THE CITY OF BLOOMFIELD

REQUEST FOR PROPOSAL (RFP)

Bergin Lane Reconstruction

RFP# 2024-001
ADDENDUM A

RFP Release Date: March 21, 2024
Addendum Release Date: April 23, 2024

Proposal Due Date: May 6, 2024 @ 1:00 PM MST

If you have questions regarding this RFP please contact:
Chief Procurement officer: **Dustie Sheets**
Telephone No.: **505-333-7820**
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Bergin Lane Improvement Project

Master Drainage Report

Bloomfield, New Mexico

May 25th, 2022

SMA

Souder, Miller & Associates
Engineering ♦ Environmental ♦ Geomatics

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May 25, 2022, #7130699

Jason J. Thomas, P.E.
Assistant City Manager
City of Bloomfield
915 N. 1st St.
Bloomfield, New Mexico 87413
Phone ((505) 333-7816
Email jthomas@bloomfieldnm.gov

RE: Bergin Lane Improvement Project
Master Drainage Report

Dear Mr. Thomas,

Souder, Miller and Associates is pleased to present the enclosed Master Drainage Report for the above reference project. Should any portion of the attached report require modifications to further adhere to your specific needs, please contact our office to schedule a meeting.

Should you have any questions, require any further information, please do not hesitate to contact our office.

Sincerely,

MILLER ENGINEERS, INC. D/B/A
SOUDER, MILLER & ASSOCIATES

Douglas W. Mize Jr., PE
Project Engineer
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Enc: Bergin Lane Improvement Project Master Drainage Report

XC: Douglas Mize Jr,(douglas.mizejr@soudermiller.com),

DRAINAGE STUDY

BERGIN LANE IMPROVEMENT PROJECT

BLOOMFIELD, NEW MEXICO

Prepared for

CITY OF BLOOMFIELD
915 N. 1st St.
Bloomfield, NM 87413

May 25, 2022

This document was prepared under the supervision and direction of the undersigned whose seal as a Professional Engineer, licensed to practice as such in the State of New Mexico, is affixed below.

Douglas W. Mize Jr., P.E. CFM
Project Engineer

27427 — NMPE Number

5/25/2022 — Date

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DRAINAGE REPORT

BERGIN LANE IMPROVEMENT PROJECT
BLOOMFIELD, NEW MEXICO

MAY 25, 2022

1.0 INTRODUCTION

1.1 INTRODUCTION

This drainage report has been prepared by Souder, Miller and Associates (SMA) on behalf of the City of Bloomfield. A drainage investigation has been conducted for an area containing +/-27.89 acres which flows through the proposed project, Bergin Lane in Bloomfield, NM. This report will address all findings obtained from the drainage investigation and identify drainage characteristics within the project site. The drainage basins contributing to the proposed project are shown in the basin map in Appendix A.

1.2 SCOPE OF INVESTIGATION

The intent of this investigation is to identify drainage characteristics of the pre-development and post-development conditions of the watershed draining through the proposed project. Further discussion of the findings is provided in Section 5.0 and 6.0. The scope of this investigation can be described as follows:

- Identify probable contributing drainage basins that are responsible for conveying runoff flow to the project.
- Perform hydrologic analysis to determine peak discharge rates and runoff volumes within the drainage basins for the 50-year (design storm) and 100-year (check storm), 24-hour frequency storm events for the pre-development and post-development land use conditions.
- Perform hydraulic analysis to create an underground storm sewer network to prevent flooding of the roadway and to route runoff to existing drainage infrastructure.

1.3 METHODOLOGY

This drainage investigation was completed using the methodology outlined in the New Mexico Department of Transportation (NMDOT) Drainage Design Manual, dated July 2018. The calculations for the hydrologic analysis were computed using Autodesk Civil 3D Hydraflow Hydrographs Extension Version 2019.2 (Hydraflow). The hydrologic calculations utilize the Soil Conservation Service (SCS) Unit Hydrograph Method for estimating peak discharges for runoff.

The hydraulic modeling has been performed using Autodesk Inc's Storm and Sanitary Analysis (SSA) Version 2021.3. Calculations of the flow depth and spread along the road were conducted using Bentley System's FlowMaster software version 10.03.00.03 and verified in SSA. Models have been run using steady state flow data to determine peak discharge rates, flow depth, and

flow width through the proposed roadway gutters, curb inlets, and the underground storm sewer network.

2.0 SITE CHARACTERISTICS

2.1 CLIMATE

The City of Bloomfield is located in the eastern section of San Juan County in north-west New Mexico. The climate within the study area is characterized as an arid, continental climate. Distant high mountains shield the area from much precipitation and shallow, cold airmasses in winter. The average mean temperature is 53 degrees F. Temperatures rarely reach 100 degrees F and on average only a few days a year reach temperatures below 0 degrees F. These conditions result in sparce vegetation. The small amount of organic matter produced by vegetation results in soils with a light-colored surface layer with less than 1 percent organic matter. Due to the lack of organic material, there is little ground litter to mitigate raindrop impact which increases runoff potential in the natural condition.

The primary source of moisture for the site originates from storms generated off the Gulf of Mexico from the Bermuda High Pressure area. The frequency and intensity of showers in the summer are less in this area than in most of northern New Mexico. Precipitation totals are slightly greater in the fall with nearly half of annual precipitation falling between July and November. Average annual precipitation in this area is approximately 9.3 inches with an average of 40 thunderstorms per year. Occasional precipitation occurs as a result of an invasion of Pacific Ocean tropical air, typically in the winter months. The precipitation during this time presents as light intensity rain or immeasurable snow because the majority of the precipitation drops on the mountains to the west. The late summer and fall precipitation are brief but heavy thunderstorms. These storms are of short duration and are a result of convective and/or orographic lifting of moist air masses. Following a period of inflow of warm airs, originating from the Gulf of Mexico, are stronger thunderstorms.

2.2 RAINFALL

Precipitation data has been obtained from the National Weather Service's National Oceanic and Atmospheric Administration (NOAA). The average annual rainfall is approximately 9.3 inches with the most severe storms occurring during the months of July through November. Precipitation frequency estimates for the project area are obtained from NOAA's Precipitation Frequency Data Server (Atlas 14, Volume 1, Version 5). The geographical coordinates of the site are Latitude 36.7167° N and Longitude 108.002° W. The NOAA rainfall determination summary for this location is included in Appendix B. The rainfall distribution for the 50-year and 100-year frequency storm events for the 24-hour duration rainfall totals for this site are as follows:

Table 2.1

Rainfall Summary for 24-hr Storm	
Frequency Storm Event	Rainfall Depth (in)
50-Year	2.22 inches
100-Year	2.49 inches

2.3 TERRAIN

Bergin Lane is located on the western side of Bloomfield, NM near the Junior High School. It intersects U.S. Highway 64 just before mile marker 63 on the south side and West Blanco Boulevard on the north side. Bergin Lane is bound on the east and west sides by agricultural land, residential properties, and the Junior High School. The source of the topographic data used within this report is the United States Geological Survey and consists of 1-foot contour data with an error of up to 30' horizontally. Based on the topographic data, the contributing area has generally mild sloping terrain. Most contributing basins have slopes ranging from 3% to 6% with a small section containing steep slopes up to 17% on a high point just north of the school. The drainage pattern of the site and contributing basins generally flow from the north to the south through the project site where it flows into US Highway 64's stormwater network which eventually discharges to the San Juan River.

2.4 LEVEL OF FLOOD RISK

According to the Federal Emergency Management Agency (FEMA), the project site is located within Flood Zone Designation X. Zone X designation indicates an area of minimal flood risk outside the 1% and 2% annual chance floodplains. The corresponding FIS map number for the project area is Map #35045C1035F effective 8/5/2010. The corresponding FIRMette map for the project is included in Appendix A.

3.0 GEOLOGY AND SOIL CHARACTERISTICS

3.1 GEOLOGY AND ORIGIN OF SOIL

The geologic information within the northern half of the study area primarily consists of Fruitland loam which is alluvium derived from sandstone and shale. Its typical profile consists of loam and fine sandy loam. The southern section of the site consists of Stumble sandy clay loam which is derived from sandstone. Its profile consists of sandy clay loam and loamy sand.

3.2 HYDROLOGIC SOIL CLASSIFICATION

The Hydraulic Soil Group (HSG) classification throughout the site varies between basins. The basin map can be found in Appendix A. The hydrologic soil classification was determined from the information available from the Soil Survey of San Juan County New Mexico Eastern Part, accessed online via the United States Department of Agriculture Web Soil Survey at http://websoilsurvey.sc.egov.usda.gov/app/WebSoilSurvey.aspx. This information was used to determine the soil classification and properties within the study area. A soil map showing the locations of individual soils withing the project site is found in the NRCS custom soil report in Appendix B.

The following table summarizes the soil map for the study area and provides the hydrologic soil group make up for each subbasin within the study area outside of the roadway. The roadway subbasins have not been included due to their surface treatment.

Table 3.1

Subbasin Hydrologic Soil Classification				
Subbasin ID	Hydrologic Soil Group Percentage			
	Group A	Group B	Group C	Group D
BSN-01	0%	100%	0%	0%
BSN-02	0%	100%	0%	0%
BSN-03	0%	100%	0%	0%
BSN-04	0%	100%	0%	0%
BSN-05	14.4%	85.6%	0%	0%
BSN-06	0%	100%	0%	0%
BSN-07	0%	100%	0%	0%
BSN-08	0%	100%	0%	0%
BSN-09	0%	100%	0%	0%
BSN-10	0%	100%	0%	0%

The NRCS Web Soil Survey indicates that the soils within the study area mostly consist of soils in HSG B with a minor component of HSG A. This indicates that the soils present have properties of high rates of water transmission and infiltration.

4.0 BASIN DESCRIPTIONS

4.1 General Drainage Characteristics

The contributing watershed to the project site is +/-27.89 acres in area. In the northern sections of the watershed, the basins which flow to the road primarily consist of sheet flow through irrigated farmland and undeveloped natural desert brush. The southern half of the site consists almost entirely of developed structures and parking lots with some bare lawns and desert landscaping. The primary flow regime through the southern section of the site is shallow concentrated flow through curbs, gutters, and small roadside swales. The drainage pattern of the site and contributing basins generally flow from the north to the south through the project site where it flows into the US Highway 64 underground storm sewer network which eventually discharges to the San Juan River.

The contributing offsite basins have been divided into ten basins which flow onto Bergin Lane. These basins have been designated as BSN-1 through BSN-10. The basins have been delineated based on topographic data described in Section 2.3 Terrain, and drainage patterns observed from a visit to the site conducted on March 24th 2022. The basins range in size from 0.80 acres to 9.01 acres.

Bergin Lane itself, the project area, has been divided into 25 basins along the length of the road in accordance with the rules of subbasin delineation outlined in the NMDOT Drainage Design Manual. One of the defining limitations forming the length of these basins within the road is the length to width ratio, which shall not exceed 4:1. These basins within the road have been designated BSN-R1 through BSN-R25. The first four road basins vary in size from 2690 square

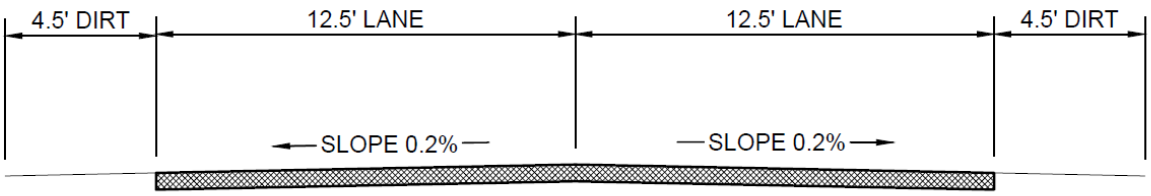
feet to 5680 square feet, while the remaining basins are all approximately 4080 square feet in area.

4.2 LAND USE

The pre-development condition of the project area varies depending on the basin. The terrain of basins BSN-1 and BSN-6 consist of mild slopes in irrigated agricultural fields. Basin BSN-5 consists of natural desert shrub in poor hydrologic condition. Each of these basins have a dirt berm along their southern edge which collects all runoff and directs it to Bergin Lane. The remaining basins, BSN-7 through BSN-10, consist primarily of developed land including single family and multi-family lots, a school with associated administration buildings, parking lots, and roads. Minor areas of gravel, desert landscaping, and open space in poor hydrologic condition also exist in the developed land. The vegetation and land use for each basin has been approximated based on aerial imagery and conditions observed from the site visit.

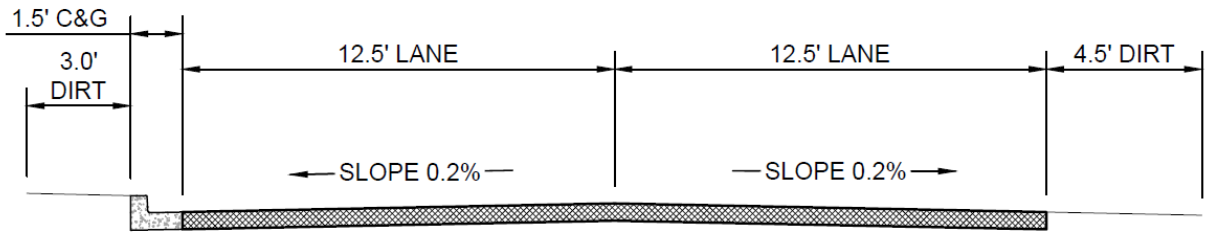
Each road basin consists of the road itself and its ROW including any curbs and sidewalks. In the pre-development condition, the majority of the road basins do not have curbs or sidewalks and consist of a 25 ft road and a bare dirt ROW. Some sections of the road that connect to developed lots like the school buildings and the multi-family lots have a 1.5 ft wide section of curb on the west side of the road. These road sections are found from STA: 3+50 to STA: 4+75, and STA: 17+60 to STA: 23+75. On the north and south ends of Bergin Ln, where it connects to W Blanco Blvd and US HWY 64, the road section contains curb and gutter and 5-foot wide sidewalks on both sides. These road sections are found between STA: 0+00 to STA: 1+25 and STA: 23+75 to STA: 26+16. The following figures illustrate each of the three types of road sections that are found along Bergin Lane in the pre-development condition.

Figure 4.1: STA:1+25 to STA:3+50 & STA:4+75 to STA:17+60



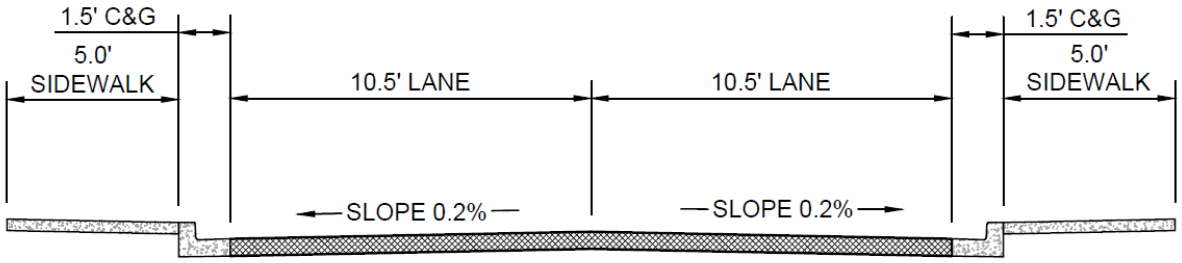
PRE-DEVELOPMENT ROAD (NO CURB)
SCALE: N.T.S.

Figure 4.2: STA:3+50 to STA:4+75 & STA:17+60 to STA:23+75



PRE-DEVELOPMENT ROAD (CURB ON ONE SIDE)
SCALE: N.T.S.

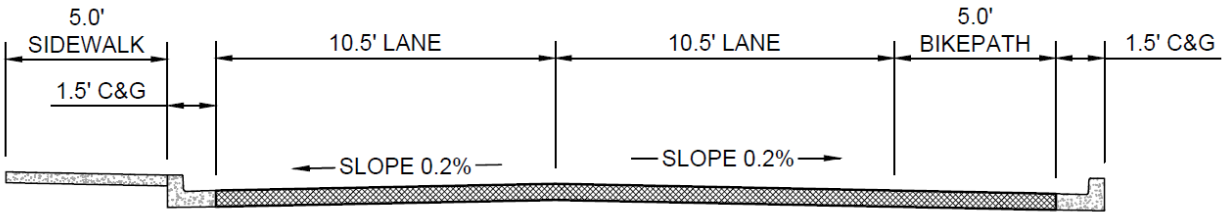
Figure 4.3: STA:0+00 to STA:1+25 & STA:23+75 to STA:26+16



PRE-DEVELOPMENT ROAD (CURB & SIDEWALK)
SCALE: N.T.S.

The post-development condition of the project includes re-constructing Bergin Lane. The improvements to Bergin Lane include widening the roadway section to 34 ft and making the roadway section uniform throughout the entirety of Bergin Lane. The proposed construction includes a 5 ft sidewalk, 18-in curb and gutter, two – 10.5 ft drive lanes, a 5 ft bike lane, and an 18-in curb and gutter. A storm sewer network will also be constructed to intercept storm water flows within the roadway. See the figure below for the proposed road section.

Figure 4.4: STA:1+25 to STA:23+75



POST DEVELOPMENT ROAD
SCALE: N.T.S.

Offsite basins continue to flow to Bergin Lane and are captured through inlets. The proposed development will result in all post-development road basins being rated as impervious.

4.3 Runoff Curve Numbers

The (SCS) Unit Hydrograph Method estimates run-off using curve numbers (CN). This method incorporates the hydrologic soil group, land use, and hydrologic condition to calculate a weighted curve number, which is used to determine runoff potential. The curve numbers are referenced from the NMDOT Drainage Design Manual, from Tables 402-2 and 402-5, which are included in Appendix B. The following table summarizes the Curve Numbers for land use coverages for each hydrologic soil group.

Table 4.1

Curve Number – Soil Type Summary				
Land Use Coverage	Hydrologic Soil Group A	Hydrologic Soil Group B	Hydrologic Soil Group C	Hydrologic Soil Group D
Road/Parking Lots	98	98	98	98
Gravel Roads/Lots	76	85	89	91
Dirt Roads/Compacted Dirt	72	82	87	89
Open Space (Poor)	68	79	86	89
Close Seeded SR (Good)	58	72	81	85
Desert Shrub (Poor)	63	77	85	88

Based on the land uses and soil types, the weighted curve numbers for the pre-development condition of each offsite basin have been calculated and are summarized below:

Table 4.2

Pre-Development Offsite Basin Weighted Curve Numbers	
Subbasin ID	Weighted CN
BSN-1	72
BSN-2	96
BSN-3	95
BSN-4	96
BSN-5	77
BSN-6	75
BSN-7	95
BSN-8	90
BSN-9	93
BSN-10	90

Similarly, the weighted curve numbers for each pre-development road basin have been calculated and summarized in the following table.

Table 4.3

Pre-Development Onsite Basin Weighted Curve Numbers			
Subbasin ID	Road Stations	Description	Weighted CN
R1 - R4, R24-R25	0+00 - 1+25 23+75 - 26+16	Sidewalk & Curb (Figure 4.3)	98
R7, R19 - R23	3+50 - 4+75 17+60 - 23+75	Curb on 1 Side (Figure 4.2)	93
R5 – R6, R8 - R13, R17 - R18	1+25 – 3+50 4+75 – 11+75 15+25 – 17+60	No Curb or Sidewalk HSG B (Figure 4.1)	92
R14 - R16	11+75 – 15+25	No Curb or Sidewalk HSG A (Figure 4.1)	88

The post-development offsite basin's CN remain unchanged. The post-development road basins are all modeled as CN=98 per the proposed road cross-section.

5.0 HYDROLOGY

Based on the site characteristics and soil characteristics, and basin descriptions detailed in the previous sections, the estimated peak rainfall discharge rates and discharge volumes are obtained for the pre-development and post-development conditions.

5.1 STORM WATER DISCHARGE CALCULATIONS

To calculate the storm water discharge rates and volumes for the 50-year and 100-year storm frequency events, the SCS Unit Hydrograph method was used. This method uses hydrologic data such as the CN and the Time of Concentration (T_c) to determine the peak runoff and volume for the site. The calculations for this analysis were computed using Autodesk's Hydraflow Hydrographs Extension 2021 software package and are found in Appendix C.

The input parameters for the hydrograph calculations were determined using the following criteria:

- The 50-year and 100-year frequency storm event, 24-hour precipitation data is referenced from NOAA's website. The point precipitation frequency estimates for the project area can be found in Appendix B. The Type II-75 storm distribution method developed by NRCS is used.
- Time of concentration (Tc) values are determined using the summation of the Upland Method, Kerby Equation, and Kirpich Equation. These methods were selected based on the anticipated flow regimes estimated from the basin characteristics. The T_c is calculated using the equations presented in the NMDOT Drainage Design Manual. For the Kerby Equation, a retardance coefficient of 0.01 has been chosen for impervious surfaces and a coefficient of 0.2 is used for dirt/vegetated areas. The minimum allowable T_c is 10 minutes. Any calculation resulting in a lower value is set to 10 minutes.

5.1.2 T_C CALCULATIONS

5.1.2.1 PRE-DEVELOPMENT T_C

The table listed below summarizes the Time of Concentration calculations for the pre-development conditions of the offsite subbasins. The data includes the subbasin identification, the hydraulic length, the overall subbasin slope, the sheet flow time of concentration calculated with the upland method, overland flow time of concentration calculated with the Kerby equation, the shallow concentrated flow time of concentration calculated with the Kirpich equation, and the total time of concentration which is the sum of the individual travel times in each flow regime.

Table 5.1

Pre-Development Subbasin Time of Concentration						
Subbasin ID	Total Flow Length (ft)	Overall Slope (ft/ft)	Upland Method, t_c (min)	Kerby Equation, t_c (min)	Kirpich Equation, t_c (min)	Total T_c (min)
BSN-1	526	3.43%	8.94	-	2.40	11.76
BSN-2	354	4.15%	2.04	-	1.92	3.07
BSN-3	509	4.41%	3.12	-	2.34	4.43
BSN-4	421	5.22%	3.36	1.84	-	5.20
BSN-5	1,405	4.56%	8.7	21.41	-	30.12
BSN-6	542	5.17%	1.86	13.32	-	15.15
BSN-7	779	3.03%	4.08	-	3.54	7.61
BSN-8	407	1.70%	1.38	-	3.54	4.87
BSN-9	617	1.56%	5.52	-	3.30	8.79
BSN-10	670	1.84%	3.00	-	4.44	7.48

Most of the onsite subbasins which make up Bergin Lane are identical in area and longest flow path. All the road basins were calculated to have a T_c less than 10 minutes. Therefore, the minimum T_c of 10 minutes was used for hydrologic calculations and have not been included in the above table.

5.1.2.2 POST-DEVELOPMENT T_C

The change in the land use conditions of the post-development road basins results in runoff flowing through each basin faster than pre-development conditions; however, 10 minutes is the minimum Tc allowable. All post development road basins have been set to 10 minutes. All offsite basin T_c remain the same as the pre-development calculation.

5.2 50(100)-YEAR STORM FREQUENCY EVENT CALCULATIONS

5.2.1 PRE-DEVELOPMENT CONDITIONS

The following table outlines the hydrologic summary of the pre-development condition offsite subbasin calculations for the 50- and 100-year frequency storm event. 100-year frequency storm events are shown in parenthesis. The data includes the subbasin identification, the total area, the calculated Tc, the hydraulic length (also known as the longest flow path), the weighted CN, runoff volume, and the peak discharge.

Table 5.2

Pre-Development Offsite Subbasins - 50(100)-Year, 24-Hour Event						
Subbasin ID	Area (acres)	Tc (min)	Flow Length (ft)	Weighted CN	50 (100) Volume (ft^3.)	50 (100) Peak Discharge (cfs)
BSN-1	2.16	11.8	526	72	1,453 (2,150)	0.31 (0.55)
BSN-2	1.01	10.0	354	96	4,611 (5,406)	1.65 (1.92)
BSN-3	1.90	10.0	509	95	8,129 (9,601)	2.95 (3.46)
BSN-4	0.92	10.0	421	96	4,205 (4,930)	1.51 (1.75)
BSN-5	9.01	30.1	1405	77	10,990 (15,121)	1.88 (2.83)
BSN-6	1.59	15.2	542	75	1,461 (2,061)	0.38 (0.60)
BSN-7	3.96	10.0	779	95	16,898 (19,959)	6.13 (7.19)
BSN-8	0.80	10.0	407	90	2,422 (2,968)	0.90 (1.10)
BSN-9	2.48	10.0	617	93	10,168 (12,188)	3.90 (4.65)
BSN-10	1.97	10.0	670	90	5,987 (7,336)	2.22 (2.82)

The following table summarizes the hydrologic data for the road subbasins. The data includes the area, flow length, weighted CN, the runoff volume, and the peak discharge.

Table 5.3

Pre-Development Road Subbasins – 50(100)-Year, 24-Hour Event					
Subbasin ID	Area (square ft.)	Flow Length (ft)	Weighted CN	50 (100) Volume (ft^3)	50 (100) Peak Discharge (cfs)
R1	4,621.7	260	98	555 (641)	0.19 (0.22)
R2	5,678.8	117	98	562 (649)	0.19 (0.22)
R3	2,585.3	121	98	310 (358)	0.11 (0.12)
R4	3,362.0	189	98	404 (466)	0.14 (0.16)
R7, R19 - R23	4,080	120	93	350 (419)	0.13 (0.15)
R5 - R13, R17 - R18	4,080	120	92	327 (394)	0.12 (0.15)
R14 - R16	4,080	120	88	247 (308)	0.10 (0.11)
R24	4,080	120	98	490 (566)	0.17 (0.19)
R25	7,589	120	98	911 (1,052)	0.31 (0.36)

Each offsite subbasin flows onto the road at certain points along the alignment. Each of these locations has a corresponding analysis point. This runoff then flows along Bergin Lane to the project design point (analysis point 10) at the intersection of US HWY 64. Each analysis point is connected to all upstream flows and is routed to the next analysis point through channels. The channels were modeled based on drainage patterns observed from the site visit and the cross section of roadways obtained from existing as-built plans. The following table summarizes the results at each analysis point for the 50(100)-year, 24-hr frequency storm event. The location of the analysis points is shown on the basin map in Appendix A.

Table 5.4

Pre-Development Conditions – 50(100)-Year, 24-Hour Event Combination Point			
Road Station	Hydrologic Element ID	Peak Discharge on West side of Road (cfs)	Peak Discharge on East side of Road (cfs)
STA 2+35	Analysis Point 2	0.23 (0.26)	2.55 (2.91)
STA 2+85	Analysis Point 1	1.07 (1.52)	2.64 (3.01)
STA 5+75	Analysis Point 3	5.48 (6.57)	2.73 (3.11)
STA 5+82	Analysis Point 4	5.57 (6.67)	4.86 (5.53)
STA 8+08	Analysis Point 6	5.74 (6.87)	5.75 (6.74)
STA 13+64	Analysis Point 5	7.90 (9.92)	6.17 (7.32)
STA 18+25	Analysis Point 7	17.03 (20.38)	6.49 (7.61)
STA 19+05	Analysis Point 8	18.54 (22.15)	6.57 (7.71)
STA 22+19	Analysis Point 9	23.79 (28.23)	6.84 (8.02)
STA 25+48	Analysis Point 10	25.23 (28.82)	7.25 (8.24)

For the 50-year and 100-year, 24-hour storm, the combined peak discharge flowing though the site in the pre-development condition is 32.48 cfs and 37.06 cfs, respectfully.

5.2.2 Post-Development Conditions

In the post-development condition, the land use of the offsite basins remains unchanged. The land use for the road basins also remains the same; however, has a fully developed condition. The post-development data for the road basins are summarized in the following table. The data includes the area, flow length, weighted CN, runoff volume, and peak discharge.

Table 5.5

Post-Development Road Subbasins – 50(100)-Year, 24-Hour Event					
Subbasin ID	Area (square ft.)	Flow Length (ft)	Weighted CN	50 (100) Volume (ft^3)	50 (100) Peak Discharge (cfs)
R1	4621.7	260	98	555 (641)	0.19 (0.22)
R2	5678.8	117	98	562 (649)	0.19 (0.22)
R3	2585.3	121	98	310 (358)	0.11 (0.12)
R4	3362.0	189	98	404 (466)	0.14 (0.16)
R5 - R24	4080	120	98	409 (566)	0.17 (0.19)
R25	7589	120	98	911 (1,052)	0.31 (0.36)

In the same manner as the pre-development condition, Autodesk SSA was used to model the flow from the outlet of each basin through Bergin Lane. Flow through road basins was modeled using channel segments based on the curb and gutter profile of the developed road as seen in Figure 4.4. However, in the post-development condition, curb inlets will be placed along the improved roadway to reduce the runoff on the surface of Bergin Lane. This flow will be routed through a new underground storm sewer network. Additionally, the runoff from basins BSN-1, BSN-3, BSN-6, and BSN-7 will be diverted by area inlets and routed directly to the underground stormwater network. Details of the stormwater network are discussed in section 6.0. For the 50-

year and 100-year, 24-hour storm, the combined peak discharge flowing though the site and the stormwater network in the post-development condition is 33.85 cfs and 39.90 cfs, respectfully.

6.0 HYDRAULIC ANALYSIS

Using the calculated discharge rates and runoff volumes for the post-development road and contributing basins, a hydraulic model was developed to determine the number and location of required curb inlets to minimize surface flow on the road surface for a 50-year, 24-hour storm event and mitigate flooding during the 100-year, 24-hour storm event. An underground stormwater network was designed to connect each of the inlets and route runoff under the road. Analysis of the existing drainage structures at the southern end of Bergin Lane and under US highway 64 was conducted to ensure that the new stormwater network could be connected to the existing system without negative effects.

6.1 INLET PLACEMENT

To mitigate potential flooding and sediment deposition on the road surface, the runoff from offsite basins BSN-1, BSN-3, BSN-6, and BSN-7 will be routed directly to the stormwater network through area inlets. Basins BSN-3 and BSN-7 have existing drainage structures to collect all runoff into a single culvert which discharges into Bergin Lane. Manholes MH-B3 and MH-B7 have been implemented at the outlets of these existing culverts to divert runoff into the underground stormwater network. Manholes MH-B3 and MH-B7 will be 2 ft deep and be connected to the main trunk of the stormwater network with 18-inch dual wall HDPE pipe. Basins BSN-1 and BSN-6 will flow into Inlet-B1 and inlet B6, which are depressed 5 foot x 5 foot inlet grates. These inlet grates will route runoff from their respective basins to the underground storm sewer network. These inlets will be 4 feet deep drop manholes with an 18-inch dual wall HDPE pipe connecting it to the main trunkline. The remaining offsite basins will continue to surface flow onto Bergin Lane. The following Table summarizes the area inlet/manhole data including the rim elevation, the outlet pipe elevation, the manhole/inlet invert elevation, and the peak inflow.

Table 6.1

Area Inlet Data				
Manhole & Inlet ID	Rim Elevation (ft ASL)	Outlet Elevation (ft ASL)	Invert Elevation (ft ASL)	50 (100) Peak Inflow (cfs)
MH-B3	5520	5518	5518	4.29 (4.85)
MH-B7	5468	5466	5466	8.93 (10.08)
Inlet-B1	5535.5	5533.5	5531.5	0.95 (1.26)
Inlet-B6	5508.5	5506.5	5504.5	1.32 (1.67)

According to the Drainage Design Manual, the height of water shall not exceed the height of the curb for two lane roads. SMA has further limited the spread of flow to not exceed the height of the crown of the road.

To determine the flowrate at specific locations along Bergin Lane, Autodesk SSA was used to model the hydraulic network. The bypass flows and widths calculated in SSA were verified in

Bentley System's Flowmaster to verify the spread of water across the road. The road cross section was modeled in accordance with the post-development road section shown in figure 4.4.

SMA modeled Neenah Type R_3076_L curb inlets placed on each side of the developed road. The locations of each inlet are placed such that no section of the road would have runoff flow above the road crown for the 100-year, 24-hour storm event. The following table summarizes the curb inlet data including the number of parallel inlet grates, the peak flow at the inlet, the flow intercepted by the inlet, the flow bypassing the inlet, and the max flow width of the water on the road at the inlet.

Table 6.2

Post-Development 100-year, 24-hour Curb Inlet Data					
Inlet ID	Number of Inlet Grates	Peak Inflow (cfs)	Flow Intercepted (cfs)	Flow Bypassing Inlet (cfs)	Max Road Spread of Flow (ft)
CDI-W1	2	5.67	4.67	1.00	10.86
CDI-W2	1	2.37	1.83	0.53	5.7
CDI-W3	2	6.61	4.90	1.71	13.83
CDI 105W	2	3.27	3.27	0.00	9.59
CDI-E1	1	3.06	1.97	1.09	8.09
CDI-E2	2	3.76	3.76	0.00	9.2
CDI-E3	1	1.36	1.36	0.00	3.53
CDI 105E	2	0.5	0.5	0.00	3.66

The locations of each inlet are shown on the Stormwater Network Map in Appendix A

6.2 STORMWATER NETWORK

The underground storm sewer network will connect each of the curb inlets to a central trunkline. This trunkline will consist of 13 manholes with 13 pipe links connecting them. All links within the storm sewer network are proposed to be dual wall HDPE pipe at their specified sized. The storm sewer network is proposed to run underneath Bergin Lane and connects to the existing US HWY 64 storm sewer network. The following table summarizes the data for the manholes within the storm sewer network. The data includes the proposed invert elevation, rim elevation, and the peak inflow calculated within SSA.

Table 6.3

Stormwater Network Manhole Data			
Manhole ID	Invert Elevation (ft ASL)	Rim Elevation (ft ASL)	50 (100) Peak Inflow (cfs)
MH-1	5531.5	5535.5	0.89 (1.26)
MH-2	5525.29	5530	2.73 (3.21)
MH-3	5516	5520.4	6.96 (8.06)
MH-4	5513.68	5518	10.10 (11.82)
MH-5	5502.75	5508.25	11.29 (13.35)
MH-6	5491.26	5495.5	11.29 (13.35)
MH-7	5481.44	5484.9	14.35 (17.37)
MH-8	5471.42	5474	14.35 (17.37)
MH-9	5462.98	5467.5	23.16 (27.45)
MH-10	5460.8	5464.3	24.88 (29.27)
MH-11	5458.11	5463.75	26.19 (30.76)
MH-12	5455.59	5459.5	30.83 (35.65)
MH-13	5452	5453.5	30.83 (35.65)

The following table summarizes the data for the pipe links within the stormwater network. The data for the pipe links include the Length of pipe, the pipe slope, the diameter of the pipe, the peak flow through the pipe, and the design flow capacity of each pipe calculated within SSA.

Table 6.4

Stormwater Network Pipe Link Data					
Pipe ID	Length (ft)	Slope (%)	Pipe Diameter (in)	50 (100) Peak Flow (cfs)	Design Flow Capacity (cfs)
Link 1	90.56	6.86	24	0.89 (1.26)	51.35
Link 2	200.2	4.64	24	2.73 (3.21)	42.23
Link 3	39.8	5.83	24	6.96 (8.06)	47.34
Link 4	205.98	5.31	24	10.10 (11.82)	45.18
Link 5	288.8	3.98	24	11.29 (13.35)	39.11
Link 6	275.36	3.57	24	11.29 (13.35)	37.04
Link 7	257.14	3.9	24	14.35 (17.37)	38.72
Link 8	184.74	4.3	24	14.35 (17.37)	40.66
Link 9	98.17	2.22	24	23.16 (27.45)	29.21
Link 10	90.68	2.97	24	24.88 (29.27)	33.79
Link 11	224.63	1.12	30	26.19 (30.76)	37.62
Link 12	285.88	1.26	30	30.83 (35.65)	39.9
Link 13	57.91	1.33	30	30.83 (35.65)	41.0

The proposed pipe network connects to the existing curb inlet on the east side of the road (CDI-105E) at the southern end of Bergin Lane. This inlet connects to the stormwater network underneath US Highway 64 which continues east for 1,171 ft where it discharges into an open drainage ditch. The proposed stormwater network and the existing network were modeled together in Autodesk SSA. The dimensions and discharge rates of the existing stormwater network were determined from the as-built plans and drainage report of US Highway 64 provided by the New Mexico Department of Transportation. The following table summarizes the data for the existing storm sewer network with the proposed pipe network installed. The data includes the length of pipe, slope, diameter, the peak flow, and the design flow capacity of each pipe calculated within SSA.

Table 6.5

US HWY 64 Stormwater Network Pipe Link Data (100-Yr)					
Pipe ID	Length (ft)	Slope (%)	Pipe Diameter (in)	Peak Flow (cfs)	Design Flow Capacity (cfs)
DS-105A	109	6.52	24	39.90	50.06
DS-105	273	1.95	30	67.09	67.69
DS-106	153	0.59	48	72.09	130.4
DS-107	317	0.5	48	77.09	120.04
DS-108	171	0.48	48	77.09	117.61
DS-109	77	0.51	48	82.09	121.23
DS-110	112	0.49	48	82.09	118.83
DS-111	68	1.15	48	82.09	182.05

According to the analysis conducted within SSA, the existing stormwater network under Highway 64 will be capable of conveying the additional discharge from Bergin Lane.

7.0 CONCLUSION, RECOMMENDATIONS AND LIMITATIONS

From the previously outlined analysis, this drainage report details the pre- and post-development hydrologic conditions for the contributing watershed to Bergin Lane in Bloomfield, New Mexico. The analysis incorporates post-development improvements within Bergin Lane. Furthermore, SMA has determined that the proposed size and locations of inlets will prevent the roadway from being completely inundated during the 100-yr, 24-hr storm event. The designed storm sewer network will allow the runoff from Bergin Lane to be safely conveyed through the existing stormwater network under US Highway 64.

SMA prepared this report specifically for the Bergin Lane Improvement Project. SMA conducted this study using the standard level of care and diligence normally practiced by recognized engineering firms now performing services of a similar nature under similar circumstances. This report, including all illustrations, is intended to be used in its entirety. Any changes that may occur during development of the Construction Drawings will require an analysis to verify that no negative affects arise from said changes.

SMA prepared this report for the exclusive use of the Client and Owner. The purpose is to evaluate the design of the project as it relates to SMA's interpretation of the drainage aspects discussed.

APPENDIX A

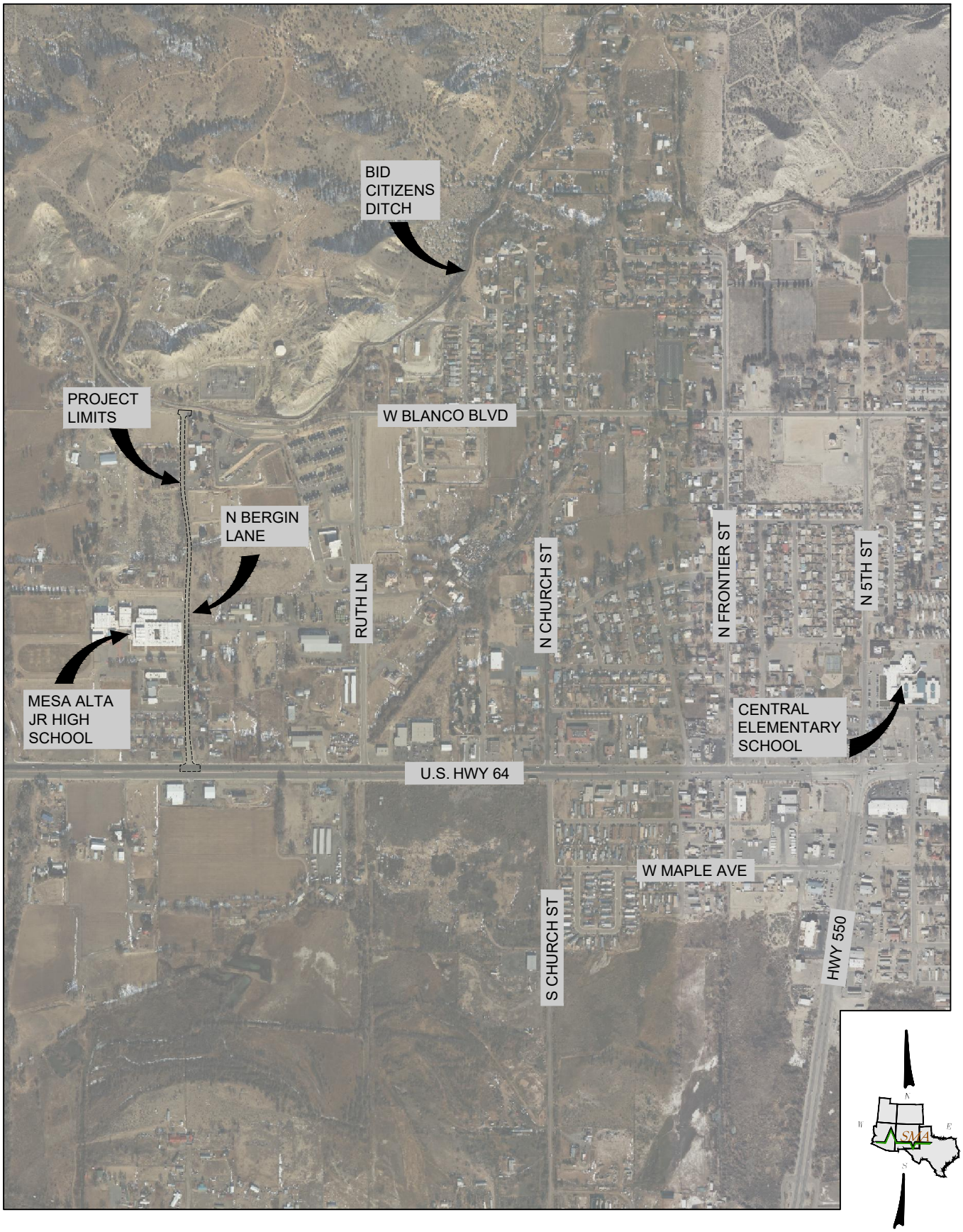
VICINITY MAP

PRE-DEVELOPMENT BASIN MAP

POST-DEVELOPMENT BASIN MAP

STORMWATER NETWORK MAP

FEMA FIRMETTE MAP



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Engineering
Environmental
Geomatics

SOUDER, MILLER & ASSOCIATES
401 West Broadway Avenue
Farmington, NM 87401-5907
Phone (505) 325-7535 Toll Free (505) 325-7535 Fax (505) 326-0045

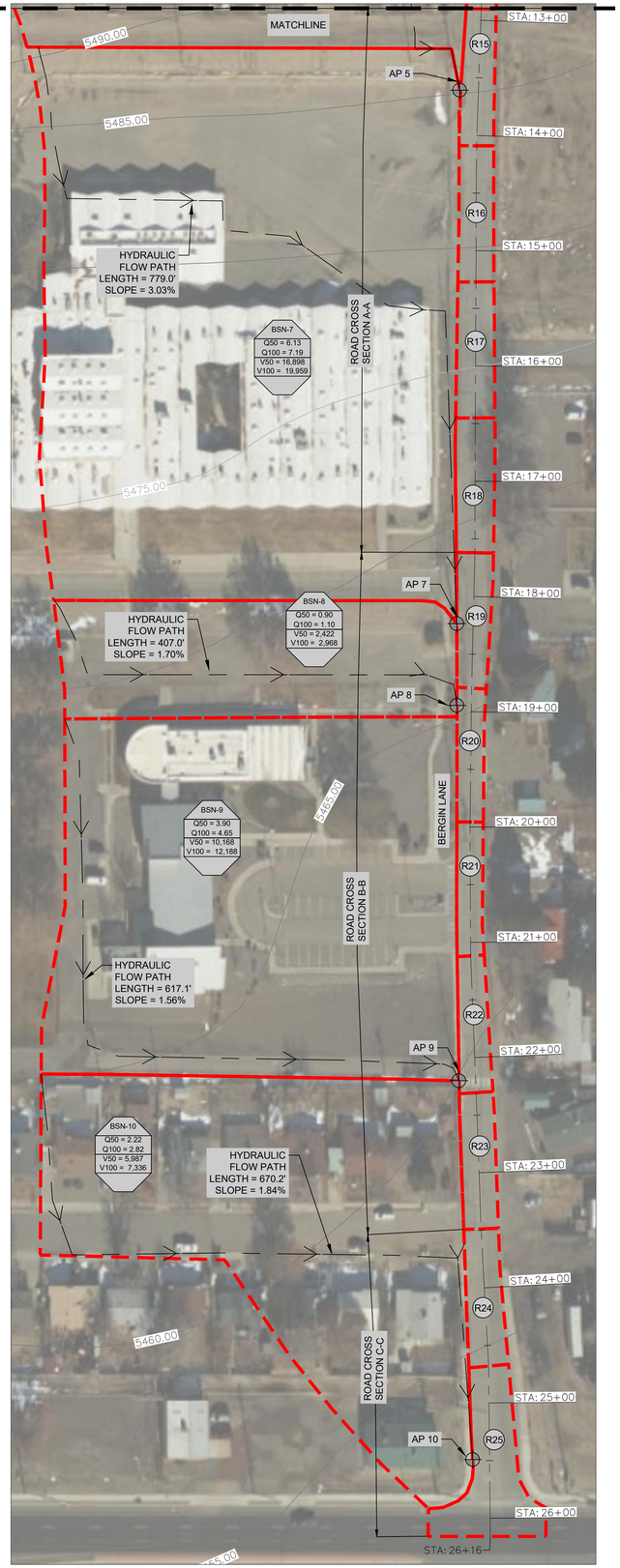
VICINITY MAP

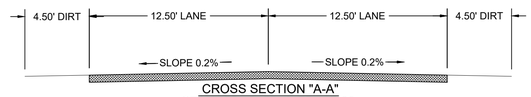
BERGIN LANE IMPROVEMENT PROJECT
BLOOMFIELD, NEW MEXICO

Designed	Drawn	Checked
RTV	RTV	DWMJR

Date: 05/23/2022
Scale: 1" = 1000'
Project No: 7130699
FIG-1

\\192.168.4.10\Projects\7-COB Bergin Ln (7130699)\Drainage\CAD\Vicinity map.dwg, RTV, 5/24/2022 11:35 AM





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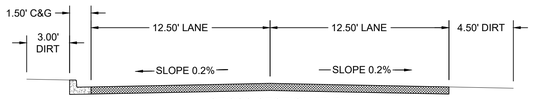
1" = 5'



CROSS SECTION "B-B"
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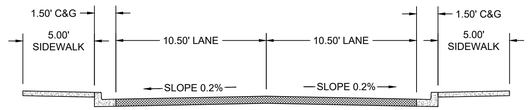
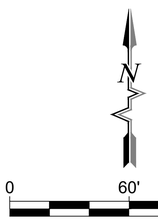
1" = 5'



CROSS SECTION "C-C"
STA 0+00 - 1+25, 23+75 - 26+16
1" = 5'

Pre-Development Road Subbasins – 50(100)-Year, 24-Hour Event

Subbasin ID	Area (square ft.)	Flow Length (ft)	Weighted CN	50 (100) Volume (ft^3)	50 (100) Peak Discharge (cfs)
R1	4,621.7	260	98	555 (641)	0.19 (0.22)
R2	5,678.8	117	98	562 (649)	0.19 (0.22)
R3	2,585.3	121	98	310 (358)	0.11 (0.12)
R4	3,362.0	189	98	404 (466)	0.14 (0.16)
R7, R19 - R23	4,080	120	93	350 (419)	0.13 (0.15)
R5 - R13, R17 - R18	4,080	120	92	327 (394)	0.12 (0.15)
R14 - R16	4,080	120	88	247 (308)	0.10 (0.11)
R24	4,080	120	98	490 (566)	0.17 (0.19)
R25	7,589	120	98	911 (1,052)	0.31 (0.36)



SCALE: 1" = 60'

GENERAL LEGEND

OFFSITE BASIN IDENTIFICATION	Basin ID / 50-Yr Discharge / 100-Yr Discharge / 50-Yr Volume / 100-Yr Volume
ROAD BASIN IDENTIFICATION	R1
BASIN BOUNDARY	
PRE-DEVELOPMENT FLOW PATH	
MAJOR CONTOUR (25' INTERVAL)	
MINOR CONTOUR (5' INTERVAL)	
ANALYSIS POINT	

To Request a Line Locate Dial 811

New Mexico state law requires everyone involved in any excavation to provide at least two working days' notice to owners of underground facilities when a dig is planned. All facility owners are then required to mark the locations of any underground lines or take other appropriate measures to protect them.

Rev #	Date	Description	By	Ck'd

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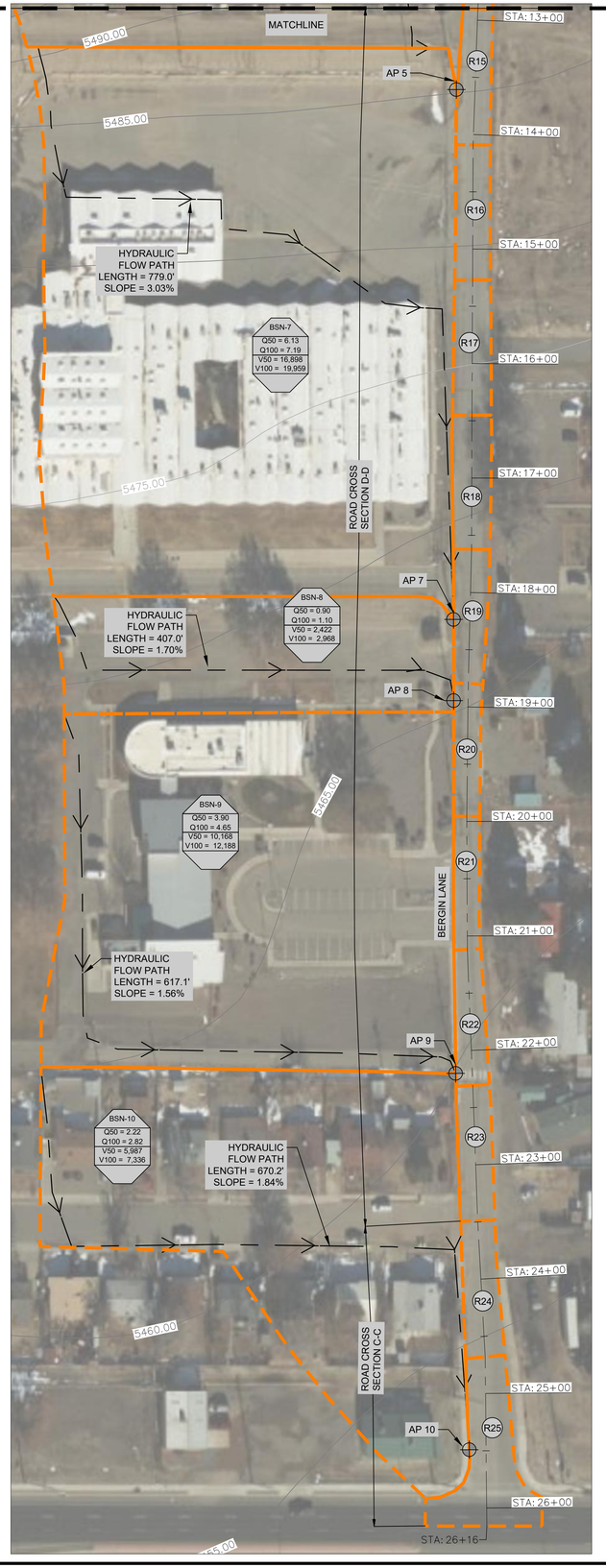
CITY OF BLOOMFIELD
BLOOMFIELD, NEW MEXICO

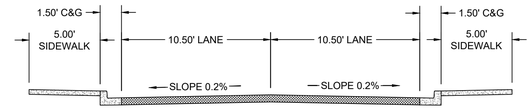
BERGIN LANE IMPROVEMENT PROJECT
BLOOMFIELD, NEW MEXICO
PRE-DEVELOPMENT BASIN MAP

THIS DRAWING IS INCOMPLETE AND NOT TO BE USED FOR CONSTRUCTION UNLESS IT IS STAMPED, SIGNED AND DATED

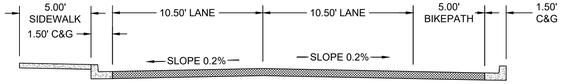
Designed	Drawn	Checked
RTV	RTV	DWMJR

Date: May 2022
Scale: Horiz: 1" = 60' Vert: N/A
Project No: 7130699
Sheet: FIG-2





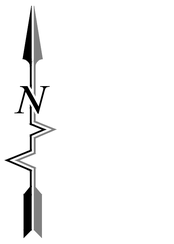
CROSS SECTION "C-C"
STA 0+00 - 1+25, 23+75 - 26+16
1" = 5'



CROSS SECTION "D-D"
STA 1+25 - 23+75
1" = 5'

Post-Development Road Subbasins – 50(100)-Year, 24-Hour Event

Subbasin ID	Area (square ft.)	Flow Length (ft)	Weighted CN	50 (100) Volume (ft^3)	50 (100) Peak Discharge (cfs)
R1	4621.7	260	98	555 (641)	0.19 (0.22)
R2	5678.8	117	98	562 (649)	0.19 (0.22)
R3	2585.3	121	98	310 (358)	0.11 (0.12)
R4	3362.0	189	98	404 (466)	0.14 (0.16)
R5 - R24	4080	120	98	409 (566)	0.17 (0.19)
R25	7589	120	98	911 (1,052)	0.31 (0.36)



GENERAL LEGEND

OFFSITE BASIN IDENTIFICATION	Basin ID; 50-Yr Flowrate; 100-Yr Flowrate; 50-Yr Discharge; 100-Yr Discharge
ROAD BASIN IDENTIFICATION	R1
BASIN BOUNDARY	
POST-DEVELOPMENT FLOW PATH	
MAJOR CONTOUR (25' INTERVAL)	
MINOR CONTOUR (5' INTERVAL)	
ANALYSIS POINT	

To Request a Line Locate Dial 811

New Mexico state law requires everyone involved in any excavation to provide at least two working days' notice to owners of underground facilities when a dig is planned. All facility owners are then required to mark the locations of any underground lines or take other appropriate measures to protect them.

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POST-DEVELOPMENT BASIN MAP

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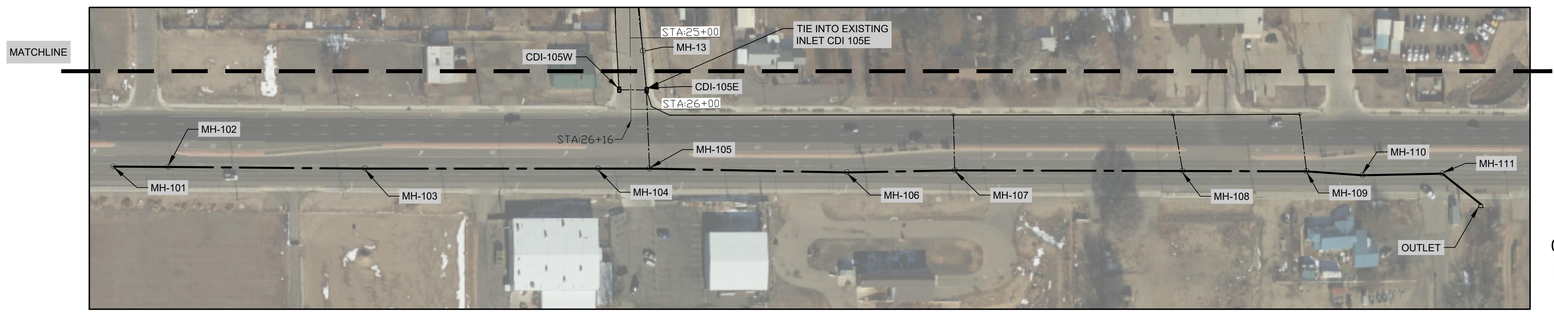
Designed	Drawn	Checked
RTV	RTV	DWMJR

Date: May 2022
Scale: Horiz: 1" = 60' Vert: N/A
Project No: 7130699
Sheet: FIG-3

PROPOSED STORM SEWER NETWORK
STA: 0+00 TO STA: 26+16
1" = 100'

0 100' 200'
SCALE: 1" = 100'



EXISTING U.S HWY 64 STORM SEWER NETWORK
1" = 100'

N
0 100' 200'
SCALE: 1" = 100'

GENERAL LEGEND

- AREA INLET
- CURB DROP INLET (CDI)
- MANHOLE (MH)
- ROADS
- STORM SEWER

To Request a Line Locate Dial 811

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BERGIN LANE IMPROVEMENT PROJECT
BLOOMFIELD, NEW MEXICO
PROPOSED STORM SEWER NETWORK MAP

THIS DRAWING IS INCOMPLETE AND NOT TO BE USED FOR CONSTRUCTION UNLESS IT IS STAMPED, SIGNED AND DATED

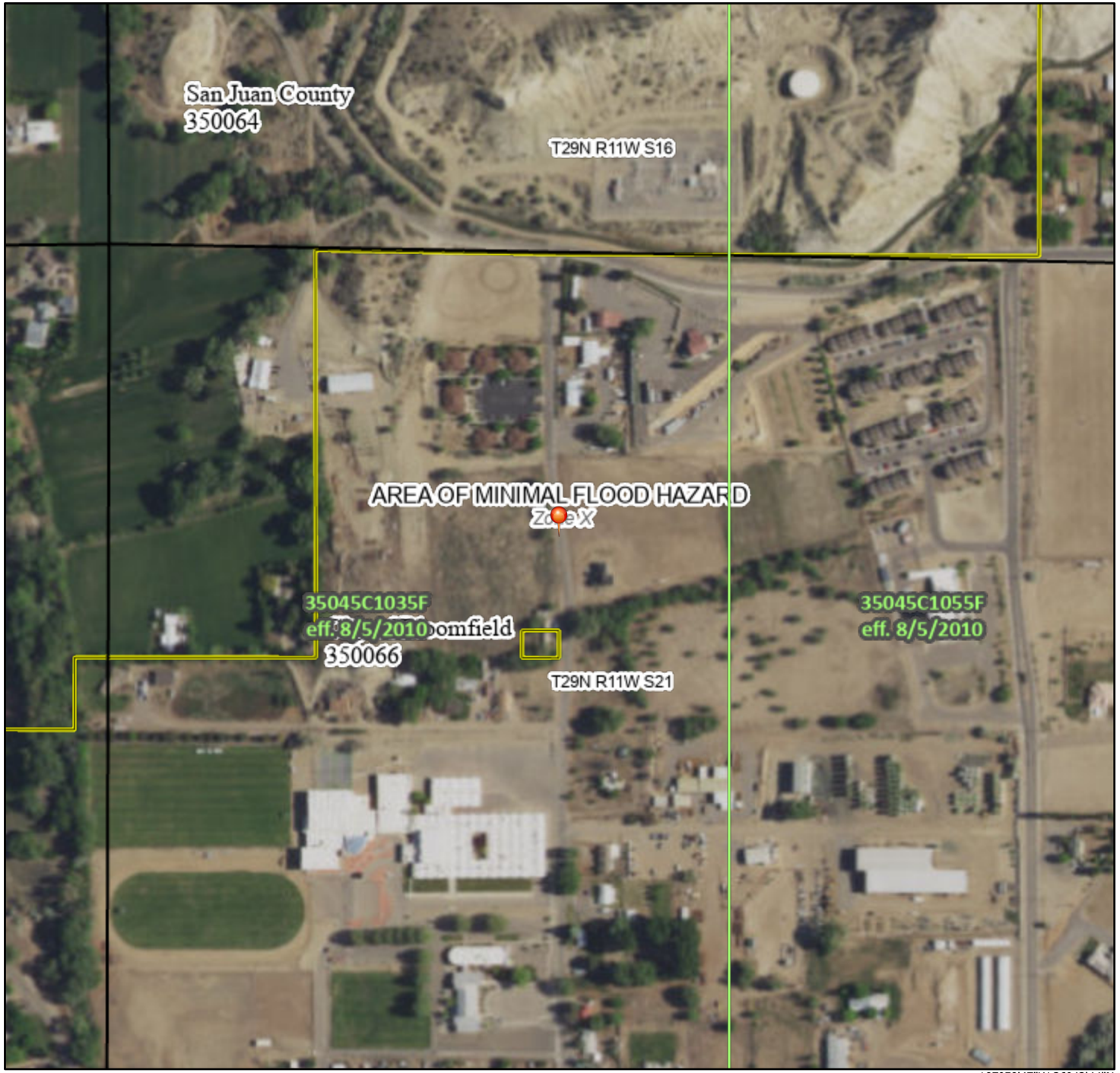
Designed	Drawn	Checked
RTV	RTV	DWMJR

Date: May 2022
Scale: Horiz: 1" = 100' Vert: N/A
Project No: 7130699
Sheet: FIG-4

National Flood Hazard Layer FIRMette

FEMA

108°0'24"W 36°43'13"N



107°59'47"W 36°42'44"N

Feet 1:6,000

0 250 500 1,000 1,500 2,000

Basemap: USGS National Map: Orthoimagery: Data refreshed October, 2020

Legend

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

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN — Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 — Cross Sections with 1% Annual Chance
- 17.5 — Water Surface Elevation
- Coastal Transect
- 513 — Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

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

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 3/18/2022 at 2:38 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

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

APPENDIX B

NOAA ATLAS 14 PRECIPITATION FREQUENCY DATA

NCRS SOILS SURVEY

CN TABLES

BASIN CURVE NUMBER CALCULATIONS

MANNING ROUGHNESS COEFFICIENT NUMBER REFERENCE

TIME OF CONCENTRATION CALCULATIONS

NOAA Atlas 14, Volume 1, Version 5
Location name: Bloomfield, New Mexico, USA*
Latitude: 36.7167°, Longitude: -108.002°
Elevation: 5514.73 ft**
* source: ESRI Maps
** source: USGS

POINT PRECIPITATION FREQUENCY ESTIMATES

Sanja Perica, Sarah Dietz, Sarah Heim, Lillian Hiner, Kazungu Maitaria, Deborah Martin, Sandra Pavlovic, Ishani Roy, Carl Trypaluk, Dale Unruh, Fenglin Yan, Michael Yekta, Tan Zhao, Geoffrey Bonnin, Daniel Brewer, Li-Chuan Chen, Tye Parzybok, John Yarchoan

NOAA, National Weather Service, Silver Spring, Maryland

PF_tabular | PF_graphical | Maps_&_aerials

PF tabular

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

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	0.149 (0.128-0.174)	0.192 (0.165-0.224)	0.258 (0.222-0.301)	0.313 (0.269-0.365)	0.392 (0.333-0.457)	0.457 (0.385-0.532)	0.527 (0.439-0.614)	0.603 (0.496-0.704)	0.710 (0.572-0.833)	0.800 (0.634-0.943)
10-min	0.227 (0.195-0.265)	0.292 (0.251-0.340)	0.393 (0.338-0.458)	0.476 (0.409-0.556)	0.596 (0.507-0.696)	0.696 (0.586-0.810)	0.802 (0.668-0.935)	0.917 (0.754-1.07)	1.08 (0.871-1.27)	1.22 (0.966-1.44)
15-min	0.281 (0.241-0.329)	0.362 (0.311-0.422)	0.487 (0.419-0.568)	0.590 (0.507-0.689)	0.739 (0.628-0.862)	0.862 (0.726-1.00)	0.994 (0.828-1.16)	1.14 (0.935-1.33)	1.34 (1.08-1.57)	1.51 (1.20-1.78)
30-min	0.378 (0.325-0.443)	0.487 (0.419-0.568)	0.656 (0.565-0.764)	0.795 (0.683-0.928)	0.995 (0.846-1.16)	1.16 (0.978-1.35)	1.34 (1.12-1.56)	1.53 (1.26-1.79)	1.81 (1.45-2.12)	2.03 (1.61-2.40)
60-min	0.468 (0.402-0.548)	0.603 (0.518-0.703)	0.812 (0.699-0.946)	0.984 (0.845-1.15)	1.23 (1.05-1.44)	1.44 (1.21-1.67)	1.66 (1.38-1.93)	1.90 (1.56-2.21)	2.23 (1.80-2.62)	2.52 (2.00-2.97)
2-hr	0.527 (0.460-0.611)	0.669 (0.585-0.777)	0.890 (0.777-1.03)	1.07 (0.934-1.24)	1.34 (1.16-1.55)	1.57 (1.33-1.81)	1.81 (1.52-2.09)	2.08 (1.72-2.40)	2.47 (2.00-2.87)	2.80 (2.22-3.27)
3-hr	0.573 (0.508-0.654)	0.722 (0.638-0.825)	0.939 (0.832-1.07)	1.12 (0.985-1.27)	1.38 (1.21-1.57)	1.60 (1.38-1.82)	1.84 (1.57-2.10)	2.10 (1.76-2.43)	2.49 (2.04-2.90)	2.81 (2.26-3.30)
6-hr	0.681 (0.614-0.764)	0.845 (0.764-0.951)	1.07 (0.962-1.20)	1.26 (1.13-1.41)	1.53 (1.36-1.71)	1.76 (1.55-1.97)	2.00 (1.73-2.24)	2.26 (1.93-2.54)	2.64 (2.21-2.99)	2.96 (2.42-3.37)
12-hr	0.800 (0.724-0.887)	0.995 (0.900-1.10)	1.24 (1.12-1.37)	1.43 (1.29-1.58)	1.70 (1.52-1.87)	1.90 (1.69-2.10)	2.12 (1.87-2.34)	2.35 (2.05-2.61)	2.67 (2.29-3.02)	2.99 (2.50-3.40)
24-hr	0.879 (0.794-0.973)	1.10 (0.996-1.22)	1.40 (1.26-1.54)	1.63 (1.47-1.80)	1.96 (1.75-2.16)	2.22 (1.98-2.44)	2.49 (2.21-2.74)	2.78 (2.45-3.06)	3.17 (2.77-3.50)	3.48 (3.02-3.85)
2-day	1.03 (0.934-1.14)	1.29 (1.17-1.42)	1.62 (1.47-1.78)	1.88 (1.70-2.06)	2.24 (2.02-2.46)	2.52 (2.26-2.76)	2.81 (2.50-3.08)	3.11 (2.76-3.41)	3.52 (3.09-3.87)	3.84 (3.35-4.23)
3-day	1.10 (1.00-1.21)	1.38 (1.25-1.51)	1.72 (1.56-1.89)	1.99 (1.81-2.18)	2.36 (2.13-2.59)	2.65 (2.38-2.90)	2.94 (2.63-3.22)	3.24 (2.88-3.55)	3.65 (3.22-4.01)	3.96 (3.47-4.37)
4-day	1.18 (1.07-1.29)	1.47 (1.34-1.61)	1.82 (1.66-1.99)	2.10 (1.91-2.30)	2.48 (2.24-2.72)	2.78 (2.50-3.04)	3.07 (2.76-3.37)	3.37 (3.01-3.69)	3.78 (3.34-4.15)	4.09 (3.60-4.50)
7-day	1.31 (1.20-1.44)	1.64 (1.49-1.79)	2.02 (1.84-2.21)	2.33 (2.11-2.54)	2.72 (2.47-2.97)	3.03 (2.73-3.30)	3.33 (3.00-3.63)	3.64 (3.25-3.97)	4.03 (3.59-4.41)	4.33 (3.83-4.75)
10-day	1.49 (1.35-1.63)	1.85 (1.69-2.03)	2.29 (2.08-2.50)	2.63 (2.39-2.87)	3.07 (2.79-3.35)	3.41 (3.08-3.71)	3.74 (3.37-4.08)	4.06 (3.65-4.44)	4.48 (4.01-4.92)	4.80 (4.26-5.28)
20-day	1.91 (1.73-2.11)	2.39 (2.16-2.64)	2.95 (2.66-3.25)	3.39 (3.06-3.74)	3.97 (3.57-4.37)	4.40 (3.94-4.85)	4.83 (4.32-5.34)	5.27 (4.69-5.82)	5.83 (5.16-6.46)	6.26 (5.51-6.95)
30-day	2.25 (2.04-2.49)	2.81 (2.55-3.10)	3.46 (3.13-3.82)	3.94 (3.56-4.35)	4.57 (4.12-5.05)	5.04 (4.53-5.56)	5.50 (4.91-6.07)	5.94 (5.29-6.58)	6.51 (5.77-7.23)	6.93 (6.11-7.71)
45-day	2.69 (2.45-2.95)	3.35 (3.06-3.69)	4.12 (3.75-4.51)	4.69 (4.27-5.13)	5.41 (4.92-5.93)	5.93 (5.37-6.50)	6.45 (5.81-7.07)	6.93 (6.22-7.61)	7.54 (6.74-8.29)	7.97 (7.11-8.79)
60-day	3.07 (2.78-3.40)	3.83 (3.47-4.24)	4.68 (4.23-5.18)	5.31 (4.79-5.87)	6.11 (5.50-6.75)	6.67 (6.00-7.38)	7.22 (6.48-7.98)	7.74 (6.92-8.56)	8.38 (7.47-9.29)	8.83 (7.85-9.81)

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

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

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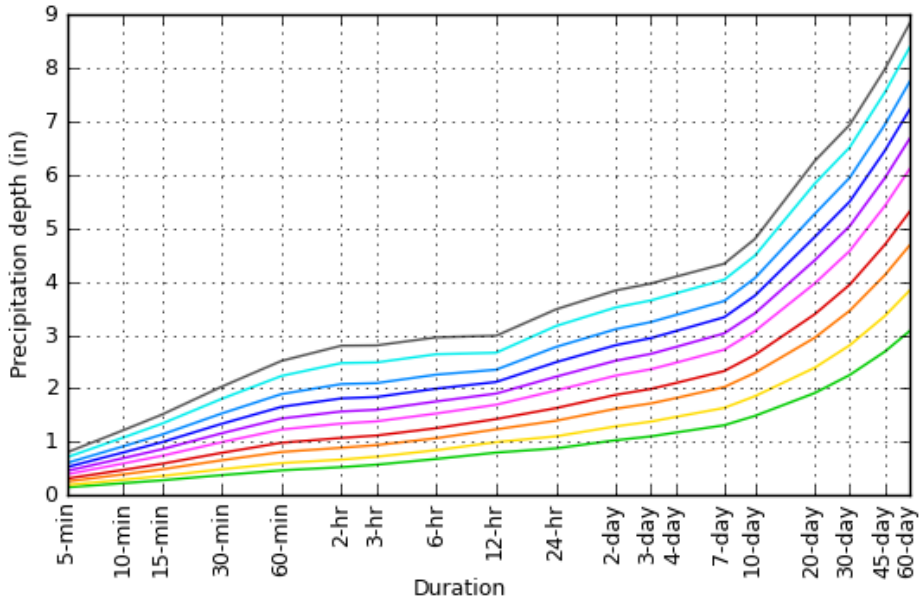
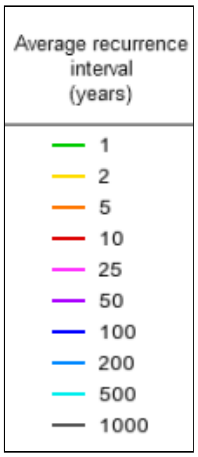
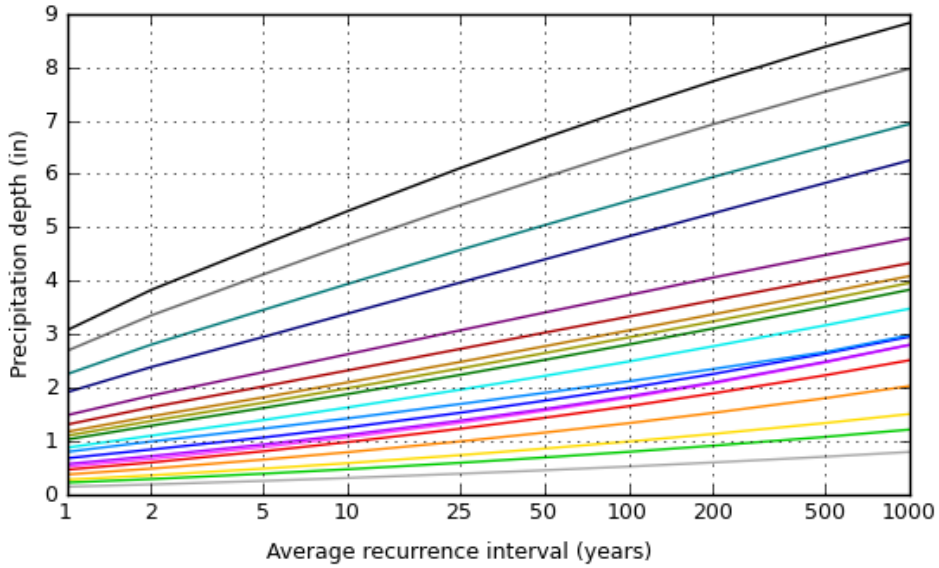
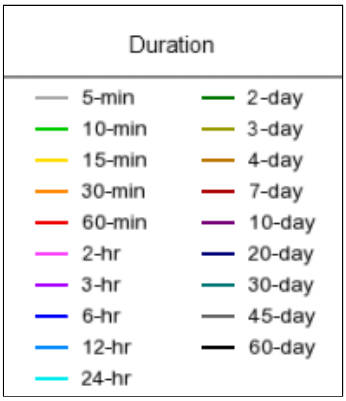
PF graphical

PDS-based depth-duration-frequency (DDF) curves
Latitude: 36.7167°, Longitude: -108.0020°









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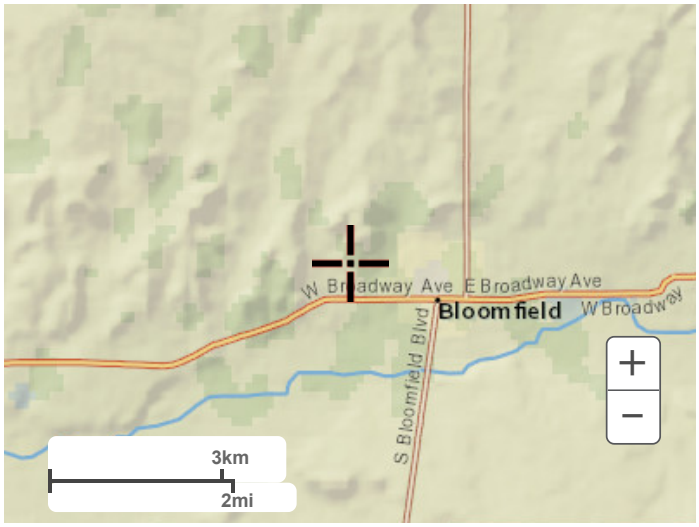
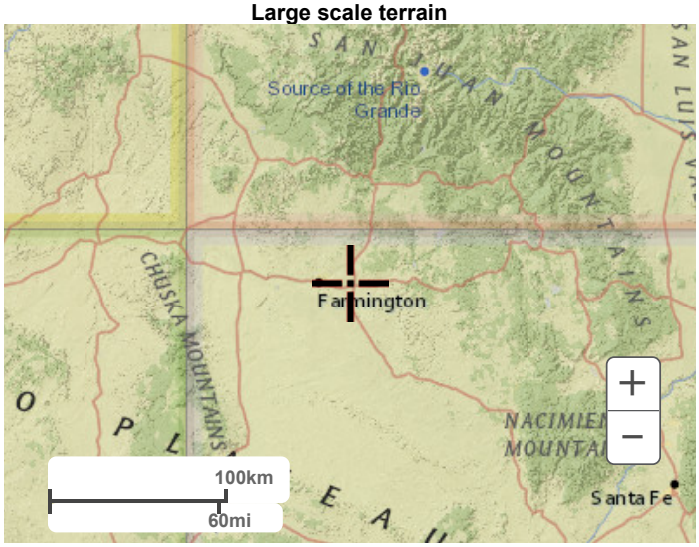
Small scale terrain



Large scale terrain



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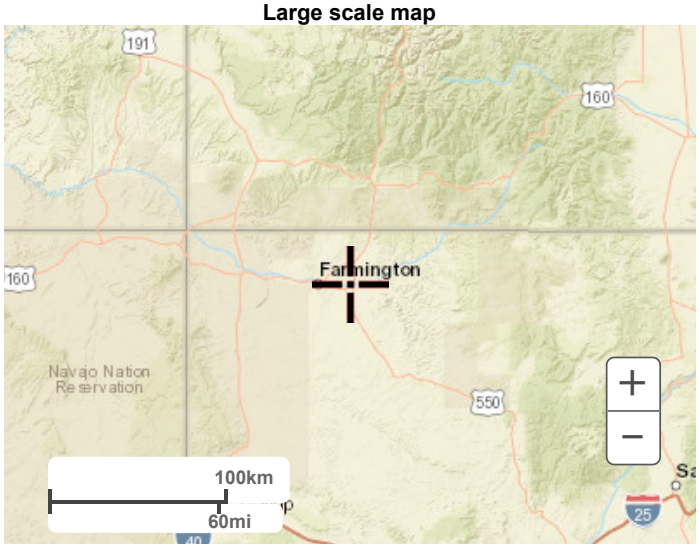
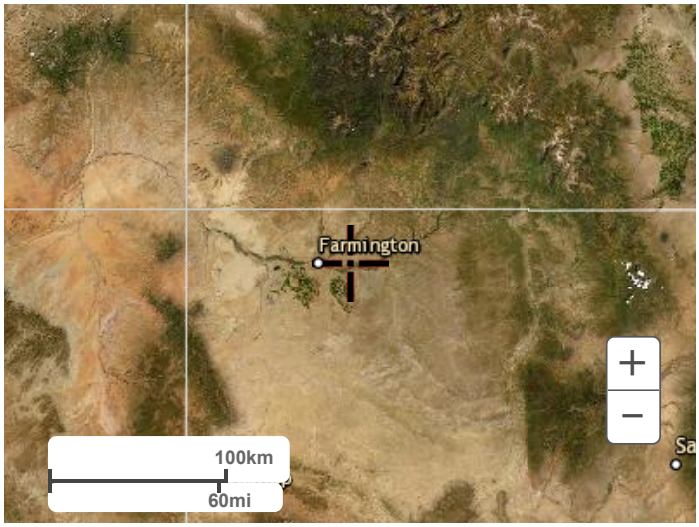


Large scale aerial



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NOAA Atlas 14, Volume 1, Version 5
Location name: Bloomfield, New Mexico, USA*
Latitude: 36.7167°, Longitude: -108.002°
Elevation: 5514.73 ft**
* source: ESRI Maps
** source: USGS

POINT PRECIPITATION FREQUENCY ESTIMATES

Sanja Perica, Sarah Dietz, Sarah Heim, Lillian Hiner, Kazungu Maitaria, Deborah Martin, Sandra Pavlovic, Ishani Roy, Carl Trypaluk, Dale Unruh, Fenglin Yan, Michael Yekta, Tan Zhao, Geoffrey Bonnin, Daniel Brewer, Li-Chuan Chen, Tye Parzybok, John Yarchoan

NOAA, National Weather Service, Silver Spring, Maryland

PF_tabular | PF_graphical | Maps_&_aerials

PF tabular

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

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	**1.79** (1.54-2.09)	**2.30** (1.98-2.69)	**3.10** (2.66-3.61)	**3.76** (3.23-4.38)	**4.70** (4.00-5.48)	**5.48** (4.62-6.38)	**6.32** (5.27-7.37)	**7.24** (5.95-8.45)	**8.52** (6.86-10.00)	**9.60** (7.61-11.3)
10-min	**1.36** (1.17-1.59)	**1.75** (1.51-2.04)	**2.36** (2.03-2.75)	**2.86** (2.45-3.34)	**3.58** (3.04-4.18)	**4.18** (3.52-4.86)	**4.81** (4.01-5.61)	**5.50** (4.52-6.43)	**6.49** (5.23-7.61)	**7.31** (5.80-8.61)
15-min	**1.12** (0.964-1.32)	**1.45** (1.24-1.69)	**1.95** (1.68-2.27)	**2.36** (2.03-2.76)	**2.96** (2.51-3.45)	**3.45** (2.90-4.02)	**3.98** (3.31-4.63)	**4.55** (3.74-5.31)	**5.36** (4.32-6.29)	**6.04** (4.79-7.12)
30-min	**0.756** (0.650-0.886)	**0.974** (0.838-1.14)	**1.31** (1.13-1.53)	**1.59** (1.37-1.86)	**1.99** (1.69-2.32)	**2.32** (1.96-2.70)	**2.68** (2.23-3.12)	**3.06** (2.52-3.58)	**3.61** (2.91-4.23)	**4.07** (3.22-4.79)
60-min	**0.468** (0.402-0.548)	**0.603** (0.518-0.703)	**0.812** (0.699-0.946)	**0.984** (0.845-1.15)	**1.23** (1.05-1.44)	**1.44** (1.21-1.67)	**1.66** (1.38-1.93)	**1.90** (1.56-2.21)	**2.23** (1.80-2.62)	**2.52** (2.00-2.97)
2-hr	**0.264** (0.230-0.306)	**0.334** (0.292-0.388)	**0.445** (0.388-0.514)	**0.537** (0.467-0.620)	**0.672** (0.578-0.776)	**0.784** (0.667-0.904)	**0.907** (0.762-1.05)	**1.04** (0.860-1.20)	**1.24** (1.00-1.44)	**1.40** (1.11-1.63)
3-hr	**0.191** (0.169-0.218)	**0.240** (0.212-0.275)	**0.313** (0.277-0.357)	**0.373** (0.328-0.424)	**0.461** (0.402-0.522)	**0.533** (0.461-0.604)	**0.613** (0.521-0.701)	**0.699** (0.587-0.809)	**0.828** (0.680-0.966)	**0.934** (0.754-1.10)
6-hr	**0.114** (0.103-0.128)	**0.141** (0.128-0.159)	**0.179** (0.161-0.200)	**0.210** (0.189-0.235)	**0.256** (0.227-0.286)	**0.293** (0.258-0.328)	**0.333** (0.289-0.374)	**0.377** (0.322-0.424)	**0.441** (0.368-0.499)	**0.494** (0.405-0.562)
12-hr	**0.066** (0.060-0.074)	**0.083** (0.075-0.091)	**0.103** (0.093-0.113)	**0.118** (0.107-0.131)	**0.141** (0.126-0.155)	**0.158** (0.141-0.174)	**0.176** (0.155-0.194)	**0.195** (0.170-0.217)	**0.221** (0.190-0.251)	**0.248** (0.207-0.282)
24-hr	**0.037** (0.033-0.041)	**0.046** (0.042-0.051)	**0.058** (0.053-0.064)	**0.068** (0.061-0.075)	**0.082** (0.073-0.090)	**0.093** (0.082-0.102)	**0.104** (0.092-0.114)	**0.116** (0.102-0.127)	**0.132** (0.116-0.146)	**0.145** (0.126-0.160)
2-day	**0.021** (0.019-0.024)	**0.027** (0.024-0.030)	**0.034** (0.031-0.037)	**0.039** (0.035-0.043)	**0.047** (0.042-0.051)	**0.052** (0.047-0.058)	**0.059** (0.052-0.064)	**0.065** (0.057-0.071)	**0.073** (0.064-0.081)	**0.080** (0.070-0.088)
3-day	**0.015** (0.014-0.017)	**0.019** (0.017-0.021)	**0.024** (0.022-0.026)	**0.028** (0.025-0.030)	**0.033** (0.030-0.036)	**0.037** (0.033-0.040)	**0.041** (0.037-0.045)	**0.045** (0.040-0.049)	**0.051** (0.045-0.056)	**0.055** (0.048-0.061)
4-day	**0.012** (0.011-0.013)	**0.015** (0.014-0.017)	**0.019** (0.017-0.021)	**0.022** (0.020-0.024)	**0.026** (0.023-0.028)	**0.029** (0.026-0.032)	**0.032** (0.029-0.035)	**0.035** (0.031-0.038)	**0.039** (0.035-0.043)	**0.043** (0.037-0.047)
7-day	**0.008** (0.007-0.009)	**0.010** (0.009-0.011)	**0.012** (0.011-0.013)	**0.014** (0.013-0.015)	**0.016** (0.015-0.018)	**0.018** (0.016-0.020)	**0.020** (0.018-0.022)	**0.022** (0.019-0.024)	**0.024** (0.021-0.026)	**0.026** (0.023-0.028)
10-day	**0.006** (0.006-0.007)	**0.008** (0.007-0.008)	**0.010** (0.009-0.010)	**0.011** (0.010-0.012)	**0.013** (0.012-0.014)	**0.014** (0.013-0.015)	**0.016** (0.014-0.017)	**0.017** (0.015-0.019)	**0.019** (0.017-0.021)	**0.020** (0.018-0.022)
20-day	**0.004** (0.004-0.004)	**0.005** (0.005-0.005)	**0.006** (0.006-0.007)	**0.007** (0.006-0.008)	**0.008** (0.007-0.009)	**0.009** (0.008-0.010)	**0.010** (0.009-0.011)	**0.011** (0.010-0.012)	**0.012** (0.011-0.013)	**0.013** (0.011-0.014)
30-day	**0.003** (0.003-0.003)	**0.004** (0.004-0.004)	**0.005** (0.004-0.005)	**0.005** (0.005-0.006)	**0.006** (0.006-0.007)	**0.007** (0.006-0.008)	**0.008** (0.007-0.008)	**0.008** (0.007-0.009)	**0.009** (0.008-0.010)	**0.010** (0.008-0.011)
45-day	**0.002** (0.002-0.003)	**0.003** (0.003-0.003)	**0.004** (0.003-0.004)	**0.004** (0.004-0.005)	**0.005** (0.005-0.005)	**0.005** (0.005-0.006)	**0.006** (0.005-0.007)	**0.006** (0.006-0.007)	**0.007** (0.006-0.008)	**0.007** (0.007-0.008)
60-day	**0.002** (0.002-0.002)	**0.003** (0.002-0.003)	**0.003** (0.003-0.004)	**0.004** (0.003-0.004)	**0.004** (0.004-0.005)	**0.005** (0.004-0.005)	**0.005** (0.004-0.006)	**0.005** (0.005-0.006)	**0.006** (0.005-0.006)	**0.006** (0.005-0.007)

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

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

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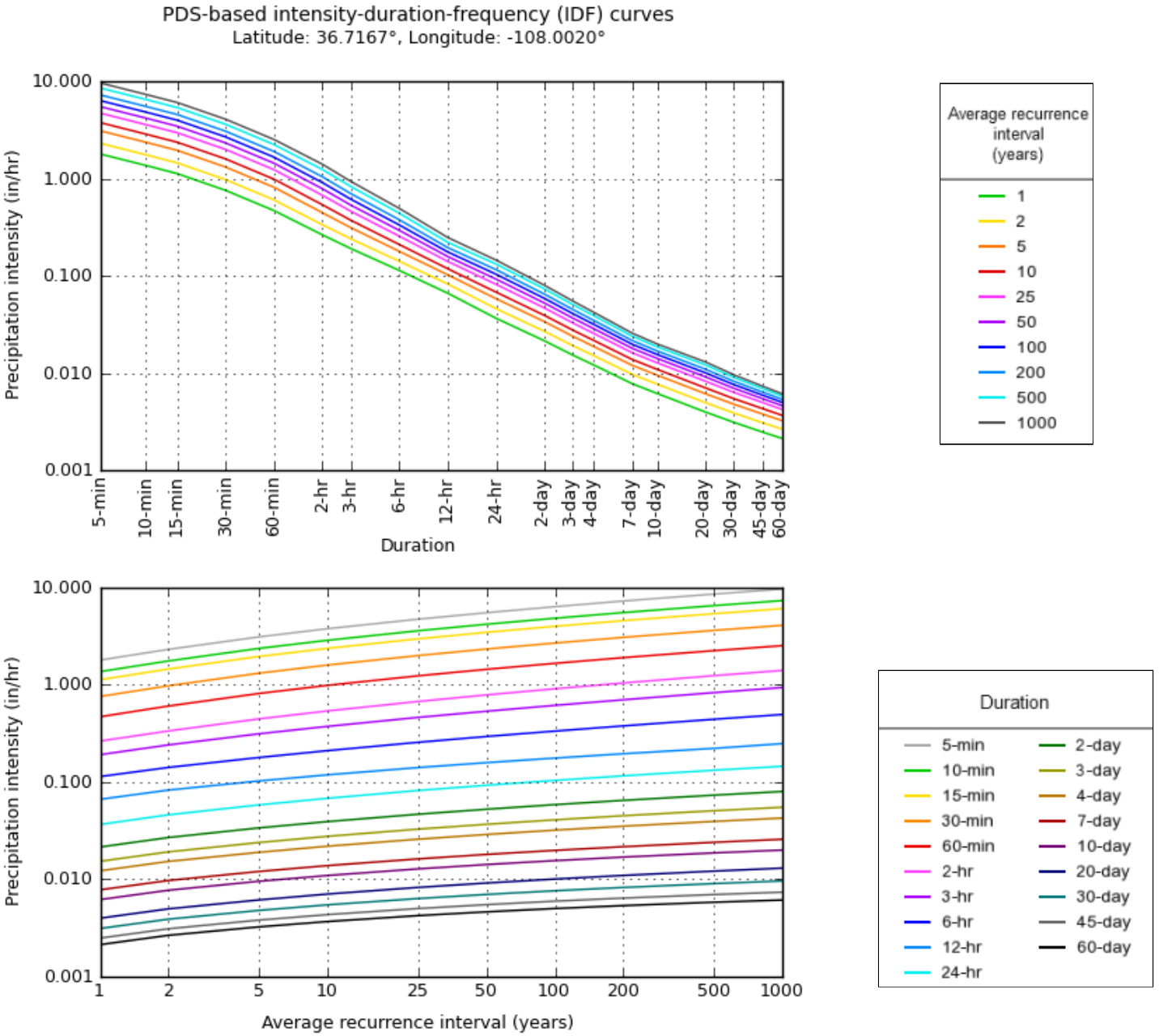
PF graphical



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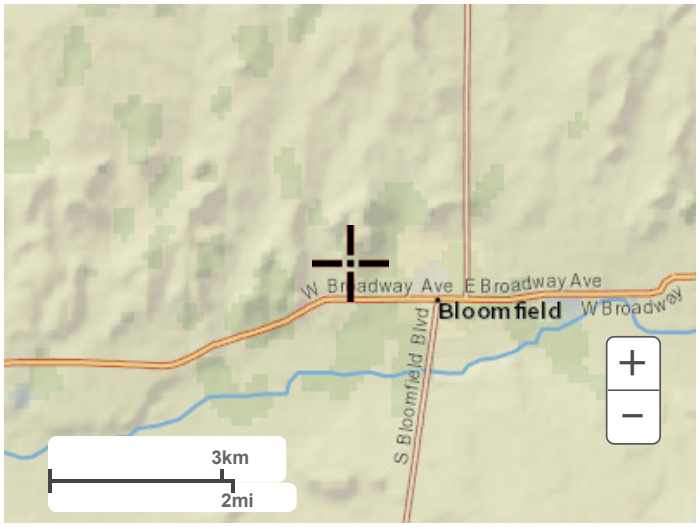
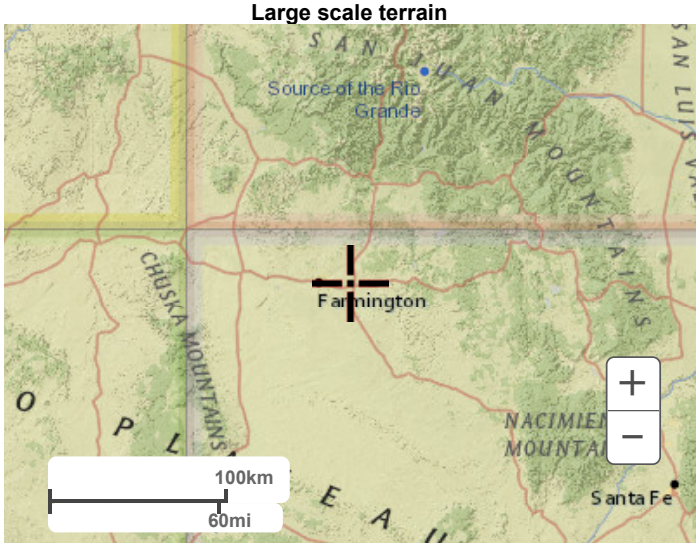


Large scale terrain



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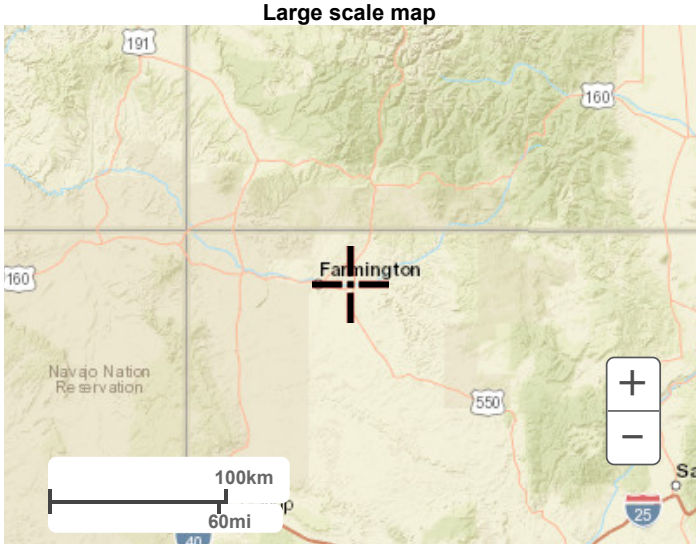
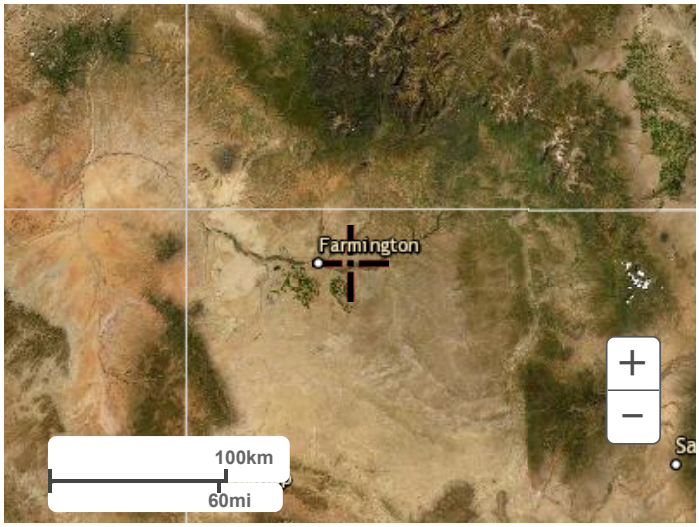


Large scale aerial



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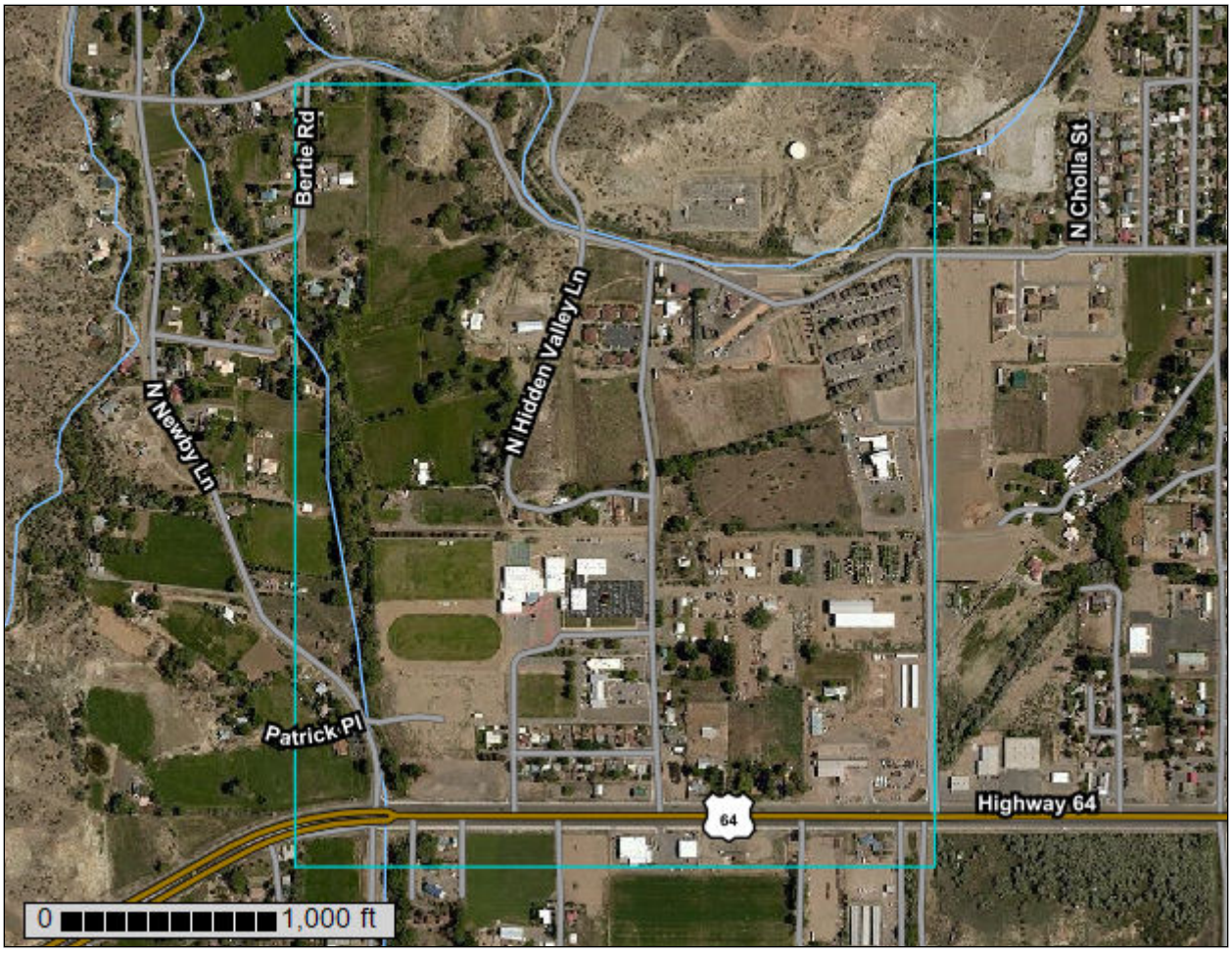
NRCS

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 San Juan County, New Mexico, Eastern Part



March 18, 2022

Preface

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

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

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

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

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

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

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Contents

How Soil Surveys Are Made

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

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

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

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

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

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

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

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

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

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

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

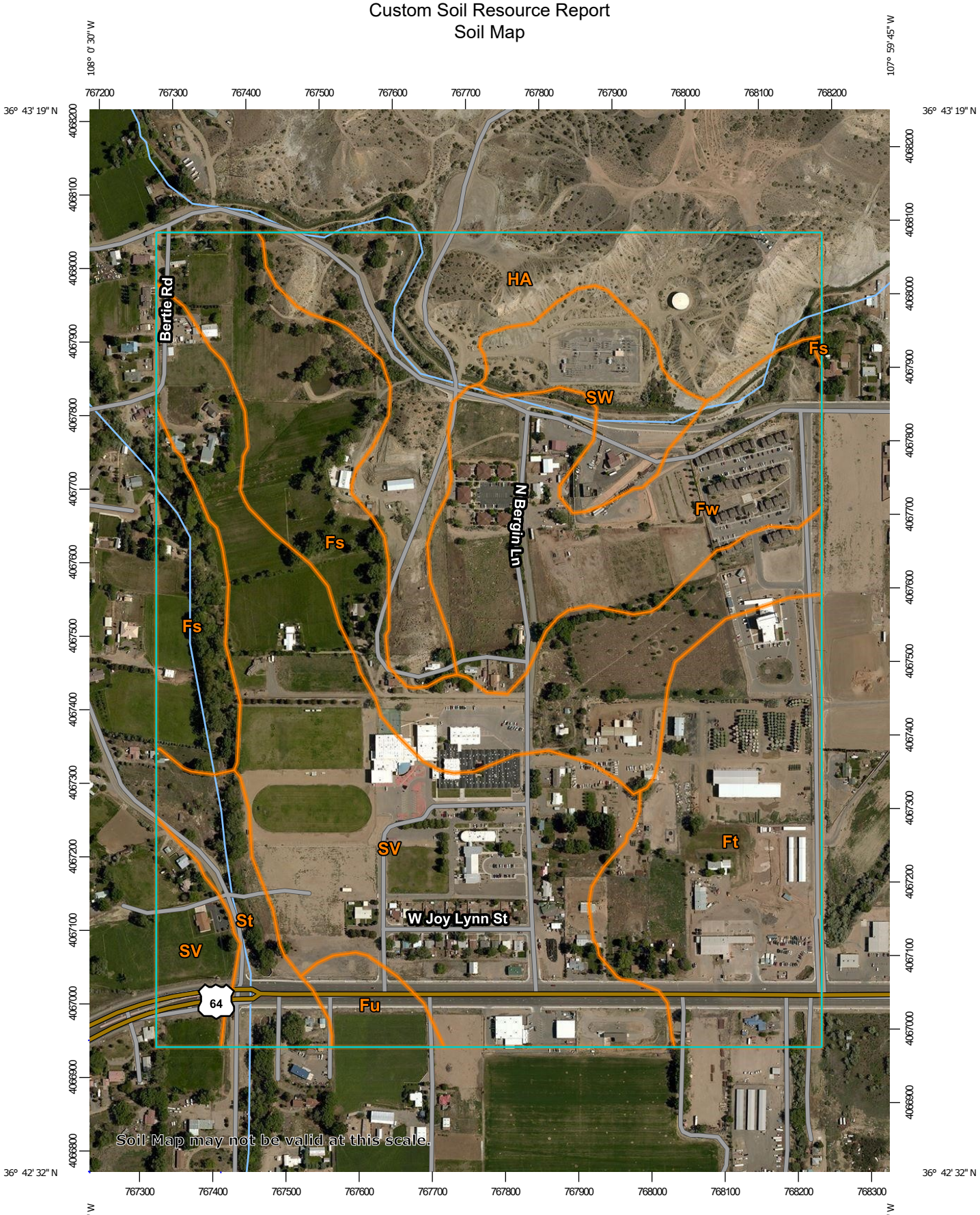
After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

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

Soil Map

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

Custom Soil Resource Report
Soil Map



Map Scale: 1:7,040 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 100 200 400 600

Feet: 0 300 600 1200 1800

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 12N WGS84

MAP LEGEND

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

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

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

Water Features
- Streams and Canals

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

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:63,400.

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: San Juan County, New Mexico, Eastern Part
Survey Area Data: Version 17, Sep 12, 2021

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

Date(s) aerial images were photographed: May 21, 2010—May 30, 2015

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
Fs	Fruitland sandy loam, 2 to 5 percent slopes	51.6	20.7%
Ft	Fruitland sandy loam, wet, 0 to 2 percent slopes	35.8	14.3%
Fu	Fruitland loam, 1 to 3 percent slopes	4.0	1.6%
Fw	Fruitland loam, 5 to 8 percent slopes	33.4	13.4%
HA	Haplargids-Blackston-Torriorthents complex, very steep	37.2	14.9%
St	Stumble loamy sand, 0 to 3 percent slopes	9.2	3.7%
SV	Stumble sandy clay loam, gently sloping	67.0	26.8%
SW	Stumble-Fruitland association, gently sloping	11.3	4.5%
Totals for Area of Interest		**249.6**	**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.

San Juan County, New Mexico, Eastern Part

Fs—Fruitland sandy loam, 2 to 5 percent slopes

Map Unit Setting

National map unit symbol: 1wwt
Elevation: 4,800 to 6,400 feet
Mean annual precipitation: 6 to 10 inches
Mean annual air temperature: 51 to 55 degrees F
Frost-free period: 140 to 160 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

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

Description of Fruitland

Setting

Landform: Stream terraces, alluvial fans
Landform position (three-dimensional): Tread, rise
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from sandstone and shale

Typical profile

A - 0 to 6 inches: sandy loam
C - 6 to 60 inches: sandy loam

Properties and qualities

Slope: 2 to 5 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): High (2.00 to 6.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 10 percent
Maximum salinity: Nonsaline to slightly saline (0.0 to 4.0 mmhos/cm)
Sodium adsorption ratio, maximum: 2.0
Available water supply, 0 to 60 inches: Moderate (about 7.2 inches)

Interpretive groups

Land capability classification (irrigated): 3e
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: A
Ecological site: R035XB002NM - Sandy
Hydric soil rating: No

Minor Components

Fruitland scl

Percent of map unit: 3 percent

Ecological site: R035XB002NM - Sandy
Hydric soil rating: No

Stumble
Percent of map unit: 2 percent
Ecological site: R035XB002NM - Sandy
Hydric soil rating: No

Ft—Fruitland sandy loam, wet, 0 to 2 percent slopes

Map Unit Setting
National map unit symbol: 1wwv
Elevation: 4,800 to 6,400 feet
Mean annual precipitation: 6 to 10 inches
Mean annual air temperature: 51 to 55 degrees F
Frost-free period: 140 to 160 days
Farmland classification: Farmland of statewide importance

Map Unit Composition
Fruitland variant and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Fruitland Variant

Setting
Landform: Stream terraces, alluvial fans
Landform position (three-dimensional): Tread, rise
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from sandstone and shale

Typical profile
A - 0 to 6 inches: sandy loam
C - 6 to 60 inches: sandy loam

Properties and qualities
Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): High (2.00 to 6.00 in/hr)
Depth to water table: About 24 to 60 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 2 percent
Maximum salinity: Nonsaline to slightly saline (0.0 to 4.0 mmhos/cm)
Sodium adsorption ratio, maximum: 2.0
Available water supply, 0 to 60 inches: Moderate (about 6.6 inches)

Interpretive groups

Land capability classification (irrigated): 2w
Land capability classification (nonirrigated): 6w
Hydrologic Soil Group: C
Ecological site: R035XB002NM - Sandy
Hydric soil rating: No

Minor Components

Fruitland scl

Percent of map unit: 5 percent
Ecological site: R035XB002NM - Sandy
Hydric soil rating: No

Beebe variant

Percent of map unit: 4 percent
Ecological site: R035XB002NM - Sandy
Hydric soil rating: No

Inclusion

Percent of map unit: 1 percent
Landform: Depressions
Landform position (three-dimensional): Talf
Down-slope shape: Concave
Across-slope shape: Concave
Ecological site: R035XB001NM - Loamy
Hydric soil rating: Yes

Fu—Fruitland loam, 1 to 3 percent slopes

Map Unit Setting

National map unit symbol: 1www
Elevation: 4,800 to 6,000 feet
Mean annual precipitation: 6 to 10 inches
Mean annual air temperature: 51 to 55 degrees F
Frost-free period: 140 to 160 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

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

Description of Fruitland

Setting

Landform: Stream terraces, alluvial fans
Landform position (three-dimensional): Tread, rise
Down-slope shape: Linear
Across-slope shape: Linear

Parent material: Alluvium derived from sandstone and shale

Typical profile

A - 0 to 8 inches: loam
C - 8 to 60 inches: sandy loam

Properties and qualities

Slope: 1 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 10 percent
Gypsum, maximum content: 1 percent
Maximum salinity: Nonsaline to slightly saline (0.0 to 4.0 mmhos/cm)
Sodium adsorption ratio, maximum: 2.0
Available water supply, 0 to 60 inches: Moderate (about 7.5 inches)

Interpretive groups

Land capability classification (irrigated): 2e
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: B
Ecological site: R035XB001NM - Loamy
Hydric soil rating: No

Minor Components

Turley

Percent of map unit: 5 percent
Ecological site: R035XB004NM - Clayey
Hydric soil rating: No

Fw—Fruitland loam, 5 to 8 percent slopes

Map Unit Setting

National map unit symbol: 1wwx
Elevation: 4,800 to 6,000 feet
Mean annual precipitation: 6 to 10 inches
Mean annual air temperature: 51 to 55 degrees F
Frost-free period: 140 to 160 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

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

Description of Fruitland

Setting

Landform: Alluvial fans, stream terraces
Landform position (three-dimensional): Tread, rise
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Slope alluvium derived from sandstone and shale

Typical profile

A - 0 to 3 inches: loam
C - 3 to 60 inches: fine sandy loam

Properties and qualities

Slope: 5 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 10 percent
Gypsum, maximum content: 2 percent
Maximum salinity: Nonsaline to slightly saline (0.0 to 4.0 mmhos/cm)
Sodium adsorption ratio, maximum: 2.0
Available water supply, 0 to 60 inches: Moderate (about 7.3 inches)

Interpretive groups

Land capability classification (irrigated): 4e
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: B
Ecological site: R035XB001NM - Loamy
Hydric soil rating: No

Minor Components

Fruitland scl

Percent of map unit: 15 percent
Ecological site: R035XB002NM - Sandy
Hydric soil rating: No

HA—Haplargids-Blackston-Torriorthents complex, very steep

Map Unit Setting

National map unit symbol: 1wx2
Elevation: 4,800 to 6,400 feet
Mean annual precipitation: 6 to 10 inches
Mean annual air temperature: 51 to 55 degrees F

Frost-free period: 140 to 160 days
Farmland classification: Not prime farmland

Map Unit Composition

Haplargids and similar soils: 45 percent
Blackston and similar soils: 30 percent
Torriorthents and similar soils: 20 percent
Minor components: 5 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Haplargids

Setting

Landform: Escarpments
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Mixed alluvium

Typical profile

A - 0 to 7 inches: cobbly sandy loam
Bt1 - 7 to 26 inches: cobbly sandy clay loam
Bt2 - 26 to 60 inches: cobbly sandy clay loam

Properties and qualities

Slope: 8 to 50 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 10 percent
Maximum salinity: Nonsaline to slightly saline (0.0 to 4.0 mmhos/cm)
Available water supply, 0 to 60 inches: Moderate (about 7.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: B
Ecological site: R035XB001NM - Loamy
Hydric soil rating: No

Description of Blackston

Setting

Landform: Escarpments
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Mixed alluvium

Typical profile

A - 0 to 11 inches: gravelly loam
Bk - 11 to 26 inches: very gravelly loam

Ck - 26 to 60 inches: very gravelly sand

Properties and qualities

Slope: 8 to 40 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 30 percent
Maximum salinity: Slightly saline to moderately saline (4.0 to 8.0 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 4.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: B
Ecological site: R035XB003NM - Limy
Hydric soil rating: No

Description of Torriorthents

Setting

Landform: Escarpments
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Mixed alluvium

Typical profile

C1 - 0 to 3 inches: cobbly loam
C2 - 3 to 15 inches: cobbly clay loam
R - 15 to 60 inches: bedrock

Properties and qualities

Slope: 8 to 50 percent
Depth to restrictive feature: 10 to 20 inches to paralithic bedrock
Drainage class: Well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 2 percent
Gypsum, maximum content: 2 percent
Maximum salinity: Nonsaline to slightly saline (0.0 to 4.0 mmhos/cm)
Sodium adsorption ratio, maximum: 2.0
Available water supply, 0 to 60 inches: Very low (about 2.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: D

Ecological site: R035XC328AZ - Cobbly Slopes 10-14" p.z.
Hydric soil rating: No

Minor Components

Rock outcrop
Percent of map unit: 5 percent
Hydric soil rating: No

St—Stumble loamy sand, 0 to 3 percent slopes

Map Unit Setting
National map unit symbol: 1wxv
Elevation: 4,800 to 6,400 feet
Mean annual precipitation: 6 to 10 inches
Mean annual air temperature: 51 to 55 degrees F
Frost-free period: 140 to 160 days
Farmland classification: Farmland of statewide importance

Map Unit Composition
Stumble and similar soils: 90 percent
Fruitland and similar soils: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Stumble

Setting
Landform: Dunes
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Eolian deposits derived from sandstone

Typical profile
A - 0 to 5 inches: loamy sand
C1 - 5 to 29 inches: loamy sand
C2 - 29 to 49 inches: gravelly loamy sand
C3 - 49 to 81 inches: loamy sand

Properties and qualities
Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat excessively drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): High to very high (6.00 to 20.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None

Frequency of ponding: None
Calcium carbonate, maximum content: 2 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 3.7 inches)

Interpretive groups

Land capability classification (irrigated): 4e
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: A
Ecological site: R035XB002NM - Sandy
Hydric soil rating: No

Description of Fruitland

Setting

Landform: Alluvial fans
Landform position (three-dimensional): Rise
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Fan alluvium derived from sandstone and shale

Typical profile

A - 0 to 8 inches: loam
C - 8 to 60 inches: fine sandy loam

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 10 percent
Maximum salinity: Nonsaline to slightly saline (0.0 to 4.0 mmhos/cm)
Available water supply, 0 to 60 inches: Moderate (about 7.5 inches)

Interpretive groups

Land capability classification (irrigated): 2e
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: B
Ecological site: R035XB001NM - Loamy
Hydric soil rating: No

SV—Stumble sandy clay loam, gently sloping

Map Unit Setting

National map unit symbol: 1wxh
Elevation: 4,800 to 6,400 feet

Mean annual precipitation: 6 to 10 inches
Mean annual air temperature: 51 to 55 degrees F
Frost-free period: 140 to 160 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Stumble and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Stumble

Setting

Landform: Dunes
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Eolian deposits derived from sandstone

Typical profile

A - 0 to 7 inches: sandy clay loam
C - 7 to 60 inches: loamy sand

Properties and qualities

Slope: 0 to 5 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat excessively drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 1 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 4.8 inches)

Interpretive groups

Land capability classification (irrigated): 4e
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: B
Ecological site: R035XB002NM - Sandy
Hydric soil rating: No

Minor Components

Fruitland

Percent of map unit: 10 percent
Ecological site: R035XB001NM - Loamy
Hydric soil rating: No

SW—Stumble-Fruitland association, gently sloping

Map Unit Setting

National map unit symbol: 1wxj
Elevation: 4,800 to 6,400 feet
Mean annual precipitation: 6 to 10 inches
Mean annual air temperature: 51 to 55 degrees F
Frost-free period: 140 to 160 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Stumble and similar soils: 45 percent
Fruitland and similar soils: 40 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Stumble

Setting

Landform: Dunes
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Eolian deposits derived from sandstone

Typical profile

A - 0 to 6 inches: loamy sand
C1 - 6 to 29 inches: loamy sand
C2 - 29 to 60 inches: gravelly loamy sand
C3 - 60 to 64 inches: loamy sand

Properties and qualities

Slope: 0 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat excessively drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): High to very high (6.00 to 20.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 1 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 3.6 inches)

Interpretive groups

Land capability classification (irrigated): 4e
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: A
Ecological site: R035XB007NM - Deep Sand

Hydric soil rating: No

Description of Fruitland

Setting

Landform: Alluvial fans
Landform position (three-dimensional): Rise
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Fan alluvium derived from sandstone and shale

Typical profile

A - 0 to 7 inches: sandy loam
C - 7 to 60 inches: sandy loam

Properties and qualities

Slope: 0 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): High (2.00 to 6.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 5 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Moderate (about 7.2 inches)

Interpretive groups

Land capability classification (irrigated): 3e
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: A
Ecological site: R035XB002NM - Sandy
Hydric soil rating: No

Minor Components

Blancot

Percent of map unit: 10 percent
Ecological site: R035XB001NM - Loamy
Hydric soil rating: No

Turley

Percent of map unit: 5 percent
Ecological site: R035XB004NM - Clayey
Hydric soil rating: No

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Table 2-2a Runoff curve numbers for urban areas [1/]

Cover description: Cover type and hydrologic condition	Average percent impervious area [2/]	Curve numbers for hydrologic soil group: A	B	C	D
Fully developed urban areas (vegetation established)					
Open space (lawns, parks, golf courses, cemeteries, etc.) [3/]:					
Poor condition (grass cover < 50%)		68	79	86	89
Fair condition (grass cover 50% to 75%)		49	69	79	84
Good condition (grass cover > 75%)		39	61	74	80
Impervious areas:					
Paved parking lots, roofs, driveways, etc. (excluding right-of-way)		98	98	98	98
Streets and roads:					
Paved; curbs and storm sewers (excluding right-of-way)		98	98	98	98
Paved; open ditches (including right-of-way)		83	89	92	93
Gravel (including right-of-way)		76	85	89	91
Dirt (including right-of-way)		72	82	87	89
Western desert urban areas:					
Natural desert landscaping (pervious areas only) [4/]		63	77	85	88
Artificial desert landscaping (impervious weed barrier, desert shrub with 1- to 2-inch sand or gravel mulch and basin borders)		96	96	96	96
Urban districts:					
Commercial and business	85	89	92	94	95
Industrial	72	81	88	91	93
Residential districts by average lot size:					
1/8 acre or less (town houses)	65	77	85	90	92
1/4 acre	38	61	75	83	87
1/3 acre	30	57	72	81	86
1/2 acre	25	54	70	80	85
1 acre	20	51	68	79	84
2 acres	12	46	65	77	82
Developing urban areas					
Newly graded areas (pervious areas only, no vegetation) [5/]		77	86	91	94
Idle lands (CN's are determined using cover types similar to those in table 2-2c).					

[1] Average runoff condition, and $I_a = 0.2S$.

[2] The average percent impervious area shown was used to develop the composite CN's. Other assumptions are as follows: impervious areas are directly connected to the drainage system, impervious areas have a CN of 98, and pervious areas are considered equivalent to open space in good hydrologic condition. CN's for other combinations of conditions may be computed using figure 2-3 or 2-4.

[3] CN's shown are equivalent to those of pasture. Composite CN's may be computed for other combinations of open space cover type.

[4] Composite CN's for natural desert landscaping should be computed using figures 2-3 or 2-4 based on the impervious area percentage (CN = 98) and the pervious area CN. The pervious area CN's are assumed equivalent to desert shrub in poor hydrologic condition.

[5] Composite CN's to use for the design of temporary measures during grading and construction should be computed using figure 2-3 or 2-4 based on the degree of development (impervious area percentage) and the CN's for the newly graded pervious areas.

Table 2-2b Runoff curve numbers for cultivated agricultural lands [1/]

Cover description			Curve numbers for hydrologic soil group			
Cover type	Treatment [2/]	Hydrologic condition [3/]	A	B	C	D
Fallow	Bare soil	—	77	86	91	94
	Crop residue cover (CR)	Poor	76	85	90	93
		Good	74	83	88	90
Row crops	Straight row (SR)	Poor	72	81	88	91
		Good	67	78	85	89
	SR + CR	Poor	71	80	87	90
		Good	64	75	82	85
	Contoured (C)	Poor	70	79	84	88
		Good	65	75	82	86
	C + CR	Poor	69	78	83	87
		Good	64	74	81	85
	Contoured & terraced (C&T)	Poor	66	74	80	82
		Good	62	71	78	81
	C&T+ CR	Poor	65	73	79	81
		Good	61	70	77	80
Small grain	SR	Poor	65	76	84	88
		Good	63	75	83	87
	SR + CR	Poor	64	75	83	86
		Good	60	72	80	84
	C	Poor	63	74	82	85
		Good	61	73	81	84
	C + CR	Poor	62	73	81	84
		Good	60	72	80	83
	C&T	Poor	61	72	79	82
		Good	59	70	78	81
	C&T+ CR	Poor	60	71	78	81
		Good	58	69	77	80
Close-seeded or broadcast legumes or rotation meadow	SR	Poor	66	77	85	89
		Good	58	72	81	85
	C	Poor	64	75	83	85
		Good	55	69	78	83
	C&T	Poor	63	73	80	83
		Good	51	67	76	80

[1] Average runoff condition, and I_a=0.2S

[2] Crop residue cover applies only if residue is on at least 5% of the surface throughout the year.

[3] Hydraulic condition is based on combination factors that affect infiltration and runoff, including (a) density and canopy of vegetative areas, (b) amount of year-round cover, (c) amount of grass or close-seeded legumes, (d) percent of residue cover on the land surface (good ≥ 20%), and (e) degree of surface roughness.

Poor: Factors impair infiltration and tend to increase runoff.

Good: Factors encourage average and better than average infiltration and tend to decrease runoff.

Table 2-2c Runoff curve numbers for other agricultural lands [1/]

Cover description		Curve numbers for hydrologic soil group			
Cover type	Hydrologic condition	A	B	C	D
Pasture, grassland, or range—continuous forage for grazing. [2/]	Poor	68	79	86	89
	Fair	49	69	79	84
	Good	39	61	74	80
Meadow—continuous grass, protected from grazing and generally mowed for hay.	—	30	58	71	78
Brush—brush-weed-grass mixture with brush the major element. [3/]	Poor	48	67	77	83
	Fair	35	56	70	77
	Good	30 [4/]	48	65	73
Woods—grass combination (orchard or tree farm). [5/]	Poor	57	73	82	86
	Fair	43	65	76	82
	Good	32	58	72	79
Woods. [6/]	Poor	45	66	77	83
	Fair	36	60	73	79
	Good	30 [4/]	55	70	77
Farmsteads—buildings, lanes, driveways, and surrounding lots.	—	59	74	82	86

1 Average runoff condition, and $I_a = 0.2S$.

2 *Poor:* <50%) ground cover or heavily grazed with no mulch.
Fair: 50 to 75% ground cover and not heavily grazed.
Good: > 75% ground cover and lightly or only occasionally grazed.

3 *Poor*: <50% ground cover.
Fair: 50 to 75% ground cover.
Good: >75% ground cover.

4 Actual curve number is less than 30; use CN = 30 for runoff computations.

5 CN's shown were computed for areas with 50% woods and 50% grass (pasture) cover. Other combinations of conditions may be computed from the CN's for woods and pasture.

6 *Poor:* Forest litter, small trees, and brush are destroyed by heavy grazing or regular burning.
Fair: Woods are grazed but not burned, and some forest litter covers the soil.
Good: Woods are protected from grazing, and litter and brush adequately cover the soil.

Table 2-2d Runoff curve numbers for arid and semiarid rangelands [1/]

Cover description		Curve numbers for hydrologic soil group			
Cover type	Hydrologic condition [2/]	A [3/]	B	C	D
Herbaceous—mixture of grass, weeds, and low-growing brush, with brush the minor element.	Poor		80	87	93
	Fair		71	81	89
	Good		62	74	85
Oak-aspen—mountain brush mixture of oak brush, aspen, mountain mahogany, bitter brush, maple, and other brush.	Poor		66	74	79
	Fair		48	57	63
	Good		30	41	48
Pinyon-juniper—pinyon, juniper, or both; grass understory.	Poor		75	85	89
	Fair		58	73	80
	Good		41	61	71
Sagebrush with grass understory.	Poor		67	80	85
	Fair		51	63	70
	Good		35	47	55
Desert shrub—major plants include saltbush, greasewood, creosotebush, blackbrush, bursage, palo verde, mesquite, and cactus.	Poor	63	77	85	88
	Fair	55	72	81	86
	Good	49	68	79	84

1 Average runoff condition, and I_a, = 0.2S. For range in humid regions, use table 2-2c.
2 Poor: <30% ground cover (litter, grass, and brush overstory).
Fair: 30 to 70% ground cover.
Good: > 70% ground cover.
3 Curve numbers for group A have been developed only for desert shrub.

LAND USE SUMMARY & WEIGHTED CURVE NUMBER CALCULATIONS

PROJECT: Bergin Ln

PROJECT#: 7130699

CLIENT: City of Bloomfield

LAND STATUS: Pre-Development 17-May-22

RUNOFF CURVE NUMBERS

HSG Rating	Impervious	Open Space Poor	Gravel Road	Desert Shrub Poor	Close Seeded Good			
HSG A	98	68	76	63	58			
HSG B	98	79	85	77	72			
HSG C	98	86	89	85	81			
HSG D	98	89	91	88	85			

LAND USE AREA SUMMARY & WEIGHTED CURVE NUMBER CALCULATIONS

			Impervious		Open Space, Poor		Gravel Road,		Desert Shrub, Poor		Close Seeded, Good	
Basin	Land Use	Acres	%	Acres	%	Acres	%	Acres	%	Acres	%	Acres
Predev 1	Highway/Parking Lots	0.0	100%	0.0	0%	0.0	0%	0.0	0%	0.0	0%	0.0
2.162	Gravel Lots	0.0	0%	0.0	0%	0.0	0%	0.0	0%	0.0	0%	0.0
Acres	Lawns/Fields	2.2	0%	0.0	0%	0.0	0%	0.0	0%	0.0	100%	2.2
Total Mil (sq)	Natural Conditions	0.00	0%	0.0	0%	0.0	0%	0.0	0%	0.0	0%	0.0
0.0034	TOTAL	2.16		0.01		0.00		0.0		0.00		2.2
DCIA			Impervious		Open Space, Poor		Gravel Road,		Desert Shrub, Poor		Close Seeded, Good	
0.00%	HSG Rating	% Area		Acres		Acres		Acres		Acres		Acres
	HSG A	0.0%		0.0		0.0		0.0		0.0		0.0
	HSG B	100.0%		0.0		0.0		0.0		0.0		2.2
	HSG C	0.0%		0.0		0.0		0.0		0.0		0.0
	HSG D	0.0%		0.0		0.0		0.0		0.0		0.0
	TOTAL			0.01		0.00		0.0		0.0		2.15
										Weighted CN		**72**

			Impervious		Open Space, Poor		Gravel Road,		Desert Shrub, Poor		Close Seeded, Good	
Basin	Land Use	Acres	%	Acres	%	Acres	%	Acres	%	Acres	%	Acres
Predev 2	Highway/Parking Lots	0.89	100%	0.89	0%	0.0	0%	0.0	0%	0.0	0%	0.0
1.009	Gravel Lots	0.00	0%	0.0	0%	0.0	0%	0.0	0%	0.0	0%	0.0
Acres	Lawns/fields	0.0	0%	0.0	0%	0.0	0%	0.0	0%	0.0	0%	0.0
Total Mil (sq)	Natural Conditions	0.12	0%	0.0	0%	0.0	0%	0.0	100%	0.1	0%	0.0
0.0016	TOTAL	1.0090		0.89		0.00		0.0		0.12		0.0
DCIA			Impervious		Open Space, Poor		Gravel Road,		Desert Shrub, Poor		Close Seeded, Good	
0.00%	HSG Rating	% Area		Acres		Acres		Acres		Acres		Acres
	HSG A	0.0%		0.0		0.0		0.0		0.0		0.0
	HSG B	100.0%		0.9		0.0		0.0		0.1		0.0
	HSG C	0.0%		0.0		0.0		0.0		0.0		0.0
	HSG D	0.0%		0.0		0.0		0.0		0.0		0.0
	TOTAL			0.89		0.00		0.0		0.1		0.00
										Weighted CN		**96**

			Impervious		Open Space, Poor		Gravel Road,		Desert Shrub, Poor		Close Seeded, Good	
Basin	Land Use	Acres	%	Acres	%	Acres	%	Acres	%	Acres	%	Acres
Predev 3	Highway/Parking Lots	1.6180	100%	1.62	0%	0.0	0%	0.0	0%	0.0	0%	0.0
1.9026	Gravel Lots	0.0000	0%	0.0	0%	0.0	0%	0.0	0%	0.0	0%	0.0
Acres	Lawns/fields	0.0	0%	0.0	0%	0.0	0%	0.0	0%	0.0	0%	0.0
Total Mil (sq)	Natural Conditions	0.28	0%	0.0	0%	0.0	0%	0.0	100%	0.3	0%	0.0
0.0030	TOTAL	1.9025		1.62		0.00		0.0		0.28		0.0
DCIA			Impervious		Open Space, Poor		Gravel Road,		Desert Shrub, Poor		Close Seeded, Good	
0.00%	HSG Rating	% Area		Acres		Acres		Acres		Acres		Acres
	HSG A	0.0%		0.0		0.0		0.0		0.0		0.0
	HSG B	100.0%		1.6		0.0		0.0		0.3		0.0
	HSG C	0.0%		0.0		0.0		0.0		0.0		0.0
	HSG D	0.0%		0.0		0.0		0.0		0.0		0.0
	TOTAL			1.62		0.00		0.0		0.3		0.00
										Weighted CN		**95**

			Impervious		Open Space, Poor		Gravel Road,		Desert Shrub, Poor		Close Seeded, Good	
Basin	Land Use	Acres	%	Acres	%	Acres	%	Acres	%	Acres	%	Acres
Predev 4	Highway/Parking Lots	0.7390	100%	0.74	0%	0.0	0%	0.0	0%	0.0	0%	0.0
0.9201	Gravel Lots	0.1810	0%	0.0	0%	0.0	100%	0.2	0%	0.0	0%	0.0
Acres	Lawns/fields	0.0	0%	0.0	0%	0.0	0%	0.0	0%	0.0	0%	0.0
Total Mil (sq)	Natural Conditions	0.00	0%	0.0	0%	0.0	0%	0.0	0%	0.0	0%	0.0

LAND USE SUMMARY & WEIGHTED CURVE NUMBER CALCULATIONS

PROJECT: Bergin Ln

PROJECT#: 7130699

CLIENT: City of Bloomfield

LAND STATUS: Pre-Development 17-May-22

RUNOFF CURVE NUMBERS

HSG Rating	Impervious	Open Space Poor	Gravel Road	Desert Shrub Poor	Close Seeded Good			
HSG A	98	68	76	63	58			
HSG B	98	79	85	77	72			
HSG C	98	86	89	85	81			
HSG D	98	89	91	88	85			

LAND USE AREA SUMMARY & WEIGHTED CURVE NUMBER CALCULATIONS

0.0014	TOTAL	0.9200		0.74		0.00		0.2		0.00		0.0
DCIA			Impervious		Open Space, Poor		Gravel Road,		Desert Shrub, Poor		Close Seeded, Good	
0.00%	HSG Rating	% Area		Acres		Acres		Acres		Acres		Acres
	HSG A	0.0%		0.0		0.0		0.0		0.0		0.0
	HSG B	100.0%		0.7		0.0		0.2		0.0		0.0
	HSG C	0.0%		0.0		0.0		0.0		0.0		0.0
	HSG D	0.0%		0.0		0.0		0.0		0.0		0.0
	TOTAL			0.74		0.00		0.2		0.0		0.00
										Weighted CN		**96**

			Impervious		Open Space, Poor		Gravel Road,		Desert Shrub, Poor		Close Seeded, Good	
Basin	Land Use	Acres	%	Acres	%	Acres	%	Acres	%	Acres	%	Acres
Predev 5	Highway/Parking Lots	0.7602	100%	0.76	0%	0.0	0%	0.0	0%	0.0	0%	0.0
9.0131	Gravel Lots	0.0000	0%	0.0	0%	0.0	100%	0.0	0%	0.0	0%	0.0
Acres	Lawns/fields	1.2302	0%	0.0	100%	1.2	0%	0.0	0%	0.0	0%	0.0
Total Mil (sq)	Natural Conditions	7.02	0%	0.0	0%	0.0	0%	0.0	100%	7.0	0%	0.0
0.0141	TOTAL	9.013		0.76		1.23		0.0		7.02		0.0
DCIA			Impervious		Open Space, Poor		Gravel Road,		Desert Shrub, Poor		Close Seeded, Good	
0.00%	HSG Rating	% Area		Acres		Acres		Acres		Acres		Acres
	HSG A	14.4%		0.1		0.2		0.0		1.0		0.0
	HSG B	85.6%		0.7		1.1		0.0		6.0		0.0
	HSG C	0.0%		0.0		0.0		0.0		0.0		0.0
	HSG D	0.0%		0.0		0.0		0.0		0.0		0.0
	TOTAL			0.76		1.23		0.0		7.0		0.00
										Weighted CN		**77**

			Impervious		Open Space, Poor		Gravel Road,		Desert Shrub, Poor		Close Seeded, Good	
Basin	Land Use	Acres	%	Acres	%	Acres	%	Acres	%	Acres	%	Acres
Predev 6	Highway/Parking Lots	0.0097	100%	0.01	0%	0.0	0%	0.0	0%	0.0	0%	0.0
1.5899	Gravel Lots	0.3500	0%	0.0	0%	0.0	100%	0.4	0%	0.0	0%	0.0
Acres	Lawns/fields	1.2	0%	0.0	0%	0.0	0%	0.0	0%	0.0	100%	1.2
Total Mil (sq)	Natural Conditions	0.00	0%	0.0	0%	0.0	0%	0.0	0%	0.0	0%	0.0
0.0025	TOTAL	1.5917		0.01		0.00		0.4		0.00		1.2
DCIA			Impervious		Open Space, Poor		Gravel Road,		Desert Shrub, Poor		Close Seeded, Good	
0.00%	HSG Rating	% Area		Acres		Acres		Acres		Acres		Acres
	HSG A	0.0%		0.0		0.0		0.0		0.0		0.0
	HSG B	100.0%		0.0		0.0		0.4		0.0		1.2
	HSG C	0.0%		0.0		0.0		0.0		0.0		0.0
	HSG D	0.0%		0.0		0.0		0.0		0.0		0.0
	TOTAL			0.01		0.00		0.4		0.0		1.23
										Weighted CN		**75**

			Impervious		Open Space, Poor		Gravel Road,		Desert Shrub, Poor		Close Seeded, Good	
Basin	Land Use	Acres	%	Acres	%	Acres	%	Acres	%	Acres	%	Acres
Predev 7	Highway/Parking Lots	3.4666	100%	3.47	0%	0.0	0%	0.0	0%	0.0	0%	0.0
3.9552	Gravel Lots	0.1596	0%	0.0	0%	0.0	100%	0.2	0%	0.0	0%	0.0
Acres	Lawns/fields	0.329	0%	0.0	100%	0.3	0%	0.0	0%	0.0	0%	0.0
Total Mil (sq)	Natural Conditions	0.00	0%	0.0	0%	0.0	0%	0.0	0%	0.0	0%	0.0
0.0062	TOTAL	3.9548		3.47		0.33		0.2		0.00		0.0
DCIA			Impervious		Open Space, Poor		Gravel Road,		Desert Shrub, Poor		Close Seeded, Good	
0.00%	HSG Rating	% Area		Acres		Acres		Acres		Acres		Acres
	HSG A	62.4%		2.2		0.2		0.1		0.0		0.0
	HSG B	37.6%		1.3		0.1		0.1		0.0		0.0
	HSG C	0.0%		0.0		0.0		0.0		0.0		0.0
	HSG D	0.0%		0.0		0.0		0.0		0.0		0.0
	TOTAL			3.47		0.33		0.2		0.0		0.00

LAND USE SUMMARY & WEIGHTED CURVE NUMBER CALCULATIONS

PROJECT: Bergin Ln

PROJECT#: 7130699

CLIENT: City of Bloomfield

LAND STATUS: Pre-Development 17-May-22

RUNOFF CURVE NUMBERS

HSG Rating	Impervious	Open Space Poor	Gravel Road	Desert Shrub Poor	Close Seeded Good			
HSG A	98	68	76	63	58			
HSG B	98	79	85	77	72			
HSG C	98	86	89	85	81			
HSG D	98	89	91	88	85			

LAND USE AREA SUMMARY & WEIGHTED CURVE NUMBER CALCULATIONS

Weighted CN 95

			Impervious		Open Space, Poor		Gravel Road,		Desert Shrub, Poor		Close Seeded, Good	
Basin	Land Use	Acres	%	Acres	%	Acres	%	Acres	%	Acres	%	Acres
Predev 8	Highway/Parking Lots	0.4702	100%	0.47	0%	0.0	0%	0.0	0%	0.0	0%	0.0
0.7972	Gravel Lots	0.0000	0%	0.0	0%	0.0	0%	0.0	0%	0.0	0%	0.0
Acres	Lawns/fields	0.327	0%	0.0	100%	0.3	0%	0.0	0%	0.0	0%	0.0
Total Mil (sq)	Natural Conditions	0.00	0%	0.0	0%	0.0	0%	0.0	0%	0.0	0%	0.0
0.0012	TOTAL	0.7972		0.47		0.33		0.0		0.00		0.0
DCIA			Impervious		Open Space, Poor		Gravel Road,		Desert Shrub, Poor		Close Seeded, Good	
0.00%	HSG Rating	% Area		Acres		Acres		Acres		Acres		Acres
	HSG A	0.0%		0.0		0.0		0.0		0.0		0.0
	HSG B	100.0%		0.5		0.3		0.0		0.0		0.0
	HSG C	0.0%		0.0		0.0		0.0		0.0		0.0
	HSG D	0.0%		0.0		0.0		0.0		0.0		0.0
	TOTAL			0.47		0.33		0.0		0.0		0.00

Weighted CN 90

			Impervious		Open Space, Poor		Gravel Road,		Desert Shrub, Poor		Close Seeded, Good	
Basin	Land Use	Acres	%	Acres	%	Acres	%	Acres	%	Acres	%	Acres
Predev 9	Highway/Parking Lots	1.5000	100%	1.50	0%	0.0	0%	0.0	0%	0.0	0%	0.0
2.4769	Gravel Lots	0.8557	0%	0.0	0%	0.0	100%	0.9	0%	0.0	0%	0.0
Acres	Lawns/fields	0.1	0%	0.0	100%	0.1	0%	0.0	0%	0.0	0%	0.0
Total Mil (sq)	Natural Conditions	0.00	0%	0.0	0%	0.0	0%	0.0	0%	0.0	0%	0.0
0.0039	TOTAL	2.4765		1.50		0.12		0.9		0.00		0.0
DCIA			Impervious		Open Space, Poor		Gravel Road,		Desert Shrub, Poor		Close Seeded, Good	
0.00%	HSG Rating	% Area		Acres		Acres		Acres		Acres		Acres
	HSG A	0.0%		0.0		0.0		0.0		0.0		0.0
	HSG B	100.0%		1.5		0.1		0.9		0.0		0.0
	HSG C	0.0%		0.0		0.0		0.0		0.0		0.0
	HSG D	0.0%		0.0		0.0		0.0		0.0		0.0
	TOTAL			1.50		0.12		0.9		0.0		0.00

Weighted CN 93

			Impervious		Open Space, Poor		Gravel Road,		Desert Shrub, Poor		Close Seeded, Good	
Basin	Land Use	Acres	%	Acres	%	Acres	%	Acres	%	Acres	%	Acres
Predev 10	Highway/Parking Lots	1.1056	100%	1.11	0%	0.0	0%	0.0	0%	0.0	0%	0.0
1.9705	Gravel Lots	0.1628	0%	0.0	0%	0.0	100%	0.2	0%	0.0	0%	0.0
Acres	Lawns/fields	0.7	0%	0.0	100%	0.7	0%	0.0	0%	0.0	0%	0.0
Total Mil (sq)	Natural Conditions	0.00	0%	0.0	0%	0.0	0%	0.0	0%	0.0	0%	0.0
0.0031	TOTAL	1.9705		1.11		0.70		0.2		0.00		0.0
DCIA			Impervious		Open Space, Poor		Gravel Road,		Desert Shrub, Poor		Close Seeded, Good	
0.00%	HSG Rating	% Area		Acres		Acres		Acres		Acres		Acres
	HSG A	0.0%		0.0		0.0		0.0		0.0		0.0
	HSG B	100.0%		1.1		0.7		0.2		0.0		0.0
	HSG C	0.0%		0.0		0.0		0.0		0.0		0.0
	HSG D	0.0%		0.0		0.0		0.0		0.0		0.0
	TOTAL			1.11		0.70		0.2		0.0		0.00

Weighted CN 90

LAND USE SUMMARY & WEIGHTED CURVE NUMBER CALCULATIONS

PROJECT: Bergin Ln

PROJECT#: 7130699

CLIENT: City of Bloomfield

LAND STATUS: Pre-Development 17-May-22

RUNOFF CURVE NUMBERS

HSG Rating	Impervious	Dirt Road	Gravel Road	Desert Shrub Poor	Row Crops Good			
HSG A	98	72	76	63	67			
HSG B	98	82	85	77	78			
HSG C	98	87	89	85	85			
HSG D	98	89	91	88	89			

LAND USE AREA SUMMARY & WEIGHTED CURVE NUMBER CALCULATIONS

			Impervious		Dirt Road,		Gravel Road,		Desert Shrub, Poor		Row Crops, Good	
Basin	Land Use	Acres	%	Acres	%	Acres	%	Acres	%	Acres	%	Acres
Predev R1-R4	Road	0.1061	100%	0.1	0%	0.0	0%	0.0	0%	0.0	0%	0.0
0.1061	Gravel Lots	0.0	0%	0.0	0%	0.0	0%	0.0	0%	0.0	0%	0.0
Acres	Lawns/Fields	0.0	0%	0.0	0%	0.0	0%	0.0	0%	0.0	0%	0.0
Total Mil (sq)	Natural Conditions	0.00	0%	0.0	0%	0.0	0%	0.0	0%	0.0	0%	0.0
0.0002	TOTAL	0.11		0.11		0.00		0.0		0.00		0.0
DCIA			Impervious		Dirt Road,		Gravel Road,		Desert Shrub, Poor		Row Crops, Good	
0.00%	HSG Rating	% Area		Acres		Acres		Acres		Acres		Acres
R1-R4 &	HSG A	0.0%		0.0		0.0		0.0		0.0		0.0
R24-R25	HSG B	100.0%		0.1		0.0		0.0		0.0		0.0
Roads W/Curb	HSG C	0.0%		0.0		0.0		0.0		0.0		0.0
& Sidewalk	HSG D	0.0%		0.0		0.0		0.0		0.0		0.0
	TOTAL			0.11		0.00		0.0		0.0		0.00
										Weighted CN		**98**

			Impervious		Dirt Road,		Gravel Road,		Desert Shrub, Poor		Row Crops, Good	
Basin	Land Use	Acres	%	Acres	%	Acres	%	Acres	%	Acres	%	Acres
Predev R19-R23	Roads	0.0620	100%	0.06	0%	0.0	0%	0.0	0%	0.0	0%	0.0
0.0937	Dirt ROW	0.0317	0%	0.0	100%	0.0	0%	0.0	0%	0.0	0%	0.0
Acres	Lawns/fields	0.0	0%	0.0	0%	0.0	0%	0.0	0%	0.0	0%	0.0
Total Mil (sq)	Natural Conditions	0.00	0%	0.0	0%	0.0	0%	0.0	0%	0.0	0%	0.0
0.0001	TOTAL	0.0937		0.06		0.03		0.0		0.00		0.0
DCIA			Impervious		Dirt Road,		Gravel Road,		Desert Shrub, Poor		Row Crops, Good	
0.00%	HSG Rating	% Area		Acres		Acres		Acres		Acres		Acres
	HSG A	0.0%		0.0		0.0		0.0		0.0		0.0
Roads W/Curb	HSG B	100.0%		0.1		0.0		0.0		0.0		0.0
On One Side	HSG C	0.0%		0.0		0.0		0.0		0.0		0.0
	HSG D	0.0%		0.0		0.0		0.0		0.0		0.0
	TOTAL			0.06		0.03		0.0		0.0		0.00
										Weighted CN		**93**

			Impervious		Dirt Road,		Gravel Road,		Desert Shrub, Poor		Row Crops, Good	
Basin	Land Use	Acres	%	Acres	%	Acres	%	Acres	%	Acres	%	Acres
Predev R5-R13	Roads	0.0579	100%	0.06	0%	0.0	0%	0.0	0%	0.0	0%	0.0
0.0937	Dirt ROW	0.0358	0%	0.0	100%	0.0	0%	0.0	0%	0.0	0%	0.0
Acres	Lawns/fields	0.0	0%	0.0	0%	0.0	0%	0.0	0%	0.0	0%	0.0
Total Mil (sq)	Natural Conditions	0.00	0%	0.0	0%	0.0	0%	0.0	0%	0.0	0%	0.0
0.0001	TOTAL	0.0937		0.06		0.04		0.0		0.00		0.0
DCIA			Impervious		Dirt Road,		Gravel Road,		Desert Shrub, Poor		Row Crops, Good	
0.00%	HSG Rating	% Area		Acres		Acres		Acres		Acres		Acres
	HSG A	0.0%		0.0		0.0		0.0		0.0		0.0
Roads Without	HSG B	100.0%		0.1		0.0		0.0		0.0		0.0
Curb or Sidewalk	HSG C	0.0%		0.0		0.0		0.0		0.0		0.0
HSG B	HSG D	0.0%		0.0		0.0		0.0		0.0		0.0
	TOTAL			0.06		0.04		0.0		0.0		0.00
										Weighted CN		**92**

			Impervious		Dirt Road,		Gravel Road,		Desert Shrub, Poor		Row Crops, Good	
Basin	Land Use	Acres	%	Acres	%	Acres	%	Acres	%	Acres	%	Acres
Predev R14-R16	Roads	0.0579	100%	0.06	0%	0.0	0%	0.0	0%	0.0	0%	0.0
0.0937	Dirt ROW	0.0358	0%	0.0	100%	0.0	0%	0.0	0%	0.0	0%	0.0
Acres	Lawns/fields	0.0	0%	0.0	0%	0.0	0%	0.0	0%	0.0	0%	0.0
Total Mil (sq)	Natural Conditions	0.00	0%	0.0	0%	0.0	0%	0.0	0%	0.0	0%	0.0

LAND USE SUMMARY & WEIGHTED CURVE NUMBER CALCULATIONS

PROJECT: Bergin Ln

PROJECT#: 7130699

CLIENT: City of Bloomfield

LAND STATUS: Pre-Development 17-May-22

RUNOFF CURVE NUMBERS

HSG Rating	Impervious	Dirt Road	Gravel Road	Desert Shrub Poor	Row Crops Good			
HSG A	98	72	76	63	67			
HSG B	98	82	85	77	78			
HSG C	98	87	89	85	85			
HSG D	98	89	91	88	89			

LAND USE AREA SUMMARY & WEIGHTED CURVE NUMBER CALCULATIONS

0.0001	TOTAL	0.0937		0.06		0.04		0.0		0.00		0.0
DCIA			Impervious		Dirt Road,		Gravel Road,		Desert Shrub, Poor		Row Crops, Good	
0.00%	HSG Rating	% Area		Acres		Acres		Acres		Acres		Acres
	HSG A	100.0%		0.1		0.0		0.0		0.0		0.0
Roads Without	HSG B	0.0%		0.0		0.0		0.0		0.0		0.0
Curb or Sidewalk	HSG C	0.0%		0.0		0.0		0.0		0.0		0.0
HSG A	HSG D	0.0%		0.0		0.0		0.0		0.0		0.0
	TOTAL			0.06		0.04		0.0		0.0		0.00
										Weighted CN		**88**

			Impervious		Dirt Road,		Gravel Road,		Desert Shrub, Poor		Row Crops, Good	
Basin	Land Use	Acres	%	Acres	%	Acres	%	Acres	%	Acres	%	Acres
Postdev Roads	Roads	0.0937	100%	0.09	0%	0.0	0%	0.0	0%	0.0	0%	0.0
0.0937	Gravel Lots	0.0000	0%	0.0	0%	0.0	0%	0.0	0%	0.0	0%	0.0
Acres	Lawns/fields	0.0000	0%	0.0	0%	0.0	0%	0.0	0%	0.0	0%	0.0
Total Mil (sq)	Natural Conditions	0.00	0%	0.0	0%	0.0	0%	0.0	0%	0.0	0%	0.0
0.0001	TOTAL	0.094		0.09		0.00		0.0		0.00		0.0
DCIA			Impervious		Dirt Road,		Gravel Road,		Desert Shrub, Poor		Row Crops, Good	
0.00%	HSG Rating	% Area		Acres		Acres		Acres		Acres		Acres
	HSG A	0.0%		0.0		0.0		0.0		0.0		0.0
ALL POSTDEV	HSG B	100.0%		0.1		0.0		0.0		0.0		0.0
ROADS	HSG C	0.0%		0.0		0.0		0.0		0.0		0.0
	HSG D	0.0%		0.0		0.0		0.0		0.0		0.0
	TOTAL			0.09		0.00		0.0		0.0		0.00
										Weighted CN		**98**

Table 402-7 Roughness Coefficients (Manning's "n") for Sheet Flow

Source: NRCS, 2010, "Part 630 Hydrology, National Engineering Handbook, Chapter 15 Time of Concentration", Table 15-1, p. 15-6.
http://directives.sc.egov.usda.gov/OpenNonWebContent.aspx?content=27002.wba

Surface description	"n" [1/]
Smooth surfaces (concrete, asphalt, gravel, or bare soil)	0.011
Fallow (no residue)	0.05
Cultivated soils:	0.
Residue cover ≤20%	0.06
Residue cover >20%	0.17
Grass:	
Short grass prairie	0.15
Dense grasses [2/]	0.24
Bermuda grass	0.41
Range (natural)	0.13
Woods:[3/]	
Light underbrush	0.40
Dense underbrush	0.80

[1/] The "n" values are a composite of information compiled by Engman (1986).
[2/] Includes species such as weeping lovegrass, bluegrass, buffalo grass, blue grama grass, and native grass mixtures.
[3/] When selecting "n", consider cover to a height of about 0.1 ft. This is the only part of the plant cover that will obstruct sheet flow.

Table 1.—Manning roughness coefficients, n [1]

	Manning's n range [2]
I. Closed conduits:	
A. Concrete pipe	0.011–0.013
B. Corrugated-metal pipe or pipe-arch:	
1. 2⅔ by ½-in. corrugation (riveted pipe): [3]	
a. Plain or fully coated	0.024
b. Paved invert (range values are for 25 and 50 percent of circumference paved):	
(1) Flow full depth	0.021–0.018
(2) Flow 0.8 depth	0.021–0.016
(3) Flow 0.6 depth	0.019–0.013
2. 6 by 2-in. corrugation (field bolted)	0.03
C. Vitrified clay pipe	0.012–0.014
D. Cast-iron pipe, uncoated	0.013
E. Steel pipe	0.009–0.011
F. Brick	0.014–0.017
G. Monolithic concrete:	
1. Wood forms, rough	0.015–0.017
2. Wood forms, smooth	0.012–0.014
3. Steel forms	0.012–0.013
H. Cemented rubble masonry walls:	
1. Concrete floor and top	0.017–0.022
2. Natural floor	0.019–0.025
I. Laminated treated wood	0.015–0.017
J. Vitrified clay liner plates	0.015
II. Open channels, lined [4] (straight alinement): [5]	
A. Concrete, with surfaces as indicated:	
1. Formed, no finish	0.013–0.017
2. Trowel finish	0.012–0.014
3. Float finish	0.013–0.015
4. Float finish, some gravel on bottom	0.015–0.017
5. Gunite, good section	0.016–0.019
6. Gunite, wavy section	0.018–0.022
B. Concrete, bottom float finished, sides as indicated:	
1. Dressed stone in mortar	0.015–0.017
2. Random stone in mortar	0.017–0.020
3. Cement rubble masonry	0.020–0.025
4. Cement rubble masonry, plastered	0.016–0.020
5. Dry rubble (riprap)	0.020–0.030
C. Gravel bottom, sides as indicated:	
1. Formed concrete	0.017–0.020
2. Random stone in mortar	0.020–0.023
3. Dry rubble (riprap)	0.023–0.033
D. Brick	0.014–0.017
E. Asphalt:	
1. Smooth	0.013
2. Rough	0.016
F. Wood, planed, clean	0.011–0.013
G. Concrete-lined excavated rock:	
1. Good section	0.017–0.020
2. Irregular section	0.022–0.027
III. Open channels, excavated [4] (straight alinement,[5] natural lining):	
A. Earth, uniform section:	
1. Clean, recently completed	0.016–0.018
2. Clean, after weathering	0.018–0.020
3. With short grass, few weeds	0.022–0.027
4. In gravelly soil, uniform section, clean	0.022–0.025
B. Earth, fairly uniform section:	
1. No vegetation	0.022–0.025
2. Grass, some weeds	0.025–0.030
3. Dense weeds or aquatic plants in deep channels	0.030–0.035
4. Sides clean, gravel bottom	0.025–0.030
5. Sides clean, cobble bottom	0.030–0.040
C. Dragline excavated or dredged:	
1. No vegetation	0.028–0.033
2. Light brush on banks	0.035–0.050
D. Rock:	
1. Based on design section	0.035
2. Based on actual mean section:	
a. Smooth and uniform	0.035–0.040
b. Jagged and irregular	0.040–0.045
E. Channels not maintained, weeds and brush uncut:	
1. Dense weeds, high as flow depth	0.08–0.12
2. Clean bottom, brush on sides	0.05–0.08
3. Clean bottom, brush on sides, highest stage of flow	0.07–0.11
4. Dense brush, high stage	0.10–0.14
IV. Highway channels and swales with maintained vegetation [6 7] (values shown are for velocities of 2 and 6 f.p.s.):	
A. Depth of flow up to 0.7 foot:	
1. Bermudagrass, Kentucky bluegrass, buffalograss:	
a. Mowed to 2 inches	0.07–0.045
b. Length 4–6 inches	0.09–0.05
2. Good stand, any grass:	
a. Length about 12 inches	0.18–0.09
b. Length about 24 inches	0.30–0.15
3. Fair stand, any grass:	
a. Length about 12 inches	0.14–0.08
b. Length about 24 inches	0.25–0.13
B. Depth of flow 0.7–1.5 feet:	
1. Bermudagrass, Kentucky bluegrass, buffalograss:	
a. Mowed to 2 inches	0.05–0.035
b. Length 4 to 6 inches	0.06–0.04
2. Good stand, any grass:	
a. Length about 12 inches	0.12–0.07
b. Length about 24 inches	0.20–0.10
3. Fair stand, any grass:	
a. Length about 12 inches	0.10–0.06
b. Length about 24 inches	0.17–0.09
V. Street and expressway gutters:	
A. Concrete gutter, troweled finish	0.012
B. Asphalt pavement:	
1. Smooth texture	0.013
2. Rough texture	0.016
C. Concrete gutter with asphalt pavement:	
1. Smooth	0.013
2. Rough	0.015
D. Concrete pavement:	
1. Float finish	0.014
2. Broom finish	0.016
E. For gutters with small slope, where sediment may accumulate, increase above values of n by	*0.002*
VI. Natural stream channels:[8]	
A. Minor streams [9] (surface width at flood stage less than 100 ft.):	
1. Fairly regular section:	
a. Some grass and weeds, little or no brush	0.030–0.035
b. Dense growth of weeds, depth of flow materially greater than weed height	0.035–0.05
c. Some weeds, light brush on banks	0.035–0.05
d. Some weeds, heavy brush on banks	0.05–0.07
e. Some weeds, dense willows on banks	0.06–0.08
f. For trees within channel, with branches submerged at high stage, increase all above values by	*0.01–0.02*
2. Irregular sections, with pools, slight channel meander; increase values given in 1a–e about	*0.01–0.02*
3. Mountain streams, no vegetation in channel, banks usually steep, trees and brush along banks submerged at high stage:	
a. Bottom of gravel, cobbles, and few boulders	0.04–0.05
b. Bottom of cobbles, with large boulders	0.05–0.07
B. Flood plains (adjacent to natural streams):	
1. Pasture, no brush:	
a. Short grass	0.030–0.035
b. High grass	0.035–0.05
2. Cultivated areas:	
a. No crop	0.03–0.04
b. Mature row crops	0.035–0.045
c. Mature field crops	0.04–0.05
3. Heavy weeds, scattered brush	0.05–0.07
4. Light brush and trees: [10]	
a. Winter	0.05–0.06
b. Summer	0.06–0.08
5. Medium to dense brush: [10]	
a. Winter	0.07–0.11
b. Summer	0.10–0.16
6. Dense willows, summer, not bent over by current	0.15–0.20
7. Cleared land with tree stumps, 100–150 per acre:	
a. No sprouts	0.04–0.05
b. With heavy growth of sprouts	0.06–0.08
8. Heavy stand of timber, a few down trees, little undergrowth:	
a. Flood depth below branches	0.10–0.12
b. Flood depth reaches branches	0.12–0.16
C. Major streams (surface width at flood stage more than 100 ft.): Roughness coefficient is usually less than for minor streams of similar description on account of less effective resistance offered by irregular banks or vegetation on banks. Values of n may be somewhat reduced. Follow recommendation in publication cited [8] if possible. The value of n for larger streams of most regular section, with no boulders or brush, may be in the range of	0.028–0.033

Footnotes to table 1 appear at the top of page 101.

Table 402-9 Kerby Equation Retardance Coefficient Values

Source: TxDOT, July 2016, "Hydraulic Design Manual", Table 4-5, p. 4-38.
http://onlinemanuals.txdot.gov/txdotmanuals/hyd/index.htm

Generalized Terrain Description	Dimensionless Retardance Coefficient (N)
Pavement	0.02
Smooth, bare, packed soil	0.10
Poor grass, cultivated row crops, or moderately rough packed surfaces	0.20
Pasture, average grass	0.40
Deciduous forest	0.60
Dense grass, coniferous forest, or deciduous forest with deep litter	0.80

402.9.4 The Kerby-Kirpich Method

The Upland Method is used for the ungullied portion of the primary watercourse when the overland flow length is 300 feet or less. The Kerby Equation should be used for the ungullied portions when the overland flow length is greater than 300 feet. The Kirpich Equation is used for the gullied portion of the watercourse, including those drained by manmade conveyances such as curb and gutter, storm drains and channels. The Tc result from each equation are added to obtain the watershed total Tc, thus the name "Kerby-Kirpich" Method.

402.9.5 The Iterative Method Within the Stream Hydraulic Method

The Iterative Method within the Stream Hydraulic Method is used when calculating peak discharges by the Unit Hydrograph Method in a watercourse where a defined stream channel is evident in the field or aerial photography (or a blue line, solid or broken, on a quadrangle topo map) and is the dominant runoff conveyance in the watershed. The Iterative Method within the Stream Hydraulic Method is applicable principally on larger basins where the longest flow path is dominated by channel flow, but that are small enough not to warrant subdividing the basin, or in basins where gullying is evident all the way to the top of the basin.

The engineer must measure or estimate the hydraulic properties of the stream channel. The total watercourse must be divided into channel reaches which are hydraulically similar within themselves. Often, hydraulically similar reaches will have similar slopes. Dramatic slope changes should be apparent from both topography and channel shape. Field reconnaissance measurements of the stream channel are suggested; however, sometimes direct measurements are not possible. The engineer must determine the slope, channel cross section, and an appropriate hydraulic roughness coefficient for each channel reach using the best information available within the limits of access, time, and budgets (topographic maps, aerial photography,

APPENDIX C

TIME OF CONCENTRATION CALCULATIONS

PRE-DEVELOPMENT CONDITION REPORTS

POST-DEVELOPMENT CONDITION REPORTS

Project Name	By		Date
Bergin Lane	Ryan Vallejos		3/21/2022
Watershed ID	Pre-Development	Post-Development	Note: Space for as many as three segments per flow type can be used for each worksheet.
Basin 1	X		

Sheet Flow

			Segment ID							
1.) Surface Description (Table 3-1)										
2.) Manning's Roughness Coefficient, n					0.035					
3.) Flow Length, L (total L < 300 ft)				ft	300					
4.) Two-Year 24-Hour Rainfall, P_2				in	1.1					
5.) Land Slope, S				ft/ft	0.047					
6.) $T_t = 0.007(nL)^{0.80}/P_2^{0.5} * S^{0.4}$	Compute T_t			hr	0.15	+	0.00	+	0.00	= 0.149

Shallow Concentrated Flow

			Segment ID							
7.) Surface Description (Figure 15-4 or Table 15-3)										
8.) Flow Length, L				ft						
9.) Watercourse Slope, S				ft/ft						
10.) Average Velocity, V (Figure 15-4 or Table 15-3)				ft/s						
11.) $T_t = L/3600\ V$	Compute T_t			hr	0.00	+	0.00	+	0.00	= 0.000

Channel Flow (Interative Method Within The Stream Hydraulic Method)

			Segment ID							
12.) Cross Sectional Flow Area, A				ft^2						
13.) Wetted Perimeter, P_w				ft						
14.) Hydraulic Radius, $R = A/P_w$	Compute R			ft	0.00		0.00		0.00	
15.) Channel Slope, S				ft/ft						
16.) Manning's Roughness Coefficient, n										
17.) $V = (1.486/n)\ R^{0.667}\ S^{0.5}$	Compute V			ft/s	0.00		0.00		0.00	
18.) Flow Length, L				ft						
19.) $T_t = L/3600\ V$	Compute T_t			hr	0.00	+	0.00	+	0.00	= 0.000

Kirpich Equation

			Segment ID							
20.) Flow Length, L				ft	225.49					
21.) Surface Slope, S				ft/ft	0.0177					
22.) $T_t = (0.0078 \times L^{0.77} \times S^{-0.385})/60$	Compute T_t			hr	0.04	+	0.00	+	0.00	= 0.040

Sum of the Watershed/Subarea Travel Time (T_t or T_c)

23.) Watershed or Subarea T_t or T_c (add in steps 6,11,19 and 22)		hr	0.189
24.) Sum of Watershed in Step 23, T_c		min	11.340
25) Lag Time, $T_L = 0.60 * T_c$	Compute T_L	min	6.804

Project Name	By		Date
Bergin Lane	Ryan Vallejos		3/21/2022
Watershed ID	Pre-Development	Post-Development	Note: Space for as many as three segments per flow type can be used for each worksheet.
Basin 2	X		

Sheet Flow

			Segment ID							
1.) Surface Description (Table 3-1)										
2.) Manning's Roughness Coefficient, n				0.011						
3.) Flow Length, L (total L < 300 ft)		ft		174.7						
4.) Two-Year 24-Hour Rainfall, P_2		in		1.1						
5.) Land Slope, S		ft/ft		0.064						
6.) $T_t = 0.007(nL)^{0.80}/P_2^{0.5} * S^{0.4}$	Compute T_t	hr		0.03	+	0.00	+	0.00	=	0.034

Shallow Concentrated Flow

			Segment ID							
7.) Surface Description (Figure 15-4 or Table 15-3)										
8.) Flow Length, L		ft								
9.) Watercourse Slope, S		ft/ft								
10.) Average Velocity, V (Figure 15-4 or Table 15-3)		ft/s								
11.) $T_t = L/3600\ V$	Compute T_t	hr		0.00	+	0.00	+	0.00	=	0.000

Channel Flow (Interative Method Within The Stream Hydraulic Method)

			Segment ID							
12.) Cross Sectional Flow Area, A		ft^2								
13.) Wetted Perimeter, P_w		ft								
14.) Hydraulic Radius, $R = A/P_w$	Compute R	ft		0.00		0.00		0.00		
15.) Channel Slope, S		ft/ft								
16.) Manning's Roughness Coefficient, n										
17.) $V = (1.486/n)\ R^{0.667}\ S^{0.5}$	Compute V	ft/s		0.00		0.00		0.00		
18.) Flow Length, L		ft								
19.) $T_t = L/3600\ V$	Compute T_t	hr		0.00	+	0.00	+	0.00	=	0.000

Kirpich Equation

			Segment ID							
20.) Flow Length, L		ft		179						
21.) Surface Slope, S		ft/ft		0.0198						
22.) $T_t = (0.0078 \times L^{0.77} \times S^{-0.385})/60$	Compute T_t	hr		0.03	+	0.00	+	0.00	=	0.032

Sum of the Watershed/Subarea Travel Time (T_t or T_c)

23.) Watershed or Subarea T_t or T_c (add in steps 6,11,19 and 22)		hr	0.066
24.) Sum of Watershed in Step 23, T_c		min	3.946
25) Lag Time, $T_L = 0.60 * T_c$	Compute T_L	min	2.368

Project Name	By		Date
Bergin Lane	Ryan Vallejos		3/21/2022
Watershed ID	Pre-Development	Post-Development	Note: Space for as many as three segments per flow type can be used for each worksheet.
Basin 3	X		

Sheet Flow

			Segment ID							
1.) Surface Description (Table 3-1)										
2.) Manning's Roughness Coefficient, n				0.011						
3.) Flow Length, L (total L < 300 ft)		ft		296.1						
4.) Two-Year 24-Hour Rainfall, P_2		in		1.1						
5.) Land Slope, S		ft/ft		0.064						
6.) $T_t = 0.007(nL)^{0.80}/P_2^{0.5} * S^{0.4}$	Compute T_t	hr		0.05	+	0.00	+	0.00	=	0.052

Shallow Concentrated Flow

			Segment ID							
7.) Surface Description (Figure 15-4 or Table 15-3)										
8.) Flow Length, L		ft								
9.) Watercourse Slope, S		ft/ft								
10.) Average Velocity, V (Figure 15-4 or Table 15-3)		ft/s								
11.) $T_t = L/3600\ V$	Compute T_t	hr		0.00	+	0.00	+	0.00	=	0.000

Channel Flow (Interative Method Within The Stream Hydraulic Method)

			Segment ID							
12.) Cross Sectional Flow Area, A		ft^2								
13.) Wetted Perimeter, P_w		ft								
14.) Hydraulic Radius, $R = A/P_w$	Compute R	ft		0.00		0.00		0.00		
15.) Channel Slope, S		ft/ft								
16.) Manning's Roughness Coefficient, n										
17.) $V = (1.486/n)\ R^{0.667}\ S^{0.5}$	Compute V	ft/s		0.00		0.00		0.00		
18.) Flow Length, L		ft								
19.) $T_t = L/3600\ V$	Compute T_t	hr		0.00	+	0.00	+	0.00	=	0.000

Kirpich Equation

			Segment ID							
20.) Flow Length, L		ft		212.71						
21.) Surface Slope, S		ft/ft		0.0172						
22.) $T_t = (0.0078 \times L^{0.77} \times S^{-0.385})/60$	Compute T_t	hr		0.04	+	0.00	+	0.00	=	0.039

Sum of the Watershed/Subarea Travel Time (T_t or T_c)

23.) Watershed or Subarea T_t or T_c (add in steps 6,11,19 and 22)		hr	0.090
24.) Sum of Watershed in Step 23, T_c		min	5.414
25) Lag Time, $T_L = 0.60 * T_c$	Compute T_L	min	3.248

Project Name	By		Date
Bergin Lane	Ryan Vallejos		3/21/2022
Watershed ID	Pre-Development	Post-Development	Note: Space for as many as three segments per flow type can be used for each worksheet.
Basin 4	X		

Sheet Flow

			Segment ID							
1.) Surface Description (Table 3-1)										
2.) Manning's Roughness Coefficient, n					0.011					
3.) Flow Length, L (total L < 300 ft)			ft		300					
4.) Two-Year 24-Hour Rainfall, P_2			in		1.1					
5.) Land Slope, S			ft/ft		0.053					
6.) $T_t = 0.007(nL)^{0.80}/P_2^{0.5} * S^{0.4}$	Compute T_t		hr		0.06	+	0.00	+	0.00	= 0.056

Shallow Concentrated Flow

			Segment ID							
7.) Surface Description (Figure 15-4 or Table 15-3)										
8.) Flow Length, L			ft							
9.) Watercourse Slope, S			ft/ft							
10.) Average Velocity, V (Figure 15-4 or Table 15-3)			ft/s							
11.) $T_t = L/3600\ V$	Compute T_t		hr		0.00	+	0.00	+	0.00	= 0.000

Channel Flow (Interative Method Within The Stream Hydraulic Method)

			Segment ID							
12.) Cross Sectional Flow Area, A			ft^2							
13.) Wetted Perimeter, P_w			ft							
14.) Hydraulic Radius, $R = A/P_w$	Compute R		ft		0.00		0.00		0.00	
15.) Channel Slope, S			ft/ft							
16.) Manning's Roughness Coefficient, n										
17.) $V = (1.486/n)\ R^{0.667}\ S^{0.5}$	Compute V		ft/s		0.00		0.00		0.00	
18.) Flow Length, L			ft							
19.) $T_t = L/3600\ V$	Compute T_t		hr		0.00	+	0.00	+	0.00	= 0.000

Kirpich Equation

			Segment ID							
20.) Flow Length, L			ft							
21.) Surface Slope, S			ft/ft							
22.) $T_t = (0.0078 \times L^{0.77} \times S^{-0.385})/60$	Compute T_t		hr		0.00	+	0.00	+	0.00	= 0.000

Sum of the Watershed/Subarea Travel Time (T_t or T_c)

23.) Watershed or Subarea T_t or T_c (add in steps 6,11,19 and 22)		hr	0.056
24.) Sum of Watershed in Step 23, T_c		min	3.363
25) Lag Time, $T_L = 0.60 * T_c$	Compute T_L	min	2.018

PRE-DEV BASIN 4 CONT…

KERBY EQUATION

SECTION 1	
Length (ft)	121.158
Slope (ft/ft)	0.0495
Retardance Coefficient (N)	0.01
Unit Conversion (K = 0.828)	0.828
Overland Flow Tc (Tov) Min	1.84
Total Kerby Eq Tc (min)	1.84

TOTAL BASIN 4 TC (min)	**5.20**

Project Name	By		Date
Bergin Lane	Ryan Vallejos		3/21/2022
Watershed ID	Pre-Development	Post-Development	Note: Space for as many as three segments per flow type can be used for each worksheet.
Basin 5	X		

Sheet Flow

			Segment ID							
1.) Surface Description (Table 3-1)										
2.) Manning's Roughness Coefficient, n				0.035						
3.) Flow Length, L (total L < 300 ft)		ft		300						
4.) Two-Year 24-Hour Rainfall, P_2		in		1.1						
5.) Land Slope, S		ft/ft		0.05						
6.) $T_t = 0.007(nL)^{0.80}/P_2^{0.5} * S^{0.4}$	Compute T_t	hr		0.15	+	0.00	+	0.00	=	0.145

Shallow Concentrated Flow

			Segment ID							
7.) Surface Description (Figure 15-4 or Table 15-3)										
8.) Flow Length, L		ft								
9.) Watercourse Slope, S		ft/ft								
10.) Average Velocity, V (Figure 15-4 or Table 15-3)		ft/s								
11.) $T_t = L/3600\ V$	Compute T_t	hr		0.00	+	0.00	+	0.00	=	0.000

Channel Flow (Interative Method Within The Stream Hydraulic Method)

			Segment ID							
12.) Cross Sectional Flow Area, A		ft^2								
13.) Wetted Perimeter, P_w		ft								
14.) Hydraulic Radius, $R = A/P_w$	Compute R	ft		0.00		0.00		0.00		
15.) Channel Slope, S		ft/ft								
16.) Manning's Roughness Coefficient, n										
17.) $V = (1.486/n)\ R^{0.667}\ S^{0.5}$	Compute V	ft/s		0.00		0.00		0.00		
18.) Flow Length, L		ft								
19.) $T_t = L/3600\ V$	Compute T_t	hr		0.00	+	0.00	+	0.00	=	0.000

Kirpich Equation

			Segment ID							
20.) Flow Length, L		ft								
21.) Surface Slope, S		ft/ft								
22.) $T_t = (0.0078 \times L^{0.77} \times S^{-0.385})/60$	Compute T_t	hr		0.00	+	0.00	+	0.00	=	0.000

Sum of the Watershed/Subarea Travel Time (T_t or T_c)

23.) Watershed or Subarea T_t or T_c (add in steps 6,11,19 and 22)		hr	0.145
24.) Sum of Watershed in Step 23, T_c		min	8.708
25) Lag Time, $T_L = 0.60 * T_c$	Compute T_L	min	5.225

PRE-DEV BASIN 5 CONT…

KERBY EQUATION

SECTION 1	
Length (ft)	1104.71
Slope (ft/ft)	0.0444
Retardance Coefficient (N)	0.2
Unit Conversion (K = 0.828)	0.828
Overland Flow Tc (Tov) Min	21.41
Total Kerby Eq Tc (min)	21.41

TOTAL BASIN 5 TC (min) **30.12**

Project Name	By		Date
Bergin Lane	Ryan Vallejos		3/21/2022
Watershed ID	Pre-Development	Post-Development	Note: Space for as many as three segments per flow type can be used for each worksheet.
Basin 6	X		

Sheet Flow

			Segment ID							
1.) Surface Description (Table 3-1)										
2.) Manning's Roughness Coefficient, n				0.011						
3.) Flow Length, L (total L < 300 ft)		ft		172.9						
4.) Two-Year 24-Hour Rainfall, P_2		in		1.1						
5.) Land Slope, S		ft/ft		0.081						
6.) $T_t = 0.007(nL)^{0.80}/P_2^{0.5} * S^{0.4}$	Compute T_t	hr		0.03	+	0.00	+	0.00	=	0.031

Shallow Concentrated Flow

			Segment ID							
7.) Surface Description (Figure 15-4 or Table 15-3)										
8.) Flow Length, L		ft								
9.) Watercourse Slope, S		ft/ft								
10.) Average Velocity, V (Figure 15-4 or Table 15-3)		ft/s								
11.) $T_t = L/3600\ V$	Compute T_t	hr		0.00	+	0.00	+	0.00	=	0.000

Channel Flow (Interative Method Within The Stream Hydraulic Method)

			Segment ID							
12.) Cross Sectional Flow Area, A		ft^2								
13.) Wetted Perimeter, P_w		ft								
14.) Hydraulic Radius, $R = A/P_w$	Compute R	ft		0.00		0.00		0.00		
15.) Channel Slope, S		ft/ft								
16.) Manning's Roughness Coefficient, n										
17.) $V = (1.486/n)\ R^{0.667}\ S^{0.5}$	Compute V	ft/s		0.00		0.00		0.00		
18.) Flow Length, L		ft								
19.) $T_t = L/3600\ V$	Compute T_t	hr		0.00	+	0.00	+	0.00	=	0.000

Kirpich Equation

			Segment ID							
20.) Flow Length, L		ft								
21.) Surface Slope, S		ft/ft								
22.) $T_t = (0.0078 \times L^{0.77} \times S^{-0.385})/60$	Compute T_t	hr		0.00	+	0.00	+	0.00	=	0.000

Sum of the Watershed/Subarea Travel Time (T_t or T_c)

23.) Watershed or Subarea T_t or T_c (add in steps 6,11,19 and 22)		hr	0.031
24.) Sum of Watershed in Step 23, T_c		min	1.830
25) Lag Time, $T_L = 0.60 * T_c$	Compute T_L	min	1.098

PRE-DEV BASIN 6 CONT…

KERBY EQUATION

SECTION 1	
Length (ft)	368.997
Slope (ft/ft)	0.0379
Retardance Coefficient (N)	0.2
Unit Conversion (K = 0.828)	0.828
Overland Flow Tc (Tov) Min	13.32
Total Kerby Eq Tc (min)	13.32

TOTAL BASIN 6 TC (min) **15.15**

Project Name	By		Date
Bergin Lane	Ryan Vallejos		3/21/2022
Watershed ID	Pre-Development	Post-Development	Note: Space for as many as three segments per flow type can be used for each worksheet.
Basin 7	X		

Sheet Flow

			Segment ID							
1.) Surface Description (Table 3-1)										
2.) Manning's Roughness Coefficient, n				0.011						
3.) Flow Length, L (total L < 300 ft)		ft		300						
4.) Two-Year 24-Hour Rainfall, P_2		in		1.1						
5.) Land Slope, S		ft/ft		0.033						
6.) $T_t = 0.007(nL)^{0.80}/P_2^{0.5} * S^{0.4}$	Compute T_t	hr		0.07	+	0.00	+	0.00	=	0.068

Shallow Concentrated Flow

			Segment ID							
7.) Surface Description (Figure 15-4 or Table 15-3)										
8.) Flow Length, L		ft								
9.) Watercourse Slope, S		ft/ft								
10.) Average Velocity, V (Figure 15-4 or Table 15-3)		ft/s								
11.) $T_t = L/3600\ V$	Compute T_t	hr		0.00	+	0.00	+	0.00	=	0.000

Channel Flow (Interative Method Within The Stream Hydraulic Method)

			Segment ID							
12.) Cross Sectional Flow Area, A		ft^2								
13.) Wetted Perimeter, P_w		ft								
14.) Hydraulic Radius, $R = A/P_w$	Compute R	ft		0.00		0.00		0.00		
15.) Channel Slope, S		ft/ft								
16.) Manning's Roughness Coefficient, n										
17.) $V = (1.486/n)\ R^{0.667}\ S^{0.5}$	Compute V	ft/s		0.00		0.00		0.00		
18.) Flow Length, L		ft								
19.) $T_t = L/3600\ V$	Compute T_t	hr		0.00	+	0.00	+	0.00	=	0.000

Kirpich Equation

			Segment ID							
20.) Flow Length, L		ft		479.01						
21.) Surface Slope, S		ft/ft		0.0285						
22.) $T_t = (0.0078 \times L^{0.77} \times S^{-0.385})/60$	Compute T_t	hr		0.06	+	0.00	+	0.00	=	0.059

Sum of the Watershed/Subarea Travel Time (T_t or T_c)

23.) Watershed or Subarea T_t or T_c (add in steps 6,11,19 and 22)		hr	0.127
24.) Sum of Watershed in Step 23, T_c		min	7.614
25) Lag Time, $T_L = 0.60 * T_c$	Compute T_L	min	4.568

Project Name	By		Date
Bergin Lane	Ryan Vallejos		3/21/2022
Watershed ID	Pre-Development	Post-Development	Note: Space for as many as three segments per flow type can be used for each worksheet.
Basin 8	X		

Sheet Flow

			Segment ID							
1.) Surface Description (Table 3-1)										
2.) Manning's Roughness Coefficient, n				0.011						
3.) Flow Length, L (total L < 300 ft)		ft		70.81						
4.) Two-Year 24-Hour Rainfall, P_2		in		1.1						
5.) Land Slope, S		ft/ft		0.028						
6.) $T_t = 0.007(nL)^{0.80}/P_2^{0.5} * S^{0.4}$	Compute T_t	hr		0.02	+	0.00	+	0.00	=	0.023

Shallow Concentrated Flow

			Segment ID							
7.) Surface Description (Figure 15-4 or Table 15-3)										
8.) Flow Length, L		ft								
9.) Watercourse Slope, S		ft/ft								
10.) Average Velocity, V (Figure 15-4 or Table 15-3)		ft/s								
11.) $T_t = L/3600\ V$	Compute T_t	hr		0.00	+	0.00	+	0.00	=	0.000

Channel Flow (Interative Method Within The Stream Hydraulic Method)

			Segment ID							
12.) Cross Sectional Flow Area, A		ft^2								
13.) Wetted Perimeter, P_w		ft								
14.) Hydraulic Radius, $R = A/P_w$	Compute R	ft		0.00		0.00		0.00		
15.) Channel Slope, S		ft/ft								
16.) Manning's Roughness Coefficient, n										
17.) $V = (1.486/n)\ R^{0.667}\ S^{0.5}$	Compute V	ft/s		0.00		0.00		0.00		
18.) Flow Length, L		ft								
19.) $T_t = L/3600\ V$	Compute T_t	hr		0.00	+	0.00	+	0.00	=	0.000

Kirpich Equation

			Segment ID							
20.) Flow Length, L		ft		336.15						
21.) Surface Slope, S		ft/ft		0.0145						
22.) $T_t = (0.0078 \times L^{0.77} \times S^{-0.385})/60$	Compute T_t	hr		0.06	+	0.00	+	0.00	=	0.059

Sum of the Watershed/Subarea Travel Time (T_t or T_c)

23.) Watershed or Subarea T_t or T_c (add in steps 6,11,19 and 22)		hr	0.081
24.) Sum of Watershed in Step 23, T_c		min	4.873
25) Lag Time, $T_L = 0.60 * T_c$	Compute T_L	min	2.924

Project Name	By		Date
Bergin Lane	Ryan Vallejos		3/21/2022
Watershed ID	Pre-Development	Post-Development	Note: Space for as many as three segments per flow type can be used for each worksheet.
Basin 9	X		

Sheet Flow

			Segment ID							
1.) Surface Description (Table 3-1)										
2.) Manning's Roughness Coefficient, n				0.011						
3.) Flow Length, L (total L < 300 ft)		ft		285.7						
4.) Two-Year 24-Hour Rainfall, P_2		in		1.1						
5.) Land Slope, S		ft/ft		0.014						
6.) $T_t = 0.007(nL)^{0.80}/P_2^{0.5} * S^{0.4}$	Compute T_t	hr		0.09	+	0.00	+	0.00	=	0.092

Shallow Concentrated Flow

			Segment ID							
7.) Surface Description (Figure 15-4 or Table 15-3)										
8.) Flow Length, L		ft								
9.) Watercourse Slope, S		ft/ft								
10.) Average Velocity, V (Figure 15-4 or Table 15-3)		ft/s								
11.) $T_t = L/3600\ V$	Compute T_t	hr		0.00	+	0.00	+	0.00	=	0.000

Channel Flow (Interative Method Within The Stream Hydraulic Method)

			Segment ID							
12.) Cross Sectional Flow Area, A		ft^2								
13.) Wetted Perimeter, P_w		ft								
14.) Hydraulic Radius, $R = A/P_w$	Compute R	ft		0.00		0.00		0.00		
15.) Channel Slope, S		ft/ft								
16.) Manning's Roughness Coefficient, n										
17.) $V = (1.486/n)\ R^{0.667}\ S^{0.5}$	Compute V	ft/s		0.00		0.00		0.00		
18.) Flow Length, L		ft								
19.) $T_t = L/3600\ V$	Compute T_t	hr		0.00	+	0.00	+	0.00	=	0.000

Kirpich Equation

			Segment ID							
20.) Flow Length, L		ft		331.42						
21.) Surface Slope, S		ft/ft		0.0169						
22.) $T_t = (0.0078 \times L^{0.77} \times S^{-0.385})/60$	Compute T_t	hr		0.05	+	0.00	+	0.00	=	0.055

Sum of the Watershed/Subarea Travel Time (T_t or T_c)

23.) Watershed or Subarea T_t or T_c (add in steps 6,11,19 and 22)		hr	0.147
24.) Sum of Watershed in Step 23, T_c		min	8.794
25) Lag Time, $T_L = 0.60 * T_c$	Compute T_L	min	5.276

Project Name	By		Date
Bergin Lane	Ryan Vallejos		3/21/2022
Watershed ID	Pre-Development	Post-Development	Note: Space for as many as three segments per flow type can be used for each worksheet.
Basin 10	X		

Sheet Flow

			Segment ID							
1.) Surface Description (Table 3-1)										
2.) Manning's Roughness Coefficient, n				0.011						
3.) Flow Length, L (total L < 300 ft)		ft		158						
4.) Two-Year 24-Hour Rainfall, P_2		in		1.1						
5.) Land Slope, S		ft/ft		0.019						
6.) $T_t = 0.007(nL)^{0.80}/P_2^{0.5} * S^{0.4}$	Compute T_t	hr		0.05	+	0.00	+	0.00	=	0.050

Shallow Concentrated Flow

			Segment ID							
7.) Surface Description (Figure 15-4 or Table 15-3)										
8.) Flow Length, L		ft								
9.) Watercourse Slope, S		ft/ft								
10.) Average Velocity, V (Figure 15-4 or Table 15-3)		ft/s								
11.) $T_t = L/3600\ V$	Compute T_t	hr		0.00	+	0.00	+	0.00	=	0.000

Channel Flow (Interative Method Within The Stream Hydraulic Method)

			Segment ID							
12.) Cross Sectional Flow Area, A		ft^2								
13.) Wetted Perimeter, P_w		ft								
14.) Hydraulic Radius, $R = A/P_w$	Compute R	ft		0.00		0.00		0.00		
15.) Channel Slope, S		ft/ft								
16.) Manning's Roughness Coefficient, n										
17.) $V = (1.486/n)\ R^{0.667}\ S^{0.5}$	Compute V	ft/s		0.00		0.00		0.00		
18.) Flow Length, L		ft								
19.) $T_t = L/3600\ V$	Compute T_t	hr		0.00	+	0.00	+	0.00	=	0.000

Kirpich Equation

			Segment ID							
20.) Flow Length, L		ft		512.23						
21.) Surface Slope, S		ft/ft		0.0181						
22.) $T_t = (0.0078 \times L^{0.77} \times S^{-0.385})/60$	Compute T_t	hr		0.07	+	0.00	+	0.00	=	0.074

Sum of the Watershed/Subarea Travel Time (T_t or T_c)

23.) Watershed or Subarea T_t or T_c (add in steps 6,11,19 and 22)		hr	0.125
24.) Sum of Watershed in Step 23, T_c		min	7.475
25) Lag Time, $T_L = 0.60 * T_c$	Compute T_L	min	4.485

Project Name	By		Date
Bergin Lane	Ryan Vallejos		3/21/2022
Watershed ID	Pre-Development	Post-Development	Note: Space for as many as three segments per flow type can be used for each worksheet.
Basin R1	X		

Sheet Flow

			Segment ID							
1.) Surface Description (Table 3-1)										
2.) Manning's Roughness Coefficient, n				0.011						
3.) Flow Length, L (total L < 300 ft)		ft		12.6						
4.) Two-Year 24-Hour Rainfall, P_2		in		1.1						
5.) Land Slope, S		ft/ft		0.02						
6.) $T_t = 0.007(nL)^{0.80}/P_2^{0.5} * S^{0.4}$	Compute T_t	hr		0.01	+	0.00	+	0.00	=	0.007

Shallow Concentrated Flow

			Segment ID							
7.) Surface Description (Figure 15-4 or Table 15-3)										
8.) Flow Length, L		ft		179.3						
9.) Watercourse Slope, S		ft/ft		0.0126						
10.) Average Velocity, V (Figure 15-4 or Table 15-3)		ft/s		2.282						
11.) $T_t = L/3600\ V$	Compute T_t	hr		0.02	+	0.00	+	0.00	=	0.022

Channel Flow (Interative Method Within The Stream Hydraulic Method)

			Segment ID							
12.) Cross Sectional Flow Area, A		ft^2								
13.) Wetted Perimeter, P_w		ft								
14.) Hydraulic Radius, $R = A/P_w$	Compute R	ft		0.00		0.00		0.00		
15.) Channel Slope, S		ft/ft								
16.) Manning's Roughness Coefficient, n										
17.) $V = (1.486/n)\ R^{0.667}\ S^{0.5}$	Compute V	ft/s		0.00		0.00		0.00		
18.) Flow Length, L		ft								
19.) $T_t = L/3600\ V$	Compute T_t	hr		0.00	+	0.00	+	0.00	=	0.000

Kirpich Equation

			Segment ID							
20.) Flow Length, L		ft								
21.) Surface Slope, S		ft/ft								
22.) $T_t = (0.0078 \times L^{0.77} \times S^{-0.385})/60$	Compute T_t	hr		0.00	+	0.00	+	0.00	=	0.000

Sum of the Watershed/Subarea Travel Time (T_t or T_c)

23.) Watershed or Subarea T_t or T_c (add in steps 6,11,19 and 22)		hr	0.028
24.) Sum of Watershed in Step 23, T_c		min	1.704
25) Lag Time, $T_L = 0.60 * T_c$	Compute T_L	min	1.022

Project Name	By		Date
Bergin Lane	Ryan Vallejos		3/21/2022
Watershed ID	Pre-Development	Post-Development	Note: Space for as many as three segments per flow type can be used for each worksheet.
Road Sheet Flow (Basins R2 & R5)	X		

Sheet Flow

			Segment ID							
1.) Surface Description (Table 3-1)										
2.) Manning's Roughness Coefficient, n			0.011							
3.) Flow Length, L (total L < 300 ft)		ft	300							
4.) Two-Year 24-Hour Rainfall, P_2		in	1.1							
5.) Land Slope, S		ft/ft	0.06							
6.) $T_t = 0.007(nL)^{0.80}/P_2^{0.5} * S^{0.4}$	Compute T_t	hr	0.05	+	0.00	+	0.00	=	0.053	

Shallow Concentrated Flow

			Segment ID							
7.) Surface Description (Figure 15-4 or Table 15-3)										
8.) Flow Length, L		ft								
9.) Watercourse Slope, S		ft/ft								
10.) Average Velocity, V (Figure 15-4 or Table 15-3)		ft/s								
11.) $T_t = L/3600\ V$	Compute T_t	hr	0.00	+	0.00	+	0.00	=	0.000	

Channel Flow (Interative Method Within The Stream Hydraulic Method)

			Segment ID							
12.) Cross Sectional Flow Area, A		ft^2								
13.) Wetted Perimeter, P_w		ft								
14.) Hydraulic Radius, $R = A/P_w$	Compute R	ft	0.00		0.00		0.00			
15.) Channel Slope, S		ft/ft								
16.) Manning's Roughness Coefficient, n										
17.) $V = (1.486/n)\ R^{0.667}\ S^{0.5}$	Compute V	ft/s	0.00		0.00		0.00			
18.) Flow Length, L		ft								
19.) $T_t = L/3600\ V$	Compute T_t	hr	0.00	+	0.00	+	0.00	=	0.000	

Kirpich Equation

			Segment ID							
20.) Flow Length, L		ft								
21.) Surface Slope, S		ft/ft								
22.) $T_t = (0.0078 \times L^{0.77} \times S^{-0.385})/60$	Compute T_t	hr	0.00	+	0.00	+	0.00	=	0.000	

Sum of the Watershed/Subarea Travel Time (T_t or T_c)

23.) Watershed or Subarea T_t or T_c (add in steps 6,11,19 and 22)		hr	0.053
24.) Sum of Watershed in Step 23, T_c		min	3.207
25) Lag Time, $T_L = 0.60 * T_c$	Compute T_L	min	1.924

Project Name	By		Date
Bergin Lane	Ryan Vallejos		3/21/2022
Watershed ID	Pre-Development	Post-Development	Note: Space for as many as three segments per flow type can be used for each worksheet.
Road SCF (Basins R3-R7)	X		

Sheet Flow

			Segment ID								
1.) Surface Description (Table 3-1)											
2.) Manning's Roughness Coefficient, n											
3.) Flow Length, L (total L < 300 ft)				ft							
4.) Two-Year 24-Hour Rainfall, P_2				in							
5.) Land Slope, S				ft/ft							
6.) $T_t = 0.007(nL)^{0.80}/P_2^{0.5} * S^{0.4}$	Compute T_t			hr	0.00	+	0.00	+	0.00	=	0.000

Shallow Concentrated Flow

			Segment ID								
7.) Surface Description (Figure 15-4 or Table 15-3)											
8.) Flow Length, L				ft	120						
9.) Watercourse Slope, S				ft/ft	0.05						
10.) Average Velocity, V (Figure 15-4 or Table 15-3)				ft/s	4.55						
11.) $T_t = L/3600\ V$	Compute T_t			hr	0.01	+	0.00	+	0.00	=	0.007

Channel Flow (Interative Method Within The Stream Hydraulic Method)

			Segment ID								
12.) Cross Sectional Flow Area, A				ft^2							
13.) Wetted Perimeter, P_w				ft							
14.) Hydraulic Radius, $R = A/P_w$	Compute R			ft	0.00		0.00		0.00		
15.) Channel Slope, S				ft/ft							
16.) Manning's Roughness Coefficient, n											
17.) $V = (1.486/n)\ R^{0.667}\ S^{0.5}$	Compute V			ft/s	0.00		0.00		0.00		
18.) Flow Length, L				ft							
19.) $T_t = L/3600\ V$	Compute T_t			hr	0.00	+	0.00	+	0.00	=	0.000

Kirpich Equation

			Segment ID								
20.) Flow Length, L				ft							
21.) Surface Slope, S				ft/ft							
22.) $T_t = (0.0078 \times L^{0.77} \times S^{-0.385})/60$	Compute T_t			hr	0.00	+	0.00	+	0.00	=	0.000

Sum of the Watershed/Subarea Travel Time (T_t or T_c)

23.) Watershed or Subarea T_t or T_c (add in steps 6,11,19 and 22)		hr	0.007
24.) Sum of Watershed in Step 23, T_c		min	0.440
25) Lag Time, $T_L = 0.60 * T_c$	Compute T_L	min	0.264

Hydraflow Table of Contents

50 - Year

100 - Year

Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	0.309	5	725	1,453	------	------	------	Basin 1
2	SCS Runoff	1.650	5	720	4,611	------	------	------	Basin 2
3	SCS Runoff	2.950	5	720	8,129	------	------	------	Basin 3
4	SCS Runoff	1.505	5	720	4,205	------	------	------	Basin 4
5	SCS Runoff	1.882	5	735	10,990	------	------	------	Basin 5
6	SCS Runoff	0.383	5	725	1,461	------	------	------	Basin 6
7	SCS Runoff	6.133	5	720	16,898	------	------	------	Basin 7
8	SCS Runoff	0.896	5	720	2,422	------	------	------	Basin 8
9	SCS Runoff	3.900	2	720	10,168	------	------	------	Basin 9
10	SCS Runoff	2.216	5	720	5,987	------	------	------	Basin 10
11	SCS Runoff	0.189	5	720	555	------	------	------	R1
12	SCS Runoff	0.192	5	720	562	------	------	------	R2
13	SCS Runoff	0.106	5	720	310	------	------	------	R3
14	SCS Runoff	0.138	5	720	404	------	------	------	R4
15	SCS Runoff	0.121	5	720	327	------	------	------	R5
16	SCS Runoff	0.121	5	720	327	------	------	------	R6
17	SCS Runoff	0.129	5	720	350	------	------	------	R7
18	SCS Runoff	0.121	5	720	327	------	------	------	R8
19	SCS Runoff	0.121	5	720	327	------	------	------	R9
20	SCS Runoff	0.121	5	720	327	------	------	------	R10
21	SCS Runoff	0.121	5	720	327	------	------	------	R11
22	SCS Runoff	0.121	5	720	327	------	------	------	R12
23	SCS Runoff	0.121	5	720	327	------	------	------	R13
24	SCS Runoff	0.091	5	720	247	------	------	------	R14
25	SCS Runoff	0.091	5	720	247	------	------	------	R15
26	SCS Runoff	0.091	5	720	247	------	------	------	R16
27	SCS Runoff	0.121	5	720	327	------	------	------	R17
28	SCS Runoff	0.121	5	720	327	------	------	------	R18
29	SCS Runoff	0.129	5	720	350	------	------	------	R19
30	SCS Runoff	0.129	5	720	350	------	------	------	R20
31	SCS Runoff	0.129	5	720	350	------	------	------	R21
32	SCS Runoff	0.129	5	720	350	------	------	------	R22
33	SCS Runoff	0.129	5	720	350	------	------	------	R23
34	SCS Runoff	0.167	5	720	490	------	------	------	R24

Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021

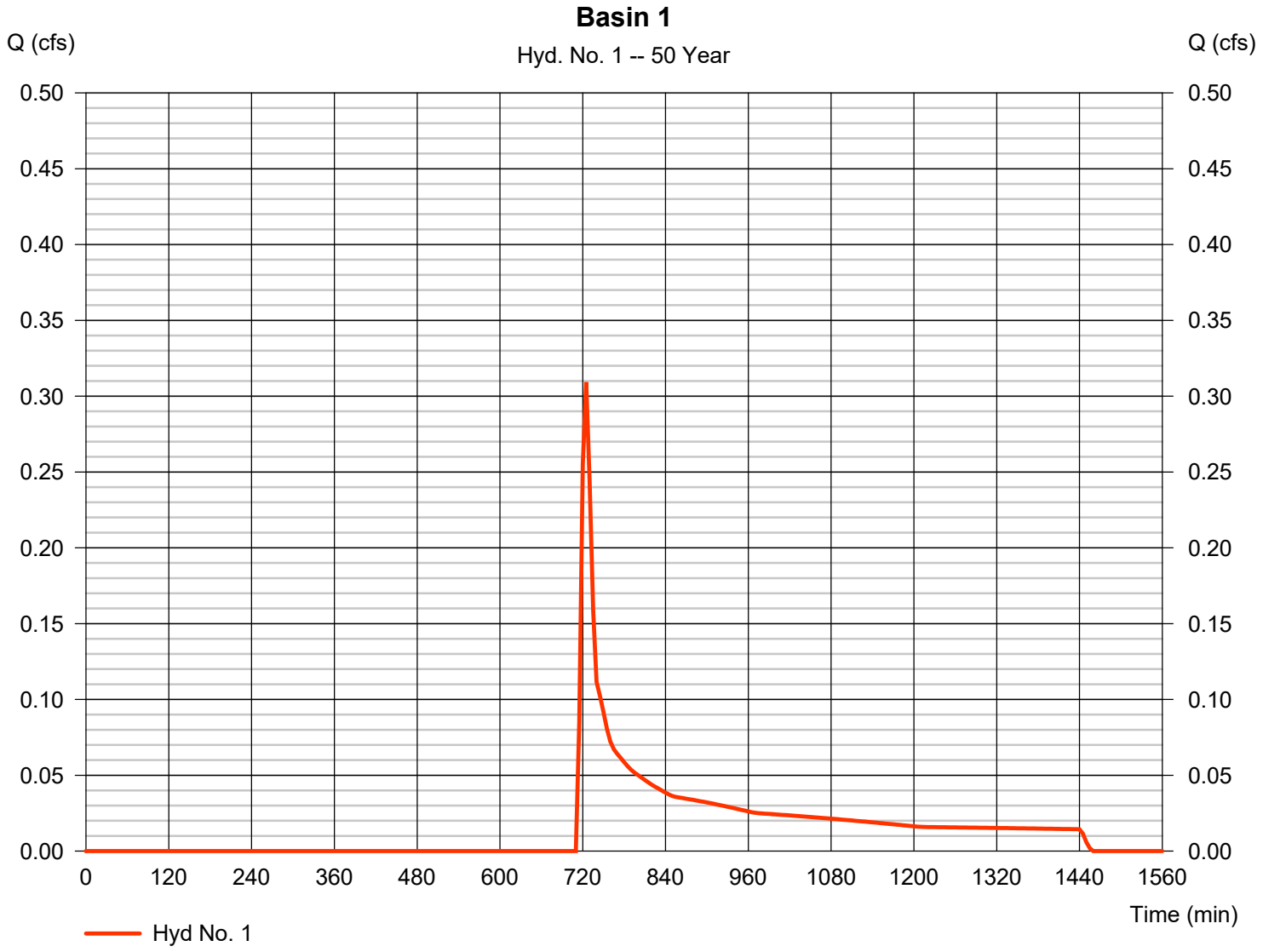
Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
35	SCS Runoff	0.311	5	720	911	------	------	------	R25

Hydrograph Report

Hyd. No. 1

Basin 1

Hydrograph type	= SCS Runoff	Peak discharge	= 0.309 cfs
Storm frequency	= 50 yrs	Time to peak	= 725 min
Time interval	= 5 min	Hyd. volume	= 1,453 cuft
Drainage area	= 2.162 ac	Curve number	= 72
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 11.80 min
Total precip.	= 1.76 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

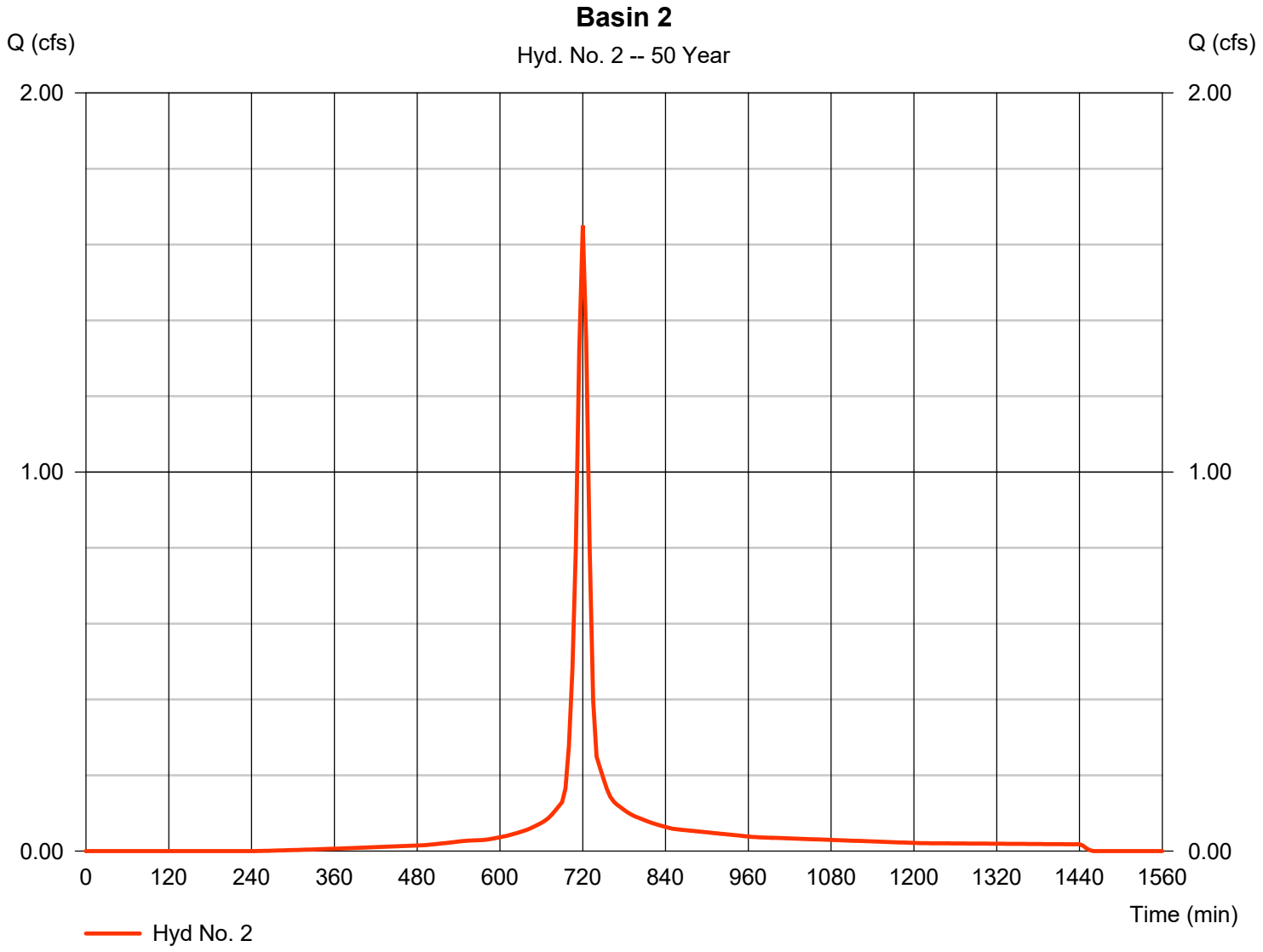


Hydrograph Report

Hyd. No. 2

Basin 2

Hydrograph type	= SCS Runoff	Peak discharge	= 1.650 cfs
Storm frequency	= 50 yrs	Time to peak	= 720 min
Time interval	= 5 min	Hyd. volume	= 4,611 cuft
Drainage area	= 1.009 ac	Curve number	= 96
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 1.76 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

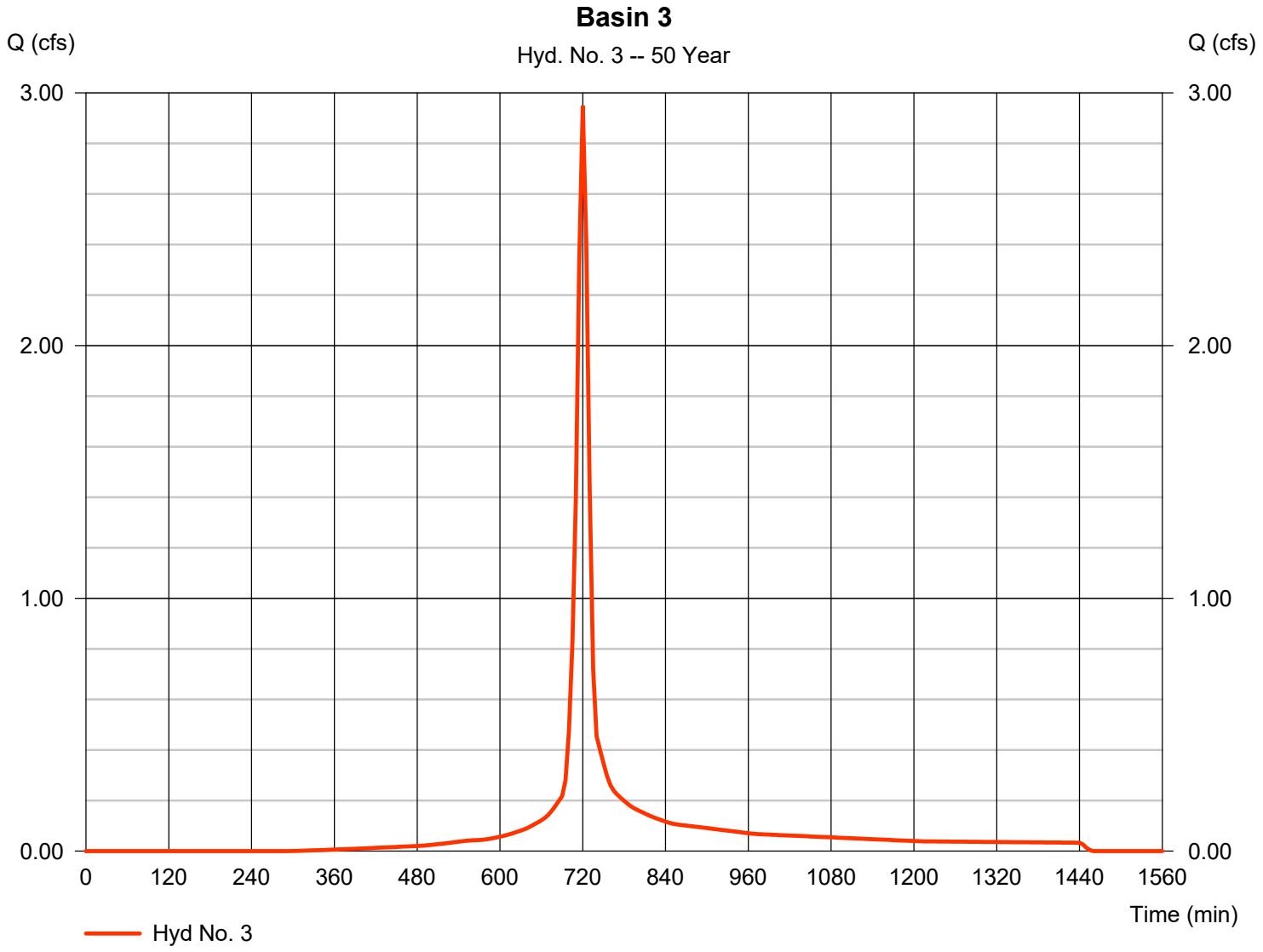


Hydrograph Report

Hyd. No. 3

Basin 3

Hydrograph type	= SCS Runoff	Peak discharge	= 2.950 cfs
Storm frequency	= 50 yrs	Time to peak	= 720 min
Time interval	= 5 min	Hyd. volume	= 8,129 cuft
Drainage area	= 1.903 ac	Curve number	= 95
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 1.76 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

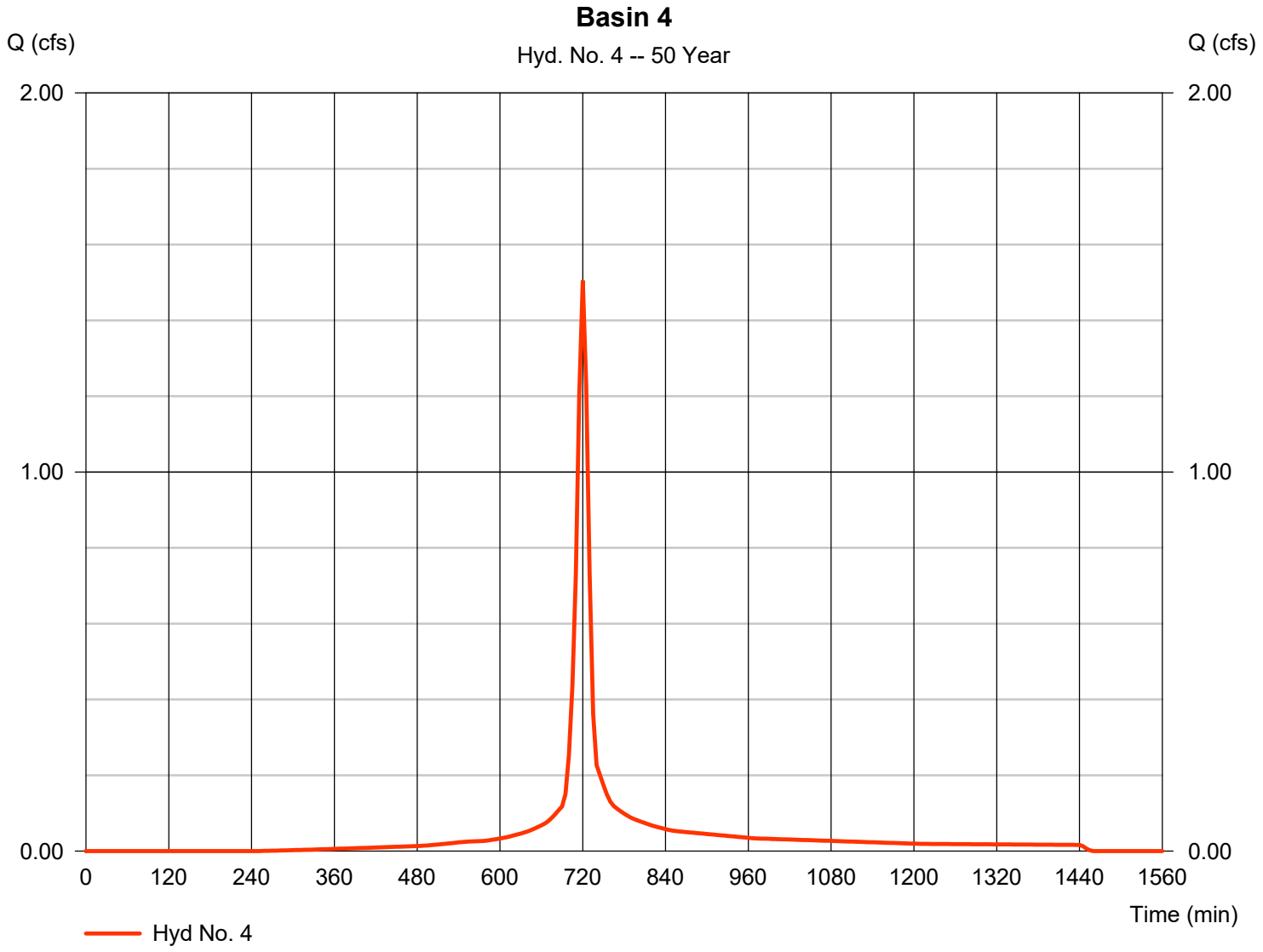


Hydrograph Report

Hyd. No. 4

Basin 4

Hydrograph type	= SCS Runoff	Peak discharge	= 1.505 cfs
Storm frequency	= 50 yrs	Time to peak	= 720 min
Time interval	= 5 min	Hyd. volume	= 4,205 cuft
Drainage area	= 0.920 ac	Curve number	= 96
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 1.76 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

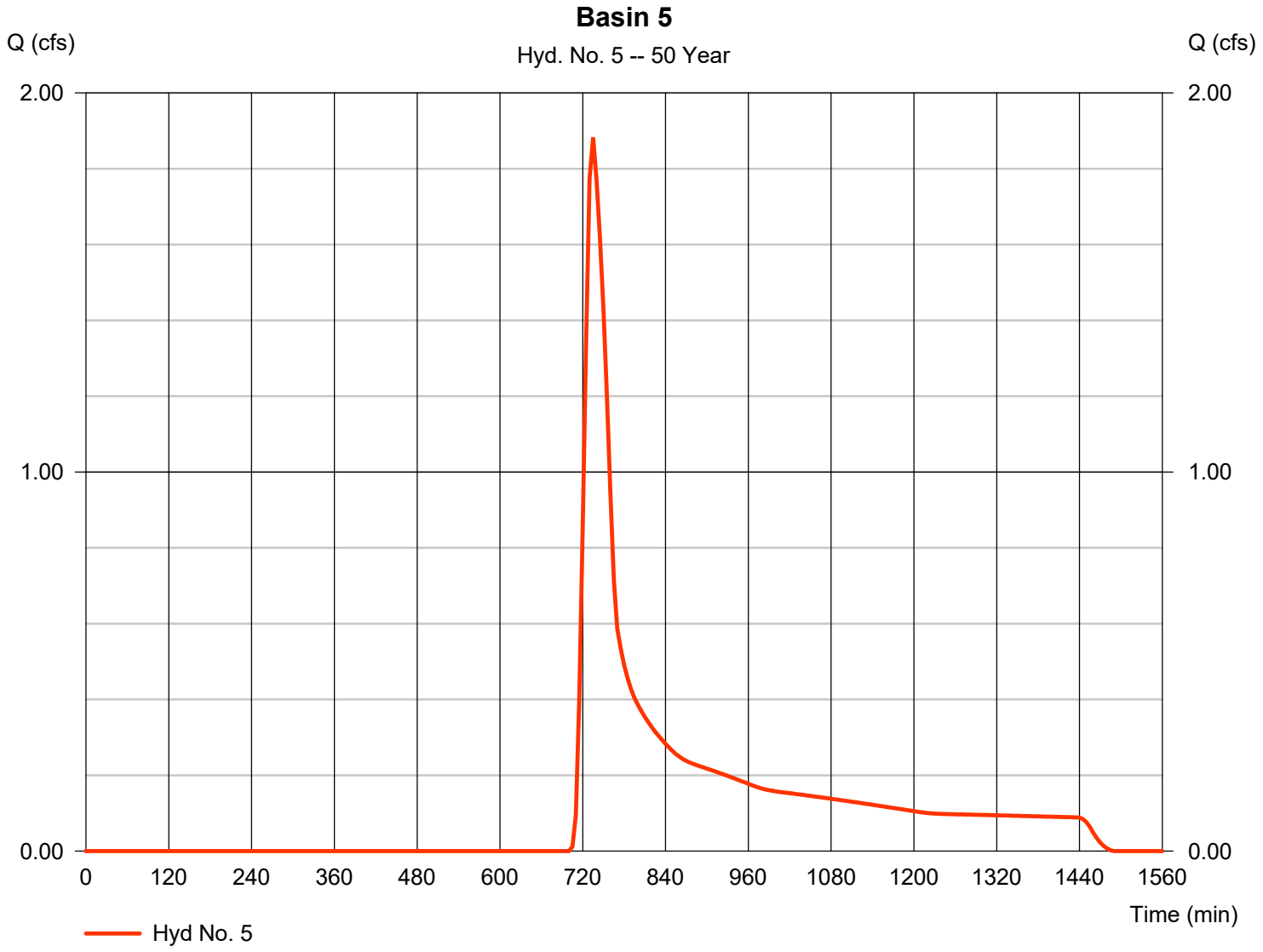


Hydrograph Report

Hyd. No. 5

Basin 5

Hydrograph type	= SCS Runoff	Peak discharge	= 1.882 cfs
Storm frequency	= 50 yrs	Time to peak	= 735 min
Time interval	= 5 min	Hyd. volume	= 10,990 cuft
Drainage area	= 9.013 ac	Curve number	= 77
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 30.12 min
Total precip.	= 1.76 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

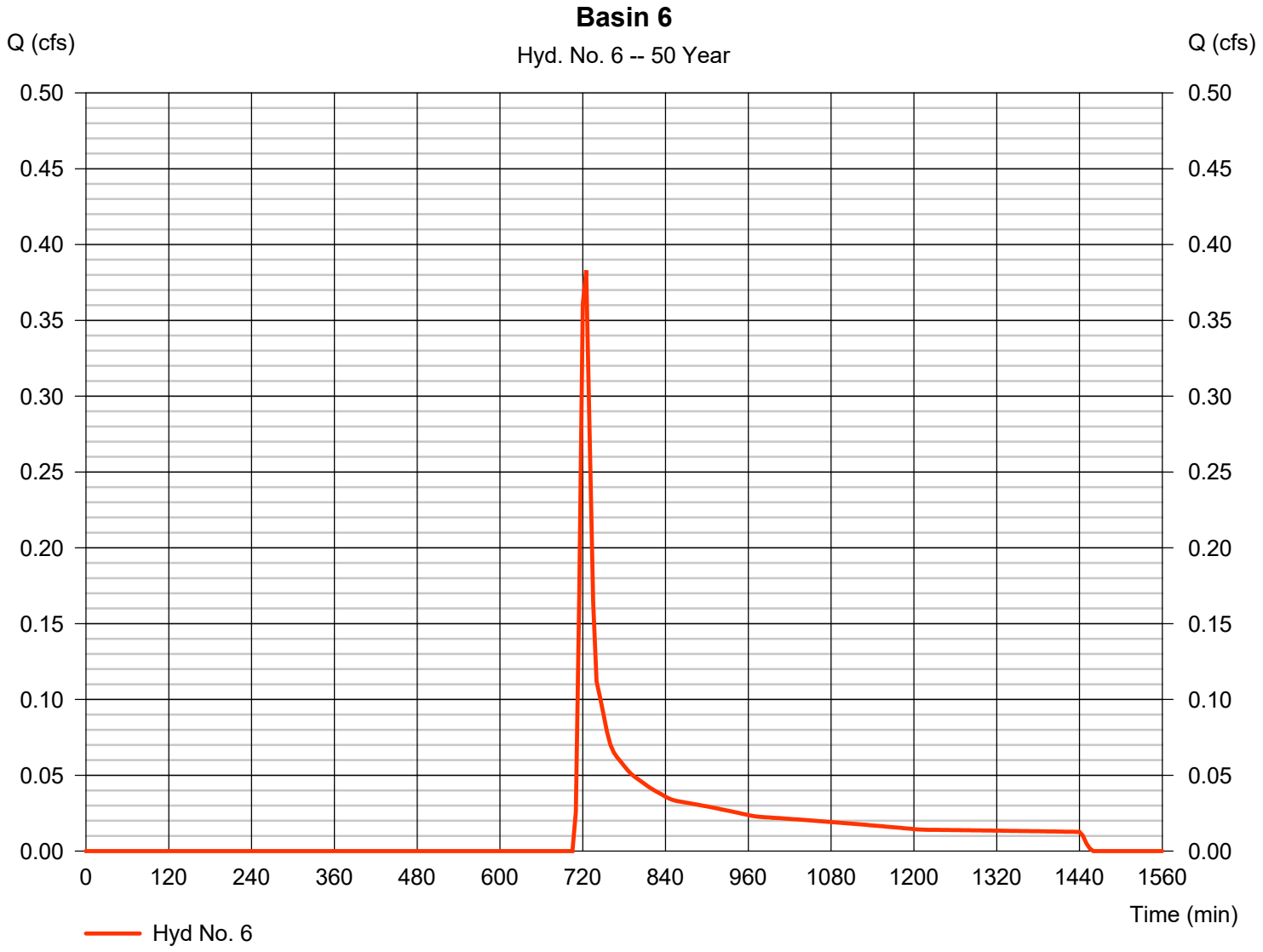


Hydrograph Report

Hyd. No. 6

Basin 6

Hydrograph type	= SCS Runoff	Peak discharge	= 0.383 cfs
Storm frequency	= 50 yrs	Time to peak	= 725 min
Time interval	= 5 min	Hyd. volume	= 1,461 cuft
Drainage area	= 1.590 ac	Curve number	= 75
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 15.10 min
Total precip.	= 1.76 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

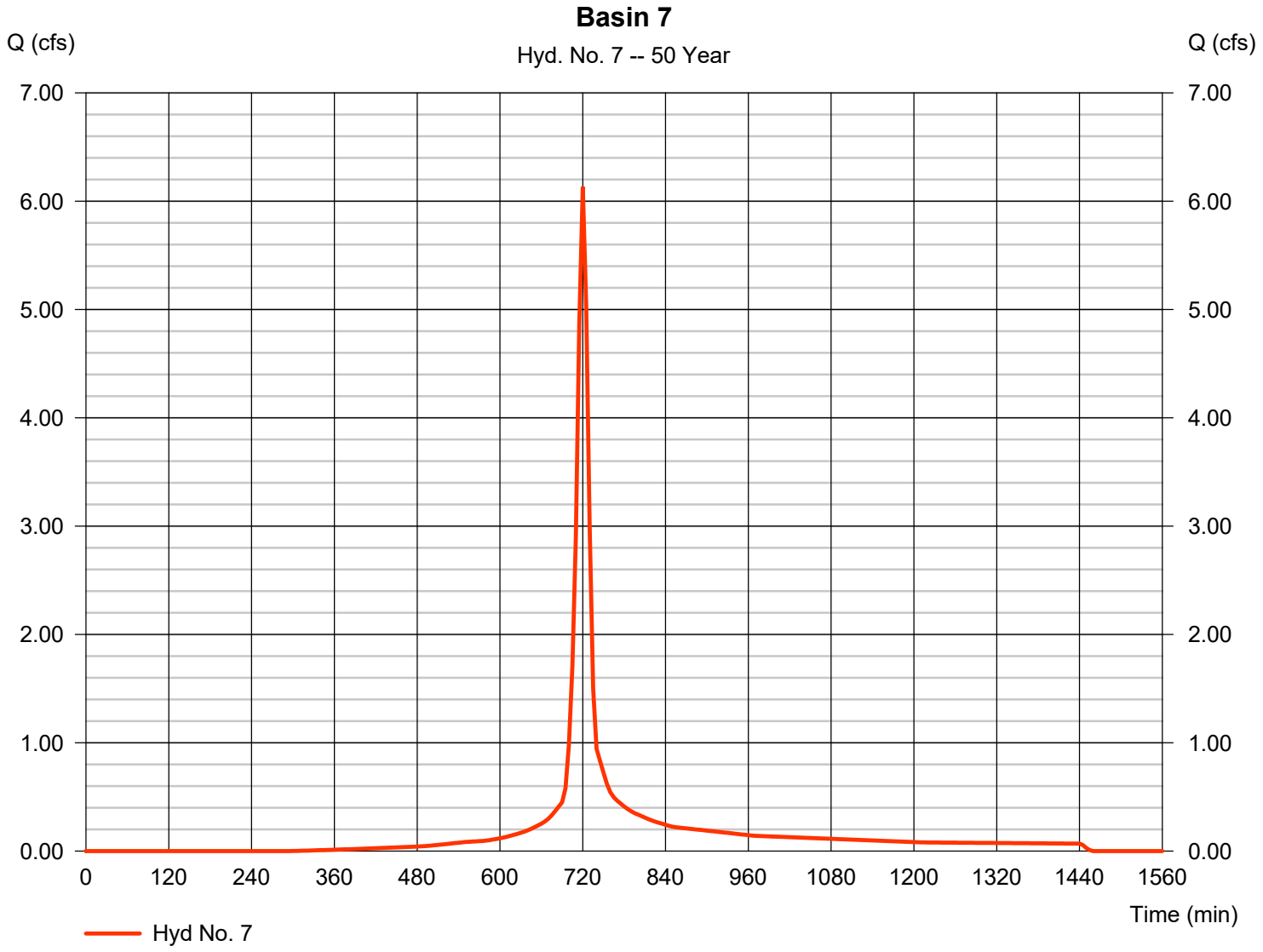


Hydrograph Report

Hyd. No. 7

Basin 7

Hydrograph type	= SCS Runoff	Peak discharge	= 6.133 cfs
Storm frequency	= 50 yrs	Time to peak	= 720 min
Time interval	= 5 min	Hyd. volume	= 16,898 cuft
Drainage area	= 3.955 ac	Curve number	= 95
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 1.76 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

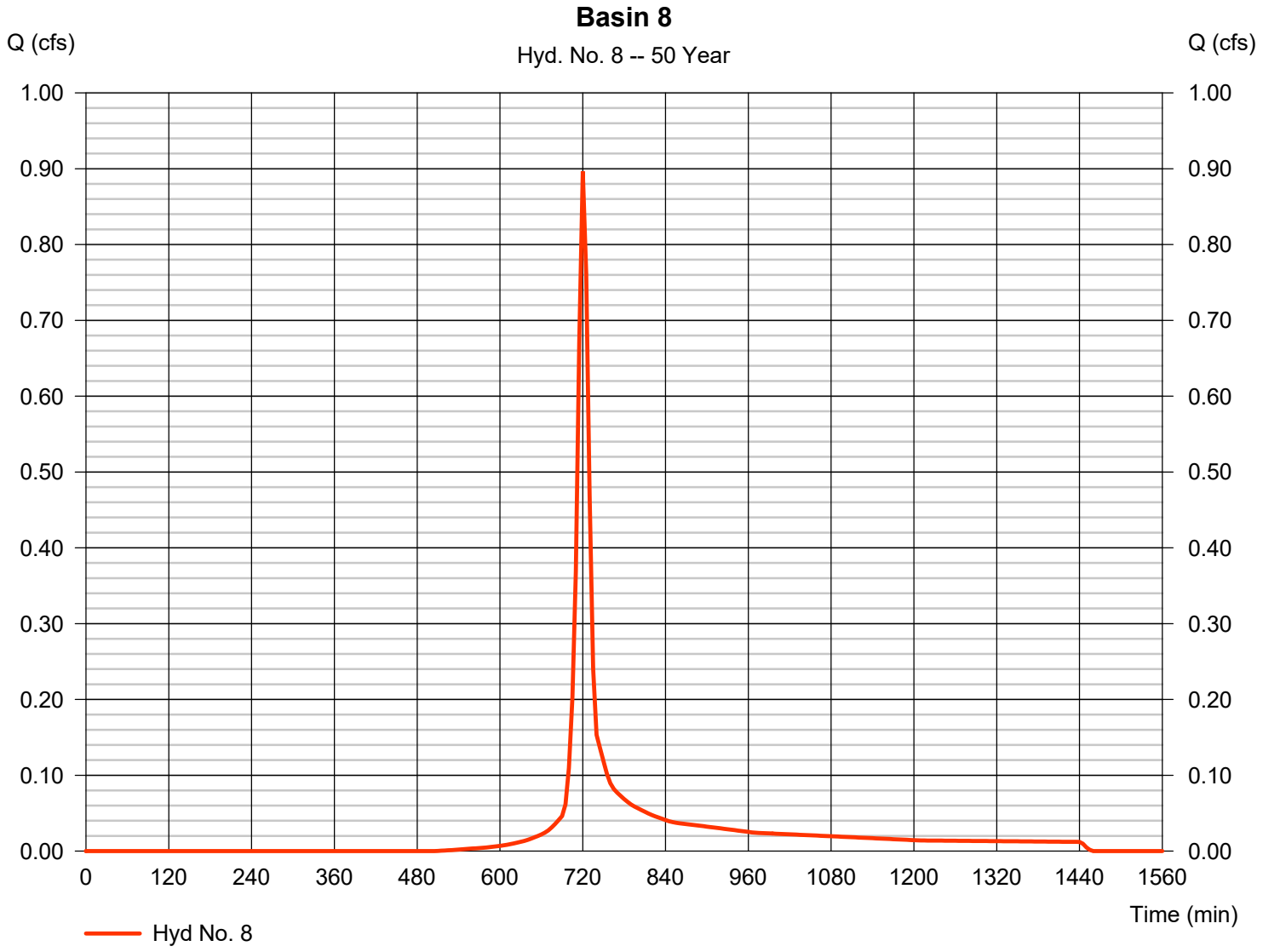


Hydrograph Report

Hyd. No. 8

Basin 8

Hydrograph type	= SCS Runoff	Peak discharge	= 0.896 cfs
Storm frequency	= 50 yrs	Time to peak	= 720 min
Time interval	= 5 min	Hyd. volume	= 2,422 cuft
Drainage area	= 0.797 ac	Curve number	= 90
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 1.76 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

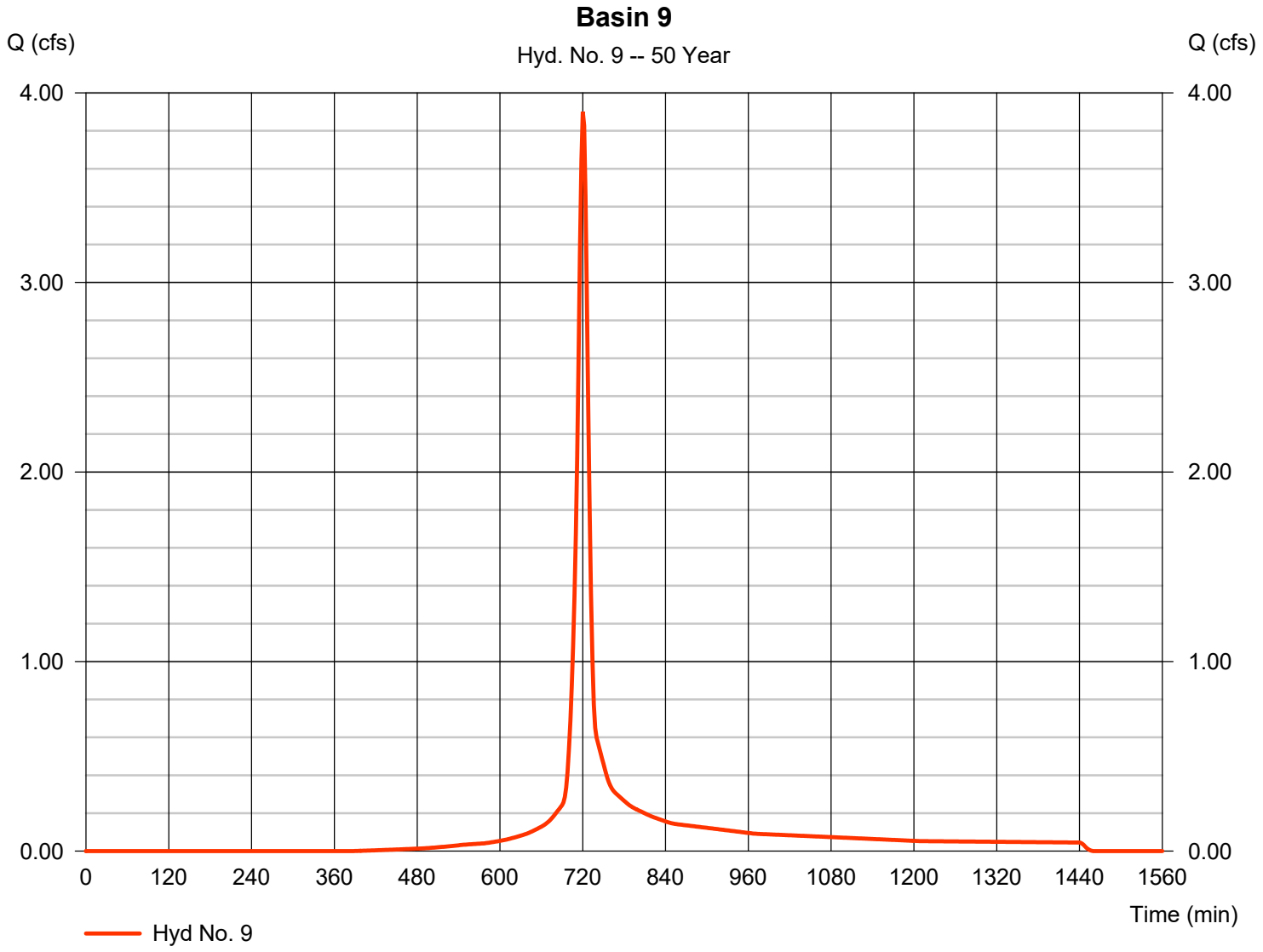


Hydrograph Report

Hyd. No. 9

Basin 9

Hydrograph type	= SCS Runoff	Peak discharge	= 3.900 cfs
Storm frequency	= 50 yrs	Time to peak	= 720 min
Time interval	= 2 min	Hyd. volume	= 10,168 cuft
Drainage area	= 2.477 ac	Curve number	= 93
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 1.76 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

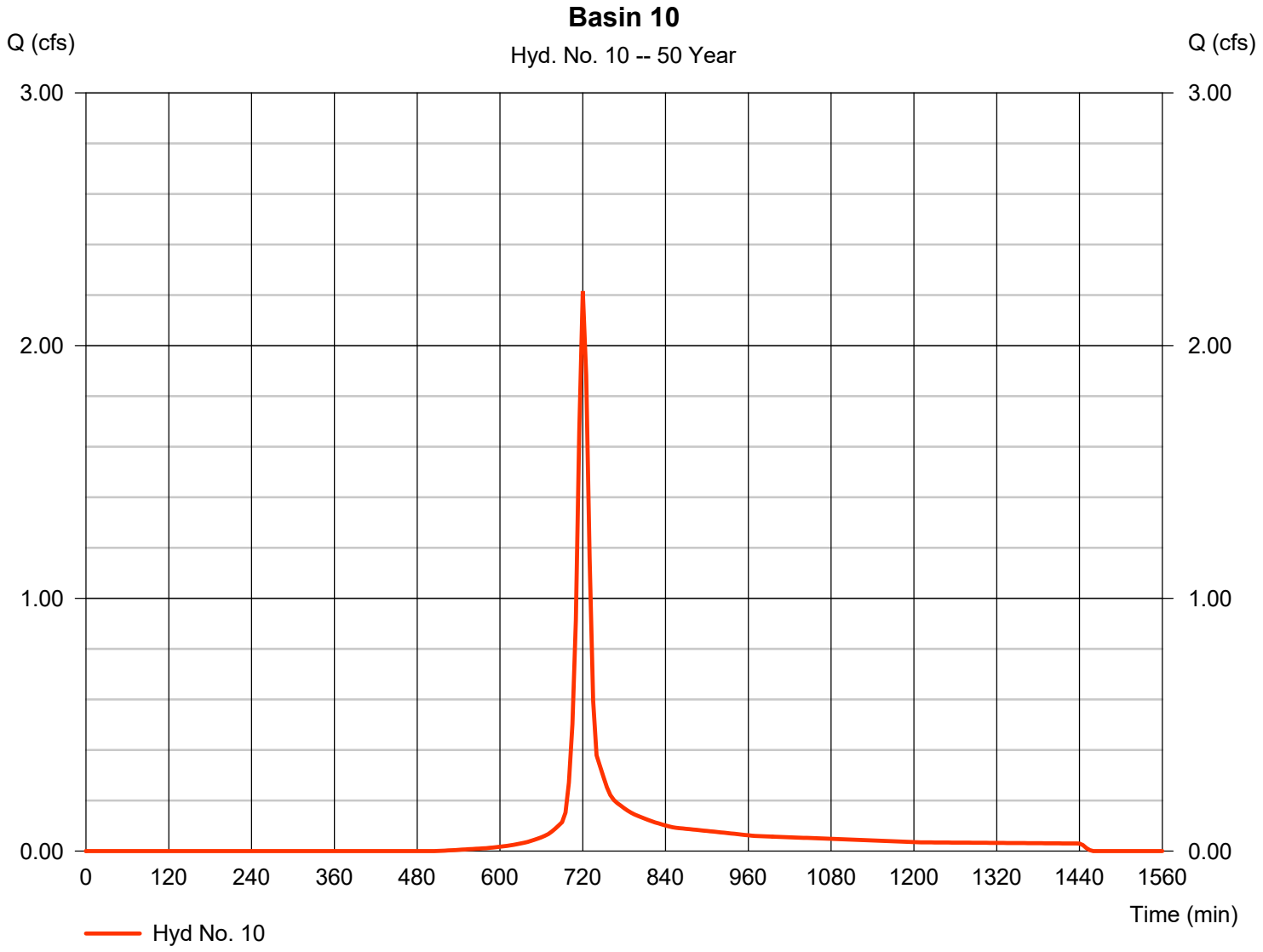


Hydrograph Report

Hyd. No. 10

Basin 10

Hydrograph type	=	SCS Runoff	Peak discharge	=	2.216 cfs
Storm frequency	=	50 yrs	Time to peak	=	720 min
Time interval	=	5 min	Hyd. volume	=	5,987 cuft
Drainage area	=	1.970 ac	Curve number	=	90
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	10.00 min
Total precip.	=	1.76 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

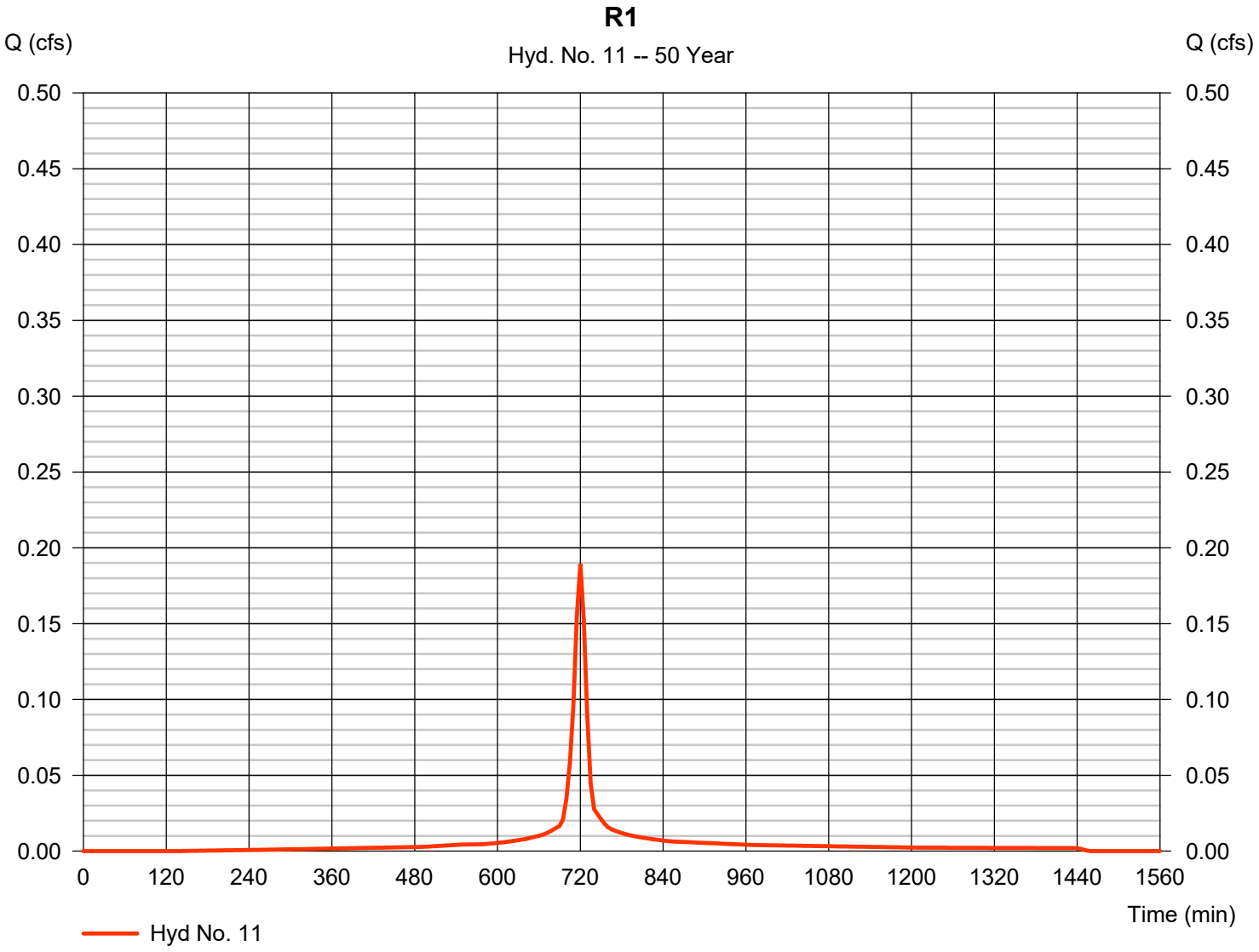


Hydrograph Report

Hyd. No. 11

R1

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.189 cfs
Storm frequency	=	50 yrs	Time to peak	=	720 min
Time interval	=	5 min	Hyd. volume	=	555 cuft
Drainage area	=	0.106 ac	Curve number	=	98
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	10.00 min
Total precip.	=	1.76 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

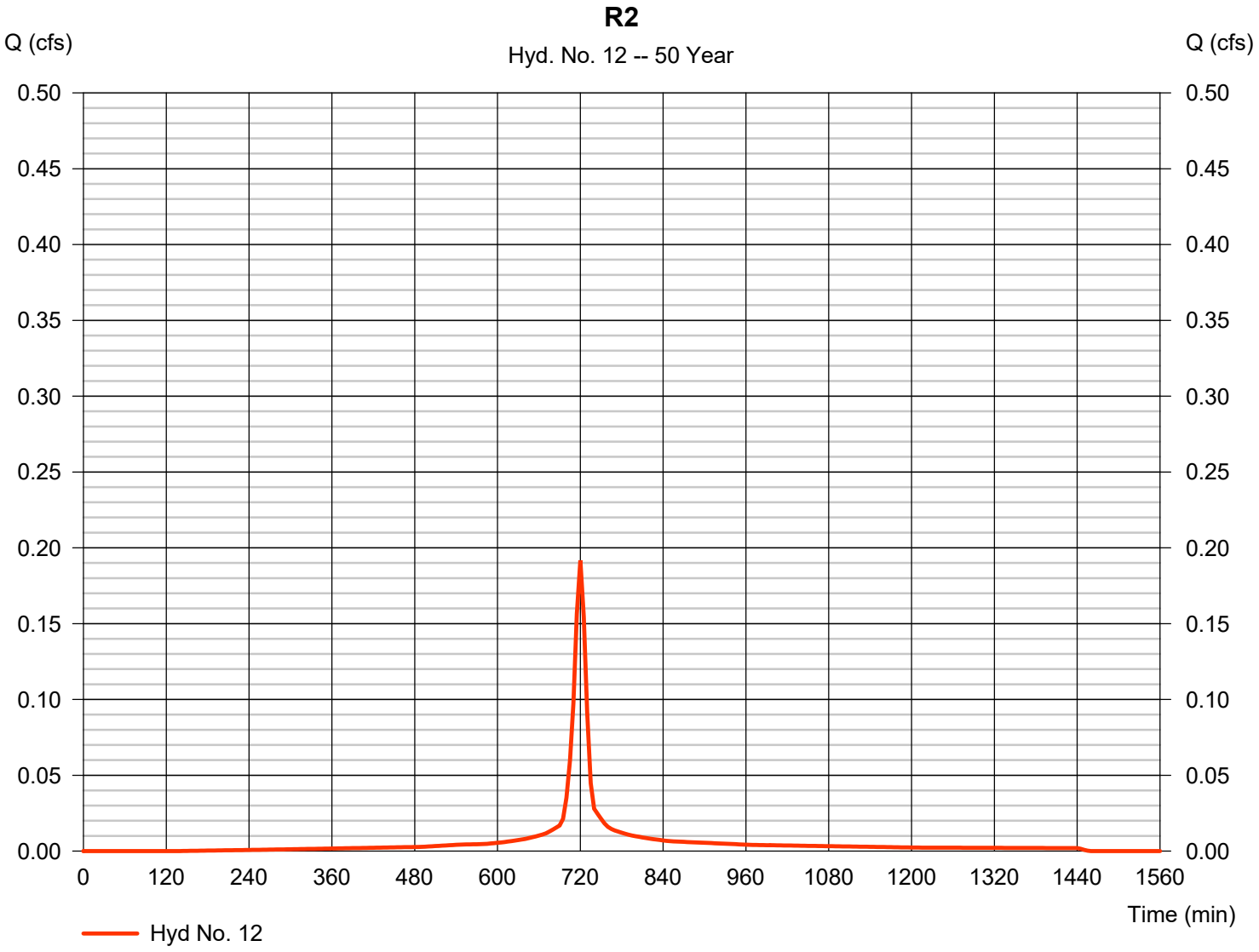


Hydrograph Report

Hyd. No. 12

R2

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.192 cfs
Storm frequency	=	50 yrs	Time to peak	=	720 min
Time interval	=	5 min	Hyd. volume	=	562 cuft
Drainage area	=	0.107 ac	Curve number	=	98
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	10.00 min
Total precip.	=	1.76 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

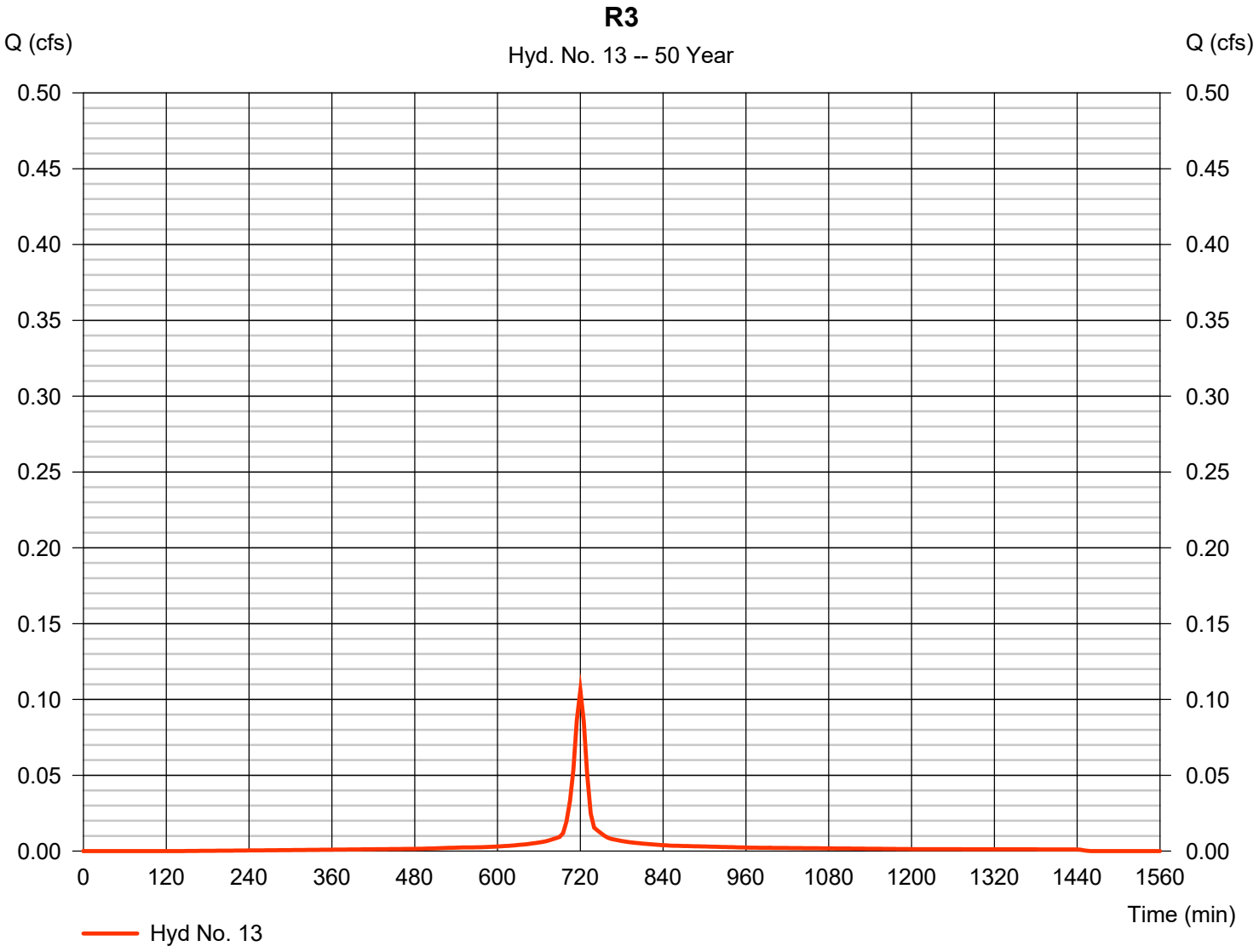


Hydrograph Report

Hyd. No. 13

R3

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.106 cfs
Storm frequency	=	50 yrs	Time to peak	=	720 min
Time interval	=	5 min	Hyd. volume	=	310 cuft
Drainage area	=	0.059 ac	Curve number	=	98
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	10.00 min
Total precip.	=	1.76 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

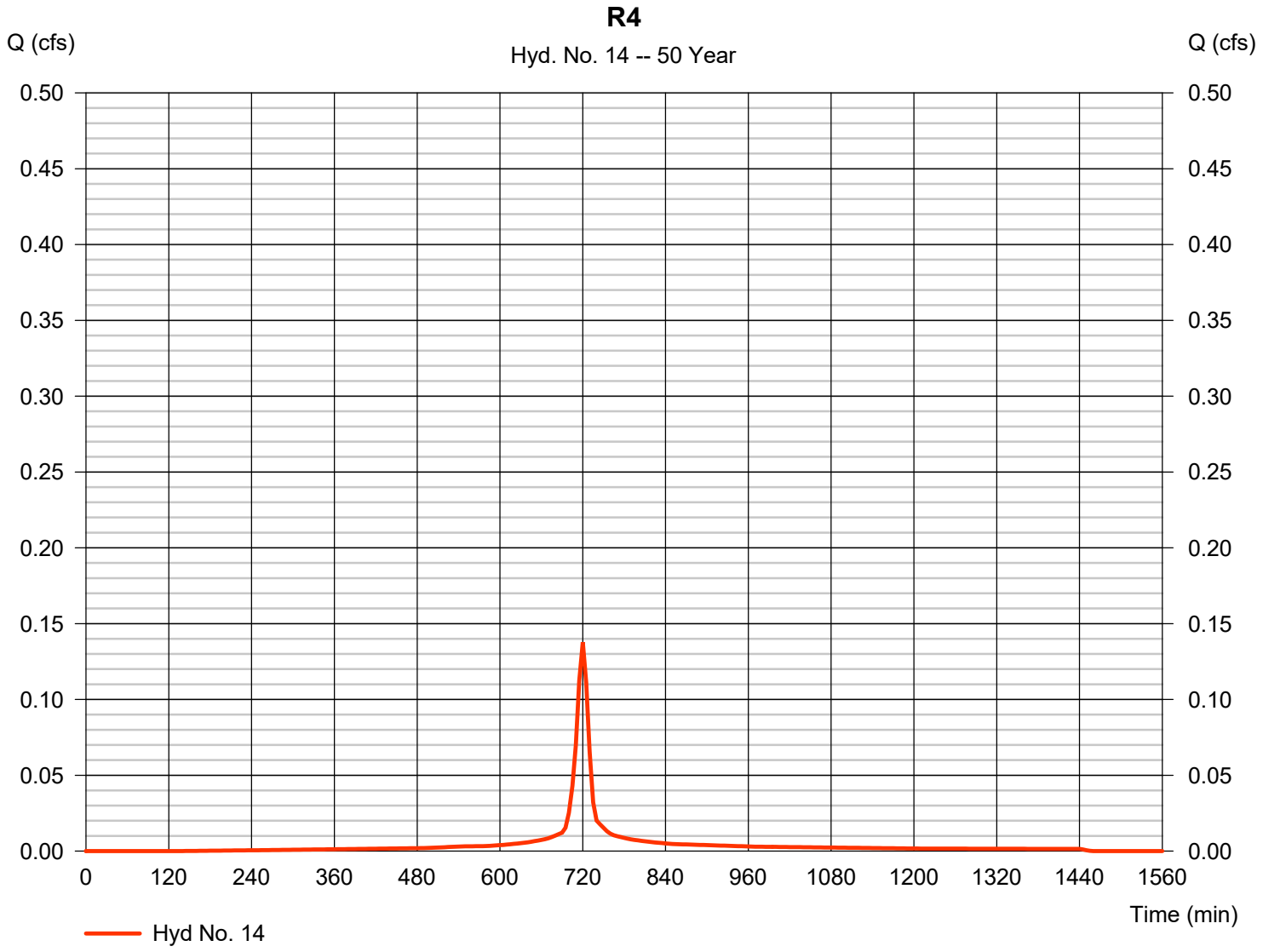


Hydrograph Report

Hyd. No. 14

R4

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.138 cfs
Storm frequency	=	50 yrs	Time to peak	=	720 min
Time interval	=	5 min	Hyd. volume	=	404 cuft
Drainage area	=	0.077 ac	Curve number	=	98
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	10.00 min
Total precip.	=	1.76 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484



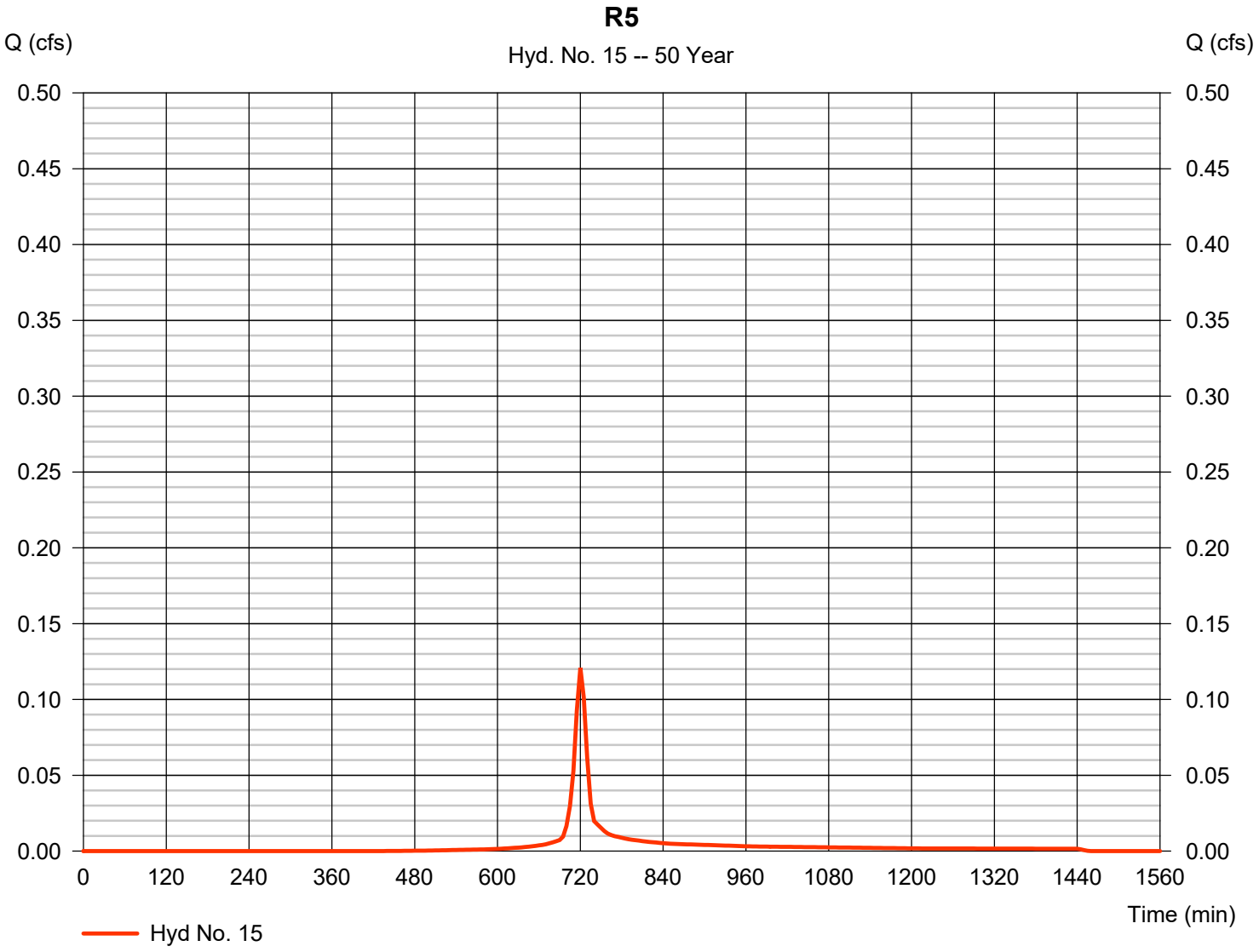
Hydrograph Report

Hyd. No. 15

R5

Hydrograph type	= SCS Runoff	Peak discharge	= 0.121 cfs
Storm frequency	= 50 yrs	Time to peak	= 720 min
Time interval	= 5 min	Hyd. volume	= 327 cuft
Drainage area	= 0.094 ac	Curve number	= 92*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 1.76 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(0.060 x 98) + (0.040 x 82)] / 0.094



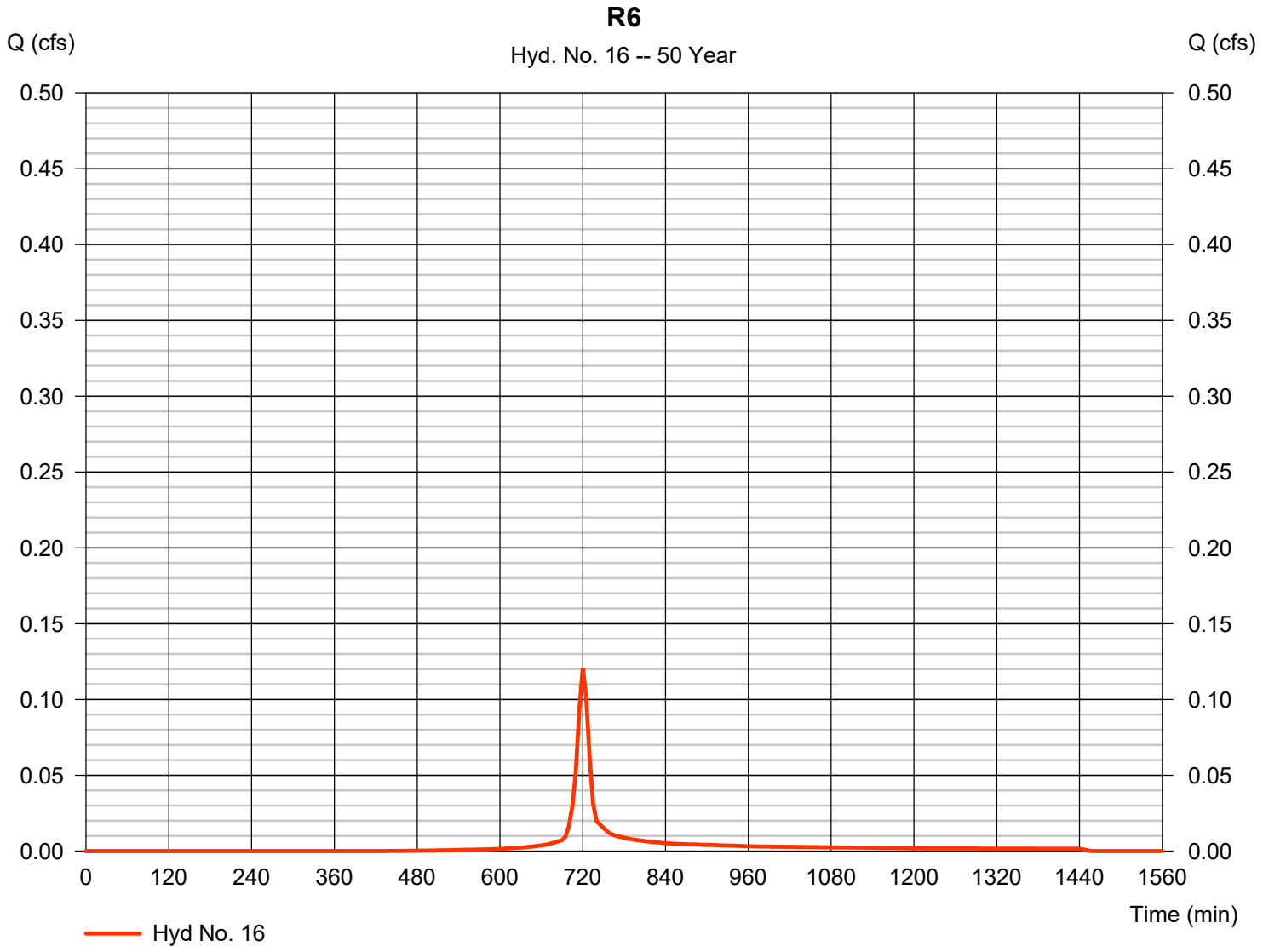
Hydrograph Report

Hyd. No. 16

R6

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.121 cfs
Storm frequency	=	50 yrs	Time to peak	=	720 min
Time interval	=	5 min	Hyd. volume	=	327 cuft
Drainage area	=	0.094 ac	Curve number	=	92*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	10.00 min
Total precip.	=	1.76 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = [(0.058 x 98) + (0.036 x 82)] / 0.094



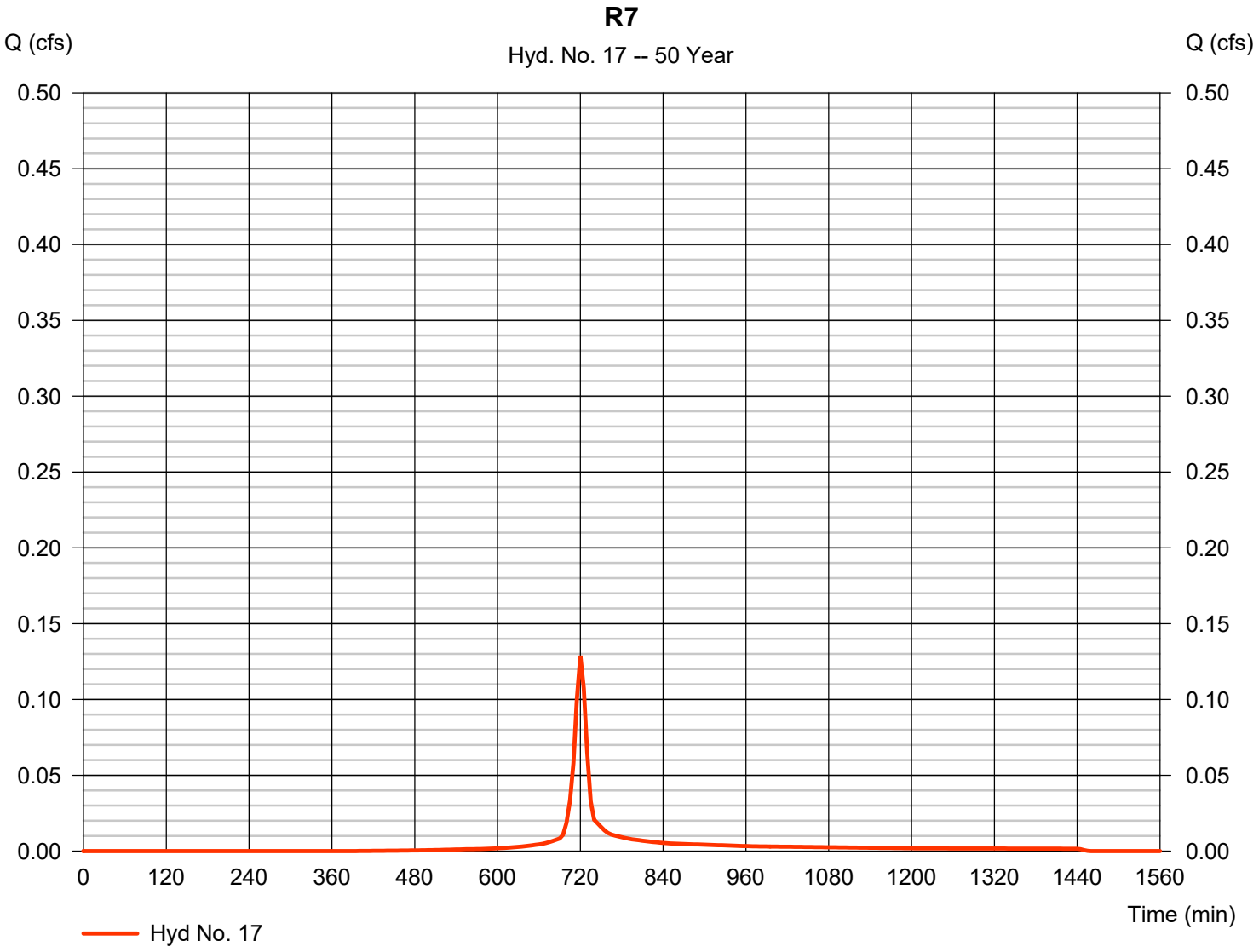
Hydrograph Report

Hyd. No. 17

R7

Hydrograph type	= SCS Runoff	Peak discharge	= 0.129 cfs
Storm frequency	= 50 yrs	Time to peak	= 720 min
Time interval	= 5 min	Hyd. volume	= 350 cuft
Drainage area	= 0.094 ac	Curve number	= 93*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 1.76 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(0.062 x 98) + (0.032 x 82)] / 0.094



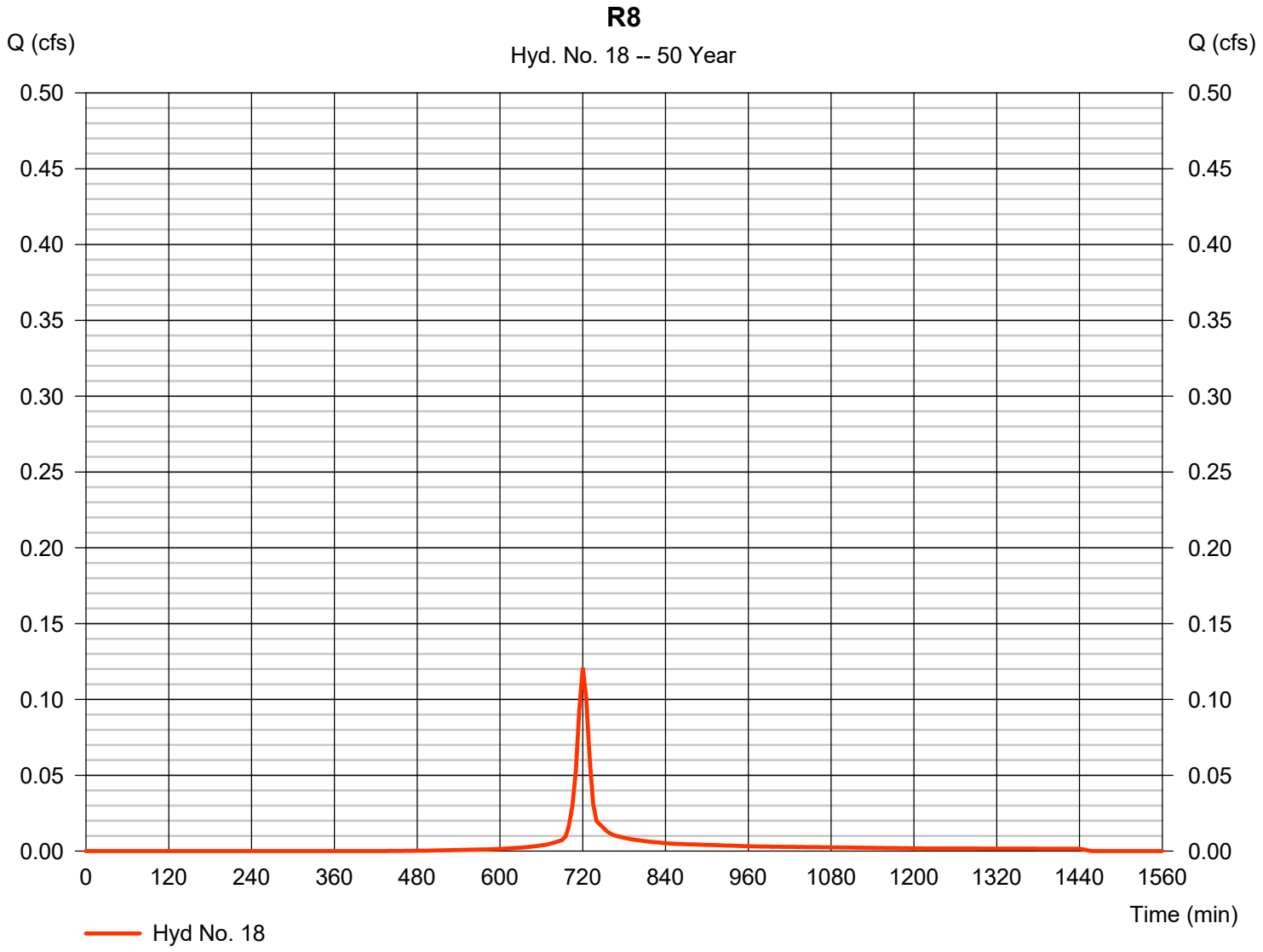
Hydrograph Report

Hyd. No. 18

R8

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.121 cfs
Storm frequency	=	50 yrs	Time to peak	=	720 min
Time interval	=	5 min	Hyd. volume	=	327 cuft
Drainage area	=	0.094 ac	Curve number	=	92*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	10.00 min
Total precip.	=	1.76 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = [(0.060 x 98) + (0.040 x 82)] / 0.094



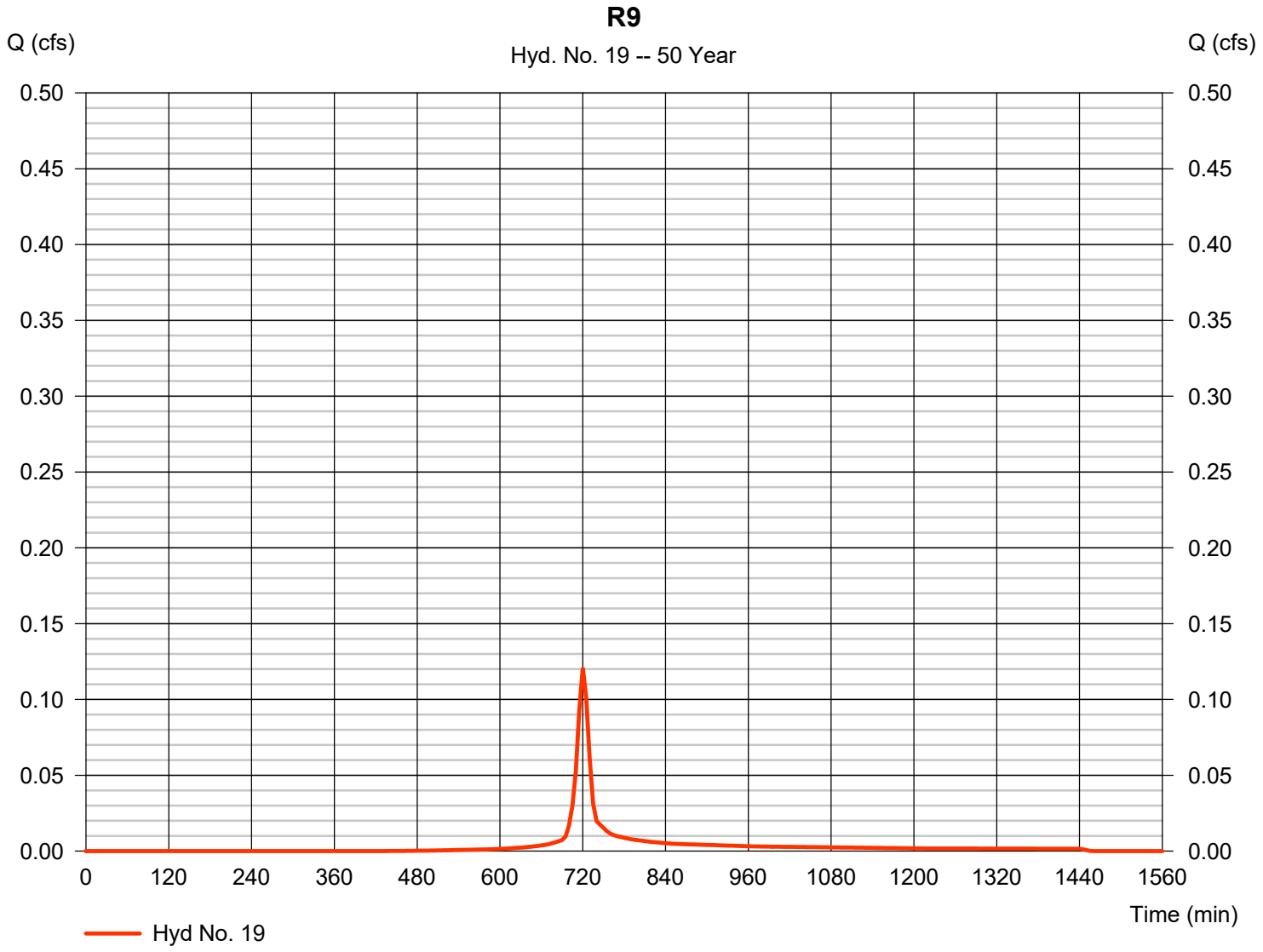
Hydrograph Report

Hyd. No. 19

R9

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.121 cfs
Storm frequency	=	50 yrs	Time to peak	=	720 min
Time interval	=	5 min	Hyd. volume	=	327 cuft
Drainage area	=	0.094 ac	Curve number	=	92*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	10.00 min
Total precip.	=	1.76 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = [(0.058 x 98) + (0.036 x 82)] / 0.094

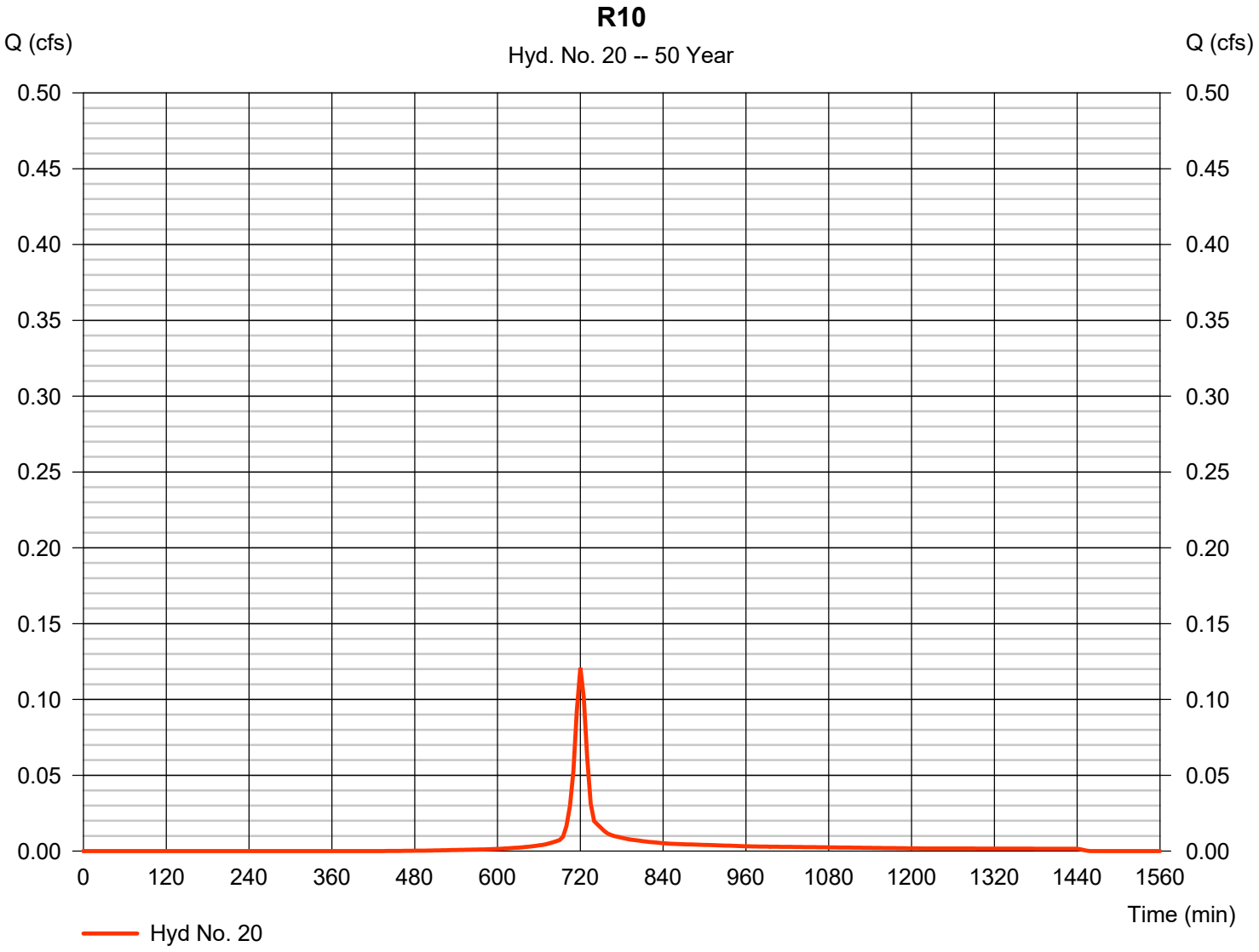


Hydrograph Report

Hyd. No. 20

R10

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.121 cfs
Storm frequency	=	50 yrs	Time to peak	=	720 min
Time interval	=	5 min	Hyd. volume	=	327 cuft
Drainage area	=	0.094 ac	Curve number	=	92
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	10.00 min
Total precip.	=	1.76 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

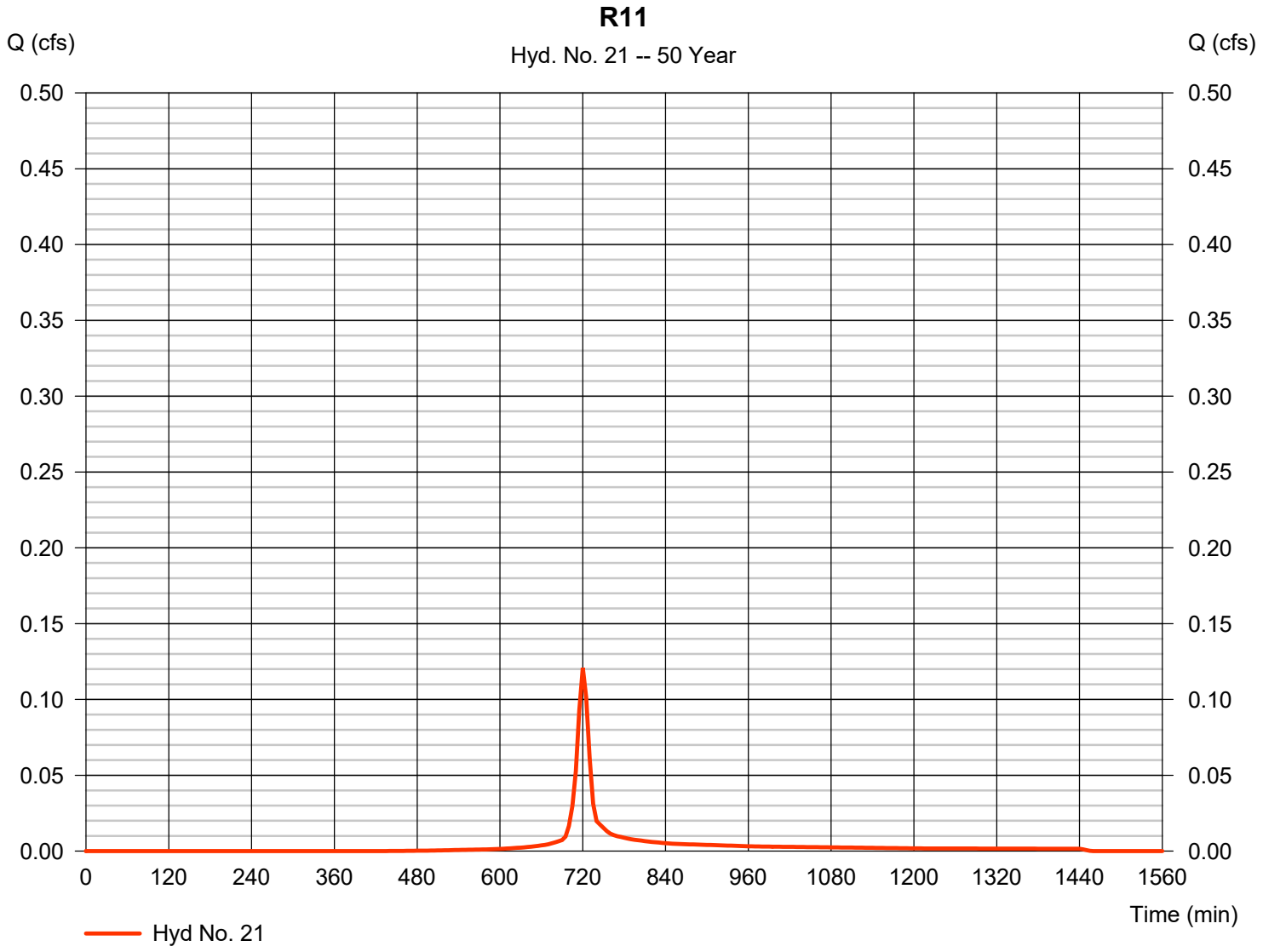


Hydrograph Report

Hyd. No. 21

R11

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.121 cfs
Storm frequency	=	50 yrs	Time to peak	=	720 min
Time interval	=	5 min	Hyd. volume	=	327 cuft
Drainage area	=	0.094 ac	Curve number	=	92
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	10.00 min
Total precip.	=	1.76 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

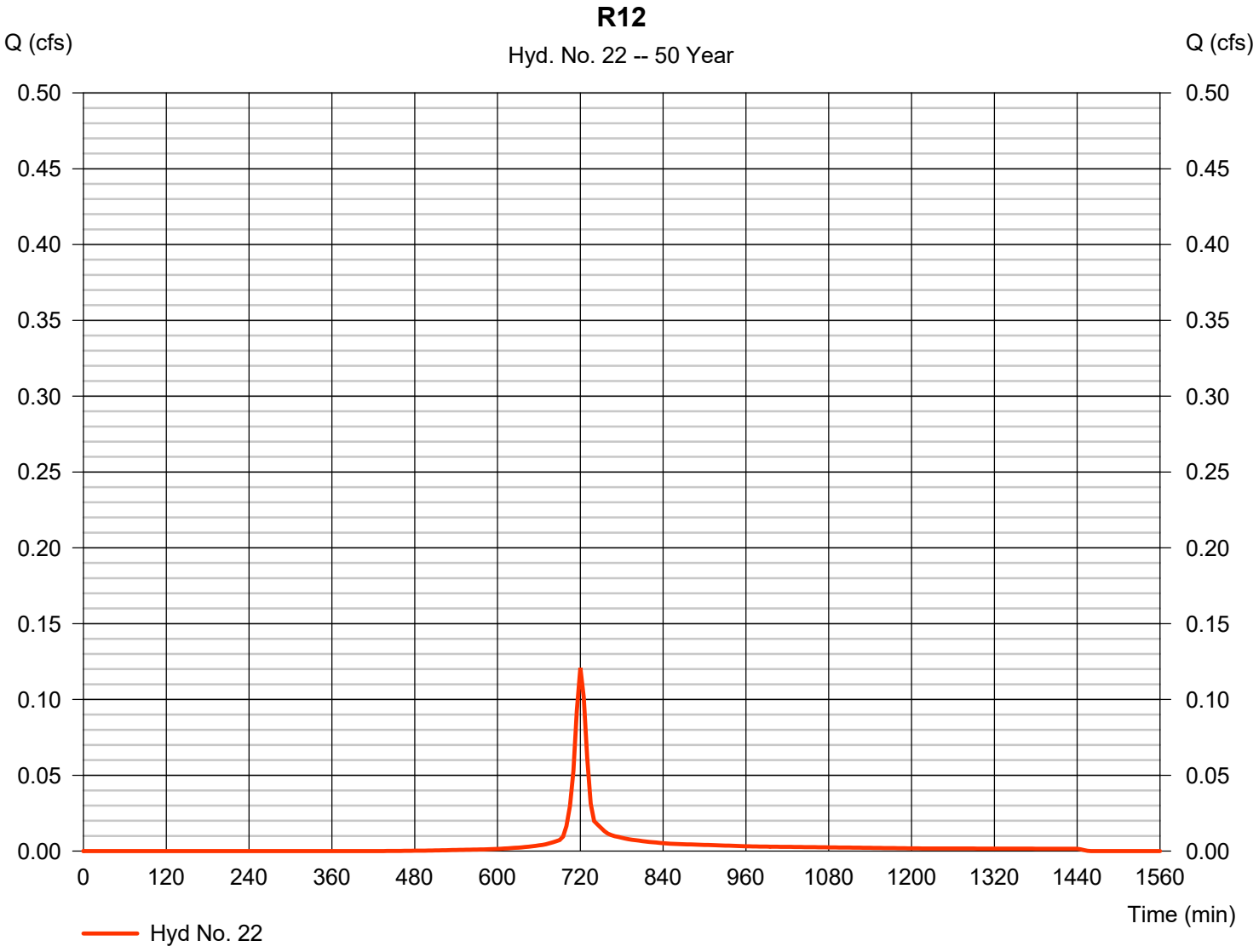


Hydrograph Report

Hyd. No. 22

R12

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.121 cfs
Storm frequency	=	50 yrs	Time to peak	=	720 min
Time interval	=	5 min	Hyd. volume	=	327 cuft
Drainage area	=	0.094 ac	Curve number	=	92
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	10.00 min
Total precip.	=	1.76 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

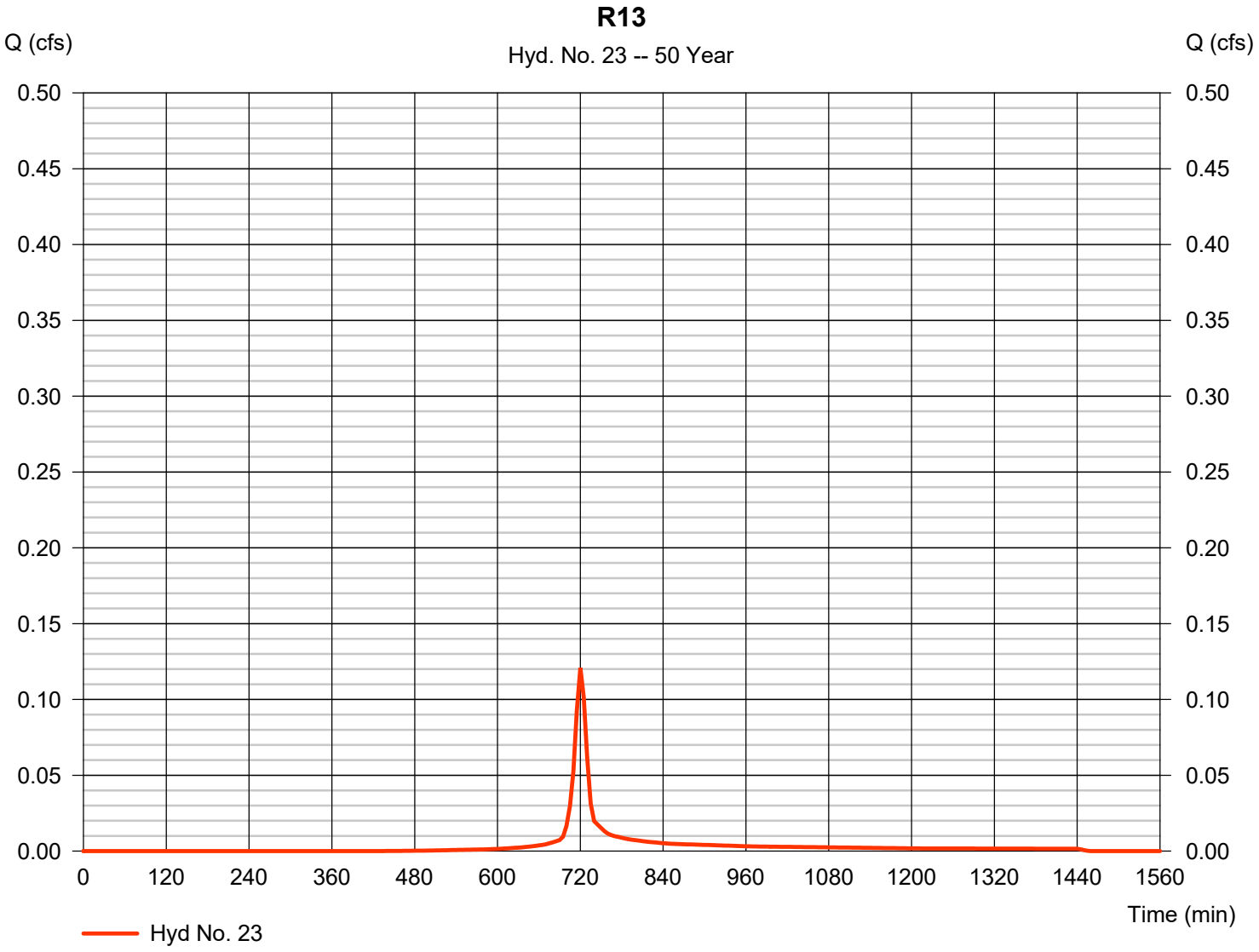


Hydrograph Report

Hyd. No. 23

R13

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.121 cfs
Storm frequency	=	50 yrs	Time to peak	=	720 min
Time interval	=	5 min	Hyd. volume	=	327 cuft
Drainage area	=	0.094 ac	Curve number	=	92
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	10.00 min
Total precip.	=	1.76 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

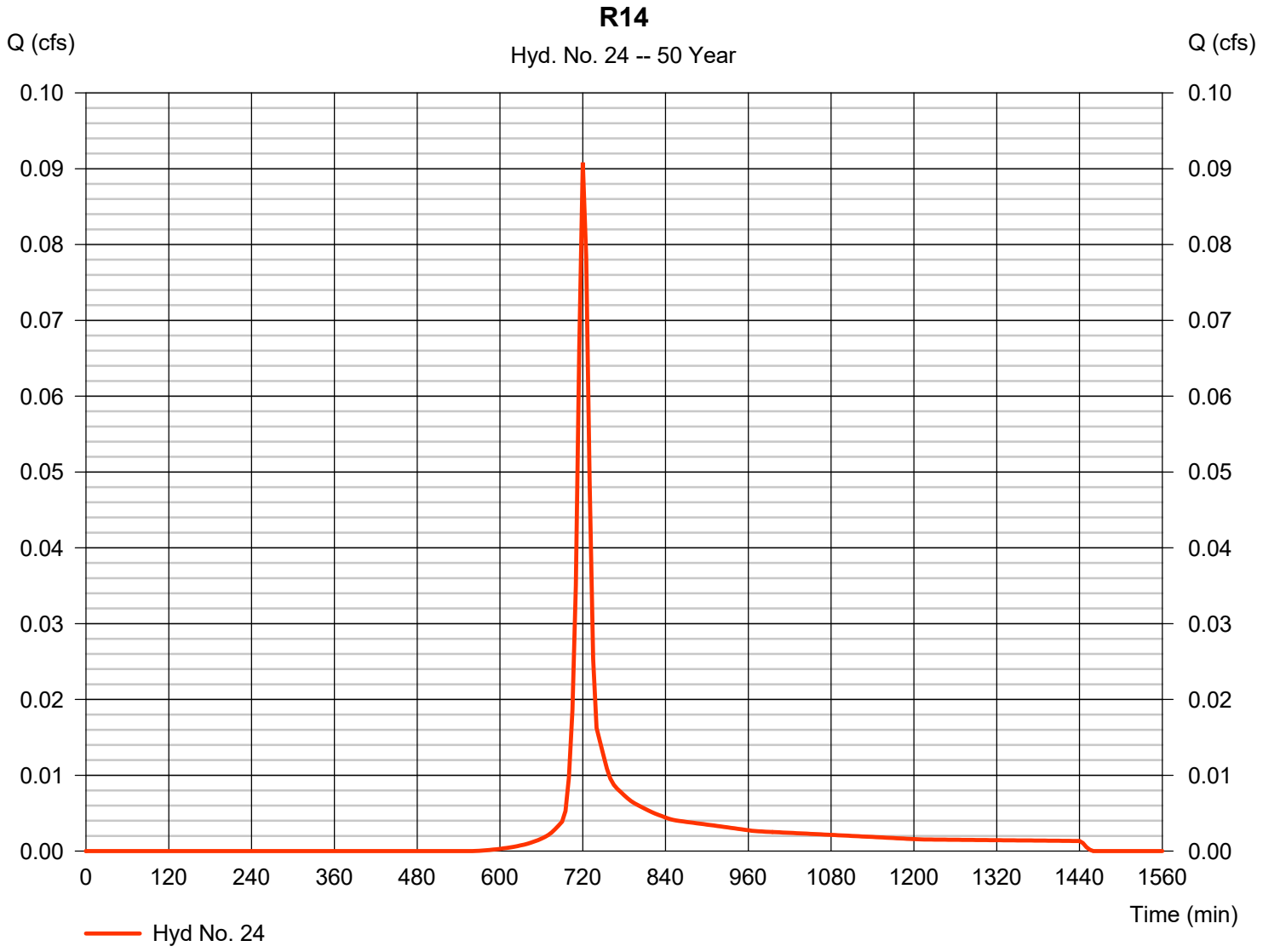


Hydrograph Report

Hyd. No. 24

R14

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.091 cfs
Storm frequency	=	50 yrs	Time to peak	=	720 min
Time interval	=	5 min	Hyd. volume	=	247 cuft
Drainage area	=	0.094 ac	Curve number	=	88
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	10.00 min
Total precip.	=	1.76 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

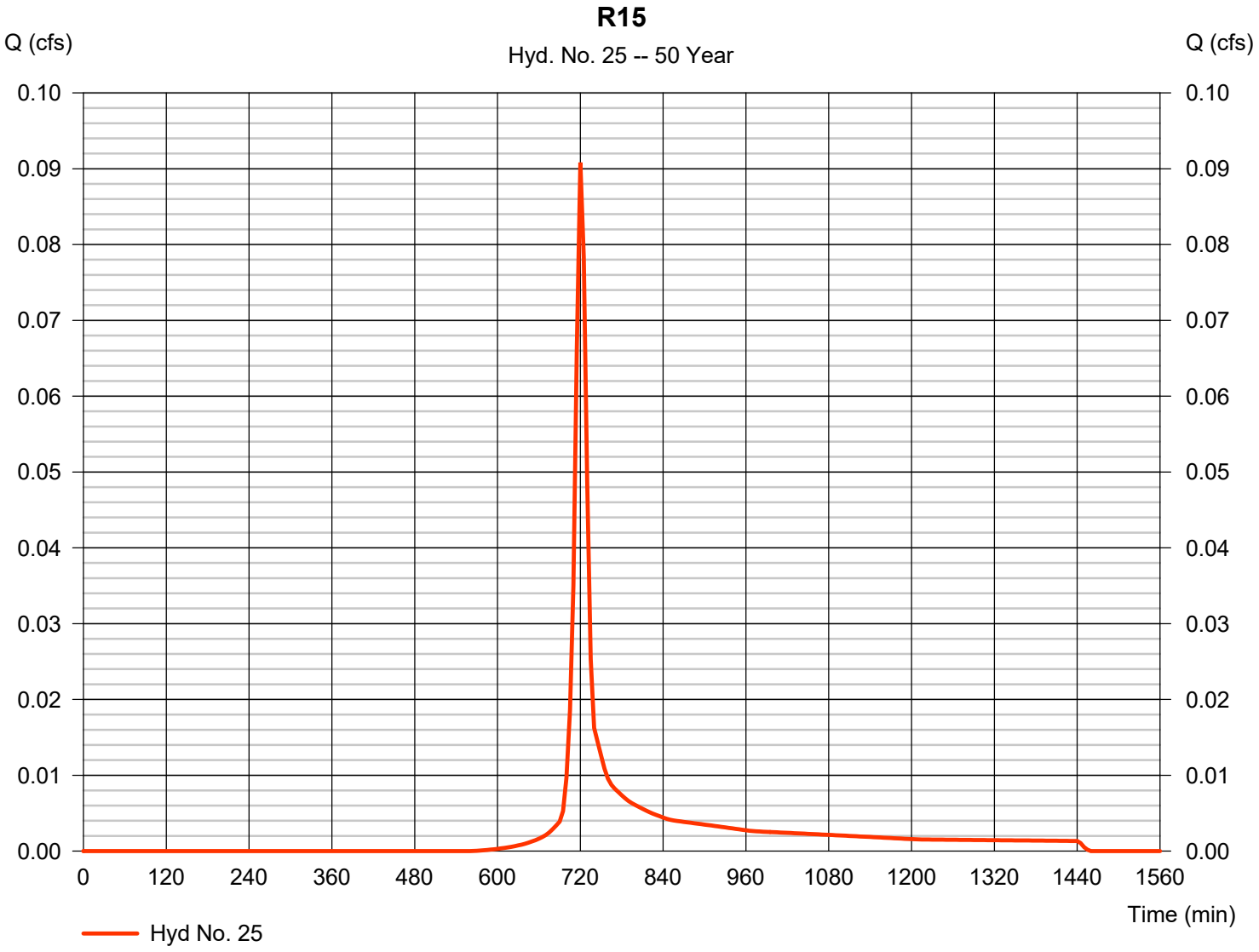


Hydrograph Report

Hyd. No. 25

R15

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.091 cfs
Storm frequency	=	50 yrs	Time to peak	=	720 min
Time interval	=	5 min	Hyd. volume	=	247 cuft
Drainage area	=	0.094 ac	Curve number	=	88
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	10.00 min
Total precip.	=	1.76 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

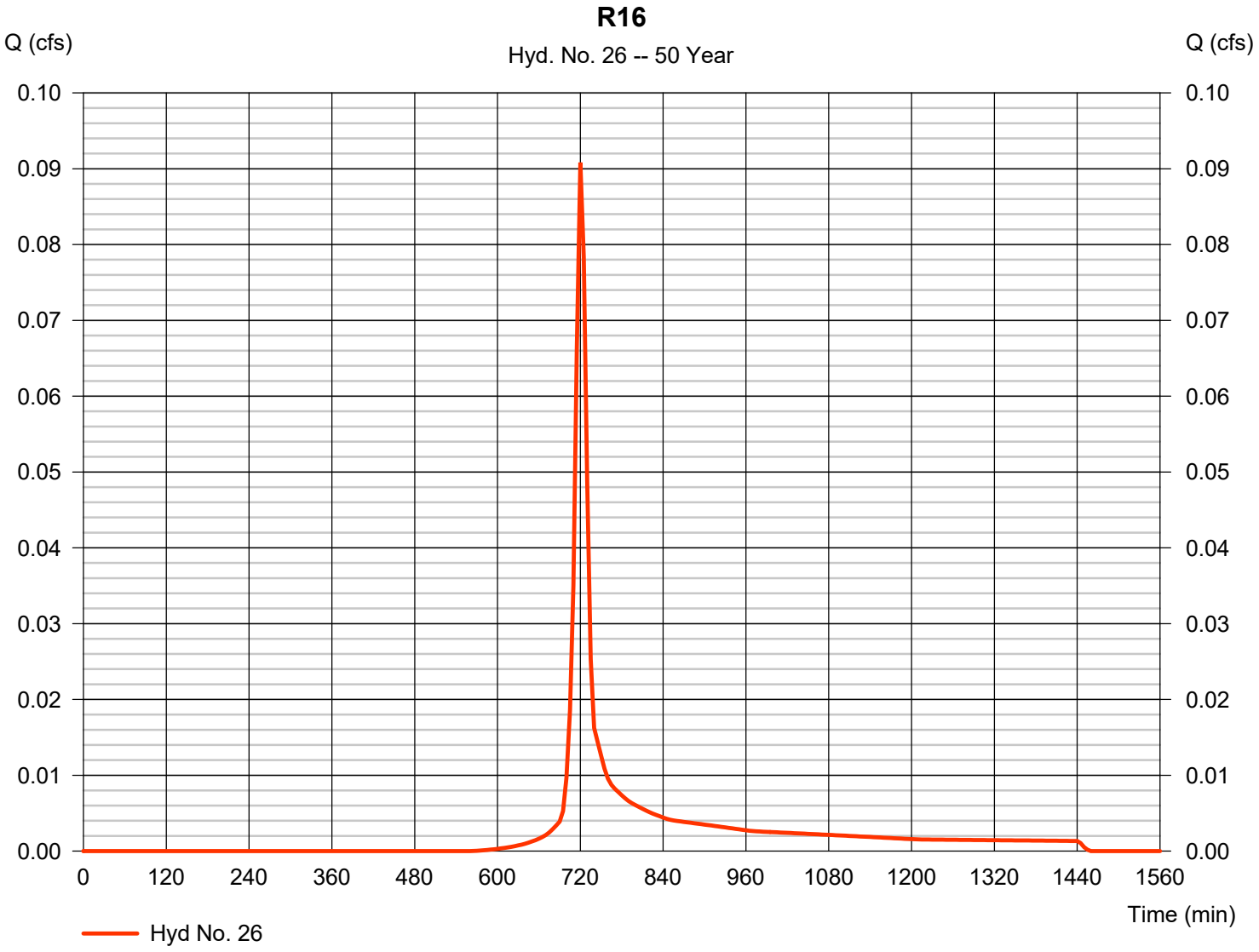


Hydrograph Report

Hyd. No. 26

R16

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.091 cfs
Storm frequency	=	50 yrs	Time to peak	=	720 min
Time interval	=	5 min	Hyd. volume	=	247 cuft
Drainage area	=	0.094 ac	Curve number	=	88
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	10.00 min
Total precip.	=	1.76 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

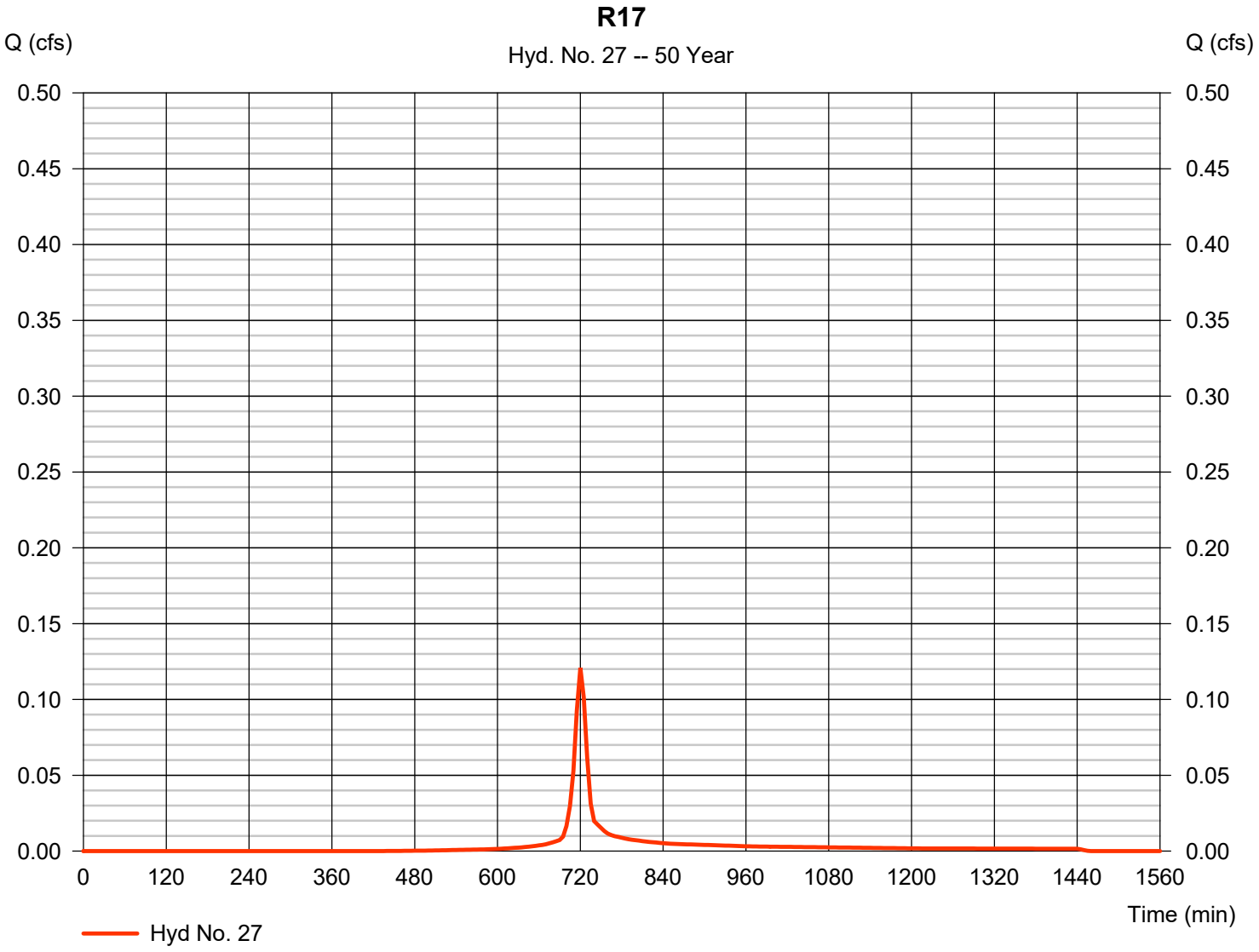


Hydrograph Report

Hyd. No. 27

R17

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.121 cfs
Storm frequency	=	50 yrs	Time to peak	=	720 min
Time interval	=	5 min	Hyd. volume	=	327 cuft
Drainage area	=	0.094 ac	Curve number	=	92
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	10.00 min
Total precip.	=	1.76 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

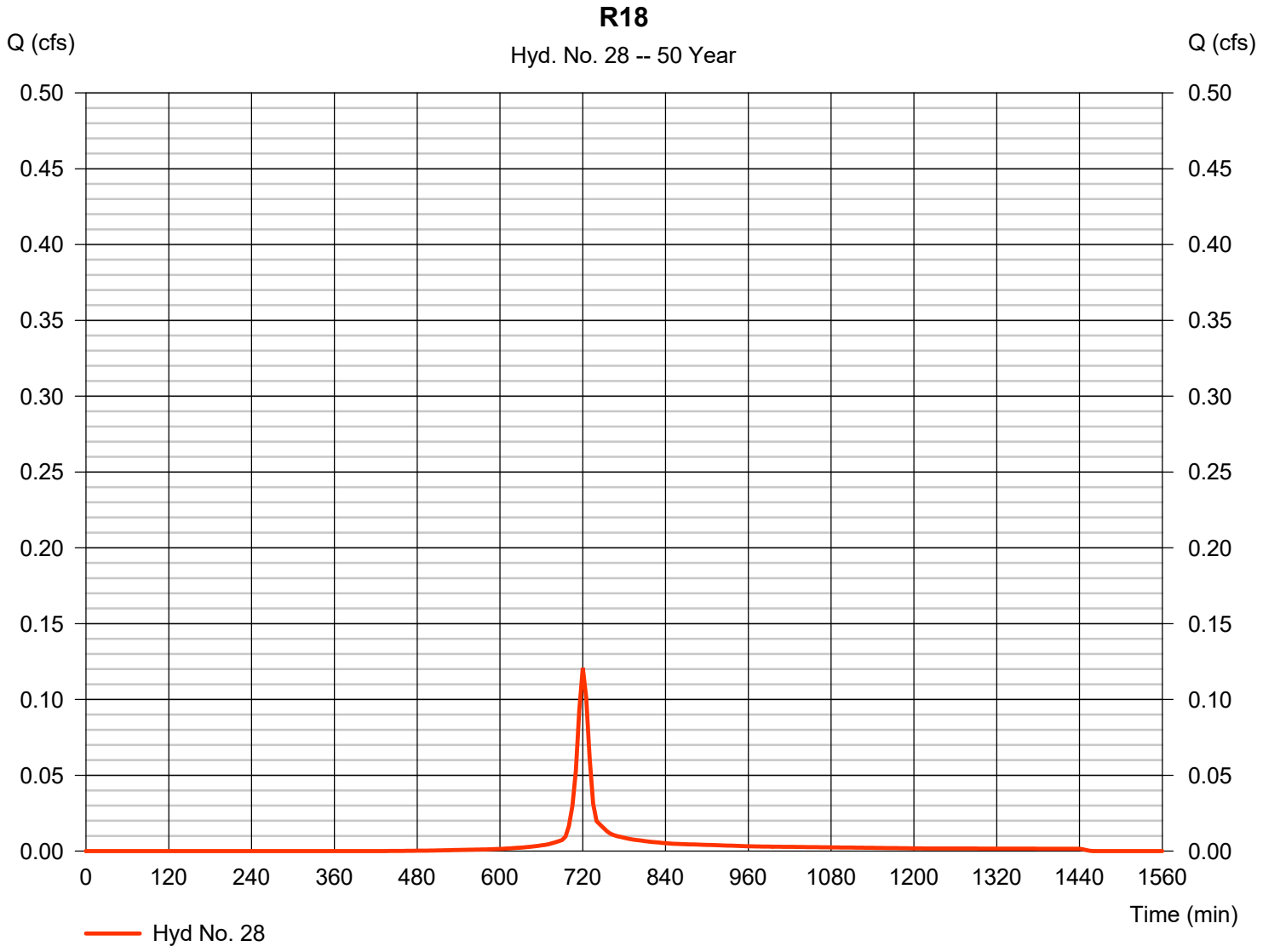


Hydrograph Report

Hyd. No. 28

R18

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.121 cfs
Storm frequency	=	50 yrs	Time to peak	=	720 min
Time interval	=	5 min	Hyd. volume	=	327 cuft
Drainage area	=	0.094 ac	Curve number	=	92
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	10.00 min
Total precip.	=	1.76 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

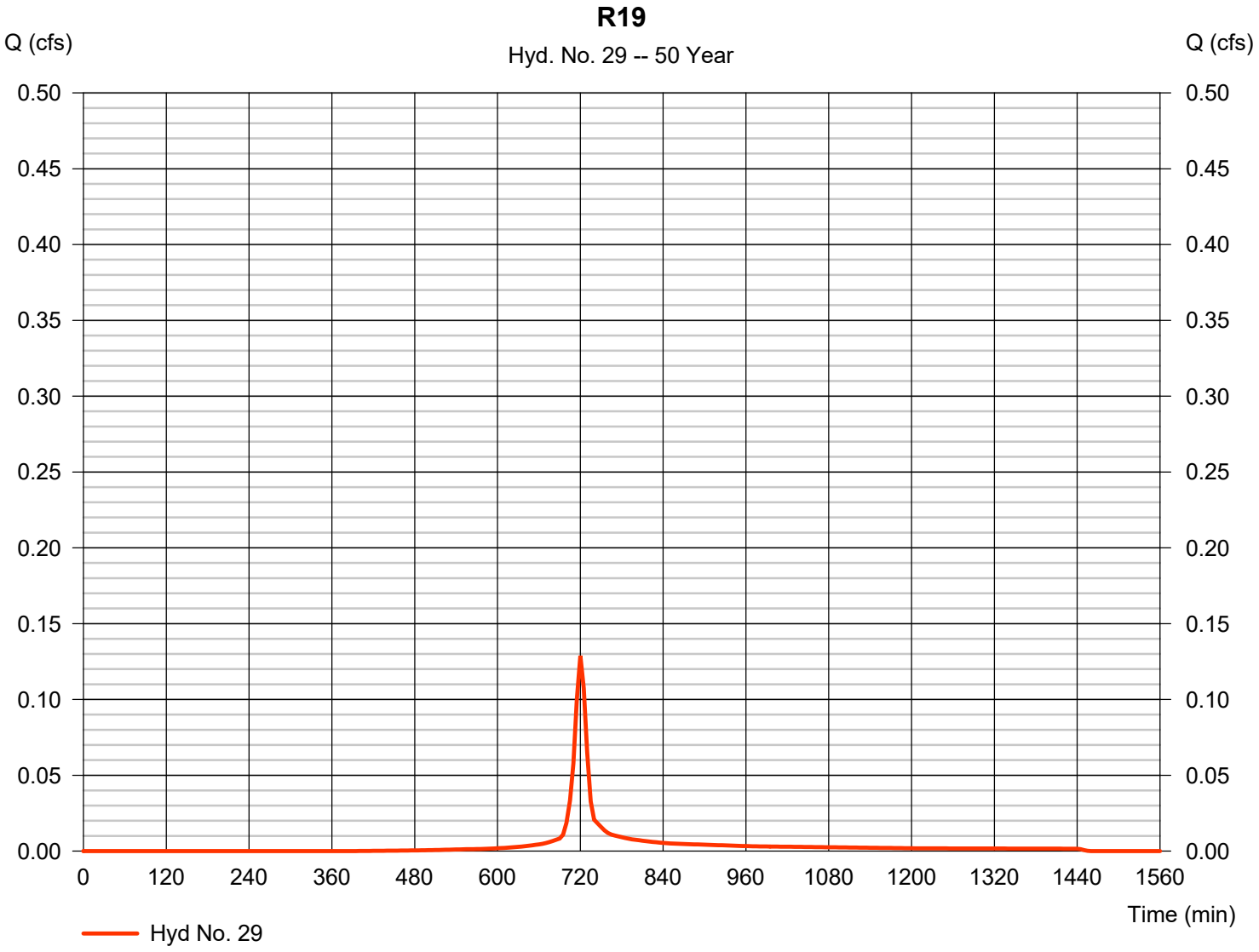


Hydrograph Report

Hyd. No. 29

R19

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.129 cfs
Storm frequency	=	50 yrs	Time to peak	=	720 min
Time interval	=	5 min	Hyd. volume	=	350 cuft
Drainage area	=	0.094 ac	Curve number	=	93
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	10.00 min
Total precip.	=	1.76 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

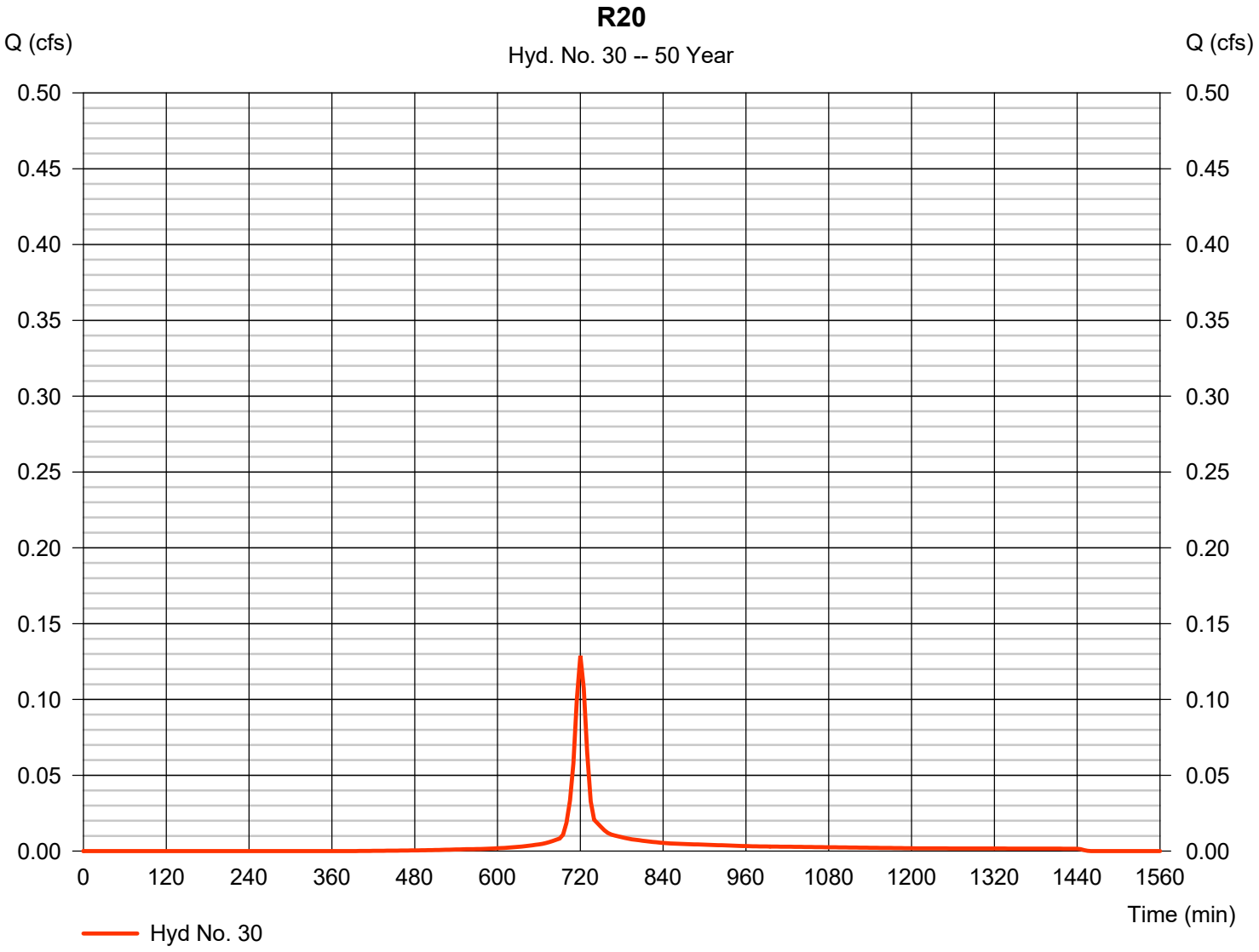


Hydrograph Report

Hyd. No. 30

R20

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.129 cfs
Storm frequency	=	50 yrs	Time to peak	=	720 min
Time interval	=	5 min	Hyd. volume	=	350 cuft
Drainage area	=	0.094 ac	Curve number	=	93
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	10.00 min
Total precip.	=	1.76 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

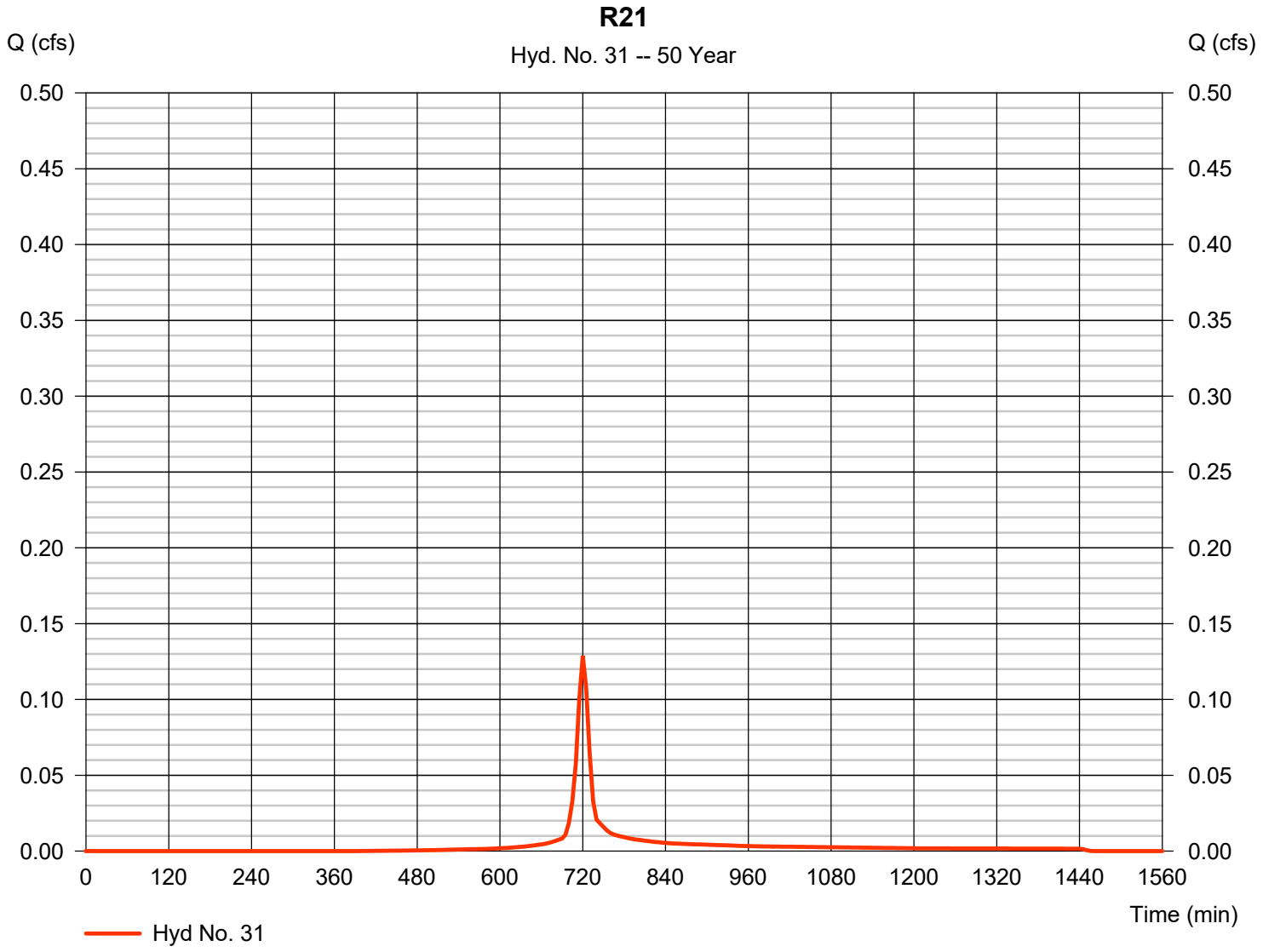


Hydrograph Report

Hyd. No. 31

R21

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.129 cfs
Storm frequency	=	50 yrs	Time to peak	=	720 min
Time interval	=	5 min	Hyd. volume	=	350 cuft
Drainage area	=	0.094 ac	Curve number	=	93
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	10.00 min
Total precip.	=	1.76 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

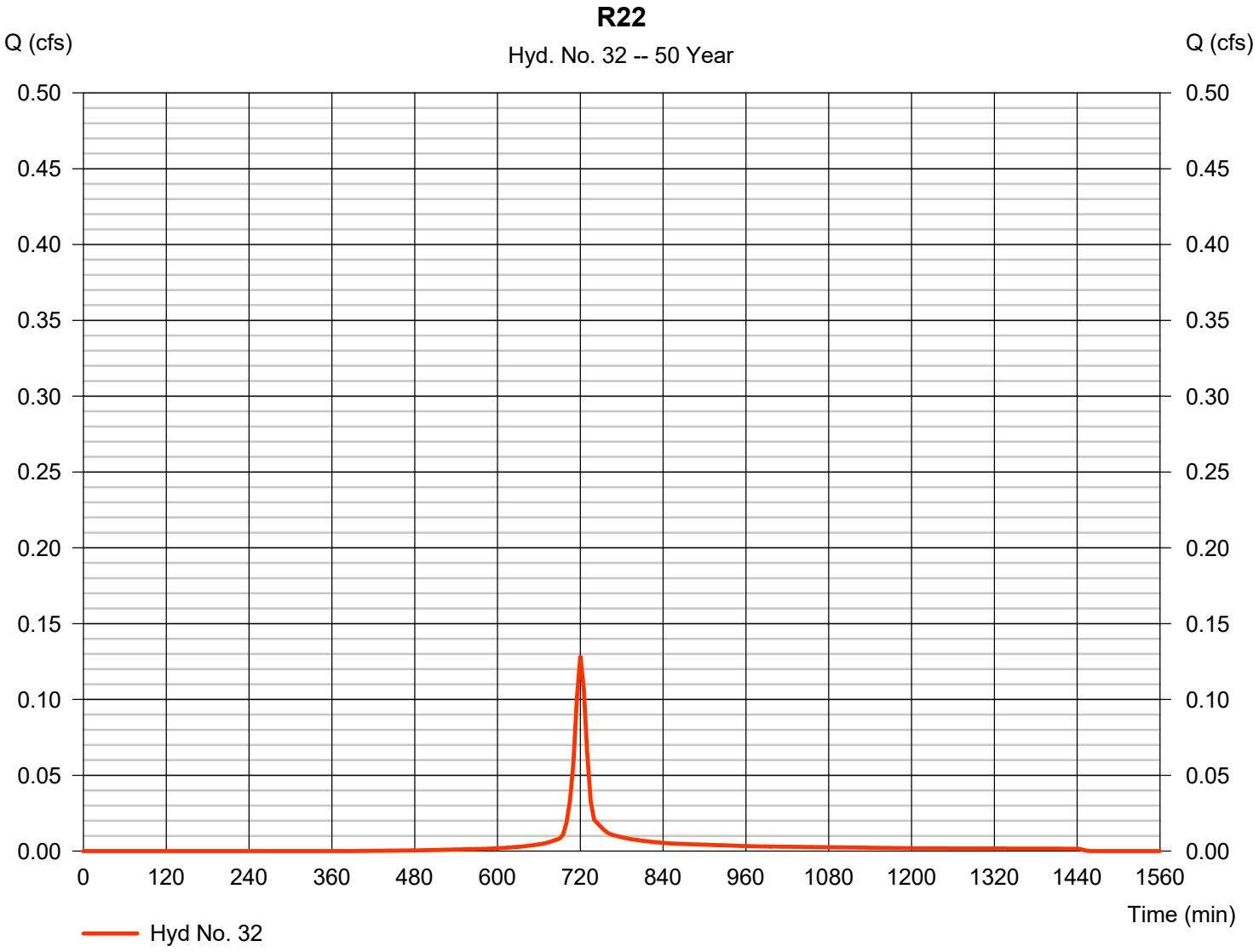


Hydrograph Report

Hyd. No. 32

R22

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.129 cfs
Storm frequency	=	50 yrs	Time to peak	=	720 min
Time interval	=	5 min	Hyd. volume	=	350 cuft
Drainage area	=	0.094 ac	Curve number	=	93
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	10.00 min
Total precip.	=	1.76 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

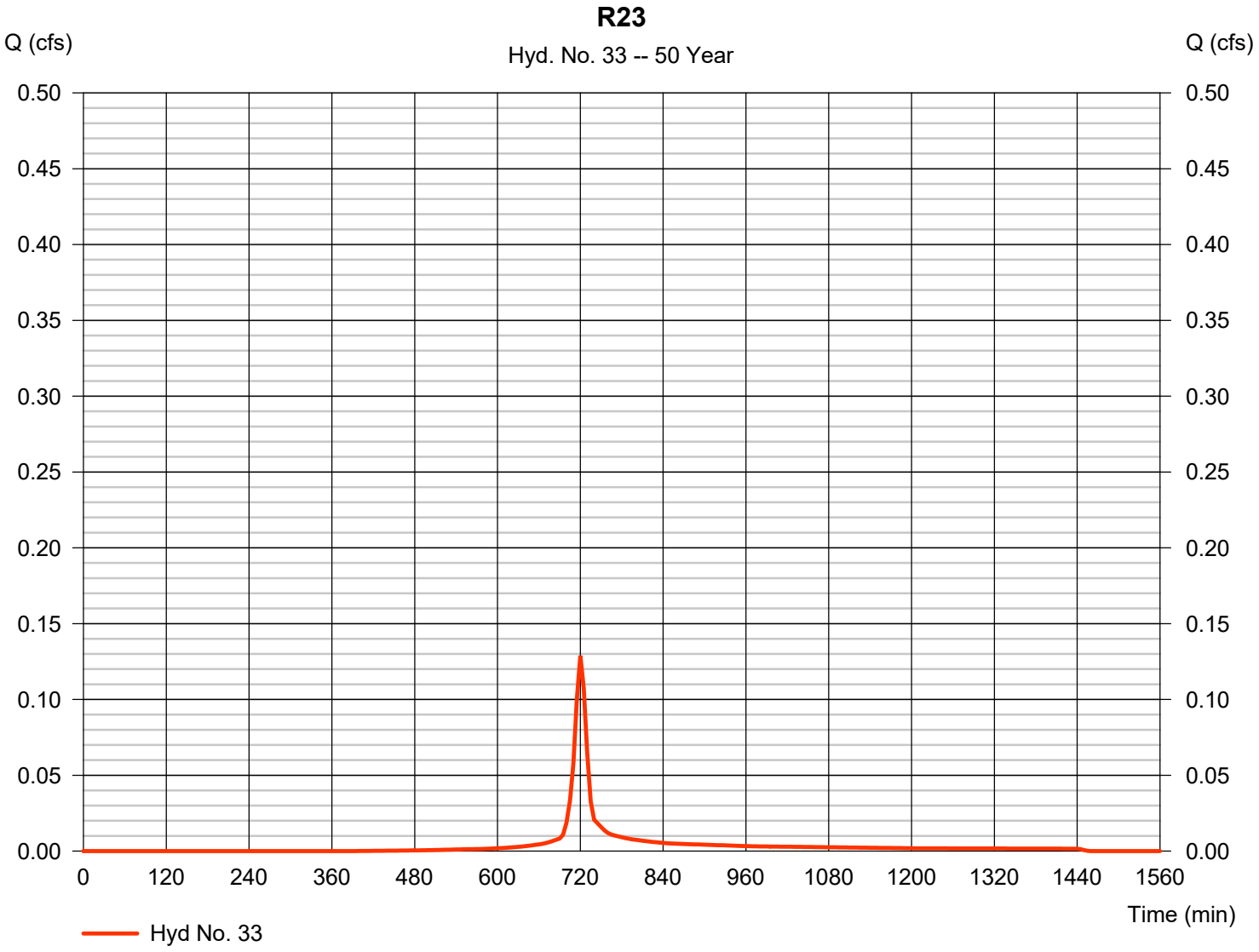


Hydrograph Report

Hyd. No. 33

R23

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.129 cfs
Storm frequency	=	50 yrs	Time to peak	=	720 min
Time interval	=	5 min	Hyd. volume	=	350 cuft
Drainage area	=	0.094 ac	Curve number	=	93
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	10.00 min
Total precip.	=	1.76 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

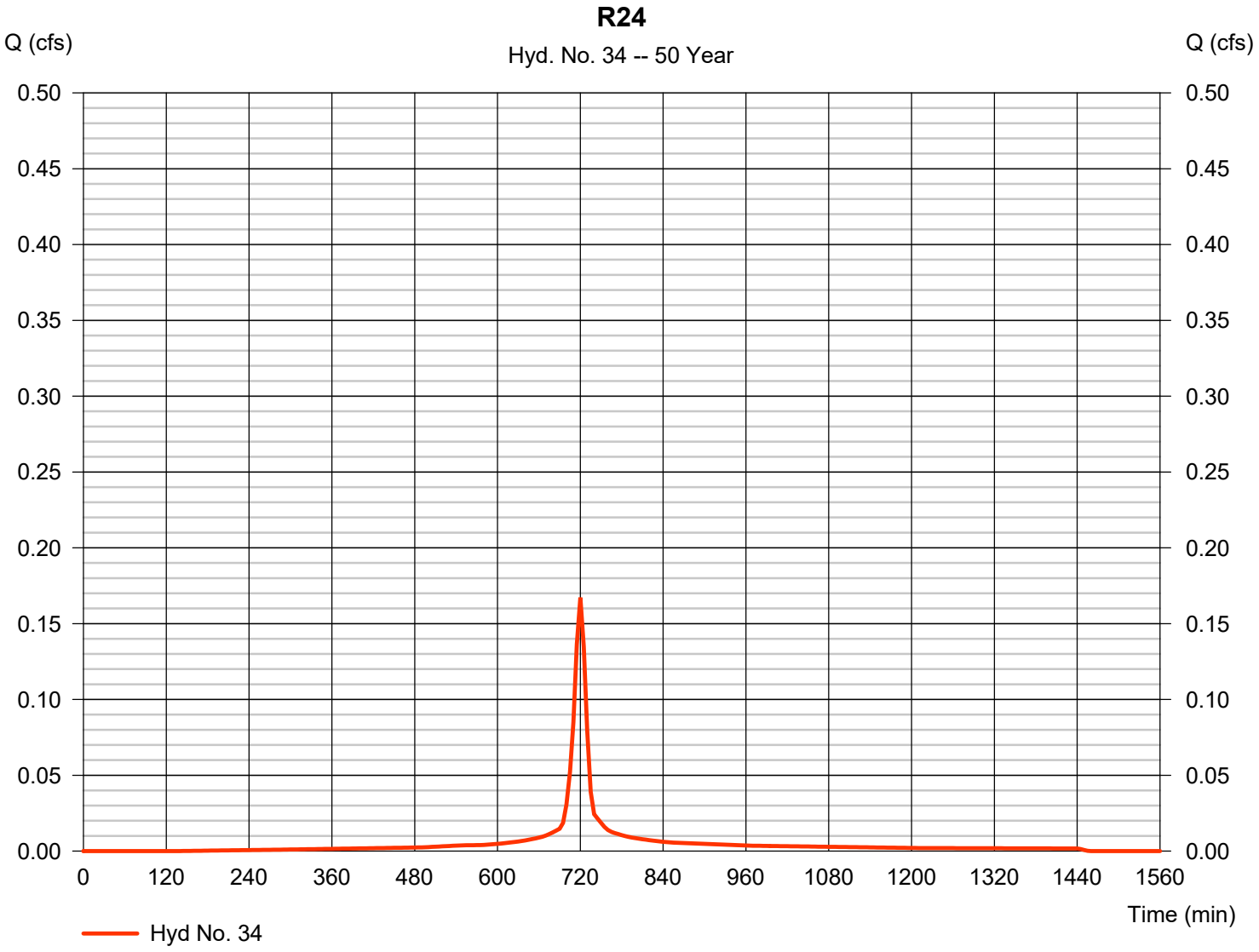


Hydrograph Report

Hyd. No. 34

R24

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.167 cfs
Storm frequency	=	50 yrs	Time to peak	=	720 min
Time interval	=	5 min	Hyd. volume	=	490 cuft
Drainage area	=	0.094 ac	Curve number	=	98
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	10.00 min
Total precip.	=	1.76 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

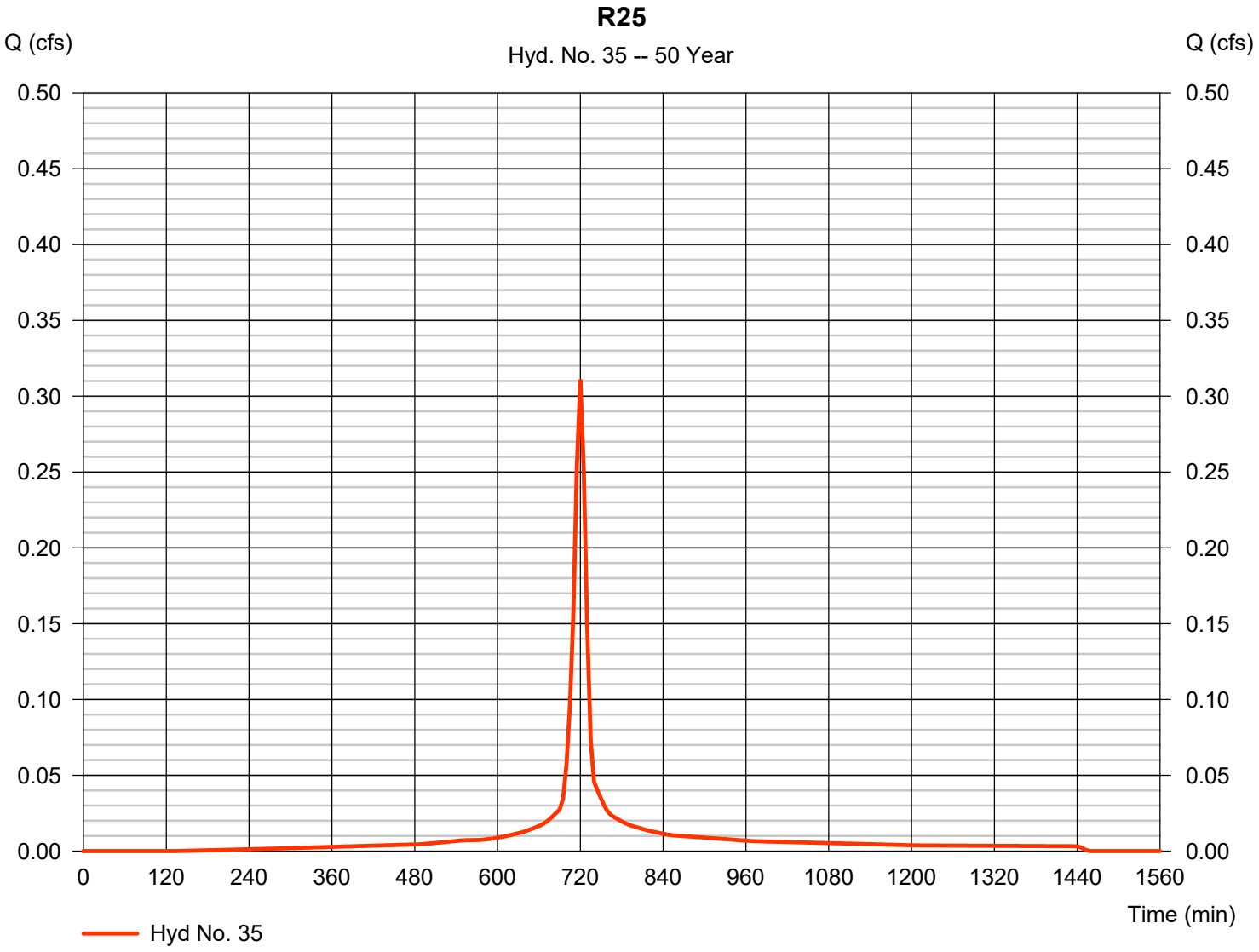


Hydrograph Report

Hyd. No. 35

R25

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.311 cfs
Storm frequency	=	50 yrs	Time to peak	=	720 min
Time interval	=	5 min	Hyd. volume	=	911 cuft
Drainage area	=	0.174 ac	Curve number	=	98
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	10.00 min
Total precip.	=	1.76 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484



Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	0.549	5	725	2,150	------	------	------	Basin 1
2	SCS Runoff	1.919	5	720	5,406	------	------	------	Basin 2
3	SCS Runoff	3.459	5	720	9,601	------	------	------	Basin 3
4	SCS Runoff	1.750	5	720	4,930	------	------	------	Basin 4
5	SCS Runoff	2.829	5	735	15,121	------	------	------	Basin 5
6	SCS Runoff	0.595	5	720	2,061	------	------	------	Basin 6
7	SCS Runoff	7.190	5	720	19,959	------	------	------	Basin 7
8	SCS Runoff	1.100	5	720	2,968	------	------	------	Basin 8
9	SCS Runoff	4.651	2	720	12,188	------	------	------	Basin 9
10	SCS Runoff	2.718	5	720	7,336	------	------	------	Basin 10
11	SCS Runoff	0.217	5	720	641	------	------	------	R1
12	SCS Runoff	0.220	5	720	649	------	------	------	R2
13	SCS Runoff	0.121	5	720	358	------	------	------	R3
14	SCS Runoff	0.158	5	720	466	------	------	------	R4
15	SCS Runoff	0.145	5	720	394	------	------	------	R5
16	SCS Runoff	0.145	5	720	394	------	------	------	R6
17	SCS Runoff	0.154	5	720	419	------	------	------	R7
18	SCS Runoff	0.145	5	720	394	------	------	------	R8
19	SCS Runoff	0.145	5	720	394	------	------	------	R9
20	SCS Runoff	0.145	5	720	394	------	------	------	R10
21	SCS Runoff	0.145	5	720	394	------	------	------	R11
22	SCS Runoff	0.145	5	720	394	------	------	------	R12
23	SCS Runoff	0.145	5	720	394	------	------	------	R13
24	SCS Runoff	0.114	5	720	308	------	------	------	R14
25	SCS Runoff	0.114	5	720	308	------	------	------	R15
26	SCS Runoff	0.114	5	720	308	------	------	------	R16
27	SCS Runoff	0.145	5	720	394	------	------	------	R17
28	SCS Runoff	0.145	5	720	394	------	------	------	R18
29	SCS Runoff	0.154	5	720	419	------	------	------	R19
30	SCS Runoff	0.154	5	720	419	------	------	------	R20
31	SCS Runoff	0.154	5	720	419	------	------	------	R21
32	SCS Runoff	0.154	5	720	419	------	------	------	R22
33	SCS Runoff	0.154	5	720	419	------	------	------	R23
34	SCS Runoff	0.191	5	720	566	------	------	------	R24

Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021

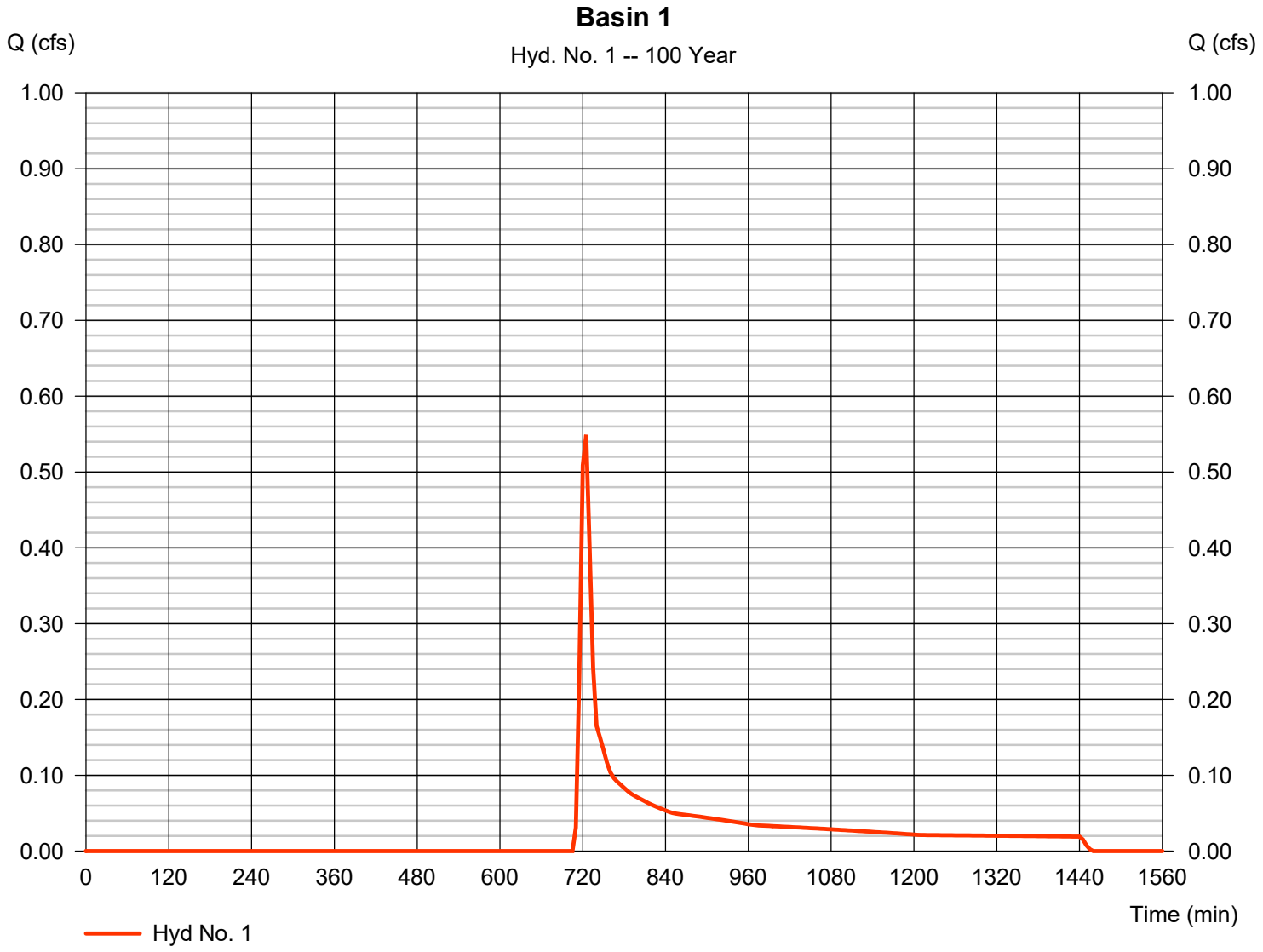
Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
35	SCS Runoff	0.356	5	720	1,052	------	------	------	R25

Hydrograph Report

Hyd. No. 1

Basin 1

Hydrograph type	= SCS Runoff	Peak discharge	= 0.549 cfs
Storm frequency	= 100 yrs	Time to peak	= 725 min
Time interval	= 5 min	Hyd. volume	= 2,150 cuft
Drainage area	= 2.162 ac	Curve number	= 72
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 11.80 min
Total precip.	= 2.00 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

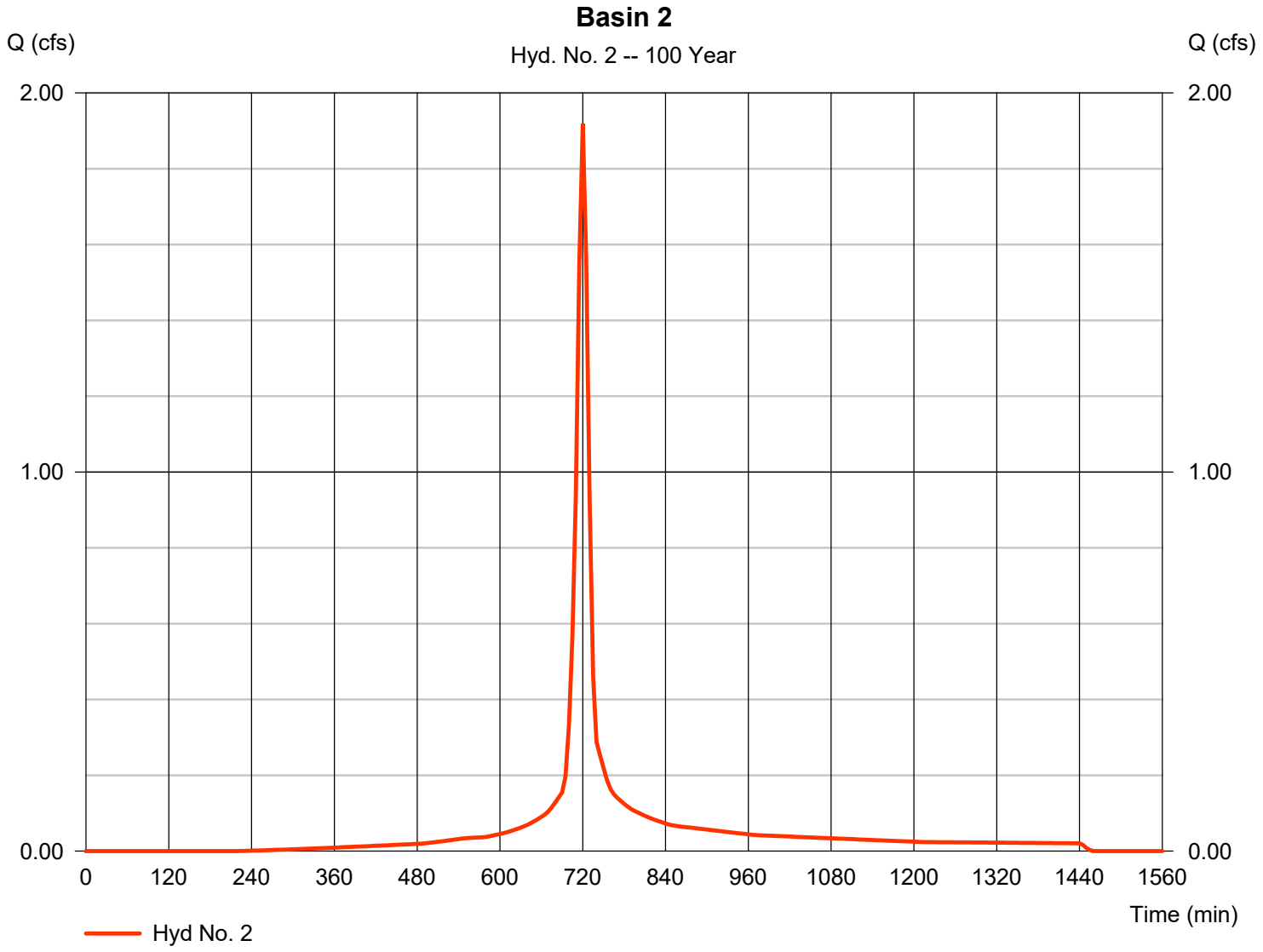


Hydrograph Report

Hyd. No. 2

Basin 2

Hydrograph type	= SCS Runoff	Peak discharge	= 1.919 cfs
Storm frequency	= 100 yrs	Time to peak	= 720 min
Time interval	= 5 min	Hyd. volume	= 5,406 cuft
Drainage area	= 1.009 ac	Curve number	= 96
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 2.00 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

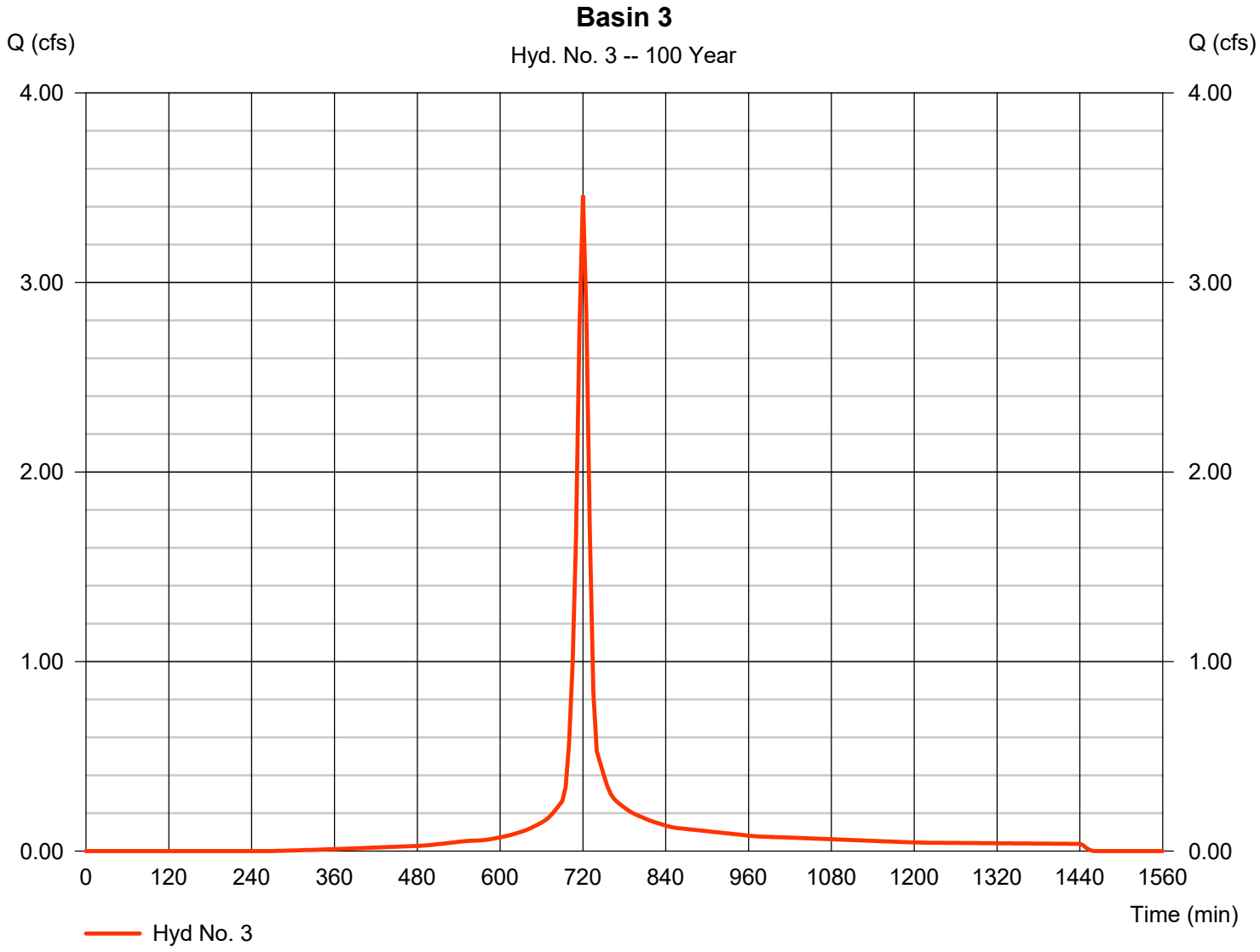


Hydrograph Report

Hyd. No. 3

Basin 3

Hydrograph type	= SCS Runoff	Peak discharge	= 3.459 cfs
Storm frequency	= 100 yrs	Time to peak	= 720 min
Time interval	= 5 min	Hyd. volume	= 9,601 cuft
Drainage area	= 1.903 ac	Curve number	= 95
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 2.00 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

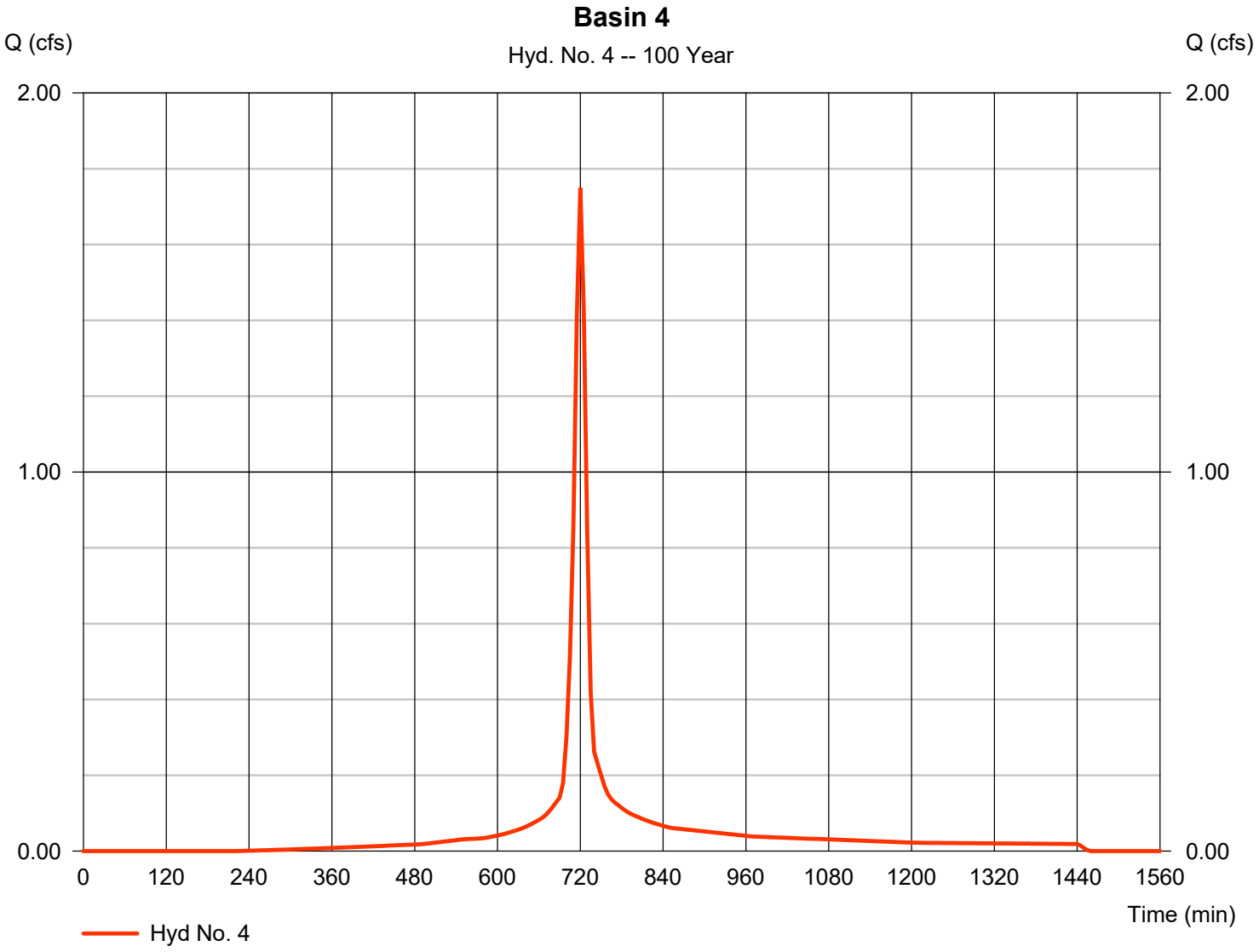


Hydrograph Report

Hyd. No. 4

Basin 4

Hydrograph type	= SCS Runoff	Peak discharge	= 1.750 cfs
Storm frequency	= 100 yrs	Time to peak	= 720 min
Time interval	= 5 min	Hyd. volume	= 4,930 cuft
Drainage area	= 0.920 ac	Curve number	= 96
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 2.00 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

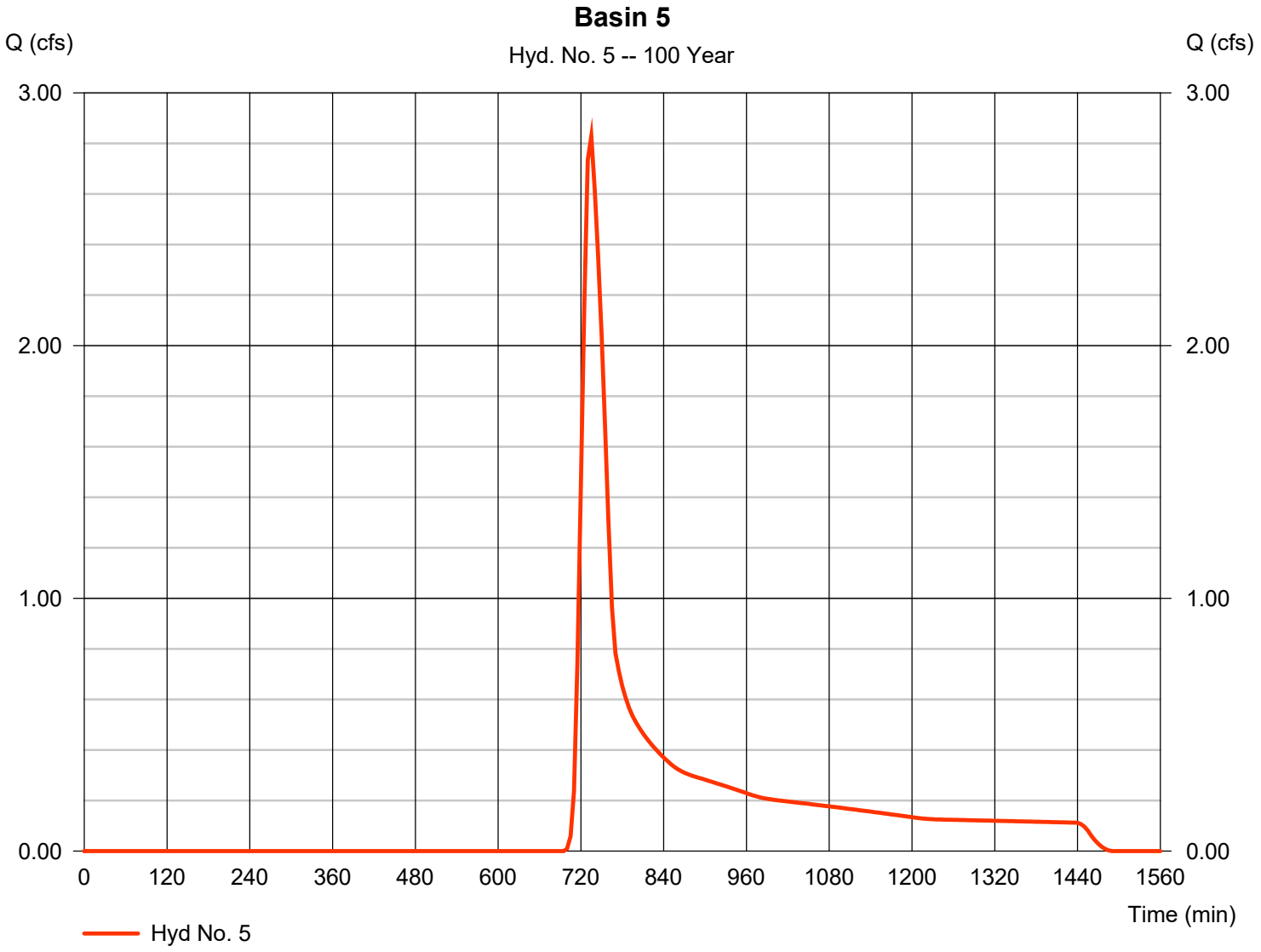


Hydrograph Report

Hyd. No. 5

Basin 5

Hydrograph type	=	SCS Runoff	Peak discharge	=	2.829 cfs
Storm frequency	=	100 yrs	Time to peak	=	735 min
Time interval	=	5 min	Hyd. volume	=	15,121 cuft
Drainage area	=	9.013 ac	Curve number	=	77
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	30.12 min
Total precip.	=	2.00 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

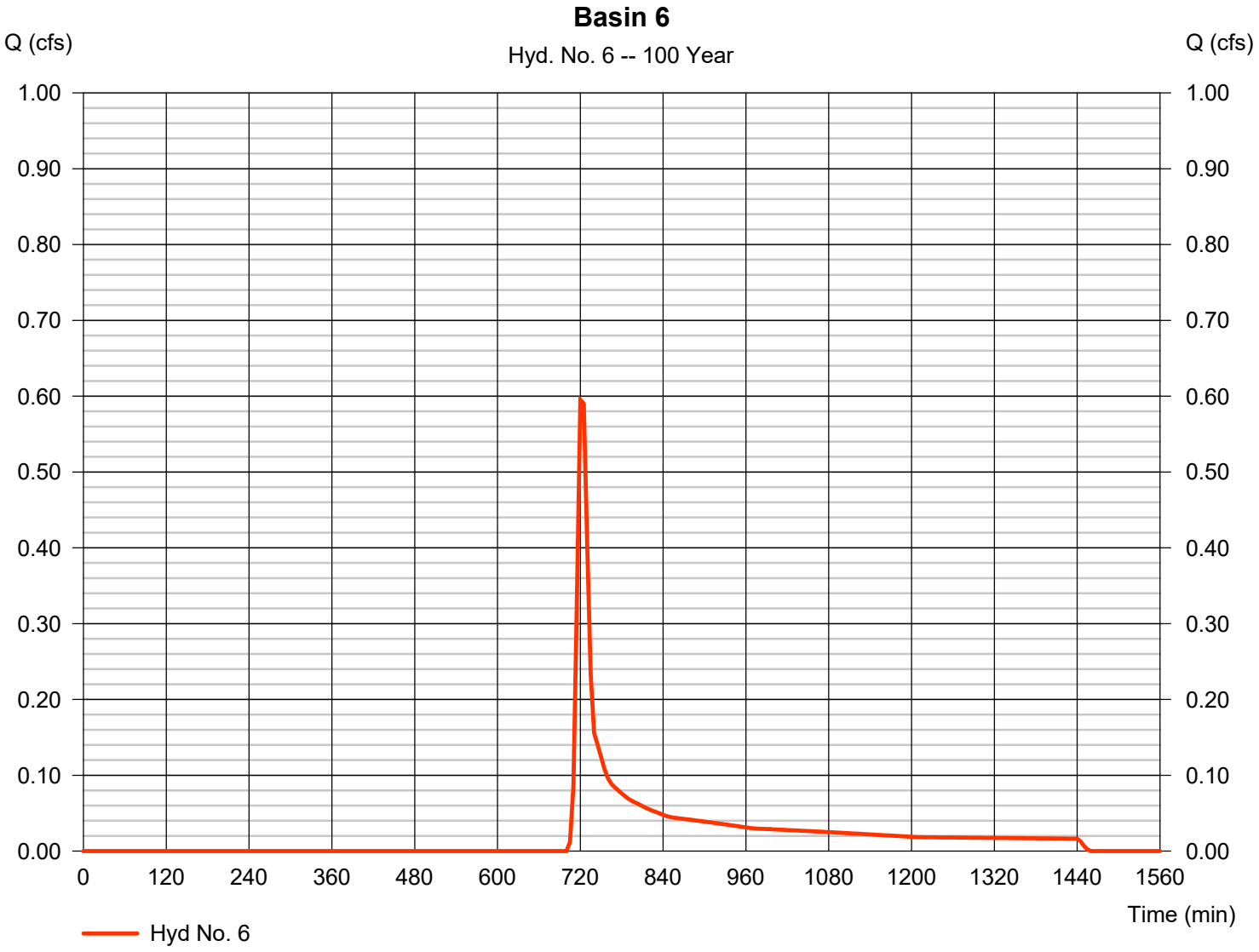


Hydrograph Report

Hyd. No. 6

Basin 6

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.595 cfs
Storm frequency	=	100 yrs	Time to peak	=	720 min
Time interval	=	5 min	Hyd. volume	=	2,061 cuft
Drainage area	=	1.590 ac	Curve number	=	75
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	15.10 min
Total precip.	=	2.00 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

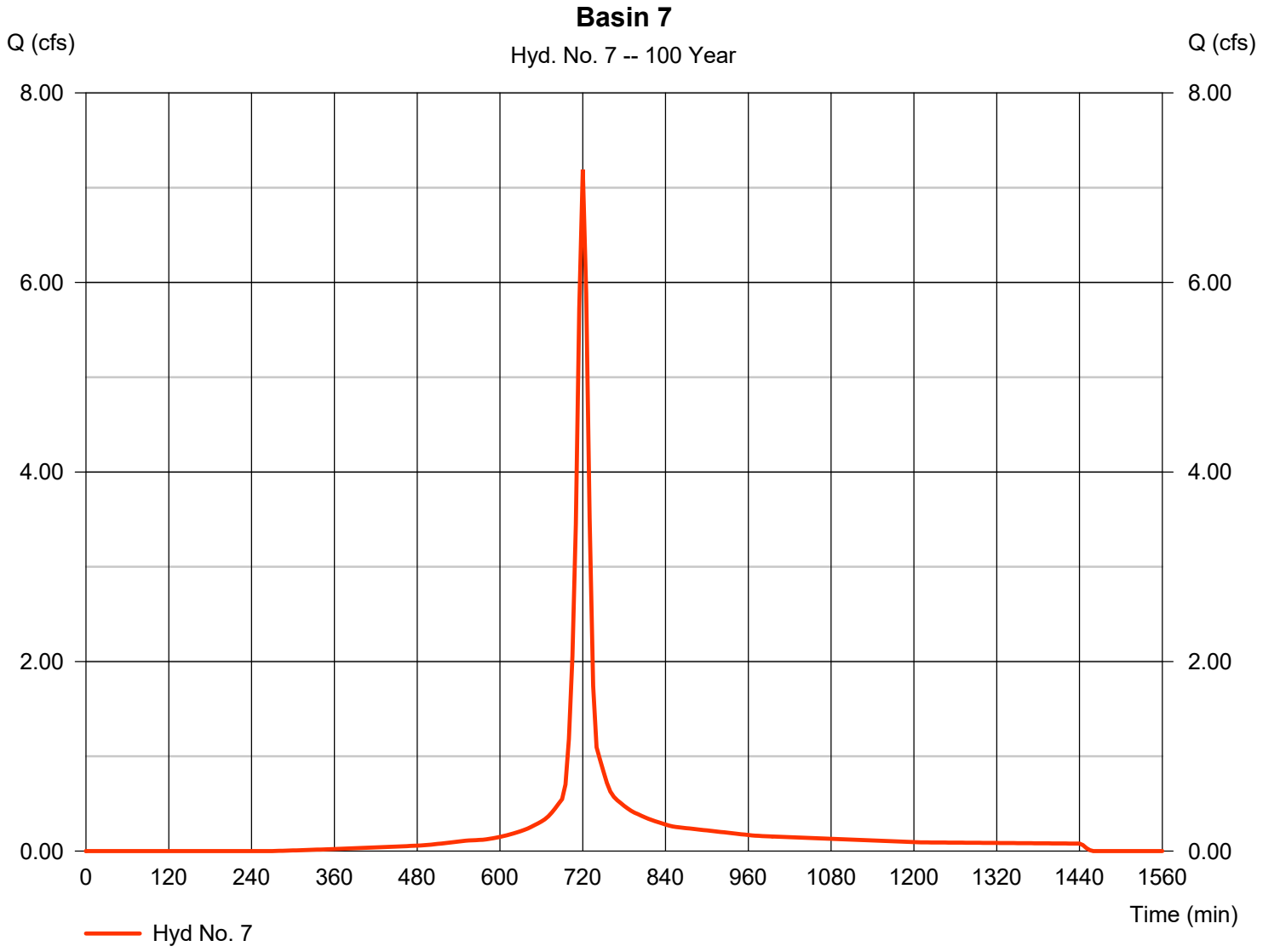


Hydrograph Report

Hyd. No. 7

Basin 7

Hydrograph type	= SCS Runoff	Peak discharge	= 7.190 cfs
Storm frequency	= 100 yrs	Time to peak	= 720 min
Time interval	= 5 min	Hyd. volume	= 19,959 cuft
Drainage area	= 3.955 ac	Curve number	= 95
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 2.00 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

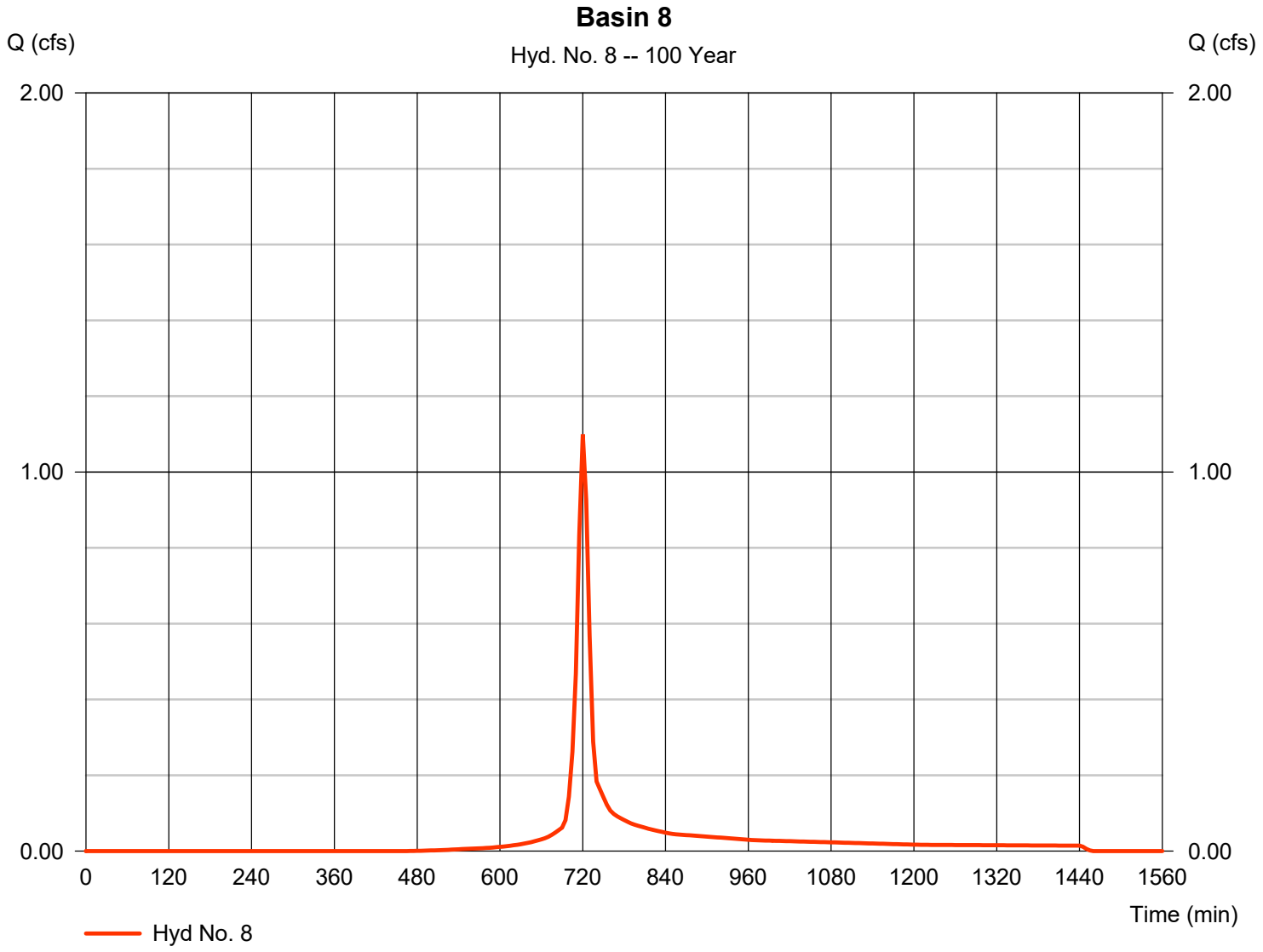


Hydrograph Report

Hyd. No. 8

Basin 8

Hydrograph type	= SCS Runoff	Peak discharge	= 1.100 cfs
Storm frequency	= 100 yrs	Time to peak	= 720 min
Time interval	= 5 min	Hyd. volume	= 2,968 cuft
Drainage area	= 0.797 ac	Curve number	= 90
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 2.00 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

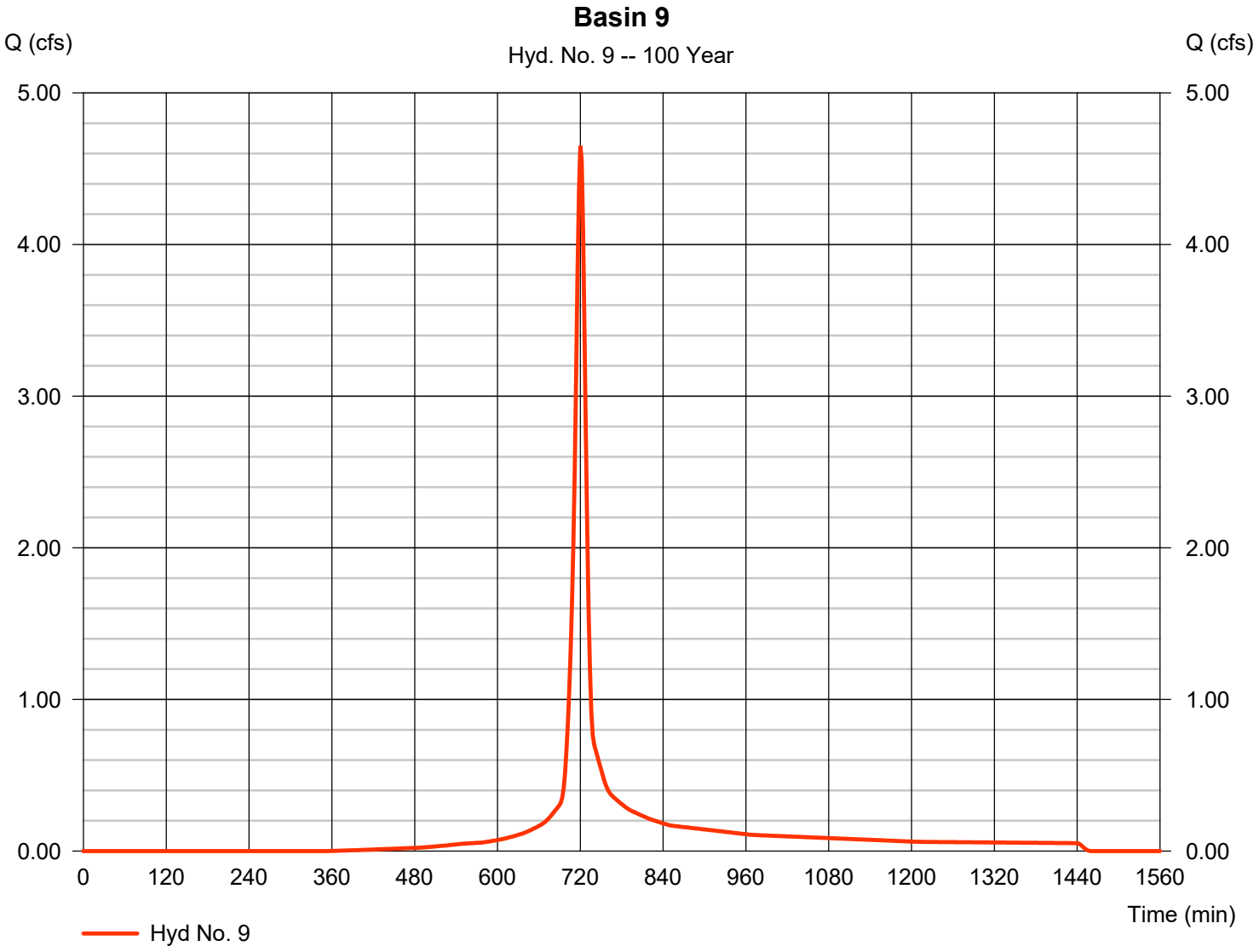


Hydrograph Report

Hyd. No. 9

Basin 9

Hydrograph type	= SCS Runoff	Peak discharge	= 4.651 cfs
Storm frequency	= 100 yrs	Time to peak	= 720 min
Time interval	= 2 min	Hyd. volume	= 12,188 cuft
Drainage area	= 2.477 ac	Curve number	= 93
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 2.00 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

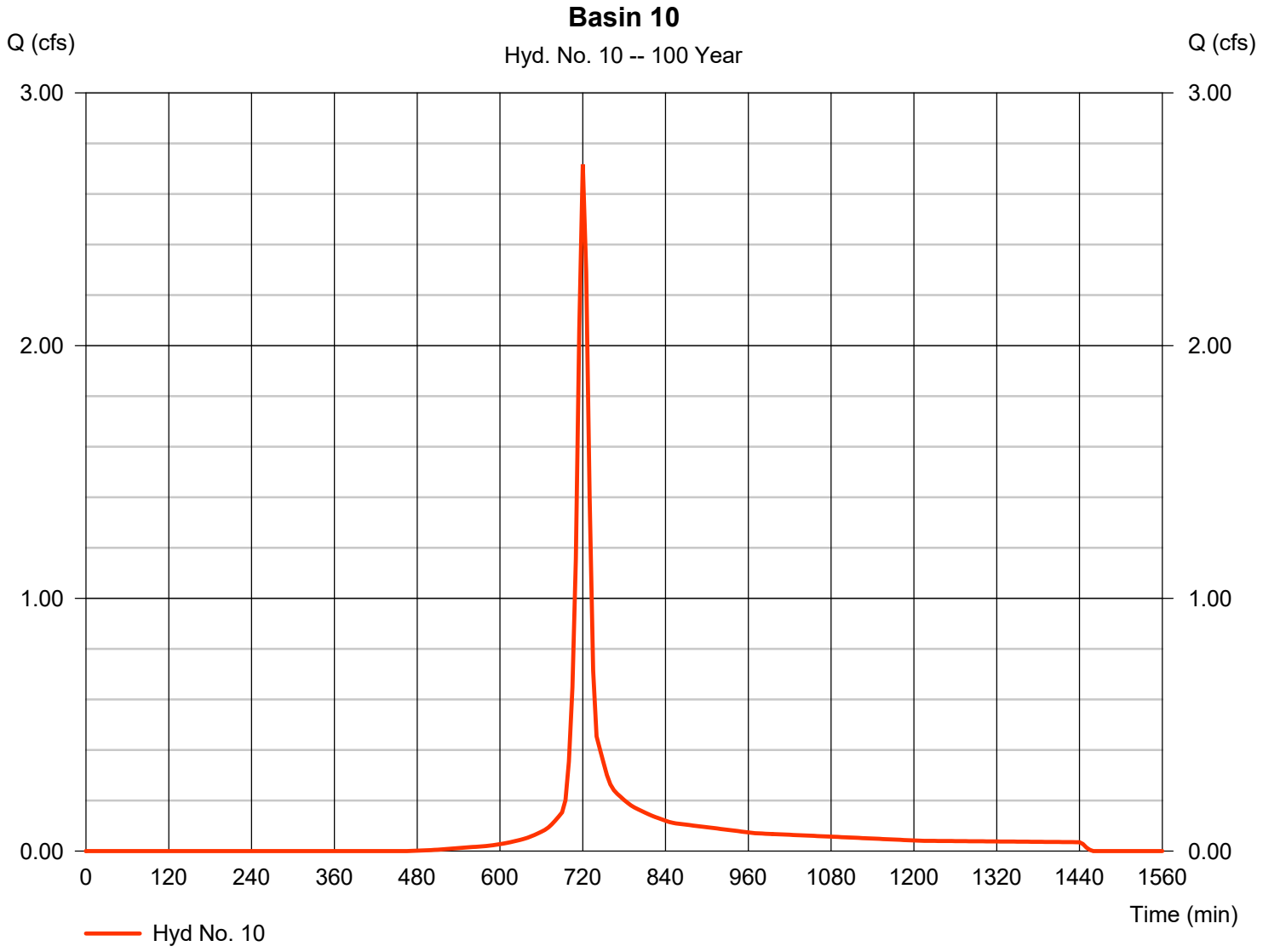


Hydrograph Report

Hyd. No. 10

Basin 10

Hydrograph type	= SCS Runoff	Peak discharge	= 2.718 cfs
Storm frequency	= 100 yrs	Time to peak	= 720 min
Time interval	= 5 min	Hyd. volume	= 7,336 cuft
Drainage area	= 1.970 ac	Curve number	= 90
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 2.00 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

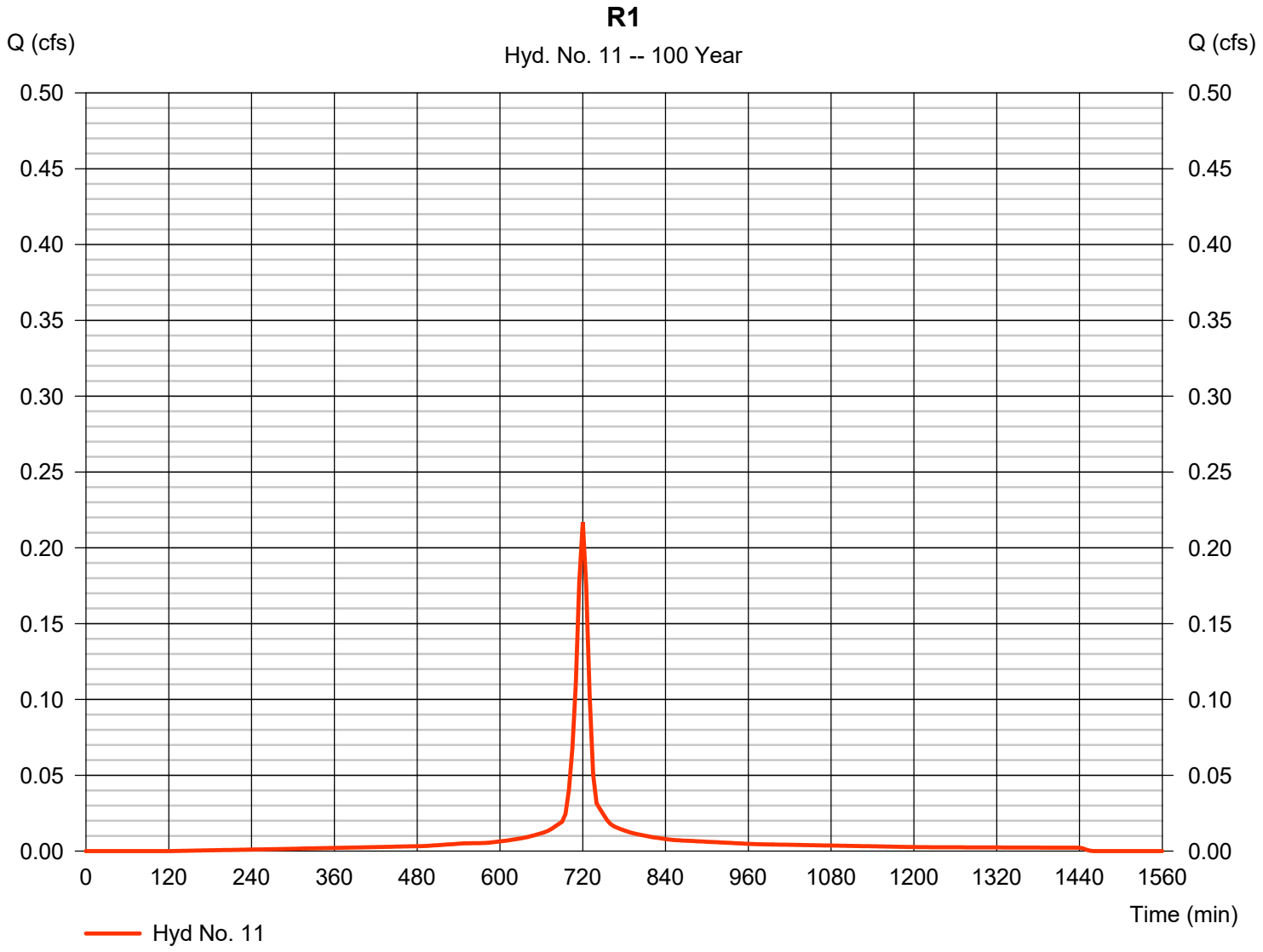


Hydrograph Report

Hyd. No. 11

R1

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.217 cfs
Storm frequency	=	100 yrs	Time to peak	=	720 min
Time interval	=	5 min	Hyd. volume	=	641 cuft
Drainage area	=	0.106 ac	Curve number	=	98
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	10.00 min
Total precip.	=	2.00 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

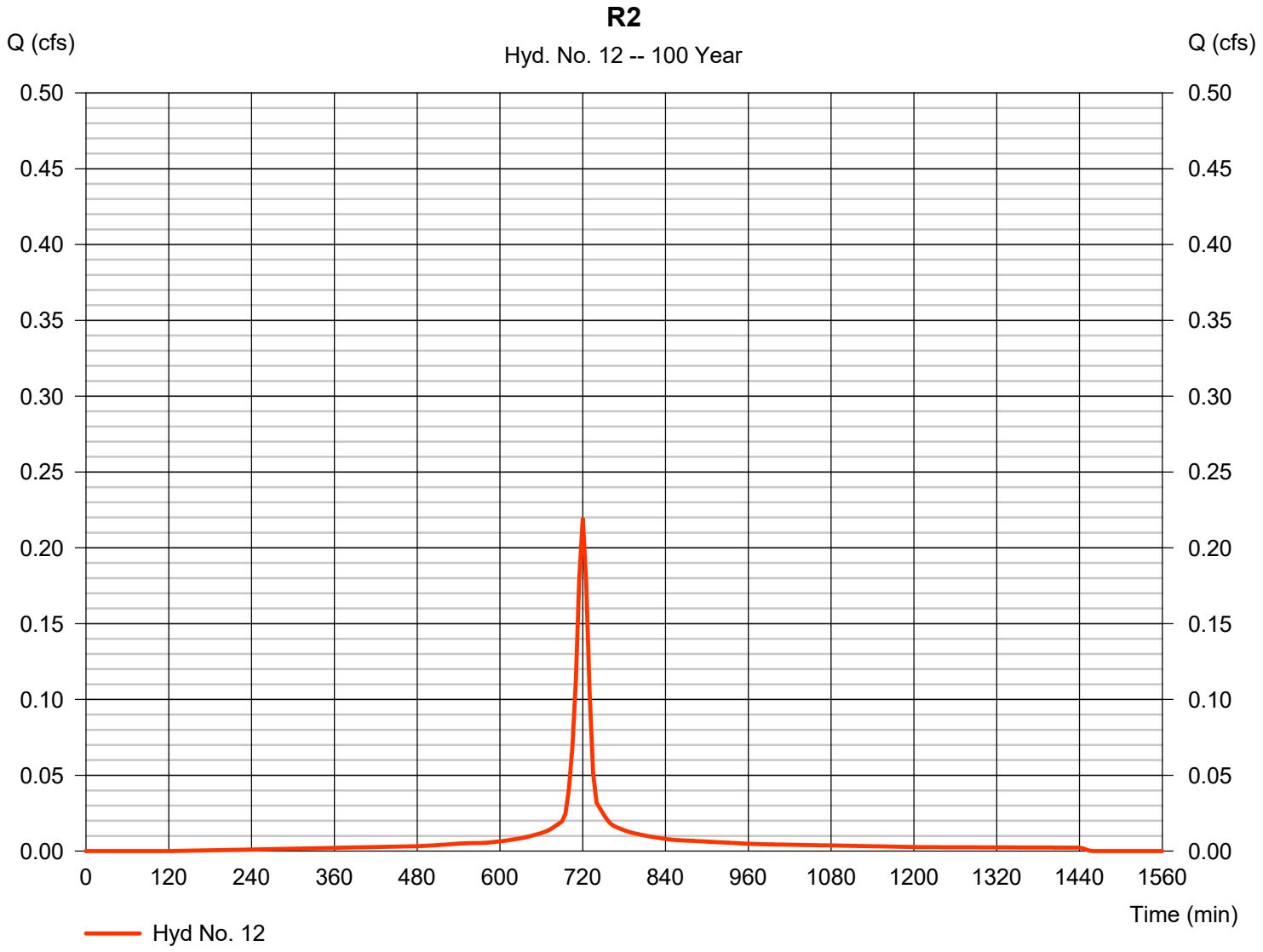


Hydrograph Report

Hyd. No. 12

R2

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.220 cfs
Storm frequency	=	100 yrs	Time to peak	=	720 min
Time interval	=	5 min	Hyd. volume	=	649 cuft
Drainage area	=	0.107 ac	Curve number	=	98
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	10.00 min
Total precip.	=	2.00 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

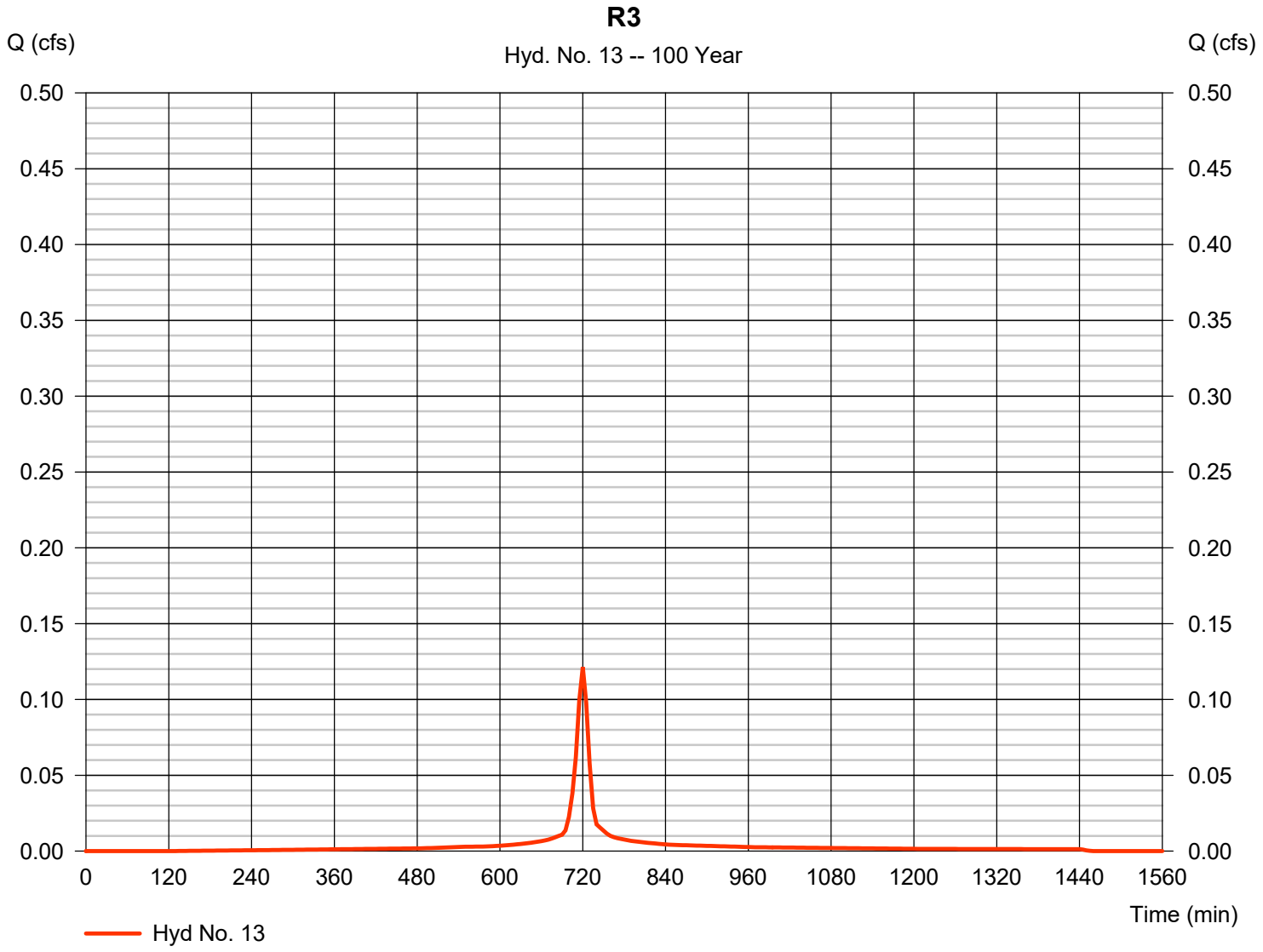


Hydrograph Report

Hyd. No. 13

R3

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.121 cfs
Storm frequency	=	100 yrs	Time to peak	=	720 min
Time interval	=	5 min	Hyd. volume	=	358 cuft
Drainage area	=	0.059 ac	Curve number	=	98
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	10.00 min
Total precip.	=	2.00 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

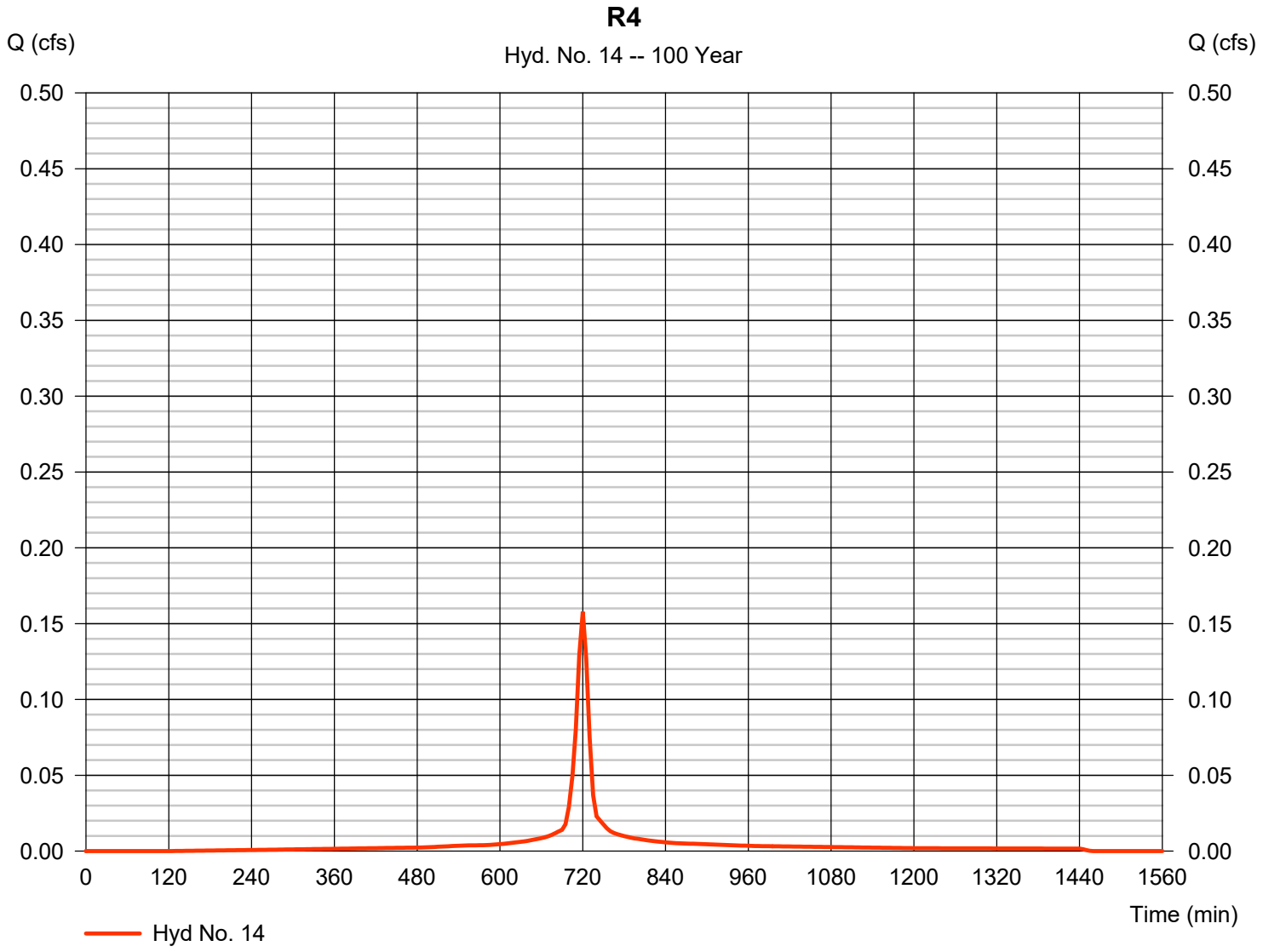


Hydrograph Report

Hyd. No. 14

R4

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.158 cfs
Storm frequency	=	100 yrs	Time to peak	=	720 min
Time interval	=	5 min	Hyd. volume	=	466 cuft
Drainage area	=	0.077 ac	Curve number	=	98
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	10.00 min
Total precip.	=	2.00 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484



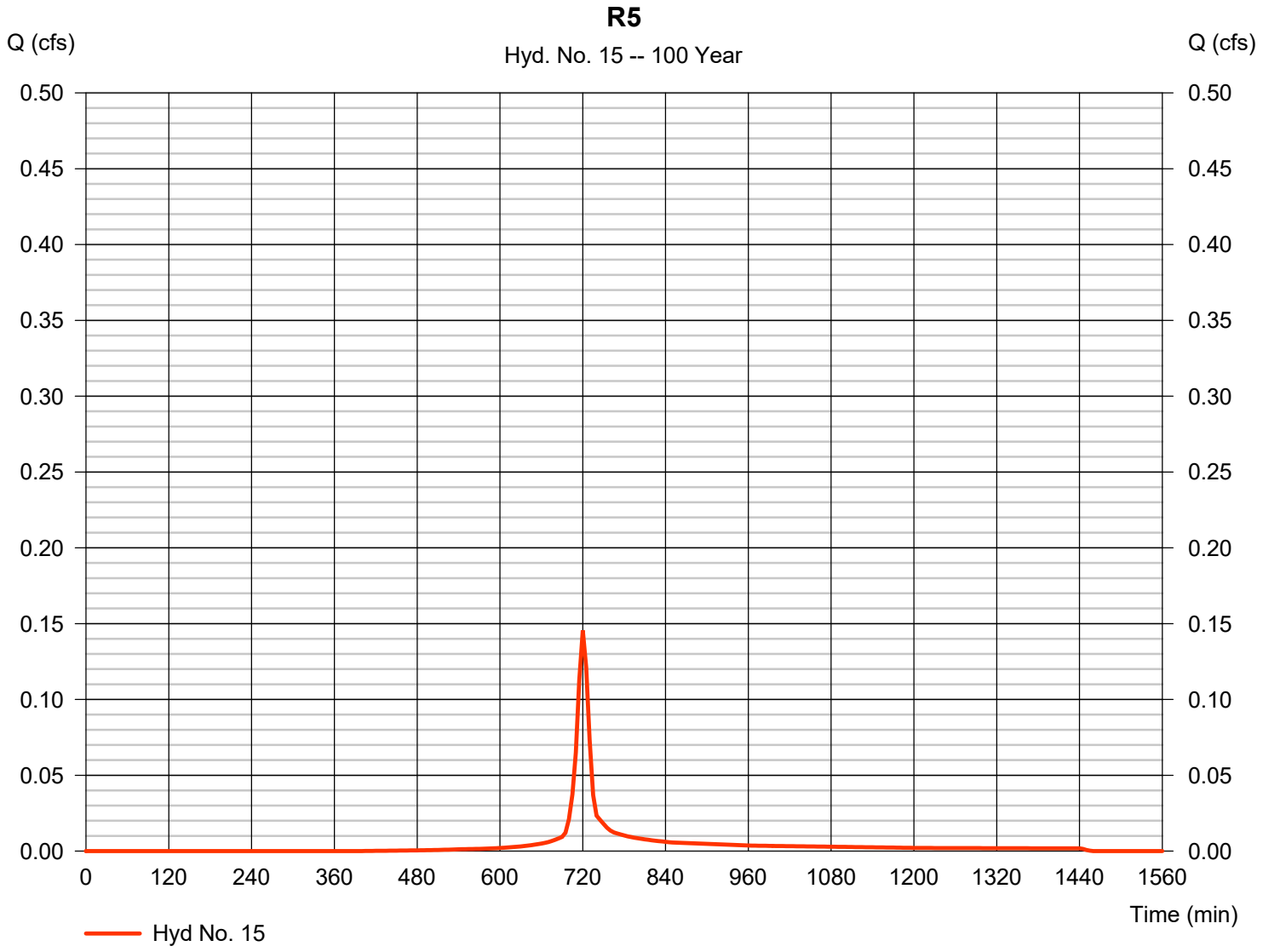
Hydrograph Report

Hyd. No. 15

R5

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.145 cfs
Storm frequency	=	100 yrs	Time to peak	=	720 min
Time interval	=	5 min	Hyd. volume	=	394 cuft
Drainage area	=	0.094 ac	Curve number	=	92*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	10.00 min
Total precip.	=	2.00 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = [(0.060 x 98) + (0.040 x 82)] / 0.094



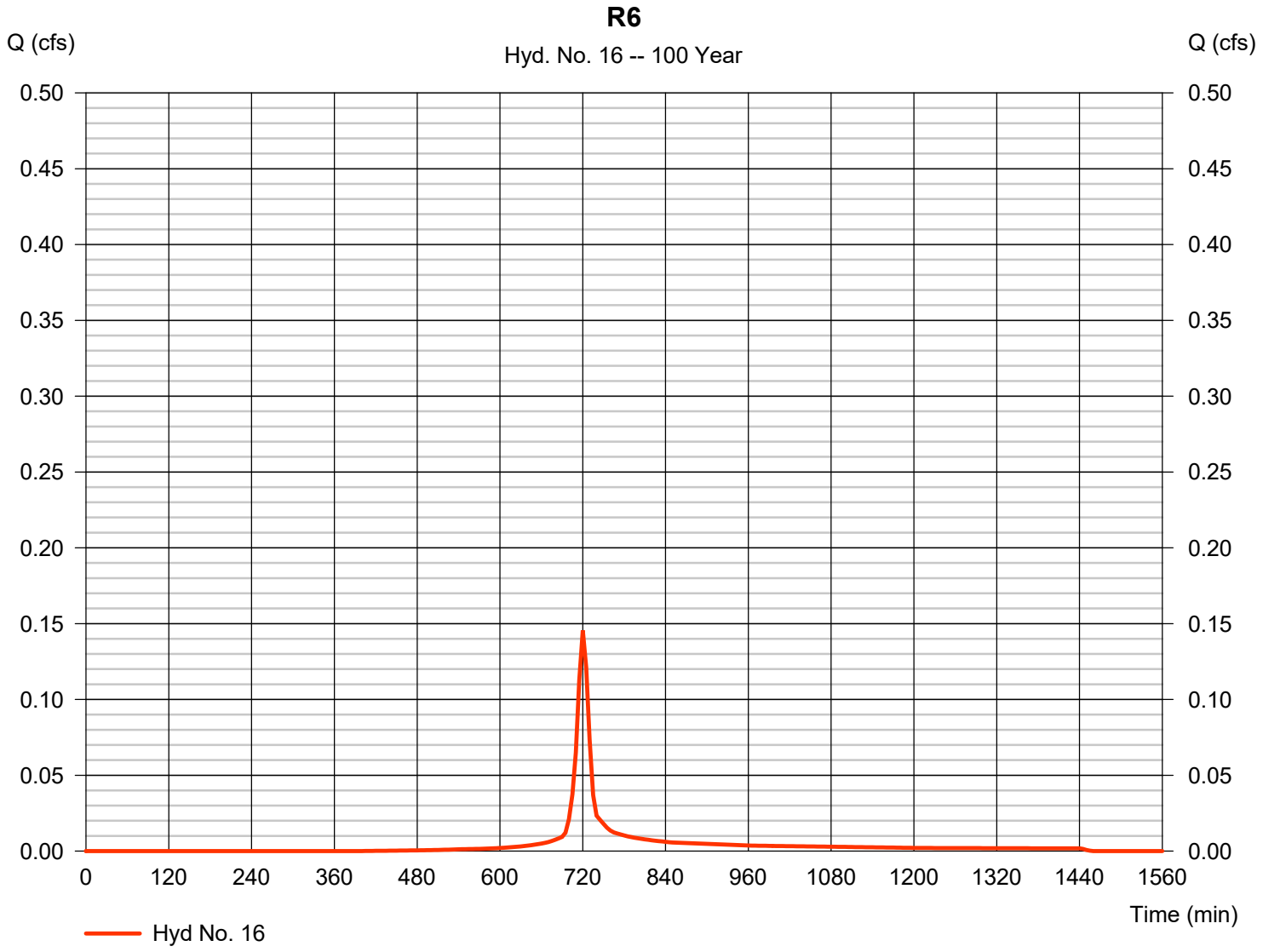
Hydrograph Report

Hyd. No. 16

R6

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.145 cfs
Storm frequency	=	100 yrs	Time to peak	=	720 min
Time interval	=	5 min	Hyd. volume	=	394 cuft
Drainage area	=	0.094 ac	Curve number	=	92*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	10.00 min
Total precip.	=	2.00 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = [(0.058 x 98) + (0.036 x 82)] / 0.094



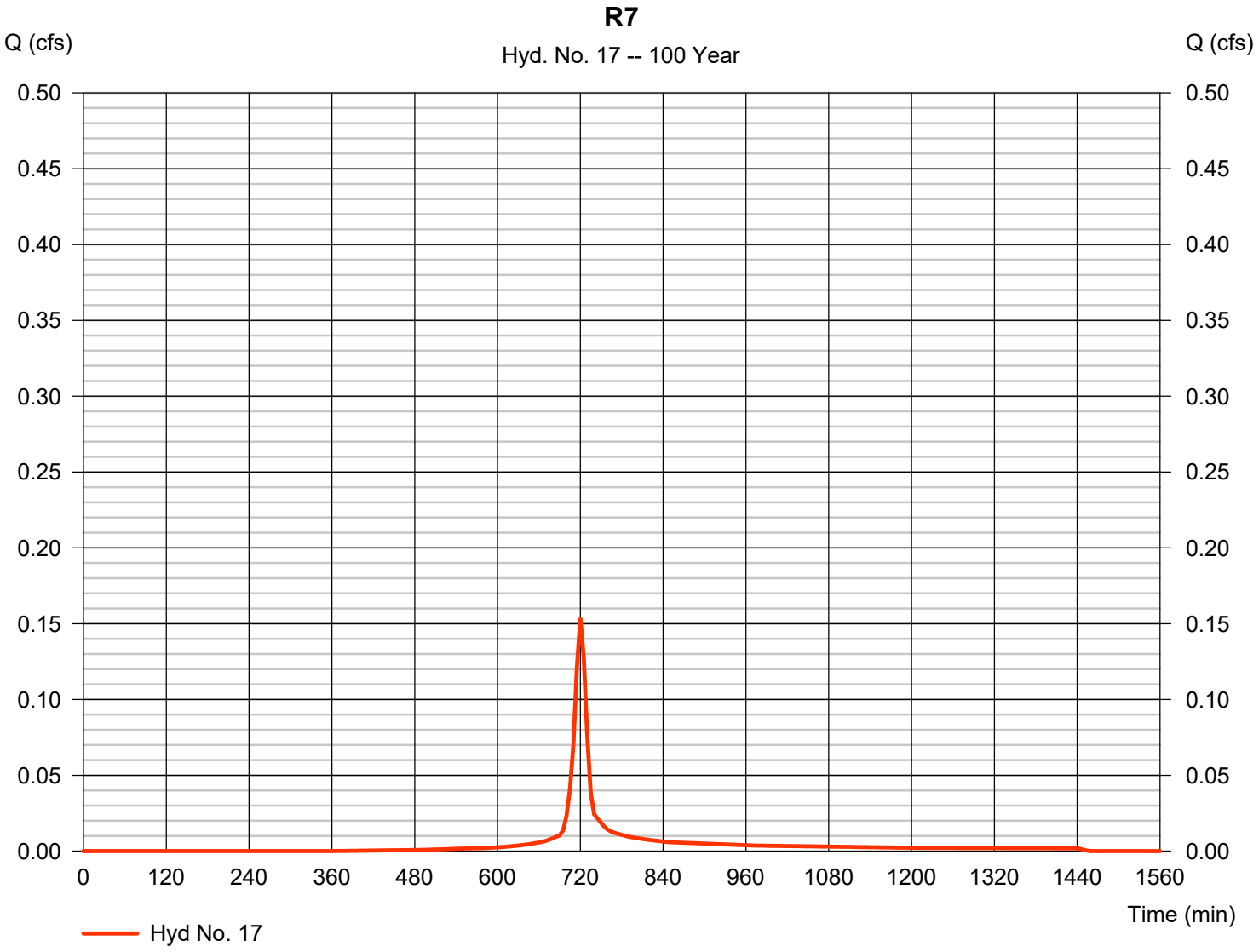
Hydrograph Report

Hyd. No. 17

R7

Hydrograph type	= SCS Runoff	Peak discharge	= 0.154 cfs
Storm frequency	= 100 yrs	Time to peak	= 720 min
Time interval	= 5 min	Hyd. volume	= 419 cuft
Drainage area	= 0.094 ac	Curve number	= 93*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 2.00 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(0.062 x 98) + (0.032 x 82)] / 0.094



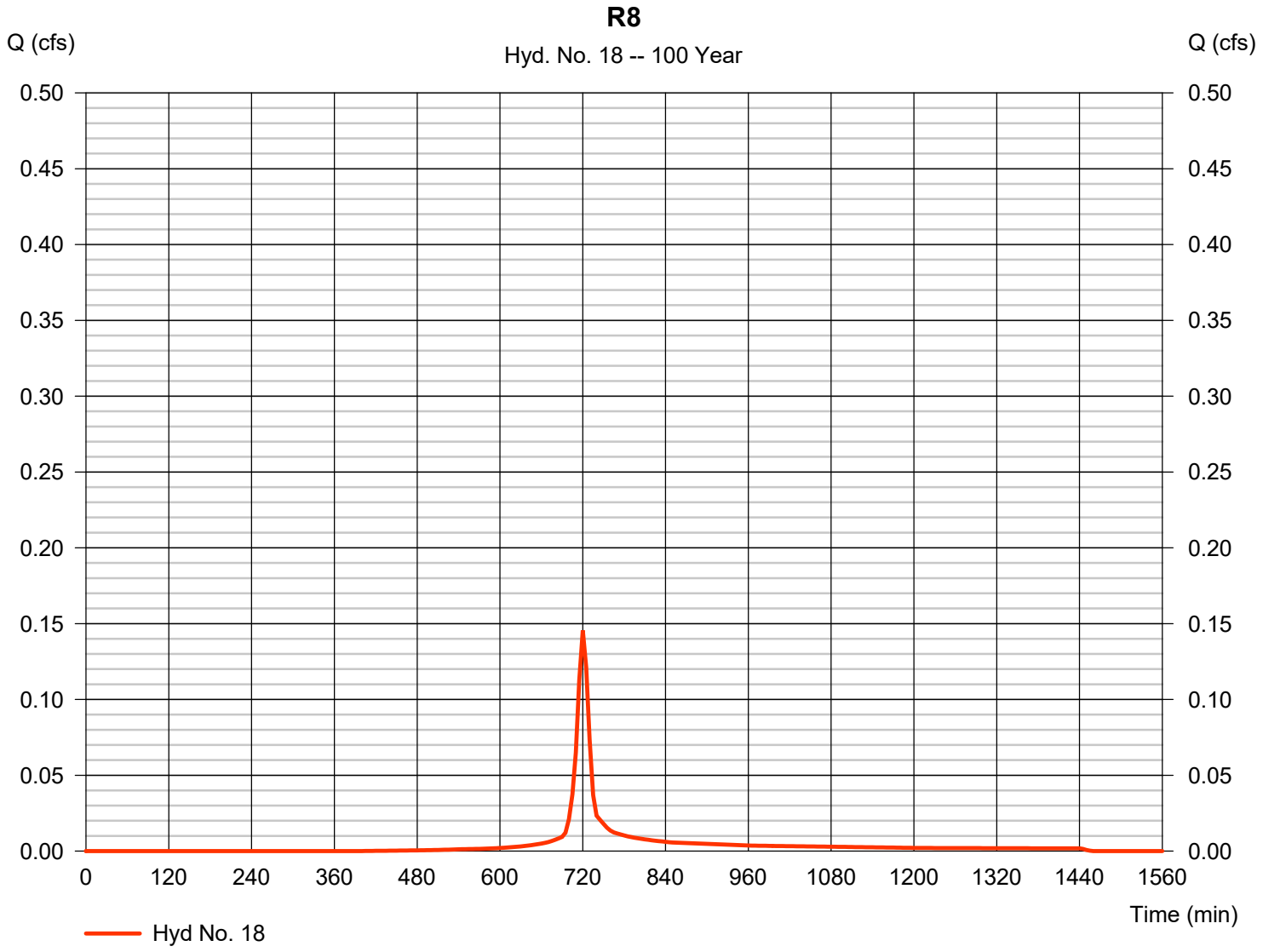
Hydrograph Report

Hyd. No. 18

R8

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.145 cfs
Storm frequency	=	100 yrs	Time to peak	=	720 min
Time interval	=	5 min	Hyd. volume	=	394 cuft
Drainage area	=	0.094 ac	Curve number	=	92*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	10.00 min
Total precip.	=	2.00 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = [(0.060 x 98) + (0.040 x 82)] / 0.094



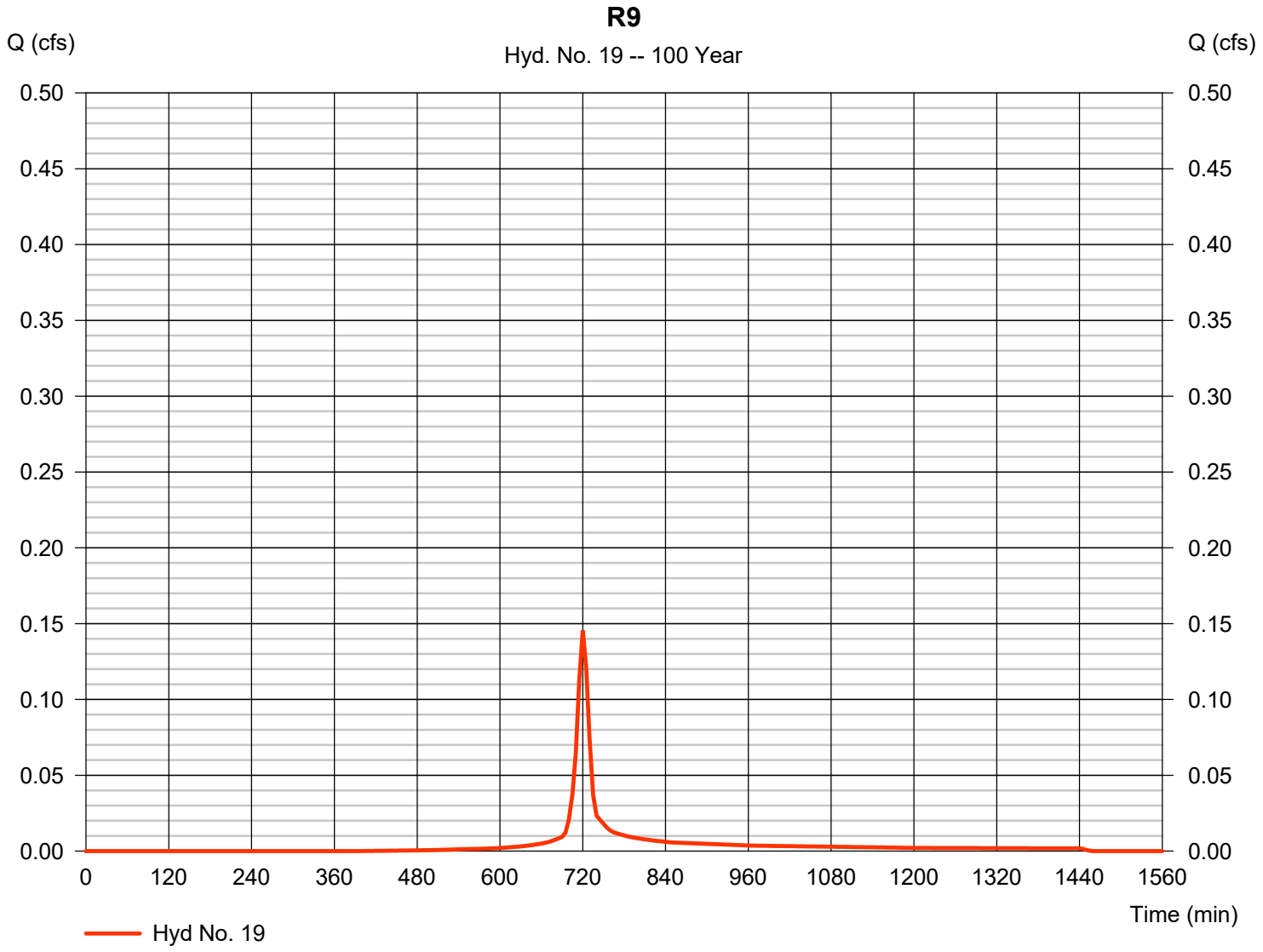
Hydrograph Report

Hyd. No. 19

R9

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.145 cfs
Storm frequency	=	100 yrs	Time to peak	=	720 min
Time interval	=	5 min	Hyd. volume	=	394 cuft
Drainage area	=	0.094 ac	Curve number	=	92*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	10.00 min
Total precip.	=	2.00 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = [(0.058 x 98) + (0.036 x 82)] / 0.094

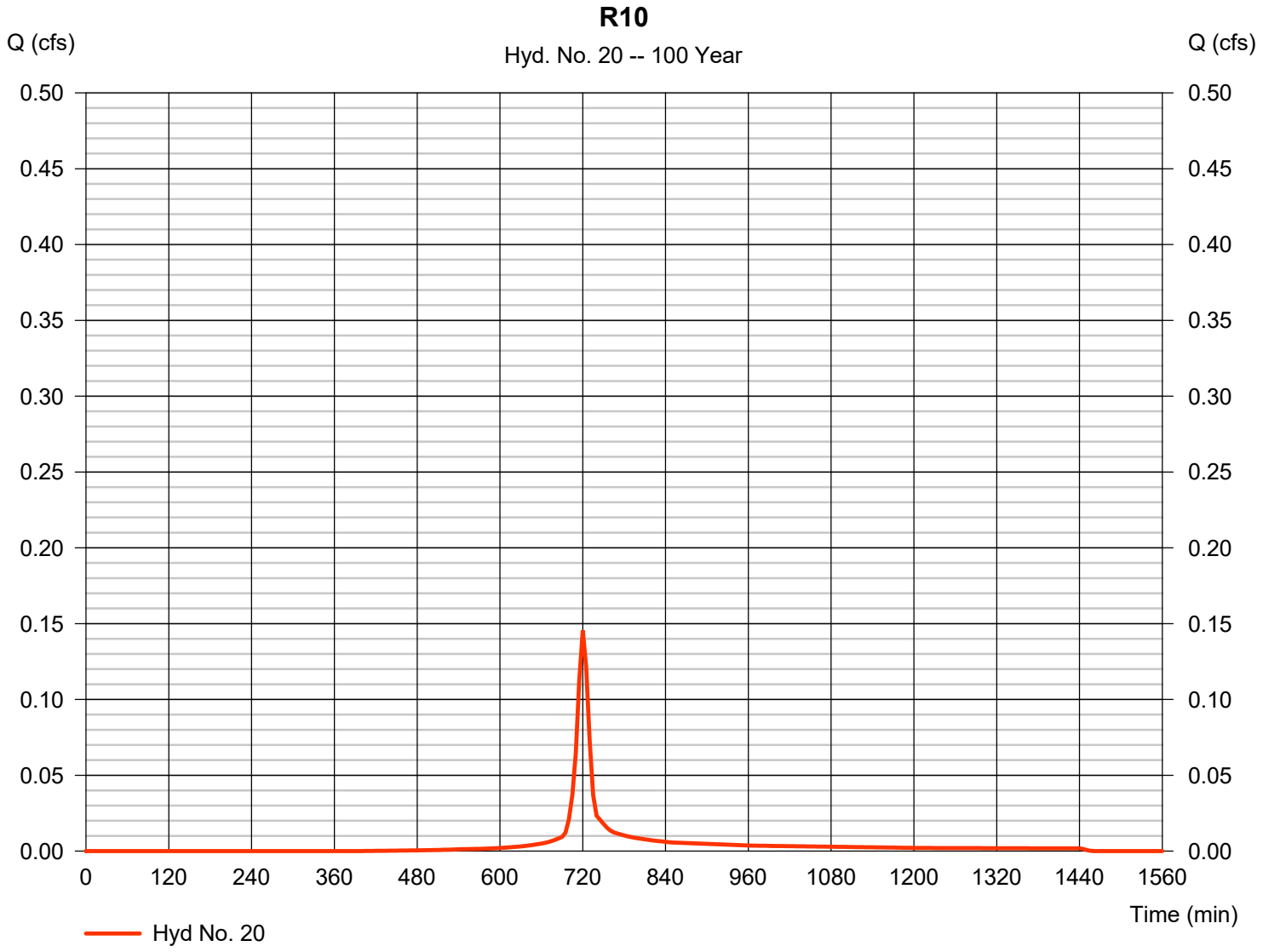


Hydrograph Report

Hyd. No. 20

R10

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.145 cfs
Storm frequency	=	100 yrs	Time to peak	=	720 min
Time interval	=	5 min	Hyd. volume	=	394 cuft
Drainage area	=	0.094 ac	Curve number	=	92
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	10.00 min
Total precip.	=	2.00 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

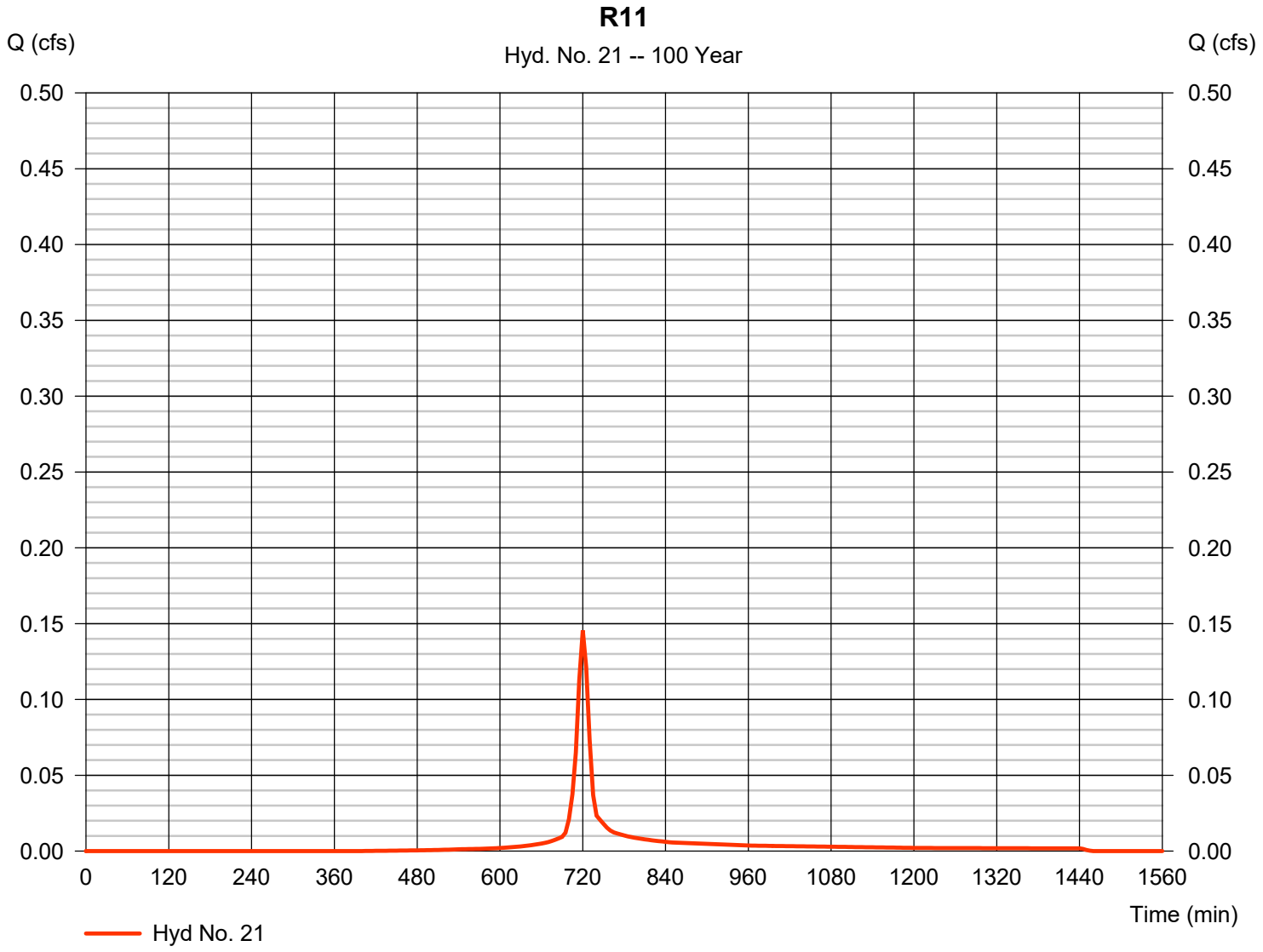


Hydrograph Report

Hyd. No. 21

R11

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.145 cfs
Storm frequency	=	100 yrs	Time to peak	=	720 min
Time interval	=	5 min	Hyd. volume	=	394 cuft
Drainage area	=	0.094 ac	Curve number	=	92
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	10.00 min
Total precip.	=	2.00 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

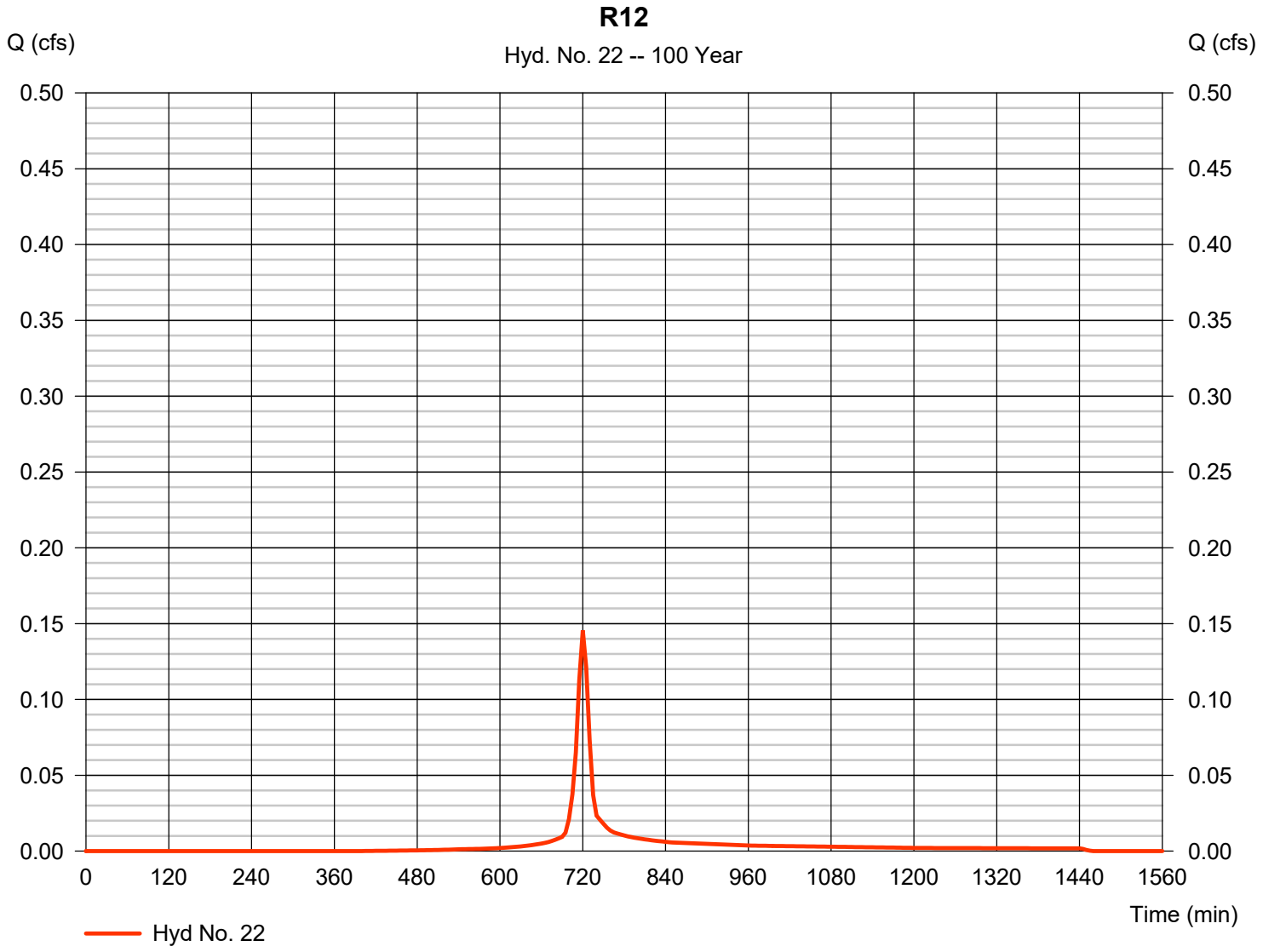


Hydrograph Report

Hyd. No. 22

R12

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.145 cfs
Storm frequency	=	100 yrs	Time to peak	=	720 min
Time interval	=	5 min	Hyd. volume	=	394 cuft
Drainage area	=	0.094 ac	Curve number	=	92
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	10.00 min
Total precip.	=	2.00 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

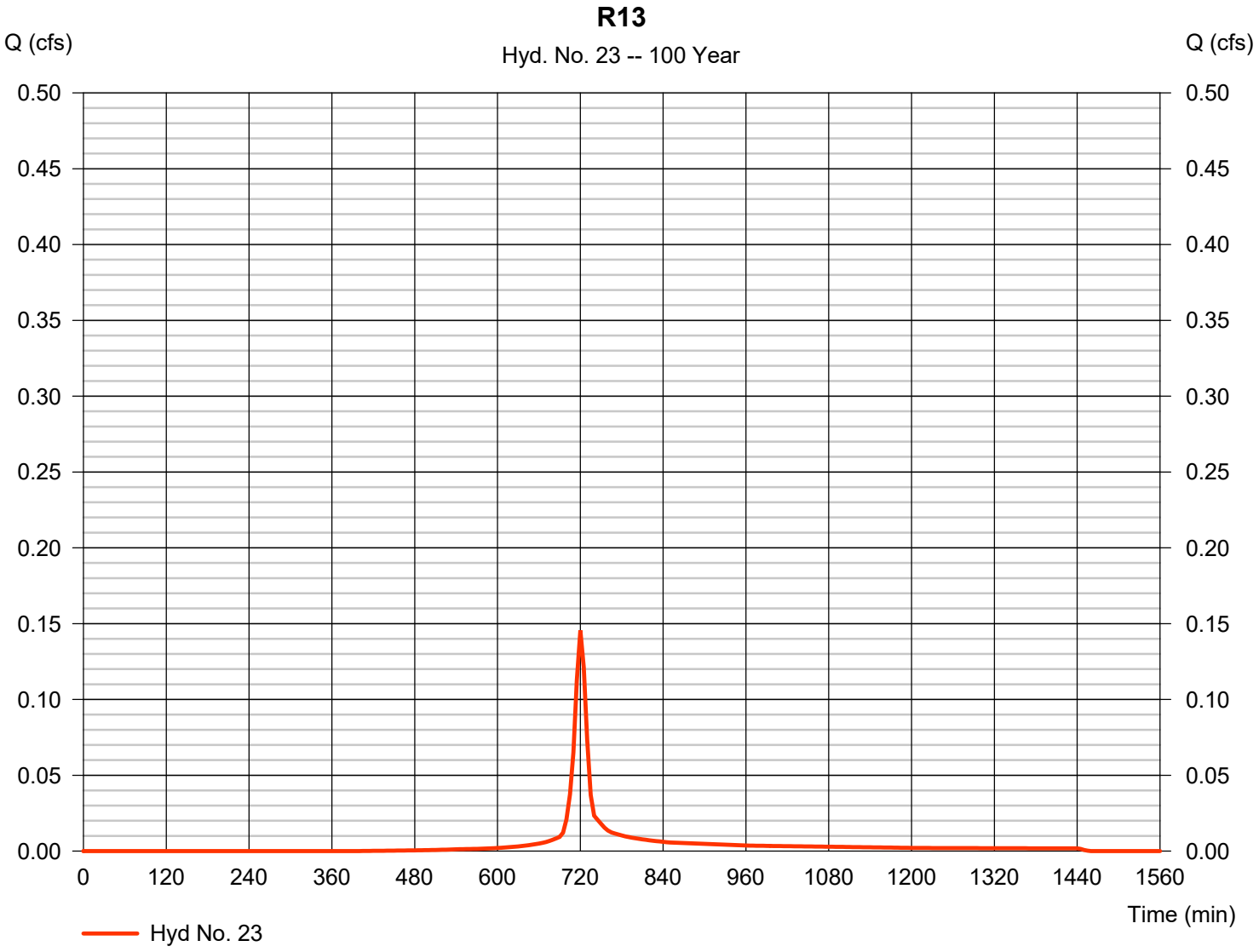


Hydrograph Report

Hyd. No. 23

R13

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.145 cfs
Storm frequency	=	100 yrs	Time to peak	=	720 min
Time interval	=	5 min	Hyd. volume	=	394 cuft
Drainage area	=	0.094 ac	Curve number	=	92
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	10.00 min
Total precip.	=	2.00 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

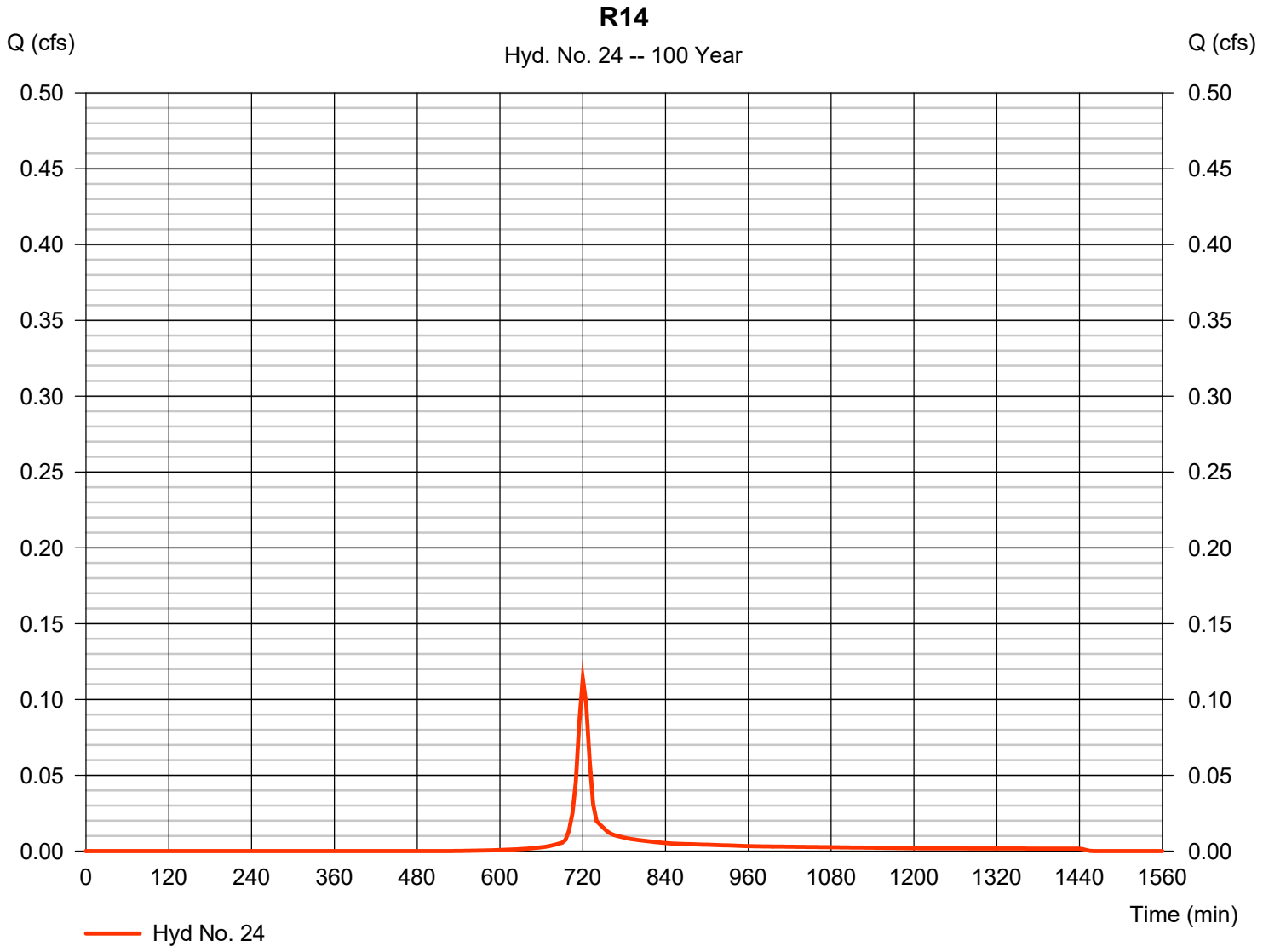


Hydrograph Report

Hyd. No. 24

R14

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.114 cfs
Storm frequency	=	100 yrs	Time to peak	=	720 min
Time interval	=	5 min	Hyd. volume	=	308 cuft
Drainage area	=	0.094 ac	Curve number	=	88
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	10.00 min
Total precip.	=	2.00 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

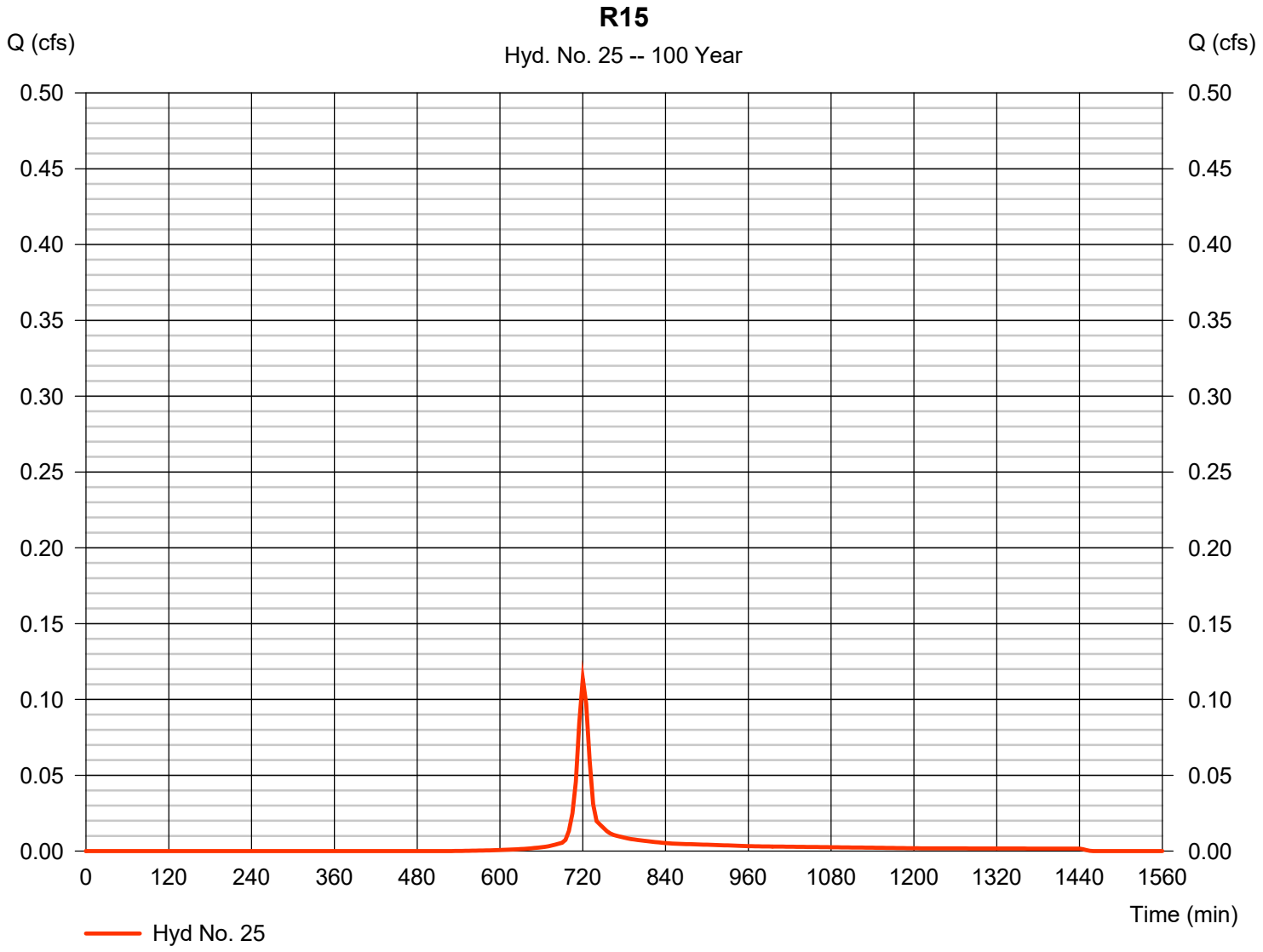


Hydrograph Report

Hyd. No. 25

R15

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.114 cfs
Storm frequency	=	100 yrs	Time to peak	=	720 min
Time interval	=	5 min	Hyd. volume	=	308 cuft
Drainage area	=	0.094 ac	Curve number	=	88
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	10.00 min
Total precip.	=	2.00 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

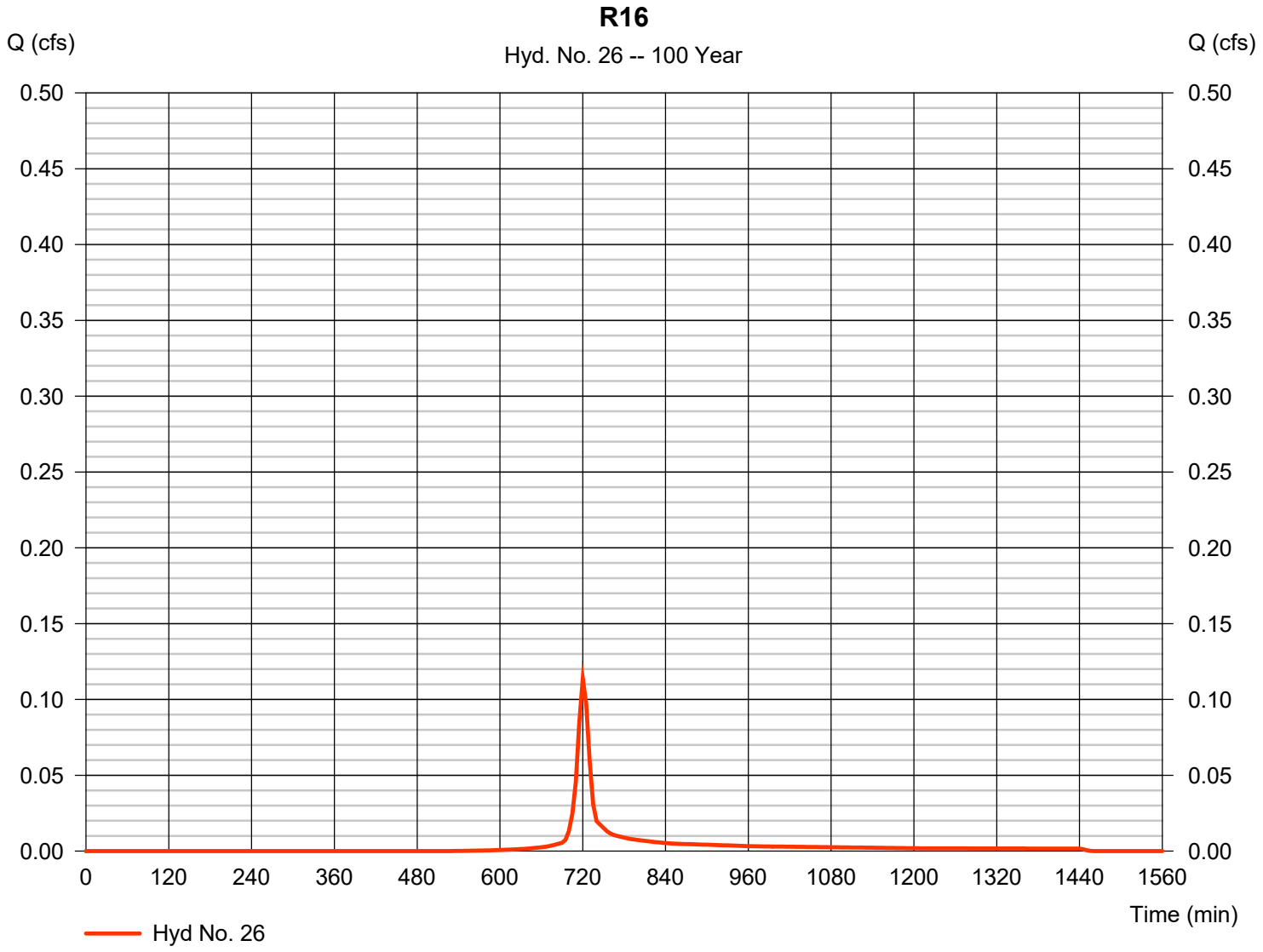


Hydrograph Report

Hyd. No. 26

R16

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.114 cfs
Storm frequency	=	100 yrs	Time to peak	=	720 min
Time interval	=	5 min	Hyd. volume	=	308 cuft
Drainage area	=	0.094 ac	Curve number	=	88
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	10.00 min
Total precip.	=	2.00 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

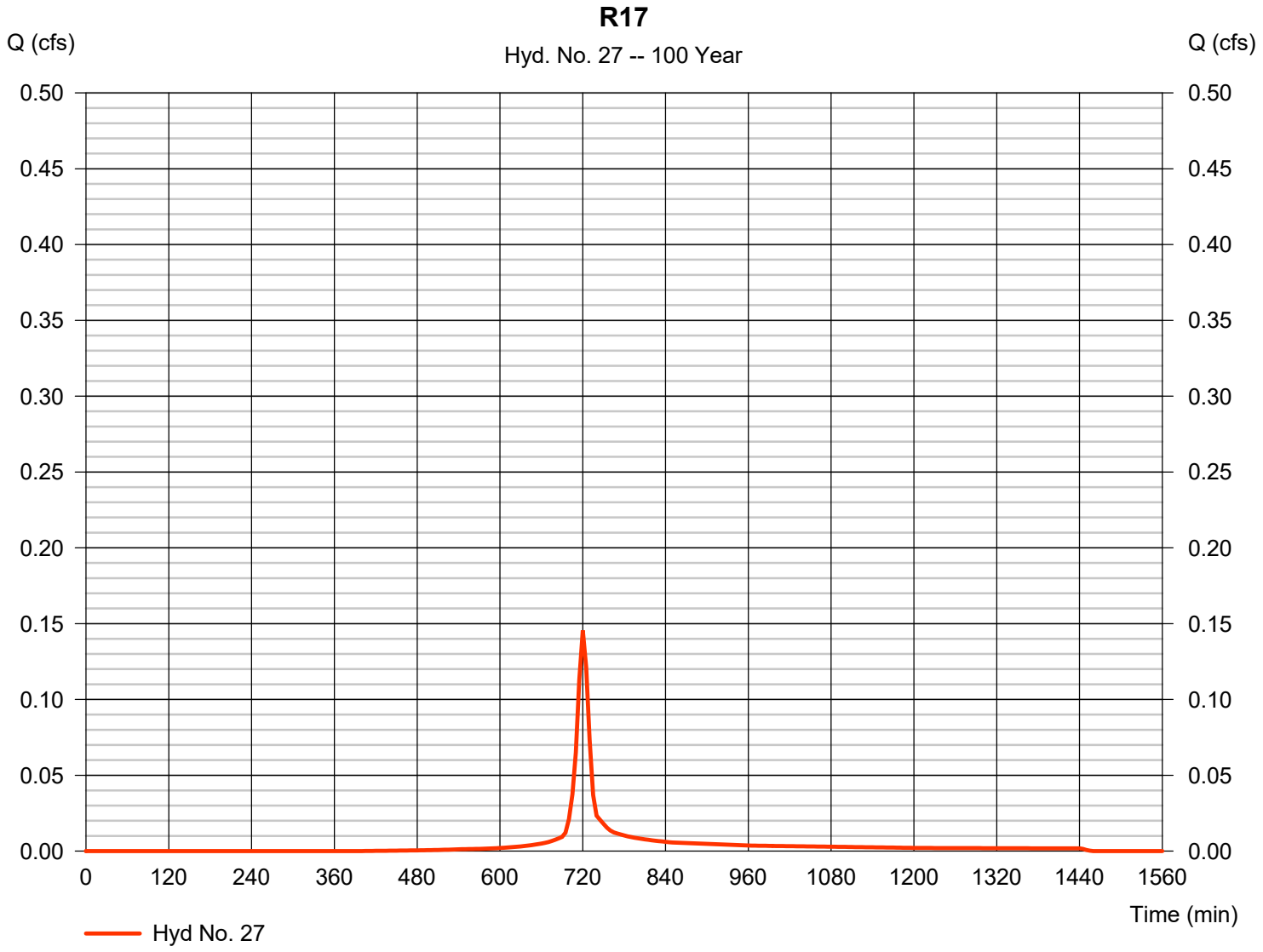


Hydrograph Report

Hyd. No. 27

R17

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.145 cfs
Storm frequency	=	100 yrs	Time to peak	=	720 min
Time interval	=	5 min	Hyd. volume	=	394 cuft
Drainage area	=	0.094 ac	Curve number	=	92
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	10.00 min
Total precip.	=	2.00 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

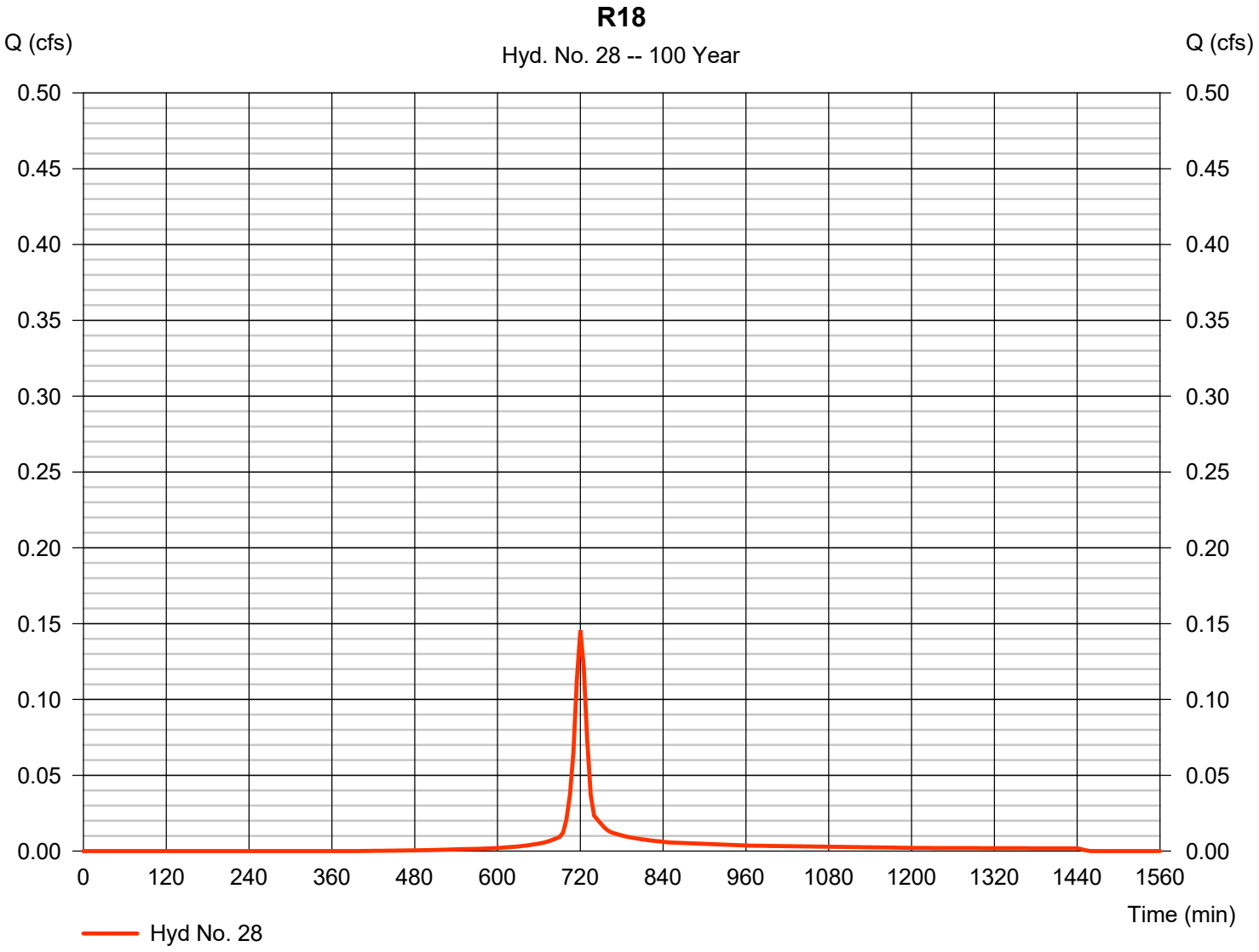


Hydrograph Report

Hyd. No. 28

R18

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.145 cfs
Storm frequency	=	100 yrs	Time to peak	=	720 min
Time interval	=	5 min	Hyd. volume	=	394 cuft
Drainage area	=	0.094 ac	Curve number	=	92
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	10.00 min
Total precip.	=	2.00 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

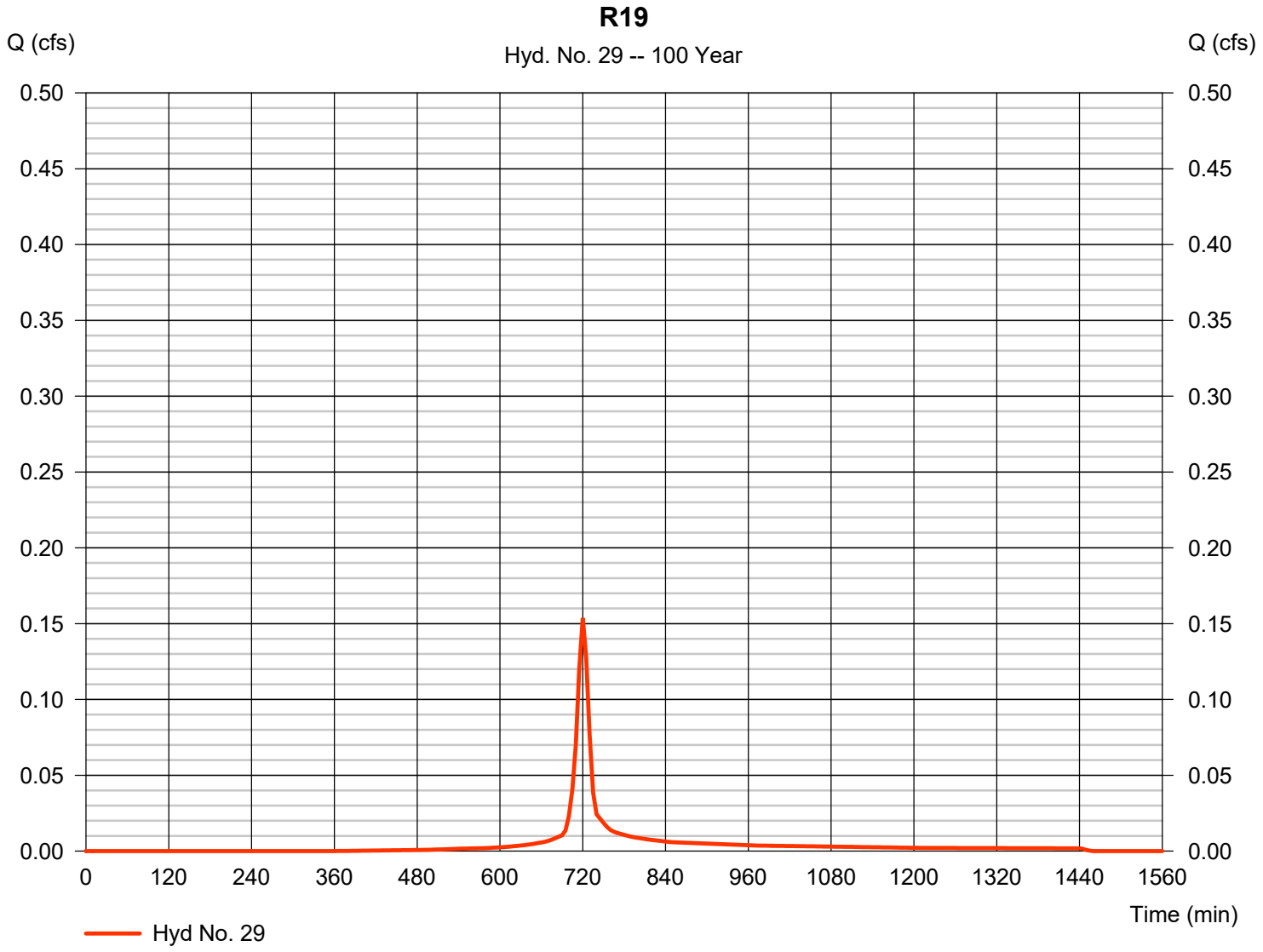


Hydrograph Report

Hyd. No. 29

R19

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.154 cfs
Storm frequency	=	100 yrs	Time to peak	=	720 min
Time interval	=	5 min	Hyd. volume	=	419 cuft
Drainage area	=	0.094 ac	Curve number	=	93
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	10.00 min
Total precip.	=	2.00 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

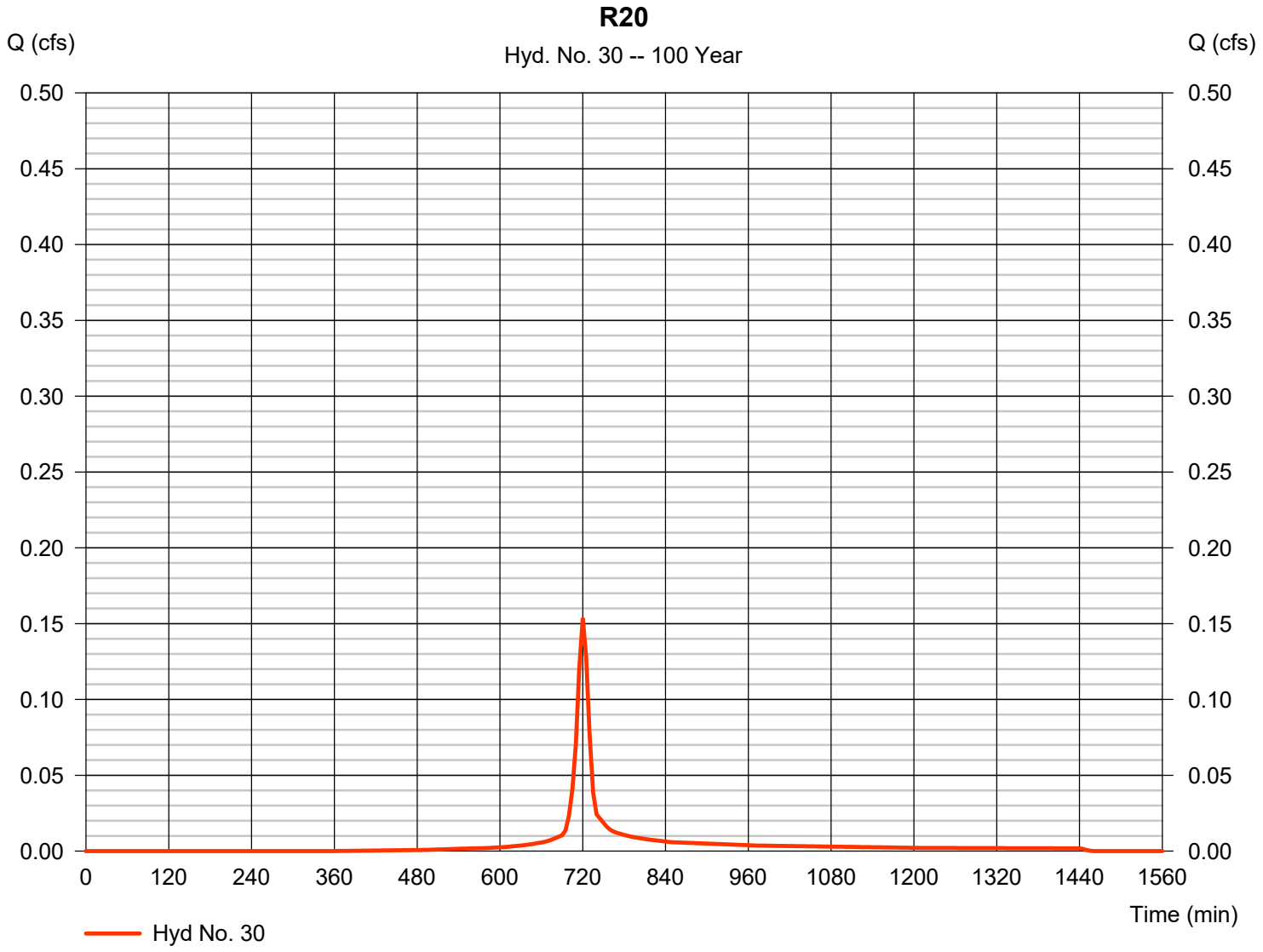


Hydrograph Report

Hyd. No. 30

R20

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.154 cfs
Storm frequency	=	100 yrs	Time to peak	=	720 min
Time interval	=	5 min	Hyd. volume	=	419 cuft
Drainage area	=	0.094 ac	Curve number	=	93
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	10.00 min
Total precip.	=	2.00 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

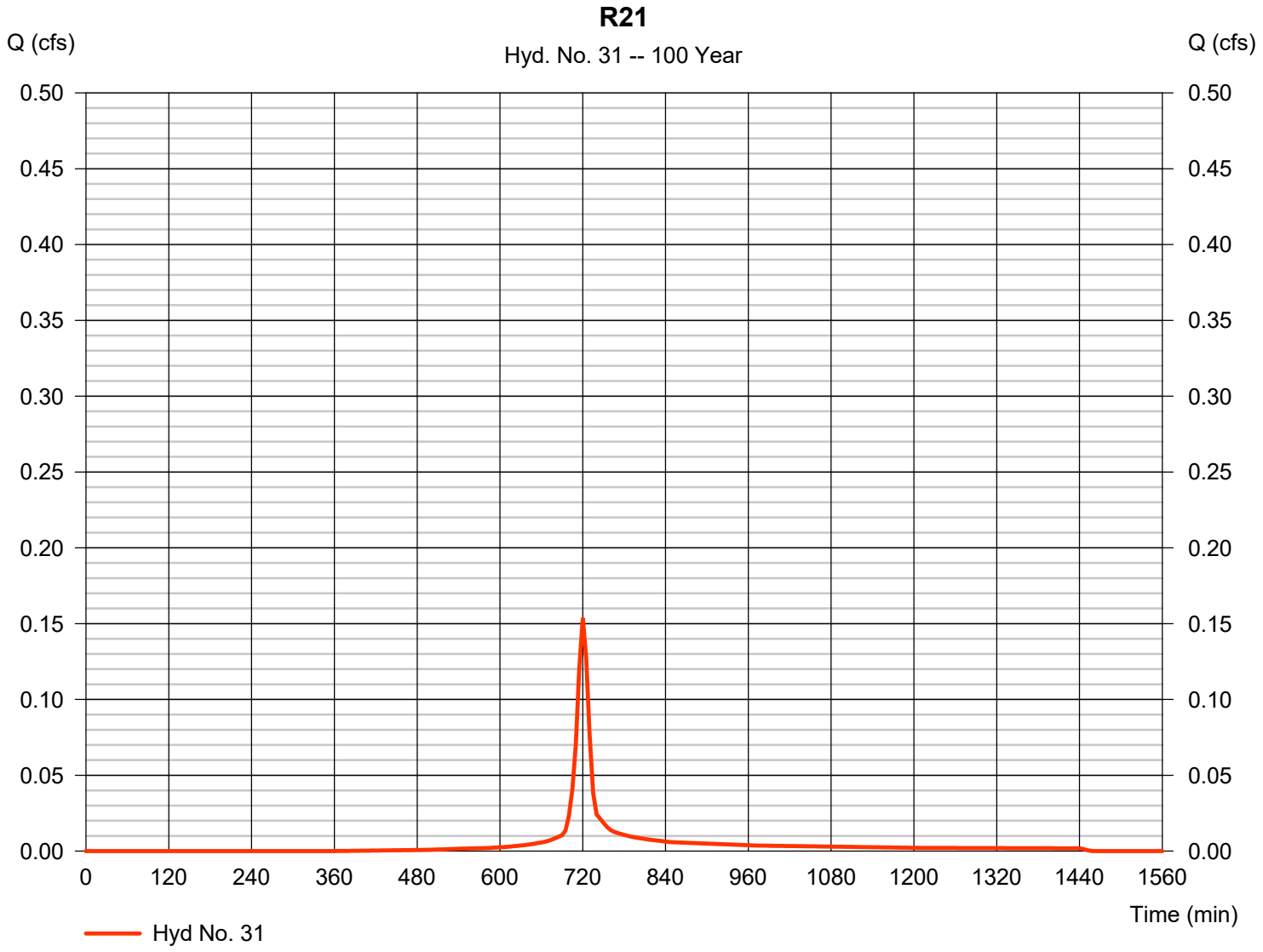


Hydrograph Report

Hyd. No. 31

R21

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.154 cfs
Storm frequency	=	100 yrs	Time to peak	=	720 min
Time interval	=	5 min	Hyd. volume	=	419 cuft
Drainage area	=	0.094 ac	Curve number	=	93
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	10.00 min
Total precip.	=	2.00 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

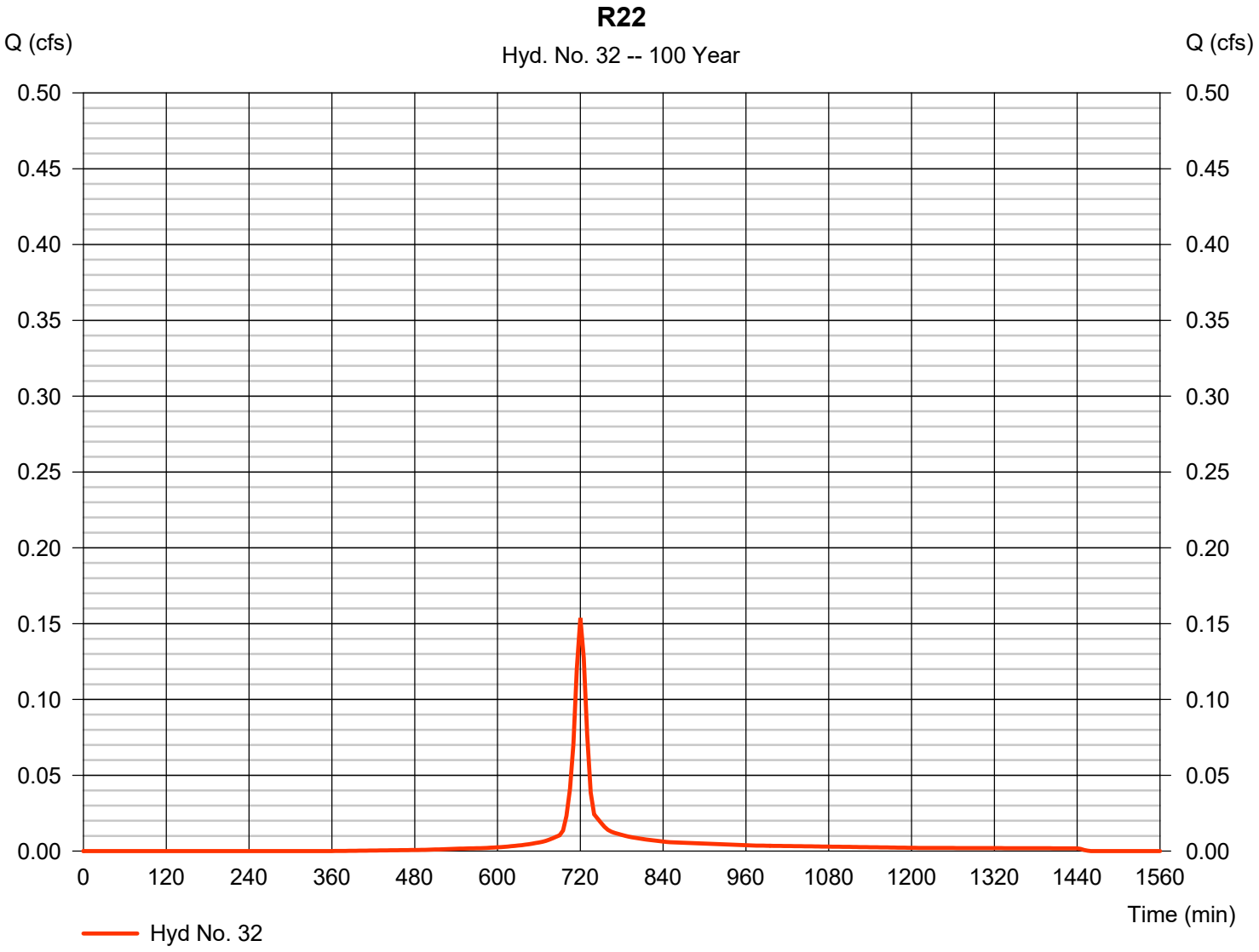


Hydrograph Report

Hyd. No. 32

R22

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.154 cfs
Storm frequency	=	100 yrs	Time to peak	=	720 min
Time interval	=	5 min	Hyd. volume	=	419 cuft
Drainage area	=	0.094 ac	Curve number	=	93
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	10.00 min
Total precip.	=	2.00 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

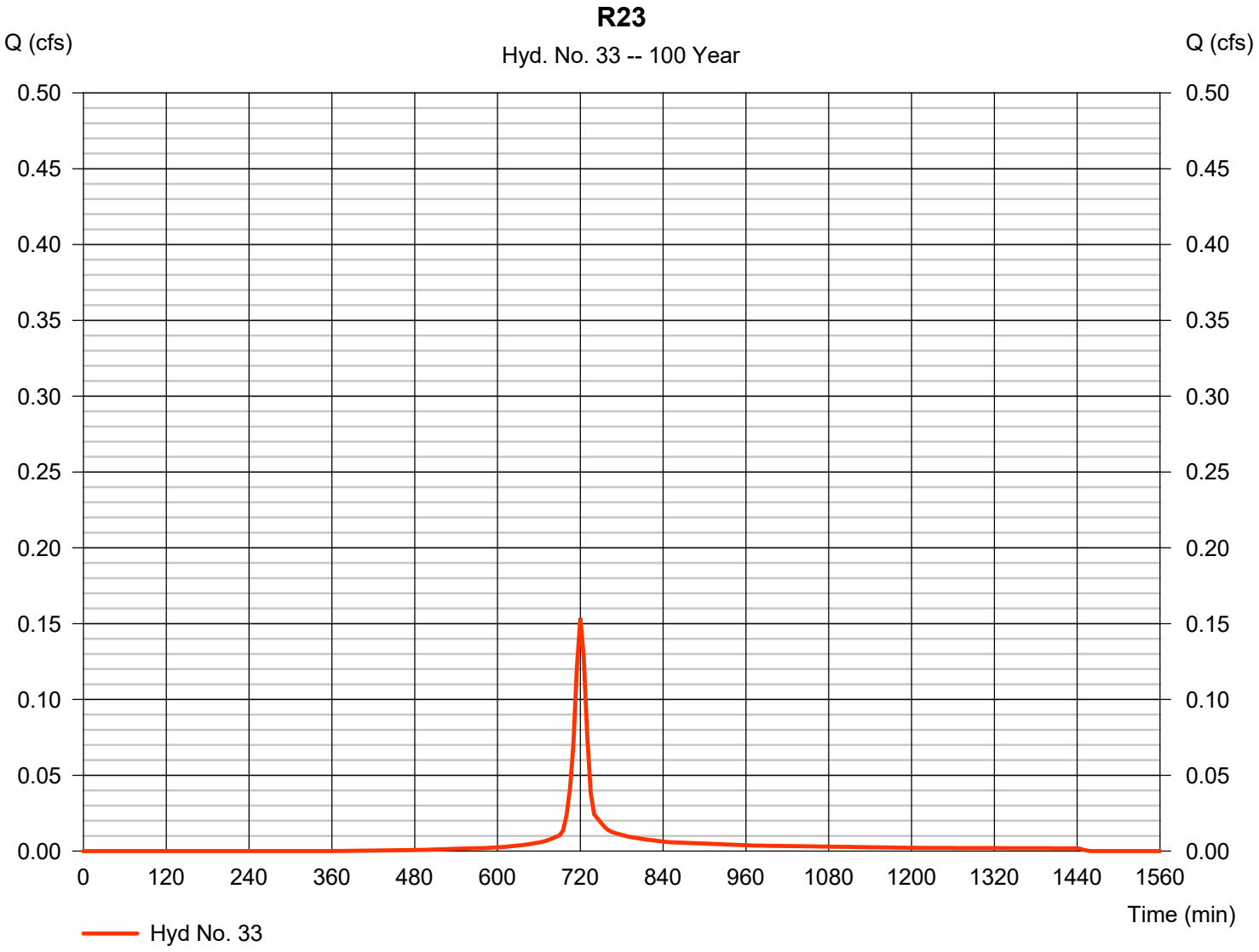


Hydrograph Report

Hyd. No. 33

R23

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.154 cfs
Storm frequency	=	100 yrs	Time to peak	=	720 min
Time interval	=	5 min	Hyd. volume	=	419 cuft
Drainage area	=	0.094 ac	Curve number	=	93
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	10.00 min
Total precip.	=	2.00 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

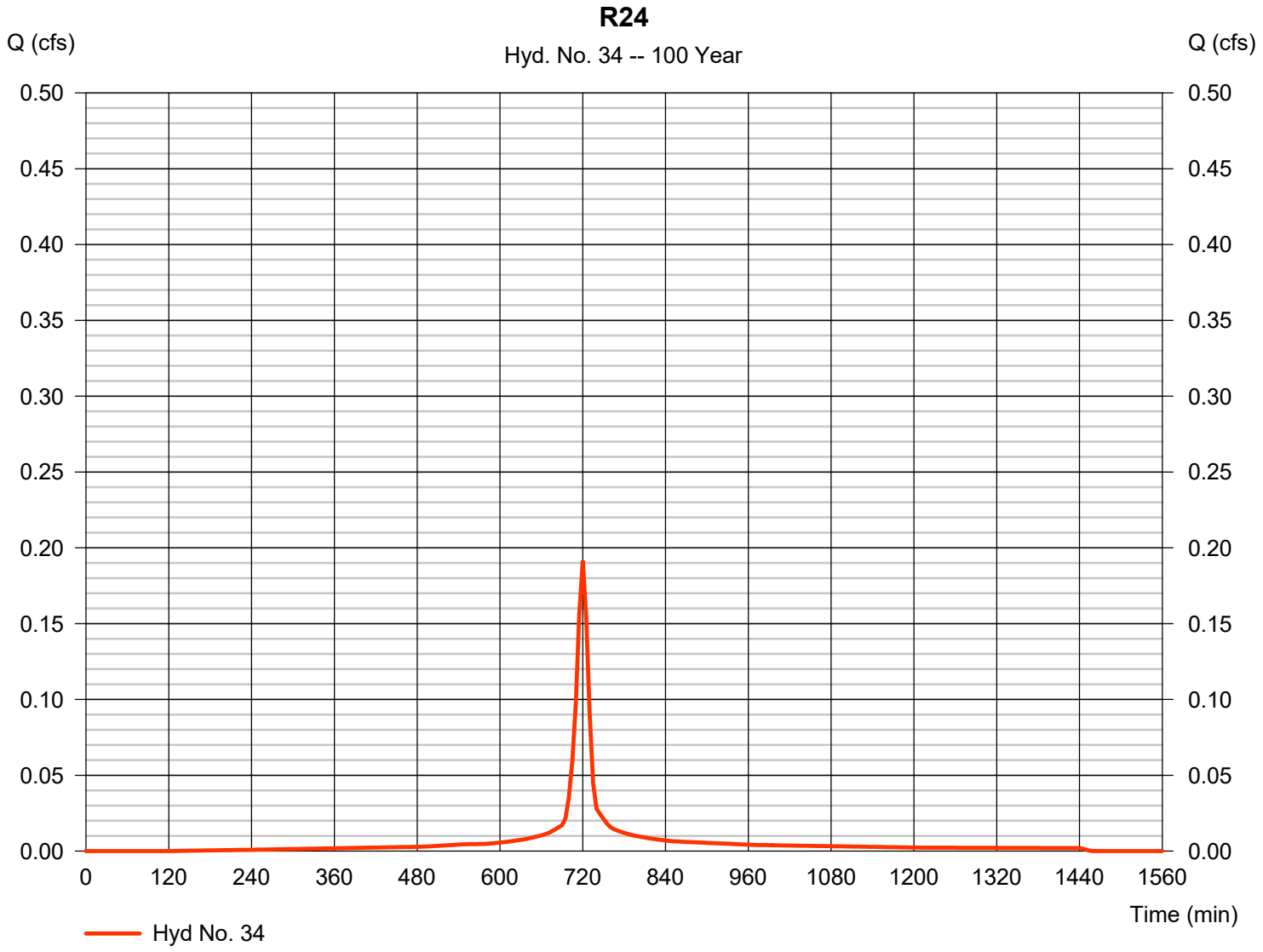


Hydrograph Report

Hyd. No. 34

R24

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.191 cfs
Storm frequency	=	100 yrs	Time to peak	=	720 min
Time interval	=	5 min	Hyd. volume	=	566 cuft
Drainage area	=	0.094 ac	Curve number	=	98
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	10.00 min
Total precip.	=	2.00 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

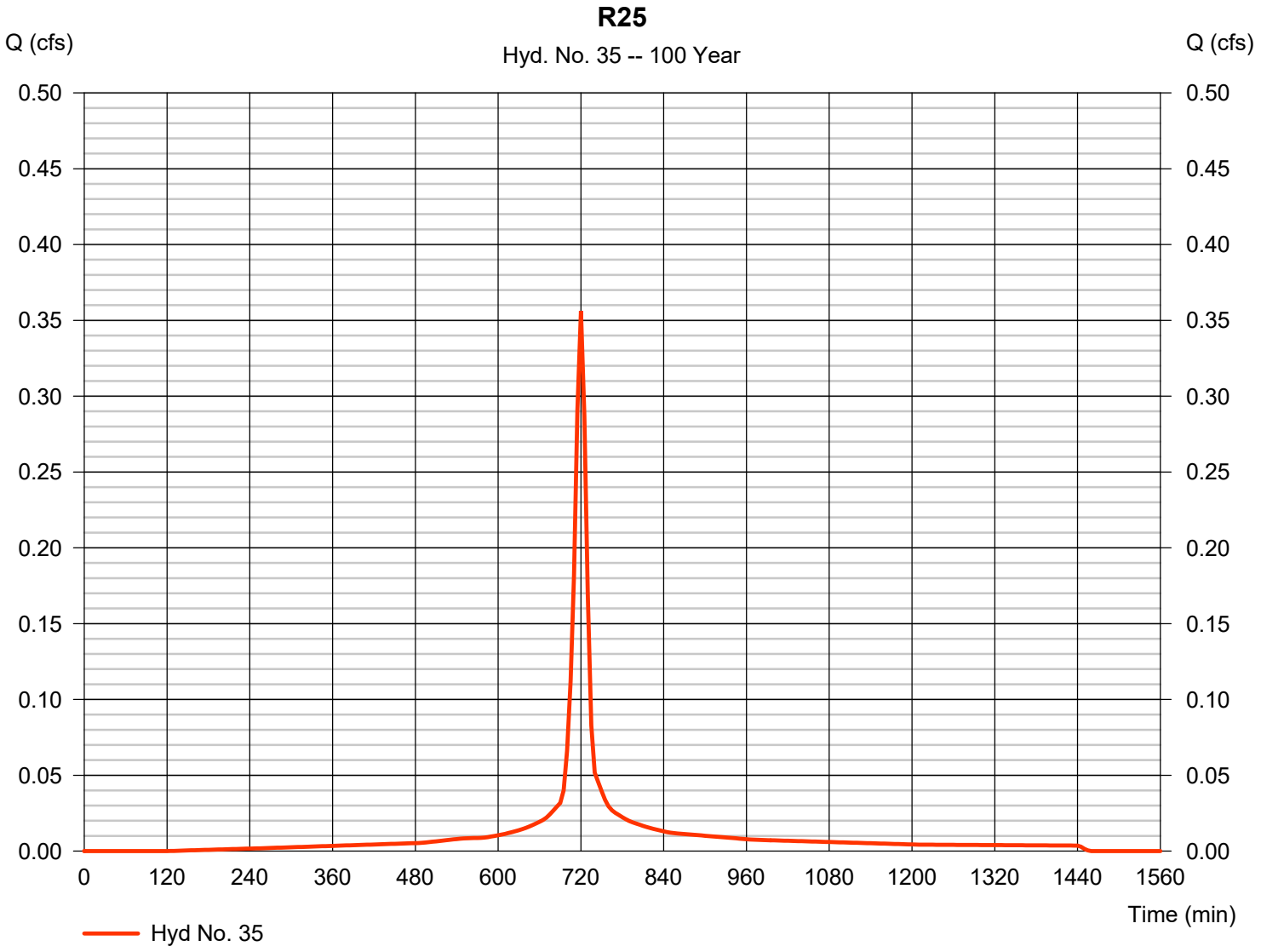


Hydrograph Report

Hyd. No. 35

R25

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.356 cfs
Storm frequency	=	100 yrs	Time to peak	=	720 min
Time interval	=	5 min	Hyd. volume	=	1,052 cuft
Drainage area	=	0.174 ac	Curve number	=	98
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	10.00 min
Total precip.	=	2.00 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484



Hydraflow Table of Contents

50 - Year

100 - Year

Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	0.309	5	725	1,453	------	------	------	Basin 1
2	SCS Runoff	1.650	5	720	4,611	------	------	------	Basin 2
3	SCS Runoff	2.950	5	720	8,129	------	------	------	Basin 3
4	SCS Runoff	1.505	5	720	4,205	------	------	------	Basin 4
5	SCS Runoff	1.882	5	735	10,990	------	------	------	Basin 5
6	SCS Runoff	0.383	5	725	1,461	------	------	------	Basin 6
7	SCS Runoff	6.133	5	720	16,898	------	------	------	Basin 7
8	SCS Runoff	0.896	5	720	2,422	------	------	------	Basin 8
9	SCS Runoff	3.900	2	720	10,168	------	------	------	Basin 9
10	SCS Runoff	2.216	5	720	5,987	------	------	------	Basin 10
11	SCS Runoff	0.189	5	720	555	------	------	------	R1
12	SCS Runoff	0.192	5	720	562	------	------	------	R2
13	SCS Runoff	0.106	5	720	310	------	------	------	R3
14	SCS Runoff	0.138	5	720	404	------	------	------	R4
15	SCS Runoff	0.167	5	720	490	------	------	------	R5
16	SCS Runoff	0.167	5	720	490	------	------	------	R6
17	SCS Runoff	0.167	5	720	490	------	------	------	R7
18	SCS Runoff	0.167	5	720	490	------	------	------	R8
19	SCS Runoff	0.167	5	720	490	------	------	------	R9
20	SCS Runoff	0.167	5	720	490	------	------	------	R10
21	SCS Runoff	0.167	5	720	490	------	------	------	R11
22	SCS Runoff	0.167	5	720	490	------	------	------	R12
23	SCS Runoff	0.167	5	720	490	------	------	------	R13
24	SCS Runoff	0.167	5	720	490	------	------	------	R14
25	SCS Runoff	0.167	5	720	490	------	------	------	R15
26	SCS Runoff	0.167	5	720	490	------	------	------	R16
27	SCS Runoff	0.167	5	720	490	------	------	------	R17
28	SCS Runoff	0.167	5	720	490	------	------	------	R18
29	SCS Runoff	0.167	5	720	490	------	------	------	R19
30	SCS Runoff	0.167	5	720	490	------	------	------	R20
31	SCS Runoff	0.167	5	720	490	------	------	------	R21
32	SCS Runoff	0.167	5	720	490	------	------	------	R22
33	SCS Runoff	0.167	5	720	490	------	------	------	R23
34	SCS Runoff	0.167	5	720	490	------	------	------	R24

Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021

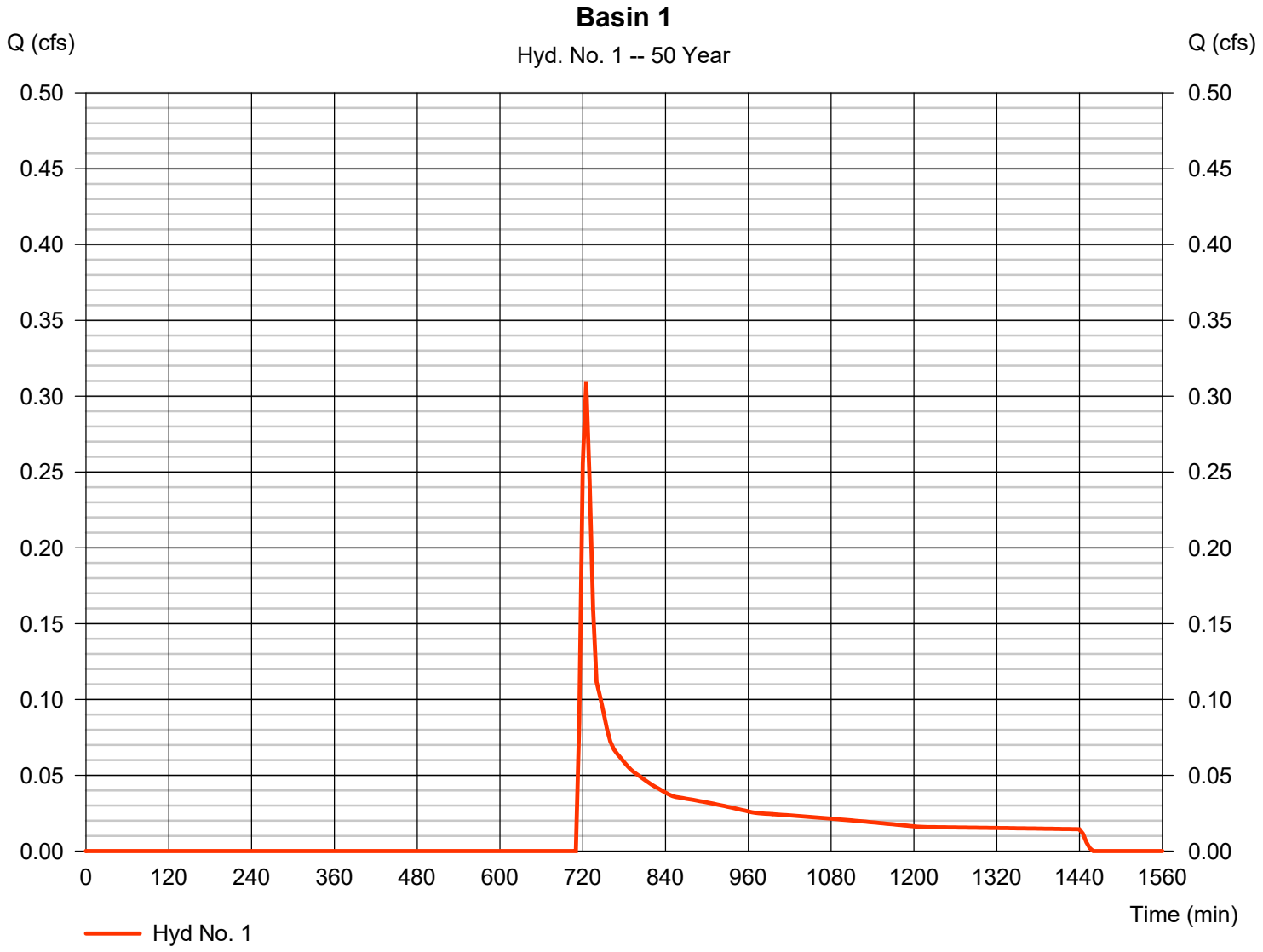
Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
35	SCS Runoff	0.311	5	720	911	------	------	------	R25

Hydrograph Report

Hyd. No. 1

Basin 1

Hydrograph type	= SCS Runoff	Peak discharge	= 0.309 cfs
Storm frequency	= 50 yrs	Time to peak	= 725 min
Time interval	= 5 min	Hyd. volume	= 1,453 cuft
Drainage area	= 2.162 ac	Curve number	= 72
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 11.80 min
Total precip.	= 1.76 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

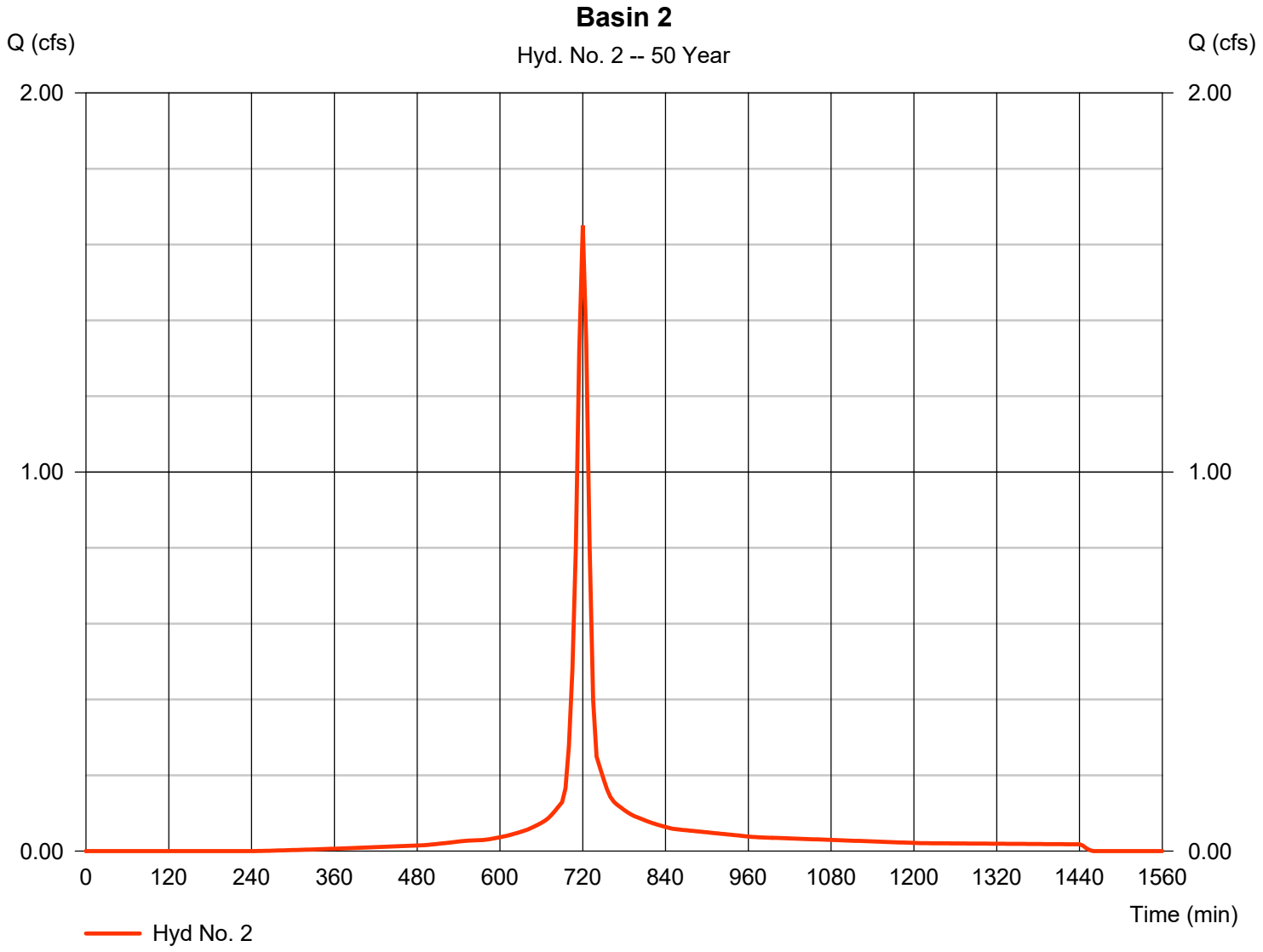


Hydrograph Report

Hyd. No. 2

Basin 2

Hydrograph type	= SCS Runoff	Peak discharge	= 1.650 cfs
Storm frequency	= 50 yrs	Time to peak	= 720 min
Time interval	= 5 min	Hyd. volume	= 4,611 cuft
Drainage area	= 1.009 ac	Curve number	= 96
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 1.76 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

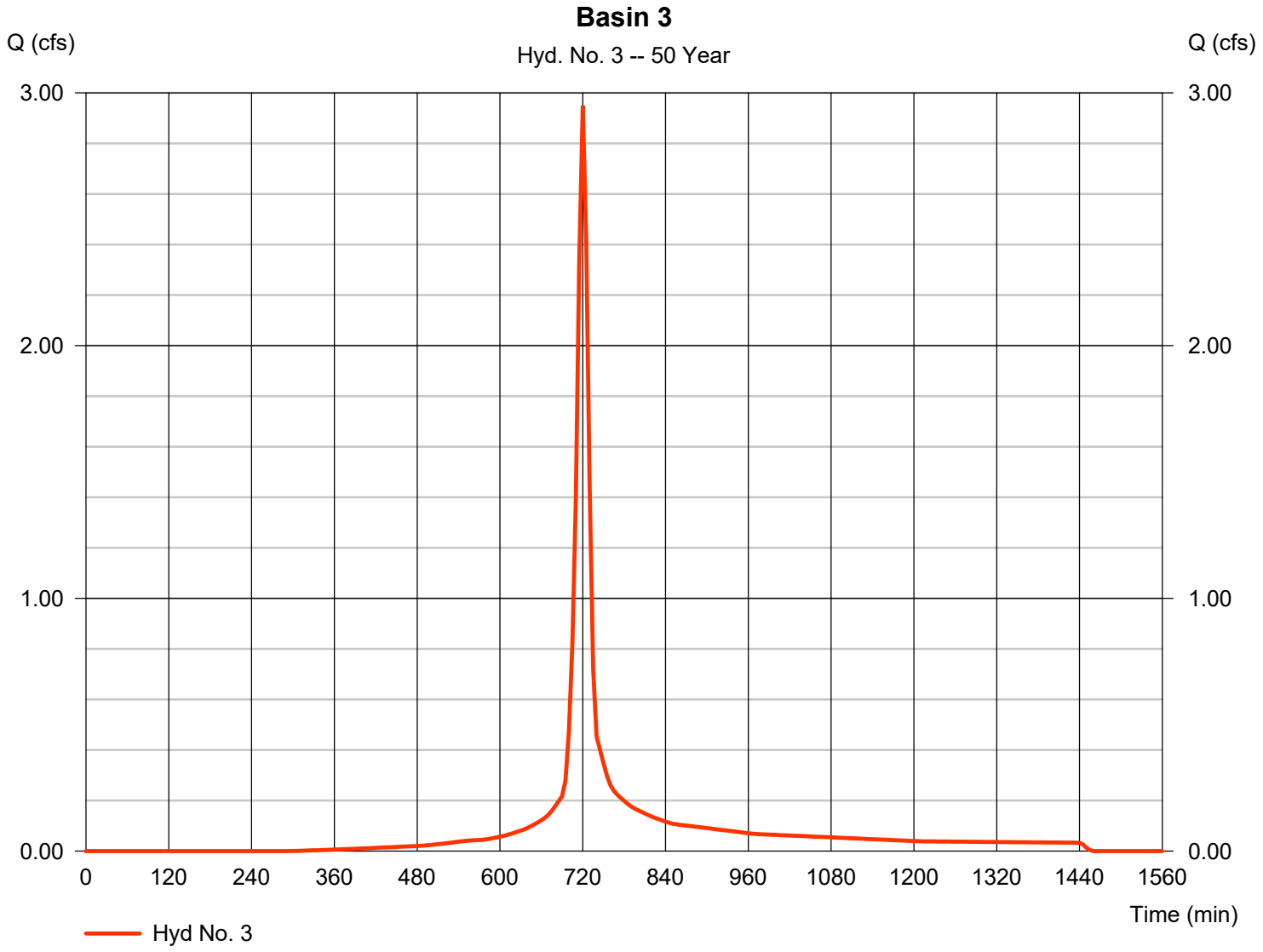


Hydrograph Report

Hyd. No. 3

Basin 3

Hydrograph type	= SCS Runoff	Peak discharge	= 2.950 cfs
Storm frequency	= 50 yrs	Time to peak	= 720 min
Time interval	= 5 min	Hyd. volume	= 8,129 cuft
Drainage area	= 1.903 ac	Curve number	= 95
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 1.76 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

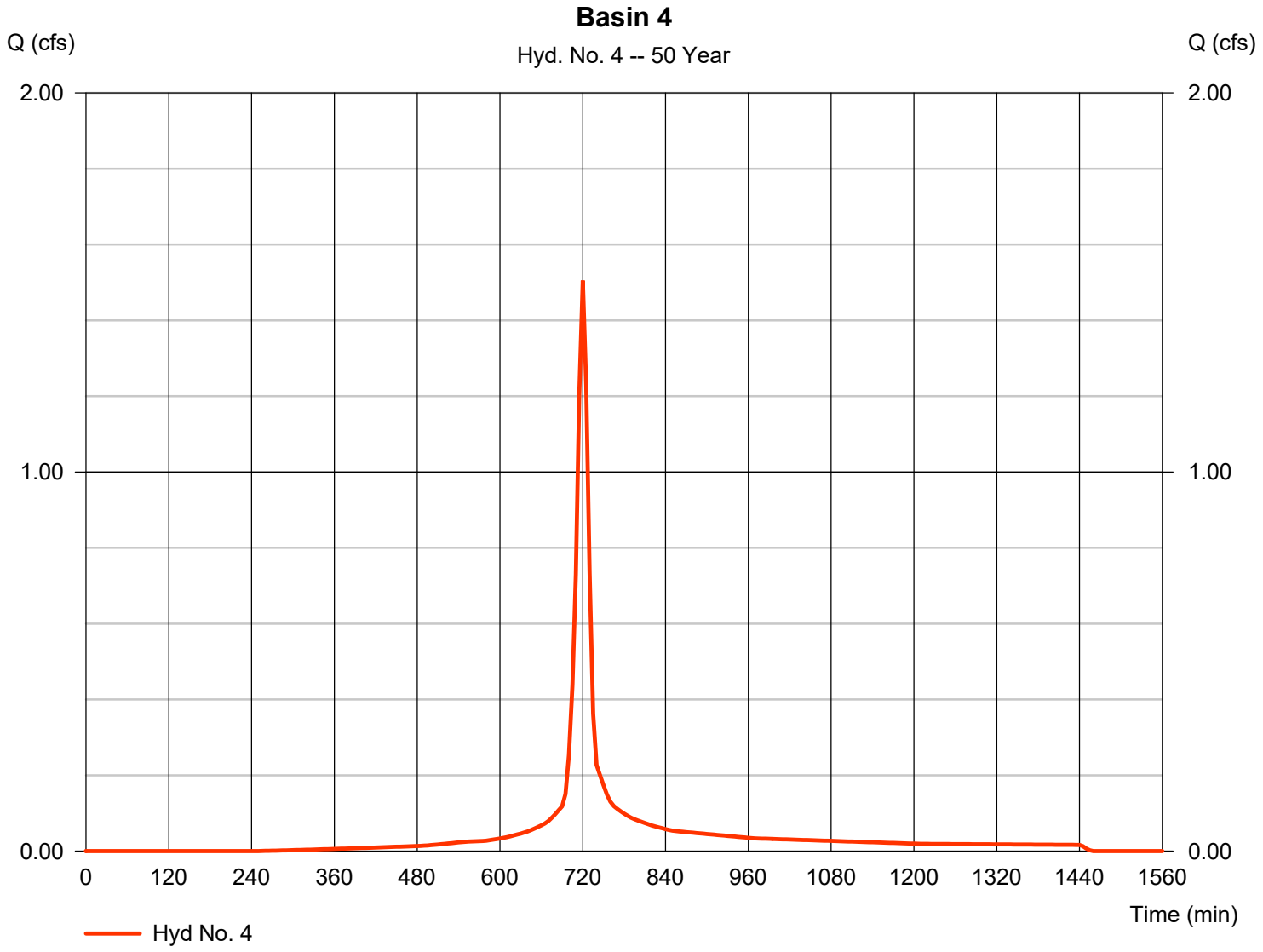


Hydrograph Report

Hyd. No. 4

Basin 4

Hydrograph type	= SCS Runoff	Peak discharge	= 1.505 cfs
Storm frequency	= 50 yrs	Time to peak	= 720 min
Time interval	= 5 min	Hyd. volume	= 4,205 cuft
Drainage area	= 0.920 ac	Curve number	= 96
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 1.76 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

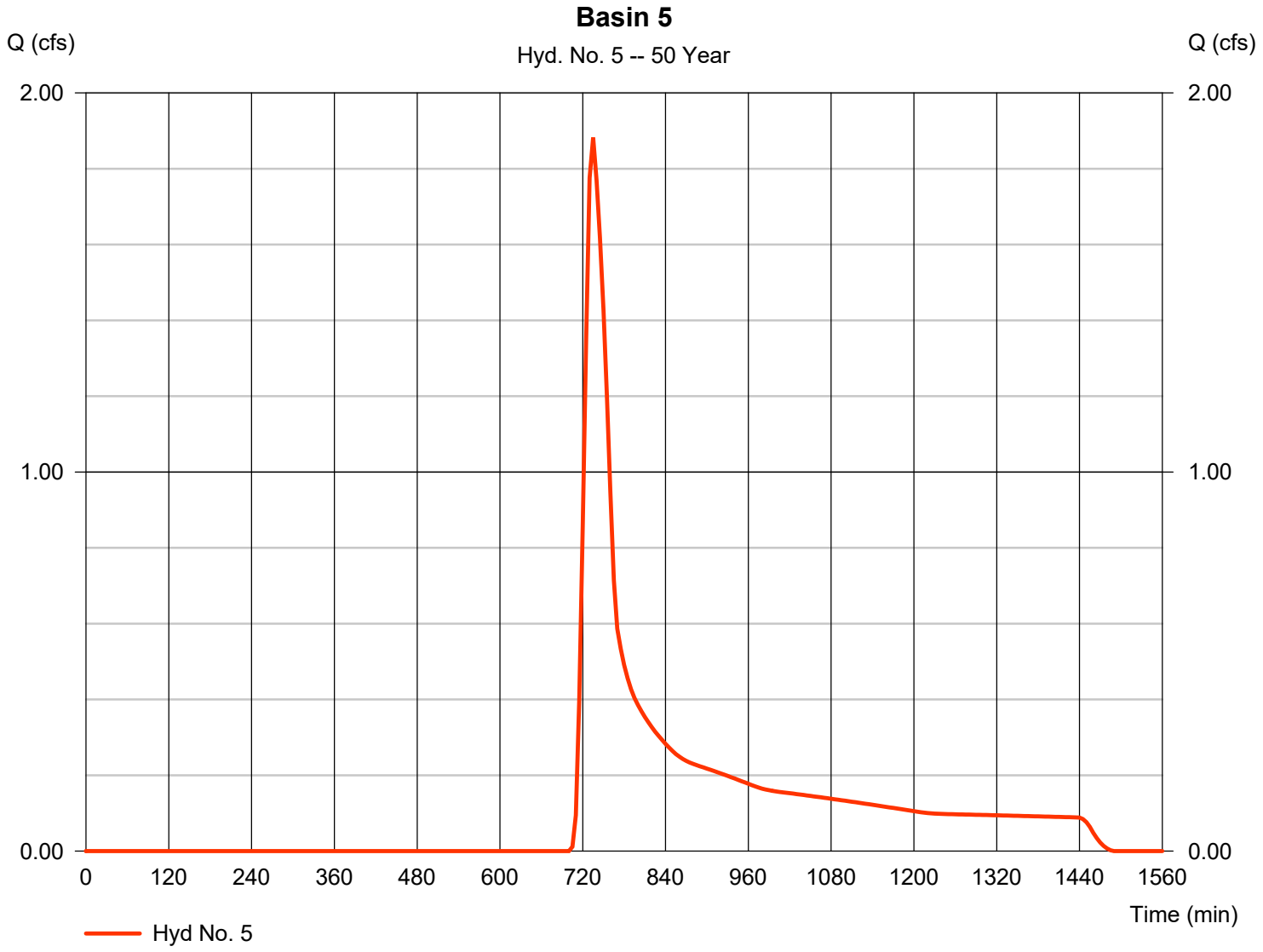


Hydrograph Report

Hyd. No. 5

Basin 5

Hydrograph type	= SCS Runoff	Peak discharge	= 1.882 cfs
Storm frequency	= 50 yrs	Time to peak	= 735 min
Time interval	= 5 min	Hyd. volume	= 10,990 cuft
Drainage area	= 9.013 ac	Curve number	= 77
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 30.10 min
Total precip.	= 1.76 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

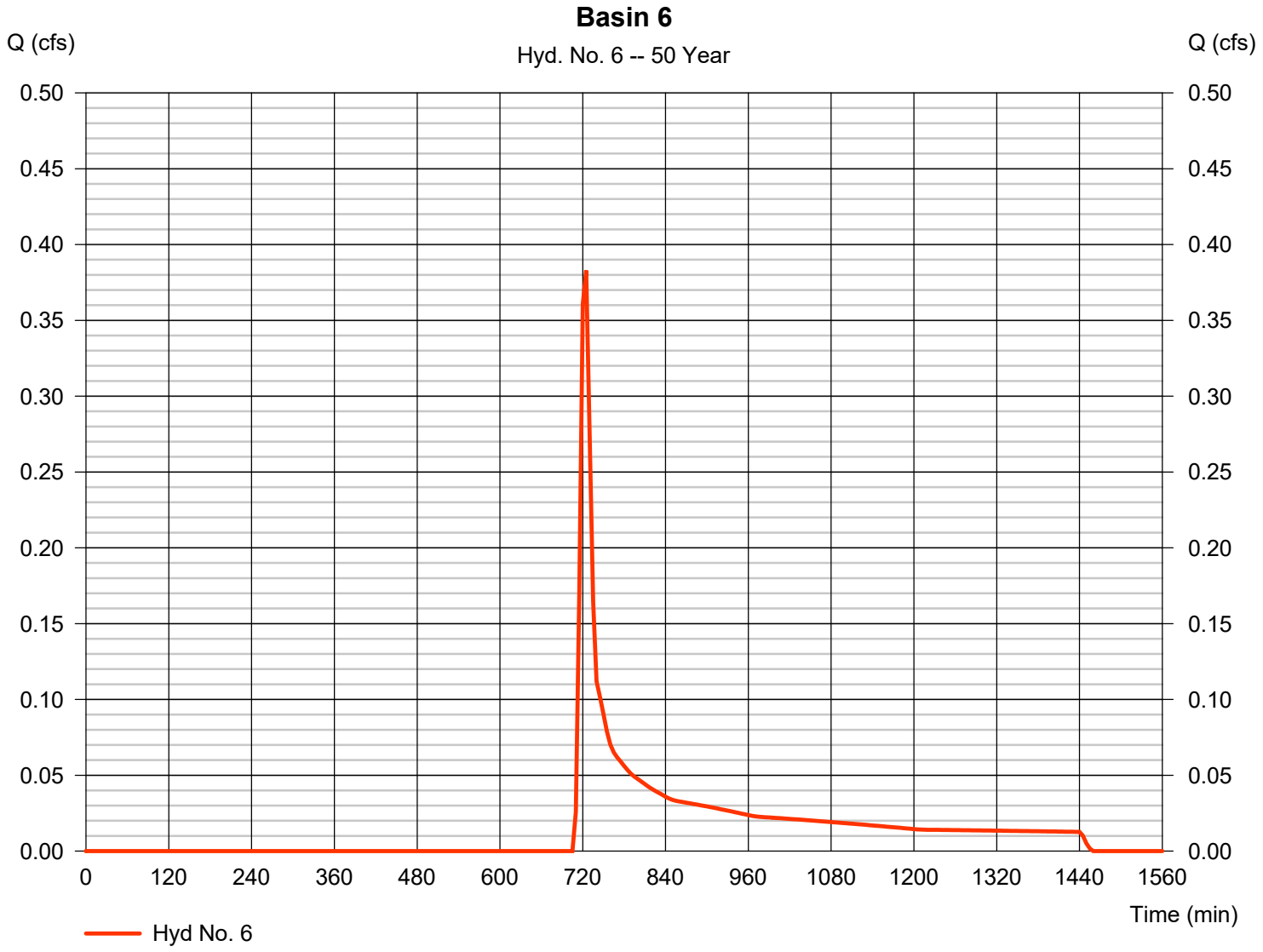


Hydrograph Report

Hyd. No. 6

Basin 6

Hydrograph type	= SCS Runoff	Peak discharge	= 0.383 cfs
Storm frequency	= 50 yrs	Time to peak	= 725 min
Time interval	= 5 min	Hyd. volume	= 1,461 cuft
Drainage area	= 1.590 ac	Curve number	= 75
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 15.10 min
Total precip.	= 1.76 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

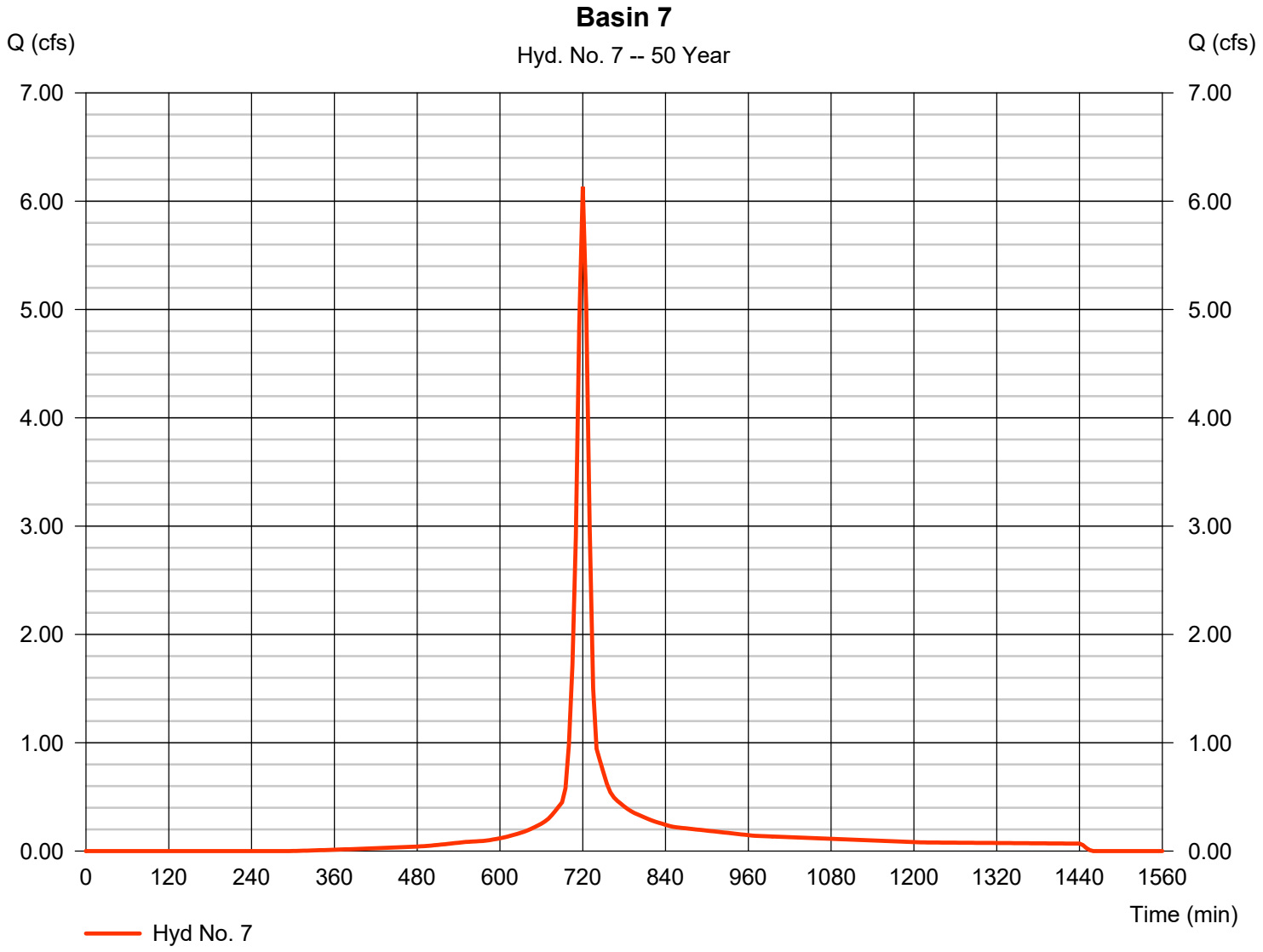


Hydrograph Report

Hyd. No. 7

Basin 7

Hydrograph type	= SCS Runoff	Peak discharge	= 6.133 cfs
Storm frequency	= 50 yrs	Time to peak	= 720 min
Time interval	= 5 min	Hyd. volume	= 16,898 cuft
Drainage area	= 3.955 ac	Curve number	= 95
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 1.76 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

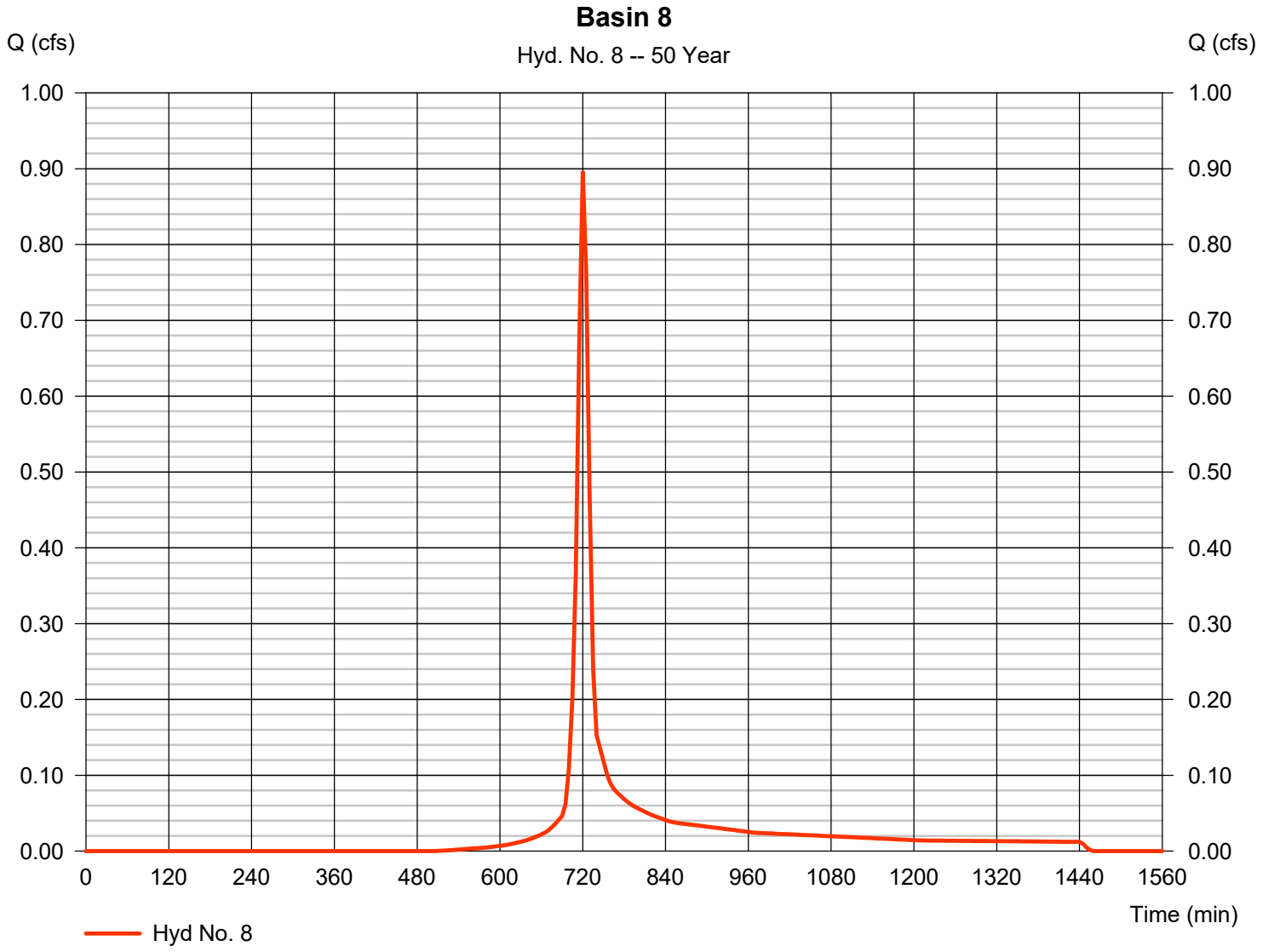


Hydrograph Report

Hyd. No. 8

Basin 8

Hydrograph type	= SCS Runoff	Peak discharge	= 0.896 cfs
Storm frequency	= 50 yrs	Time to peak	= 720 min
Time interval	= 5 min	Hyd. volume	= 2,422 cuft
Drainage area	= 0.797 ac	Curve number	= 90
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 1.76 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

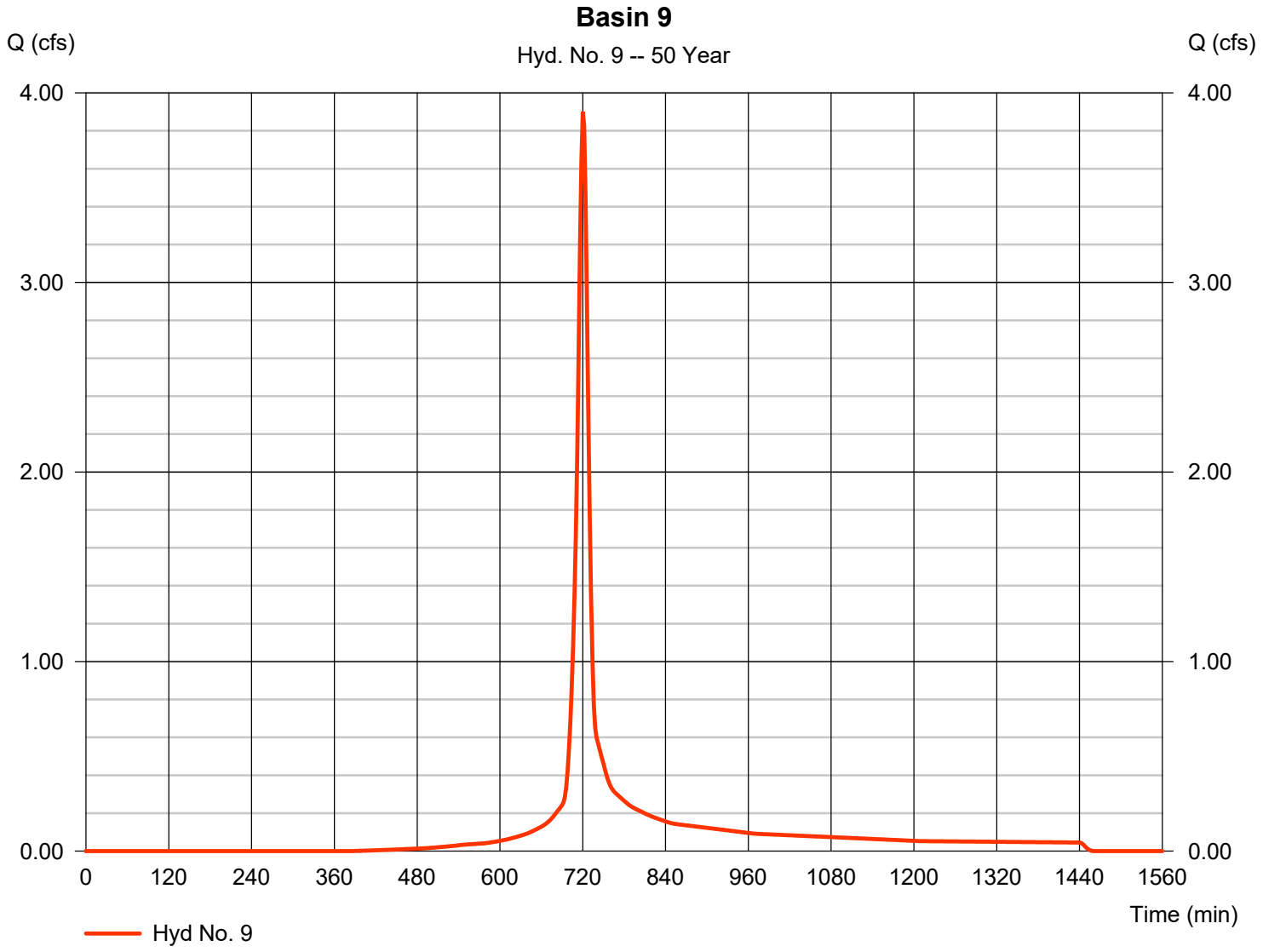


Hydrograph Report

Hyd. No. 9

Basin 9

Hydrograph type	= SCS Runoff	Peak discharge	= 3.900 cfs
Storm frequency	= 50 yrs	Time to peak	= 720 min
Time interval	= 2 min	Hyd. volume	= 10,168 cuft
Drainage area	= 2.477 ac	Curve number	= 93
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 1.76 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

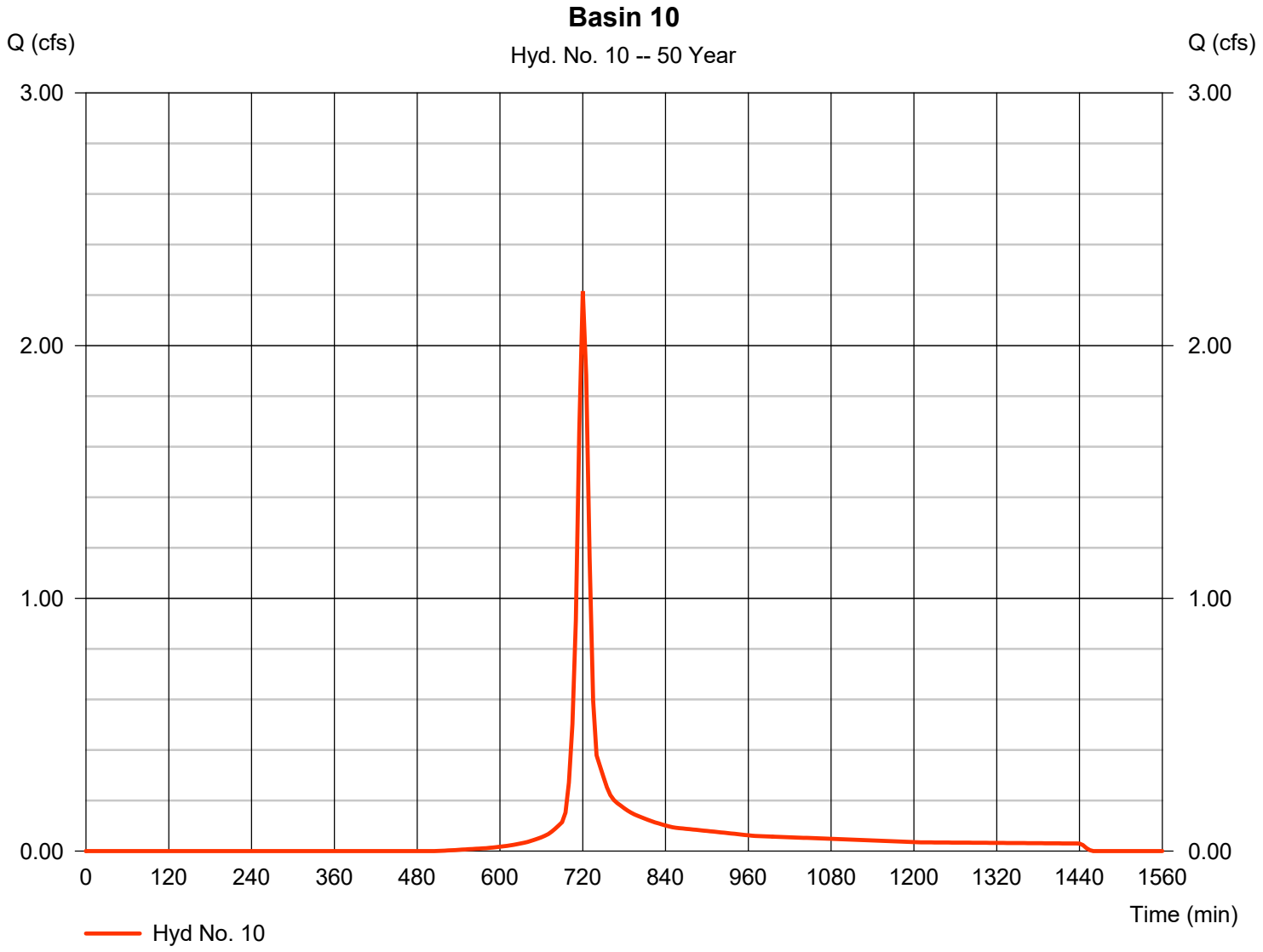


Hydrograph Report

Hyd. No. 10

Basin 10

Hydrograph type	=	SCS Runoff	Peak discharge	=	2.216 cfs
Storm frequency	=	50 yrs	Time to peak	=	720 min
Time interval	=	5 min	Hyd. volume	=	5,987 cuft
Drainage area	=	1.970 ac	Curve number	=	90
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	10.00 min
Total precip.	=	1.76 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

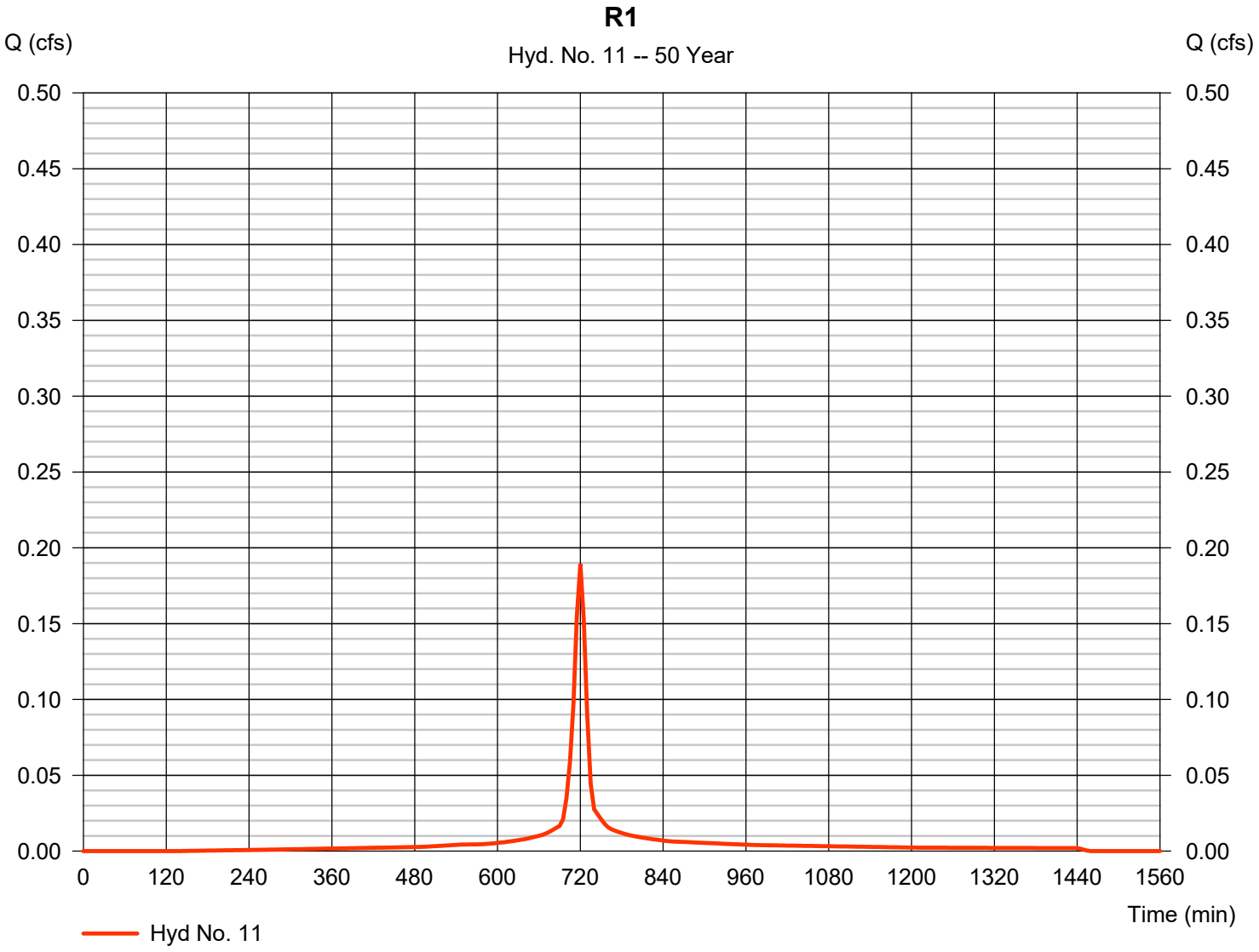


Hydrograph Report

Hyd. No. 11

R1

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.189 cfs
Storm frequency	=	50 yrs	Time to peak	=	720 min
Time interval	=	5 min	Hyd. volume	=	555 cuft
Drainage area	=	0.106 ac	Curve number	=	98
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	10.00 min
Total precip.	=	1.76 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

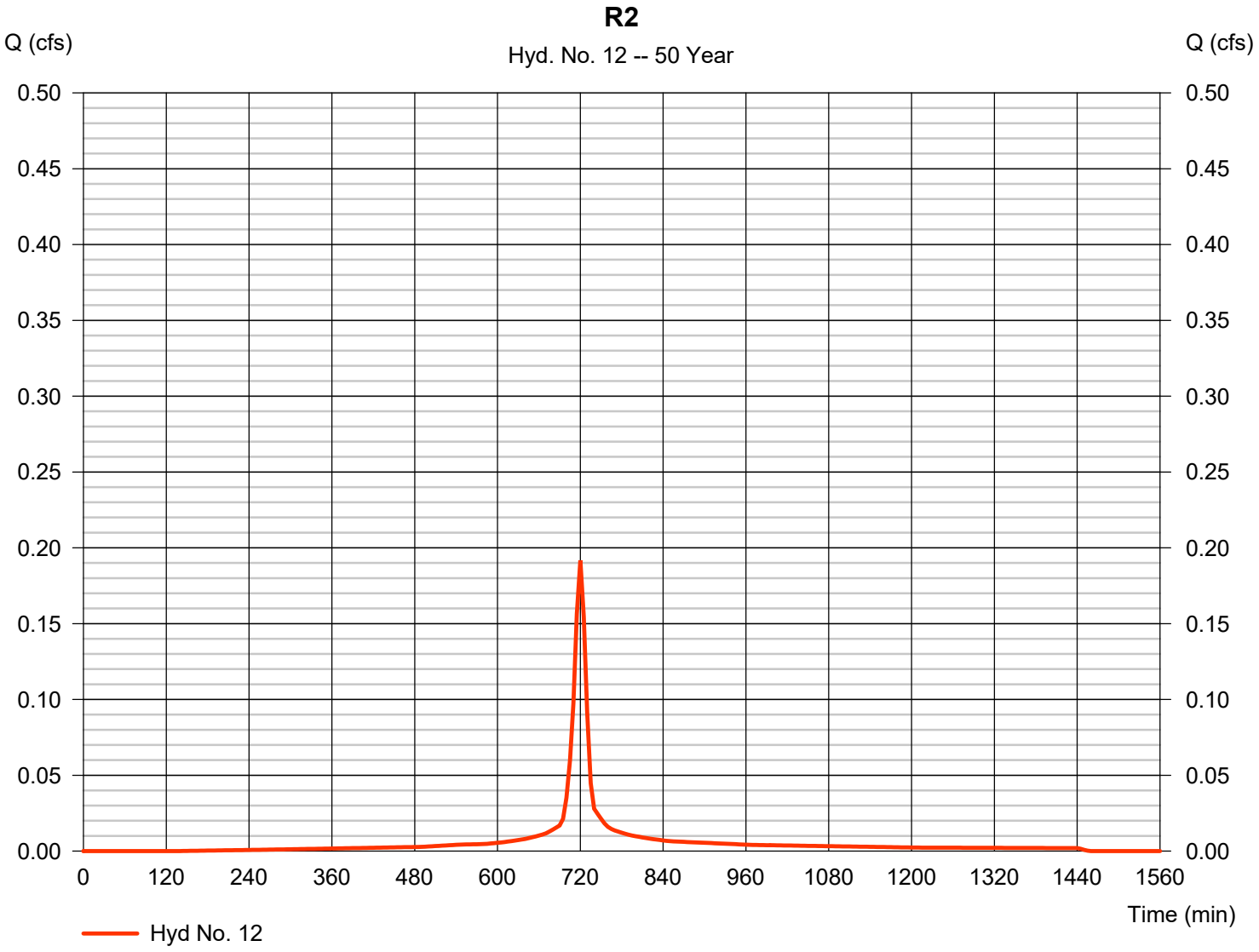


Hydrograph Report

Hyd. No. 12

R2

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.192 cfs
Storm frequency	=	50 yrs	Time to peak	=	720 min
Time interval	=	5 min	Hyd. volume	=	562 cuft
Drainage area	=	0.107 ac	Curve number	=	98
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	10.00 min
Total precip.	=	1.76 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

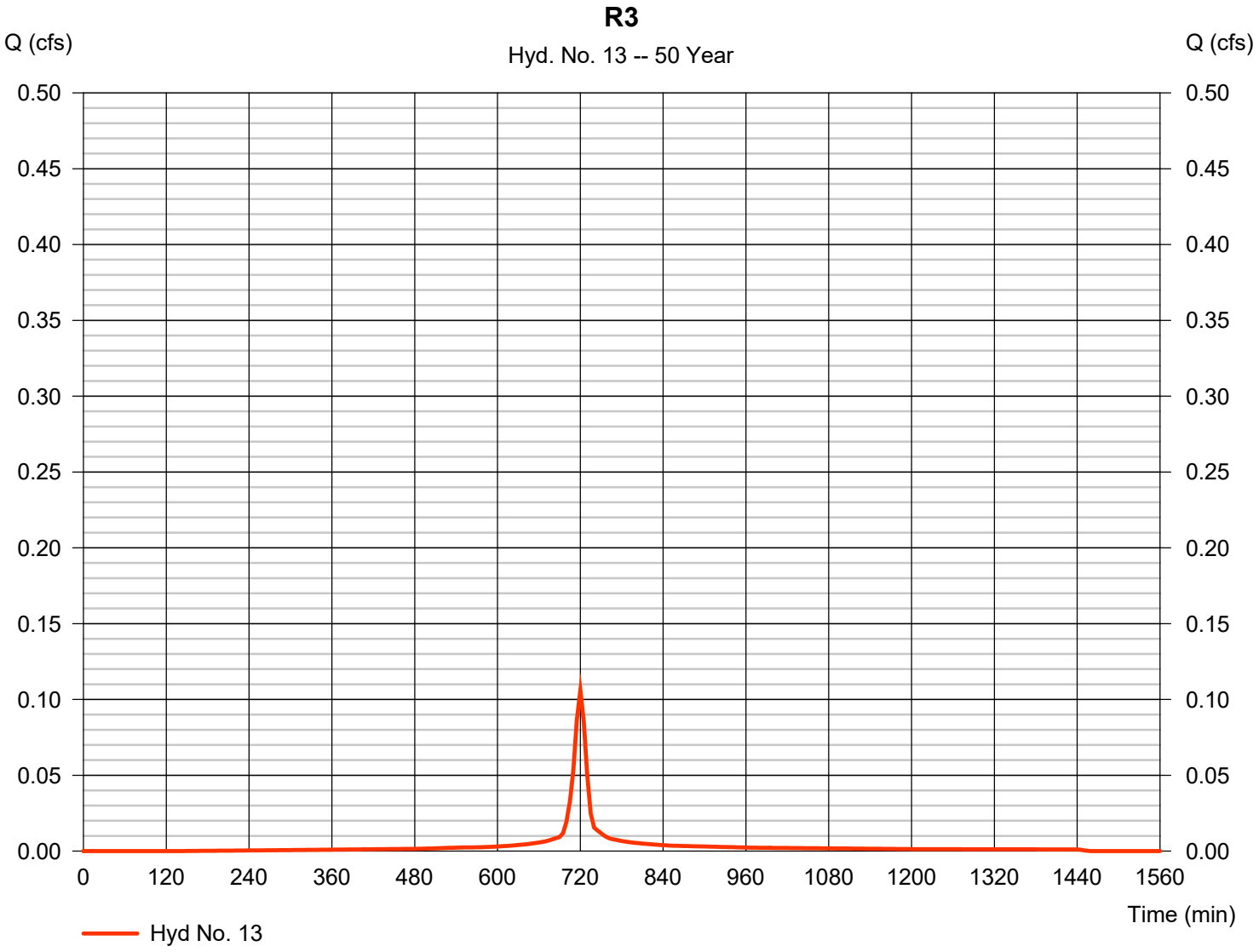


Hydrograph Report

Hyd. No. 13

R3

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.106 cfs
Storm frequency	=	50 yrs	Time to peak	=	720 min
Time interval	=	5 min	Hyd. volume	=	310 cuft
Drainage area	=	0.059 ac	Curve number	=	98
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	10.00 min
Total precip.	=	1.76 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

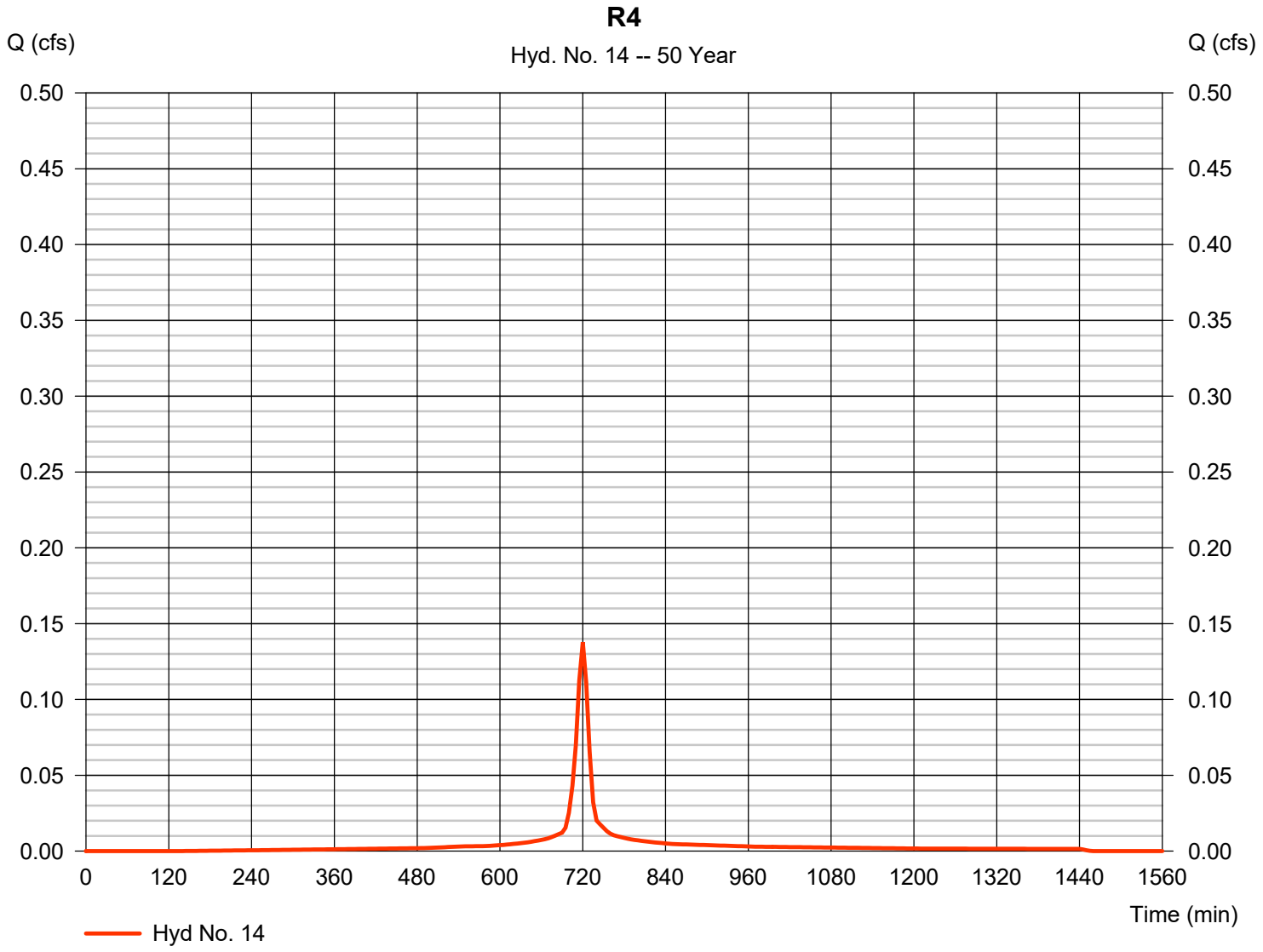


Hydrograph Report

Hyd. No. 14

R4

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.138 cfs
Storm frequency	=	50 yrs	Time to peak	=	720 min
Time interval	=	5 min	Hyd. volume	=	404 cuft
Drainage area	=	0.077 ac	Curve number	=	98
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	10.00 min
Total precip.	=	1.76 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484



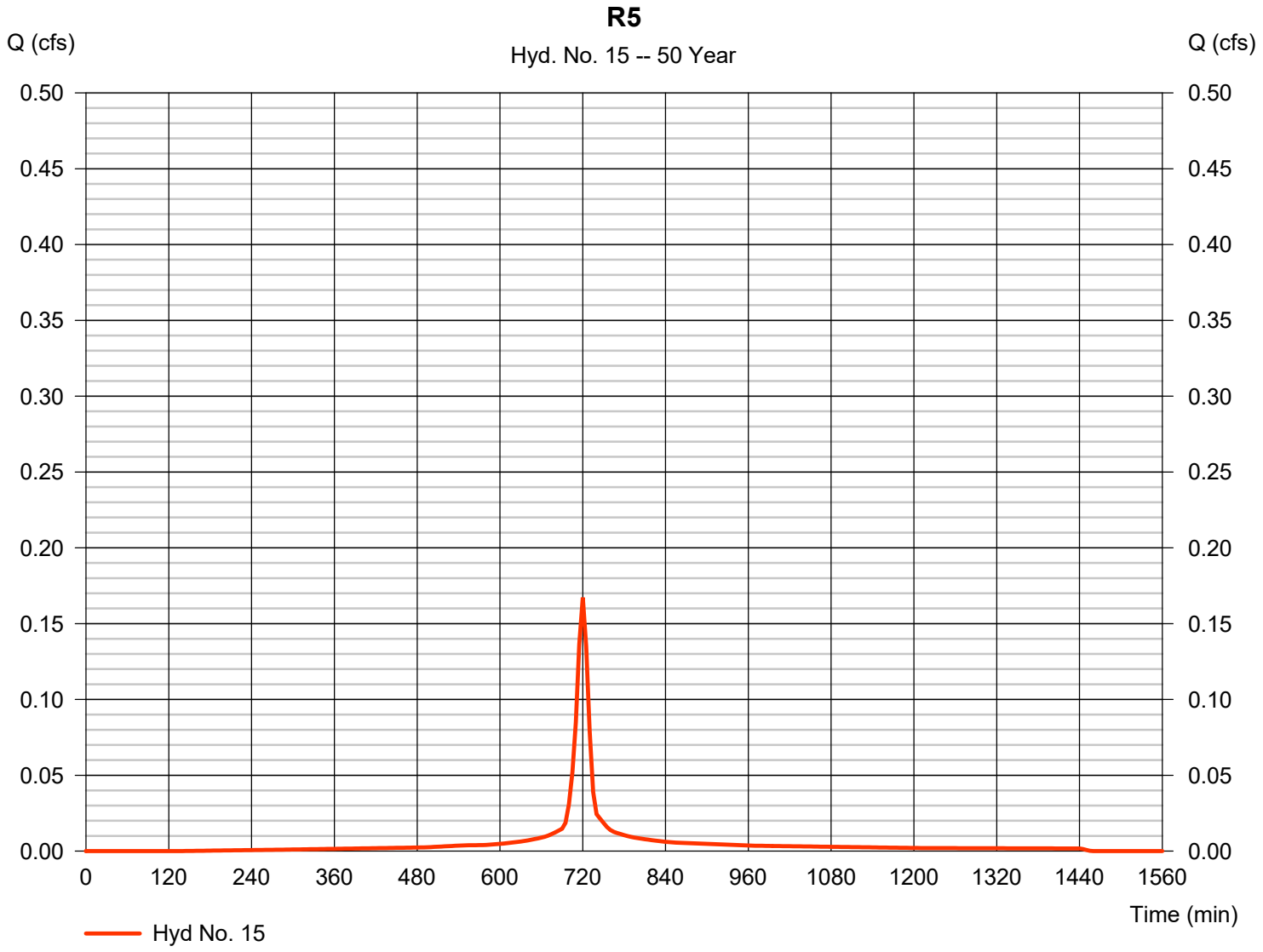
Hydrograph Report

Hyd. No. 15

R5

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.167 cfs
Storm frequency	=	50 yrs	Time to peak	=	720 min
Time interval	=	5 min	Hyd. volume	=	490 cuft
Drainage area	=	0.094 ac	Curve number	=	98*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	10.00 min
Total precip.	=	1.76 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = [(0.060 x 98) + (0.040 x 82)] / 0.094



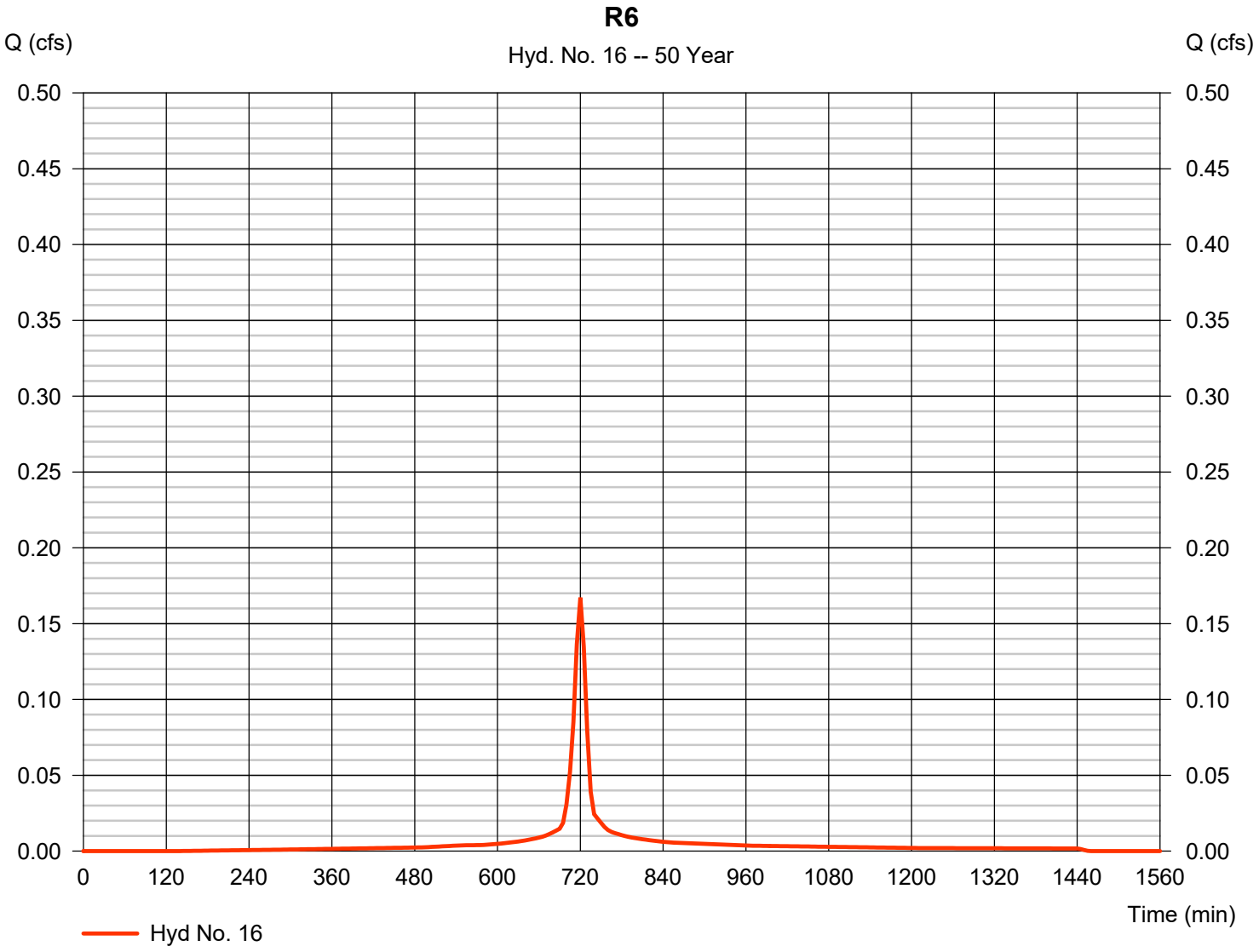
Hydrograph Report

Hyd. No. 16

R6

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.167 cfs
Storm frequency	=	50 yrs	Time to peak	=	720 min
Time interval	=	5 min	Hyd. volume	=	490 cuft
Drainage area	=	0.094 ac	Curve number	=	98*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	10.00 min
Total precip.	=	1.76 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = [(0.058 x 98) + (0.036 x 82)] / 0.094



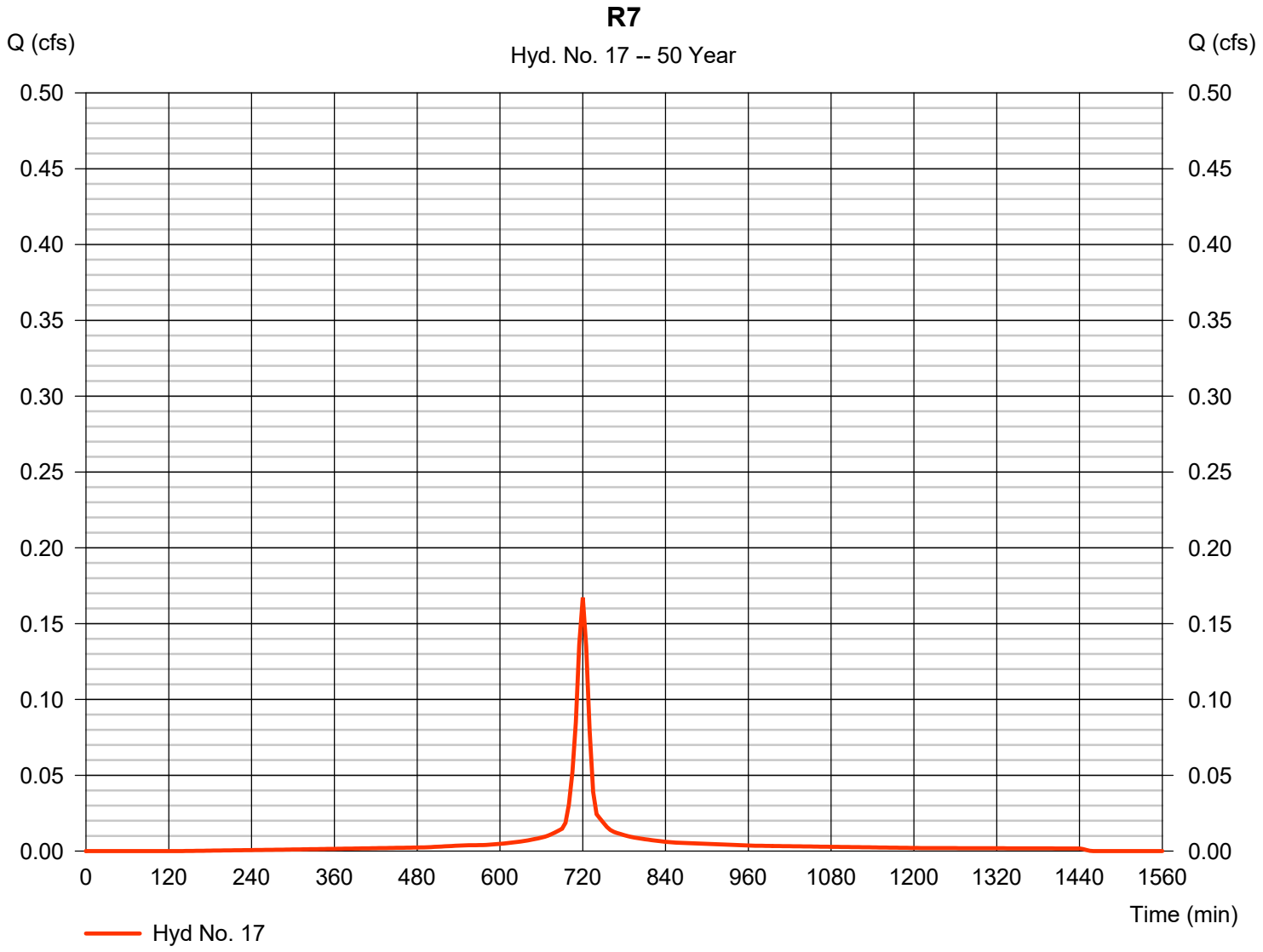
Hydrograph Report

Hyd. No. 17

R7

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.167 cfs
Storm frequency	=	50 yrs	Time to peak	=	720 min
Time interval	=	5 min	Hyd. volume	=	490 cuft
Drainage area	=	0.094 ac	Curve number	=	98*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	10.00 min
Total precip.	=	1.76 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = [(0.062 x 98) + (0.032 x 82)] / 0.094



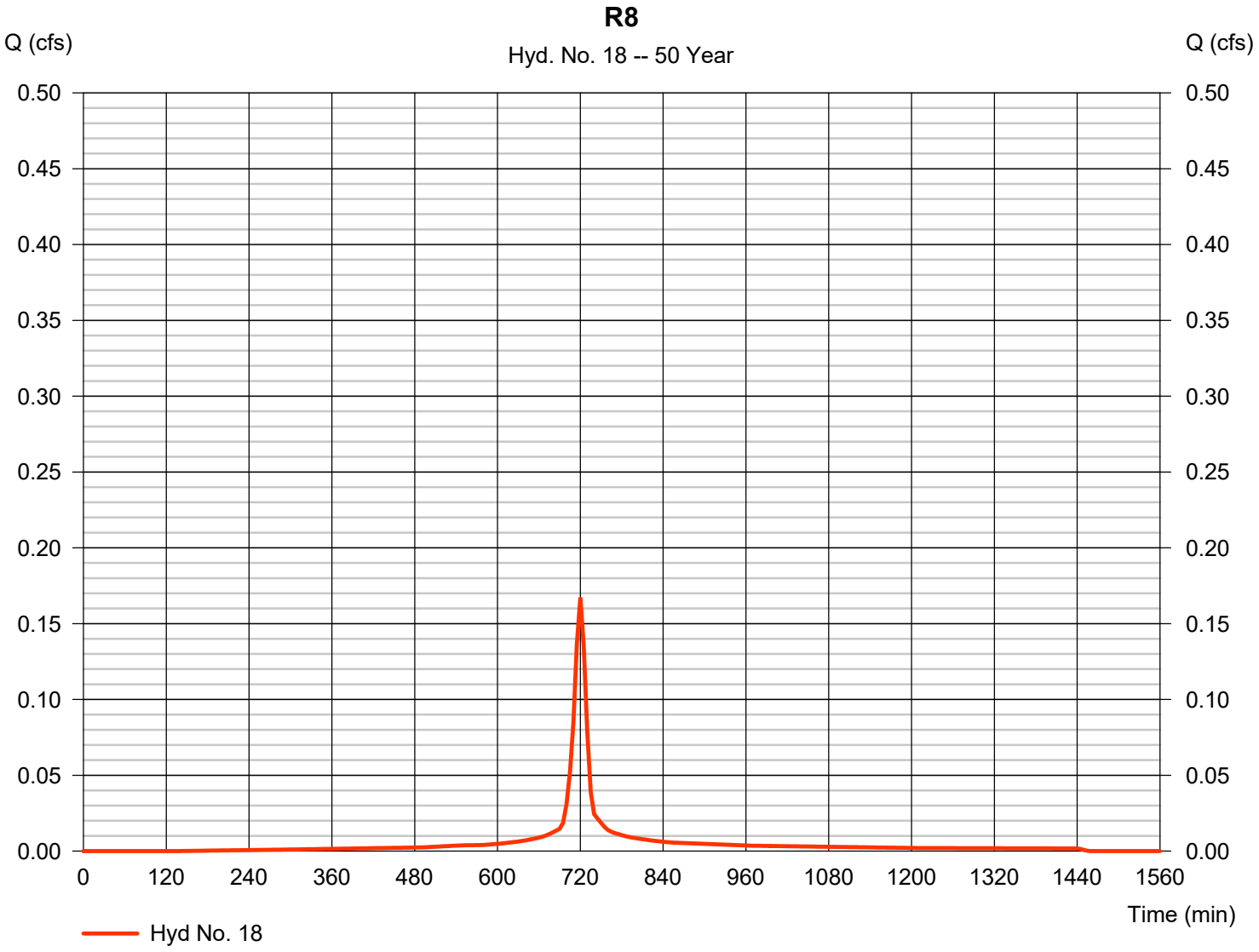
Hydrograph Report

Hyd. No. 18

R8

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.167 cfs
Storm frequency	=	50 yrs	Time to peak	=	720 min
Time interval	=	5 min	Hyd. volume	=	490 cuft
Drainage area	=	0.094 ac	Curve number	=	98*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	10.00 min
Total precip.	=	1.76 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = [(0.060 x 98) + (0.040 x 82)] / 0.094



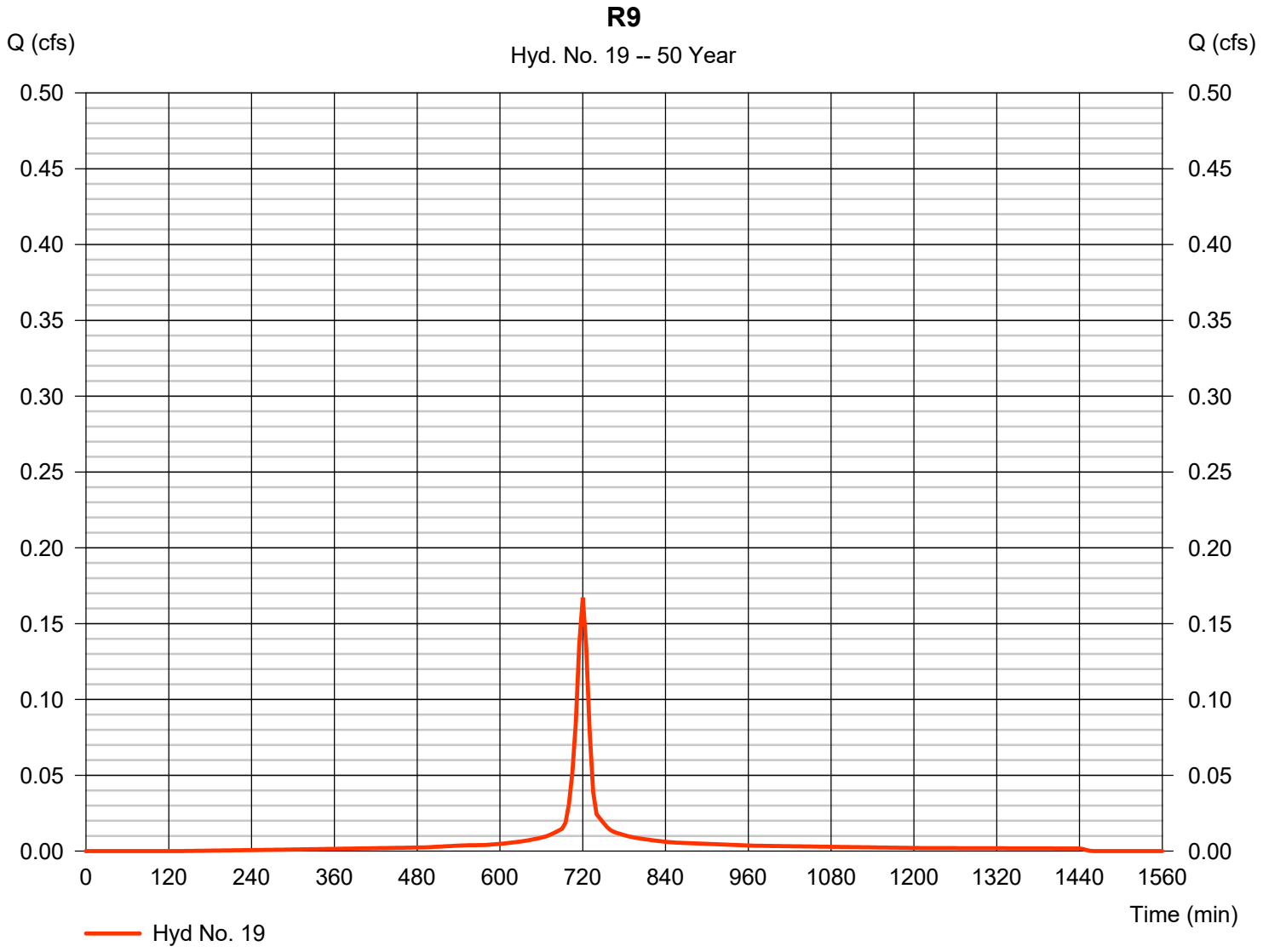
Hydrograph Report

Hyd. No. 19

R9

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.167 cfs
Storm frequency	=	50 yrs	Time to peak	=	720 min
Time interval	=	5 min	Hyd. volume	=	490 cuft
Drainage area	=	0.094 ac	Curve number	=	98*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	10.00 min
Total precip.	=	1.76 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = [(0.058 x 98) + (0.036 x 82)] / 0.094

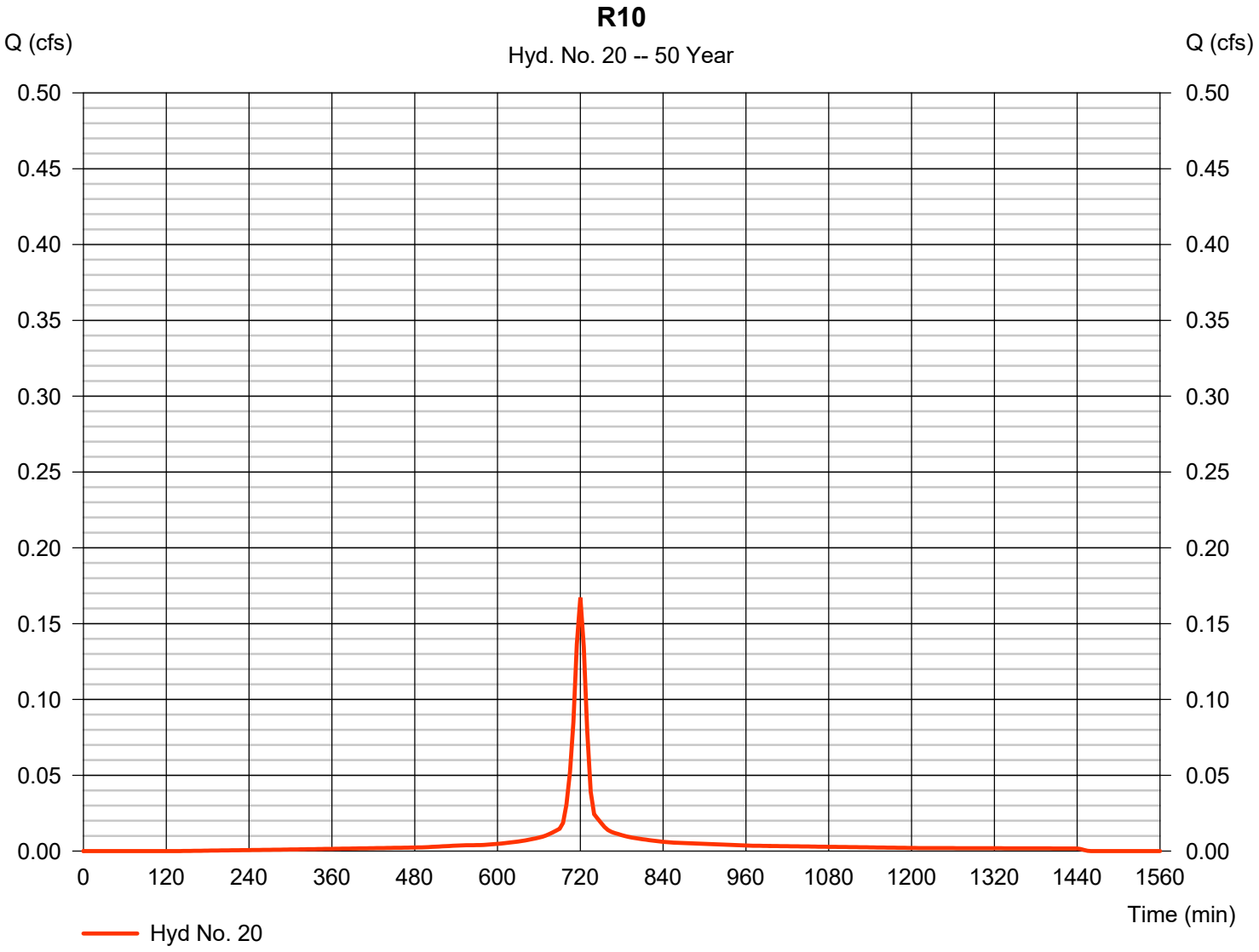


Hydrograph Report

Hyd. No. 20

R10

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.167 cfs
Storm frequency	=	50 yrs	Time to peak	=	720 min
Time interval	=	5 min	Hyd. volume	=	490 cuft
Drainage area	=	0.094 ac	Curve number	=	98
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	10.00 min
Total precip.	=	1.76 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

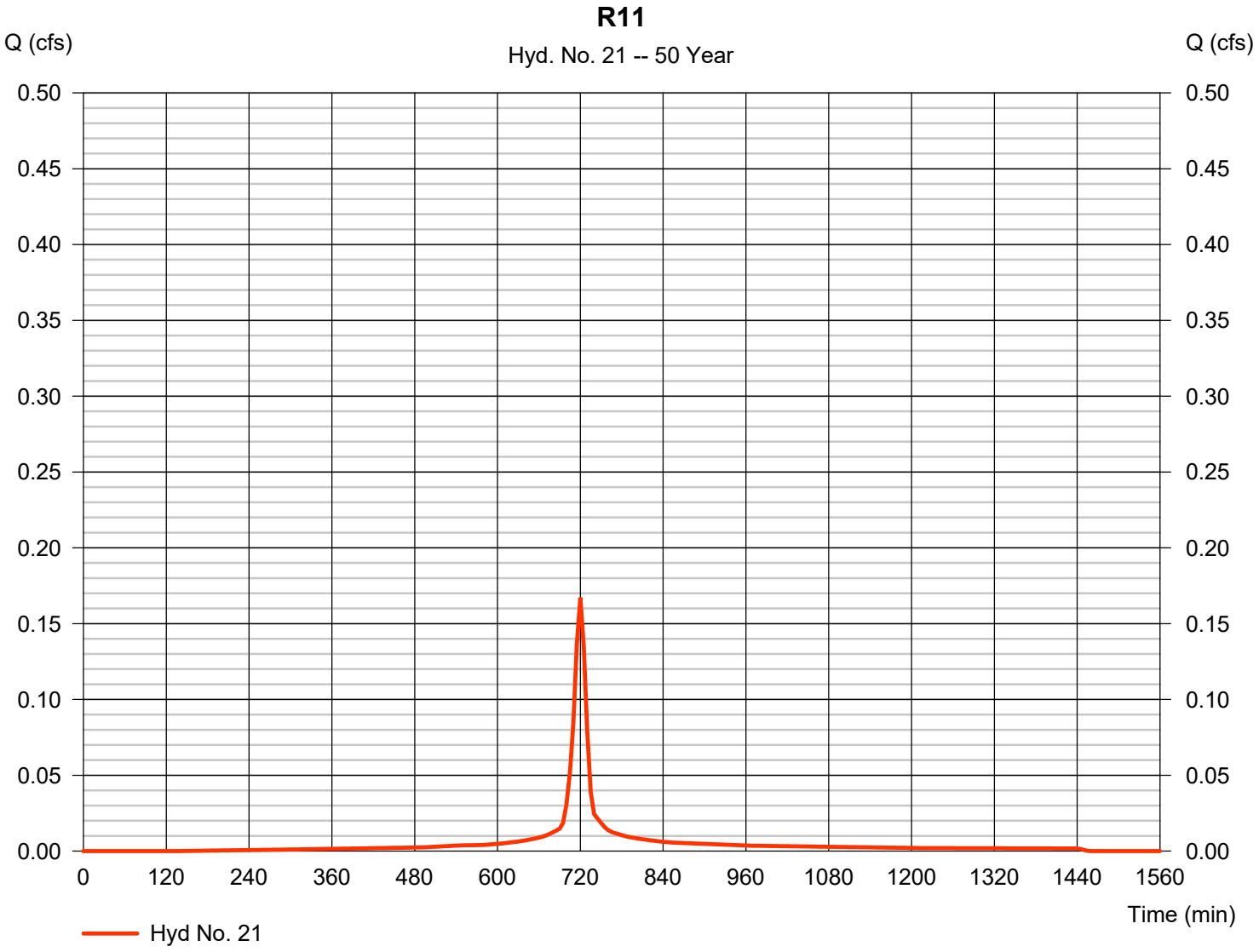


Hydrograph Report

Hyd. No. 21

R11

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.167 cfs
Storm frequency	=	50 yrs	Time to peak	=	720 min
Time interval	=	5 min	Hyd. volume	=	490 cuft
Drainage area	=	0.094 ac	Curve number	=	98
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	10.00 min
Total precip.	=	1.76 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

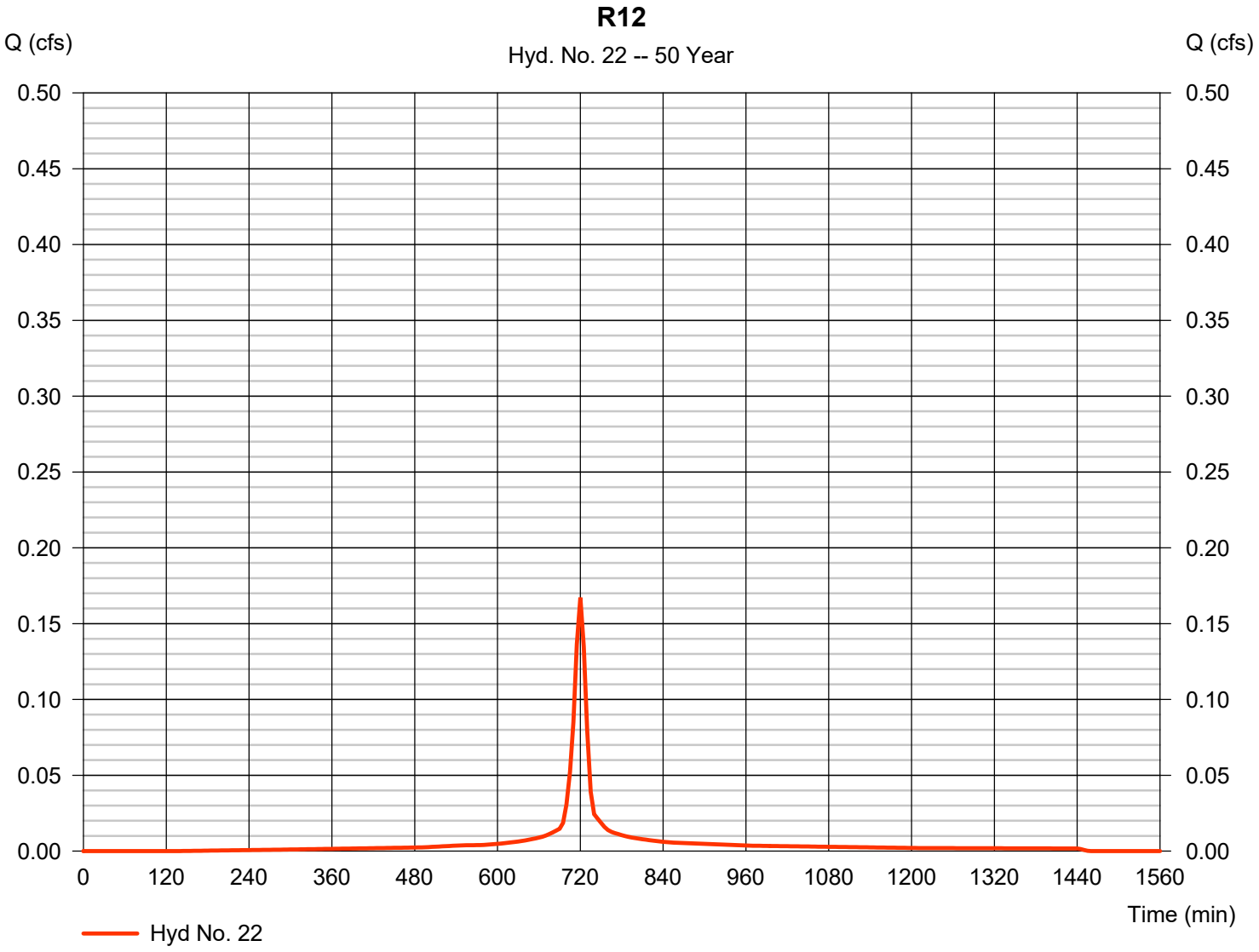


Hydrograph Report

Hyd. No. 22

R12

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.167 cfs
Storm frequency	=	50 yrs	Time to peak	=	720 min
Time interval	=	5 min	Hyd. volume	=	490 cuft
Drainage area	=	0.094 ac	Curve number	=	98
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	10.00 min
Total precip.	=	1.76 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

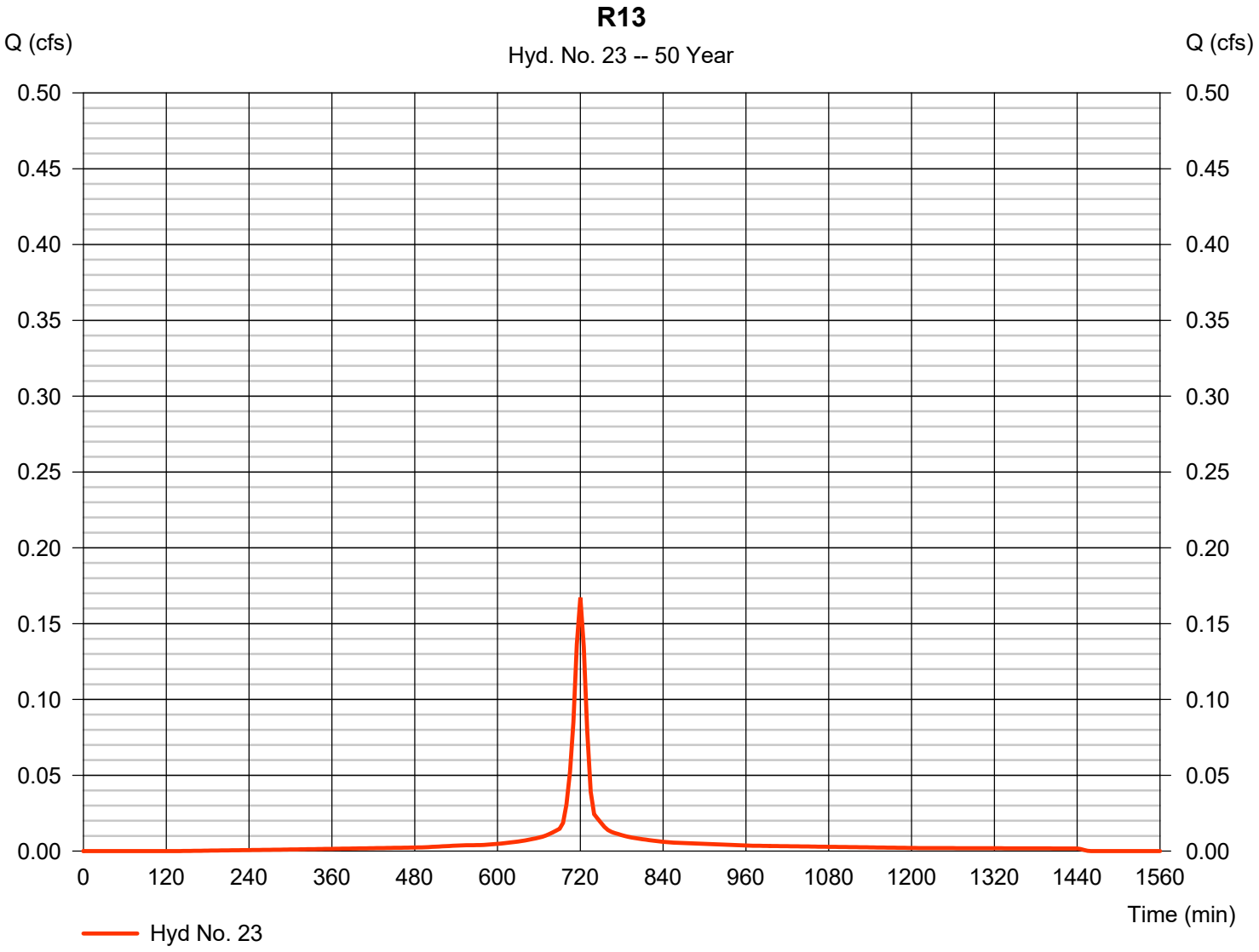


Hydrograph Report

Hyd. No. 23

R13

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.167 cfs
Storm frequency	=	50 yrs	Time to peak	=	720 min
Time interval	=	5 min	Hyd. volume	=	490 cuft
Drainage area	=	0.094 ac	Curve number	=	98
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	10.00 min
Total precip.	=	1.76 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

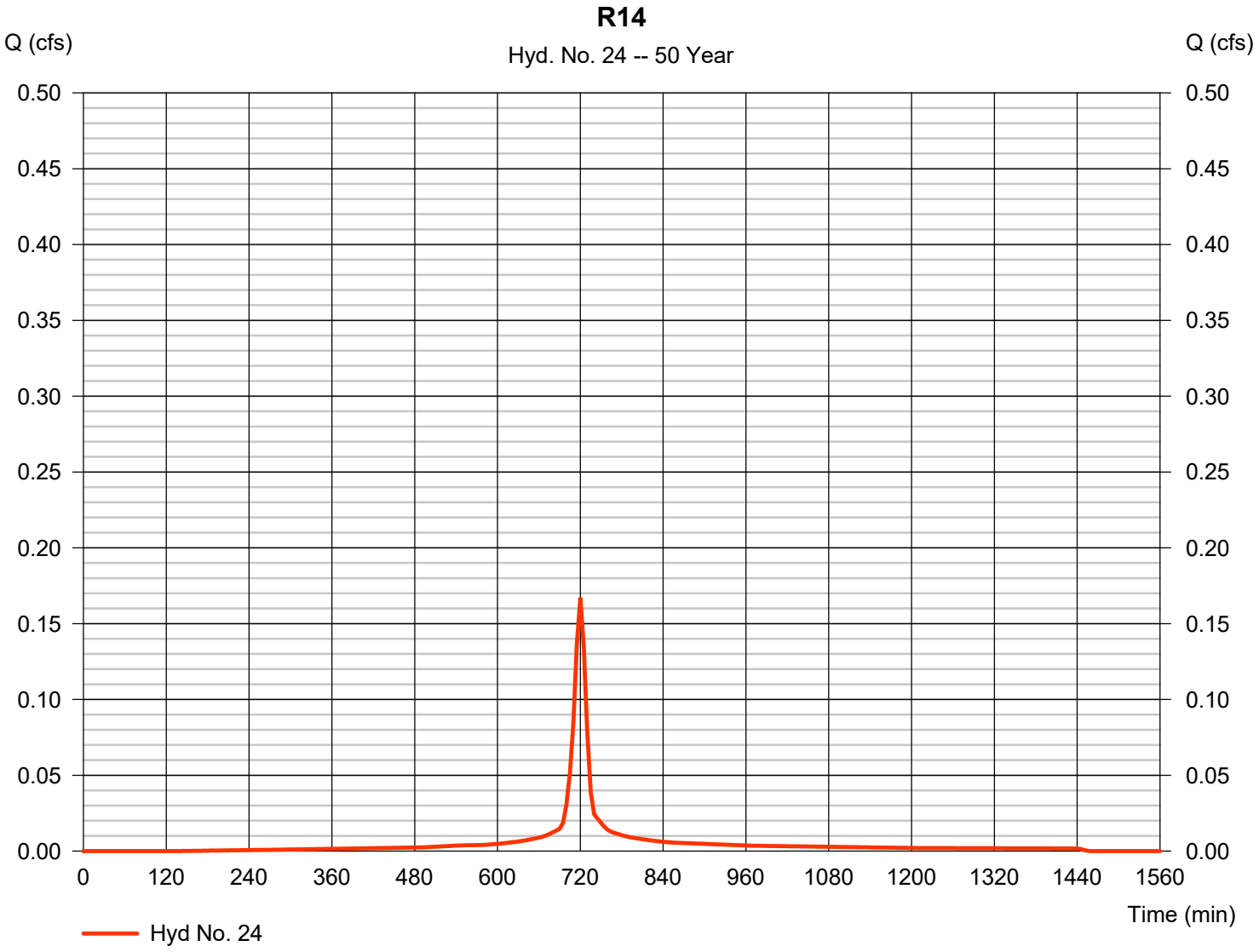


Hydrograph Report

Hyd. No. 24

R14

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.167 cfs
Storm frequency	=	50 yrs	Time to peak	=	720 min
Time interval	=	5 min	Hyd. volume	=	490 cuft
Drainage area	=	0.094 ac	Curve number	=	98
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	10.00 min
Total precip.	=	1.76 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

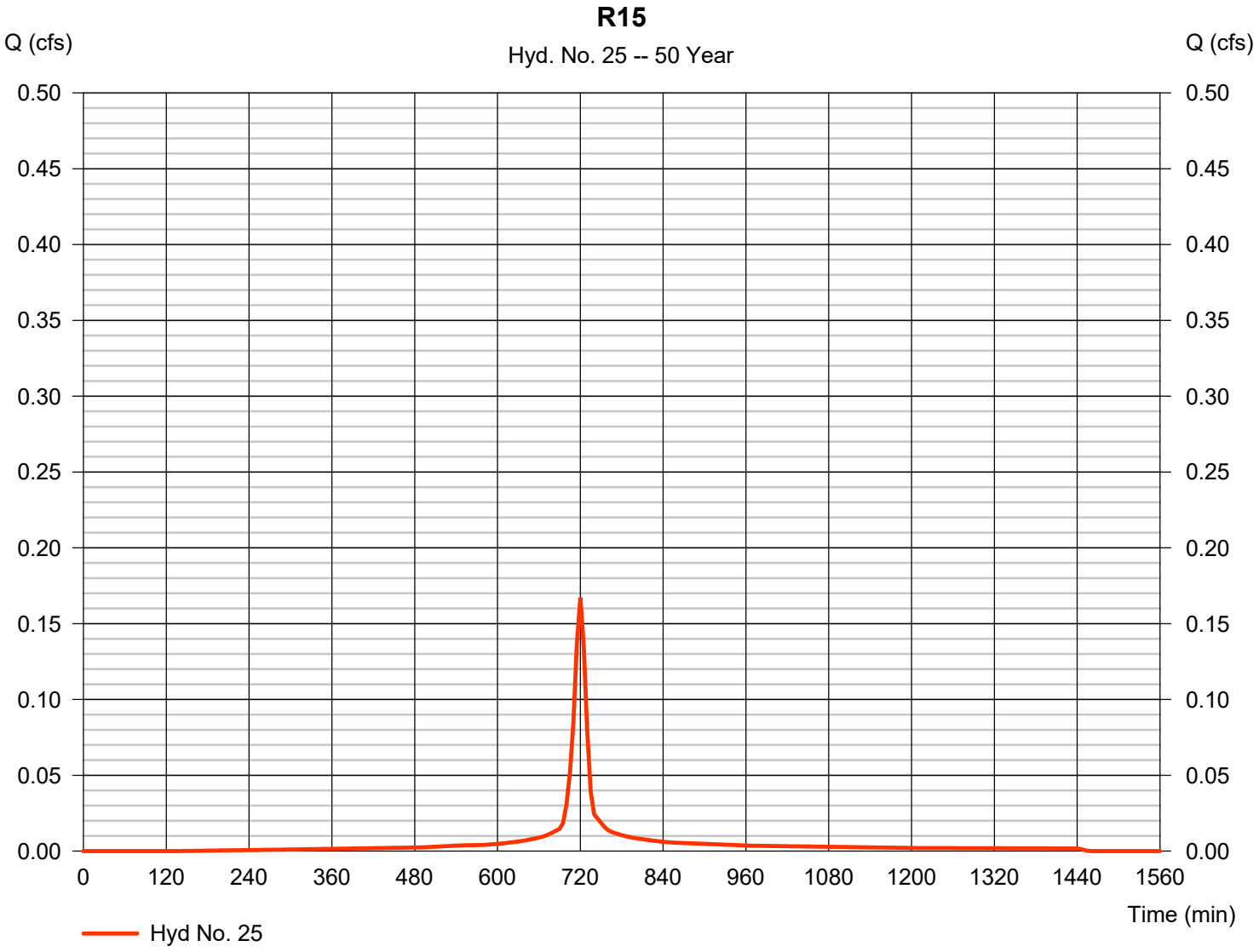


Hydrograph Report

Hyd. No. 25

R15

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.167 cfs
Storm frequency	=	50 yrs	Time to peak	=	720 min
Time interval	=	5 min	Hyd. volume	=	490 cuft
Drainage area	=	0.094 ac	Curve number	=	98
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	10.00 min
Total precip.	=	1.76 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

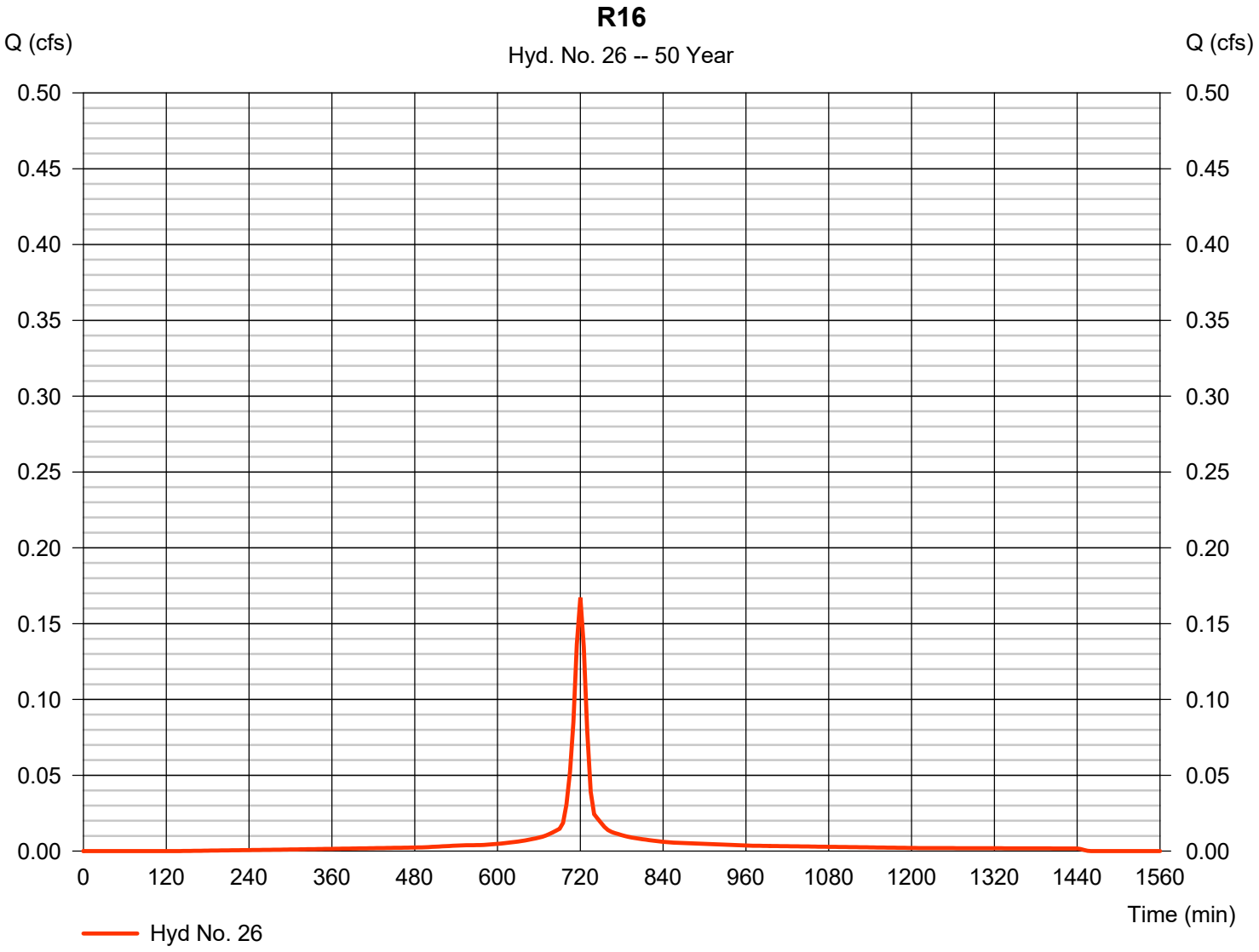


Hydrograph Report

Hyd. No. 26

R16

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.167 cfs
Storm frequency	=	50 yrs	Time to peak	=	720 min
Time interval	=	5 min	Hyd. volume	=	490 cuft
Drainage area	=	0.094 ac	Curve number	=	98
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	10.00 min
Total precip.	=	1.76 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

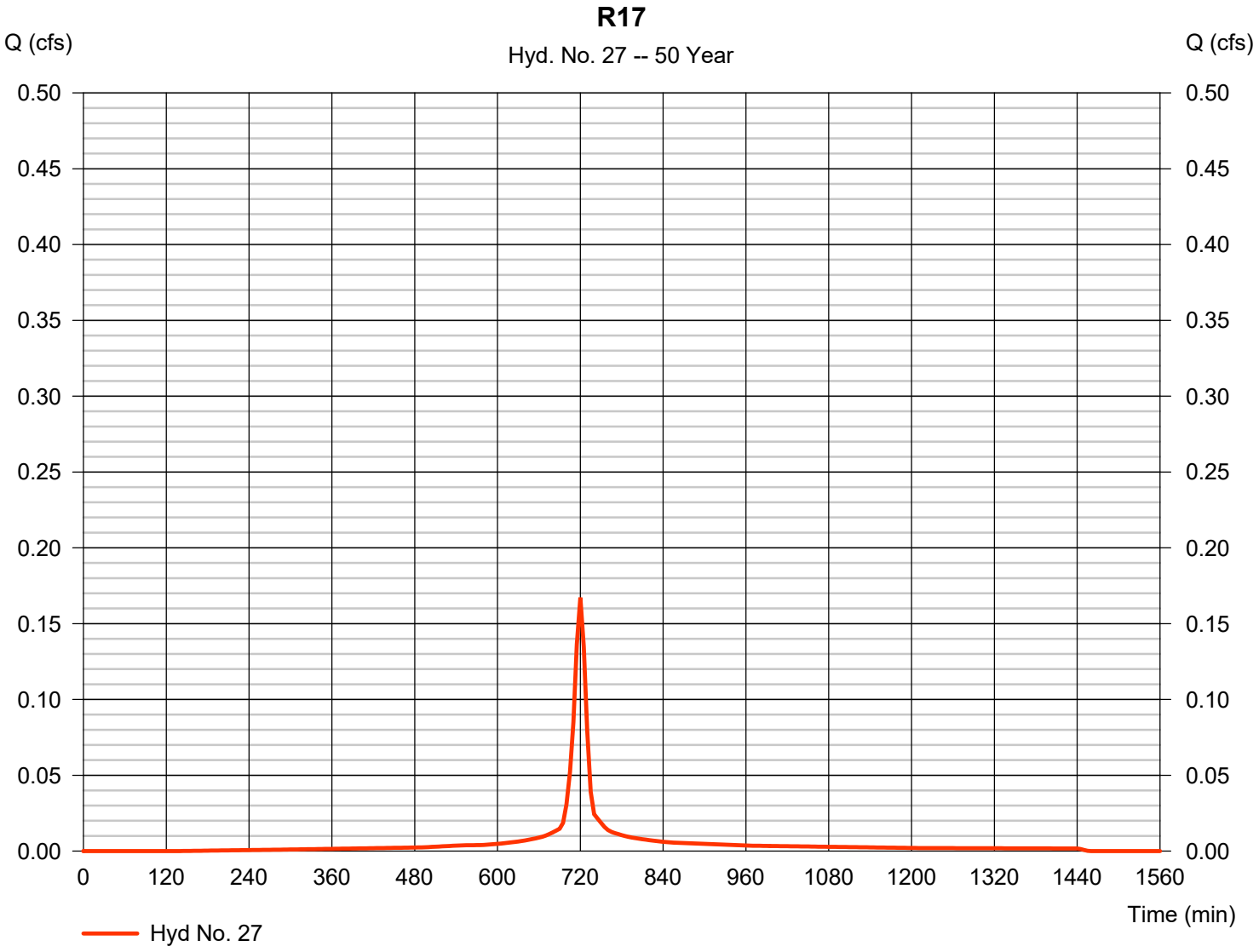


Hydrograph Report

Hyd. No. 27

R17

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.167 cfs
Storm frequency	=	50 yrs	Time to peak	=	720 min
Time interval	=	5 min	Hyd. volume	=	490 cuft
Drainage area	=	0.094 ac	Curve number	=	98
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	10.00 min
Total precip.	=	1.76 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

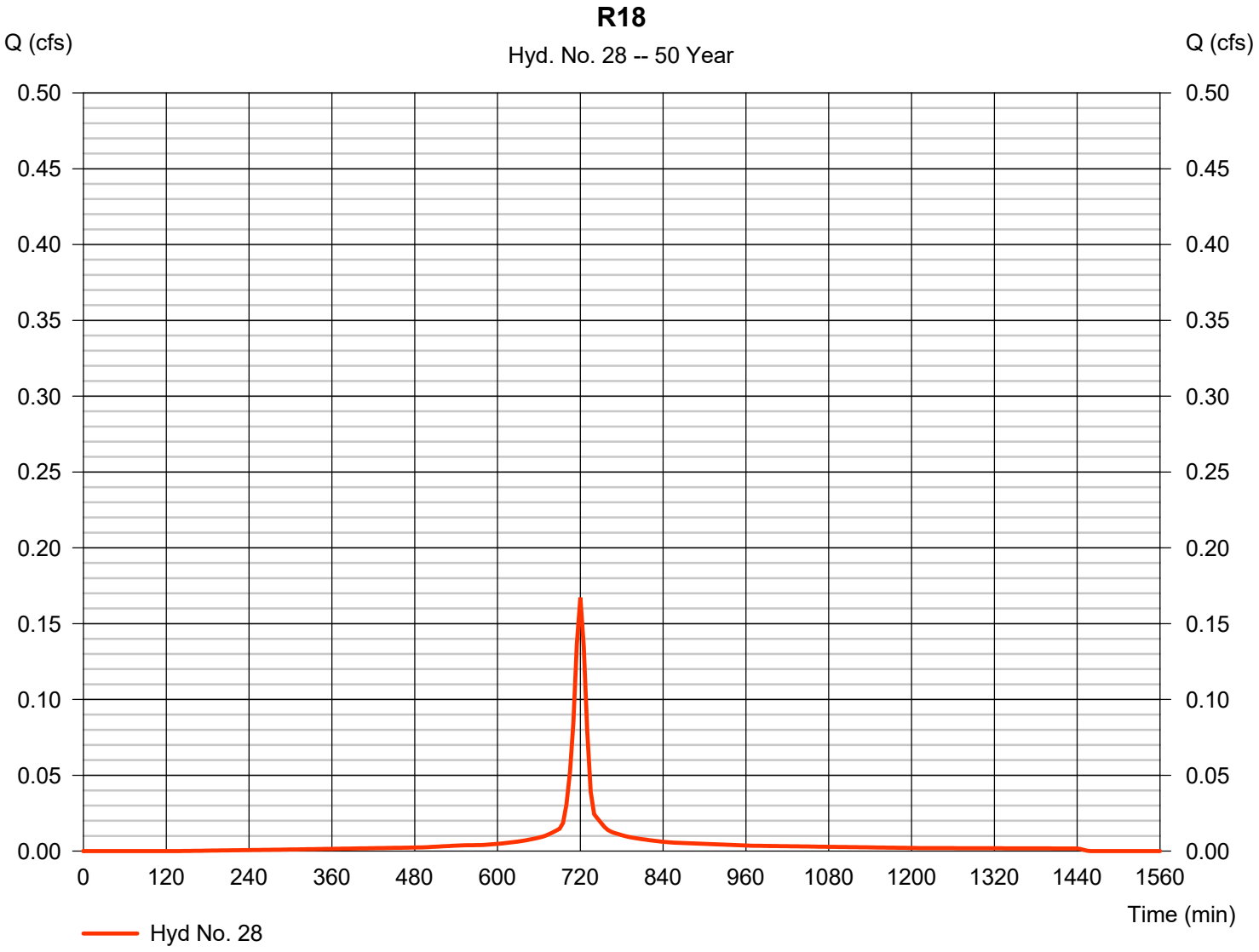


Hydrograph Report

Hyd. No. 28

R18

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.167 cfs
Storm frequency	=	50 yrs	Time to peak	=	720 min
Time interval	=	5 min	Hyd. volume	=	490 cuft
Drainage area	=	0.094 ac	Curve number	=	98
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	10.00 min
Total precip.	=	1.76 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

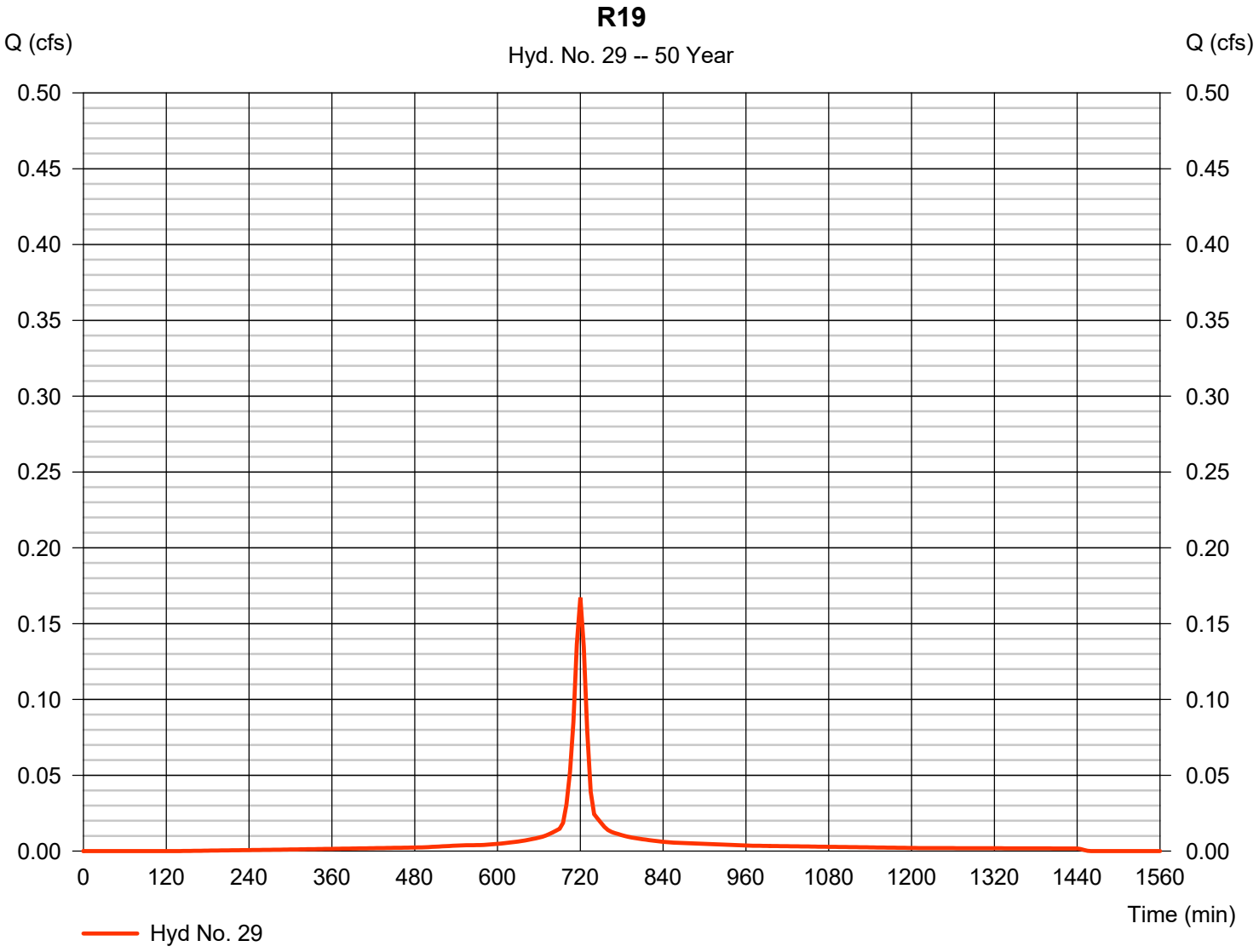


Hydrograph Report

Hyd. No. 29

R19

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.167 cfs
Storm frequency	=	50 yrs	Time to peak	=	720 min
Time interval	=	5 min	Hyd. volume	=	490 cuft
Drainage area	=	0.094 ac	Curve number	=	98
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	10.00 min
Total precip.	=	1.76 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

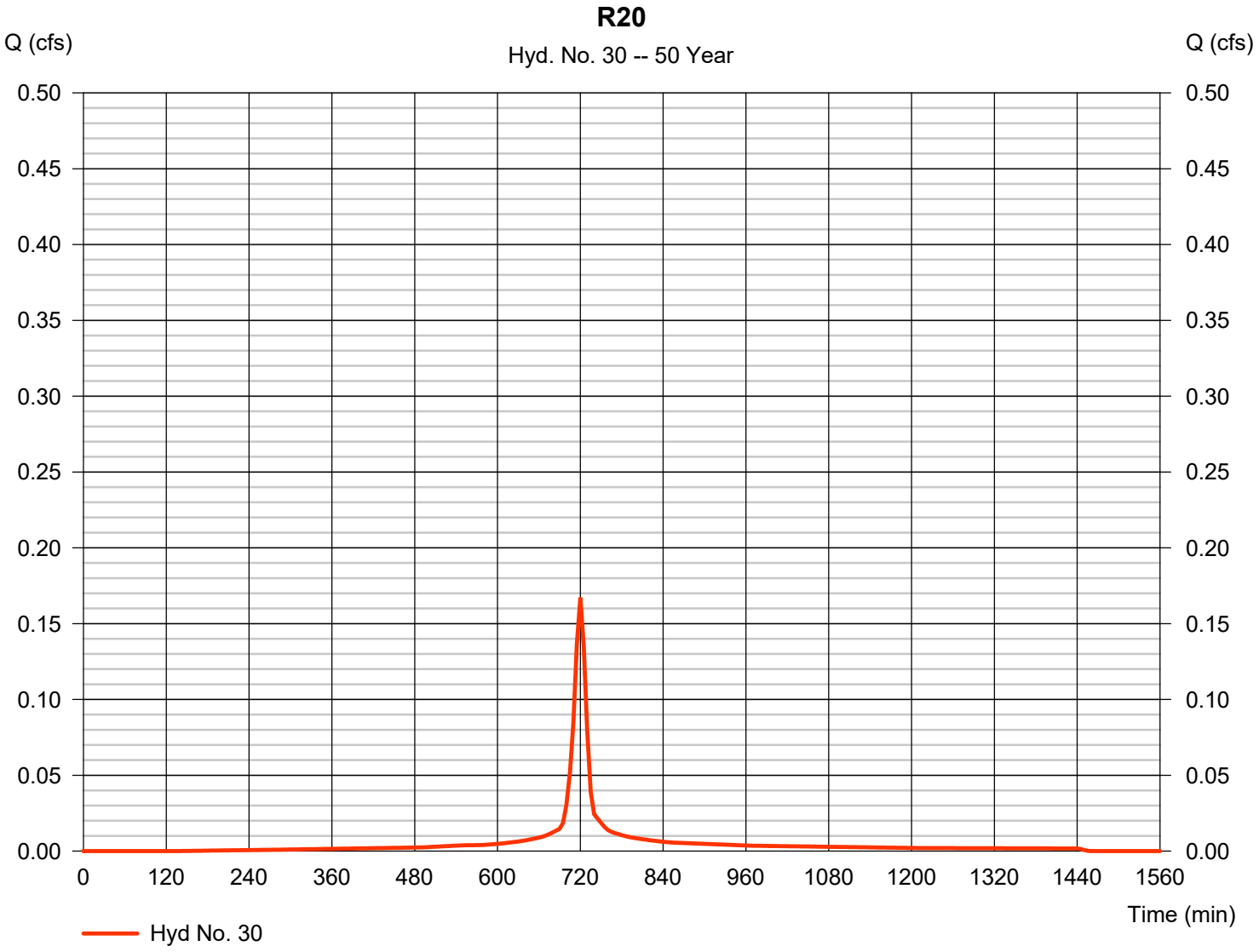


Hydrograph Report

Hyd. No. 30

R20

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.167 cfs
Storm frequency	=	50 yrs	Time to peak	=	720 min
Time interval	=	5 min	Hyd. volume	=	490 cuft
Drainage area	=	0.094 ac	Curve number	=	98
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	10.00 min
Total precip.	=	1.76 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

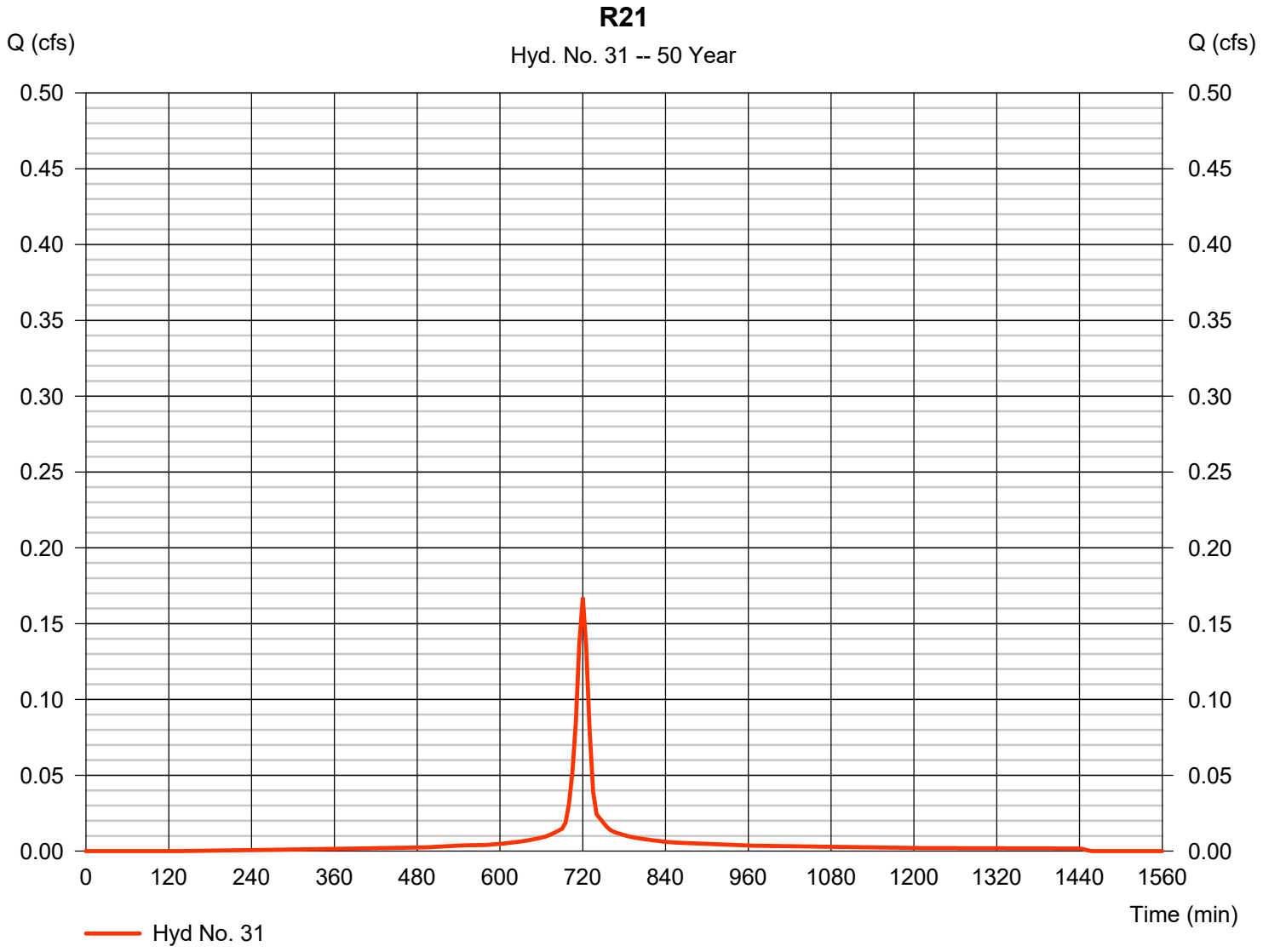


Hydrograph Report

Hyd. No. 31

R21

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.167 cfs
Storm frequency	=	50 yrs	Time to peak	=	720 min
Time interval	=	5 min	Hyd. volume	=	490 cuft
Drainage area	=	0.094 ac	Curve number	=	98
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	10.00 min
Total precip.	=	1.76 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

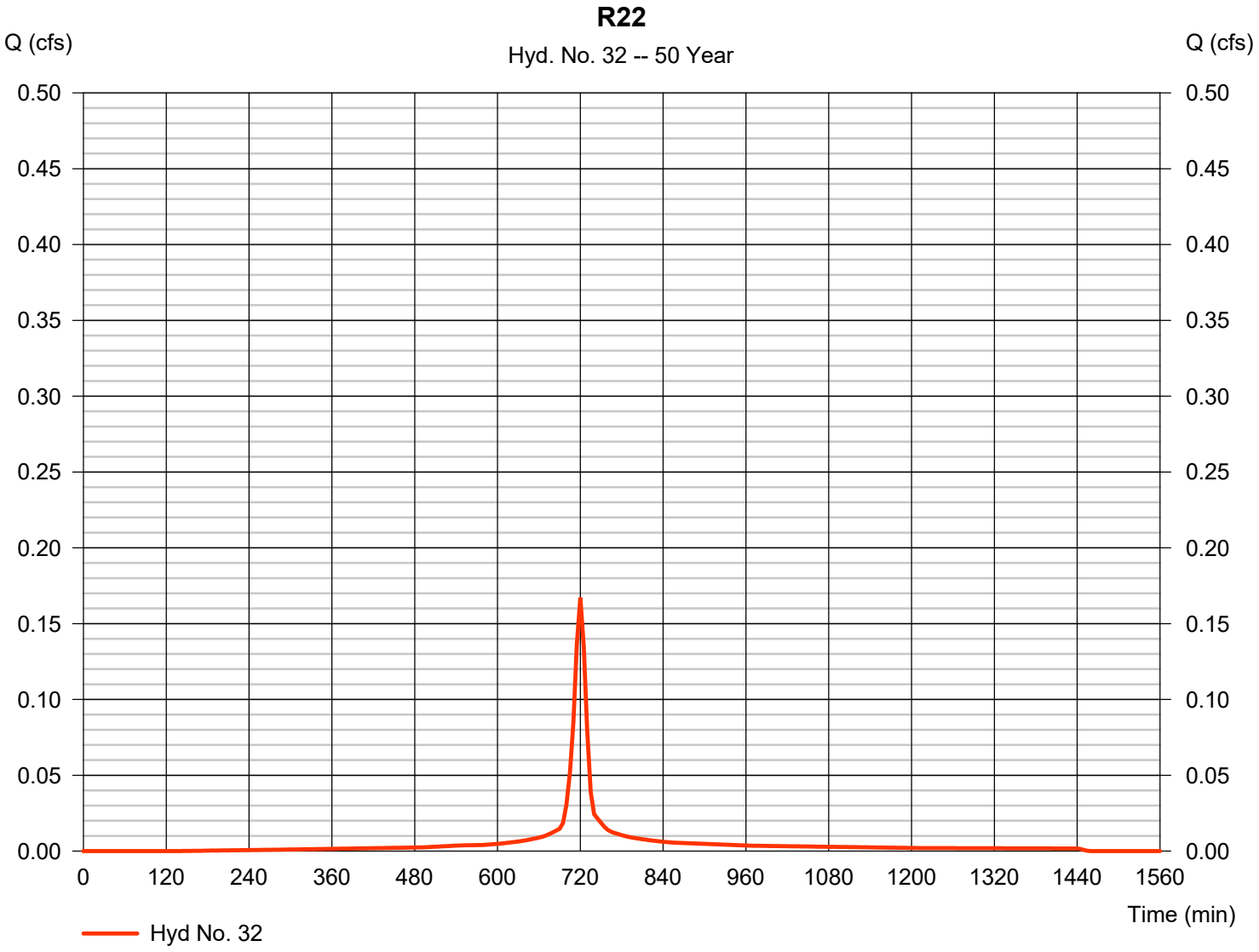


Hydrograph Report

Hyd. No. 32

R22

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.167 cfs
Storm frequency	=	50 yrs	Time to peak	=	720 min
Time interval	=	5 min	Hyd. volume	=	490 cuft
Drainage area	=	0.094 ac	Curve number	=	98
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	10.00 min
Total precip.	=	1.76 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

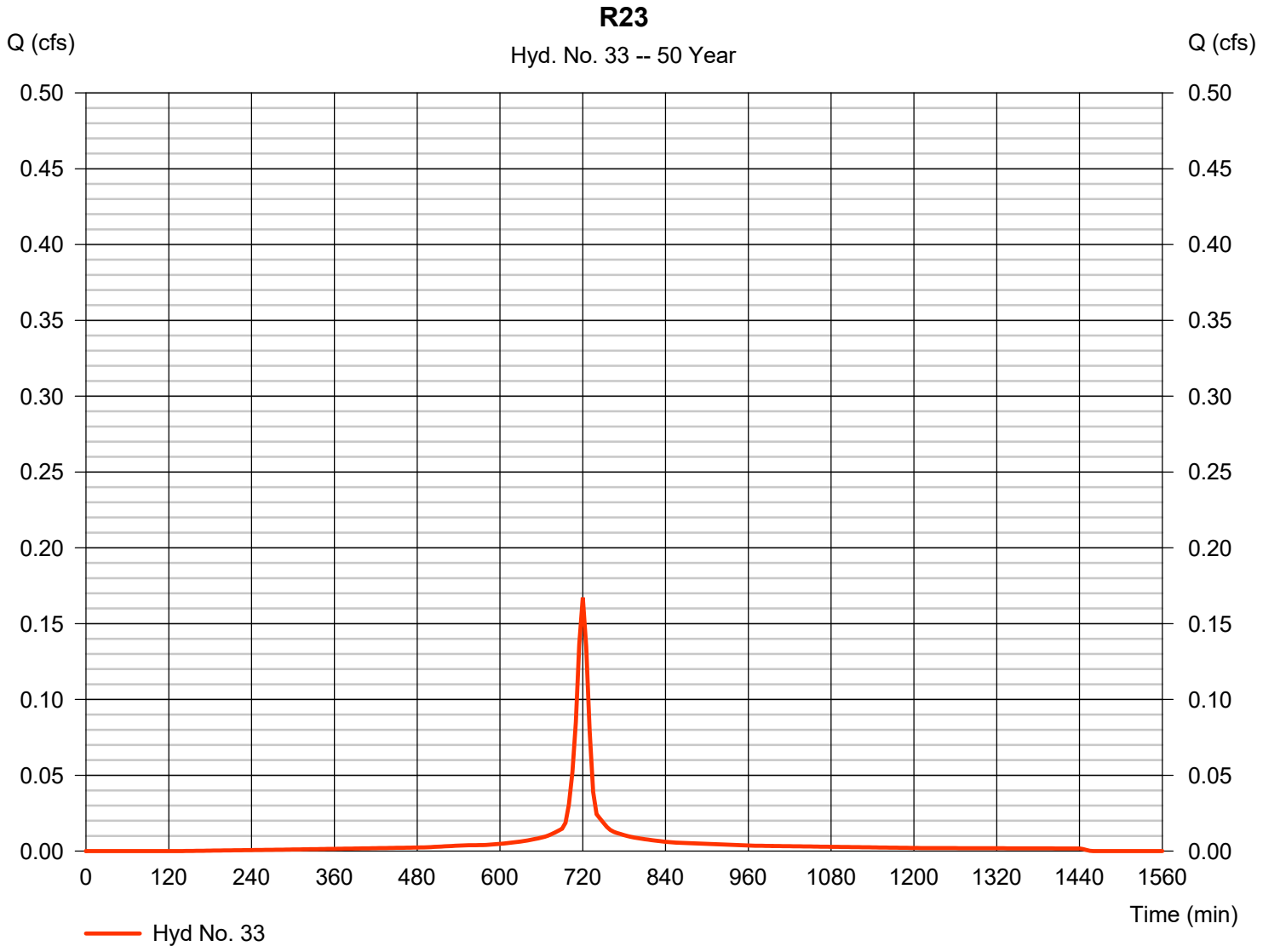


Hydrograph Report

Hyd. No. 33

R23

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.167 cfs
Storm frequency	=	50 yrs	Time to peak	=	720 min
Time interval	=	5 min	Hyd. volume	=	490 cuft
Drainage area	=	0.094 ac	Curve number	=	98
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	10.00 min
Total precip.	=	1.76 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

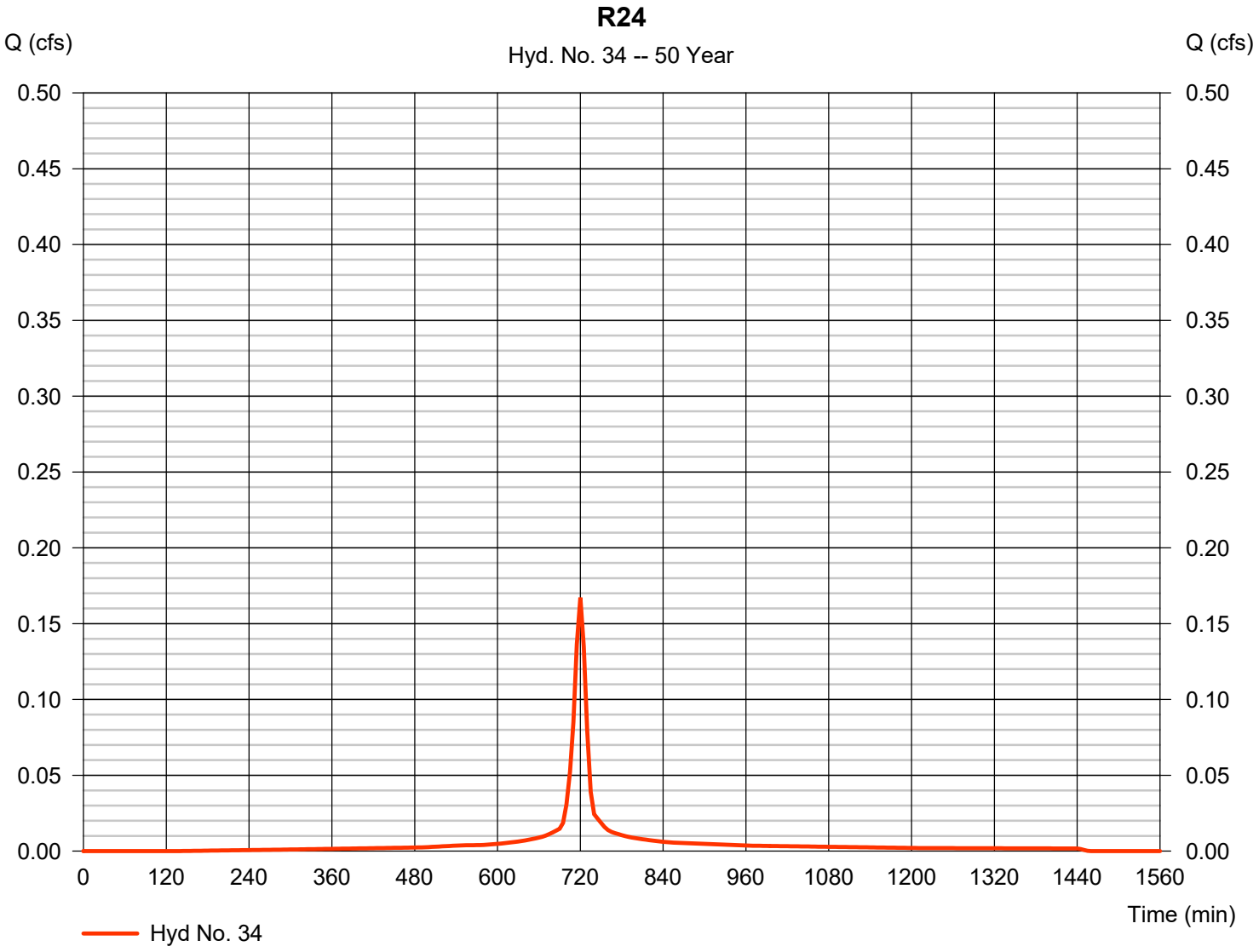


Hydrograph Report

Hyd. No. 34

R24

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.167 cfs
Storm frequency	=	50 yrs	Time to peak	=	720 min
Time interval	=	5 min	Hyd. volume	=	490 cuft
Drainage area	=	0.094 ac	Curve number	=	98
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	10.00 min
Total precip.	=	1.76 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

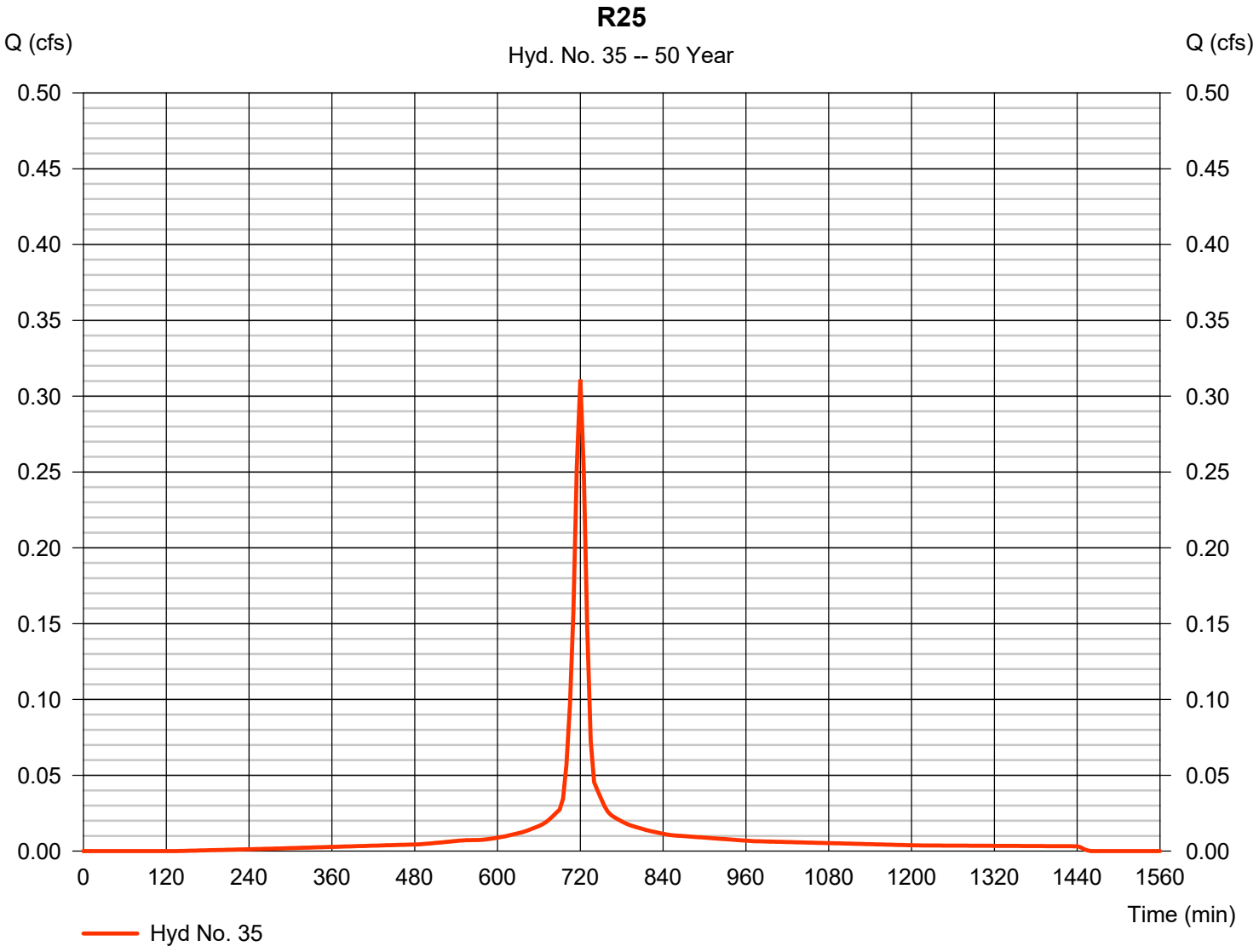


Hydrograph Report

Hyd. No. 35

R25

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.311 cfs
Storm frequency	=	50 yrs	Time to peak	=	720 min
Time interval	=	5 min	Hyd. volume	=	911 cuft
Drainage area	=	0.174 ac	Curve number	=	98
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	10.00 min
Total precip.	=	1.76 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484



Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	0.549	5	725	2,150	------	------	------	Basin 1
2	SCS Runoff	1.919	5	720	5,406	------	------	------	Basin 2
3	SCS Runoff	3.459	5	720	9,601	------	------	------	Basin 3
4	SCS Runoff	1.750	5	720	4,930	------	------	------	Basin 4
5	SCS Runoff	2.829	5	735	15,121	------	------	------	Basin 5
6	SCS Runoff	0.595	5	720	2,061	------	------	------	Basin 6
7	SCS Runoff	7.190	5	720	19,959	------	------	------	Basin 7
8	SCS Runoff	1.100	5	720	2,968	------	------	------	Basin 8
9	SCS Runoff	4.651	2	720	12,188	------	------	------	Basin 9
10	SCS Runoff	2.718	5	720	7,336	------	------	------	Basin 10
11	SCS Runoff	0.217	5	720	641	------	------	------	R1
12	SCS Runoff	0.220	5	720	649	------	------	------	R2
13	SCS Runoff	0.121	5	720	358	------	------	------	R3
14	SCS Runoff	0.158	5	720	466	------	------	------	R4
15	SCS Runoff	0.191	5	720	566	------	------	------	R5
16	SCS Runoff	0.191	5	720	566	------	------	------	R6
17	SCS Runoff	0.191	5	720	566	------	------	------	R7
18	SCS Runoff	0.191	5	720	566	------	------	------	R8
19	SCS Runoff	0.191	5	720	566	------	------	------	R9
20	SCS Runoff	0.191	5	720	566	------	------	------	R10
21	SCS Runoff	0.191	5	720	566	------	------	------	R11
22	SCS Runoff	0.191	5	720	566	------	------	------	R12
23	SCS Runoff	0.191	5	720	566	------	------	------	R13
24	SCS Runoff	0.191	5	720	566	------	------	------	R14
25	SCS Runoff	0.191	5	720	566	------	------	------	R15
26	SCS Runoff	0.191	5	720	566	------	------	------	R16
27	SCS Runoff	0.191	5	720	566	------	------	------	R17
28	SCS Runoff	0.191	5	720	566	------	------	------	R18
29	SCS Runoff	0.191	5	720	566	------	------	------	R19
30	SCS Runoff	0.191	5	720	566	------	------	------	R20
31	SCS Runoff	0.191	5	720	566	------	------	------	R21
32	SCS Runoff	0.191	5	720	566	------	------	------	R22
33	SCS Runoff	0.191	5	720	566	------	------	------	R23
34	SCS Runoff	0.191	5	720	566	------	------	------	R24

Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021

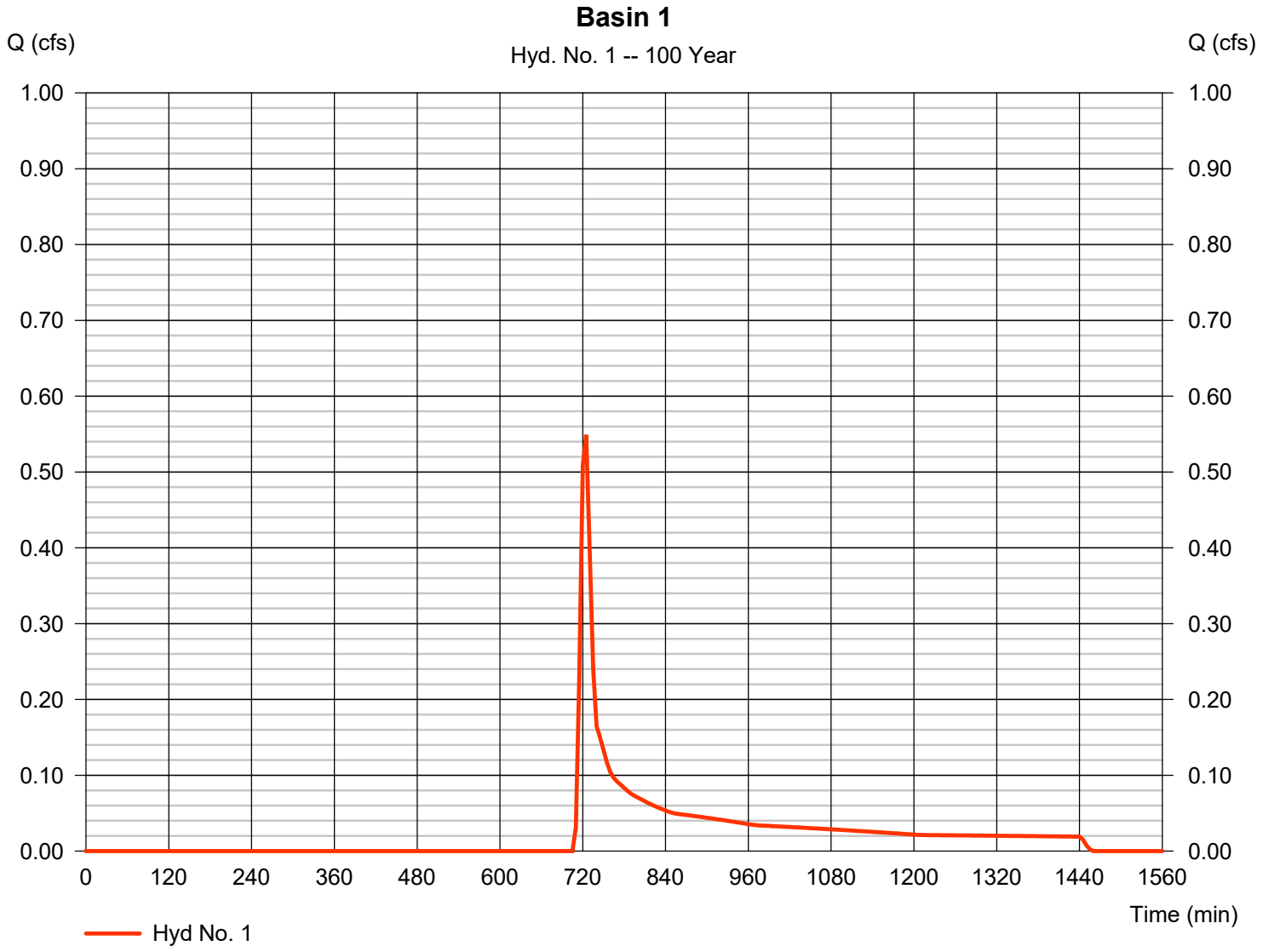
Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
35	SCS Runoff	0.356	5	720	1,052	------	------	------	R25

Hydrograph Report

Hyd. No. 1

Basin 1

Hydrograph type	= SCS Runoff	Peak discharge	= 0.549 cfs
Storm frequency	= 100 yrs	Time to peak	= 725 min
Time interval	= 5 min	Hyd. volume	= 2,150 cuft
Drainage area	= 2.162 ac	Curve number	= 72
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 11.80 min
Total precip.	= 2.00 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

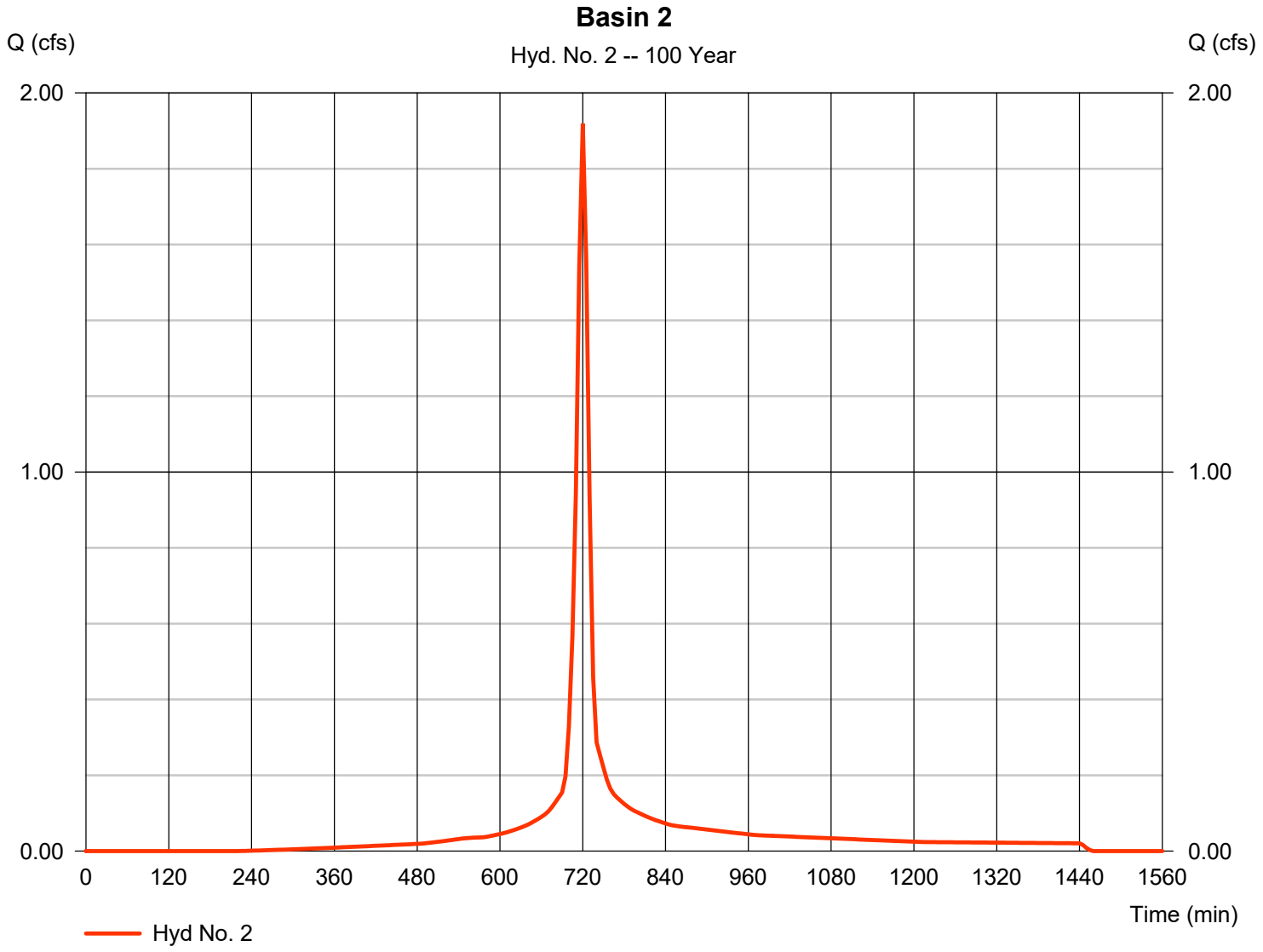


Hydrograph Report

Hyd. No. 2

Basin 2

Hydrograph type	= SCS Runoff	Peak discharge	= 1.919 cfs
Storm frequency	= 100 yrs	Time to peak	= 720 min
Time interval	= 5 min	Hyd. volume	= 5,406 cuft
Drainage area	= 1.009 ac	Curve number	= 96
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 2.00 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

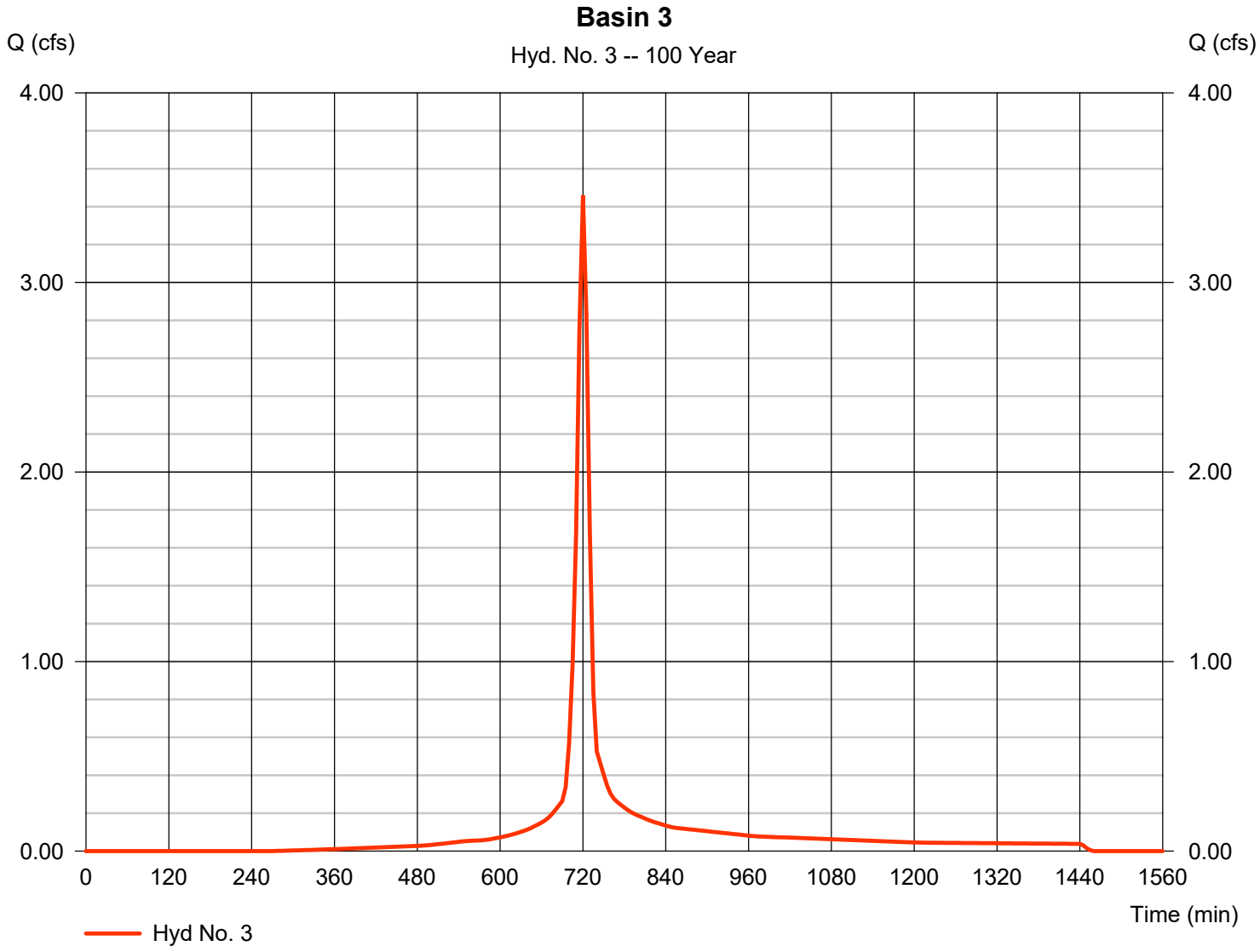


Hydrograph Report

Hyd. No. 3

Basin 3

Hydrograph type	= SCS Runoff	Peak discharge	= 3.459 cfs
Storm frequency	= 100 yrs	Time to peak	= 720 min
Time interval	= 5 min	Hyd. volume	= 9,601 cuft
Drainage area	= 1.903 ac	Curve number	= 95
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 2.00 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

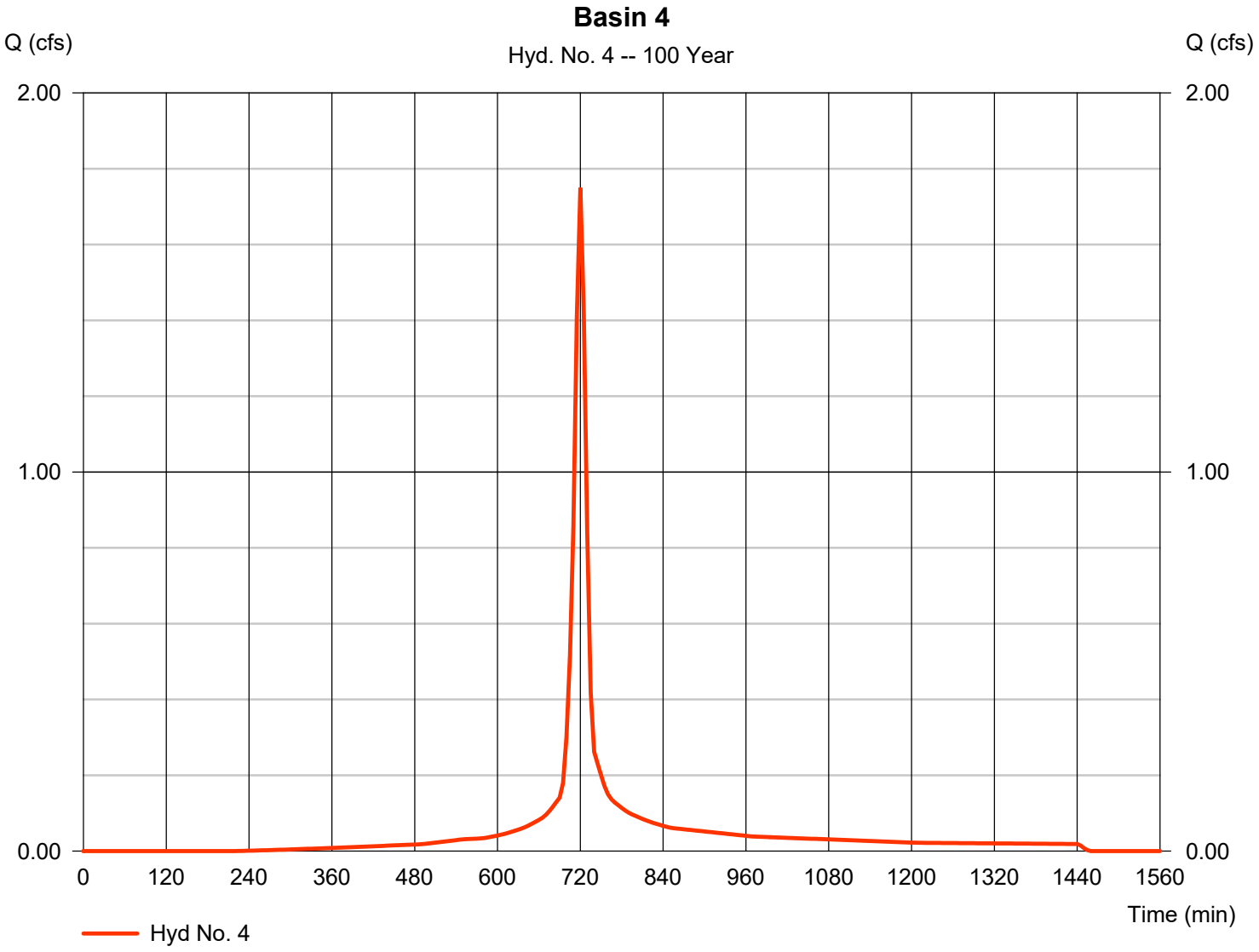


Hydrograph Report

Hyd. No. 4

Basin 4

Hydrograph type	= SCS Runoff	Peak discharge	= 1.750 cfs
Storm frequency	= 100 yrs	Time to peak	= 720 min
Time interval	= 5 min	Hyd. volume	= 4,930 cuft
Drainage area	= 0.920 ac	Curve number	= 96
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 2.00 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

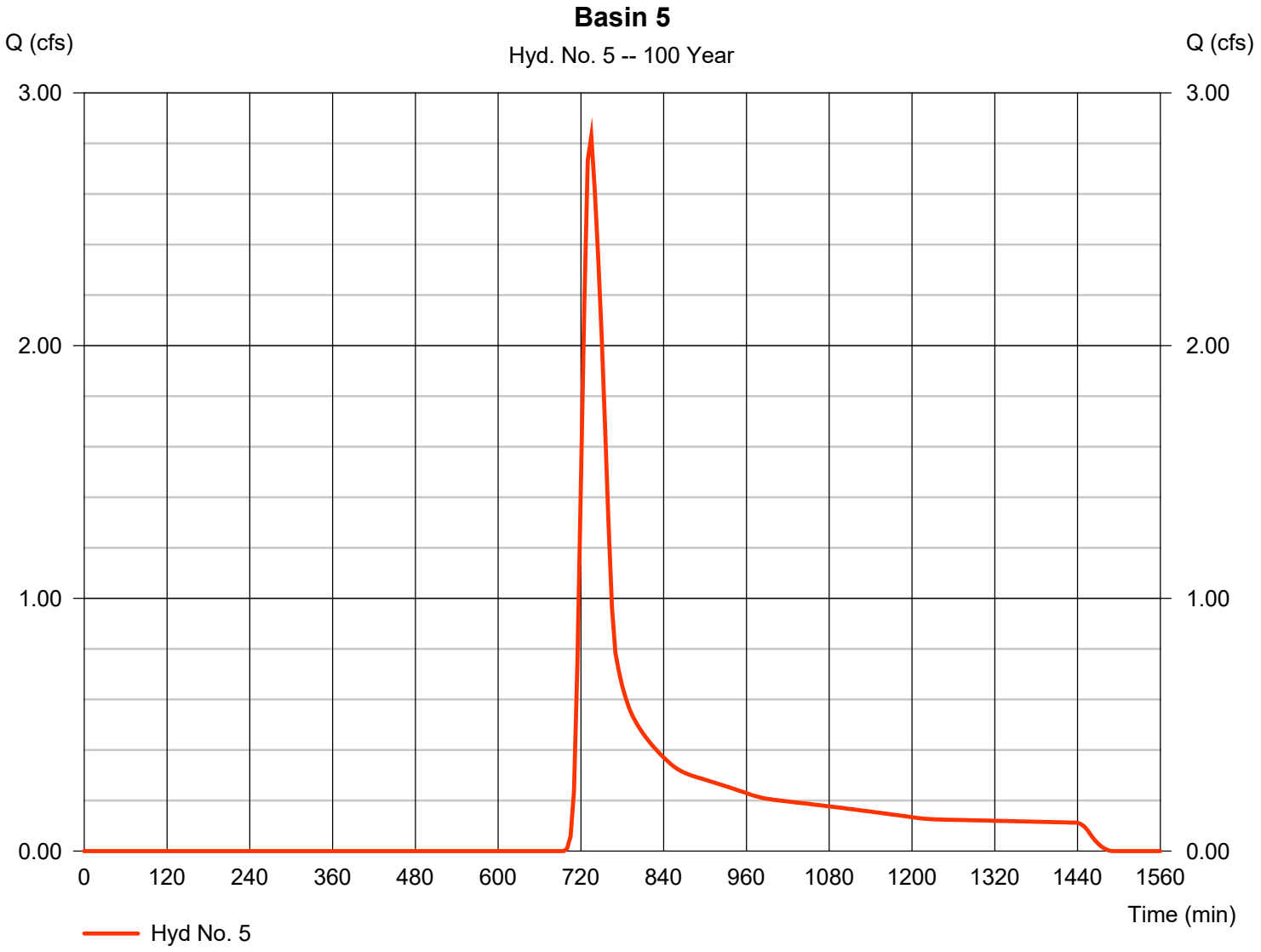


Hydrograph Report

Hyd. No. 5

Basin 5

Hydrograph type	=	SCS Runoff	Peak discharge	=	2.829 cfs
Storm frequency	=	100 yrs	Time to peak	=	735 min
Time interval	=	5 min	Hyd. volume	=	15,121 cuft
Drainage area	=	9.013 ac	Curve number	=	77
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	30.10 min
Total precip.	=	2.00 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

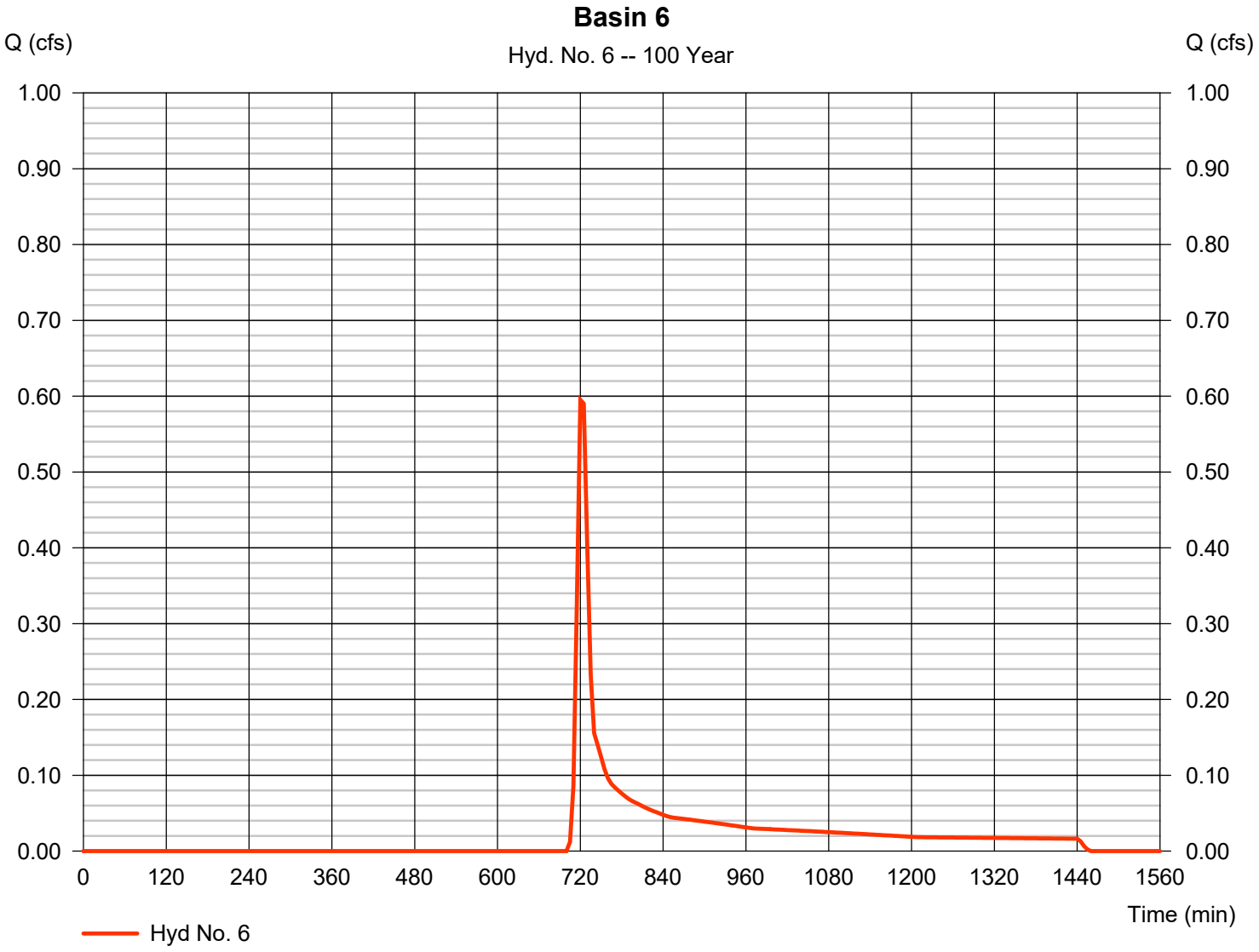


Hydrograph Report

Hyd. No. 6

Basin 6

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.595 cfs
Storm frequency	=	100 yrs	Time to peak	=	720 min
Time interval	=	5 min	Hyd. volume	=	2,061 cuft
Drainage area	=	1.590 ac	Curve number	=	75
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	15.10 min
Total precip.	=	2.00 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

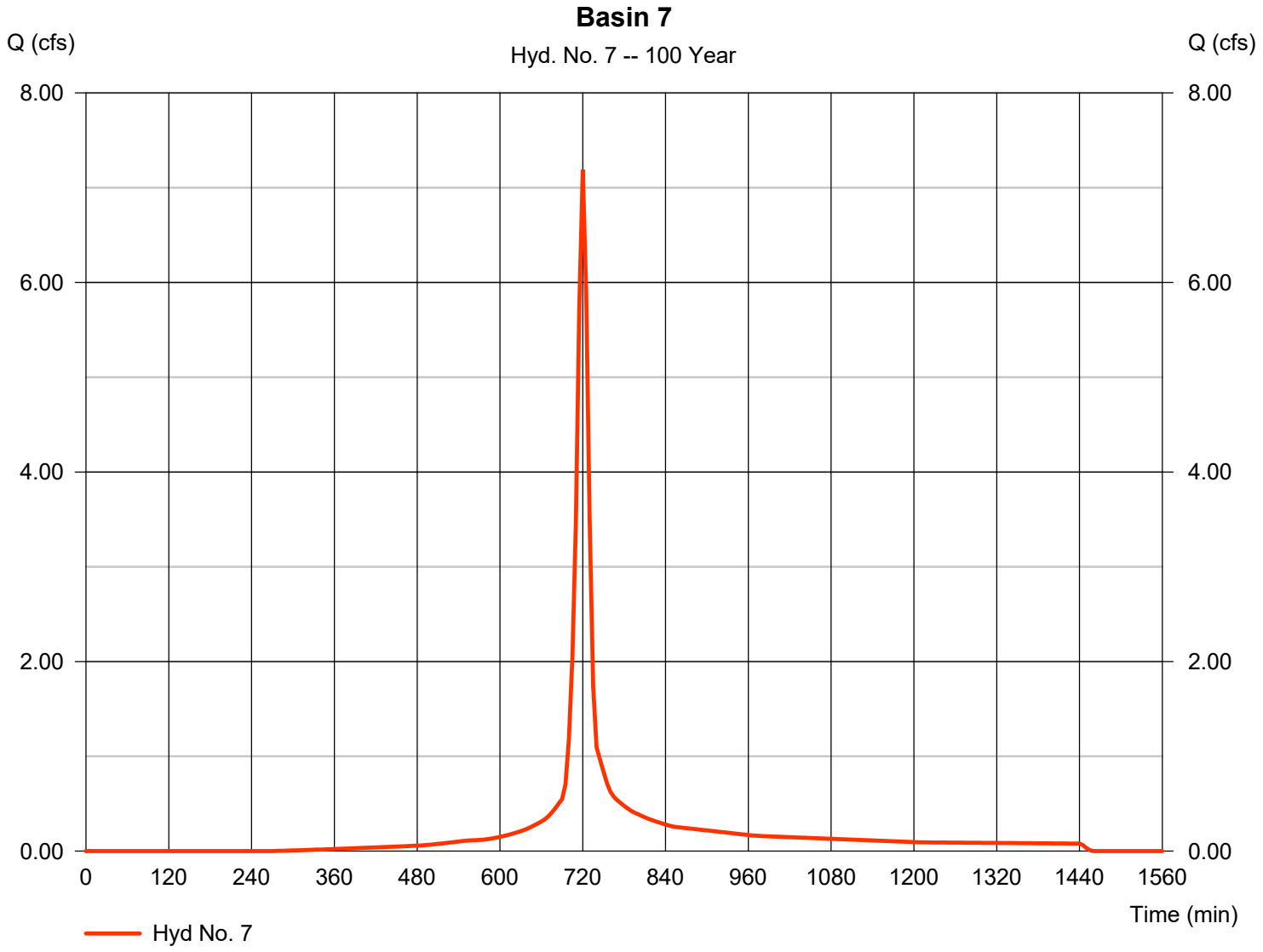


Hydrograph Report

Hyd. No. 7

Basin 7

Hydrograph type	= SCS Runoff	Peak discharge	= 7.190 cfs
Storm frequency	= 100 yrs	Time to peak	= 720 min
Time interval	= 5 min	Hyd. volume	= 19,959 cuft
Drainage area	= 3.955 ac	Curve number	= 95
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 2.00 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

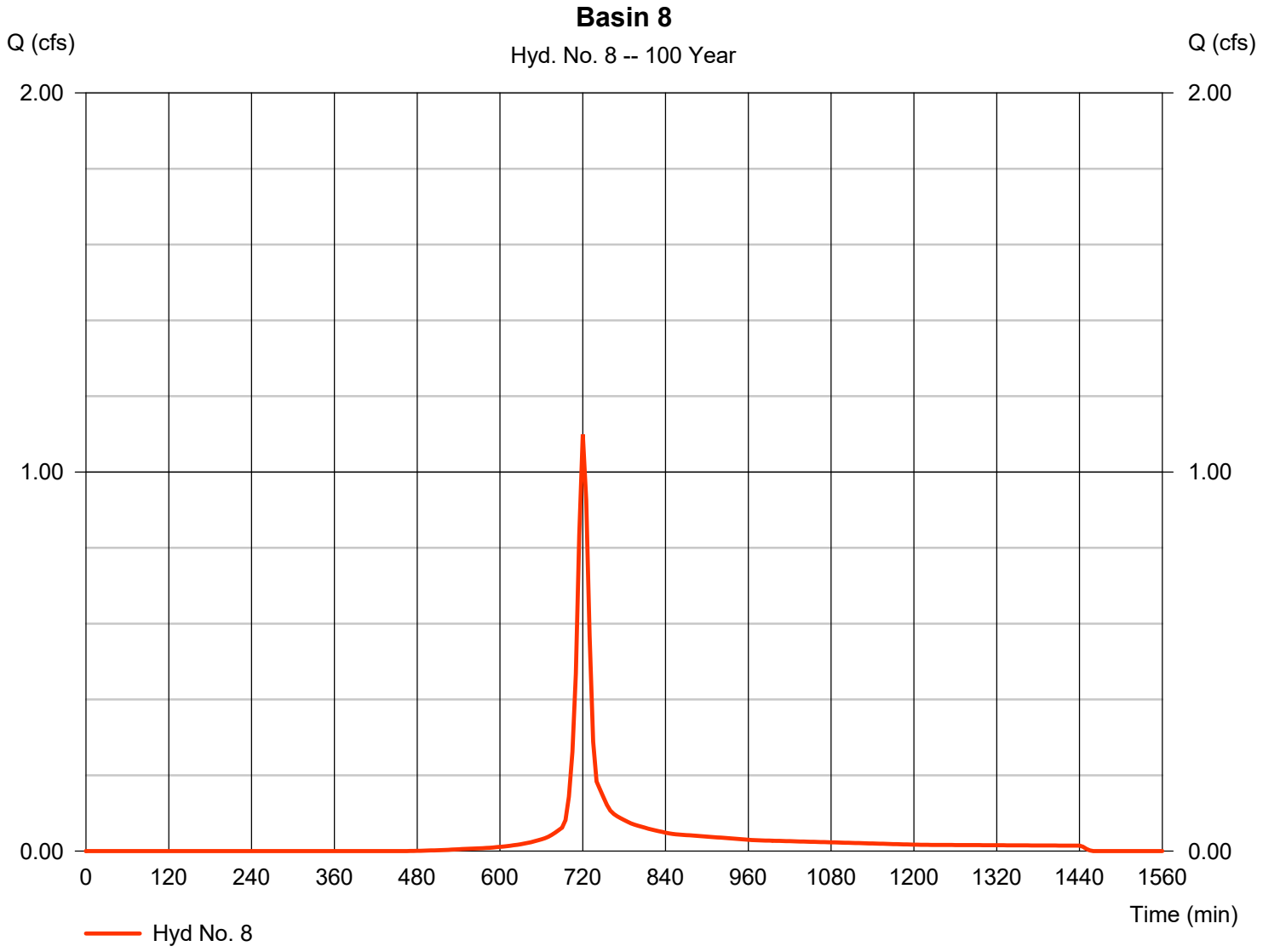


Hydrograph Report

Hyd. No. 8

Basin 8

Hydrograph type	= SCS Runoff	Peak discharge	= 1.100 cfs
Storm frequency	= 100 yrs	Time to peak	= 720 min
Time interval	= 5 min	Hyd. volume	= 2,968 cuft
Drainage area	= 0.797 ac	Curve number	= 90
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 2.00 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

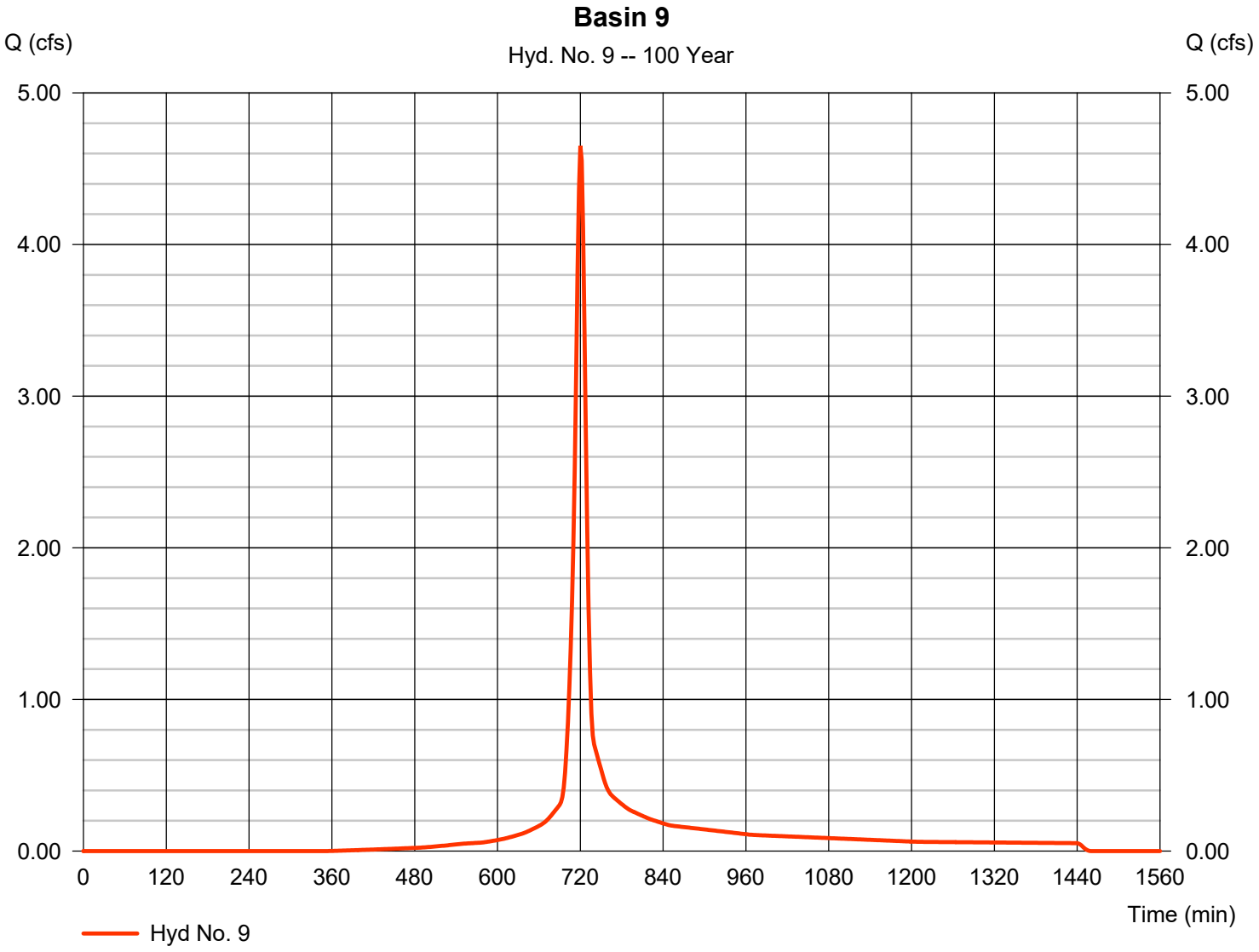


Hydrograph Report

Hyd. No. 9

Basin 9

Hydrograph type	= SCS Runoff	Peak discharge	= 4.651 cfs
Storm frequency	= 100 yrs	Time to peak	= 720 min
Time interval	= 2 min	Hyd. volume	= 12,188 cuft
Drainage area	= 2.477 ac	Curve number	= 93
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 2.00 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

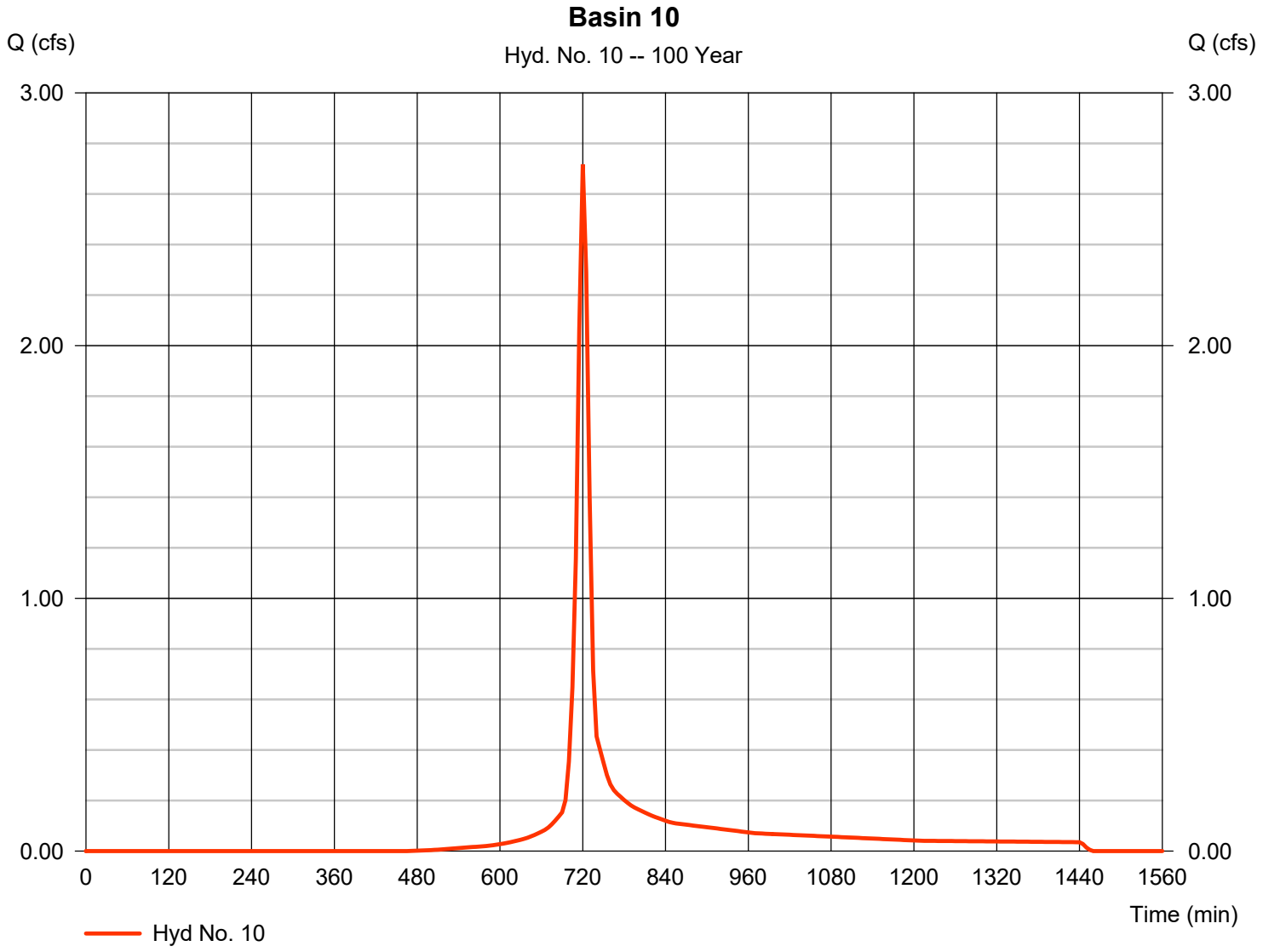


Hydrograph Report

Hyd. No. 10

Basin 10

Hydrograph type	= SCS Runoff	Peak discharge	= 2.718 cfs
Storm frequency	= 100 yrs	Time to peak	= 720 min
Time interval	= 5 min	Hyd. volume	= 7,336 cuft
Drainage area	= 1.970 ac	Curve number	= 90
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 2.00 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

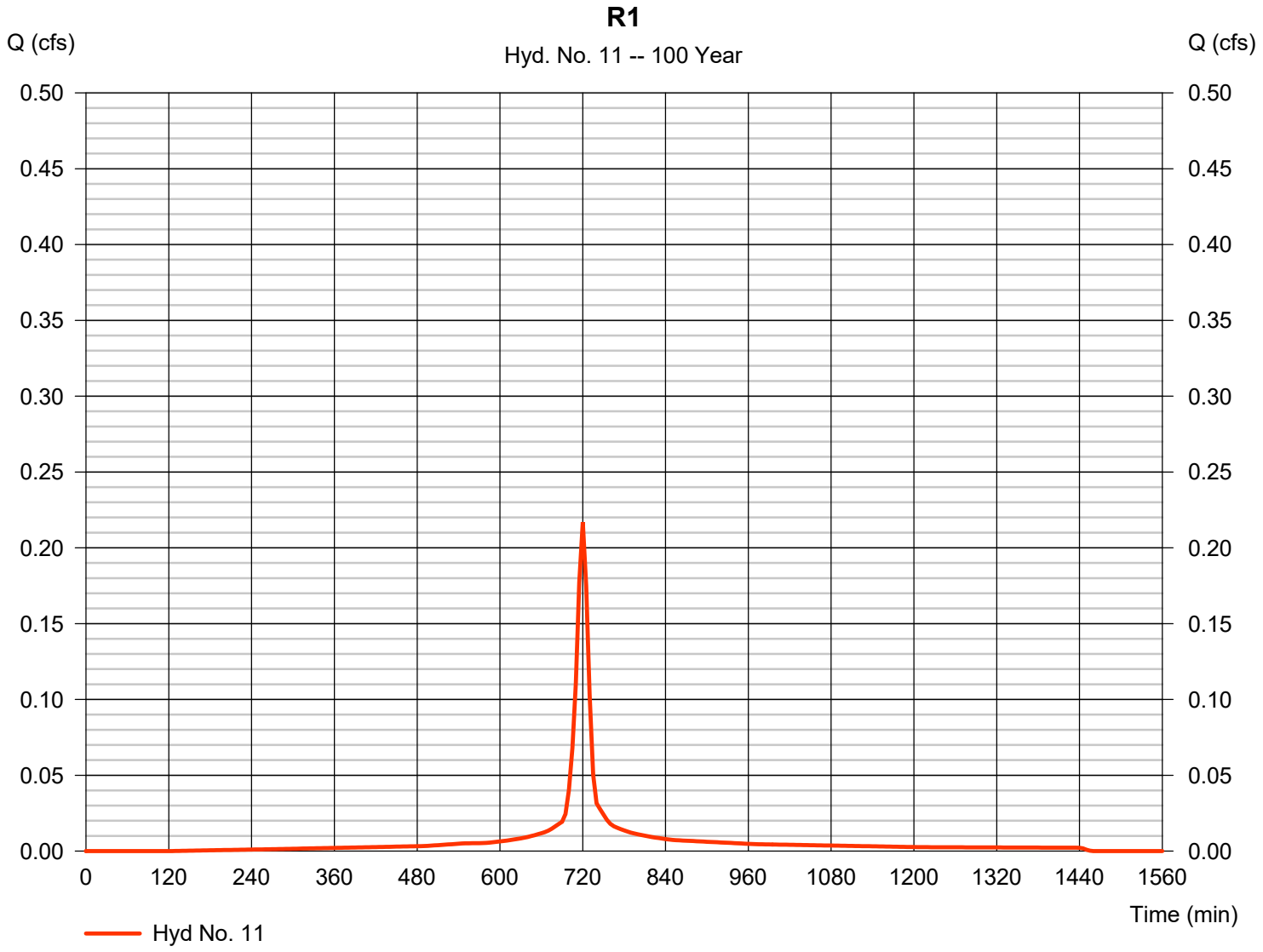


Hydrograph Report

Hyd. No. 11

R1

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.217 cfs
Storm frequency	=	100 yrs	Time to peak	=	720 min
Time interval	=	5 min	Hyd. volume	=	641 cuft
Drainage area	=	0.106 ac	Curve number	=	98
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	10.00 min
Total precip.	=	2.00 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

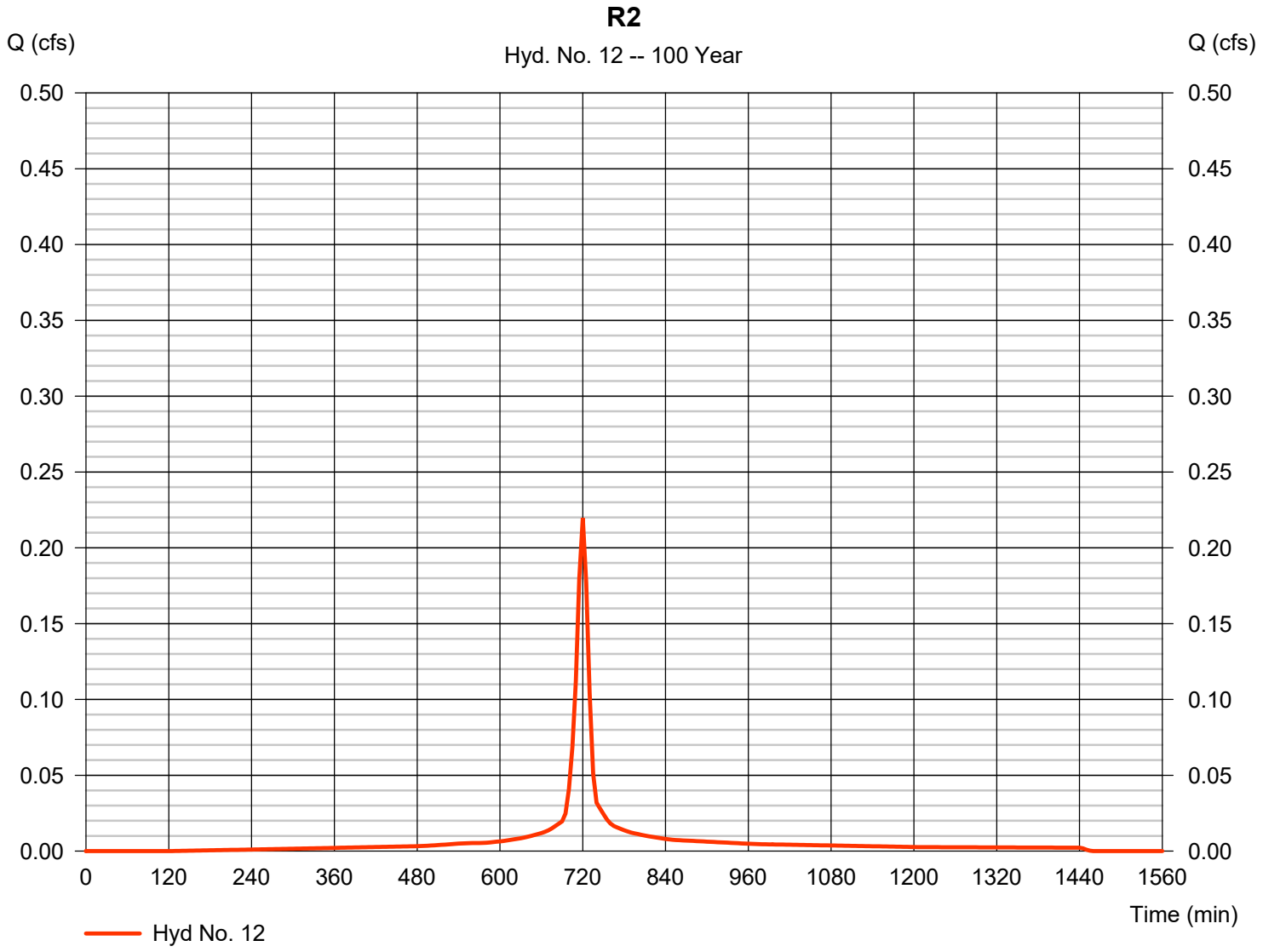


Hydrograph Report

Hyd. No. 12

R2

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.220 cfs
Storm frequency	=	100 yrs	Time to peak	=	720 min
Time interval	=	5 min	Hyd. volume	=	649 cuft
Drainage area	=	0.107 ac	Curve number	=	98
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	10.00 min
Total precip.	=	2.00 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

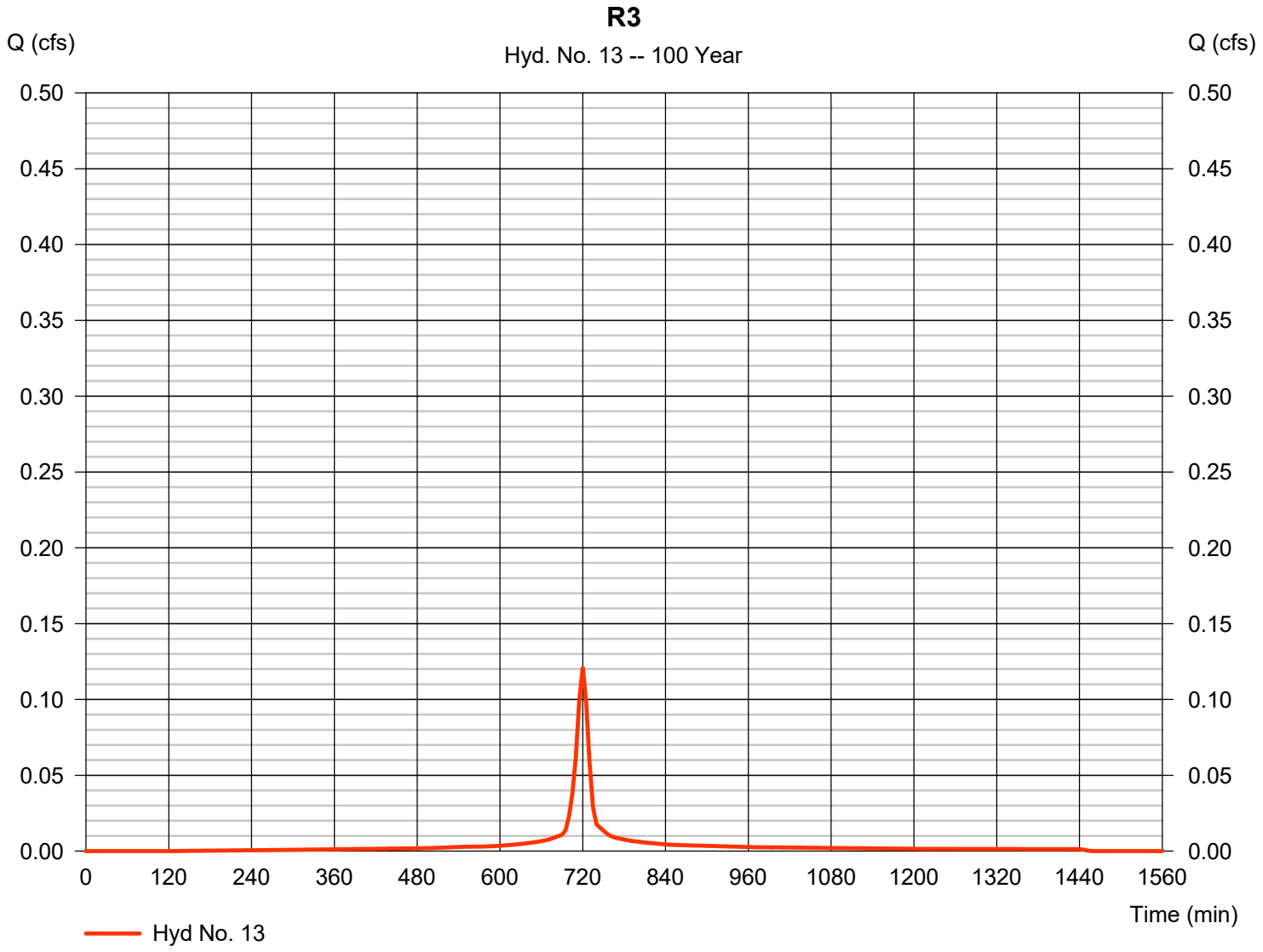


Hydrograph Report

Hyd. No. 13

R3

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.121 cfs
Storm frequency	=	100 yrs	Time to peak	=	720 min
Time interval	=	5 min	Hyd. volume	=	358 cuft
Drainage area	=	0.059 ac	Curve number	=	98
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	10.00 min
Total precip.	=	2.00 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

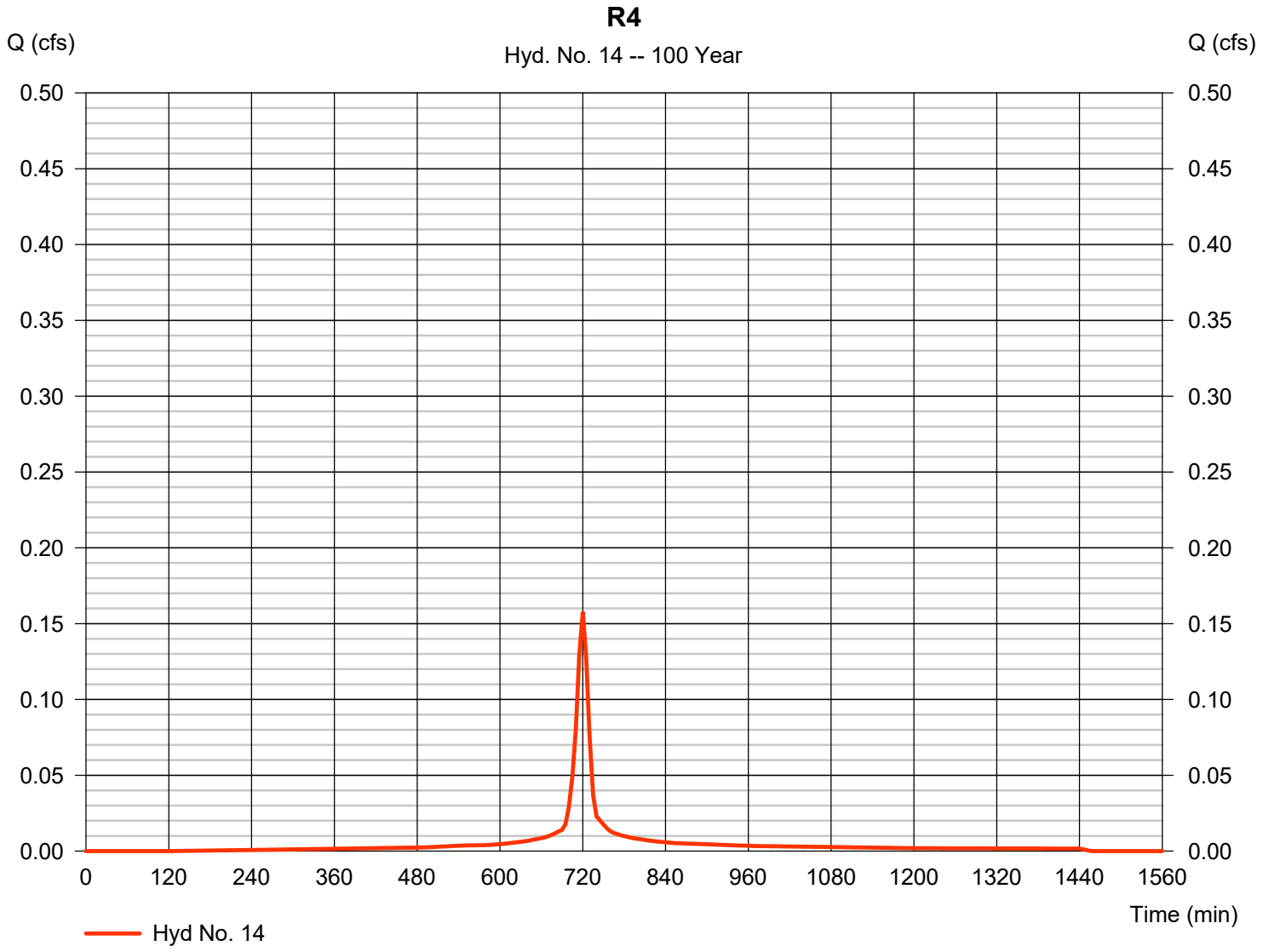


Hydrograph Report

Hyd. No. 14

R4

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.158 cfs
Storm frequency	=	100 yrs	Time to peak	=	720 min
Time interval	=	5 min	Hyd. volume	=	466 cuft
Drainage area	=	0.077 ac	Curve number	=	98
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	10.00 min
Total precip.	=	2.00 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484



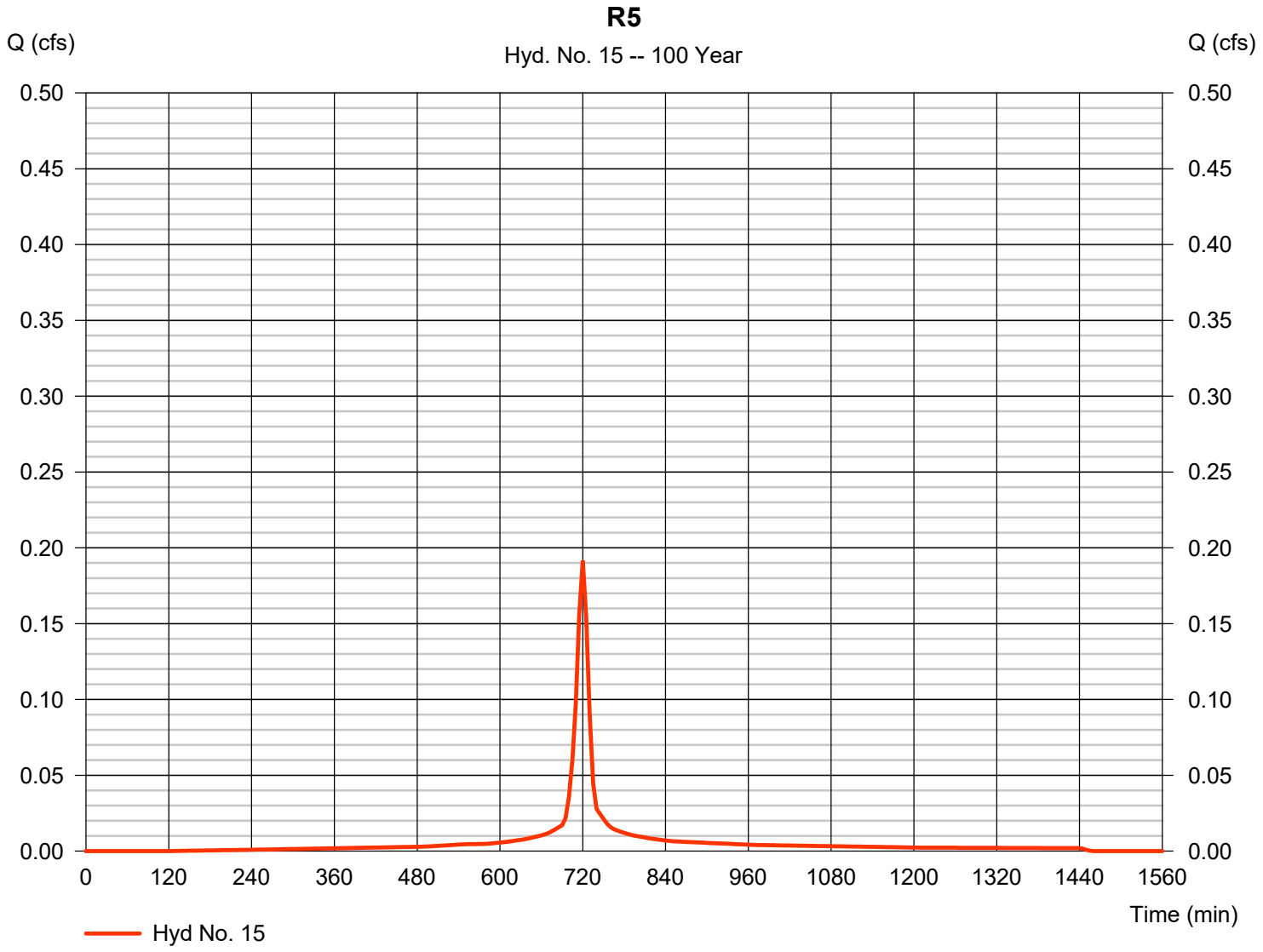
Hydrograph Report

Hyd. No. 15

R5

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.191 cfs
Storm frequency	=	100 yrs	Time to peak	=	720 min
Time interval	=	5 min	Hyd. volume	=	566 cuft
Drainage area	=	0.094 ac	Curve number	=	98*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	10.00 min
Total precip.	=	2.00 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = [(0.060 x 98) + (0.040 x 82)] / 0.094



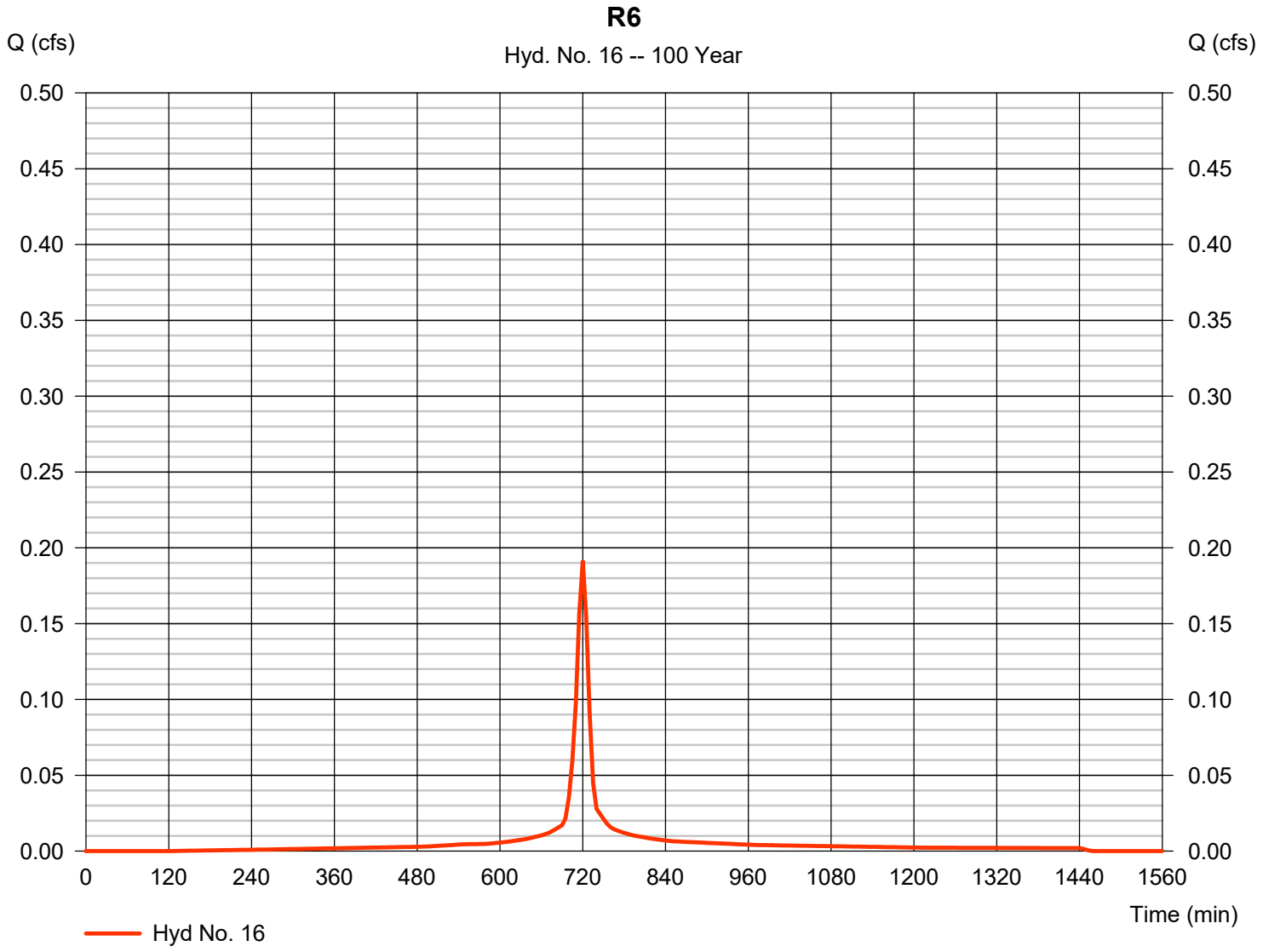
Hydrograph Report

Hyd. No. 16

R6

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.191 cfs
Storm frequency	=	100 yrs	Time to peak	=	720 min
Time interval	=	5 min	Hyd. volume	=	566 cuft
Drainage area	=	0.094 ac	Curve number	=	98*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	10.00 min
Total precip.	=	2.00 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = [(0.058 x 98) + (0.036 x 82)] / 0.094



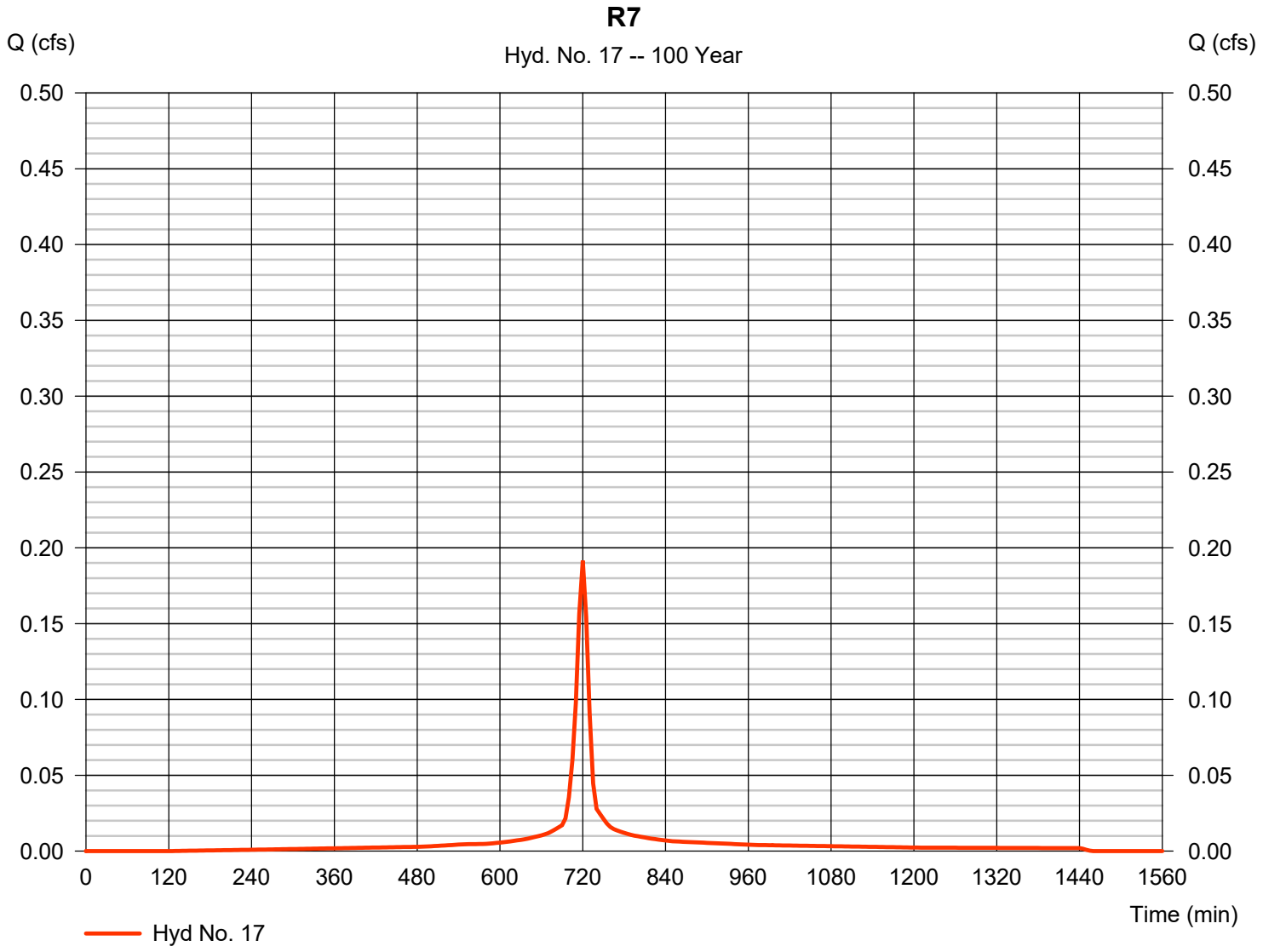
Hydrograph Report

Hyd. No. 17

R7

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.191 cfs
Storm frequency	=	100 yrs	Time to peak	=	720 min
Time interval	=	5 min	Hyd. volume	=	566 cuft
Drainage area	=	0.094 ac	Curve number	=	98*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	10.00 min
Total precip.	=	2.00 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = [(0.062 x 98) + (0.032 x 82)] / 0.094



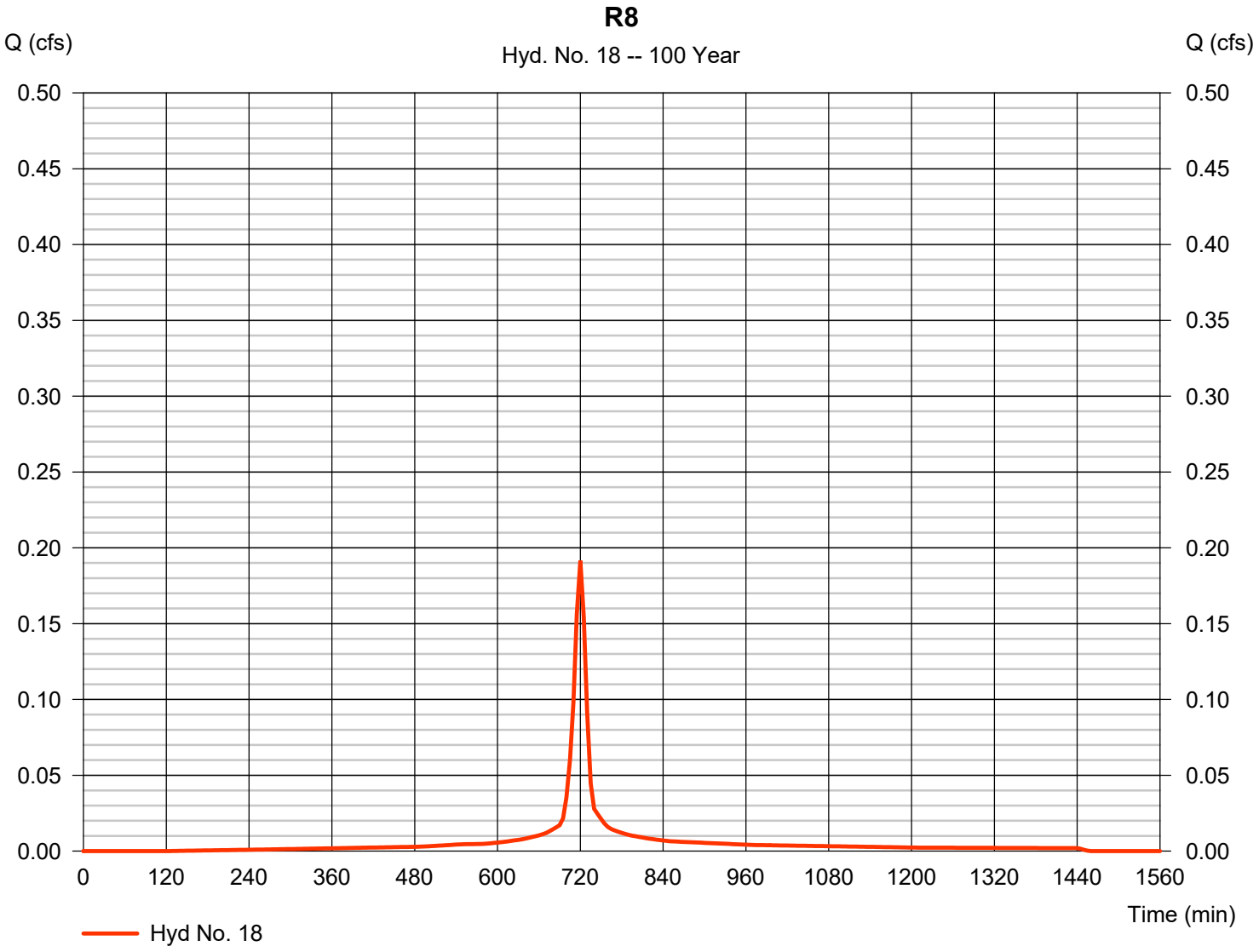
Hydrograph Report

Hyd. No. 18

R8

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.191 cfs
Storm frequency	=	100 yrs	Time to peak	=	720 min
Time interval	=	5 min	Hyd. volume	=	566 cuft
Drainage area	=	0.094 ac	Curve number	=	98*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	10.00 min
Total precip.	=	2.00 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = [(0.060 x 98) + (0.040 x 82)] / 0.094



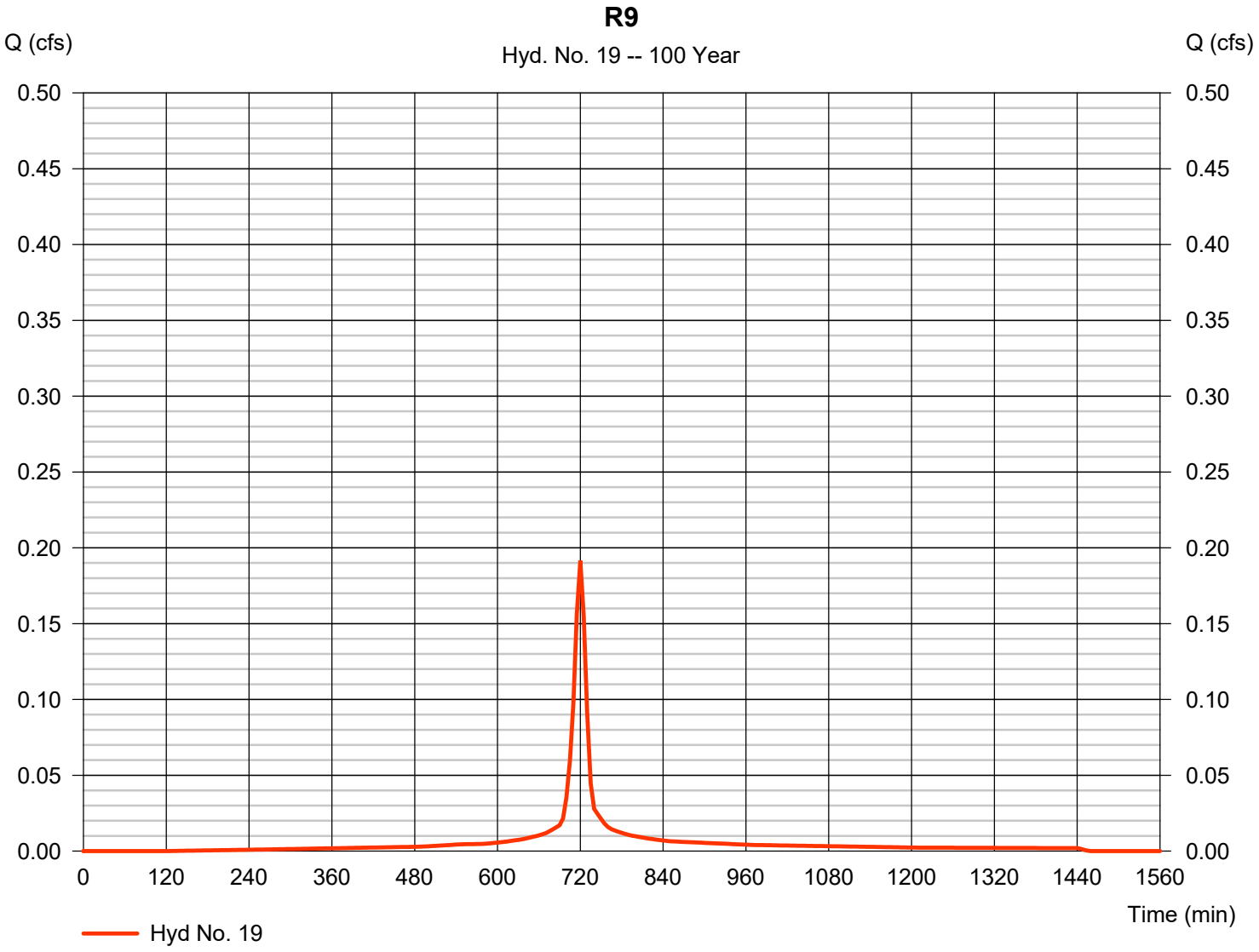
Hydrograph Report

Hyd. No. 19

R9

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.191 cfs
Storm frequency	=	100 yrs	Time to peak	=	720 min
Time interval	=	5 min	Hyd. volume	=	566 cuft
Drainage area	=	0.094 ac	Curve number	=	98*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	10.00 min
Total precip.	=	2.00 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = [(0.058 x 98) + (0.036 x 82)] / 0.094

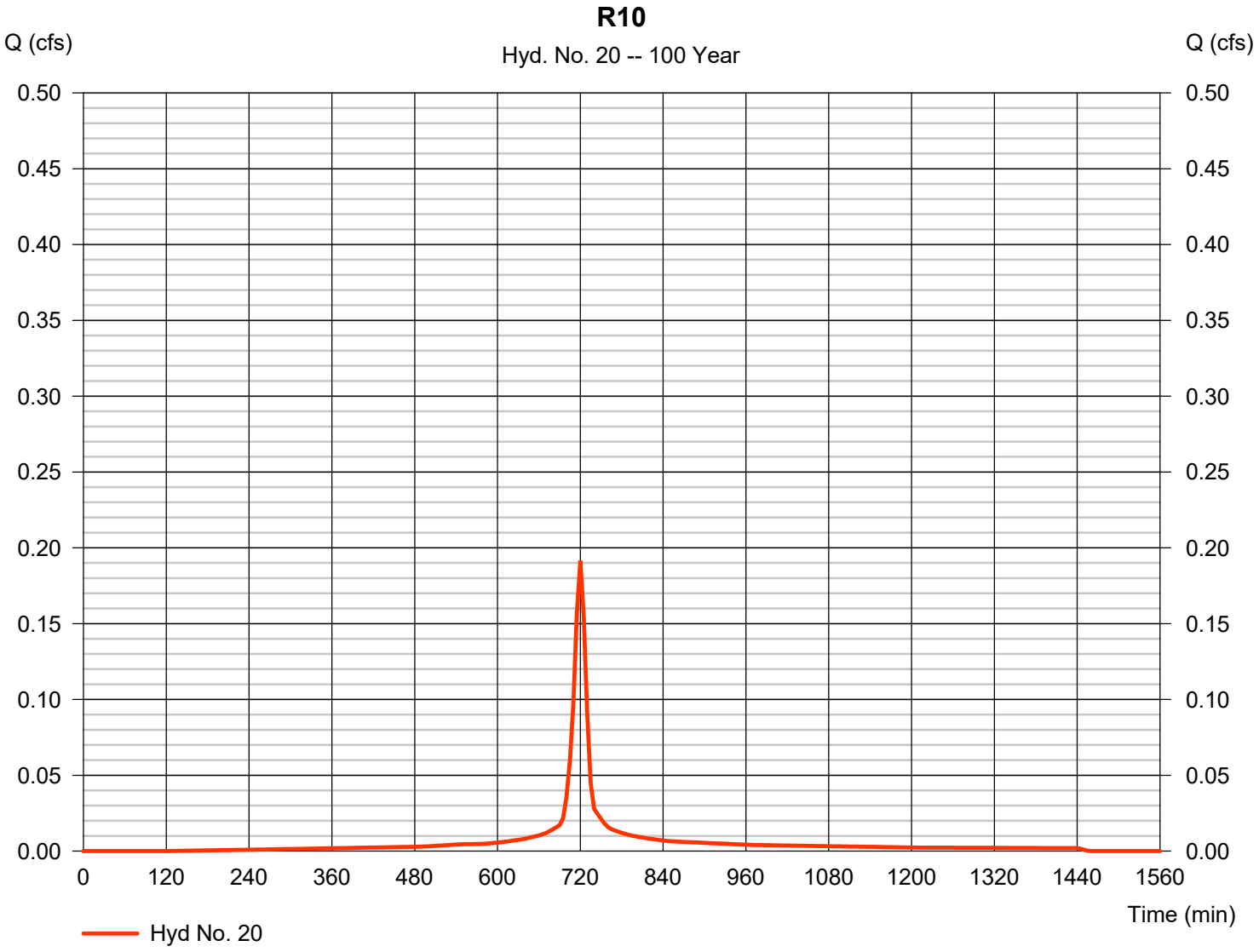


Hydrograph Report

Hyd. No. 20

R10

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.191 cfs
Storm frequency	=	100 yrs	Time to peak	=	720 min
Time interval	=	5 min	Hyd. volume	=	566 cuft
Drainage area	=	0.094 ac	Curve number	=	98
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	10.00 min
Total precip.	=	2.00 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

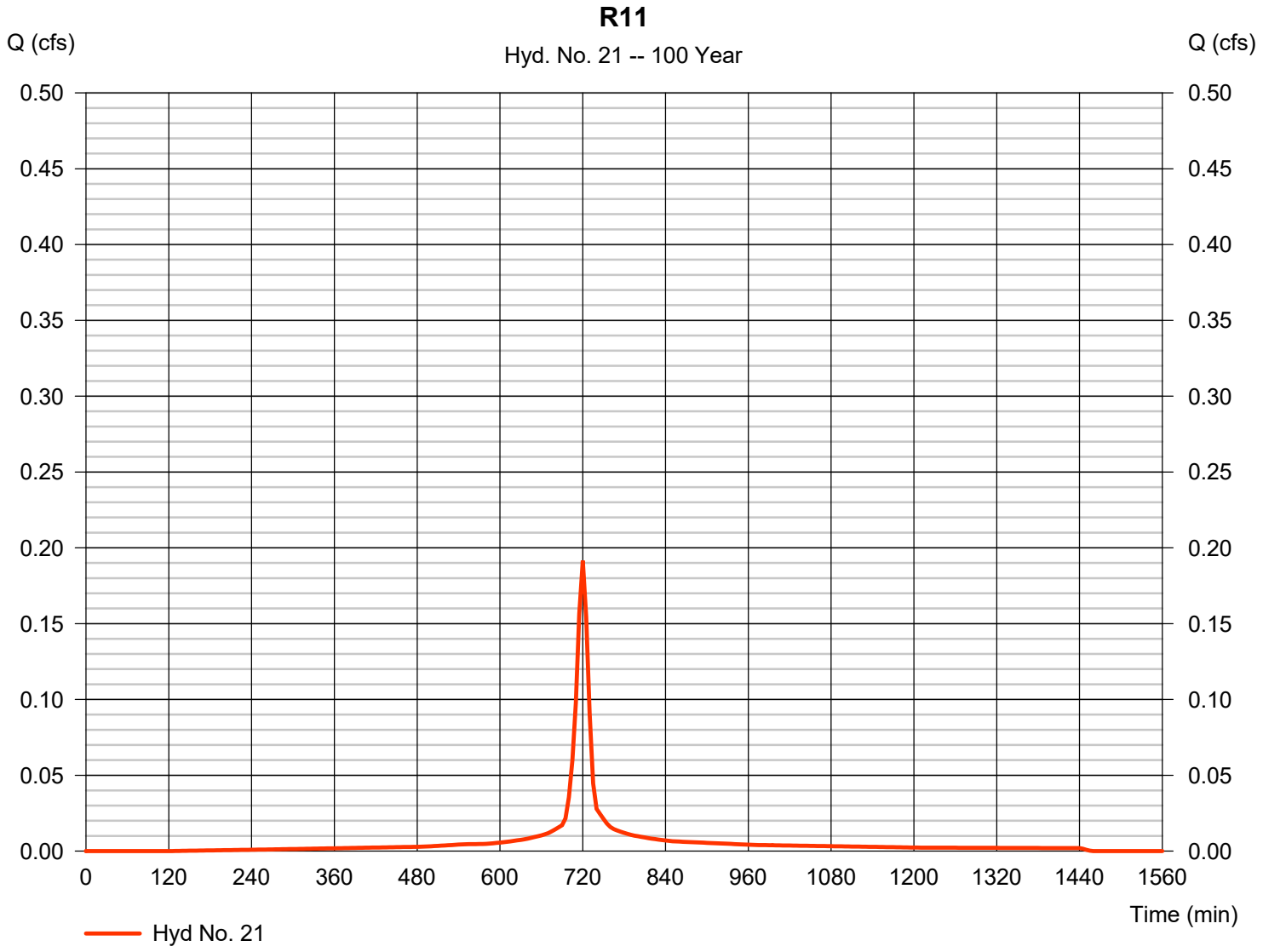


Hydrograph Report

Hyd. No. 21

R11

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.191 cfs
Storm frequency	=	100 yrs	Time to peak	=	720 min
Time interval	=	5 min	Hyd. volume	=	566 cuft
Drainage area	=	0.094 ac	Curve number	=	98
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	10.00 min
Total precip.	=	2.00 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

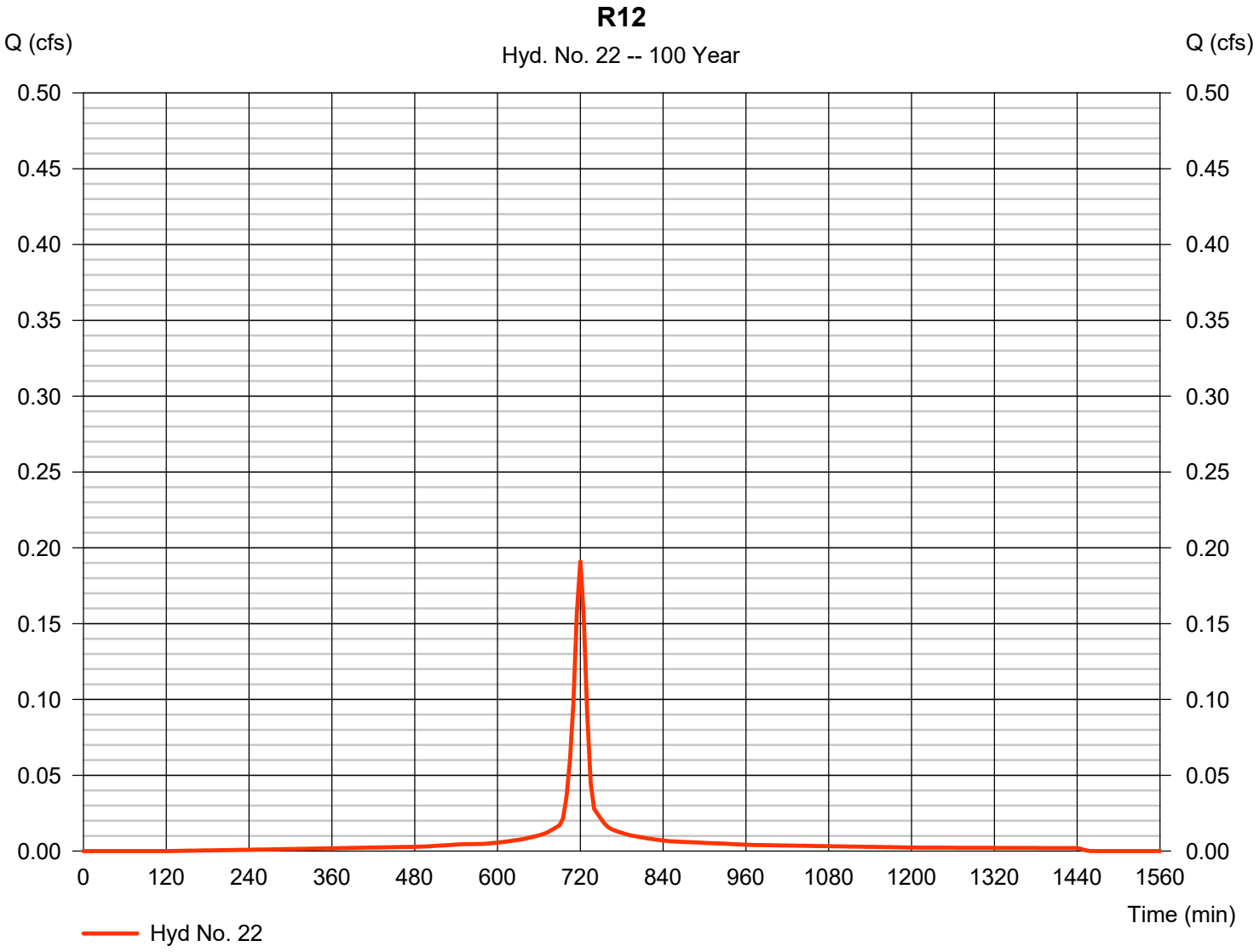


Hydrograph Report

Hyd. No. 22

R12

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.191 cfs
Storm frequency	=	100 yrs	Time to peak	=	720 min
Time interval	=	5 min	Hyd. volume	=	566 cuft
Drainage area	=	0.094 ac	Curve number	=	98
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	10.00 min
Total precip.	=	2.00 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

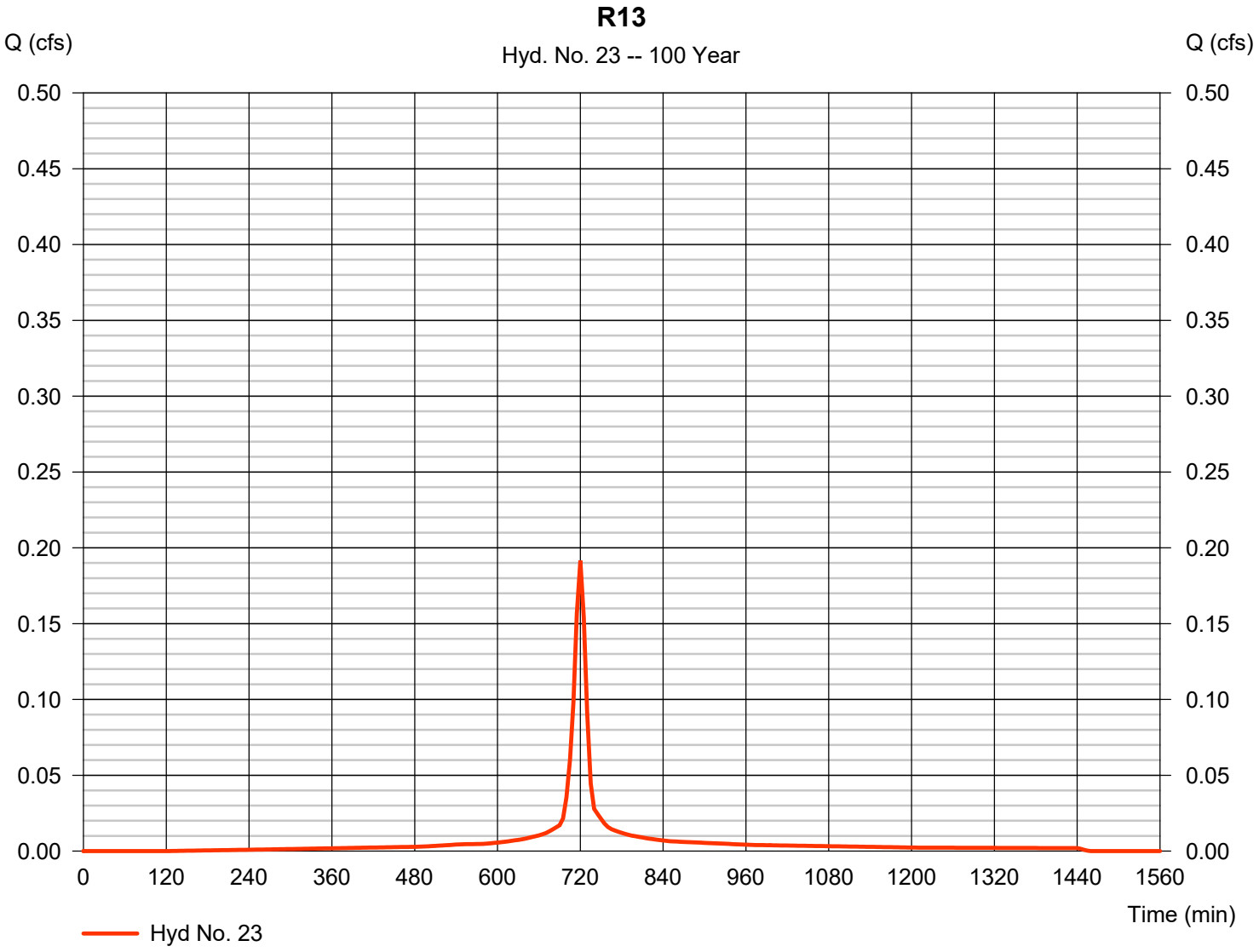


Hydrograph Report

Hyd. No. 23

R13

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.191 cfs
Storm frequency	=	100 yrs	Time to peak	=	720 min
Time interval	=	5 min	Hyd. volume	=	566 cuft
Drainage area	=	0.094 ac	Curve number	=	98
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	10.00 min
Total precip.	=	2.00 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

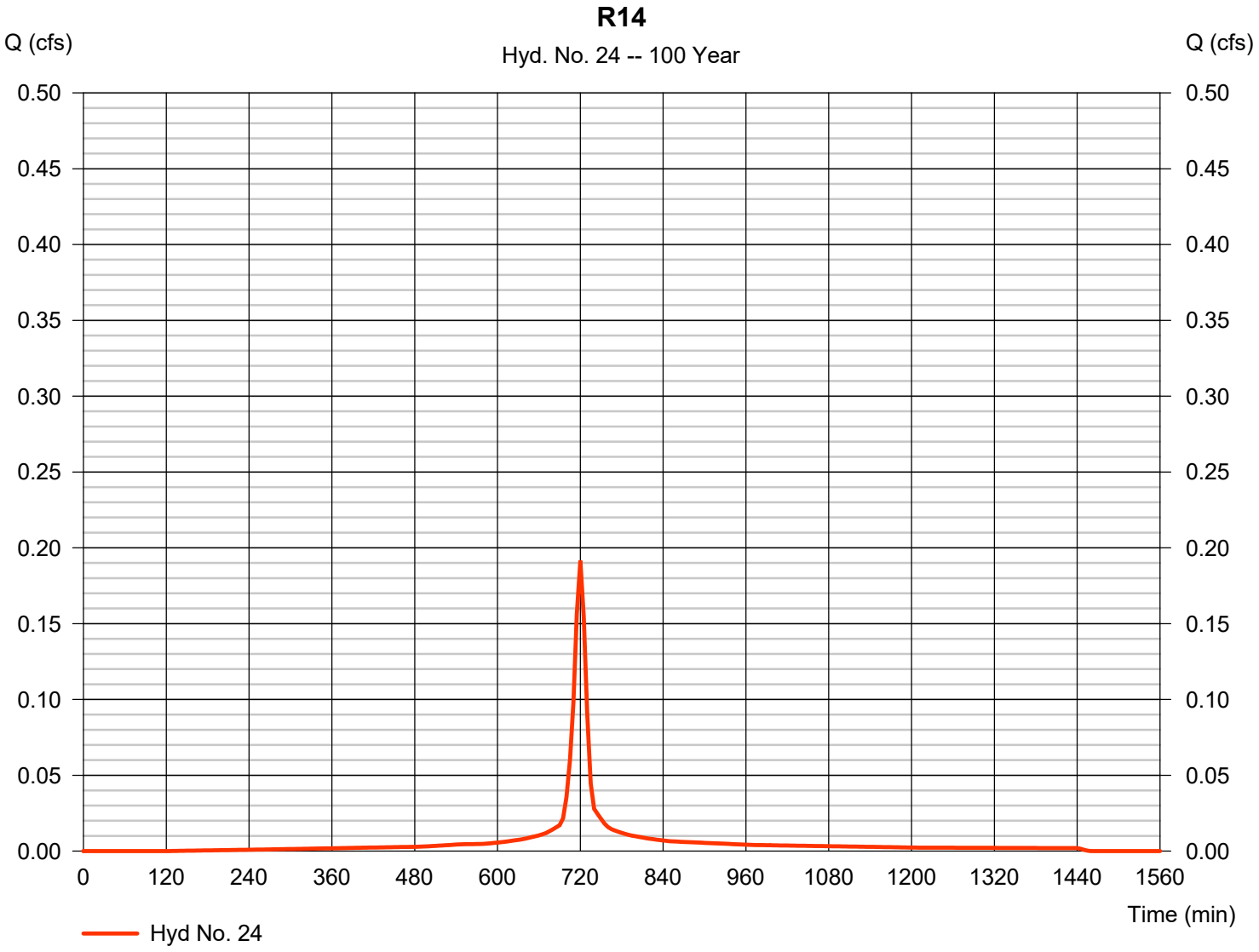


Hydrograph Report

Hyd. No. 24

R14

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.191 cfs
Storm frequency	=	100 yrs	Time to peak	=	720 min
Time interval	=	5 min	Hyd. volume	=	566 cuft
Drainage area	=	0.094 ac	Curve number	=	98
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	10.00 min
Total precip.	=	2.00 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

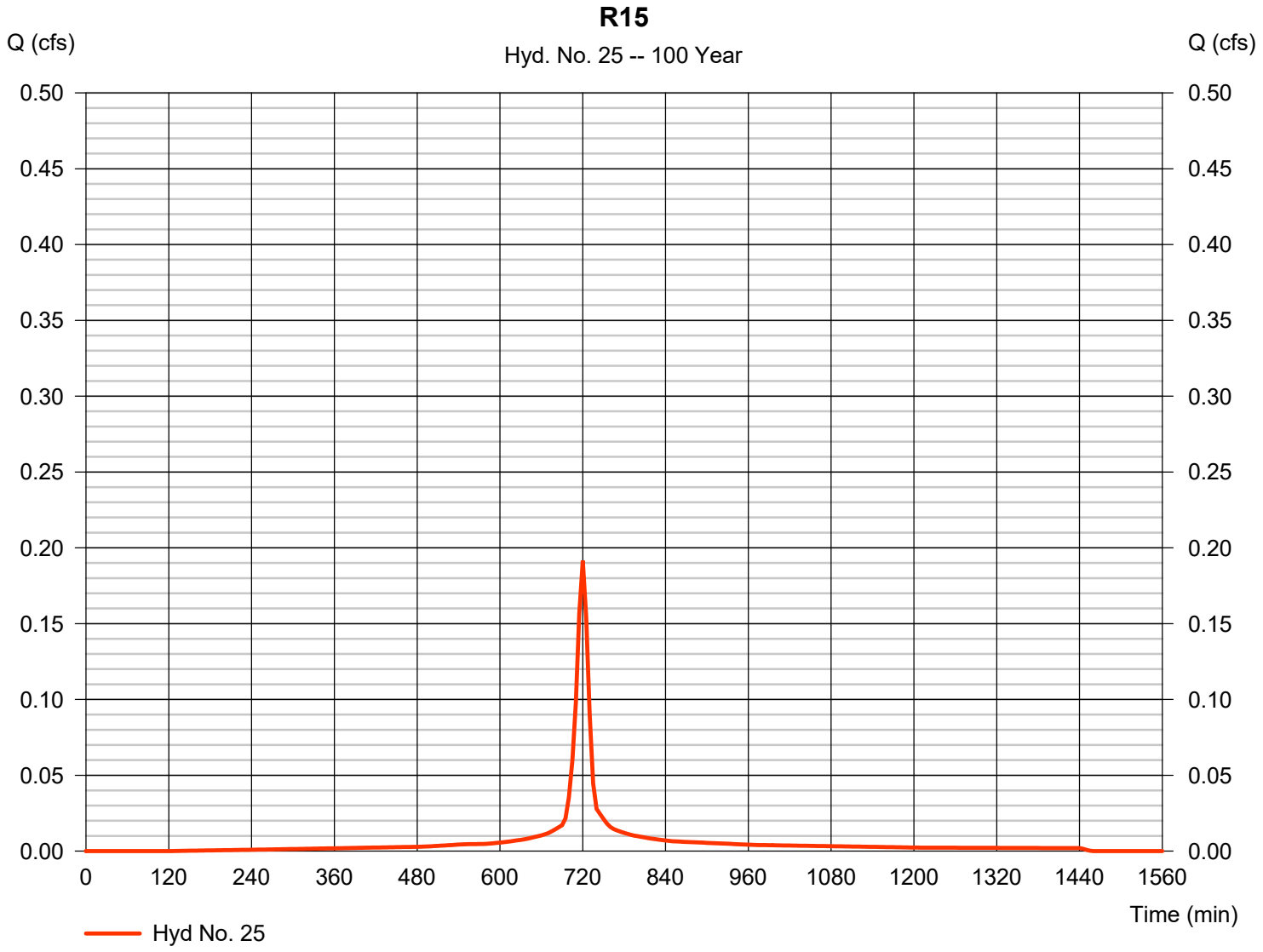


Hydrograph Report

Hyd. No. 25

R15

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.191 cfs
Storm frequency	=	100 yrs	Time to peak	=	720 min
Time interval	=	5 min	Hyd. volume	=	566 cuft
Drainage area	=	0.094 ac	Curve number	=	98
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	10.00 min
Total precip.	=	2.00 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

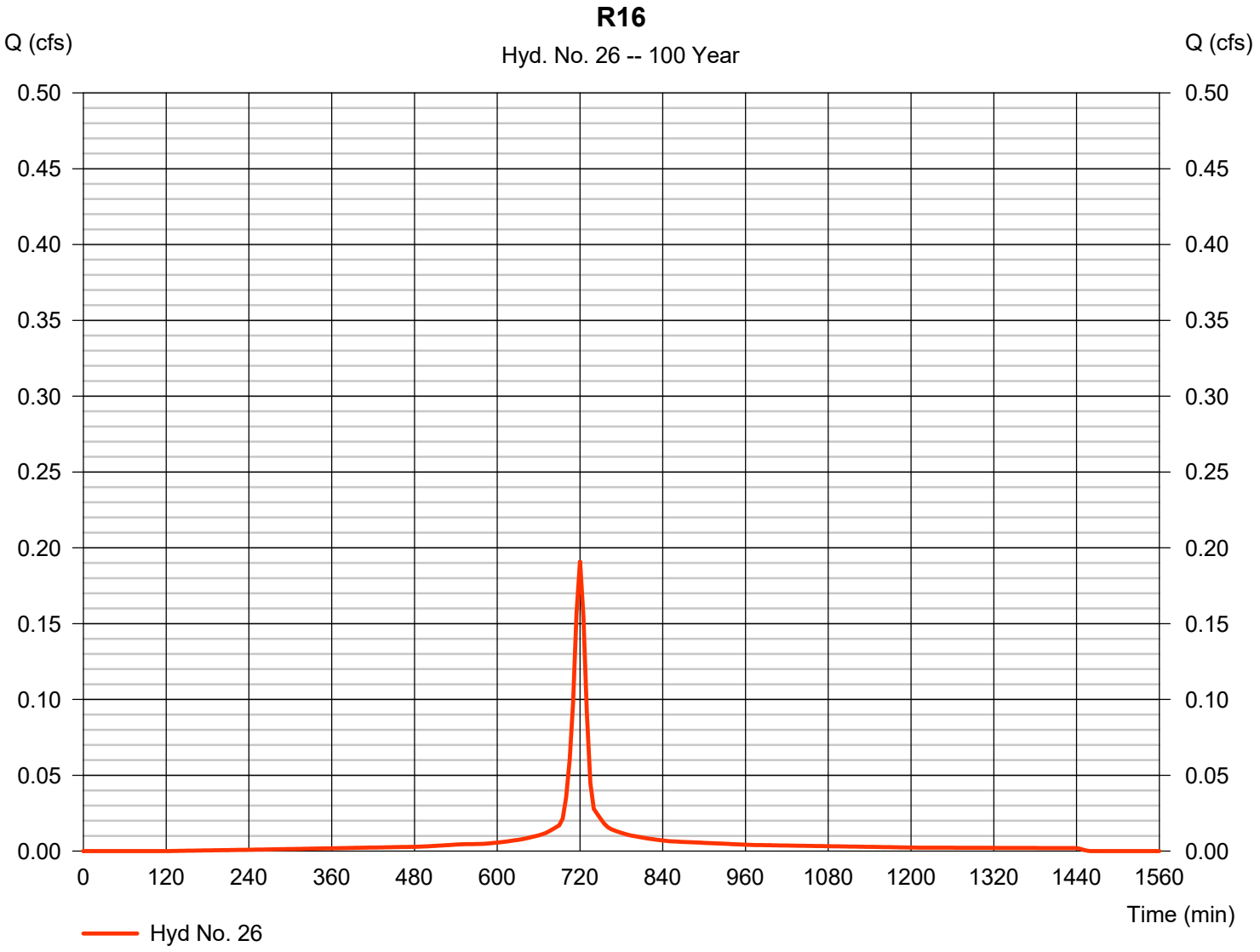


Hydrograph Report

Hyd. No. 26

R16

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.191 cfs
Storm frequency	=	100 yrs	Time to peak	=	720 min
Time interval	=	5 min	Hyd. volume	=	566 cuft
Drainage area	=	0.094 ac	Curve number	=	98
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	10.00 min
Total precip.	=	2.00 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

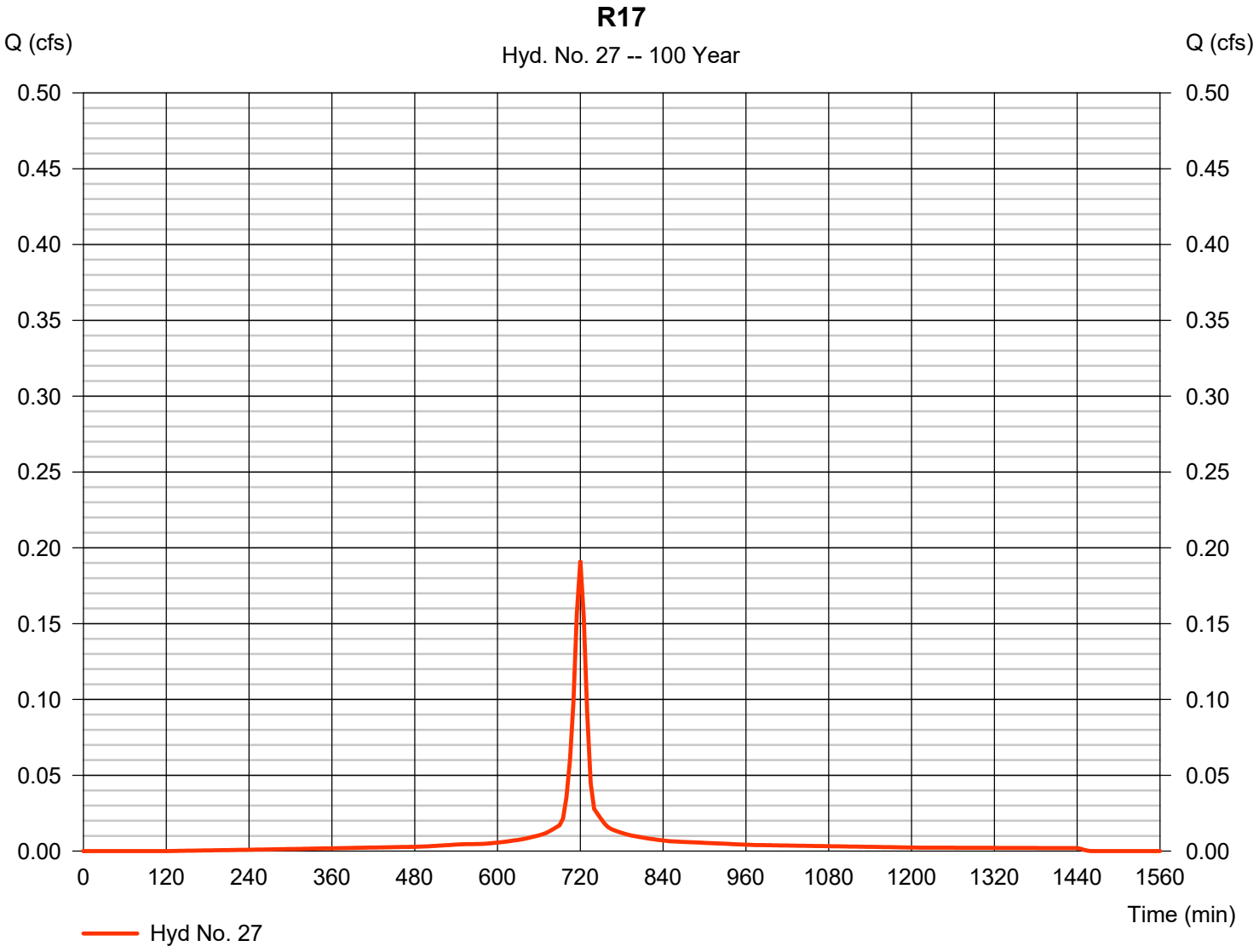


Hydrograph Report

Hyd. No. 27

R17

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.191 cfs
Storm frequency	=	100 yrs	Time to peak	=	720 min
Time interval	=	5 min	Hyd. volume	=	566 cuft
Drainage area	=	0.094 ac	Curve number	=	98
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	10.00 min
Total precip.	=	2.00 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

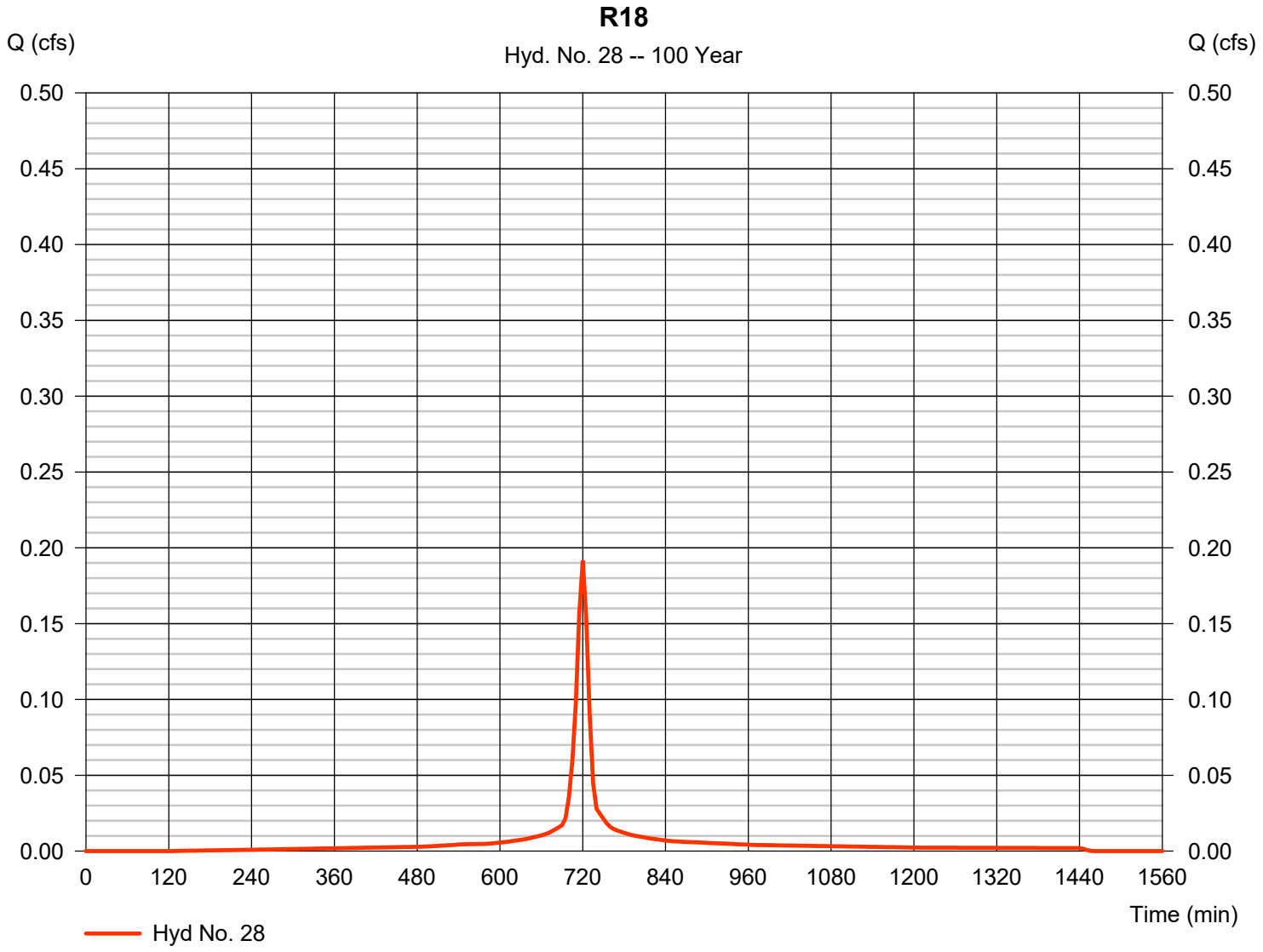


Hydrograph Report

Hyd. No. 28

R18

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.191 cfs
Storm frequency	=	100 yrs	Time to peak	=	720 min
Time interval	=	5 min	Hyd. volume	=	566 cuft
Drainage area	=	0.094 ac	Curve number	=	98
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	10.00 min
Total precip.	=	2.00 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

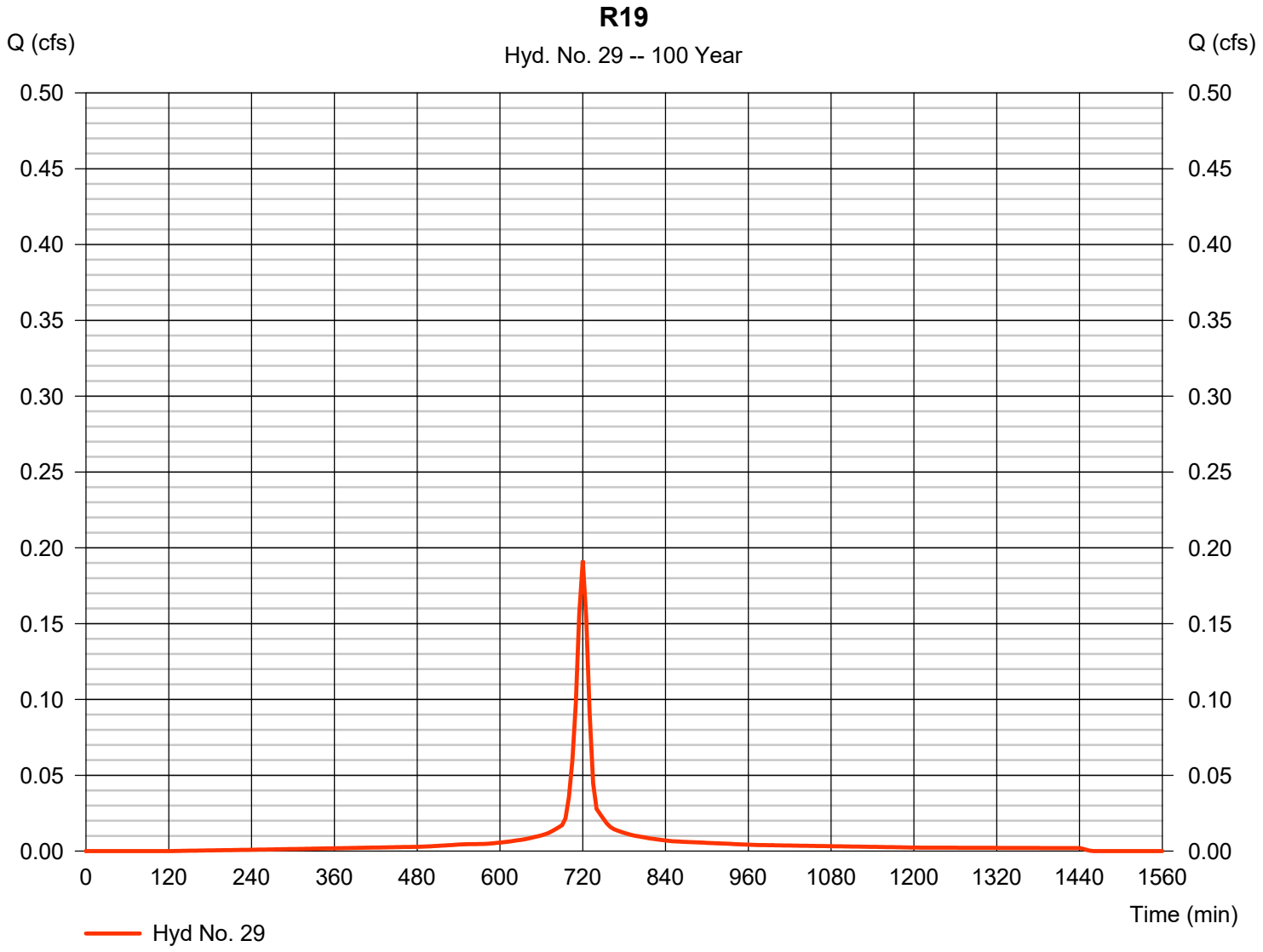


Hydrograph Report

Hyd. No. 29

R19

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.191 cfs
Storm frequency	=	100 yrs	Time to peak	=	720 min
Time interval	=	5 min	Hyd. volume	=	566 cuft
Drainage area	=	0.094 ac	Curve number	=	98
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	10.00 min
Total precip.	=	2.00 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

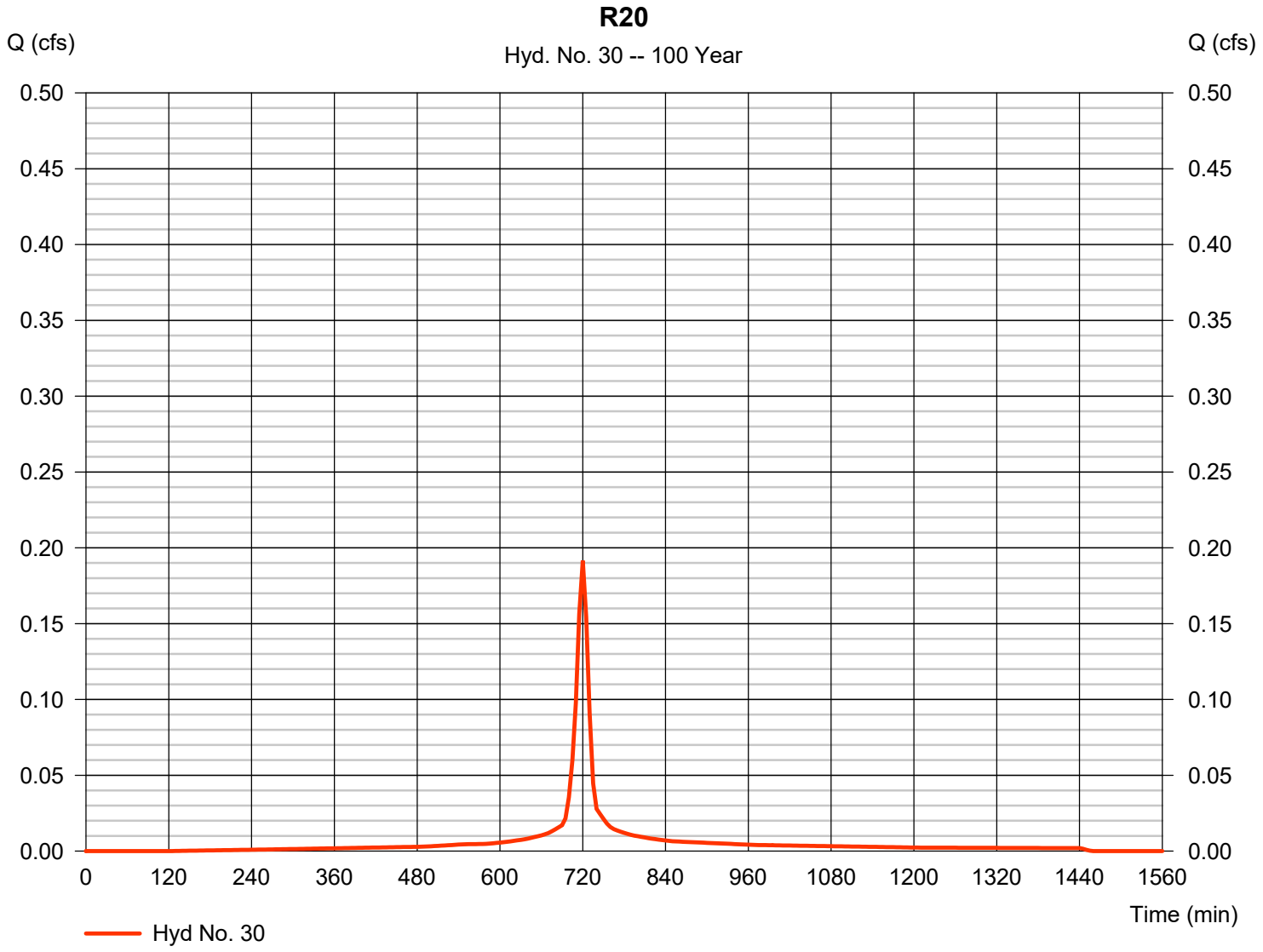


Hydrograph Report

Hyd. No. 30

R20

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.191 cfs
Storm frequency	=	100 yrs	Time to peak	=	720 min
Time interval	=	5 min	Hyd. volume	=	566 cuft
Drainage area	=	0.094 ac	Curve number	=	98
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	10.00 min
Total precip.	=	2.00 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

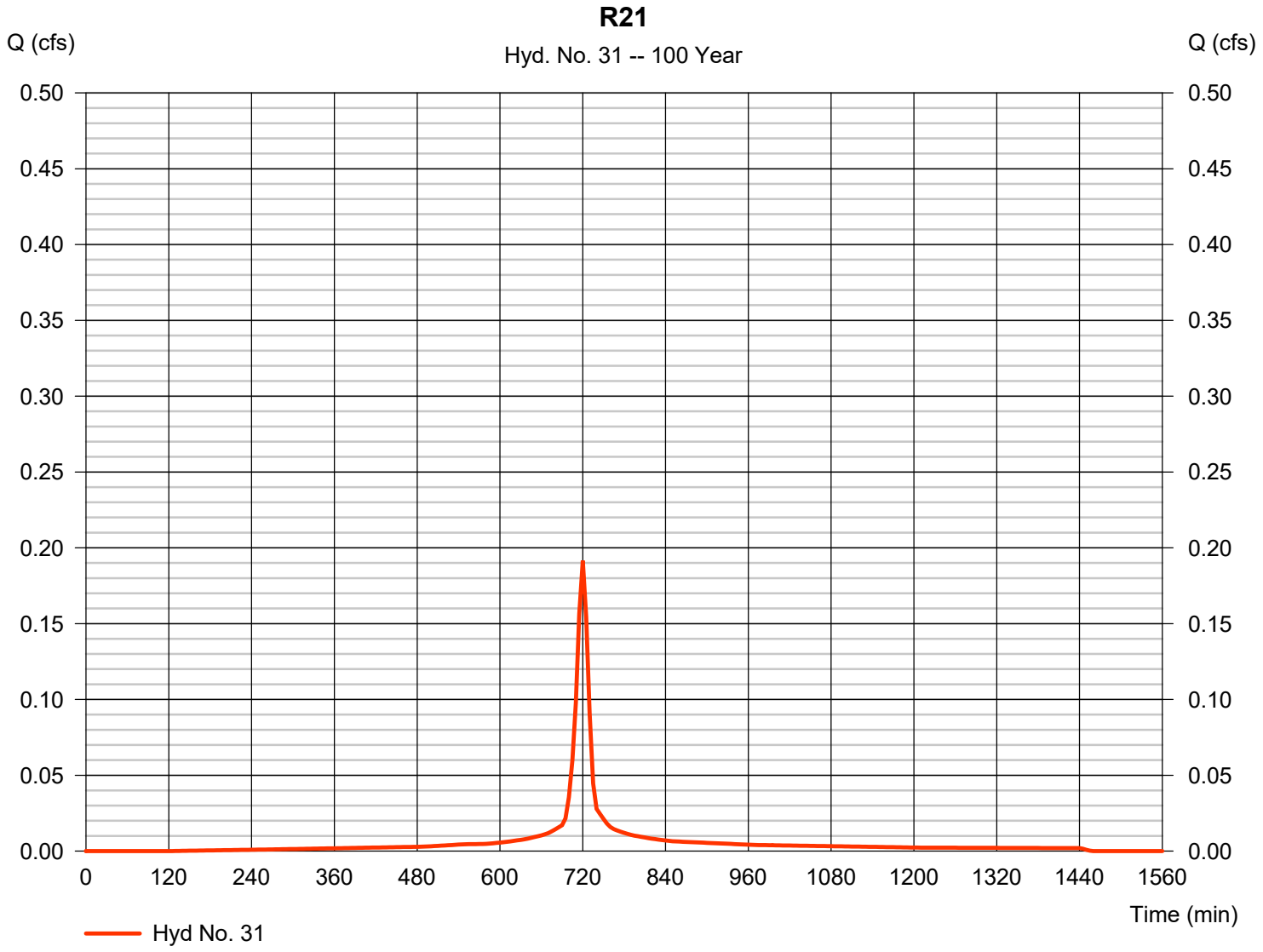


Hydrograph Report

Hyd. No. 31

R21

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.191 cfs
Storm frequency	=	100 yrs	Time to peak	=	720 min
Time interval	=	5 min	Hyd. volume	=	566 cuft
Drainage area	=	0.094 ac	Curve number	=	98
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	10.00 min
Total precip.	=	2.00 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

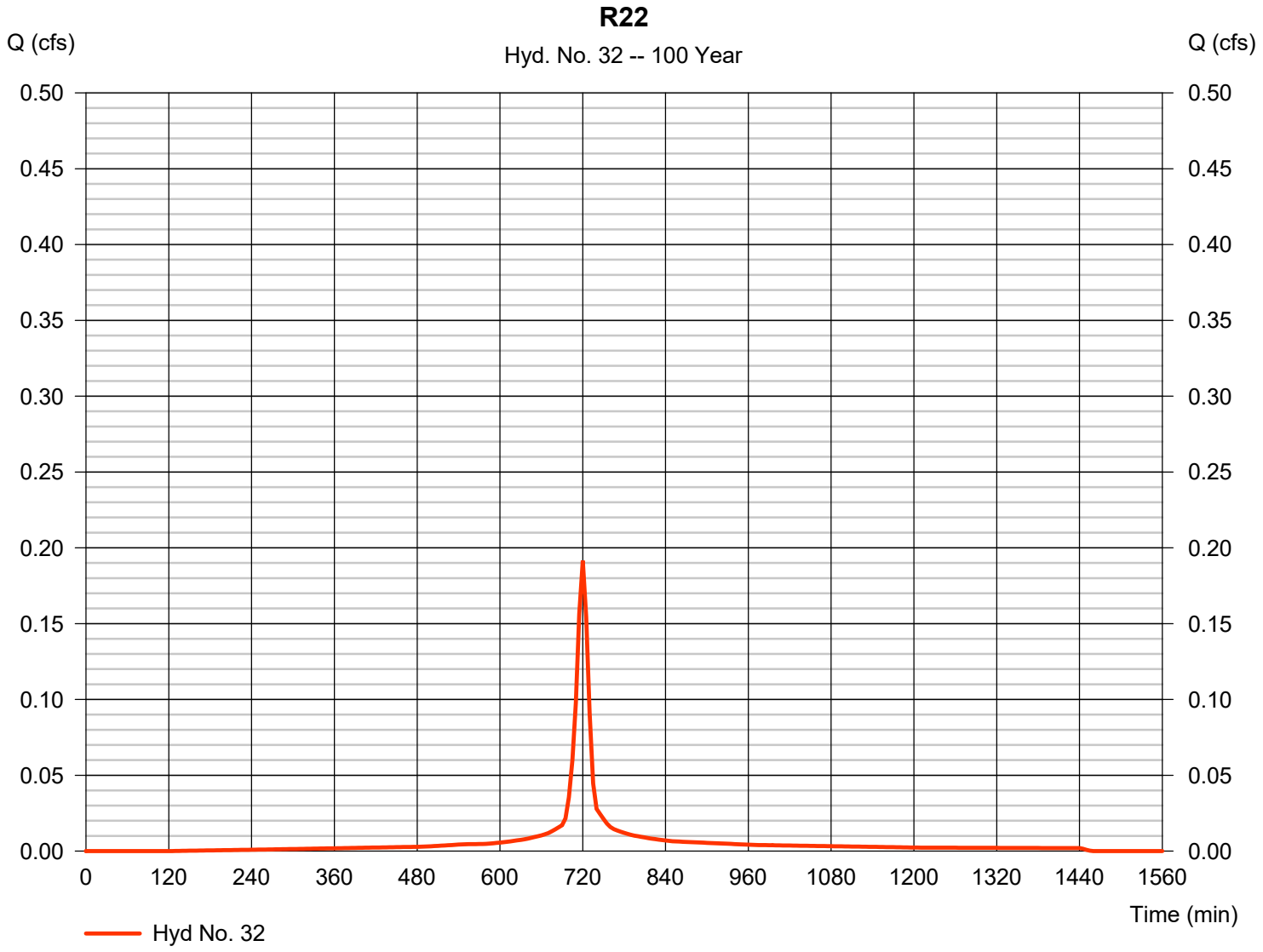


Hydrograph Report

Hyd. No. 32

R22

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.191 cfs
Storm frequency	=	100 yrs	Time to peak	=	720 min
Time interval	=	5 min	Hyd. volume	=	566 cuft
Drainage area	=	0.094 ac	Curve number	=	98
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	10.00 min
Total precip.	=	2.00 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

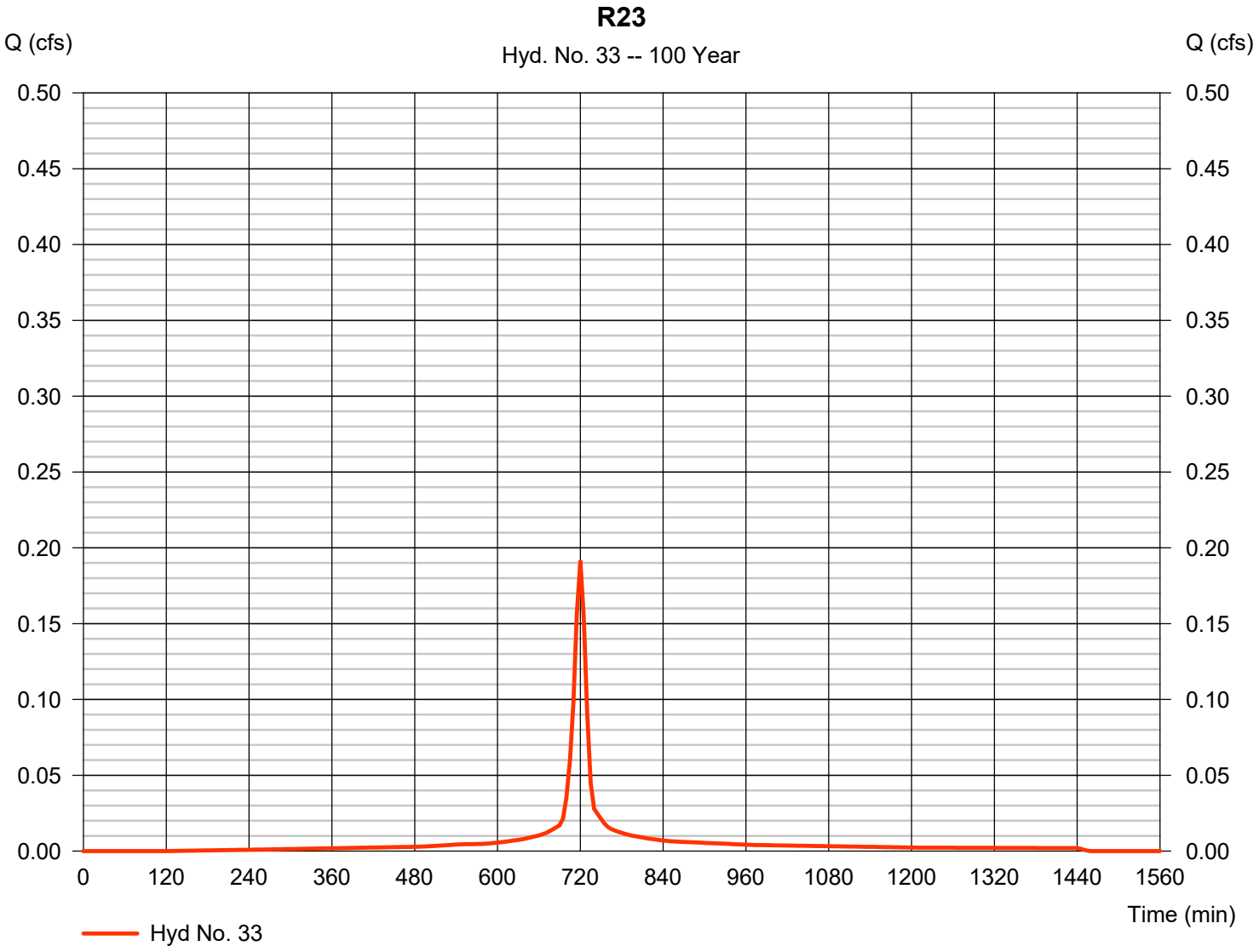


Hydrograph Report

Hyd. No. 33

R23

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.191 cfs
Storm frequency	=	100 yrs	Time to peak	=	720 min
Time interval	=	5 min	Hyd. volume	=	566 cuft
Drainage area	=	0.094 ac	Curve number	=	98
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	10.00 min
Total precip.	=	2.00 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

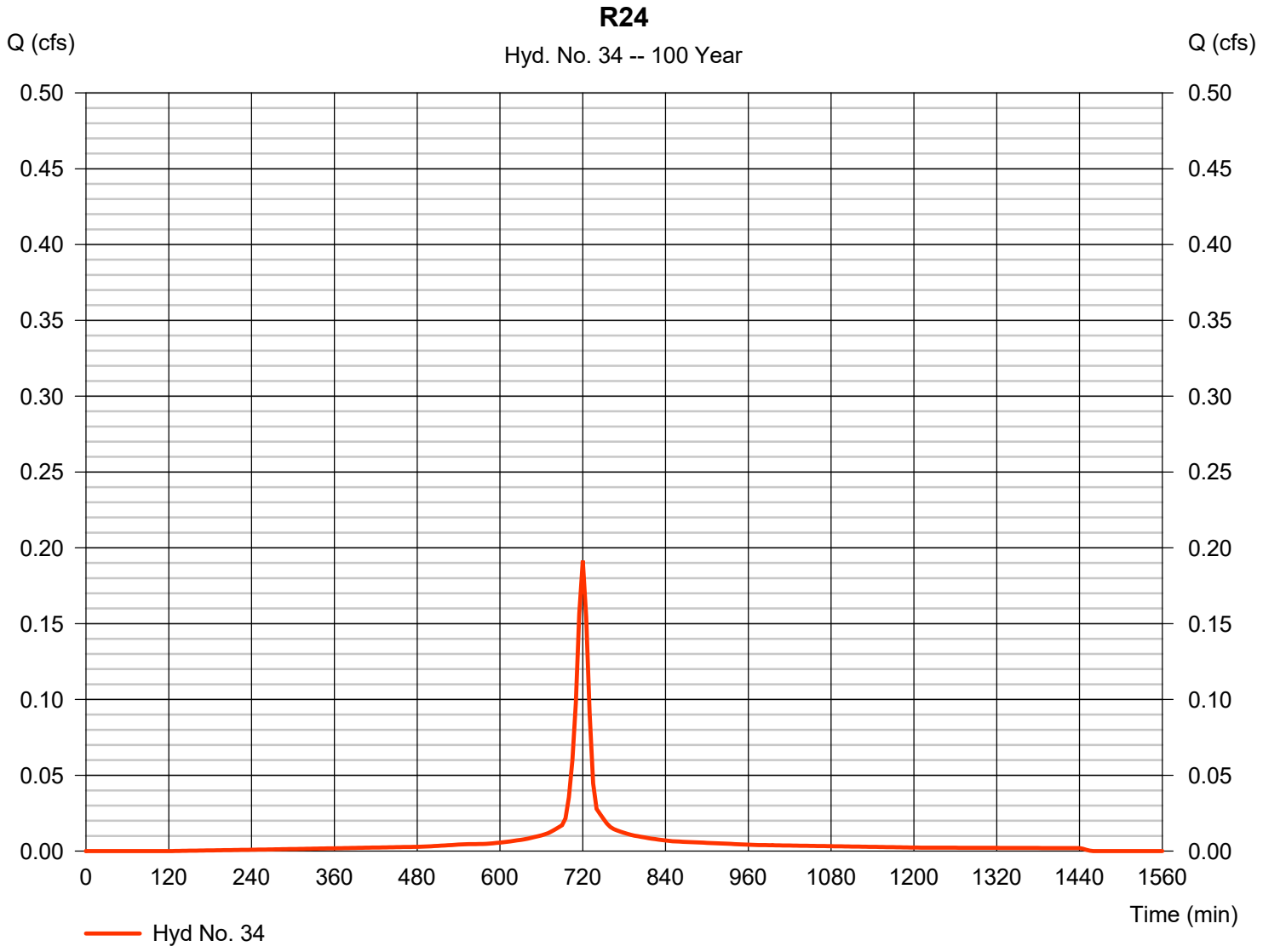


Hydrograph Report

Hyd. No. 34

R24

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.191 cfs
Storm frequency	=	100 yrs	Time to peak	=	720 min
Time interval	=	5 min	Hyd. volume	=	566 cuft
Drainage area	=	0.094 ac	Curve number	=	98
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	10.00 min
Total precip.	=	2.00 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

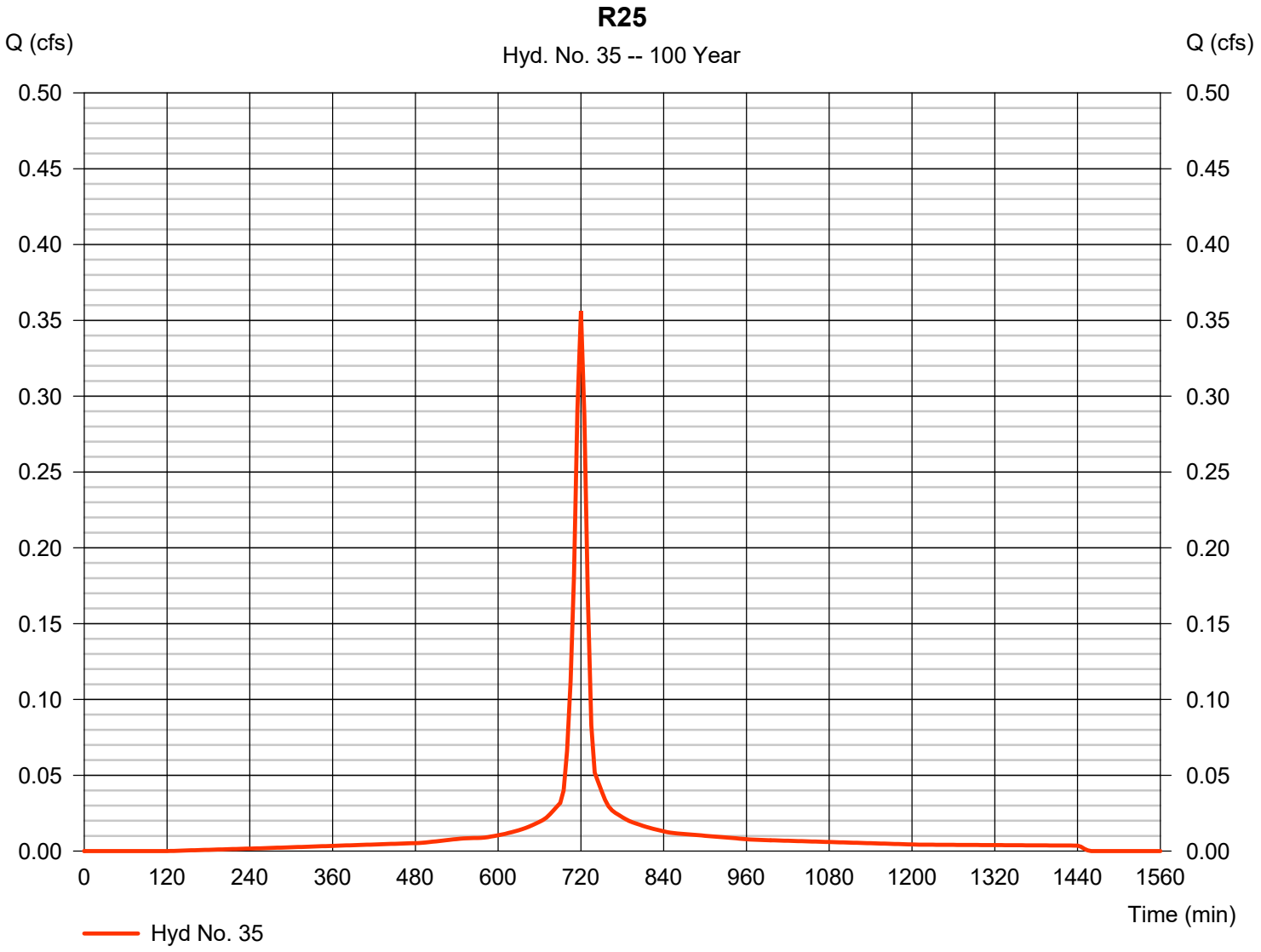


Hydrograph Report

Hyd. No. 35

R25

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.356 cfs
Storm frequency	=	100 yrs	Time to peak	=	720 min
Time interval	=	5 min	Hyd. volume	=	1,052 cuft
Drainage area	=	0.174 ac	Curve number	=	98
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	10.00 min
Total precip.	=	2.00 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484



APPENDIX D

ROADWAY FLOW/DISCHARGE DATA

CURB INLET FLOW DATA

STORMWATER NETWORK DATA

STORMWATER NETWORK PROFILES

SSA PLOT SUMMARY TABLES

ROADWAY FLOW DATA
100 yr Storm Event

Station ID	Description	Road Slope (ft/ft)	Left (West) Side	SSA Discharge L (cfs)	Flow Depth (ft)	Flow Top Width (ft)	Right (East) Side	SSA Discharge R (cfs)	Flow Depth (ft)	Flow Top Width (ft)
1+15.98	R2 Out	7.3%		0.16	0.03	3.29		0.15	0.02	3.25
2.35.38	R5 Out & BSN-2 Out	4.6%		0.28	0.04	3.99		2.93	0.13	8.36
3+54.23	R6 Out	6.0%		0.40	0.05	4.25	CDI E1	3.06	0.12	8.09
4+73.84	R7 Out	5.5%		0.53	0.05	4.65		1.21	0.08	6.02
5+81.94	BSN-4 Out							3.64	0.14	9.09
5+92.41	R8 Out	4.4%		0.65	0.06	5.1	CDI E2	3.76	0.14	9.2
7+07.83	R9 Out	5.5%		0.78	0.06	5.23		0.12	0.02	3.19
8+25.07	R10 Out	4.1%		0.90	0.07	5.72		0.25	0.04	3.93
9+43.52	R11 Out	5.1%		1.02	0.08	5.75		0.37	0.05	4.25
10+59.22	R12 Out	4.1%		1.15	0.08	6.21		0.50	0.06	4.78
11+75.27	R13 Out	3.6%		1.27	0.09	6.54		0.62	0.06	5.21
12+90.66	R14 Out	3.9%		1.40	0.09	6.68		0.74	0.07	5.43
13+63.94	BSN-5 Out		CDI W1	5.67	0.18	10.86				
14+08.89	R15 Out	3.3%		1.04	0.08	6.22		0.87	0.08	5.86
15+26.96	R16 Out	4.2%		1.08	0.07	5.63		0.99	0.08	5.87
16+44.77	R17 Out	4.8%		1.12	0.08	6		1.11	0.08	5.98
17+61.94	R18 Out	3.4%		1.16	0.09	6.4		1.24	0.09	6.55
18+79.45	R19 Out	2.9%		1.12	0.05	4.54		1.36	0.06	4.81
19+05.09	BSN-8 Out		CDI W2	2.37	0.07	5.7				
19+95.57	R20 Out	2.3%		0.63	0.07	5.61	CDI E3	0.12	0.03	3.53
21+11.61	R21 Out	1.4%		0.74	0.09	6.39		0.12	0.03	3.74
22+19.46	BSN-9		CDI W3	6.61	0.24	13.83				
22+30.69	R22 Out	1.5%		1.84	0.13	8.63		0.25	0.05	4.52
23+48.52	R23 Out	1.5%		1.97	0.14	8.84		0.37	0.06	5.07
24+67.96	R24 Out	2.6%		3.27	0.15	9.59		0.50	0.03	3.66
25+48.16	R25 Out	2.3%		CDI 105W				CDI 105E		

INLET FLOW DATA

Left (West) Side

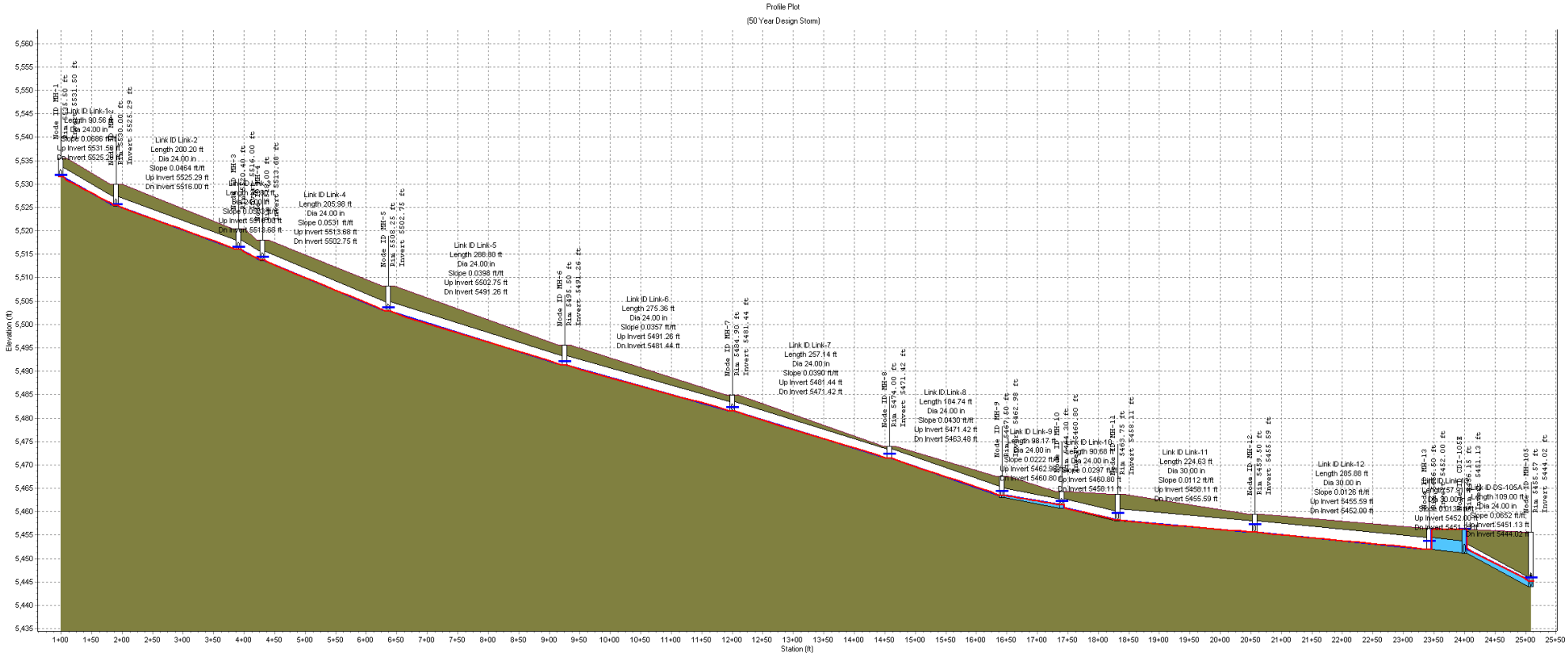
	Type of Inlet	# of Inlets	Peak Inflow (cfs)	Flow Intercepted (cfs)	Flow Bypassing Inlet (cfs)
CDI W1	Neenah R_3067_L	2	5.67	4.67	1.00
CDI W2	Neenah R_3067_L	1	2.37	1.83	0.53
CDI W3	Neenah R_3067_L	2	6.61	4.90	1.71
CDI 105W		2	3.27	3.27	0.00

Right (East) Side

	Type of Inlet	# of Inlets	Peak Inflow (cfs)	Flow Intercepted (cfs)	Flow Bypassing Inlet (cfs)
CDI E1	Neenah R_3067_L	1	3.06	1.97	1.09
CDI E2	Neenah R_3067_L	2	3.76	3.67	0.00
CDI E3	Neenah R_3067_L	1	1.36	1.36	0.00
CDI 105E		2	0.50	0.50	0.00

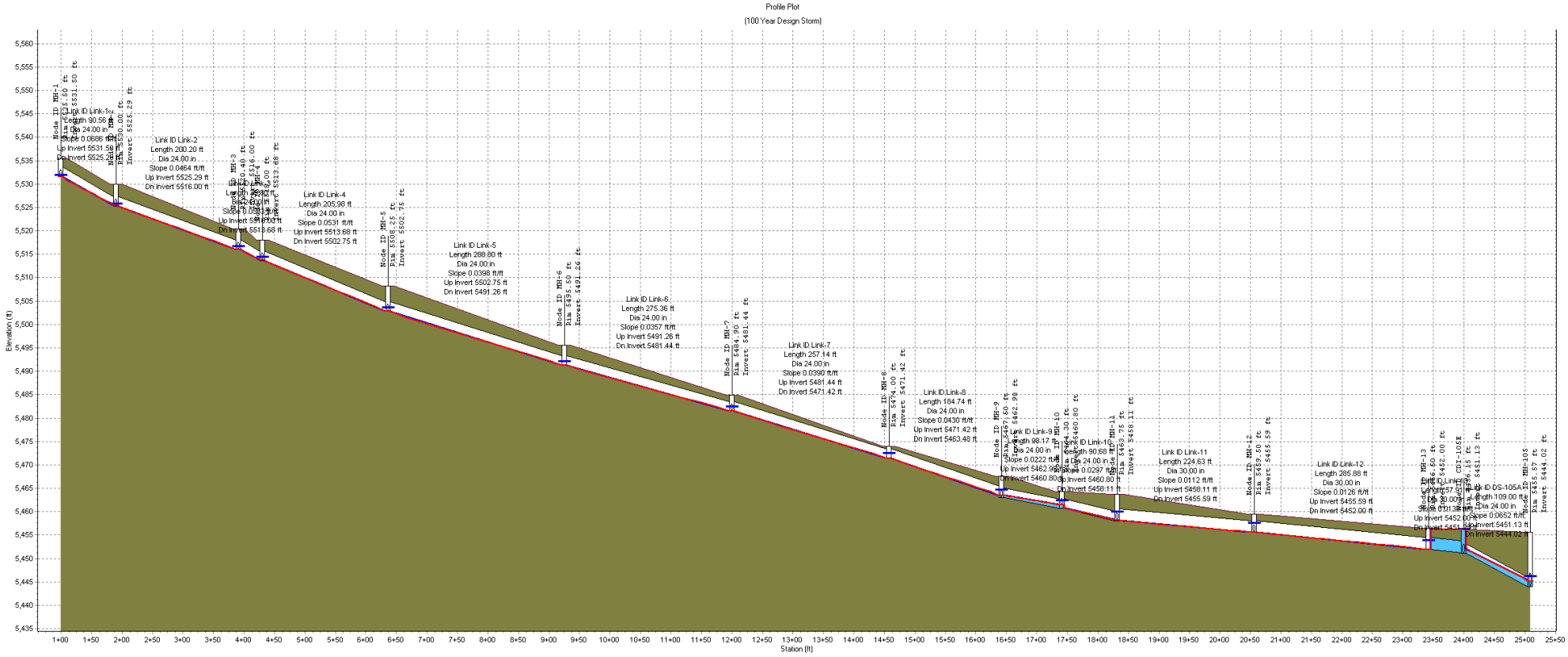
STORMWATER NETWORK DATA

	Invert Elevation	Rim Elevation	Peak Inflow (cfs)		Length (ft)	Slope (%)	Pipe Diameter (in)	Peak Flow (cfs)	Design Flow Capacity
MH-1	5531.5	5535.5	1.26	Link 1	90.56	6.86	24	1.26	51.35
MH-2	5525.29	5530	3.21	Link 2	200.2	4.64	24	3.21	42.23
MH-3	5516	5520.4	8.06	Link 3	39.8	5.83	24	8.06	47.34
MH-4	5513.68	5518	11.82	Link 4	205.98	5.31	24	11.82	45.18
MH-5	5502.75	5508.25	13.35	Link 5	288.8	3.98	24	13.35	39.11
MH-6	5491.26	5495.5	13.35	Link 6	275.36	3.57	24	13.35	37.04
MH-7	5481.44	5484.9	17.37	Link 7	257.14	3.9	24	17.37	38.72
MH-8	5471.42	5474	17.37	Link 8	184.74	4.3	24	17.37	40.66
MH-9	5462.98	5467.5	27.45	Link 9	98.17	2.22	24	27.45	29.21
MH-10	5460.8	5464.3	29.27	Link 10	90.68	2.97	24	29.27	33.79
MH-11	5458.11	5463.75	30.76	Link 11	224.63	1.12	30	30.76	37.62
MH-12	5455.59	5459.5	35.65	Link 12	285.88	1.26	30	35.65	39.9
MH-13	5452	5453.5	35.65	Link 13	57.91	1.33	30	35.65	41
		EXISTING					EXISTING		Design Flow Capacity
CDI-105E	5451.13	5456.15	39.90	DS-105A	109	6.52	24	39.90	50.06
MH-105	5444.02	5455.57	67.09	DS-105	273	1.95	30	67.09	67.69
MH-106	5438.7	5450.22	72.09	DS-106	153	0.59	48	72.09	130.4
MH-107	5437.8	5446.67	77.09	DS-107	317	0.5	48	77.09	120.04
MH-108	5436.21	5442.78	77.09	DS-108	171	0.48	48	77.09	117.61
MH-109	5435.39	5442.24	82.09	DS-109	77	0.51	48	82.09	121.23
MH-110	5435	5442.37	82.09	DS-110	112	0.49	48	82.09	118.83
MH-111	5434.45	5442.95	82.09	DS-111	68	1.15	48	82.09	182.05



Node ID:	MH-1	MH-2	MH-3	MH-4	MH-5	MH-6	MH-7	MH-8	MH-9	MH-10	MH-11	MH-12	MH-13	CDI-105E	MH-105
Rim (ft):	5535.50	5530.00	5520.40	5518.00	5508.25	5495.50	5484.90	5474.00	5467.50	5464.30	5463.75	5459.50	5456.50	5456.15	5455.57
Invert (ft):	5531.50	5525.29	5516.00	5513.68	5502.75	5491.26	5481.44	5471.42	5462.98	5460.80	5458.11	5455.59	5452.00	5451.13	5444.02
Min Pipe Cover (ft):	2.00	2.71	2.40	2.32	3.50	2.24	1.46	0.58	2.02	1.40	3.14	1.41	2.00		8.55
Max HGL (ft):	5531.78	5525.64	5516.52	5514.32	5503.49	5492.02	5482.28	5472.26	5464.32	5462.14	5459.65	5457.24	5453.65	5456.23	5445.88

Link ID:	Link-1	Link-2	Link-3	Link-4	Link-5	Link-6	Link-7	Link-8	Link-9	Link-10	Link-11	Link-12	Link-13	DS-105A
Length (ft):	90.56	200.20	39.80	205.98	288.80	275.36	257.14	184.74	98.17	90.68	224.63	285.88	57.91	109.00
Dia (in):	24.00	24.00	24.00	24.00	24.00	24.00	24.00	24.00	24.00	24.00	30.00	30.00	30.00	24.00
Slope (ft/ft):	0.0686	0.0464	0.0583	0.0531	0.0398	0.0357	0.0390	0.0430	0.0222	0.0297	0.0112	0.0126	0.0133	0.0652
Up Invert (ft):	5531.50	5525.29	5516.00	5513.68	5502.75	5491.26	5481.44	5471.42	5462.98	5460.80	5458.11	5455.59	5452.00	5451.13
Dn Invert (ft):	5525.29	5516.00	5513.68	5502.75	5491.26	5481.44	5471.42	5463.48	5460.80	5458.11	5455.59	5452.00	5451.23	5444.02
Max Q (cfs):	0.89	2.73	6.96	10.10	11.29	11.29	14.35	14.35	23.16	24.88	26.19	30.83	30.83	33.85
Max Vel (ft/s):	6.08	7.49	10.78	11.58	10.76	10.34	11.39	11.81	10.32	11.75	8.28	8.96	9.17	17.11
Max Depth (ft):	0.19	0.35	0.52	0.64	0.74	0.76	0.84	0.82	1.34	1.28	1.54	1.65	1.62	1.21



Node ID:	MH-1	MH-2	MH-3	MH-4	MH-5	MH-6	MH-7	MH-8	MH-9	MH-10	MH-11	MH-12	MH-13	CDI-105E	MH-105
Rim (ft):	5535.50	5530.00	5520.40	5518.00	5508.25	5495.50	5484.90	5474.00	5467.50	5464.30	5463.75	5459.50	5456.50	5456.15	5455.57
Invert (ft):	5531.50	5525.29	5516.00	5513.68	5502.75	5491.26	5481.44	5471.42	5462.98	5460.80	5458.11	5455.59	5452.00	5451.13	5444.02
Min Pipe Cover (ft):	2.00	2.71	2.40	2.32	3.50	2.24	1.46	0.58	2.02	1.40	3.14	1.41	2.00		8.55
Max HGL (ft):	5531.82	5525.66	5516.56	5514.38	5503.56	5492.09	5482.38	5472.36	5464.52	5462.34	5459.83	5457.44	5453.85	5456.23	5446.05

Link ID:	Link-1	Link-2	Link-3	Link-4	Link-5	Link-6	Link-7	Link-8	Link-9	Link-10	Link-11	Link-12	Link-13	DS-105A
Length (ft):	90.56	200.20	39.80	205.98	288.80	275.36	257.14	184.74	98.17	90.68	224.63	285.88	57.91	109.00
Dia (in):	24.00	24.00	24.00	24.00	24.00	24.00	24.00	24.00	24.00	24.00	30.00	30.00	30.00	24.00
Slope (ft/ft):	0.0686	0.0464	0.0583	0.0531	0.0398	0.0357	0.0390	0.0430	0.0222	0.0297	0.0112	0.0126	0.0133	0.0652
Up Invert (ft):	5531.50	5525.29	5516.00	5513.68	5502.75	5491.26	5481.44	5471.42	5462.98	5460.80	5458.11	5455.59	5452.00	5451.13
Dn Invert (ft):	5525.29	5516.00	5513.68	5502.75	5491.26	5481.44	5471.42	5463.48	5460.80	5458.11	5455.59	5452.00	5451.23	5444.02
Max Q (cfs):	1.26	3.21	8.06	11.82	13.35	13.35	17.37	17.37	27.45	29.27	30.76	35.65	35.65	39.90
Max Vel (ft/s):	6.39	7.95	11.22	12.10	11.26	10.82	11.99	12.43	10.57	12.09	8.55	9.17	9.40	17.70
Max Depth (ft):	0.23	0.37	0.56	0.70	0.81	0.83	0.94	0.91	1.54	1.44	1.72	1.85	1.80	1.35

Road Plot Summary Table (West Side)																										
Node ID:	CDI_EX-1	Jun-R2-L	Jun-R5-L	Jun-R6-L	Jun-R7-L	Jun-R8-L	Jun-R9-L	Jun-R10-L	Jun-R11-L	Jun-R12-L	Jun-R13-L	Jun-R14-L	CDI-W1	Jun-R15-L	Jun-R16-L	Jun-R17-L	Jun-R18-L	Jun-R19-L	CDI-W2	Jun-R20-L	Jun-R21-L	CDI-W3	Jun-R22-L	Jun-R23-L	Jun-R24-L	CD-105W
Rim (ft):	5549.43	5542.32	5536.94	5529.7	5523.11	5517.94	5511.65	5506.93	5500.94	5496.35	5492.14	5487.62	5485	5483.6	5478.69	5473.15	5469.27	5465.79	5465.35	5463	5461.41	5459.93	5459.79	5457.82	5457.41	5457
Invert (ft):	5542.68	5542.32	5536.94	5529.7	5523.11	5517.94	5511.65	5506.93	5500.94	5496.35	5492.14	5487.62	5481	5483.6	5478.69	5473.15	5469.27	5465.79	5461.35	5463	5461.41	5455.79	5459.79	5457.82	5457.41	5452
Min Pipe Cover (ft):		0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0		0	0		0	0	0	
Max HGL (ft):	5543.01	5542.35	5536.98	5529.74	5523.16	5518	5511.72	5507	5501.01	5496.43	5492.22	5487.71	5482.97	5483.68	5478.76	5473.23	5469.36	5465.89	5463.1	5463.08	5461.49	5457.71	5459.92	5458	5457.62	5457
Link ID:	Link-Road-2L	Link-R5-L	Link-R6-L	Link-R7-L	Link-R8-L	Link-R9-L	Link-R10-L	Link-R11-L	Link-R12-L	Link-R13-L	Link-R14-L	Link-R15-L-1	Link-R15-L-2	Link-R16-L	Link-R17-L	Link-117	Link-118	Link-R20-L-1	Link-R20-L-2	Link-R21-L	Link-R22-L-1	Link-R22-L-2	Link-R23-L	Link-R24-L	Link-R25-L	
Length (ft):	119.24	119.41	118.54	119.78	119.67	116.09	118.63	117.53	113.04	115.25	116.1	73.84	45.43	118.15	117.94	116.64	116.81	25.75	91.22	116.86	107.84	11.3	117.69	119.94	89.09	
Dia (in):	2.88	2.88	2.88	2.88	2.88	2.88	2.88	2.88	2.88	2.88	2.88	2.88	2.88	2.88	2.88	2.88	2.88	2.88	2.88	2.88	2.88	2.88	2.88	2.88	2.88	
Slope (ft/ft):	0.0596	0.0451	0.0611	0.055	0.0432	0.0542	0.0398	0.051	0.0406	0.0365	0.0389	0.0355	0.0308	0.0416	0.047	0.0333	0.0298	0.0171	0.0258	0.0136	0.0137	0.0124	0.0167	0.0034	0.0046	
Up Invert (ft):	5549.43	5542.32	5536.94	5529.7	5523.11	5517.94	5511.65	5506.93	5500.94	5496.35	5492.14	5487.62	5485	5483.6	5478.69	5473.15	5469.27	5465.79	5465.35	5463	5461.41	5459.93	5459.79	5457.82	5457.41	
Dn Invert (ft):	5542.32	5536.94	5529.7	5523.11	5517.94	5511.65	5506.93	5500.94	5496.35	5492.14	5487.62	5485	5483.6	5478.69	5473.15	5469.27	5465.79	5465.35	5463	5461.41	5459.93	5459.79	5457.82	5457.41	5457	
Max Q (cfs):	0.02	0.16	0.28	0.4	0.53	0.65	0.78	0.9	1.02	1.15	1.27	1.4	0.99	1.04	1.08	1.12	1.16	1.21	0.54	0.63	0.74	1.72	1.84	1.97	3.27	
Max Vel (ft/s):	0	2.19	2.82	3.17	3.13	3.6	3.33	3.78	3.64	3.6	3.78	3.74	3.26	3.68	3.9	3.46	3.35	2.73	2.61	2.14	2.24	2.64	3.01	1.66	2.09	
Max Depth (ft):	0.01	0.03	0.04	0.04	0.05	0.06	0.07	0.07	0.07	0.08	0.08	0.09	0.08	0.07	0.07	0.08	0.09	0.1	0.06	0.08	0.08	0.13	0.12	0.18	0.21	

Road Plot Summary Table (East Side)																										
Node ID:	Inlet-existing-03	CEI_EX-2	Jun-R2-R	Jun-R5-R	CDI-E1	Jun-R7-R	6/4/2022	CDI-E2	Jun-R9-R	Jun-R10-R	Jun-R11-R	Jun-R12-R	Jun-R13-R	Jun-R14-R	Jun-R15-R	Jun-R16-R	Jun-R17-R	Jun-R18-R	Jun-R19-R	CDI-E3	Jun-R21-R	Jun-R22-R	Jun-R23-R	Jun-R24-R	CDI-105E	
Rim (ft):	5552.53	5550.98	5542.63	5537.12	5530.18	5523.66	5519	5518.4	5512.11	5507.16	5501.07	5496.18	5491.94	5487.45	5483.51	5478.55	5472.8	5468.84	5465.36	5462.75	5461	5459.1	5457.34	5456.75	5456.15	
Invert (ft):	5548.86	5546.81	5542.63	5537.12	5526.18	5523.66	5519	5514.4	5512.11	5507.16	5501.07	5496.18	5491.94	5487.45	5483.51	5478.55	5472.8	5468.84	5465.36	5459.25	5461	5459.1	5457.34	5456.75	5451.13	
Min Pipe Cover (ft):			0	0		0	0		0	0	0	0	0	0	0	0	0	0	0		0	0	0	0		
Max HGL (ft):	5549	5547.19	5542.66	5537.23	5527.92	5523.74	5519.12	5516.23	5512.13	5507.19	5501.11	5496.23	5492	5487.52	5483.58	5478.62	5472.88	5468.93	5465.46	5462.85	5461.03	5459.15	5457.42	5456.83	5456.23	
Link ID:	Link-Road-3	nk-Road-2	Link-R5-R	Link-R6-R	Link-R7-R	Link-R8-R	Link-R8-R-2	Link-R9-R	Link-113	Link-R11-R	Link-R12-R	Link-R13-R	Link-R14-R	Link-R15-R	Link-R16-R	Link-R17-R	Link-R18-R	Link-R19-R	Link-R20-R	Link-R21-R	Link-R22-R	Link-R23-R	Link-R24-R	Link-R25-R		
Length (ft):	121.88	154.37	119.24	118.47	119.86	107.84	9.54	114.66	117.96	117.63	118.31	116.12	114.27	118.54	118.03	118	117.41	118.13	114.56	116.52	118.43	118.68	118.26	92.6		
Dia (in):	2.88	2.88	2.88	2.88	2.88	2.88	2.88	2.88	2.88	2.88	2.88	2.88	2.88	2.88	2.88	2.88	2.88	2.88	2.88	2.88	2.88	2.88	2.88	2.88		
Slope (ft/ft):	0.0127	0.0541	0.0462	0.0586	0.0544	0.0432	0.0629	0.0549	0.042	0.0518	0.0413	0.0365	0.0393	0.0332	0.042	0.0487	0.0337	0.0295	0.0228	0.015	0.016	0.0148	0.005	0.0065		
Up Invert (ft):	5552.53	5550.98	5542.63	5537.12	5530.18	5523.66	5519	5518.4	5512.11	5507.16	5501.07	5496.18	5491.94	5487.45	5483.51	5478.55	5472.8	5468.84	5465.36	5462.75	5461	5459.1	5457.34	5456.75		
Dn Invert (ft):	5550.98	5542.63	5537.12	5530.18	5523.66	5519	5518.4	5512.11	5507.16	5501.07	5496.18	5491.94	5487.45	5483.51	5478.55	5472.8	5468.84	5465.36	5462.75	5461	5459.1	5457.34	5456.75	5456.15		
Max Q (cfs):	0.01	0.01	0.15	2.93	1.09	1.21	3.64	0	0.12	0.25	0.37	0.5	0.62	0.74	0.87	0.99	1.11	1.24	1.36	0	0.12	0.25	0.37	0.5		
Max Vel (ft/s):	0	0	2.19	5.41	4.04	3.89	5.85	0	2.03	2.57	2.8	2.89	3.16	3.07	3.48	3.79	3.47	3.38	3.13	0	1.39	1.73	1.29	1.53		
Max Depth (ft):	0.01	0	0.03	0.11	0.07	0.08	0.12	0	0.02	0.03	0.04	0.05	0.06	0.07	0.07	0.07	0.08	0.09	0.1	0	0.03	0.05	0.08	0.08		

Proposed Stormwater Network Plot Summary Table															
Node ID:	MH-1	MH-2	MH-3	MH-4	MH-5	MH-6	MH-7	MH-8	MH-9	MH-10	MH-11	MH-12	MH-13	CDI-105E	MH-105
Rim (ft):	5535.5	5530	5520.4	5518	5508.25	5495.5	5484.9	5474	5467.5	5464.3	5463.75	5459.5	5456.5	5456.15	5455.57
Invert (ft):	5531.5	5525.29	5516	5513.68	5502.75	5491.26	5481.44	5471.42	5462.98	5460.8	5458.11	5455.59	5452	5451.13	5444.02
Min Pipe Cover (ft):	2	2.71	2.4	2.32	3.5	2.24	1.46	0.58	2.02	1.4	3.14	1.41	2		8.55
Max HGL (ft):	5531.82	5525.66	5516.56	5514.38	5503.56	5492.09	5482.38	5472.36	5464.52	5462.34	5459.83	5457.44	5453.85	5456.23	5446.05
Link ID:	Link-1	Link-2	Link-3	Link-4	Link-5	Link-6	Link-7	Link-8	Link-9	Link-10	Link-11	Link-12	Link-13	DS-105A	
Length (ft):	90.56	200.2	39.8	205.98	288.8	275.36	257.14	184.74	98.17	90.68	224.63	285.88	57.91	109	
Dia (in):	24	24	24	24	24	24	24	24	24	24	30	30	30	24	
Slope (ft/ft):	0.0686	0.0464	0.0583	0.0531	0.0398	0.0357	0.039	0.043	0.0222	0.0297	0.0112	0.0126	0.0133	0.0652	
Up Invert (ft):	5531.5	5525.29	5516	5513.68	5502.75	5491.26	5481.44	5471.42	5462.98	5460.8	5458.11	5455.59	5452	5451.13	
Dn Invert (ft):	5525.29	5516	5513.68	5502.75	5491.26	5481.44	5471.42	5463.48	5460.8	5458.11	5455.59	5452	5451.23	5444.02	
Max Q (cfs):	1.26	3.21	8.06	11.82	13.35	13.35	17.37	17.37	27.45	29.27	30.76	35.65	35.65	39.9	
Max Vel (ft/s):	6.39	7.95	11.22	12.1	11.26	10.82	11.99	12.43	10.57	12.09	8.55	9.17	9.4	17.7	
Max Depth (ft):	0.23	0.37	0.56	0.7	0.81	0.83	0.94	0.91	1.54	1.44	1.72	1.85	1.8	1.35	

Existing US 64 Stormwater Network Plot Summary Table												
Node ID:	MH-101	MH-102	MH-103	MH-104	MH-105	MH-106	MH-107	MH-108	MH-109	MH-110	MH-111	Out-06
Rim (ft):	5461.09	5460.71	5459.34	5456.2	5455.57	5450.22	5446.67	5442.78	5442.24	5442.37	5442.95	
Invert (ft):	5454.59	5454.09	5452.21	5445.65	5444.02	5438.7	5437.8	5436.21	5435.39	5435	5434.45	5433.67
Min Pipe Cover (ft):	4.5	4.62	5.13	7.55	8.55	7.52	4.87	2.57	2.85	3.37	4.5	
Max HGL (ft):	5456.1	5460.71	5454.21	5446.75	5446.05	5440.83	5440.13	5438.57	5437.81	5437.44	5436.89	5435.56
Link ID:	DS-101	DS-102	DS-103	DS-104	DS-105	DS-106	DS-107	DS-108	DS-109	DS-110	DS-111	
Length (ft):	75	273	328	74	273	153	317	171	77	112	68	
Dia (in):	24	24	24	36	30	48	48	48	48	48	48	
Slope (ft/ft):	0.0067	0.0069	0.02	0.022	0.0195	0.0059	0.005	0.0048	0.0051	0.0049	0.0115	
Up Invert (ft):	5454.59	5454.09	5452.21	5445.65	5444.02	5438.7	5437.8	5436.21	5435.39	5435	5434.45	
Dn Invert (ft):	5454.09	5452.21	5445.65	5444.02	5438.7	5437.8	5436.21	5435.39	5435	5434.45	5433.67	
Max Q (cfs):	20	22.19	22.19	27.19	67.09	72.09	77.09	77.09	82.09	82.09	82.09	
Max Vel (ft/s):	7.88	7.06	12.51	13.47	15.71	10.62	10.15	9.97	10.33	10.21	14.1	
Max Depth (ft):	1.51	2	1.1	0.98	2.03	2.13	2.33	2.36	2.42	2.44	1.89	