs
Storm frequency	= 100 yrs		Time to peak	= 12.03 hrs
Time interval	= 2 min		Hyd. volume	= 9,642 cuft
Drainage area	= 0.610 ac		Curve number	= 73
Basin Slope	= 0.0 %		Hydraulic length	= 0 ft
Tc method	= User		Time of conc. (Tc)	= 13.50 min
Total precip.	= 7.61 in		Distribution	= Type II
Storm duration	= 24 hrs		Shape factor	= 484

WS2 - POST BYPASS
Hyd. No. 18 -- 100 Year

Hyd No. 18