

Franklin Gateway Development, LLC

Franklin Gateway Development – Lot 1
Franklin, IN

Site Drainage Report

July 11, 2018

Independent
Land
Surveying

414 South Main Street
Brownstown, IN 47220

Phone: 812-358-2882 – Fax: 812-358-2605

Franklin Gateway Development, LLC
Franklin Gateway Development – Lot 1
Franklin, IN

Site Drainage Report
July 11, 2018

Table of Contents

Appendices: 2

Professional Certification..... 3

Project Site Map..... 4

Introduction 4

Pre-Construction Site Conditions..... 4

Proposed Site Conditions..... 5

Design Requirements..... 6

Drainage Modeling Methodology..... 7

Culverts & Pipes 8

Pre-Development vs. Post Development Results 9

Water Quality..... 10

Conclusion..... 11

Appendices:

Appendix A – Site Drainage Basin Drawings

Appendix B – Rainfall Data

Appendix C – NRCS Soil Reports

Appendix D – ADS StormTech SC-310 Data

Appendix E – Hydraflow Hydrographs 1 Hour Storm Data

Appendix F – Hydraflow Hydrographs 2 Hour Storm Data

Appendix G – Hydraflow Hydrographs 3 Hour Storm Data

Appendix H – Hydraflow Hydrographs 6 Hour Storm Data

Appendix I – Hydraflow Hydrographs 12 Hour Storm Data

Appendix J – Hydraflow Hydrographs 24 Hour Storm Data

Appendix K – Hydraflow Hydrographs Water Quality Storm Data

Appendix L – Outlet Control Emergency Weir Capacity Data

Franklin Gateway Development, LLC

Franklin Gateway Development – Lot 1

Franklin, IN

Professional Certification

Site Drainage Report

July 11, 2018

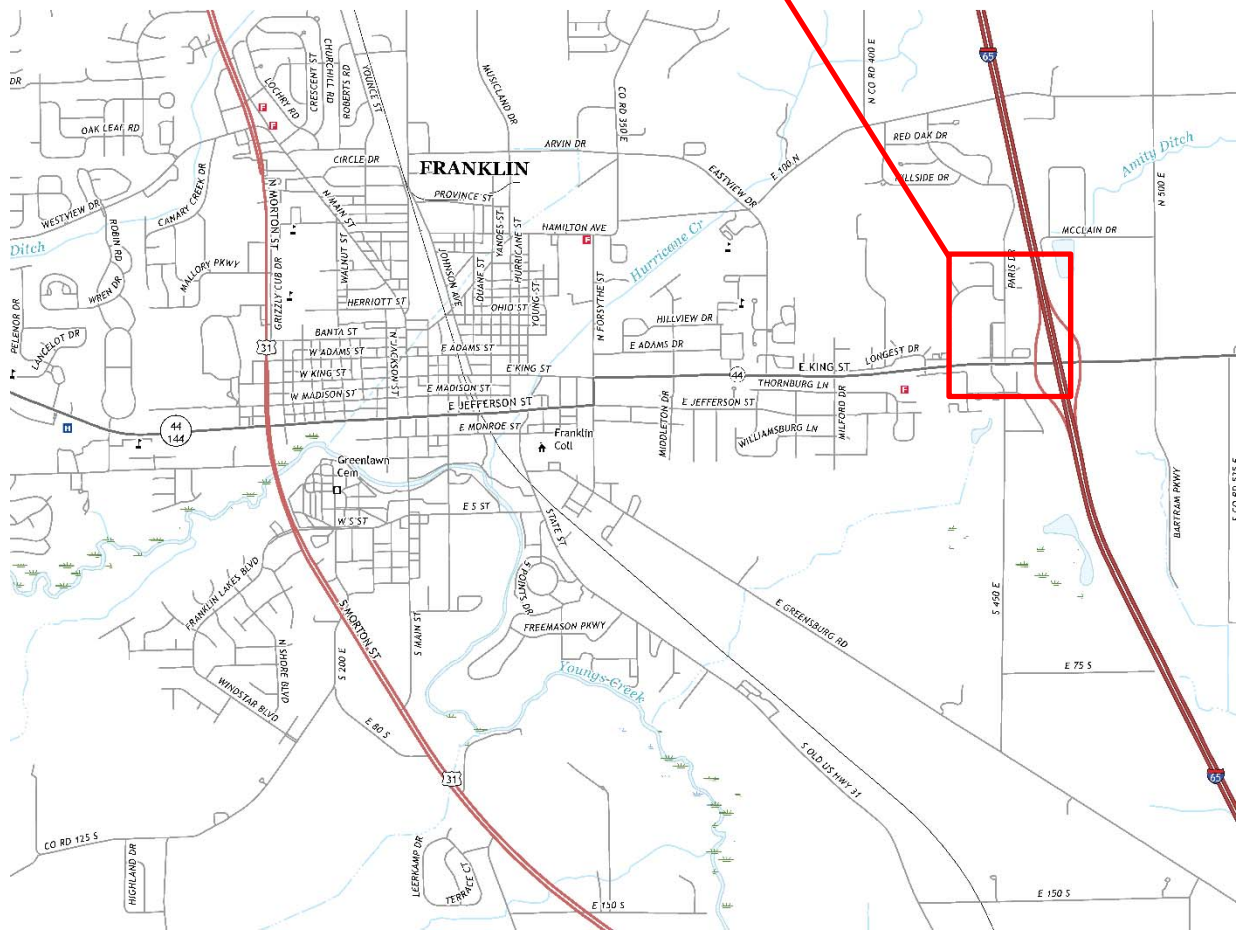


A handwritten signature in black ink, appearing to read "James C. Leinart", written over a horizontal line.

James C. Leinart, P.E.
Indiana P.E. No. 10707550

The drainage design and calculations included in this report have been performed by me or under my direction or supervision.

Project Location



Franklin Gateway Development, LLC is to replatting approximately 13 acres of ground located north of East King ST (SR 44), between Paris DR and Interstate 65. There are five existing parcels that are being replatted to eight lots. Lot One will be located along the north end of the existing parcels. The improvements scheduled for this lot include private ditches, sanitary, storm and other utilities to allow access and infrastructure to serve a proposed hotel. This lot will be required to meet the City of Franklin's General Drainage Detention Standards as a central detention basin has not been constructed for this development.

This site is not located in the floodplain as shown on FEM's WMS server. At one time, the existing site was a hotel that has since had the buildings that contained the rooms demolished. One building remains that is currently being used for a retail business. In addition, the drives and parking areas remain. The area north of the existing drives and parking area is undeveloped. Lot One is located north of the previously developed area. The stormwater from

the pre-development condition of this lot drains via overland flow to the northeast corner of the property. This site is in the Amity Watershed and all runoff from this site makes it way to Big Blue River via the Amity Open Drain.

Proposed Site Conditions

The proposed construction on this site will include the following improvements:

- A new 19,000 FT² hotel will be constructed on this lot.
- Paved access drives, curbs and parking areas will connect the proposed building to the existing improvements adjoining the lot.
- The proposed drainage system will consist of inlets to catch surface water and a stormwater piping system to convey the stormwater to an underground detention system. In addition, the building downspout drains will be connected to the stormwater system via underground piping.
- A preliminary site drainage report was prepared for this property to support the preliminary plat submission. Since a centralized detention basin was not designed for this development, each lot will be required to provide its own stormwater system to meet the City of Franklin's drainage standards. That report determined the pre-development runoff rates for the entire property and then pro-rated the rates based on lot size. The allowable runoff rates established for Lot One are 0.44 CFS (2 YR pre-development rate) for the 10 YR post development event and 1.21 CFS (10 YR pre-development rate) for the 100 YR post development event.
- StormTech SC-310 chambers manufactured by ADS will be utilized for underground stormwater detention. These chambers and the surrounding backfill will provide the required storage to allow for the outlet control structure to limit the discharge to the allowable limits.
- The outlet control structure will be a 60" diameter precast concrete manhole with a custom fabricated weir wall formed inside the manhole. There will be two 5" orifices installed in the weir wall to control the release rate of water. The first 5" orifice will have its invert at 639.60' to match the bottom of the chamber elevation. The second 5" orifice will have its invert at 740.50'. In addition, the elevation of the top of the weir wall will be set at 741.25' and will allow for 1.25 times the peak runoff caused by the 100 YR event. The outlet pipe from the outlet control structure to the outlet point will also be sized to accommodate this increased rate.
- The existing swale along the north property contains two sections of concrete swale and the west swale is not concrete. Since the existing slopes of these swales is less than one

percent, these swales will be brought up to the current City of Franklin requirements of using a minimum of three feet wide section of concrete in the flowline of the swale.

- Lot One will be designed to drain to the northeast to match the pre-developed condition and will outlet directly to the ditch on the north property line. Due to the proximity of the outfall location of outlet pipe for this detention system to the outfall location for the detention systems for lots 2, 7 & 8, a $D_{50} = 12$ rip rap apron will be installed to dissipate the energy before the stormwater leaves the site.

Design Requirements

The site will be designed to comply with the stormwater design standards for the City of Franklin. Highlights of the standards are as follows:

- Runoff Rates:
 - Post development runoff rate for the 10YR storm event shall be less than or equal to the pre-development rate for a 2YR storm event.
 - Post development runoff rate for the 100YR storm event shall be less than or equal to the pre-development rate for a 10YR storm event.
 - In all subdivisions, the pre-developed runoff rates shall be based on pasture, meadow, brush or woods ground cover types in good hydraulic condition. Any existing farm ground will be based on the pasture cover type, in good hydrologic condition.
- Stormwater Piping:
 - Stormwater piping shall be reinforced concrete pipe, unless approved by the City Engineer.
 - The minimum allowable pipe size shall be 12 inches in diameter.
 - The minimum allowable pipe flow velocity shall be 2.5 feet per second.
 - The maximum velocity shall be 15 feet per second.
- Detention System:
 - All detention design shall conform to the current Soil Conservation Service hydrograph methods for drainage, or an approved equal as determined by the City Engineer. The design of all drainage facilities shall include analysis of all storm durations (1,2,3,6,12, and 24 hours) to determine the critical peak to be used.
- Street Drainage:
 - Storm drainage systems shall be designed to prevent the overtopping of curbs by a 10-year storm. Inlets placed in a low area shall be sized to accept a 10-year storm volume with 50% of the inlet clogged and no greater than 6 inches of water pooling above each inlet.

- Local streets shall have a minimum 12 foot wide section free from water during a 10-year storm.
- Protective gratings shall be placed over all inlets and outlet piping 10 inches or larger.
- Off-street Drainage:
 - Storm swale inlets shall be sized to accept a 10-year storm volume with 50% of the inlet clogged and no greater than 9 inches of water pooling above each inlet.
- Detention Facility Specifications:
 - The developer shall be required to provide a water quality detention system that is designed to detain, for over 24 hours after peak run-off from a 24-hour storm, at least 20% of the run-off from either a 1-1/4 inch storm or 1/2 inch of direct runoff, whichever is greater.
 - Outlet pipes from detention facilities must be discharged into a natural ditch, a defined swale, or a discharge control structure that will eliminate erosion downstream. Outlet pipes shall not be discharged onto an existing tillable field.
 - Emergency spillways shall be capable of handling one and one-quarter times the peak discharge and peak flow velocity resulting from the 100-year design storm event runoff from the entire contributing watershed, assuming post-development conditions, draining to detention/retention facility.

Drainage Modeling Methodology

The pre-project and post construction conditions were modeled with information from the following sources:

- Site information was collected from a pre-construction site survey, the NRCS Soil Survey for Johnson County, the Bulletin 71 rainfall data and the preliminary plans.
- The drainage areas were delineated and measured using the existing site survey and aerial imagery in the computer design program AutoCAD Civil 3D.
- A Custom Soil Resource Report for Johnson County, Indiana was obtained to determine the NRCS soil classifications.
- The information was input into the stormwater runoff model Hydraflow Hydrographs. This program was used to model the site to calculate both pre-development and post development discharge rates. This program also routes the discharge through a model of the site to determine flow rates for pipes and detention design.
- The pipes full flow capacities were calculated to check for flow capacity and full flow velocity.

Culverts & Pipes

The pipe flows were calculated to show the 10 Year and 100 Year 1 Hour design flows for each pipe as well as the full flow pipe capacity and resulting velocity. The table below shows the results of this modeling.

Pipe	Material	Upstream INV Elevation	Downstream INV Elevation	Length (FT)	Diameter (in)	Pipe Capacity (CFS)	Pipe Full Flow Velocity (FT/SEC)	10 YR 1 Hour Peak Discharge (CFS)	100 YR 1 Hour Peak Discharge (CFS)
300-301	RCP	740.71	740.63	27	12	2.12	2.7	0.38	1.07
301-302	RCP	740.63	740.58	17	12	2.08	2.65	1.09	1.90
904-905	N-12	740.58	740.12	183	12	2.11	2.69	1.15	2.21
905-906	N-12	740.12	739.73	159	15	3.83	3.12	2.34	4.49
906-Storage	N-12	739.73	739.71	7	15	4.12	3.36	2.90	5.86
900-901	N-12	740.75	740.40	116	12	2.12	2.7	0.78	1.50
901-902	N-12	740.40	739.97	144	15	3.84	3.13	2.00	3.72
902-Storage	N-12	739.97	739.75	90	15	3.44	2.8	3.13	4.20
Outlet Control to Outfall	N-12	739.50	739.30	33	24	19.19	6.11	17.35*	

*1.25 x Peak 100 YR Discharge

This project will also install the first part of a private access road that will eventually connect all of the proposed lots to Paris Drive. In addition to the pipes that are part of the hotel development, a culvert will need to be installed in the existing swale under the access drive being constructed. No existing drainage information was available from the recent upgrades to Paris DR to allow for modeling of the offsite drainage. There are two sets of twin culverts that will feed the culverts that will be installed under the proposed private drive. In order to size the proposed culverts, the existing culverts were analyzed to determine full flow in open channel, as-built conditions. The flow rates were then added together to determine a design flow rate for the proposed culverts. The results of this analysis are in the table below.

Pipe	Material	Upstream INV Elevation	Downstream INV Elevation	Length (FT)	Size	Pipe Capacity (CFS)*	Existing	Pipe Full Flow Velocity (FT/SEC)
323	RCP	741.34	741.20	94	19x30 Elliptical	9.76	N/A	2.96
310	RCP	740.83	740.72	80	14x23 Elliptical	4.34	N/A	2.41
303-304	RCP	740.7	740.59	44	22x34 Elliptical	16.95	14.1	4.13

*Capacity is per pipe. Each location has twin pipes.

The inlet grates were also modeled for inlet capacity and ponding depth for the 10 Year 1 Hour storm event to verify that they meet the required 9" maximum ponding depth. The table below shows the result of that modeling:

Structure Number	Casting Manufacturer	Model	10 YR 1 HR Peak Discharge	Maximum Depth (IN)*
300	Neenah	3501-TR	0.61	2.4
301	Neenah	3508-TL	0.47	2.0
900	Neenah	1878-A6G	0.78	1.8
901	Neenah	1878-A6G	1.22	2.5
902	Neenah	1878-A6G	1.13	2.4
903	Neenah	3067-VB	0.78	2.4
904	Neenah	1878-A6G	1.15	2.4
905	Neenah	1878-A6G	1.19	2.4
906	Neenah	1878-A6G	0.56	1.5
907	Neenah	1878-A6G	0.55	1.5

**The inlet capacities above were calculated allowing for half of the inlet to be blocked by debris.*

The gutter spread at each inlet was calculated to verify that a 12' travel lane will be maintained. The table below shows the results.

Structure	Calculated Flow at Maximum Allowable Spread (CFS)	10 YR Design Flow (CFS)
300	2.054	0.61
301	2.054	0.47

Pre-Development vs. Post Development Results

The table below compares the pre-development peak flows to the post development flow after routing the post development flows through the detention system. For the City of Franklin's requirements, the detention pond flow was calculated for the 1 Hour, 2 Hour, 3 Hour, 6 Hour, 12 Hour and 24 Hour duration storms for both the 10 Year and 100 Year Storm Events.

Design Storm Event	2 YR Pre-Development Flow (CFS)*	10 YR Post Development Flow (CFS)	Detention System Outflow (CFS)	Max Storage Elevation
10 Year Huff Storm				
1 Hour	0.44	7.32	0.28	740.03
2 Hour	0.44	4.42	0.23	739.96
3 Hour	0.44	4.73	0.39	740.23
6 Hour	0.44	2.95	0.39	740.23
12 Hour	0.44	1.30	0.41	740.28
24 Hour	0.44	0.82	0.40	740.24
100 Year Huff Storm	10 YR Pre-Development Flow (CFS)*	100 YR Post Development Flow (CFS)	Detention System Outflow (CFS)	Max Storage Elevation
1 Hour	1.21	13.88	0.92	740.93
2 Hour	1.21	8.26	0.62	740.66
3 Hour	1.21	8.30	1.15	741.21
6 Hour	1.21	5.02	1.08	741.12
12 Hour	1.21	2.13	1.12	741.17
24 Hour	1.21	1.34	0.93	740.93

*Allowable rates taken from the preliminary site drainage report that was prepared for this property to support the preliminary plat submission.

Water Quality

In order to comply with the water quality aspects of the drainage standards, an 18" thick stone layer will be installed below the StormTech chambers. The amount of drawdown time is shown in the table below. This time will commence after all of the storm runoff has left the underground detention, not after the peak.

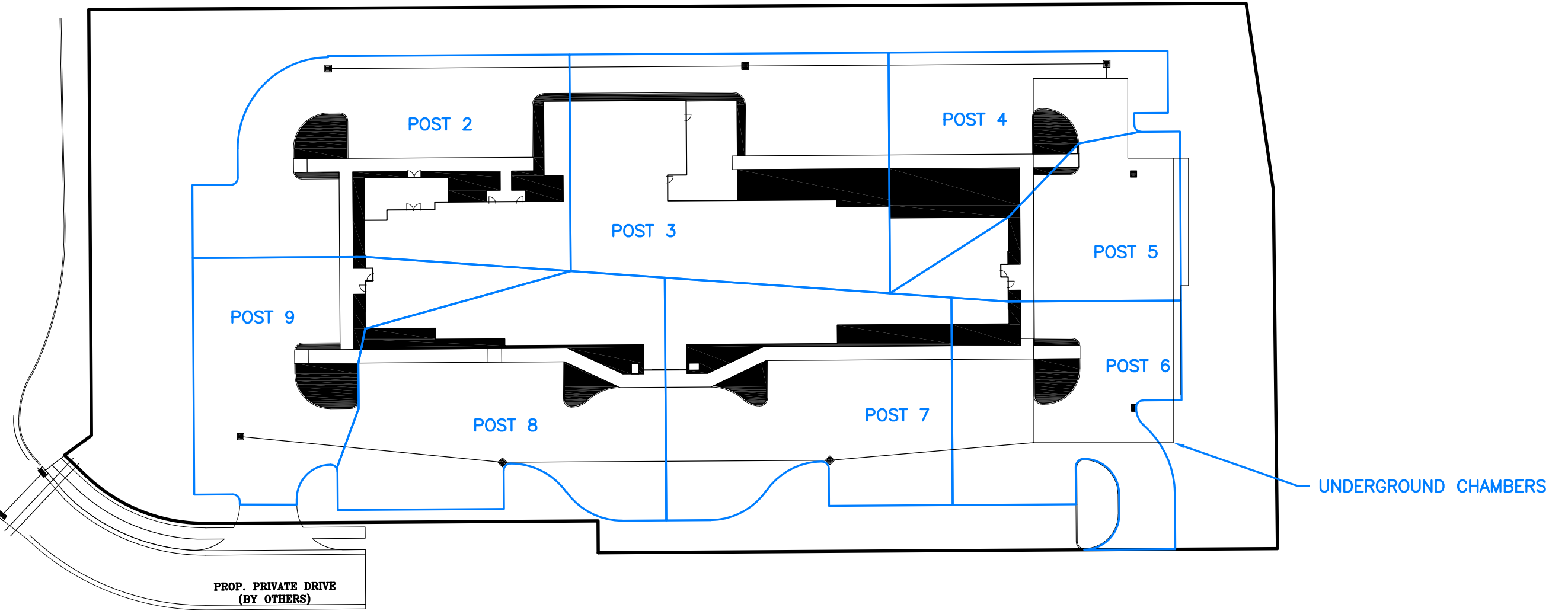
Water Quality								
Lot Number	Area (AC)	0.5" Direct Runoff	Volume from 0.5" Runoff (FT^3)	Volume from 1.25" Storm (FT^3)	Largest Volume (FT^3)	20% of Largest Volume (FT^3)	Volume Detained (FT^3)	Drawdown Time (HRS)
Lot 1	2.92	0.5	5299.8	5914	5914	1182.8	14509.5	90.0

Conclusion

The computer modeling of this site shows that the increased stormwater runoff from the proposed development of this site can be effectively handled by the proposed drainage system. The site drainage system will reduce the post development flows to match those required by section 6.19 - General Drainage Standards in the City of Franklin's Subdivision Control Ordinance. In addition, the proposed drainage system will comply with the water quality standards by detaining the required volume of water for more than a 24 hour period. This system modeling shows that the site drainage system will reduce the post development peak runoff from this site to the Amity Watershed and the Big Blue River.

Appendix A

Site Drainage Basin Drawings



**FRANKLIN GATEWAY
DEVELOPMENT
LOT 1**

**POST DEVELOPMENT
DRAINAGE AREAS**

SHEET: 1 OF 1	JOB NUMBER: 17174	
SCALE: N.T.S.	DWG REVISION DATES	
DRAWN BY: CL	-	-
DWG DATE: 07/11/18	-	-
DWG NAME: 17174 SPRAGUE BASE.dwg		

Independent
Land
Surveying

www.ilsurveying.com

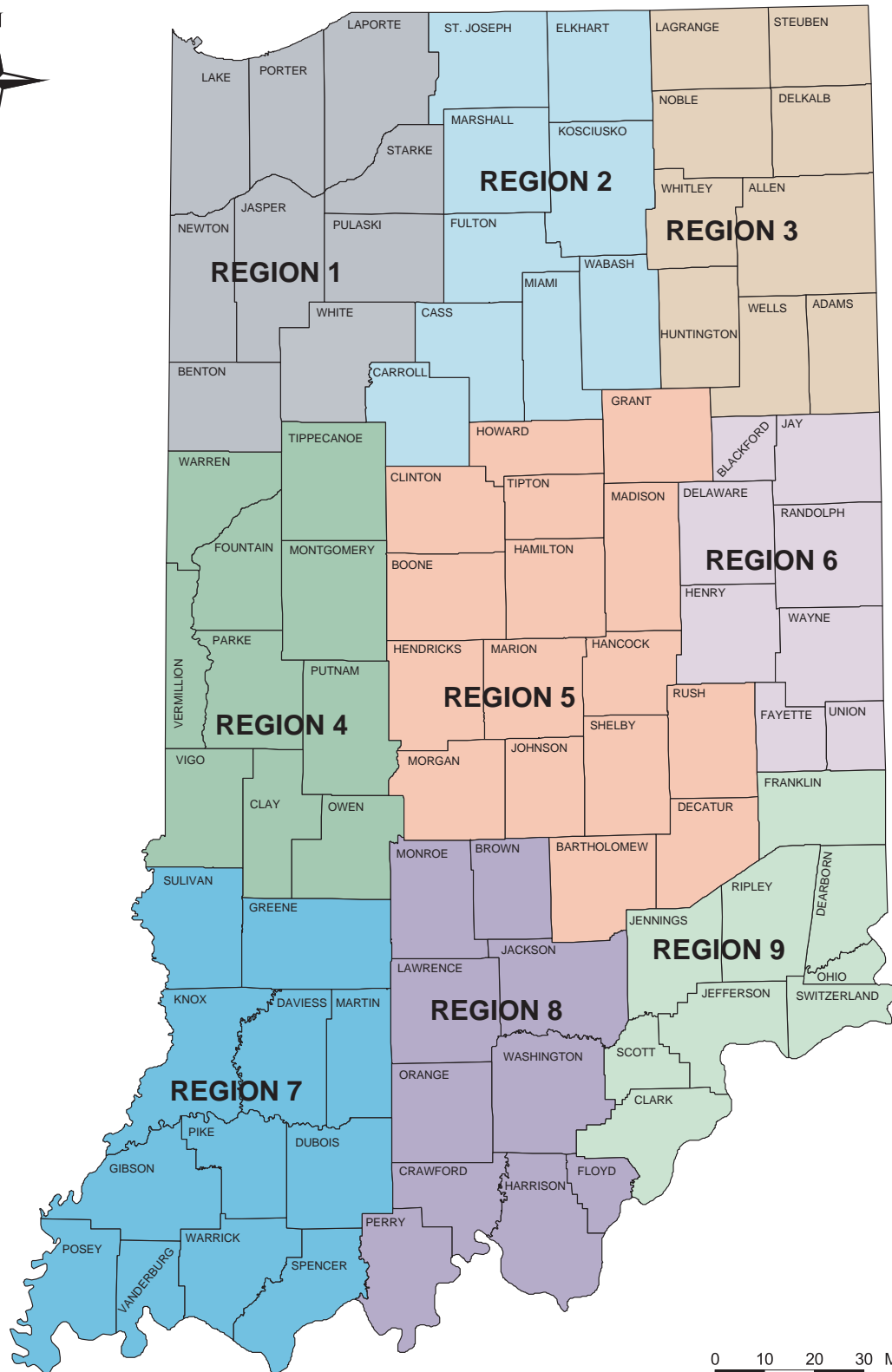
414 South Main Street
Brownstown, Indiana 47220
Phone: 812-358-2882
Fax: 812-358-2605

3640 Commerce Drive
Columbus, Indiana 47201
Phone: 812-372-0996
Fax: 812-372-0996

Appendix B

Rainfall Data

HUFF CLIMATIC REGIONS FOR INDIANA



RAINFALL FREQUENCY ATLAS OF THE MIDWEST -- BULLETIN 71

Sectional Mean Frequency Distributions for Storm Periods of 5 Minutes to 10 Days and Recurrence Intervals of 2 Months to 100 Years in Indiana

Rainfall (inches) for given recurrence interval

<u>Section</u>	<u>Duration</u>	<u>2-Month</u>	<u>3-Month</u>	<u>4-Month</u>	<u>6-Month</u>	<u>9-Month</u>	<u>1-year</u>	<u>2-year</u>	<u>5-year</u>	<u>10-year</u>	<u>25-year</u>	<u>50-year</u>	<u>100-year</u>
5	10-day	2.13	2.56	2.95	3.47	3.99	4.34	5.06	6.07	6.96	8.36	9.57	10.86
5	5-day	1.73	2.07	2.34	2.71	3.12	3.39	3.97	4.86	5.66	6.91	8.07	9.44
5	72-hr	1.52	1.79	2.02	2.34	2.70	2.93	3.45	4.27	5.04	6.15	7.17	8.31
5	48-hr	1.42	1.66	1.85	2.14	2.47	2.68	3.18	3.94	4.63	5.65	6.56	7.55
5	24-hr	1.35	1.57	1.72	1.99	2.26	2.46	2.92	3.64	4.25	5.16	5.95	6.84
5	18-hr	1.27	1.48	1.62	1.87	2.13	2.31	2.74	3.42	3.99	4.85	5.59	6.43
5	12-hr	1.18	1.37	1.50	1.73	1.97	2.14	2.54	3.17	3.70	4.49	5.18	5.95
5	6-hr	1.02	1.18	1.29	1.50	1.70	1.85	2.19	2.73	3.19	3.87	4.46	5.13
5	3-hr	0.86	1.00	1.10	1.27	1.44	1.57	1.87	2.33	2.72	3.30	3.81	4.38
5	2-hr	0.79	0.92	1.00	1.16	1.32	1.43	1.69	2.11	2.46	2.99	3.45	3.97
5	1-hr	0.64	0.74	0.81	0.94	1.07	1.16	1.37	1.71	2.00	2.43	2.80	3.21
5	30-min	0.50	0.58	0.64	0.74	0.84	0.91	1.08	1.35	1.57	1.91	2.20	2.53
5	15-min	0.36	0.42	0.46	0.53	0.61	0.66	0.79	0.98	1.15	1.39	1.61	1.85
5	10-min	0.29	0.33	0.36	0.42	0.48	0.52	0.61	0.76	0.89	1.08	1.25	1.44
5	5-min	0.17	0.19	0.21	0.24	0.28	0.30	0.35	0.44	0.51	0.62	0.71	0.82
6	10-day	2.13	2.57	2.96	3.48	4.00	4.35	5.00	6.00	6.82	8.30	9.55	11.05
6	5-day	1.62	1.93	2.19	2.54	2.92	3.17	3.75	4.68	5.50	6.90	8.20	9.68
6	72-hr	1.45	1.70	1.92	2.22	2.56	2.78	3.30	4.15	4.98	6.06	7.25	8.55
6	48-hr	1.36	1.59	1.77	2.06	2.36	2.57	3.01	3.73	4.40	5.54	6.55	7.70
6	24-hr	1.26	1.47	1.61	1.86	2.21	2.30	2.76	3.37	3.89	4.65	5.29	6.05
6	18-hr	1.19	1.38	1.51	1.75	1.99	2.16	2.59	3.17	3.66	4.37	4.97	5.69
6	12-hr	1.10	1.28	1.40	1.62	1.84	2.00	2.40	2.93	3.38	4.05	4.60	5.26
6	6-hr	0.95	1.10	1.20	1.39	1.58	1.72	2.07	2.53	2.92	3.49	3.97	4.54
6	3-hr	0.81	0.94	1.03	1.19	1.35	1.47	1.77	2.16	2.49	2.98	3.39	3.87
6	2-hr	0.73	0.85	0.93	1.08	1.22	1.33	1.60	1.95	2.26	2.70	3.07	3.51
6	1-hr	0.59	0.69	0.76	0.87	0.99	1.08	1.30	1.58	1.83	2.19	2.49	2.84
6	30-min	0.47	0.54	0.60	0.69	0.78	0.85	1.02	1.25	1.44	1.72	1.96	2.24
6	15-min	0.34	0.40	0.43	0.50	0.57	0.62	0.75	0.91	1.05	1.26	1.43	1.63
6	10-min	0.26	0.31	0.34	0.39	0.44	0.48	0.58	0.71	0.82	0.98	1.11	1.27
6	5-min	0.15	0.18	0.20	0.23	0.26	0.28	0.33	0.40	0.47	0.56	0.63	0.73

Appendix C

NRCS Soil Reports



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 **Johnson County, Indiana**

**Sprague Companies - Franklin
Gateway Development**



May 3, 2018

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.

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, age, disability, and where applicable, sex, marital status, familial status, parental status, religion, sexual orientation, genetic information, political beliefs, reprisal, or because all or a part of an individual's income is derived from any public assistance program. (Not all prohibited bases apply to all programs.) Persons with disabilities who require

alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at (202) 720-2600 (voice and TDD). To file a complaint of discrimination, write to USDA, Director, Office of Civil Rights, 1400 Independence Avenue, S.W., Washington, D.C. 20250-9410 or call (800) 795-3272 (voice) or (202) 720-6382 (TDD). USDA is an equal opportunity provider and employer.

Contents

Preface	2
How Soil Surveys Are Made	5
Soil Map	8
Soil Map.....	9
Legend.....	10
Map Unit Legend.....	11
Map Unit Descriptions.....	11
Johnson County, Indiana.....	13
Br—Brookston silty clay loam, 0 to 2 percent slopes.....	13
CrA—Crosby silt loam, fine-loamy subsoil, 0 to 2 percent slopes.....	14
MnB2—Miami silt loam, 2 to 6 percent slopes, eroded.....	15
References	18

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

Custom Soil Resource Report

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.

Custom Soil Resource Report Soil Map



Custom Soil Resource Report


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 1:15,800.

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: Johnson County, Indiana
Survey Area Data: Version 25, Oct 2, 2017

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

Date(s) aerial images were photographed: Sep 24, 2014—Mar 20, 2017

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

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
Br	Brookston silty clay loam, 0 to 2 percent slopes	3.9	29.7%
CrA	Crosby silt loam, fine-loamy subsoil, 0 to 2 percent slopes	6.3	48.3%
MnB2	Miami silt loam, 2 to 6 percent slopes, eroded	2.9	22.1%
Totals for Area of Interest		13.0	100.0%

Map Unit Descriptions

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.

Johnson County, Indiana

Br—Brookston silty clay loam, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 2t98n
Elevation: 600 to 1,260 feet
Mean annual precipitation: 37 to 46 inches
Mean annual air temperature: 48 to 55 degrees F
Frost-free period: 145 to 180 days
Farmland classification: Prime farmland if drained

Map Unit Composition

Brookston and similar soils: 95 percent
Minor components: 5 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Brookston

Setting

Landform: Depressions, till plains
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Dip
Down-slope shape: Concave, linear
Across-slope shape: Concave
Parent material: Loess over loamy till

Typical profile

Ap - 0 to 16 inches: silty clay loam
Btg1 - 16 to 32 inches: silty clay loam
Btg2 - 32 to 44 inches: loam
C - 44 to 60 inches: loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Poorly drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.60 in/hr)
Depth to water table: About 0 to 12 inches
Frequency of flooding: None
Frequency of ponding: Frequent
Calcium carbonate, maximum in profile: 40 percent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: Moderate (about 8.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: B/D
Hydric soil rating: Yes

Minor Components

Crosby

Percent of map unit: 5 percent
Landform: Till plains
Landform position (two-dimensional): Footslope, summit
Landform position (three-dimensional): Talf
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

CrA—Crosby silt loam, fine-loamy subsoil, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 2thy4
Elevation: 600 to 1,000 feet
Mean annual precipitation: 36 to 44 inches
Mean annual air temperature: 49 to 54 degrees F
Frost-free period: 145 to 180 days
Farmland classification: Prime farmland if drained

Map Unit Composition

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

Description of Crosby

Setting

Landform: Ground moraines, recessional moraines, water-lain moraines
Landform position (two-dimensional): Summit, backslope, footslope
Landform position (three-dimensional): Interfluve, rise
Down-slope shape: Convex, linear
Across-slope shape: Linear, convex
Parent material: Silty material or loess over loamy till

Typical profile

Ap - 0 to 10 inches: silt loam
Btg - 10 to 17 inches: silty clay loam
2Bt - 17 to 29 inches: clay loam
2BCt - 29 to 36 inches: loam
2Cd - 36 to 79 inches: loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: 24 to 40 inches to densic material
Natural drainage class: Somewhat poorly drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Low to moderately high (0.01 to 0.20 in/hr)

Custom Soil Resource Report

Depth to water table: About 6 to 24 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 55 percent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: Moderate (about 6.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: C/D
Hydric soil rating: No

Minor Components

Williamstown, eroded

Percent of map unit: 5 percent
Landform: Ground moraines, recessional moraines, water-lain moraines
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Crest, head slope, nose slope, side slope, rise
Down-slope shape: Convex, linear
Across-slope shape: Linear, convex
Hydric soil rating: No

Treaty, drained

Percent of map unit: 2 percent
Landform: Depressions, swales, water-lain moraines
Landform position (two-dimensional): Toeslope, footslope
Landform position (three-dimensional): Base slope, dip
Down-slope shape: Linear
Across-slope shape: Concave
Hydric soil rating: Yes

MnB2—Miami silt loam, 2 to 6 percent slopes, eroded

Map Unit Setting

National map unit symbol: 2rkb2
Elevation: 180 to 370 feet
Mean annual precipitation: 37 to 46 inches
Mean annual air temperature: 48 to 55 degrees F
Frost-free period: 145 to 180 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Miami, eroded, and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Miami, Eroded

Setting

Landform: Till plains

Landform position (two-dimensional): Backslope, shoulder, footslope

Landform position (three-dimensional): Side slope

Down-slope shape: Convex

Across-slope shape: Linear

Parent material: Loess over loamy till

Typical profile

Ap - 0 to 8 inches: silt loam

Bt - 8 to 13 inches: silty clay loam

2Bt - 13 to 31 inches: clay loam

2BCt - 31 to 36 inches: loam

2Cd - 36 to 79 inches: loam

Properties and qualities

Slope: 2 to 6 percent

Depth to restrictive feature: 24 to 40 inches to densic material

Natural drainage class: Moderately well drained

Runoff class: High

Capacity of the most limiting layer to transmit water (Ksat): Low to moderately high (0.01 to 0.20 in/hr)

Depth to water table: About 24 to 36 inches

Frequency of flooding: None

Frequency of ponding: None

Calcium carbonate, maximum in profile: 45 percent

Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)

Available water storage in profile: Low (about 5.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 2e

Hydrologic Soil Group: C

Other vegetative classification: Trees/Timber (Woody Vegetation)

Hydric soil rating: No

Minor Components

Williamstown

Percent of map unit: 5 percent

Landform: Till plains

Landform position (two-dimensional): Backslope, shoulder

Landform position (three-dimensional): Side slope

Down-slope shape: Convex

Across-slope shape: Linear

Other vegetative classification: Trees/Timber (Woody Vegetation)

Hydric soil rating: No

Crosby

Percent of map unit: 5 percent

Landform: Till plains

Landform position (two-dimensional): Summit

Landform position (three-dimensional): Interfluvium

Custom Soil Resource Report

Down-slope shape: Linear
Across-slope shape: Convex
Other vegetative classification: Trees/Timber (Woody Vegetation)
Hydric soil rating: No

Treaty

Percent of map unit: 5 percent
Landform: Till plains
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Concave
Other vegetative classification: Mixed/Transitional (Mixed Native Vegetation)
Hydric soil rating: Yes

References

- American Association of State Highway and Transportation Officials (AASHTO). 2004. Standard specifications for transportation materials and methods of sampling and testing. 24th edition.
- American Society for Testing and Materials (ASTM). 2005. Standard classification of soils for engineering purposes. ASTM Standard D2487-00.
- Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe. 1979. Classification of wetlands and deep-water habitats of the United States. U.S. Fish and Wildlife Service FWS/OBS-79/31.
- Federal Register. July 13, 1994. Changes in hydric soils of the United States.
- Federal Register. September 18, 2002. Hydric soils of the United States.
- Hurt, G.W., and L.M. Vasilas, editors. Version 6.0, 2006. Field indicators of hydric soils in the United States.
- National Research Council. 1995. Wetlands: Characteristics and boundaries.
- Soil Survey Division Staff. 1993. Soil survey manual. Soil Conservation Service. U.S. Department of Agriculture Handbook 18. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_054262
- Soil Survey Staff. 1999. Soil taxonomy: A basic system of soil classification for making and interpreting soil surveys. 2nd edition. Natural Resources Conservation Service, U.S. Department of Agriculture Handbook 436. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053577
- Soil Survey Staff. 2010. Keys to soil taxonomy. 11th edition. U.S. Department of Agriculture, Natural Resources Conservation Service. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053580
- Tiner, R.W., Jr. 1985. Wetlands of Delaware. U.S. Fish and Wildlife Service and Delaware Department of Natural Resources and Environmental Control, Wetlands Section.
- United States Army Corps of Engineers, Environmental Laboratory. 1987. Corps of Engineers wetlands delineation manual. Waterways Experiment Station Technical Report Y-87-1.
- United States Department of Agriculture, Natural Resources Conservation Service. National forestry manual. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/home/?cid=nrcs142p2_053374
- United States Department of Agriculture, Natural Resources Conservation Service. National range and pasture handbook. <http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/landuse/rangepasture/?cid=stelpdb1043084>

Custom Soil Resource Report

United States Department of Agriculture, Natural Resources Conservation Service. National soil survey handbook, title 430-VI. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/scientists/?cid=nrcs142p2_054242

United States Department of Agriculture, Natural Resources Conservation Service. 2006. Land resource regions and major land resource areas of the United States, the Caribbean, and the Pacific Basin. U.S. Department of Agriculture Handbook 296. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053624

United States Department of Agriculture, Soil Conservation Service. 1961. Land capability classification. U.S. Department of Agriculture Handbook 210. http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_052290.pdf

Appendix D

ADS StormTech SC-310 Data

SC-310 CHAMBER

Designed to meet the most stringent industry performance standards for superior structural integrity while providing designers with a cost-effective method to save valuable land and protect water resources. The StormTech system is designed primarily to be used under parking lots, thus maximizing land usage for private (commercial) and public applications. StormTech chambers can also be used in conjunction with Green Infrastructure, thus enhancing the performance and extending the service life of these practices.

STORMTECH SC-310 CHAMBER

(not to scale)

Nominal Chamber Specifications

Size (L x W x H)

85.4" x 34.0" x 16.0"

2,170 mm x 864 mm x 406 mm

Chamber Storage

14.7 ft³ (0.42 m³)

Min. Installed Storage*

31.0 ft³ (0.88 m³)

Weight

37.0 lbs (16.8 kg)

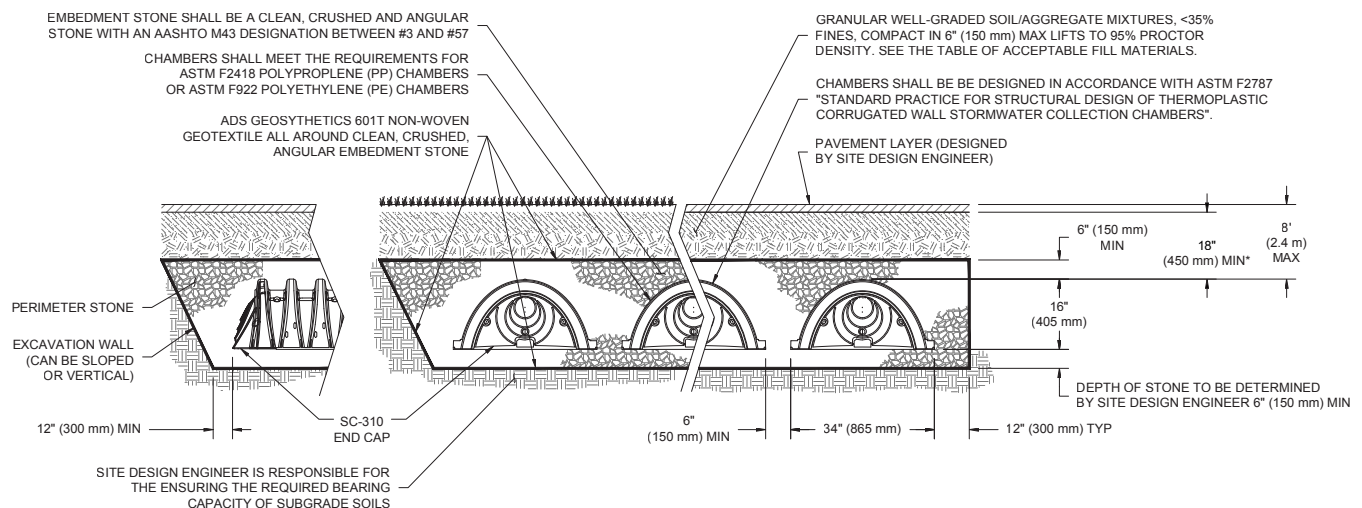
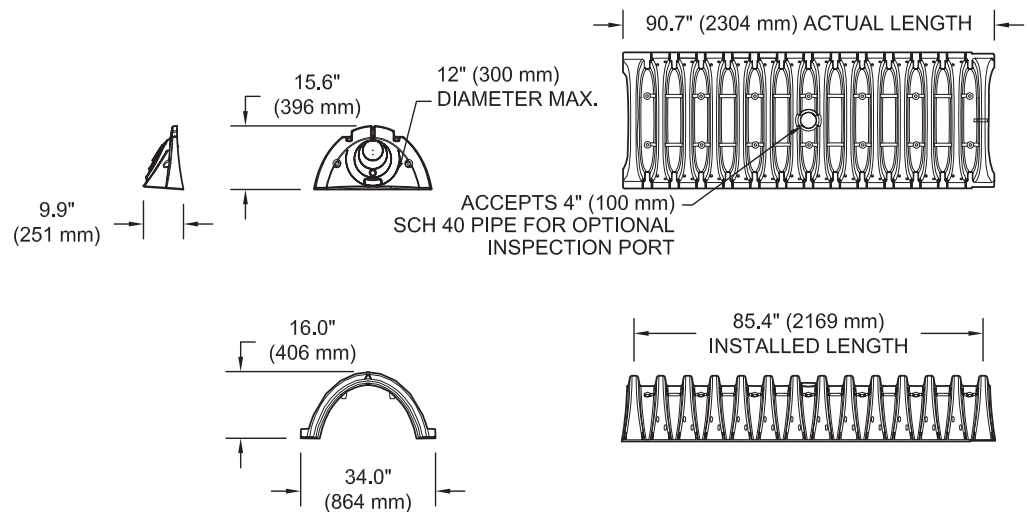
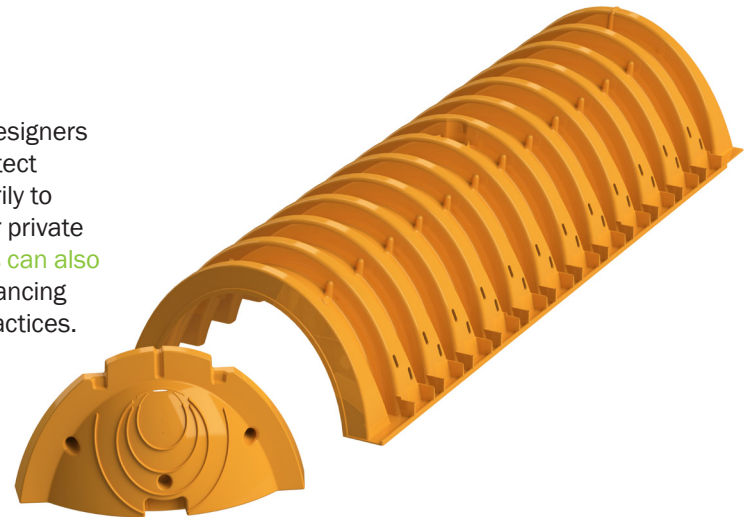
Shipping

41 chambers/pallet

108 end caps/pallet

18 pallets/truck

*Assumes 6" (150 mm) stone above and below chambers and 40% stone porosity.



*MINIMUM COVER TO BOTTOM OF FLEXIBLE PAVEMENT. FOR UNPAVED INSTALLATIONS WHERE RUTTING FROM VEHICLES MAY OCCUR, INCREASE COVER TO 24" (600 mm).

SC-310 CUMULATIVE STORAGE VOLUMES PER CHAMBER

Assumes 40% Stone Porosity. Calculations are Based Upon a 6" (150 mm) Stone Base Under Chambers.

Depth of Water in System Inches (mm)	Cumulative Chamber Storage ft ³ (m ³)	Total System Cumulative Storage ft ³ (m ³)
28 (711)	14.70 (0.416)	31.00 (0.878)
27 (686)	14.70 (0.416)	30.21 (0.855)
26 (680)	14.70 (0.416)	29.42 (0.833)
25 (610)	14.70 (0.416)	28.63 (0.811)
24 (609)	14.70 (0.416)	27.84 (0.788)
23 (584)	14.70 (0.416)	27.05 (0.766)
22 (559)	14.70 (0.416)	26.26 (0.748)
21 (533)	14.64 (0.415)	25.43 (0.720)
20 (508)	14.49 (0.410)	24.54 (0.695)
19 (483)	14.22 (0.403)	23.58 (0.668)
18 (457)	13.68 (0.387)	22.47 (0.636)
17 (432)	12.99 (0.368)	21.25 (0.602)
16 (406)	12.17 (0.345)	19.97 (0.566)
15 (381)	11.25 (0.319)	18.62 (0.528)
14 (356)	10.23 (0.290)	17.22 (0.488)
13 (330)	9.15 (0.260)	15.78 (0.447)
12 (305)	7.99 (0.227)	14.29 (0.425)
11 (279)	6.78 (0.192)	12.77 (0.362)
10 (254)	5.51 (0.156)	11.22 (0.318)
9 (229)	4.19 (0.119)	9.64 (0.278)
8 (203)	2.83 (0.081)	8.03 (0.227)
7 (178)	1.43 (0.041)	6.40 (0.181)
6 (152)	0	4.74 (0.134)
5 (127)	0	3.95 (0.112)
4 (102)	0	3.16 (0.090)
3 (76)	0	2.37 (0.067)
2 (51)	0	1.58 (0.046)
1 (25)	0	0.79 (0.022)

Note: Add 0.79 ft³ (0.022 m³) of storage for each additional inch. (25 mm) of stone foundation.

STORAGE VOLUME PER CHAMBER FT³ (M³)

	Bare Chamber Storage ft ³ (m ³)	Chamber and Stone Foundation Depth in. (mm)		
		6 (150)	12 (300)	18 (450)
StormTech SC-310	14.7 (0.4)	31.0 (0.9)	35.7 (1.0)	40.4 (1.1)

Note: Assumes 6" (150 mm) of stone above chambers, 6" (150 mm) row spacing and 40% stone porosity.

AMOUNT OF STONE PER CHAMBER

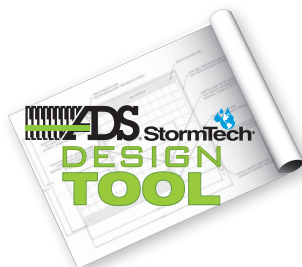
ENGLISH TONS (yds ³)	Stone Foundation Depth		
	6"	12"	18"
StormTech SC-310	2.1 (1.5 yd ³)	2.7 (1.9 yd ³)	3.4 (2.4 yd ³)
METRIC KILOGRAMS (m ³)	150 mm	300 mm	450 mm
StormTech SC-310	1830 (1.1 m ³)	2490 (1.5 m ³)	2990 (1.8 m ³)

Note: Assumes 6" (150 mm) of stone above, and between chambers.

VOLUME EXCAVATION PER CHAMBER YD³ (M³)

	Stone Foundation Depth		
	6" (150 mm)	12" (300 mm)	18" (450 mm)
StormTech SC-310	2.9 (2.2)	3.4 (2.6)	3.8 (2.9)

Note: Assumes 6" (150 mm) of row separation and 18" (450 mm) of cover. The volume of excavation will vary as the depth of the cover increases.



Working on a project?
Visit us at www.stormtech.com
and utilize the StormTech Design Tool

For more information on the StormTech SC-310 Chamber and other ADS products, please contact our Customer Service Representatives at 1-800-821-6710

THE MOST **ADVANCED** NAME IN WATER MANAGEMENT SOLUTIONS™

Appendix E

*Hydraflow Hydrographs
1 Hour Storm Data*

Hydrograph Report

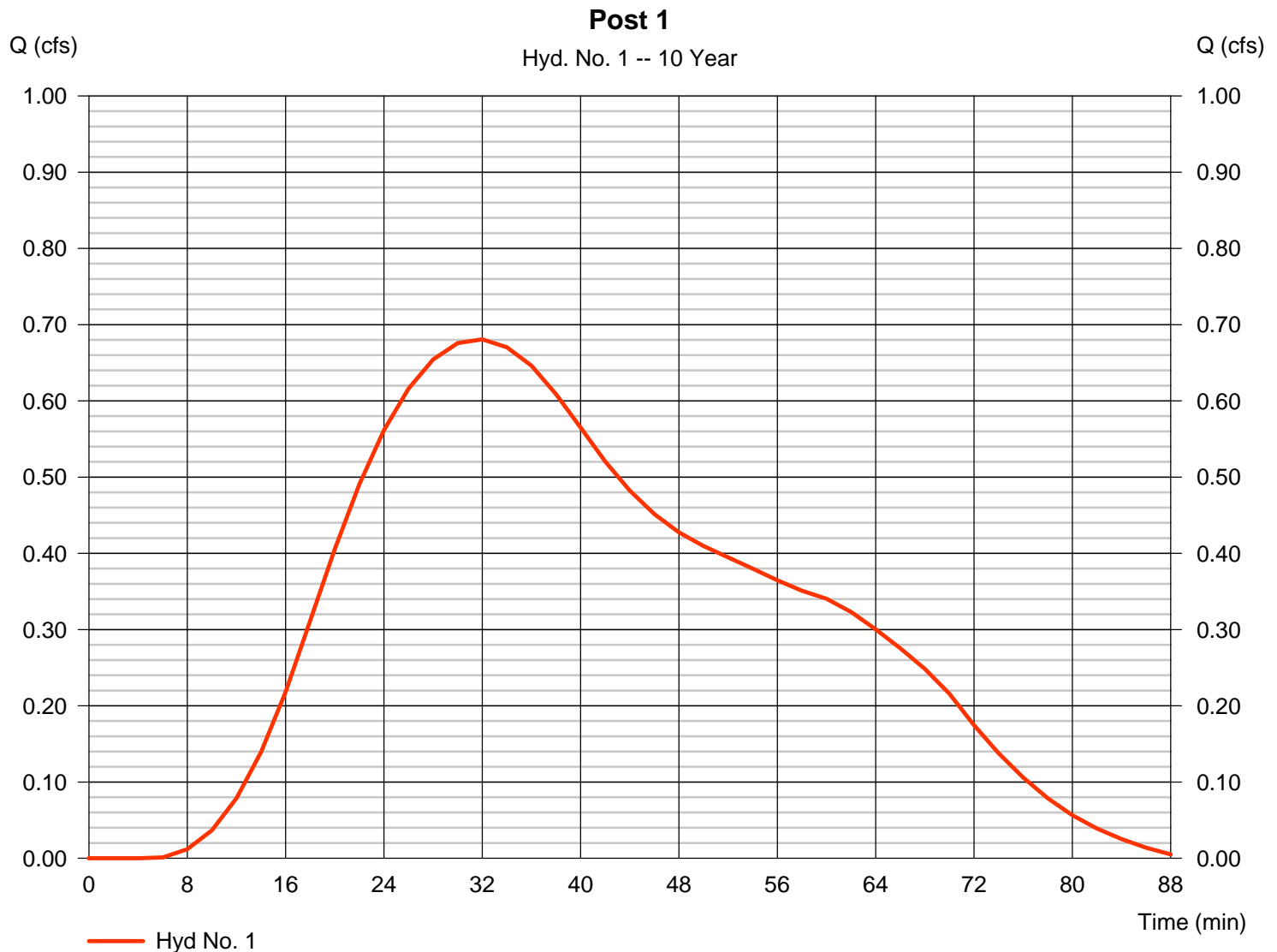
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

Wednesday, 07 / 11 / 2018

Hyd. No. 1

Post 1

Hydrograph type	= SCS Runoff	Peak discharge	= 0.681 cfs
Storm frequency	= 10 yrs	Time to peak	= 32 min
Time interval	= 2 min	Hyd. volume	= 1,619 cuft
Drainage area	= 0.860 ac	Curve number	= 79
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 18.20 min
Total precip.	= 2.00 in	Distribution	= Huff-1st
Storm duration	= 1.00 hrs	Shape factor	= 484



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

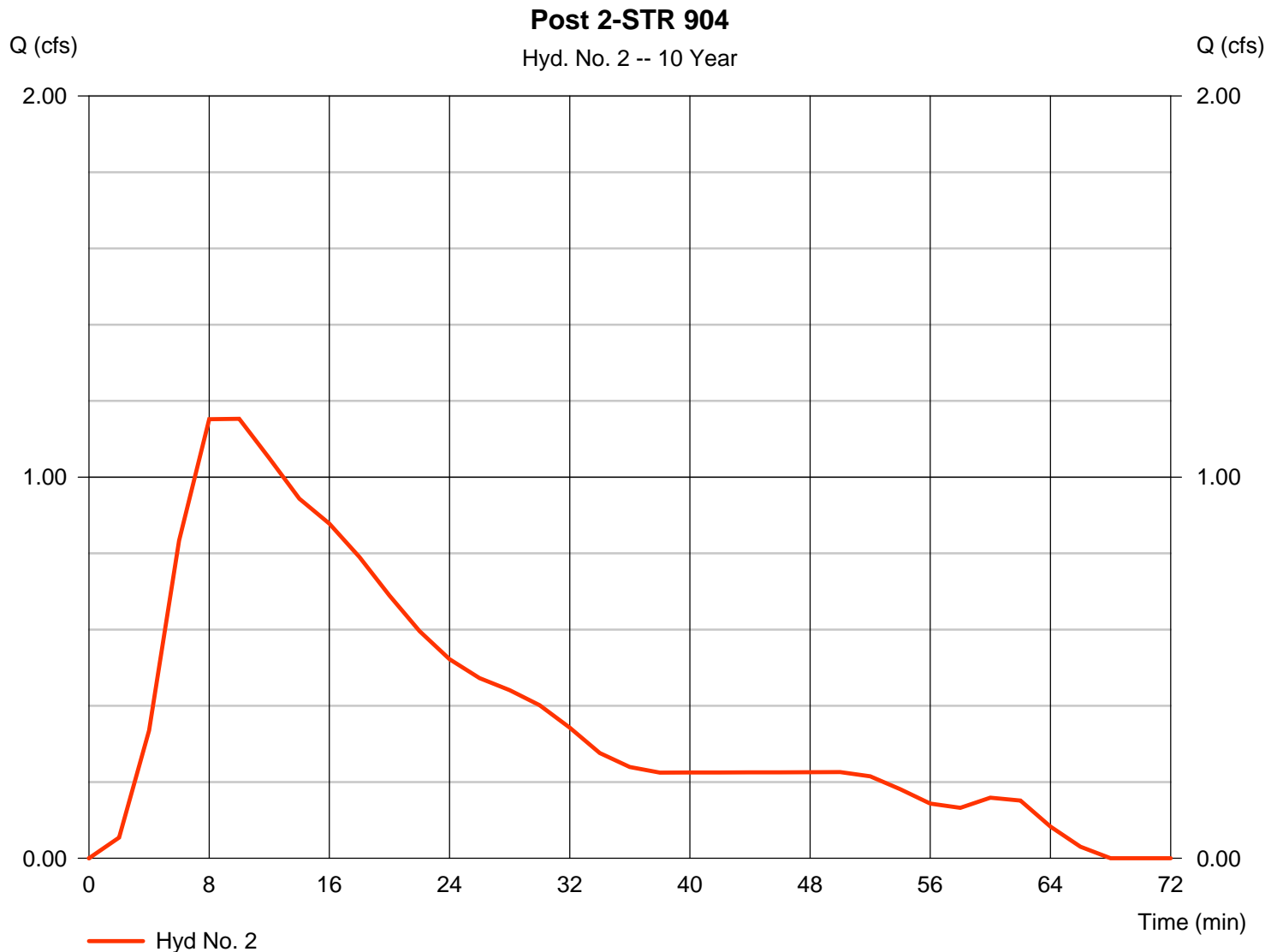
Wednesday, 07 / 11 / 2018

Hyd. No. 2

Post 2-STR 904

Hydrograph type	= SCS Runoff	Peak discharge	= 1.153 cfs
Storm frequency	= 10 yrs	Time to peak	= 10 min
Time interval	= 2 min	Hyd. volume	= 1,661 cuft
Drainage area	= 0.310 ac	Curve number	= 96*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 2.00 in	Distribution	= Huff-1st
Storm duration	= 1.00 hrs	Shape factor	= 484

* Composite (Area/CN) = $[(0.030 \times 79) + (0.280 \times 98)] / 0.310$



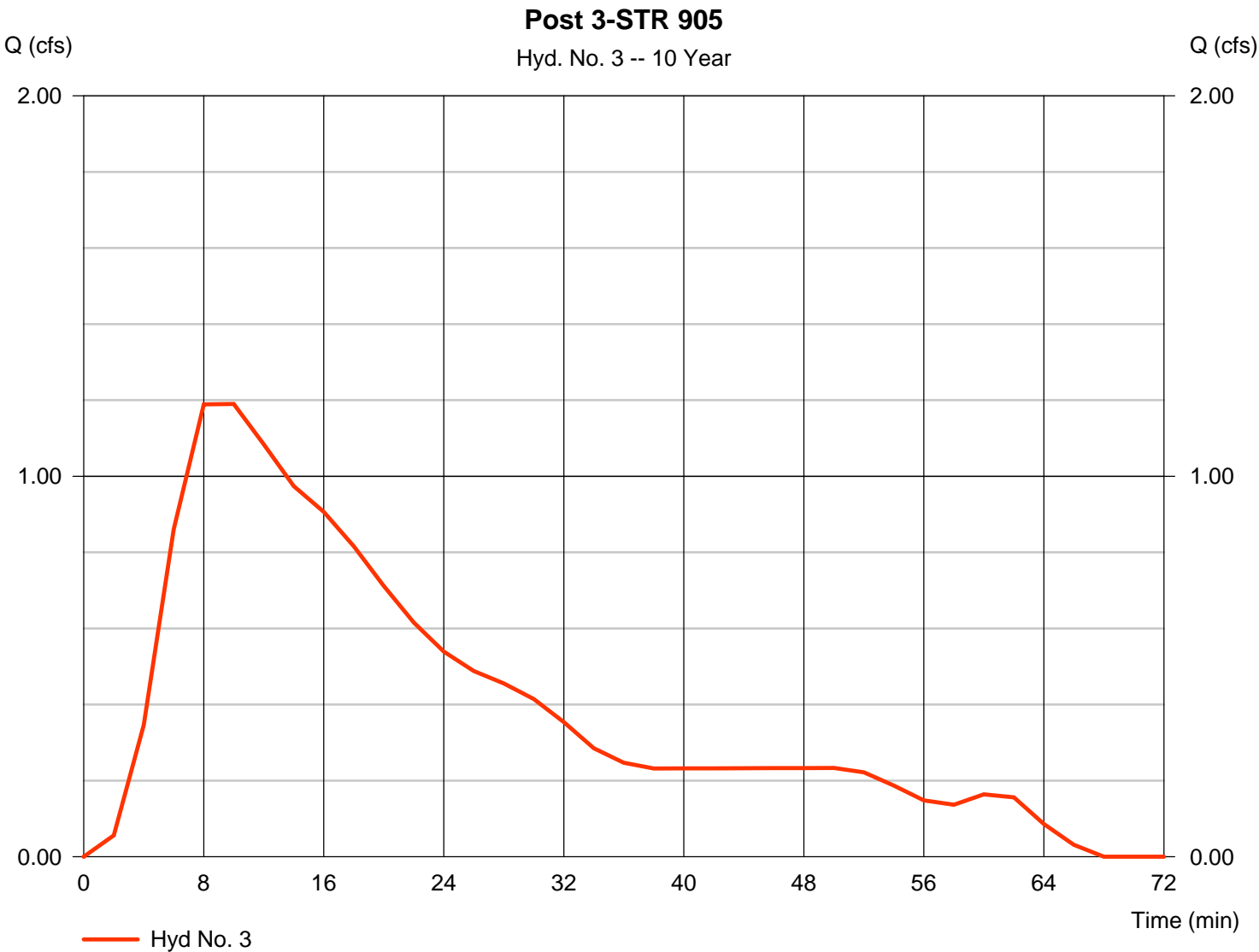
Hydrograph Report

Hyd. No. 3

Post 3-STR 905

Hydrograph type	= SCS Runoff	Peak discharge	= 1.190 cfs
Storm frequency	= 10 yrs	Time to peak	= 10 min
Time interval	= 2 min	Hyd. volume	= 1,715 cuft
Drainage area	= 0.320 ac	Curve number	= 96*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 2.00 in	Distribution	= Huff-1st
Storm duration	= 1.00 hrs	Shape factor	= 484

* Composite (Area/CN) = [(0.030 x 79) + (0.290 x 98)] / 0.320



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

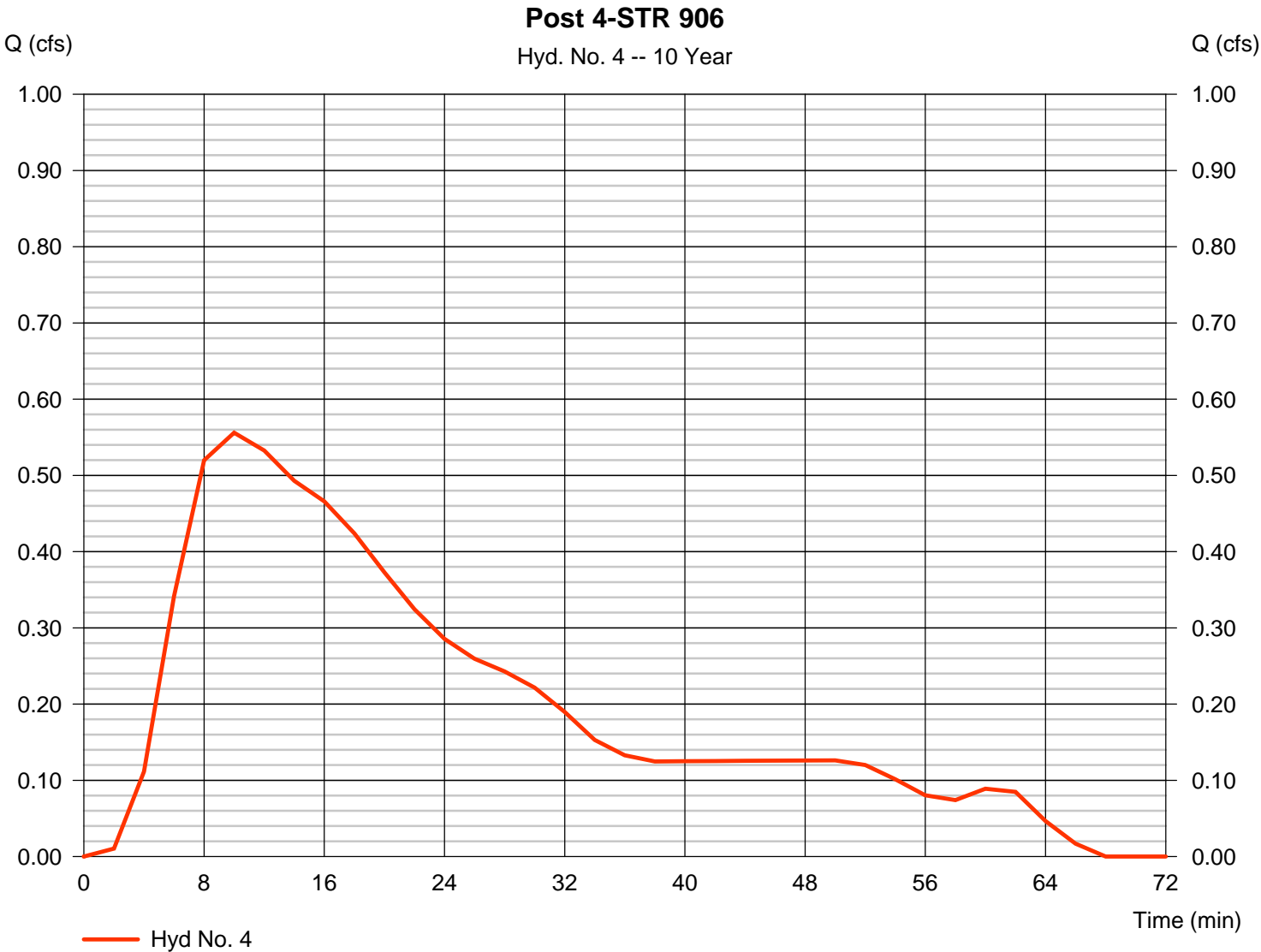
Wednesday, 07 / 11 / 2018

Hyd. No. 4

Post 4-STR 906

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.556 cfs
Storm frequency	=	10 yrs	Time to peak	=	10 min
Time interval	=	2 min	Hyd. volume	=	855 cuft
Drainage area	=	0.180 ac	Curve number	=	94*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	2.00 in	Distribution	=	Huff-1st
Storm duration	=	1.00 hrs	Shape factor	=	484

* Composite (Area/CN) = [(0.040 x 79) + (0.140 x 98)] / 0.180



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

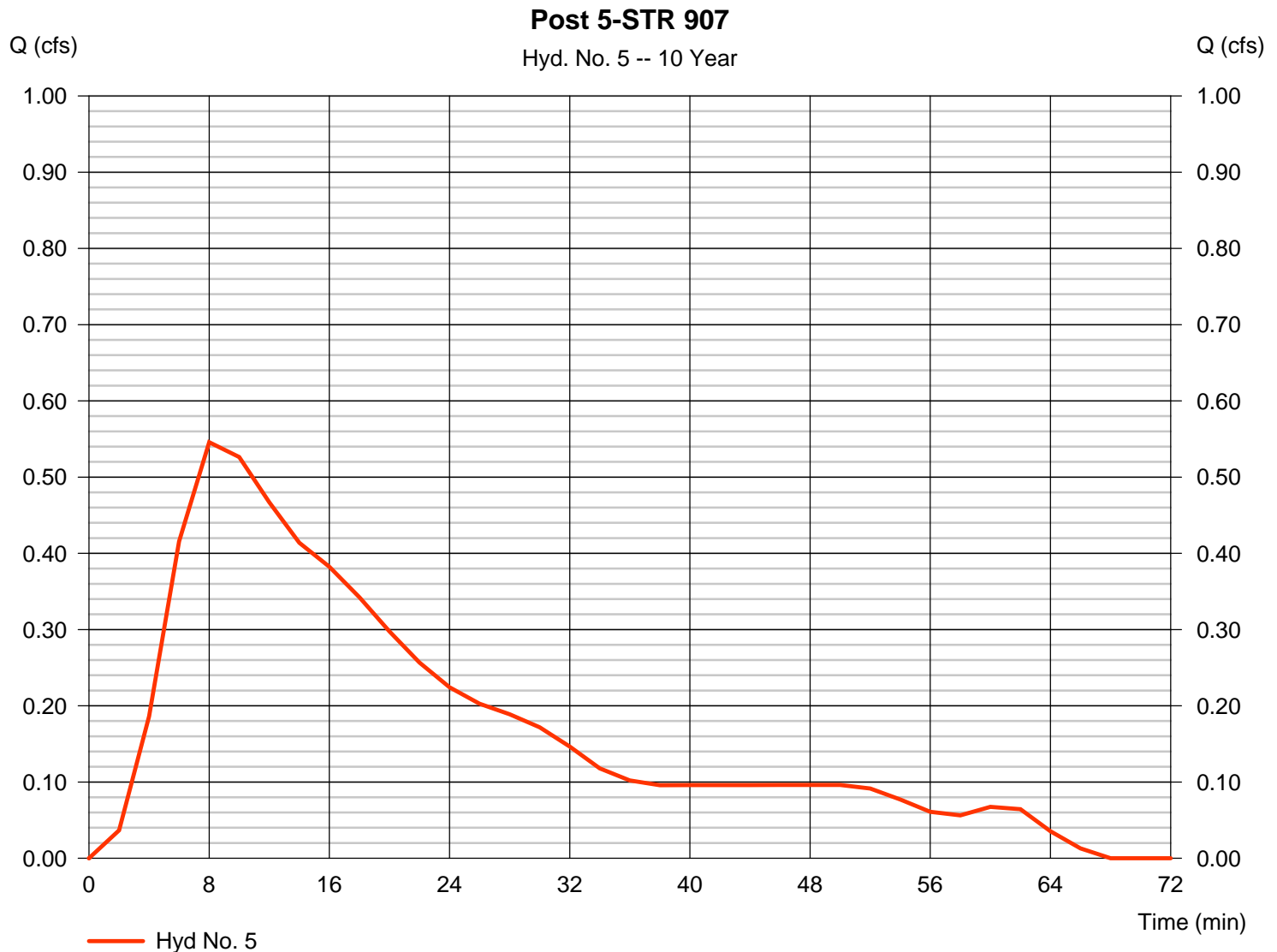
Wednesday, 07 / 11 / 2018

Hyd. No. 5

Post 5-STR 907

Hydrograph type	= SCS Runoff	Peak discharge	= 0.546 cfs
Storm frequency	= 10 yrs	Time to peak	= 8 min
Time interval	= 2 min	Hyd. volume	= 739 cuft
Drainage area	= 0.130 ac	Curve number	= 97*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 2.00 in	Distribution	= Huff-1st
Storm duration	= 1.00 hrs	Shape factor	= 484

* Composite (Area/CN) = $[(0.010 \times 79) + (0.120 \times 98)] / 0.130$



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

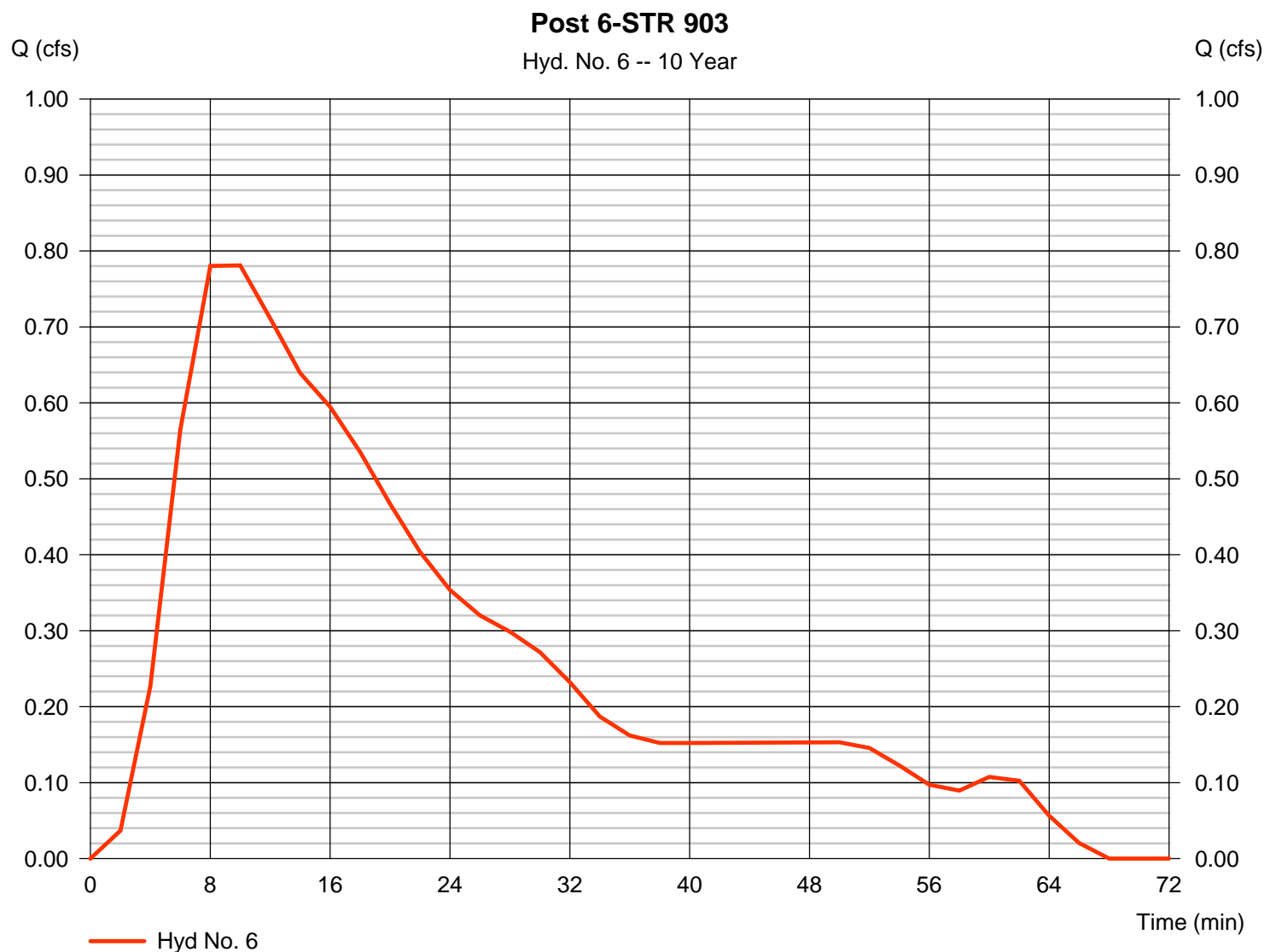
Wednesday, 07 / 11 / 2018

Hyd. No. 6

Post 6-STR 903

Hydrograph type	= SCS Runoff	Peak discharge	= 0.781 cfs
Storm frequency	= 10 yrs	Time to peak	= 10 min
Time interval	= 2 min	Hyd. volume	= 1,125 cuft
Drainage area	= 0.210 ac	Curve number	= 96*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 2.00 in	Distribution	= Huff-1st
Storm duration	= 1.00 hrs	Shape factor	= 484

* Composite (Area/CN) = $[(0.020 \times 79) + (0.190 \times 98)] / 0.210$



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

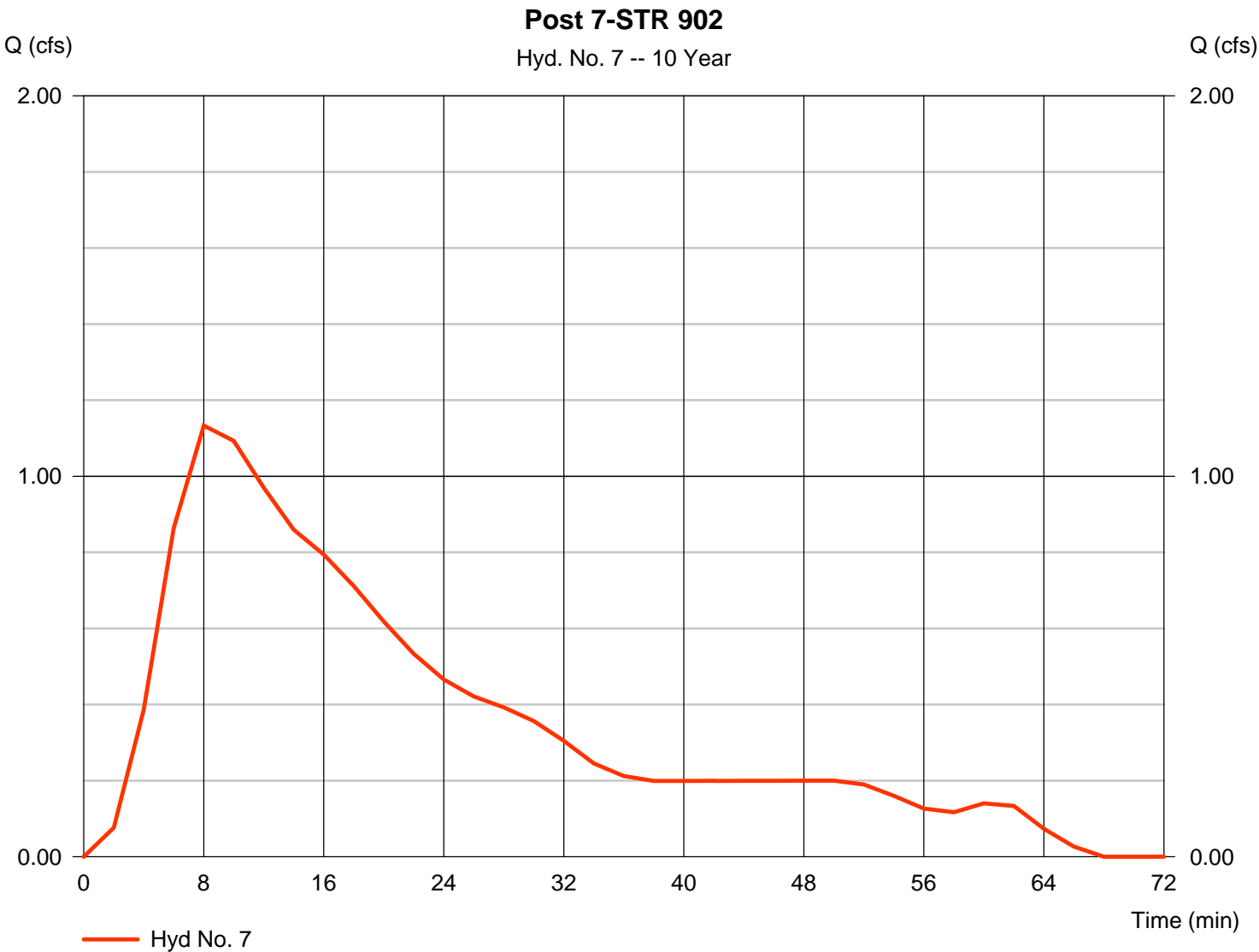
Wednesday, 07 / 11 / 2018

Hyd. No. 7

Post 7-STR 902

Hydrograph type	= SCS Runoff	Peak discharge	= 1.133 cfs
Storm frequency	= 10 yrs	Time to peak	= 8 min
Time interval	= 2 min	Hyd. volume	= 1,536 cuft
Drainage area	= 0.270 ac	Curve number	= 97*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 2.00 in	Distribution	= Huff-1st
Storm duration	= 1.00 hrs	Shape factor	= 484

* Composite (Area/CN) = [(0.020 x 79) + (0.250 x 98)] / 0.270



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

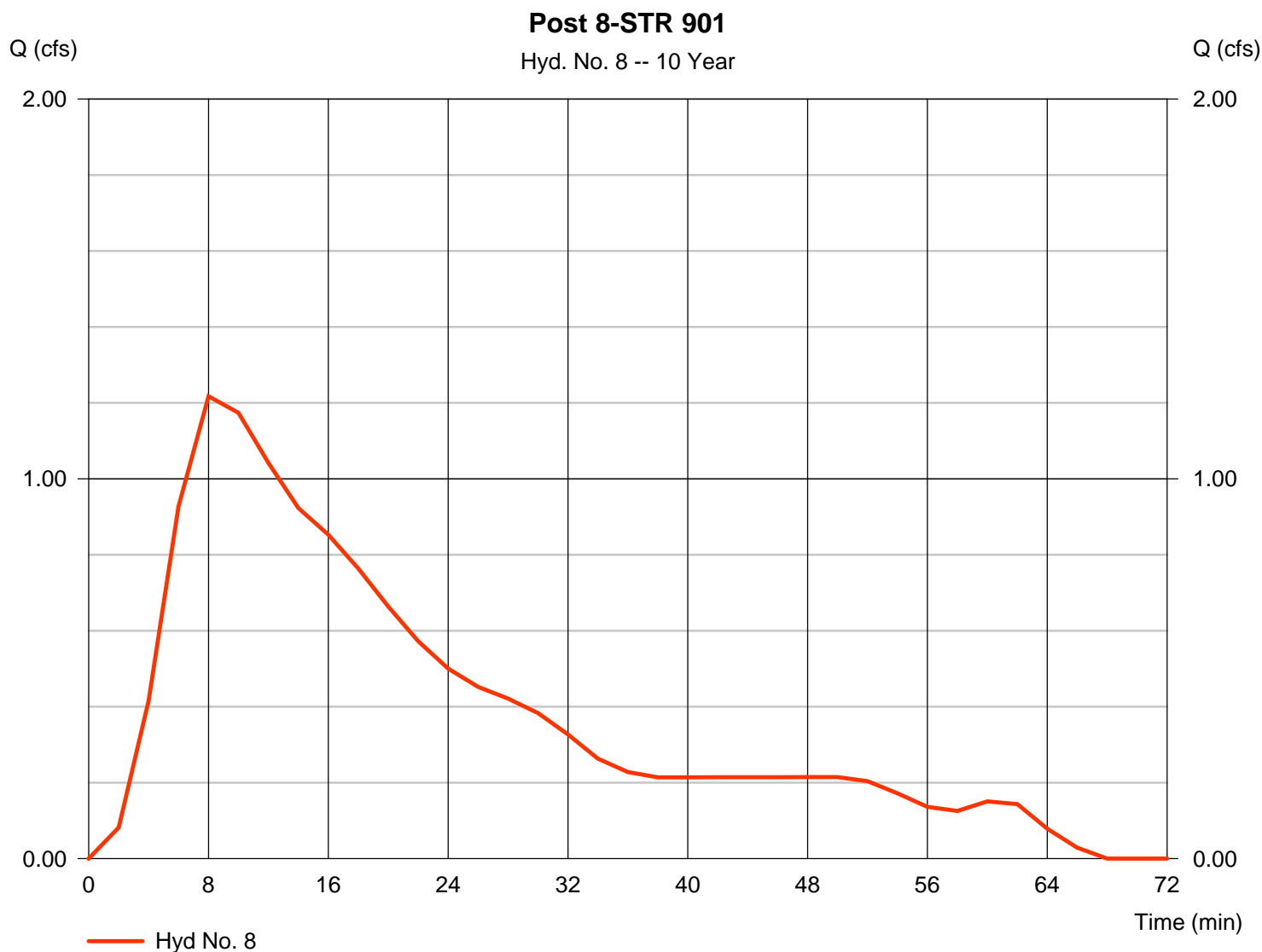
Wednesday, 07 / 11 / 2018

Hyd. No. 8

Post 8-STR 901

Hydrograph type	= SCS Runoff	Peak discharge	= 1.217 cfs
Storm frequency	= 10 yrs	Time to peak	= 8 min
Time interval	= 2 min	Hyd. volume	= 1,650 cuft
Drainage area	= 0.290 ac	Curve number	= 97*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 2.00 in	Distribution	= Huff-1st
Storm duration	= 1.00 hrs	Shape factor	= 484

* Composite (Area/CN) = $[(0.020 \times 79) + (0.270 \times 98)] / 0.290$



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

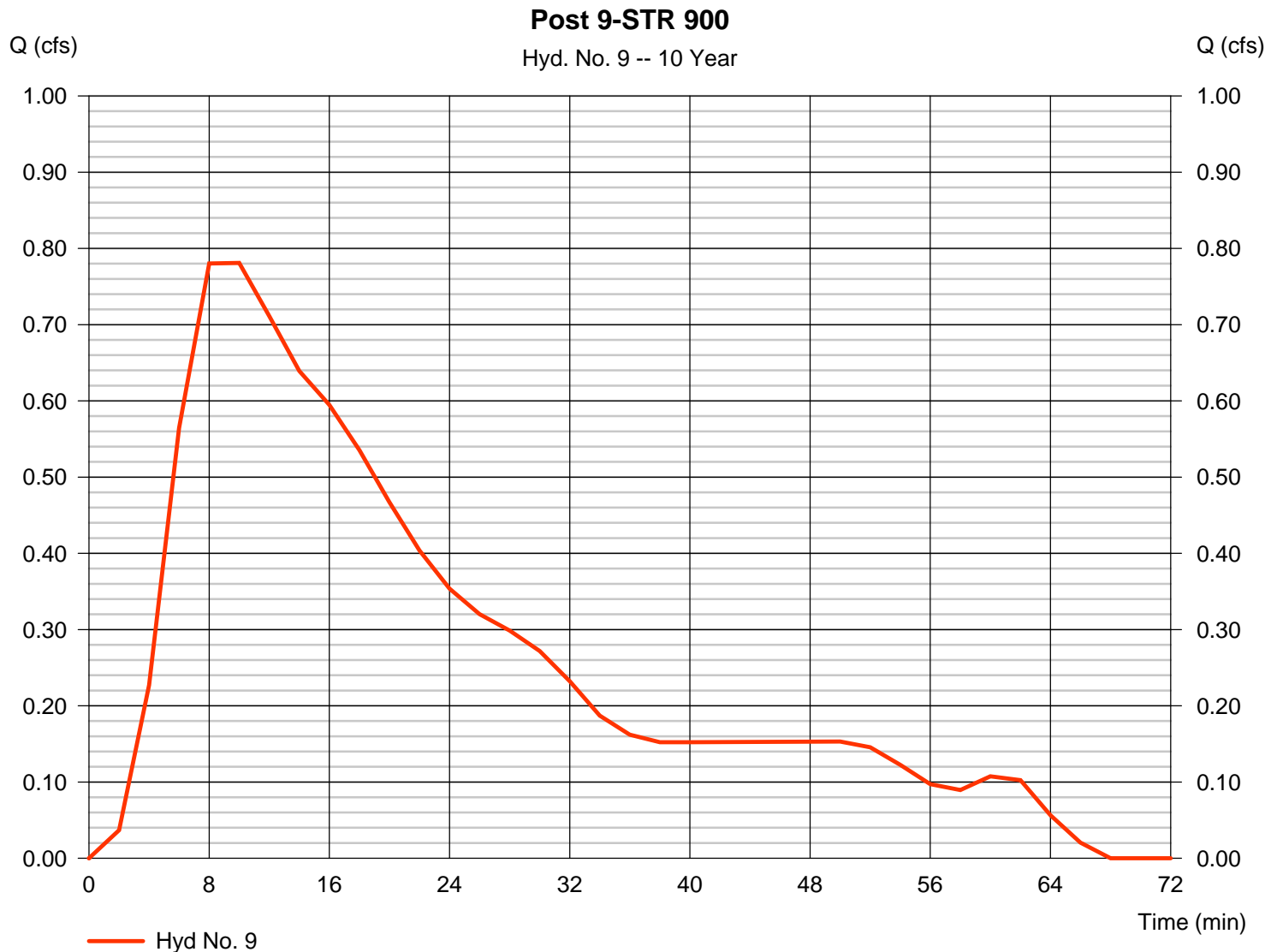
Wednesday, 07 / 11 / 2018

Hyd. No. 9

Post 9-STR 900

Hydrograph type	= SCS Runoff	Peak discharge	= 0.781 cfs
Storm frequency	= 10 yrs	Time to peak	= 10 min
Time interval	= 2 min	Hyd. volume	= 1,125 cuft
Drainage area	= 0.210 ac	Curve number	= 96*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 2.00 in	Distribution	= Huff-1st
Storm duration	= 1.00 hrs	Shape factor	= 484

* Composite (Area/CN) = $[(0.020 \times 79) + (0.190 \times 98)] / 0.210$



Hydrograph Report

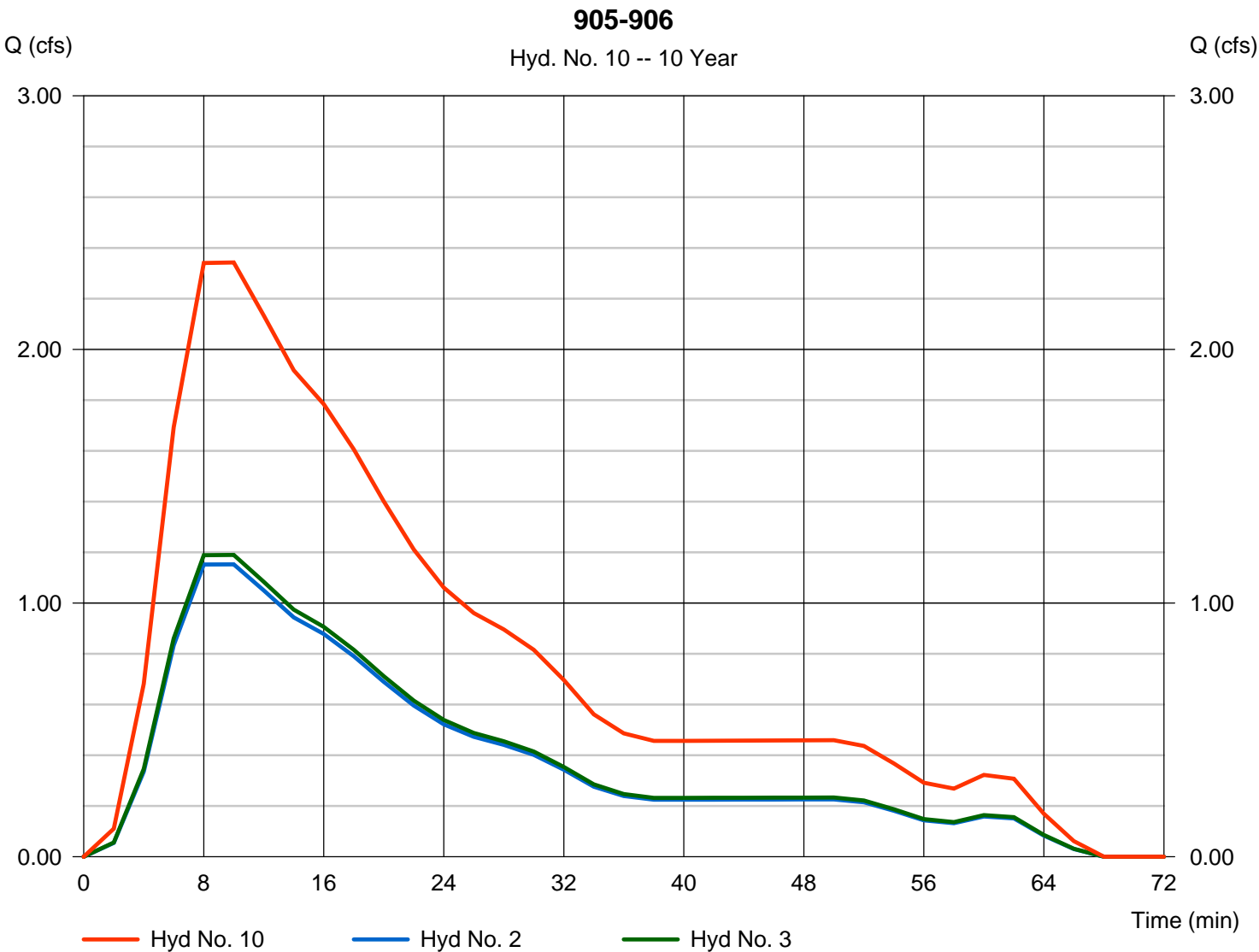
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

Wednesday, 07 / 11 / 2018

Hyd. No. 10

905-906

Hydrograph type	= Combine	Peak discharge	= 2.343 cfs
Storm frequency	= 10 yrs	Time to peak	= 10 min
Time interval	= 2 min	Hyd. volume	= 3,375 cuft
Inflow hyds.	= 2, 3	Contrib. drain. area	= 0.630 ac



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

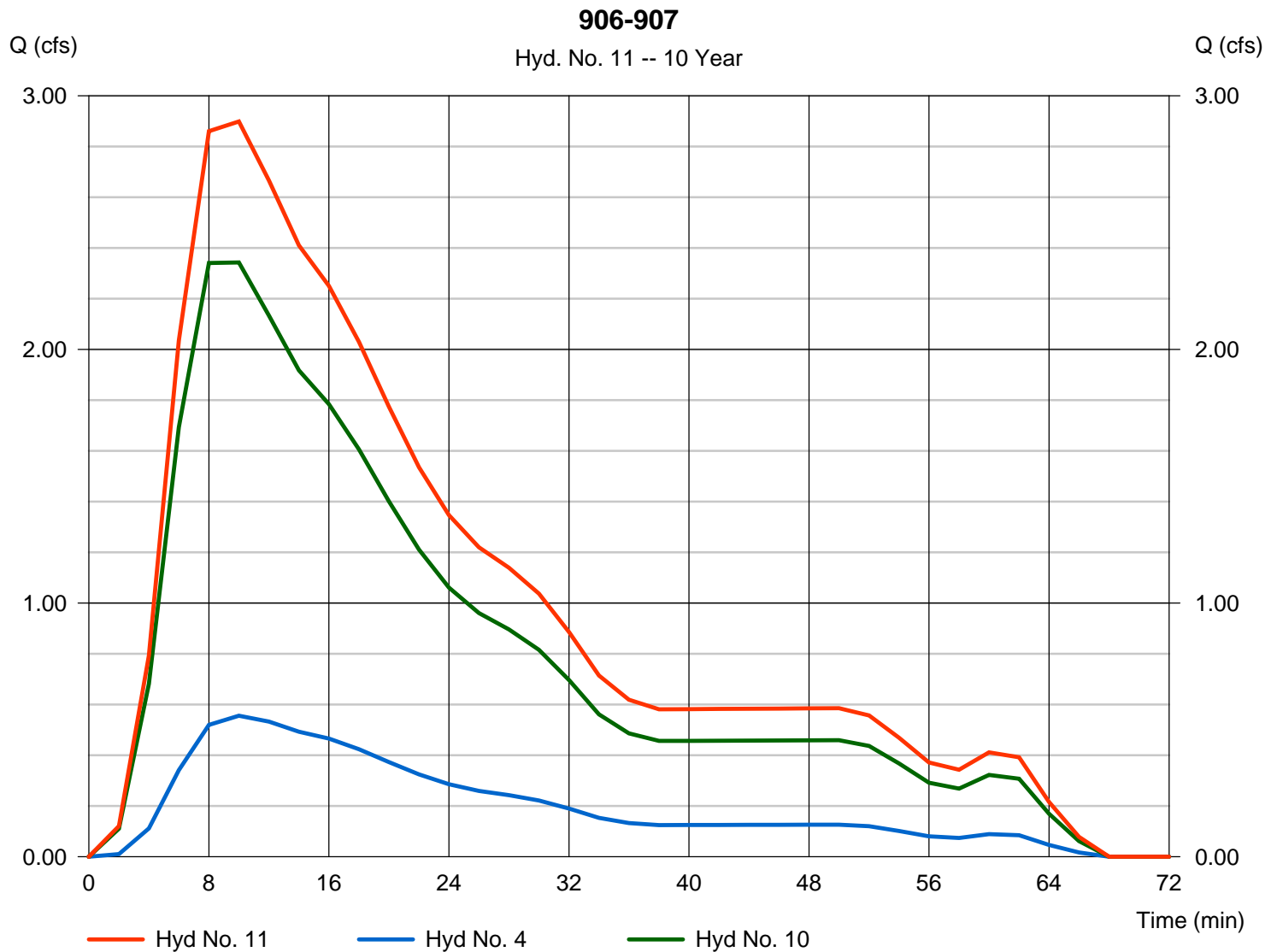
Wednesday, 07 / 11 / 2018

Hyd. No. 11

906-907

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

Peak discharge = 2.899 cfs
 Time to peak = 10 min
 Hyd. volume = 4,231 cuft
 Contrib. drain. area = 0.180 ac



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

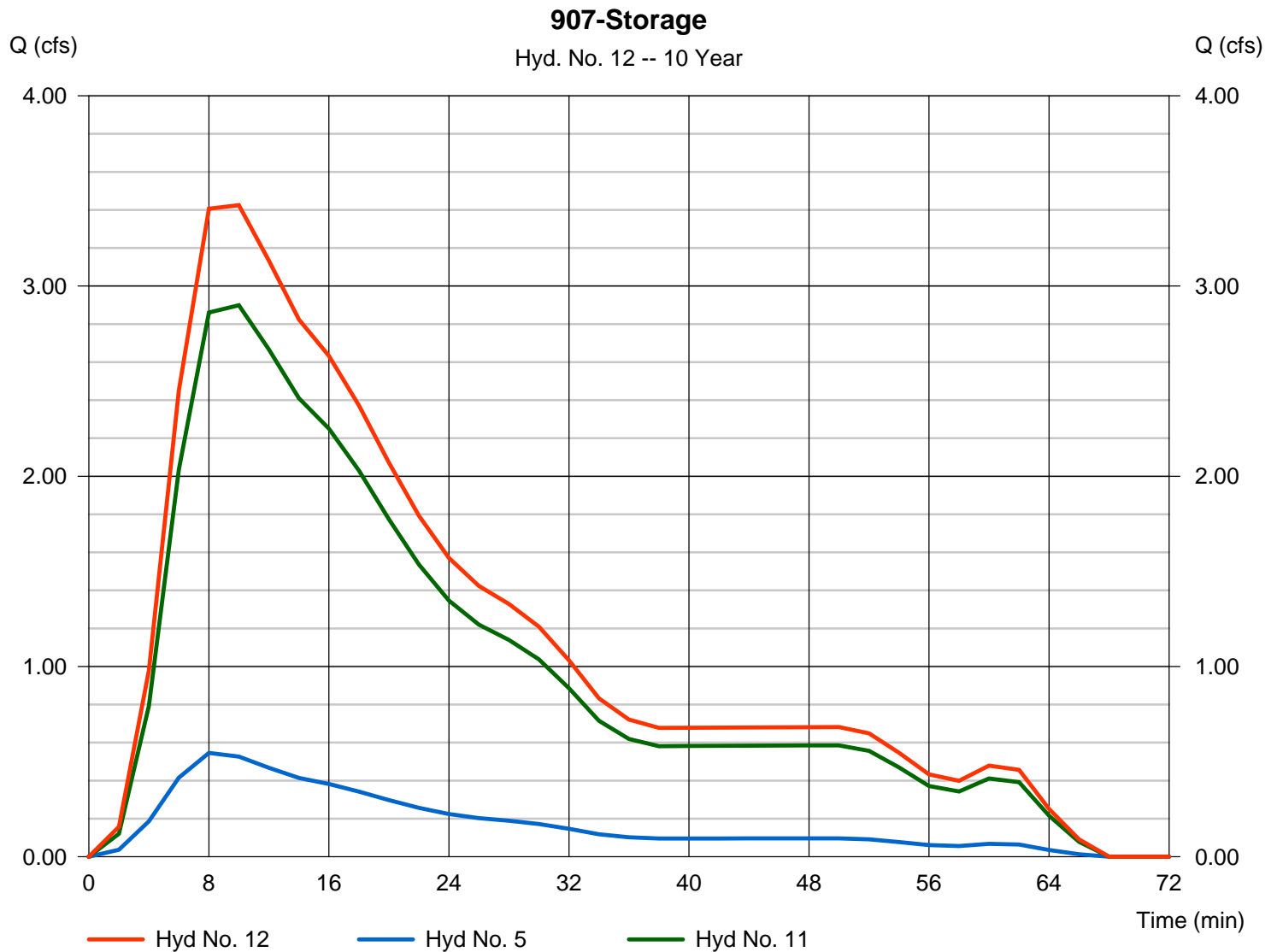
Wednesday, 07 / 11 / 2018

Hyd. No. 12

907-Storage

Hydrograph type = Combine
 Storm frequency = 10 yrs
 Time interval = 2 min
 Inflow hyds. = 5, 11

Peak discharge = 3.425 cfs
 Time to peak = 10 min
 Hyd. volume = 4,970 cuft
 Contrib. drain. area = 0.130 ac



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

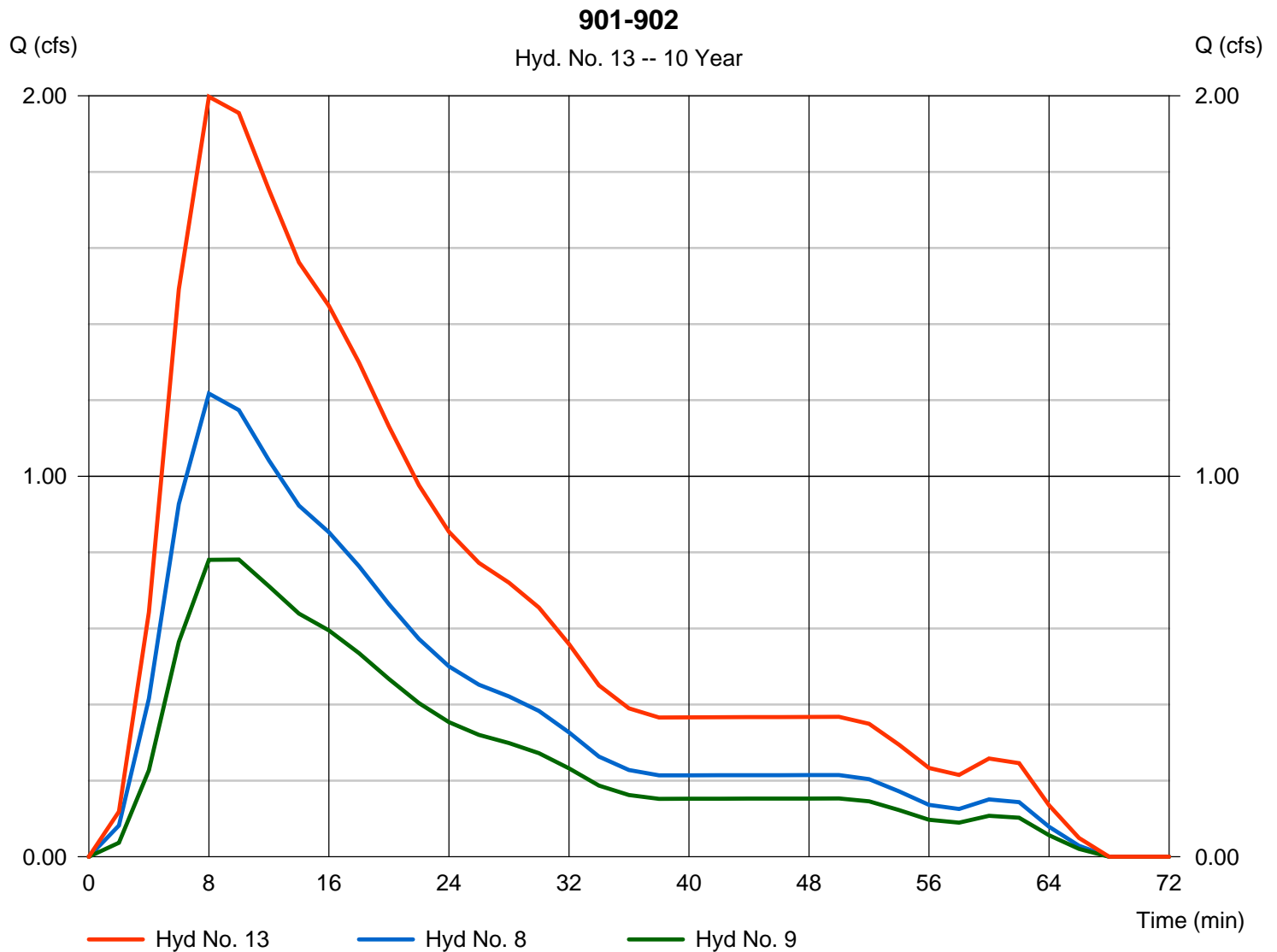
Wednesday, 07 / 11 / 2018

Hyd. No. 13

901-902

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

Peak discharge = 1.998 cfs
 Time to peak = 8 min
 Hyd. volume = 2,775 cuft
 Contrib. drain. area = 0.500 ac



Hydrograph Report

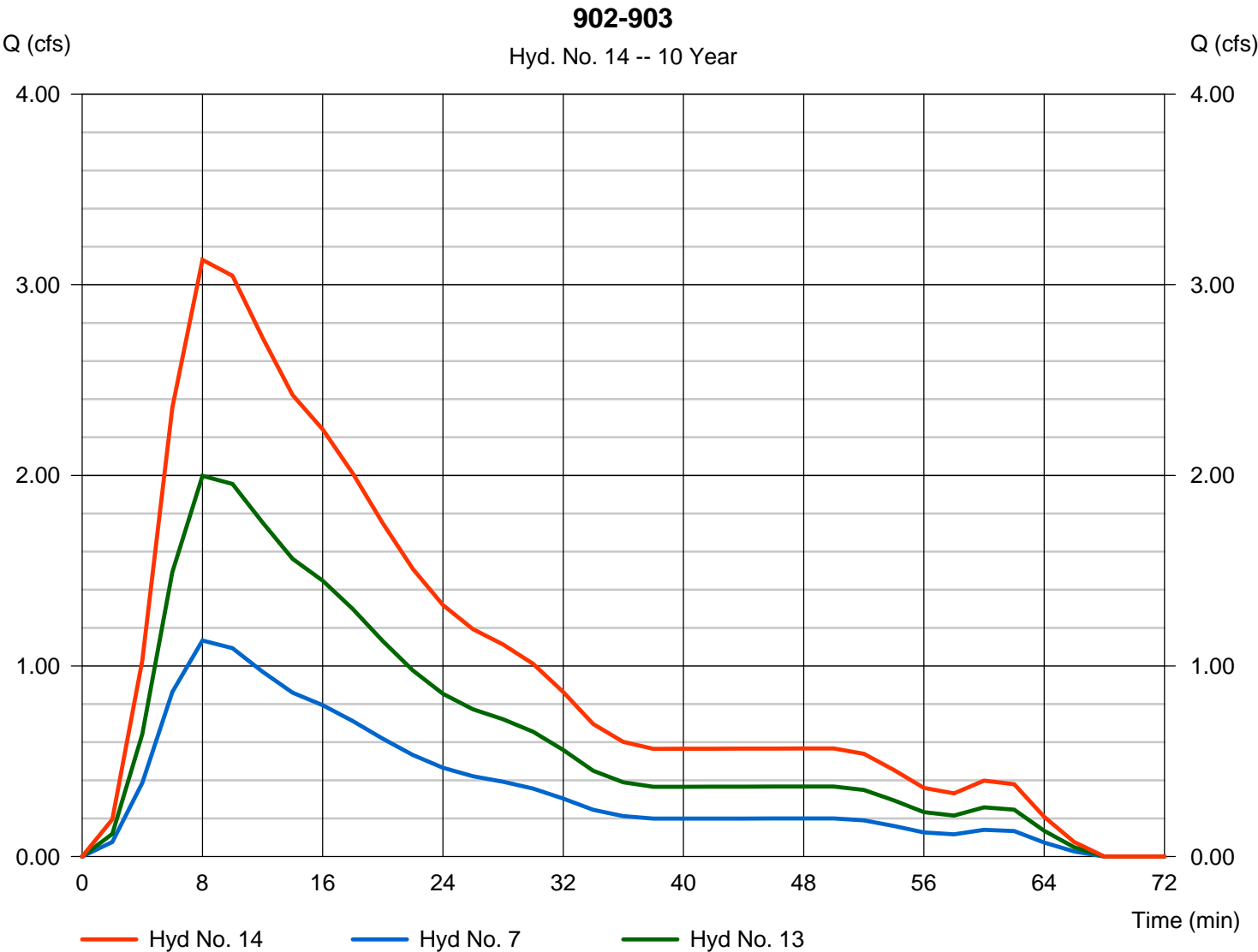
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

Wednesday, 07 / 11 / 2018

Hyd. No. 14

902-903

Hydrograph type	= Combine	Peak discharge	= 3.131 cfs
Storm frequency	= 10 yrs	Time to peak	= 8 min
Time interval	= 2 min	Hyd. volume	= 4,310 cuft
Inflow hyds.	= 7, 13	Contrib. drain. area	= 0.270 ac



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

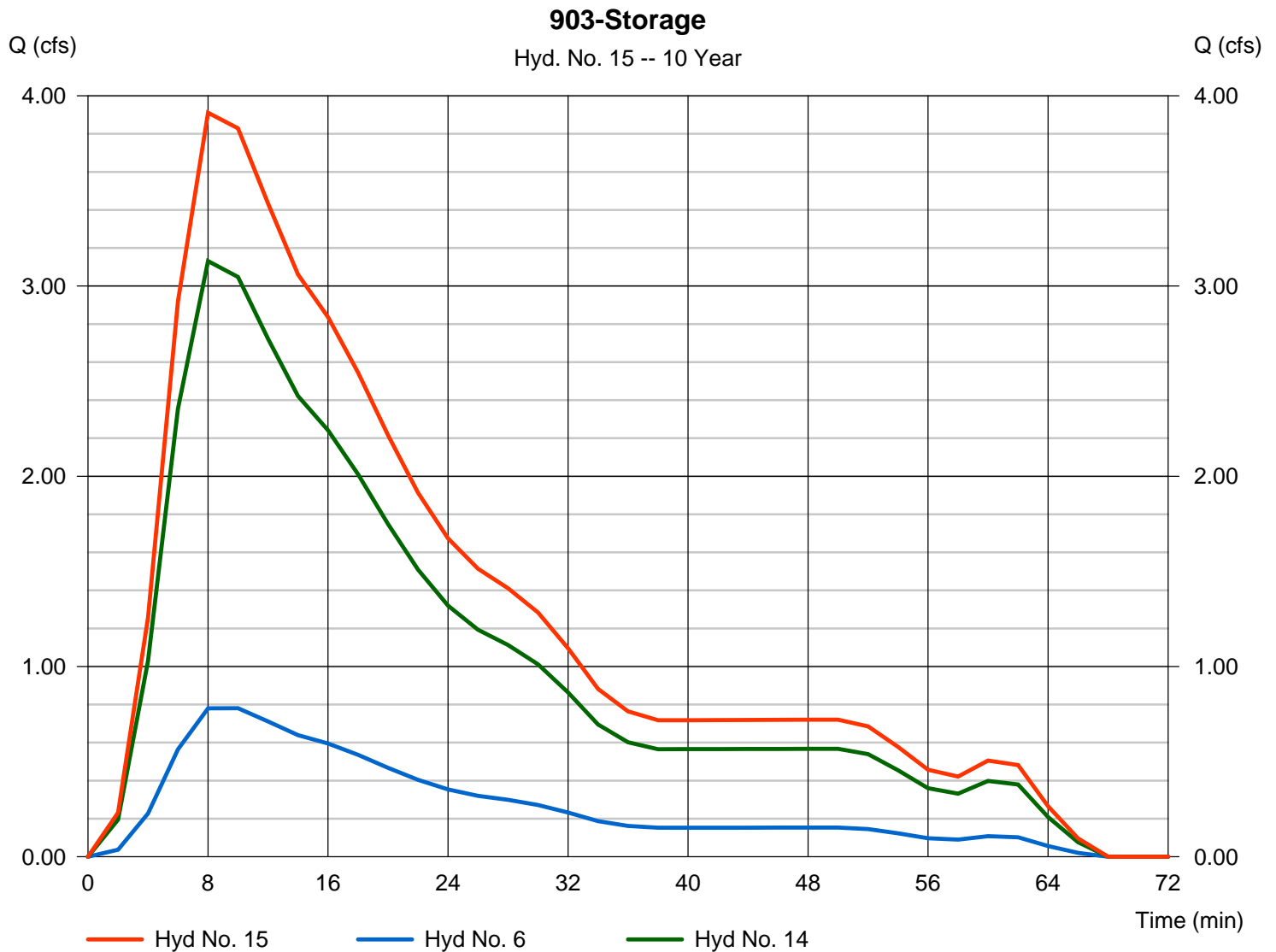
Wednesday, 07 / 11 / 2018

Hyd. No. 15

903-Storage

Hydrograph type = Combine
 Storm frequency = 10 yrs
 Time interval = 2 min
 Inflow hyds. = 6, 14

Peak discharge = 3.911 cfs
 Time to peak = 8 min
 Hyd. volume = 5,436 cuft
 Contrib. drain. area = 0.210 ac



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

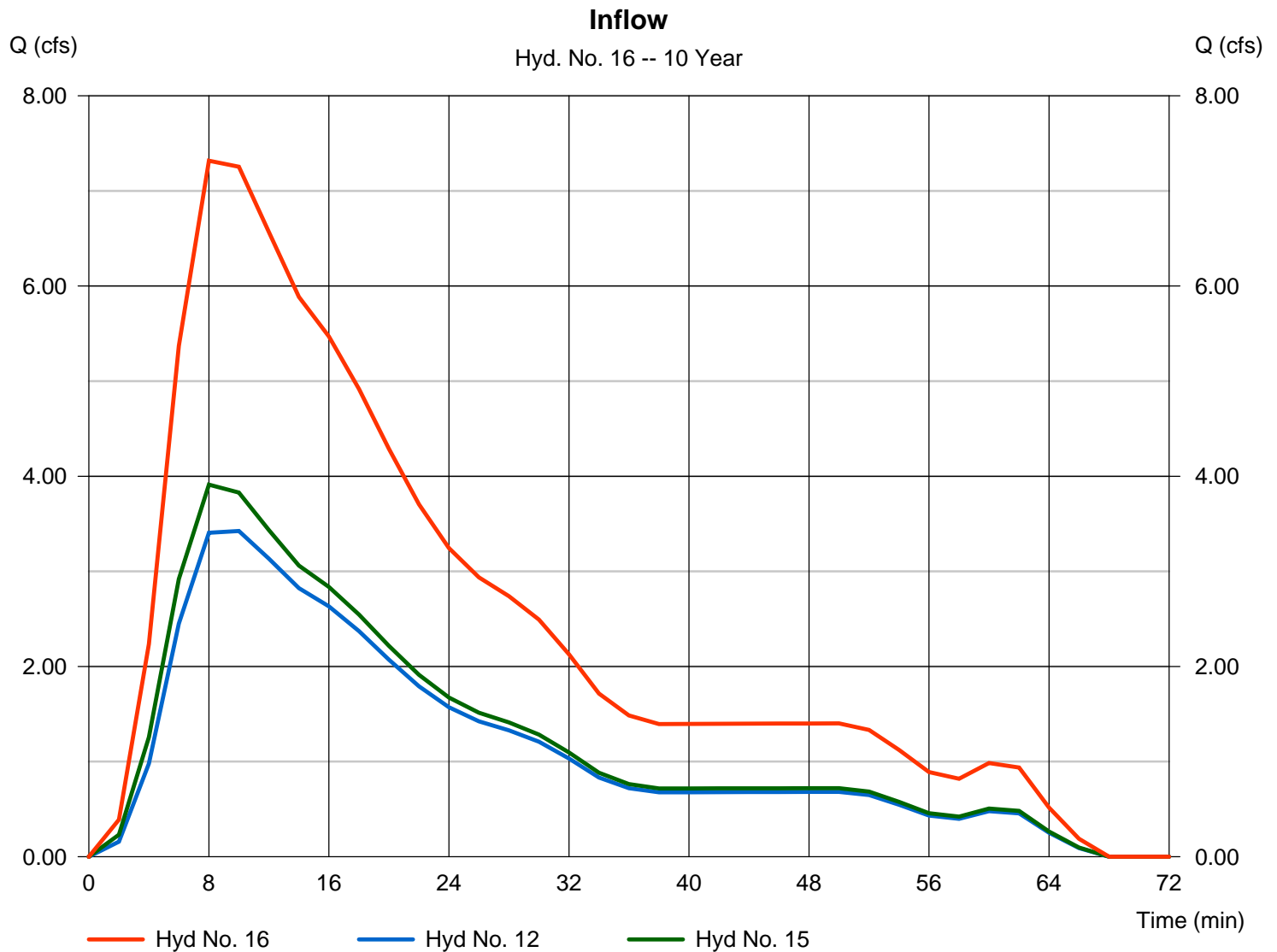
Wednesday, 07 / 11 / 2018

Hyd. No. 16

Inflow

Hydrograph type = Combine
 Storm frequency = 10 yrs
 Time interval = 2 min
 Inflow hyds. = 12, 15

Peak discharge = 7.317 cfs
 Time to peak = 8 min
 Hyd. volume = 10,406 cuft
 Contrib. drain. area = 0.000 ac



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

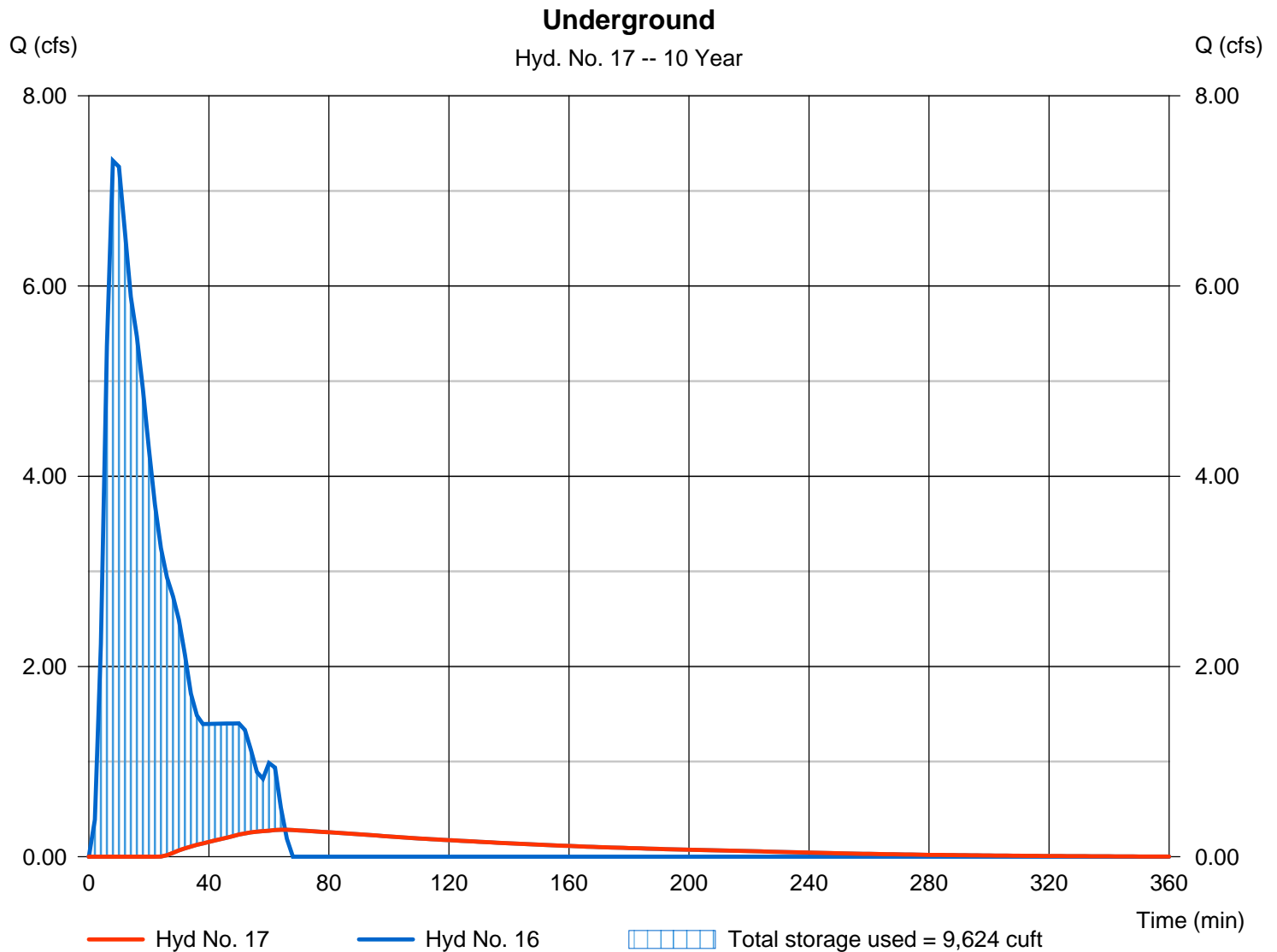
Wednesday, 07 / 11 / 2018

Hyd. No. 17

Underground

Hydrograph type	= Reservoir	Peak discharge	= 0.284 cfs
Storm frequency	= 10 yrs	Time to peak	= 64 min
Time interval	= 2 min	Hyd. volume	= 2,005 cuft
Inflow hyd. No.	= 16 - Inflow	Max. Elevation	= 740.03 ft
Reservoir name	= Underground Storage	Max. Storage	= 9,624 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Hydrograph Report

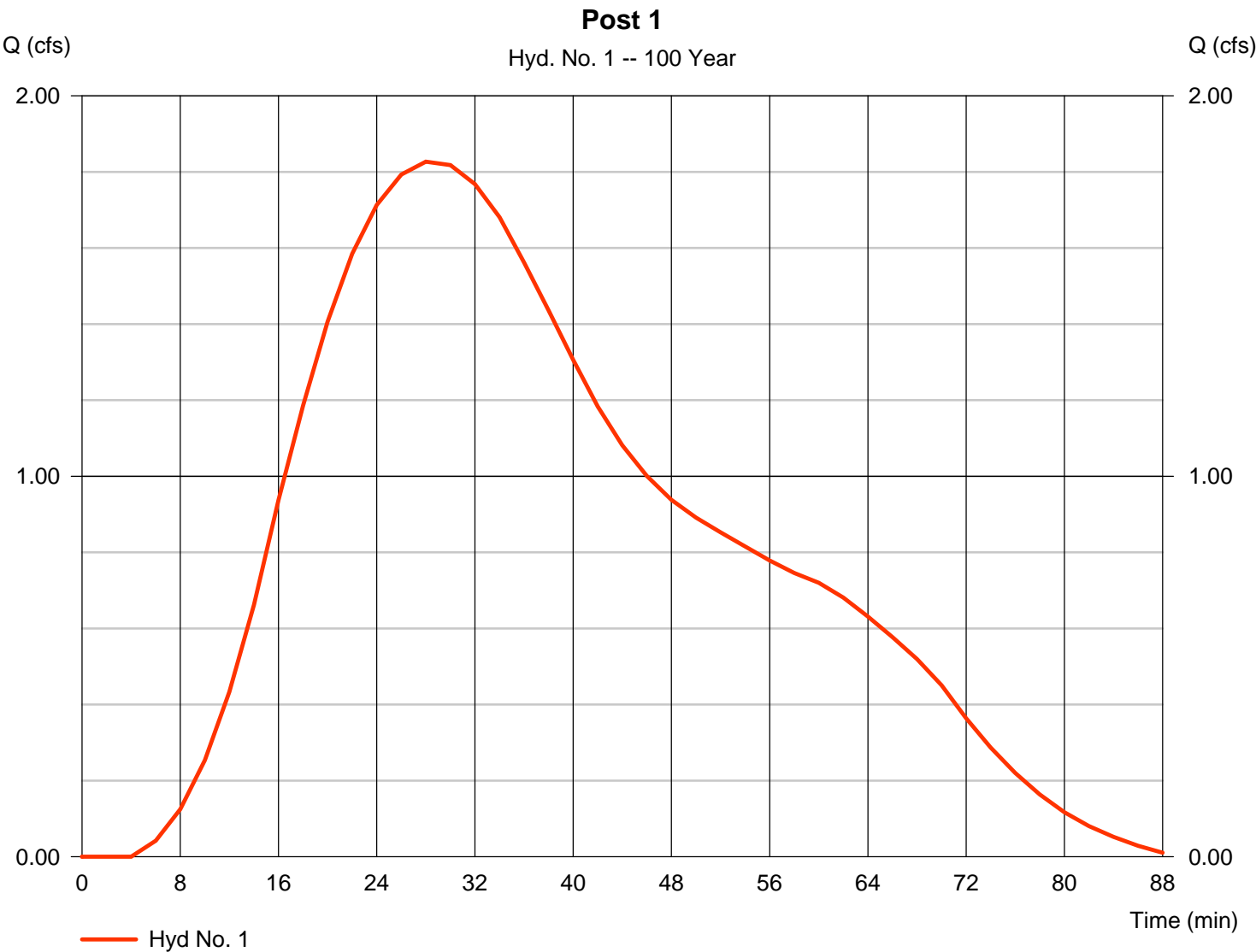
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

Wednesday, 07 / 11 / 2018

Hyd. No. 1

Post 1

Hydrograph type	= SCS Runoff	Peak discharge	= 1.827 cfs
Storm frequency	= 100 yrs	Time to peak	= 28 min
Time interval	= 2 min	Hyd. volume	= 4,167 cuft
Drainage area	= 0.860 ac	Curve number	= 79
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 18.20 min
Total precip.	= 3.21 in	Distribution	= Huff-1st
Storm duration	= 1.00 hrs	Shape factor	= 484



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

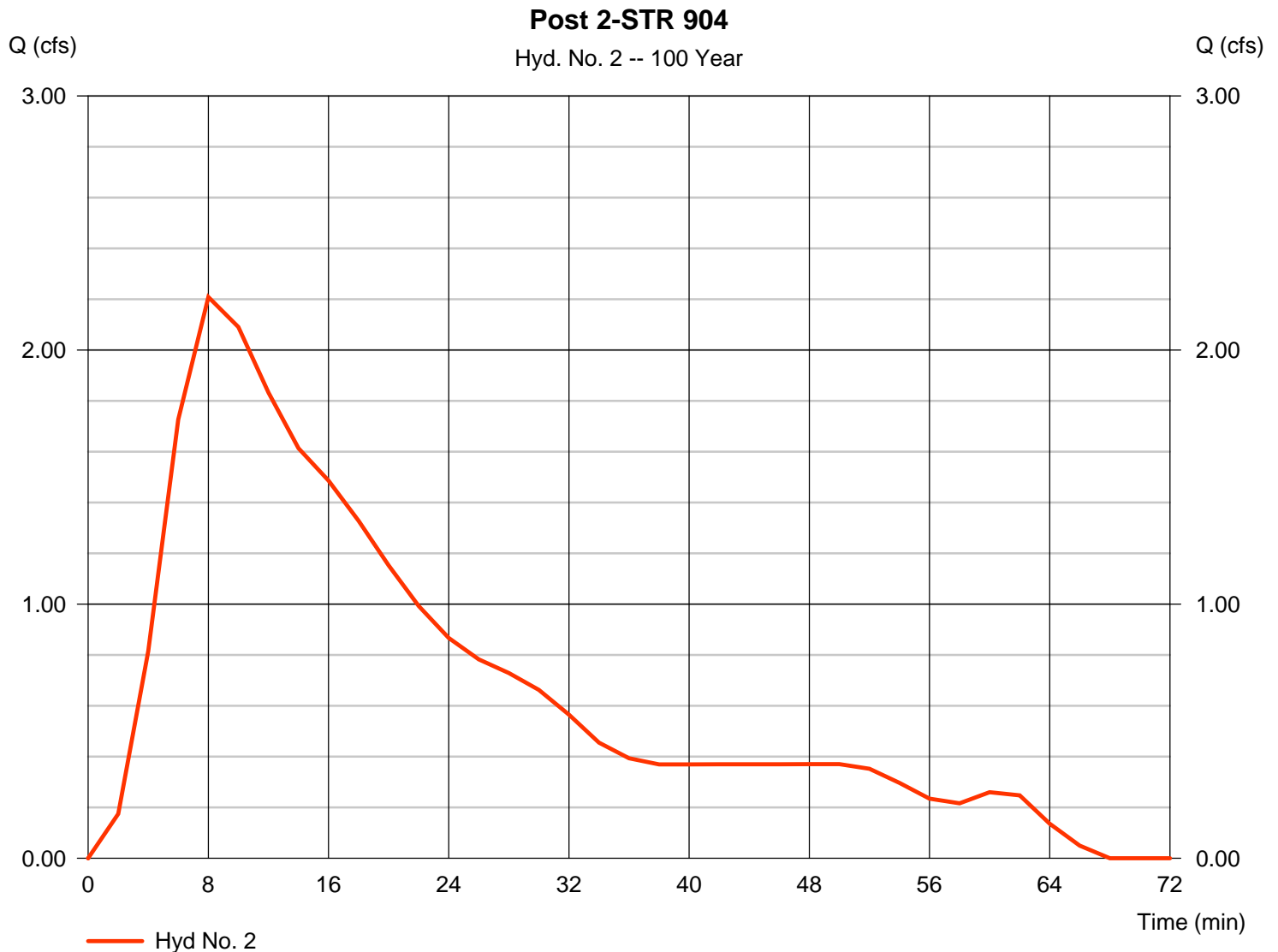
Wednesday, 07 / 11 / 2018

Hyd. No. 2

Post 2-STR 904

Hydrograph type	= SCS Runoff	Peak discharge	= 2.209 cfs
Storm frequency	= 100 yrs	Time to peak	= 8 min
Time interval	= 2 min	Hyd. volume	= 2,911 cuft
Drainage area	= 0.310 ac	Curve number	= 96*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.21 in	Distribution	= Huff-1st
Storm duration	= 1.00 hrs	Shape factor	= 484

* Composite (Area/CN) = $[(0.030 \times 79) + (0.280 \times 98)] / 0.310$



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

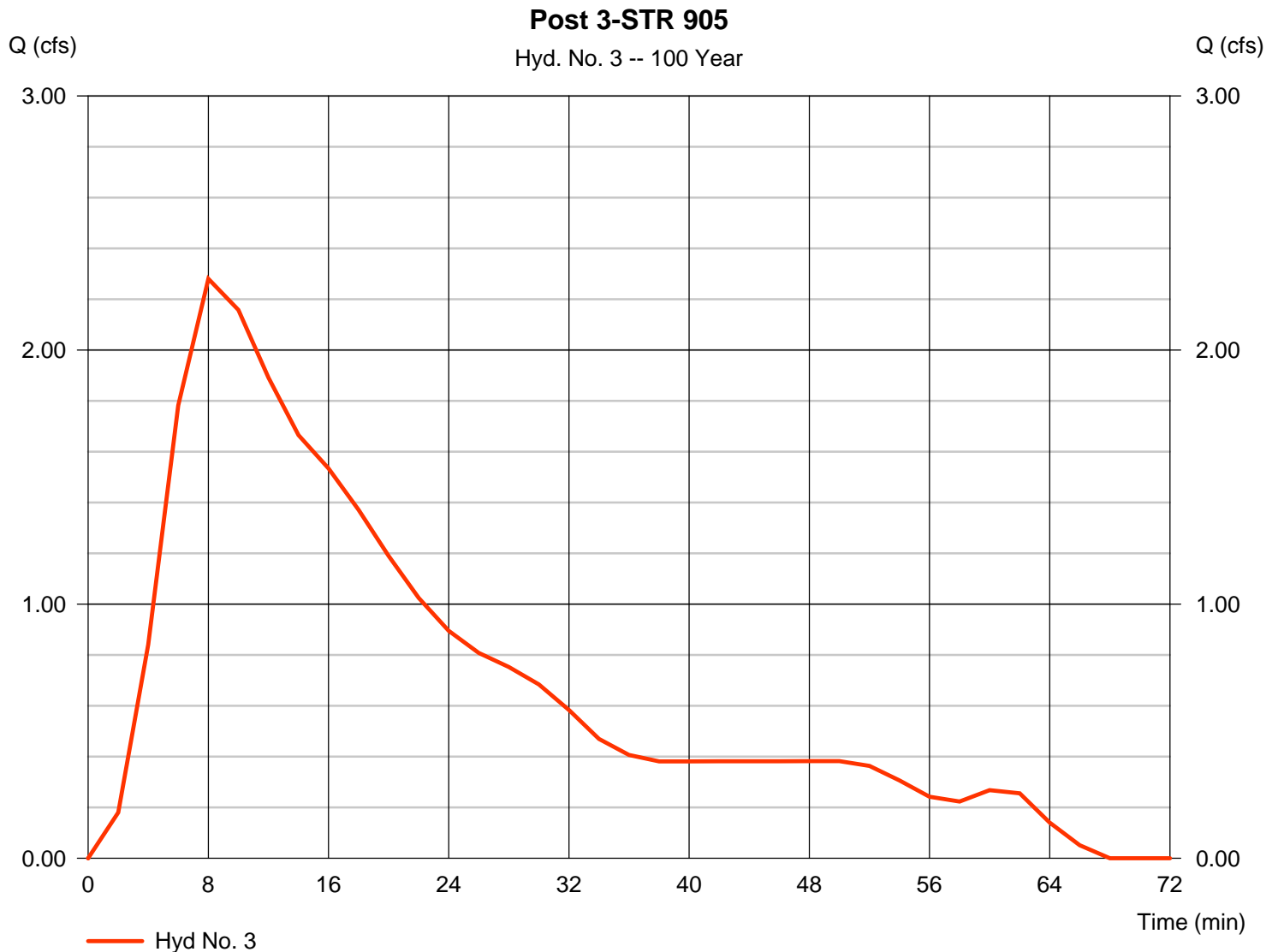
Wednesday, 07 / 11 / 2018

Hyd. No. 3

Post 3-STR 905

Hydrograph type	= SCS Runoff	Peak discharge	= 2.280 cfs
Storm frequency	= 100 yrs	Time to peak	= 8 min
Time interval	= 2 min	Hyd. volume	= 3,005 cuft
Drainage area	= 0.320 ac	Curve number	= 96*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.21 in	Distribution	= Huff-1st
Storm duration	= 1.00 hrs	Shape factor	= 484

* Composite (Area/CN) = $[(0.030 \times 79) + (0.290 \times 98)] / 0.320$



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

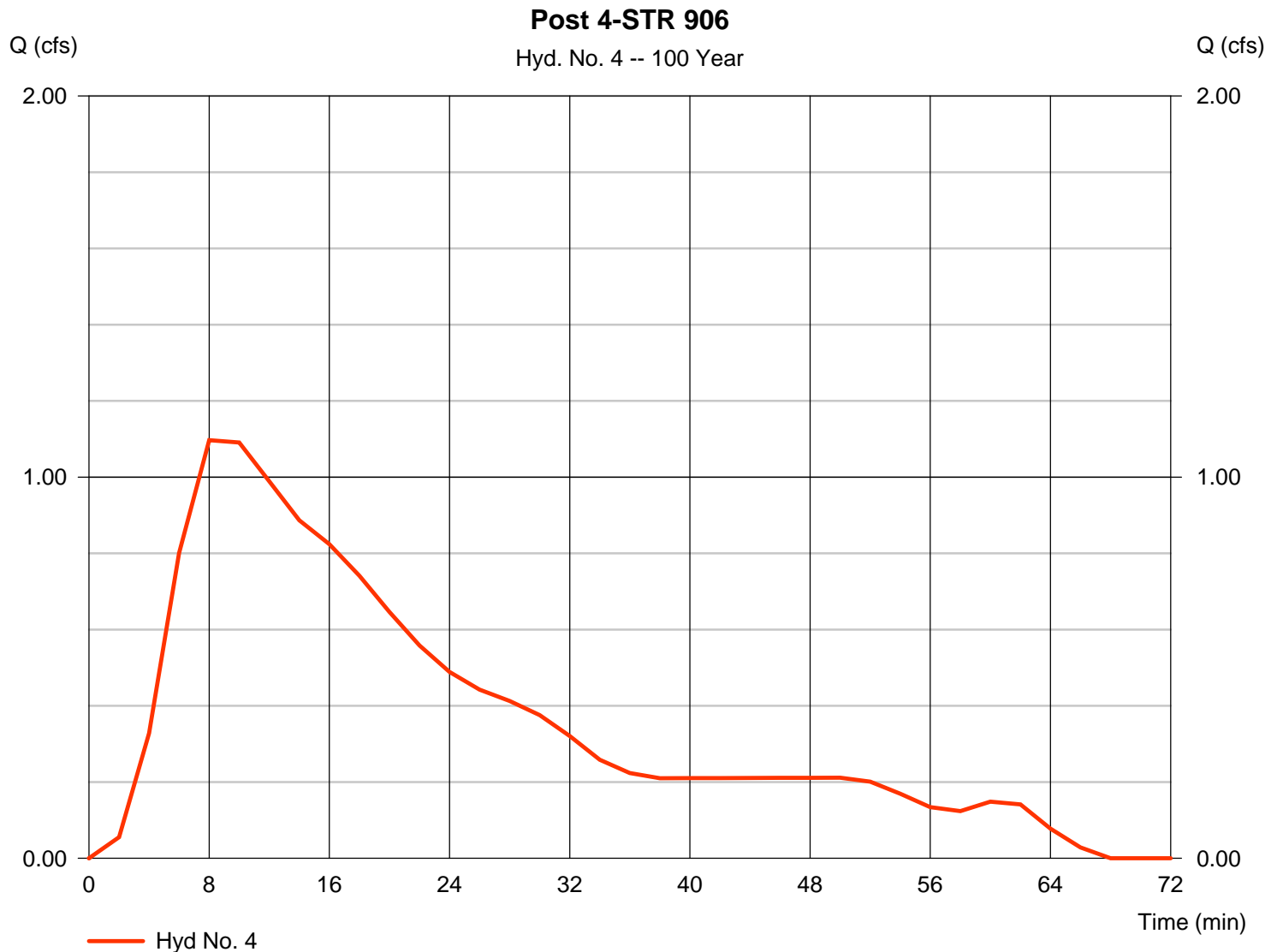
Wednesday, 07 / 11 / 2018

Hyd. No. 4

Post 4-STR 906

Hydrograph type	= SCS Runoff	Peak discharge	= 1.097 cfs
Storm frequency	= 100 yrs	Time to peak	= 8 min
Time interval	= 2 min	Hyd. volume	= 1,564 cuft
Drainage area	= 0.180 ac	Curve number	= 94*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.21 in	Distribution	= Huff-1st
Storm duration	= 1.00 hrs	Shape factor	= 484

* Composite (Area/CN) = $[(0.040 \times 79) + (0.140 \times 98)] / 0.180$



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

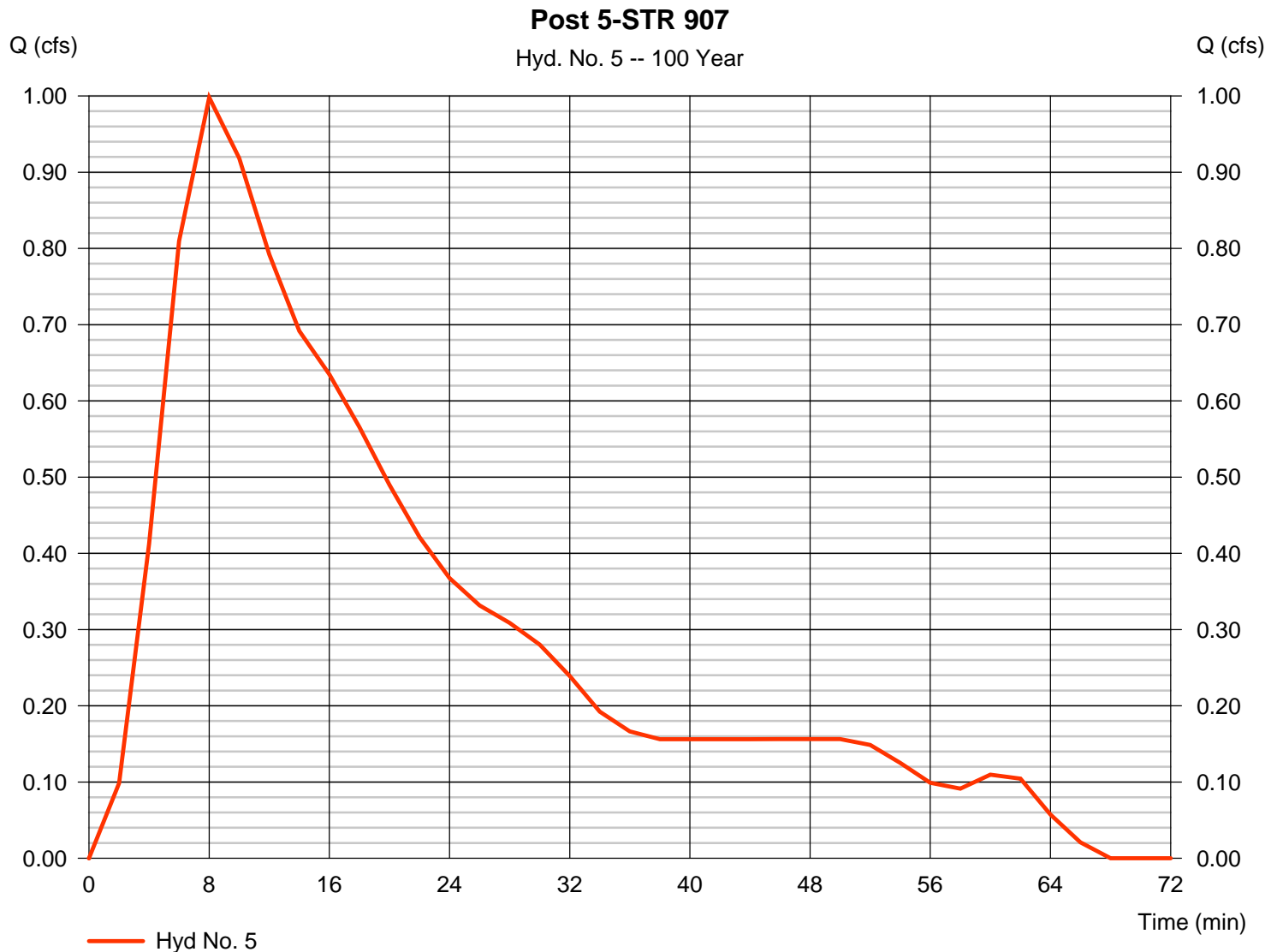
Wednesday, 07 / 11 / 2018

Hyd. No. 5

Post 5-STR 907

Hydrograph type	= SCS Runoff	Peak discharge	= 0.998 cfs
Storm frequency	= 100 yrs	Time to peak	= 8 min
Time interval	= 2 min	Hyd. volume	= 1,268 cuft
Drainage area	= 0.130 ac	Curve number	= 97*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.21 in	Distribution	= Huff-1st
Storm duration	= 1.00 hrs	Shape factor	= 484

* Composite (Area/CN) = $[(0.010 \times 79) + (0.120 \times 98)] / 0.130$



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

Wednesday, 07 / 11 / 2018

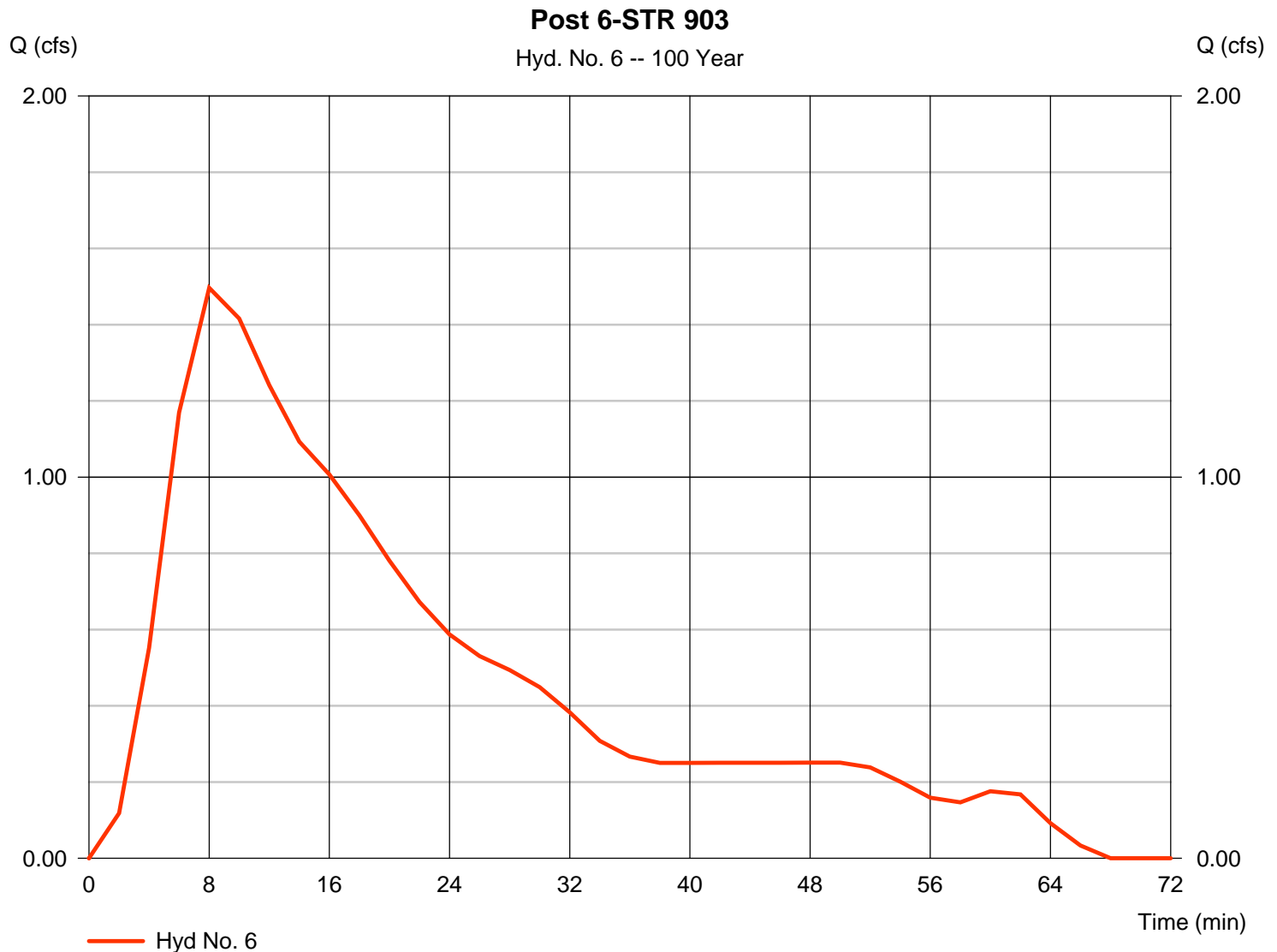
Hyd. No. 6

Post 6-STR 903

Hydrograph type = SCS Runoff
 Storm frequency = 100 yrs
 Time interval = 2 min
 Drainage area = 0.210 ac
 Basin Slope = 0.0 %
 Tc method = User
 Total precip. = 3.21 in
 Storm duration = 1.00 hrs

Peak discharge = 1.496 cfs
 Time to peak = 8 min
 Hyd. volume = 1,972 cuft
 Curve number = 96*
 Hydraulic length = 0 ft
 Time of conc. (Tc) = 5.00 min
 Distribution = Huff-1st
 Shape factor = 484

* Composite (Area/CN) = $[(0.020 \times 79) + (0.190 \times 98)] / 0.210$



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

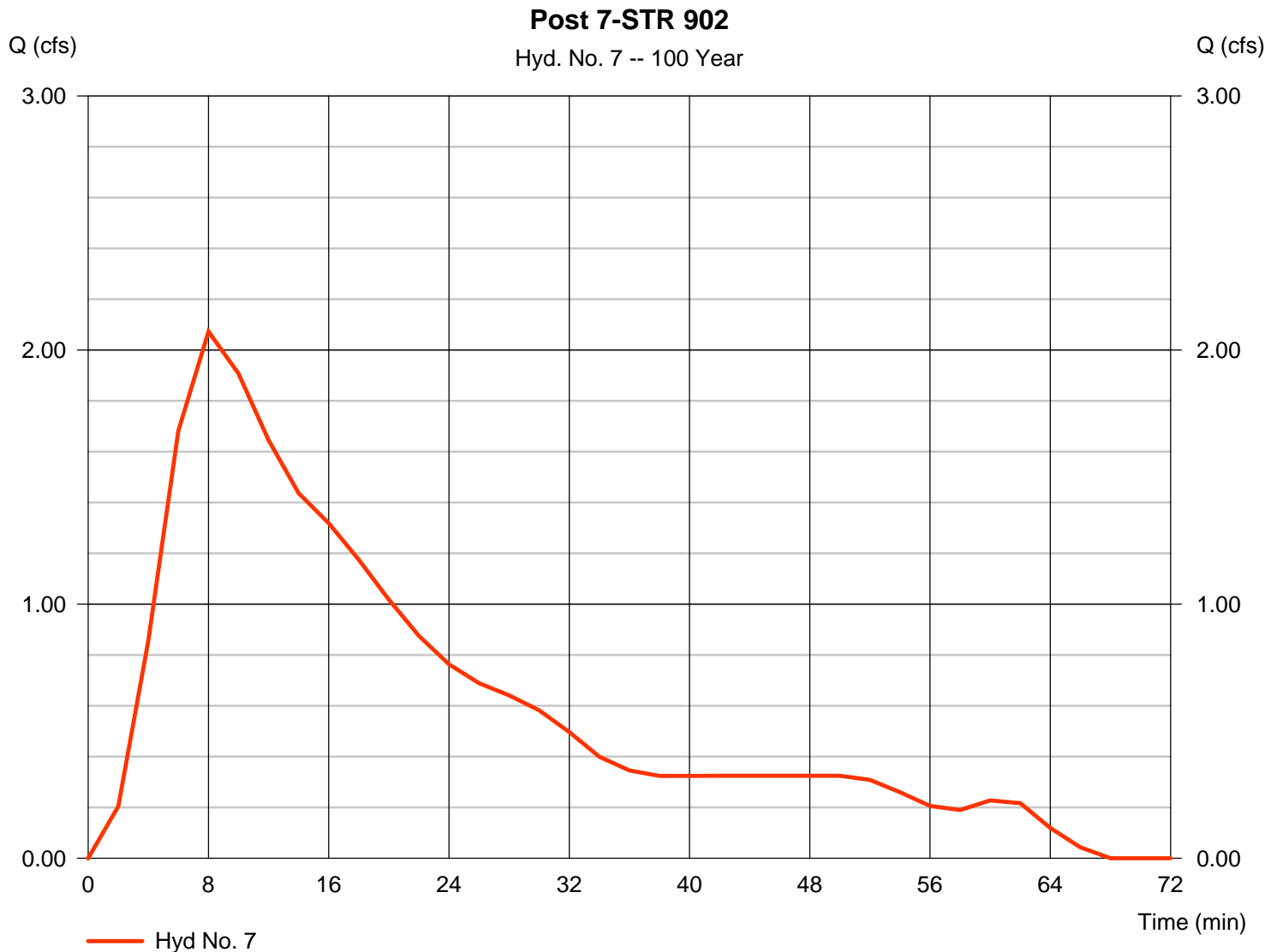
Wednesday, 07 / 11 / 2018

Hyd. No. 7

Post 7-STR 902

Hydrograph type	= SCS Runoff	Peak discharge	= 2.073 cfs
Storm frequency	= 100 yrs	Time to peak	= 8 min
Time interval	= 2 min	Hyd. volume	= 2,634 cuft
Drainage area	= 0.270 ac	Curve number	= 97*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.21 in	Distribution	= Huff-1st
Storm duration	= 1.00 hrs	Shape factor	= 484

* Composite (Area/CN) = $[(0.020 \times 79) + (0.250 \times 98)] / 0.270$



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

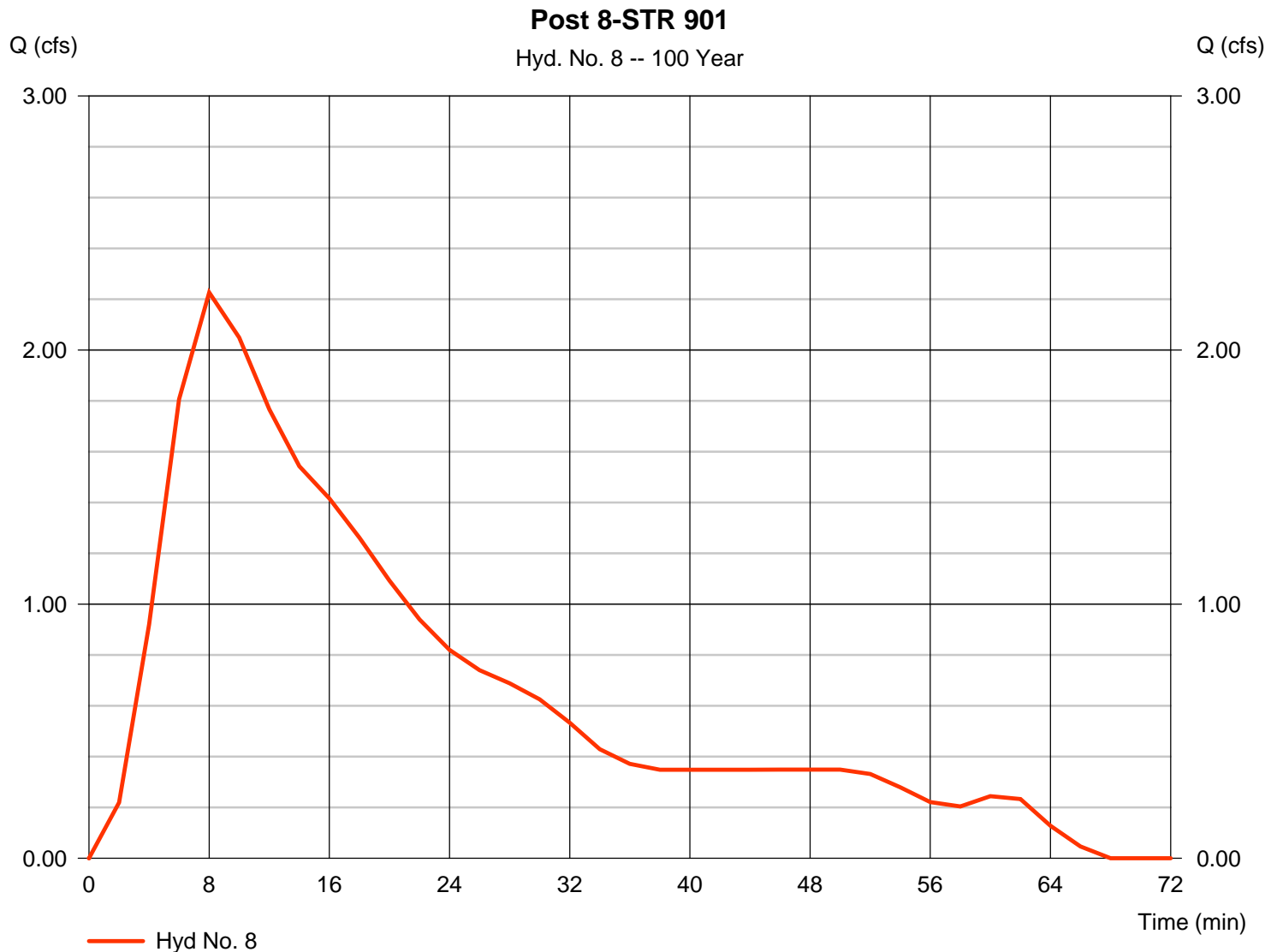
Wednesday, 07 / 11 / 2018

Hyd. No. 8

Post 8-STR 901

Hydrograph type	= SCS Runoff	Peak discharge	= 2.226 cfs
Storm frequency	= 100 yrs	Time to peak	= 8 min
Time interval	= 2 min	Hyd. volume	= 2,829 cuft
Drainage area	= 0.290 ac	Curve number	= 97*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.21 in	Distribution	= Huff-1st
Storm duration	= 1.00 hrs	Shape factor	= 484

* Composite (Area/CN) = $[(0.020 \times 79) + (0.270 \times 98)] / 0.290$



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

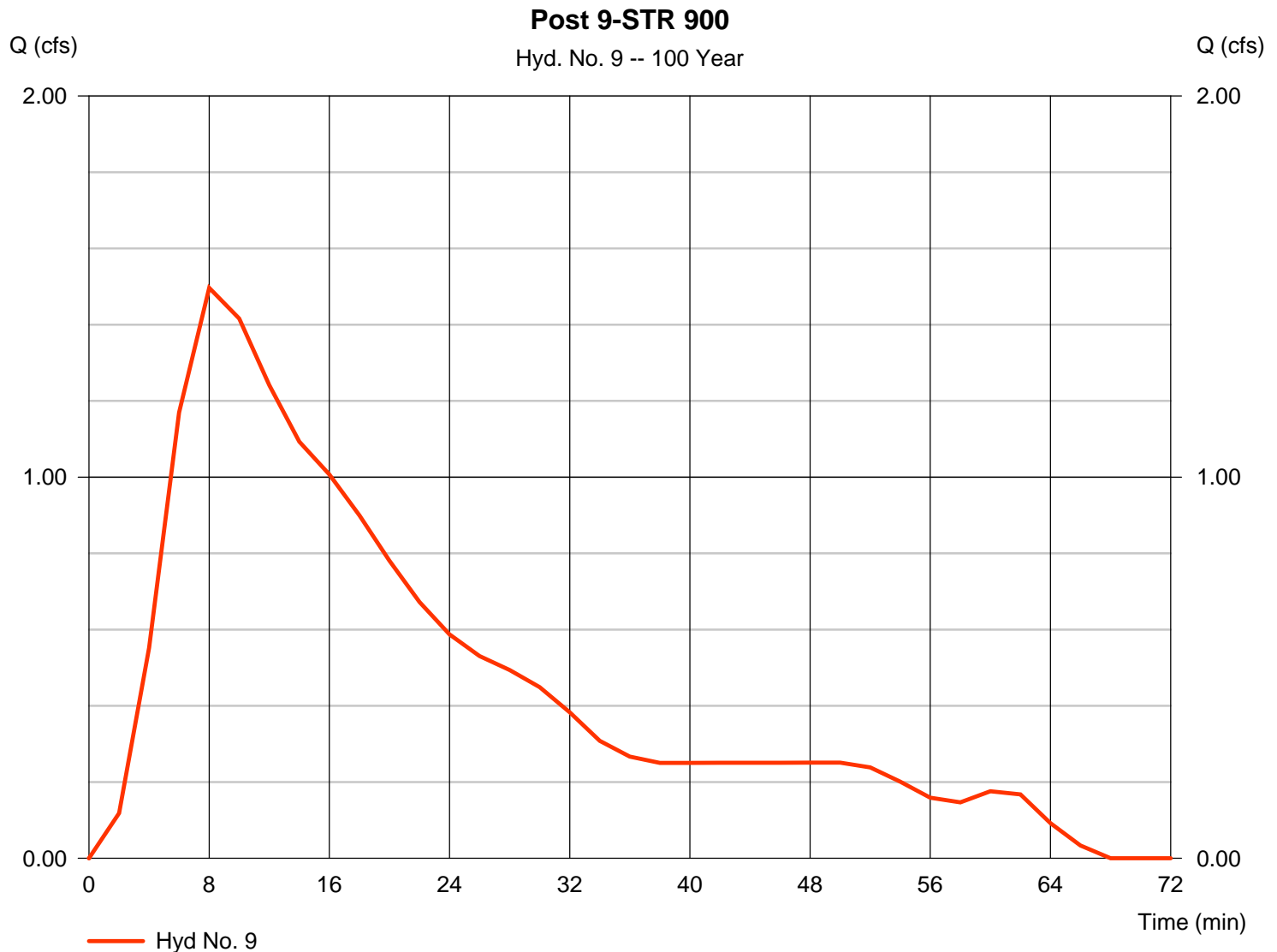
Wednesday, 07 / 11 / 2018

Hyd. No. 9

Post 9-STR 900

Hydrograph type	= SCS Runoff	Peak discharge	= 1.496 cfs
Storm frequency	= 100 yrs	Time to peak	= 8 min
Time interval	= 2 min	Hyd. volume	= 1,972 cuft
Drainage area	= 0.210 ac	Curve number	= 96*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.21 in	Distribution	= Huff-1st
Storm duration	= 1.00 hrs	Shape factor	= 484

* Composite (Area/CN) = $[(0.020 \times 79) + (0.190 \times 98)] / 0.210$



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

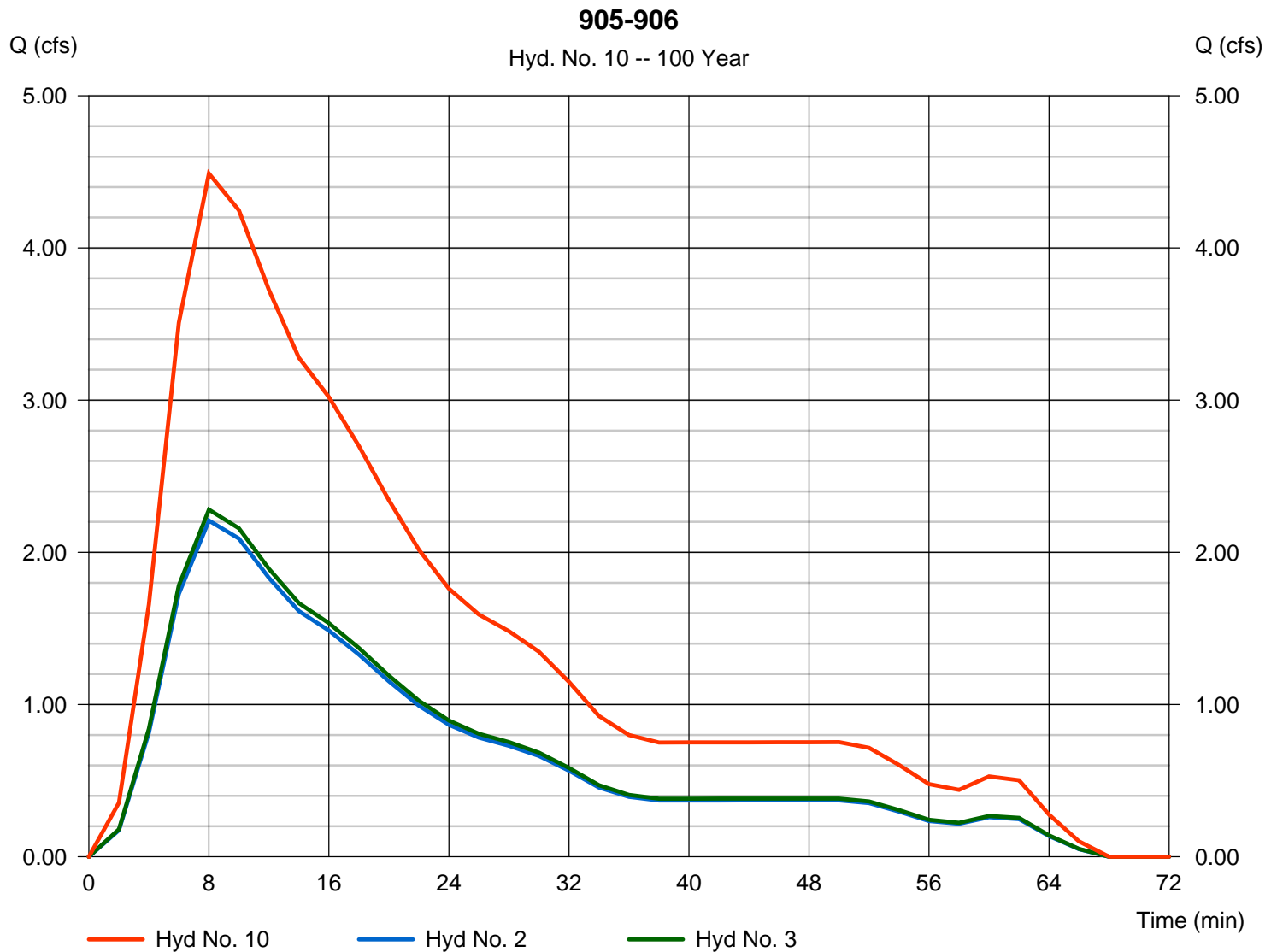
Wednesday, 07 / 11 / 2018

Hyd. No. 10

905-906

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

Peak discharge = 4.489 cfs
 Time to peak = 8 min
 Hyd. volume = 5,915 cuft
 Contrib. drain. area = 0.630 ac



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

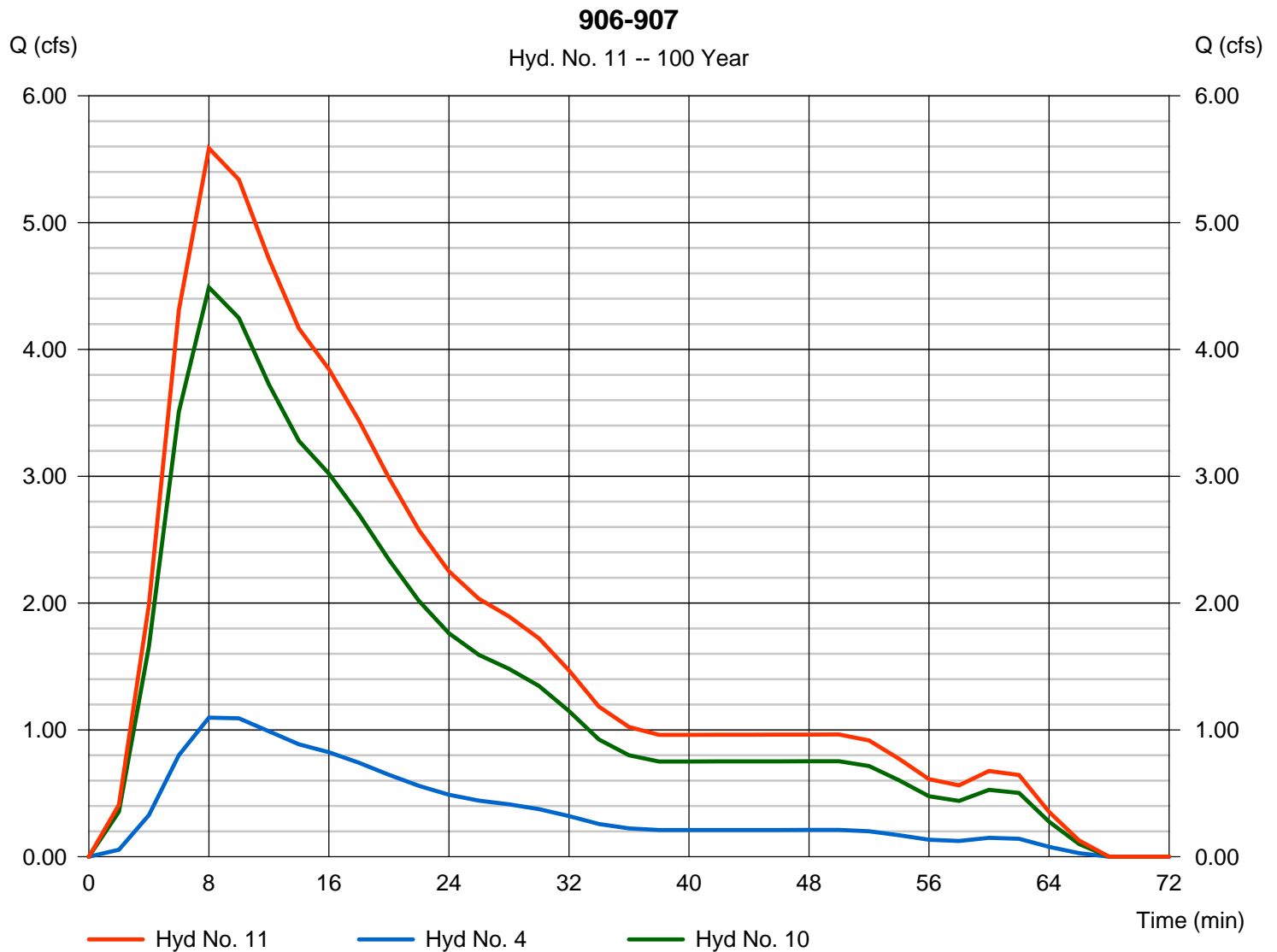
Wednesday, 07 / 11 / 2018

Hyd. No. 11

906-907

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

Peak discharge = 5.586 cfs
 Time to peak = 8 min
 Hyd. volume = 7,479 cuft
 Contrib. drain. area = 0.180 ac



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

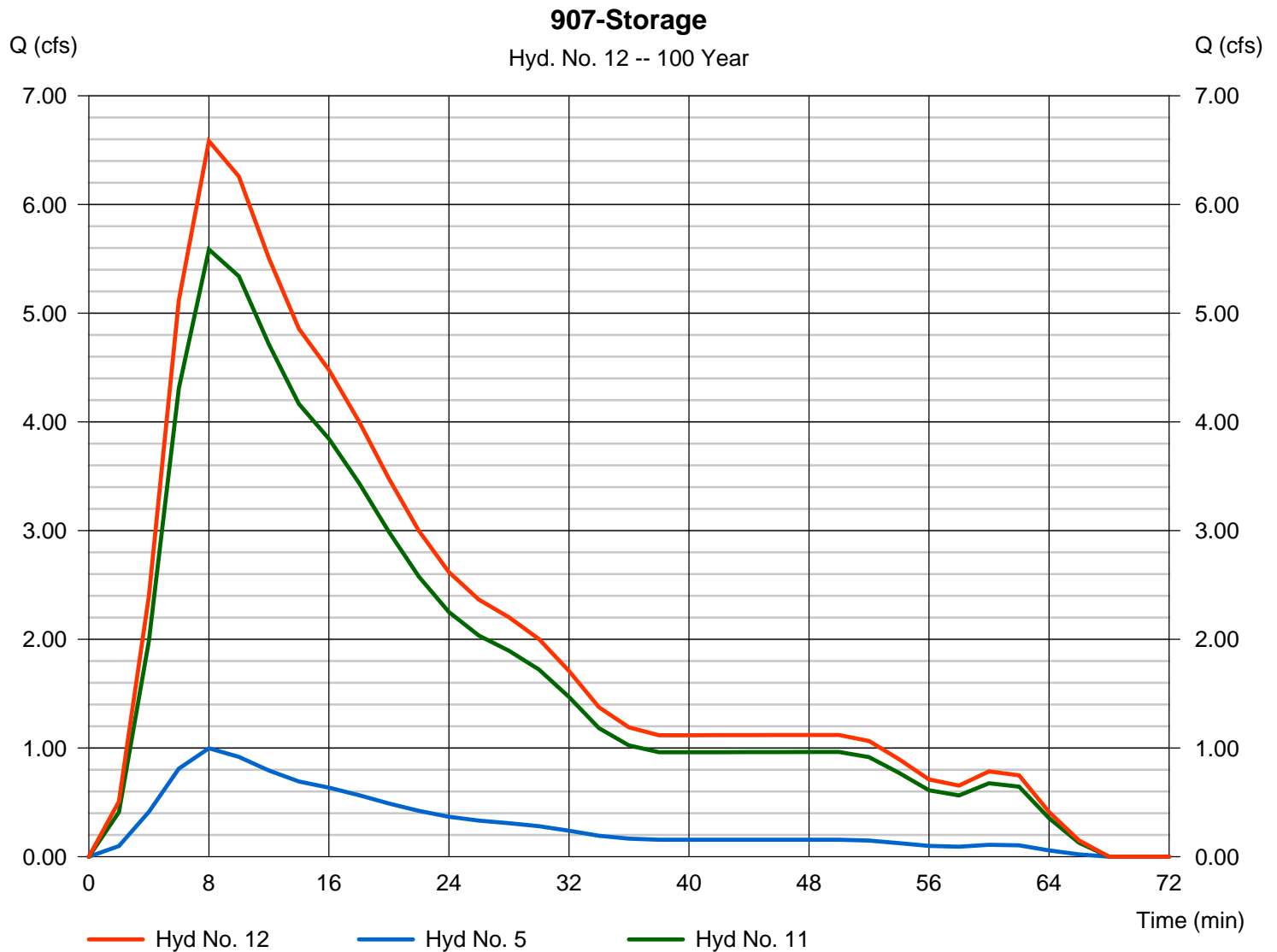
Wednesday, 07 / 11 / 2018

Hyd. No. 12

907-Storage

Hydrograph type = Combine
 Storm frequency = 100 yrs
 Time interval = 2 min
 Inflow hyds. = 5, 11

Peak discharge = 6.584 cfs
 Time to peak = 8 min
 Hyd. volume = 8,748 cuft
 Contrib. drain. area = 0.130 ac



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

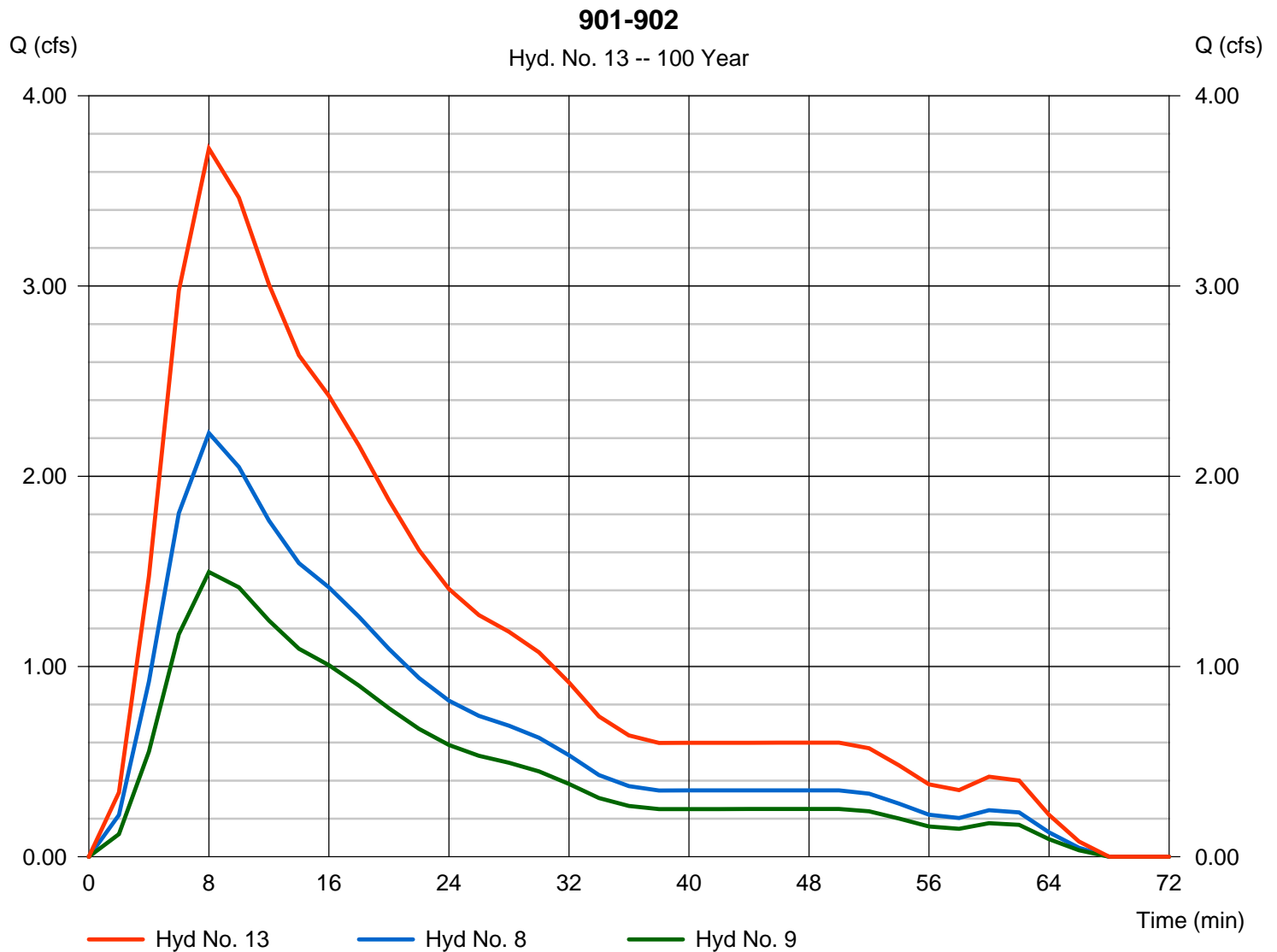
Wednesday, 07 / 11 / 2018

Hyd. No. 13

901-902

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

Peak discharge = 3.723 cfs
 Time to peak = 8 min
 Hyd. volume = 4,801 cuft
 Contrib. drain. area = 0.500 ac



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

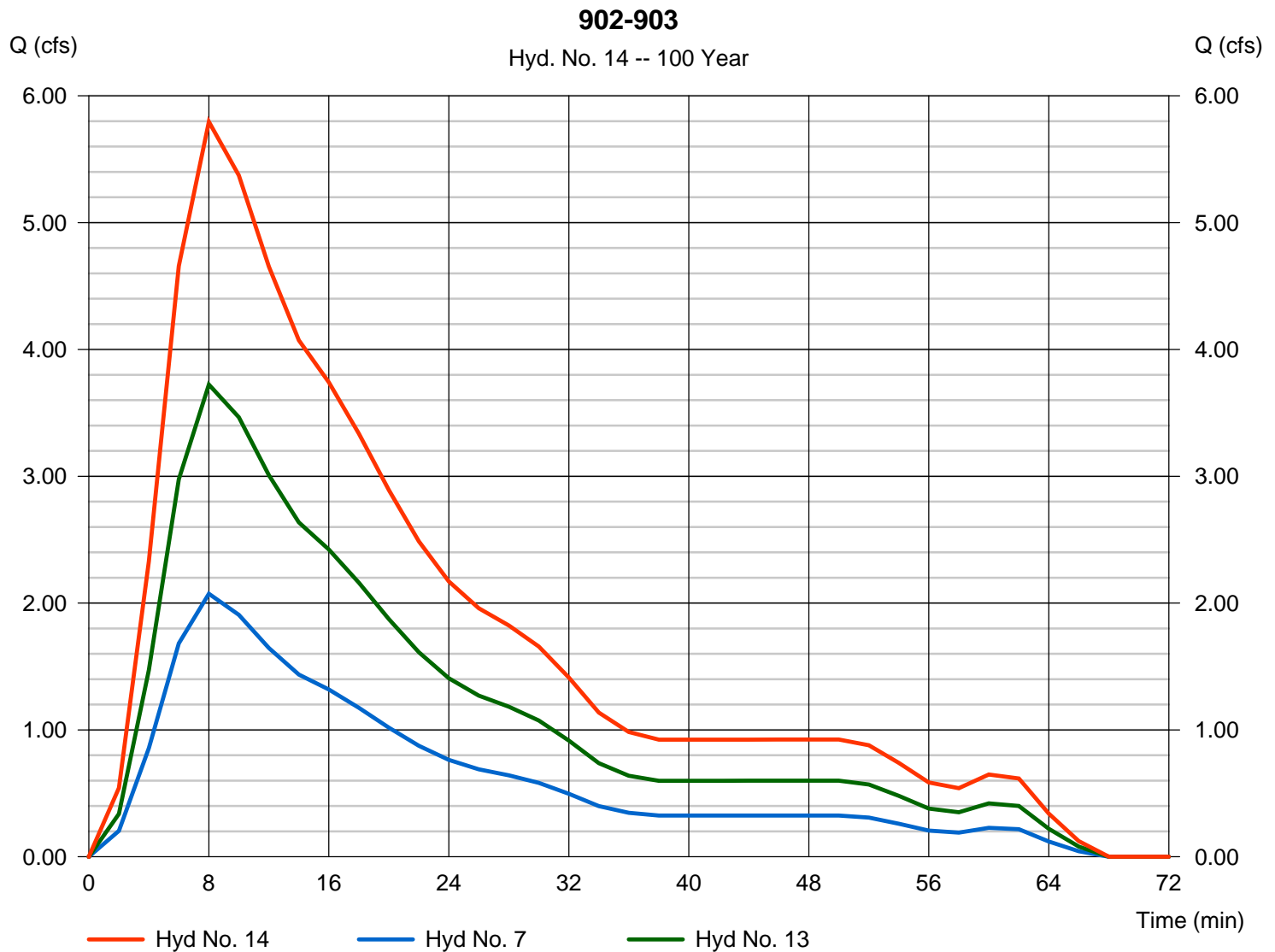
Wednesday, 07 / 11 / 2018

Hyd. No. 14

902-903

Hydrograph type = Combine
 Storm frequency = 100 yrs
 Time interval = 2 min
 Inflow hyds. = 7, 13

Peak discharge = 5.796 cfs
 Time to peak = 8 min
 Hyd. volume = 7,435 cuft
 Contrib. drain. area = 0.270 ac



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

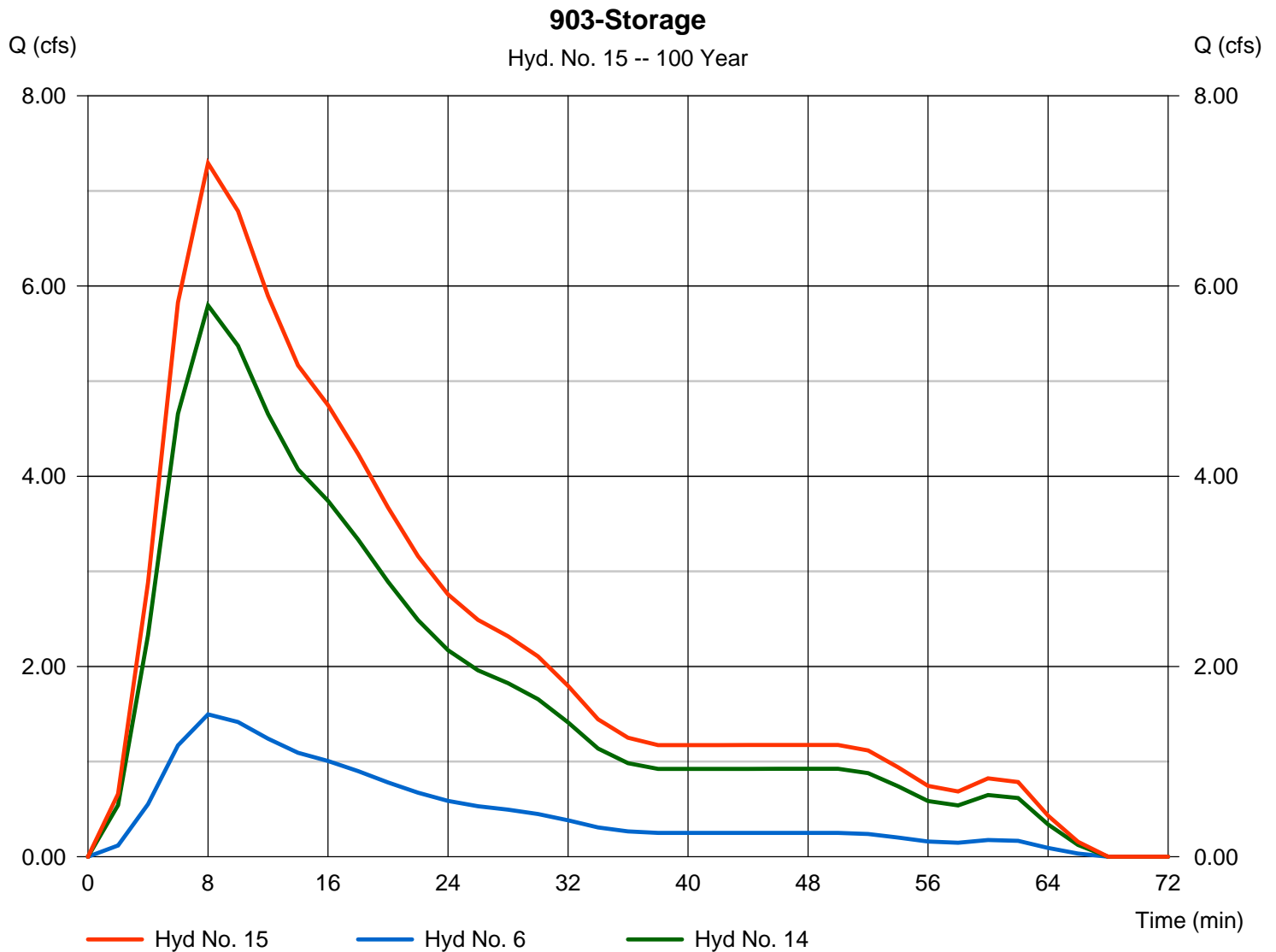
Wednesday, 07 / 11 / 2018

Hyd. No. 15

903-Storage

Hydrograph type = Combine
 Storm frequency = 100 yrs
 Time interval = 2 min
 Inflow hyds. = 6, 14

Peak discharge = 7.292 cfs
 Time to peak = 8 min
 Hyd. volume = 9,406 cuft
 Contrib. drain. area = 0.210 ac



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

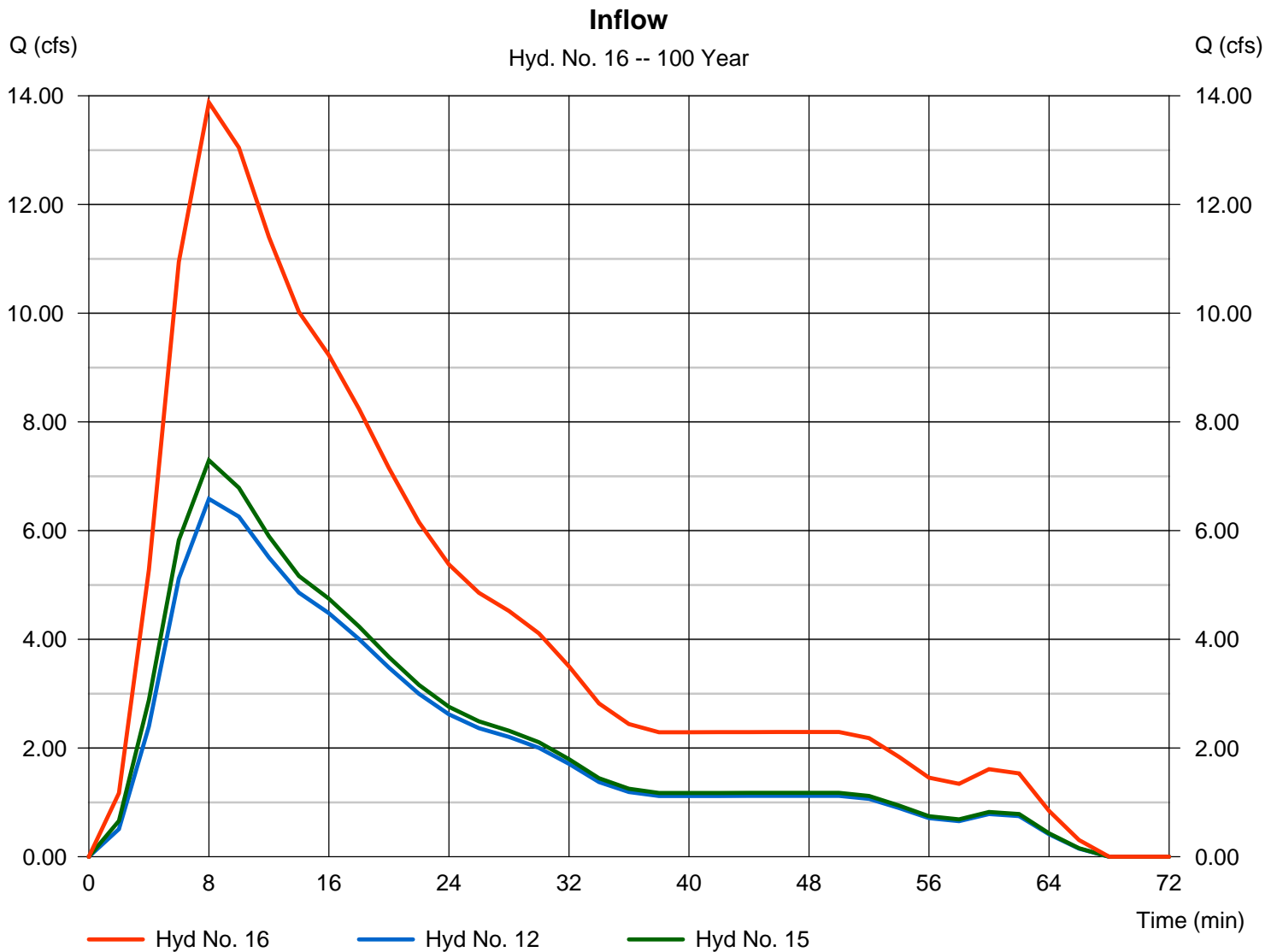
Wednesday, 07 / 11 / 2018

Hyd. No. 16

Inflow

Hydrograph type = Combine
 Storm frequency = 100 yrs
 Time interval = 2 min
 Inflow hyds. = 12, 15

Peak discharge = 13.88 cfs
 Time to peak = 8 min
 Hyd. volume = 18,154 cuft
 Contrib. drain. area = 0.000 ac



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

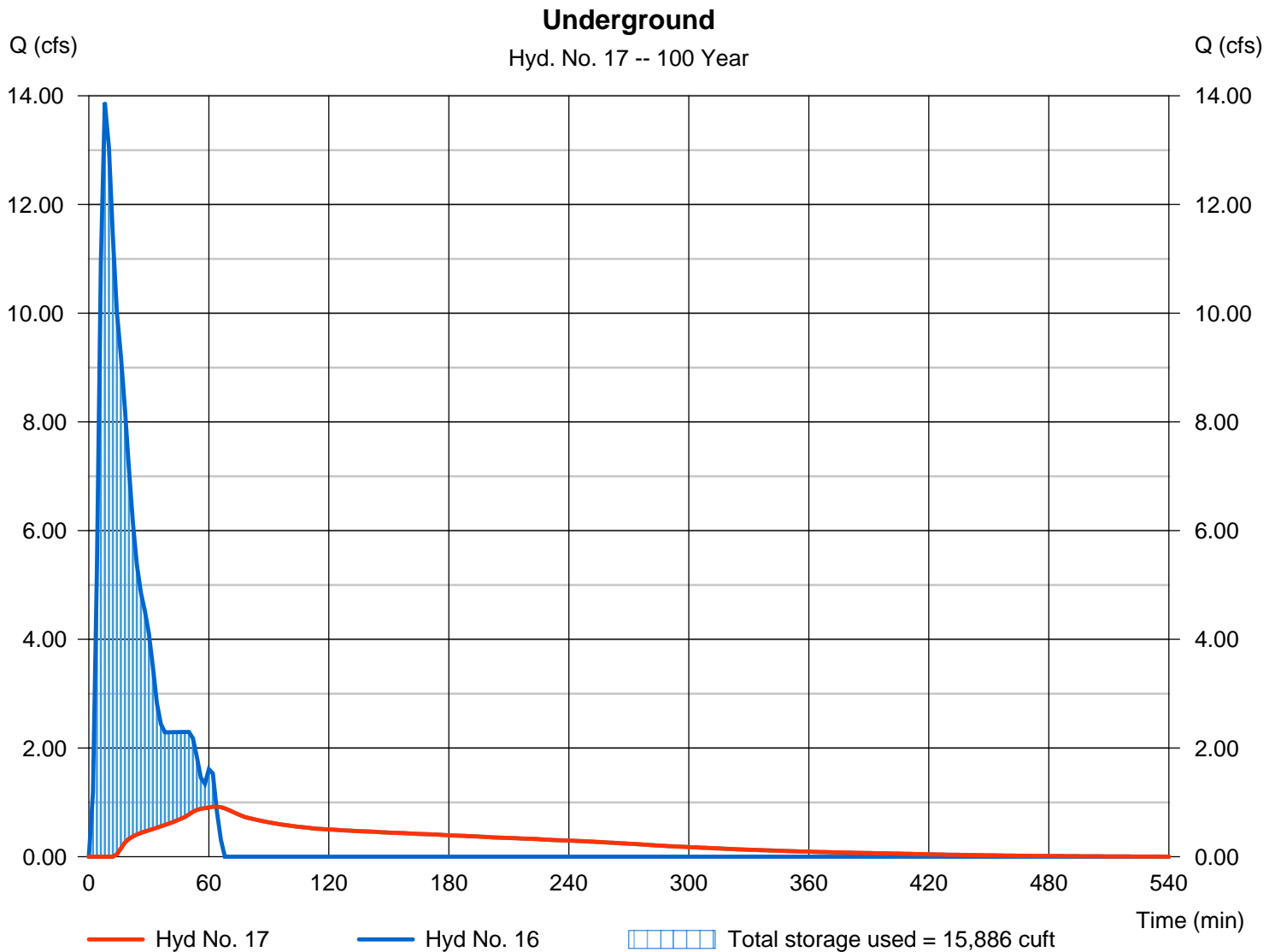
Wednesday, 07 / 11 / 2018

Hyd. No. 17

Underground

Hydrograph type	= Reservoir	Peak discharge	= 0.921 cfs
Storm frequency	= 100 yrs	Time to peak	= 64 min
Time interval	= 2 min	Hyd. volume	= 8,524 cuft
Inflow hyd. No.	= 16 - Inflow	Max. Elevation	= 740.93 ft
Reservoir name	= Underground Storage	Max. Storage	= 15,886 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Appendix F

*Hydraflow Hydrographs
2 Hour Storm Data*

Hydrograph Report

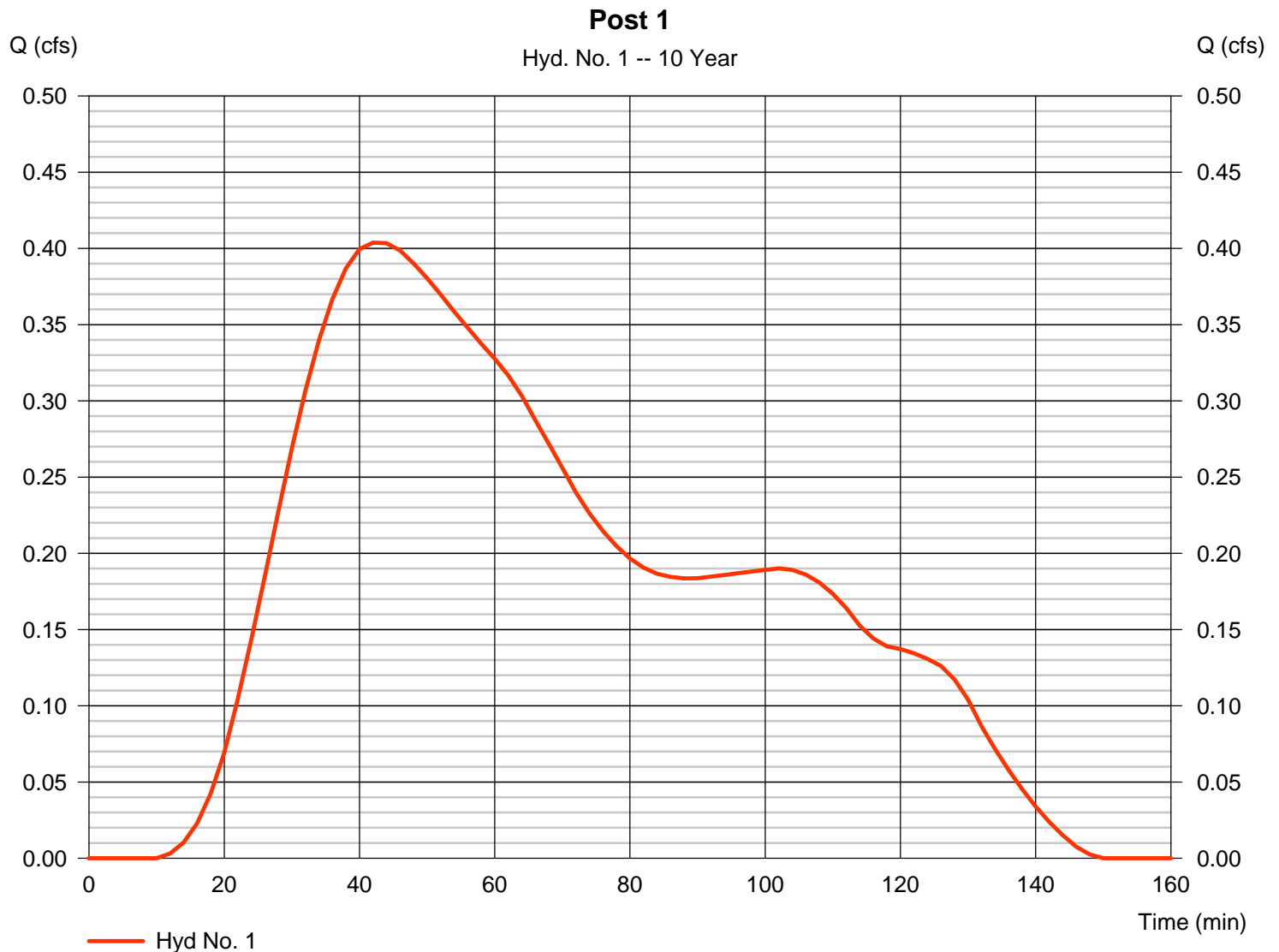
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

Wednesday, 07 / 11 / 2018

Hyd. No. 1

Post 1

Hydrograph type	= SCS Runoff	Peak discharge	= 0.404 cfs
Storm frequency	= 10 yrs	Time to peak	= 42 min
Time interval	= 2 min	Hyd. volume	= 1,631 cuft
Drainage area	= 0.860 ac	Curve number	= 79
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 18.20 min
Total precip.	= 2.00 in	Distribution	= Huff-1st
Storm duration	= 2.00 hrs	Shape factor	= 484



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

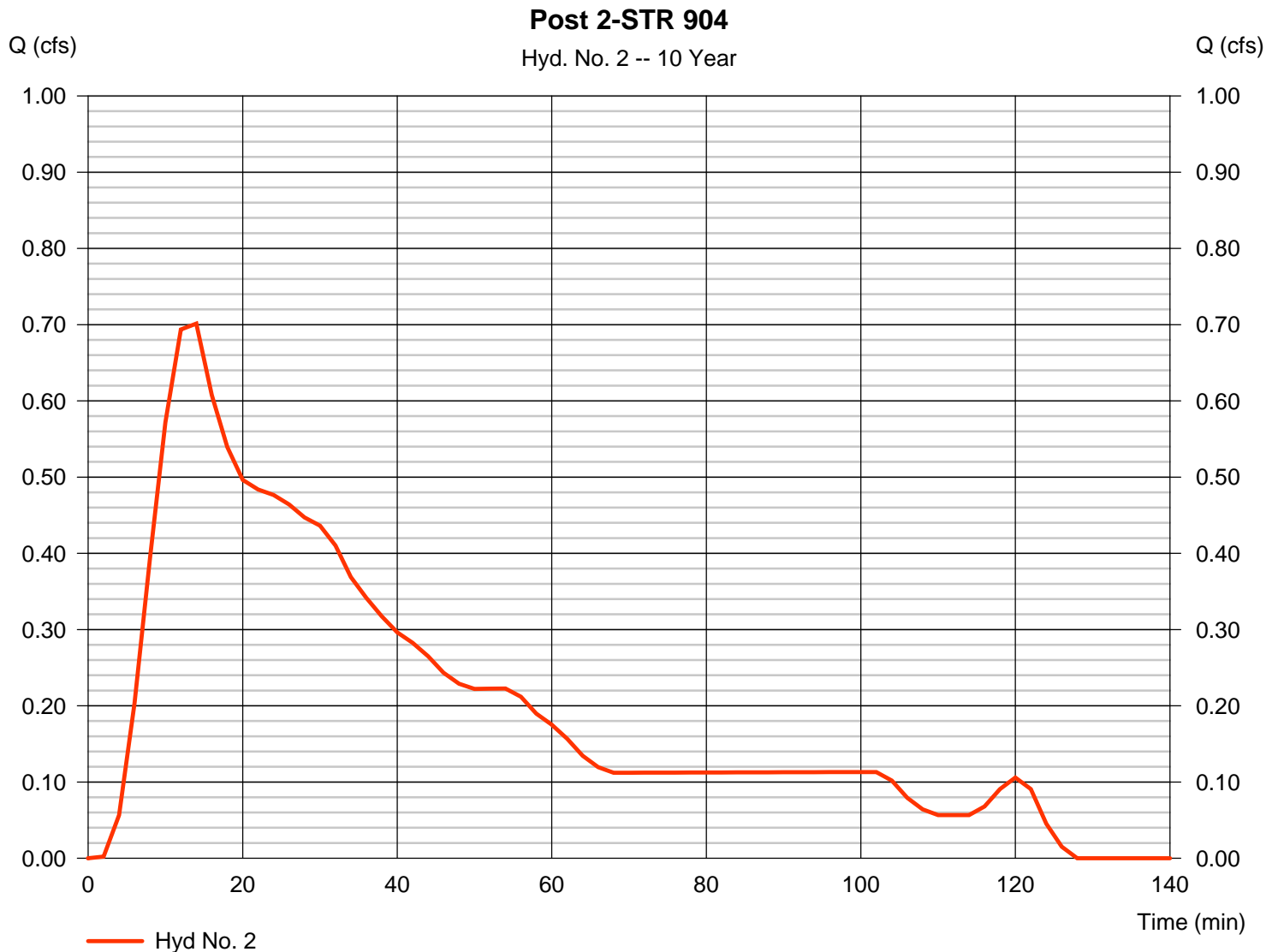
Wednesday, 07 / 11 / 2018

Hyd. No. 2

Post 2-STR 904

Hydrograph type	= SCS Runoff	Peak discharge	= 0.701 cfs
Storm frequency	= 10 yrs	Time to peak	= 14 min
Time interval	= 2 min	Hyd. volume	= 1,661 cuft
Drainage area	= 0.310 ac	Curve number	= 96*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 2.00 in	Distribution	= Huff-1st
Storm duration	= 2.00 hrs	Shape factor	= 484

* Composite (Area/CN) = $[(0.030 \times 79) + (0.280 \times 98)] / 0.310$



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

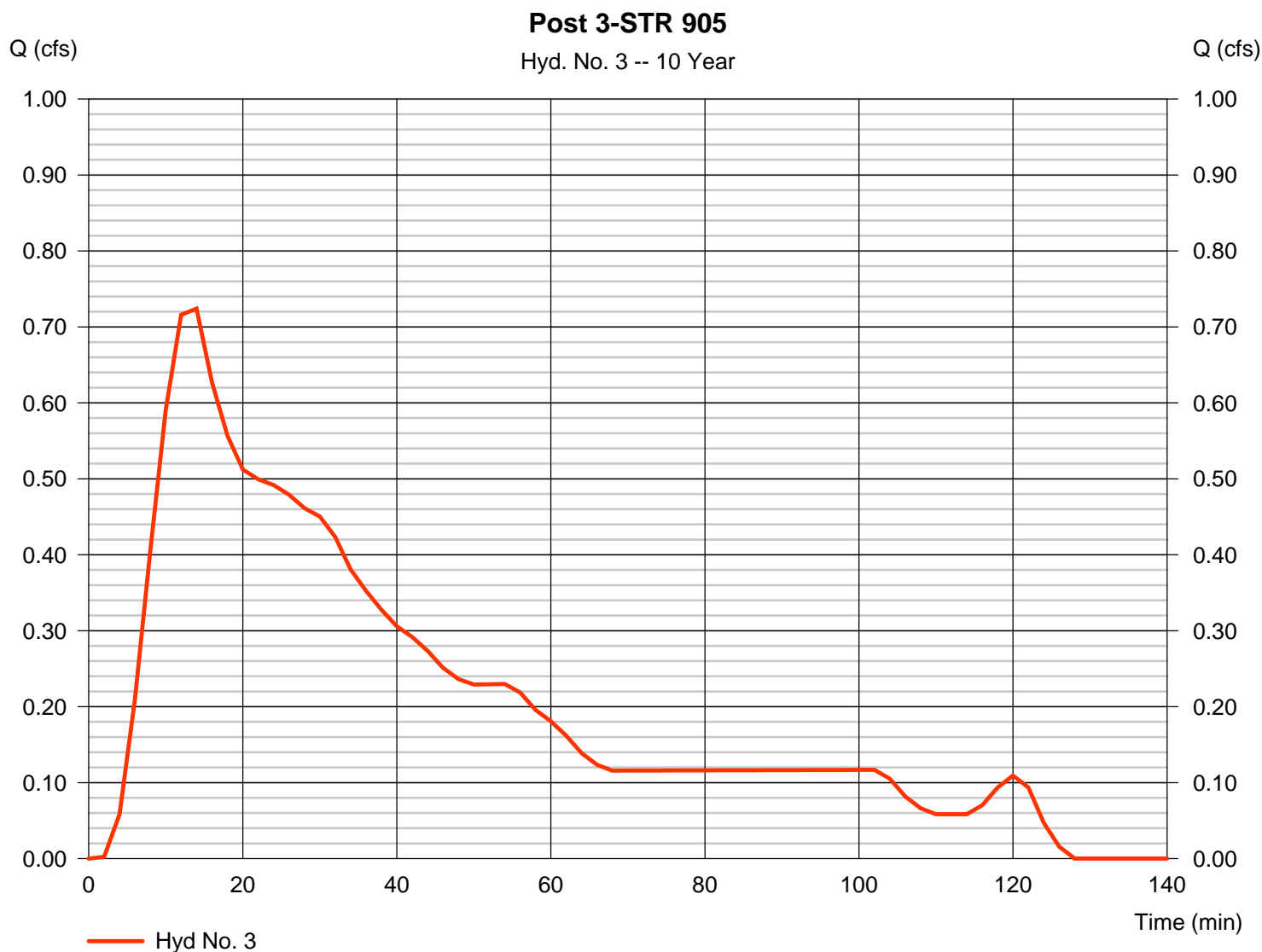
Wednesday, 07 / 11 / 2018

Hyd. No. 3

Post 3-STR 905

Hydrograph type	= SCS Runoff	Peak discharge	= 0.724 cfs
Storm frequency	= 10 yrs	Time to peak	= 14 min
Time interval	= 2 min	Hyd. volume	= 1,715 cuft
Drainage area	= 0.320 ac	Curve number	= 96*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 2.00 in	Distribution	= Huff-1st
Storm duration	= 2.00 hrs	Shape factor	= 484

* Composite (Area/CN) = $[(0.030 \times 79) + (0.290 \times 98)] / 0.320$



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

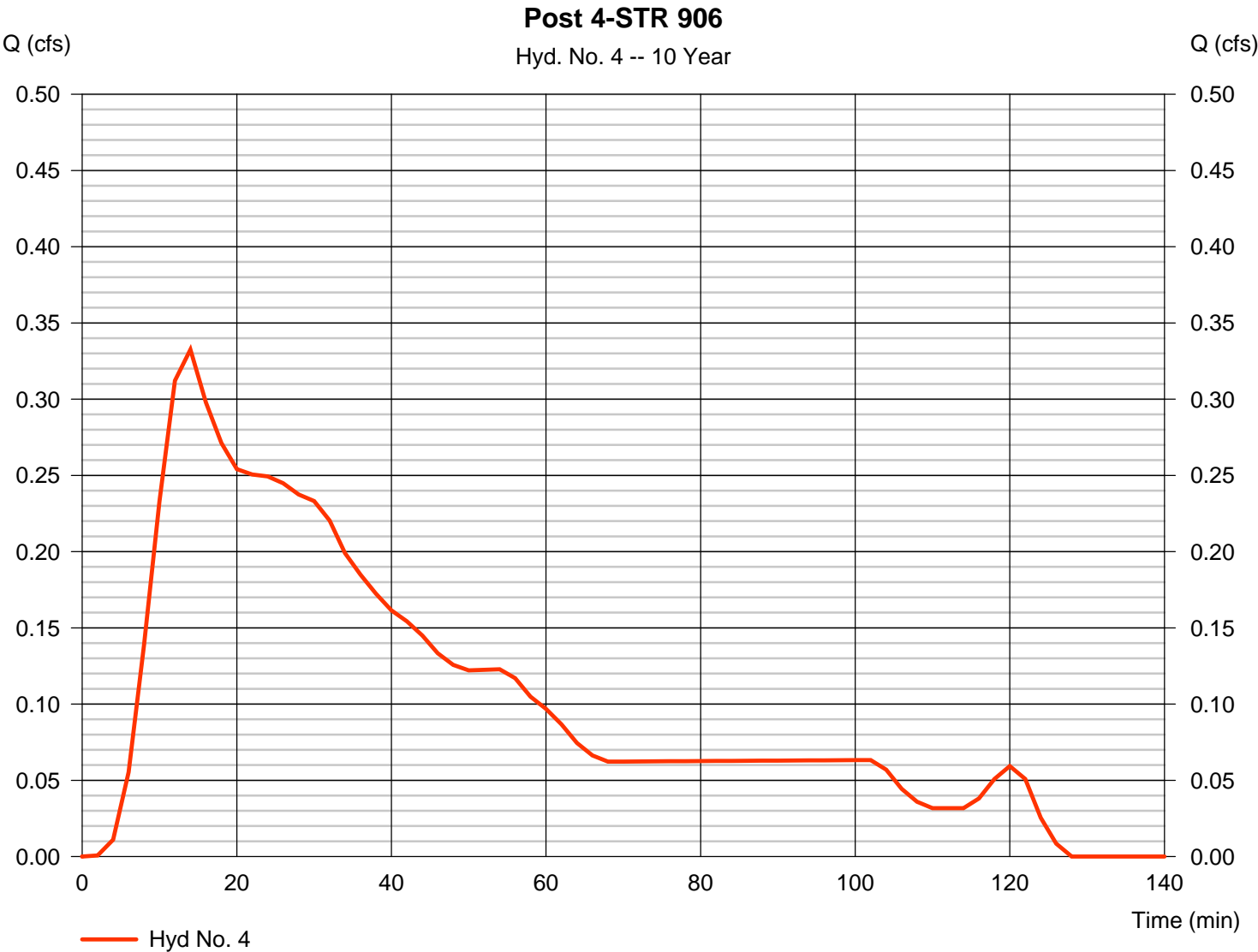
Wednesday, 07 / 11 / 2018

Hyd. No. 4

Post 4-STR 906

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.333 cfs
Storm frequency	=	10 yrs	Time to peak	=	14 min
Time interval	=	2 min	Hyd. volume	=	855 cuft
Drainage area	=	0.180 ac	Curve number	=	94*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	2.00 in	Distribution	=	Huff-1st
Storm duration	=	2.00 hrs	Shape factor	=	484

* Composite (Area/CN) = [(0.040 x 79) + (0.140 x 98)] / 0.180



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

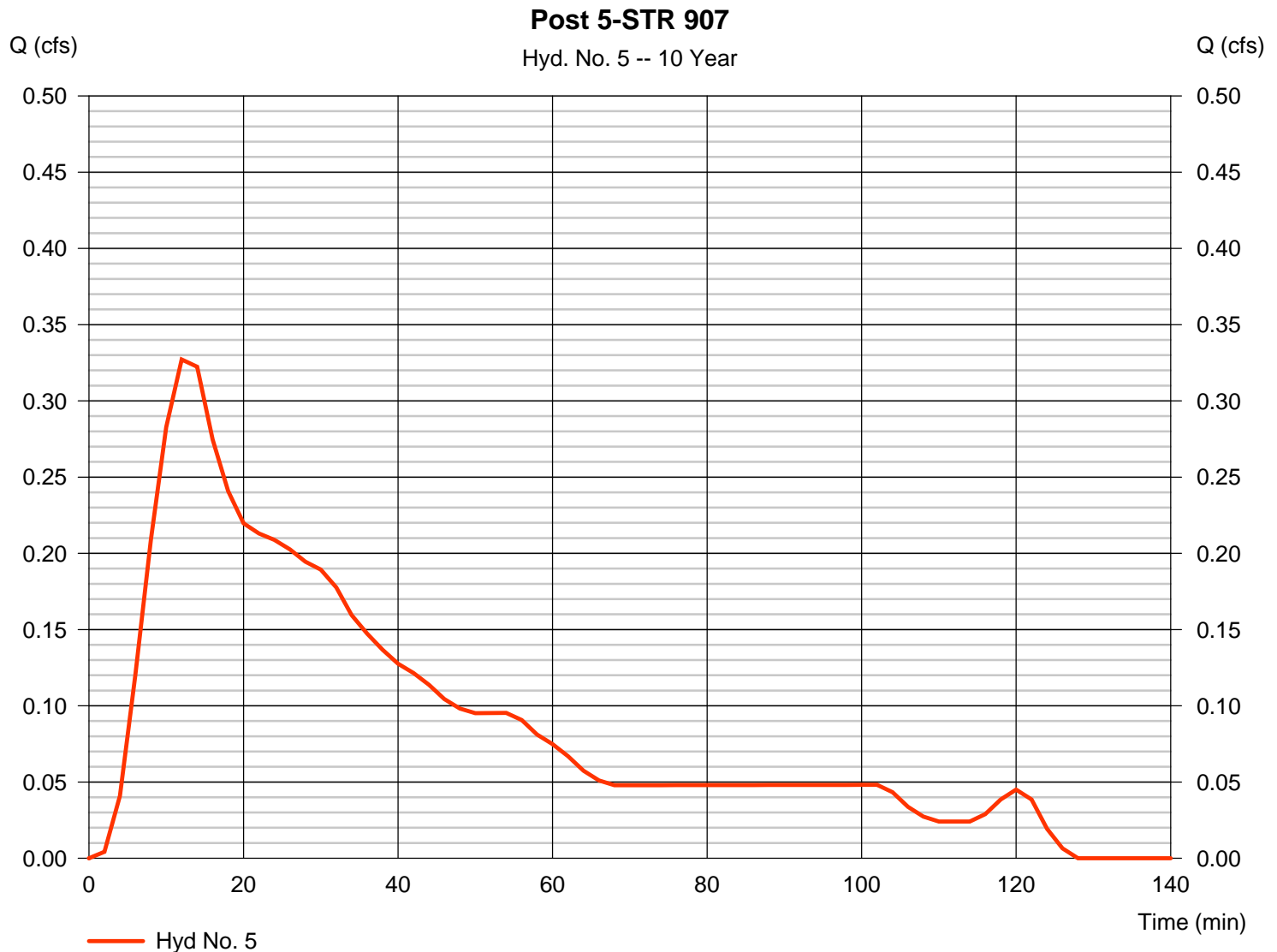
Wednesday, 07 / 11 / 2018

Hyd. No. 5

Post 5-STR 907

Hydrograph type	= SCS Runoff	Peak discharge	= 0.327 cfs
Storm frequency	= 10 yrs	Time to peak	= 12 min
Time interval	= 2 min	Hyd. volume	= 739 cuft
Drainage area	= 0.130 ac	Curve number	= 97*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 2.00 in	Distribution	= Huff-1st
Storm duration	= 2.00 hrs	Shape factor	= 484

* Composite (Area/CN) = $[(0.010 \times 79) + (0.120 \times 98)] / 0.130$



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

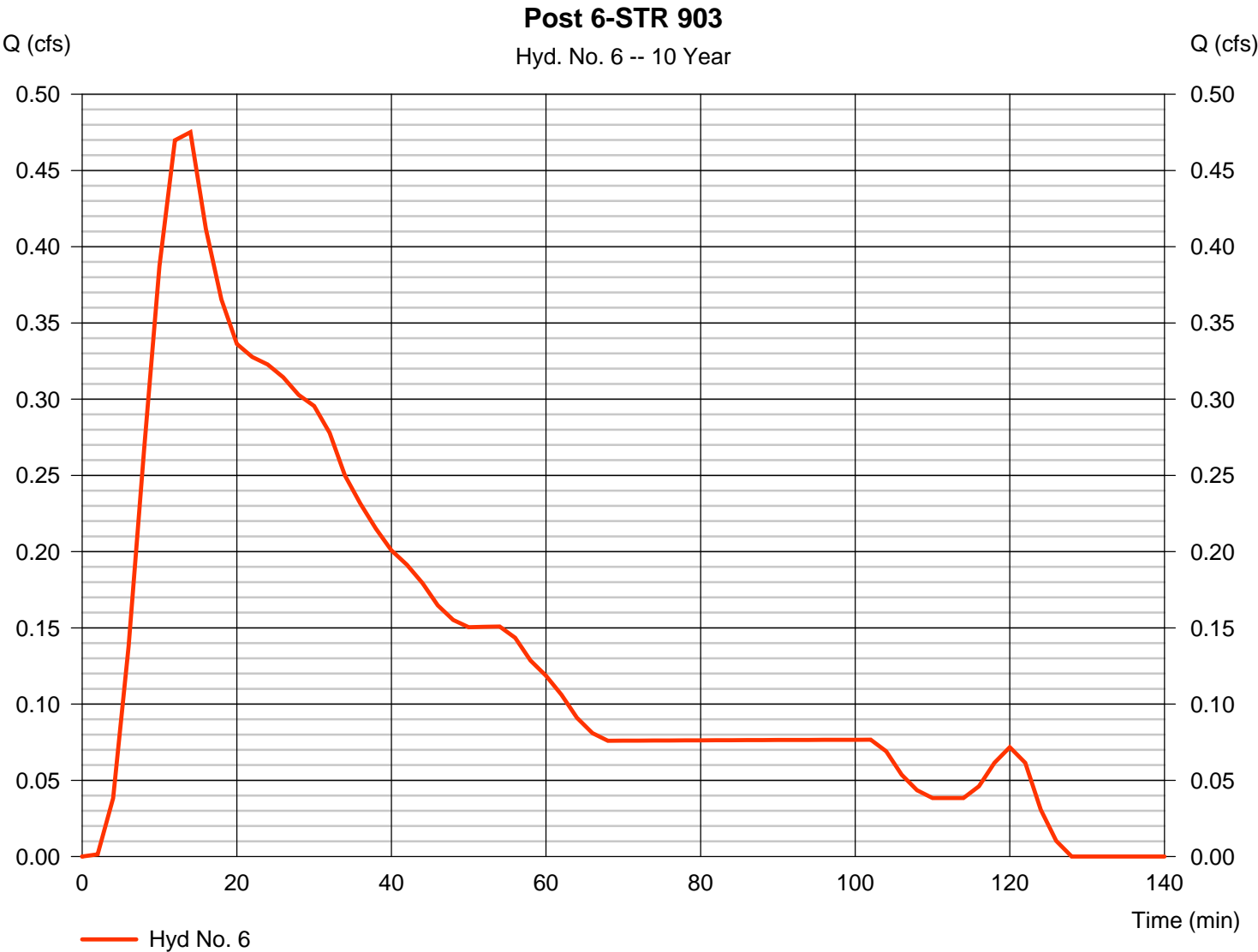
Wednesday, 07 / 11 / 2018

Hyd. No. 6

Post 6-STR 903

Hydrograph type	= SCS Runoff	Peak discharge	= 0.475 cfs
Storm frequency	= 10 yrs	Time to peak	= 14 min
Time interval	= 2 min	Hyd. volume	= 1,125 cuft
Drainage area	= 0.210 ac	Curve number	= 96*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 2.00 in	Distribution	= Huff-1st
Storm duration	= 2.00 hrs	Shape factor	= 484

* Composite (Area/CN) = [(0.020 x 79) + (0.190 x 98)] / 0.210



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

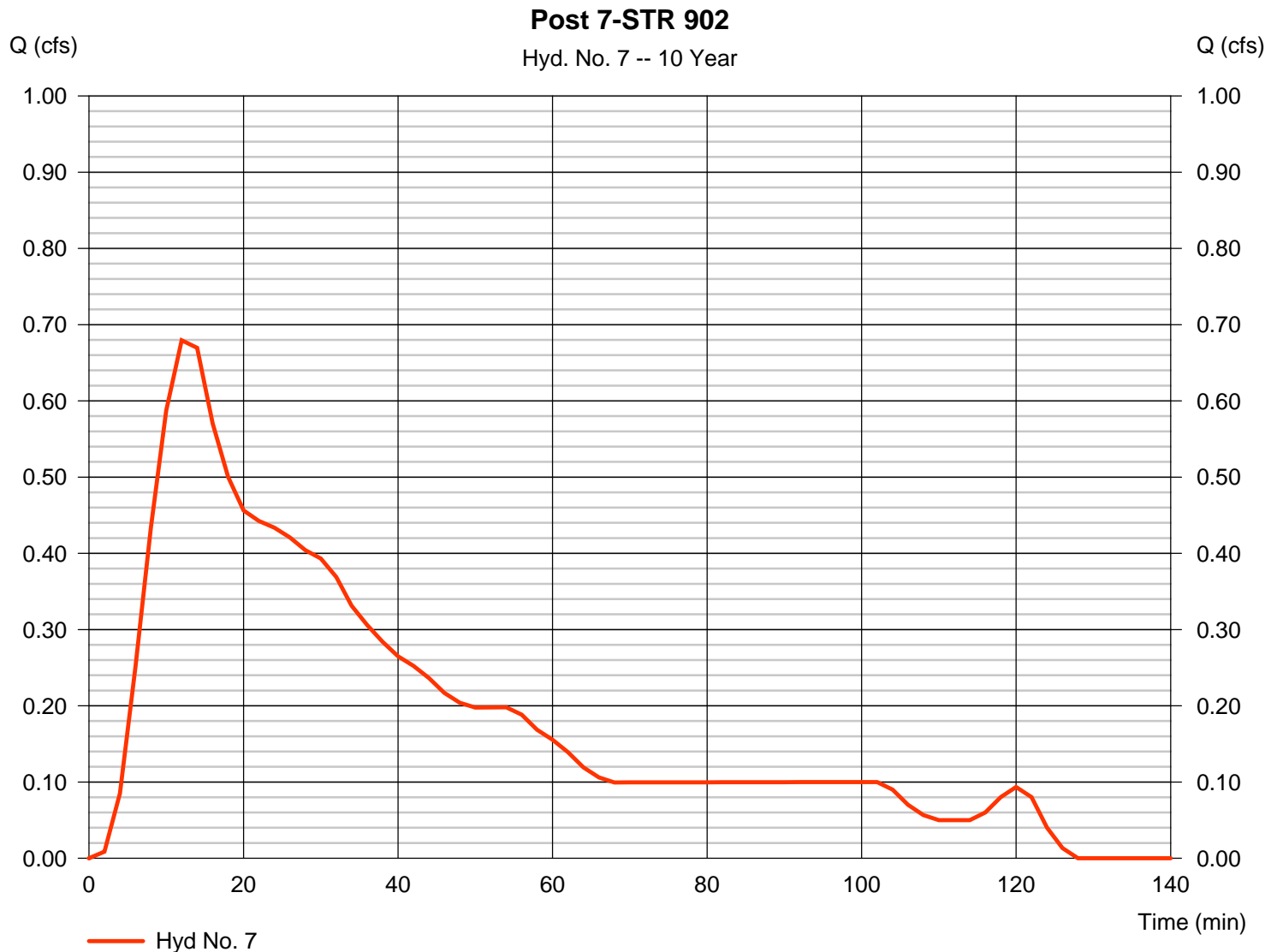
Wednesday, 07 / 11 / 2018

Hyd. No. 7

Post 7-STR 902

Hydrograph type	= SCS Runoff	Peak discharge	= 0.679 cfs
Storm frequency	= 10 yrs	Time to peak	= 12 min
Time interval	= 2 min	Hyd. volume	= 1,536 cuft
Drainage area	= 0.270 ac	Curve number	= 97*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 2.00 in	Distribution	= Huff-1st
Storm duration	= 2.00 hrs	Shape factor	= 484

* Composite (Area/CN) = $[(0.020 \times 79) + (0.250 \times 98)] / 0.270$



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

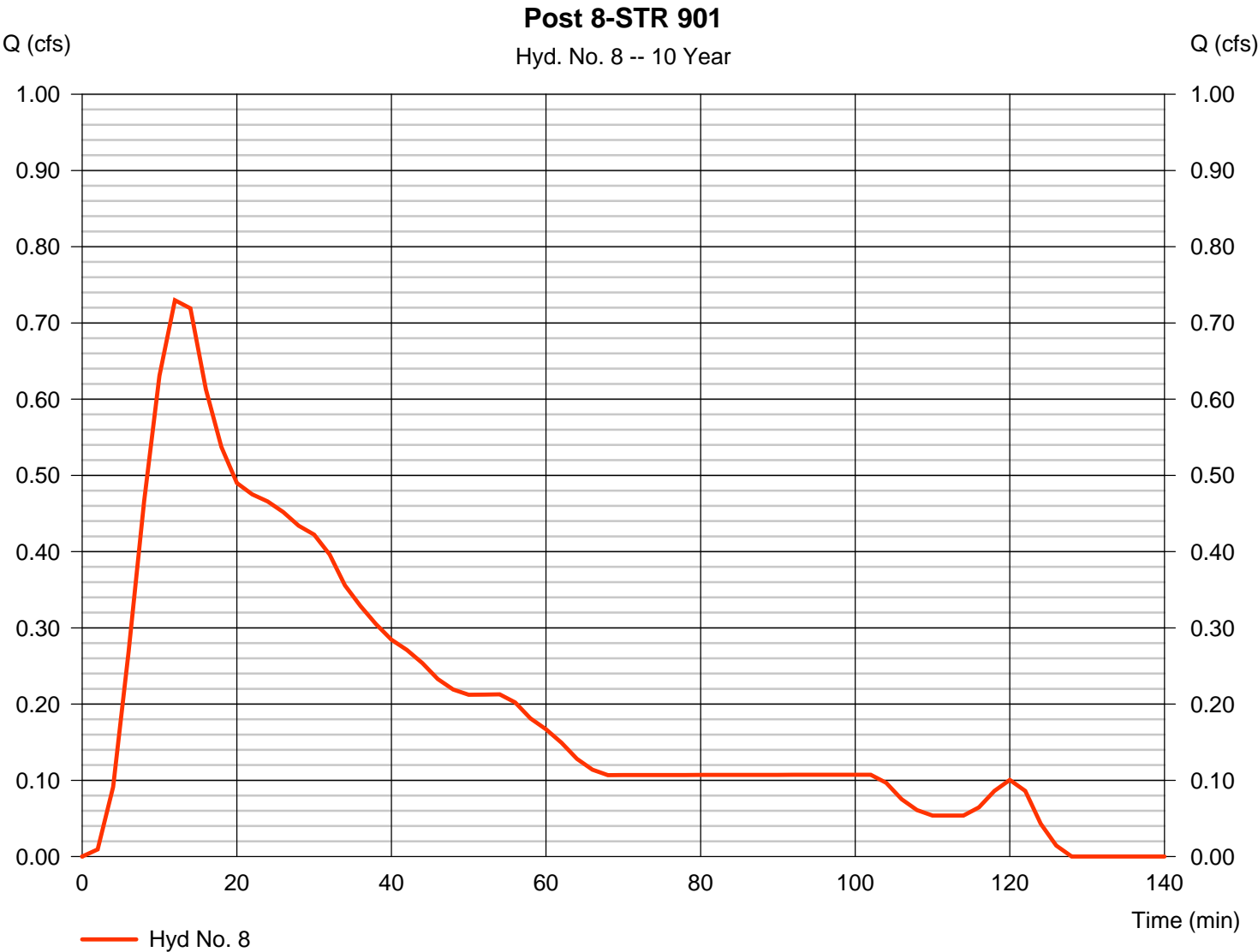
Wednesday, 07 / 11 / 2018

Hyd. No. 8

Post 8-STR 901

Hydrograph type	= SCS Runoff	Peak discharge	= 0.730 cfs
Storm frequency	= 10 yrs	Time to peak	= 12 min
Time interval	= 2 min	Hyd. volume	= 1,650 cuft
Drainage area	= 0.290 ac	Curve number	= 97*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 2.00 in	Distribution	= Huff-1st
Storm duration	= 2.00 hrs	Shape factor	= 484

* Composite (Area/CN) = [(0.020 x 79) + (0.270 x 98)] / 0.290



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

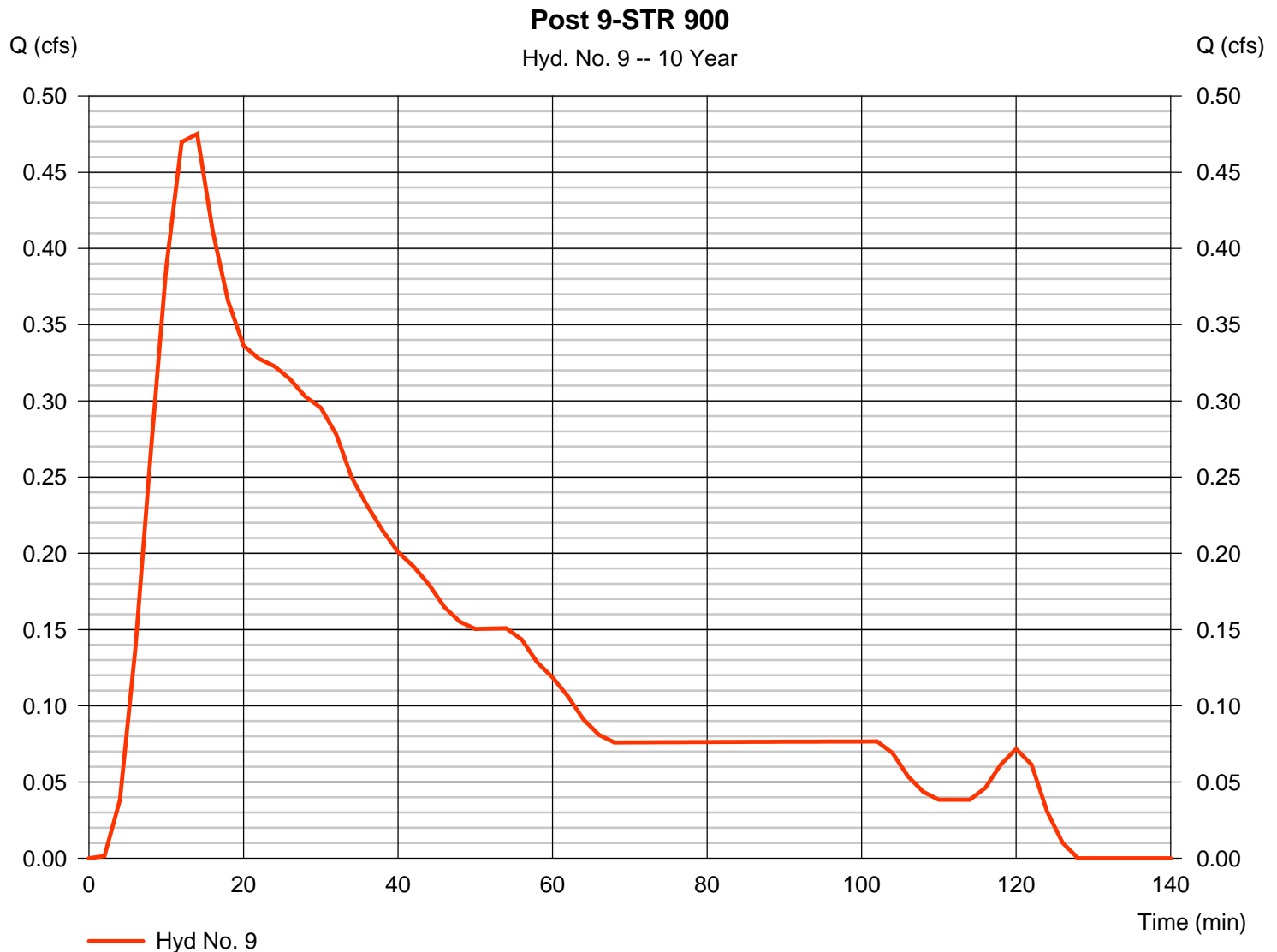
Wednesday, 07 / 11 / 2018

Hyd. No. 9

Post 9-STR 900

Hydrograph type	= SCS Runoff	Peak discharge	= 0.475 cfs
Storm frequency	= 10 yrs	Time to peak	= 14 min
Time interval	= 2 min	Hyd. volume	= 1,125 cuft
Drainage area	= 0.210 ac	Curve number	= 96*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 2.00 in	Distribution	= Huff-1st
Storm duration	= 2.00 hrs	Shape factor	= 484

* Composite (Area/CN) = $[(0.020 \times 79) + (0.190 \times 98)] / 0.210$



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

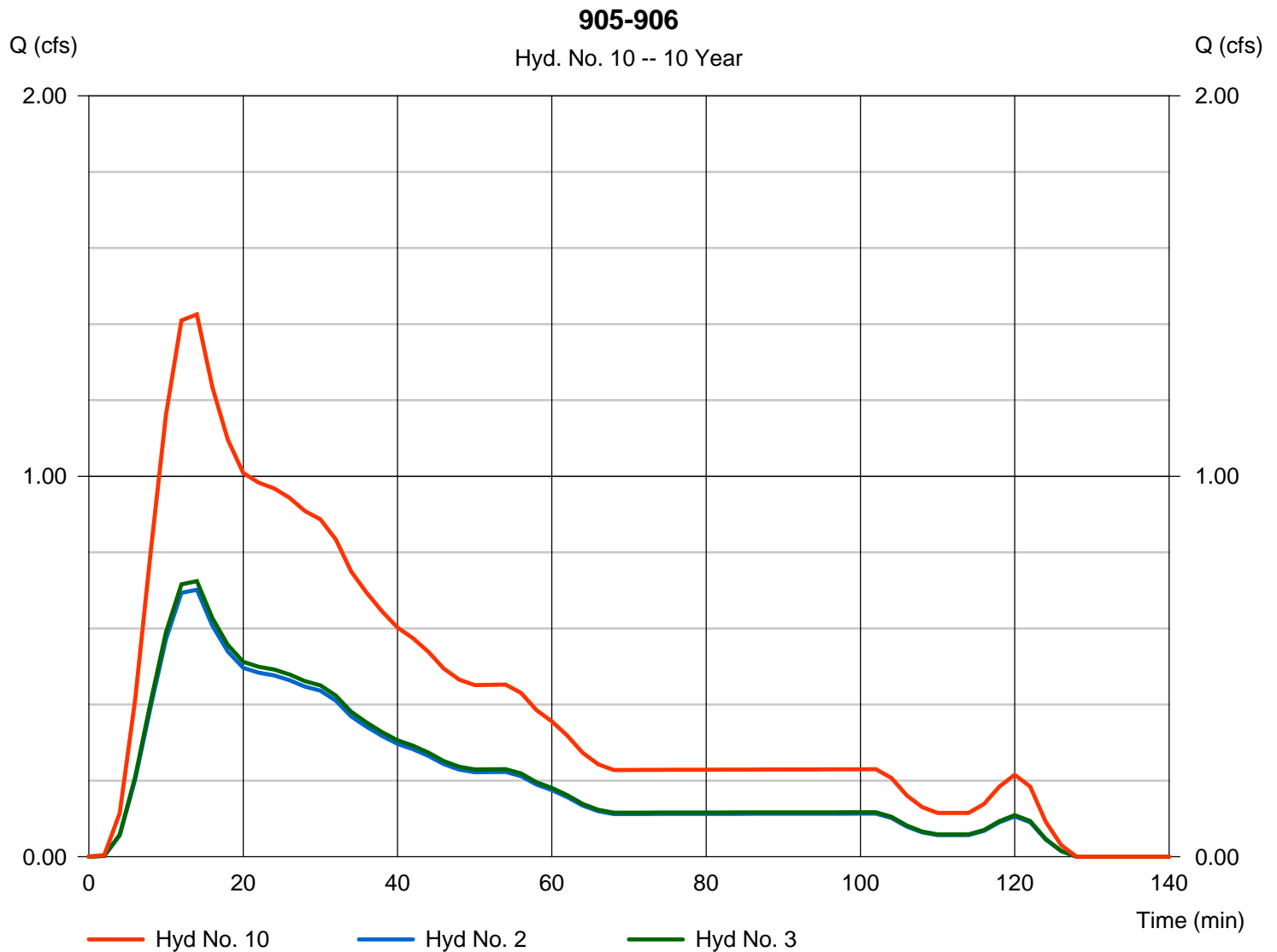
Wednesday, 07 / 11 / 2018

Hyd. No. 10

905-906

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

Peak discharge = 1.425 cfs
Time to peak = 14 min
Hyd. volume = 3,375 cuft
Contrib. drain. area = 0.630 ac



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

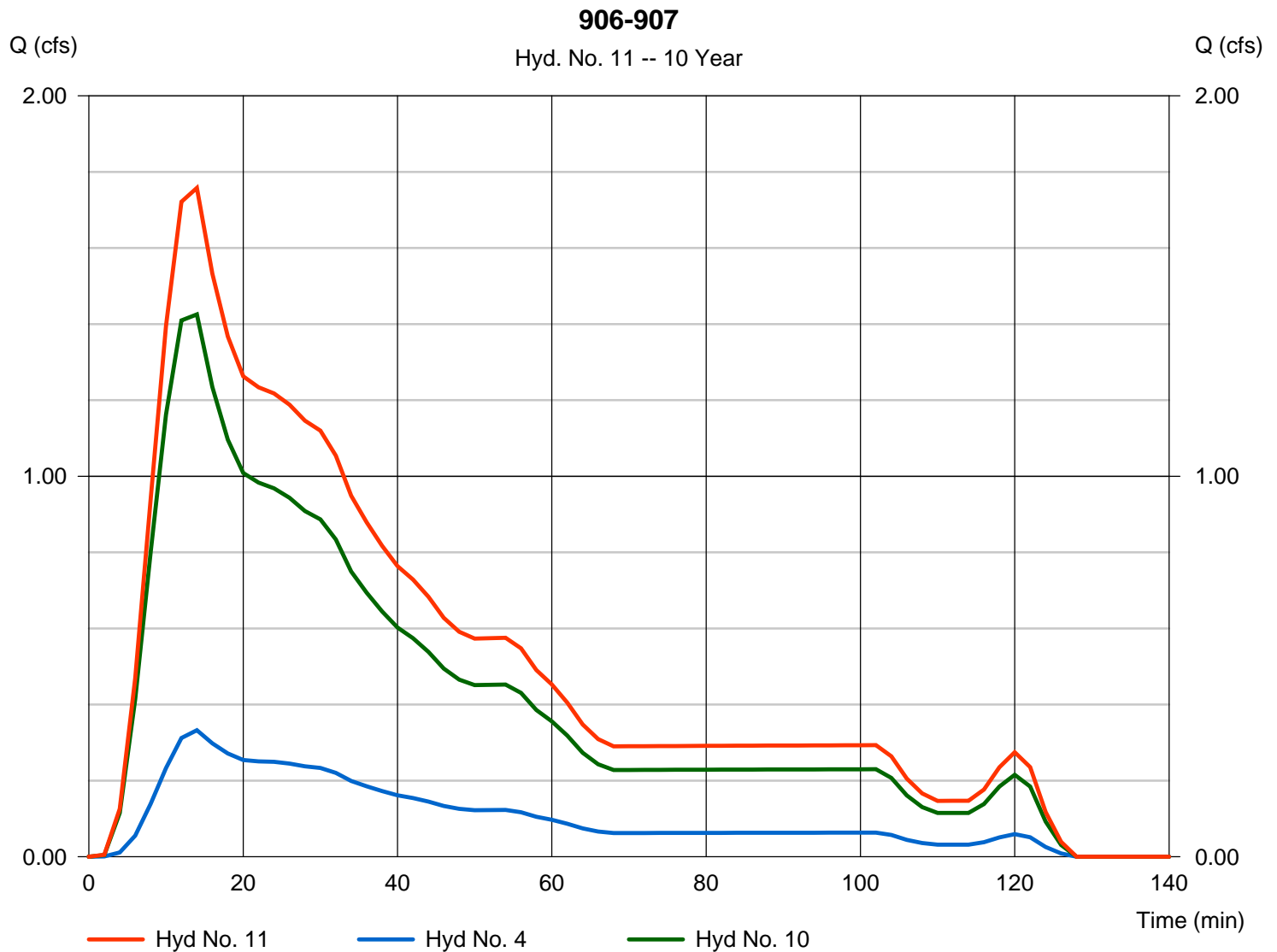
Wednesday, 07 / 11 / 2018

Hyd. No. 11

906-907

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

Peak discharge = 1.758 cfs
 Time to peak = 14 min
 Hyd. volume = 4,231 cuft
 Contrib. drain. area = 0.180 ac



Hydrograph Report

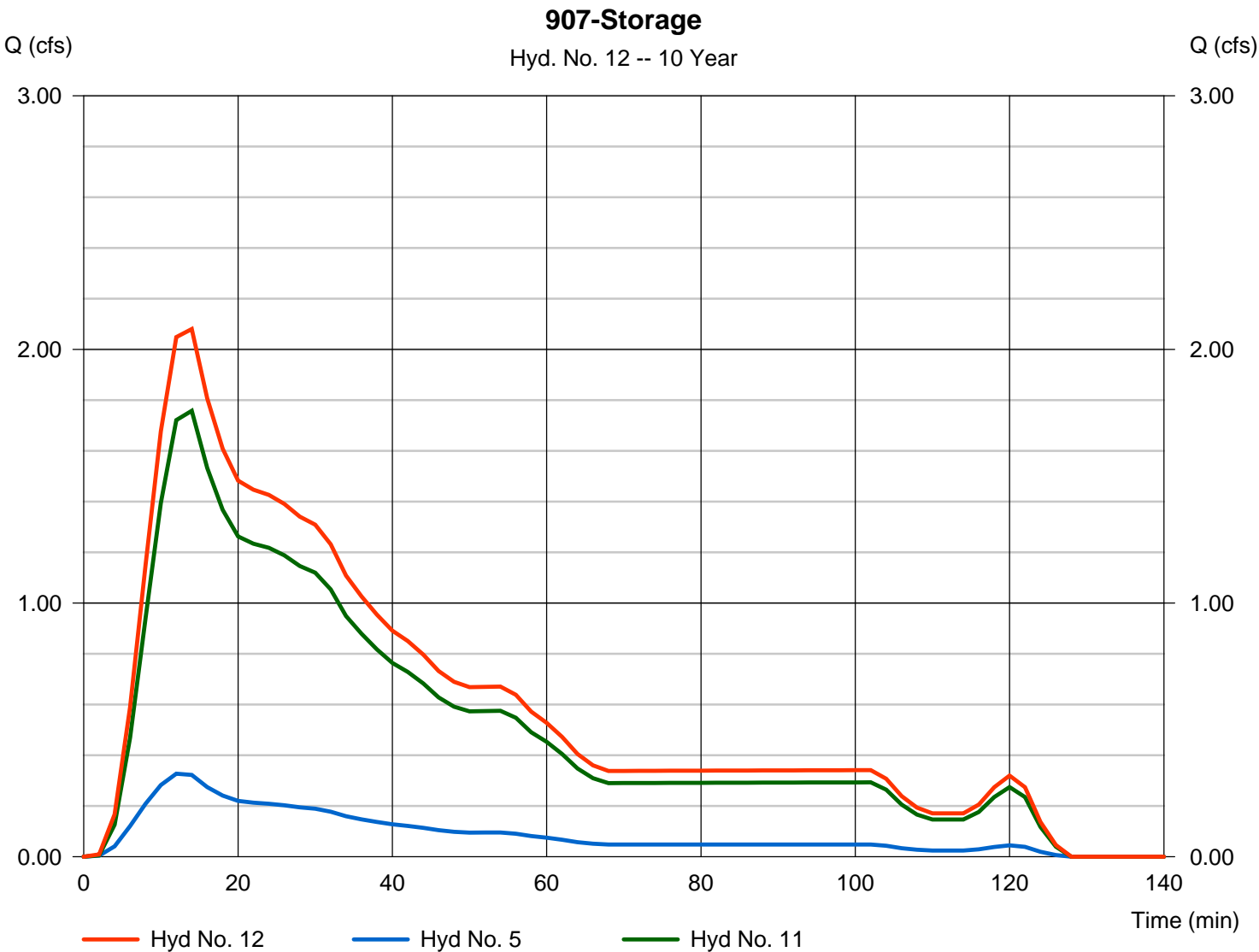
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

Wednesday, 07 / 11 / 2018

Hyd. No. 12

907-Storage

Hydrograph type	= Combine	Peak discharge	= 2.080 cfs
Storm frequency	= 10 yrs	Time to peak	= 14 min
Time interval	= 2 min	Hyd. volume	= 4,970 cuft
Inflow hyds.	= 5, 11	Contrib. drain. area	= 0.130 ac



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

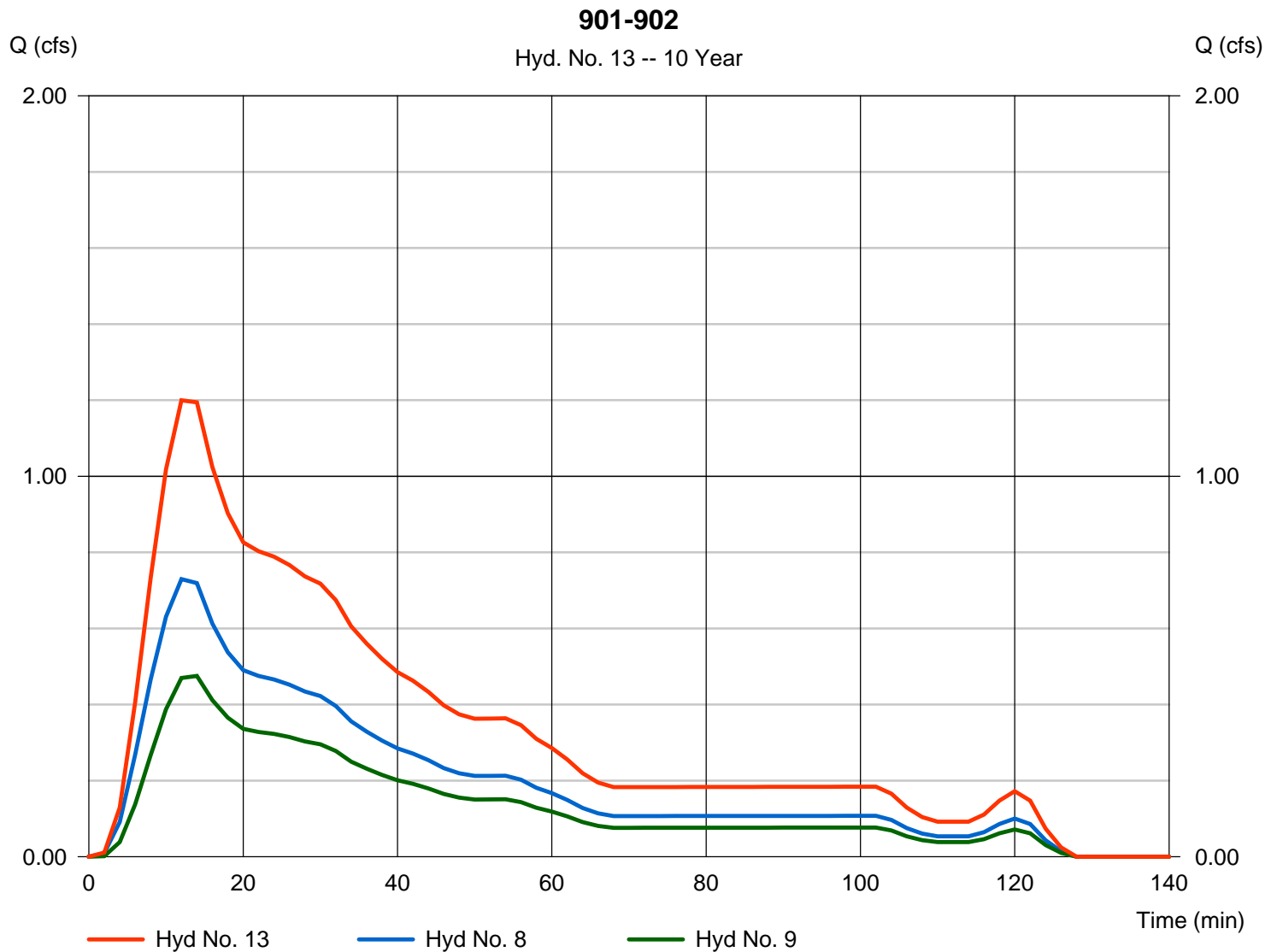
Wednesday, 07 / 11 / 2018

Hyd. No. 13

901-902

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

Peak discharge = 1.200 cfs
Time to peak = 12 min
Hyd. volume = 2,775 cuft
Contrib. drain. area = 0.500 ac



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

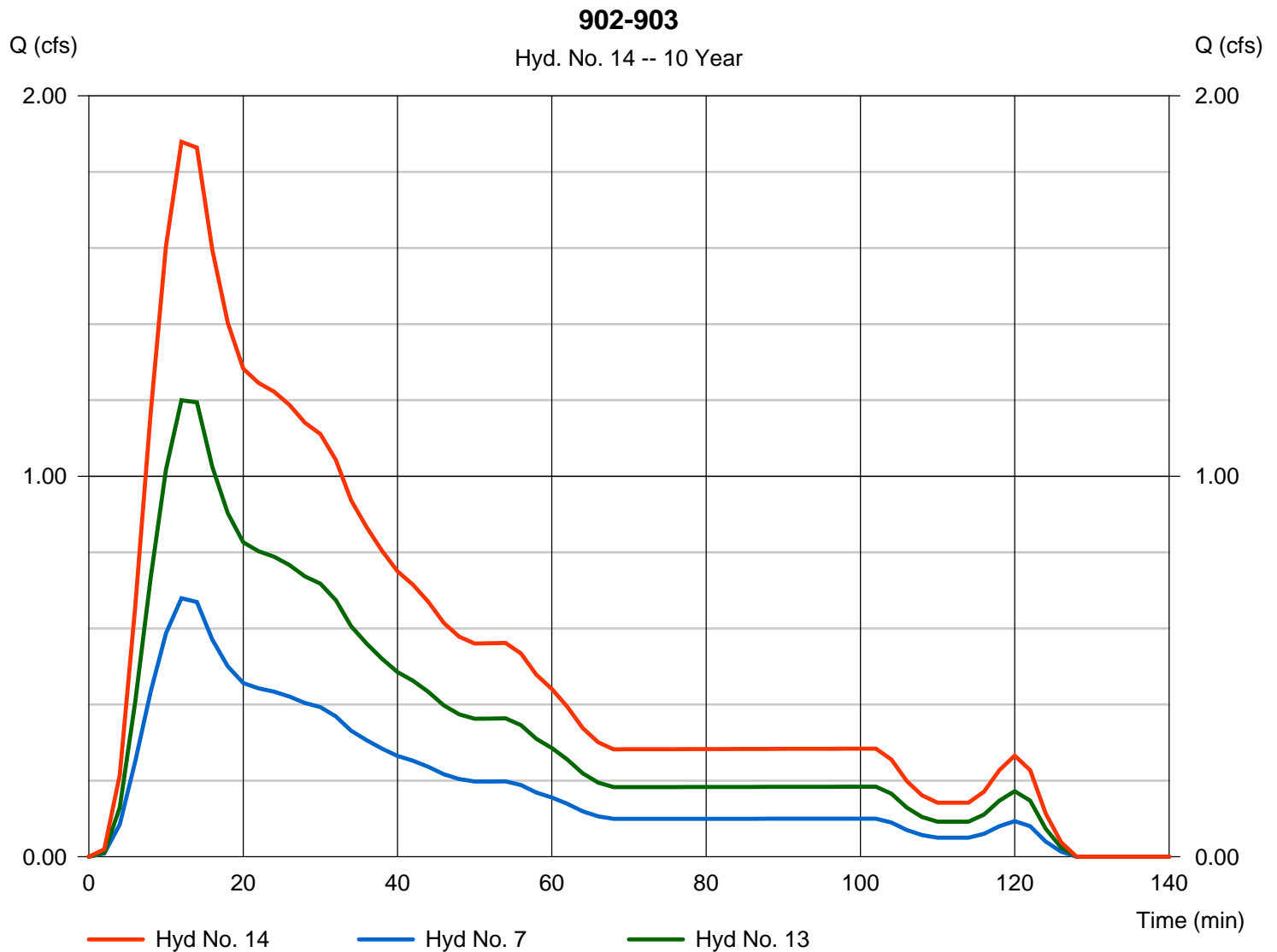
Wednesday, 07 / 11 / 2018

Hyd. No. 14

902-903

Hydrograph type = Combine
 Storm frequency = 10 yrs
 Time interval = 2 min
 Inflow hyds. = 7, 13

Peak discharge = 1.879 cfs
 Time to peak = 12 min
 Hyd. volume = 4,310 cuft
 Contrib. drain. area = 0.270 ac



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

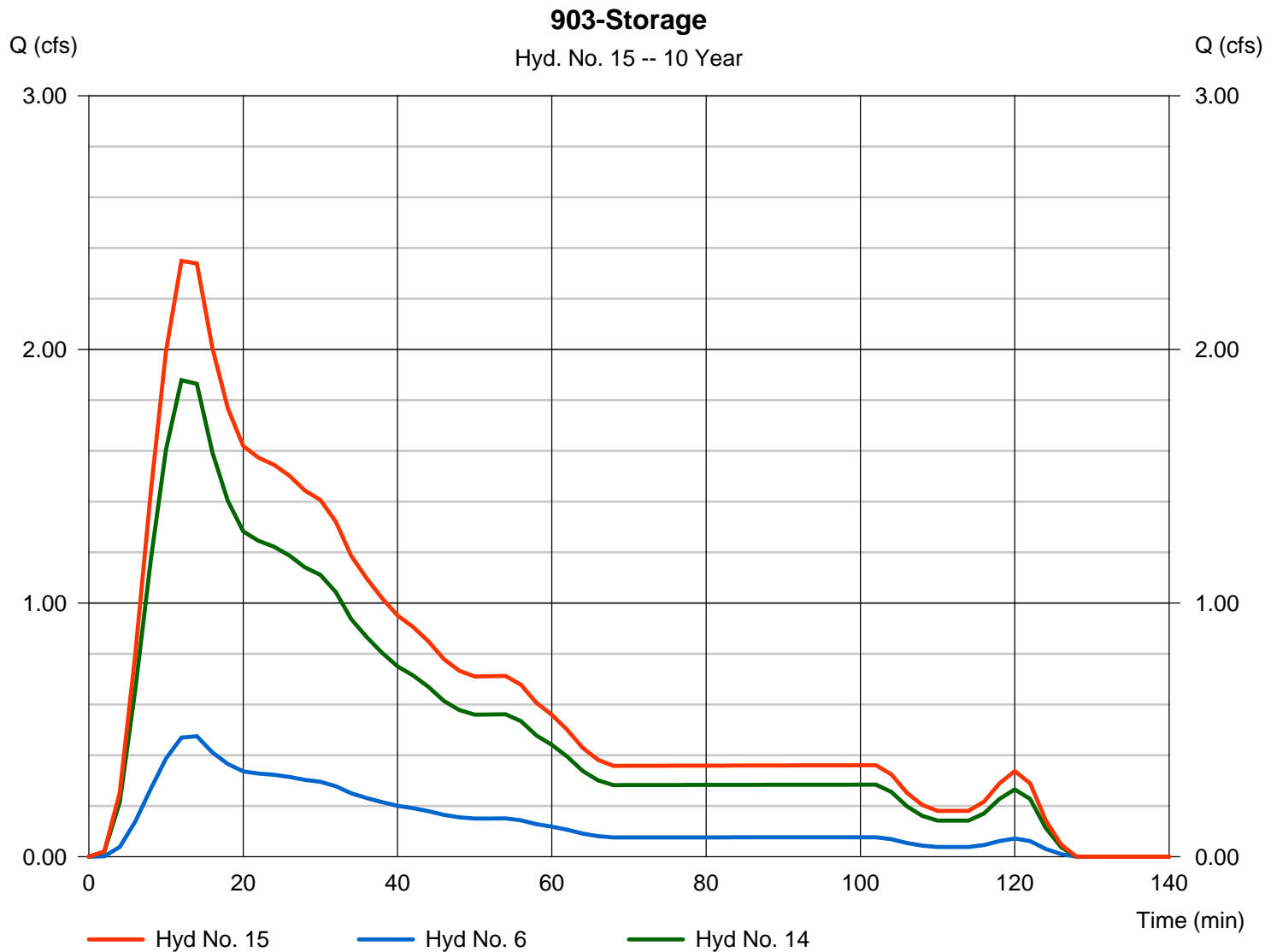
Wednesday, 07 / 11 / 2018

Hyd. No. 15

903-Storage

Hydrograph type = Combine
 Storm frequency = 10 yrs
 Time interval = 2 min
 Inflow hyds. = 6, 14

Peak discharge = 2.349 cfs
 Time to peak = 12 min
 Hyd. volume = 5,436 cuft
 Contrib. drain. area = 0.210 ac



Hydrograph Report

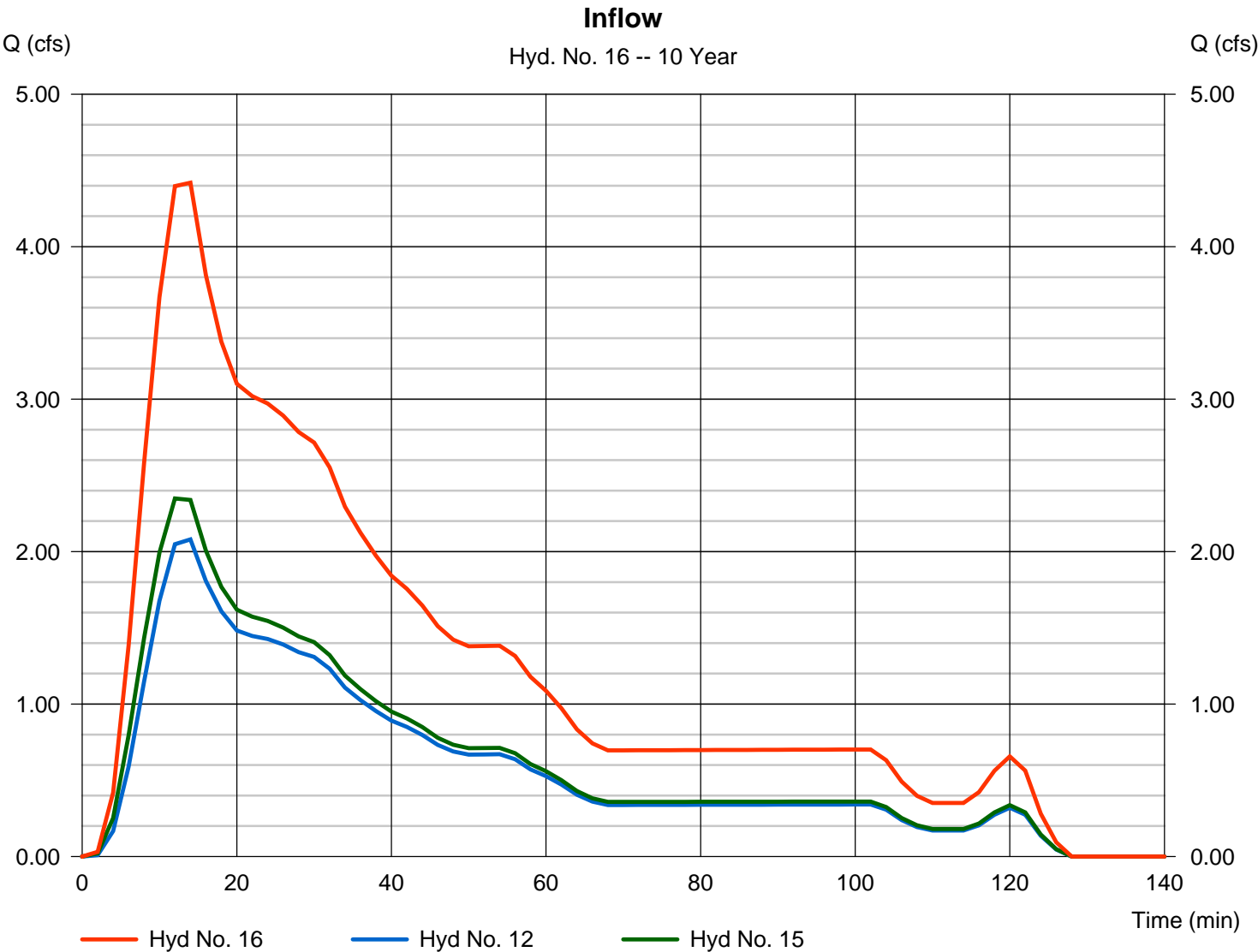
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

Wednesday, 07 / 11 / 2018

Hyd. No. 16

Inflow

Hydrograph type	= Combine	Peak discharge	= 4.419 cfs
Storm frequency	= 10 yrs	Time to peak	= 14 min
Time interval	= 2 min	Hyd. volume	= 10,406 cuft
Inflow hyds.	= 12, 15	Contrib. drain. area	= 0.000 ac



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

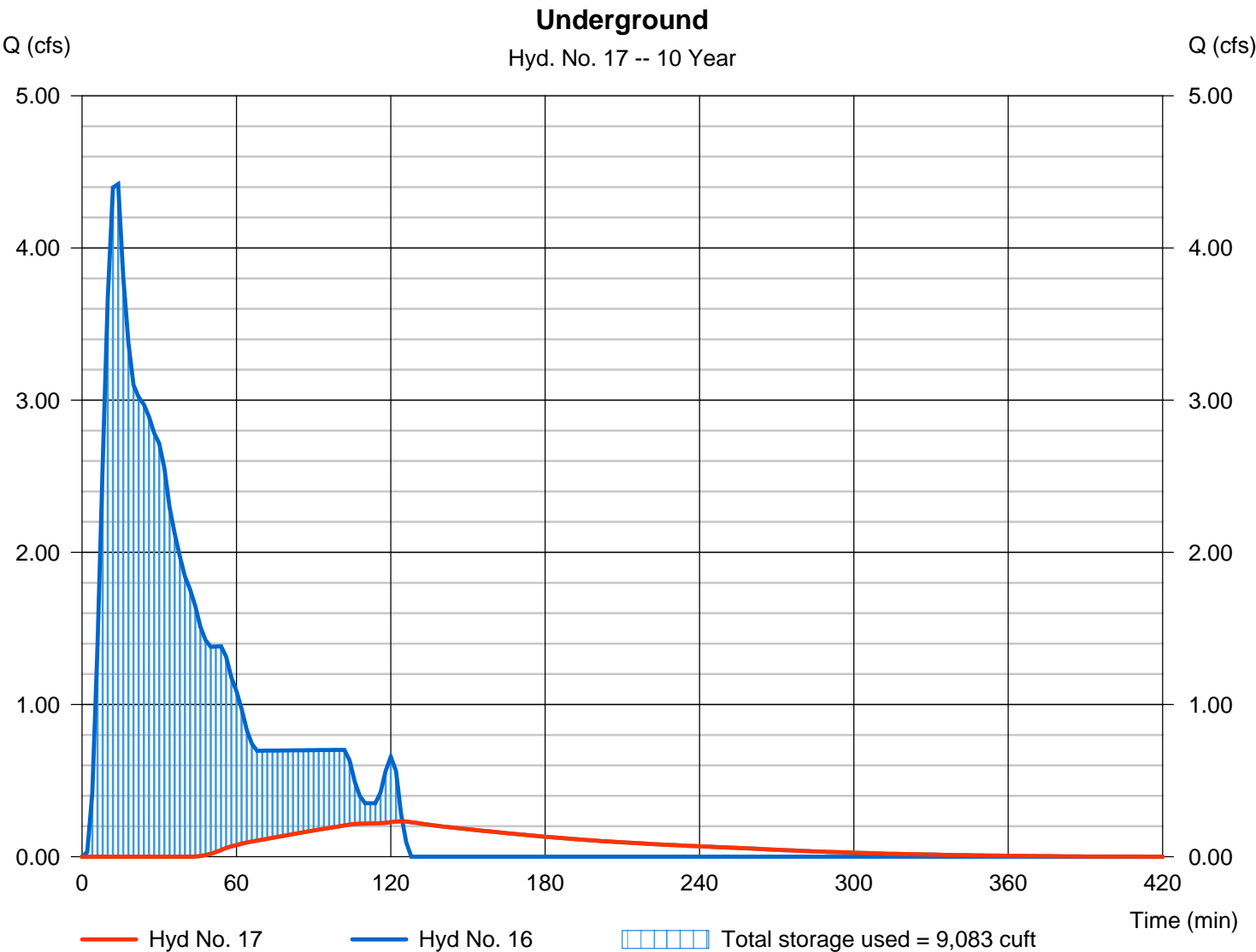
Wednesday, 07 / 11 / 2018

Hyd. No. 17

Underground

Hydrograph type	= Reservoir	Peak discharge	= 0.233 cfs
Storm frequency	= 10 yrs	Time to peak	= 124 min
Time interval	= 2 min	Hyd. volume	= 1,860 cuft
Inflow hyd. No.	= 16 - Inflow	Max. Elevation	= 739.96 ft
Reservoir name	= Underground Storage	Max. Storage	= 9,083 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Hydrograph Report

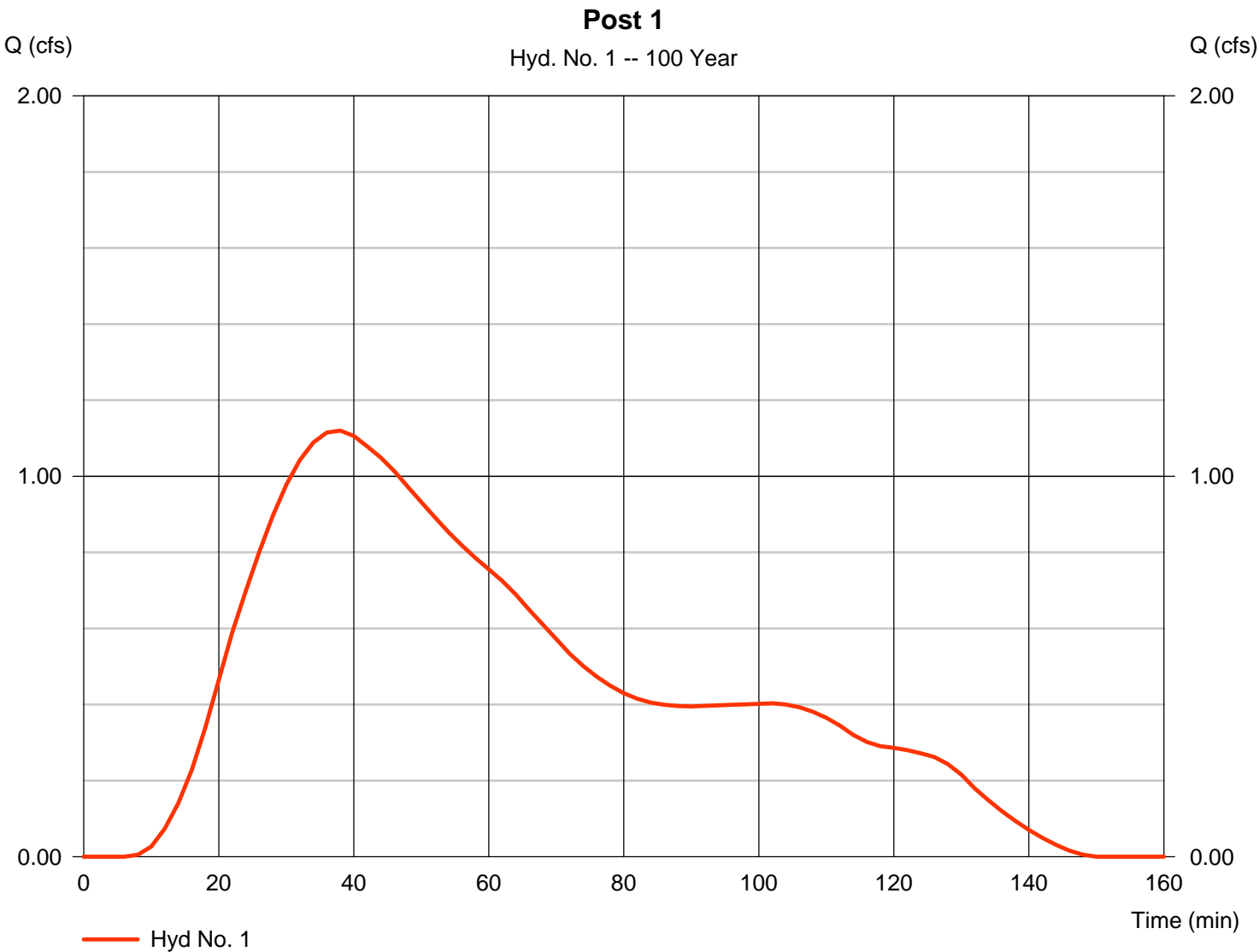
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

Wednesday, 07 / 11 / 2018

Hyd. No. 1

Post 1

Hydrograph type	= SCS Runoff	Peak discharge	= 1.120 cfs
Storm frequency	= 100 yrs	Time to peak	= 38 min
Time interval	= 2 min	Hyd. volume	= 4,196 cuft
Drainage area	= 0.860 ac	Curve number	= 79
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 18.20 min
Total precip.	= 3.21 in	Distribution	= Huff-1st
Storm duration	= 2.00 hrs	Shape factor	= 484



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

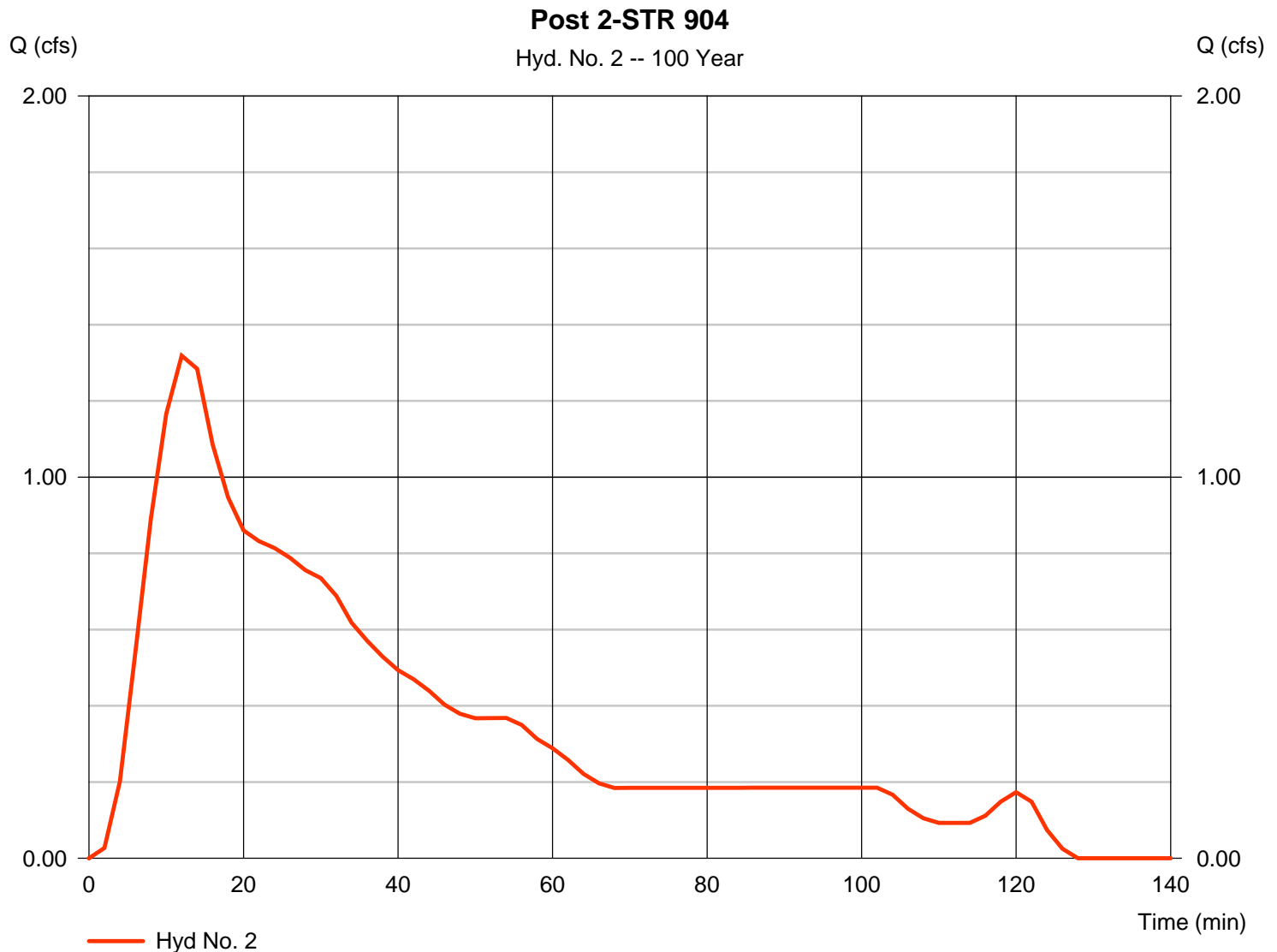
Wednesday, 07 / 11 / 2018

Hyd. No. 2

Post 2-STR 904

Hydrograph type	= SCS Runoff	Peak discharge	= 1.319 cfs
Storm frequency	= 100 yrs	Time to peak	= 12 min
Time interval	= 2 min	Hyd. volume	= 2,911 cuft
Drainage area	= 0.310 ac	Curve number	= 96*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.21 in	Distribution	= Huff-1st
Storm duration	= 2.00 hrs	Shape factor	= 484

* Composite (Area/CN) = $[(0.030 \times 79) + (0.280 \times 98)] / 0.310$



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

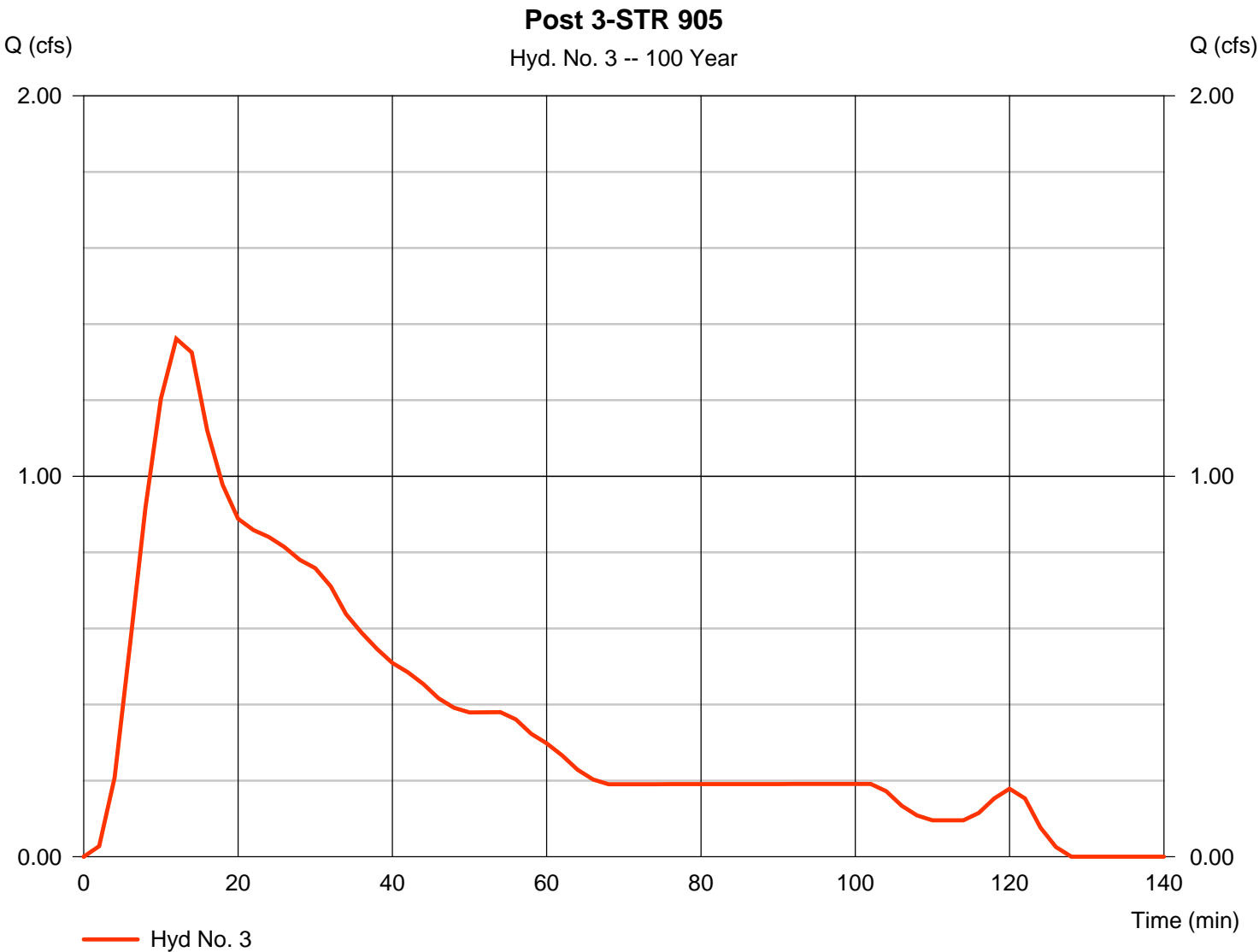
Wednesday, 07 / 11 / 2018

Hyd. No. 3

Post 3-STR 905

Hydrograph type	= SCS Runoff	Peak discharge	= 1.361 cfs
Storm frequency	= 100 yrs	Time to peak	= 12 min
Time interval	= 2 min	Hyd. volume	= 3,005 cuft
Drainage area	= 0.320 ac	Curve number	= 96*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.21 in	Distribution	= Huff-1st
Storm duration	= 2.00 hrs	Shape factor	= 484

* Composite (Area/CN) = [(0.030 x 79) + (0.290 x 98)] / 0.320



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

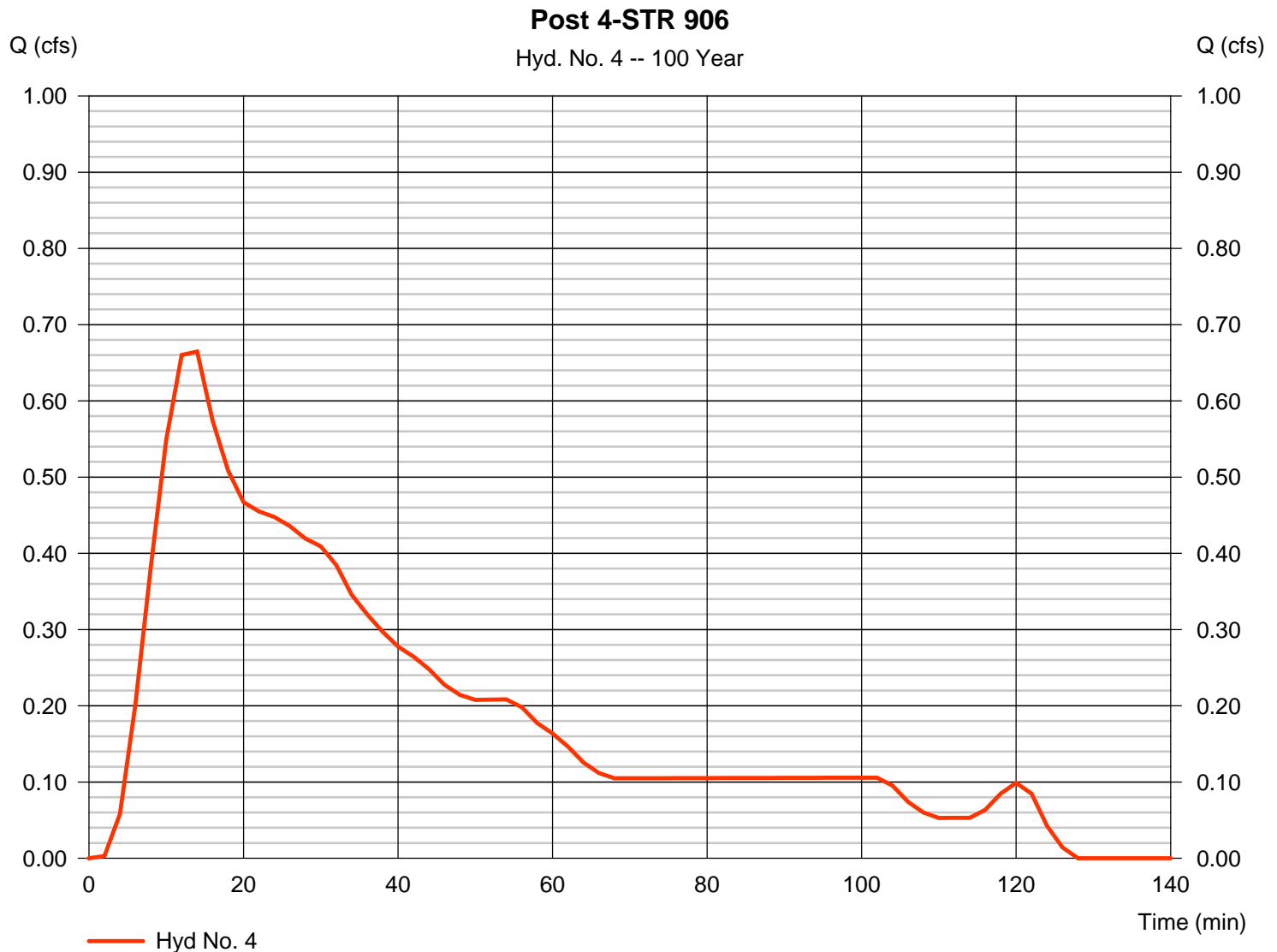
Wednesday, 07 / 11 / 2018

Hyd. No. 4

Post 4-STR 906

Hydrograph type	= SCS Runoff	Peak discharge	= 0.665 cfs
Storm frequency	= 100 yrs	Time to peak	= 14 min
Time interval	= 2 min	Hyd. volume	= 1,564 cuft
Drainage area	= 0.180 ac	Curve number	= 94*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.21 in	Distribution	= Huff-1st
Storm duration	= 2.00 hrs	Shape factor	= 484

* Composite (Area/CN) = $[(0.040 \times 79) + (0.140 \times 98)] / 0.180$



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

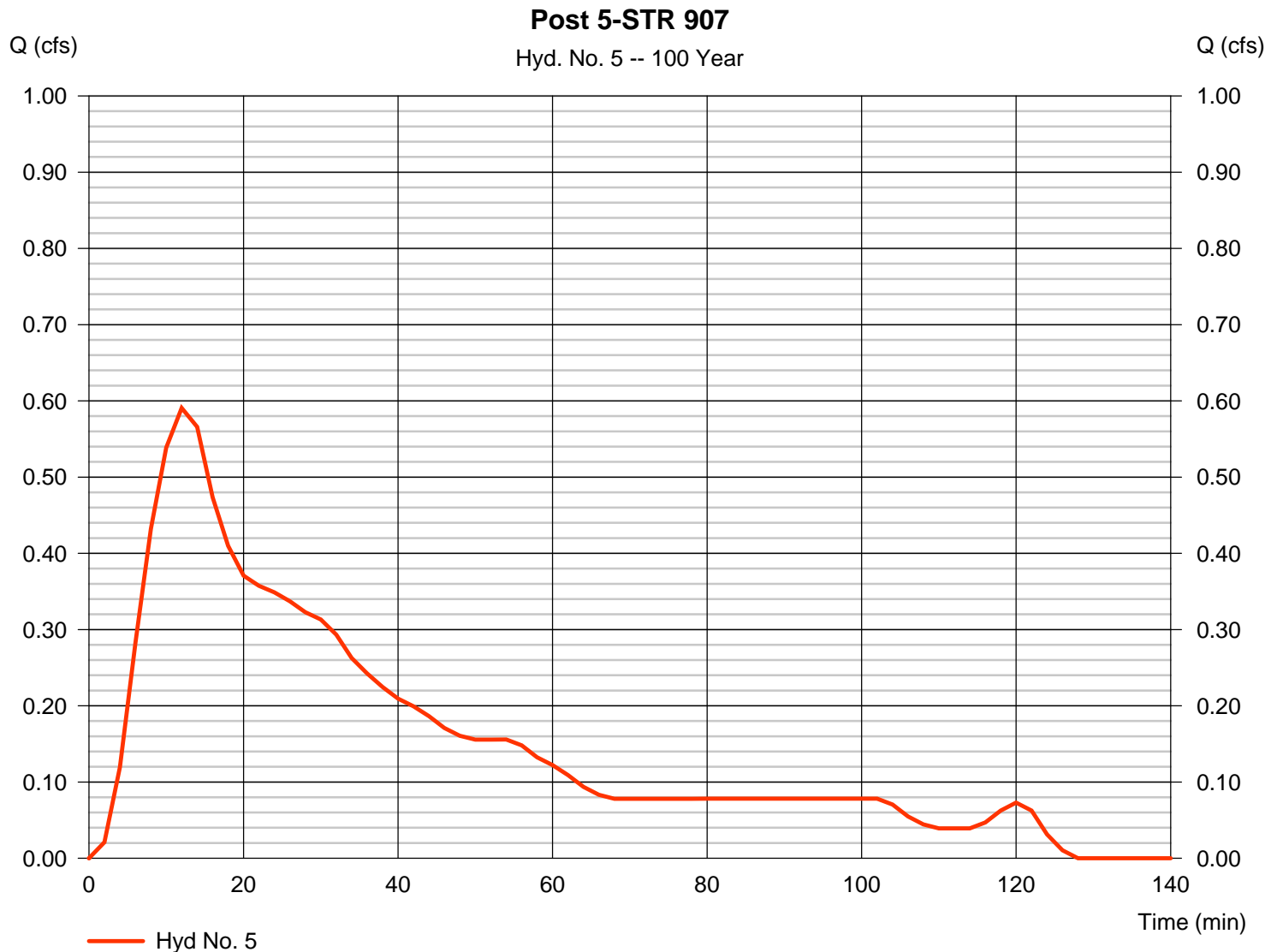
Wednesday, 07 / 11 / 2018

Hyd. No. 5

Post 5-STR 907

Hydrograph type	= SCS Runoff	Peak discharge	= 0.591 cfs
Storm frequency	= 100 yrs	Time to peak	= 12 min
Time interval	= 2 min	Hyd. volume	= 1,268 cuft
Drainage area	= 0.130 ac	Curve number	= 97*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.21 in	Distribution	= Huff-1st
Storm duration	= 2.00 hrs	Shape factor	= 484

* Composite (Area/CN) = $[(0.010 \times 79) + (0.120 \times 98)] / 0.130$



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

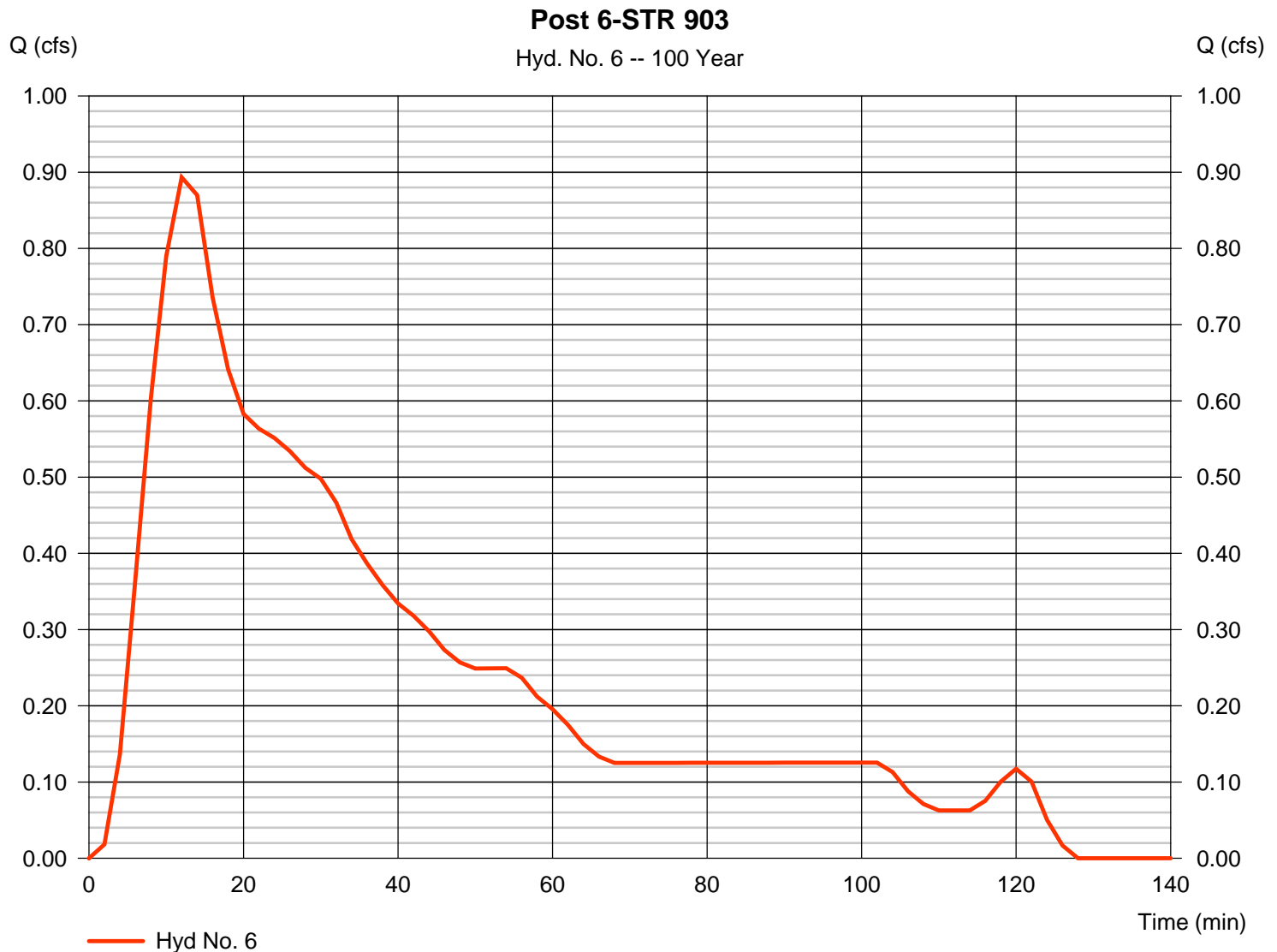
Wednesday, 07 / 11 / 2018

Hyd. No. 6

Post 6-STR 903

Hydrograph type	= SCS Runoff	Peak discharge	= 0.893 cfs
Storm frequency	= 100 yrs	Time to peak	= 12 min
Time interval	= 2 min	Hyd. volume	= 1,972 cuft
Drainage area	= 0.210 ac	Curve number	= 96*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.21 in	Distribution	= Huff-1st
Storm duration	= 2.00 hrs	Shape factor	= 484

* Composite (Area/CN) = $[(0.020 \times 79) + (0.190 \times 98)] / 0.210$



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

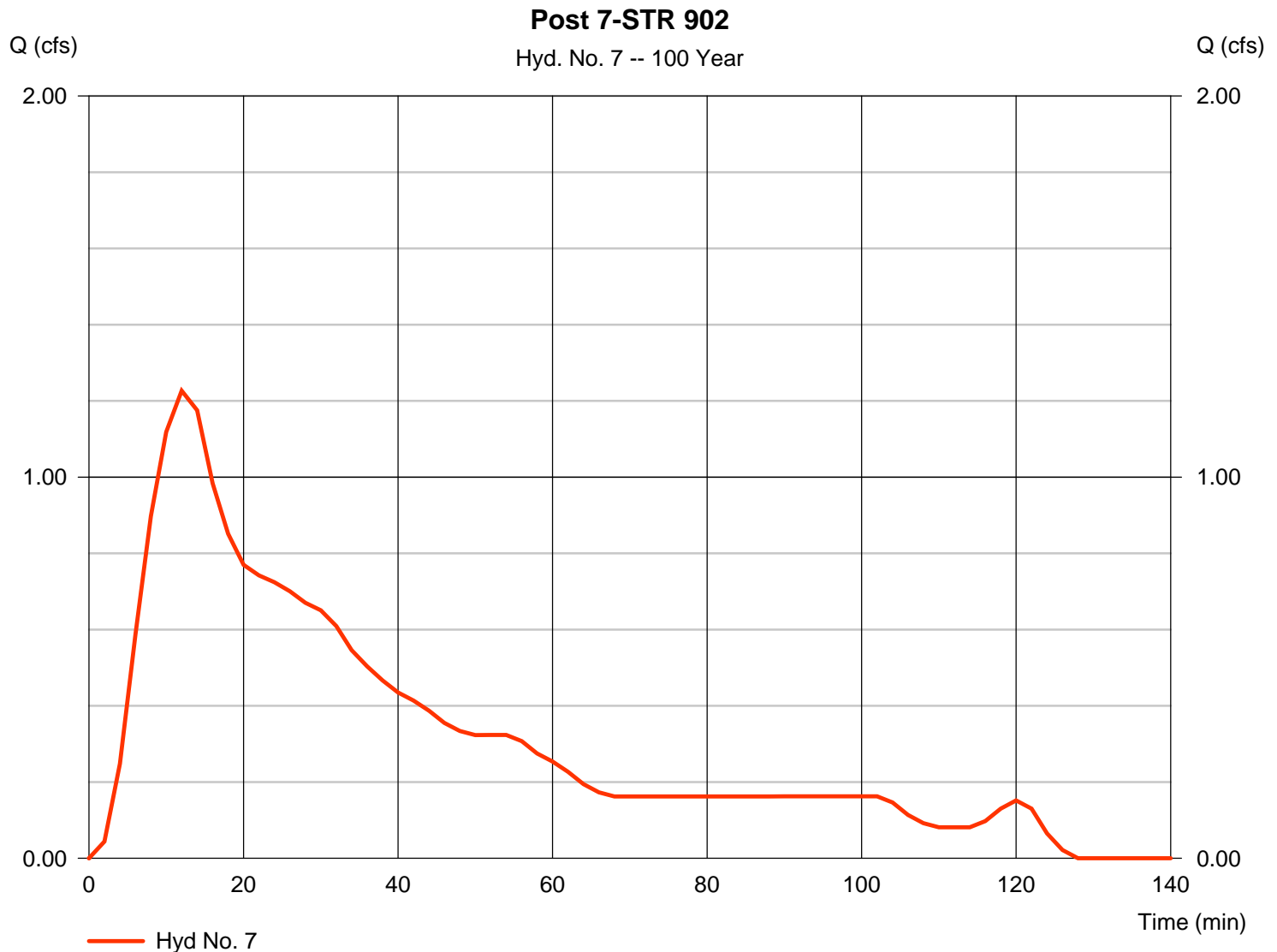
Wednesday, 07 / 11 / 2018

Hyd. No. 7

Post 7-STR 902

Hydrograph type	= SCS Runoff	Peak discharge	= 1.227 cfs
Storm frequency	= 100 yrs	Time to peak	= 12 min
Time interval	= 2 min	Hyd. volume	= 2,634 cuft
Drainage area	= 0.270 ac	Curve number	= 97*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.21 in	Distribution	= Huff-1st
Storm duration	= 2.00 hrs	Shape factor	= 484

* Composite (Area/CN) = $[(0.020 \times 79) + (0.250 \times 98)] / 0.270$



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

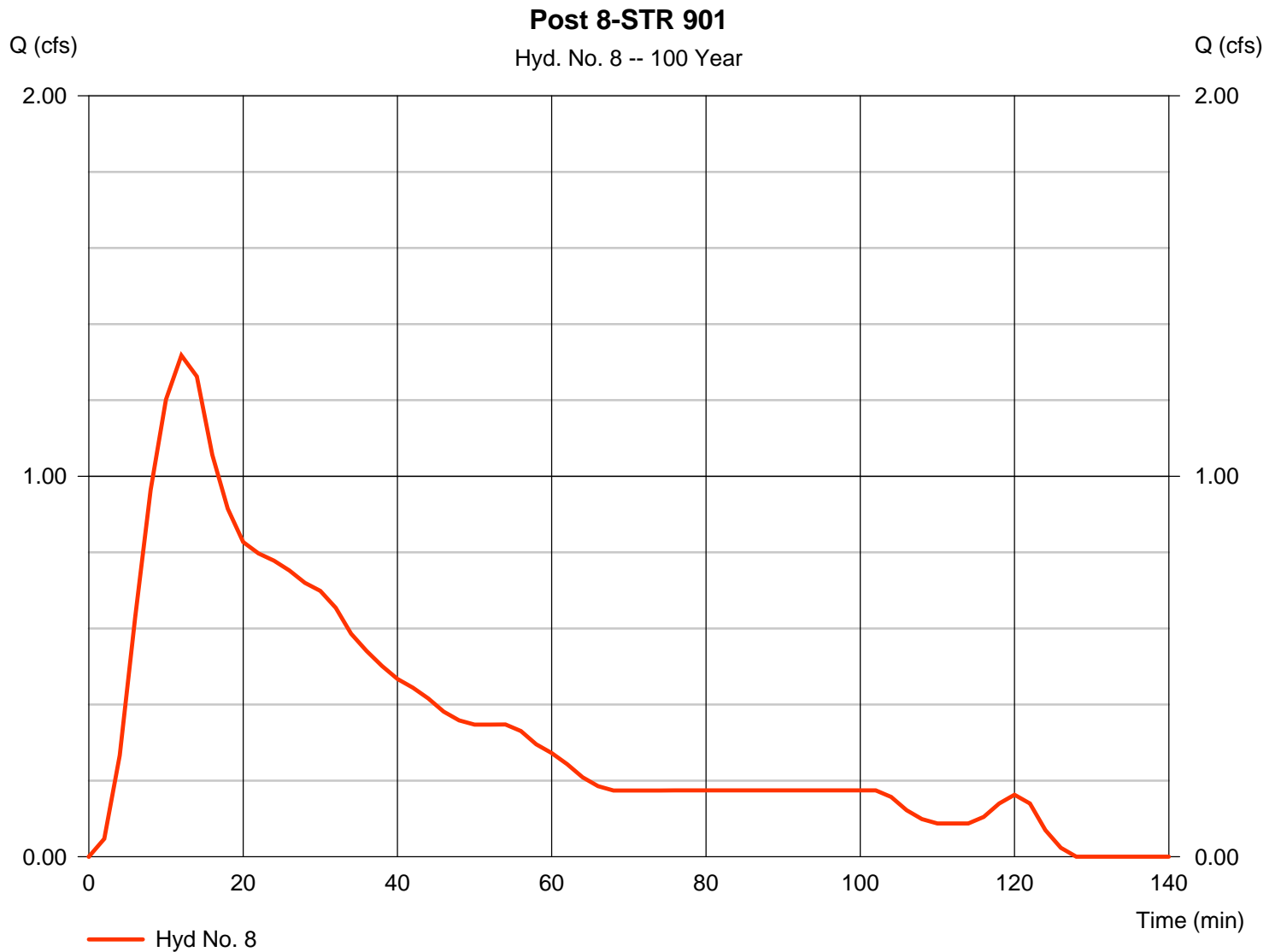
Wednesday, 07 / 11 / 2018

Hyd. No. 8

Post 8-STR 901

Hydrograph type	= SCS Runoff	Peak discharge	= 1.318 cfs
Storm frequency	= 100 yrs	Time to peak	= 12 min
Time interval	= 2 min	Hyd. volume	= 2,829 cuft
Drainage area	= 0.290 ac	Curve number	= 97*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.21 in	Distribution	= Huff-1st
Storm duration	= 2.00 hrs	Shape factor	= 484

* Composite (Area/CN) = $[(0.020 \times 79) + (0.270 \times 98)] / 0.290$



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

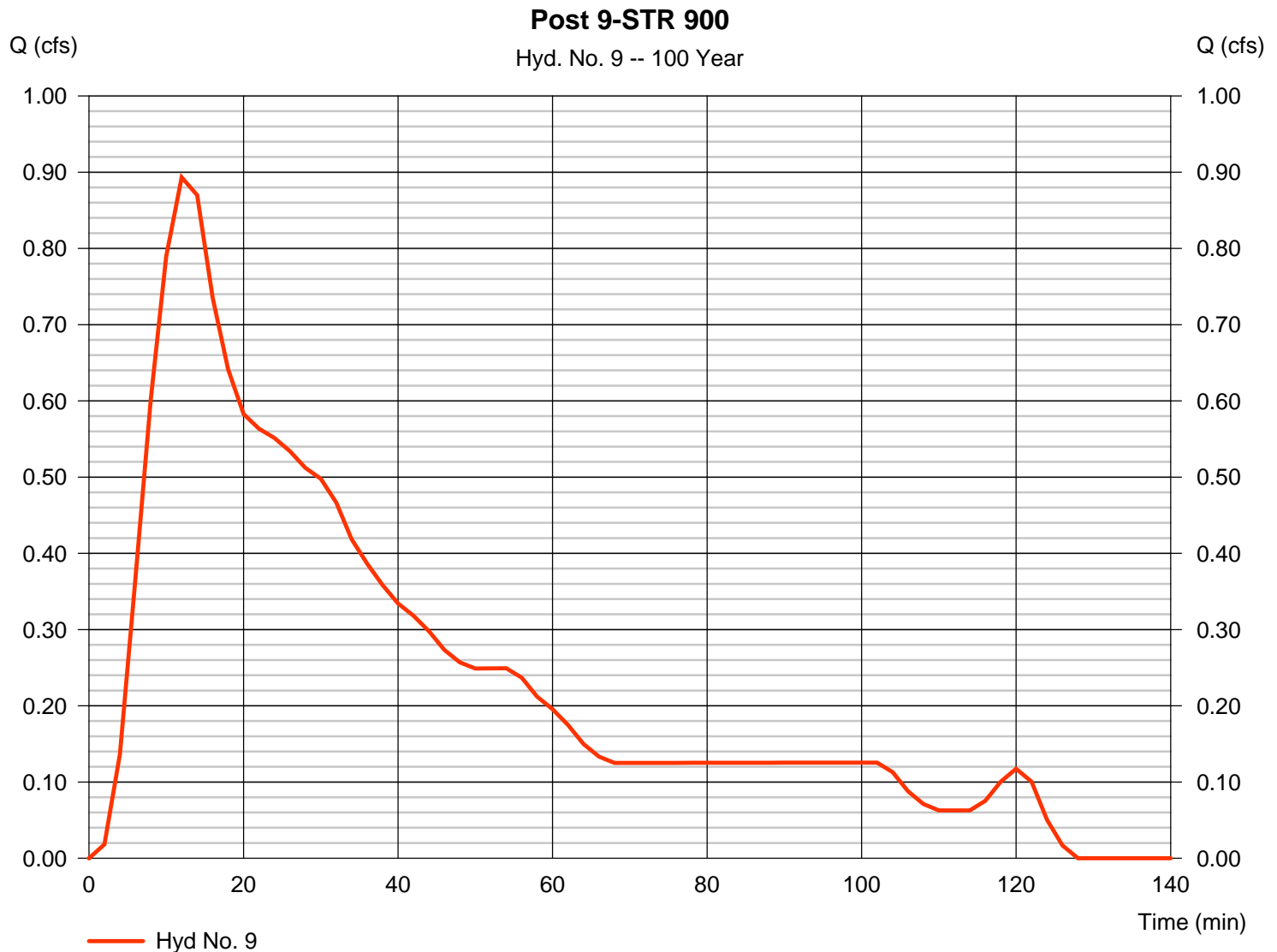
Wednesday, 07 / 11 / 2018

Hyd. No. 9

Post 9-STR 900

Hydrograph type	= SCS Runoff	Peak discharge	= 0.893 cfs
Storm frequency	= 100 yrs	Time to peak	= 12 min
Time interval	= 2 min	Hyd. volume	= 1,972 cuft
Drainage area	= 0.210 ac	Curve number	= 96*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.21 in	Distribution	= Huff-1st
Storm duration	= 2.00 hrs	Shape factor	= 484

* Composite (Area/CN) = $[(0.020 \times 79) + (0.190 \times 98)] / 0.210$



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

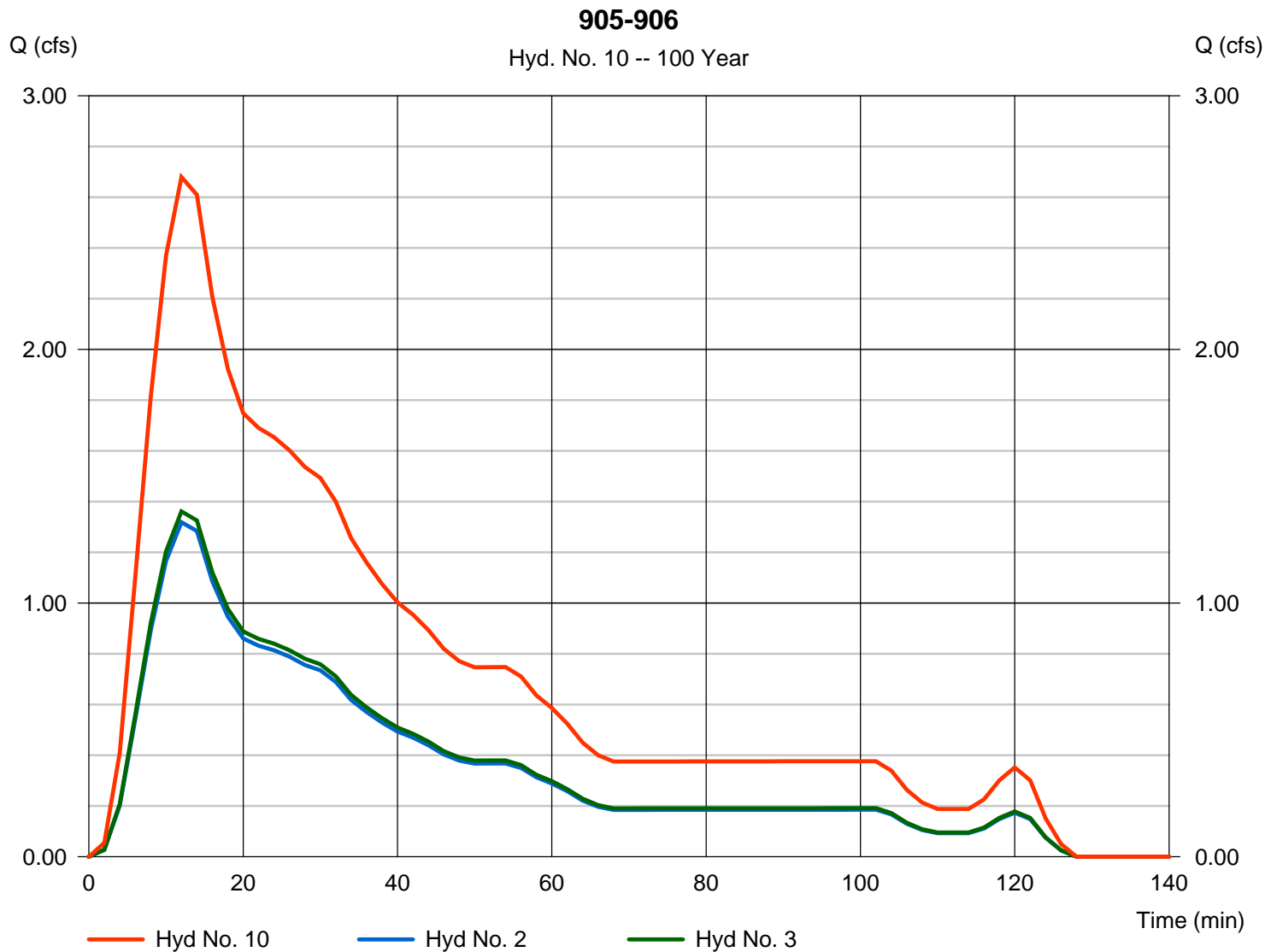
Wednesday, 07 / 11 / 2018

Hyd. No. 10

905-906

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

Peak discharge = 2.680 cfs
Time to peak = 12 min
Hyd. volume = 5,915 cuft
Contrib. drain. area = 0.630 ac



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

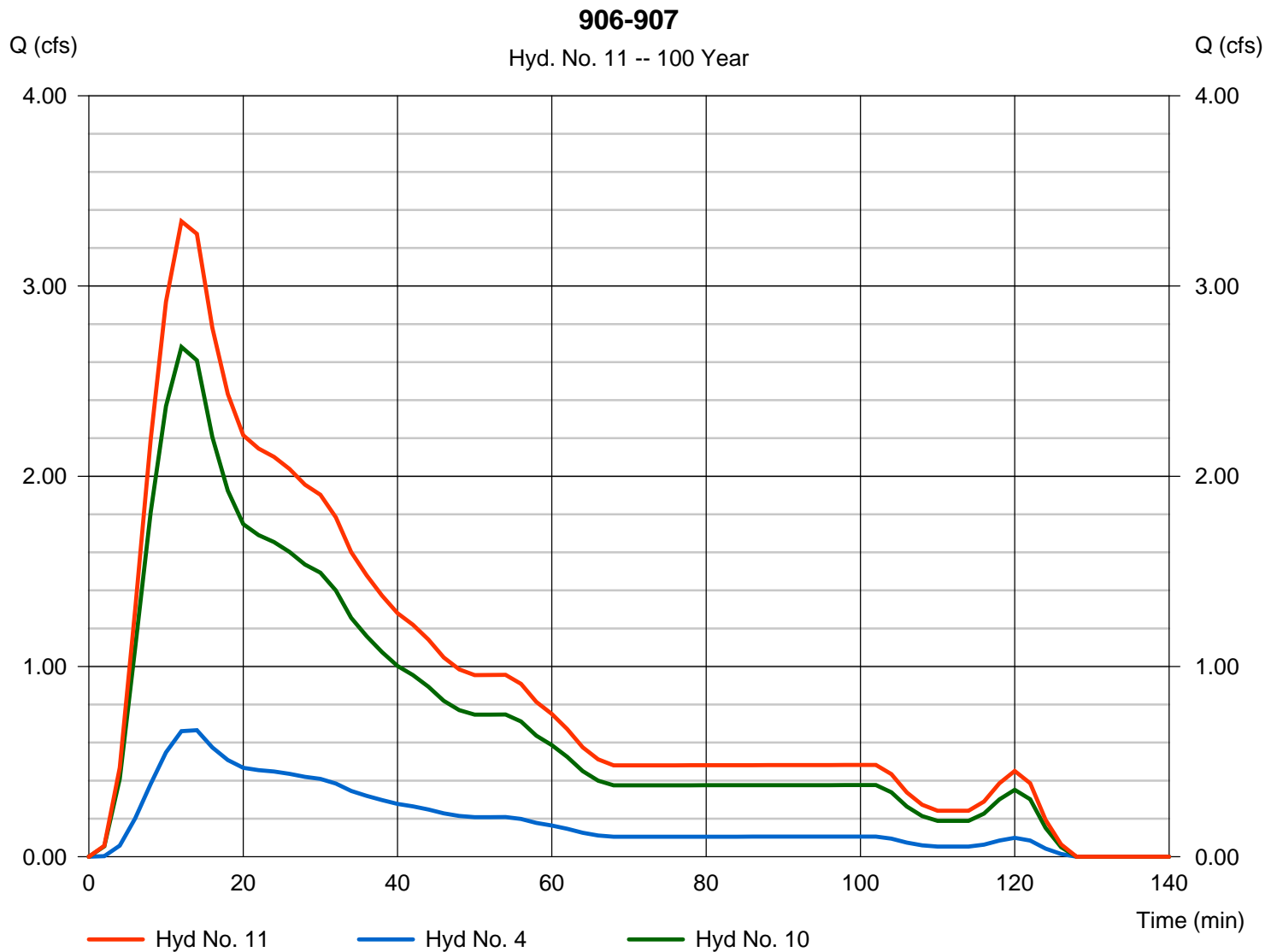
Wednesday, 07 / 11 / 2018

Hyd. No. 11

906-907

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

Peak discharge = 3.340 cfs
 Time to peak = 12 min
 Hyd. volume = 7,479 cuft
 Contrib. drain. area = 0.180 ac



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

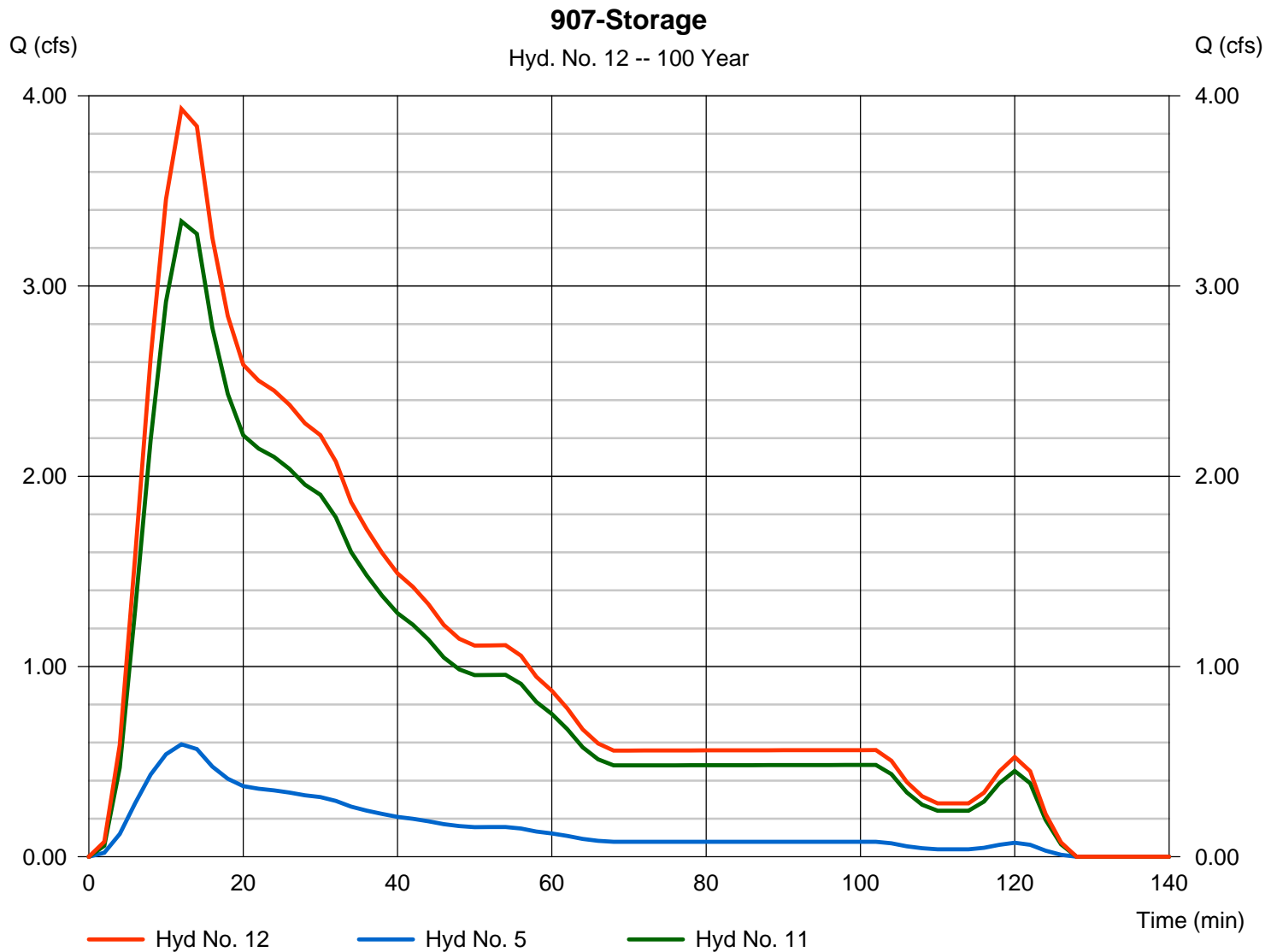
Wednesday, 07 / 11 / 2018

Hyd. No. 12

907-Storage

Hydrograph type = Combine
 Storm frequency = 100 yrs
 Time interval = 2 min
 Inflow hyds. = 5, 11

Peak discharge = 3.931 cfs
 Time to peak = 12 min
 Hyd. volume = 8,748 cuft
 Contrib. drain. area = 0.130 ac



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

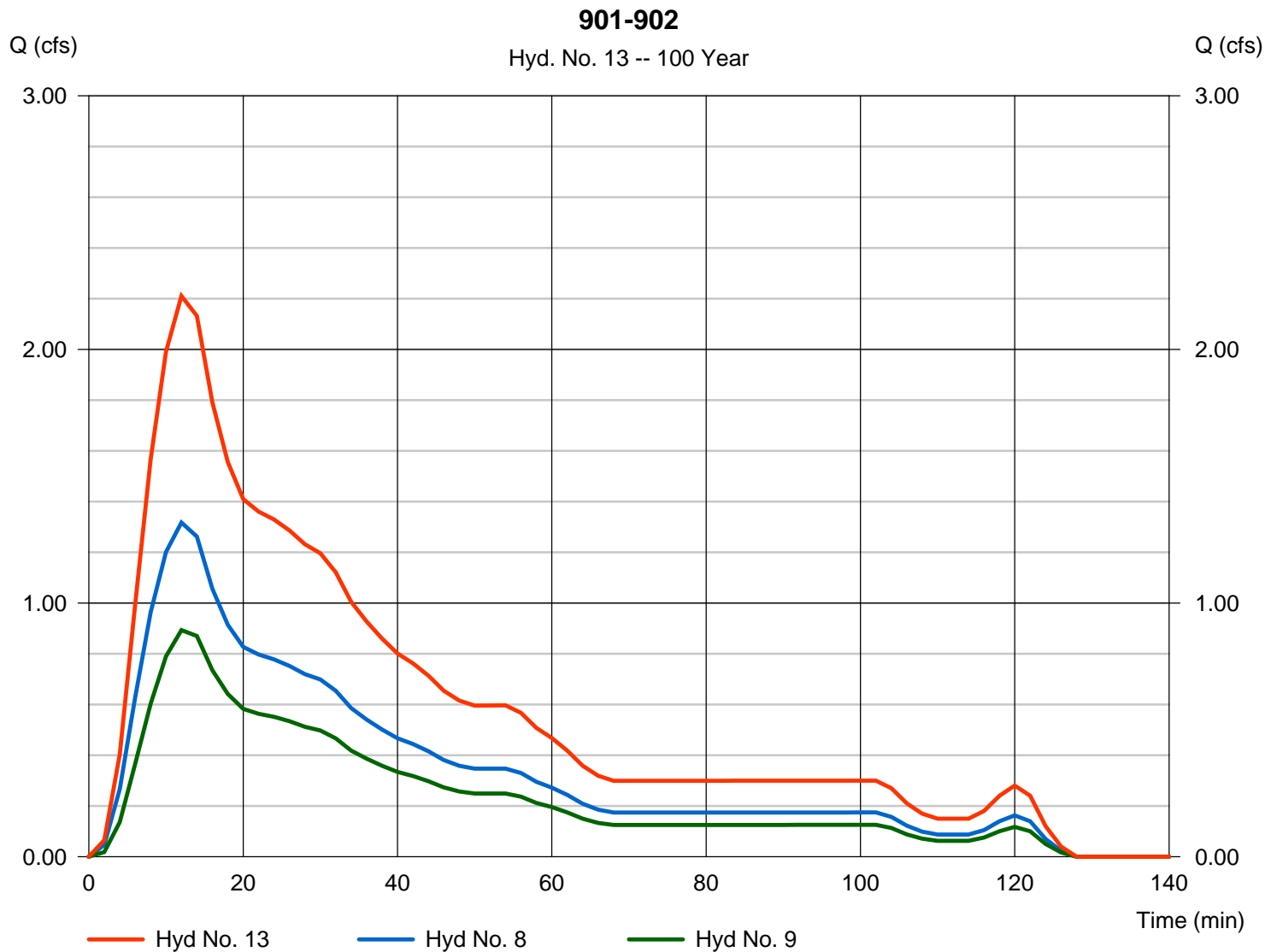
Wednesday, 07 / 11 / 2018

Hyd. No. 13

901-902

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

Peak discharge = 2.211 cfs
 Time to peak = 12 min
 Hyd. volume = 4,801 cuft
 Contrib. drain. area = 0.500 ac



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

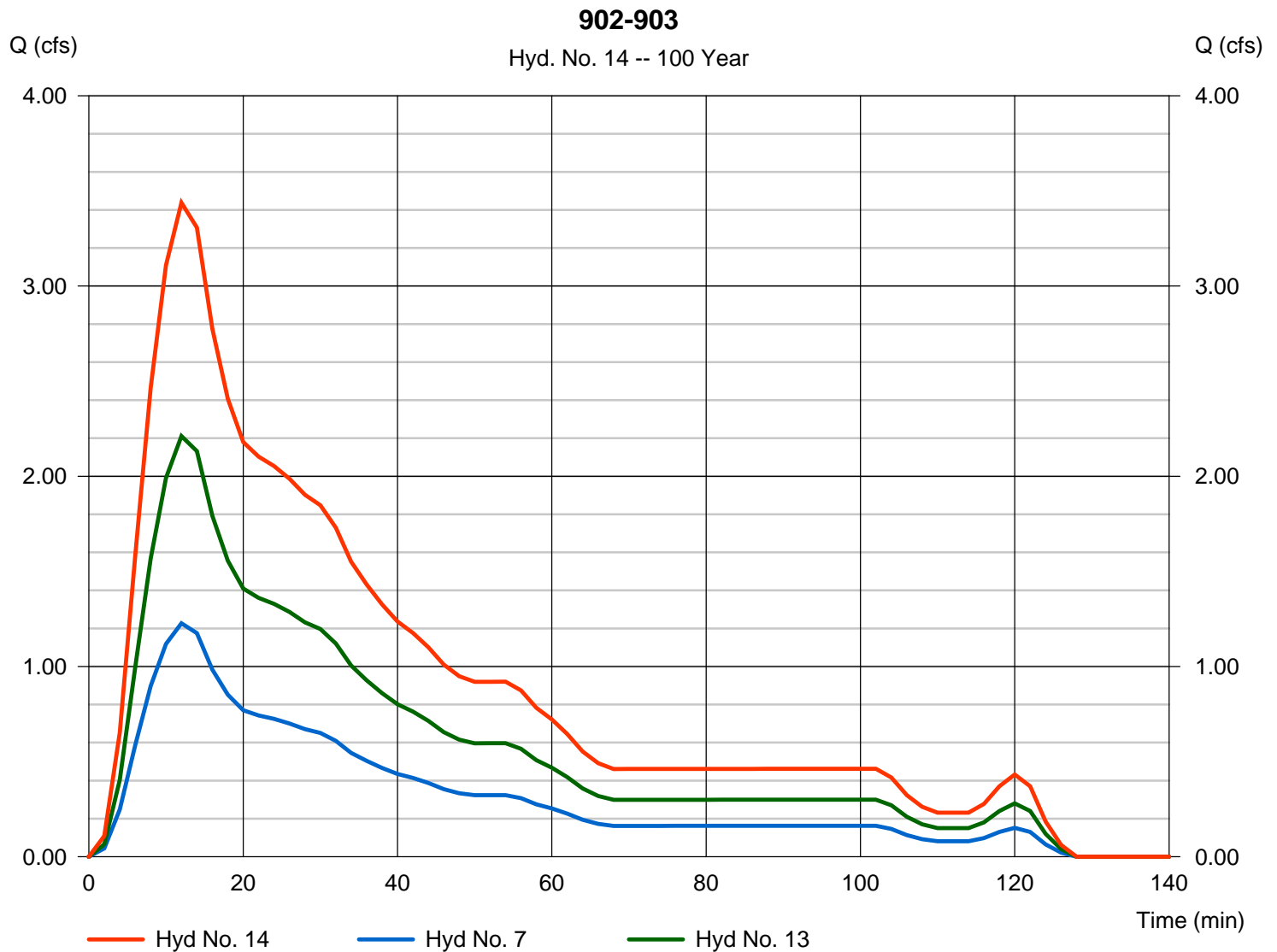
Wednesday, 07 / 11 / 2018

Hyd. No. 14

902-903

Hydrograph type = Combine
 Storm frequency = 100 yrs
 Time interval = 2 min
 Inflow hyds. = 7, 13

Peak discharge = 3.438 cfs
 Time to peak = 12 min
 Hyd. volume = 7,435 cuft
 Contrib. drain. area = 0.270 ac



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

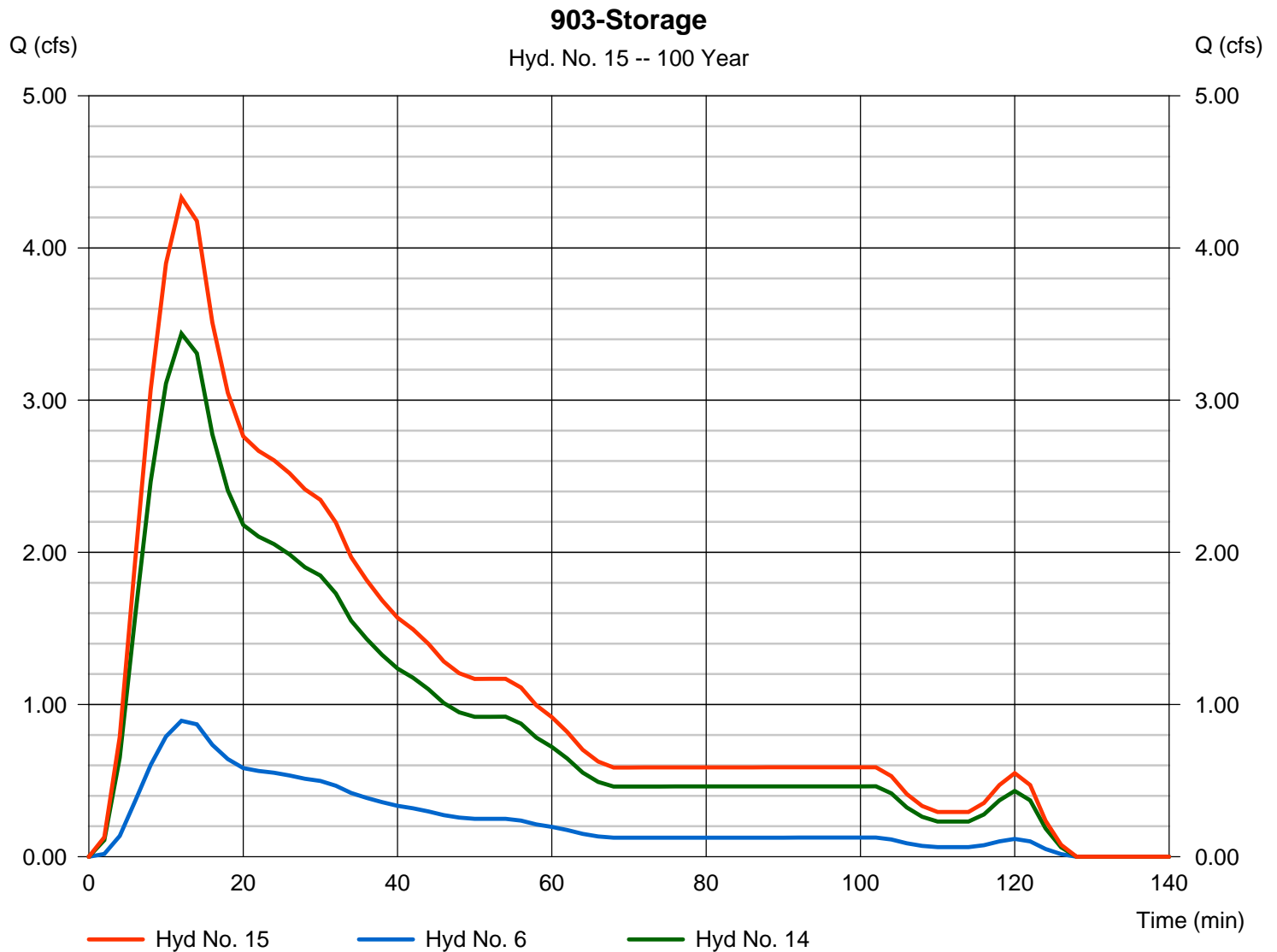
Wednesday, 07 / 11 / 2018

Hyd. No. 15

903-Storage

Hydrograph type = Combine
 Storm frequency = 100 yrs
 Time interval = 2 min
 Inflow hyds. = 6, 14

Peak discharge = 4.331 cfs
 Time to peak = 12 min
 Hyd. volume = 9,406 cuft
 Contrib. drain. area = 0.210 ac



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

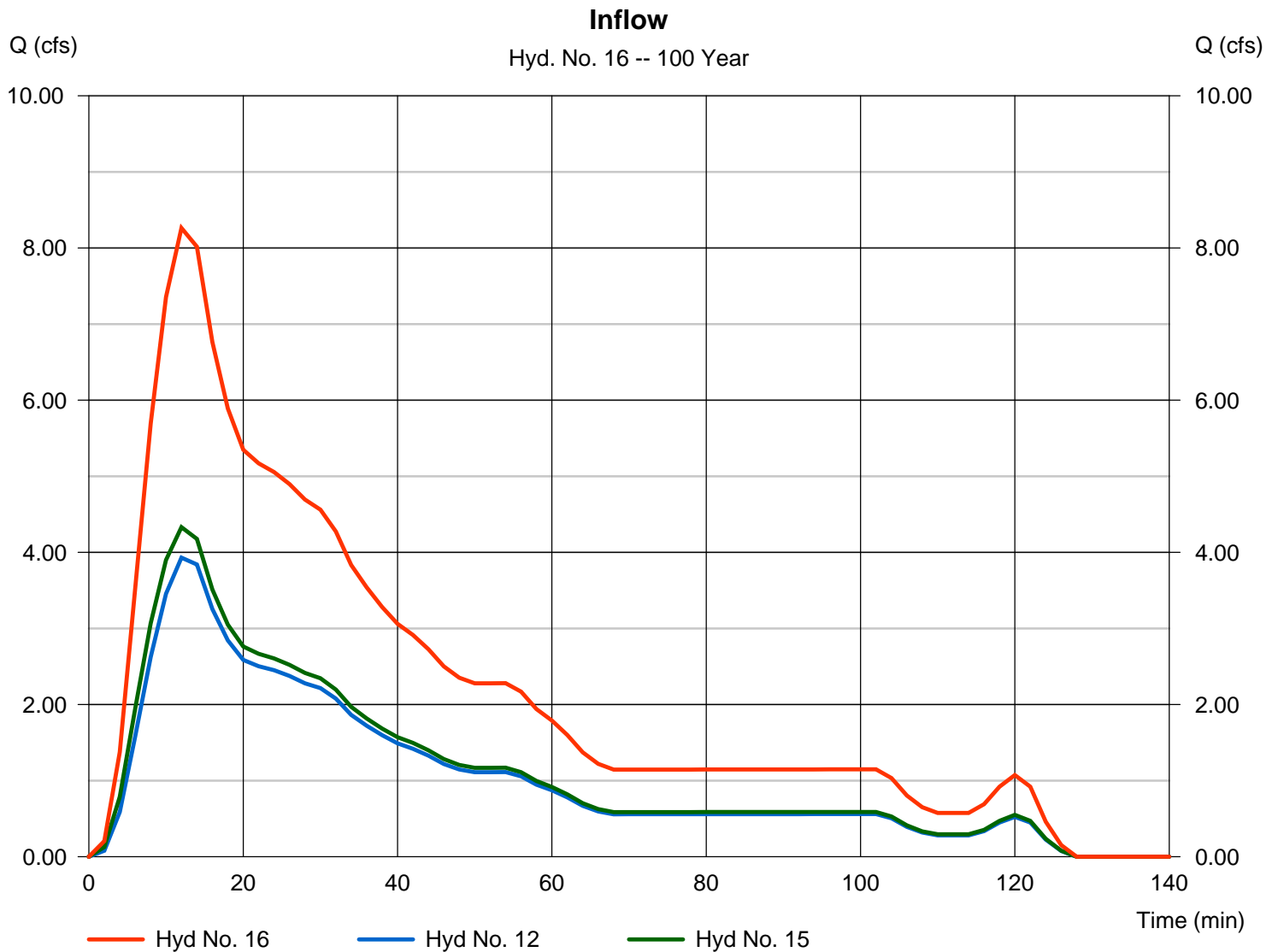
Wednesday, 07 / 11 / 2018

Hyd. No. 16

Inflow

Hydrograph type = Combine
 Storm frequency = 100 yrs
 Time interval = 2 min
 Inflow hyds. = 12, 15

Peak discharge = 8.262 cfs
 Time to peak = 12 min
 Hyd. volume = 18,154 cuft
 Contrib. drain. area = 0.000 ac



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

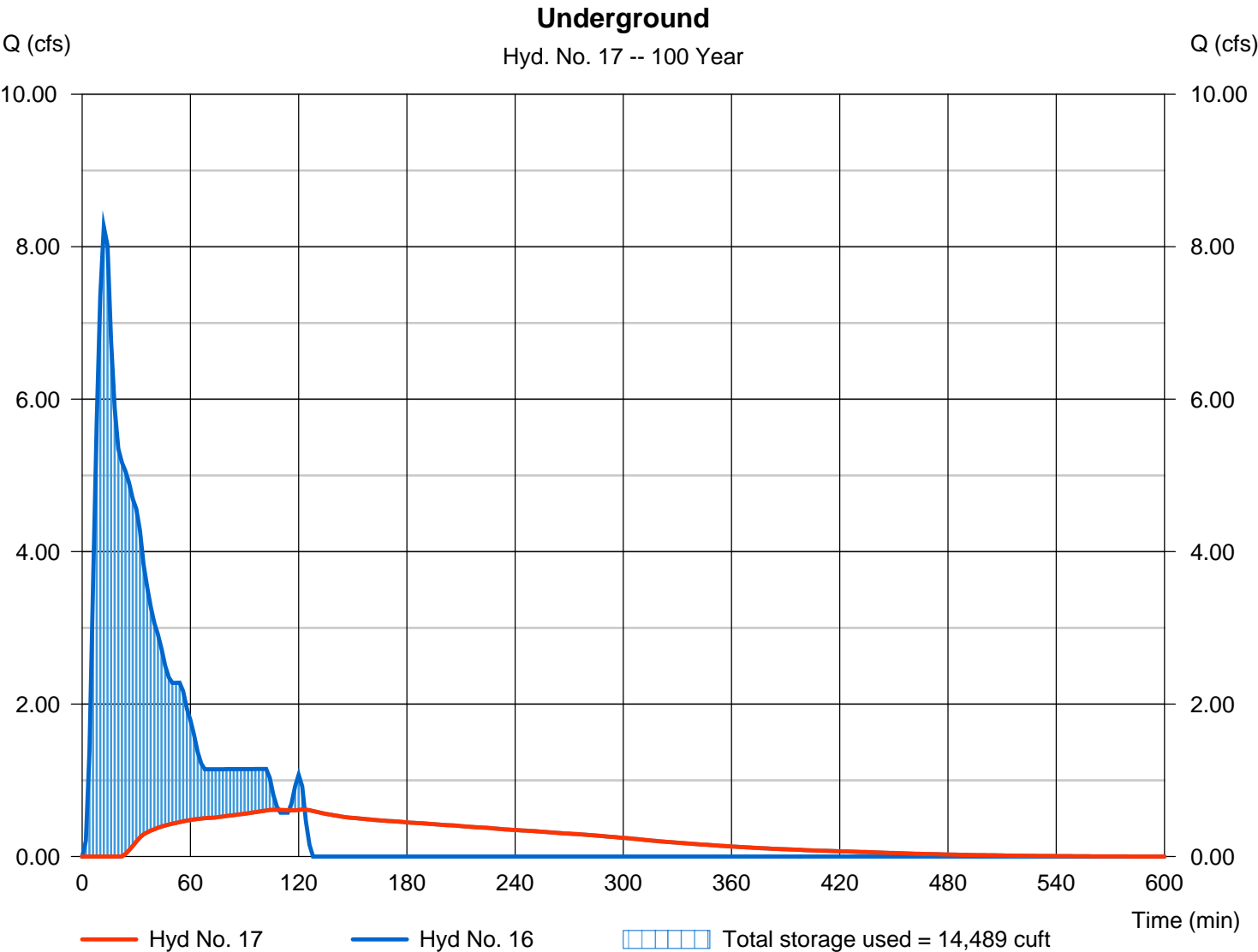
Wednesday, 07 / 11 / 2018

Hyd. No. 17

Underground

Hydrograph type	= Reservoir	Peak discharge	= 0.616 cfs
Storm frequency	= 100 yrs	Time to peak	= 122 min
Time interval	= 2 min	Hyd. volume	= 8,367 cuft
Inflow hyd. No.	= 16 - Inflow	Max. Elevation	= 740.66 ft
Reservoir name	= Underground Storage	Max. Storage	= 14,489 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Appendix G

*Hydraflow Hydrographs
3 Hour Storm Data*

Hydrograph Report

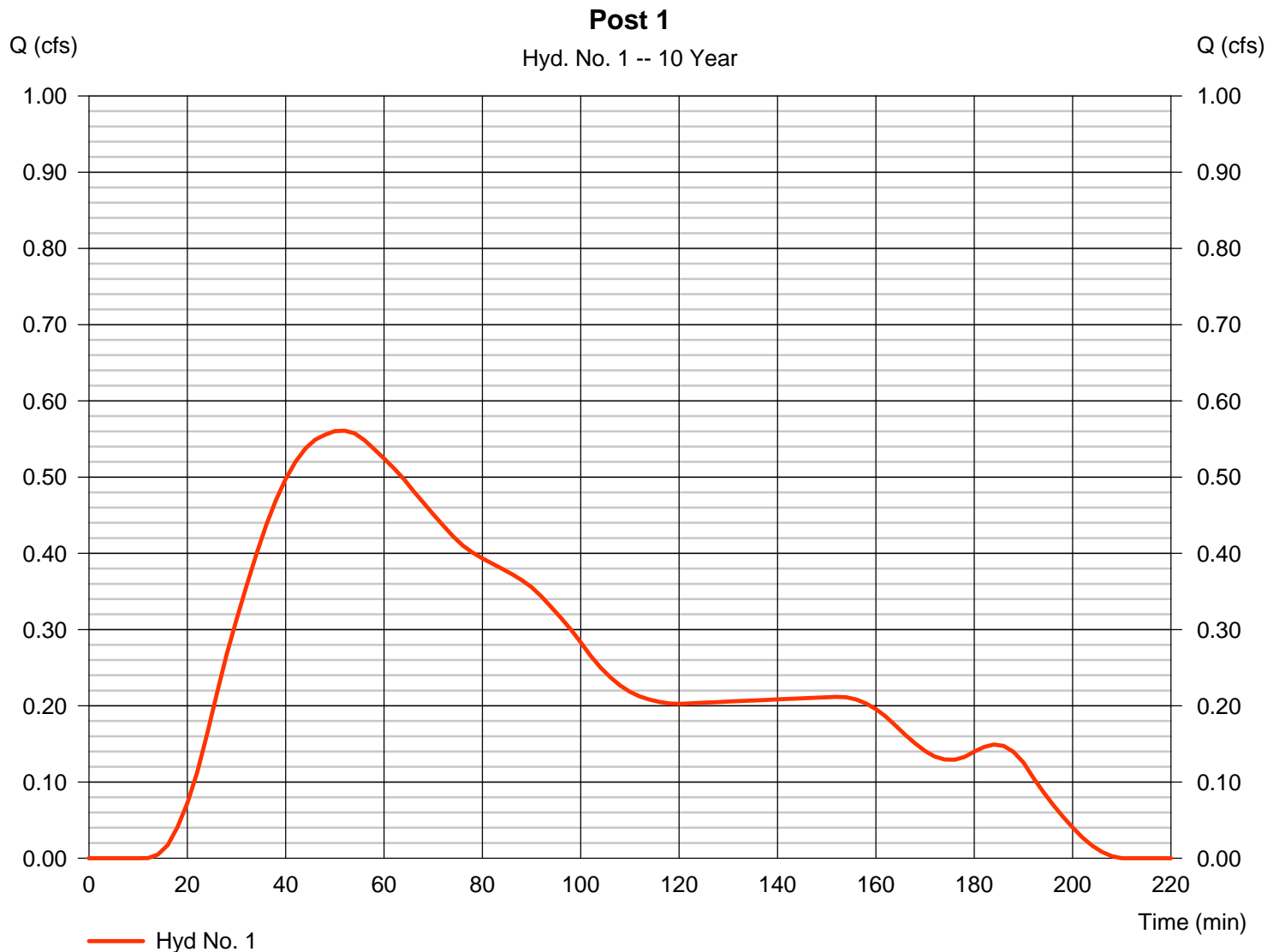
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

Wednesday, 07 / 11 / 2018

Hyd. No. 1

Post 1

Hydrograph type	= SCS Runoff	Peak discharge	= 0.561 cfs
Storm frequency	= 10 yrs	Time to peak	= 52 min
Time interval	= 2 min	Hyd. volume	= 3,082 cuft
Drainage area	= 0.860 ac	Curve number	= 79
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 18.20 min
Total precip.	= 2.72 in	Distribution	= Huff-1st
Storm duration	= 3.00 hrs	Shape factor	= 484



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

Wednesday, 07 / 11 / 2018

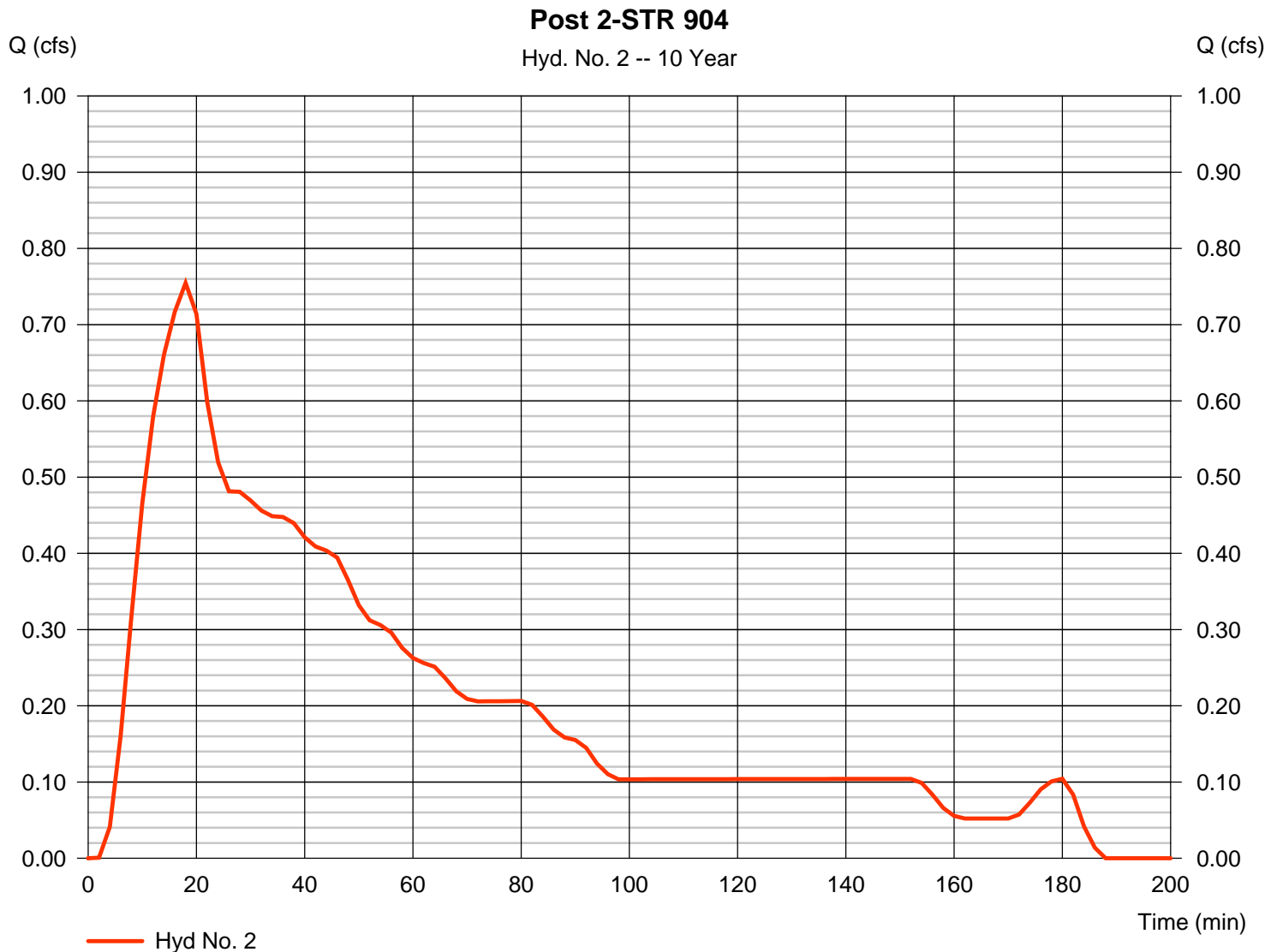
Hyd. No. 2

Post 2-STR 904

Hydrograph type = SCS Runoff
 Storm frequency = 10 yrs
 Time interval = 2 min
 Drainage area = 0.310 ac
 Basin Slope = 0.0 %
 Tc method = User
 Total precip. = 2.72 in
 Storm duration = 3.00 hrs

Peak discharge = 0.755 cfs
 Time to peak = 18 min
 Hyd. volume = 2,402 cuft
 Curve number = 96*
 Hydraulic length = 0 ft
 Time of conc. (Tc) = 5.00 min
 Distribution = Huff-1st
 Shape factor = 484

* Composite (Area/CN) = $[(0.030 \times 79) + (0.280 \times 98)] / 0.310$



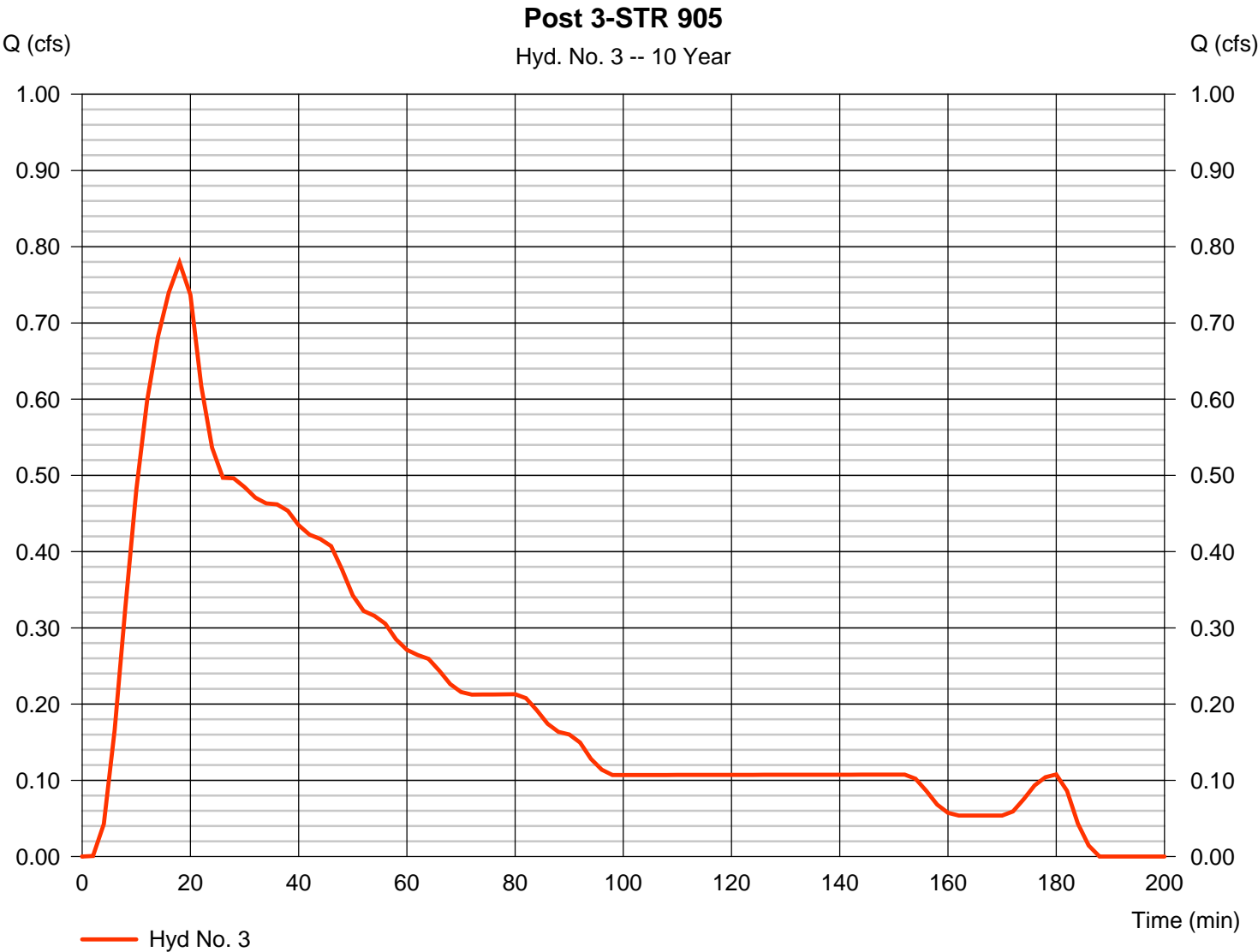
Hydrograph Report

Hyd. No. 3

Post 3-STR 905

Hydrograph type	= SCS Runoff	Peak discharge	= 0.779 cfs
Storm frequency	= 10 yrs	Time to peak	= 18 min
Time interval	= 2 min	Hyd. volume	= 2,479 cuft
Drainage area	= 0.320 ac	Curve number	= 96*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 2.72 in	Distribution	= Huff-1st
Storm duration	= 3.00 hrs	Shape factor	= 484

* Composite (Area/CN) = [(0.030 x 79) + (0.290 x 98)] / 0.320



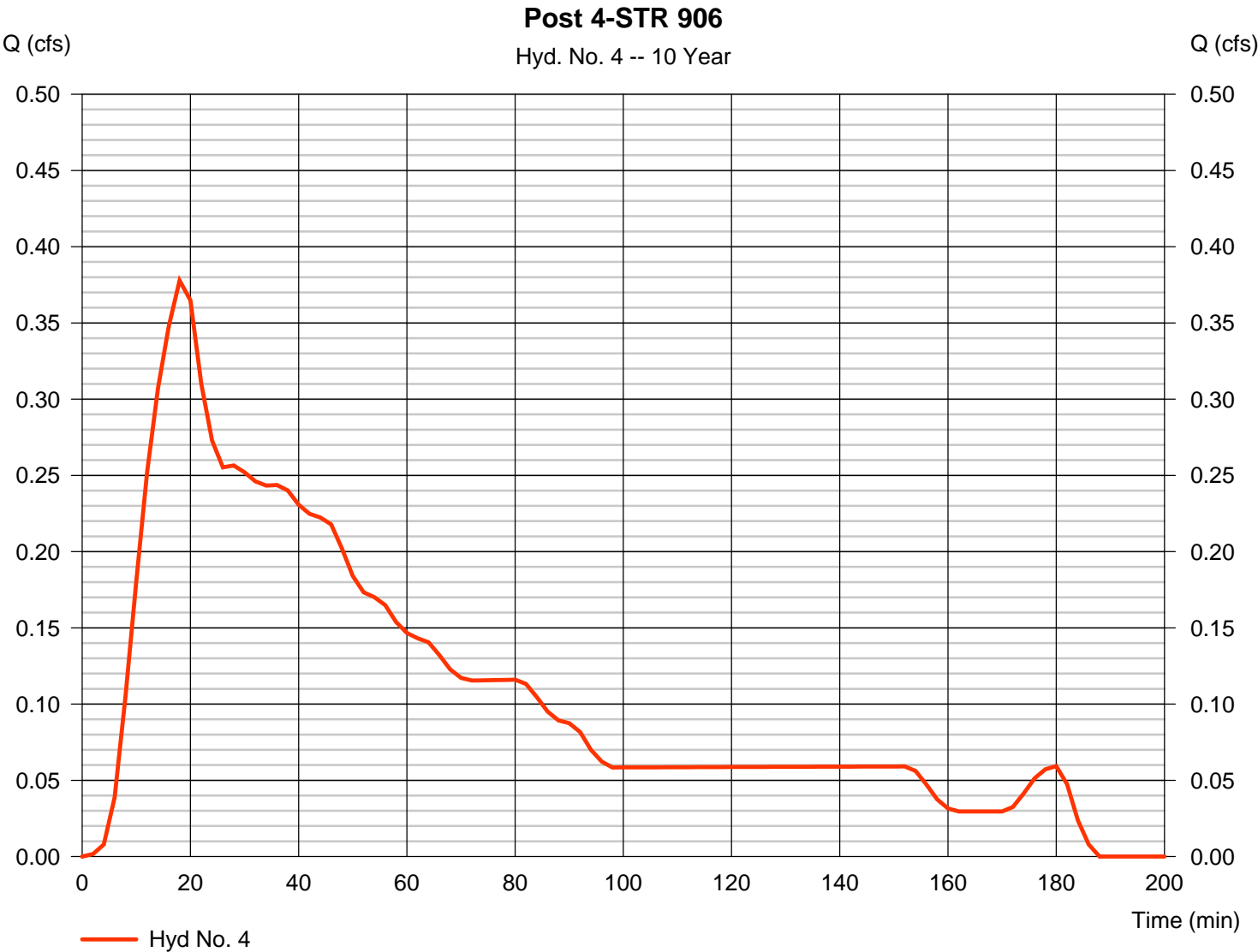
Hydrograph Report

Hyd. No. 4

Post 4-STR 906

Hydrograph type	= SCS Runoff	Peak discharge	= 0.378 cfs
Storm frequency	= 10 yrs	Time to peak	= 18 min
Time interval	= 2 min	Hyd. volume	= 1,274 cuft
Drainage area	= 0.180 ac	Curve number	= 94*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 2.72 in	Distribution	= Huff-1st
Storm duration	= 3.00 hrs	Shape factor	= 484

* Composite (Area/CN) = [(0.040 x 79) + (0.140 x 98)] / 0.180



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

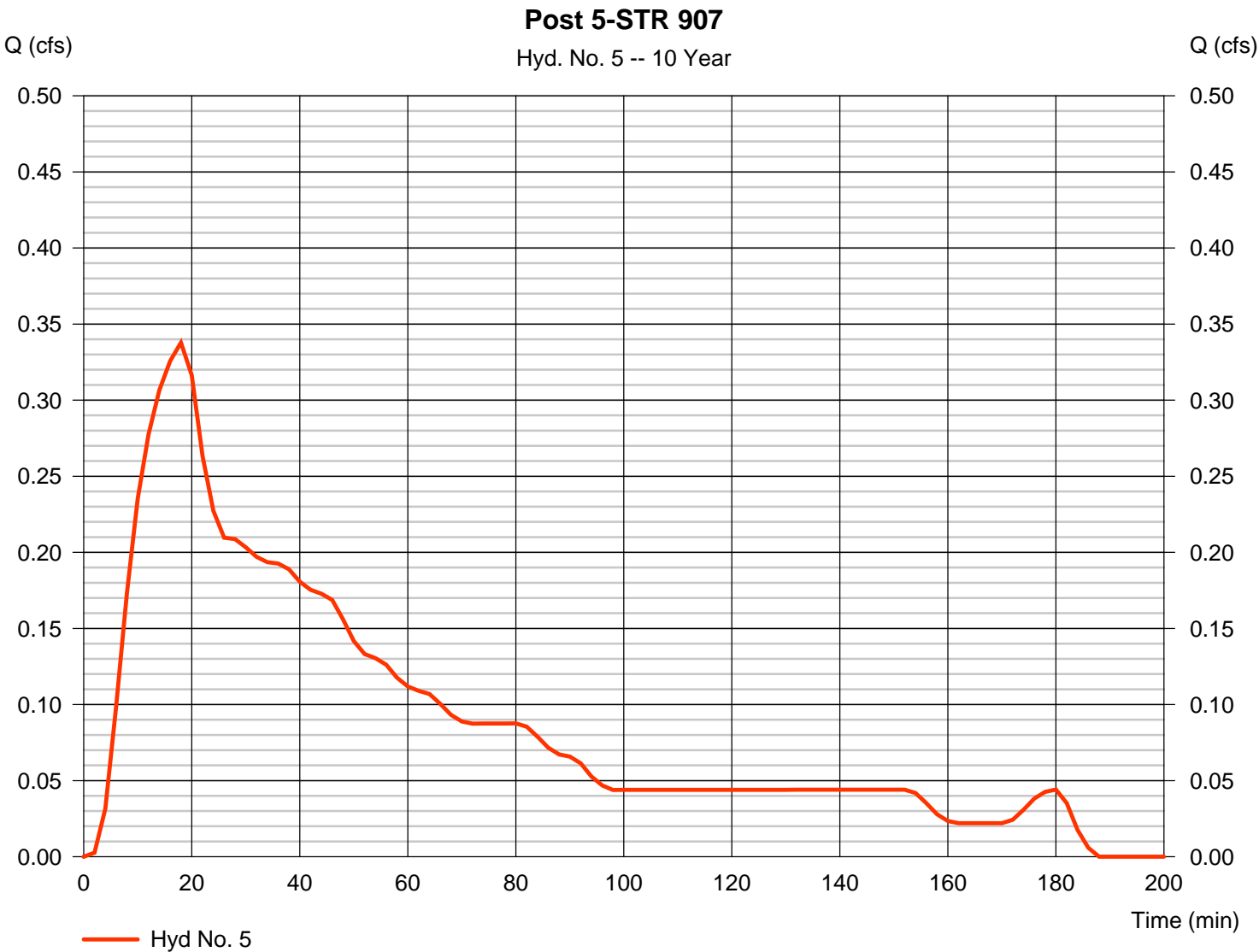
Wednesday, 07 / 11 / 2018

Hyd. No. 5

Post 5-STR 907

Hydrograph type	= SCS Runoff	Peak discharge	= 0.338 cfs
Storm frequency	= 10 yrs	Time to peak	= 18 min
Time interval	= 2 min	Hyd. volume	= 1,053 cuft
Drainage area	= 0.130 ac	Curve number	= 97*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 2.72 in	Distribution	= Huff-1st
Storm duration	= 3.00 hrs	Shape factor	= 484

* Composite (Area/CN) = [(0.010 x 79) + (0.120 x 98)] / 0.130



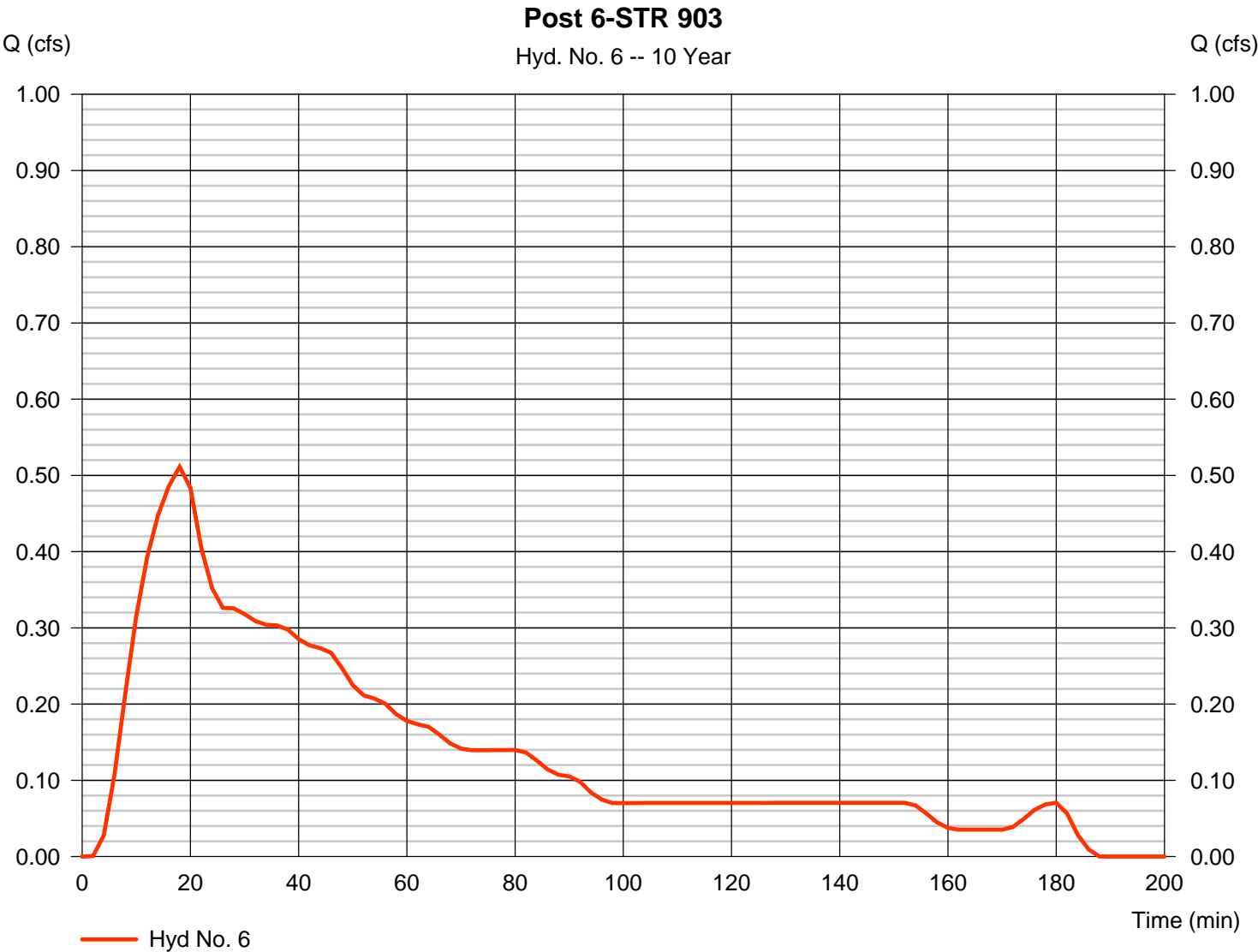
Hydrograph Report

Hyd. No. 6

Post 6-STR 903

Hydrograph type	= SCS Runoff	Peak discharge	= 0.511 cfs
Storm frequency	= 10 yrs	Time to peak	= 18 min
Time interval	= 2 min	Hyd. volume	= 1,627 cuft
Drainage area	= 0.210 ac	Curve number	= 96*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 2.72 in	Distribution	= Huff-1st
Storm duration	= 3.00 hrs	Shape factor	= 484

* Composite (Area/CN) = [(0.020 x 79) + (0.190 x 98)] / 0.210



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

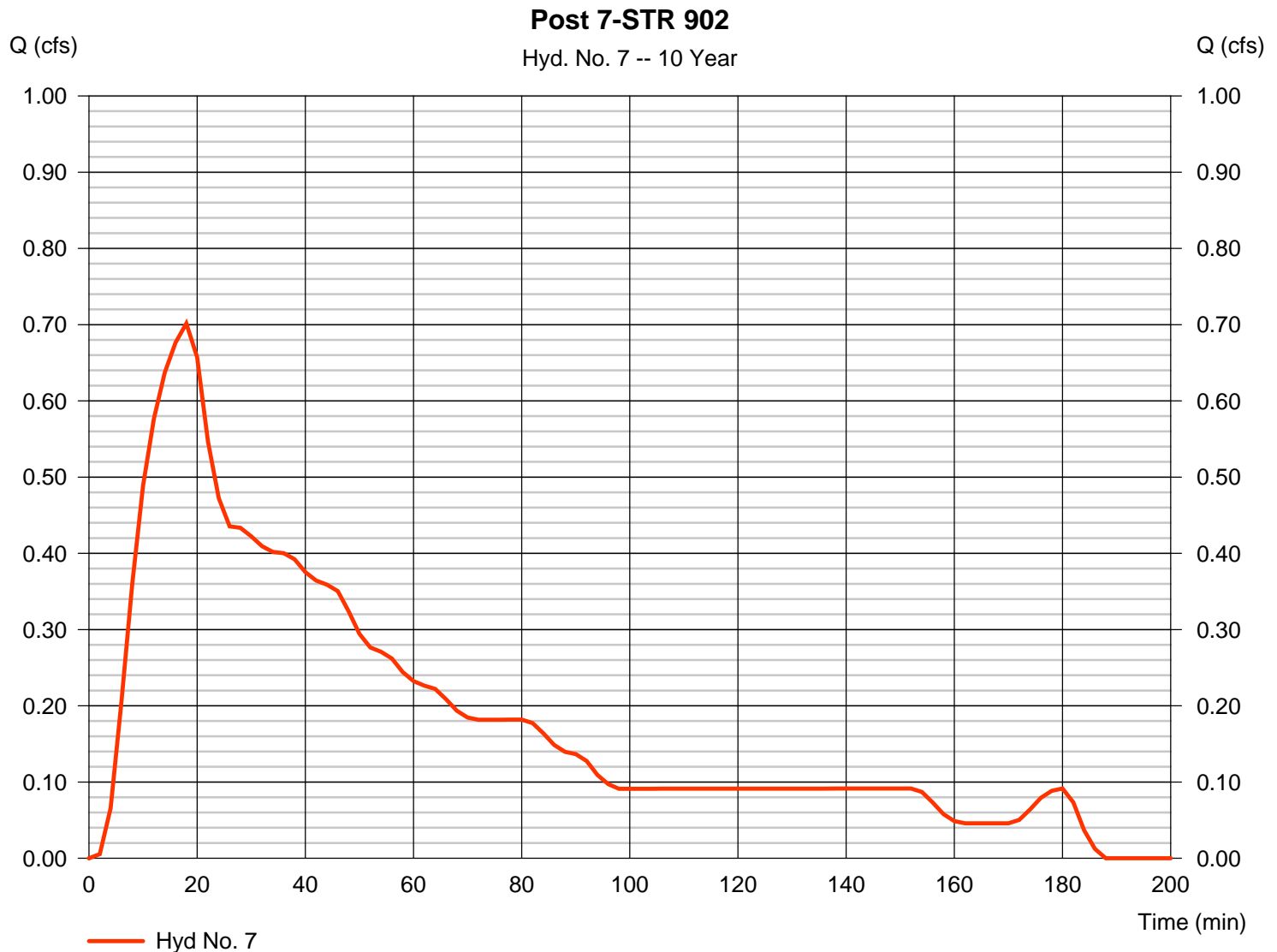
Wednesday, 07 / 11 / 2018

Hyd. No. 7

Post 7-STR 902

Hydrograph type	= SCS Runoff	Peak discharge	= 0.702 cfs
Storm frequency	= 10 yrs	Time to peak	= 18 min
Time interval	= 2 min	Hyd. volume	= 2,188 cuft
Drainage area	= 0.270 ac	Curve number	= 97*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 2.72 in	Distribution	= Huff-1st
Storm duration	= 3.00 hrs	Shape factor	= 484

* Composite (Area/CN) = $[(0.020 \times 79) + (0.250 \times 98)] / 0.270$



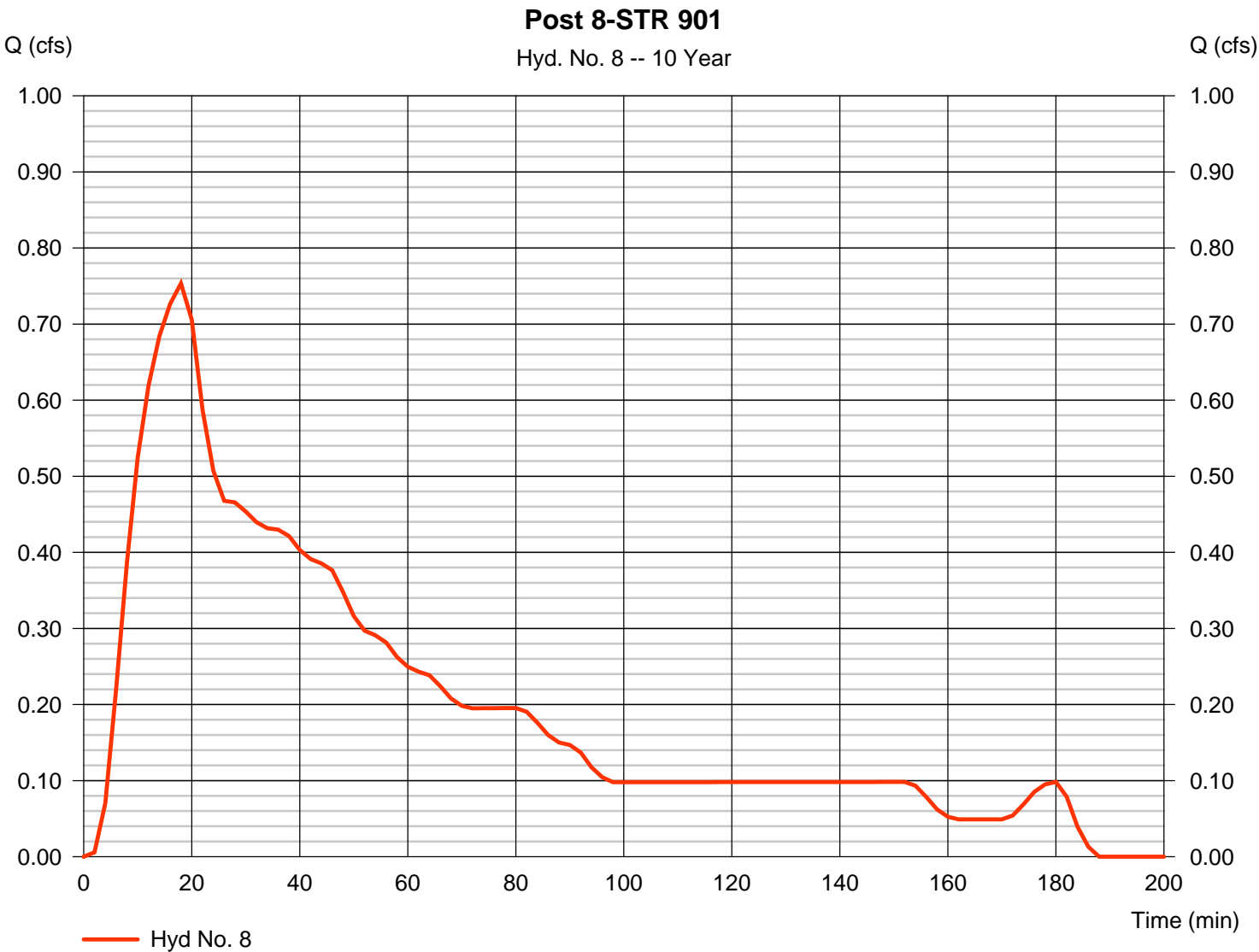
Hydrograph Report

Hyd. No. 8

Post 8-STR 901

Hydrograph type	= SCS Runoff	Peak discharge	= 0.754 cfs
Storm frequency	= 10 yrs	Time to peak	= 18 min
Time interval	= 2 min	Hyd. volume	= 2,350 cuft
Drainage area	= 0.290 ac	Curve number	= 97*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 2.72 in	Distribution	= Huff-1st
Storm duration	= 3.00 hrs	Shape factor	= 484

* Composite (Area/CN) = [(0.020 x 79) + (0.270 x 98)] / 0.290



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

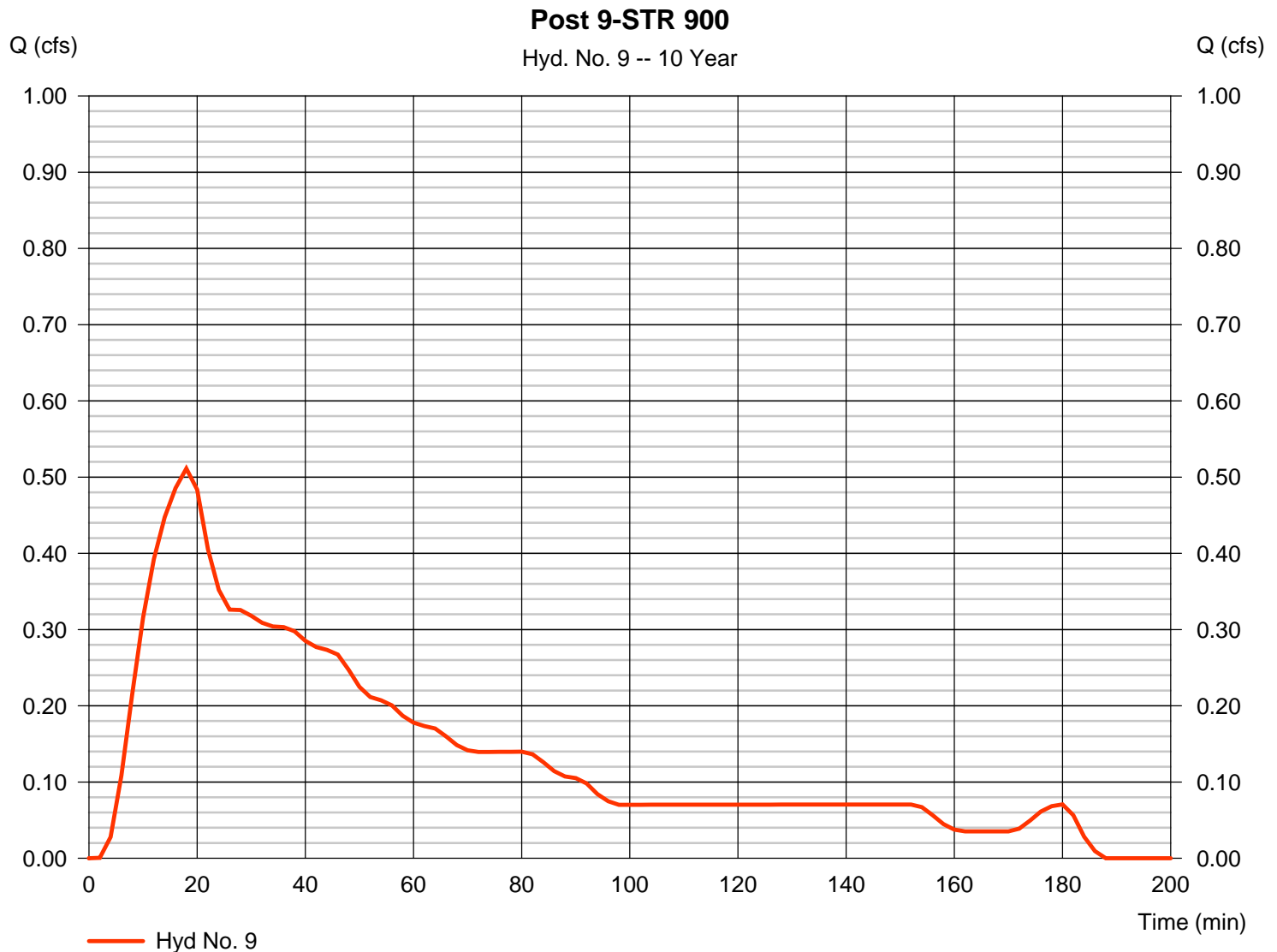
Wednesday, 07 / 11 / 2018

Hyd. No. 9

Post 9-STR 900

Hydrograph type	= SCS Runoff	Peak discharge	= 0.511 cfs
Storm frequency	= 10 yrs	Time to peak	= 18 min
Time interval	= 2 min	Hyd. volume	= 1,627 cuft
Drainage area	= 0.210 ac	Curve number	= 96*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 2.72 in	Distribution	= Huff-1st
Storm duration	= 3.00 hrs	Shape factor	= 484

* Composite (Area/CN) = $[(0.020 \times 79) + (0.190 \times 98)] / 0.210$



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

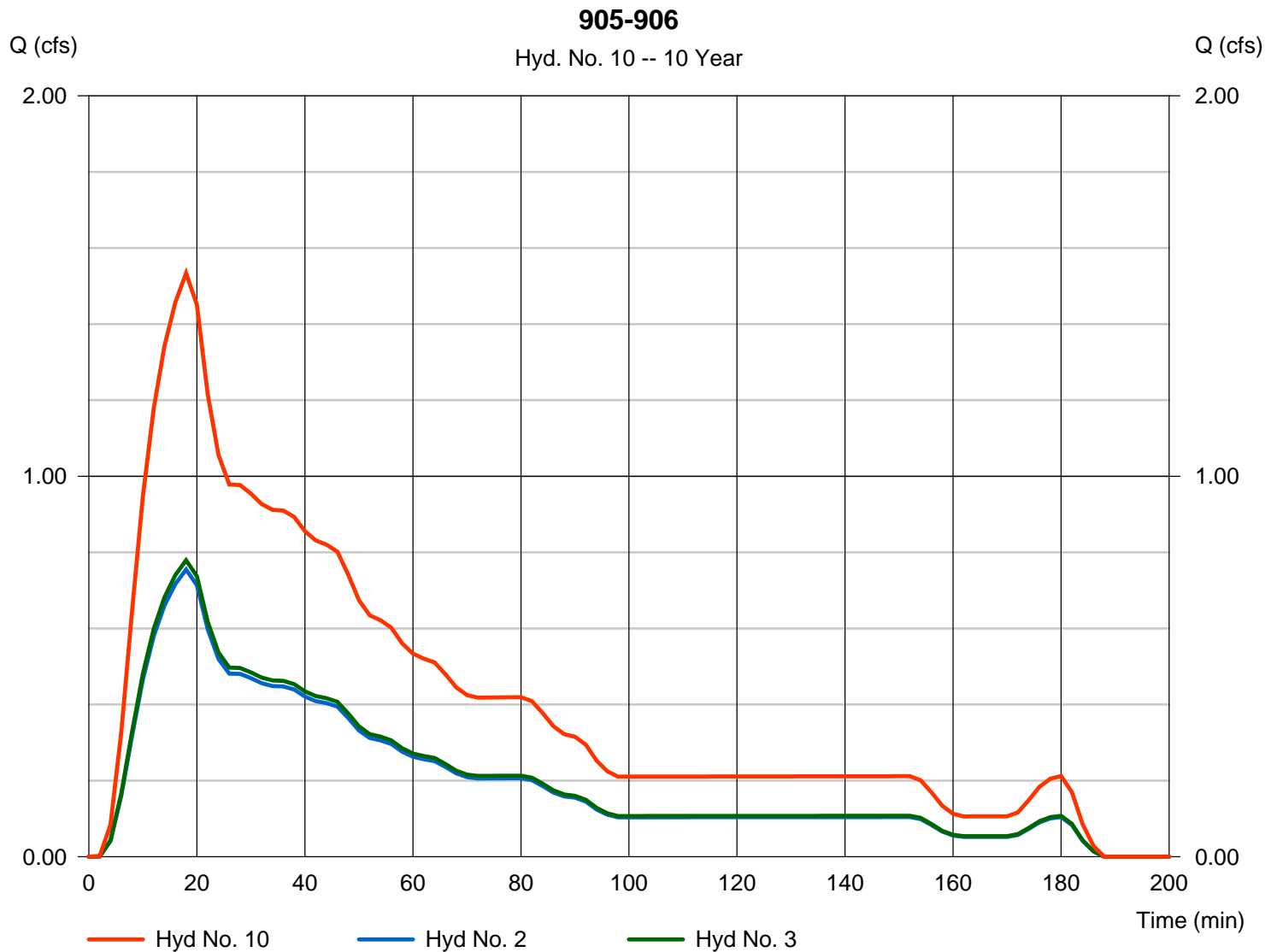
Wednesday, 07 / 11 / 2018

Hyd. No. 10

905-906

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

Peak discharge = 1.534 cfs
 Time to peak = 18 min
 Hyd. volume = 4,882 cuft
 Contrib. drain. area = 0.630 ac



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

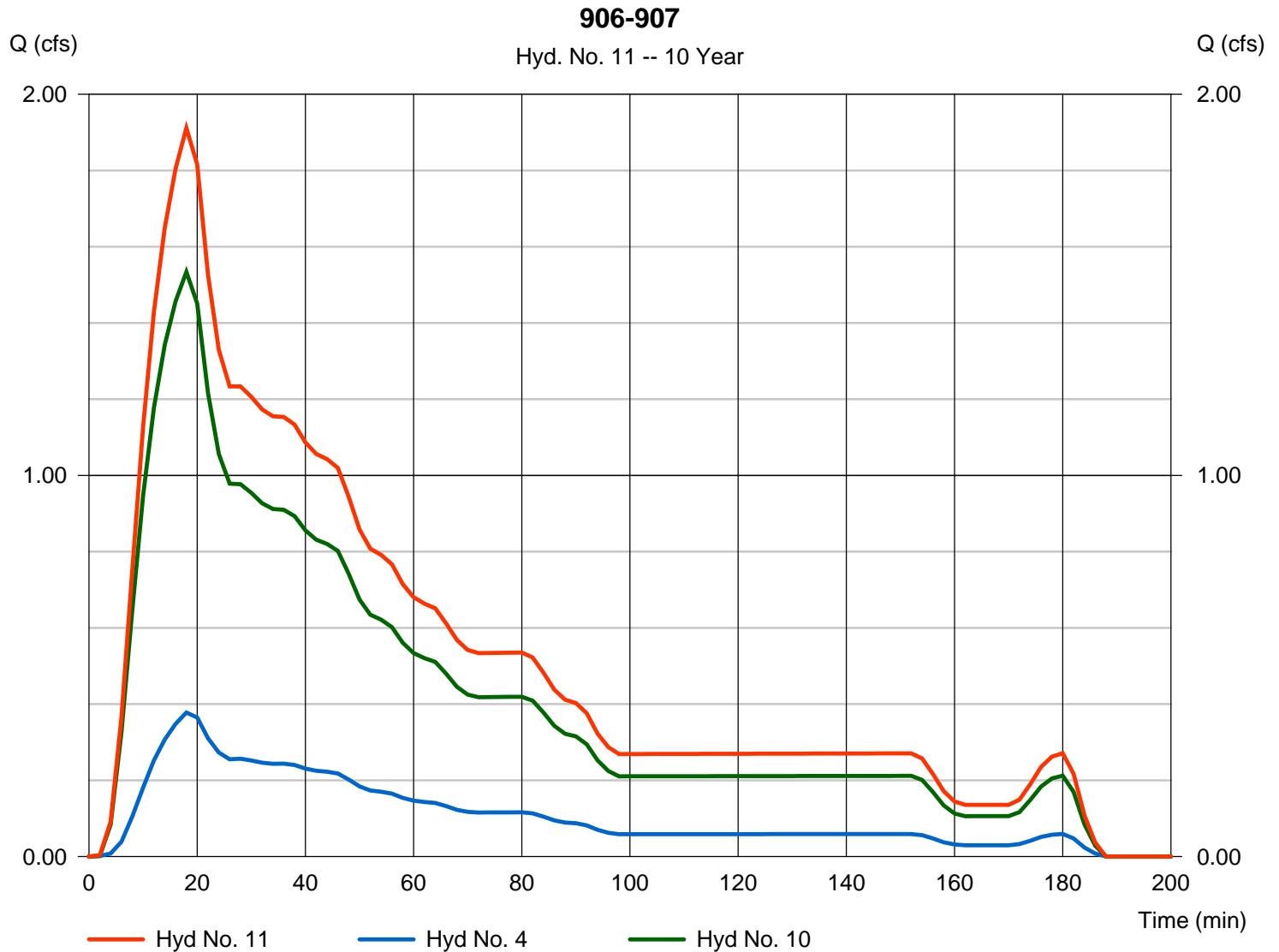
Wednesday, 07 / 11 / 2018

Hyd. No. 11

906-907

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

Peak discharge = 1.912 cfs
 Time to peak = 18 min
 Hyd. volume = 6,156 cuft
 Contrib. drain. area = 0.180 ac



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

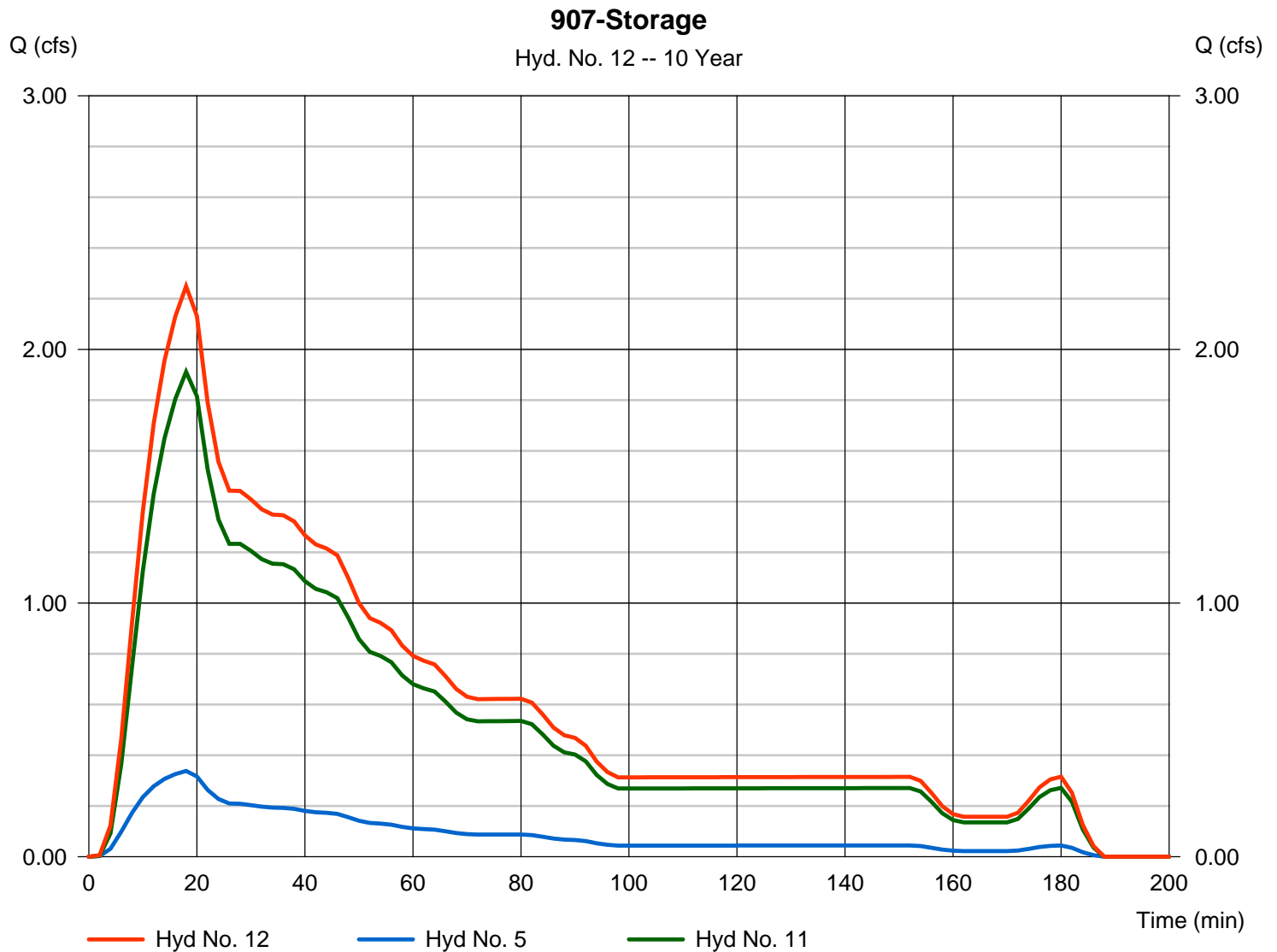
Wednesday, 07 / 11 / 2018

Hyd. No. 12

907-Storage

Hydrograph type = Combine
Storm frequency = 10 yrs
Time interval = 2 min
Inflow hyds. = 5, 11

Peak discharge = 2.249 cfs
Time to peak = 18 min
Hyd. volume = 7,209 cuft
Contrib. drain. area = 0.130 ac



Hydrograph Report

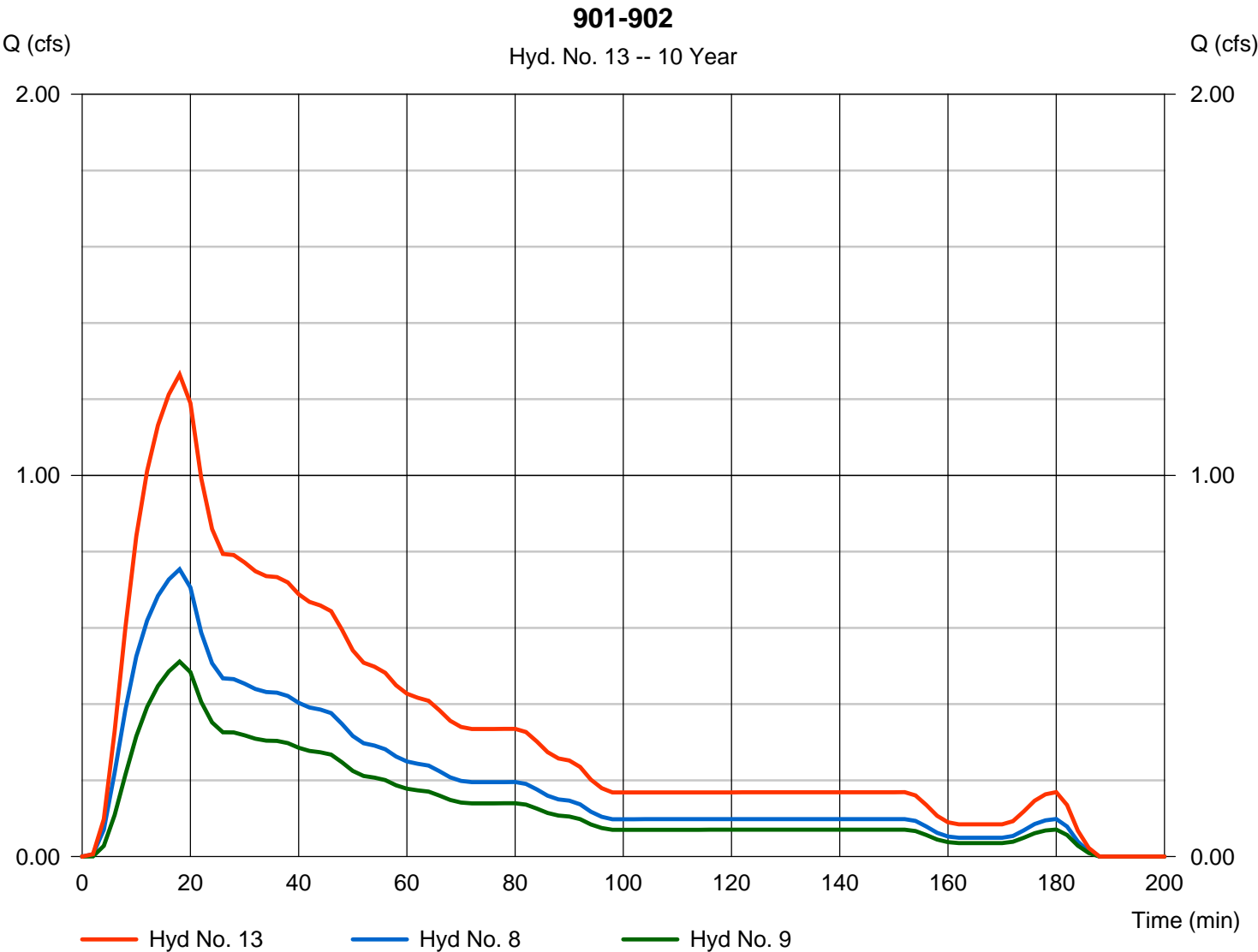
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

Wednesday, 07 / 11 / 2018

Hyd. No. 13

901-902

Hydrograph type	= Combine	Peak discharge	= 1.265 cfs
Storm frequency	= 10 yrs	Time to peak	= 18 min
Time interval	= 2 min	Hyd. volume	= 3,977 cuft
Inflow hyds.	= 8, 9	Contrib. drain. area	= 0.500 ac



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

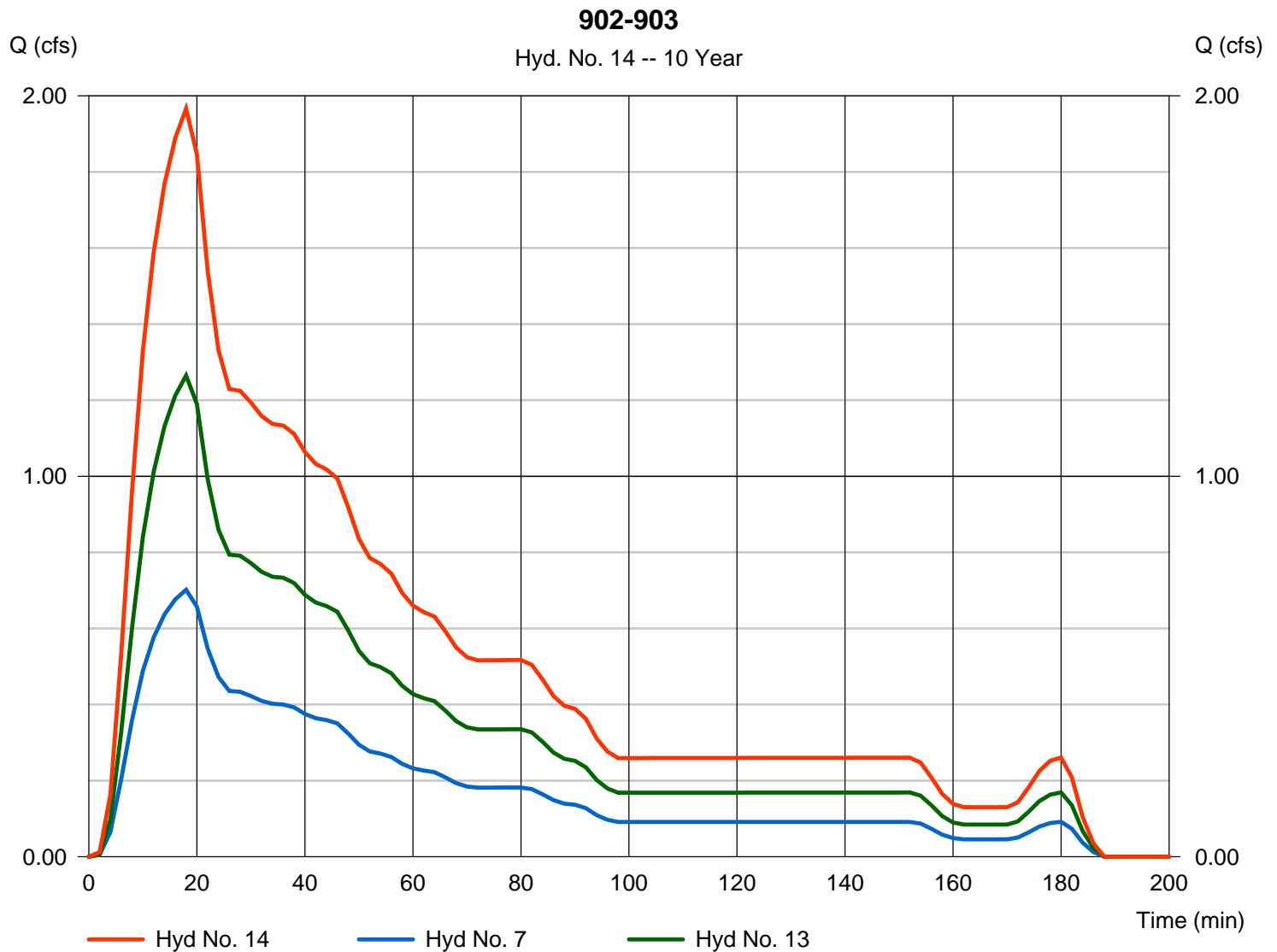
Wednesday, 07 / 11 / 2018

Hyd. No. 14

902-903

Hydrograph type = Combine
 Storm frequency = 10 yrs
 Time interval = 2 min
 Inflow hyds. = 7, 13

Peak discharge = 1.966 cfs
 Time to peak = 18 min
 Hyd. volume = 6,165 cuft
 Contrib. drain. area = 0.270 ac



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

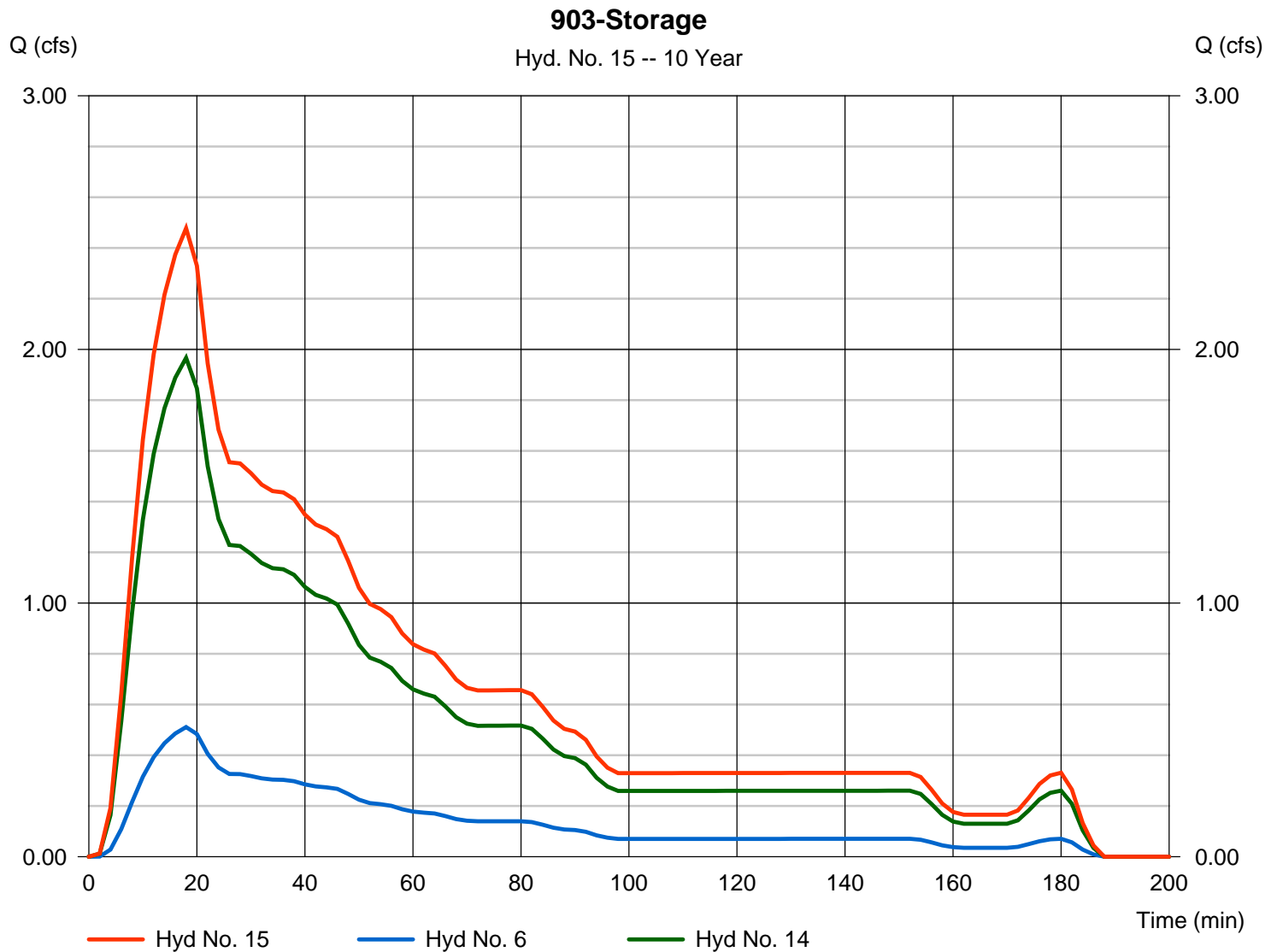
Wednesday, 07 / 11 / 2018

Hyd. No. 15

903-Storage

Hydrograph type = Combine
 Storm frequency = 10 yrs
 Time interval = 2 min
 Inflow hyds. = 6, 14

Peak discharge = 2.478 cfs
 Time to peak = 18 min
 Hyd. volume = 7,792 cuft
 Contrib. drain. area = 0.210 ac



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

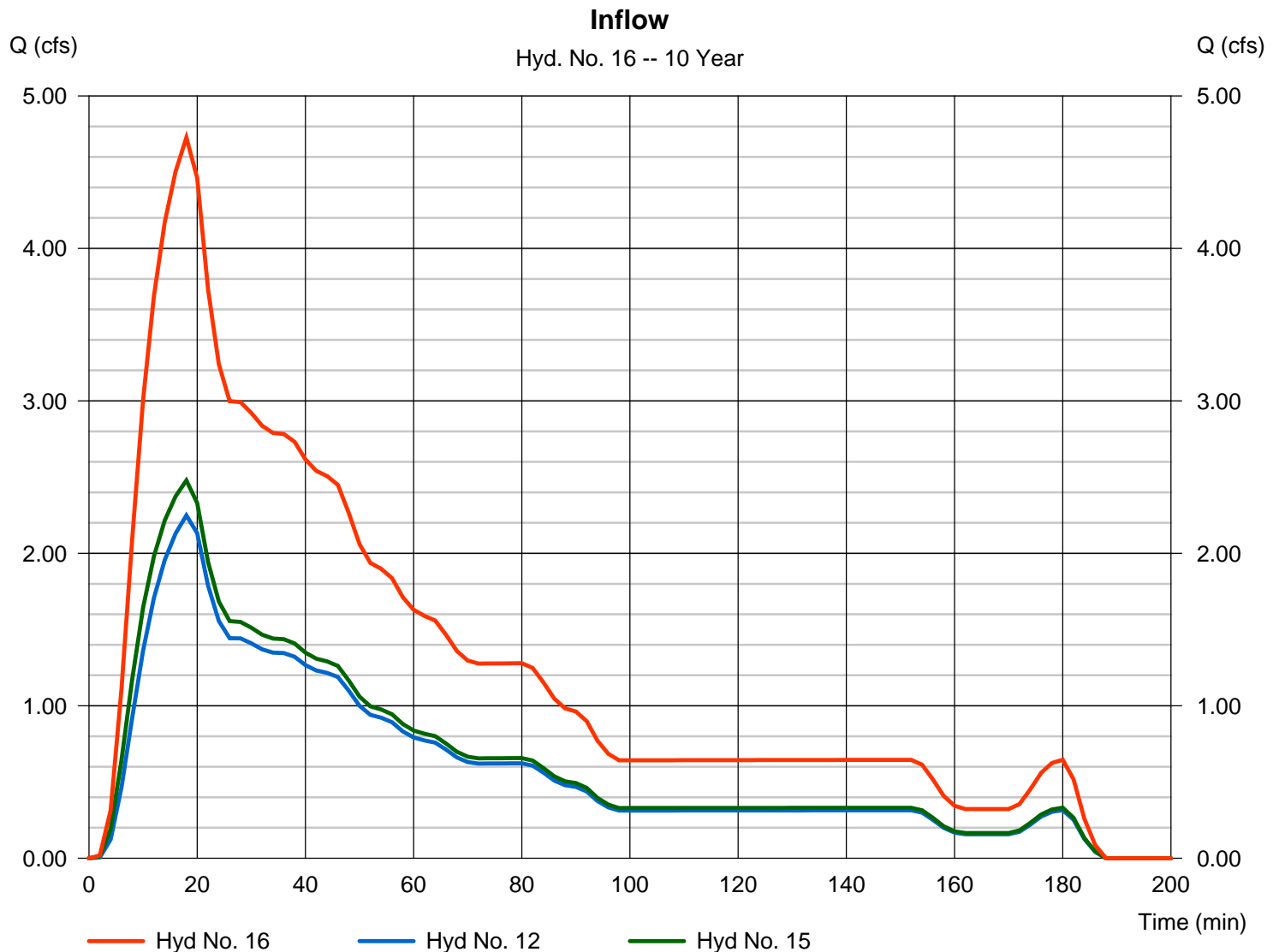
Wednesday, 07 / 11 / 2018

Hyd. No. 16

Inflow

Hydrograph type = Combine
Storm frequency = 10 yrs
Time interval = 2 min
Inflow hyds. = 12, 15

Peak discharge = 4.727 cfs
Time to peak = 18 min
Hyd. volume = 15,001 cuft
Contrib. drain. area = 0.000 ac



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

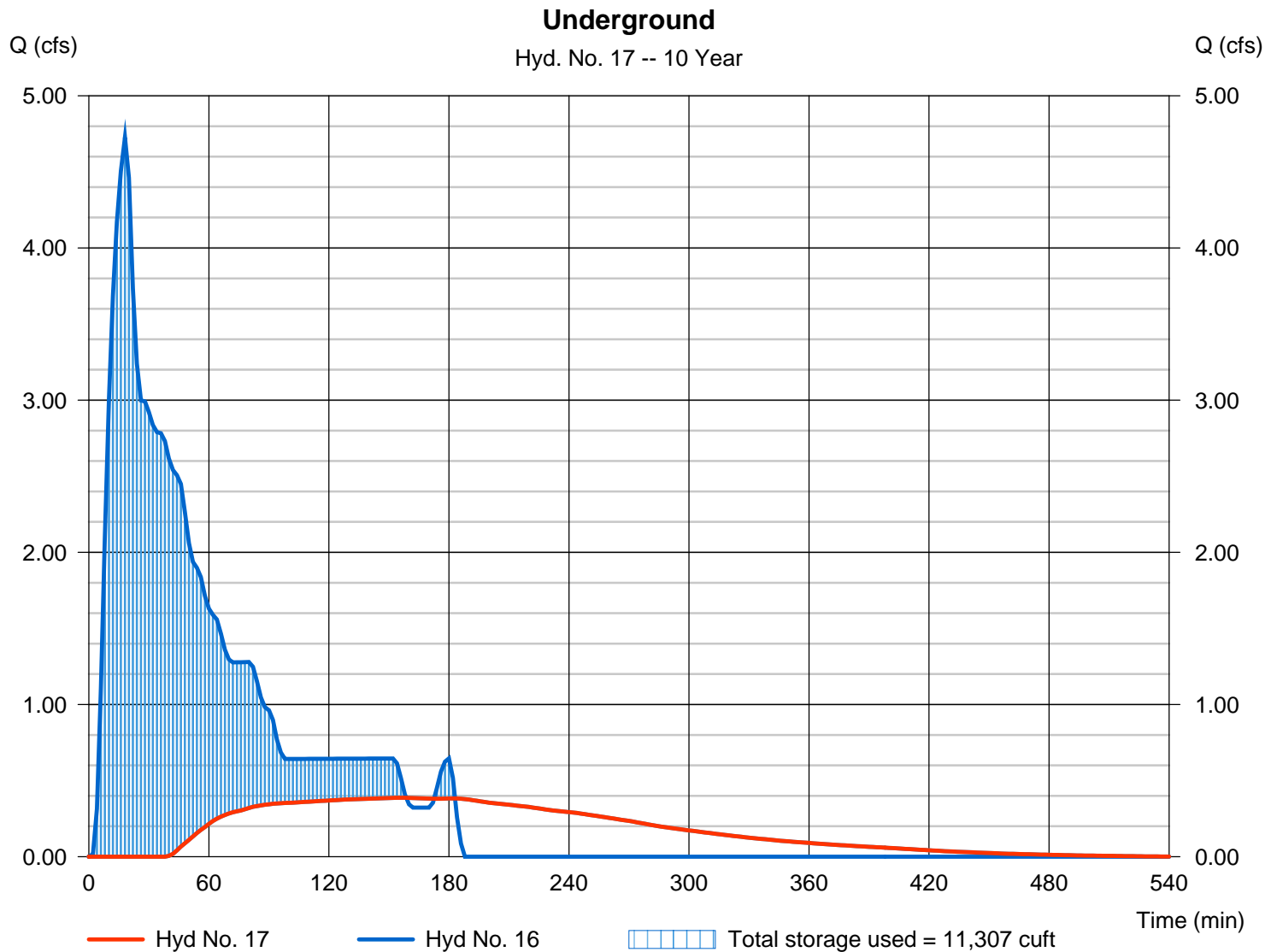
Wednesday, 07 / 11 / 2018

Hyd. No. 17

Underground

Hydrograph type	= Reservoir	Peak discharge	= 0.388 cfs
Storm frequency	= 10 yrs	Time to peak	= 156 min
Time interval	= 2 min	Hyd. volume	= 5,556 cuft
Inflow hyd. No.	= 16 - Inflow	Max. Elevation	= 740.23 ft
Reservoir name	= Underground Storage	Max. Storage	= 11,307 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Hydrograph Report

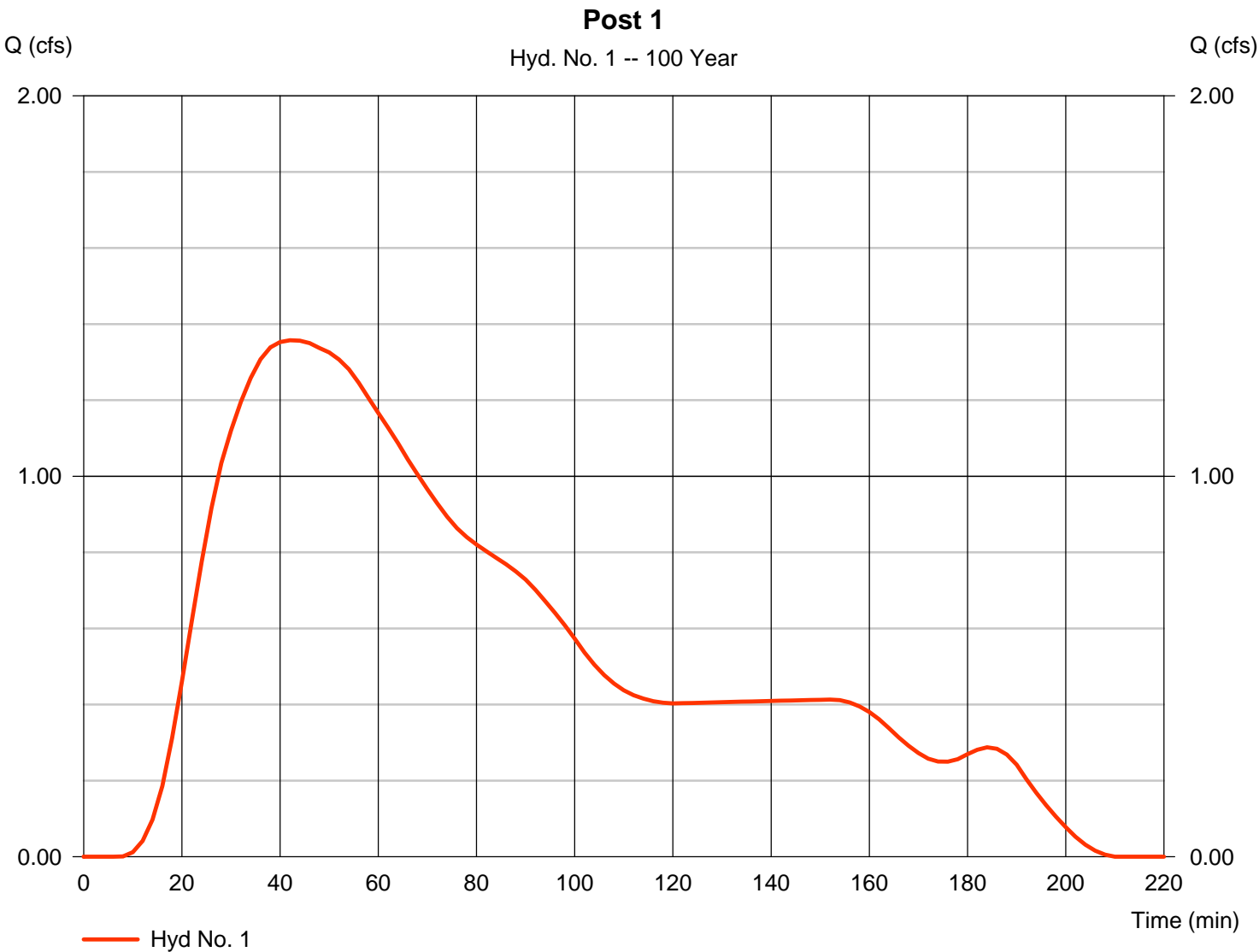
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

Wednesday, 07 / 11 / 2018

Hyd. No. 1

Post 1

Hydrograph type	= SCS Runoff	Peak discharge	= 1.357 cfs
Storm frequency	= 100 yrs	Time to peak	= 42 min
Time interval	= 2 min	Hyd. volume	= 7,101 cuft
Drainage area	= 0.860 ac	Curve number	= 79
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 18.20 min
Total precip.	= 4.38 in	Distribution	= Huff-1st
Storm duration	= 3.00 hrs	Shape factor	= 484



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

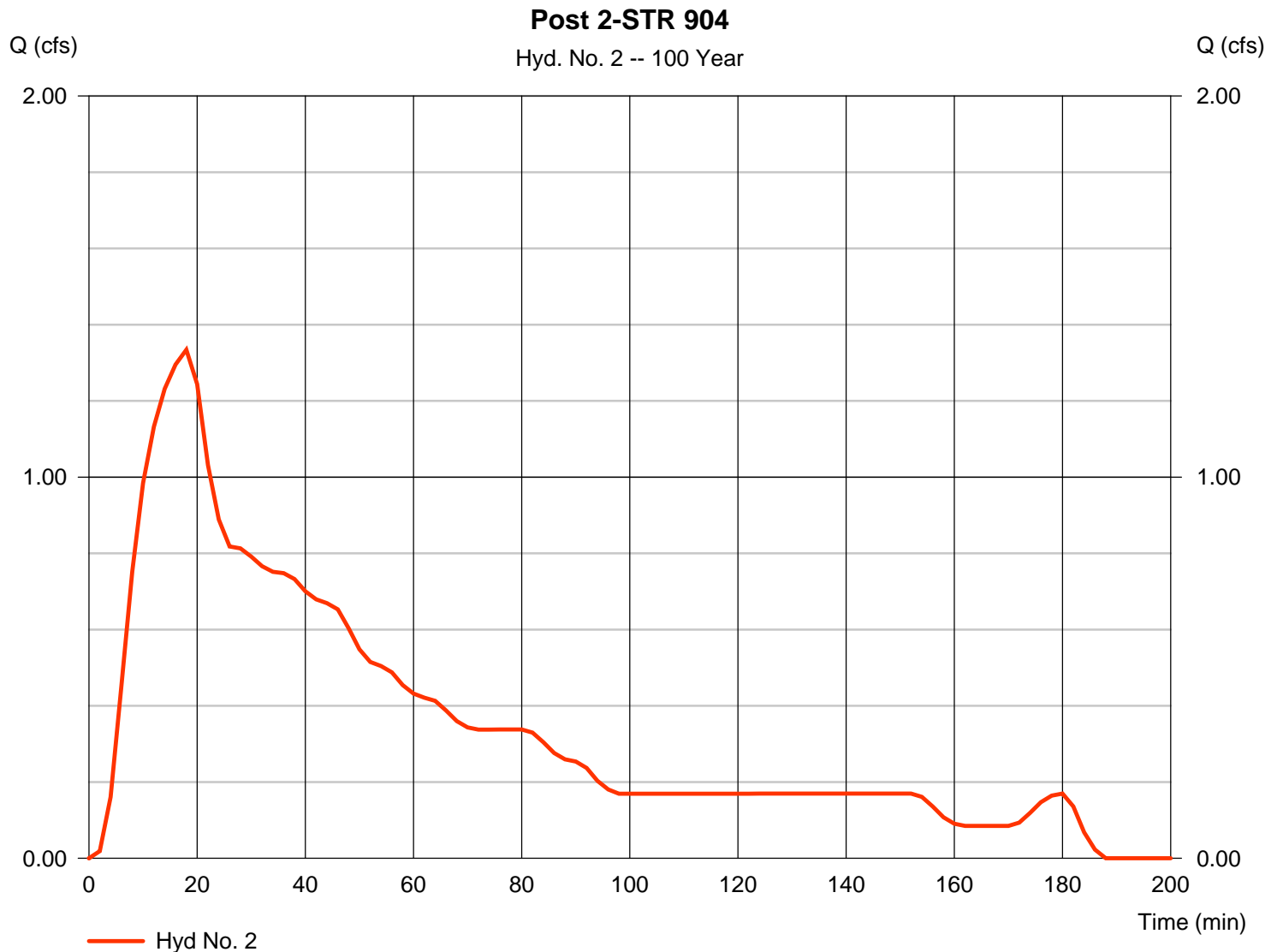
Wednesday, 07 / 11 / 2018

Hyd. No. 2

Post 2-STR 904

Hydrograph type	= SCS Runoff	Peak discharge	= 1.334 cfs
Storm frequency	= 100 yrs	Time to peak	= 18 min
Time interval	= 2 min	Hyd. volume	= 4,132 cuft
Drainage area	= 0.310 ac	Curve number	= 96*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 4.38 in	Distribution	= Huff-1st
Storm duration	= 3.00 hrs	Shape factor	= 484

* Composite (Area/CN) = $[(0.030 \times 79) + (0.280 \times 98)] / 0.310$



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

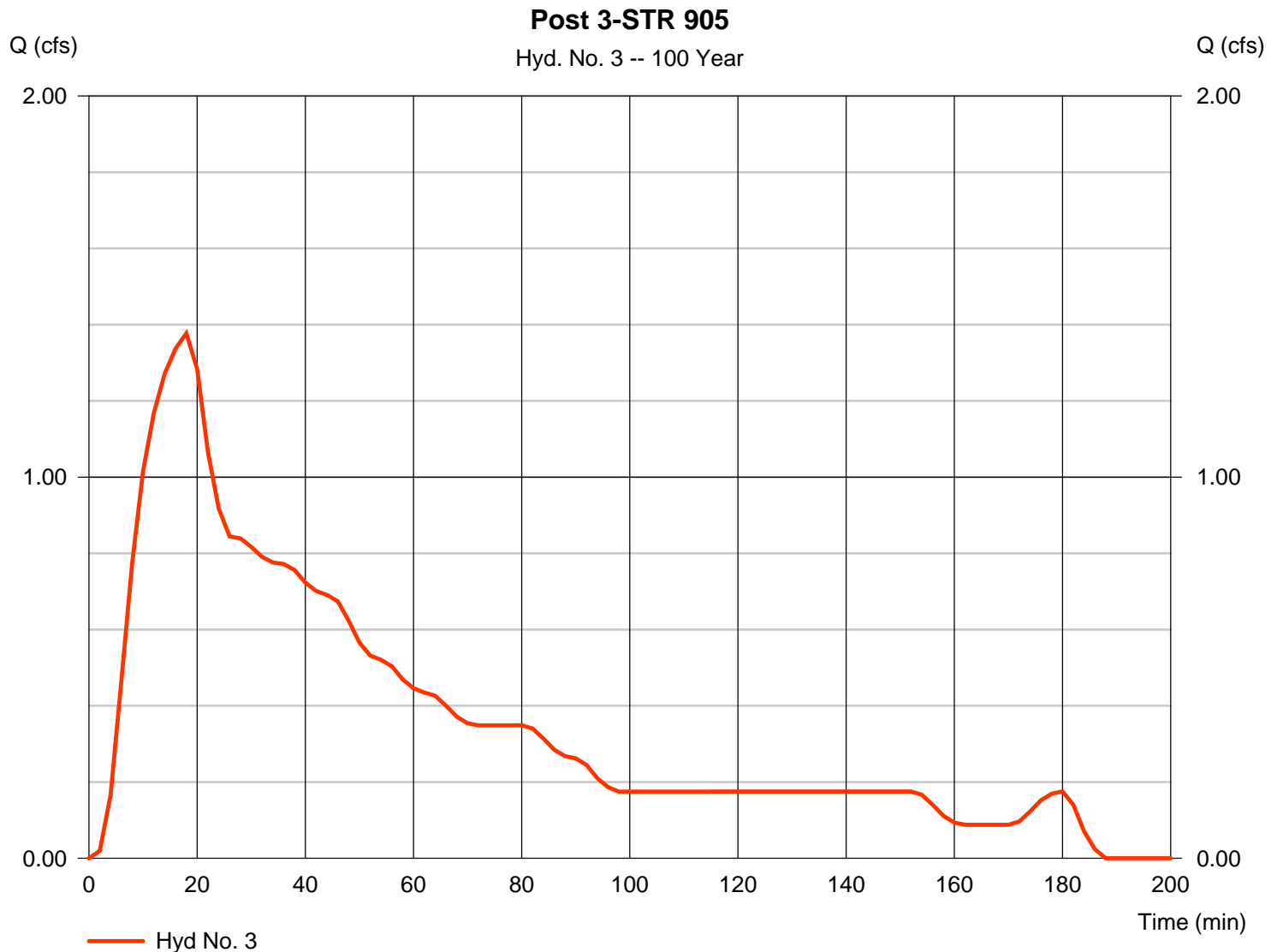
Wednesday, 07 / 11 / 2018

Hyd. No. 3

Post 3-STR 905

Hydrograph type	= SCS Runoff	Peak discharge	= 1.377 cfs
Storm frequency	= 100 yrs	Time to peak	= 18 min
Time interval	= 2 min	Hyd. volume	= 4,265 cuft
Drainage area	= 0.320 ac	Curve number	= 96*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 4.38 in	Distribution	= Huff-1st
Storm duration	= 3.00 hrs	Shape factor	= 484

* Composite (Area/CN) = $[(0.030 \times 79) + (0.290 \times 98)] / 0.320$



Hydrograph Report

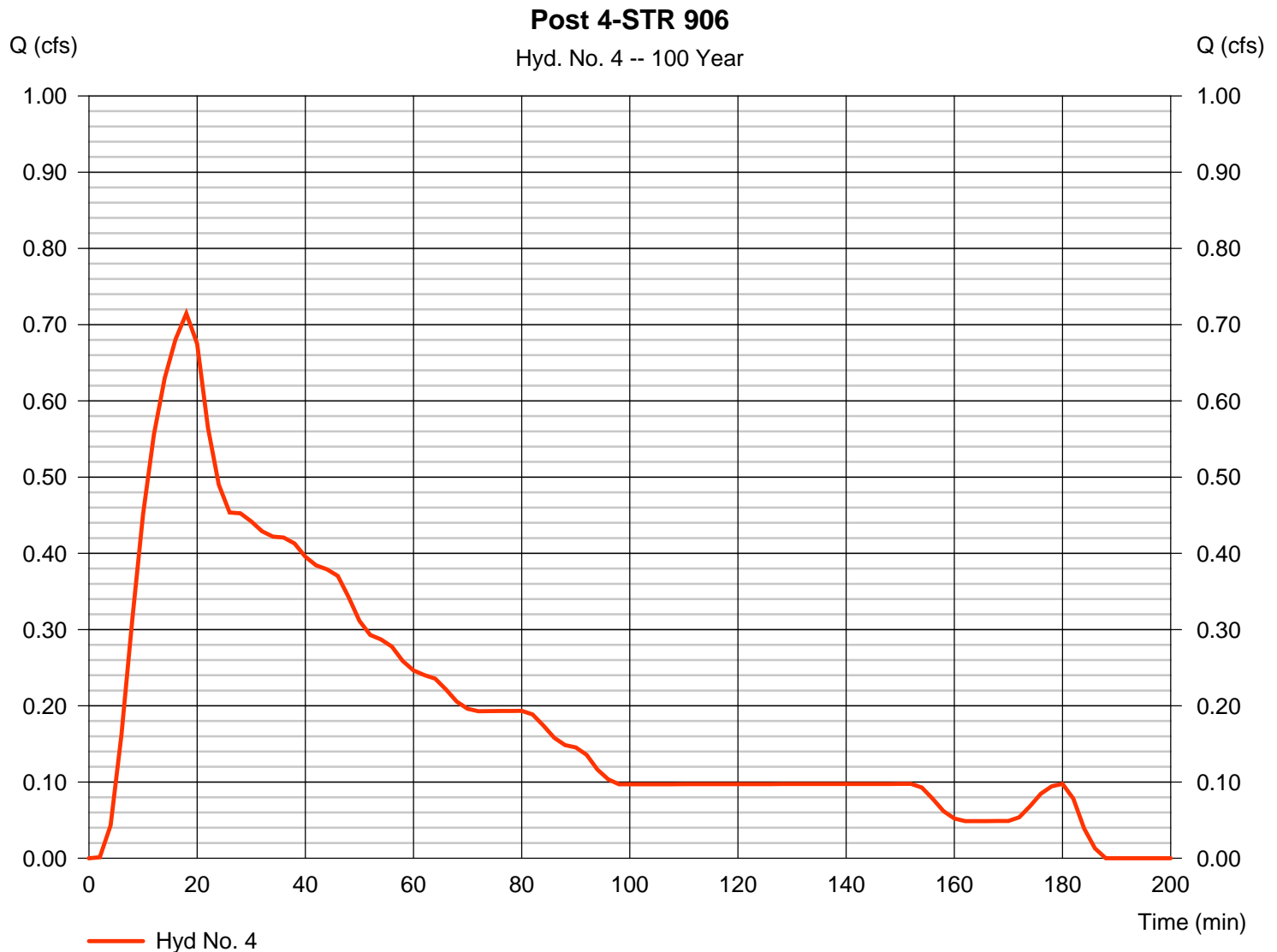
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

Wednesday, 07 / 11 / 2018

Hyd. No. 4

Post 4-STR 906

Hydrograph type	= SCS Runoff	Peak discharge	= 0.715 cfs
Storm frequency	= 100 yrs	Time to peak	= 18 min
Time interval	= 2 min	Hyd. volume	= 2,265 cuft
Drainage area	= 0.180 ac	Curve number	= 94*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 4.38 in	Distribution	= Huff-1st
Storm duration	= 3.00 hrs	Shape factor	= 484

* Composite (Area/CN) = $[(0.040 \times 79) + (0.140 \times 98)] / 0.180$ 

Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

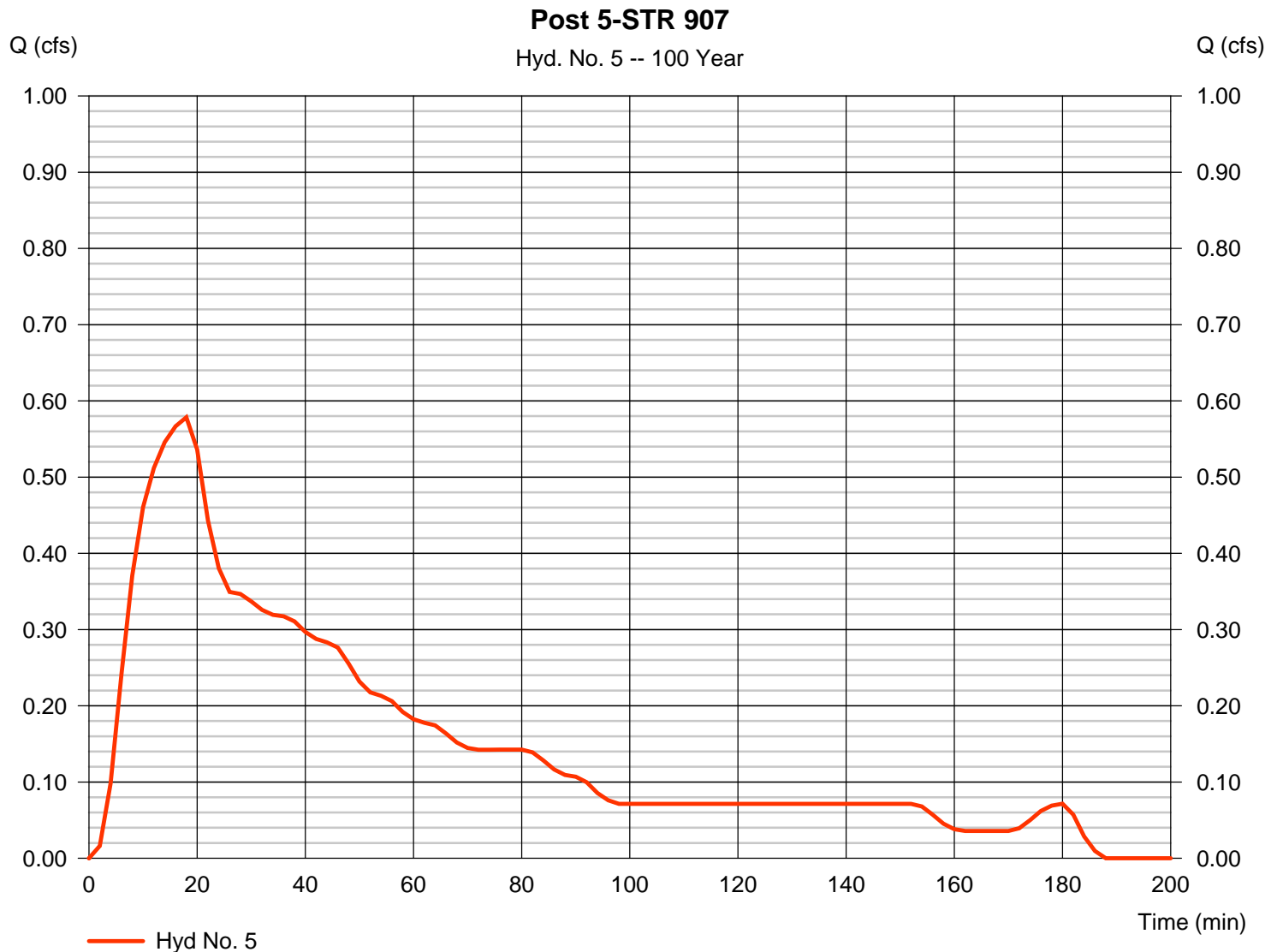
Wednesday, 07 / 11 / 2018

Hyd. No. 5

Post 5-STR 907

Hydrograph type	= SCS Runoff	Peak discharge	= 0.578 cfs
Storm frequency	= 100 yrs	Time to peak	= 18 min
Time interval	= 2 min	Hyd. volume	= 1,783 cuft
Drainage area	= 0.130 ac	Curve number	= 97*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 4.38 in	Distribution	= Huff-1st
Storm duration	= 3.00 hrs	Shape factor	= 484

* Composite (Area/CN) = $[(0.010 \times 79) + (0.120 \times 98)] / 0.130$



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

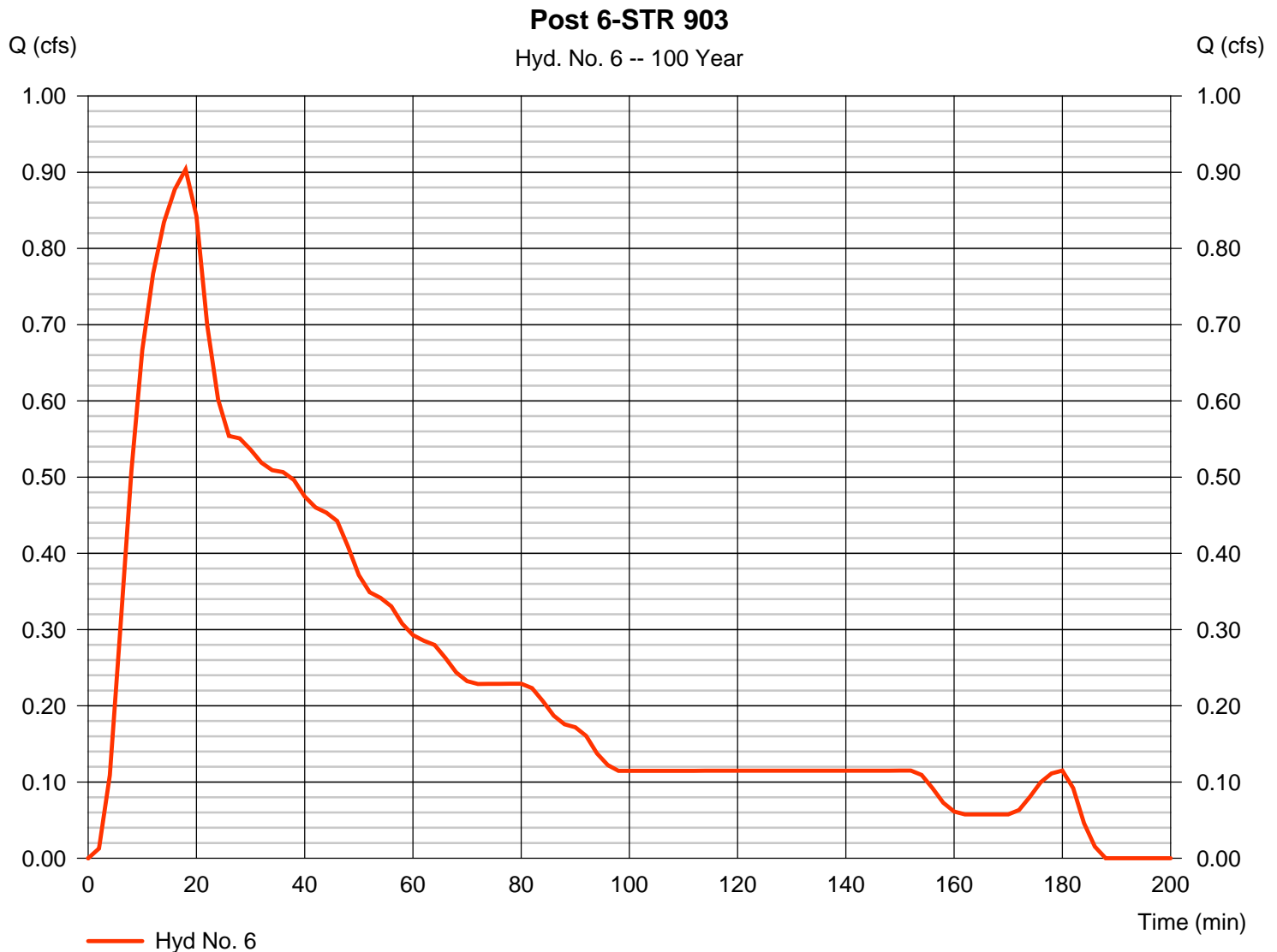
Wednesday, 07 / 11 / 2018

Hyd. No. 6

Post 6-STR 903

Hydrograph type	= SCS Runoff	Peak discharge	= 0.904 cfs
Storm frequency	= 100 yrs	Time to peak	= 18 min
Time interval	= 2 min	Hyd. volume	= 2,799 cuft
Drainage area	= 0.210 ac	Curve number	= 96*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 4.38 in	Distribution	= Huff-1st
Storm duration	= 3.00 hrs	Shape factor	= 484

* Composite (Area/CN) = $[(0.020 \times 79) + (0.190 \times 98)] / 0.210$



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

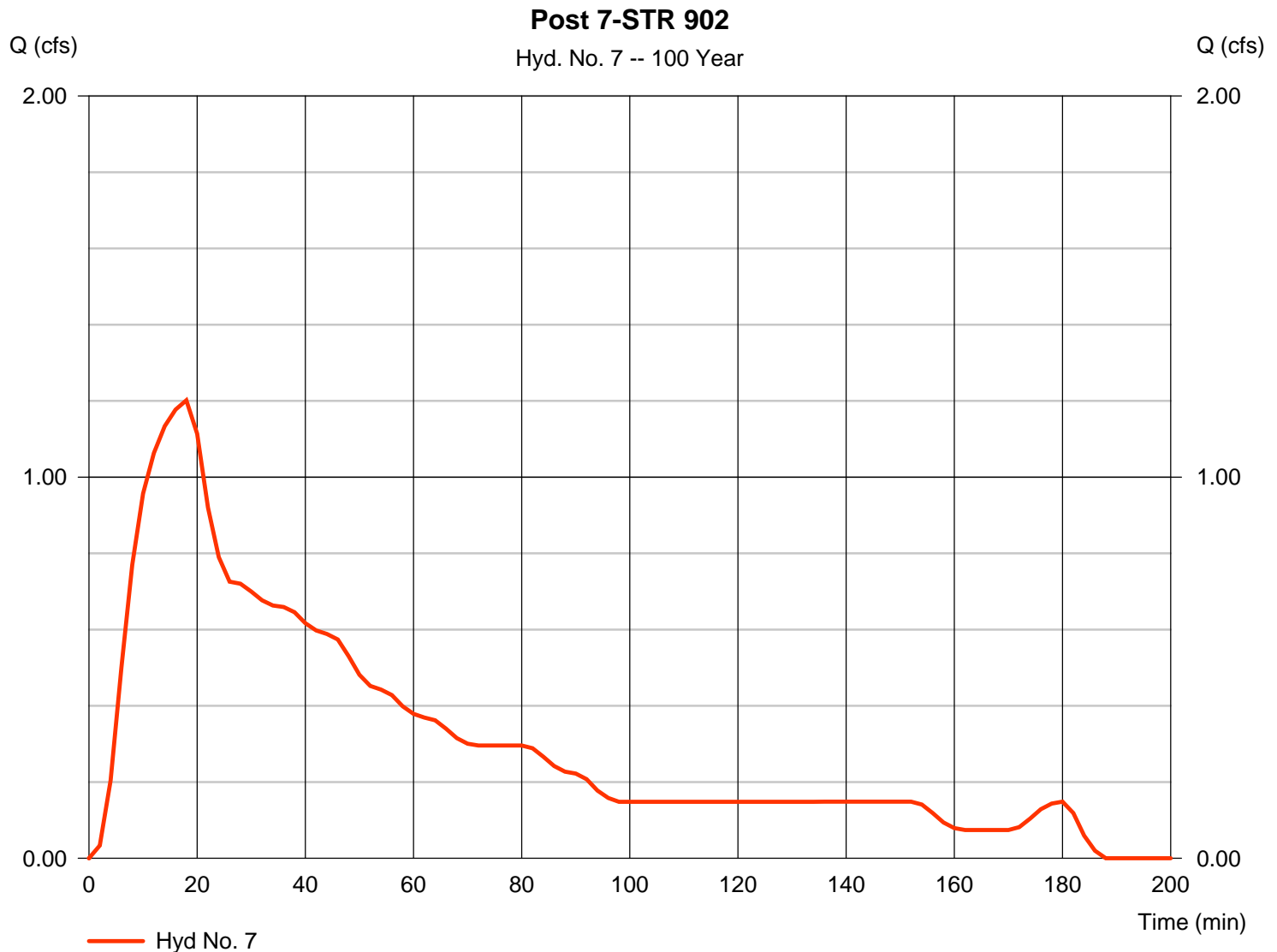
Wednesday, 07 / 11 / 2018

Hyd. No. 7

Post 7-STR 902

Hydrograph type	= SCS Runoff	Peak discharge	= 1.201 cfs
Storm frequency	= 100 yrs	Time to peak	= 18 min
Time interval	= 2 min	Hyd. volume	= 3,703 cuft
Drainage area	= 0.270 ac	Curve number	= 97*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 4.38 in	Distribution	= Huff-1st
Storm duration	= 3.00 hrs	Shape factor	= 484

* Composite (Area/CN) = $[(0.020 \times 79) + (0.250 \times 98)] / 0.270$



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

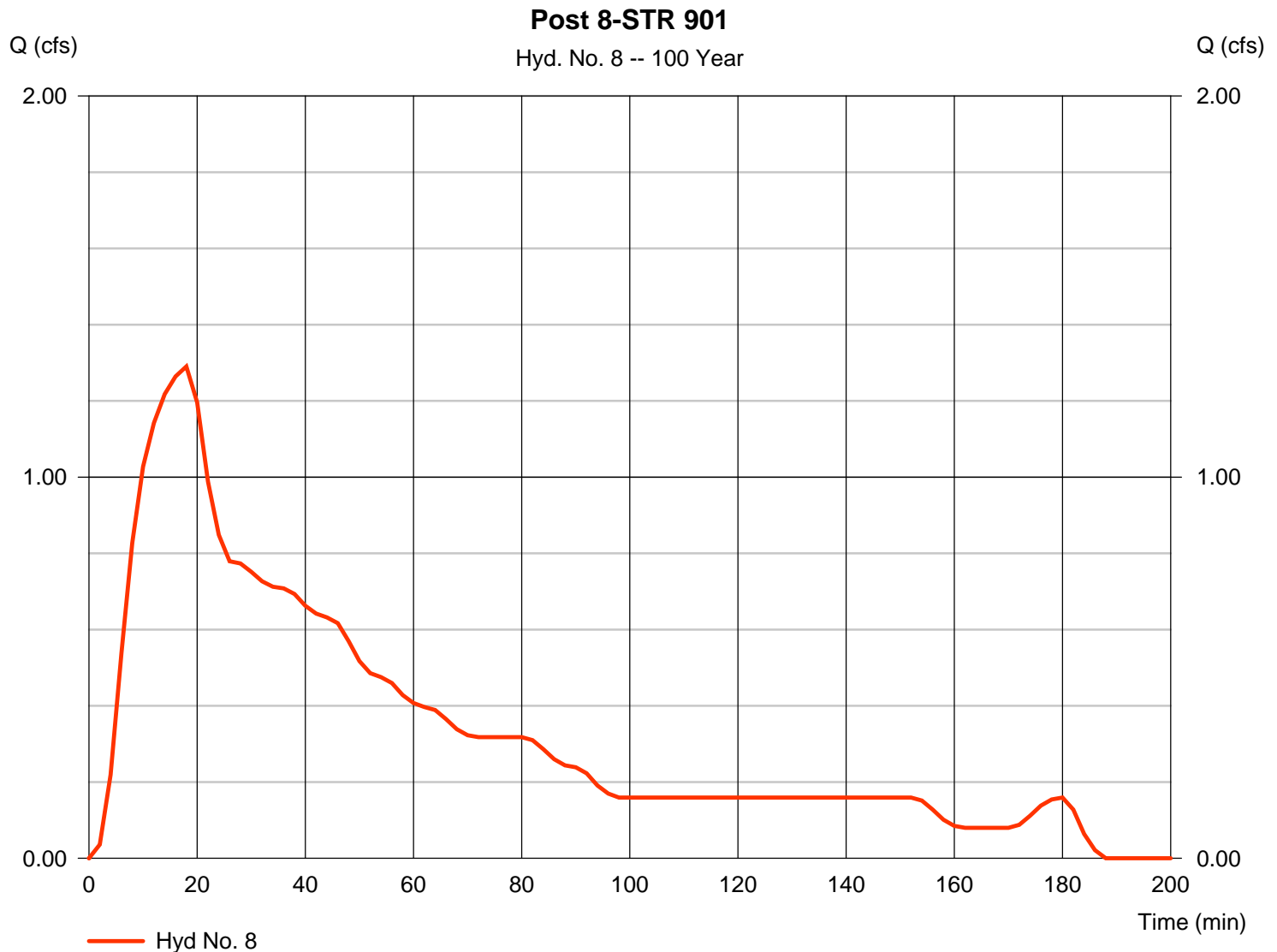
Wednesday, 07 / 11 / 2018

Hyd. No. 8

Post 8-STR 901

Hydrograph type	= SCS Runoff	Peak discharge	= 1.290 cfs
Storm frequency	= 100 yrs	Time to peak	= 18 min
Time interval	= 2 min	Hyd. volume	= 3,977 cuft
Drainage area	= 0.290 ac	Curve number	= 97*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 4.38 in	Distribution	= Huff-1st
Storm duration	= 3.00 hrs	Shape factor	= 484

* Composite (Area/CN) = $[(0.020 \times 79) + (0.270 \times 98)] / 0.290$



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

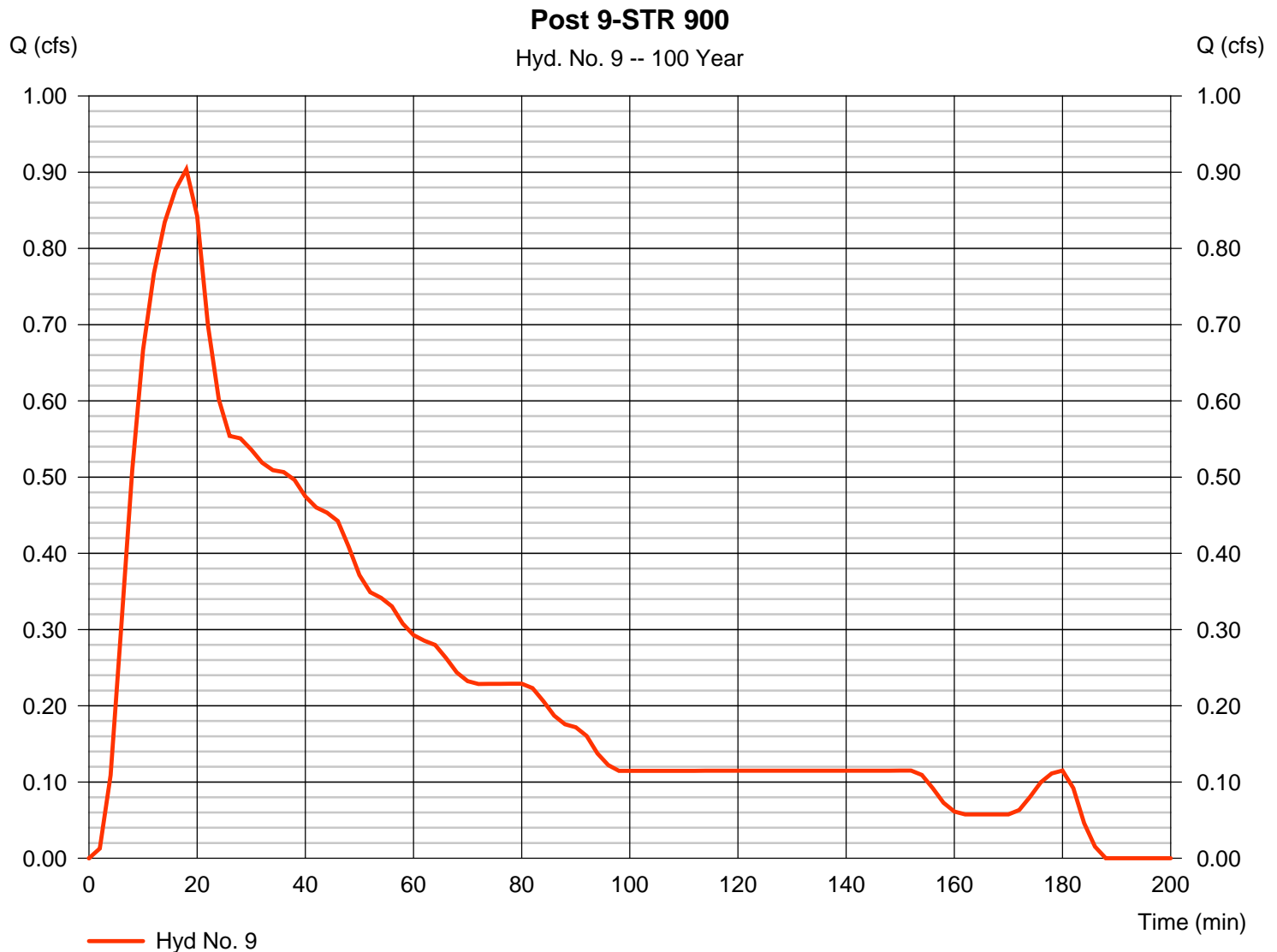
Wednesday, 07 / 11 / 2018

Hyd. No. 9

Post 9-STR 900

Hydrograph type	= SCS Runoff	Peak discharge	= 0.904 cfs
Storm frequency	= 100 yrs	Time to peak	= 18 min
Time interval	= 2 min	Hyd. volume	= 2,799 cuft
Drainage area	= 0.210 ac	Curve number	= 96*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 4.38 in	Distribution	= Huff-1st
Storm duration	= 3.00 hrs	Shape factor	= 484

* Composite (Area/CN) = $[(0.020 \times 79) + (0.190 \times 98)] / 0.210$



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

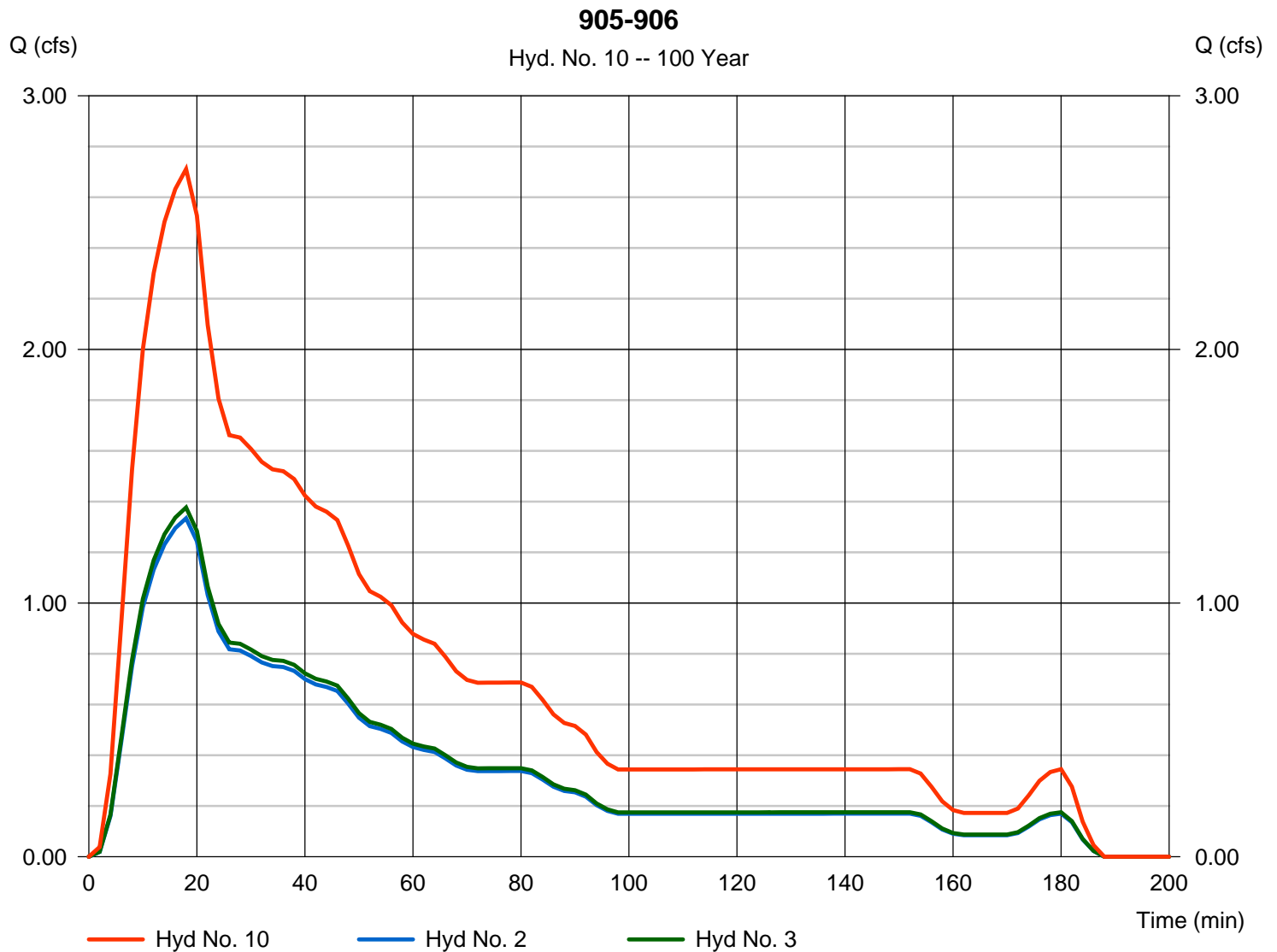
Wednesday, 07 / 11 / 2018

Hyd. No. 10

905-906

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

Peak discharge = 2.711 cfs
 Time to peak = 18 min
 Hyd. volume = 8,398 cuft
 Contrib. drain. area = 0.630 ac



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

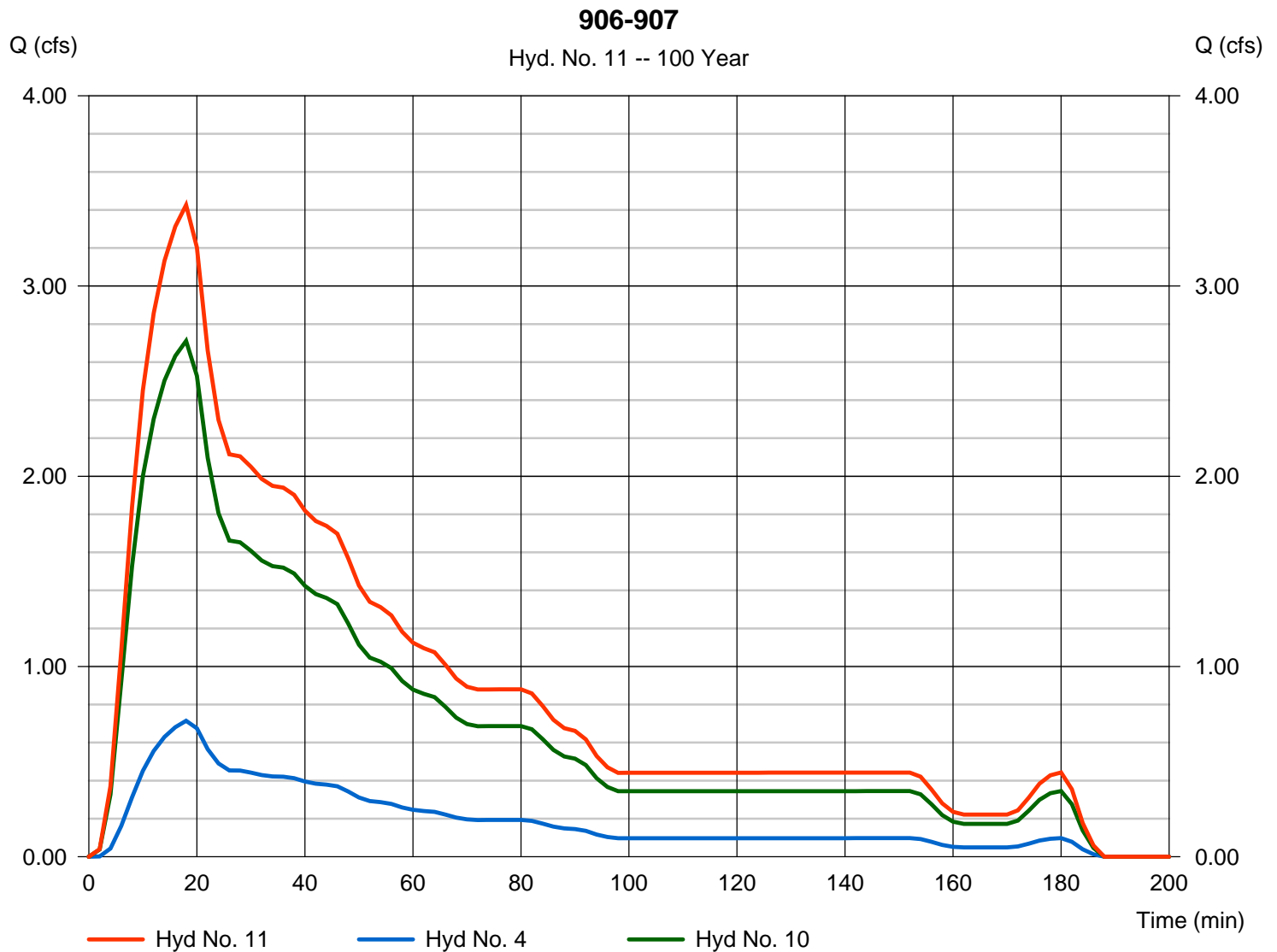
Wednesday, 07 / 11 / 2018

Hyd. No. 11

906-907

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

Peak discharge = 3.426 cfs
 Time to peak = 18 min
 Hyd. volume = 10,662 cuft
 Contrib. drain. area = 0.180 ac



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

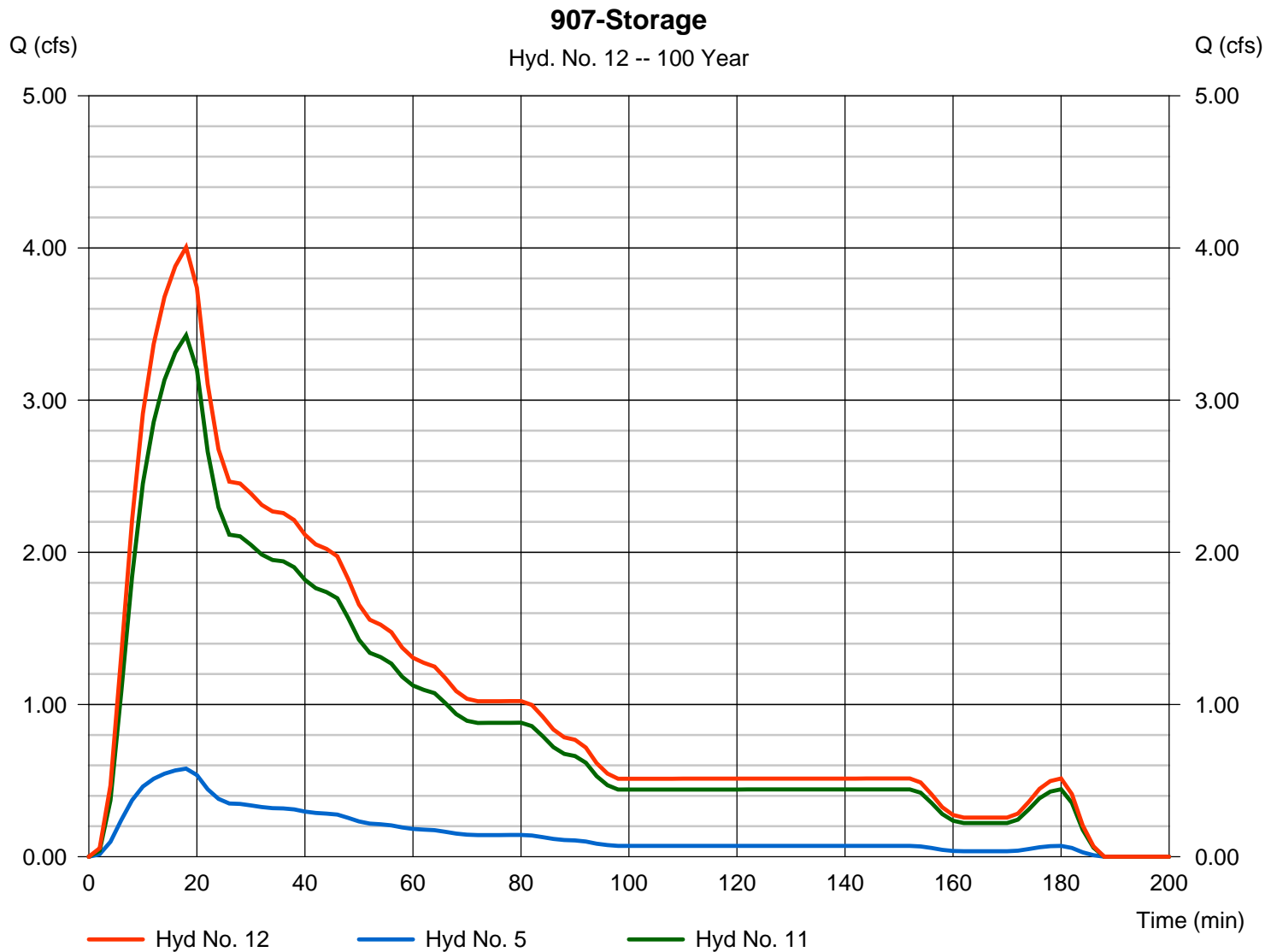
Wednesday, 07 / 11 / 2018

Hyd. No. 12

907-Storage

Hydrograph type = Combine
 Storm frequency = 100 yrs
 Time interval = 2 min
 Inflow hyds. = 5, 11

Peak discharge = 4.004 cfs
 Time to peak = 18 min
 Hyd. volume = 12,445 cuft
 Contrib. drain. area = 0.130 ac



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

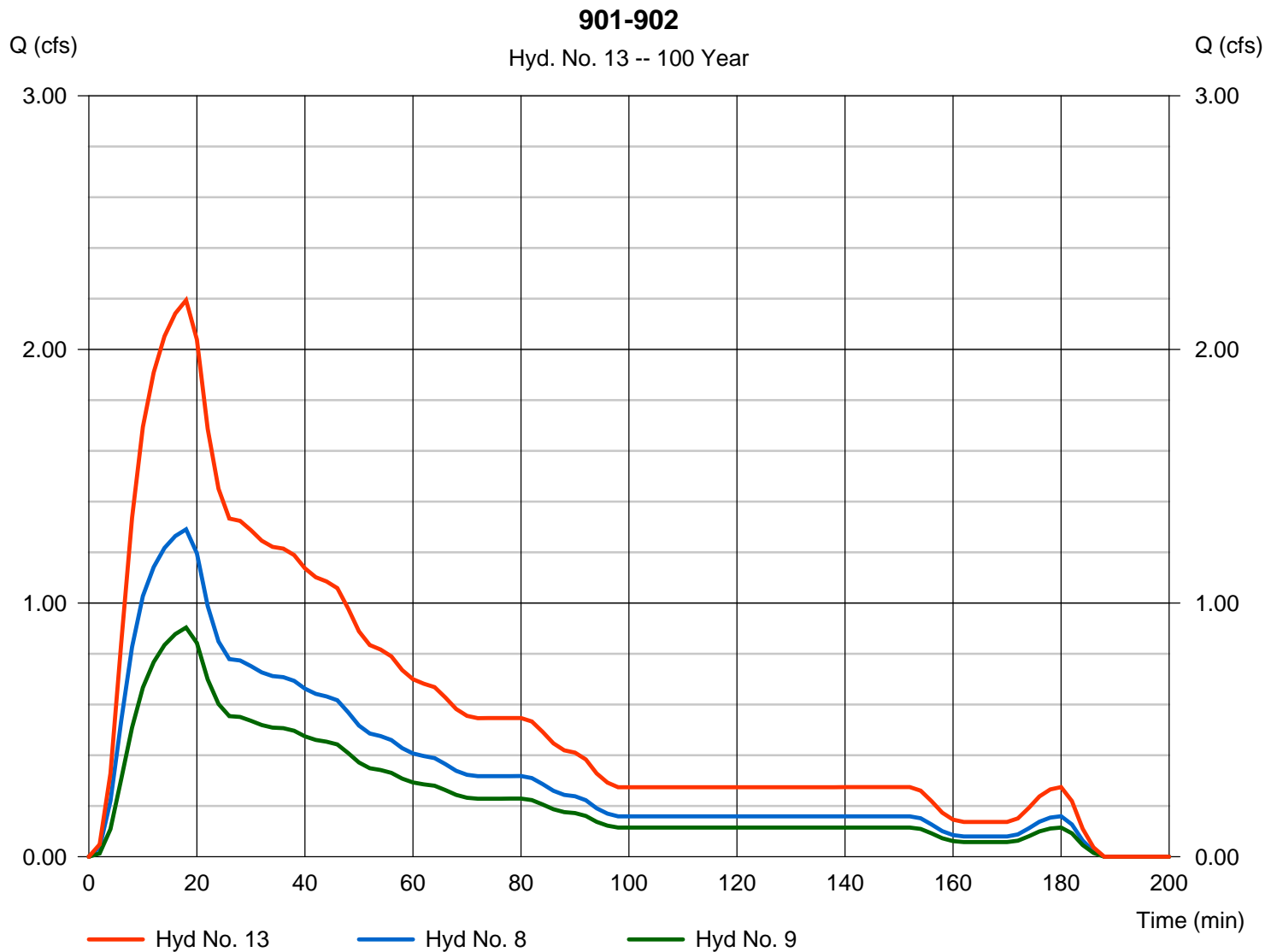
Wednesday, 07 / 11 / 2018

Hyd. No. 13

901-902

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

Peak discharge = 2.194 cfs
 Time to peak = 18 min
 Hyd. volume = 6,776 cuft
 Contrib. drain. area = 0.500 ac



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

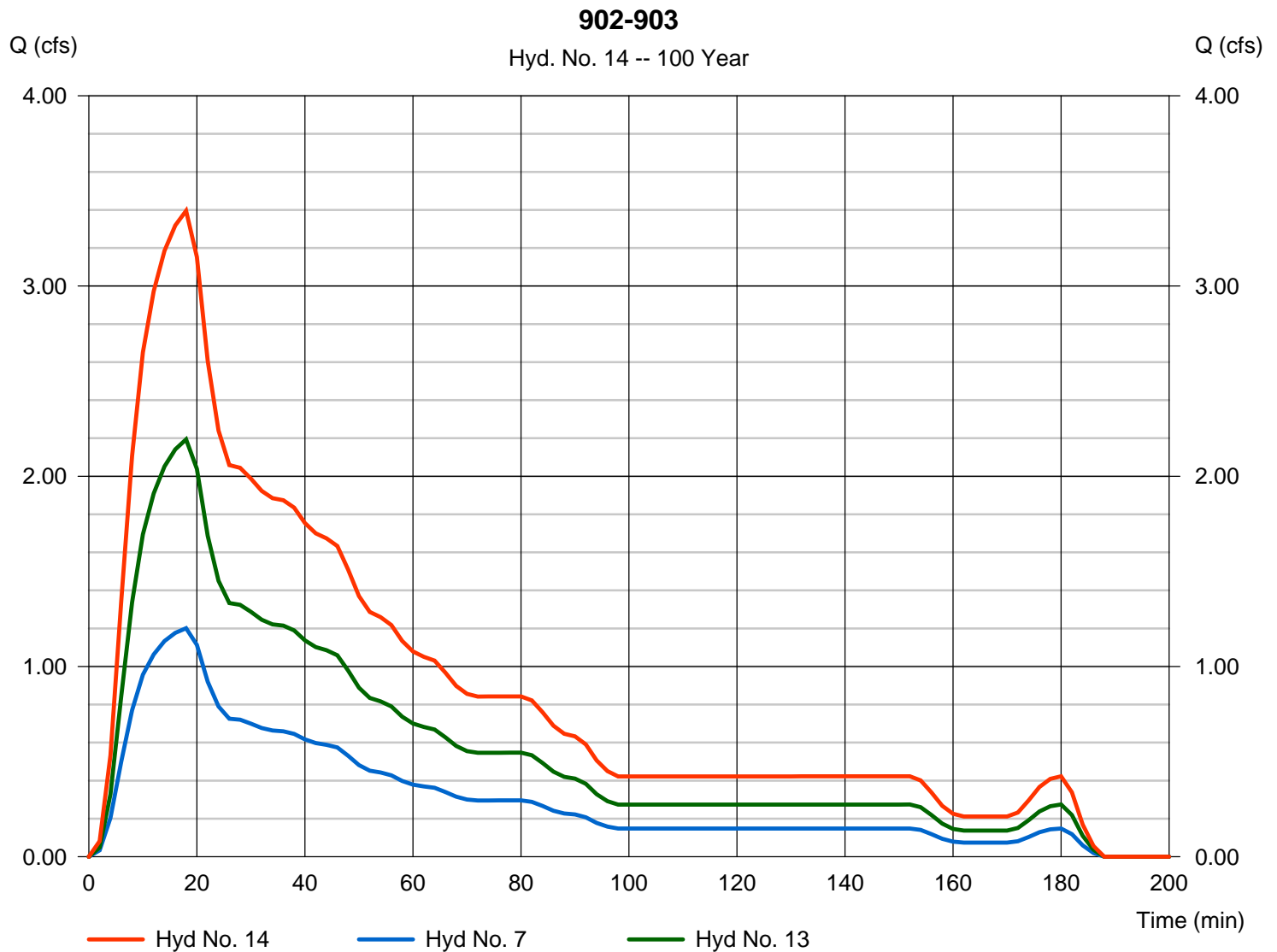
Wednesday, 07 / 11 / 2018

Hyd. No. 14

902-903

Hydrograph type = Combine
 Storm frequency = 100 yrs
 Time interval = 2 min
 Inflow hyds. = 7, 13

Peak discharge = 3.395 cfs
 Time to peak = 18 min
 Hyd. volume = 10,478 cuft
 Contrib. drain. area = 0.270 ac



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

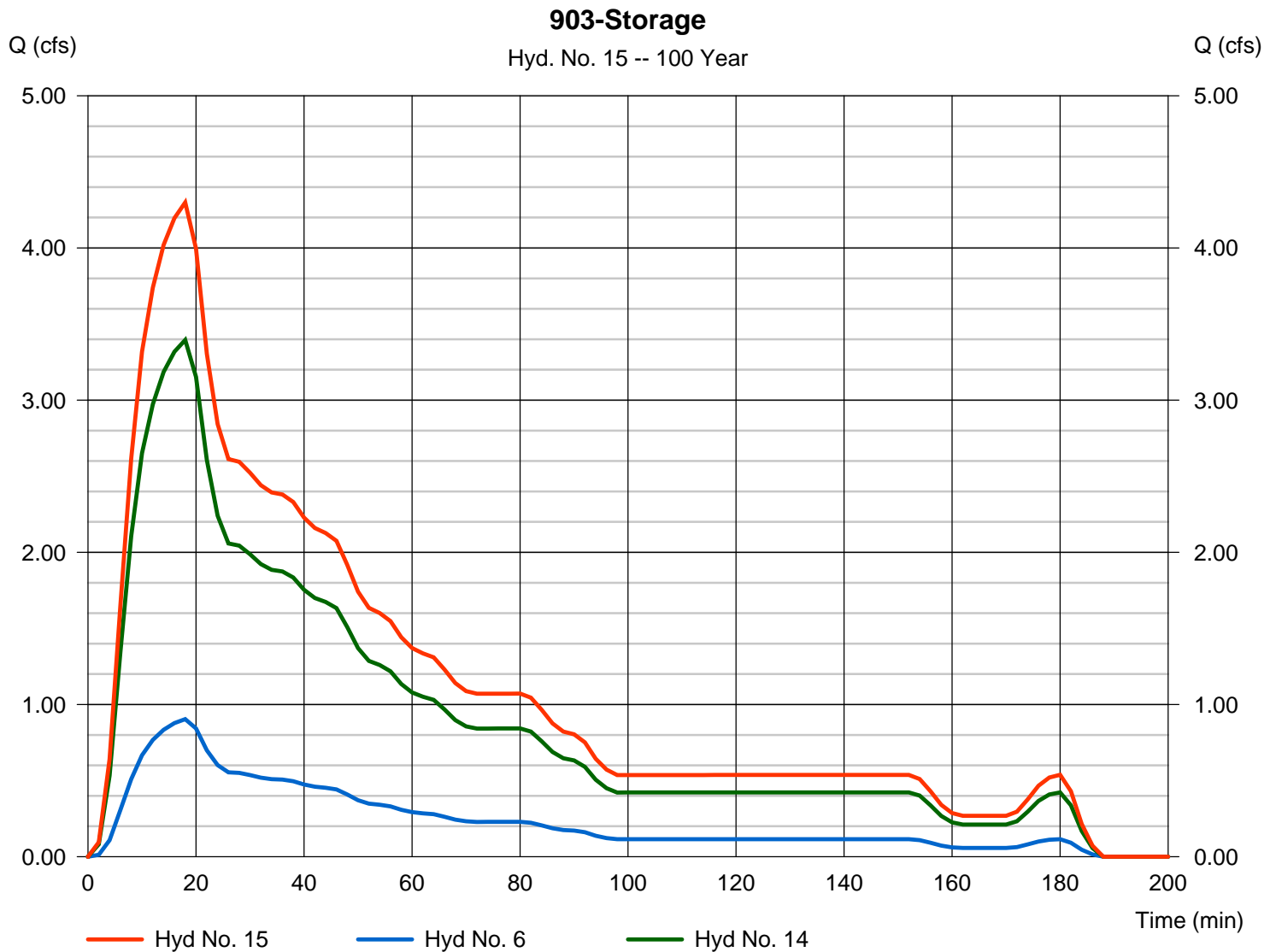
Wednesday, 07 / 11 / 2018

Hyd. No. 15

903-Storage

Hydrograph type = Combine
 Storm frequency = 100 yrs
 Time interval = 2 min
 Inflow hyds. = 6, 14

Peak discharge = 4.299 cfs
 Time to peak = 18 min
 Hyd. volume = 13,278 cuft
 Contrib. drain. area = 0.210 ac



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

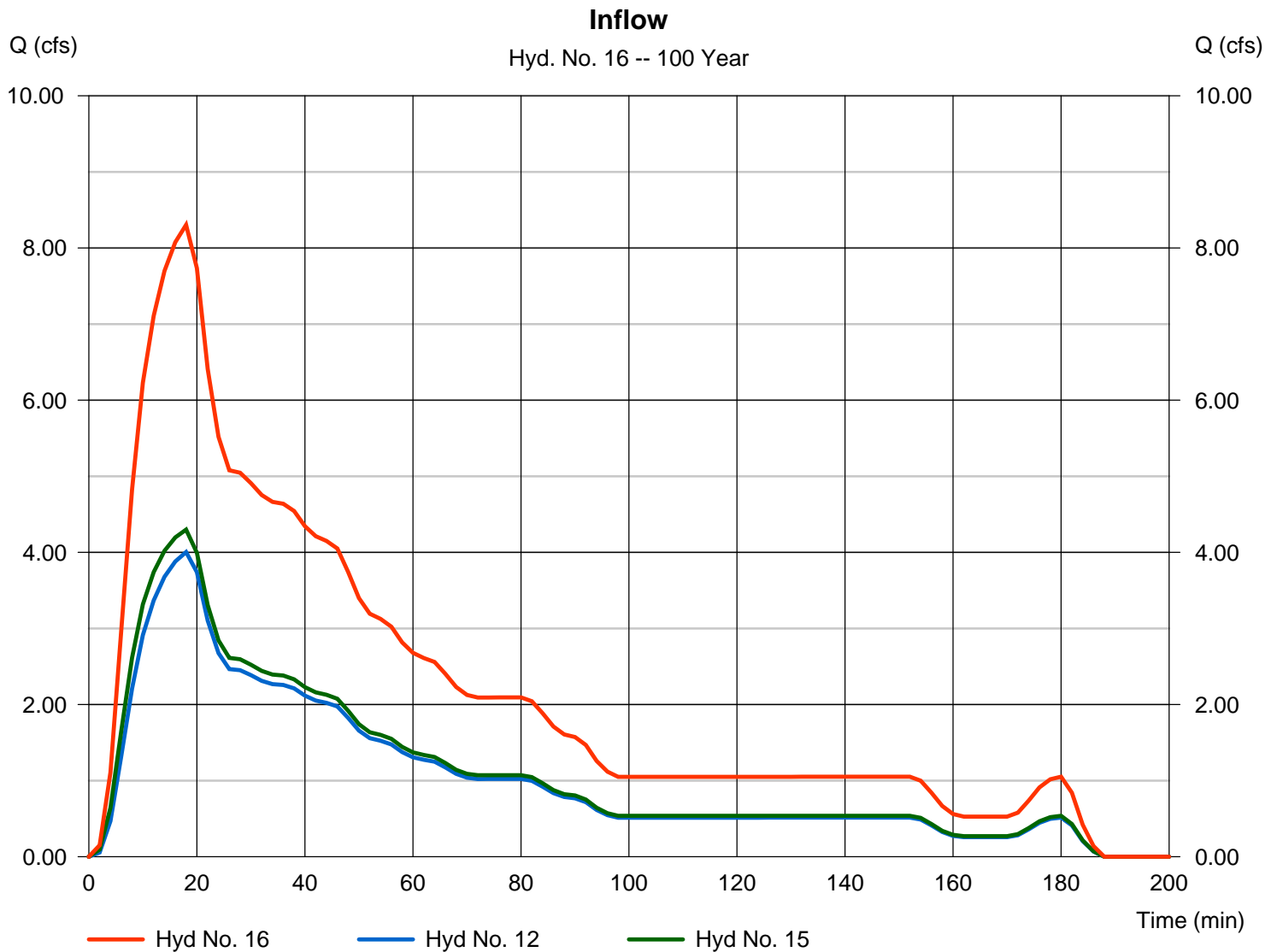
Wednesday, 07 / 11 / 2018

Hyd. No. 16

Inflow

Hydrograph type = Combine
 Storm frequency = 100 yrs
 Time interval = 2 min
 Inflow hyds. = 12, 15

Peak discharge = 8.303 cfs
 Time to peak = 18 min
 Hyd. volume = 25,723 cuft
 Contrib. drain. area = 0.000 ac



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

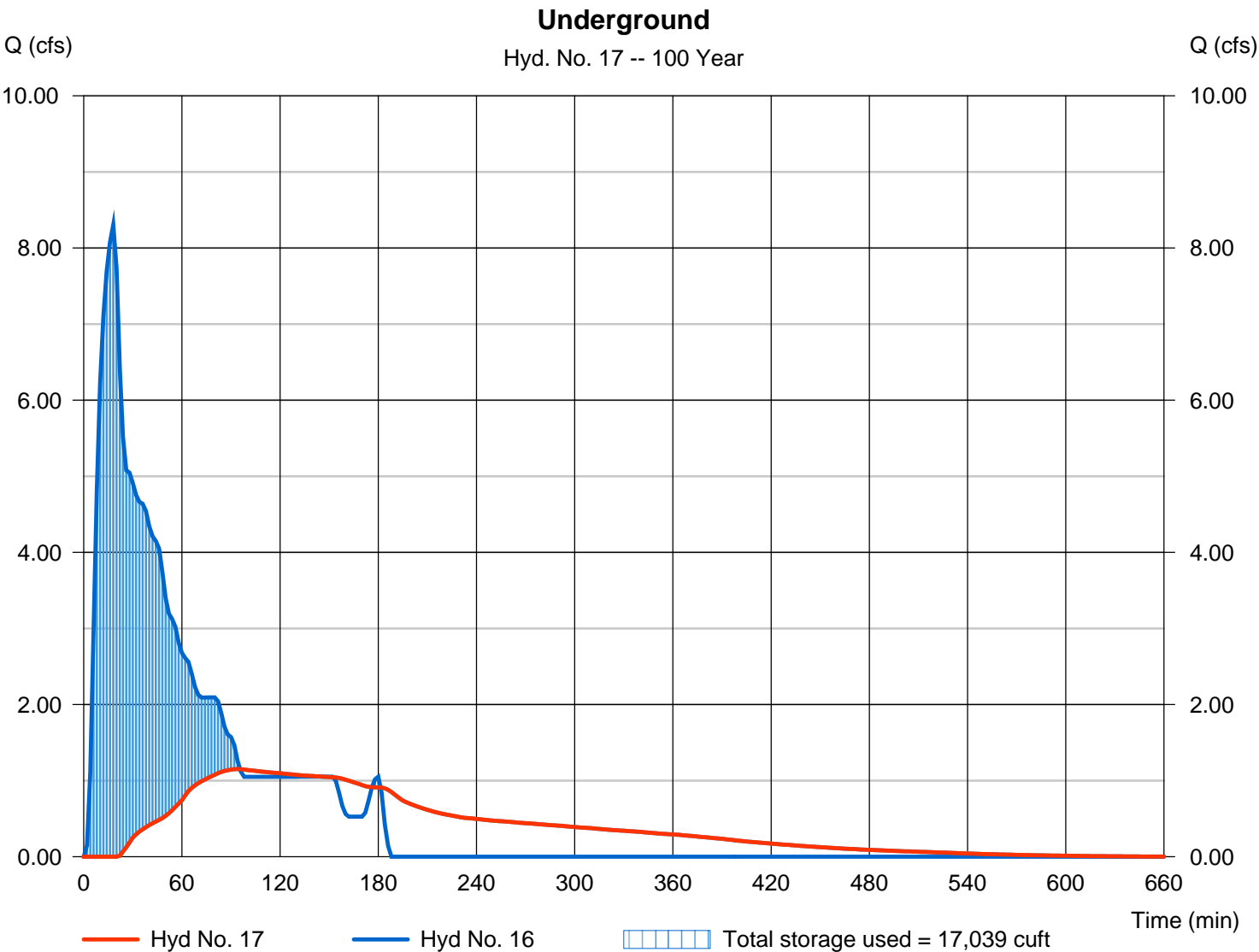
Wednesday, 07 / 11 / 2018

Hyd. No. 17

Underground

Hydrograph type	= Reservoir	Peak discharge	= 1.152 cfs
Storm frequency	= 100 yrs	Time to peak	= 94 min
Time interval	= 2 min	Hyd. volume	= 15,256 cuft
Inflow hyd. No.	= 16 - Inflow	Max. Elevation	= 741.21 ft
Reservoir name	= Underground Storage	Max. Storage	= 17,039 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Appendix H

*Hydraflow Hydrographs
6 Hour Storm Data*

Hydrograph Report

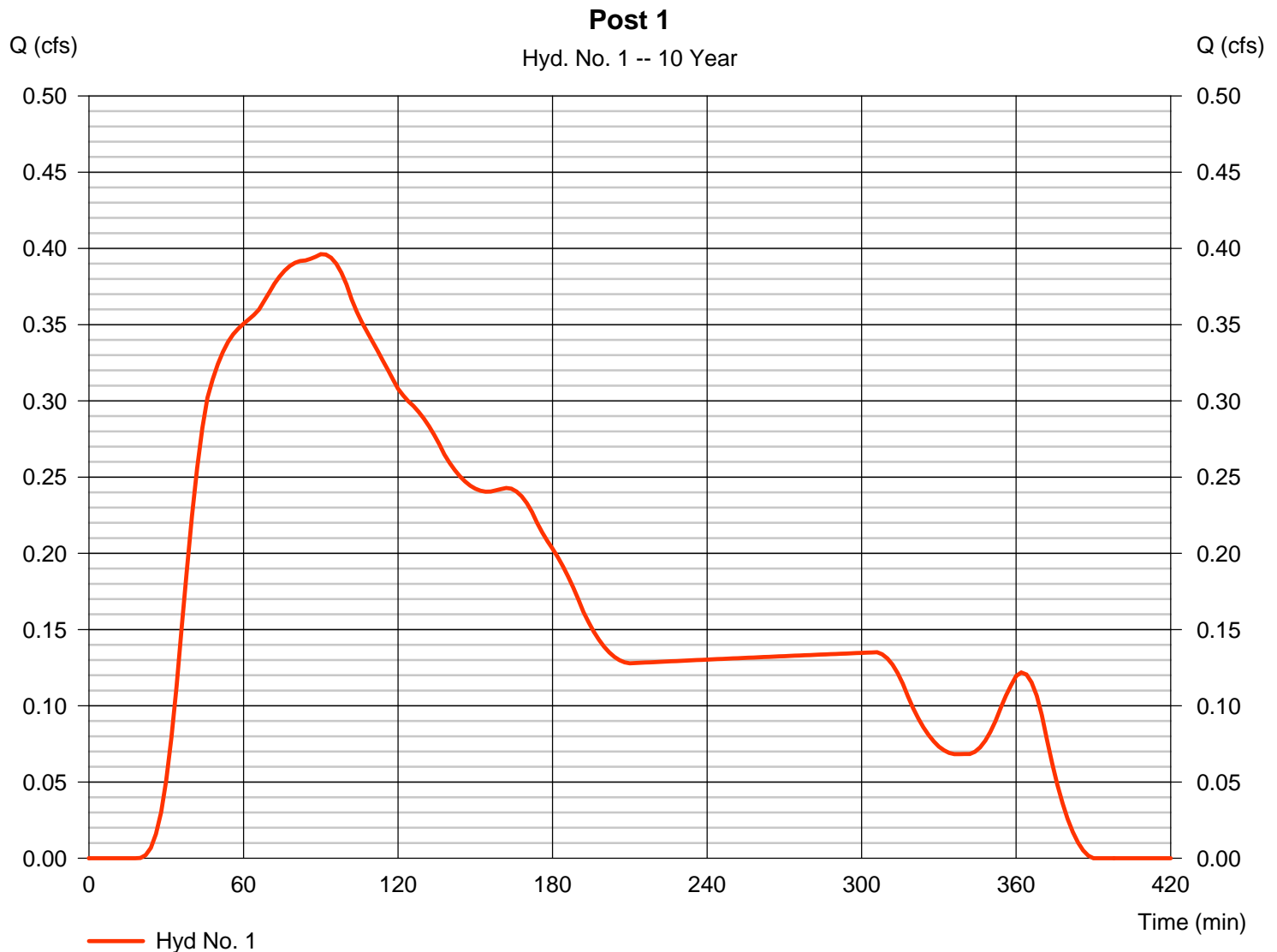
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

Wednesday, 07 / 11 / 2018

Hyd. No. 1

Post 1

Hydrograph type	= SCS Runoff	Peak discharge	= 0.396 cfs
Storm frequency	= 10 yrs	Time to peak	= 90 min
Time interval	= 2 min	Hyd. volume	= 4,149 cuft
Drainage area	= 0.860 ac	Curve number	= 79
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 18.20 min
Total precip.	= 3.19 in	Distribution	= Huff-1st
Storm duration	= 6.00 hrs	Shape factor	= 484



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

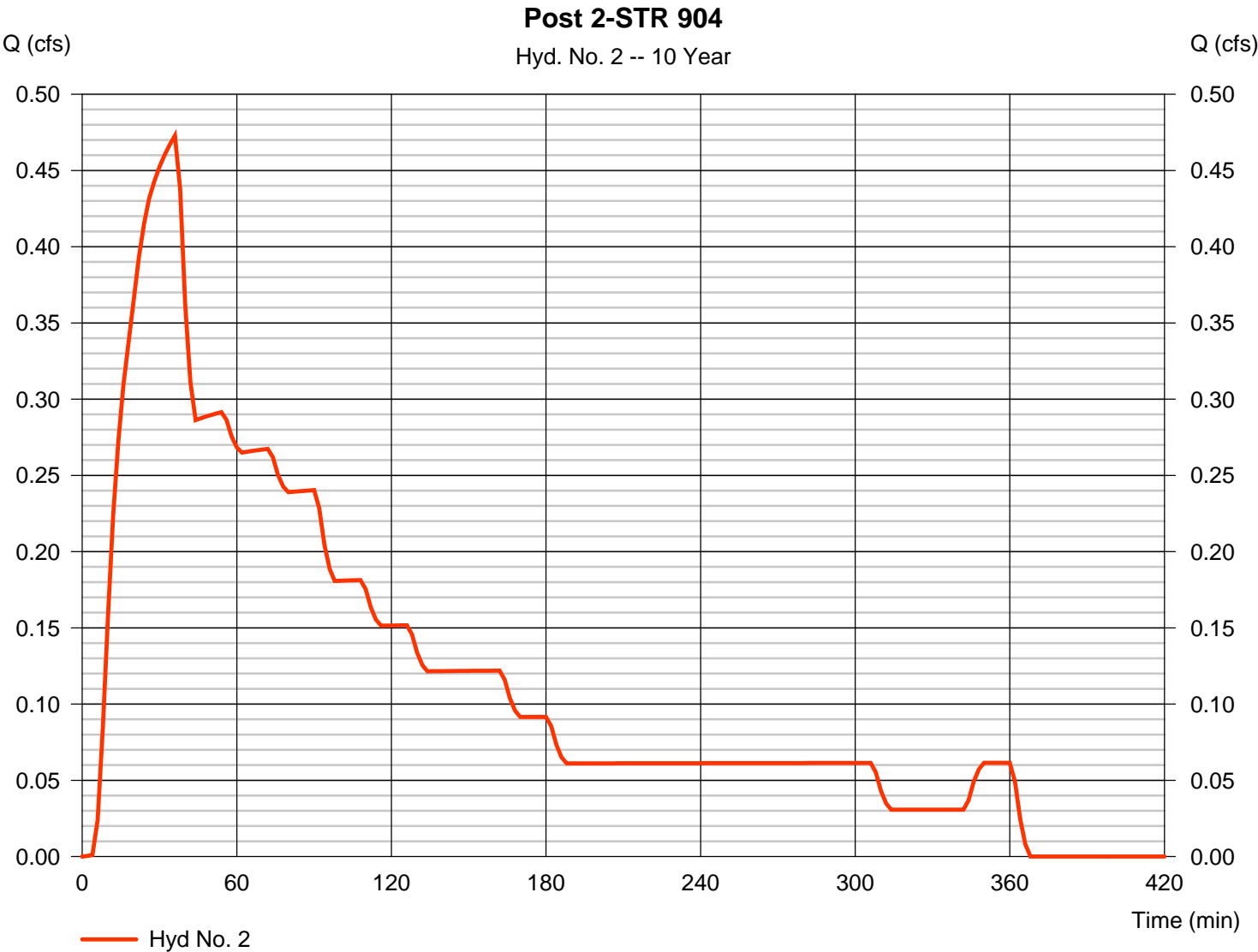
Wednesday, 07 / 11 / 2018

Hyd. No. 2

Post 2-STR 904

Hydrograph type	= SCS Runoff	Peak discharge	= 0.473 cfs
Storm frequency	= 10 yrs	Time to peak	= 36 min
Time interval	= 2 min	Hyd. volume	= 2,888 cuft
Drainage area	= 0.310 ac	Curve number	= 96*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.19 in	Distribution	= Huff-1st
Storm duration	= 6.00 hrs	Shape factor	= 484

* Composite (Area/CN) = [(0.030 x 79) + (0.280 x 98)] / 0.310



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

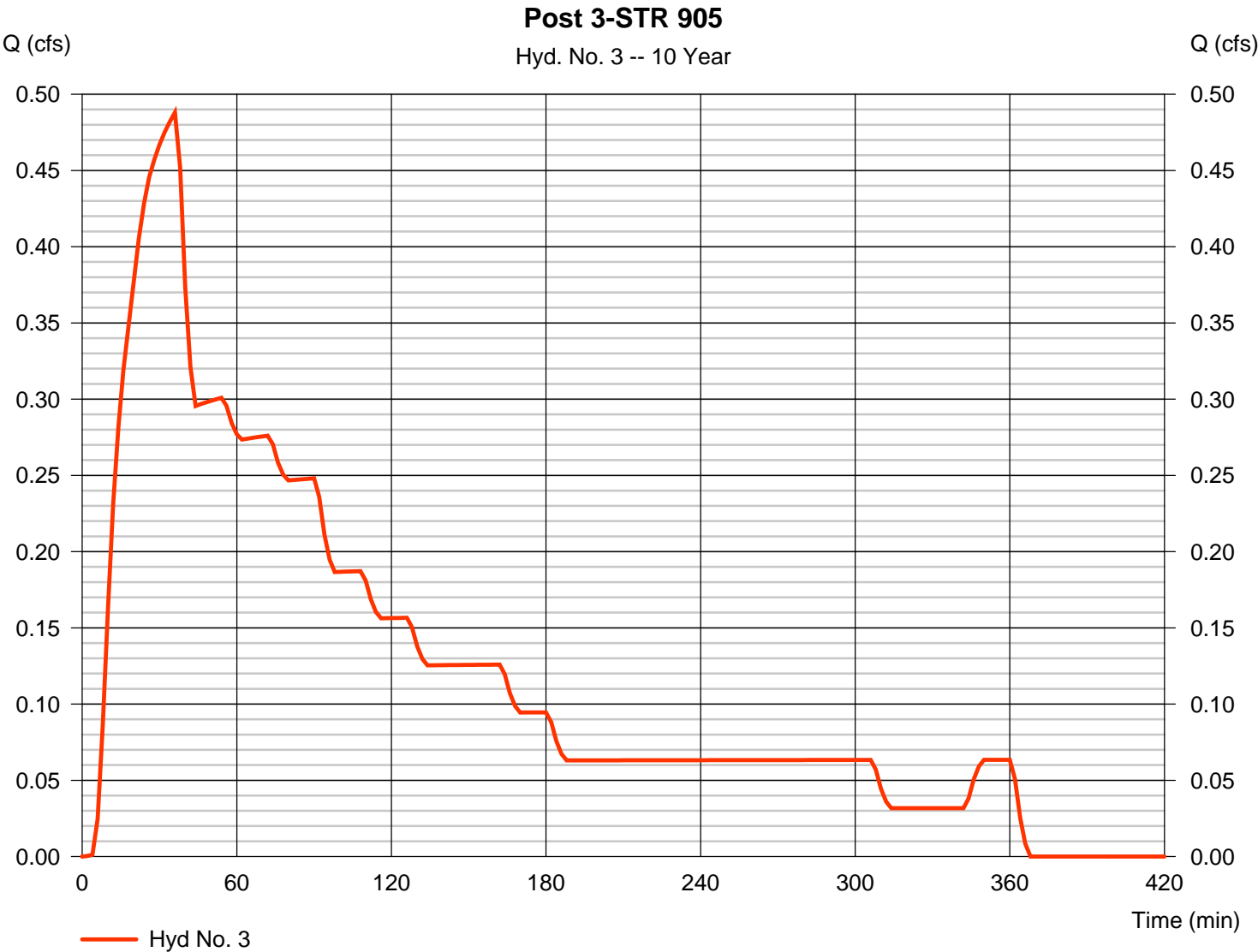
Wednesday, 07 / 11 / 2018

Hyd. No. 3

Post 3-STR 905

Hydrograph type	= SCS Runoff	Peak discharge	= 0.488 cfs
Storm frequency	= 10 yrs	Time to peak	= 36 min
Time interval	= 2 min	Hyd. volume	= 2,981 cuft
Drainage area	= 0.320 ac	Curve number	= 96*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.19 in	Distribution	= Huff-1st
Storm duration	= 6.00 hrs	Shape factor	= 484

* Composite (Area/CN) = [(0.030 x 79) + (0.290 x 98)] / 0.320



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

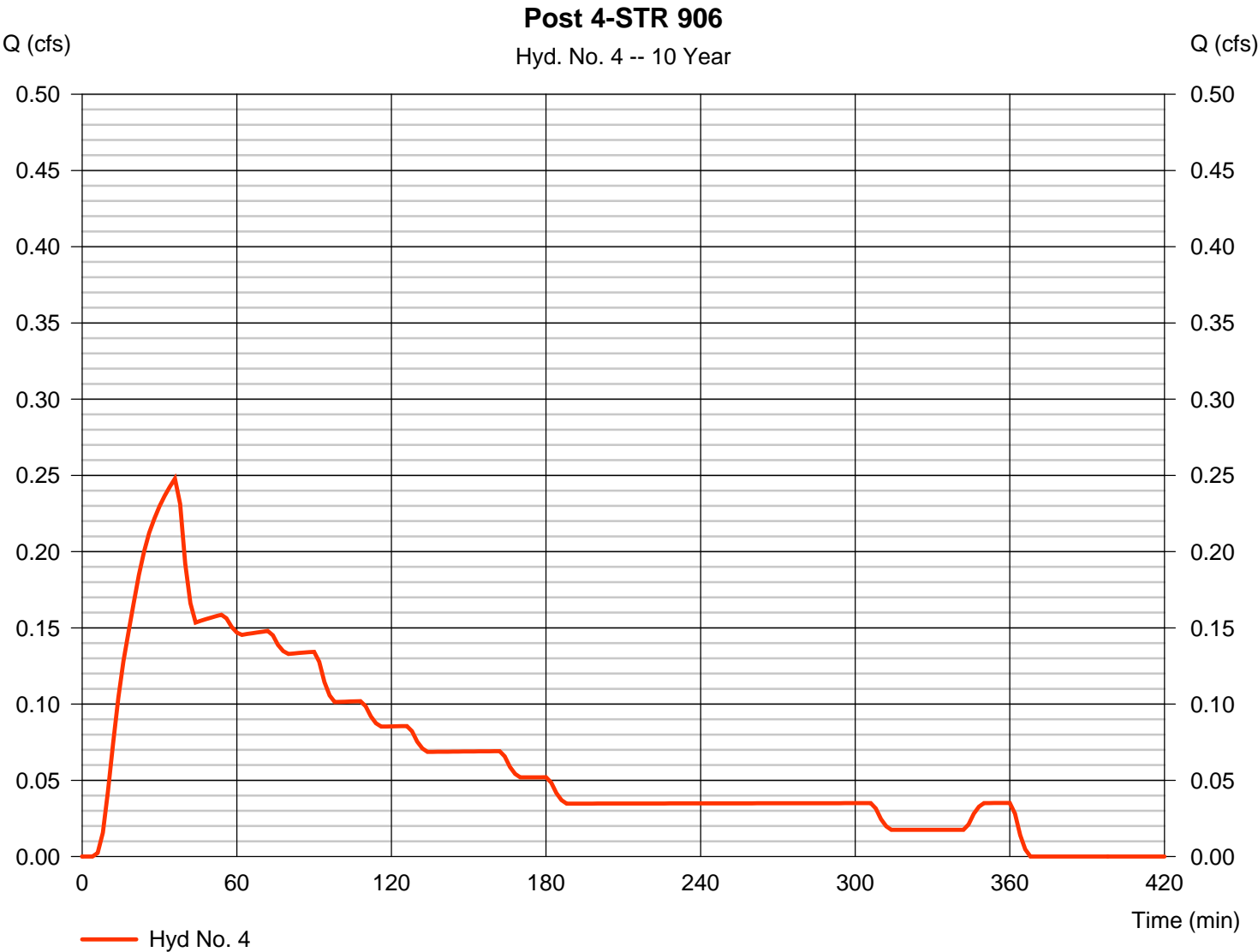
Wednesday, 07 / 11 / 2018

Hyd. No. 4

Post 4-STR 906

Hydrograph type	= SCS Runoff	Peak discharge	= 0.248 cfs
Storm frequency	= 10 yrs	Time to peak	= 36 min
Time interval	= 2 min	Hyd. volume	= 1,552 cuft
Drainage area	= 0.180 ac	Curve number	= 94*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.19 in	Distribution	= Huff-1st
Storm duration	= 6.00 hrs	Shape factor	= 484

* Composite (Area/CN) = [(0.040 x 79) + (0.140 x 98)] / 0.180



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

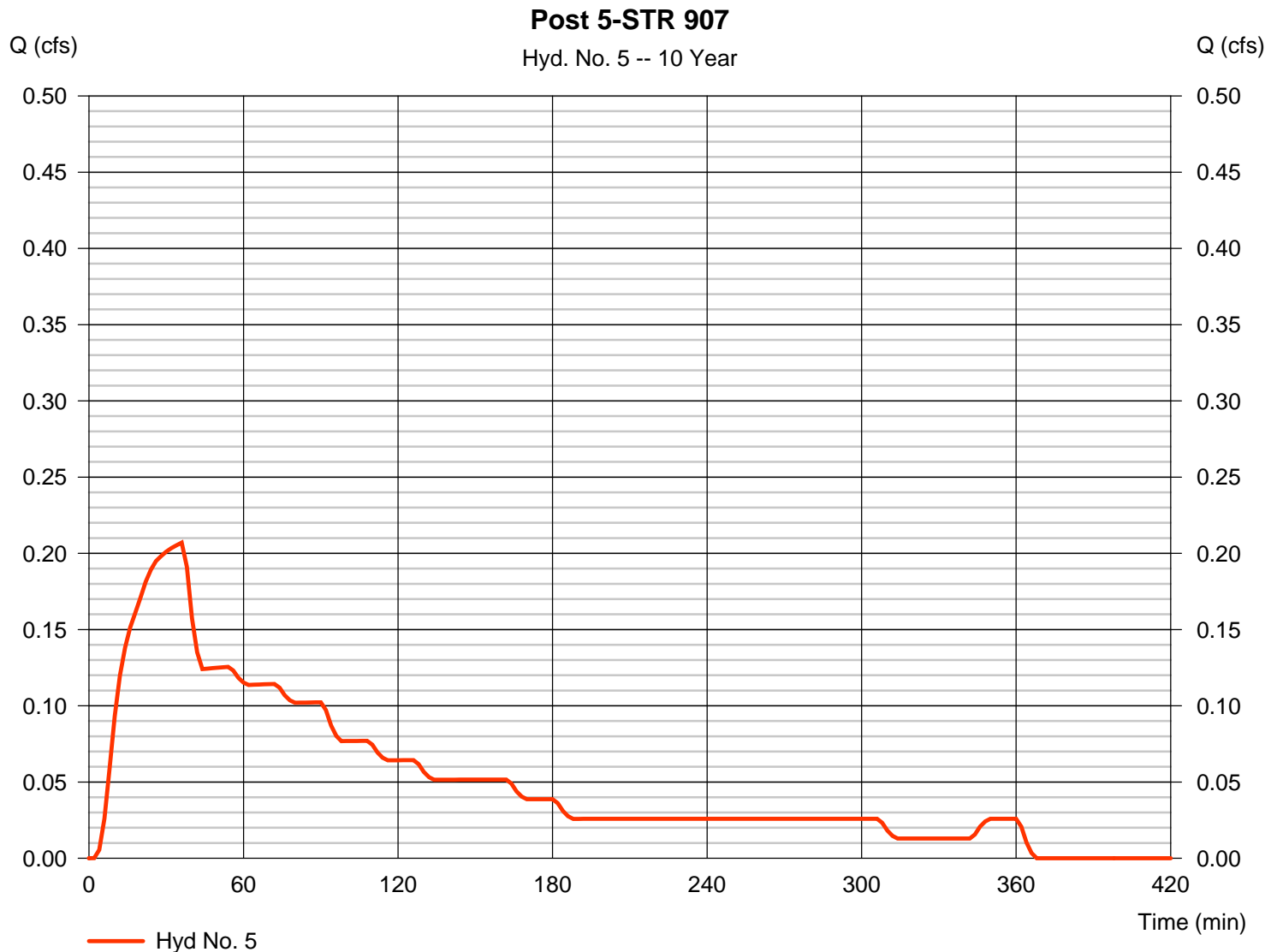
Wednesday, 07 / 11 / 2018

Hyd. No. 5

Post 5-STR 907

Hydrograph type	= SCS Runoff	Peak discharge	= 0.207 cfs
Storm frequency	= 10 yrs	Time to peak	= 36 min
Time interval	= 2 min	Hyd. volume	= 1,259 cuft
Drainage area	= 0.130 ac	Curve number	= 97*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.19 in	Distribution	= Huff-1st
Storm duration	= 6.00 hrs	Shape factor	= 484

* Composite (Area/CN) = $[(0.010 \times 79) + (0.120 \times 98)] / 0.130$



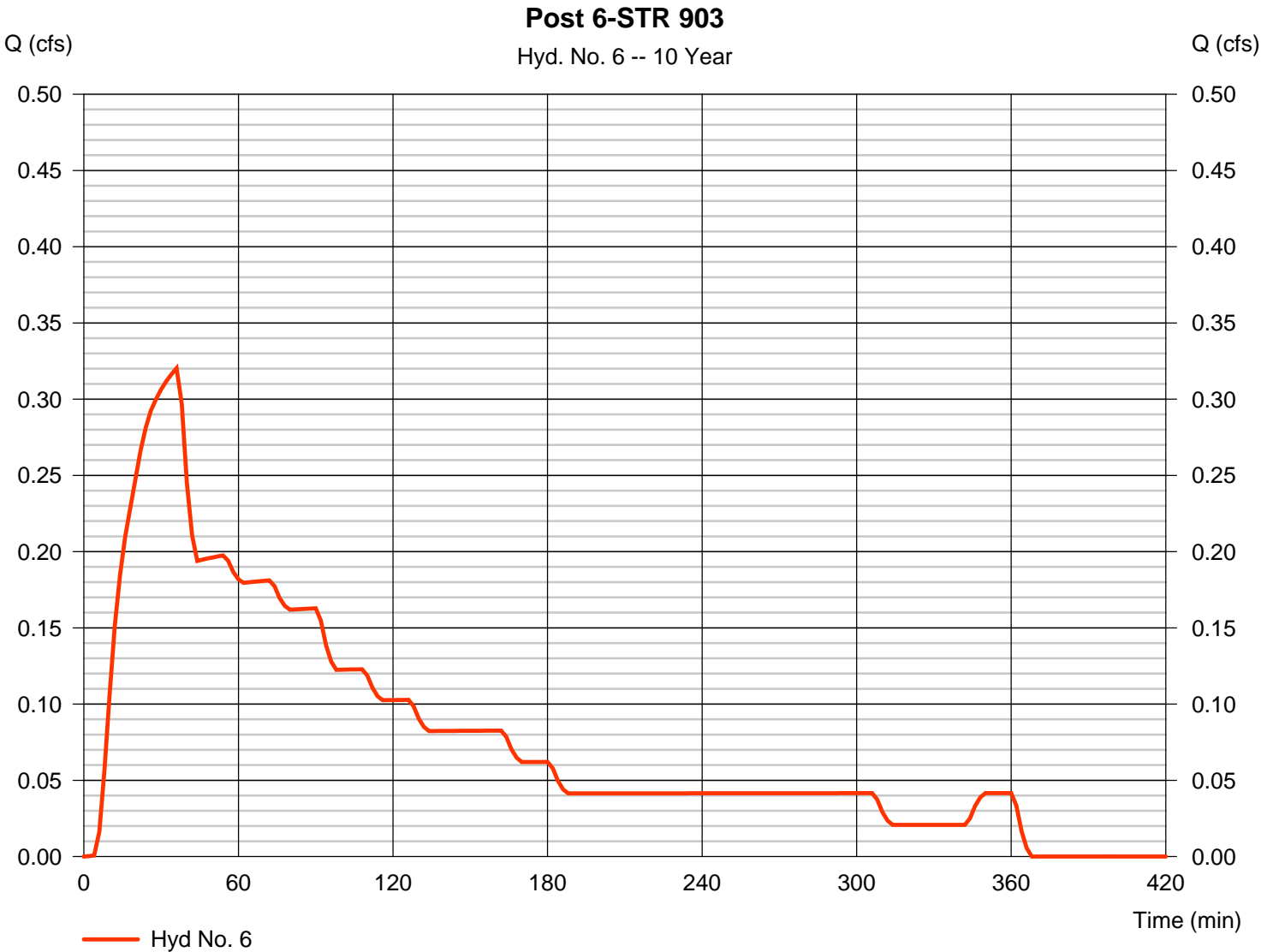
Hydrograph Report

Hyd. No. 6

Post 6-STR 903

Hydrograph type	= SCS Runoff	Peak discharge	= 0.320 cfs
Storm frequency	= 10 yrs	Time to peak	= 36 min
Time interval	= 2 min	Hyd. volume	= 1,956 cuft
Drainage area	= 0.210 ac	Curve number	= 96*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.19 in	Distribution	= Huff-1st
Storm duration	= 6.00 hrs	Shape factor	= 484

* Composite (Area/CN) = [(0.020 x 79) + (0.190 x 98)] / 0.210



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

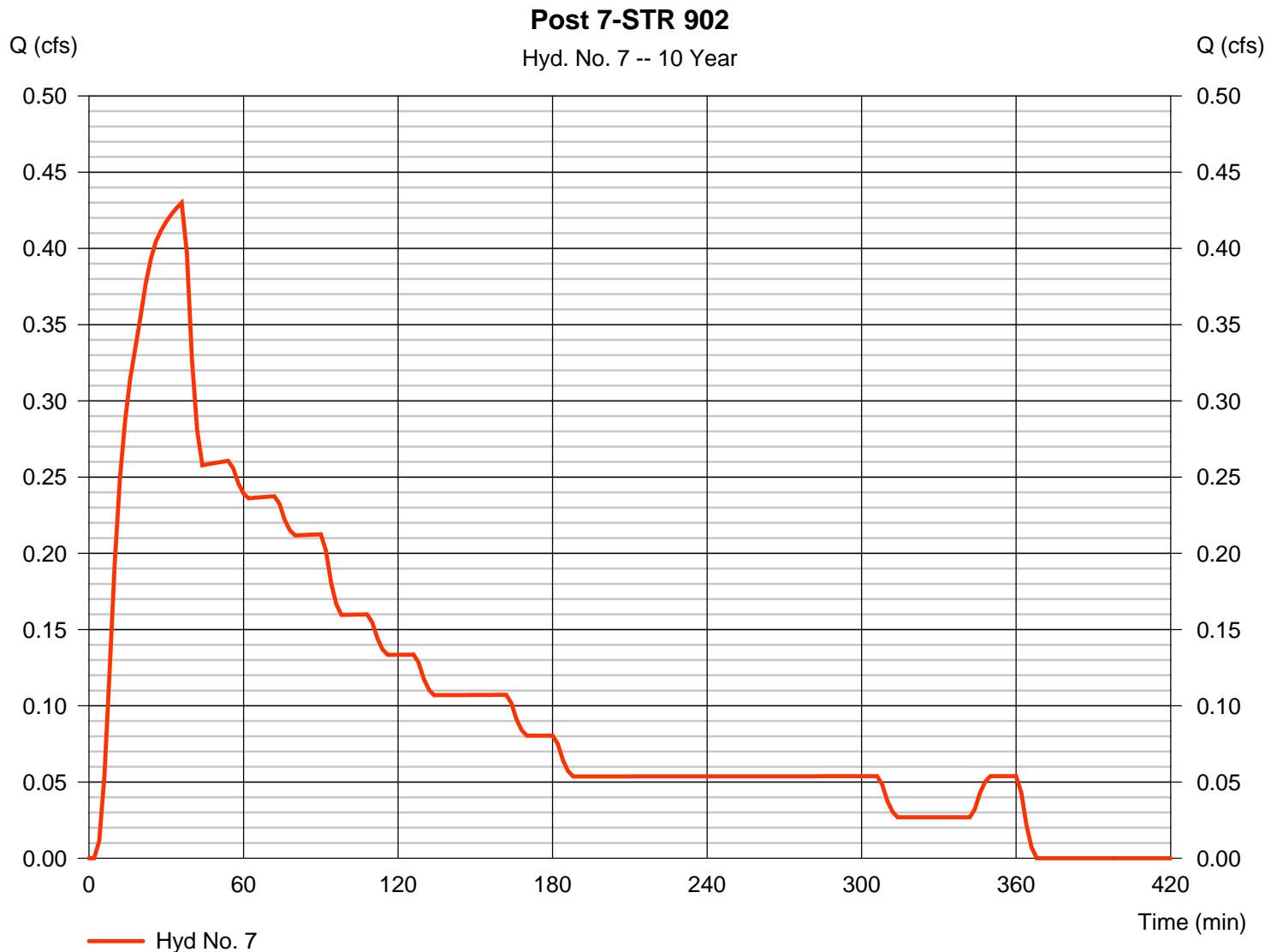
Wednesday, 07 / 11 / 2018

Hyd. No. 7

Post 7-STR 902

Hydrograph type	= SCS Runoff	Peak discharge	= 0.430 cfs
Storm frequency	= 10 yrs	Time to peak	= 36 min
Time interval	= 2 min	Hyd. volume	= 2,616 cuft
Drainage area	= 0.270 ac	Curve number	= 97*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.19 in	Distribution	= Huff-1st
Storm duration	= 6.00 hrs	Shape factor	= 484

* Composite (Area/CN) = $[(0.020 \times 79) + (0.250 \times 98)] / 0.270$



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

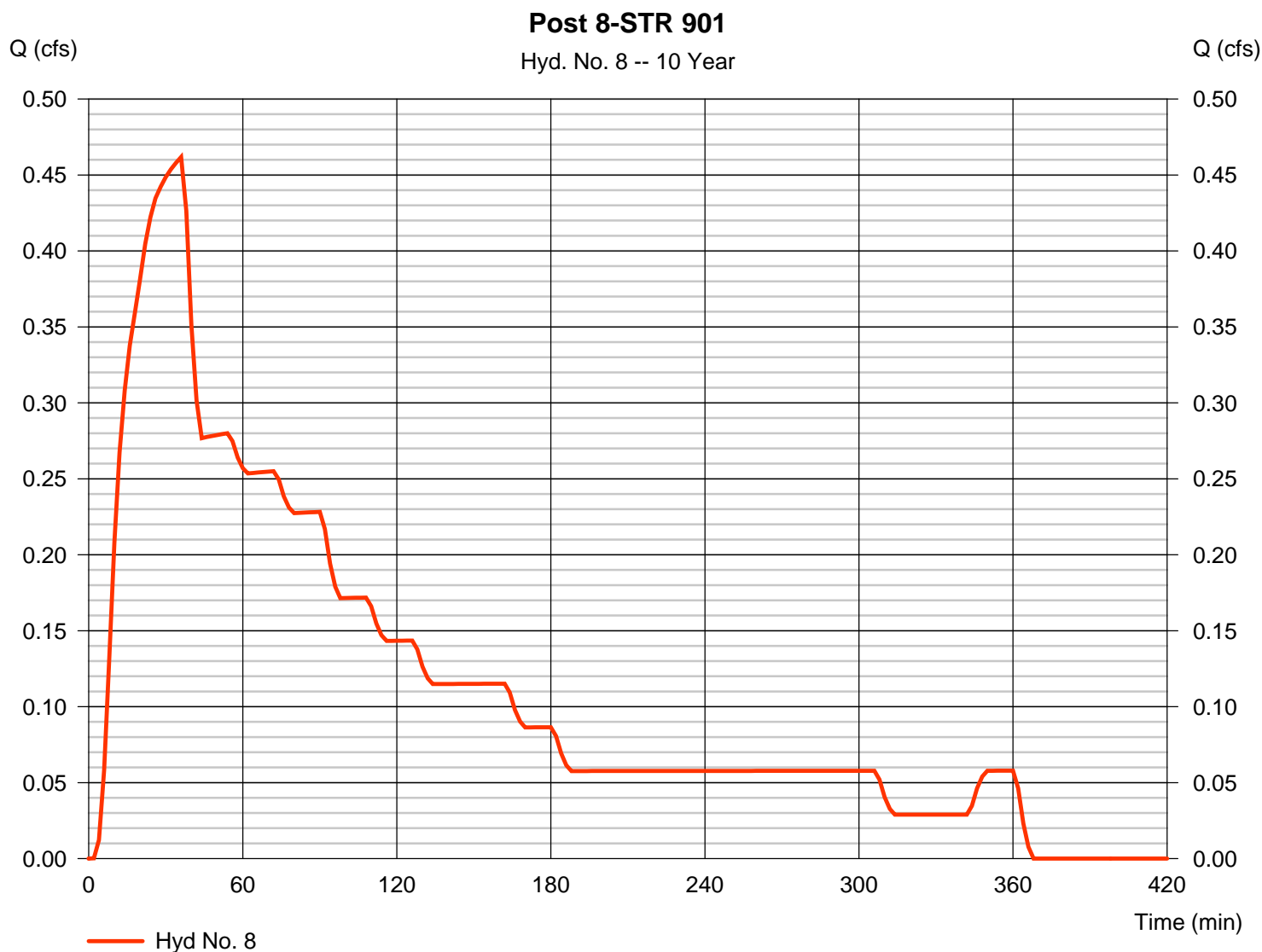
Wednesday, 07 / 11 / 2018

Hyd. No. 8

Post 8-STR 901

Hydrograph type	= SCS Runoff	Peak discharge	= 0.462 cfs
Storm frequency	= 10 yrs	Time to peak	= 36 min
Time interval	= 2 min	Hyd. volume	= 2,809 cuft
Drainage area	= 0.290 ac	Curve number	= 97*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.19 in	Distribution	= Huff-1st
Storm duration	= 6.00 hrs	Shape factor	= 484

* Composite (Area/CN) = $[(0.020 \times 79) + (0.270 \times 98)] / 0.290$



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

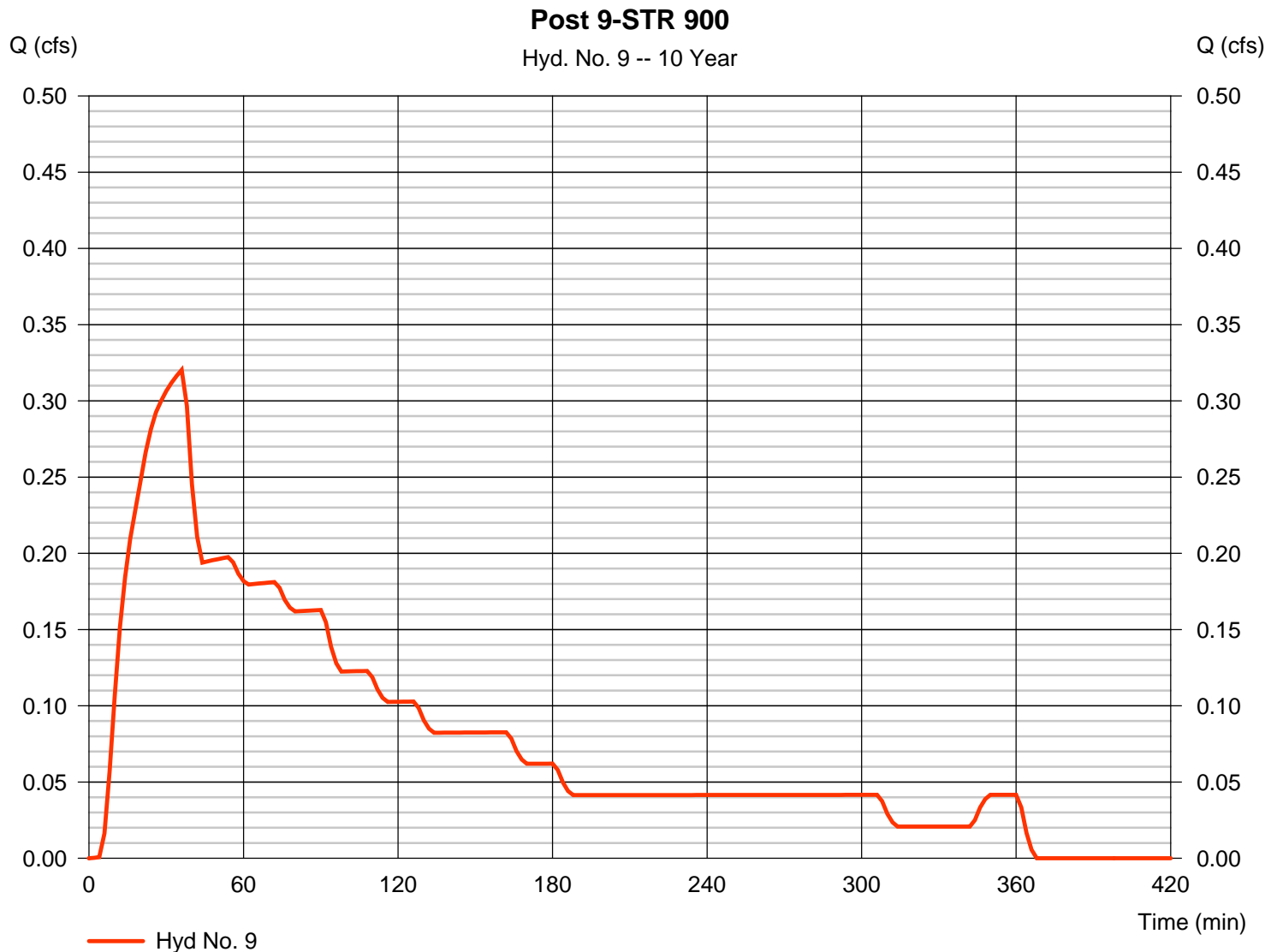
Wednesday, 07 / 11 / 2018

Hyd. No. 9

Post 9-STR 900

Hydrograph type	= SCS Runoff	Peak discharge	= 0.320 cfs
Storm frequency	= 10 yrs	Time to peak	= 36 min
Time interval	= 2 min	Hyd. volume	= 1,956 cuft
Drainage area	= 0.210 ac	Curve number	= 96*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.19 in	Distribution	= Huff-1st
Storm duration	= 6.00 hrs	Shape factor	= 484

* Composite (Area/CN) = $[(0.020 \times 79) + (0.190 \times 98)] / 0.210$



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

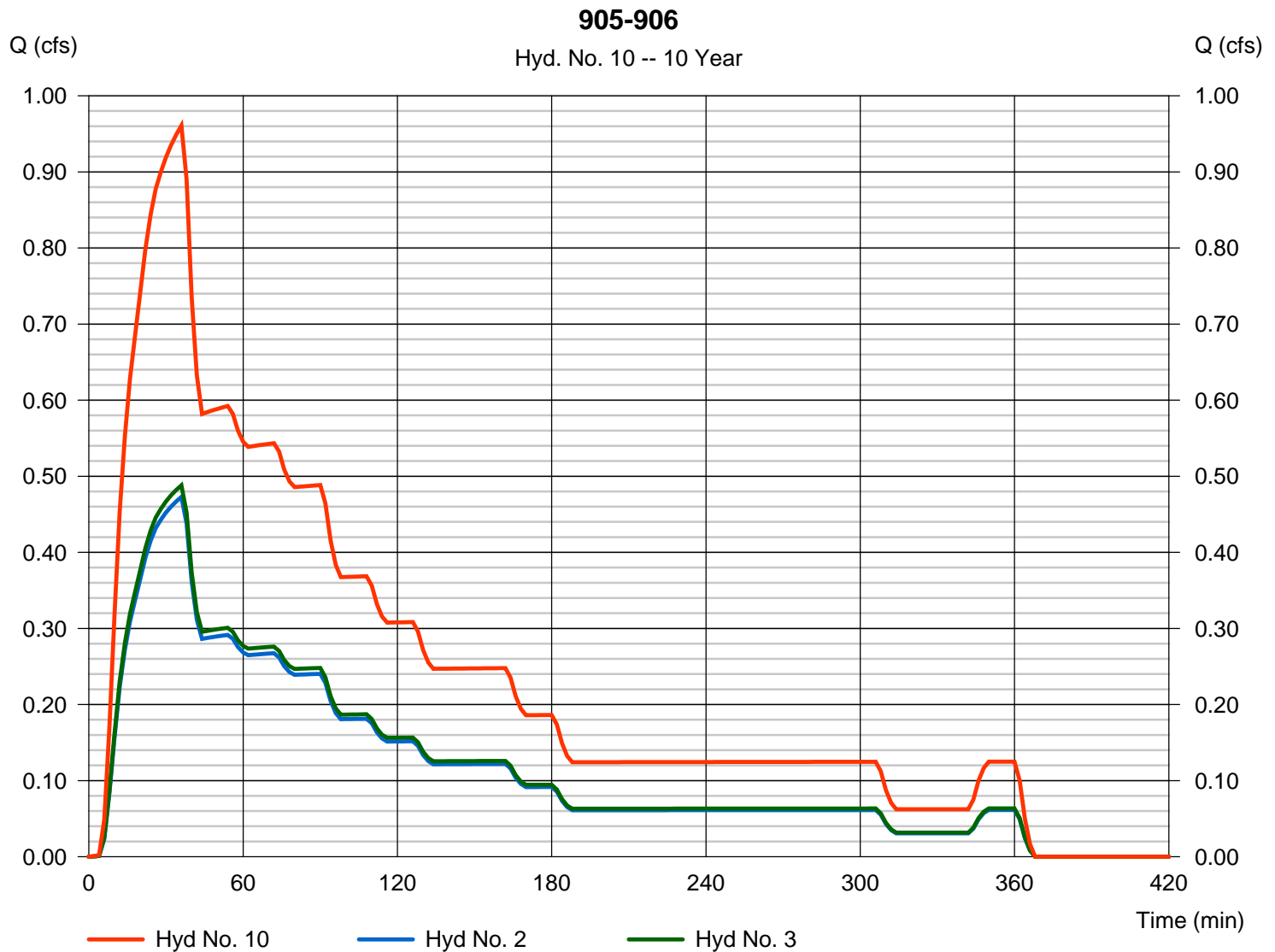
Wednesday, 07 / 11 / 2018

Hyd. No. 10

905-906

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

Peak discharge = 0.961 cfs
Time to peak = 36 min
Hyd. volume = 5,869 cuft
Contrib. drain. area = 0.630 ac



Hydrograph Report

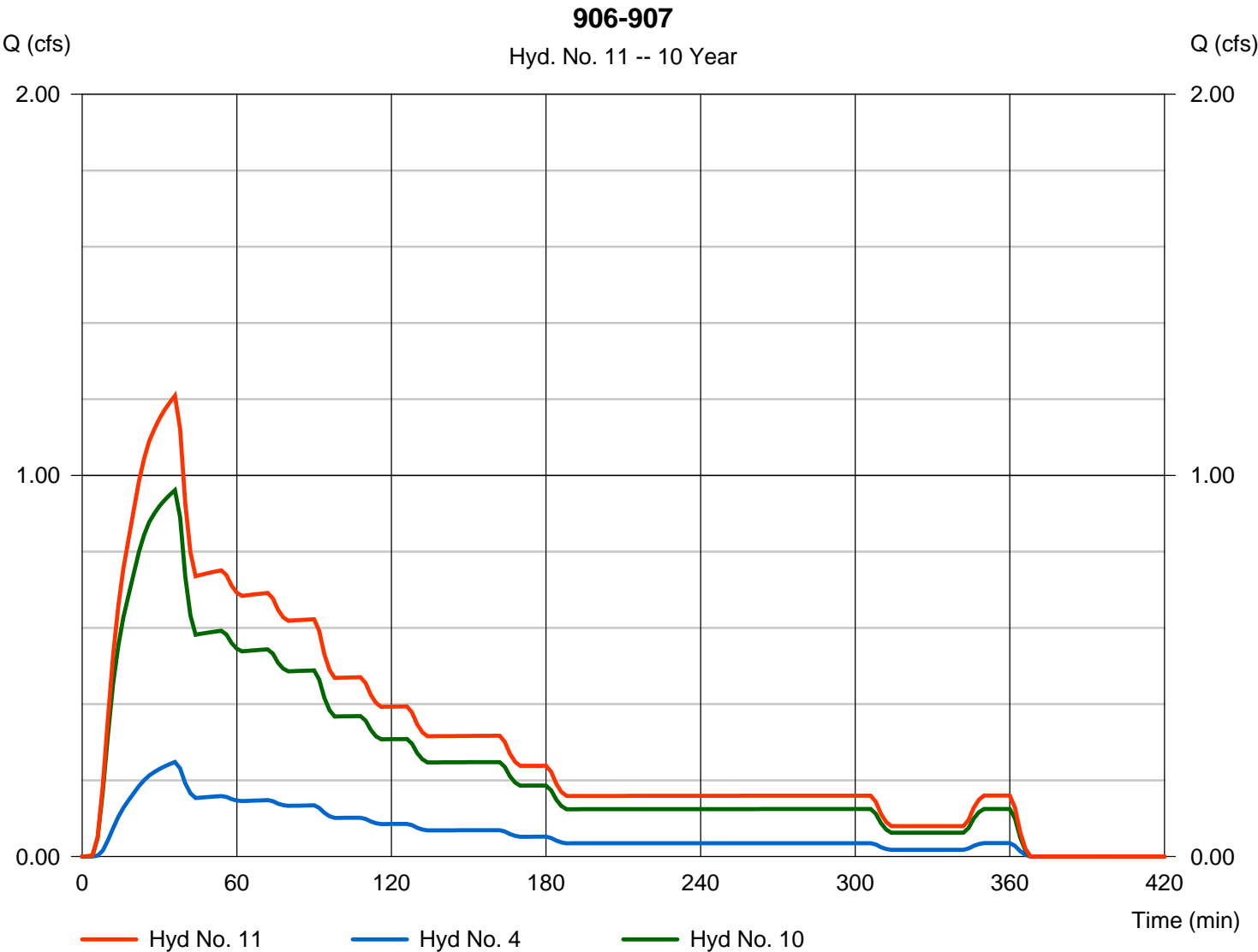
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

Wednesday, 07 / 11 / 2018

Hyd. No. 11

906-907

Hydrograph type	= Combine	Peak discharge	= 1.209 cfs
Storm frequency	= 10 yrs	Time to peak	= 36 min
Time interval	= 2 min	Hyd. volume	= 7,422 cuft
Inflow hyds.	= 4, 10	Contrib. drain. area	= 0.180 ac



Hydrograph Report

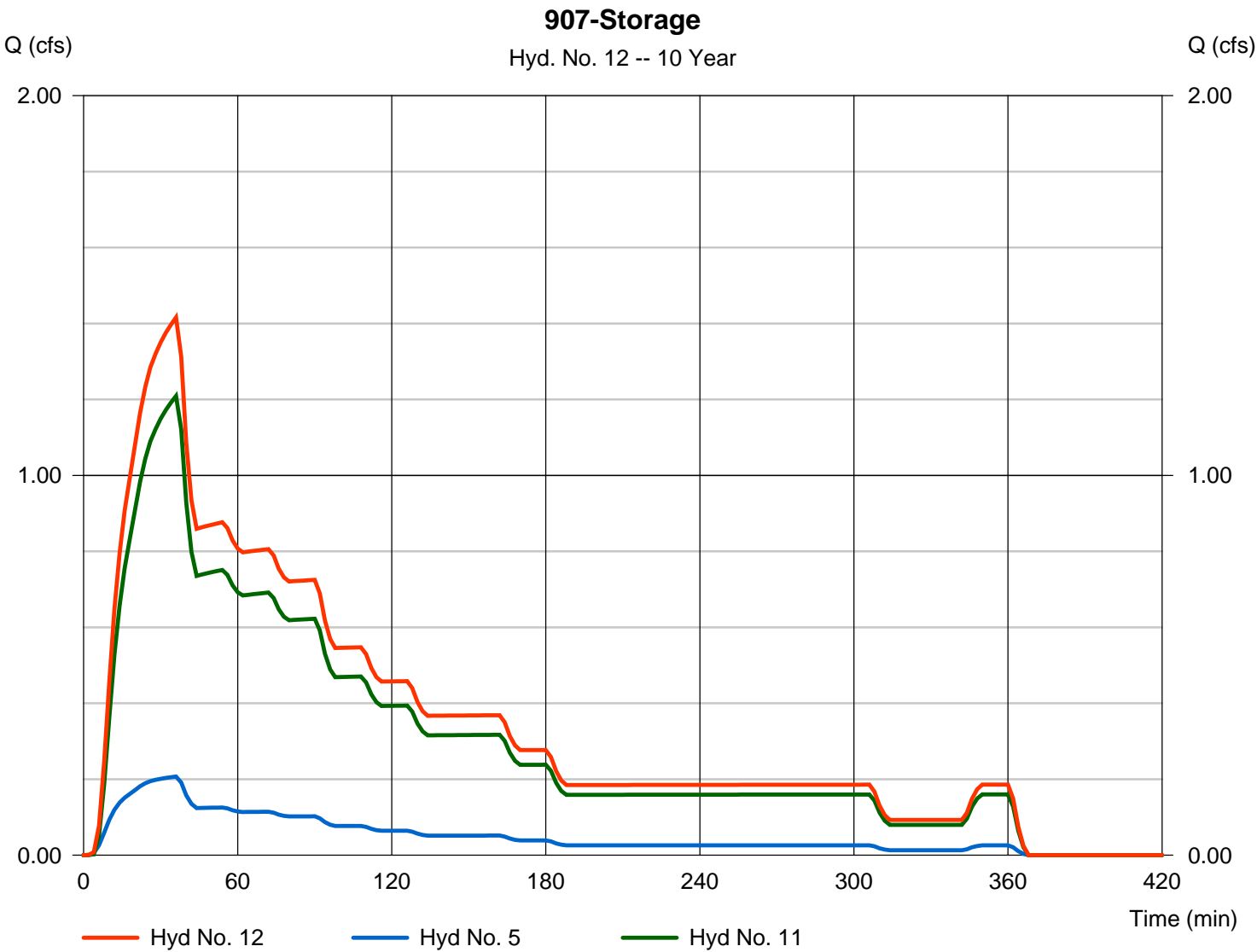
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

Wednesday, 07 / 11 / 2018

Hyd. No. 12

907-Storage

Hydrograph type	= Combine	Peak discharge	= 1.416 cfs
Storm frequency	= 10 yrs	Time to peak	= 36 min
Time interval	= 2 min	Hyd. volume	= 8,681 cuft
Inflow hyds.	= 5, 11	Contrib. drain. area	= 0.130 ac



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

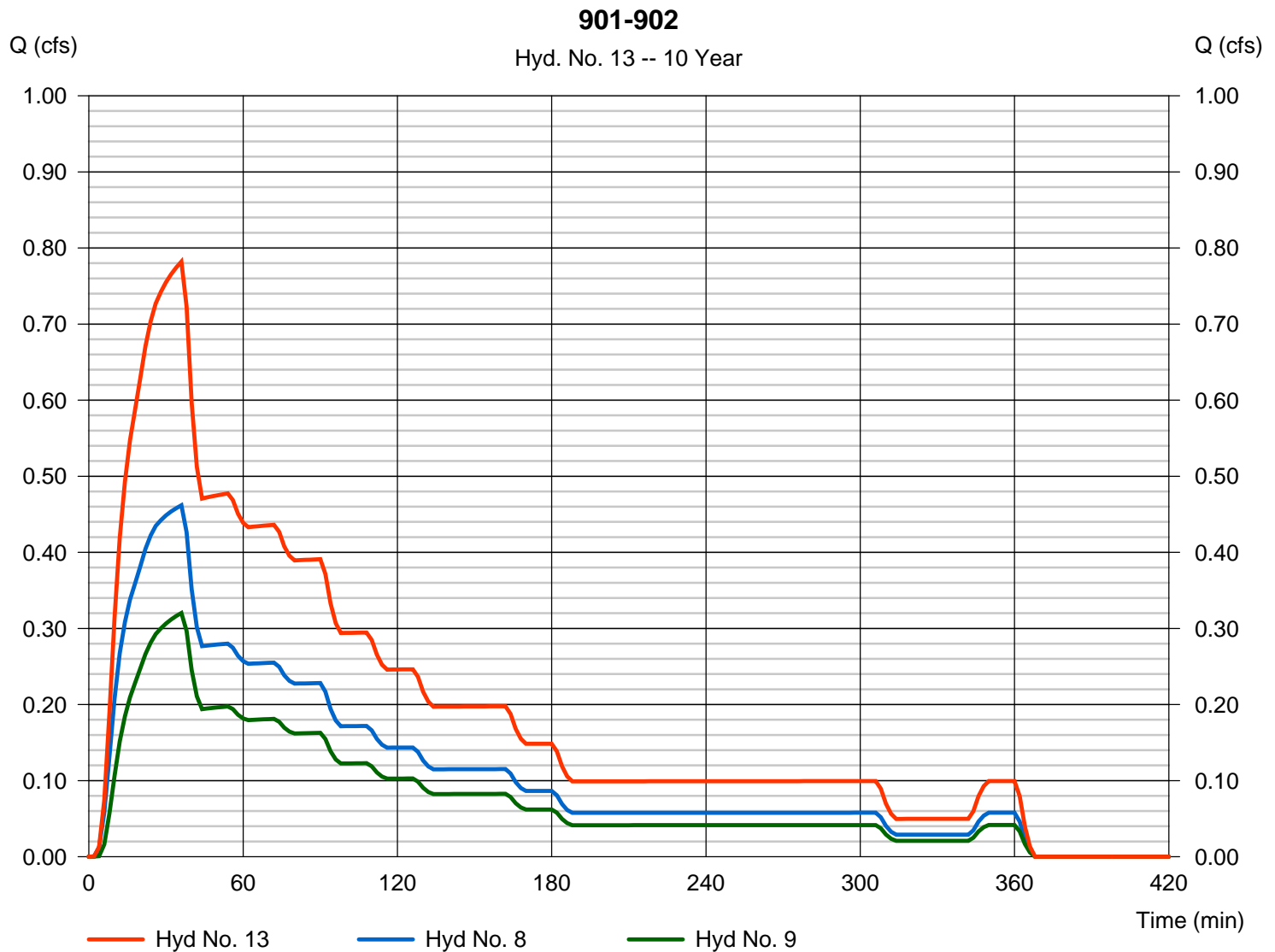
Wednesday, 07 / 11 / 2018

Hyd. No. 13

901-902

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

Peak discharge = 0.782 cfs
 Time to peak = 36 min
 Hyd. volume = 4,766 cuft
 Contrib. drain. area = 0.500 ac



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

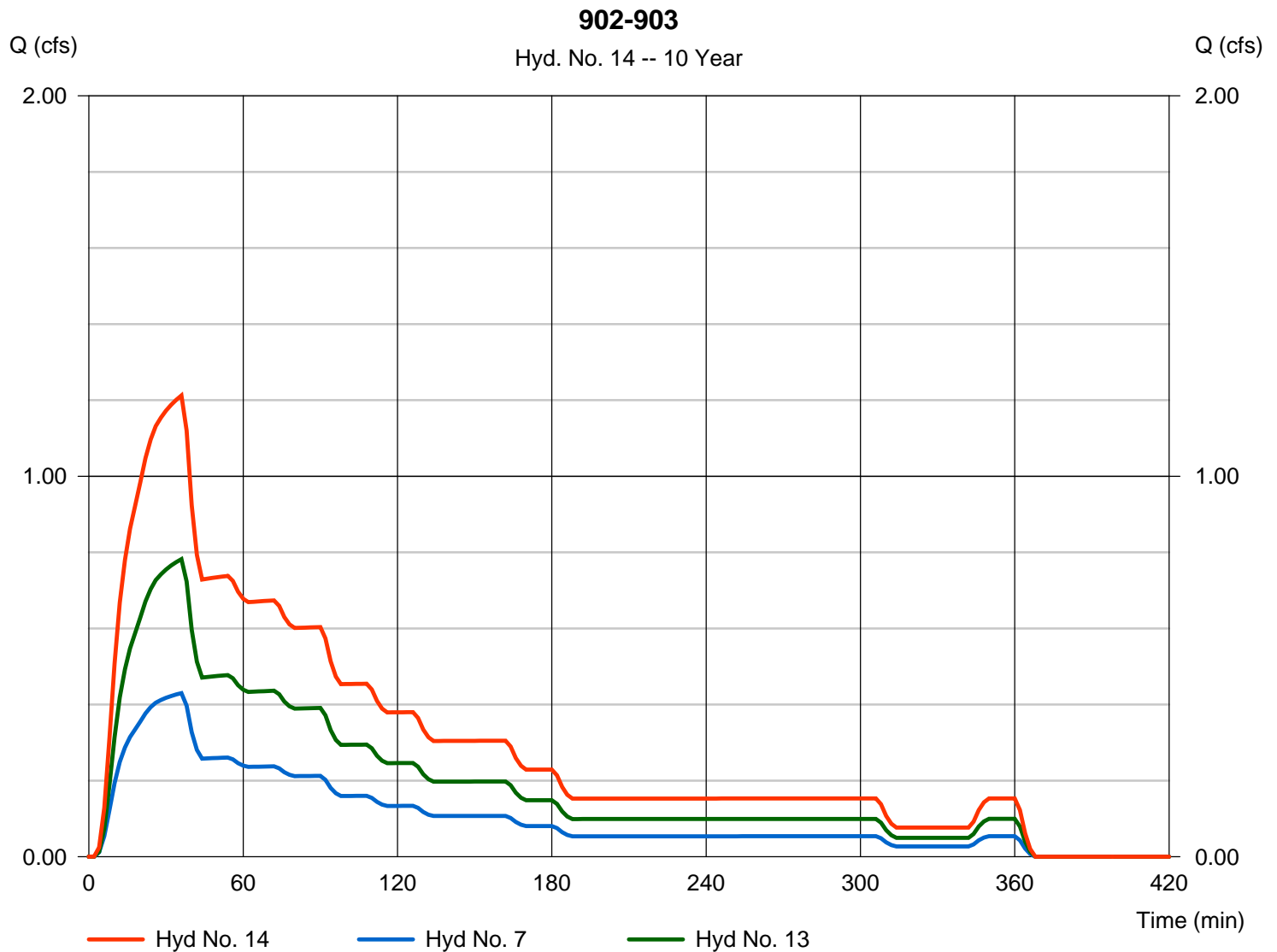
Wednesday, 07 / 11 / 2018

Hyd. No. 14

902-903

Hydrograph type = Combine
 Storm frequency = 10 yrs
 Time interval = 2 min
 Inflow hyds. = 7, 13

Peak discharge = 1.212 cfs
 Time to peak = 36 min
 Hyd. volume = 7,382 cuft
 Contrib. drain. area = 0.270 ac



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

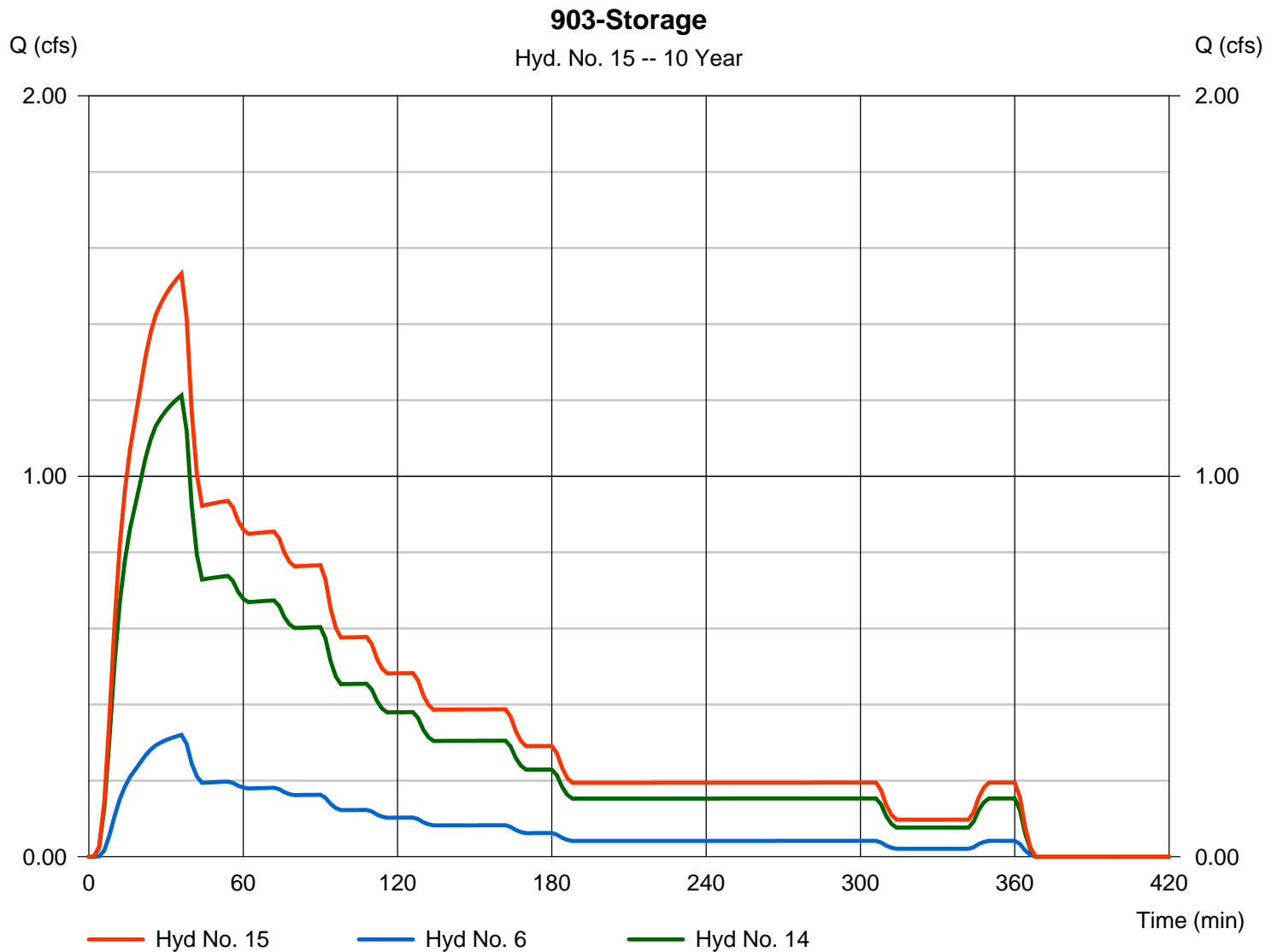
Wednesday, 07 / 11 / 2018

Hyd. No. 15

903-Storage

Hydrograph type = Combine
 Storm frequency = 10 yrs
 Time interval = 2 min
 Inflow hyds. = 6, 14

Peak discharge = 1.532 cfs
 Time to peak = 36 min
 Hyd. volume = 9,338 cuft
 Contrib. drain. area = 0.210 ac



Hydrograph Report

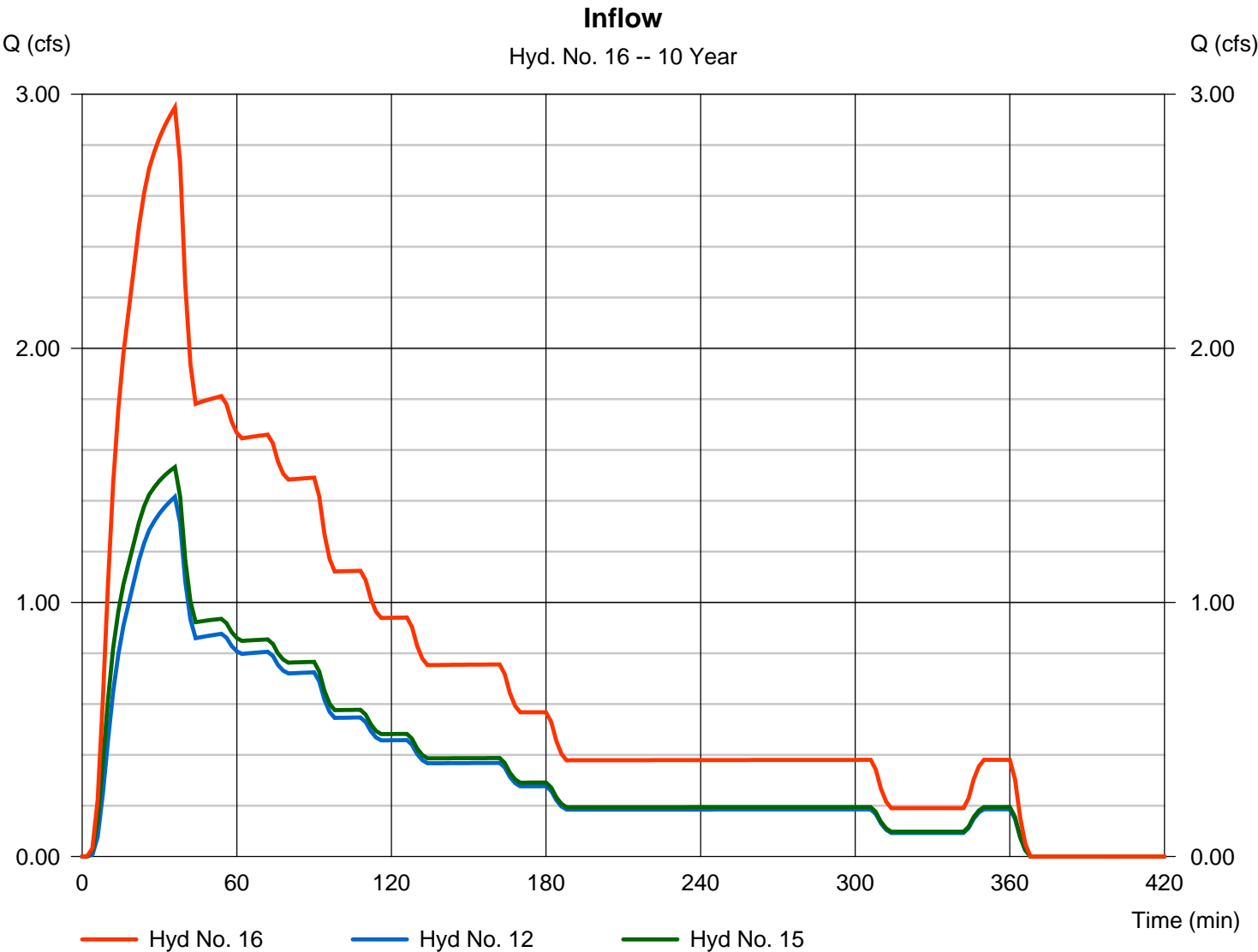
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

Wednesday, 07 / 11 / 2018

Hyd. No. 16

Inflow

Hydrograph type	= Combine	Peak discharge	= 2.948 cfs
Storm frequency	= 10 yrs	Time to peak	= 36 min
Time interval	= 2 min	Hyd. volume	= 18,019 cuft
Inflow hyds.	= 12, 15	Contrib. drain. area	= 0.000 ac



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

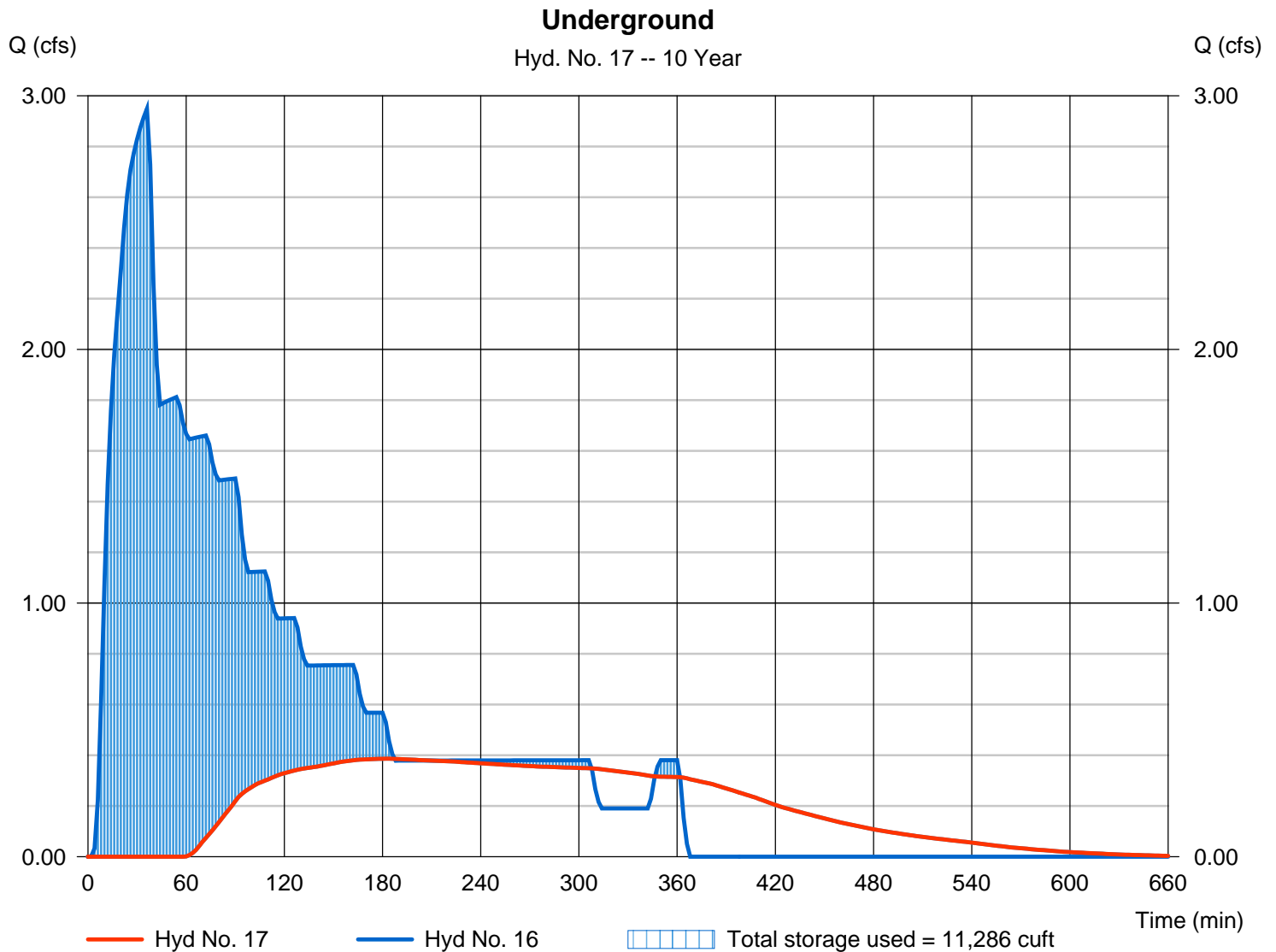
Wednesday, 07 / 11 / 2018

Hyd. No. 17

Underground

Hydrograph type	= Reservoir	Peak discharge	= 0.387 cfs
Storm frequency	= 10 yrs	Time to peak	= 184 min
Time interval	= 2 min	Hyd. volume	= 7,810 cuft
Inflow hyd. No.	= 16 - Inflow	Max. Elevation	= 740.23 ft
Reservoir name	= Underground Storage	Max. Storage	= 11,286 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Hydrograph Report

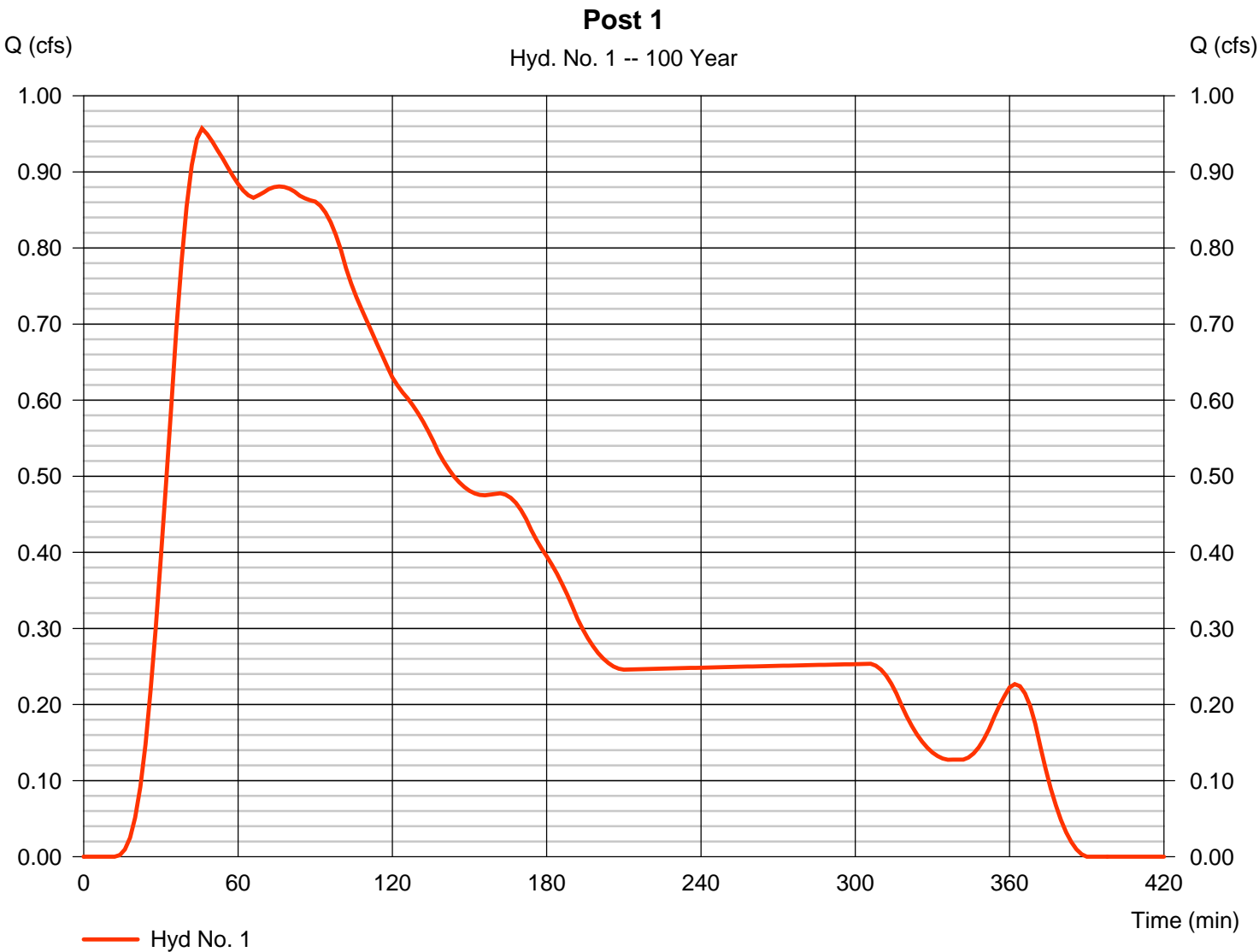
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

Wednesday, 07 / 11 / 2018

Hyd. No. 1

Post 1

Hydrograph type	= SCS Runoff	Peak discharge	= 0.957 cfs
Storm frequency	= 100 yrs	Time to peak	= 46 min
Time interval	= 2 min	Hyd. volume	= 9,096 cuft
Drainage area	= 0.860 ac	Curve number	= 79
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 18.20 min
Total precip.	= 5.13 in	Distribution	= Huff-1st
Storm duration	= 6.00 hrs	Shape factor	= 484



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

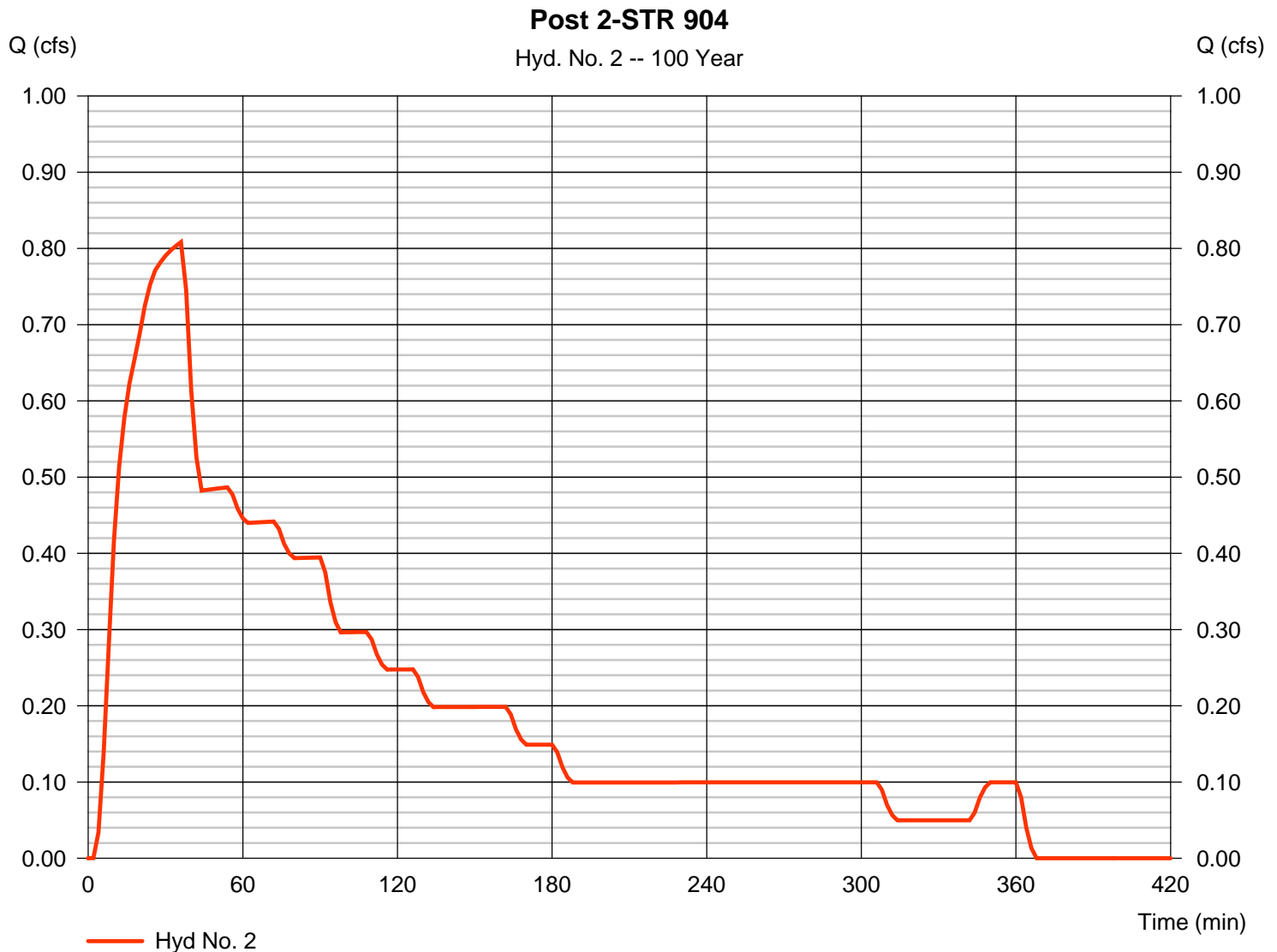
Wednesday, 07 / 11 / 2018

Hyd. No. 2

Post 2-STR 904

Hydrograph type	= SCS Runoff	Peak discharge	= 0.808 cfs
Storm frequency	= 100 yrs	Time to peak	= 36 min
Time interval	= 2 min	Hyd. volume	= 4,918 cuft
Drainage area	= 0.310 ac	Curve number	= 96*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 5.13 in	Distribution	= Huff-1st
Storm duration	= 6.00 hrs	Shape factor	= 484

* Composite (Area/CN) = $[(0.030 \times 79) + (0.280 \times 98)] / 0.310$



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

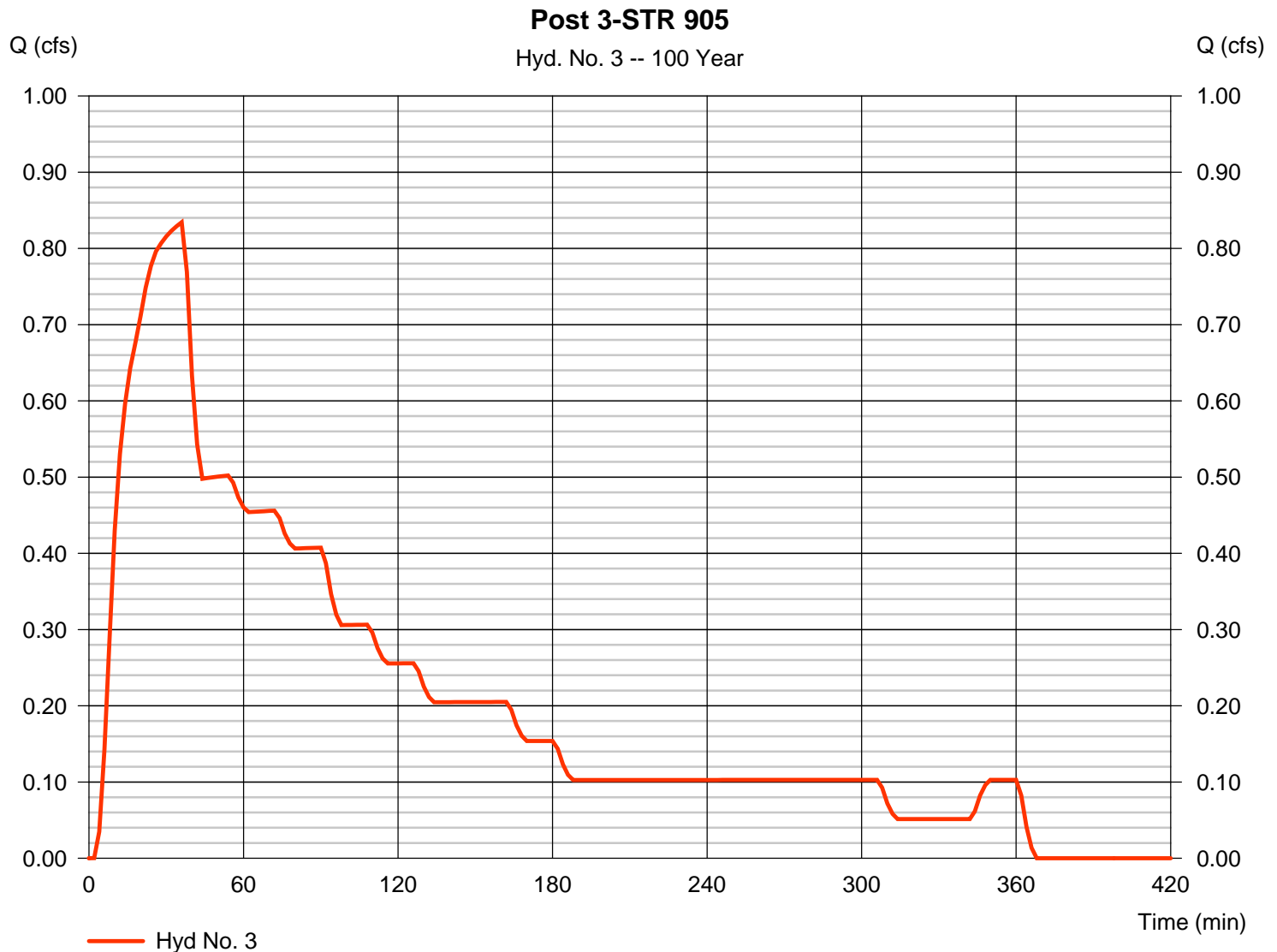
Wednesday, 07 / 11 / 2018

Hyd. No. 3

Post 3-STR 905

Hydrograph type	= SCS Runoff	Peak discharge	= 0.834 cfs
Storm frequency	= 100 yrs	Time to peak	= 36 min
Time interval	= 2 min	Hyd. volume	= 5,077 cuft
Drainage area	= 0.320 ac	Curve number	= 96*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 5.13 in	Distribution	= Huff-1st
Storm duration	= 6.00 hrs	Shape factor	= 484

* Composite (Area/CN) = $[(0.030 \times 79) + (0.290 \times 98)] / 0.320$



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

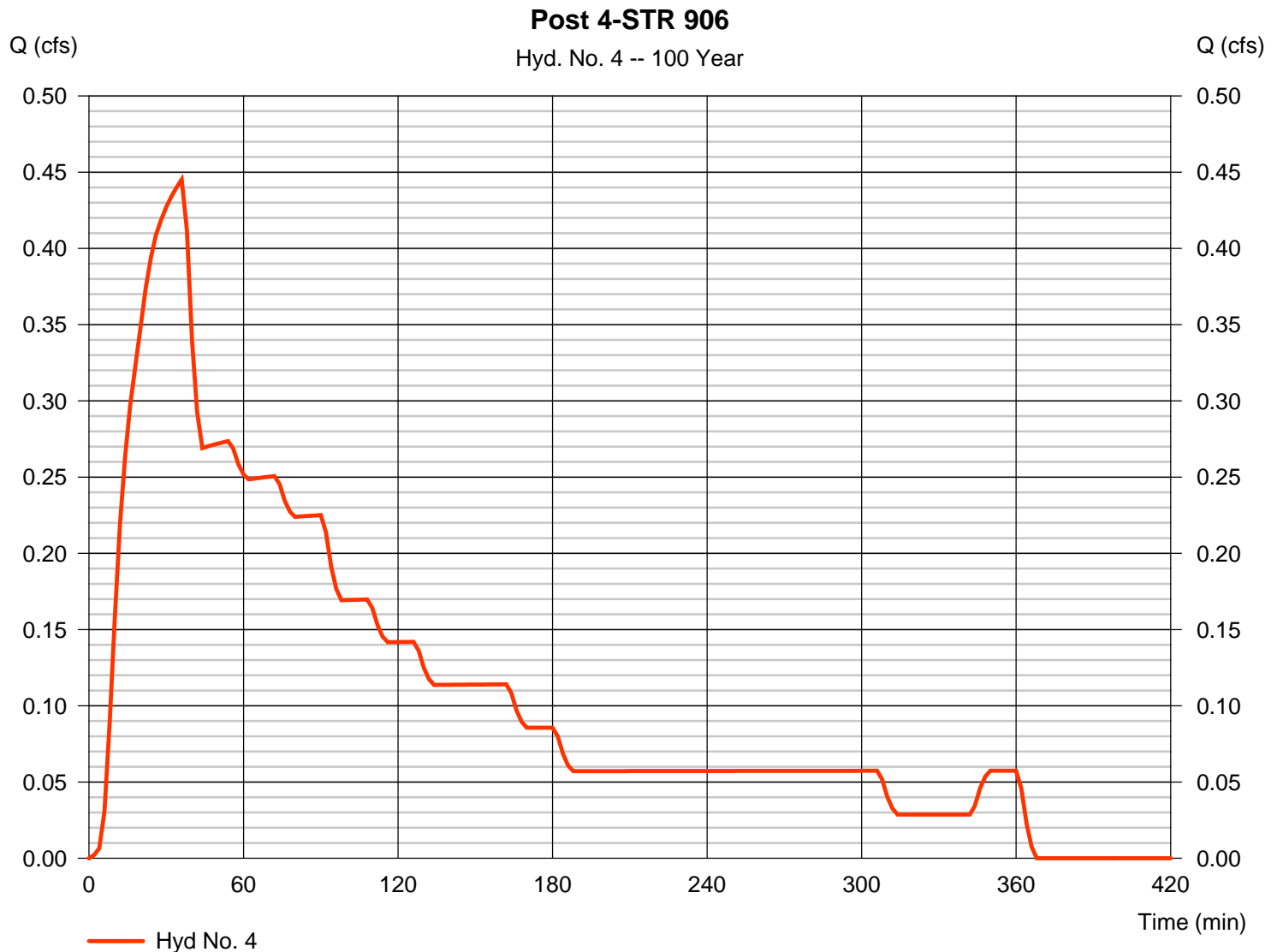
Wednesday, 07 / 11 / 2018

Hyd. No. 4

Post 4-STR 906

Hydrograph type	= SCS Runoff	Peak discharge	= 0.445 cfs
Storm frequency	= 100 yrs	Time to peak	= 36 min
Time interval	= 2 min	Hyd. volume	= 2,717 cuft
Drainage area	= 0.180 ac	Curve number	= 94*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 5.13 in	Distribution	= Huff-1st
Storm duration	= 6.00 hrs	Shape factor	= 484

* Composite (Area/CN) = $[(0.040 \times 79) + (0.140 \times 98)] / 0.180$



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

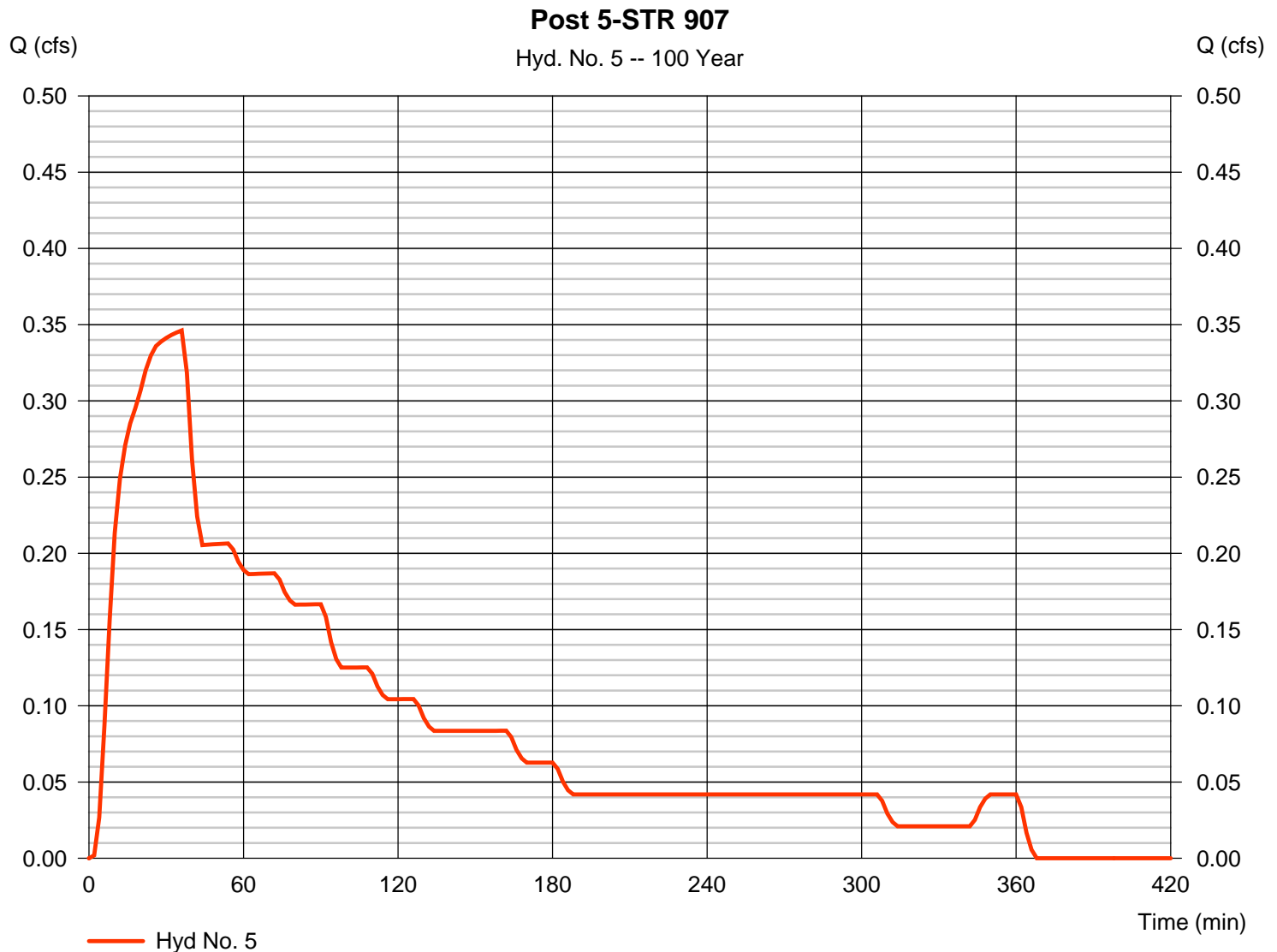
Wednesday, 07 / 11 / 2018

Hyd. No. 5

Post 5-STR 907

Hydrograph type	= SCS Runoff	Peak discharge	= 0.346 cfs
Storm frequency	= 100 yrs	Time to peak	= 36 min
Time interval	= 2 min	Hyd. volume	= 2,113 cuft
Drainage area	= 0.130 ac	Curve number	= 97*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 5.13 in	Distribution	= Huff-1st
Storm duration	= 6.00 hrs	Shape factor	= 484

* Composite (Area/CN) = $[(0.010 \times 79) + (0.120 \times 98)] / 0.130$



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

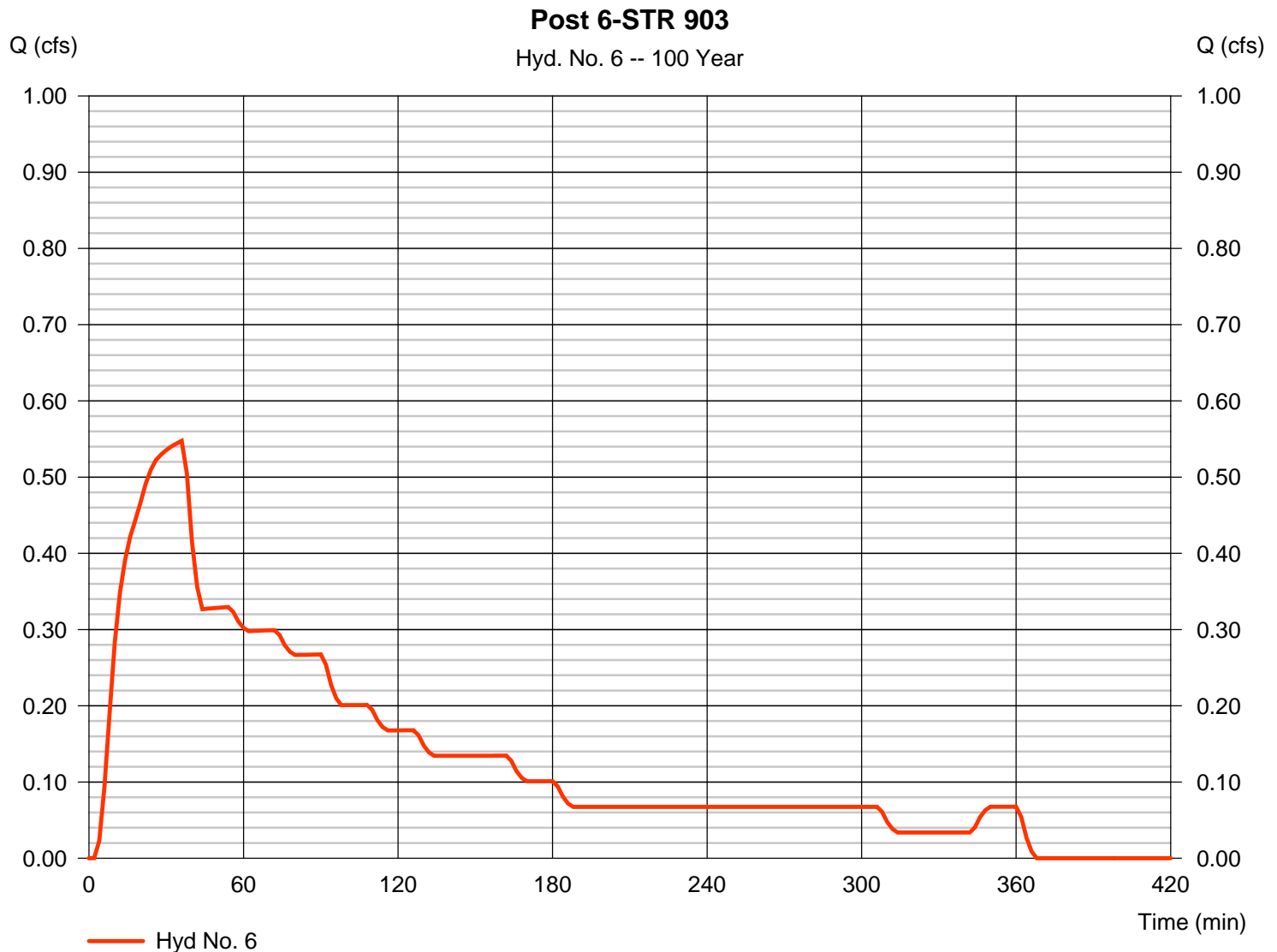
Wednesday, 07 / 11 / 2018

Hyd. No. 6

Post 6-STR 903

Hydrograph type	= SCS Runoff	Peak discharge	= 0.548 cfs
Storm frequency	= 100 yrs	Time to peak	= 36 min
Time interval	= 2 min	Hyd. volume	= 3,332 cuft
Drainage area	= 0.210 ac	Curve number	= 96*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 5.13 in	Distribution	= Huff-1st
Storm duration	= 6.00 hrs	Shape factor	= 484

* Composite (Area/CN) = $[(0.020 \times 79) + (0.190 \times 98)] / 0.210$



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

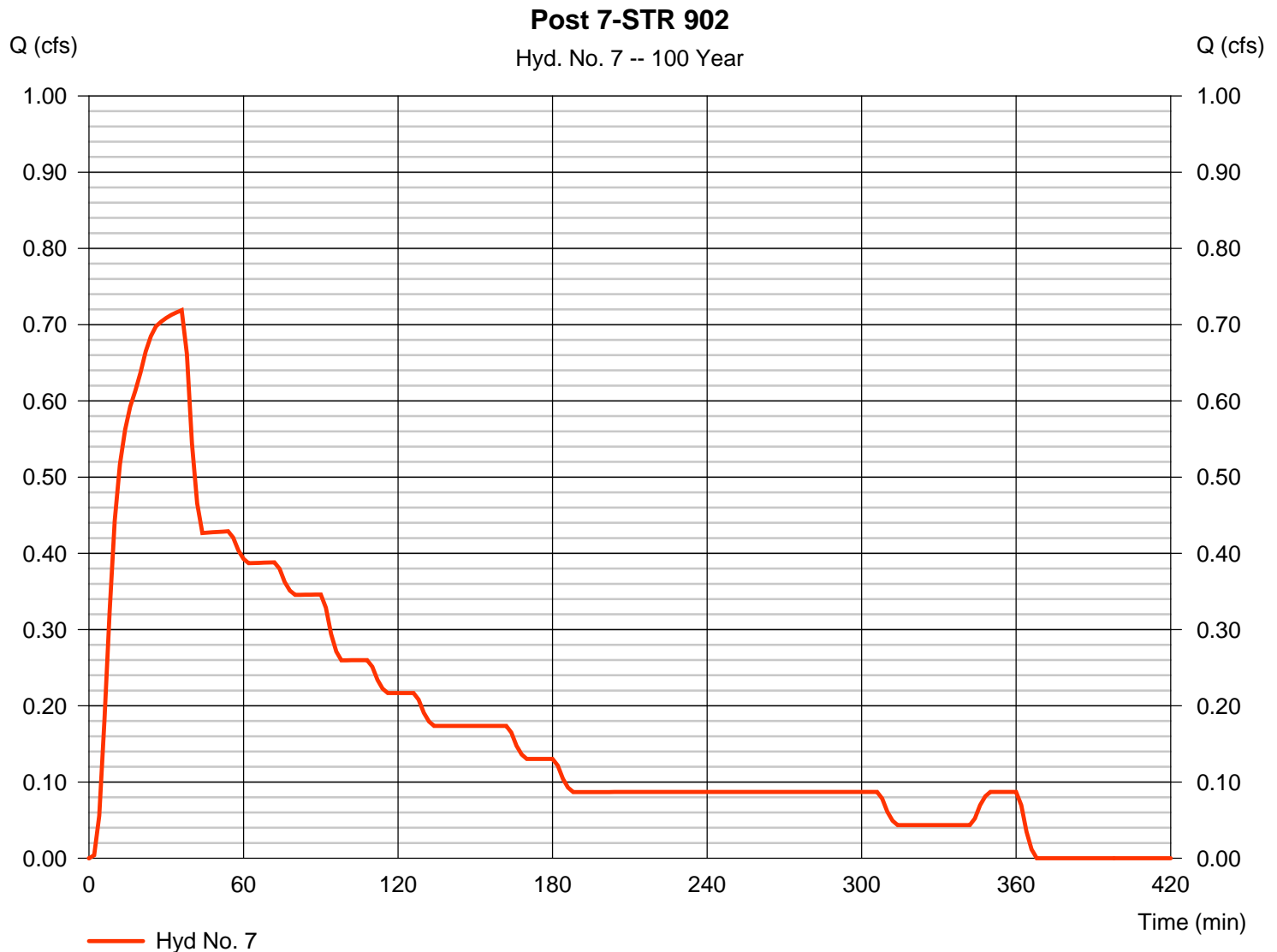
Wednesday, 07 / 11 / 2018

Hyd. No. 7

Post 7-STR 902

Hydrograph type	= SCS Runoff	Peak discharge	= 0.719 cfs
Storm frequency	= 100 yrs	Time to peak	= 36 min
Time interval	= 2 min	Hyd. volume	= 4,389 cuft
Drainage area	= 0.270 ac	Curve number	= 97*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 5.13 in	Distribution	= Huff-1st
Storm duration	= 6.00 hrs	Shape factor	= 484

* Composite (Area/CN) = $[(0.020 \times 79) + (0.250 \times 98)] / 0.270$



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

Wednesday, 07 / 11 / 2018

Hyd. No. 8

Post 8-STR 901

Hydrograph type	= SCS Runoff	Peak discharge	= 0.772 cfs
Storm frequency	= 100 yrs	Time to peak	= 36 min
Time interval	= 2 min	Hyd. volume	= 4,714 cuft
Drainage area	= 0.290 ac	Curve number	= 97*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 5.13 in	Distribution	= Huff-1st
Storm duration	= 6.00 hrs	Shape factor	= 484

* Composite (Area/CN) = $[(0.020 \times 79) + (0.270 \times 98)] / 0.290$



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

Wednesday, 07 / 11 / 2018

Hyd. No. 9

Post 9-STR 900

Hydrograph type	= SCS Runoff	Peak discharge	= 0.548 cfs
Storm frequency	= 100 yrs	Time to peak	= 36 min
Time interval	= 2 min	Hyd. volume	= 3,332 cuft
Drainage area	= 0.210 ac	Curve number	= 96*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 5.13 in	Distribution	= Huff-1st
Storm duration	= 6.00 hrs	Shape factor	= 484

* Composite (Area/CN) = $[(0.020 \times 79) + (0.190 \times 98)] / 0.210$



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

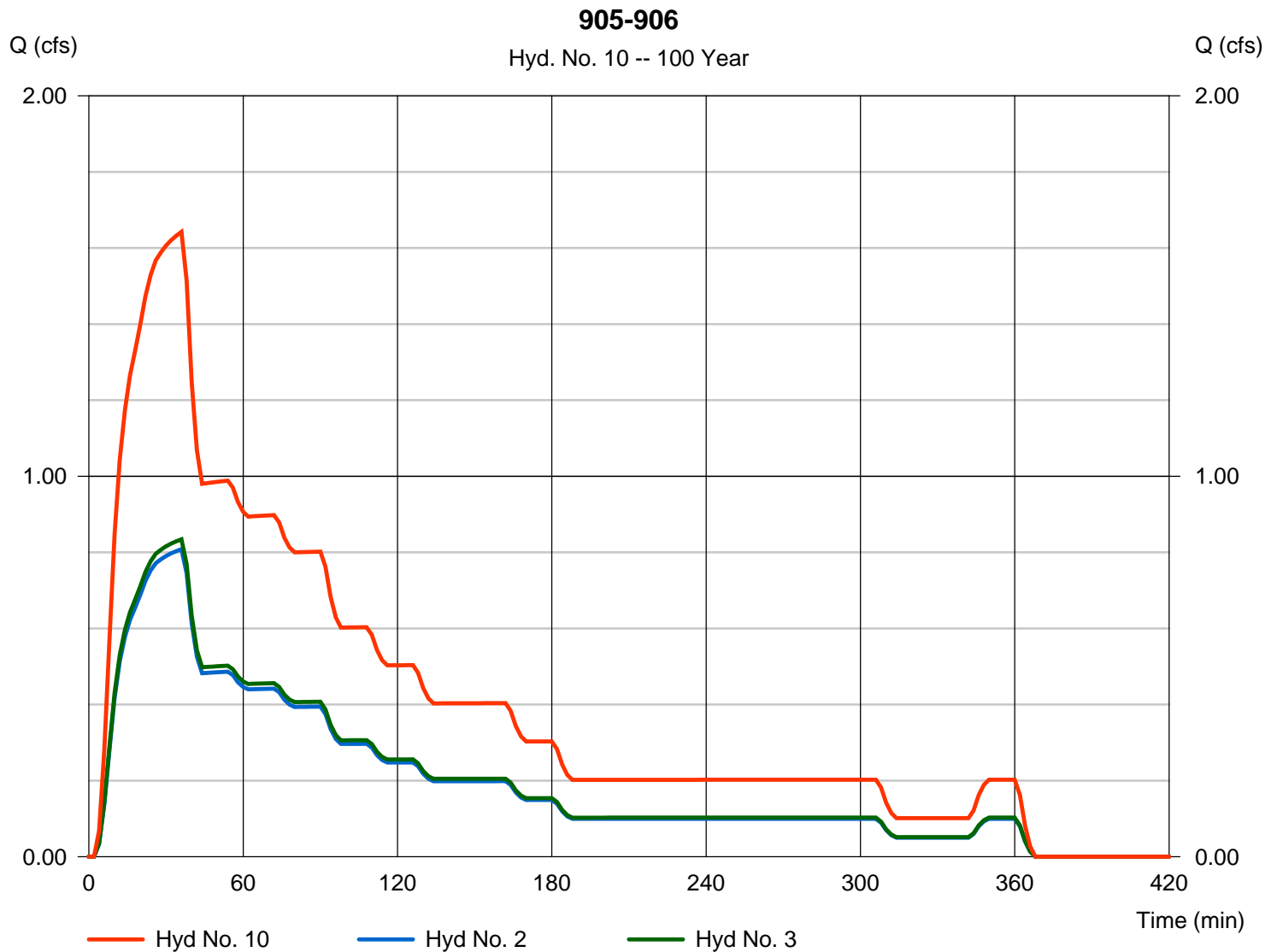
Wednesday, 07 / 11 / 2018

Hyd. No. 10

905-906

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

Peak discharge = 1.643 cfs
 Time to peak = 36 min
 Hyd. volume = 9,995 cuft
 Contrib. drain. area = 0.630 ac



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

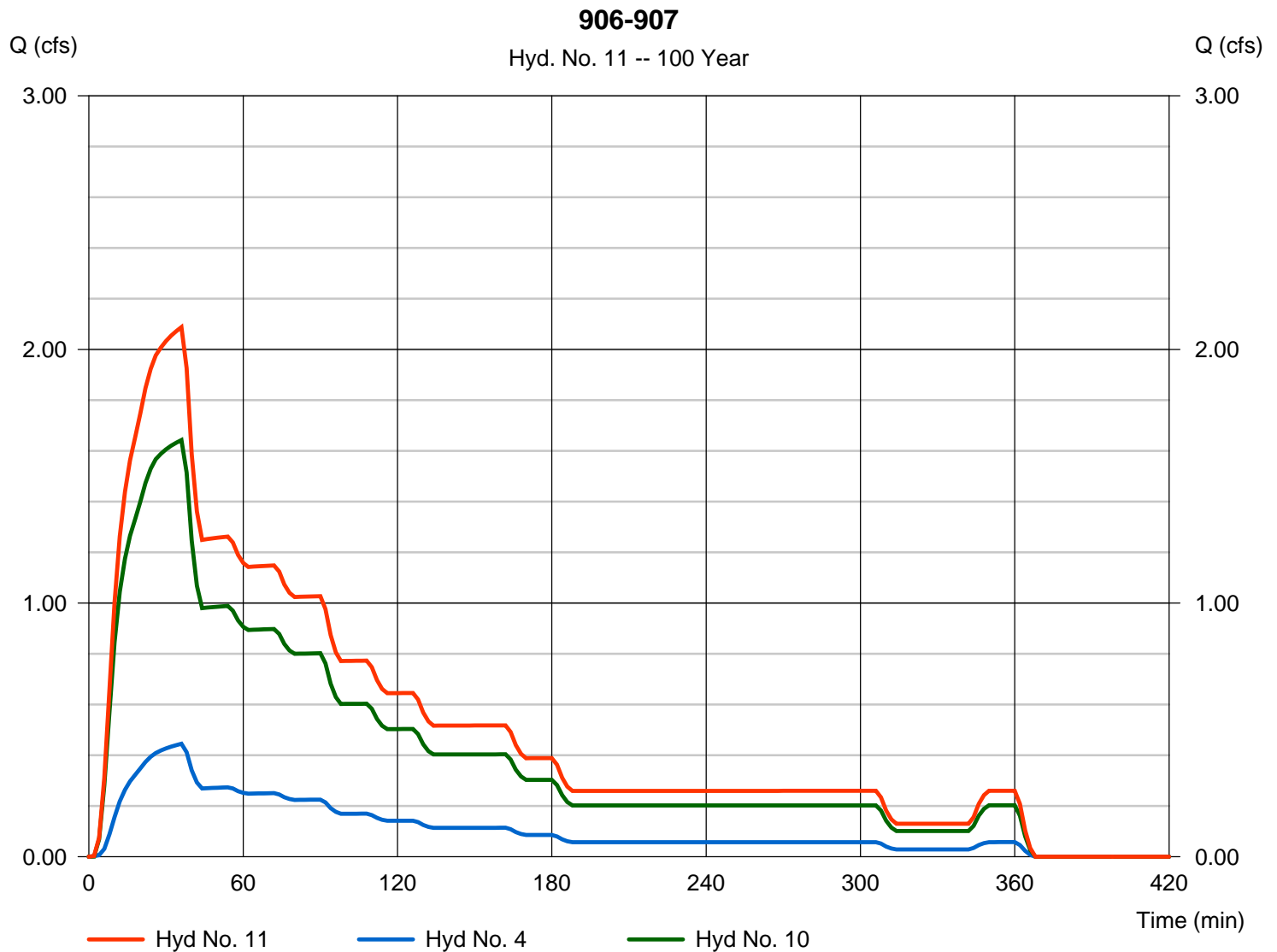
Wednesday, 07 / 11 / 2018

Hyd. No. 11

906-907

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

Peak discharge = 2.088 cfs
 Time to peak = 36 min
 Hyd. volume = 12,712 cuft
 Contrib. drain. area = 0.180 ac



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

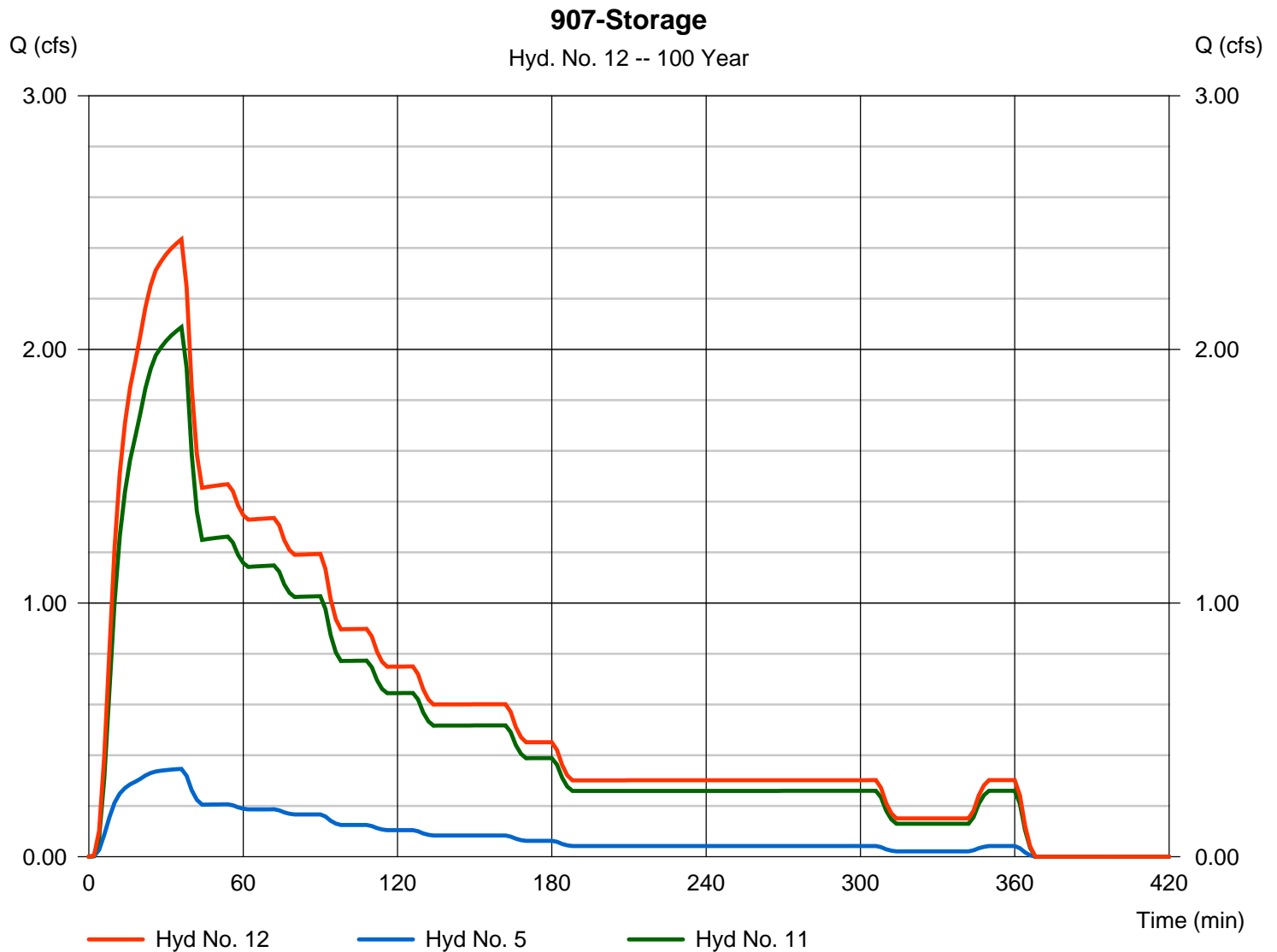
Wednesday, 07 / 11 / 2018

Hyd. No. 12

907-Storage

Hydrograph type = Combine
 Storm frequency = 100 yrs
 Time interval = 2 min
 Inflow hyds. = 5, 11

Peak discharge = 2.434 cfs
 Time to peak = 36 min
 Hyd. volume = 14,825 cuft
 Contrib. drain. area = 0.130 ac



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

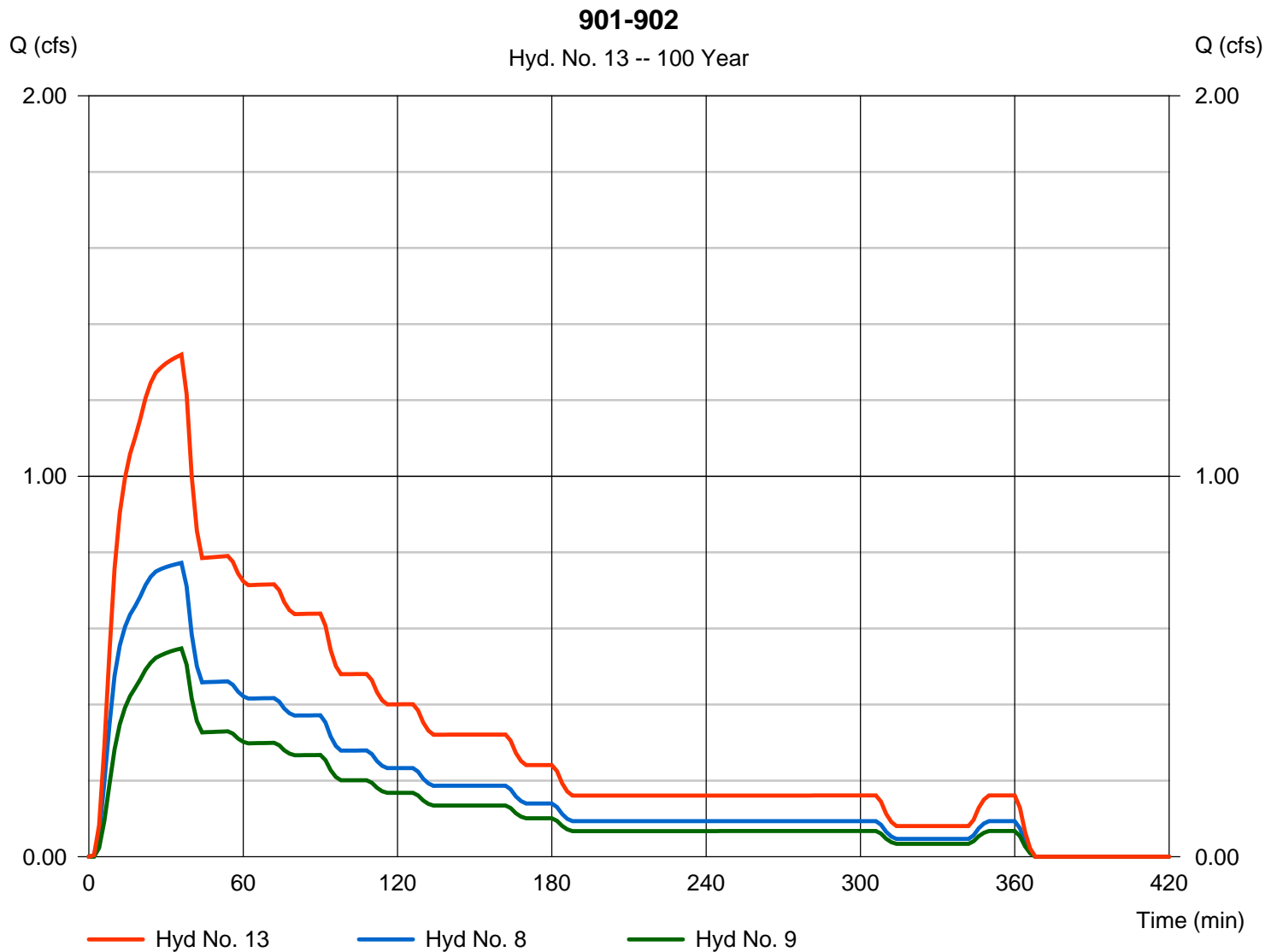
Wednesday, 07 / 11 / 2018

Hyd. No. 13

901-902

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

Peak discharge = 1.320 cfs
 Time to peak = 36 min
 Hyd. volume = 8,046 cuft
 Contrib. drain. area = 0.500 ac



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

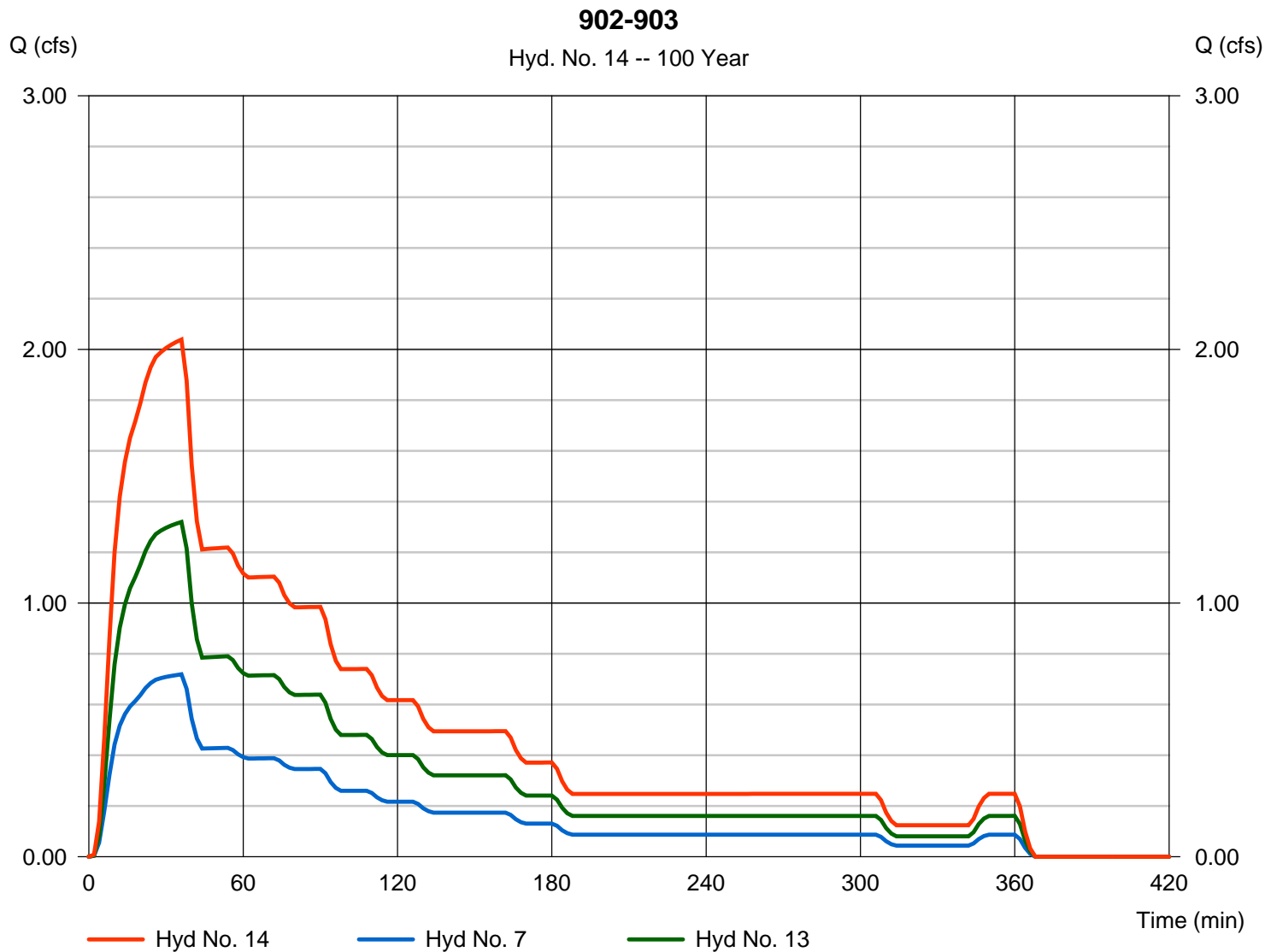
Wednesday, 07 / 11 / 2018

Hyd. No. 14

902-903

Hydrograph type = Combine
 Storm frequency = 100 yrs
 Time interval = 2 min
 Inflow hyds. = 7, 13

Peak discharge = 2.039 cfs
 Time to peak = 36 min
 Hyd. volume = 12,435 cuft
 Contrib. drain. area = 0.270 ac



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

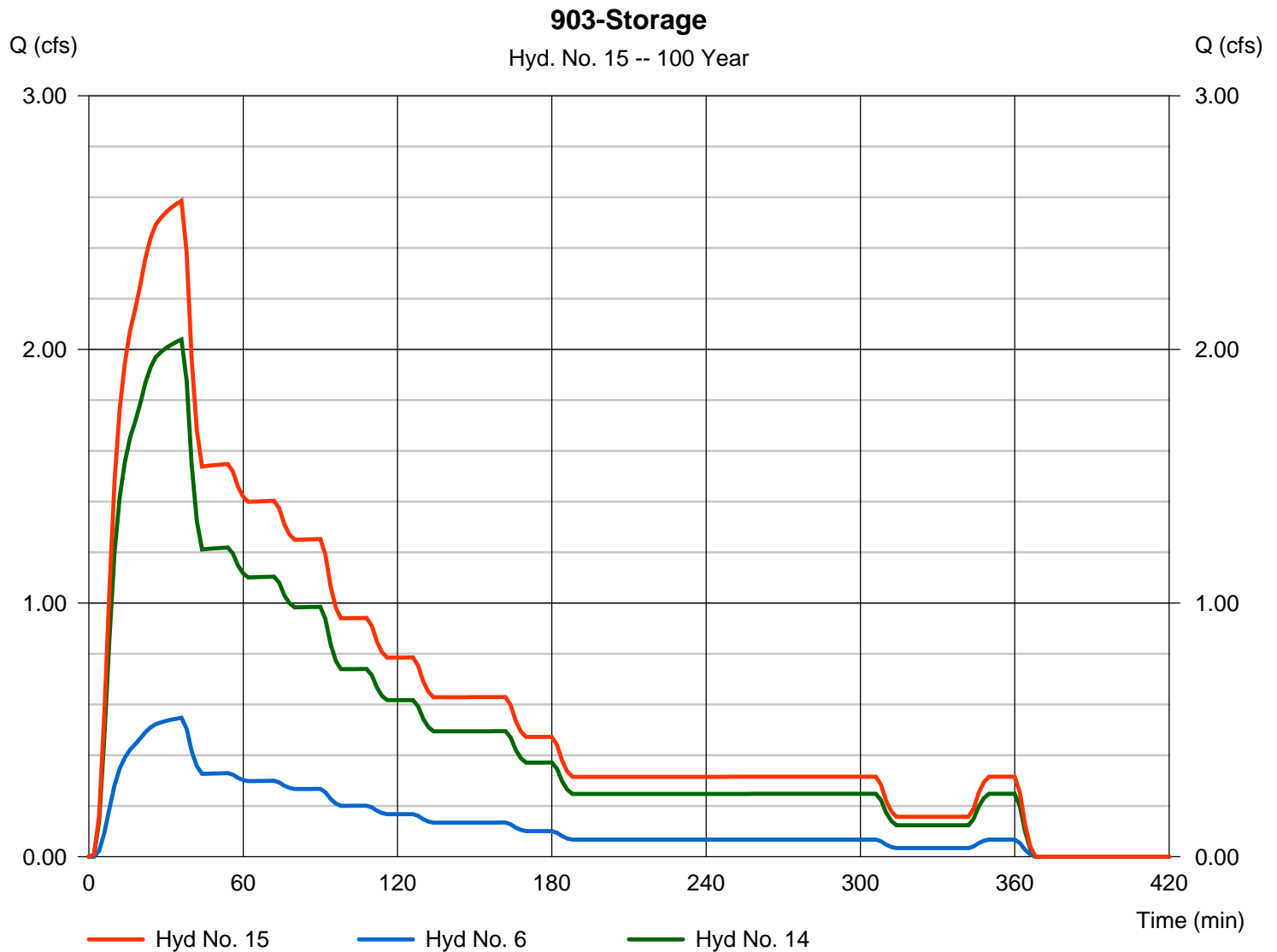
Wednesday, 07 / 11 / 2018

Hyd. No. 15

903-Storage

Hydrograph type = Combine
 Storm frequency = 100 yrs
 Time interval = 2 min
 Inflow hyds. = 6, 14

Peak discharge = 2.586 cfs
 Time to peak = 36 min
 Hyd. volume = 15,766 cuft
 Contrib. drain. area = 0.210 ac



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

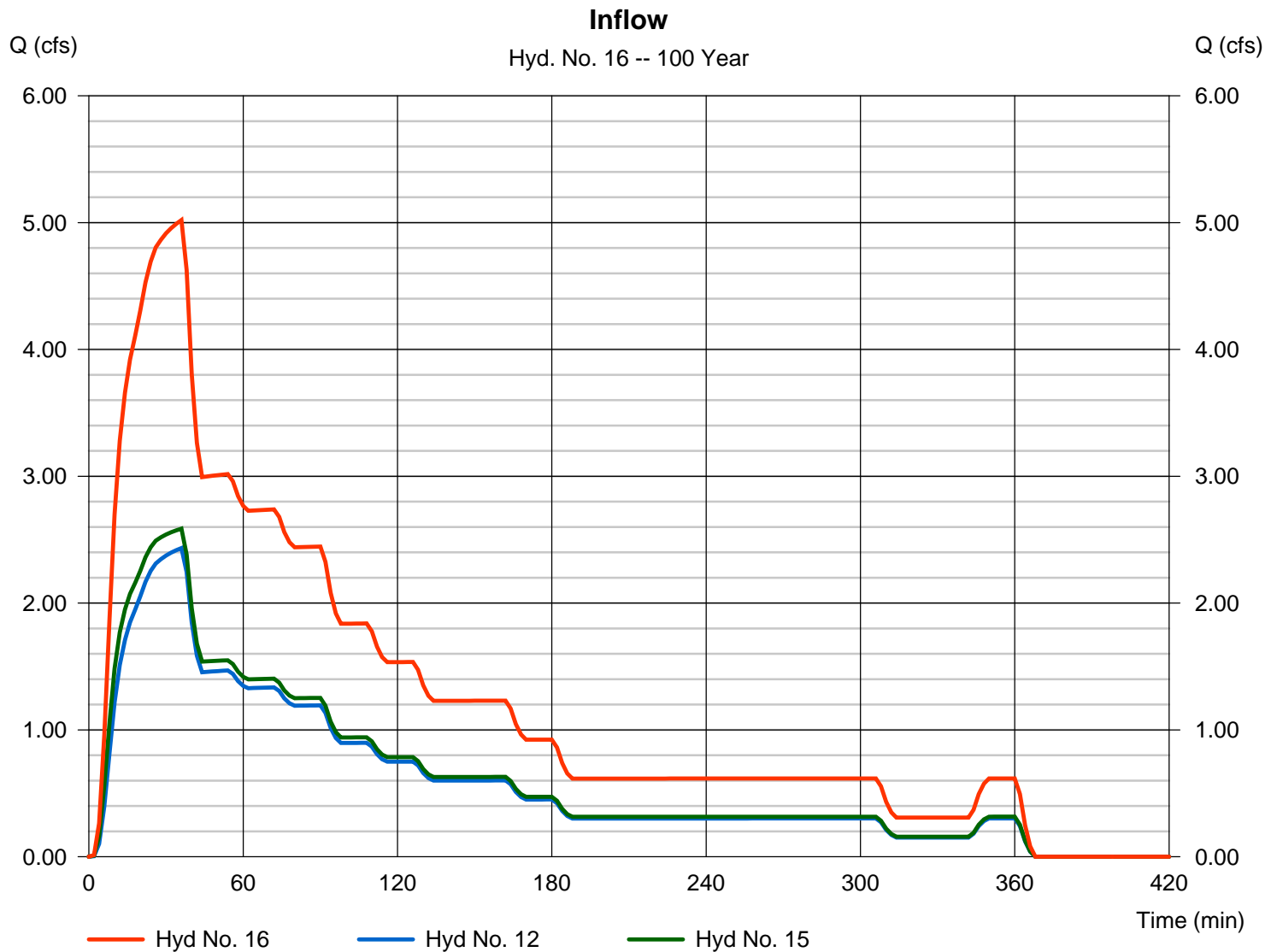
Wednesday, 07 / 11 / 2018

Hyd. No. 16

Inflow

Hydrograph type = Combine
 Storm frequency = 100 yrs
 Time interval = 2 min
 Inflow hyds. = 12, 15

Peak discharge = 5.020 cfs
 Time to peak = 36 min
 Hyd. volume = 30,592 cuft
 Contrib. drain. area = 0.000 ac



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

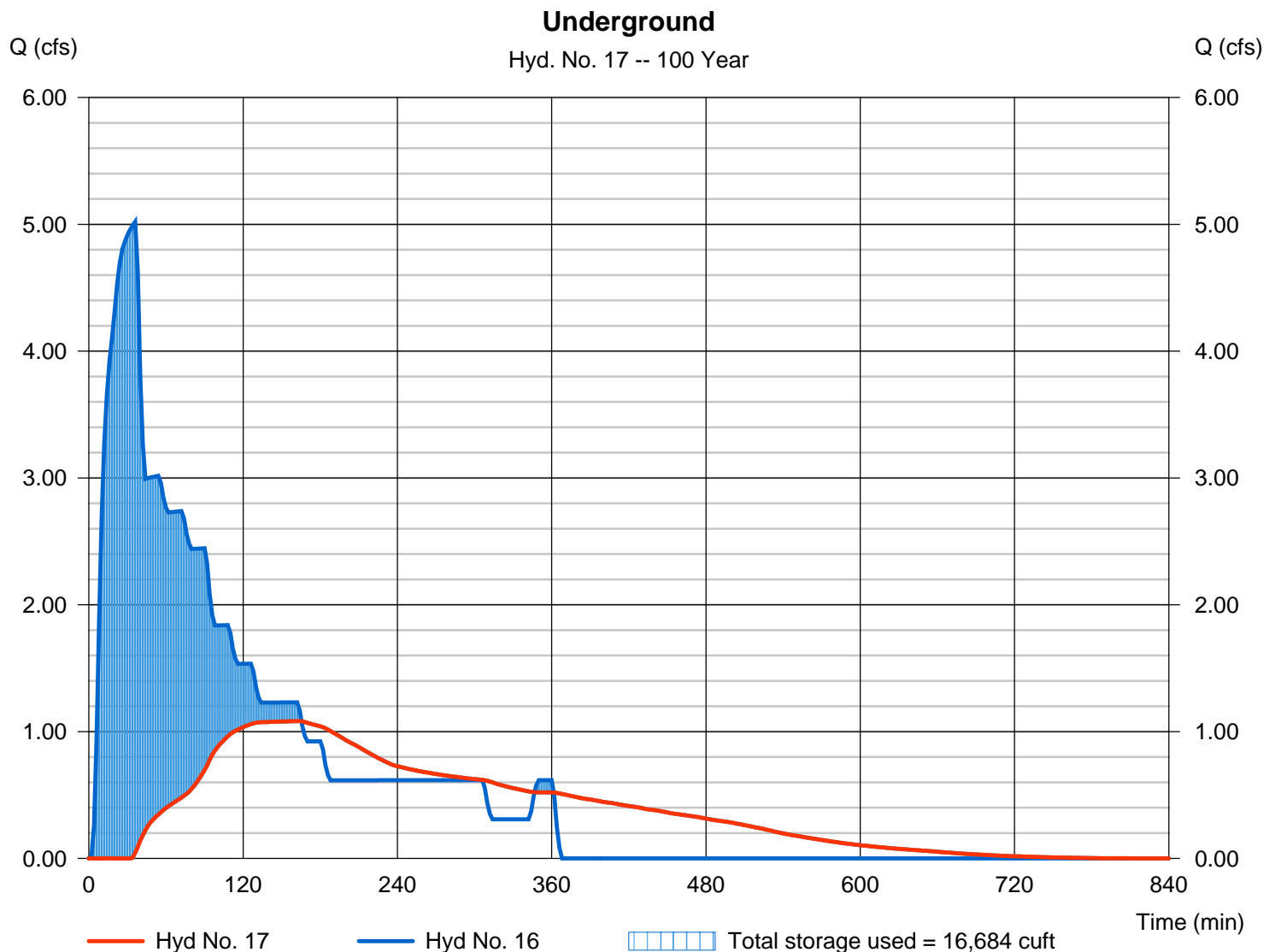
Wednesday, 07 / 11 / 2018

Hyd. No. 17

Underground

Hydrograph type	= Reservoir	Peak discharge	= 1.083 cfs
Storm frequency	= 100 yrs	Time to peak	= 162 min
Time interval	= 2 min	Hyd. volume	= 19,276 cuft
Inflow hyd. No.	= 16 - Inflow	Max. Elevation	= 741.12 ft
Reservoir name	= Underground Storage	Max. Storage	= 16,684 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Appendix I

*Hydraflow Hydrographs
12 Hour Storm Data*

Hydrograph Report

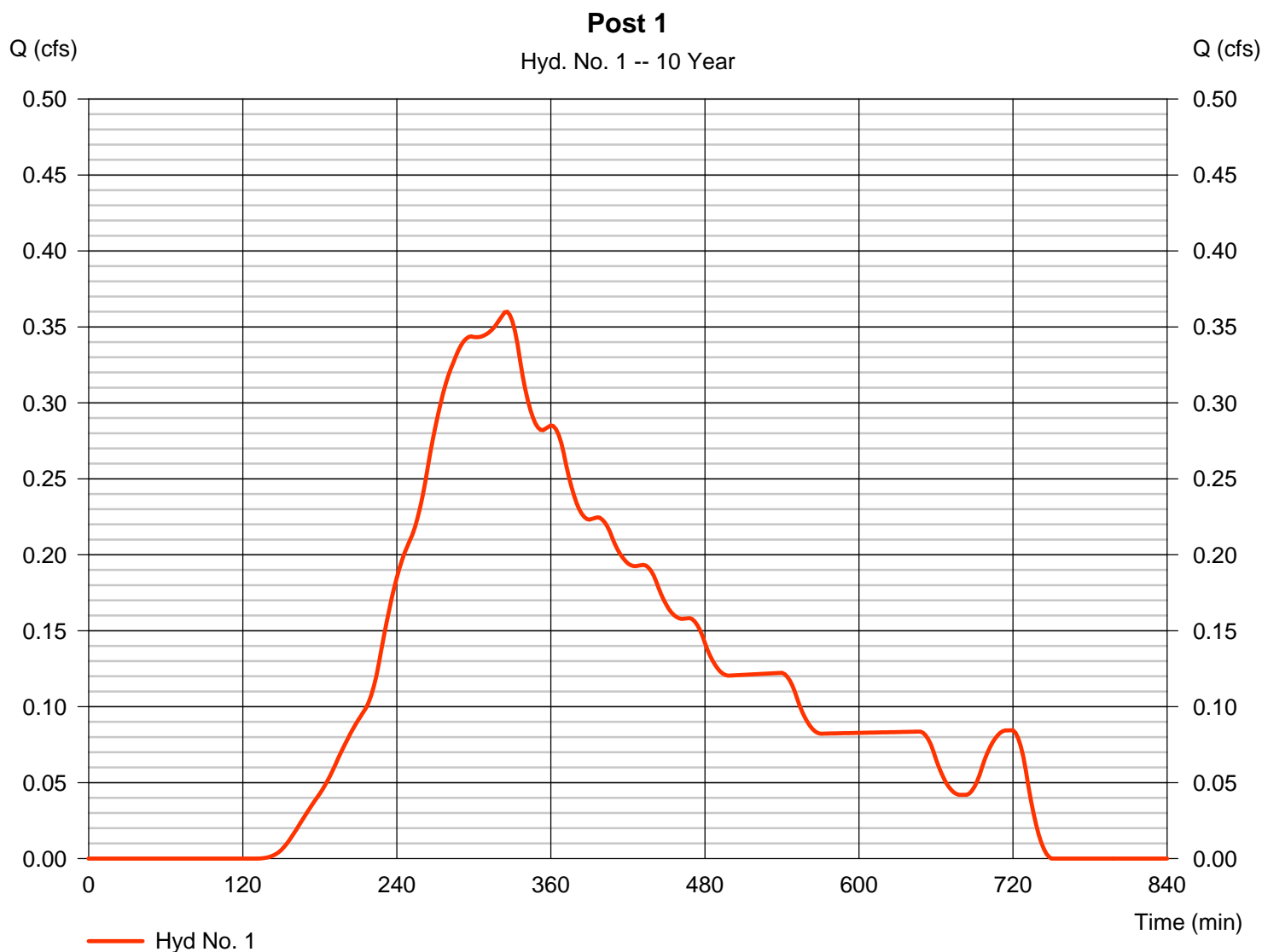
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

Wednesday, 07 / 11 / 2018

Hyd. No. 1

Post 1

Hydrograph type	= SCS Runoff	Peak discharge	= 0.360 cfs
Storm frequency	= 10 yrs	Time to peak	= 326 min
Time interval	= 2 min	Hyd. volume	= 5,378 cuft
Drainage area	= 0.860 ac	Curve number	= 79
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 18.20 min
Total precip.	= 3.70 in	Distribution	= Huff-2nd
Storm duration	= 12.00 hrs	Shape factor	= 484



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

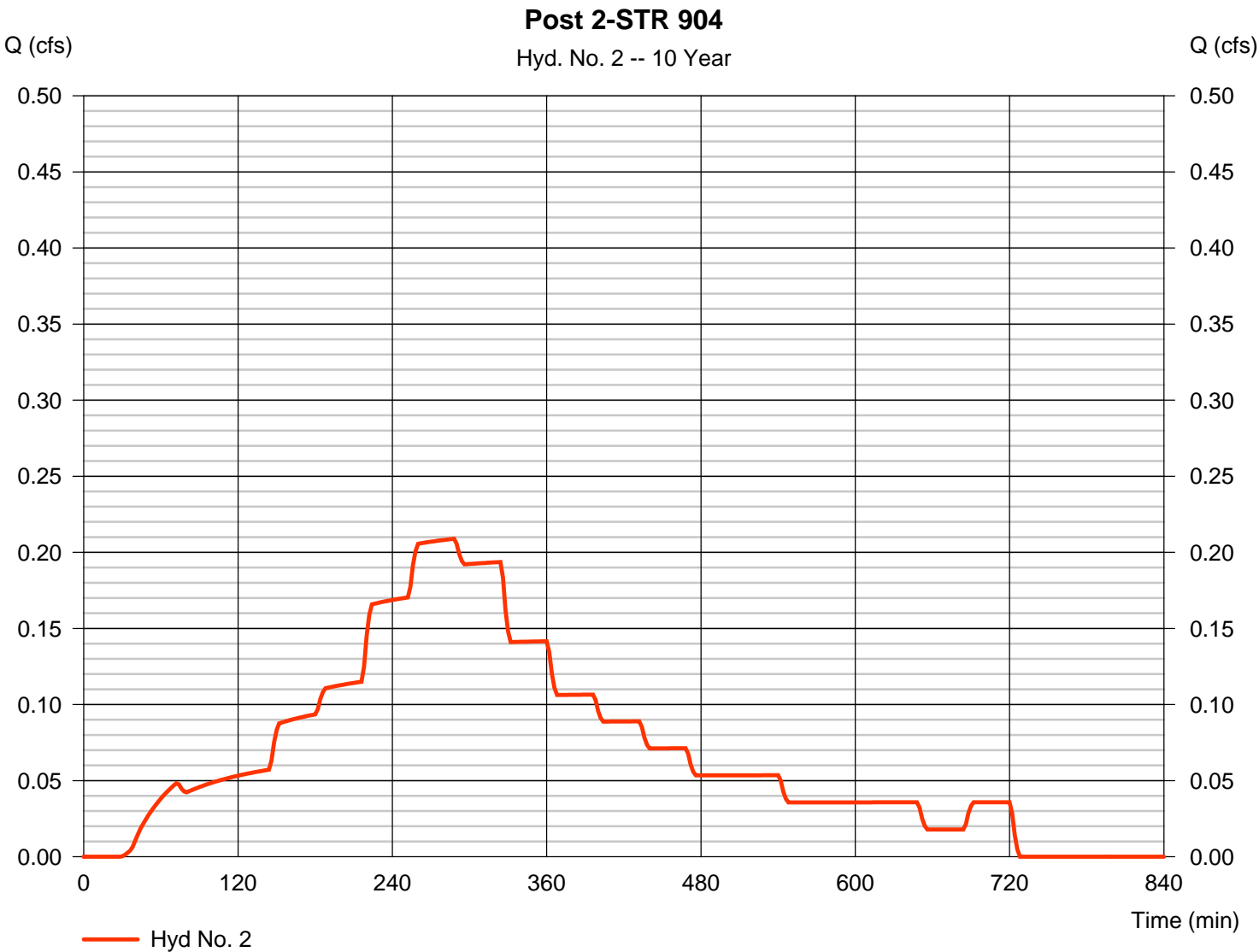
Wednesday, 07 / 11 / 2018

Hyd. No. 2

Post 2-STR 904

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.209 cfs
Storm frequency	=	10 yrs	Time to peak	=	288 min
Time interval	=	2 min	Hyd. volume	=	3,421 cuft
Drainage area	=	0.310 ac	Curve number	=	96*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	3.70 in	Distribution	=	Huff-2nd
Storm duration	=	12.00 hrs	Shape factor	=	484

* Composite (Area/CN) = [(0.030 x 79) + (0.280 x 98)] / 0.310



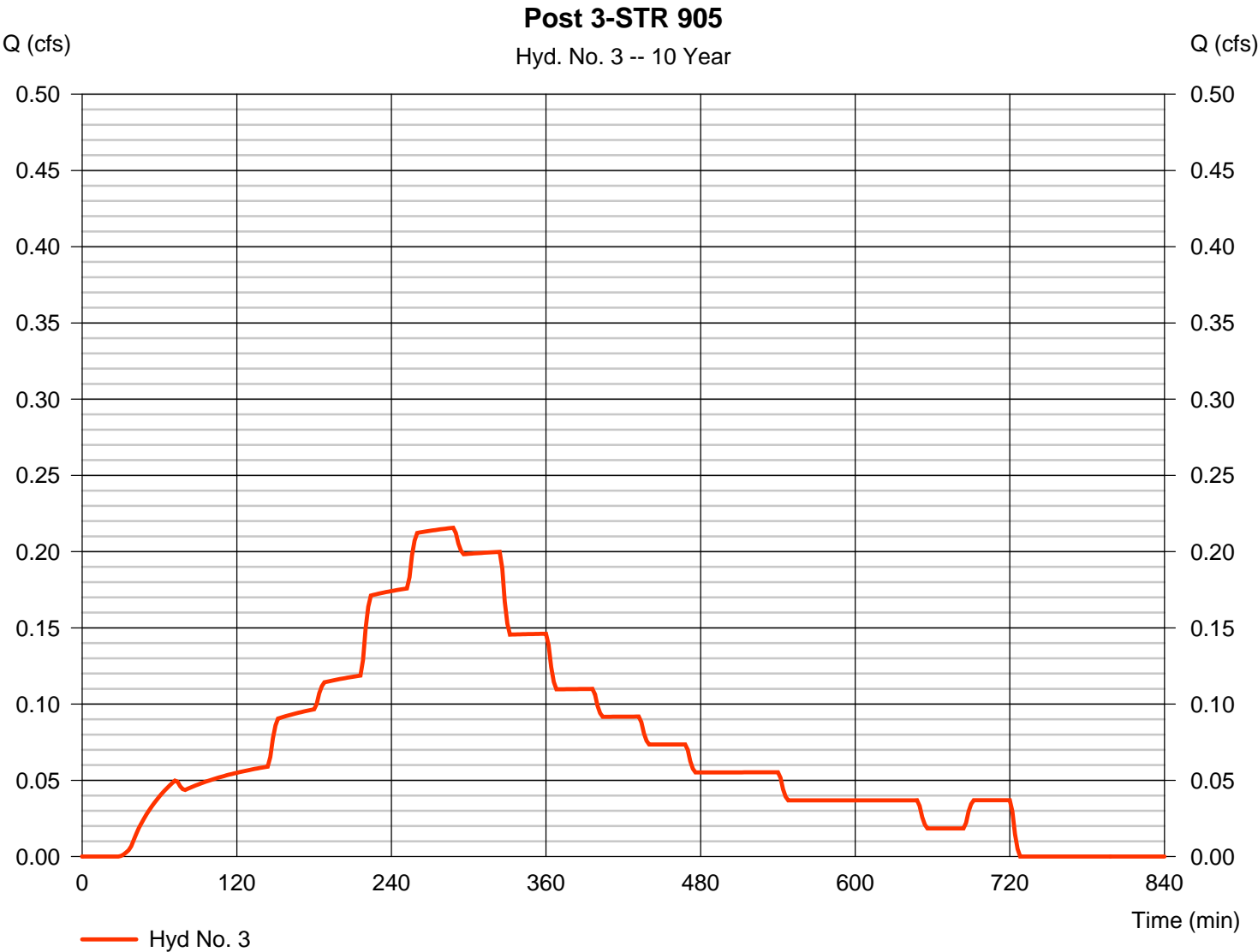
Hydrograph Report

Hyd. No. 3

Post 3-STR 905

Hydrograph type	= SCS Runoff	Peak discharge	= 0.216 cfs
Storm frequency	= 10 yrs	Time to peak	= 288 min
Time interval	= 2 min	Hyd. volume	= 3,532 cuft
Drainage area	= 0.320 ac	Curve number	= 96*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.70 in	Distribution	= Huff-2nd
Storm duration	= 12.00 hrs	Shape factor	= 484

* Composite (Area/CN) = [(0.030 x 79) + (0.290 x 98)] / 0.320



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

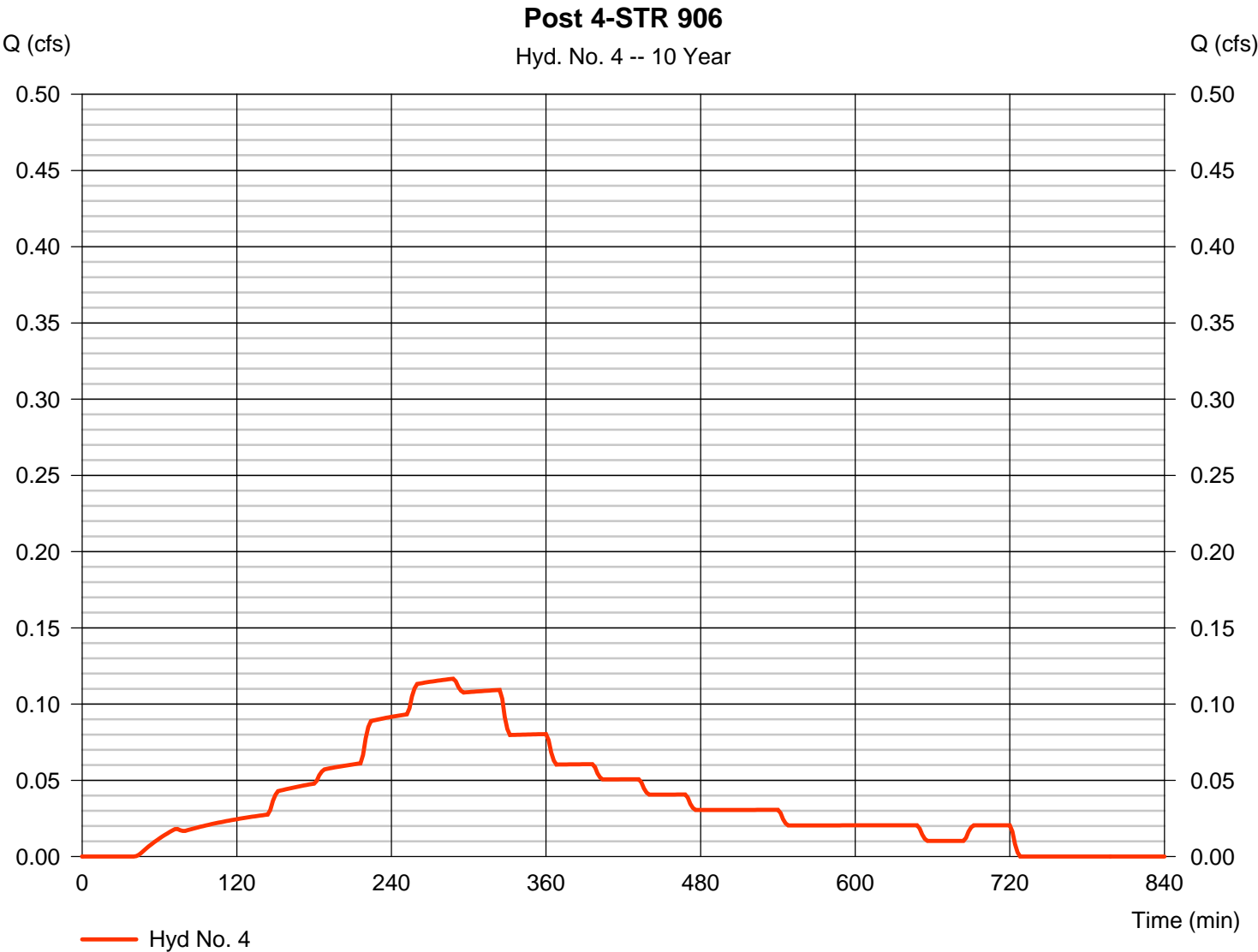
Wednesday, 07 / 11 / 2018

Hyd. No. 4

Post 4-STR 906

Hydrograph type	= SCS Runoff	Peak discharge	= 0.117 cfs
Storm frequency	= 10 yrs	Time to peak	= 288 min
Time interval	= 2 min	Hyd. volume	= 1,857 cuft
Drainage area	= 0.180 ac	Curve number	= 94*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.70 in	Distribution	= Huff-2nd
Storm duration	= 12.00 hrs	Shape factor	= 484

* Composite (Area/CN) = [(0.040 x 79) + (0.140 x 98)] / 0.180



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

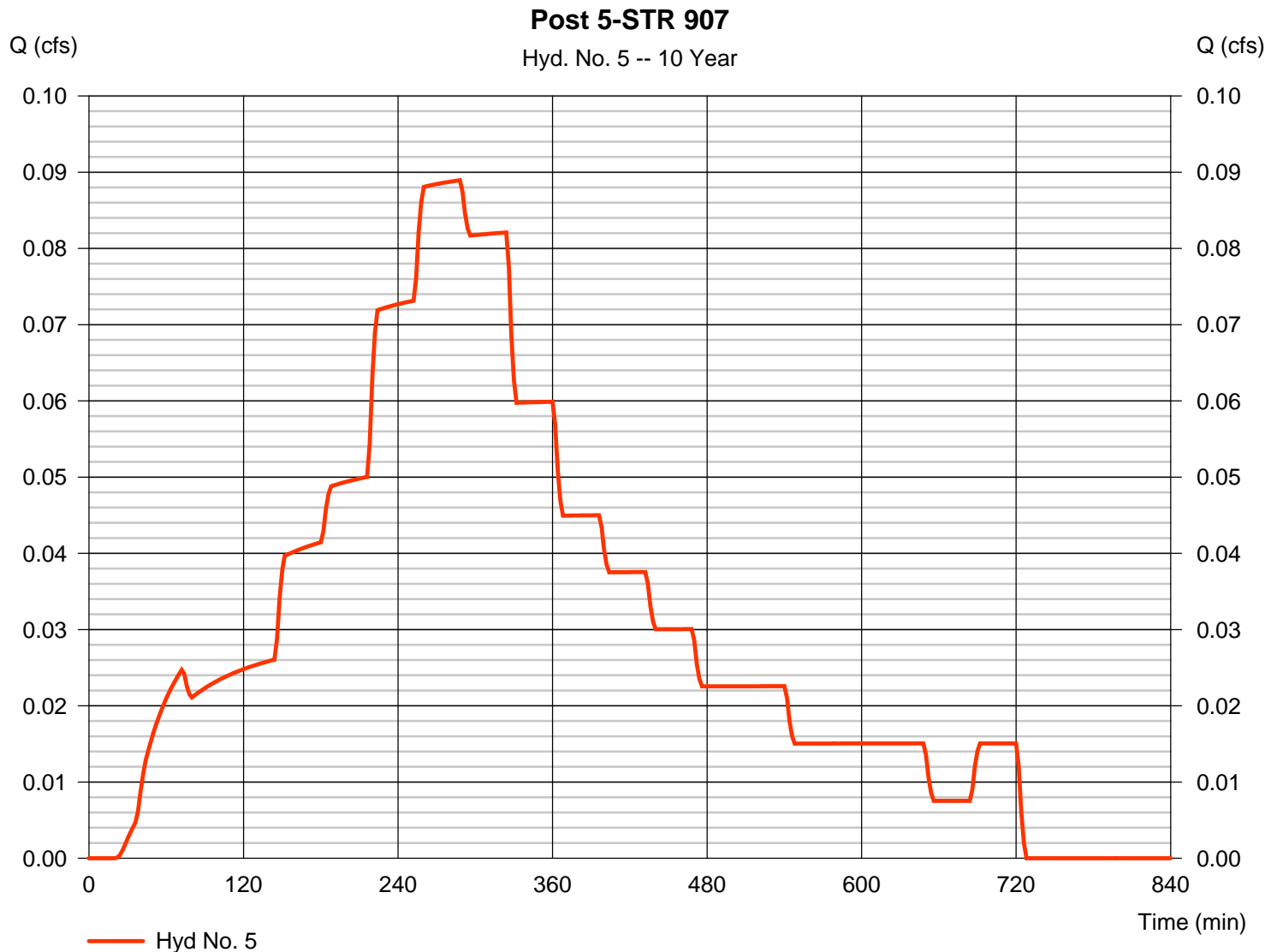
Wednesday, 07 / 11 / 2018

Hyd. No. 5

Post 5-STR 907

Hydrograph type	= SCS Runoff	Peak discharge	= 0.089 cfs
Storm frequency	= 10 yrs	Time to peak	= 288 min
Time interval	= 2 min	Hyd. volume	= 1,483 cuft
Drainage area	= 0.130 ac	Curve number	= 97*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.70 in	Distribution	= Huff-2nd
Storm duration	= 12.00 hrs	Shape factor	= 484

* Composite (Area/CN) = $[(0.010 \times 79) + (0.120 \times 98)] / 0.130$



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

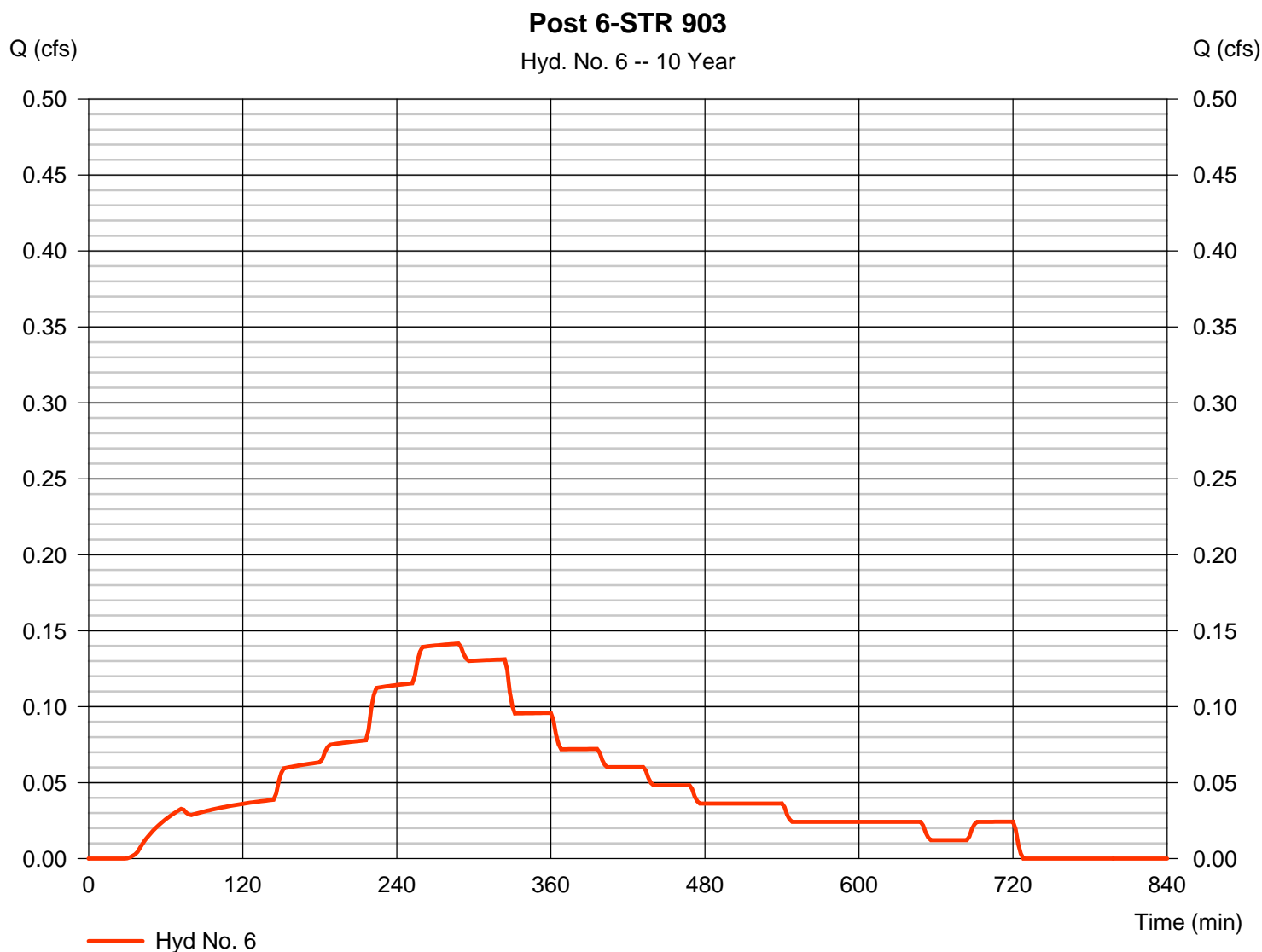
Wednesday, 07 / 11 / 2018

Hyd. No. 6

Post 6-STR 903

Hydrograph type	= SCS Runoff	Peak discharge	= 0.142 cfs
Storm frequency	= 10 yrs	Time to peak	= 288 min
Time interval	= 2 min	Hyd. volume	= 2,318 cuft
Drainage area	= 0.210 ac	Curve number	= 96*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.70 in	Distribution	= Huff-2nd
Storm duration	= 12.00 hrs	Shape factor	= 484

* Composite (Area/CN) = $[(0.020 \times 79) + (0.190 \times 98)] / 0.210$



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

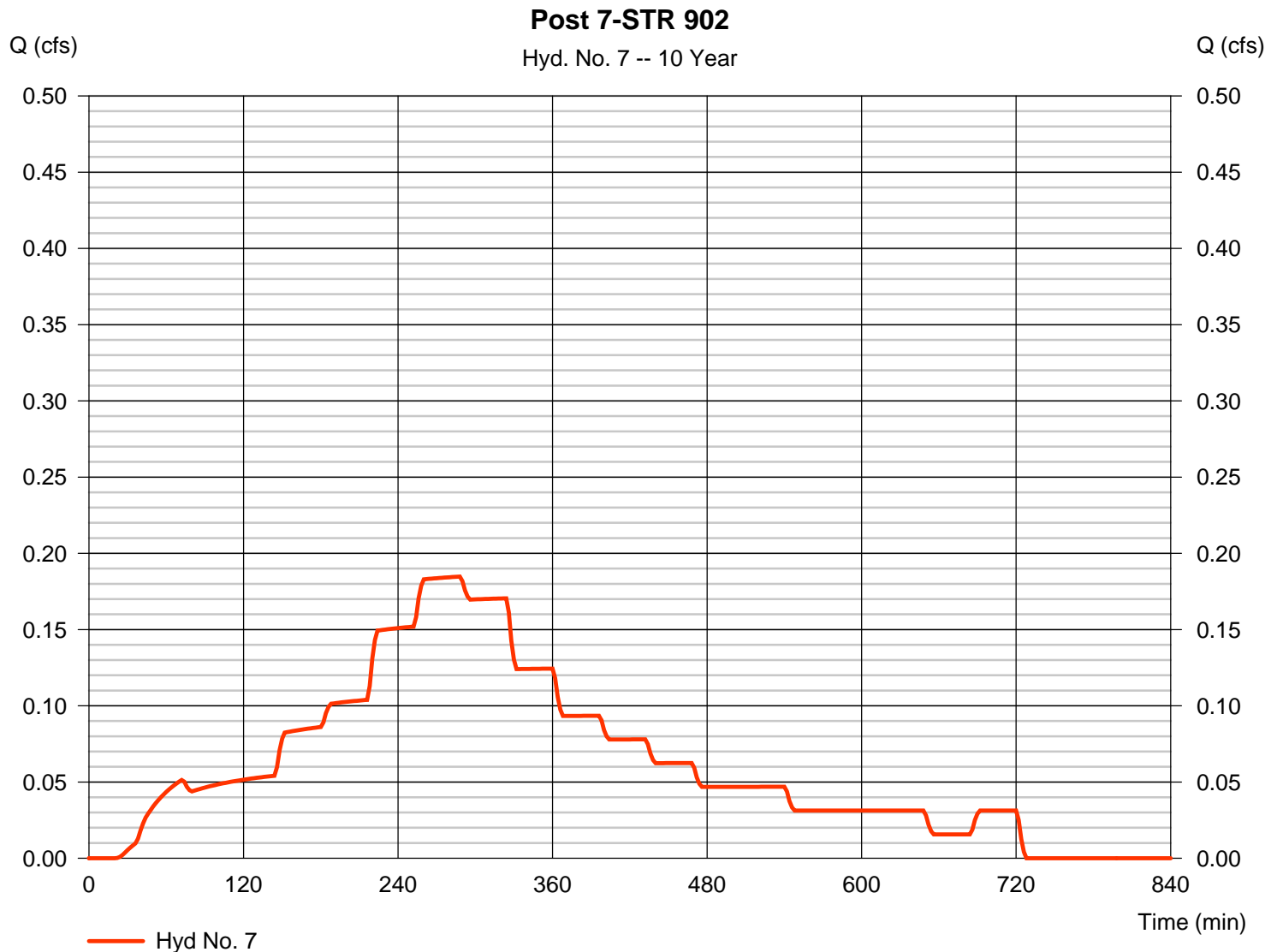
Wednesday, 07 / 11 / 2018

Hyd. No. 7

Post 7-STR 902

Hydrograph type	= SCS Runoff	Peak discharge	= 0.185 cfs
Storm frequency	= 10 yrs	Time to peak	= 288 min
Time interval	= 2 min	Hyd. volume	= 3,081 cuft
Drainage area	= 0.270 ac	Curve number	= 97*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.70 in	Distribution	= Huff-2nd
Storm duration	= 12.00 hrs	Shape factor	= 484

* Composite (Area/CN) = $[(0.020 \times 79) + (0.250 \times 98)] / 0.270$



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

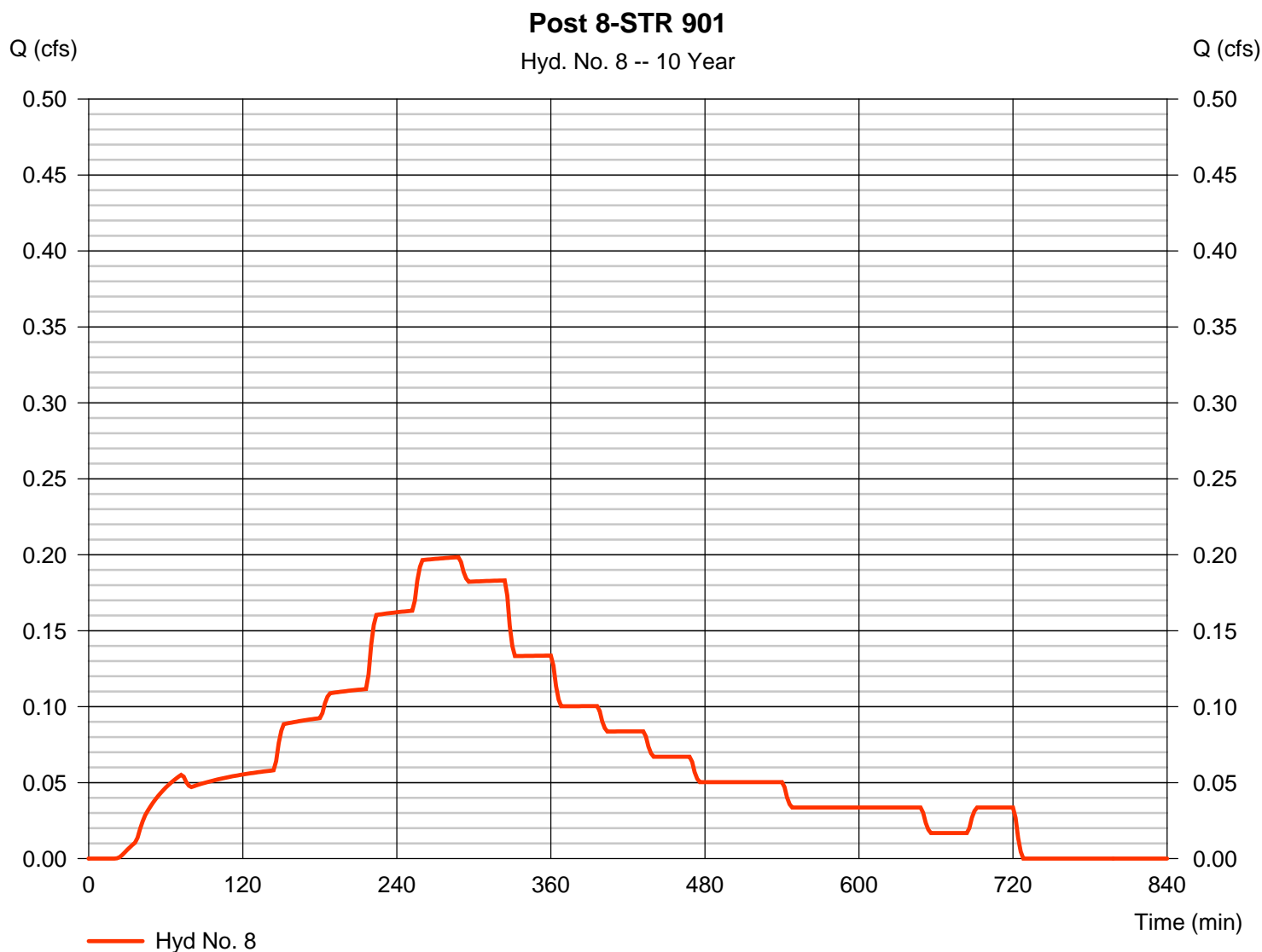
Wednesday, 07 / 11 / 2018

Hyd. No. 8

Post 8-STR 901

Hydrograph type	= SCS Runoff	Peak discharge	= 0.198 cfs
Storm frequency	= 10 yrs	Time to peak	= 288 min
Time interval	= 2 min	Hyd. volume	= 3,309 cuft
Drainage area	= 0.290 ac	Curve number	= 97*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.70 in	Distribution	= Huff-2nd
Storm duration	= 12.00 hrs	Shape factor	= 484

* Composite (Area/CN) = $[(0.020 \times 79) + (0.270 \times 98)] / 0.290$



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

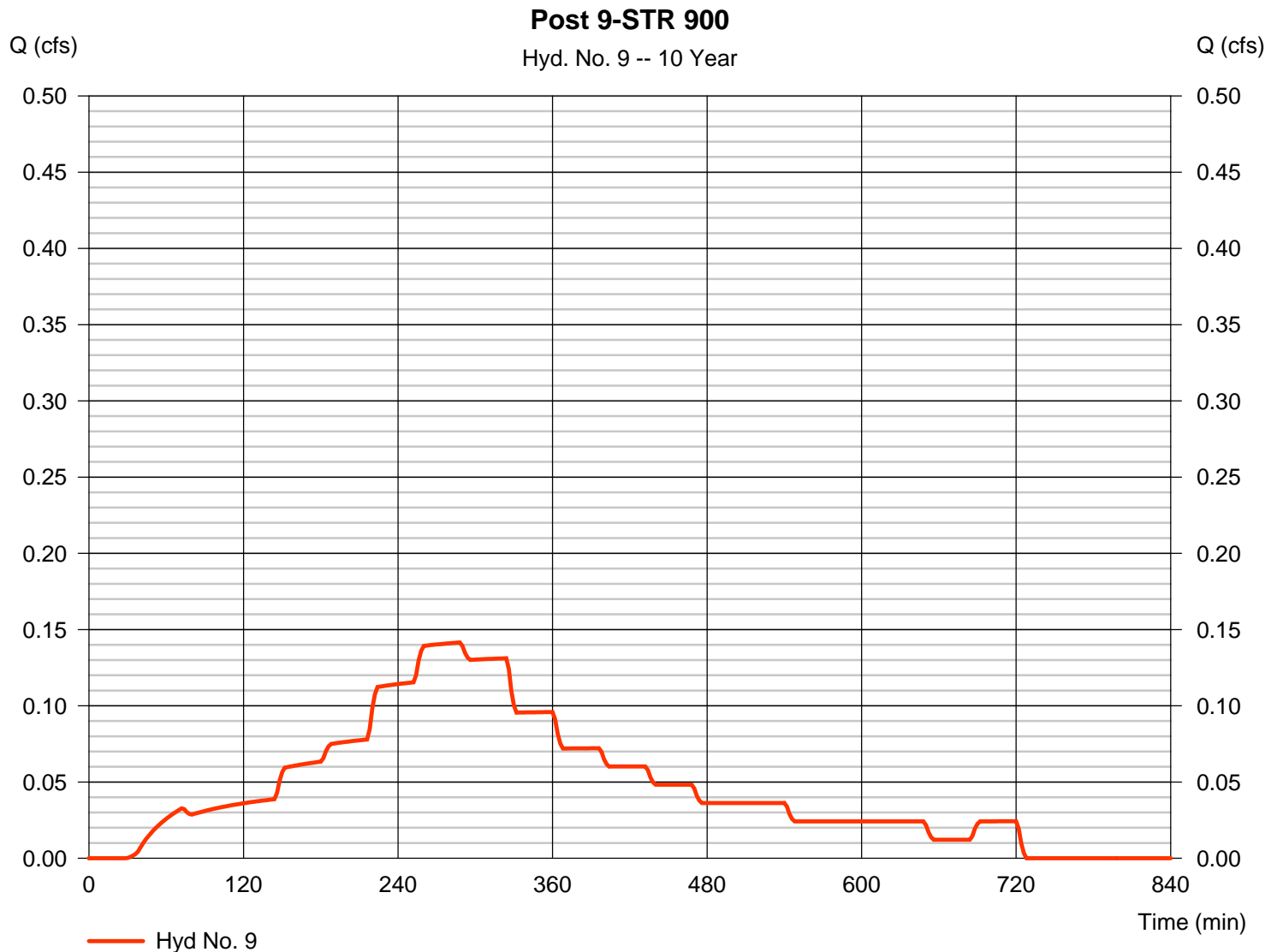
Wednesday, 07 / 11 / 2018

Hyd. No. 9

Post 9-STR 900

Hydrograph type	= SCS Runoff	Peak discharge	= 0.142 cfs
Storm frequency	= 10 yrs	Time to peak	= 288 min
Time interval	= 2 min	Hyd. volume	= 2,318 cuft
Drainage area	= 0.210 ac	Curve number	= 96*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.70 in	Distribution	= Huff-2nd
Storm duration	= 12.00 hrs	Shape factor	= 484

* Composite (Area/CN) = $[(0.020 \times 79) + (0.190 \times 98)] / 0.210$



Hydrograph Report

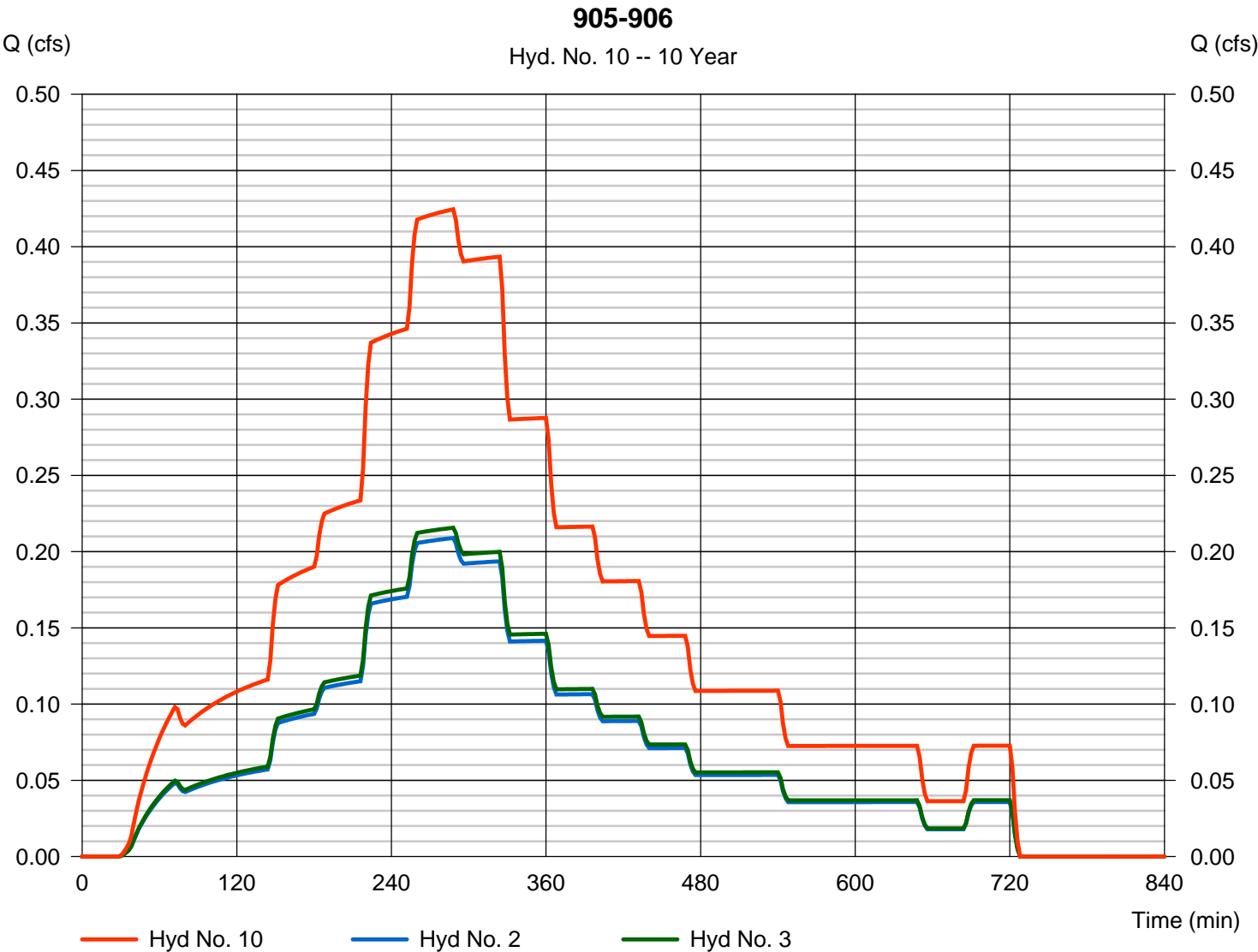
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

Wednesday, 07 / 11 / 2018

Hyd. No. 10

905-906

Hydrograph type	= Combine	Peak discharge	= 0.425 cfs
Storm frequency	= 10 yrs	Time to peak	= 288 min
Time interval	= 2 min	Hyd. volume	= 6,953 cuft
Inflow hyds.	= 2, 3	Contrib. drain. area	= 0.630 ac



Hydrograph Report

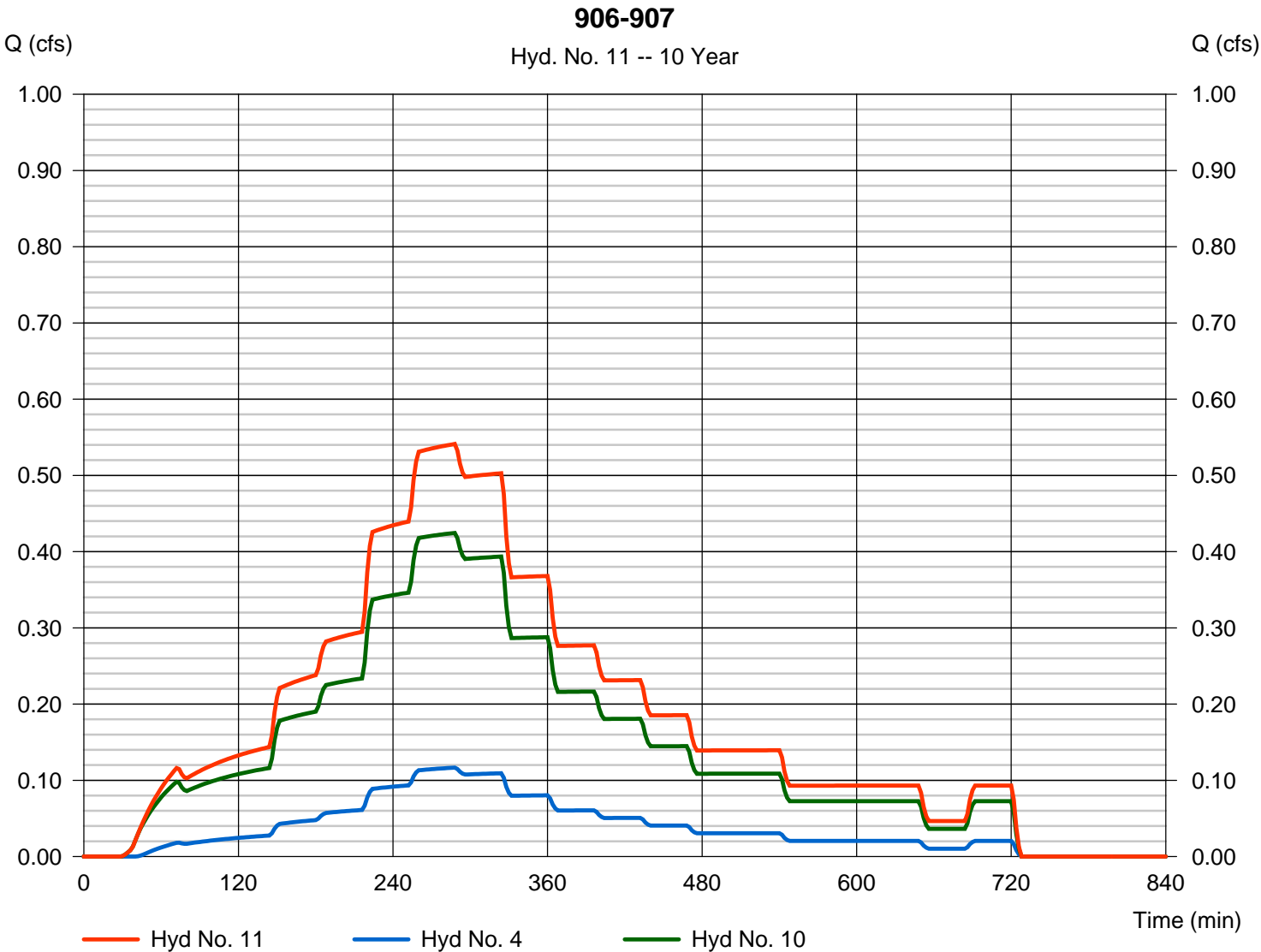
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

Wednesday, 07 / 11 / 2018

Hyd. No. 11

906-907

Hydrograph type	= Combine	Peak discharge	= 0.541 cfs
Storm frequency	= 10 yrs	Time to peak	= 288 min
Time interval	= 2 min	Hyd. volume	= 8,809 cuft
Inflow hyds.	= 4, 10	Contrib. drain. area	= 0.180 ac



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

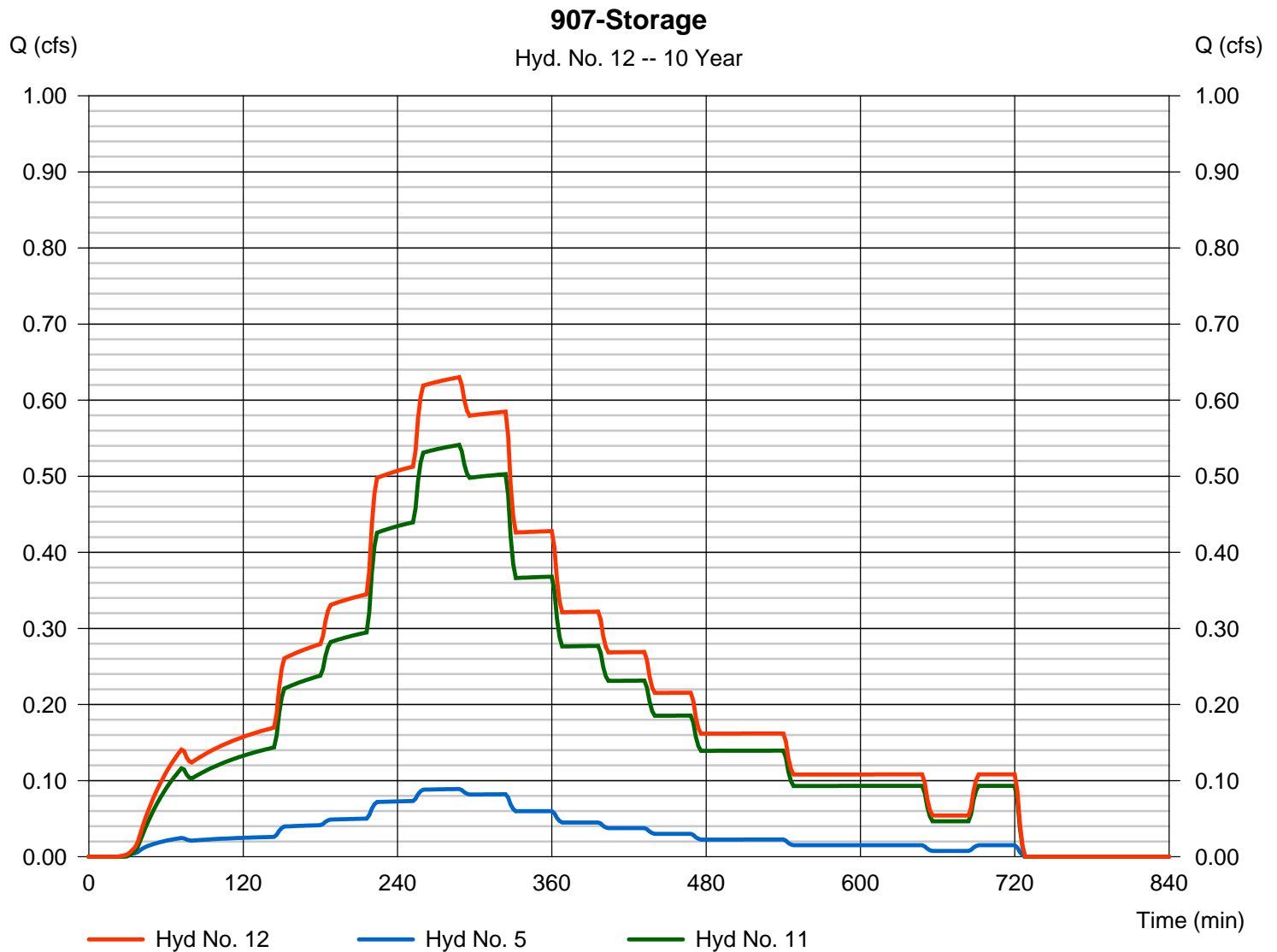
Wednesday, 07 / 11 / 2018

Hyd. No. 12

907-Storage

Hydrograph type = Combine
 Storm frequency = 10 yrs
 Time interval = 2 min
 Inflow hyds. = 5, 11

Peak discharge = 0.630 cfs
 Time to peak = 288 min
 Hyd. volume = 10,293 cuft
 Contrib. drain. area = 0.130 ac



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

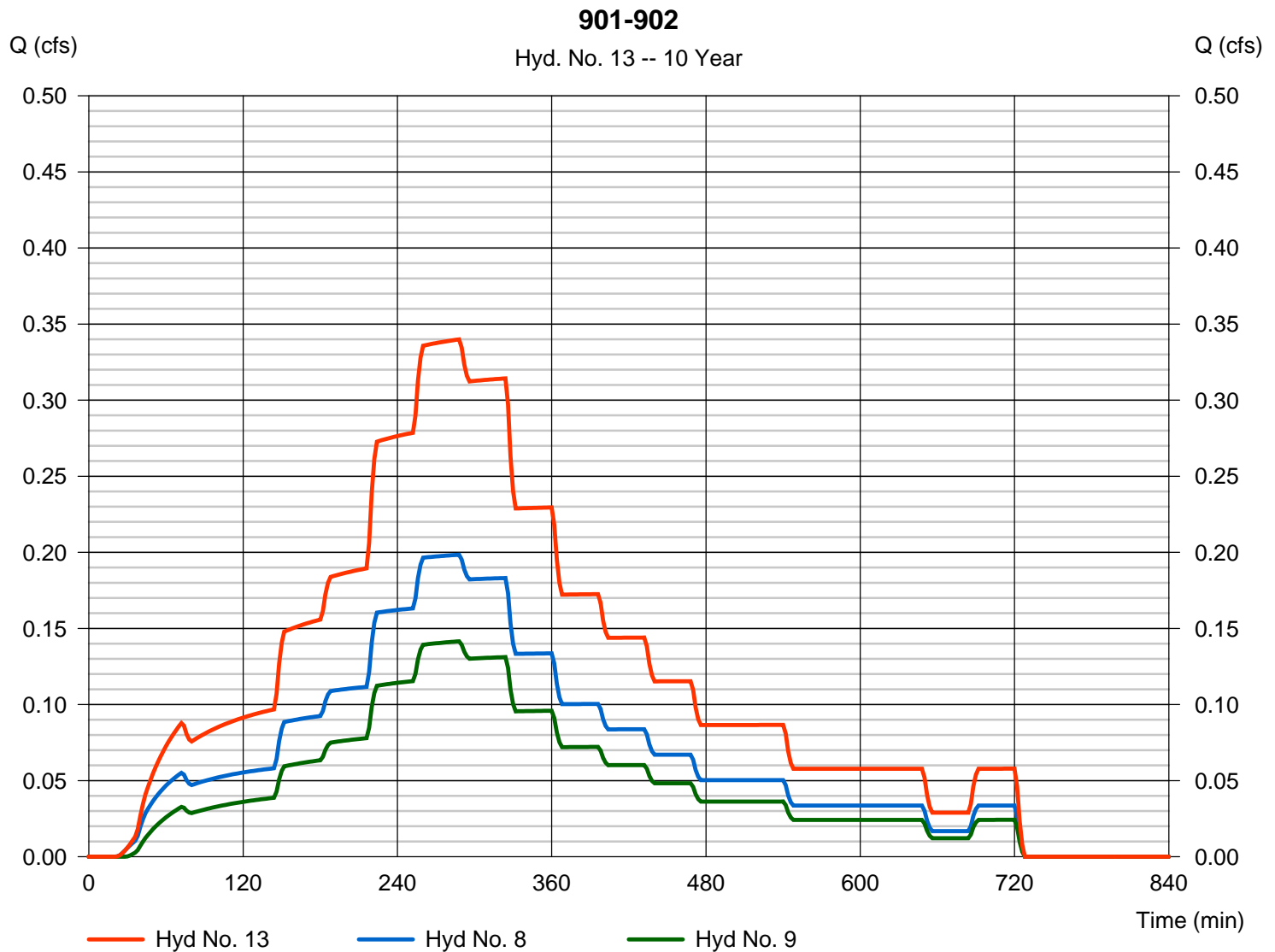
Wednesday, 07 / 11 / 2018

Hyd. No. 13

901-902

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

Peak discharge = 0.340 cfs
 Time to peak = 288 min
 Hyd. volume = 5,627 cuft
 Contrib. drain. area = 0.500 ac



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

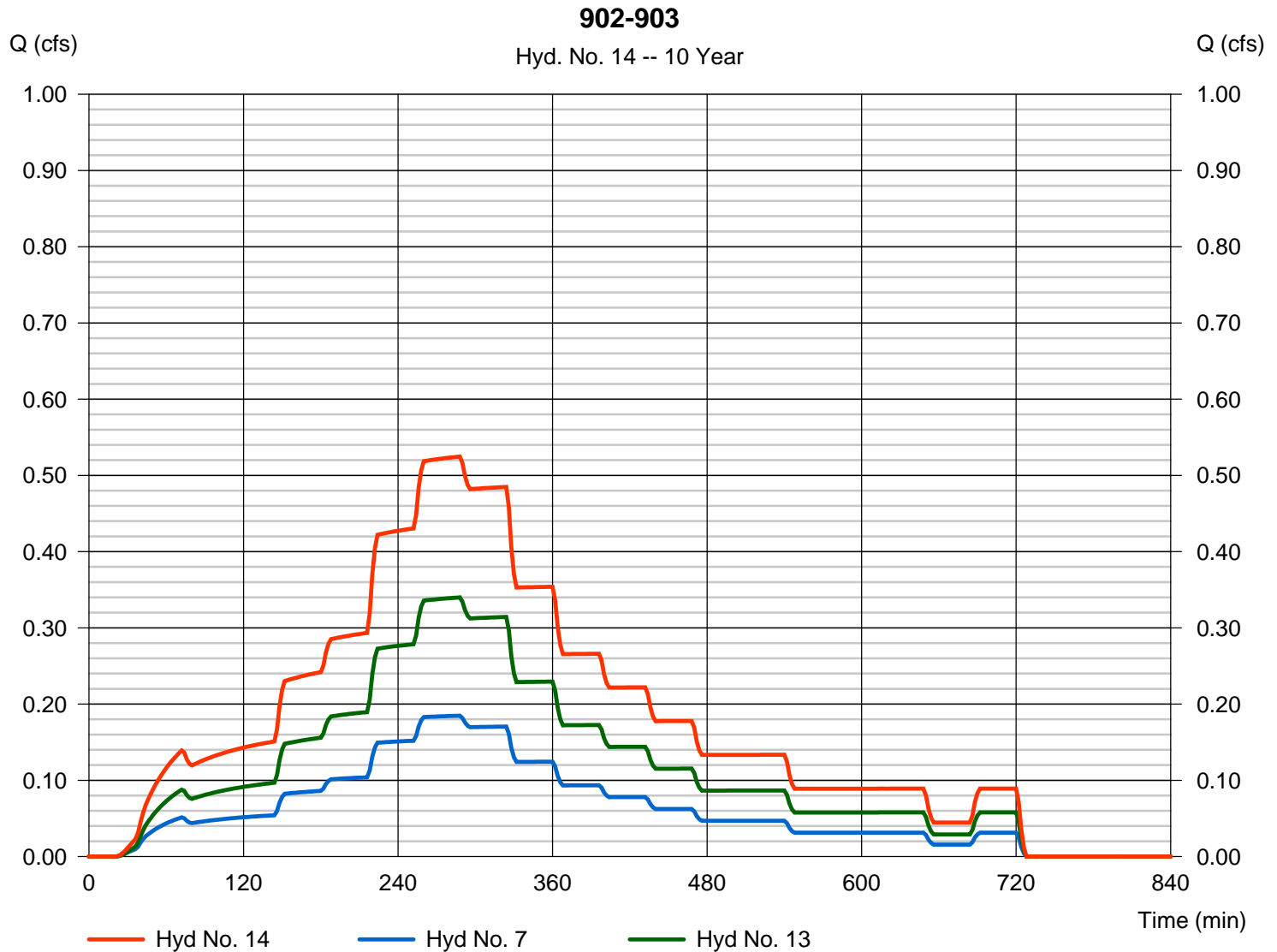
Wednesday, 07 / 11 / 2018

Hyd. No. 14

902-903

Hydrograph type = Combine
 Storm frequency = 10 yrs
 Time interval = 2 min
 Inflow hyds. = 7, 13

Peak discharge = 0.525 cfs
 Time to peak = 288 min
 Hyd. volume = 8,708 cuft
 Contrib. drain. area = 0.270 ac



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

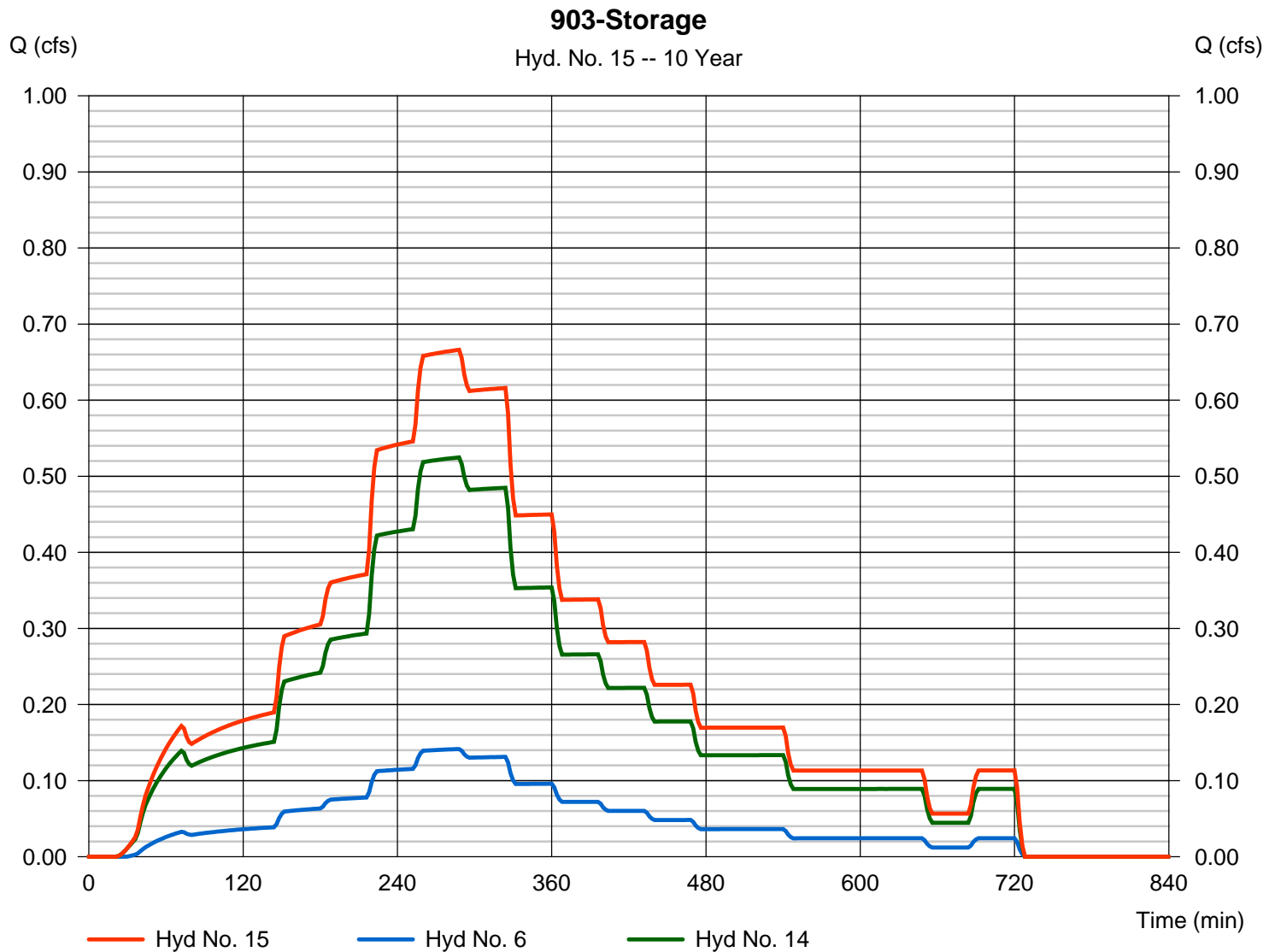
Wednesday, 07 / 11 / 2018

Hyd. No. 15

903-Storage

Hydrograph type = Combine
 Storm frequency = 10 yrs
 Time interval = 2 min
 Inflow hyds. = 6, 14

Peak discharge = 0.666 cfs
 Time to peak = 288 min
 Hyd. volume = 11,025 cuft
 Contrib. drain. area = 0.210 ac



Hydrograph Report

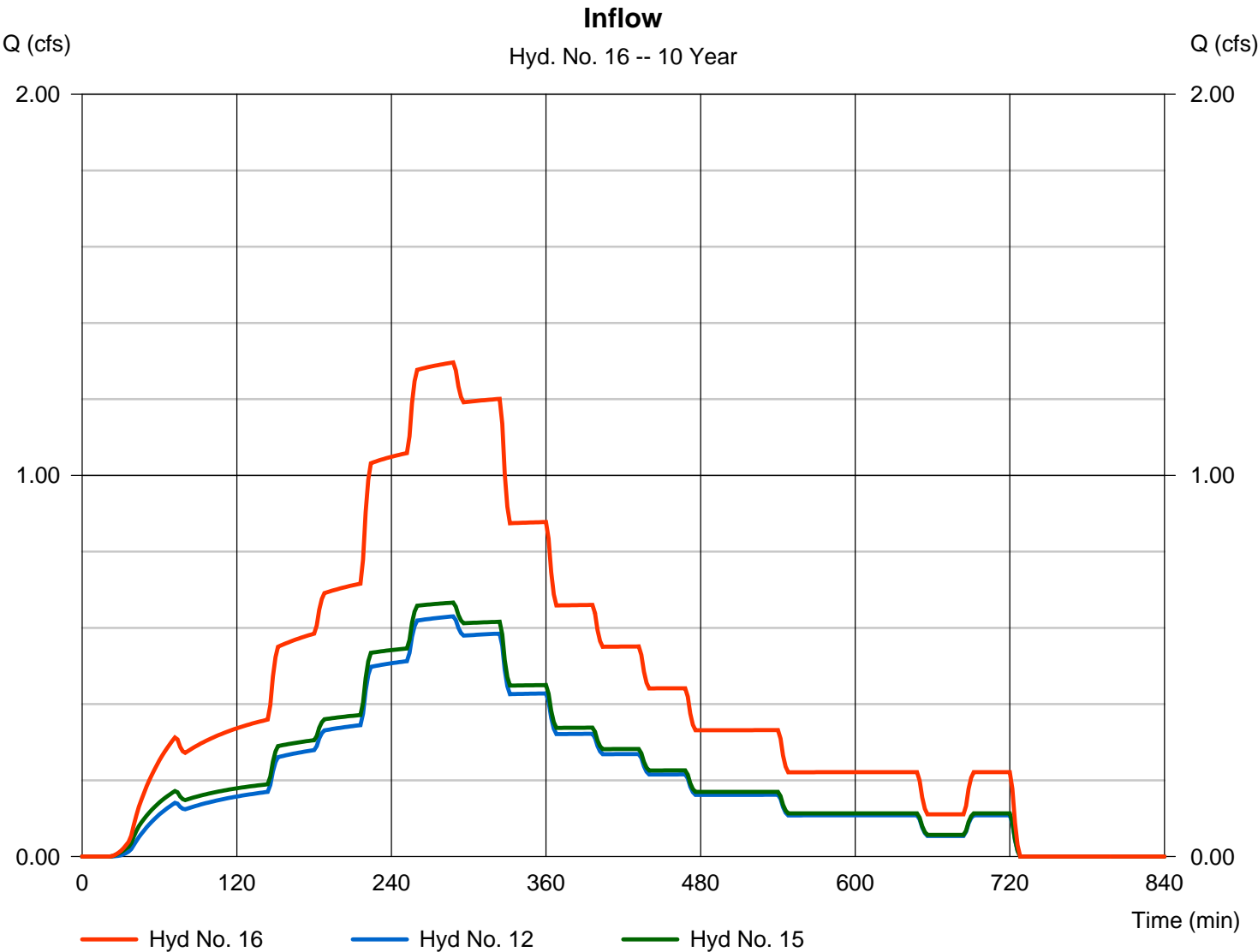
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

Wednesday, 07 / 11 / 2018

Hyd. No. 16

Inflow

Hydrograph type	= Combine	Peak discharge	= 1.296 cfs
Storm frequency	= 10 yrs	Time to peak	= 288 min
Time interval	= 2 min	Hyd. volume	= 21,318 cuft
Inflow hyds.	= 12, 15	Contrib. drain. area	= 0.000 ac



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

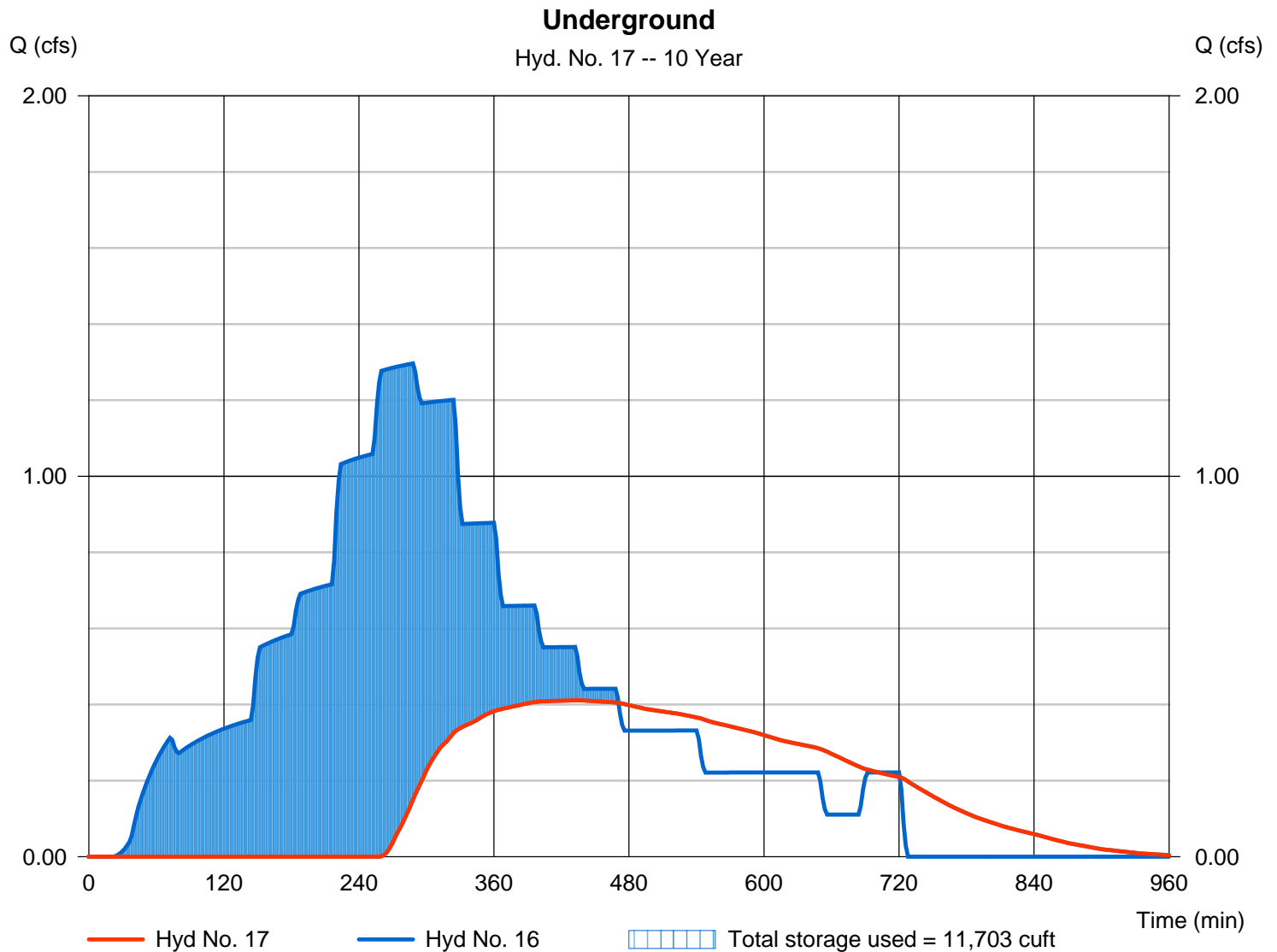
Wednesday, 07 / 11 / 2018

Hyd. No. 17

Underground

Hydrograph type	= Reservoir	Peak discharge	= 0.411 cfs
Storm frequency	= 10 yrs	Time to peak	= 434 min
Time interval	= 2 min	Hyd. volume	= 9,906 cuft
Inflow hyd. No.	= 16 - Inflow	Max. Elevation	= 740.28 ft
Reservoir name	= Underground Storage	Max. Storage	= 11,703 cuft

Storage Indication method used. Exfiltration extracted from Outflow.

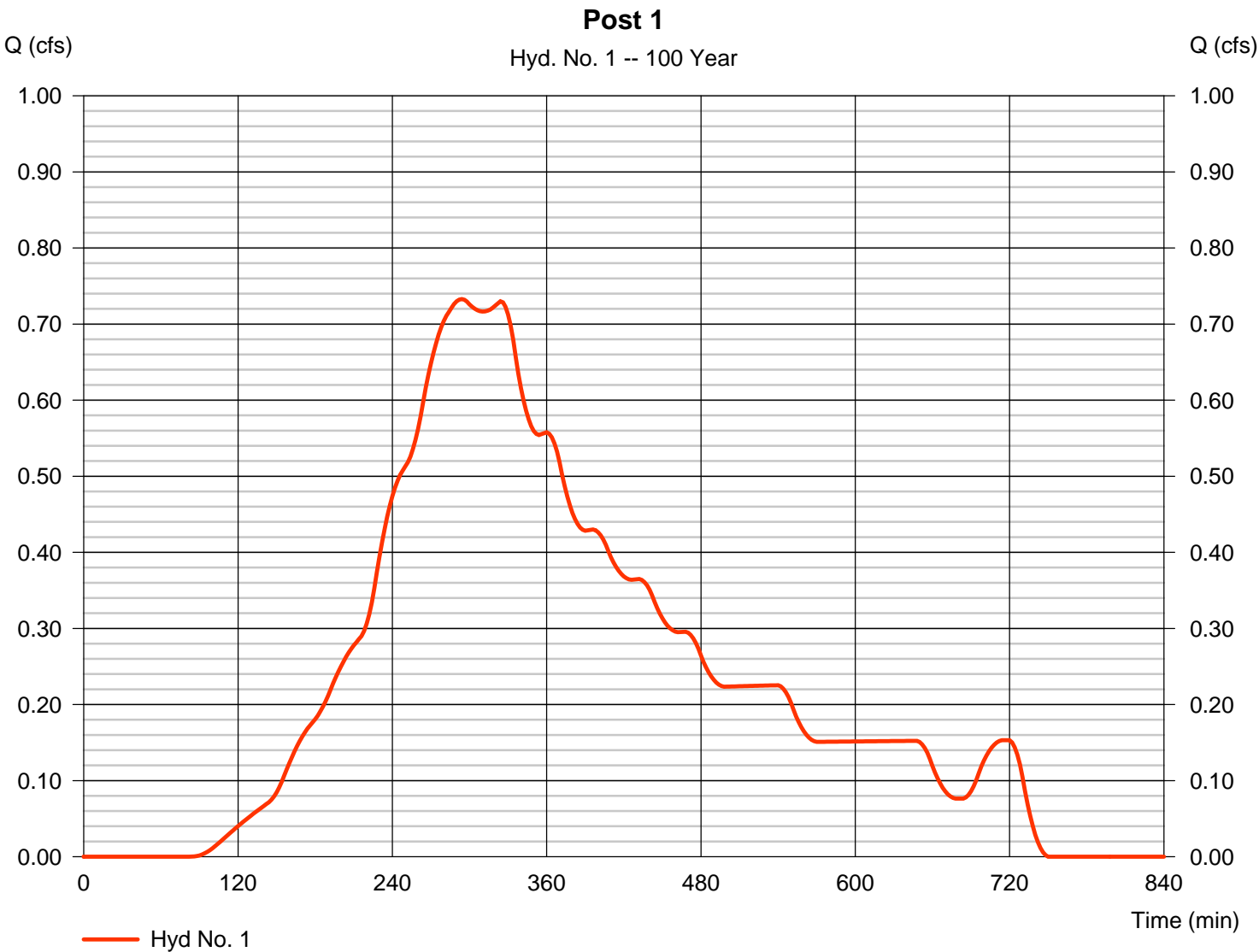


Hydrograph Report

Hyd. No. 1

Post 1

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.733 cfs
Storm frequency	=	100 yrs	Time to peak	=	294 min
Time interval	=	2 min	Hyd. volume	=	11,348 cuft
Drainage area	=	0.860 ac	Curve number	=	79
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	TR55	Time of conc. (Tc)	=	18.20 min
Total precip.	=	5.95 in	Distribution	=	Huff-2nd
Storm duration	=	12.00 hrs	Shape factor	=	484



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

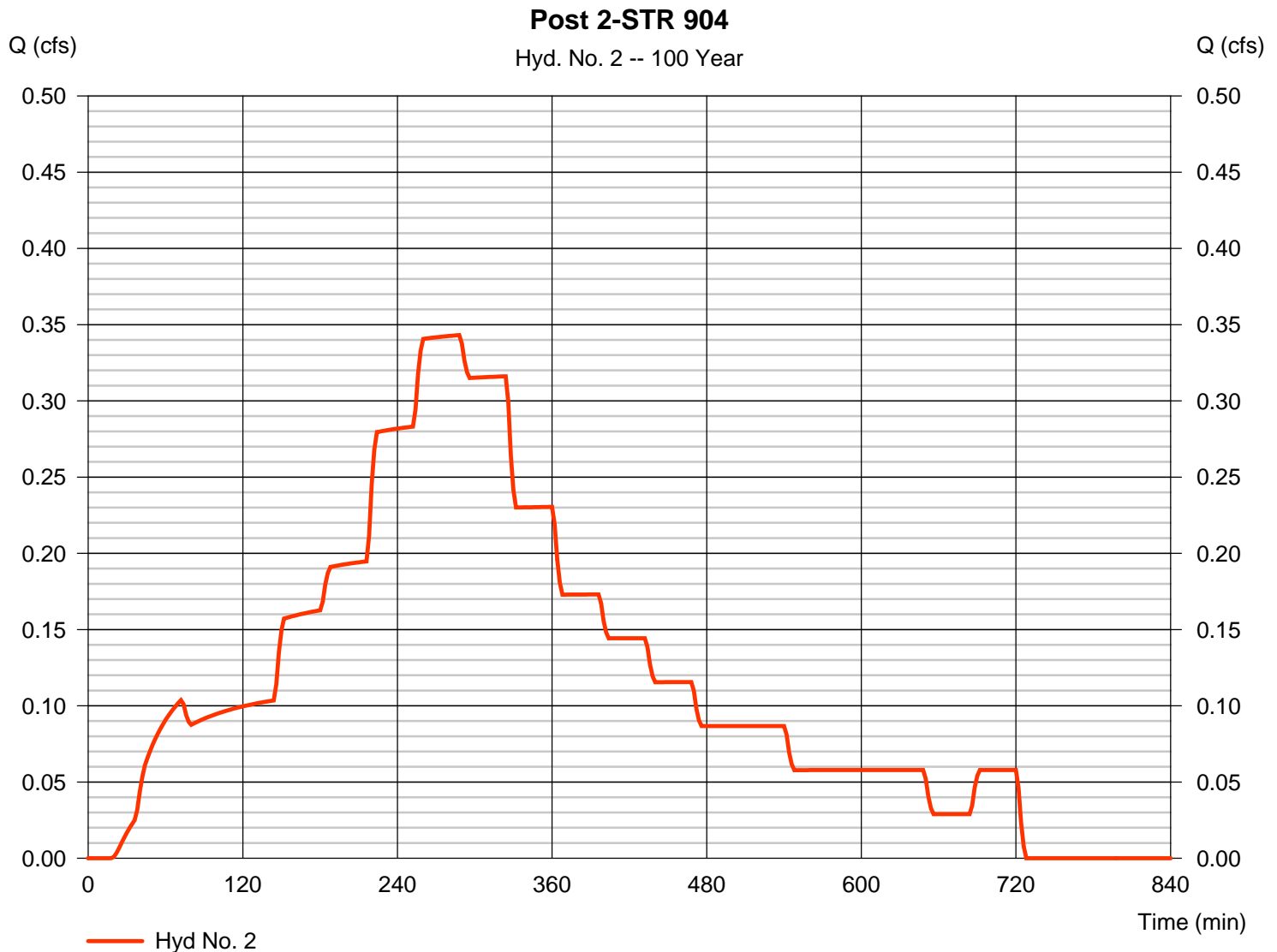
Wednesday, 07 / 11 / 2018

Hyd. No. 2

Post 2-STR 904

Hydrograph type	= SCS Runoff	Peak discharge	= 0.343 cfs
Storm frequency	= 100 yrs	Time to peak	= 288 min
Time interval	= 2 min	Hyd. volume	= 5,779 cuft
Drainage area	= 0.310 ac	Curve number	= 96*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 5.95 in	Distribution	= Huff-2nd
Storm duration	= 12.00 hrs	Shape factor	= 484

* Composite (Area/CN) = $[(0.030 \times 79) + (0.280 \times 98)] / 0.310$



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

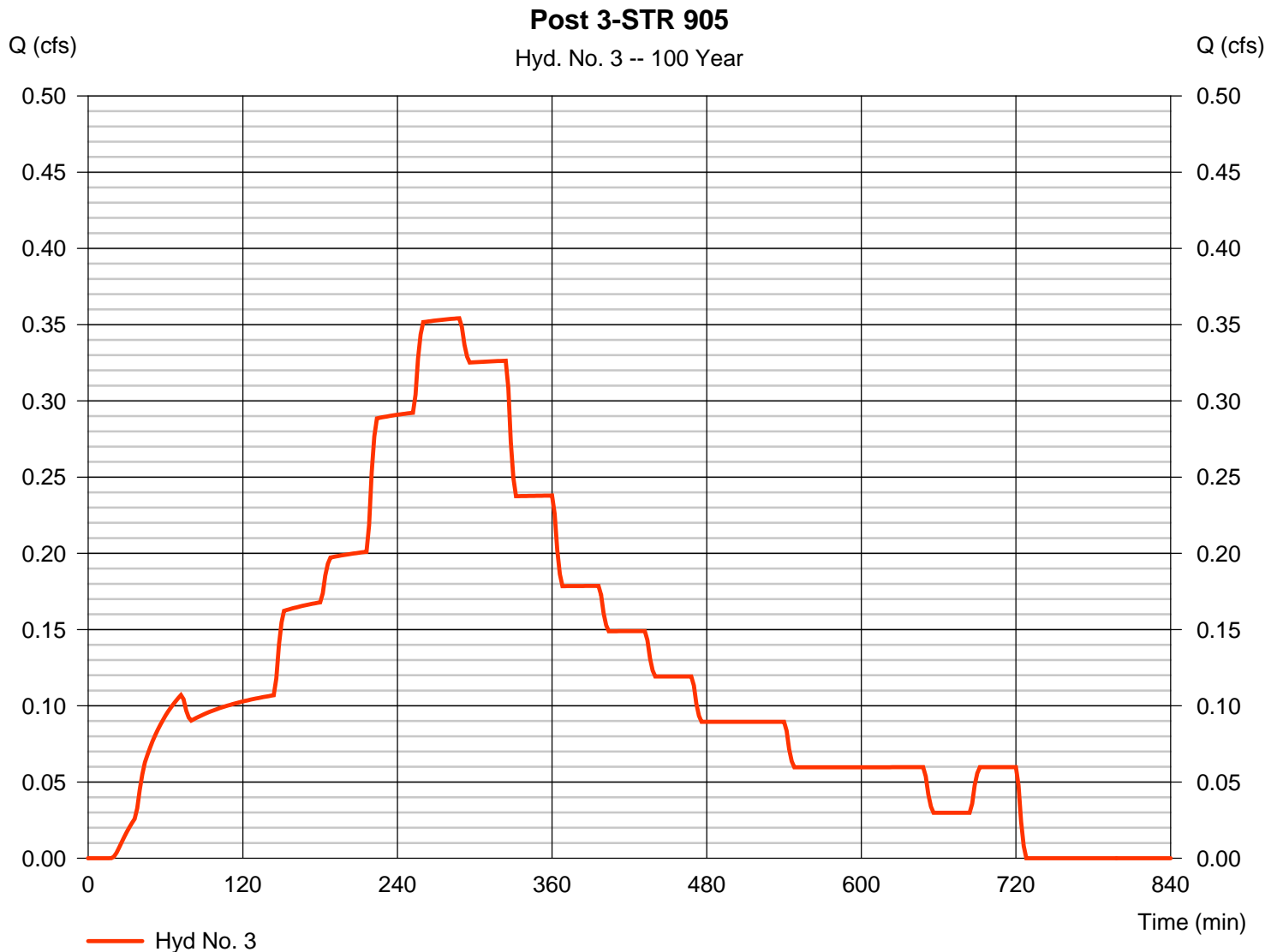
Wednesday, 07 / 11 / 2018

Hyd. No. 3

Post 3-STR 905

Hydrograph type	= SCS Runoff	Peak discharge	= 0.354 cfs
Storm frequency	= 100 yrs	Time to peak	= 288 min
Time interval	= 2 min	Hyd. volume	= 5,965 cuft
Drainage area	= 0.320 ac	Curve number	= 96*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 5.95 in	Distribution	= Huff-2nd
Storm duration	= 12.00 hrs	Shape factor	= 484

* Composite (Area/CN) = $[(0.030 \times 79) + (0.290 \times 98)] / 0.320$



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

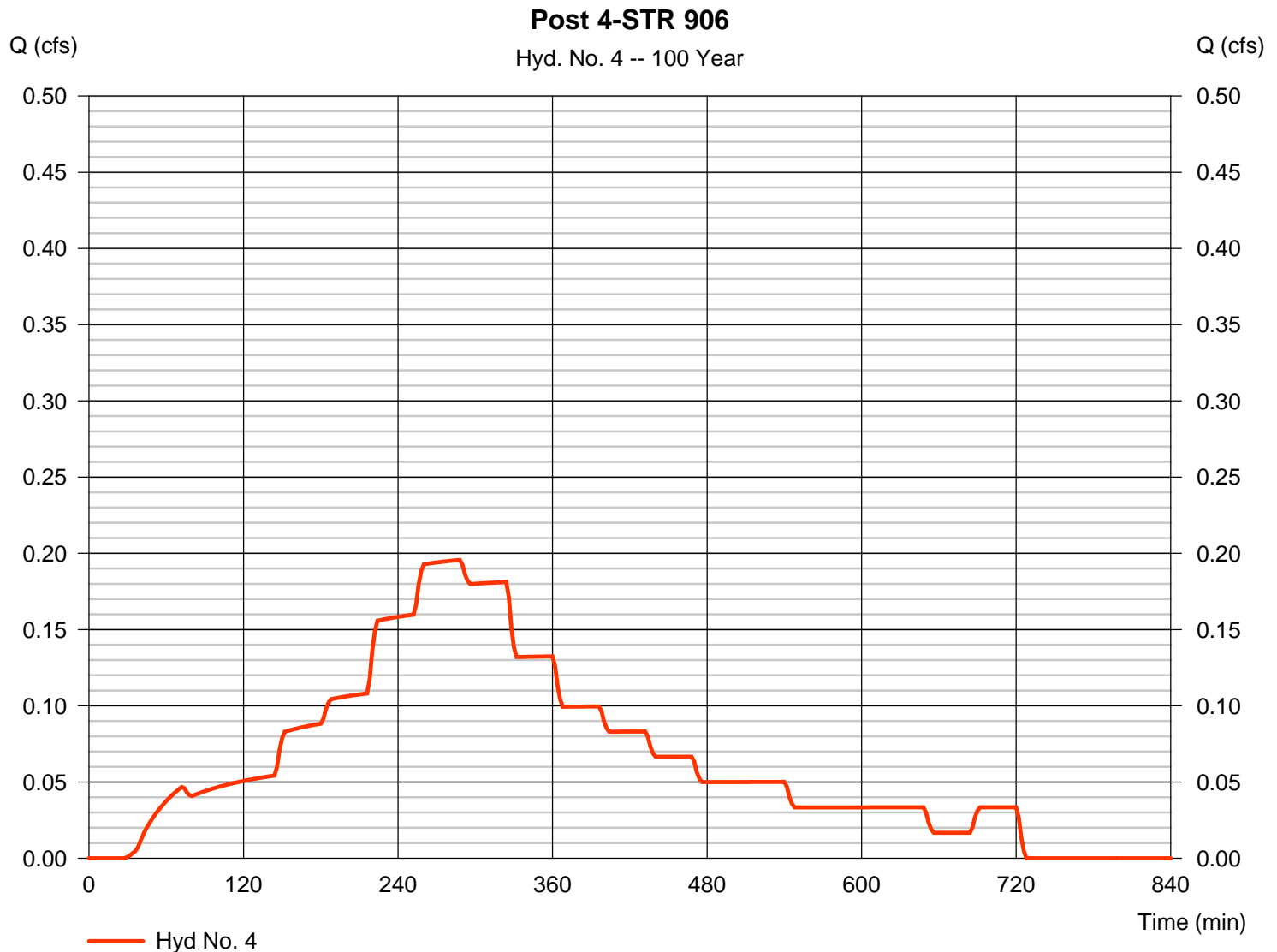
Wednesday, 07 / 11 / 2018

Hyd. No. 4

Post 4-STR 906

Hydrograph type	= SCS Runoff	Peak discharge	= 0.196 cfs
Storm frequency	= 100 yrs	Time to peak	= 288 min
Time interval	= 2 min	Hyd. volume	= 3,214 cuft
Drainage area	= 0.180 ac	Curve number	= 94*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 5.95 in	Distribution	= Huff-2nd
Storm duration	= 12.00 hrs	Shape factor	= 484

* Composite (Area/CN) = $[(0.040 \times 79) + (0.140 \times 98)] / 0.180$



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

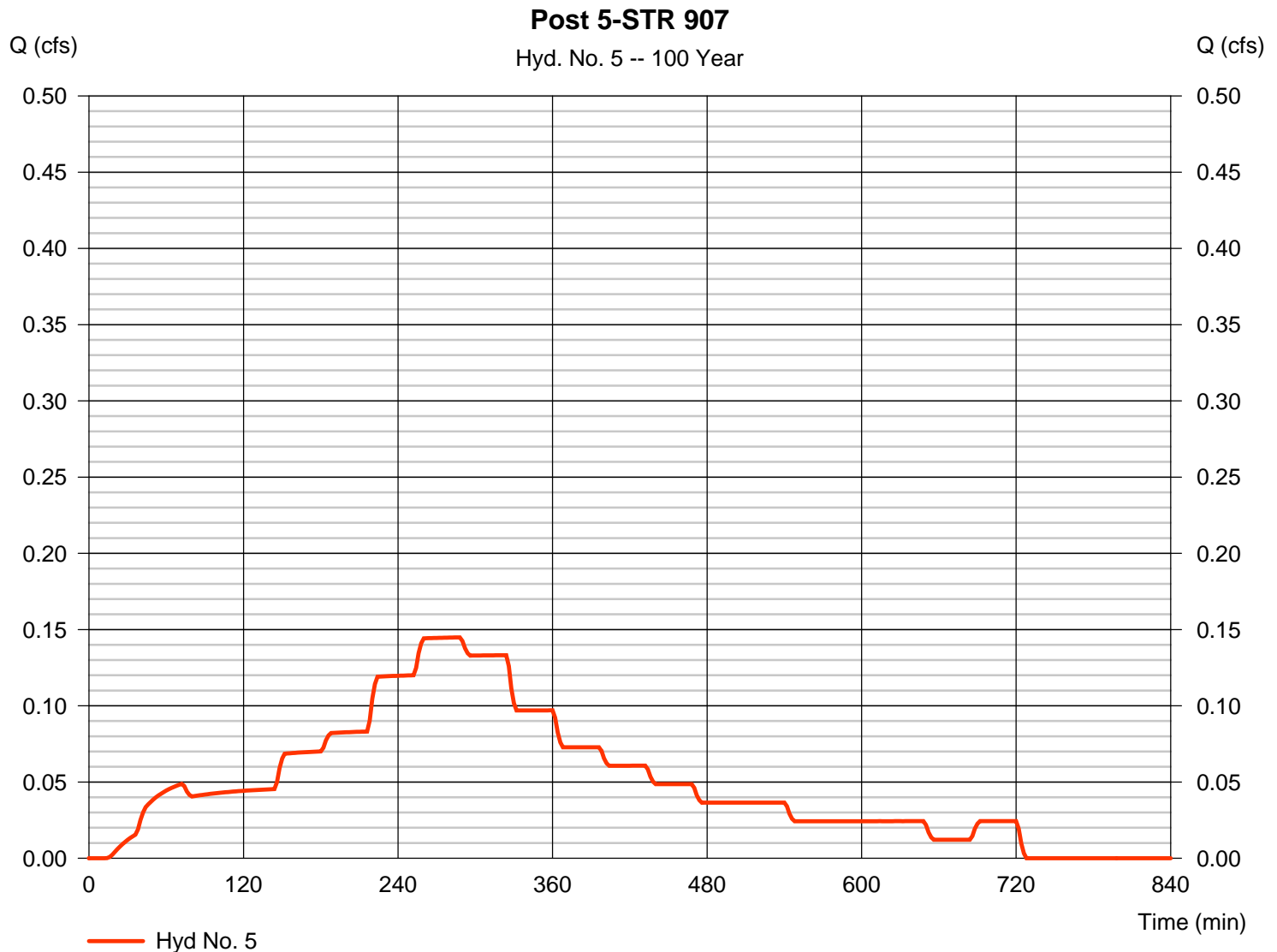
Wednesday, 07 / 11 / 2018

Hyd. No. 5

Post 5-STR 907

Hydrograph type	= SCS Runoff	Peak discharge	= 0.145 cfs
Storm frequency	= 100 yrs	Time to peak	= 288 min
Time interval	= 2 min	Hyd. volume	= 2,475 cuft
Drainage area	= 0.130 ac	Curve number	= 97*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 5.95 in	Distribution	= Huff-2nd
Storm duration	= 12.00 hrs	Shape factor	= 484

* Composite (Area/CN) = $[(0.010 \times 79) + (0.120 \times 98)] / 0.130$



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

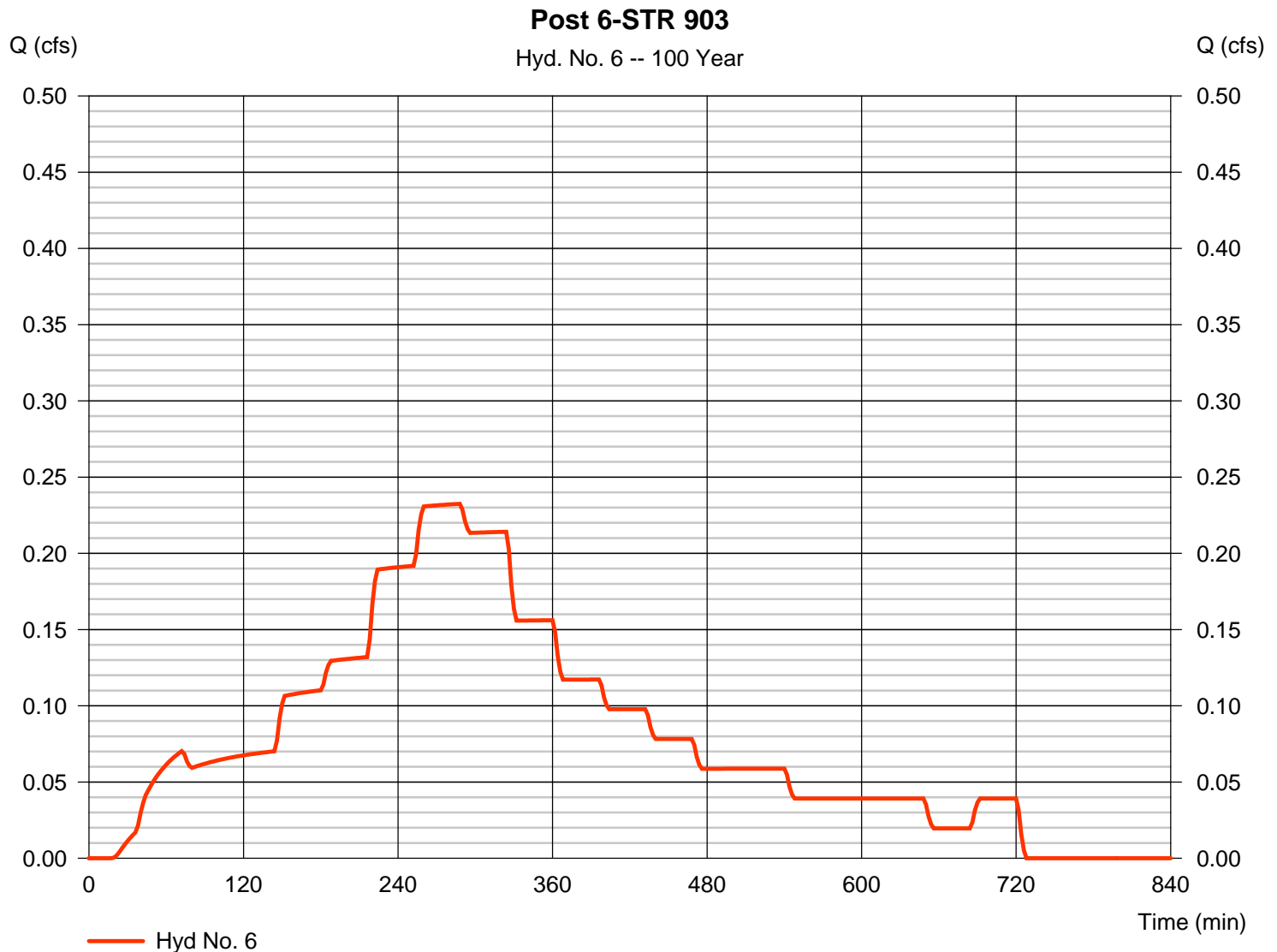
Wednesday, 07 / 11 / 2018

Hyd. No. 6

Post 6-STR 903

Hydrograph type	= SCS Runoff	Peak discharge	= 0.232 cfs
Storm frequency	= 100 yrs	Time to peak	= 288 min
Time interval	= 2 min	Hyd. volume	= 3,915 cuft
Drainage area	= 0.210 ac	Curve number	= 96*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 5.95 in	Distribution	= Huff-2nd
Storm duration	= 12.00 hrs	Shape factor	= 484

* Composite (Area/CN) = $[(0.020 \times 79) + (0.190 \times 98)] / 0.210$



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

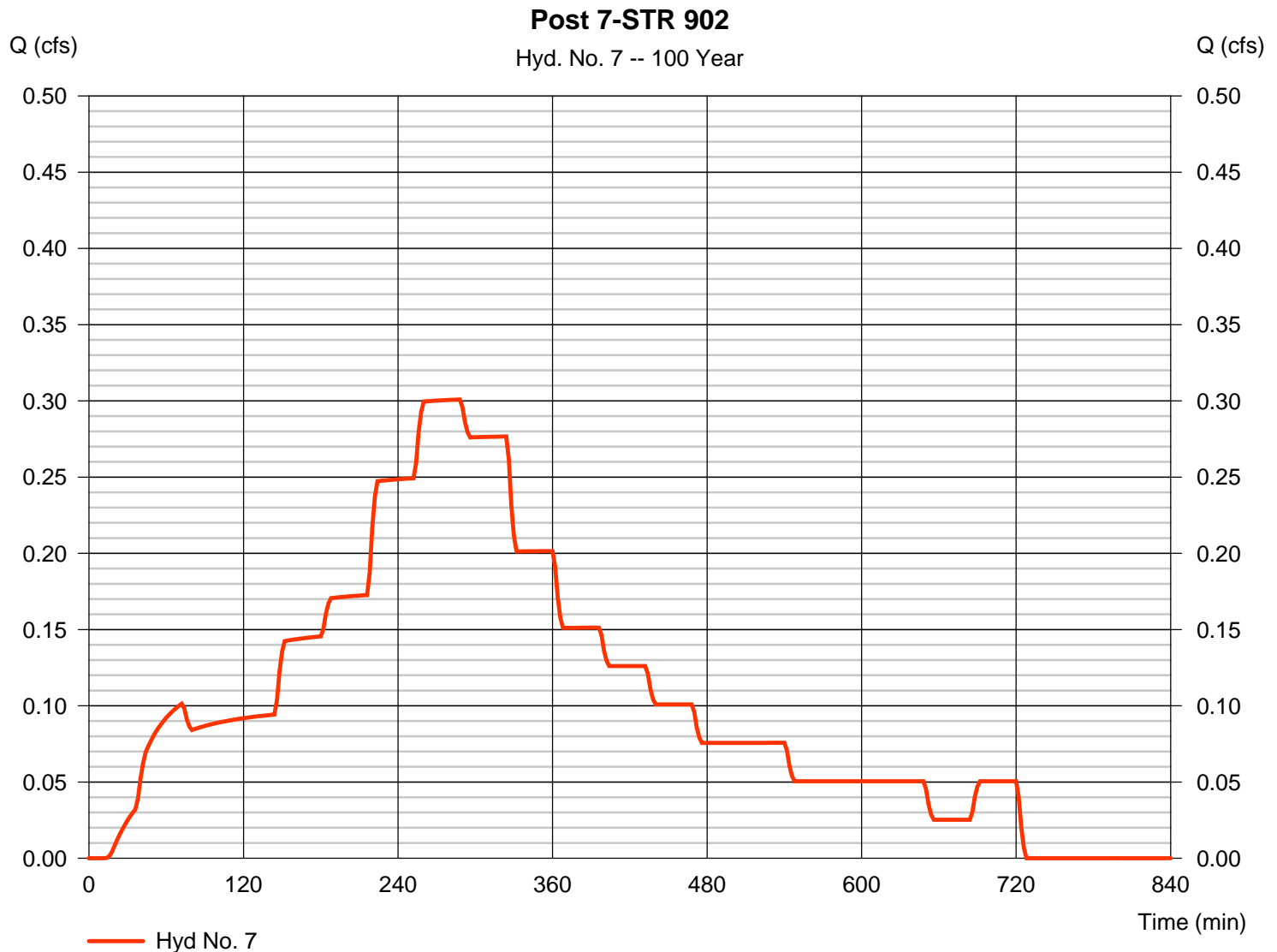
Wednesday, 07 / 11 / 2018

Hyd. No. 7

Post 7-STR 902

Hydrograph type	= SCS Runoff	Peak discharge	= 0.301 cfs
Storm frequency	= 100 yrs	Time to peak	= 288 min
Time interval	= 2 min	Hyd. volume	= 5,140 cuft
Drainage area	= 0.270 ac	Curve number	= 97*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 5.95 in	Distribution	= Huff-2nd
Storm duration	= 12.00 hrs	Shape factor	= 484

* Composite (Area/CN) = $[(0.020 \times 79) + (0.250 \times 98)] / 0.270$



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

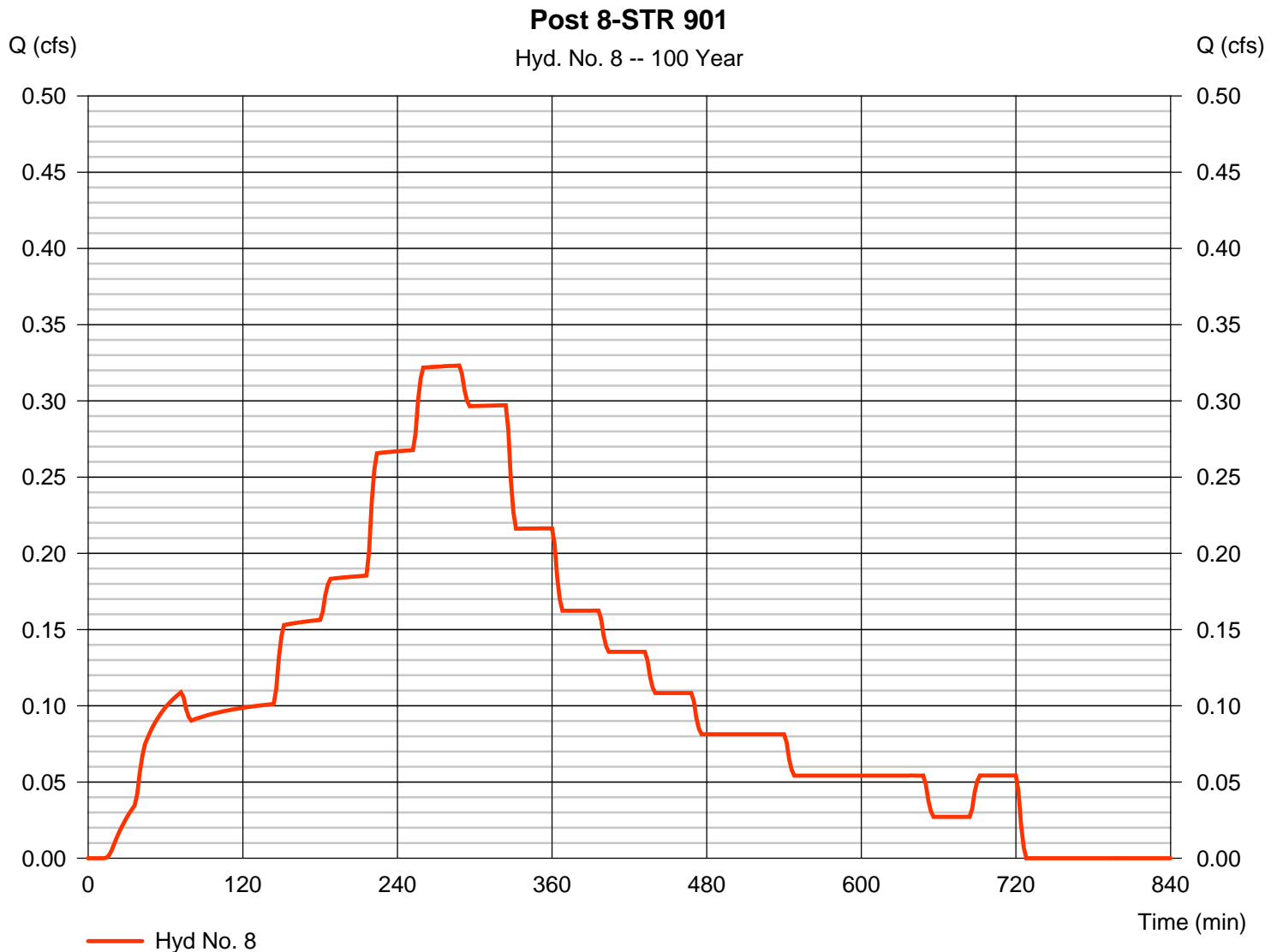
Wednesday, 07 / 11 / 2018

Hyd. No. 8

Post 8-STR 901

Hydrograph type	= SCS Runoff	Peak discharge	= 0.323 cfs
Storm frequency	= 100 yrs	Time to peak	= 288 min
Time interval	= 2 min	Hyd. volume	= 5,521 cuft
Drainage area	= 0.290 ac	Curve number	= 97*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 5.95 in	Distribution	= Huff-2nd
Storm duration	= 12.00 hrs	Shape factor	= 484

* Composite (Area/CN) = $[(0.020 \times 79) + (0.270 \times 98)] / 0.290$



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

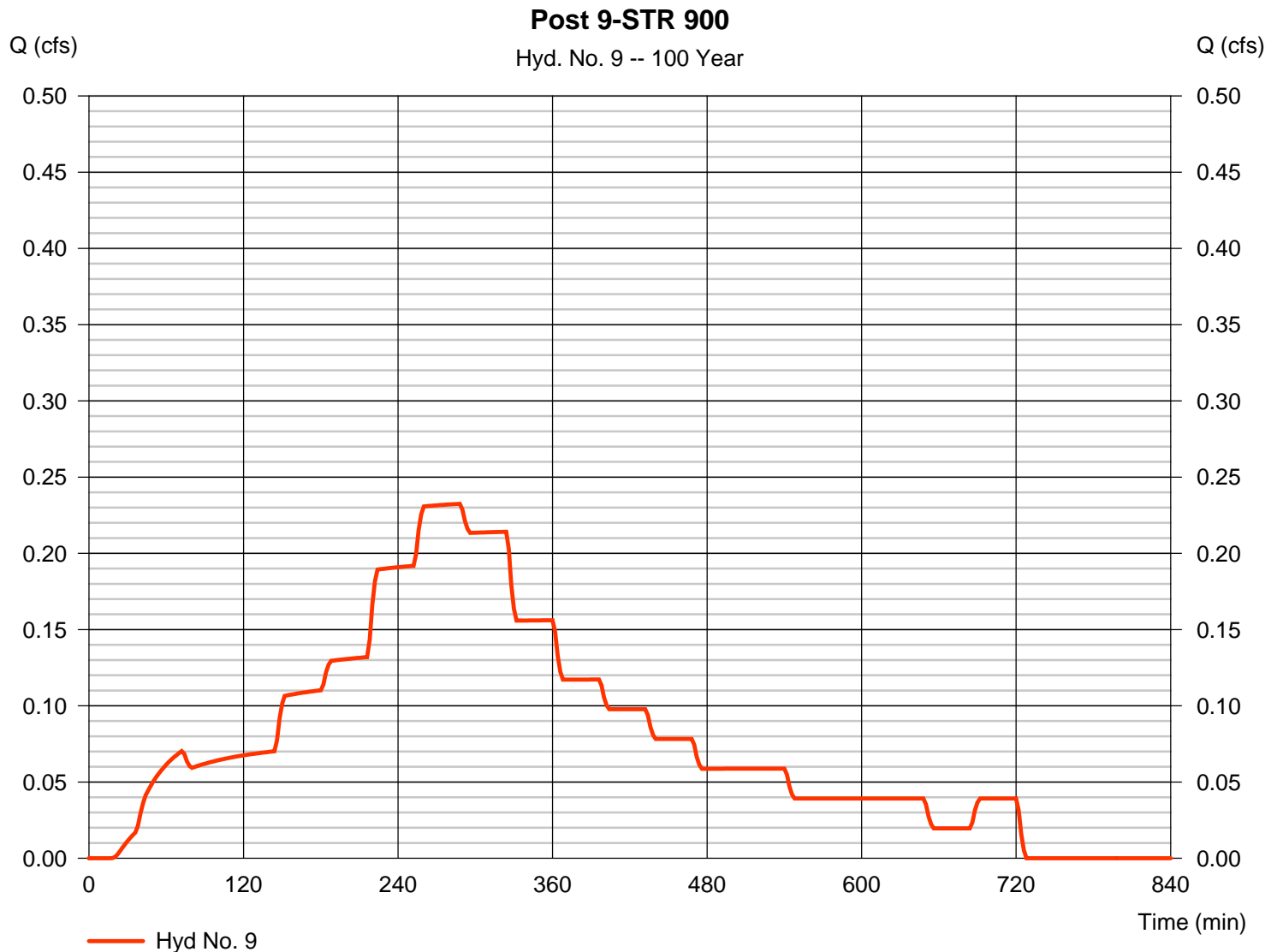
Wednesday, 07 / 11 / 2018

Hyd. No. 9

Post 9-STR 900

Hydrograph type	= SCS Runoff	Peak discharge	= 0.232 cfs
Storm frequency	= 100 yrs	Time to peak	= 288 min
Time interval	= 2 min	Hyd. volume	= 3,915 cuft
Drainage area	= 0.210 ac	Curve number	= 96*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 5.95 in	Distribution	= Huff-2nd
Storm duration	= 12.00 hrs	Shape factor	= 484

* Composite (Area/CN) = $[(0.020 \times 79) + (0.190 \times 98)] / 0.210$



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

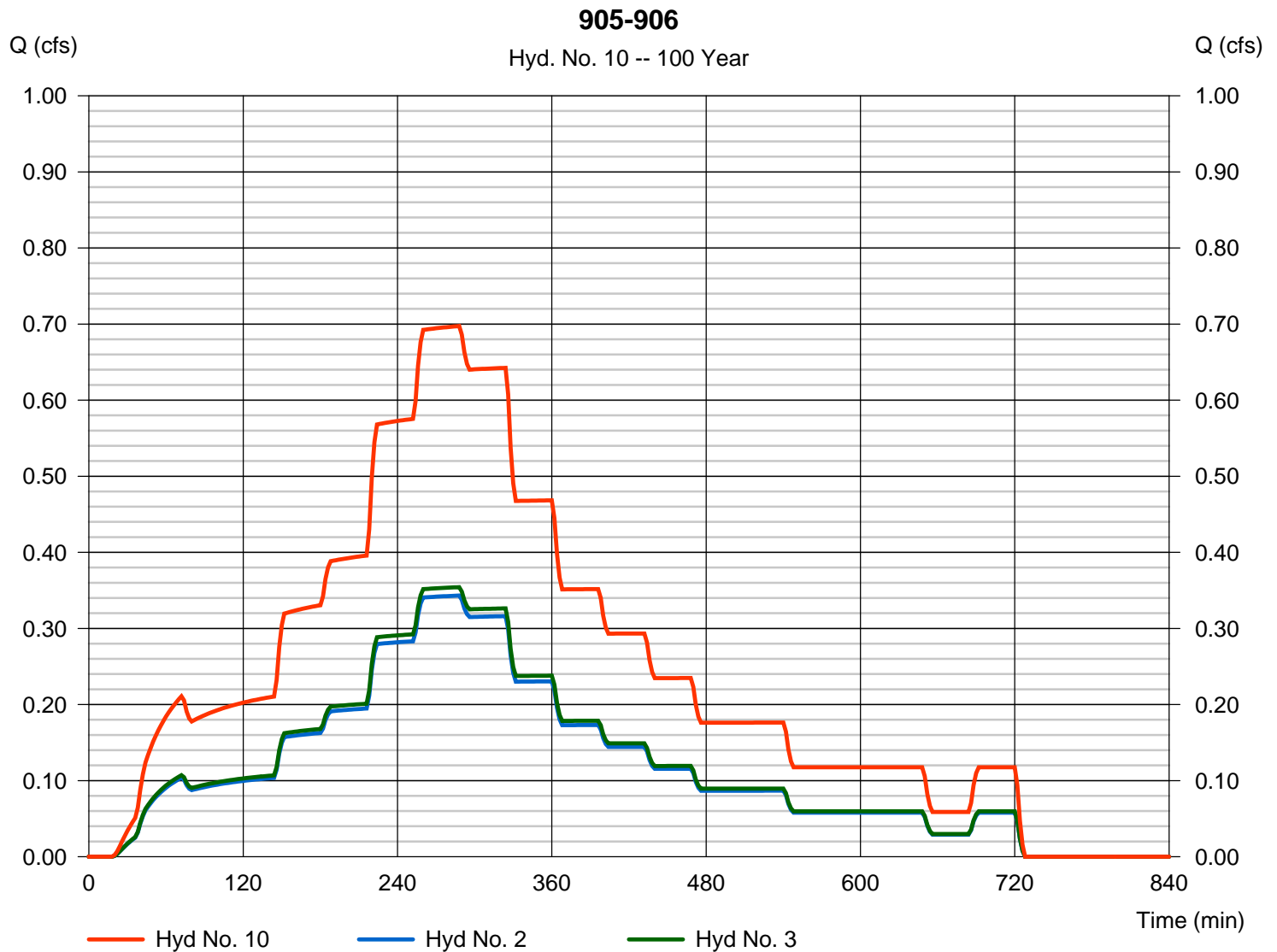
Wednesday, 07 / 11 / 2018

Hyd. No. 10

905-906

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

Peak discharge = 0.697 cfs
 Time to peak = 288 min
 Hyd. volume = 11,744 cuft
 Contrib. drain. area = 0.630 ac



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

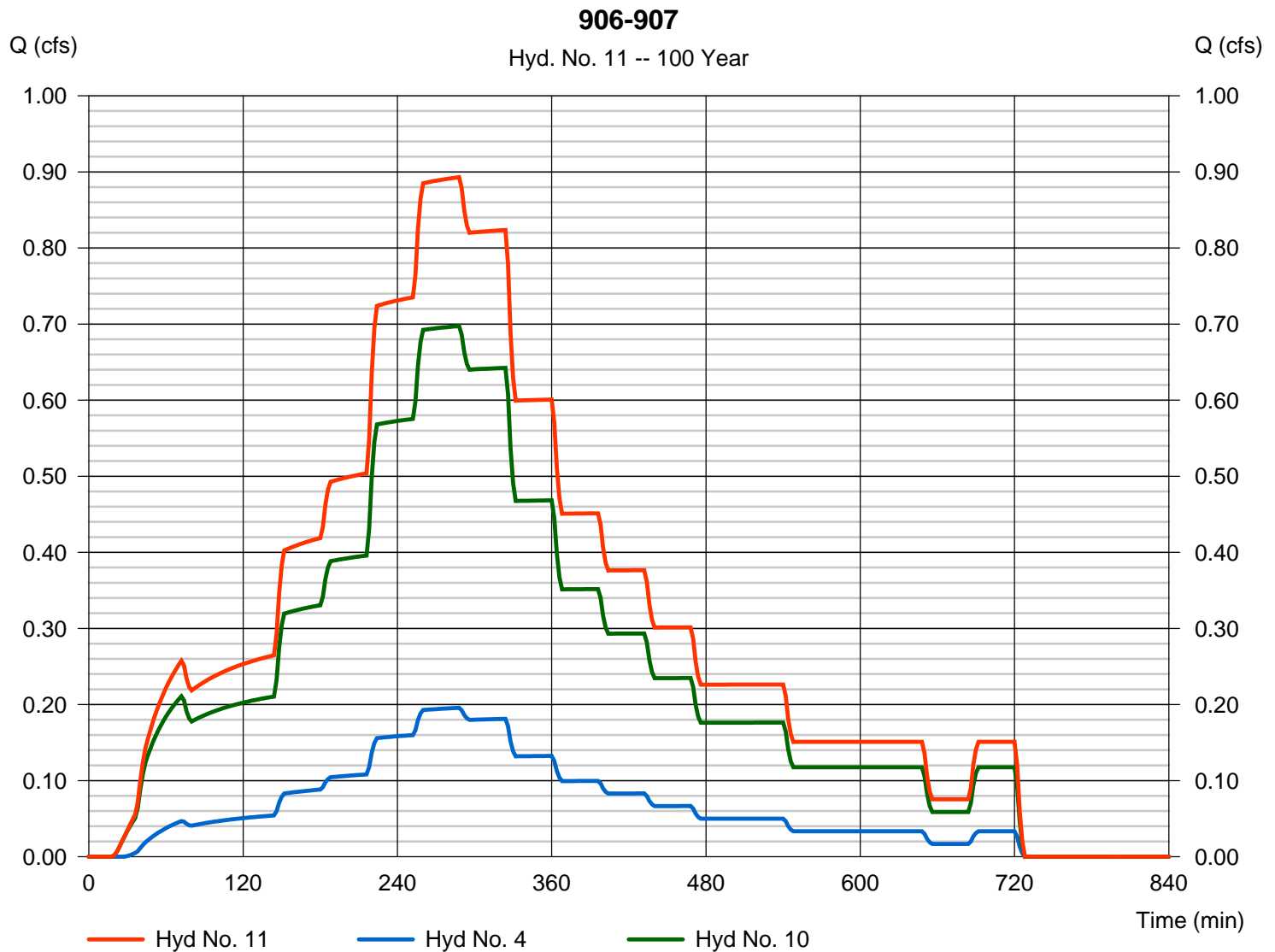
Wednesday, 07 / 11 / 2018

Hyd. No. 11

906-907

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

Peak discharge = 0.893 cfs
 Time to peak = 288 min
 Hyd. volume = 14,958 cuft
 Contrib. drain. area = 0.180 ac



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

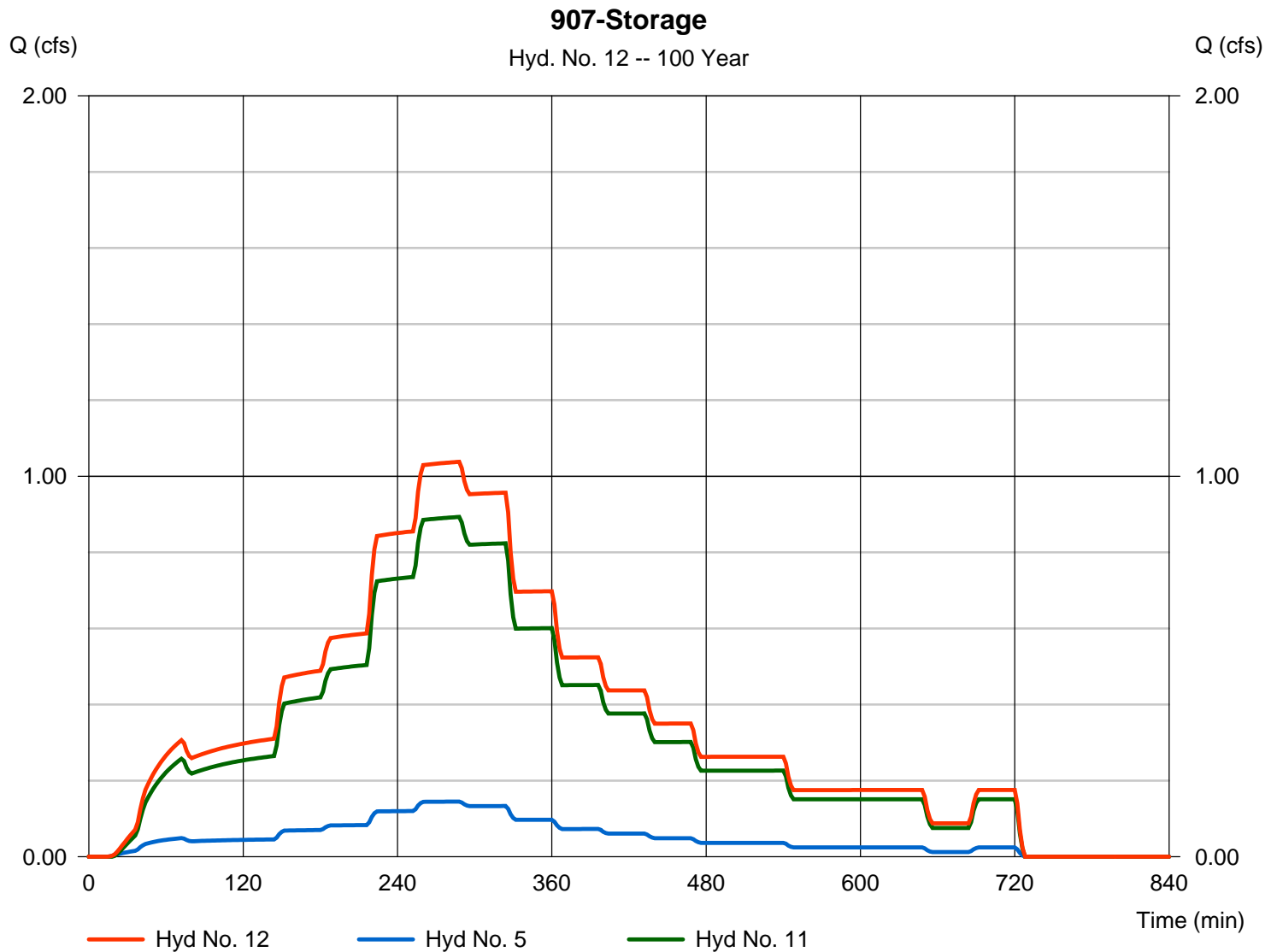
Wednesday, 07 / 11 / 2018

Hyd. No. 12

907-Storage

Hydrograph type = Combine
 Storm frequency = 100 yrs
 Time interval = 2 min
 Inflow hyds. = 5, 11

Peak discharge = 1.038 cfs
 Time to peak = 288 min
 Hyd. volume = 17,433 cuft
 Contrib. drain. area = 0.130 ac



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

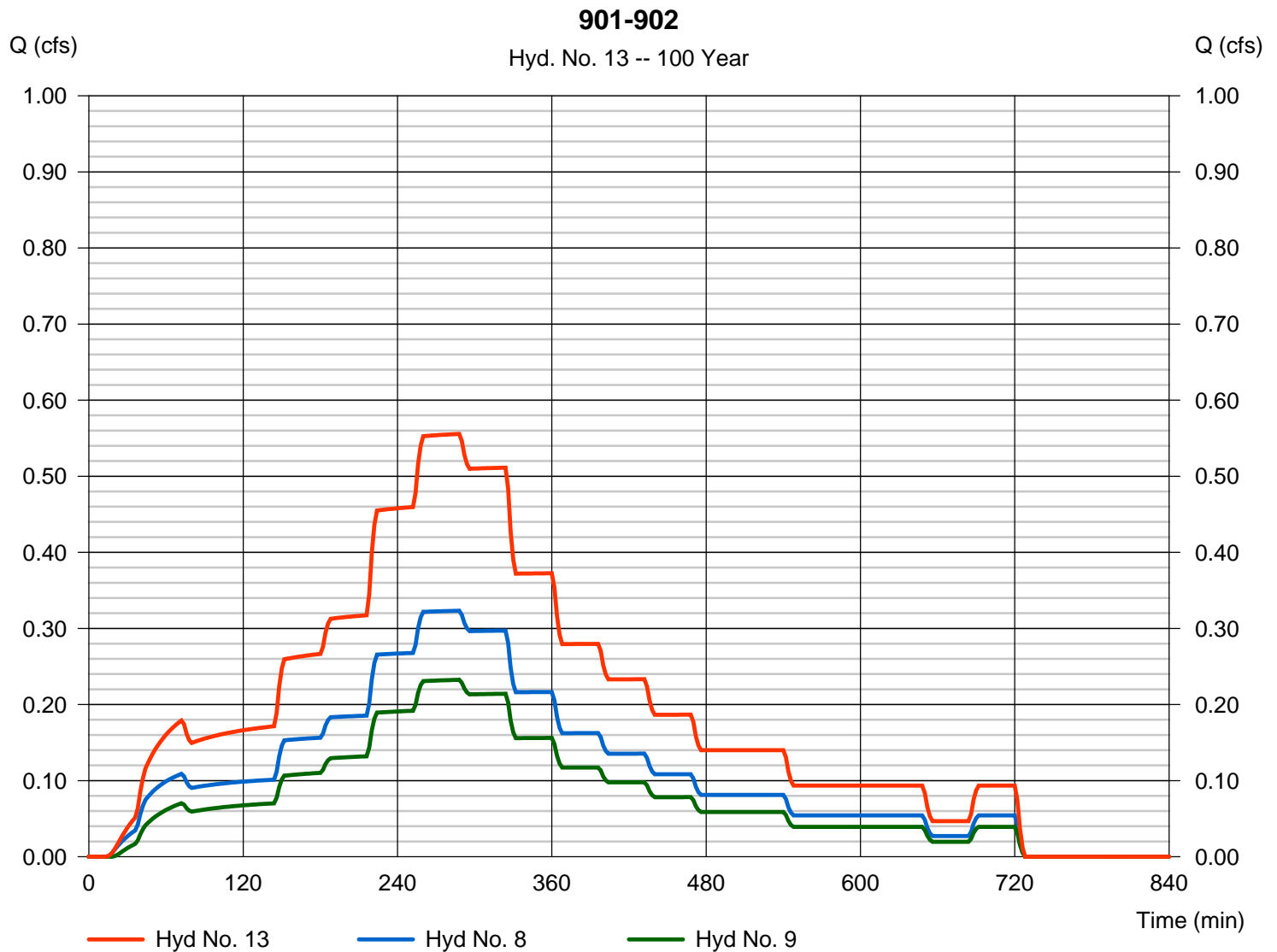
Wednesday, 07 / 11 / 2018

Hyd. No. 13

901-902

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

Peak discharge = 0.556 cfs
 Time to peak = 288 min
 Hyd. volume = 9,436 cuft
 Contrib. drain. area = 0.500 ac



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

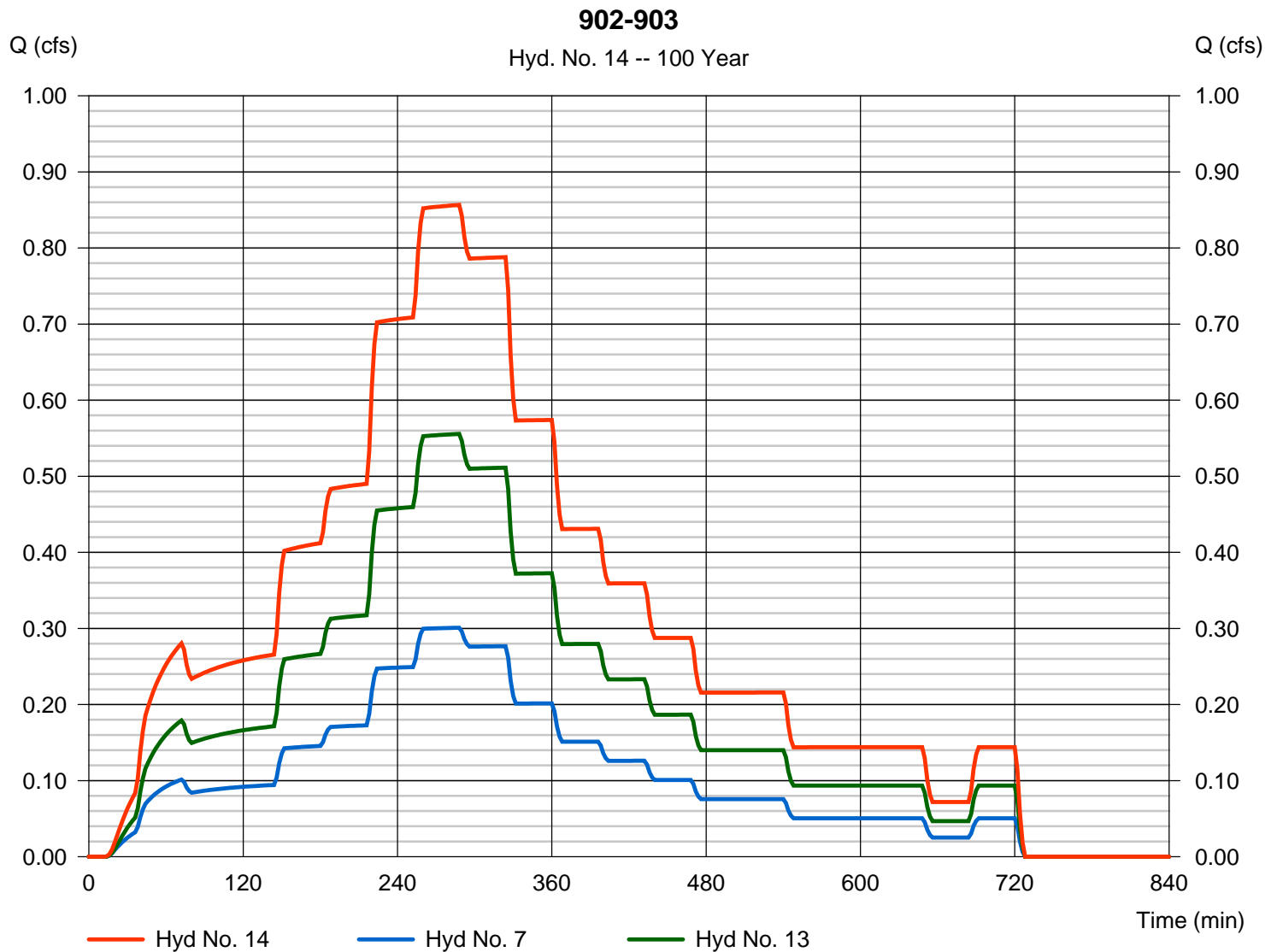
Wednesday, 07 / 11 / 2018

Hyd. No. 14

902-903

Hydrograph type = Combine
 Storm frequency = 100 yrs
 Time interval = 2 min
 Inflow hyds. = 7, 13

Peak discharge = 0.857 cfs
 Time to peak = 288 min
 Hyd. volume = 14,576 cuft
 Contrib. drain. area = 0.270 ac



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

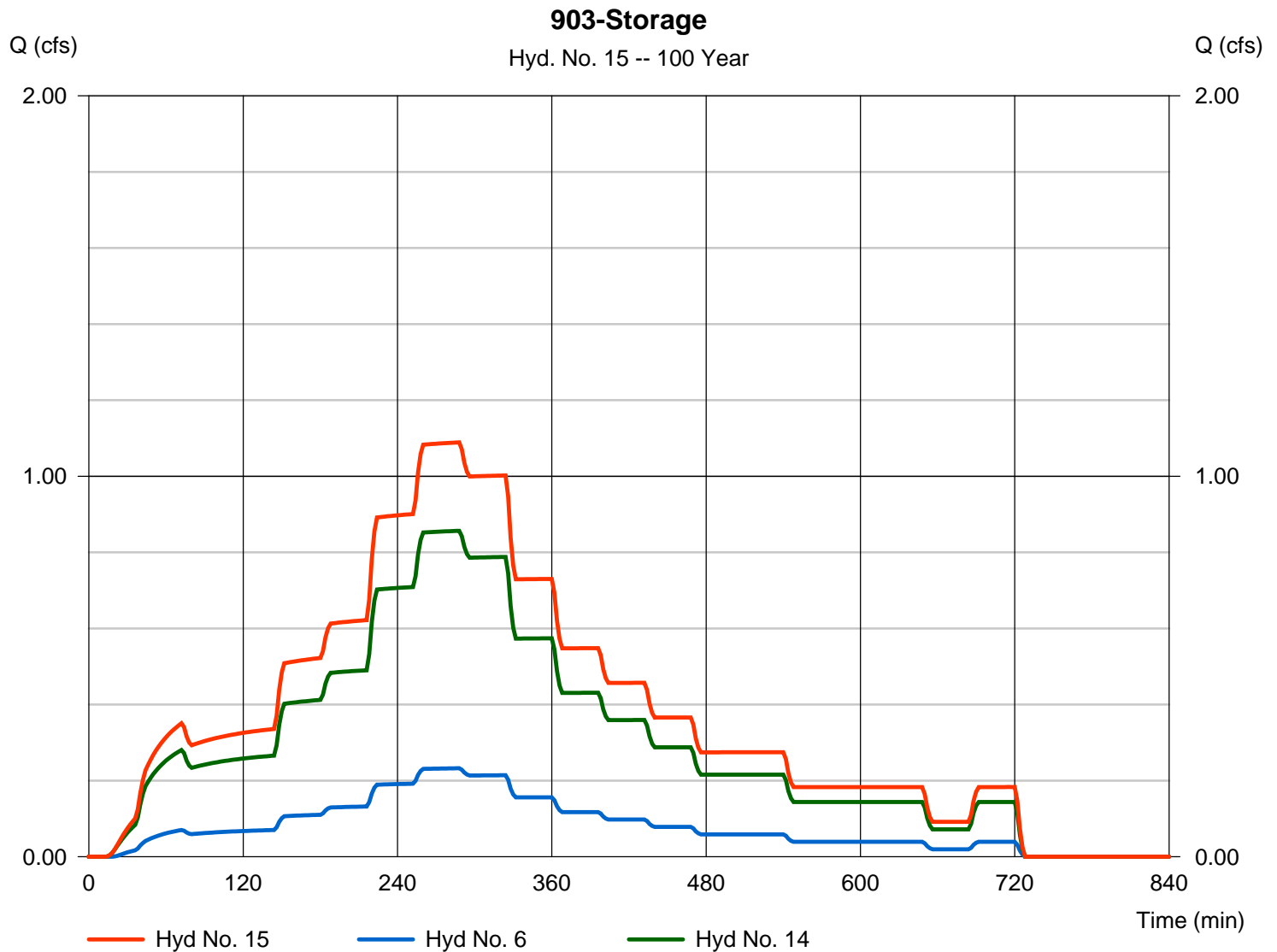
Wednesday, 07 / 11 / 2018

Hyd. No. 15

903-Storage

Hydrograph type = Combine
 Storm frequency = 100 yrs
 Time interval = 2 min
 Inflow hyds. = 6, 14

Peak discharge = 1.089 cfs
 Time to peak = 288 min
 Hyd. volume = 18,491 cuft
 Contrib. drain. area = 0.210 ac



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

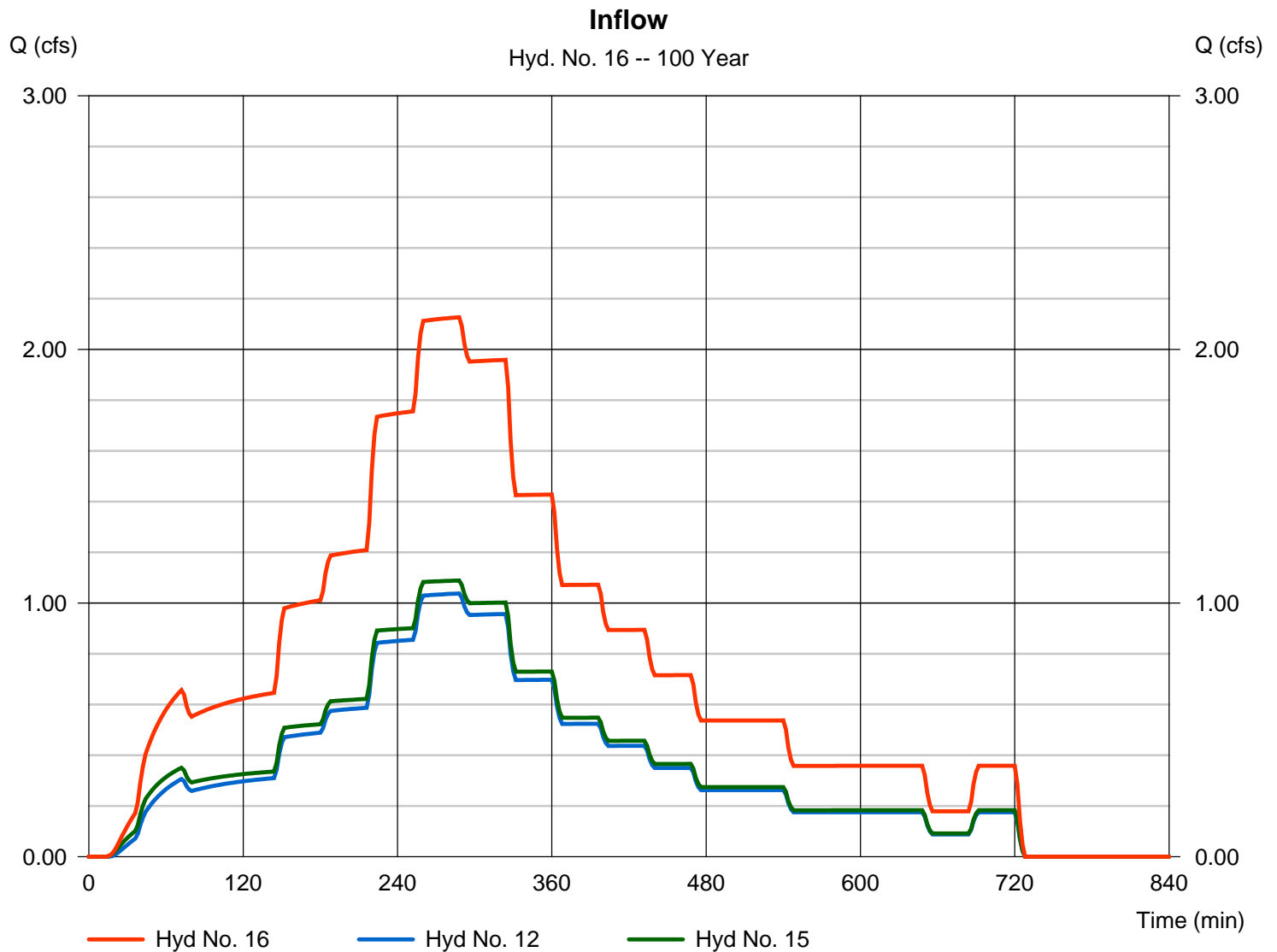
Wednesday, 07 / 11 / 2018

Hyd. No. 16

Inflow

Hydrograph type = Combine
 Storm frequency = 100 yrs
 Time interval = 2 min
 Inflow hyds. = 12, 15

Peak discharge = 2.127 cfs
 Time to peak = 288 min
 Hyd. volume = 35,923 cuft
 Contrib. drain. area = 0.000 ac



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

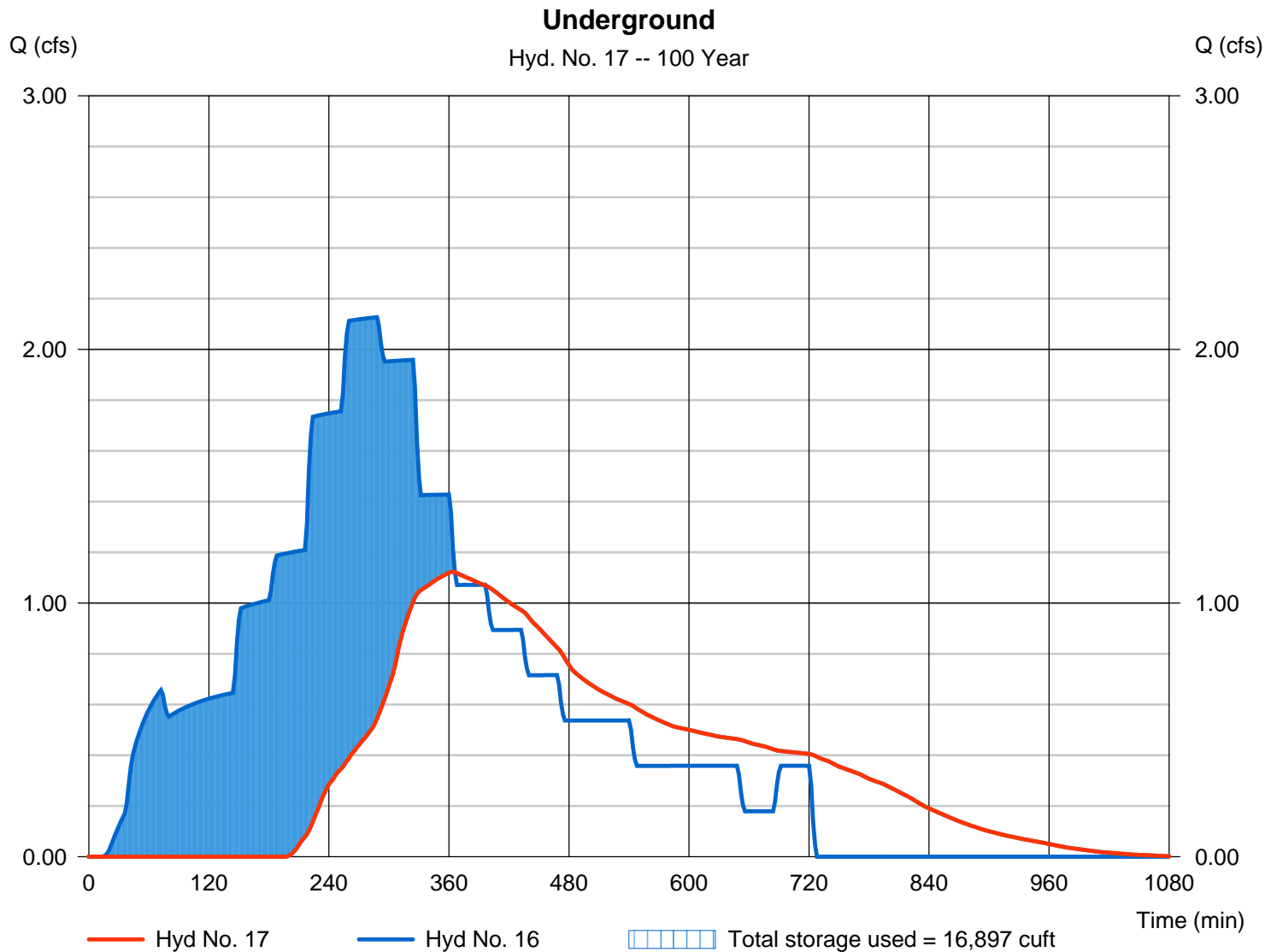
Wednesday, 07 / 11 / 2018

Hyd. No. 17

Underground

Hydrograph type	= Reservoir	Peak discharge	= 1.124 cfs
Storm frequency	= 100 yrs	Time to peak	= 364 min
Time interval	= 2 min	Hyd. volume	= 23,242 cuft
Inflow hyd. No.	= 16 - Inflow	Max. Elevation	= 741.17 ft
Reservoir name	= Underground Storage	Max. Storage	= 16,897 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Appendix J

*Hydraflow Hydrographs
24 Hour Storm Data*

Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

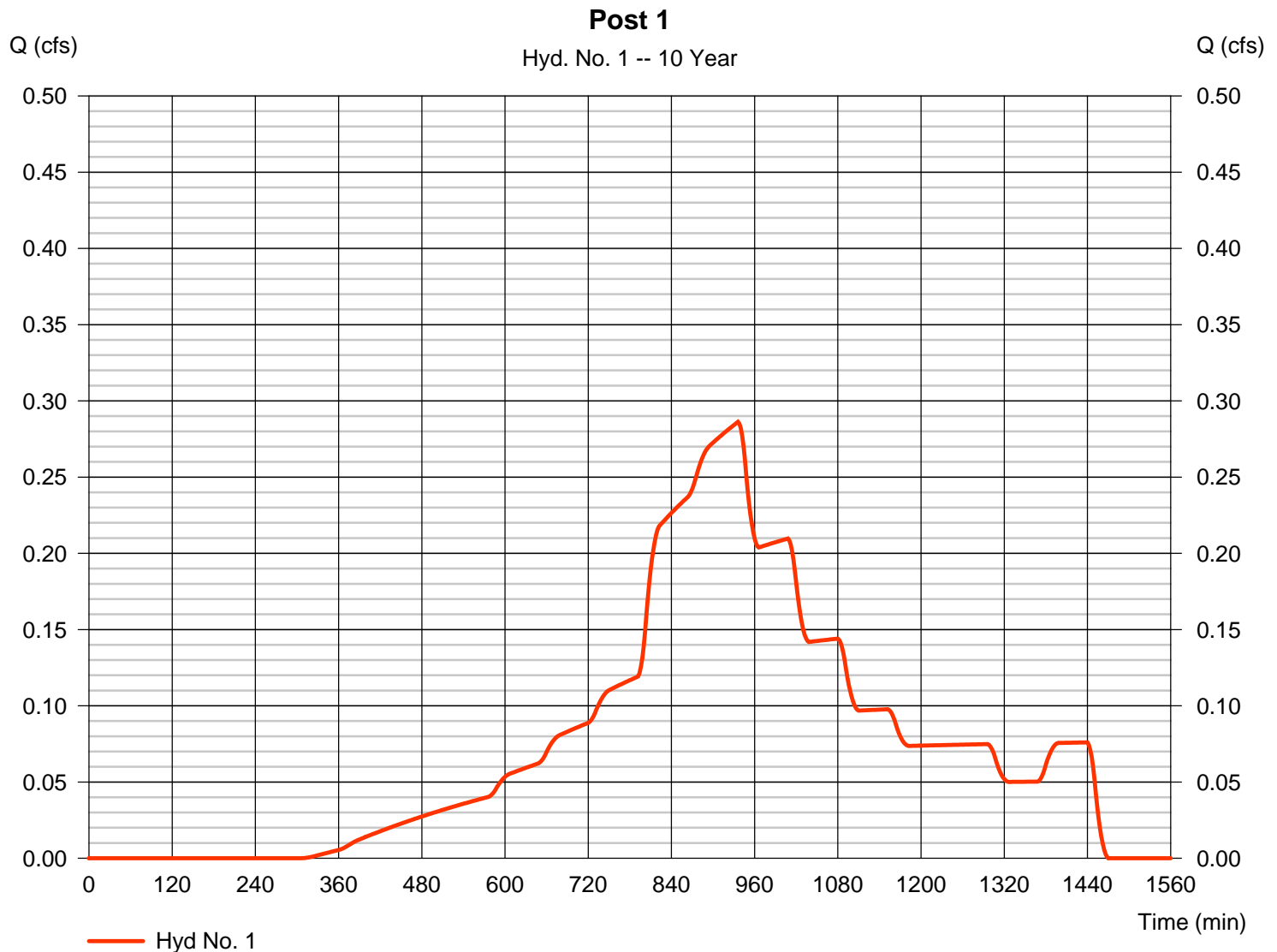
Wednesday, 07 / 11 / 2018

Hyd. No. 1

Post 1

Hydrograph type = SCS Runoff
 Storm frequency = 10 yrs
 Time interval = 2 min
 Drainage area = 0.860 ac
 Basin Slope = 0.0 %
 Tc method = TR55
 Total precip. = 4.25 in
 Storm duration = 24.00 hrs

Peak discharge = 0.286 cfs
 Time to peak = 936 min
 Hyd. volume = 6,769 cuft
 Curve number = 79
 Hydraulic length = 0 ft
 Time of conc. (Tc) = 18.20 min
 Distribution = Huff-3rd
 Shape factor = 484



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

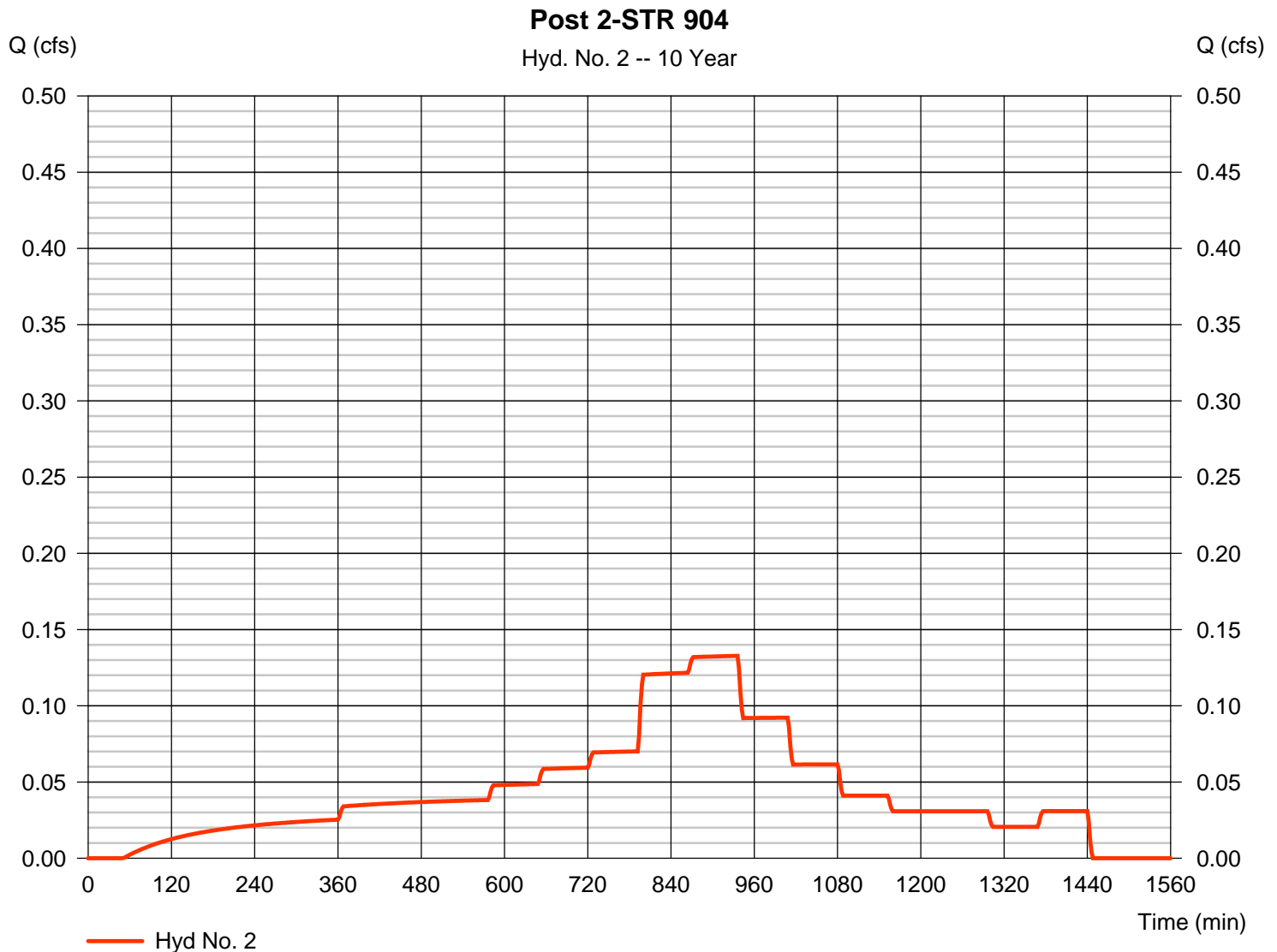
Wednesday, 07 / 11 / 2018

Hyd. No. 2

Post 2-STR 904

Hydrograph type	= SCS Runoff	Peak discharge	= 0.133 cfs
Storm frequency	= 10 yrs	Time to peak	= 936 min
Time interval	= 2 min	Hyd. volume	= 3,996 cuft
Drainage area	= 0.310 ac	Curve number	= 96*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 4.25 in	Distribution	= Huff-3rd
Storm duration	= 24.00 hrs	Shape factor	= 484

* Composite (Area/CN) = $[(0.030 \times 79) + (0.280 \times 98)] / 0.310$



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

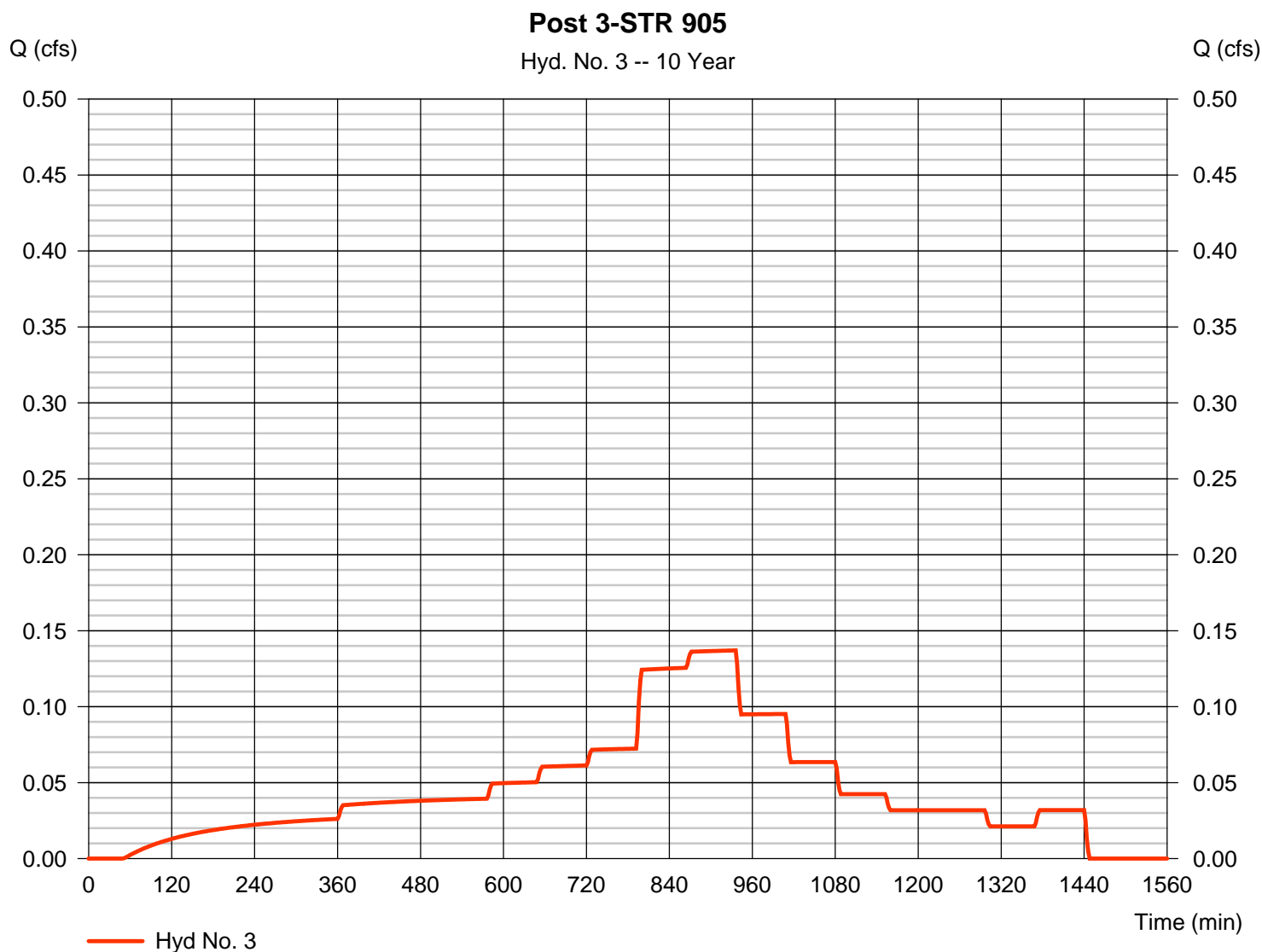
Wednesday, 07 / 11 / 2018

Hyd. No. 3

Post 3-STR 905

Hydrograph type	= SCS Runoff	Peak discharge	= 0.137 cfs
Storm frequency	= 10 yrs	Time to peak	= 936 min
Time interval	= 2 min	Hyd. volume	= 4,125 cuft
Drainage area	= 0.320 ac	Curve number	= 96*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 4.25 in	Distribution	= Huff-3rd
Storm duration	= 24.00 hrs	Shape factor	= 484

* Composite (Area/CN) = $[(0.030 \times 79) + (0.290 \times 98)] / 0.320$



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

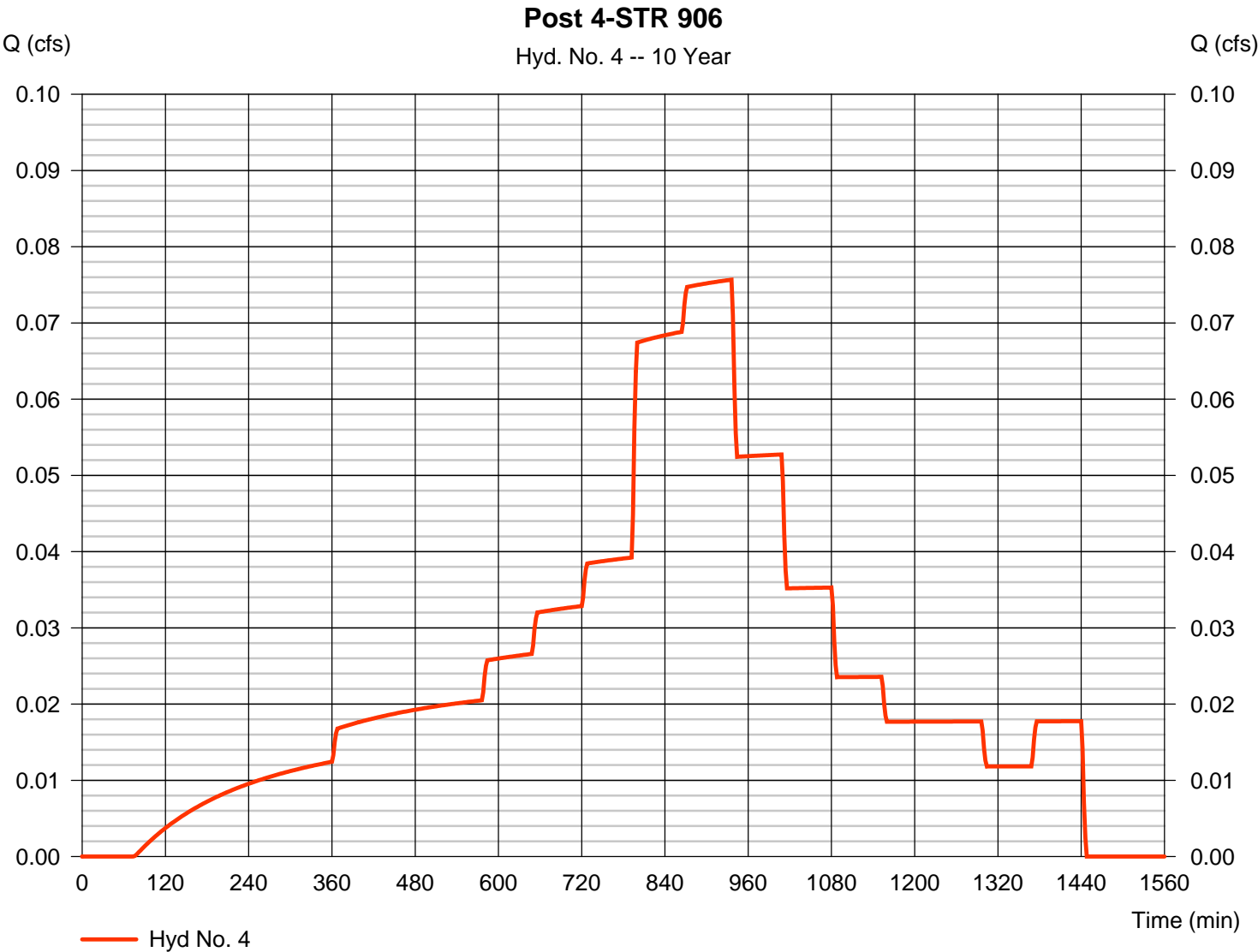
Wednesday, 07 / 11 / 2018

Hyd. No. 4

Post 4-STR 906

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.076 cfs
Storm frequency	=	10 yrs	Time to peak	=	936 min
Time interval	=	2 min	Hyd. volume	=	2,187 cuft
Drainage area	=	0.180 ac	Curve number	=	94*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	4.25 in	Distribution	=	Huff-3rd
Storm duration	=	24.00 hrs	Shape factor	=	484

* Composite (Area/CN) = [(0.040 x 79) + (0.140 x 98)] / 0.180



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

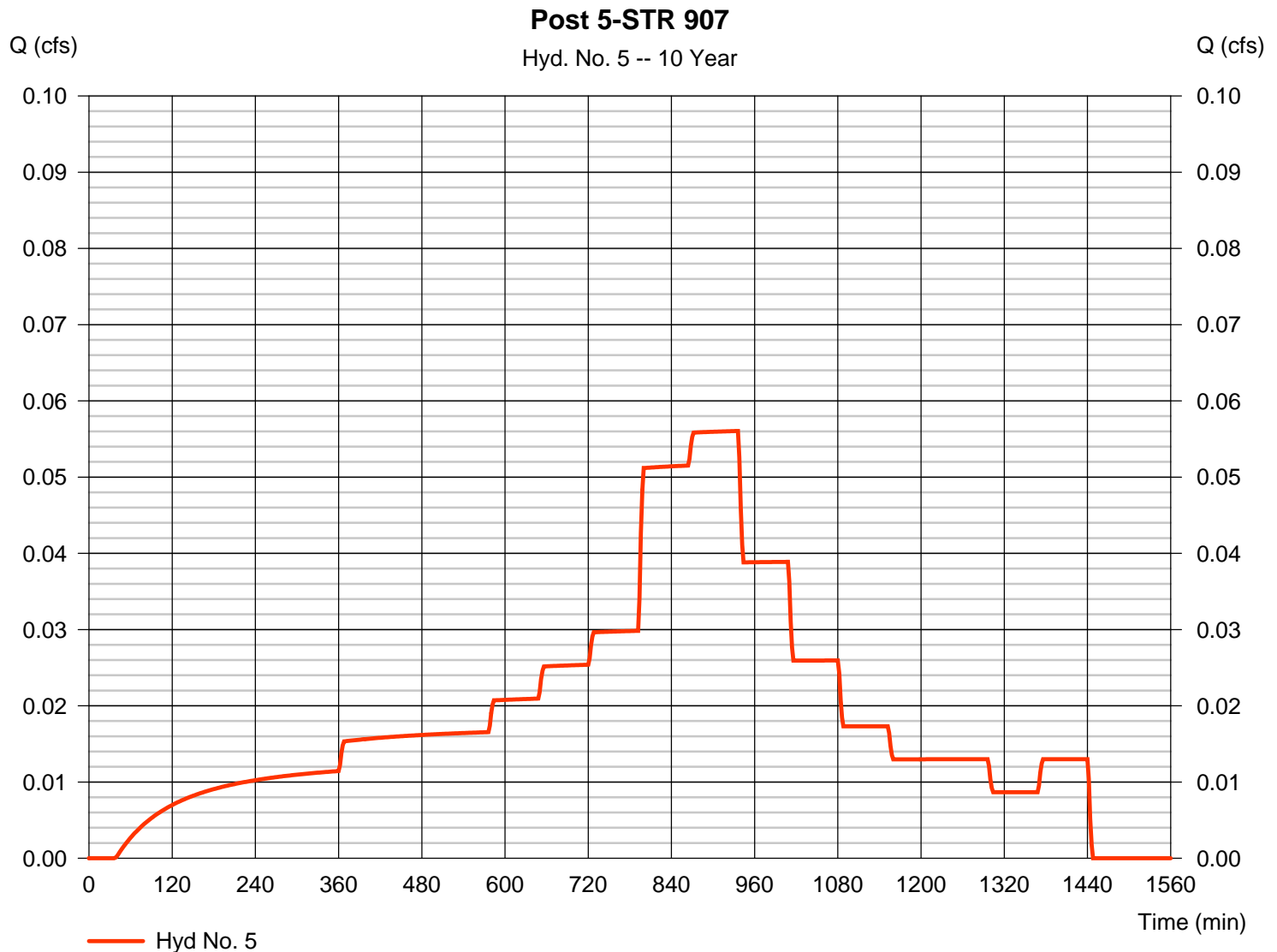
Wednesday, 07 / 11 / 2018

Hyd. No. 5

Post 5-STR 907

Hydrograph type	= SCS Runoff	Peak discharge	= 0.056 cfs
Storm frequency	= 10 yrs	Time to peak	= 936 min
Time interval	= 2 min	Hyd. volume	= 1,725 cuft
Drainage area	= 0.130 ac	Curve number	= 97*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 4.25 in	Distribution	= Huff-3rd
Storm duration	= 24.00 hrs	Shape factor	= 484

* Composite (Area/CN) = $[(0.010 \times 79) + (0.120 \times 98)] / 0.130$



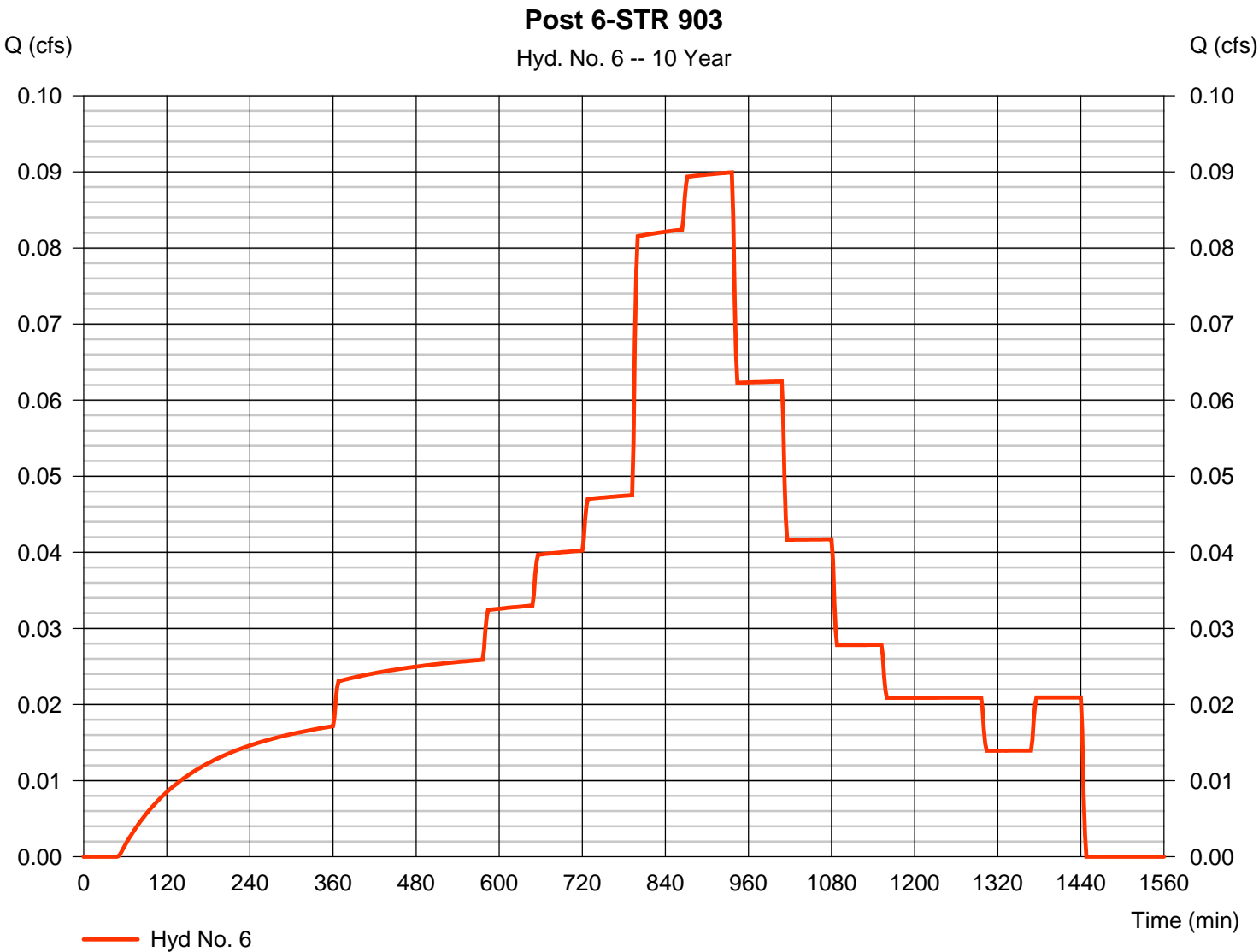
Hydrograph Report

Hyd. No. 6

Post 6-STR 903

Hydrograph type	= SCS Runoff	Peak discharge	= 0.090 cfs
Storm frequency	= 10 yrs	Time to peak	= 936 min
Time interval	= 2 min	Hyd. volume	= 2,707 cuft
Drainage area	= 0.210 ac	Curve number	= 96*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 4.25 in	Distribution	= Huff-3rd
Storm duration	= 24.00 hrs	Shape factor	= 484

* Composite (Area/CN) = [(0.020 x 79) + (0.190 x 98)] / 0.210



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

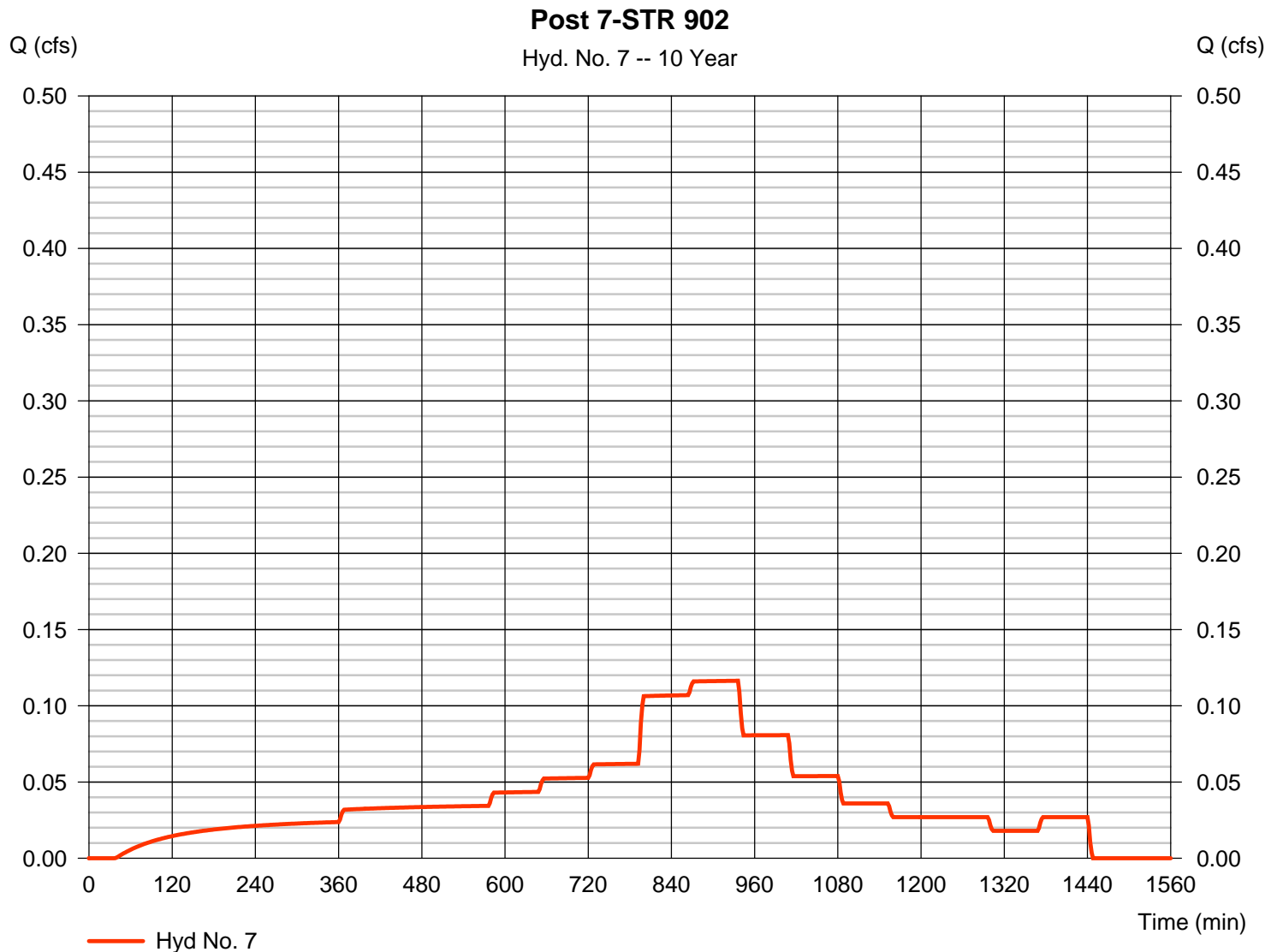
Wednesday, 07 / 11 / 2018

Hyd. No. 7

Post 7-STR 902

Hydrograph type	= SCS Runoff	Peak discharge	= 0.116 cfs
Storm frequency	= 10 yrs	Time to peak	= 936 min
Time interval	= 2 min	Hyd. volume	= 3,584 cuft
Drainage area	= 0.270 ac	Curve number	= 97*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 4.25 in	Distribution	= Huff-3rd
Storm duration	= 24.00 hrs	Shape factor	= 484

* Composite (Area/CN) = $[(0.020 \times 79) + (0.250 \times 98)] / 0.270$



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

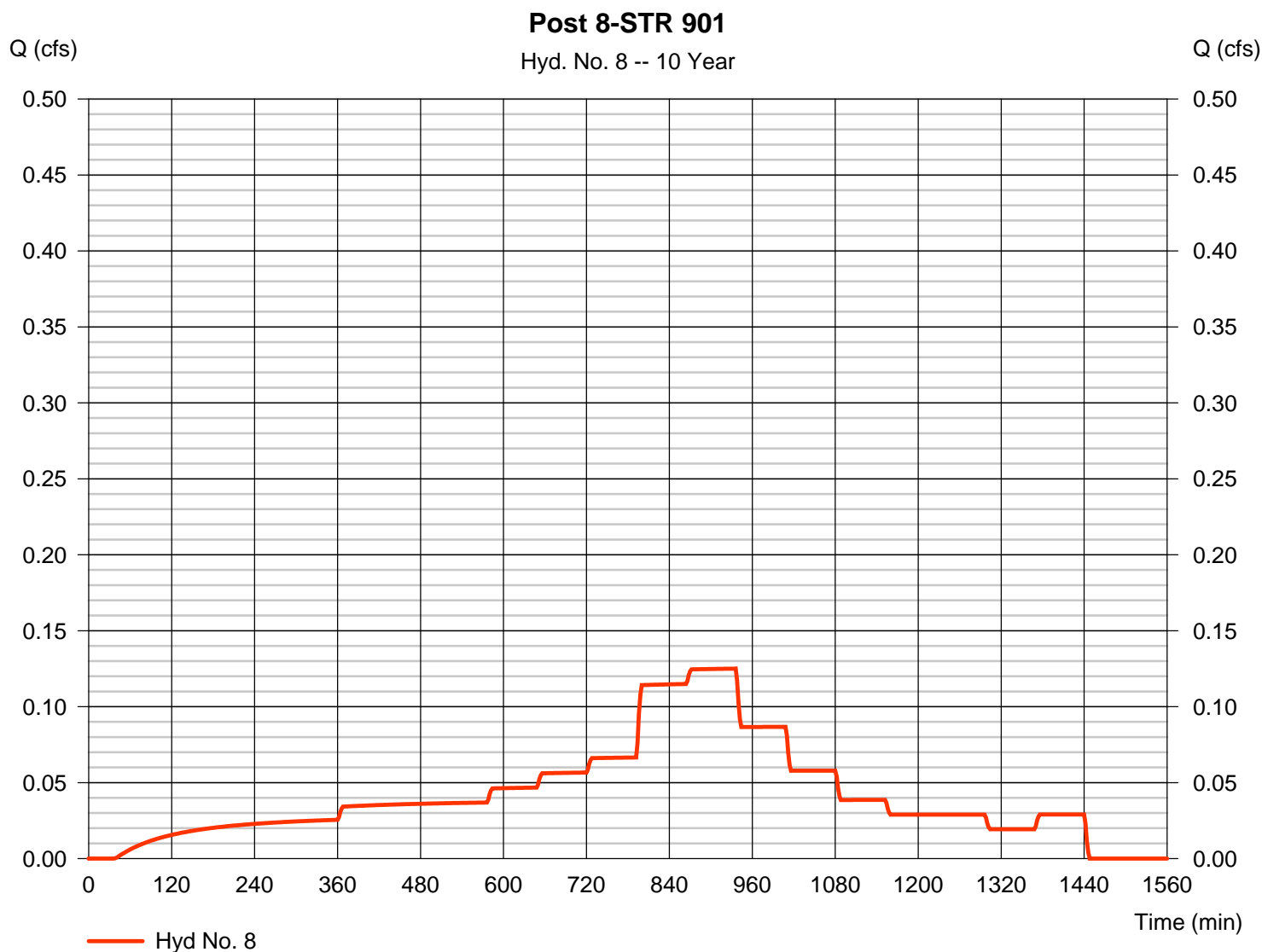
Wednesday, 07 / 11 / 2018

Hyd. No. 8

Post 8-STR 901

Hydrograph type	= SCS Runoff	Peak discharge	= 0.125 cfs
Storm frequency	= 10 yrs	Time to peak	= 936 min
Time interval	= 2 min	Hyd. volume	= 3,849 cuft
Drainage area	= 0.290 ac	Curve number	= 97*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 4.25 in	Distribution	= Huff-3rd
Storm duration	= 24.00 hrs	Shape factor	= 484

* Composite (Area/CN) = $[(0.020 \times 79) + (0.270 \times 98)] / 0.290$



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

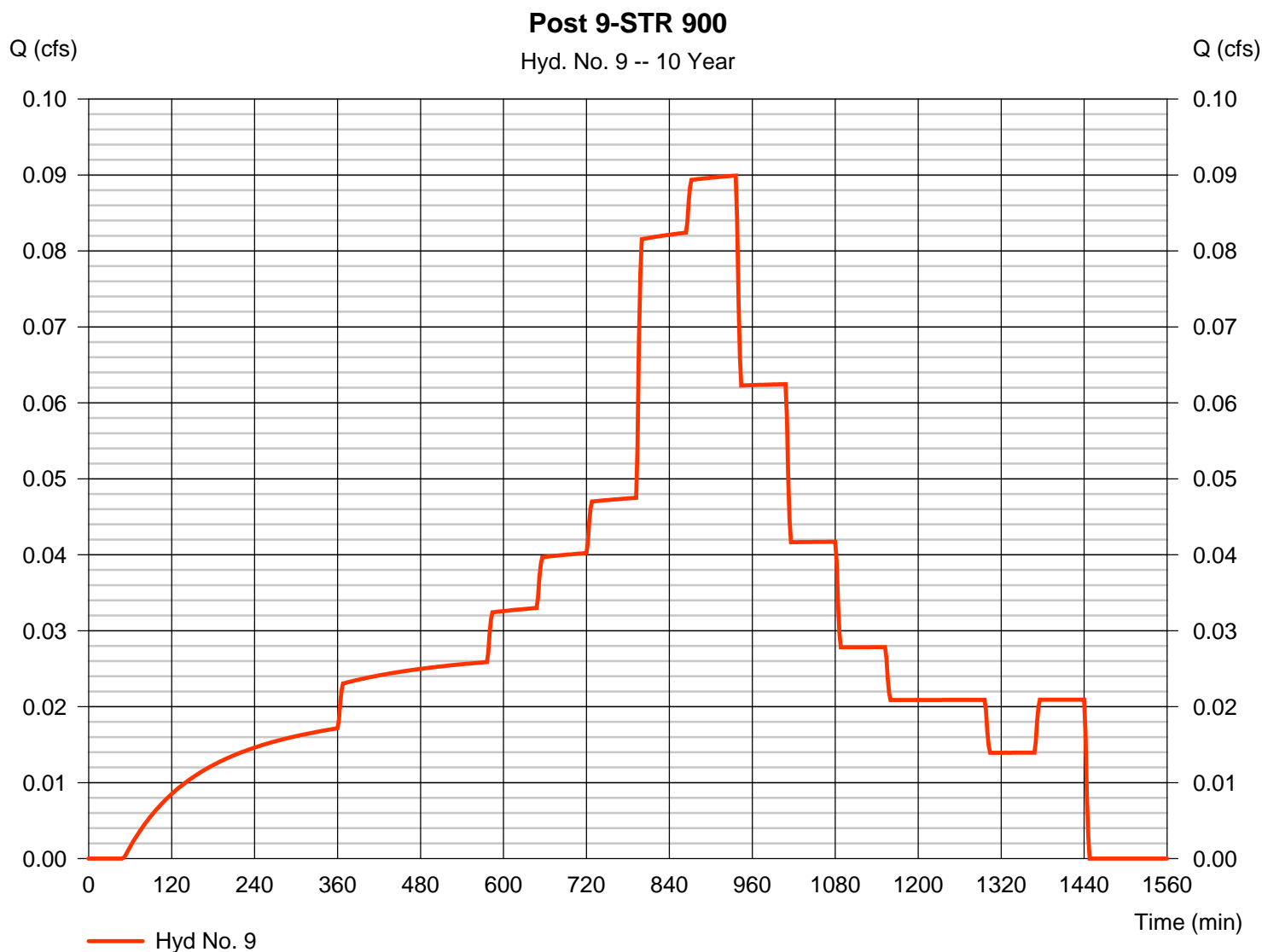
Wednesday, 07 / 11 / 2018

Hyd. No. 9

Post 9-STR 900

Hydrograph type	= SCS Runoff	Peak discharge	= 0.090 cfs
Storm frequency	= 10 yrs	Time to peak	= 936 min
Time interval	= 2 min	Hyd. volume	= 2,707 cuft
Drainage area	= 0.210 ac	Curve number	= 96*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 4.25 in	Distribution	= Huff-3rd
Storm duration	= 24.00 hrs	Shape factor	= 484

* Composite (Area/CN) = $[(0.020 \times 79) + (0.190 \times 98)] / 0.210$



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

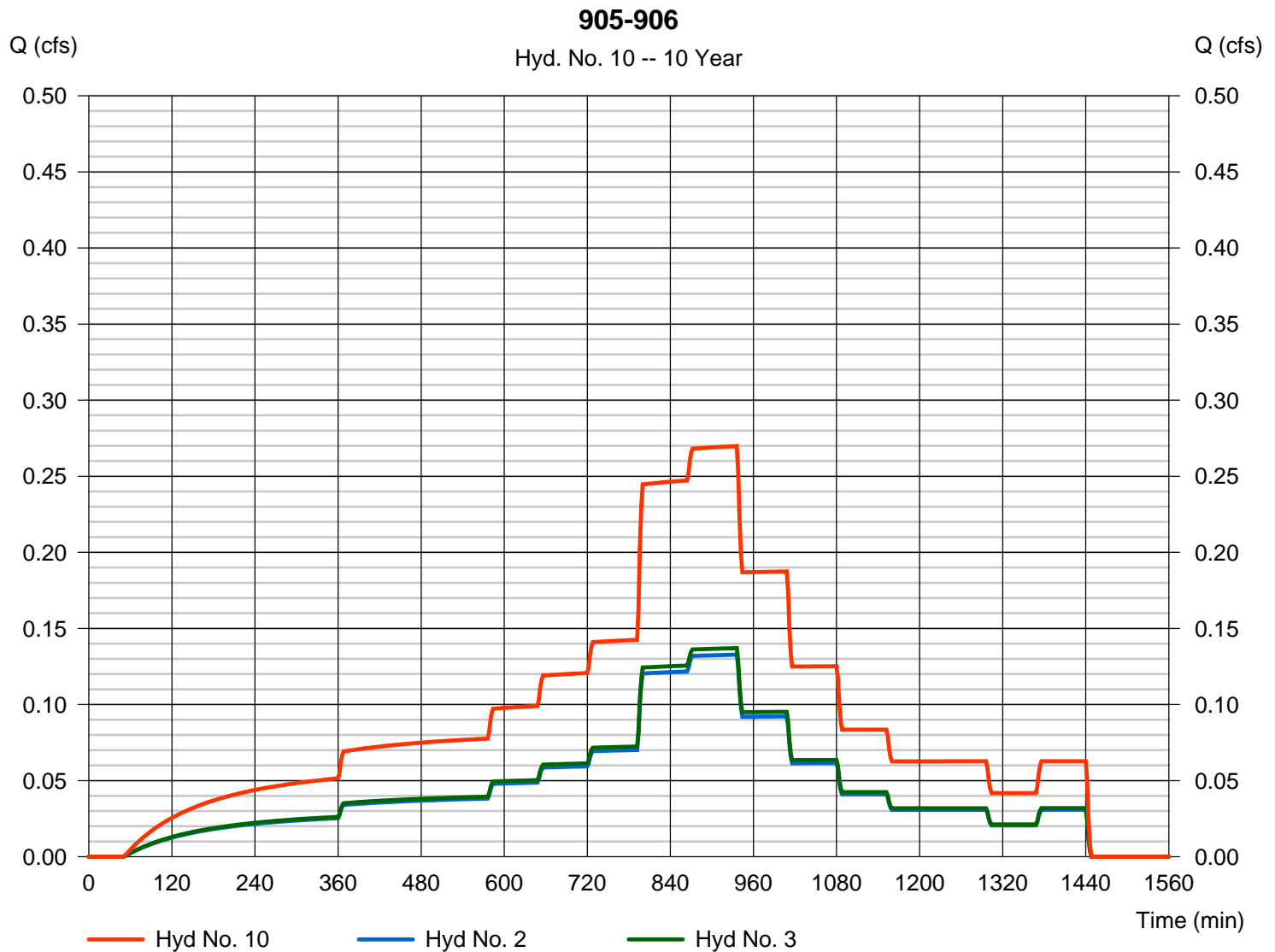
Wednesday, 07 / 11 / 2018

Hyd. No. 10

905-906

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

Peak discharge = 0.270 cfs
 Time to peak = 936 min
 Hyd. volume = 8,121 cuft
 Contrib. drain. area = 0.630 ac



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

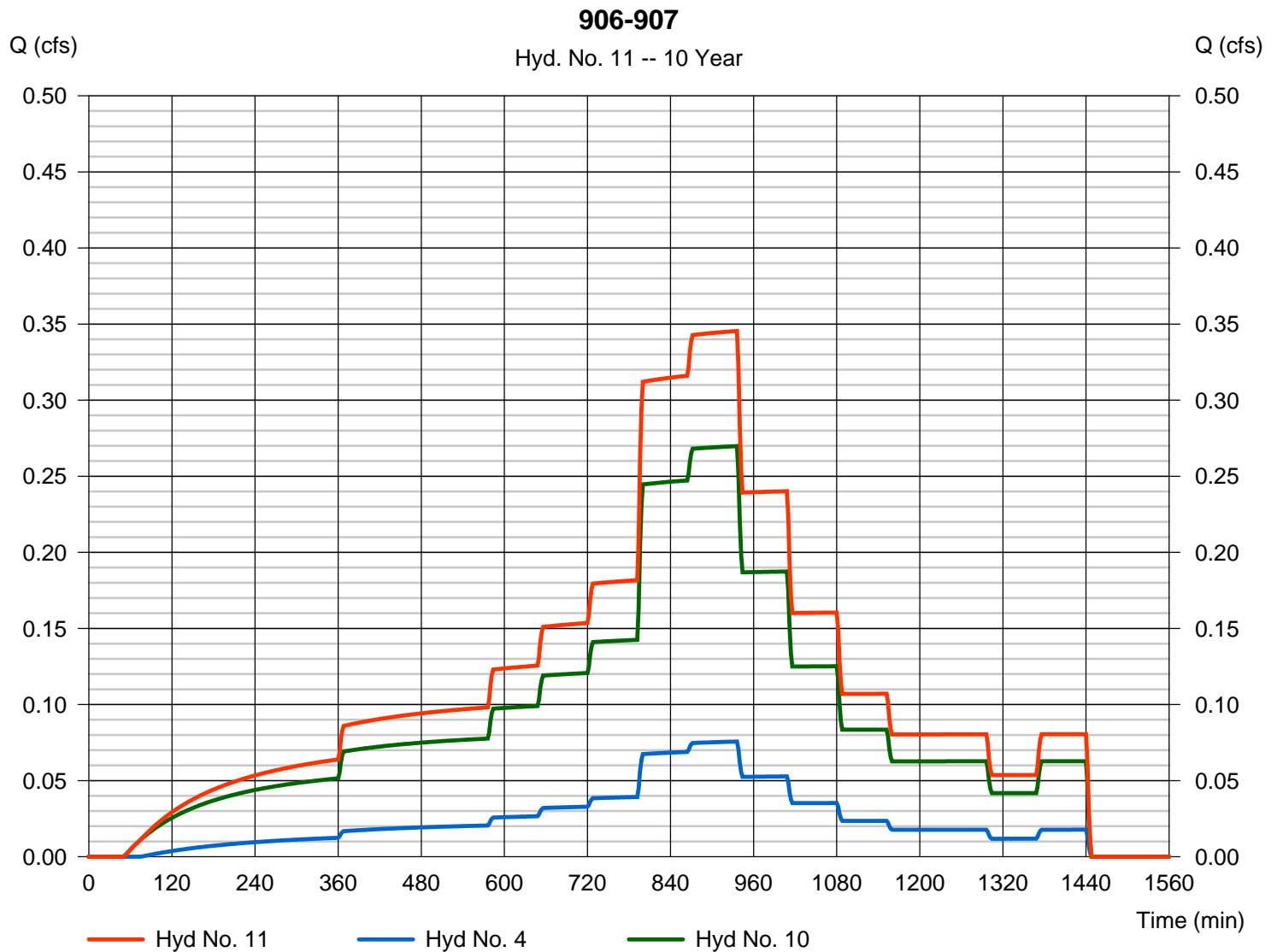
Wednesday, 07 / 11 / 2018

Hyd. No. 11

906-907

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

Peak discharge = 0.345 cfs
 Time to peak = 936 min
 Hyd. volume = 10,308 cuft
 Contrib. drain. area = 0.180 ac



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

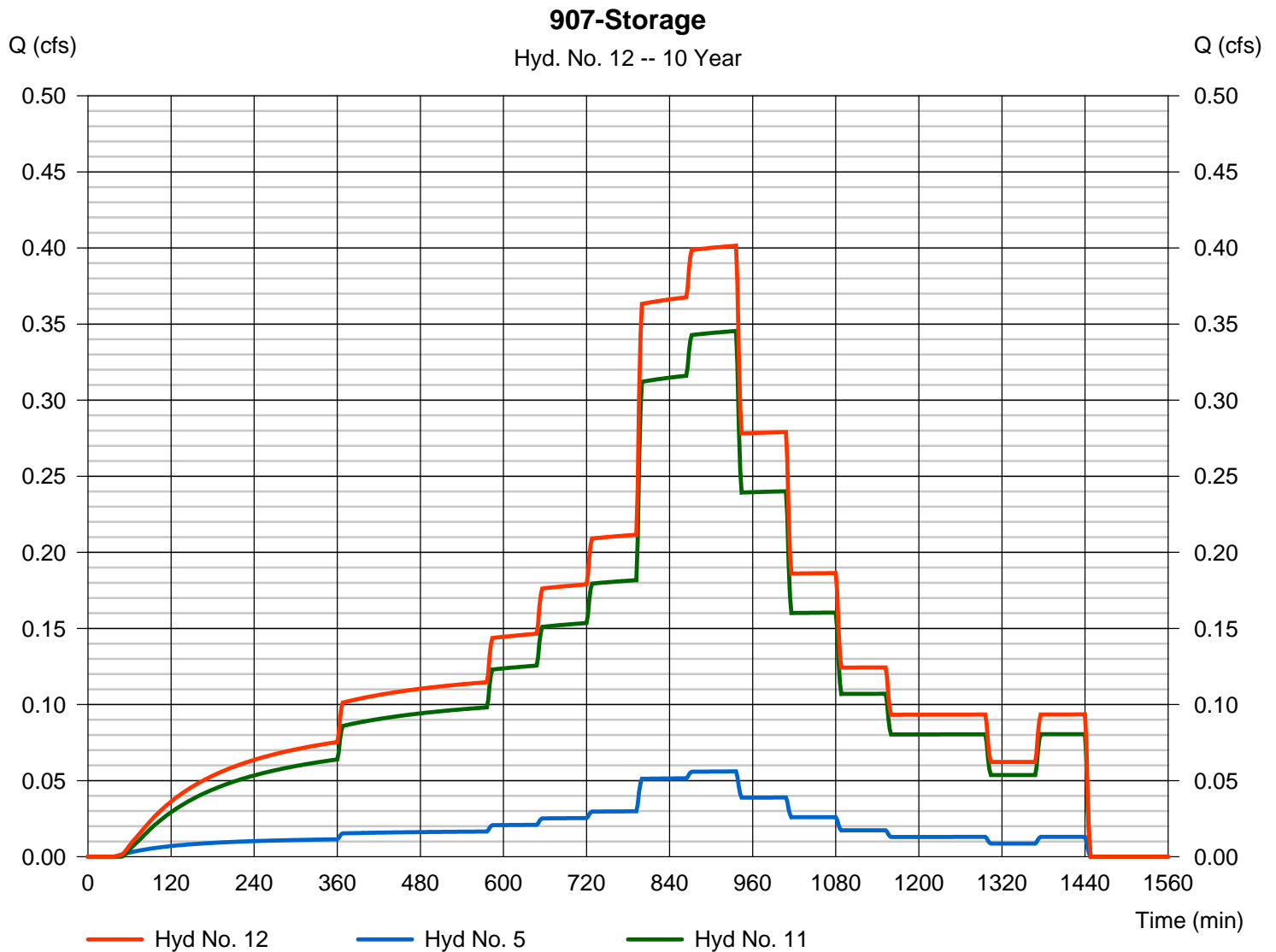
Wednesday, 07 / 11 / 2018

Hyd. No. 12

907-Storage

Hydrograph type = Combine
 Storm frequency = 10 yrs
 Time interval = 2 min
 Inflow hyds. = 5, 11

Peak discharge = 0.401 cfs
 Time to peak = 936 min
 Hyd. volume = 12,033 cuft
 Contrib. drain. area = 0.130 ac



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

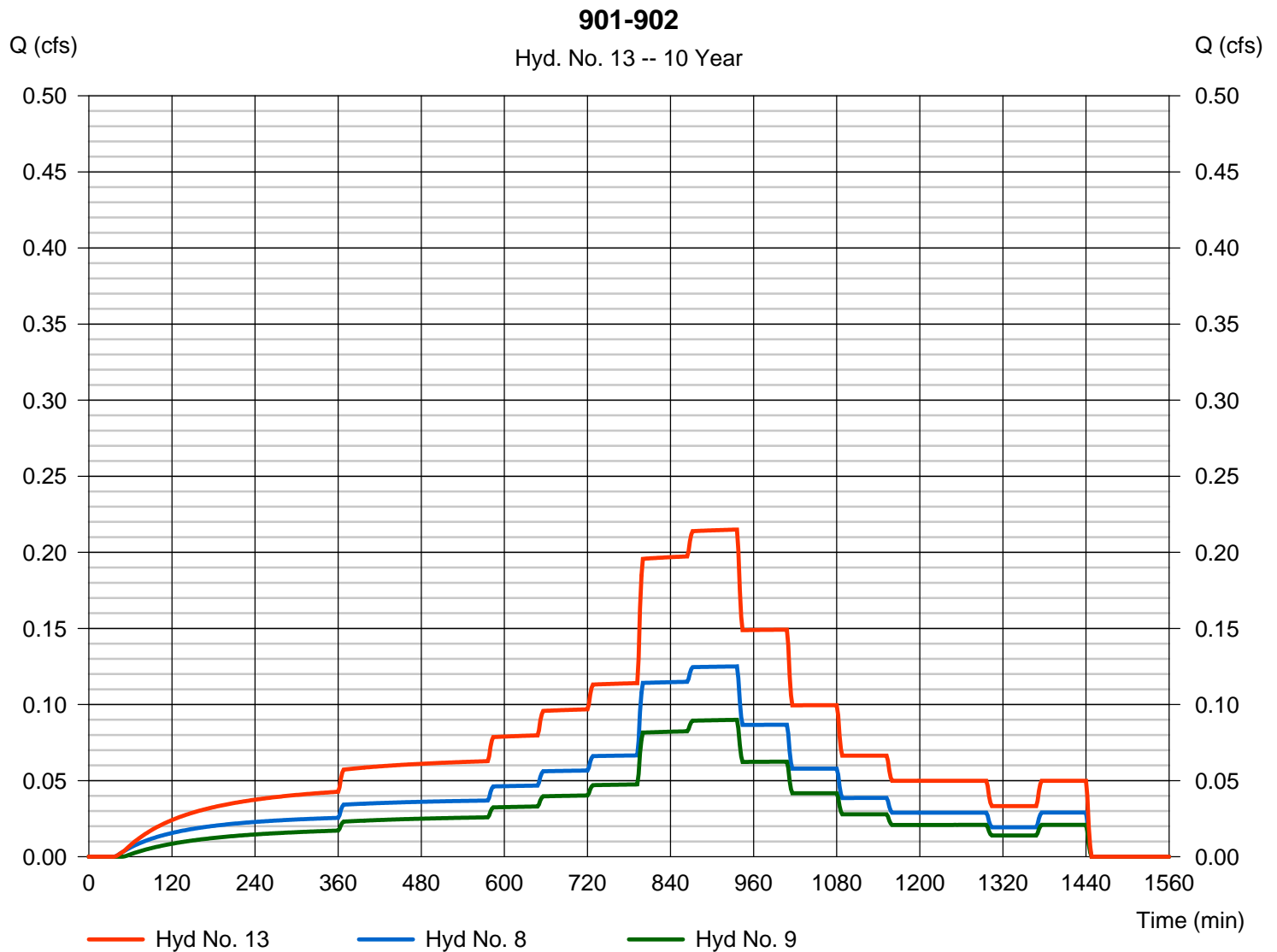
Wednesday, 07 / 11 / 2018

Hyd. No. 13

901-902

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

Peak discharge = 0.215 cfs
Time to peak = 936 min
Hyd. volume = 6,556 cuft
Contrib. drain. area = 0.500 ac



Hydrograph Report

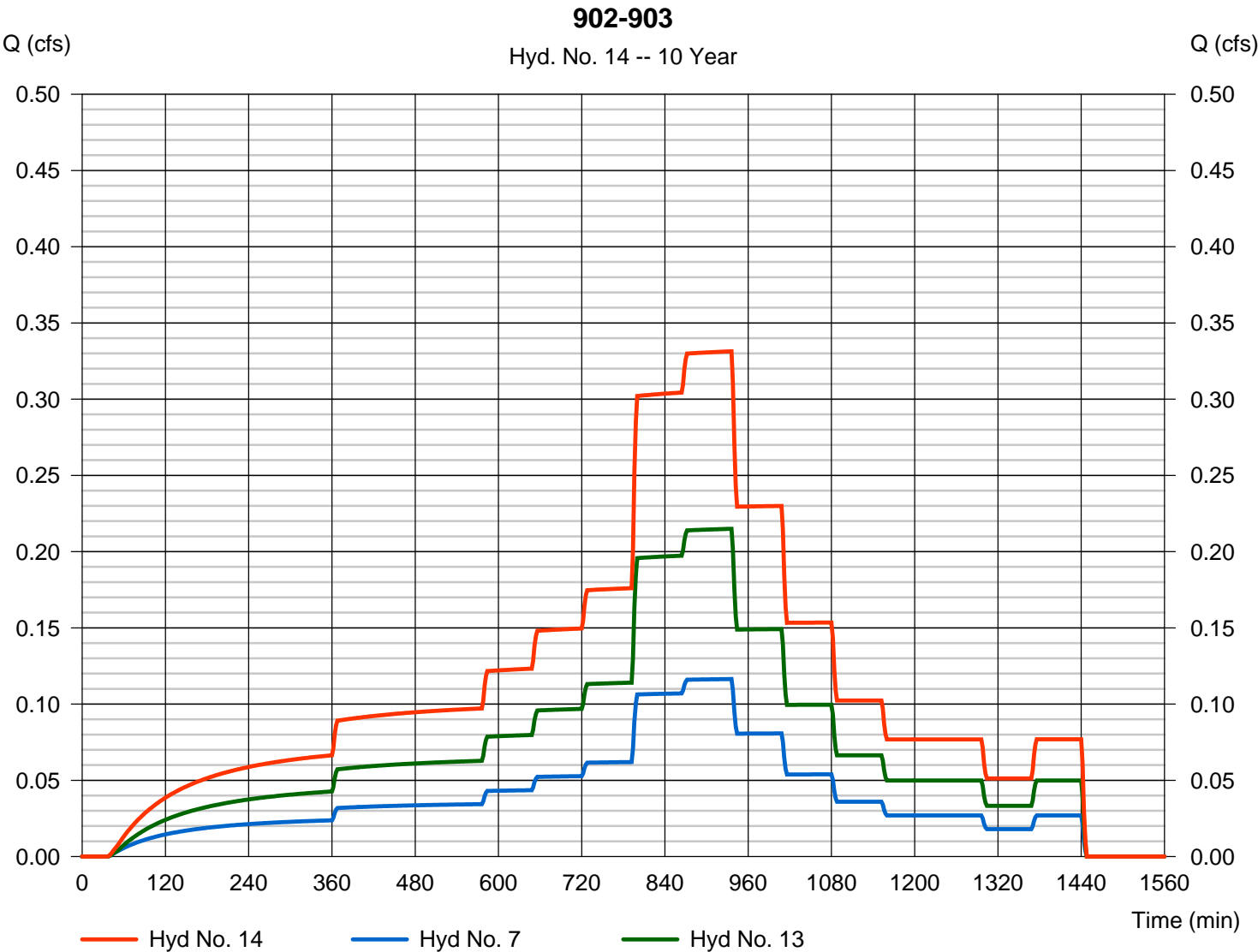
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

Wednesday, 07 / 11 / 2018

Hyd. No. 14

902-903

Hydrograph type	= Combine	Peak discharge	= 0.331 cfs
Storm frequency	= 10 yrs	Time to peak	= 936 min
Time interval	= 2 min	Hyd. volume	= 10,140 cuft
Inflow hyds.	= 7, 13	Contrib. drain. area	= 0.270 ac



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

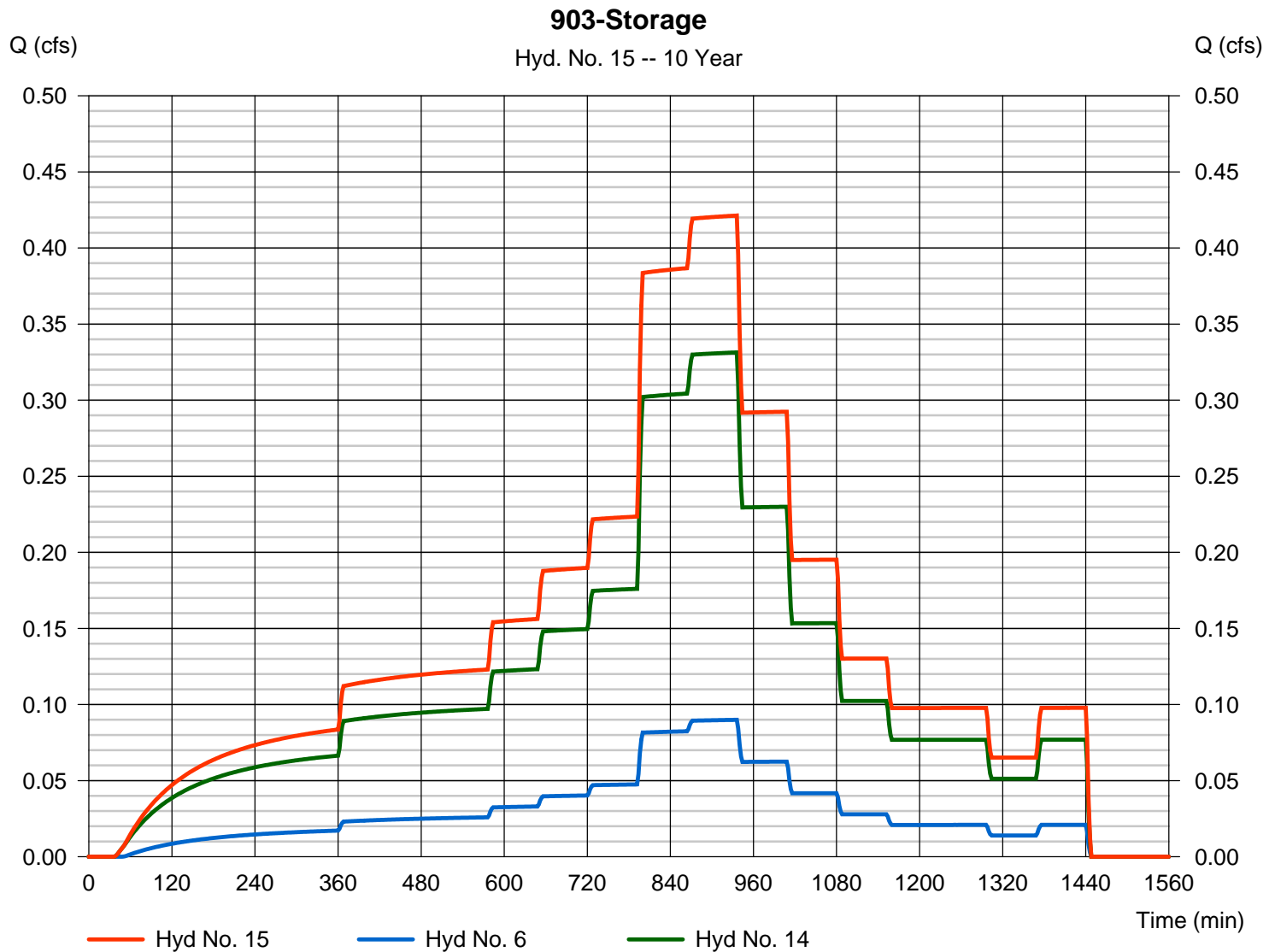
Wednesday, 07 / 11 / 2018

Hyd. No. 15

903-Storage

Hydrograph type = Combine
 Storm frequency = 10 yrs
 Time interval = 2 min
 Inflow hyds. = 6, 14

Peak discharge = 0.421 cfs
 Time to peak = 936 min
 Hyd. volume = 12,847 cuft
 Contrib. drain. area = 0.210 ac



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

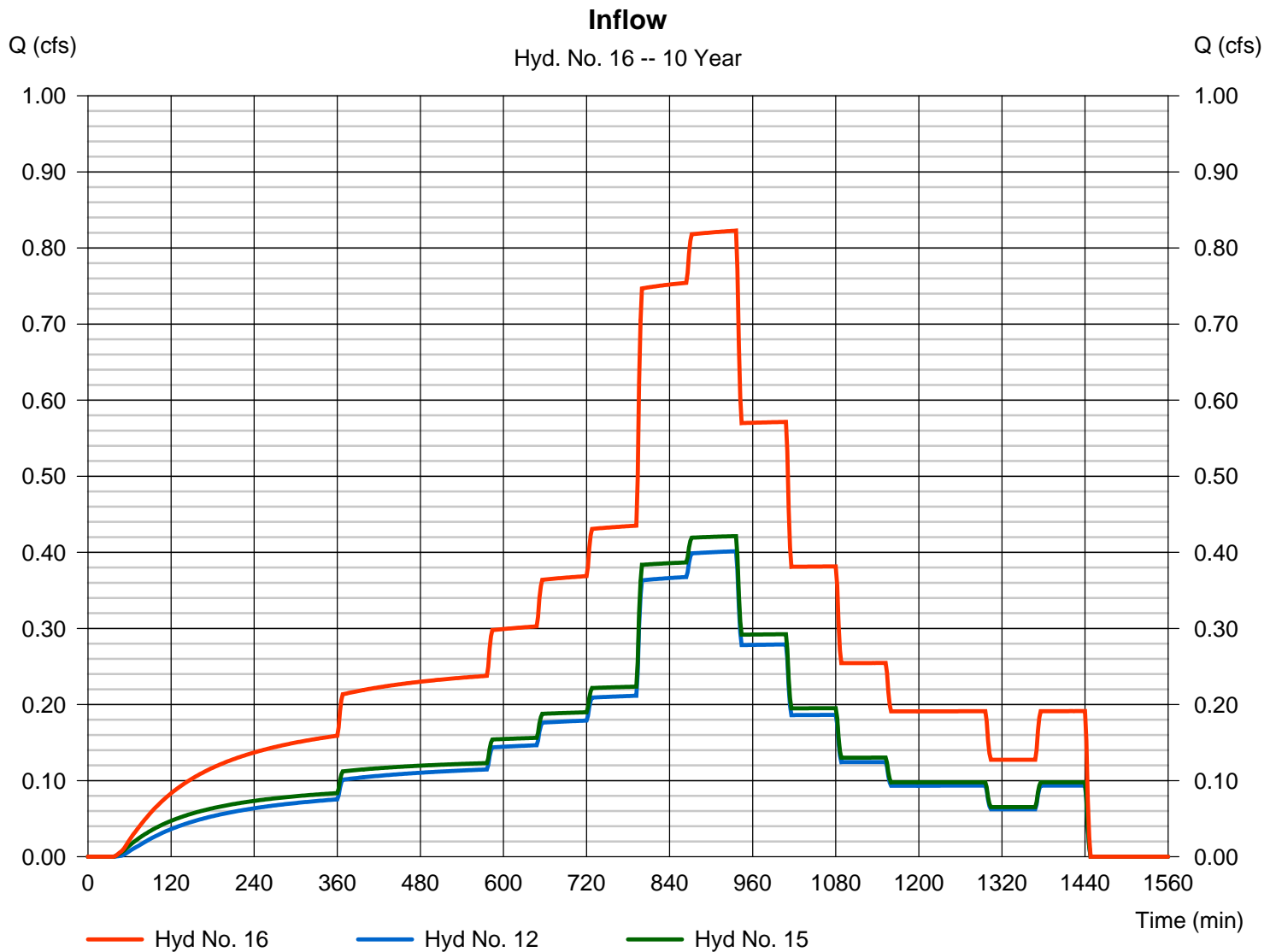
Wednesday, 07 / 11 / 2018

Hyd. No. 16

Inflow

Hydrograph type = Combine
Storm frequency = 10 yrs
Time interval = 2 min
Inflow hyds. = 12, 15

Peak discharge = 0.823 cfs
Time to peak = 936 min
Hyd. volume = 24,880 cuft
Contrib. drain. area = 0.000 ac



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

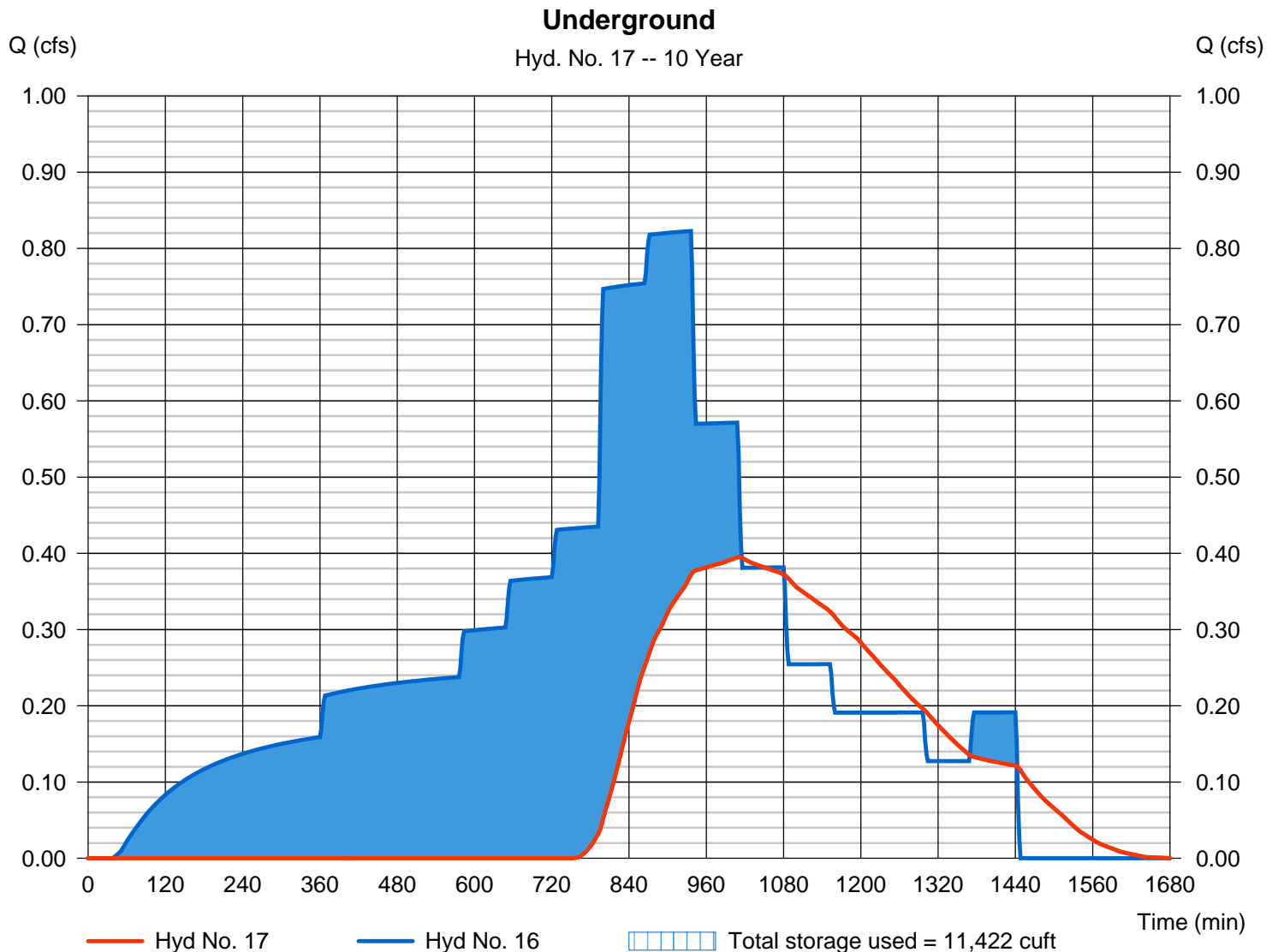
Wednesday, 07 / 11 / 2018

Hyd. No. 17

Underground

Hydrograph type	= Reservoir	Peak discharge	= 0.395 cfs
Storm frequency	= 10 yrs	Time to peak	= 1010 min
Time interval	= 2 min	Hyd. volume	= 10,875 cuft
Inflow hyd. No.	= 16 - Inflow	Max. Elevation	= 740.24 ft
Reservoir name	= Underground Storage	Max. Storage	= 11,422 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

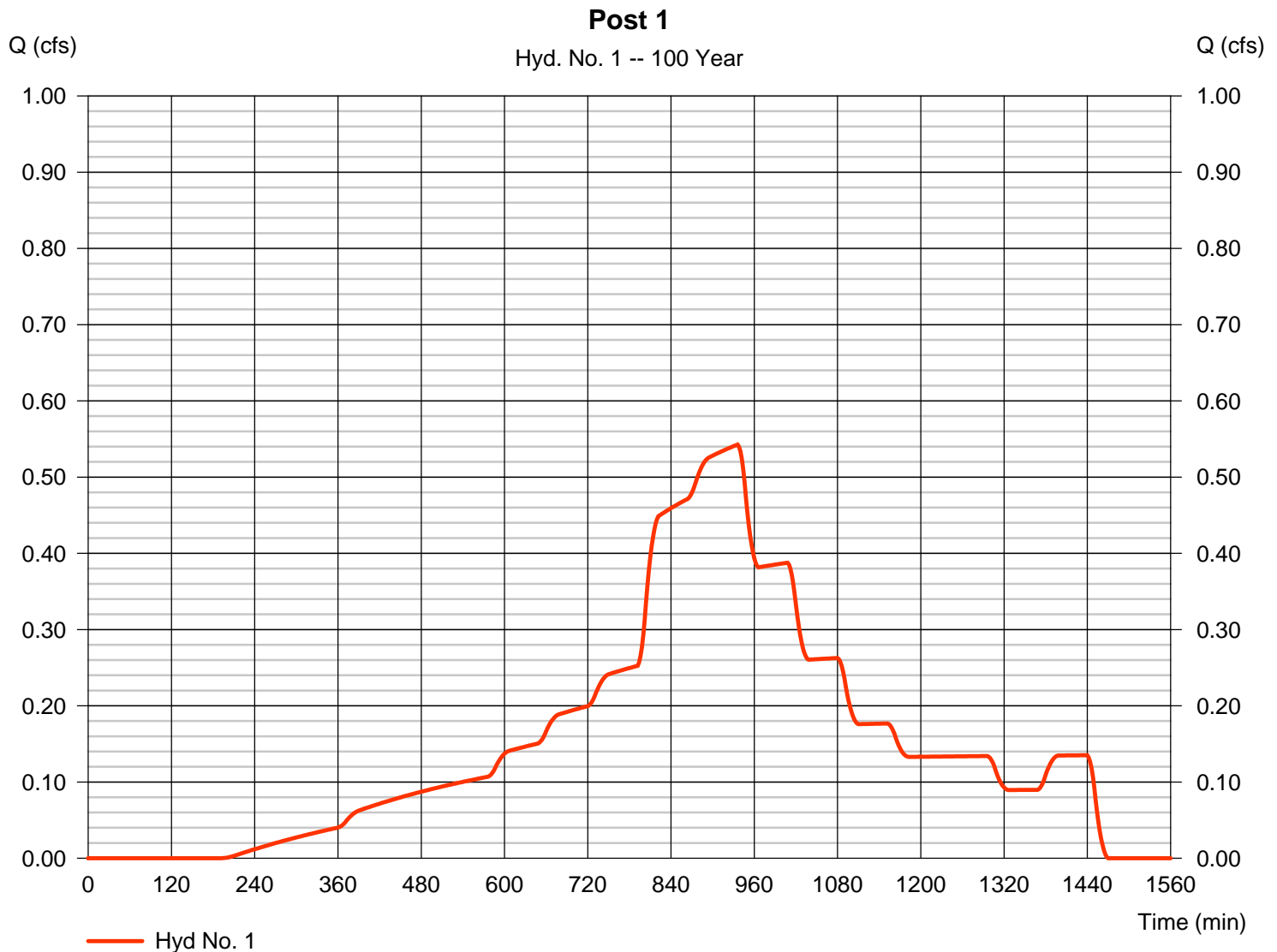
Wednesday, 07 / 11 / 2018

Hyd. No. 1

Post 1

Hydrograph type = SCS Runoff
 Storm frequency = 100 yrs
 Time interval = 2 min
 Drainage area = 0.860 ac
 Basin Slope = 0.0 %
 Tc method = TR55
 Total precip. = 6.84 in
 Storm duration = 24.00 hrs

Peak discharge = 0.543 cfs
 Time to peak = 936 min
 Hyd. volume = 13,855 cuft
 Curve number = 79
 Hydraulic length = 0 ft
 Time of conc. (Tc) = 18.20 min
 Distribution = Huff-3rd
 Shape factor = 484



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

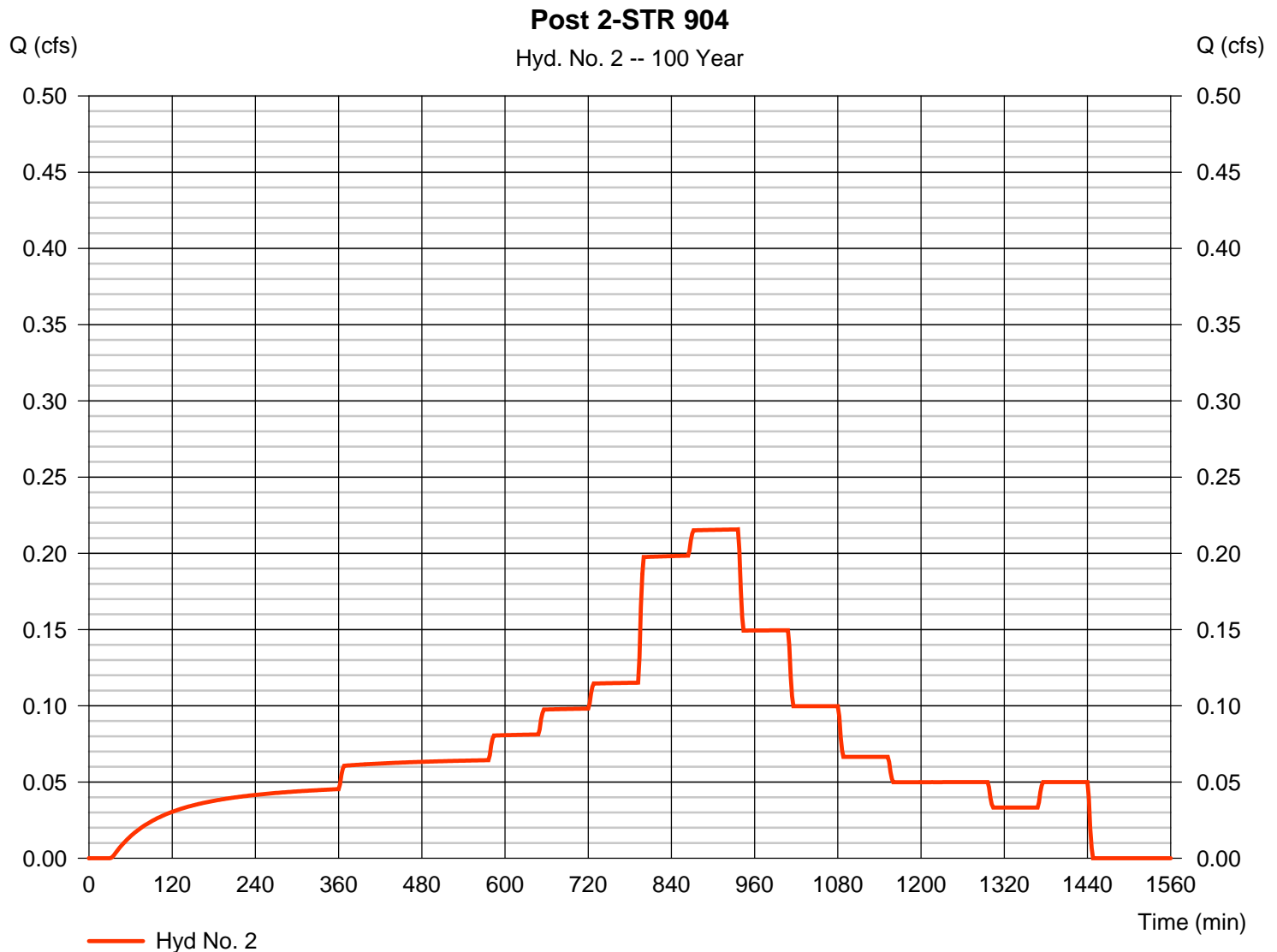
Wednesday, 07 / 11 / 2018

Hyd. No. 2

Post 2-STR 904

Hydrograph type	= SCS Runoff	Peak discharge	= 0.216 cfs
Storm frequency	= 100 yrs	Time to peak	= 936 min
Time interval	= 2 min	Hyd. volume	= 6,714 cuft
Drainage area	= 0.310 ac	Curve number	= 96*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 6.84 in	Distribution	= Huff-3rd
Storm duration	= 24.00 hrs	Shape factor	= 484

* Composite (Area/CN) = $[(0.030 \times 79) + (0.280 \times 98)] / 0.310$



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

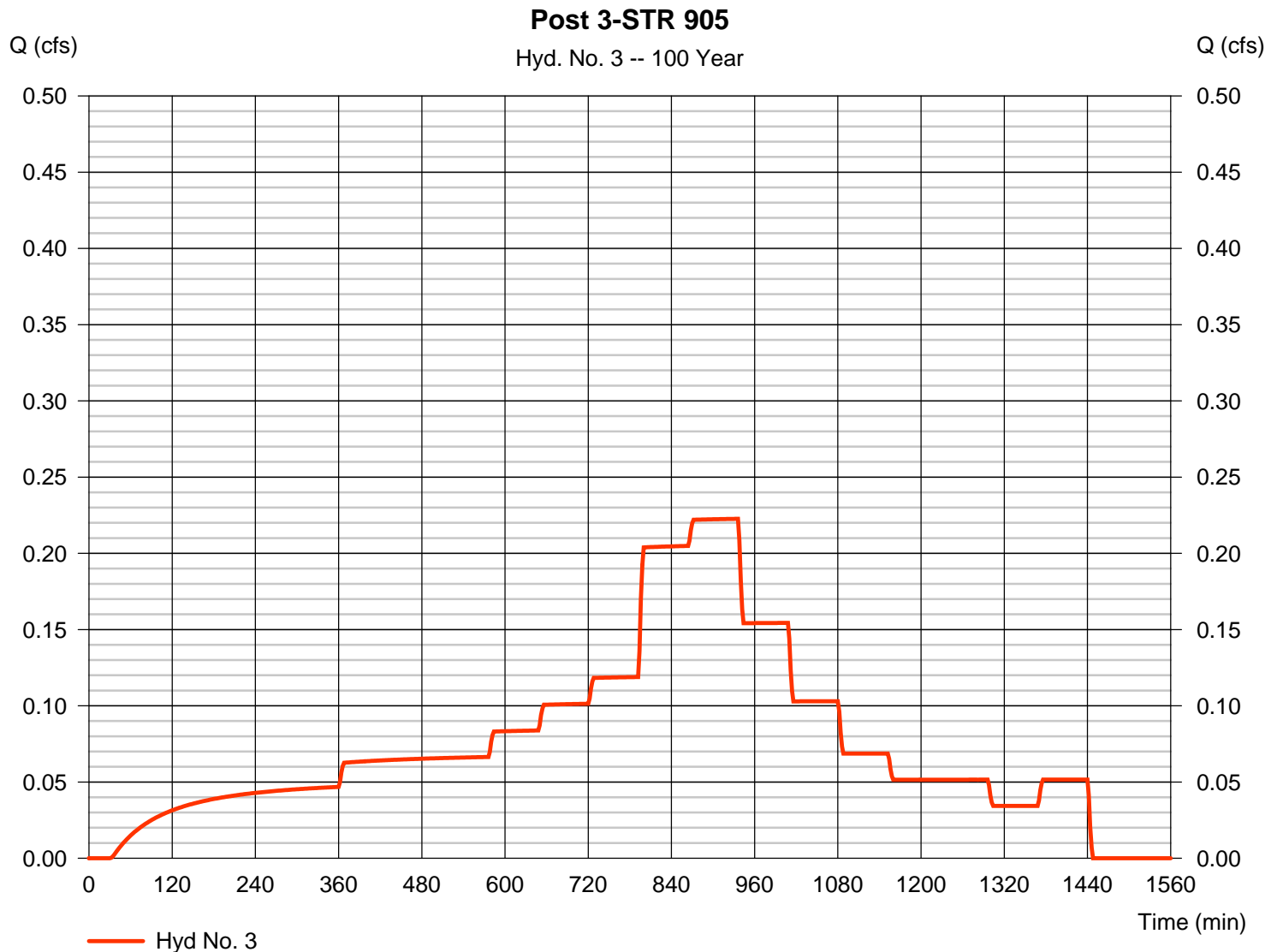
Wednesday, 07 / 11 / 2018

Hyd. No. 3

Post 3-STR 905

Hydrograph type	= SCS Runoff	Peak discharge	= 0.223 cfs
Storm frequency	= 100 yrs	Time to peak	= 936 min
Time interval	= 2 min	Hyd. volume	= 6,931 cuft
Drainage area	= 0.320 ac	Curve number	= 96*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 6.84 in	Distribution	= Huff-3rd
Storm duration	= 24.00 hrs	Shape factor	= 484

* Composite (Area/CN) = $[(0.030 \times 79) + (0.290 \times 98)] / 0.320$



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

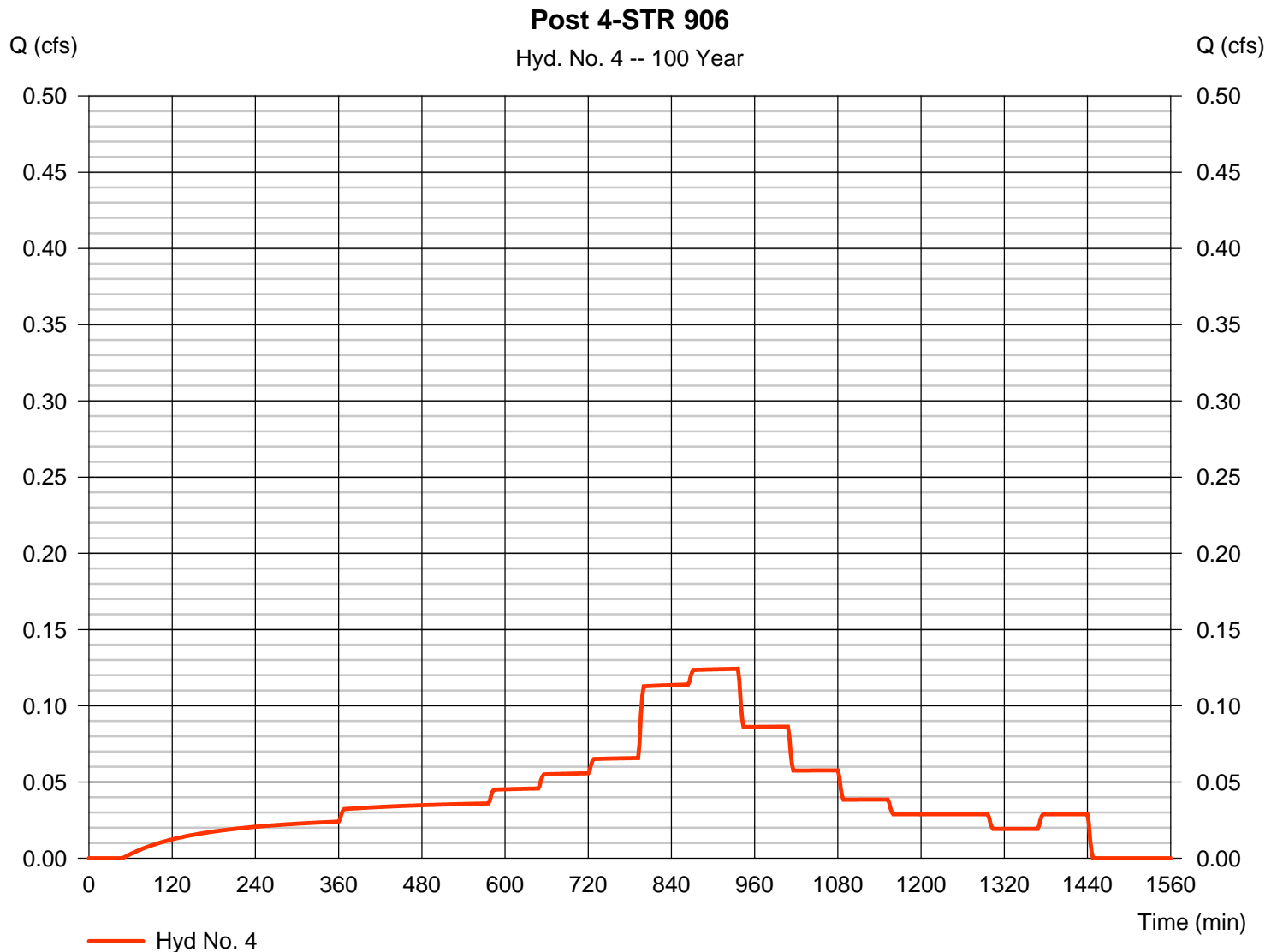
Wednesday, 07 / 11 / 2018

Hyd. No. 4

Post 4-STR 906

Hydrograph type	= SCS Runoff	Peak discharge	= 0.124 cfs
Storm frequency	= 100 yrs	Time to peak	= 936 min
Time interval	= 2 min	Hyd. volume	= 3,755 cuft
Drainage area	= 0.180 ac	Curve number	= 94*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 6.84 in	Distribution	= Huff-3rd
Storm duration	= 24.00 hrs	Shape factor	= 484

* Composite (Area/CN) = $[(0.040 \times 79) + (0.140 \times 98)] / 0.180$



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

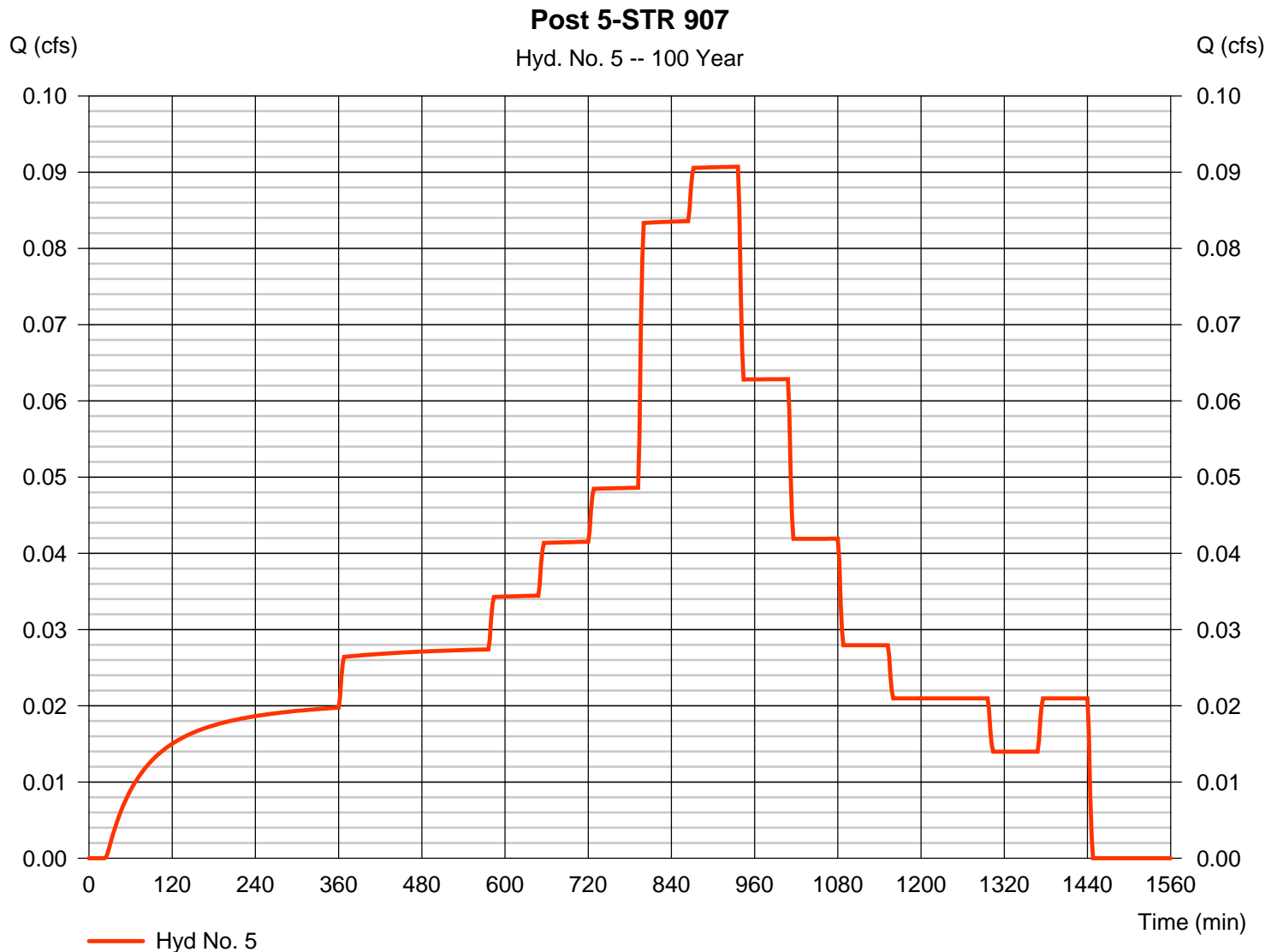
Wednesday, 07 / 11 / 2018

Hyd. No. 5

Post 5-STR 907

Hydrograph type	= SCS Runoff	Peak discharge	= 0.091 cfs
Storm frequency	= 100 yrs	Time to peak	= 936 min
Time interval	= 2 min	Hyd. volume	= 2,868 cuft
Drainage area	= 0.130 ac	Curve number	= 97*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 6.84 in	Distribution	= Huff-3rd
Storm duration	= 24.00 hrs	Shape factor	= 484

* Composite (Area/CN) = $[(0.010 \times 79) + (0.120 \times 98)] / 0.130$



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

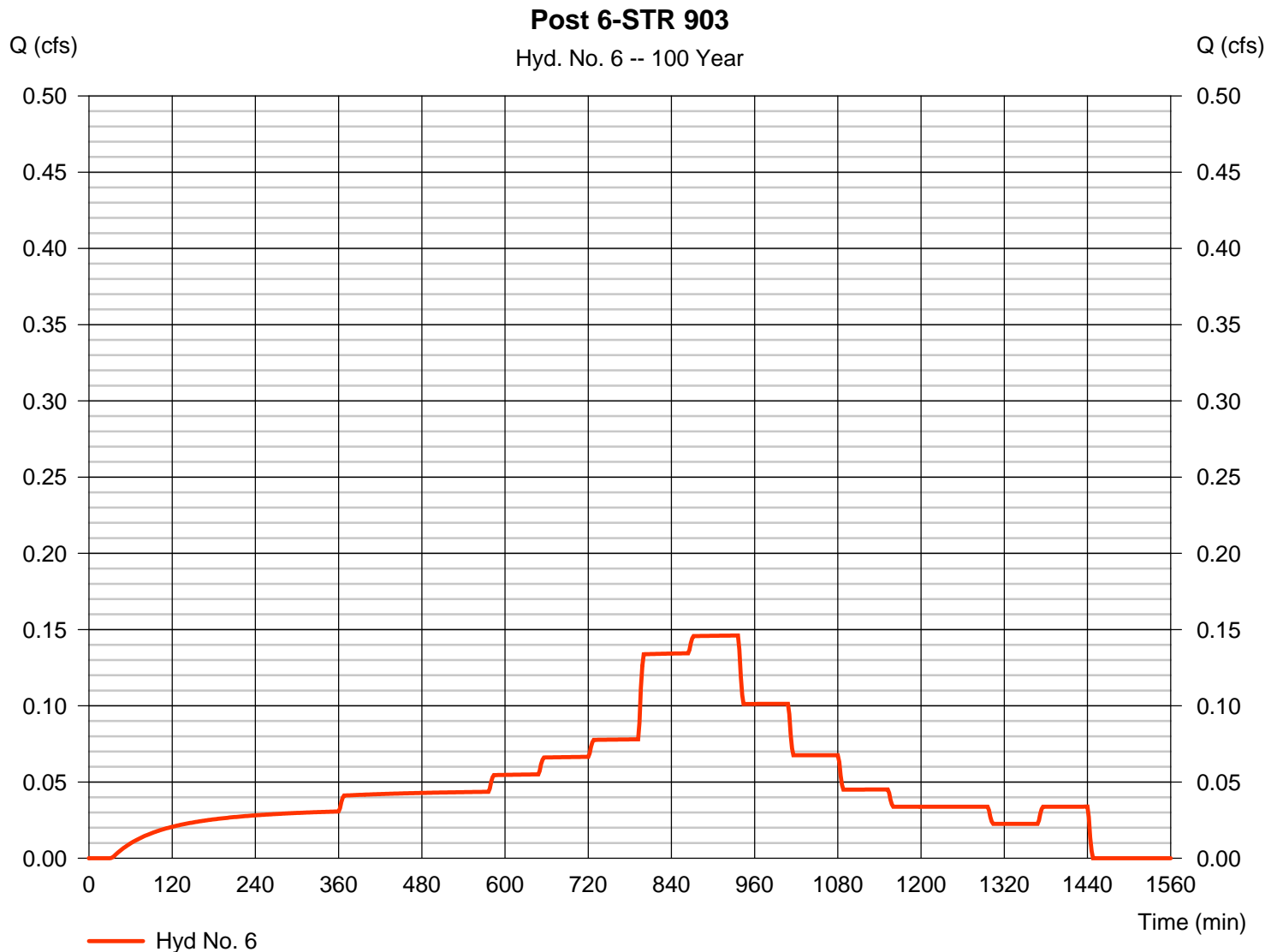
Wednesday, 07 / 11 / 2018

Hyd. No. 6

Post 6-STR 903

Hydrograph type	= SCS Runoff	Peak discharge	= 0.146 cfs
Storm frequency	= 100 yrs	Time to peak	= 936 min
Time interval	= 2 min	Hyd. volume	= 4,548 cuft
Drainage area	= 0.210 ac	Curve number	= 96*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 6.84 in	Distribution	= Huff-3rd
Storm duration	= 24.00 hrs	Shape factor	= 484

* Composite (Area/CN) = $[(0.020 \times 79) + (0.190 \times 98)] / 0.210$



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

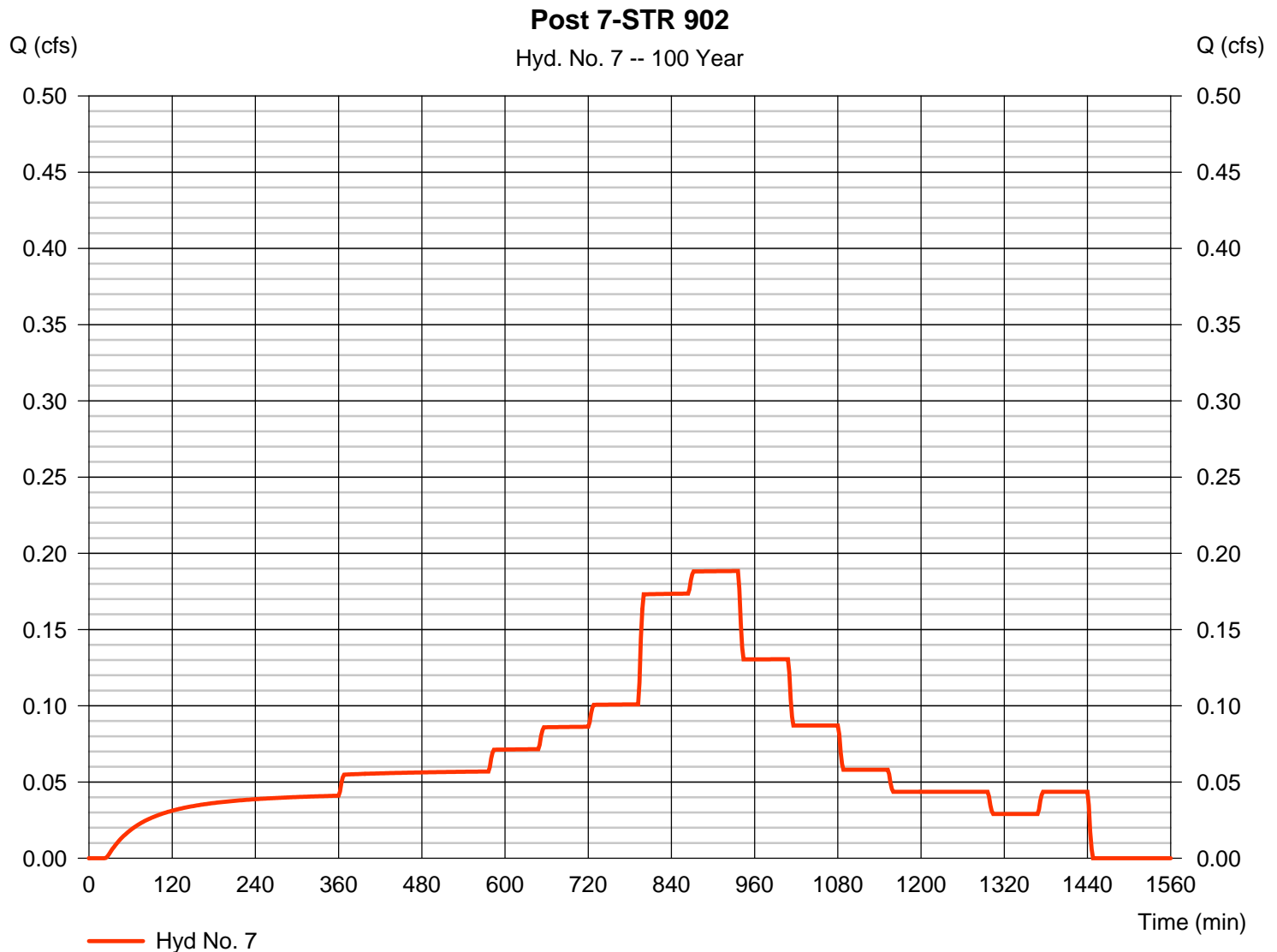
Wednesday, 07 / 11 / 2018

Hyd. No. 7

Post 7-STR 902

Hydrograph type	= SCS Runoff	Peak discharge	= 0.188 cfs
Storm frequency	= 100 yrs	Time to peak	= 936 min
Time interval	= 2 min	Hyd. volume	= 5,956 cuft
Drainage area	= 0.270 ac	Curve number	= 97*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 6.84 in	Distribution	= Huff-3rd
Storm duration	= 24.00 hrs	Shape factor	= 484

* Composite (Area/CN) = $[(0.020 \times 79) + (0.250 \times 98)] / 0.270$



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

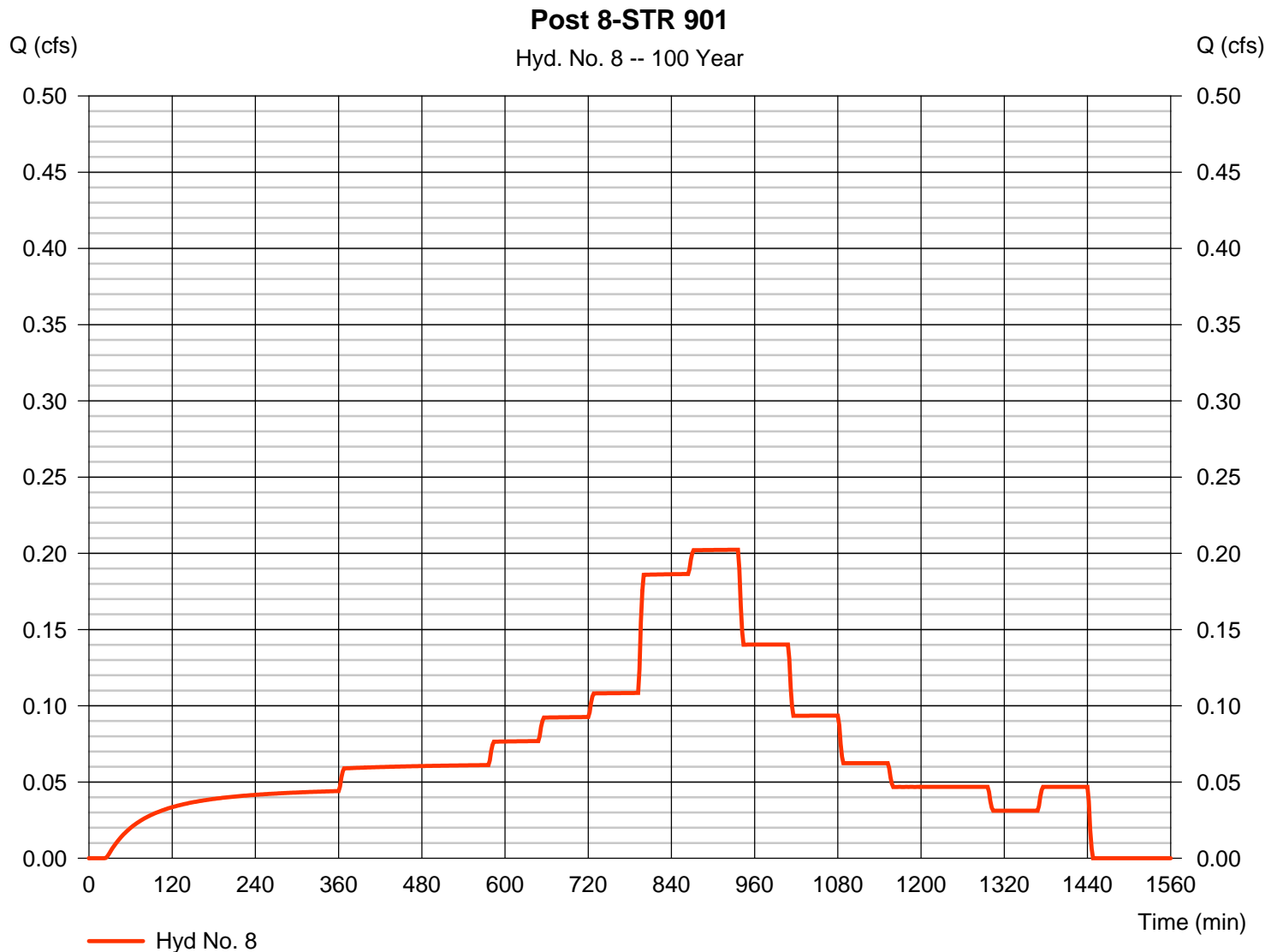
Wednesday, 07 / 11 / 2018

Hyd. No. 8

Post 8-STR 901

Hydrograph type	= SCS Runoff	Peak discharge	= 0.202 cfs
Storm frequency	= 100 yrs	Time to peak	= 936 min
Time interval	= 2 min	Hyd. volume	= 6,397 cuft
Drainage area	= 0.290 ac	Curve number	= 97*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 6.84 in	Distribution	= Huff-3rd
Storm duration	= 24.00 hrs	Shape factor	= 484

* Composite (Area/CN) = $[(0.020 \times 79) + (0.270 \times 98)] / 0.290$



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

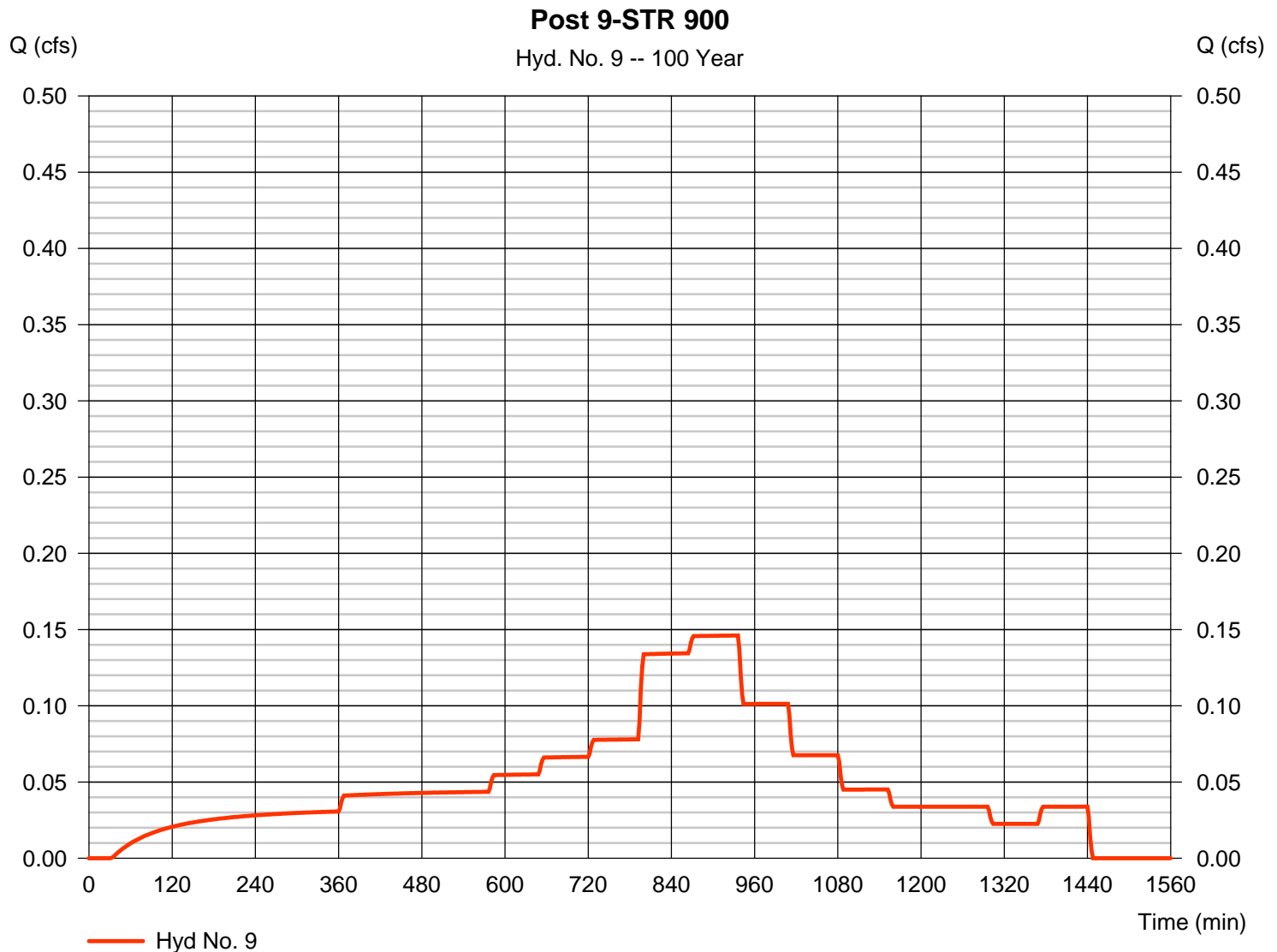
Wednesday, 07 / 11 / 2018

Hyd. No. 9

Post 9-STR 900

Hydrograph type	= SCS Runoff	Peak discharge	= 0.146 cfs
Storm frequency	= 100 yrs	Time to peak	= 936 min
Time interval	= 2 min	Hyd. volume	= 4,548 cuft
Drainage area	= 0.210 ac	Curve number	= 96*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 6.84 in	Distribution	= Huff-3rd
Storm duration	= 24.00 hrs	Shape factor	= 484

* Composite (Area/CN) = $[(0.020 \times 79) + (0.190 \times 98)] / 0.210$



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

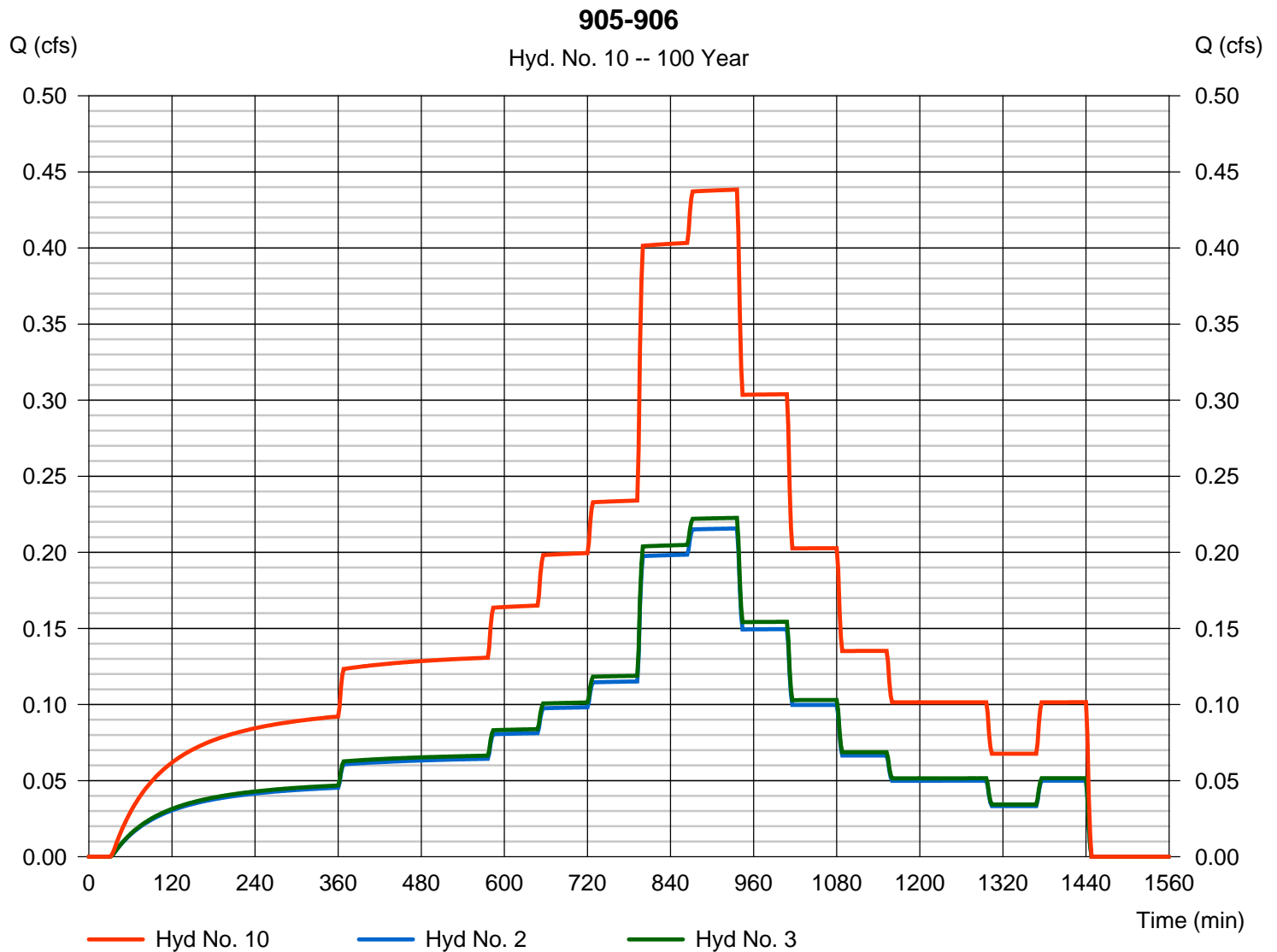
Wednesday, 07 / 11 / 2018

Hyd. No. 10

905-906

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

Peak discharge = 0.438 cfs
 Time to peak = 936 min
 Hyd. volume = 13,645 cuft
 Contrib. drain. area = 0.630 ac



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

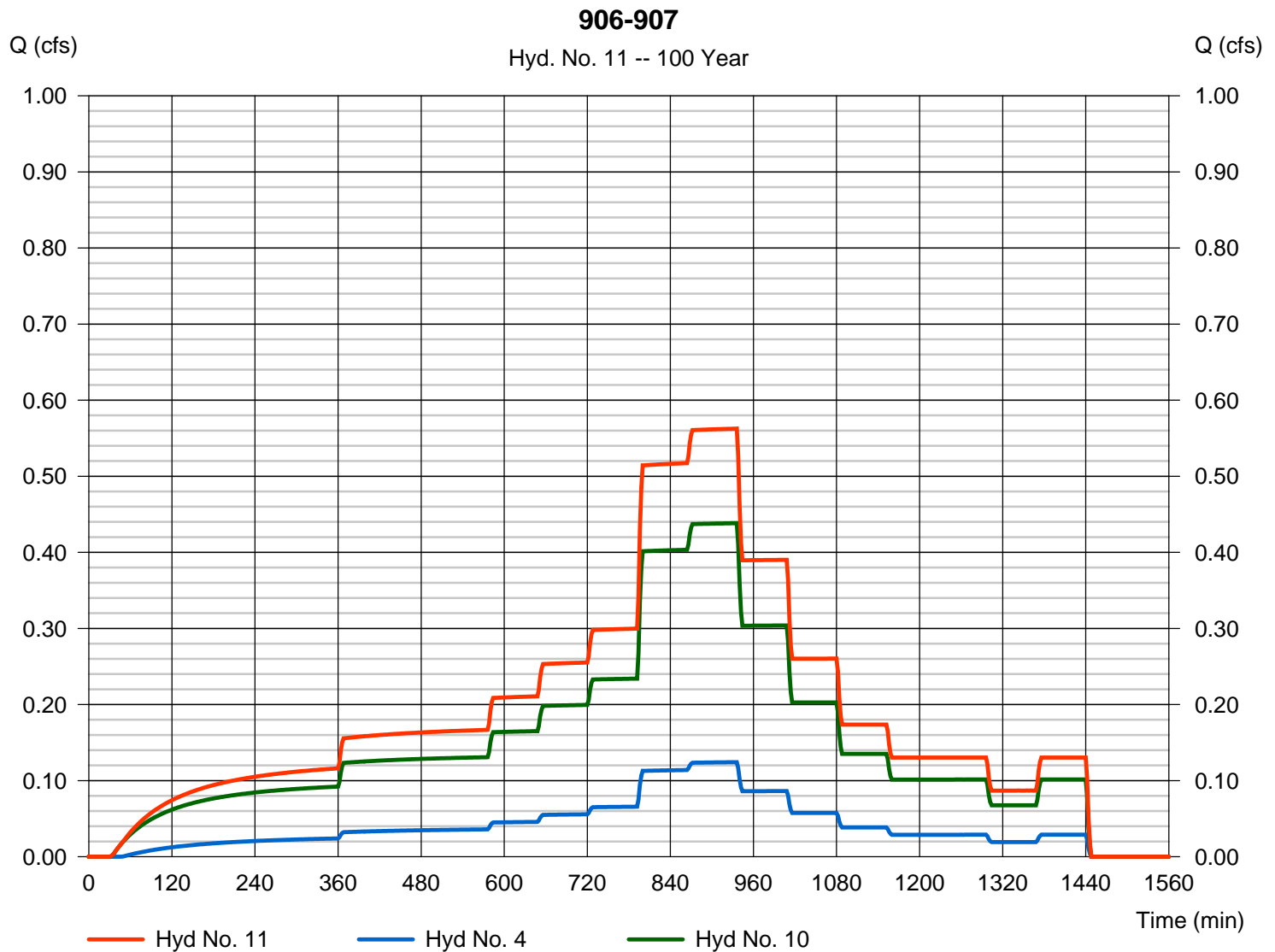
Wednesday, 07 / 11 / 2018

Hyd. No. 11

906-907

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

Peak discharge = 0.563 cfs
 Time to peak = 936 min
 Hyd. volume = 17,399 cuft
 Contrib. drain. area = 0.180 ac



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

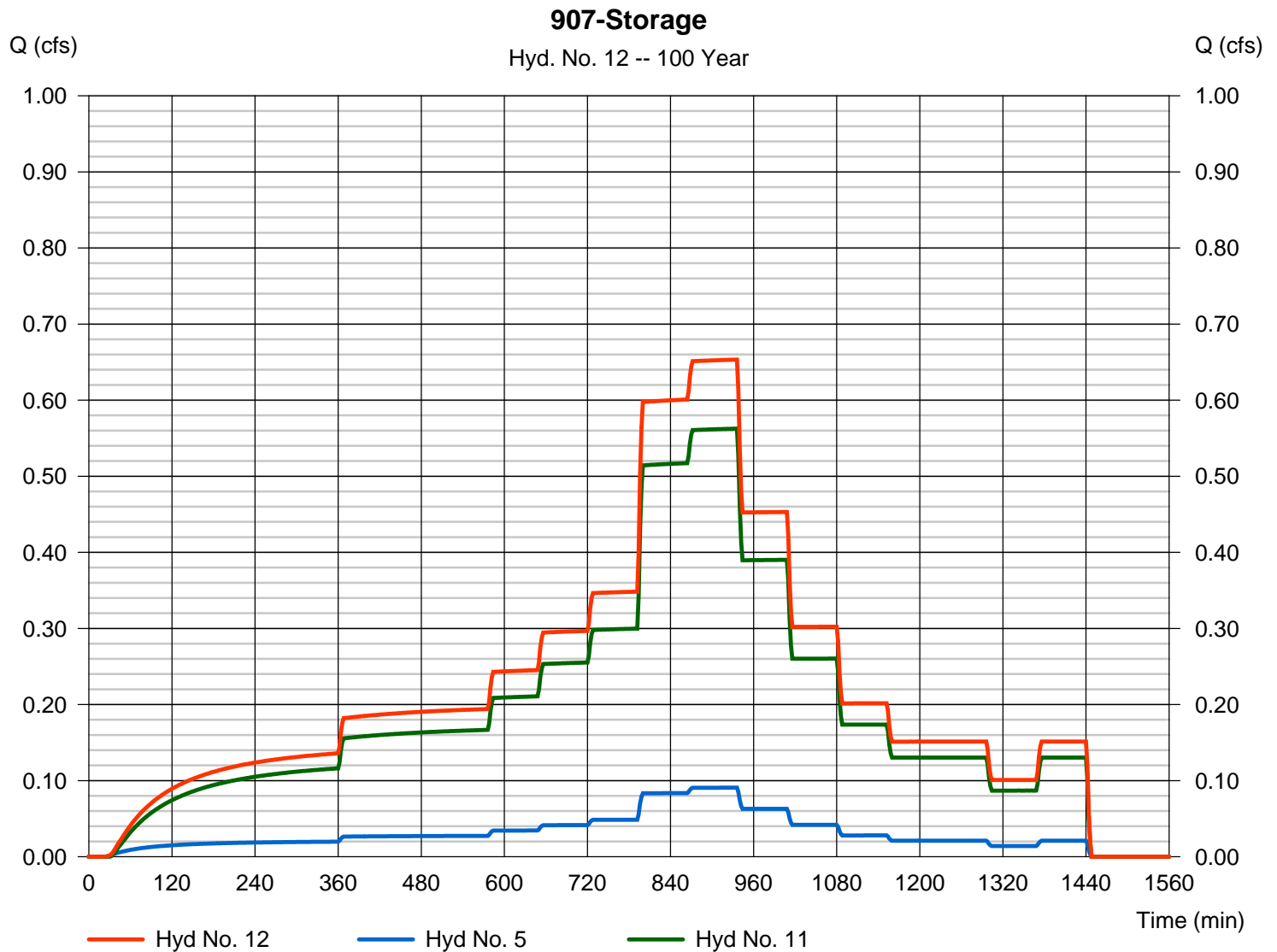
Wednesday, 07 / 11 / 2018

Hyd. No. 12

907-Storage

Hydrograph type = Combine
 Storm frequency = 100 yrs
 Time interval = 2 min
 Inflow hyds. = 5, 11

Peak discharge = 0.653 cfs
 Time to peak = 936 min
 Hyd. volume = 20,267 cuft
 Contrib. drain. area = 0.130 ac



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

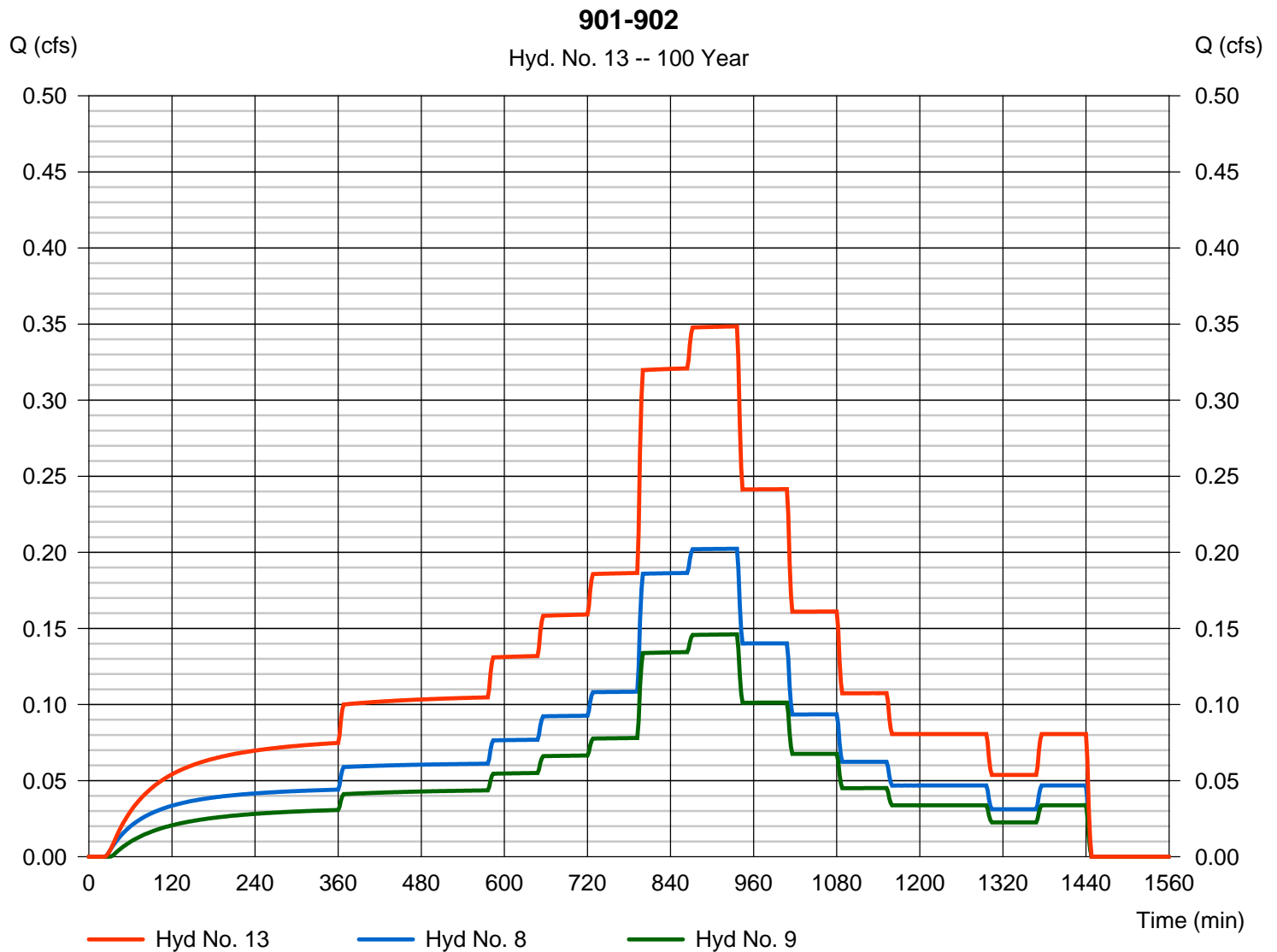
Wednesday, 07 / 11 / 2018

Hyd. No. 13

901-902

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

Peak discharge = 0.348 cfs
 Time to peak = 936 min
 Hyd. volume = 10,946 cuft
 Contrib. drain. area = 0.500 ac



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

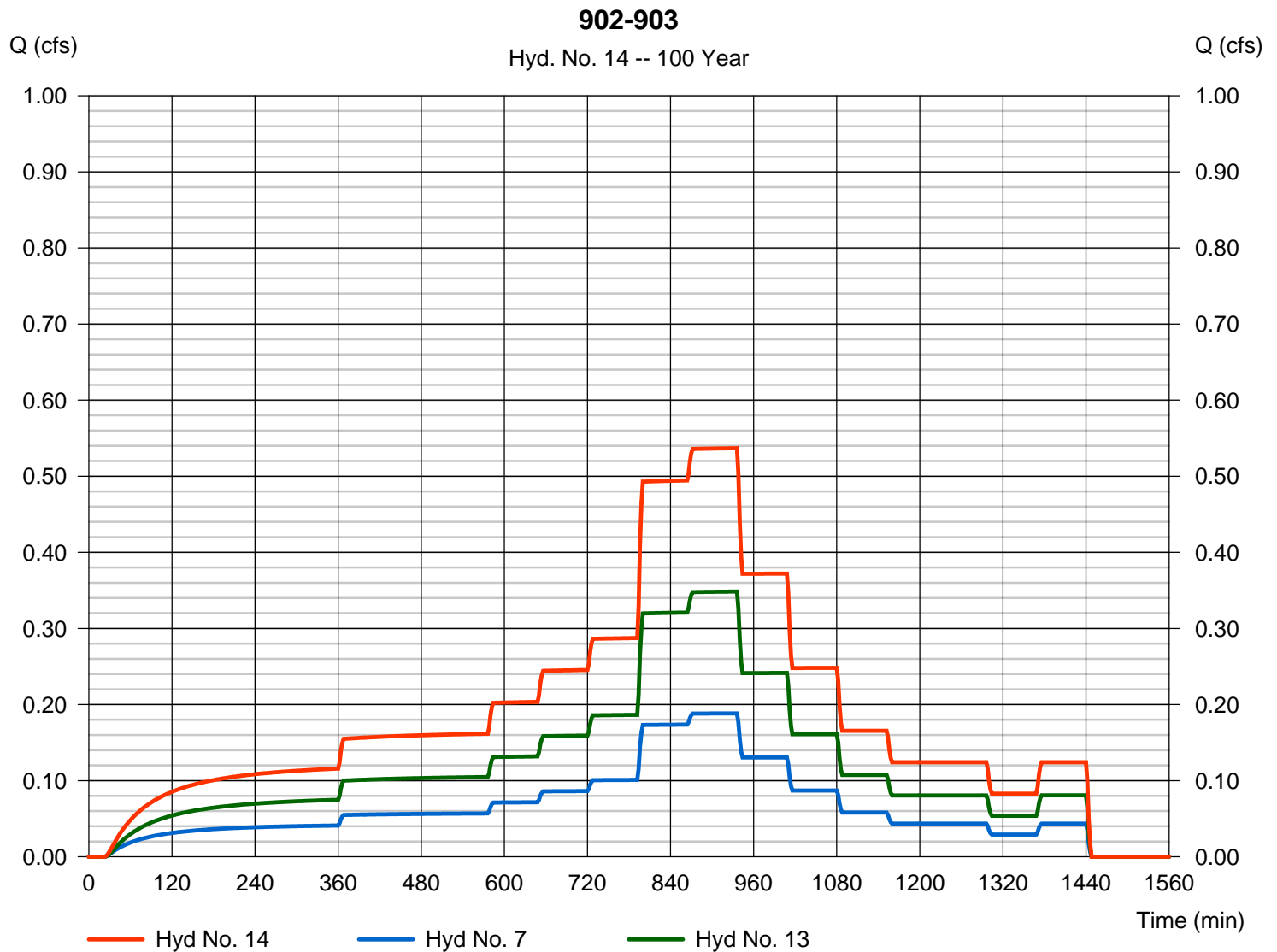
Wednesday, 07 / 11 / 2018

Hyd. No. 14

902-903

Hydrograph type = Combine
 Storm frequency = 100 yrs
 Time interval = 2 min
 Inflow hyds. = 7, 13

Peak discharge = 0.537 cfs
 Time to peak = 936 min
 Hyd. volume = 16,902 cuft
 Contrib. drain. area = 0.270 ac



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

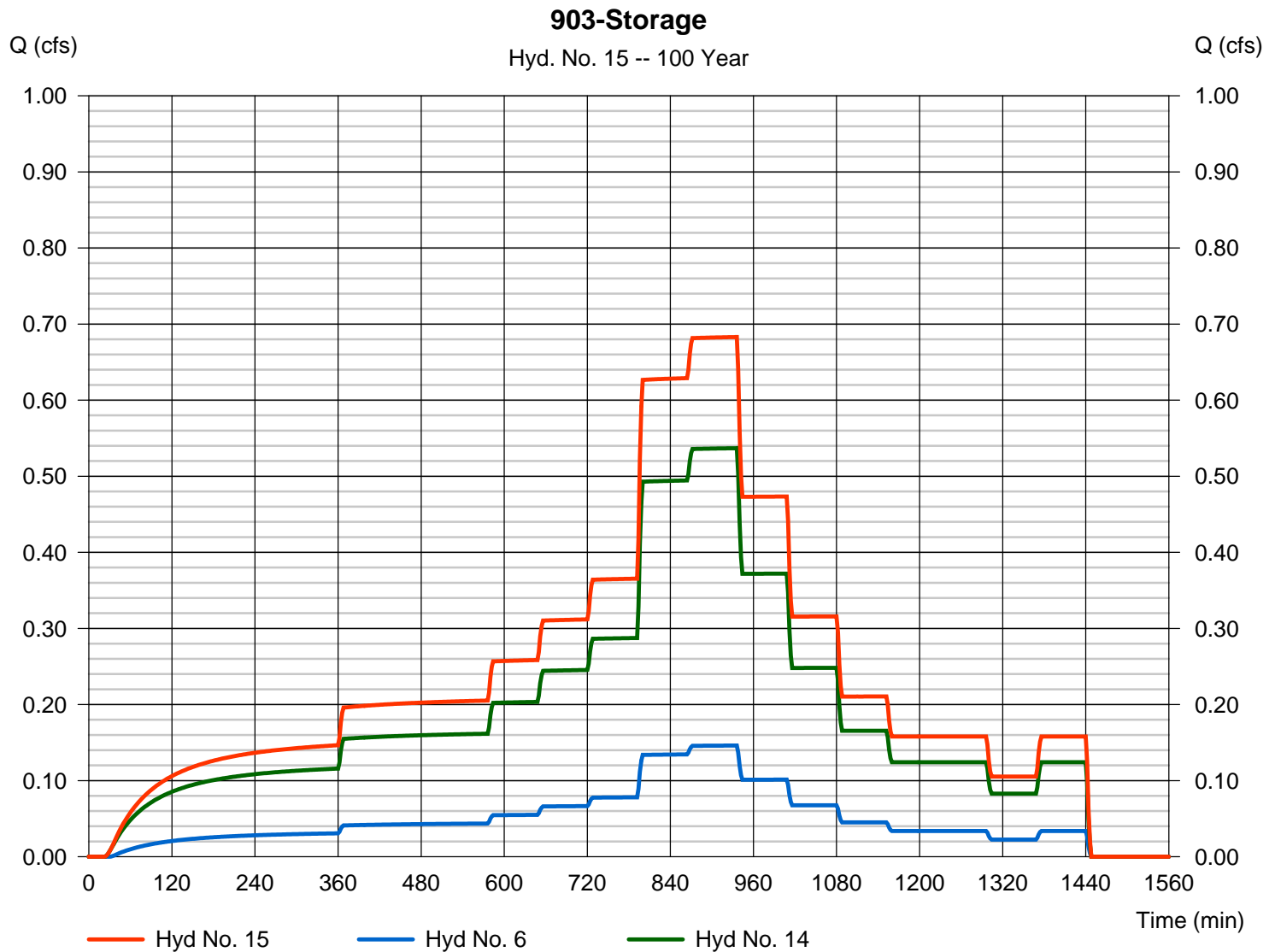
Wednesday, 07 / 11 / 2018

Hyd. No. 15

903-Storage

Hydrograph type = Combine
 Storm frequency = 100 yrs
 Time interval = 2 min
 Inflow hyds. = 6, 14

Peak discharge = 0.683 cfs
 Time to peak = 936 min
 Hyd. volume = 21,450 cuft
 Contrib. drain. area = 0.210 ac



Hydrograph Report

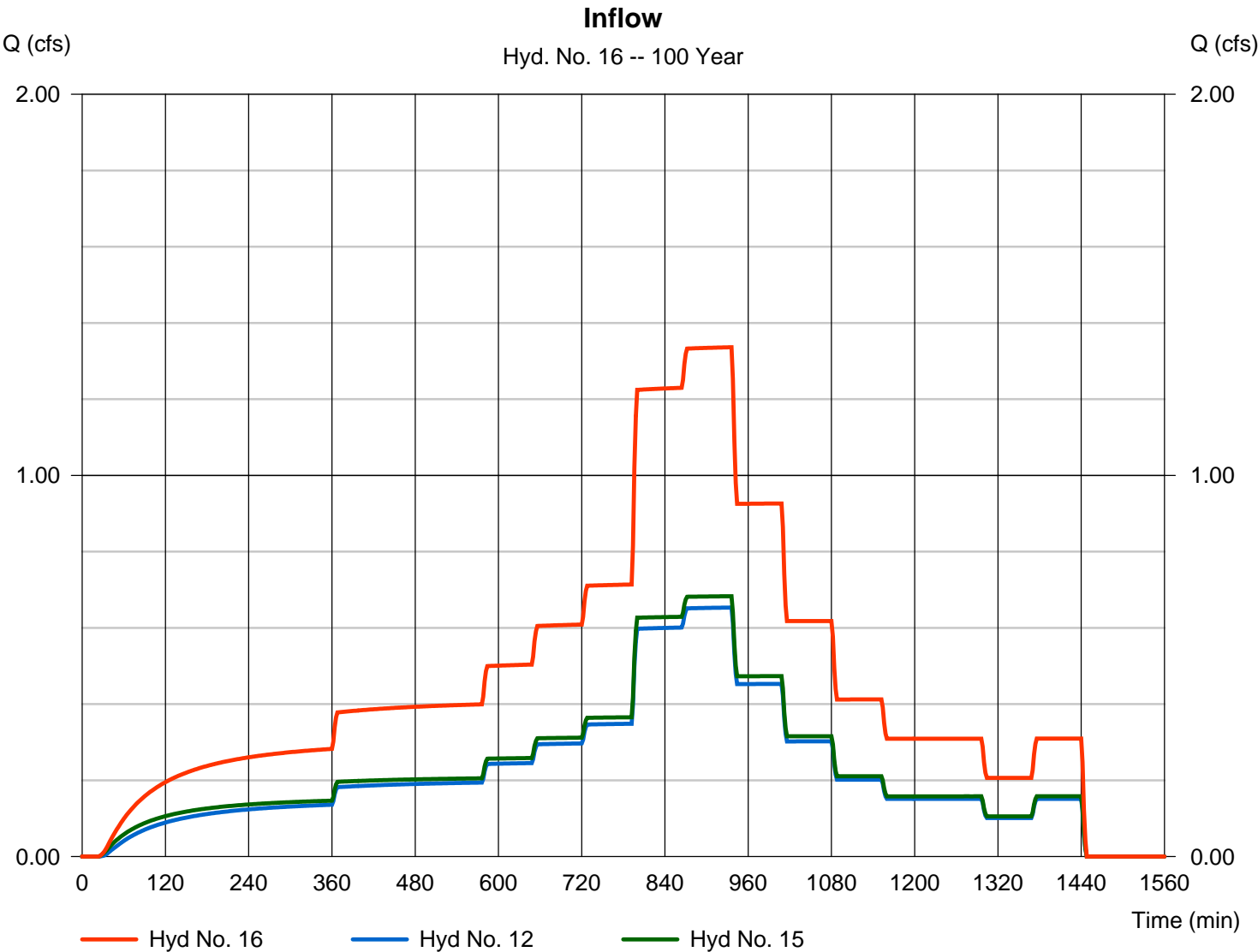
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

Wednesday, 07 / 11 / 2018

Hyd. No. 16

Inflow

Hydrograph type	= Combine	Peak discharge	= 1.336 cfs
Storm frequency	= 100 yrs	Time to peak	= 936 min
Time interval	= 2 min	Hyd. volume	= 41,717 cuft
Inflow hyds.	= 12, 15	Contrib. drain. area	= 0.000 ac



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

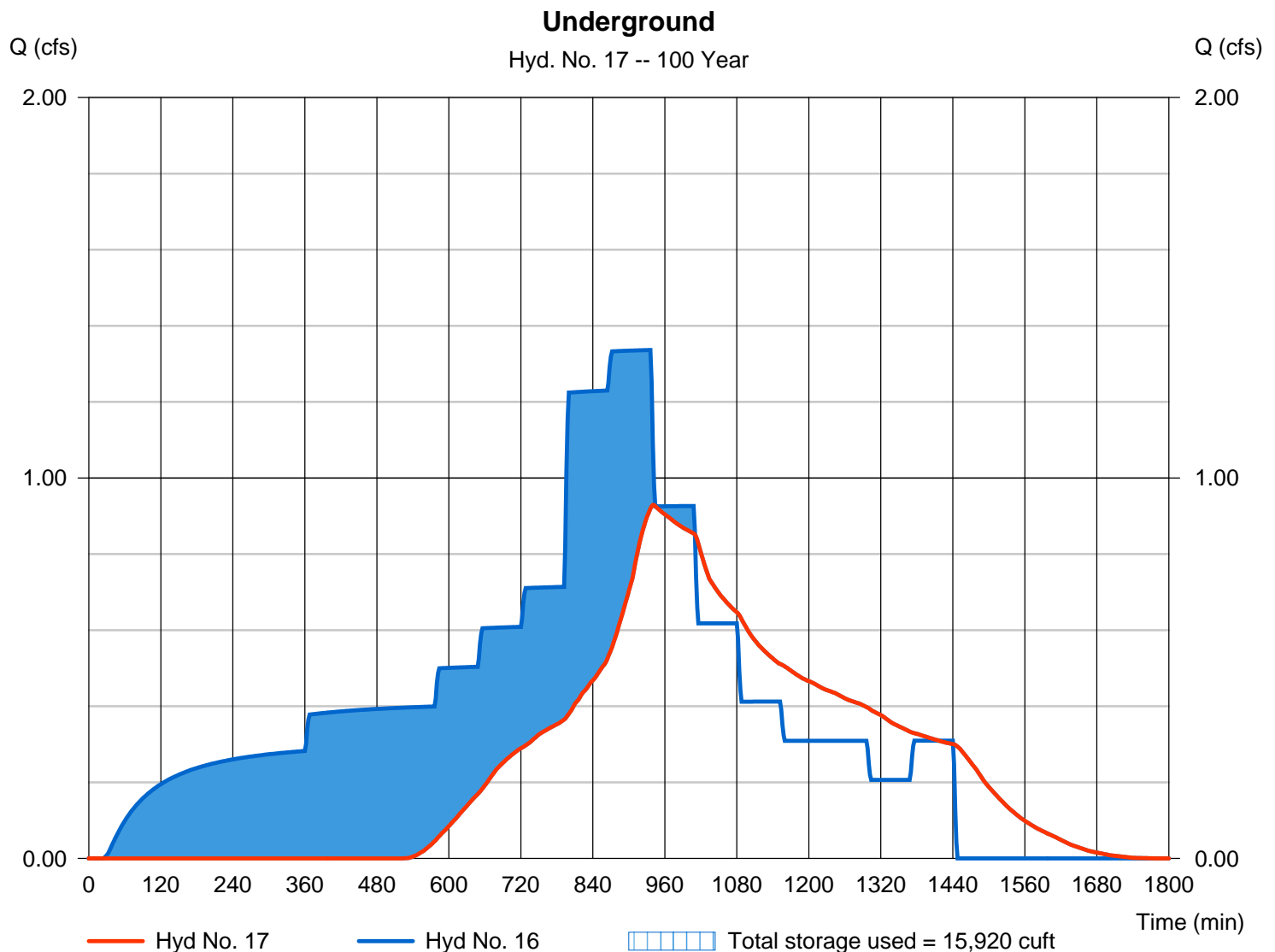
Wednesday, 07 / 11 / 2018

Hyd. No. 17

Underground

Hydrograph type	= Reservoir	Peak discharge	= 0.929 cfs
Storm frequency	= 100 yrs	Time to peak	= 940 min
Time interval	= 2 min	Hyd. volume	= 26,022 cuft
Inflow hyd. No.	= 16 - Inflow	Max. Elevation	= 740.93 ft
Reservoir name	= Underground Storage	Max. Storage	= 15,920 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Appendix K

*Hydraflow Hydrographs
Water Quality Storm Data*

Hydrograph Report

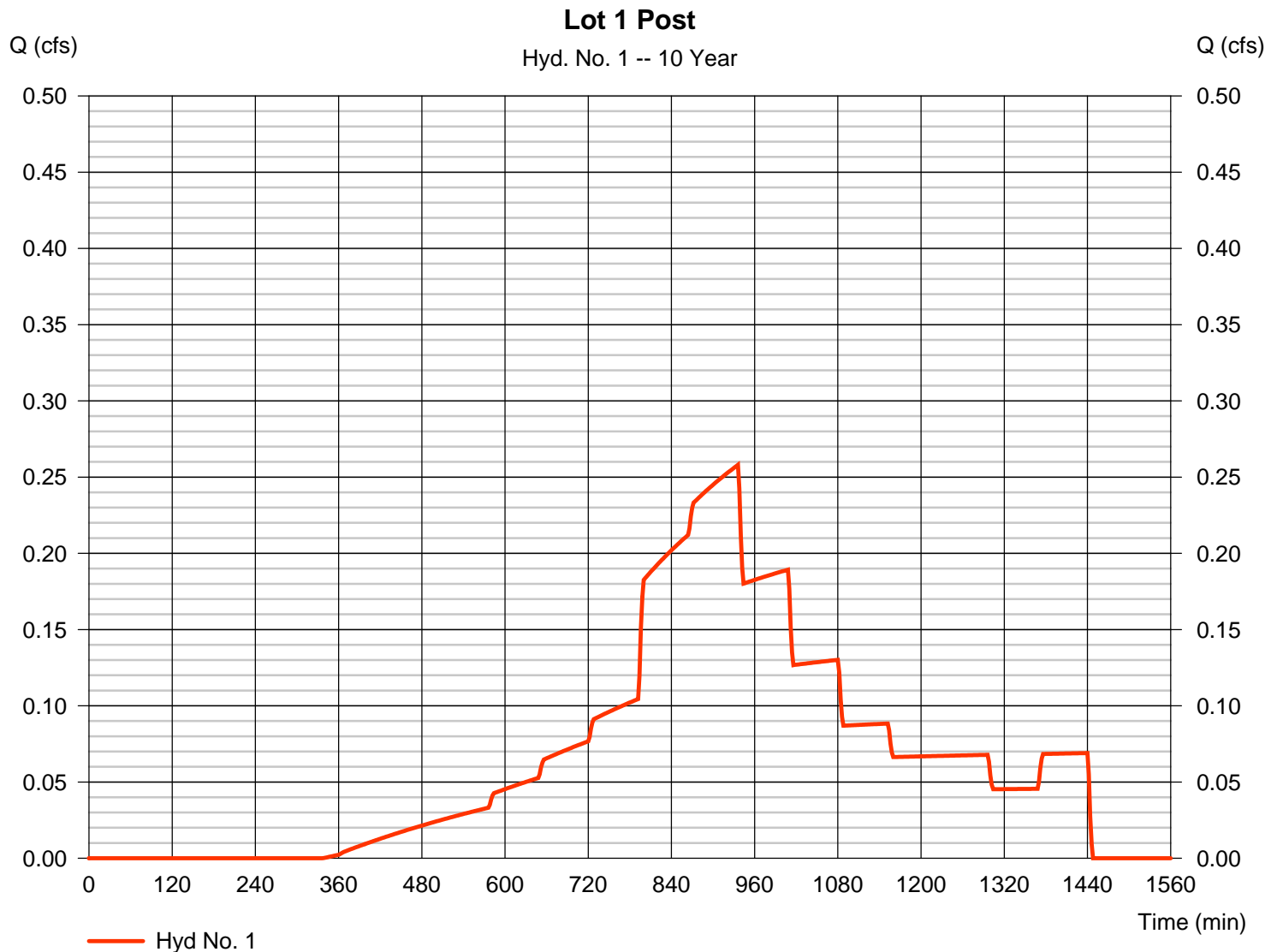
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

Wednesday, 07 / 11 / 2018

Hyd. No. 1

Lot 1 Post

Hydrograph type	= SCS Runoff	Peak discharge	= 0.258 cfs
Storm frequency	= 10 yrs	Time to peak	= 936 min
Time interval	= 2 min	Hyd. volume	= 5,914 cuft
Drainage area	= 2.920 ac	Curve number	= 92
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 1.25 in	Distribution	= Huff-3rd
Storm duration	= 24.00 hrs	Shape factor	= 484



Appendix L

Outlet Control Emergency Weir Capacity Data

Weir Report

Outlet Control Structure

Rectangular Weir

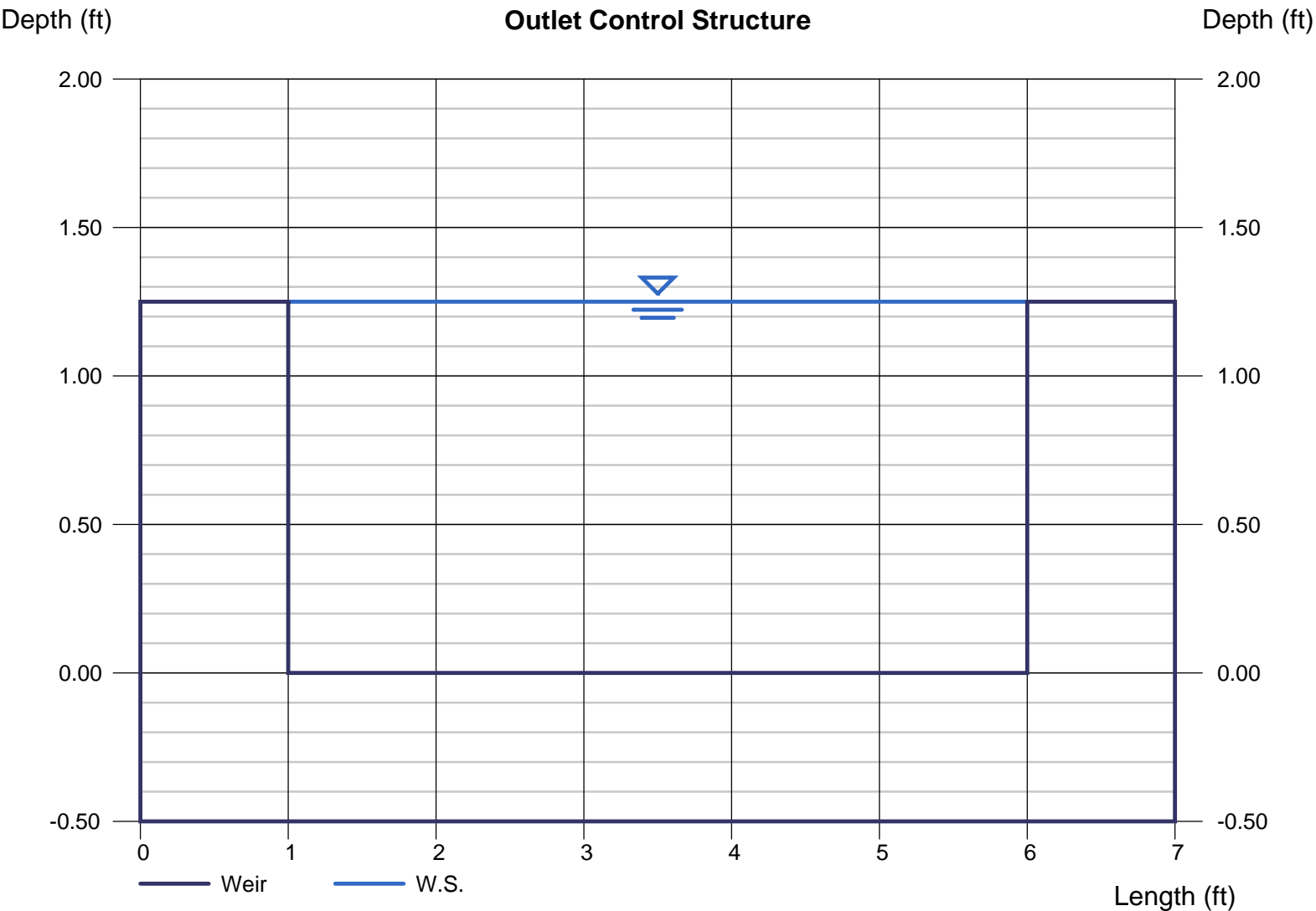
Crest = Broad
Bottom Length (ft) = 5.00
Total Depth (ft) = 1.25

Calculations

Weir Coeff. Cw = 2.60
Compute by: Q vs Depth
No. Increments = 10

Highlighted

Depth (ft) = 1.25
Q (cfs) = 18.17
Area (sqft) = 6.25
Velocity (ft/s) = 2.91
Top Width (ft) = 5.00



Weir Report

Outlet Control Structure

Rectangular Weir

Crest = Broad
Bottom Length (ft) = 5.00
Total Depth (ft) = 1.25

Calculations

Weir Coeff. Cw = 2.60
Compute by: Q vs Depth
No. Increments = 10

Highlighted

Depth (ft) = 0.13
Q (cfs) = 0.575
Area (sqft) = 0.63
Velocity (ft/s) = 0.92
Top Width (ft) = 5.00

