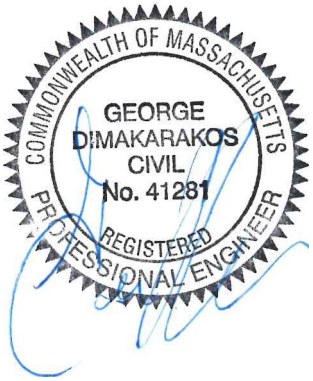
Stormwater Management Report Addendum

For

77 Grant Road
Devens, MA

July 7, 2026
Revised: September 16, 2026
Revised: October 5, 2026



Applicant: Elite Home Builders, LLC
PO Box 1205
Westborough, MA 01581

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Engineering - Planning – Surveying
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SM-6944A File: 6944A StormwaterReportCover.doc

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The proposed project is to construct an additional parking area for the multi-family building at 77 Grant Road. The proposed parking area includes (23) spaces and is designed to drain to a catch basin, which will be fitted with a Contech treatment unit, which will direct runoff to a subsurface stone trench and 12" perforated pipe. This pipe outlets into a manhole with an outlet that directs runoff to the nearby existing depression. The additional runoff from this new parking area is contained within this existing depression.

A new subcatchment, P-X, was created containing the new parking area which drains to the catch basin and subsurface stone trench. The new parking lot area, previously modeled as open space draining to the existing depression, has been removed from subcatchment P-9B. Subcatchment P-9A is routed to the rain garden, and the outflow was combined with P-9B and P-X and routed to the existing depression (Low Point C or LP-C).

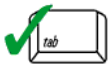
Stormwater Checklist

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands Program

Checklist for Stormwater Report

A. Introduction

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



A Stormwater Report must be submitted with the Notice of Intent permit application to document compliance with the Stormwater Management Standards. The following checklist is NOT a substitute for the Stormwater Report (which should provide more substantive and detailed information) but is offered here as a tool to help the applicant organize their Stormwater Management documentation for their Report and for the reviewer to assess this information in a consistent format. As noted in the Checklist, the Stormwater Report must contain the engineering computations and supporting information set forth in Volume 3 of the Massachusetts Stormwater Handbook. The Stormwater Report must be prepared and certified by a Registered Professional Engineer (RPE) licensed in the Commonwealth.

The Stormwater Report must include:

- The Stormwater Checklist completed and stamped by a Registered Professional Engineer (see page 2) that certifies that the Stormwater Report contains all required submittals.[1] This Checklist is to be used as the cover for the completed Stormwater Report.
- Applicant/Project Name
- Project Address
- Name of Firm and Registered Professional Engineer that prepared the Report
- Long-Term Pollution Prevention Plan required by Standards 4-6
- Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan required by Standard 8[2]
- Operation and Maintenance Plan required by Standard 9

In addition to all plans and supporting information, the Stormwater Report must include a brief narrative describing stormwater management practices, including environmentally sensitive site design and LID techniques, along with a diagram depicting runoff through the proposed BMP treatment train. Plans are required to show existing and proposed conditions, identify all wetland resource areas, NRCS soil types, critical areas, Land Uses with Higher Potential Pollutant Loads (LUHPPL), and any areas on the site where infiltration rate is greater than 2.4 inches per hour. The Plans shall identify the drainage areas for both existing and proposed conditions at a scale that enables verification of supporting calculations.

As noted in the Checklist, the Stormwater Management Report shall document compliance with each of the Stormwater Management Standards as provided in the Massachusetts Stormwater Handbook. The soils evaluation and calculations shall be done using the methodologies set forth in Volume 3 of the Massachusetts Stormwater Handbook.

To ensure that the Stormwater Report is complete, applicants are required to fill in the Stormwater Report Checklist by checking the box to indicate that the specified information has been included in the Stormwater Report. If any of the information specified in the checklist has not been submitted, the applicant must provide an explanation. The completed Stormwater Report Checklist and Certification must be submitted with the Stormwater Report.

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[1] The Stormwater Report may also include the Illicit Discharge Compliance Statement required by Standard 10. If not included in the Stormwater Report, the Illicit Discharge Compliance Statement must be submitted prior to the discharge of stormwater runoff to the post-construction best management practices.

[2] For some complex projects, it may not be possible to include the Construction Period Erosion and Sedimentation Control Plan in the Stormwater Report. In that event, the issuing authority has the discretion to issue an Order of Conditions that approves the project and includes a condition requiring the proponent to submit the Construction Period Erosion and Sedimentation Control Plan before commencing any land disturbance activity on the site.

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands Program

Checklist for Stormwater Report

B. Stormwater Checklist and Certification

The following checklist is intended to serve as a guide for applicants as to the elements that ordinarily need to be addressed in a complete Stormwater Report. The checklist is also intended to provide conservation commissions and other reviewing authorities with a summary of the components necessary for a comprehensive Stormwater Report that addresses the ten Stormwater Standards.

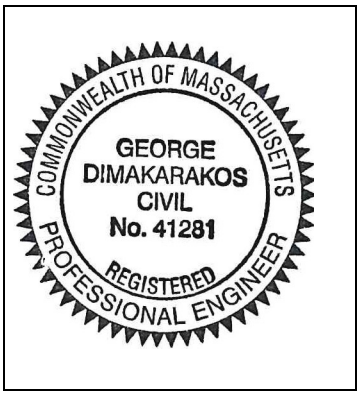
Note: Because stormwater requirements vary from project to project, it is possible that a complete Stormwater Report may not include information on some of the subjects specified in the Checklist. If it is determined that a specific item does not apply to the project under review, please note that the item is not applicable (N.A.) and provide the reasons for that determination.

A complete checklist must include the Certification set forth below signed by the Registered Professional Engineer who prepared the Stormwater Report.

Registered Professional Engineer's Certification

I have reviewed the Stormwater Report, including the soil evaluation, computations, Long-term Pollution Prevention Plan, the Construction Period Erosion and Sedimentation Control Plan (if included), the Long-term Post-Construction Operation and Maintenance Plan, the Illicit Discharge Compliance Statement (if included) and the plans showing the stormwater management system, and have determined that they have been prepared in accordance with the requirements of the Stormwater Management Standards as further elaborated by the Massachusetts Stormwater Handbook. I have also determined that the information presented in the Stormwater Checklist is accurate and that the information presented in the Stormwater Report accurately reflects conditions at the site as of the date of this permit application.

Registered Professional Engineer Block and Signature



9/17/2026

Signature and Date

Checklist

Project Type: Is the application for new development, redevelopment, or a mix of new and redevelopment?

☒ New development

☐ Redevelopment

☐ Mix of New Development and Redevelopment

Checklist for Stormwater Report

Checklist (continued)

LID Measures: Stormwater Standards require LID measures to be considered. Document what environmentally sensitive design and LID Techniques were considered during the planning and design of the project:

- ☒ No disturbance to any Wetland Resource Areas
- ☐ Site Design Practices (e.g. clustered development, reduced frontage setbacks)
- ☐ Reduced Impervious Area (Redevelopment Only)
- ☒ Minimizing disturbance to existing trees and shrubs
- ☐ LID Site Design Credit Requested:
  - ☐ Credit 1
  - ☐ Credit 2
  - ☐ Credit 3
- ☐ Use of "country drainage" versus curb and gutter conveyance and pipe
- ☒ Bioretention Cells (includes Rain Gardens)
- ☐ Constructed Stormwater Wetlands (includes Gravel Wetlands designs)
- ☐ Treebox Filter
- ☐ Water Quality Swale
- ☐ Grass Channel
- ☐ Green Roof
- ☒ Other (describe): Subsurface stone trench with perforated pipe

Standard 1: No New Untreated Discharges

- ☒ No new untreated discharges
- ☒ Outlets have been designed so there is no erosion or scour to wetlands and waters of the Commonwealth
- ☒ Supporting calculations specified in Volume 3 of the Massachusetts Stormwater Handbook included.

Checklist for Stormwater Report

Checklist (continued)

Standard 2: Peak Rate Attenuation

☐ Standard 2 waiver requested because the project is located in land subject to coastal storm flowage and stormwater discharge is to a wetland subject to coastal flooding.

☒ Evaluation provided to determine whether off-site flooding increases during the 100-year 24-hour storm.

☒ Calculations provided to show that post-development peak discharge rates do not exceed pre-development rates for the 2-year and 10-year 24-hour storms. If evaluation shows that off-site flooding increases during the 100-year 24-hour storm, calculations are also provided to show that post-development peak discharge rates do not exceed pre-development rates for the 100-year 24-hour storm.

Standard 3: Recharge

☐ Soil Analysis provided.

☐ Required Recharge Volume calculation provided.

☐ Required Recharge volume reduced through use of the LID site Design Credits.

☐ Sizing the infiltration, BMPs is based on the following method: Check the method used.

☐ Static ☐ Simple Dynamic ☐ Dynamic Field[1]

☐ Runoff from all impervious areas at the site discharging to the infiltration BMP.

☐ Runoff from all impervious areas at the site is *not* discharging to the infiltration BMP and calculations are provided showing that the drainage area contributing runoff to the infiltration BMPs is sufficient to generate the required recharge volume.

☒ Recharge BMPs have been sized to infiltrate the Required Recharge Volume.

☐ Recharge BMPs have been sized to infiltrate the Required Recharge Volume *only* to the maximum extent practicable for the following reason:

- ☐ Site is comprised solely of C and D soils and/or bedrock at the land surface
- ☐ M.G.L. c. 21E sites pursuant to 310 CMR 40.0000
- ☐ Solid Waste Landfill pursuant to 310 CMR 19.000
- ☐ Project is otherwise subject to Stormwater Management Standards only to the maximum extent practicable.

☐ Calculations showing that the infiltration BMPs will drain in 72 hours are provided.

☐ Property includes a M.G.L. c. 21E site or a solid waste landfill and a mounding analysis is included.

[1] 80% TSS removal is required prior to discharge to infiltration BMP if Dynamic Field method is used.

Checklist for Stormwater Report

Checklist (continued)

Standard 3: Recharge (continued)

☐ The infiltration BMP is used to attenuate peak flows during storms greater than or equal to the 10-year 24-hour storm and separation to seasonal high groundwater is less than 4 feet and a mounding analysis is provided.

☐ Documentation is provided showing that infiltration BMPs do not adversely impact nearby wetland resource areas.

Standard 4: Water Quality

The Long-Term Pollution Prevention Plan typically includes the following:

- Good housekeeping practices;
- Provisions for storing materials and waste products inside or under cover;
- Vehicle washing controls;
- Requirements for routine inspections and maintenance of stormwater BMPs;
- Spill prevention and response plans;
- Provisions for maintenance of lawns, gardens, and other landscaped areas;
- Requirements for storage and use of fertilizers, herbicides, and pesticides;
- Pet waste management provisions;
- Provisions for operation and management of septic systems;
- Provisions for solid waste management;
- Snow disposal and plowing plans relative to Wetland Resource Areas;
- Winter Road Salt and/or Sand Use and Storage restrictions;
- Street sweeping schedules;
- Provisions for prevention of illicit discharges to the stormwater management system;
- Documentation that Stormwater BMPs are designed to provide for shutdown and containment in the event of a spill or discharges to or near critical areas or from LUHPPL;
- Training for staff or personnel involved with implementing Long-Term Pollution Prevention Plan;
- List of Emergency contacts for implementing Long-Term Pollution Prevention Plan.

☐ A Long-Term Pollution Prevention Plan is attached to Stormwater Report and is included as an attachment to the Wetlands Notice of Intent.

☒ Treatment BMPs subject to the 44% TSS removal pretreatment requirement and the one inch rule for calculating the water quality volume are included, and discharge:

- ☐ is within the Zone II or Interim Wellhead Protection Area
- ☐ is near or to other critical areas
- ☒ is within soils with a rapid infiltration rate (greater than 2.4 inches per hour)
- ☐ involves runoff from land uses with higher potential pollutant loads.

☐ The Required Water Quality Volume is reduced through use of the LID site Design Credits.

☒ Calculations documenting that the treatment train meets the 80% TSS removal requirement and, if applicable, the 44% TSS removal pretreatment requirement, are provided.

Checklist for Stormwater Report

Checklist (continued)

Standard 4: Water Quality (continued)

☐ The BMP is sized (and calculations provided) based on:

- ☐ The ½" or 1" Water Quality Volume or
- ☐ The equivalent flow rate associated with the Water Quality Volume and documentation is provided showing that the BMP treats the required water quality volume.

☐ The applicant proposes to use proprietary BMPs, and documentation supporting use of proprietary BMP and proposed TSS removal rate is provided. This documentation may be in the form of the propriety BMP checklist found in Volume 2, Chapter 4 of the Massachusetts Stormwater Handbook and submitting copies of the TARP Report, STEP Report, and/or other third party studies verifying performance of the proprietary BMPs.

☐ A TMDL exists that indicates a need to reduce pollutants other than TSS and documentation showing that the BMPs selected are consistent with the TMDL is provided.

Standard 5: Land Uses With Higher Potential Pollutant Loads (LUHPPLs)

☐ The NPDES Multi-Sector General Permit covers the land use and the Stormwater Pollution Prevention Plan (SWPPP) has been included with the Stormwater Report.

☐ The NPDES Multi-Sector General Permit covers the land use and the SWPPP will be submitted ***prior to*** the discharge of stormwater to the post-construction stormwater BMPs.

☐ The NPDES Multi-Sector General Permit does ***not*** cover the land use.

☐ LUHPPLs are located at the site and industry specific source control and pollution prevention measures have been proposed to reduce or eliminate the exposure of LUHPPLs to rain, snow, snow melt and runoff, and been included in the long term Pollution Prevention Plan.

☐ All exposure has been eliminated.

☐ All exposure has ***not*** been eliminated and all BMPs selected are on MassDEP LUHPPL list.

☐ The LUHPPL has the potential to generate runoff with moderate to higher concentrations of oil and grease (e.g. all parking lots with >1000 vehicle trips per day) and the treatment train includes an oil grit separator, a filtering bioretention area, a sand filter or equivalent.

Standard 6: Critical Areas

☐ The discharge is near or to a critical area and the treatment train includes only BMPs that MassDEP has approved for stormwater discharges to or near that particular class of critical area.

☐ Critical areas and BMPs are identified in the Stormwater Report.

Checklist for Stormwater Report

Checklist (continued)

Standard 7: Redevelopments and Other Projects Subject to the Standards only to the maximum extent practicable

☐ The project is subject to the Stormwater Management Standards only to the maximum Extent Practicable as a:

- ☐ Limited Project
- ☐ Small Residential Projects: 5-9 single family houses or 5-9 units in a multi-family development provided there is no discharge that may potentially affect a critical area.
- ☐ Small Residential Projects: 2-4 single family houses or 2-4 units in a multi-family development with a discharge to a critical area
- ☐ Marina and/or boatyard provided the hull painting, service and maintenance areas are protected from exposure to rain, snow, snow melt and runoff
- ☐ Bike Path and/or Foot Path
- ☐ Redevelopment Project
- ☐ Redevelopment portion of mix of new and redevelopment.

☐ Certain standards are not fully met (Standard No. 1, 8, 9, and 10 must always be fully met) and an explanation of why these standards are not met is contained in the Stormwater Report.

☐ The project involves redevelopment and a description of all measures that have been taken to improve existing conditions is provided in the Stormwater Report. The redevelopment checklist found in Volume 2 Chapter 3 of the Massachusetts Stormwater Handbook may be used to document that the proposed stormwater management system (a) complies with Standards 2, 3 and the pretreatment and structural BMP requirements of Standards 4-6 to the maximum extent practicable and (b) improves existing conditions.

Standard 8: Construction Period Pollution Prevention and Erosion and Sedimentation Control

A Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan must include the following information:

- Narrative;
- Construction Period Operation and Maintenance Plan;
- Names of Persons or Entity Responsible for Plan Compliance;
- Construction Period Pollution Prevention Measures;
- Erosion and Sedimentation Control Plan Drawings;
- Detail drawings and specifications for erosion control BMPs, including sizing calculations;
- Vegetation Planning;
- Site Development Plan;
- Construction Sequencing Plan;
- Sequencing of Erosion and Sedimentation Controls;
- Operation and Maintenance of Erosion and Sedimentation Controls;
- Inspection Schedule;
- Maintenance Schedule;
- Inspection and Maintenance Log Form.

☐ A Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan containing the information set forth above has been included in the Stormwater Report.

Checklist for Stormwater Report

Checklist (continued)

Standard 8: Construction Period Pollution Prevention and Erosion and Sedimentation Control (continued)

☐ The project is highly complex and information is included in the Stormwater Report that explains why it is not possible to submit the Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan with the application. A Construction Period Pollution Prevention and Erosion and Sedimentation Control has ***not*** been included in the Stormwater Report but will be submitted ***before*** land disturbance begins.

☐ The project is ***not*** covered by a NPDES Construction General Permit.

☒ The project is covered by a NPDES Construction General Permit and a copy of the SWPPP is in the Stormwater Report.

☐ The project is covered by a NPDES Construction General Permit but no SWPPP been submitted. The SWPPP will be submitted BEFORE land disturbance begins.

Standard 9: Operation and Maintenance Plan

☐ The Post Construction Operation and Maintenance Plan is included in the Stormwater Report and includes the following information:

- ☐ Name of the stormwater management system owners;
- ☐ Party responsible for operation and maintenance;
- ☐ Schedule for implementation of routine and non-routine maintenance tasks;
- ☐ Plan showing the location of all stormwater BMPs maintenance access areas;
- ☐ Description and delineation of public safety features;
- ☐ Estimated operation and maintenance budget; and
- ☐ Operation and Maintenance Log Form.

☐ The responsible party is ***not*** the owner of the parcel where the BMP is located and the Stormwater Report includes the following submissions:

- ☐ A copy of the legal instrument (deed, homeowner's association, utility trust or other legal entity) that establishes the terms of and legal responsibility for the operation and maintenance of the project site stormwater BMPs;
- ☐ A plan and easement deed that allows site access for the legal entity to operate and maintain BMP functions.

Standard 10: Prohibition of Illicit Discharges

☒ The Long-Term Pollution Prevention Plan includes measures to prevent illicit discharges;

☐ An Illicit Discharge Compliance Statement is attached;

☒ NO Illicit Discharge Compliance Statement is attached but will be submitted ***prior to*** the discharge of any stormwater to post-construction BMPs.

Pre-Development Hydrology

Worksheet 2: Runoff curve number and runoff **SM-5666**

Project: Village Green By PFK Date 2/27/18

Location: Devens, MA Checked _____ Date _____

Circle one: Present Developed Subcatchment E-9

1. Runoff curve number (CN)

Soil name and hydrologic group (appendix A)	Cover description (cover type, treatment, and hydrologic condition: percent impervious: unconnected/connected impervious area ratio)	CN 1/ Table 2-2	CN 1/ Fig. 2-3	CN 1/ Fig. 2-4	Area Acres	Product of CN x Area
-	Impervious - Drive	98			0.00	0.00
-	Impervious - Building	98			0.00	0.00
A	Woods and Brush Good Condition	30			0.50	15.00
A	Open Space Good Condition	39			0.27	10.53
				Totals =	0.77	25.53

1/ Use only one CN source per line.

CN (weighted) = $\frac{\text{total product}}{\text{total area}} = \frac{25.53}{0.77} = 33.16$; Use CN = 33.2

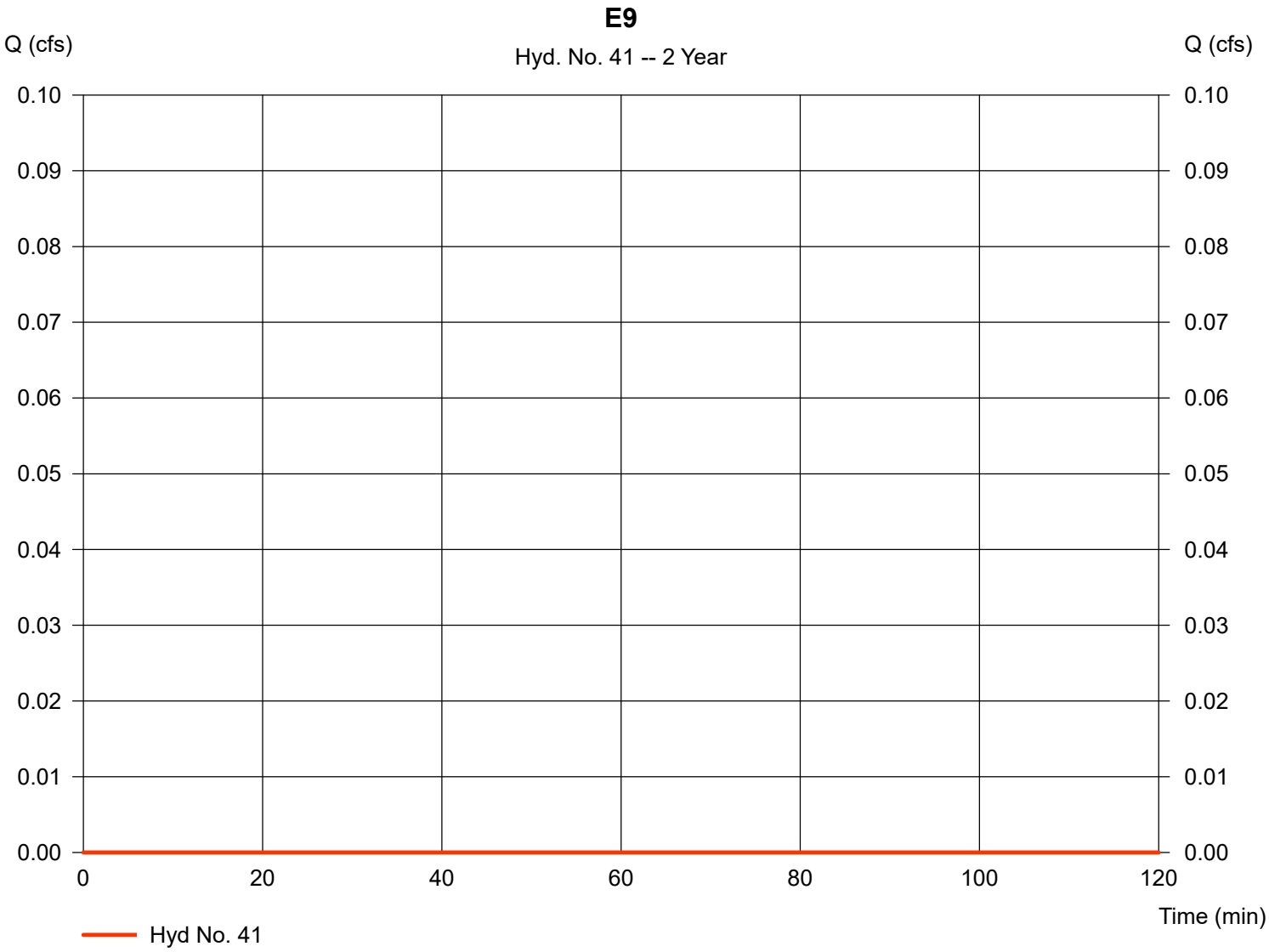
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.2 | Tuesday, Oct 6, 2026

Hyd. No. 41

E9

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.000 cfs
Storm frequency	=	2 yrs	Time to peak	=	n/a
Time interval	=	2 min	Hyd. volume	=	0 cuft
Drainage area	=	0.770 ac	Curve number	=	33.2
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	USER	Time of conc. (Tc)	=	13.00 min
Total precip.	=	3.20 in	Distribution	=	Type III
Storm duration	=	24 hrs	Shape factor	=	484



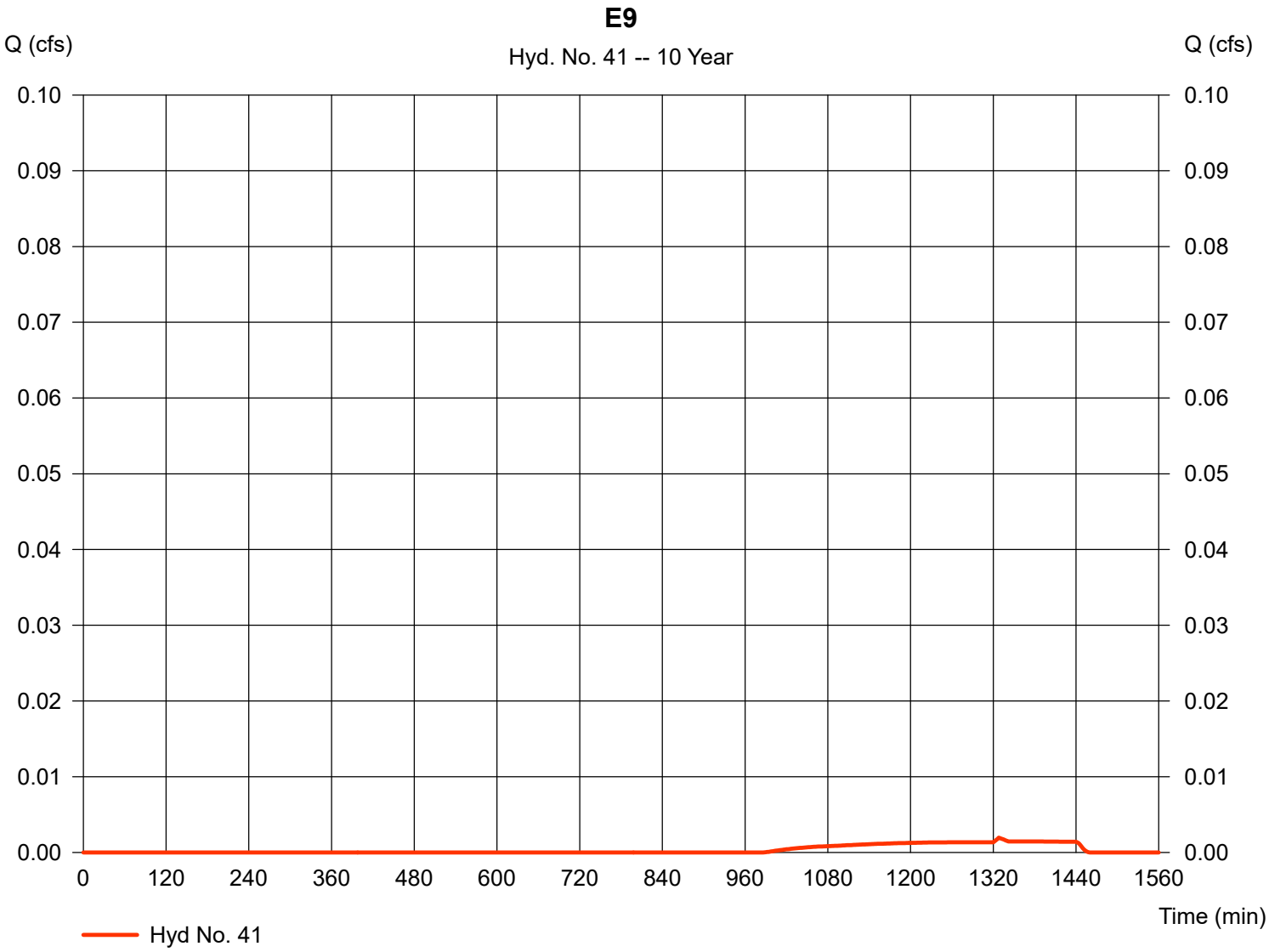
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.2 | Tuesday, Oct 6, 2026

Hyd. No. 41

E9

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.002 cfs
Storm frequency	=	10 yrs	Time to peak	=	1328 min
Time interval	=	2 min	Hyd. volume	=	32 cuft
Drainage area	=	0.770 ac	Curve number	=	33.2
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	USER	Time of conc. (Tc)	=	13.00 min
Total precip.	=	4.50 in	Distribution	=	Type III
Storm duration	=	24 hrs	Shape factor	=	484



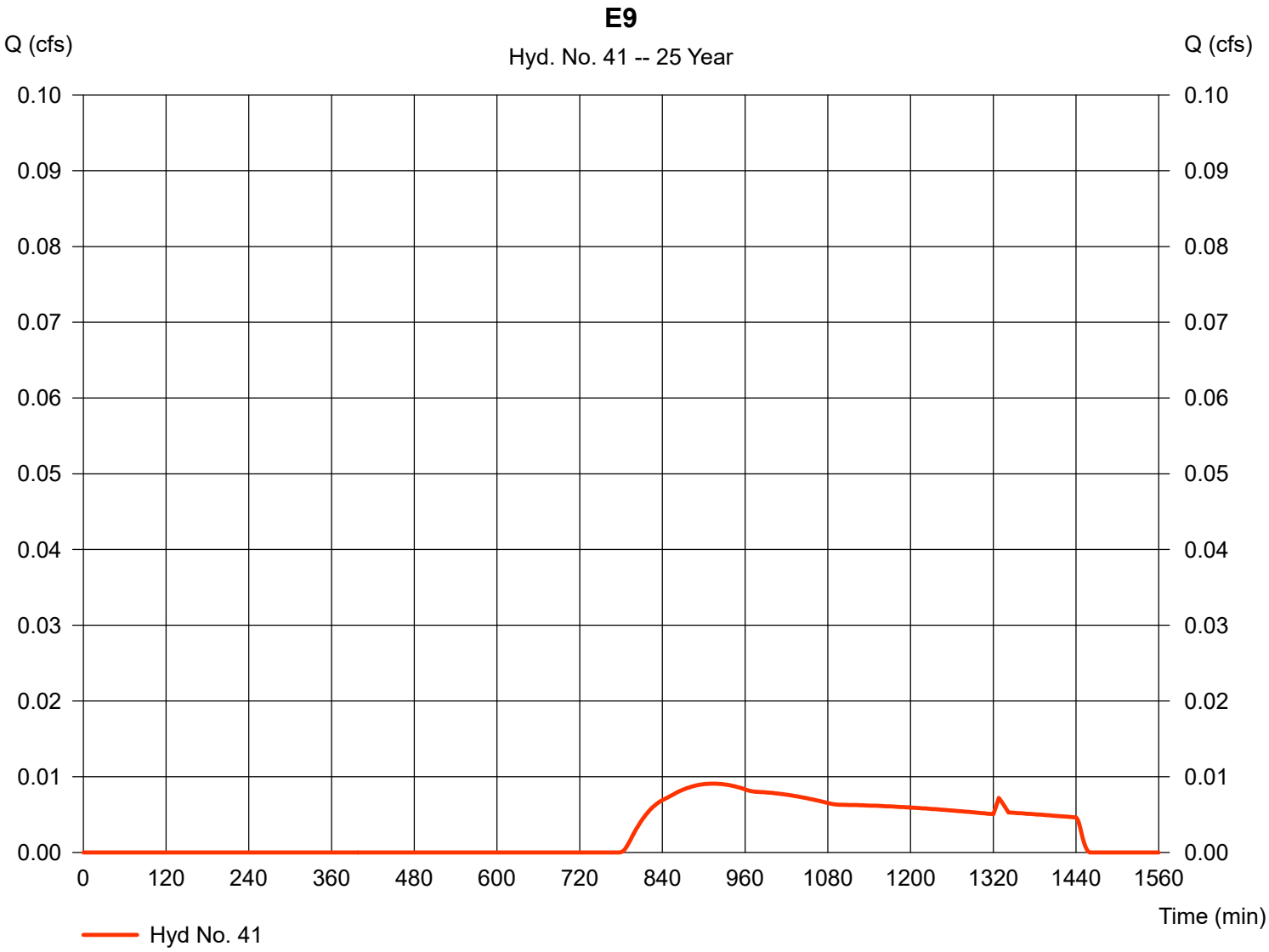
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.2 | Tuesday, Oct 6, 2026

Hyd. No. 41

E9

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.009 cfs
Storm frequency	=	25 yrs	Time to peak	=	914 min
Time interval	=	2 min	Hyd. volume	=	254 cuft
Drainage area	=	0.770 ac	Curve number	=	33.2
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	USER	Time of conc. (Tc)	=	13.00 min
Total precip.	=	5.40 in	Distribution	=	Type III
Storm duration	=	24 hrs	Shape factor	=	484



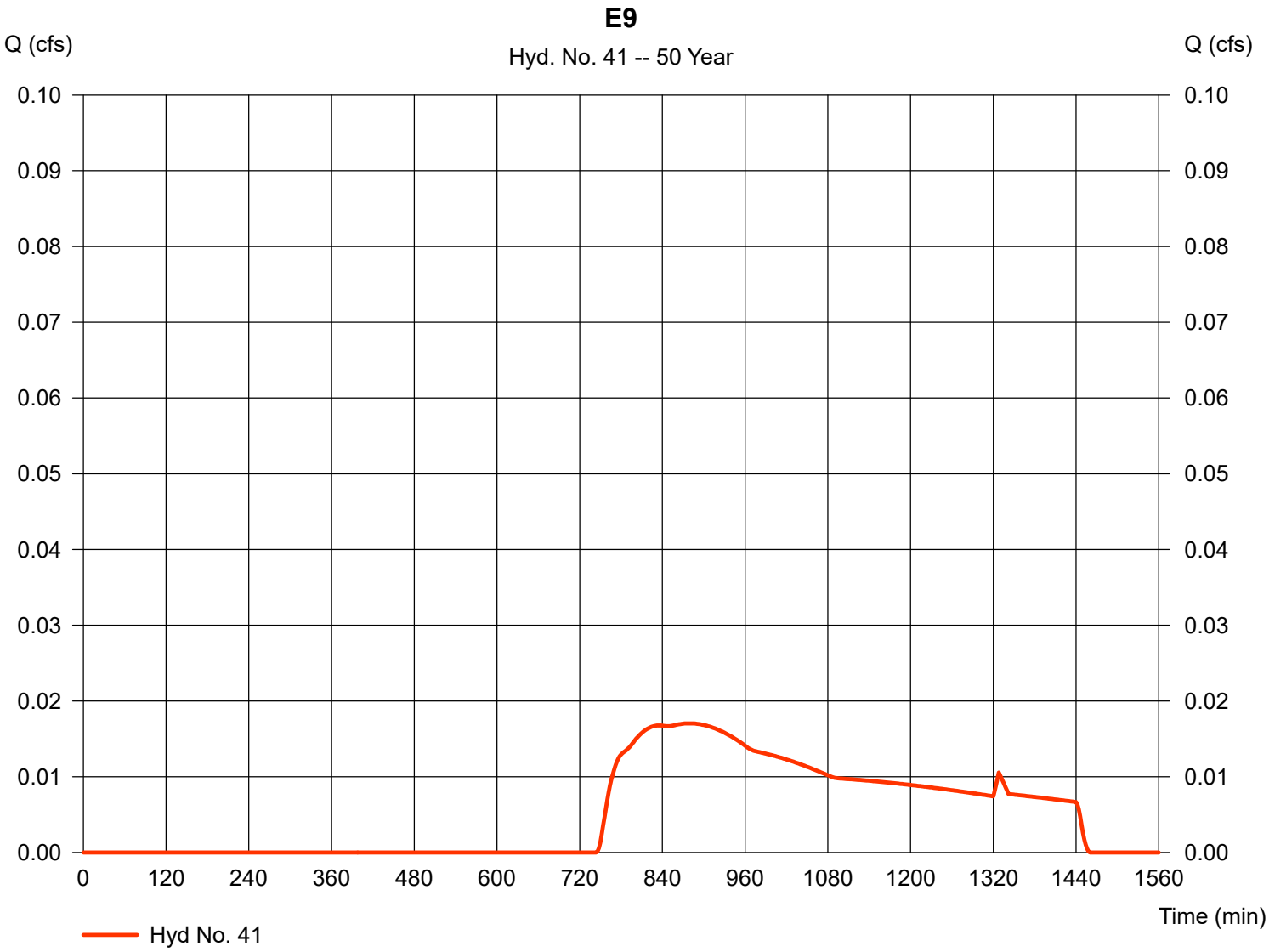
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.2 | Tuesday, Oct 6, 2026

Hyd. No. 41

E9

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.017 cfs
Storm frequency	=	50 yrs	Time to peak	=	880 min
Time interval	=	2 min	Hyd. volume	=	461 cuft
Drainage area	=	0.770 ac	Curve number	=	33.2
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	USER	Time of conc. (Tc)	=	13.00 min
Total precip.	=	5.90 in	Distribution	=	Type III
Storm duration	=	24 hrs	Shape factor	=	484



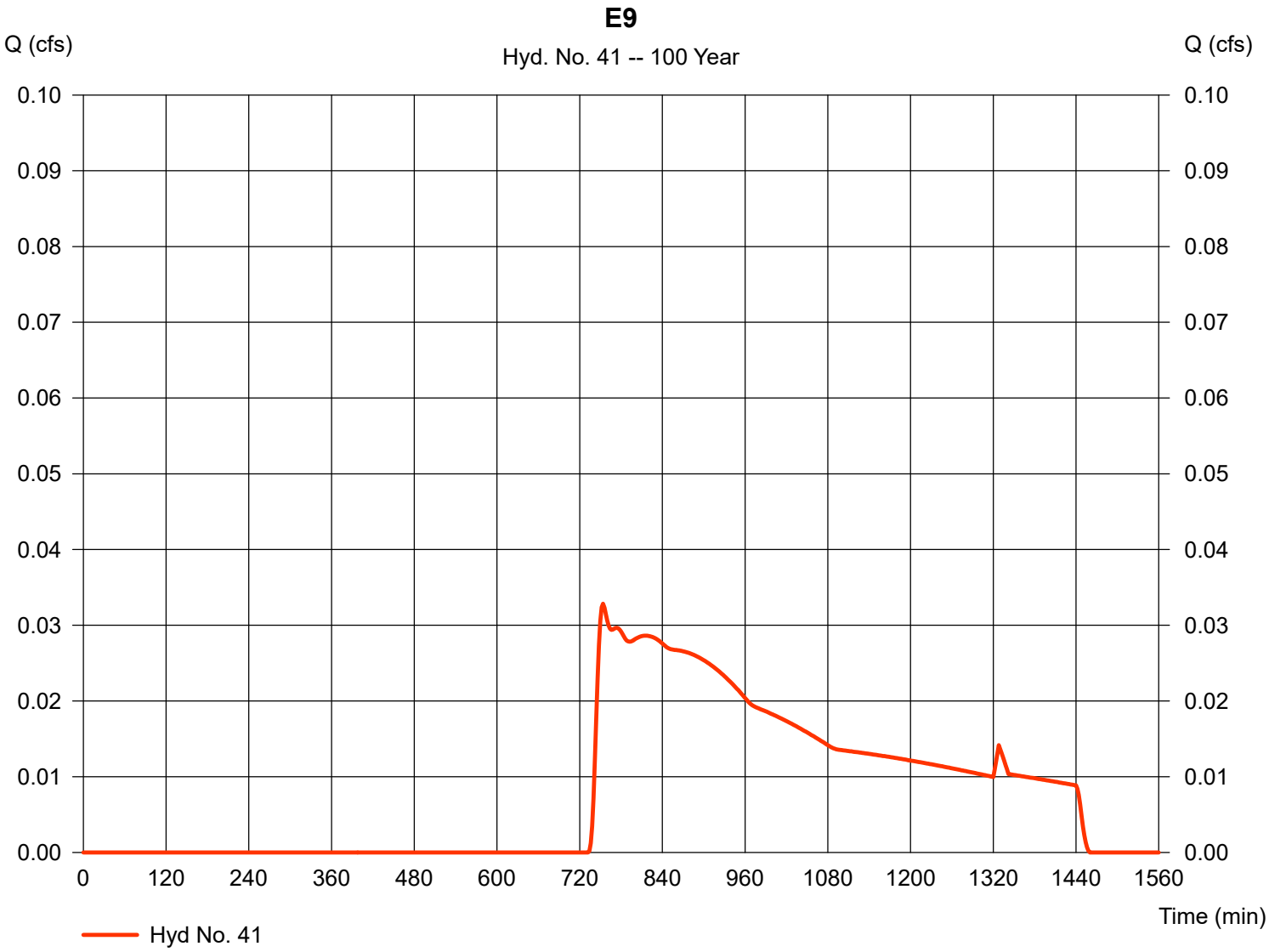
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.2 | Tuesday, Oct 6, 2026

Hyd. No. 41

E9

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.033 cfs
Storm frequency	=	100 yrs	Time to peak	=	754 min
Time interval	=	2 min	Hyd. volume	=	723 cuft
Drainage area	=	0.770 ac	Curve number	=	33.2
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	USER	Time of conc. (Tc)	=	13.00 min
Total precip.	=	6.40 in	Distribution	=	Type III
Storm duration	=	24 hrs	Shape factor	=	484



Hydrograph Report

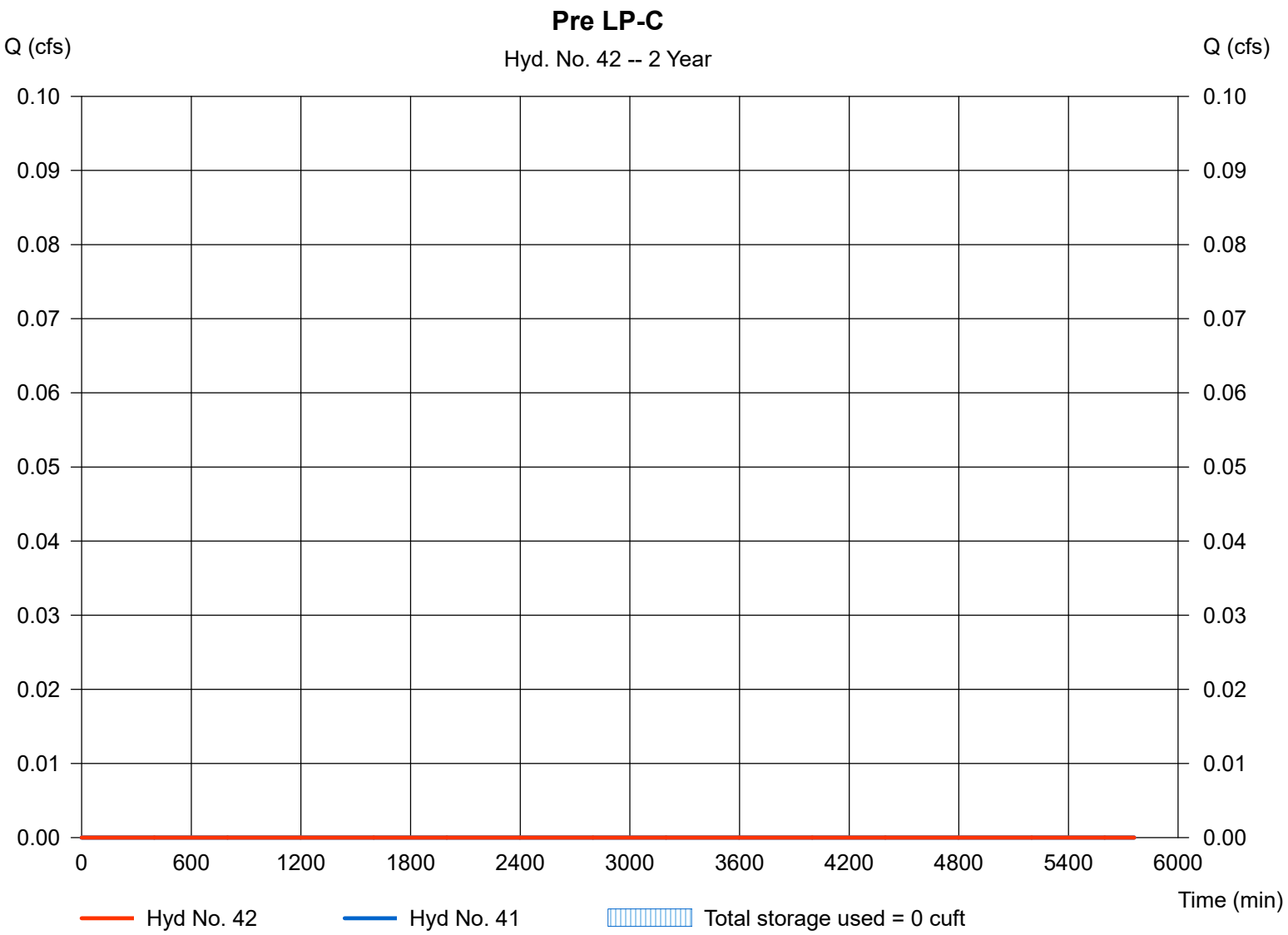
Hydraflow Hydrographs by Intelisolve v9.2 Tuesday, Oct 6, 2026

Hyd. No. 42

Pre LP-C

Hydrograph type	=	Reservoir	Peak discharge	=	0.000 cfs
Storm frequency	=	2 yrs	Time to peak	=	n/a
Time interval	=	2 min	Hyd. volume	=	0 cuft
Inflow hyd. No.	=	41 - E9	Max. Elevation	=	296.00 ft
Reservoir name	=	LOW POINT C	Max. Storage	=	0 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Hydrograph Report

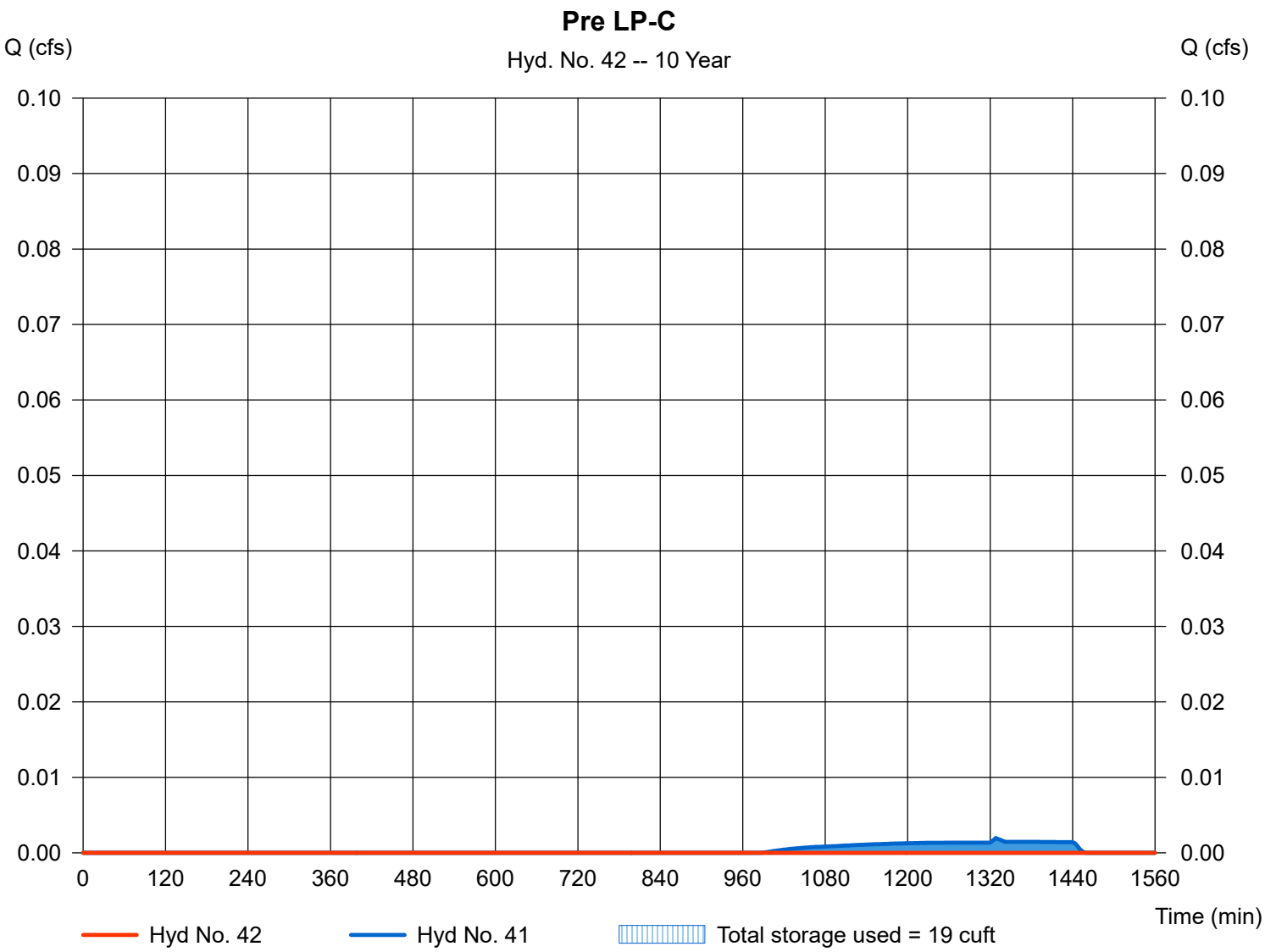
Hydraflow Hydrographs by Intelisolve v9.2 | Tuesday, Oct 6, 2026

Hyd. No. 42

Pre LP-C

Hydrograph type	=	Reservoir	Peak discharge	=	0.000 cfs
Storm frequency	=	10 yrs	Time to peak	=	1448 min
Time interval	=	2 min	Hyd. volume	=	0 cuft
Inflow hyd. No.	=	41 - E9	Max. Elevation	=	296.03 ft
Reservoir name	=	LOW POINT C	Max. Storage	=	19 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Hydrograph Report

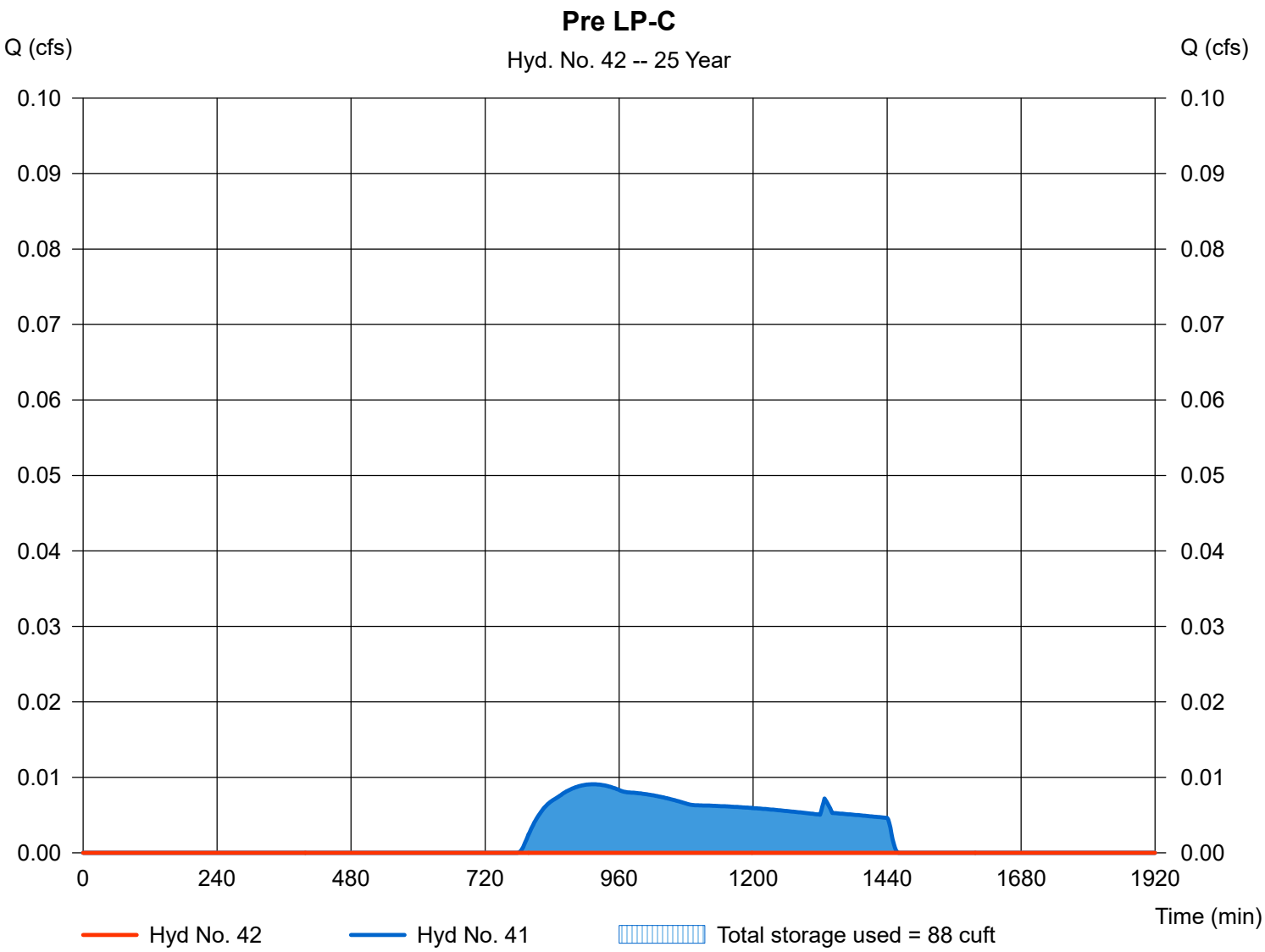
Hydraflow Hydrographs by Intelisolve v9.2 | Tuesday, Oct 6, 2026

Hyd. No. 42

Pre LP-C

Hydrograph type	=	Reservoir	Peak discharge	=	0.000 cfs
Storm frequency	=	25 yrs	Time to peak	=	1056 min
Time interval	=	2 min	Hyd. volume	=	0 cuft
Inflow hyd. No.	=	41 - E9	Max. Elevation	=	296.14 ft
Reservoir name	=	LOW POINT C	Max. Storage	=	88 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Hydrograph Report

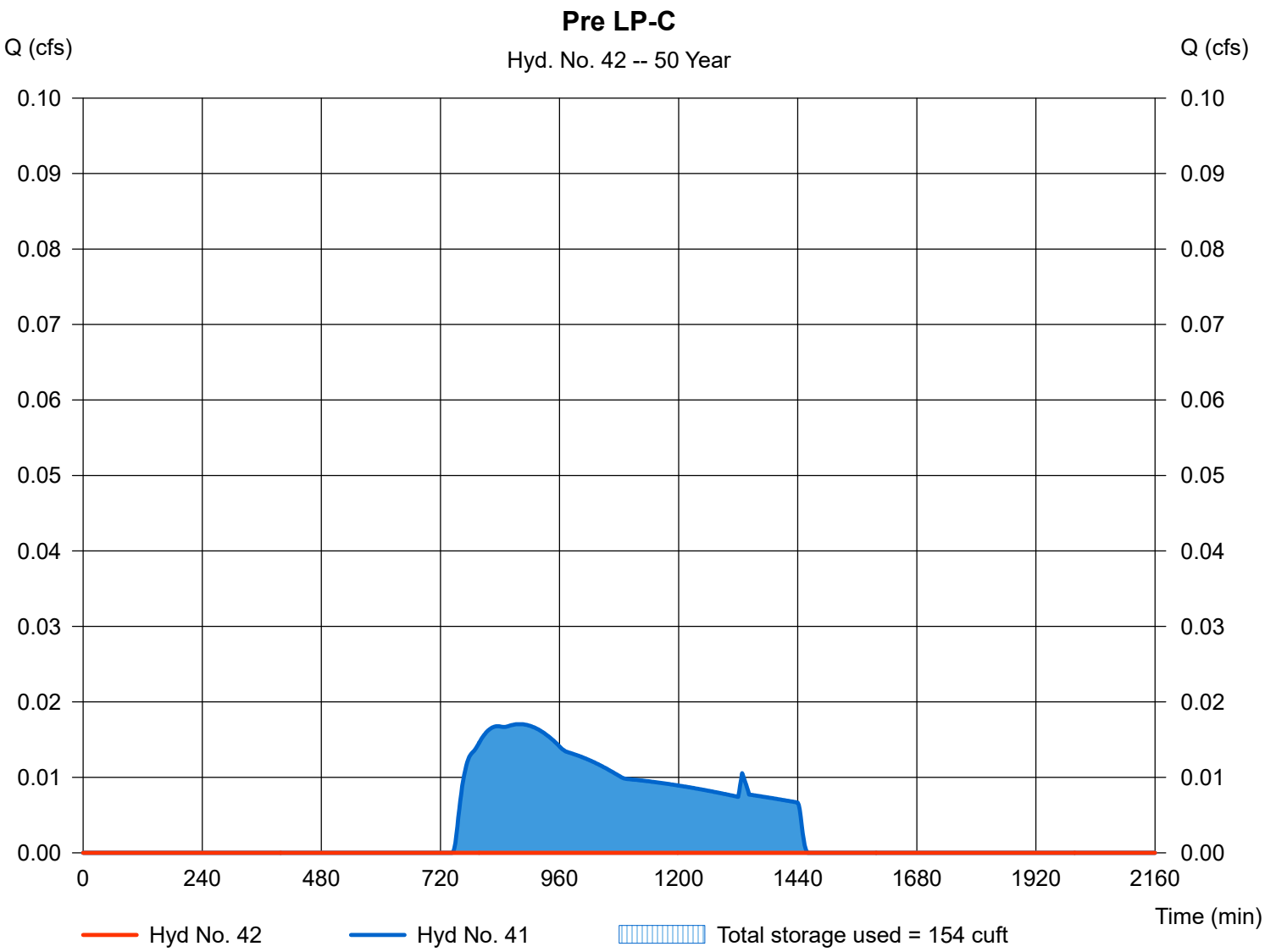
Hydraflow Hydrographs by Intelisolve v9.2 | Tuesday, Oct 6, 2026

Hyd. No. 42

Pre LP-C

Hydrograph type	=	Reservoir	Peak discharge	=	0.000 cfs
Storm frequency	=	50 yrs	Time to peak	=	1108 min
Time interval	=	2 min	Hyd. volume	=	0 cuft
Inflow hyd. No.	=	41 - E9	Max. Elevation	=	296.25 ft
Reservoir name	=	LOW POINT C	Max. Storage	=	154 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Hydrograph Report

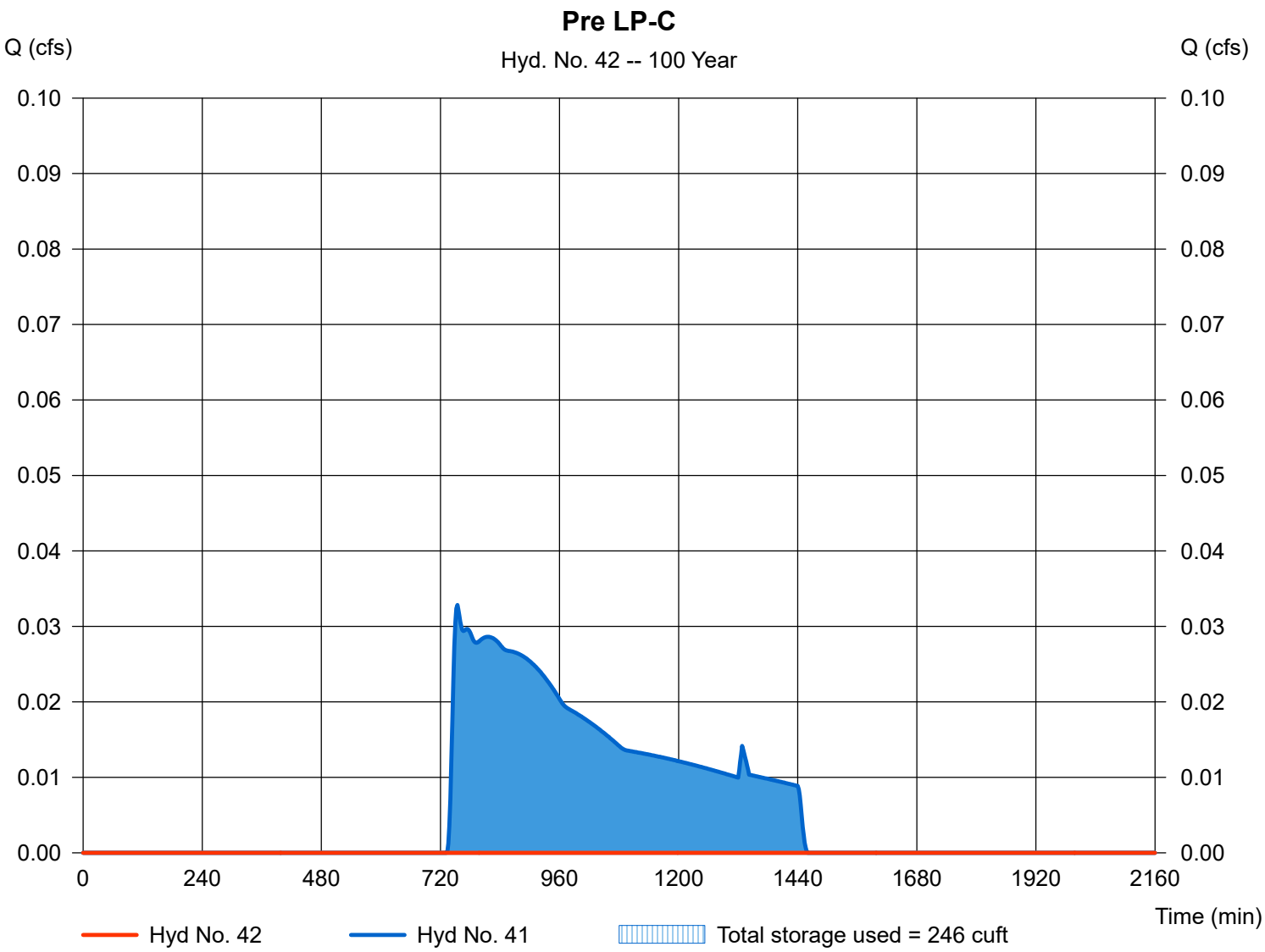
Hydraflow Hydrographs by Intelisolve v9.2 Tuesday, Oct 6, 2026

Hyd. No. 42

Pre LP-C

Hydrograph type	=	Reservoir	Peak discharge	=	0.000 cfs
Storm frequency	=	100 yrs	Time to peak	=	876 min
Time interval	=	2 min	Hyd. volume	=	0 cuft
Inflow hyd. No.	=	41 - E9	Max. Elevation	=	296.40 ft
Reservoir name	=	LOW POINT C	Max. Storage	=	246 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Pond Report

Hydraflow Hydrographs by Intelisolve v9.2 — Tuesday, Oct 6, 2026

Pond No. 3 - LOW POINT C

Pond Data

Contours - User-defined contour areas. Conic method used for volume calculation. Begining Elevation = 296.00 ft

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	296.00	92	0	0
2.00	298.00	1,397	1,232	1,232
4.00	300.00	2,580	3,917	5,148
6.00	302.00	5,014	7,460	12,608
8.00	304.00	8,435	13,300	25,908

Culvert / Orifice Structures

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

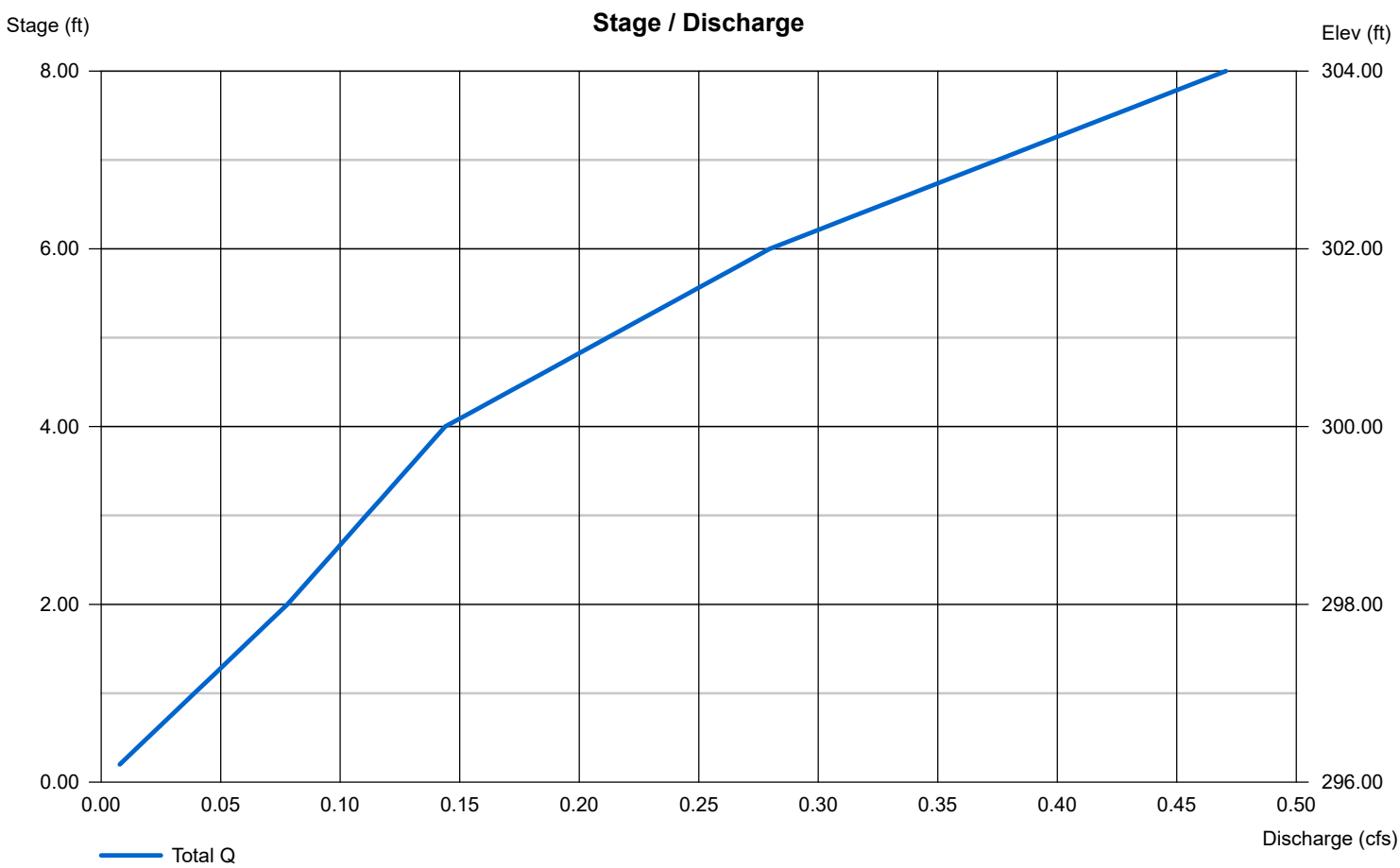
Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 0.00	0.00	0.00	0.00
Crest El. (ft)	= 0.00	0.00	0.00	0.00
Weir Coeff.	= 3.33	3.33	3.33	3.33
Weir Type	= ---	---	---	---
Multi-Stage	= No	No	No	No

Exfil.(in/hr) = 2.410 (by Contour)

TW Elev. (ft) = 0.00

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



Post-Development Hydrology

Worksheet 2: Runoff curve number and runoff **SM-6944A**

Project: Village Green By DJC Date 9/17/26

Location: Devens, MA Checked _____ Date _____

Circle one: Present [Developed] Subcatchment P-9A

1. Runoff curve number (CN)

Soil name and hydrologic group (appendix A)	Cover description (cover type, treatment, and hydrologic condition: percent impervious: unconnected/connected impervious area ratio)	CN 1/ Table 2-2	CN 1/ Fig. 2-3	CN 1/ Fig. 2-4	Area Acres	Product of CN x Area
-	Impervious - Drive/Curb/Sidewalk/Parking	98			0.62	60.99
-	Impervious - Building	98			0.35	33.83
A	Woods and Brush Good Condition	30			0.00	0.00
A	Open Space Good Condition	39			0.44	17.11
				Totals =	1.41	111.93

1/ Use only one CN source per line.

CN (weighted) = $\frac{\text{total product}}{\text{total area}} = \frac{111.93}{1.41} = 79.60$; Use CN = 79.6

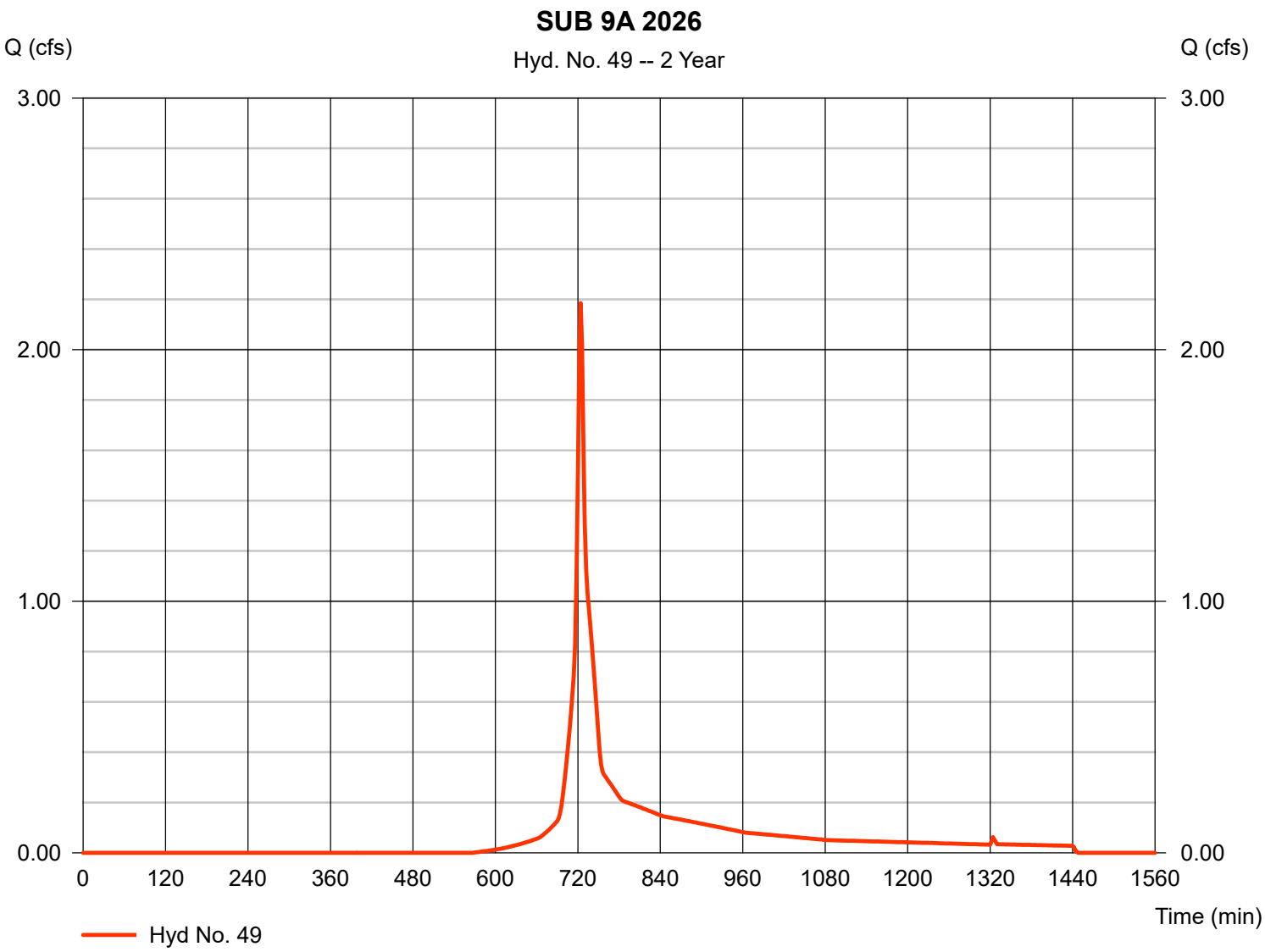
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.2 | Tuesday, Oct 6, 2026

Hyd. No. 49

SUB 9A 2026

Hydrograph type	=	SCS Runoff	Peak discharge	=	2.185 cfs
Storm frequency	=	2 yrs	Time to peak	=	724 min
Time interval	=	2 min	Hyd. volume	=	6,601 cuft
Drainage area	=	1.410 ac	Curve number	=	79.6
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	USER	Time of conc. (Tc)	=	6.00 min
Total precip.	=	3.20 in	Distribution	=	Type III
Storm duration	=	24 hrs	Shape factor	=	484



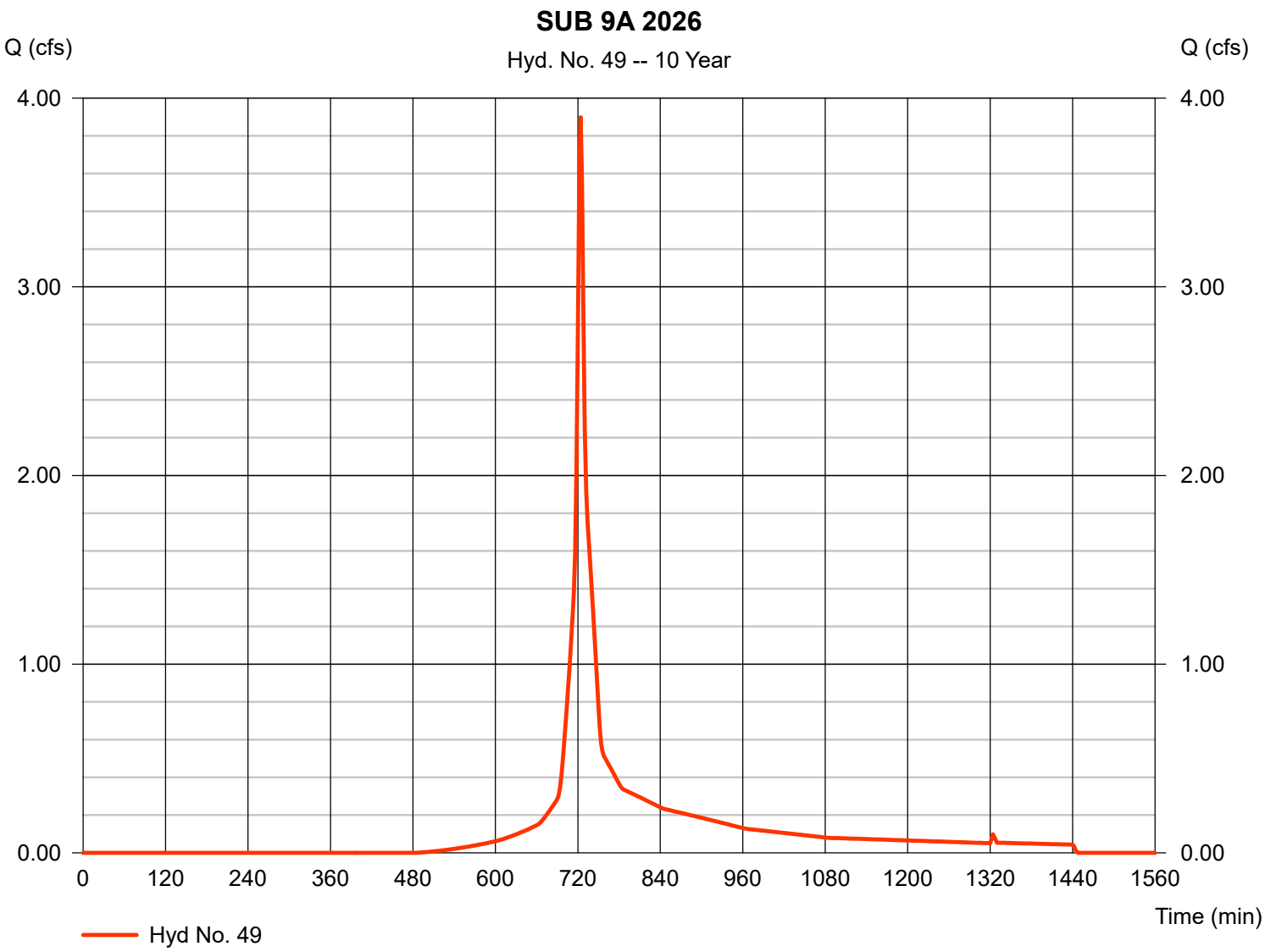
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.2 | Tuesday, Oct 6, 2026

Hyd. No. 49

SUB 9A 2026

Hydrograph type	=	SCS Runoff	Peak discharge	=	3.898 cfs
Storm frequency	=	10 yrs	Time to peak	=	724 min
Time interval	=	2 min	Hyd. volume	=	11,647 cuft
Drainage area	=	1.410 ac	Curve number	=	79.6
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	USER	Time of conc. (Tc)	=	6.00 min
Total precip.	=	4.50 in	Distribution	=	Type III
Storm duration	=	24 hrs	Shape factor	=	484



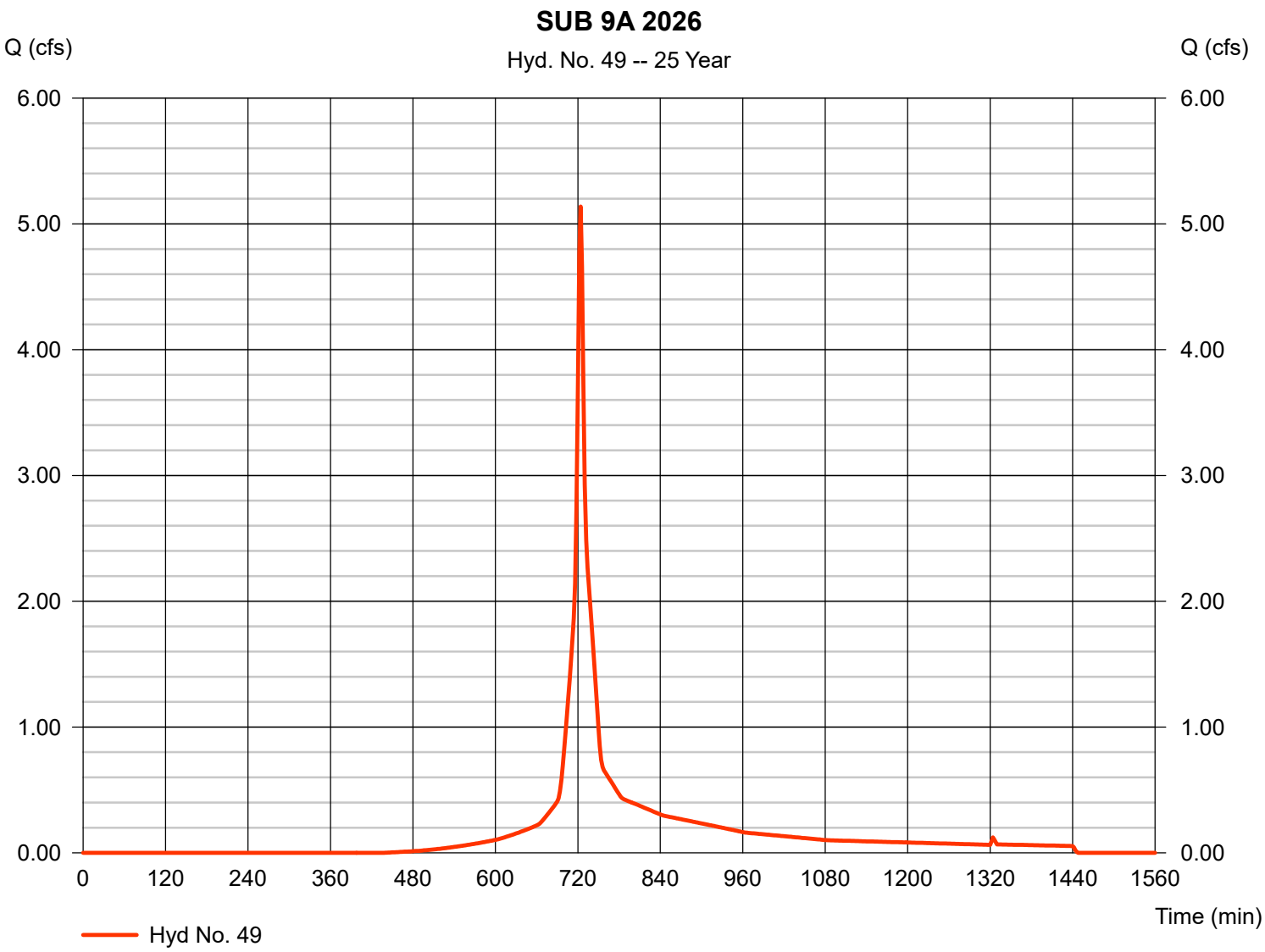
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.2 | Tuesday, Oct 6, 2026

Hyd. No. 49

SUB 9A 2026

Hydrograph type	=	SCS Runoff	Peak discharge	=	5.138 cfs
Storm frequency	=	25 yrs	Time to peak	=	724 min
Time interval	=	2 min	Hyd. volume	=	15,385 cuft
Drainage area	=	1.410 ac	Curve number	=	79.6
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	USER	Time of conc. (Tc)	=	6.00 min
Total precip.	=	5.40 in	Distribution	=	Type III
Storm duration	=	24 hrs	Shape factor	=	484



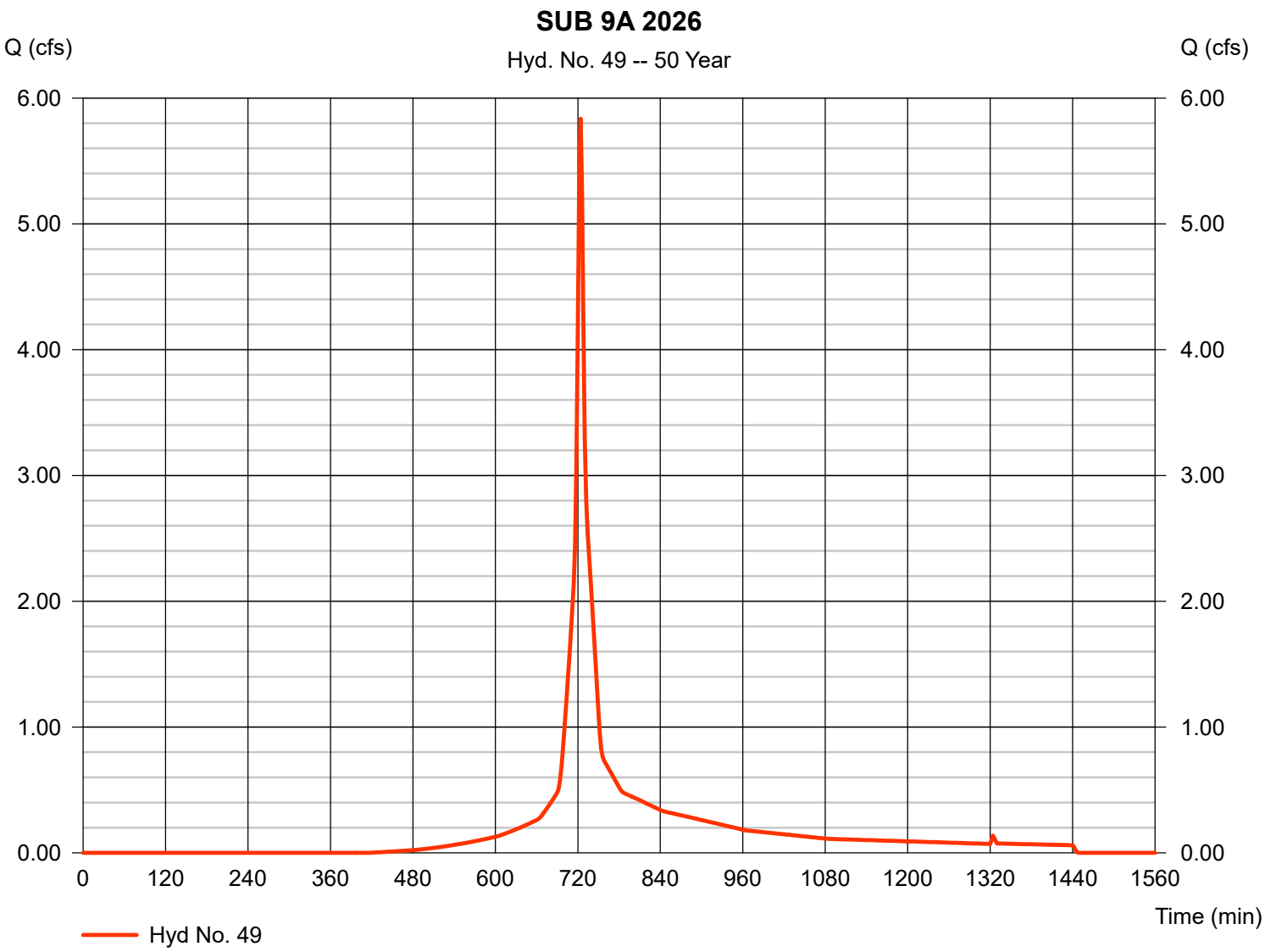
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.2 | Tuesday, Oct 6, 2026

Hyd. No. 49

SUB 9A 2026

Hydrograph type	=	SCS Runoff	Peak discharge	=	5.836 cfs
Storm frequency	=	50 yrs	Time to peak	=	724 min
Time interval	=	2 min	Hyd. volume	=	17,518 cuft
Drainage area	=	1.410 ac	Curve number	=	79.6
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	USER	Time of conc. (Tc)	=	6.00 min
Total precip.	=	5.90 in	Distribution	=	Type III
Storm duration	=	24 hrs	Shape factor	=	484



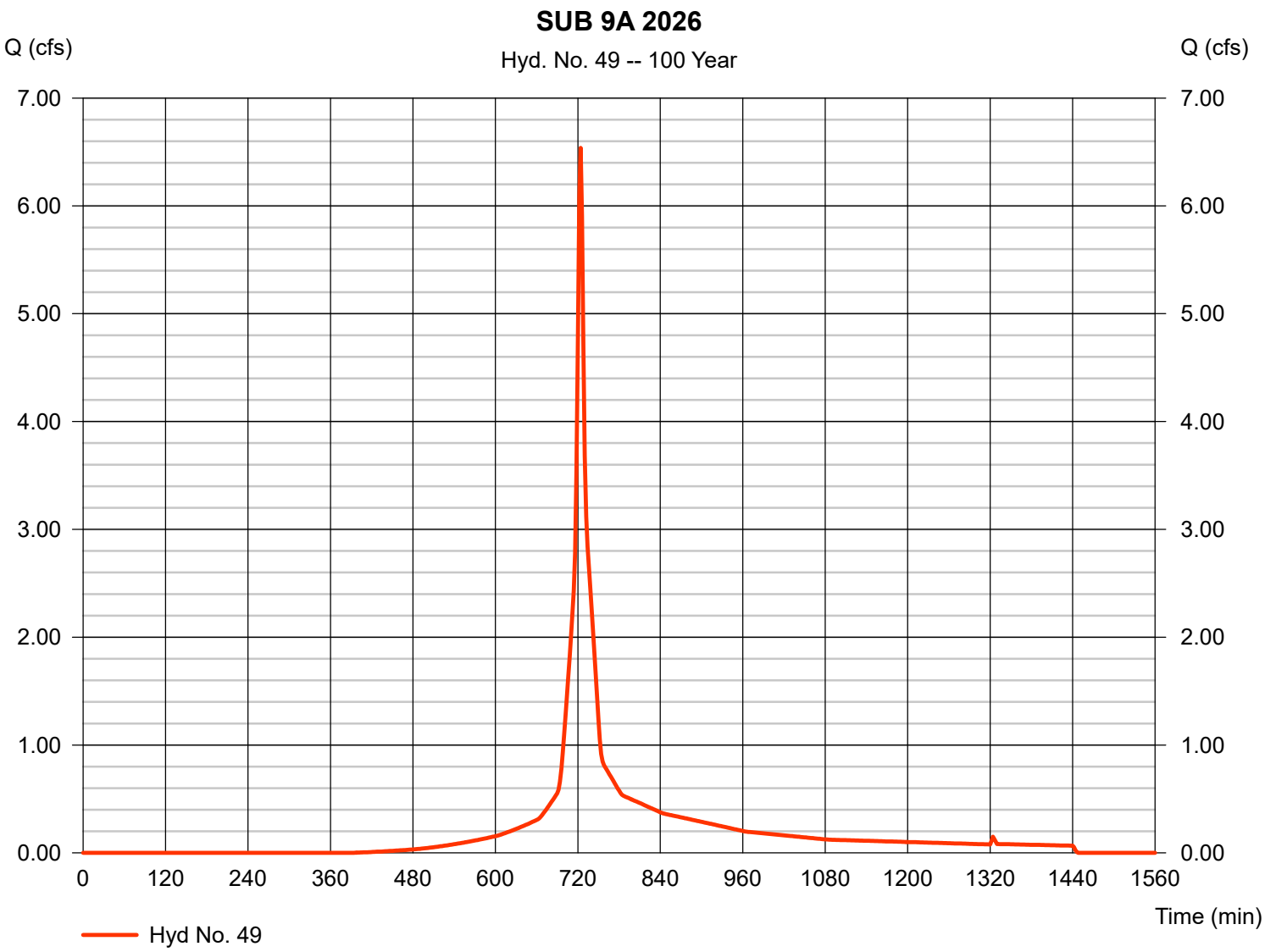
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.2 | Tuesday, Oct 6, 2026

Hyd. No. 49

SUB 9A 2026

Hydrograph type	=	SCS Runoff	Peak discharge	=	6.538 cfs
Storm frequency	=	100 yrs	Time to peak	=	724 min
Time interval	=	2 min	Hyd. volume	=	19,682 cuft
Drainage area	=	1.410 ac	Curve number	=	79.6
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	USER	Time of conc. (Tc)	=	6.00 min
Total precip.	=	6.40 in	Distribution	=	Type III
Storm duration	=	24 hrs	Shape factor	=	484



Hydrograph Report

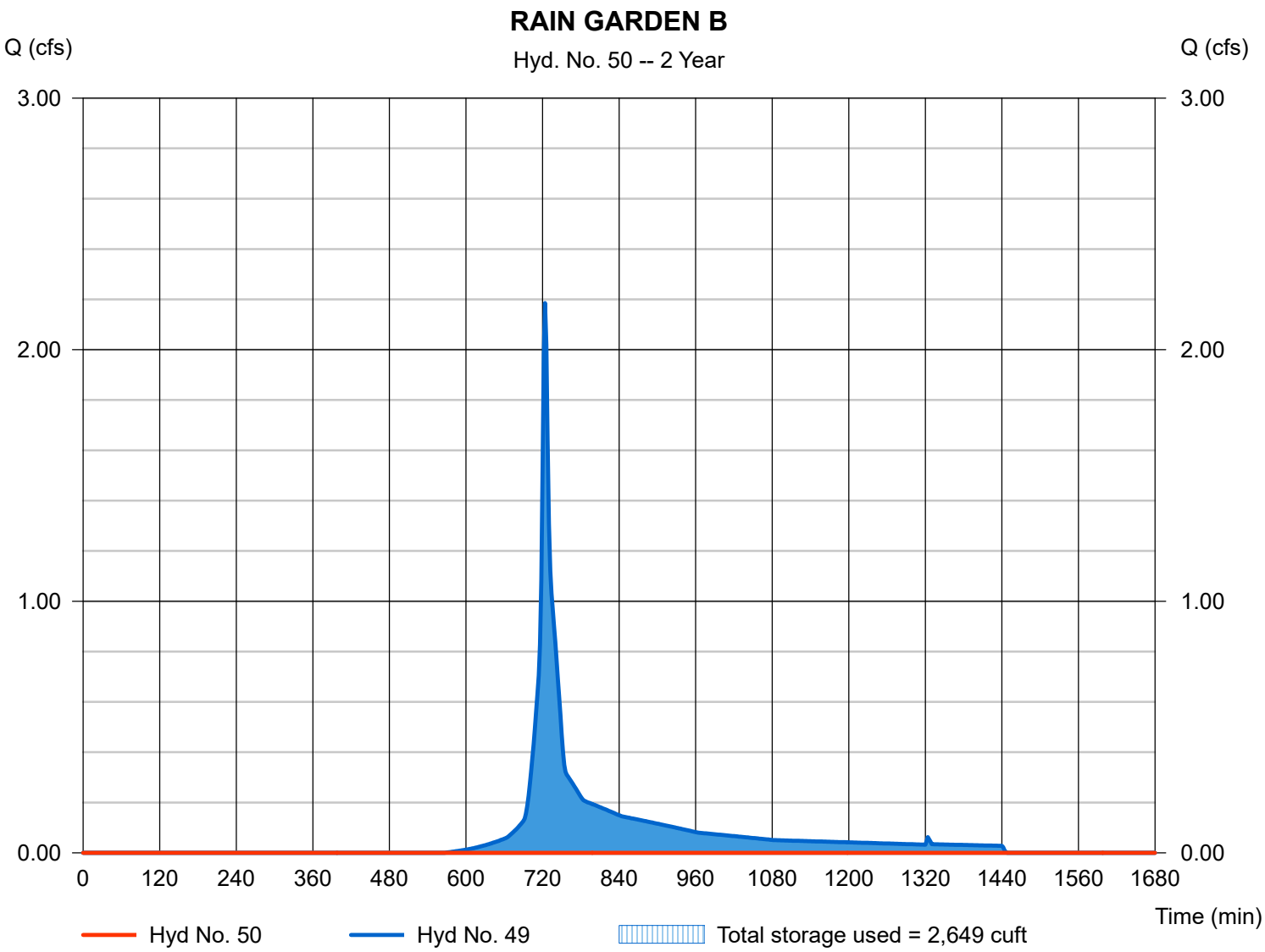
Hydraflow Hydrographs by Intelisolve v9.2 Tuesday, Oct 6, 2026

Hyd. No. 50

RAIN GARDEN B

Hydrograph type	=	Reservoir	Peak discharge	=	0.000 cfs
Storm frequency	=	2 yrs	Time to peak	=	742 min
Time interval	=	2 min	Hyd. volume	=	0 cuft
Inflow hyd. No.	=	49 - SUB 9A 2026	Max. Elevation	=	302.27 ft
Reservoir name	=	RAIN GARDEN B	Max. Storage	=	2,649 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Hydrograph Report

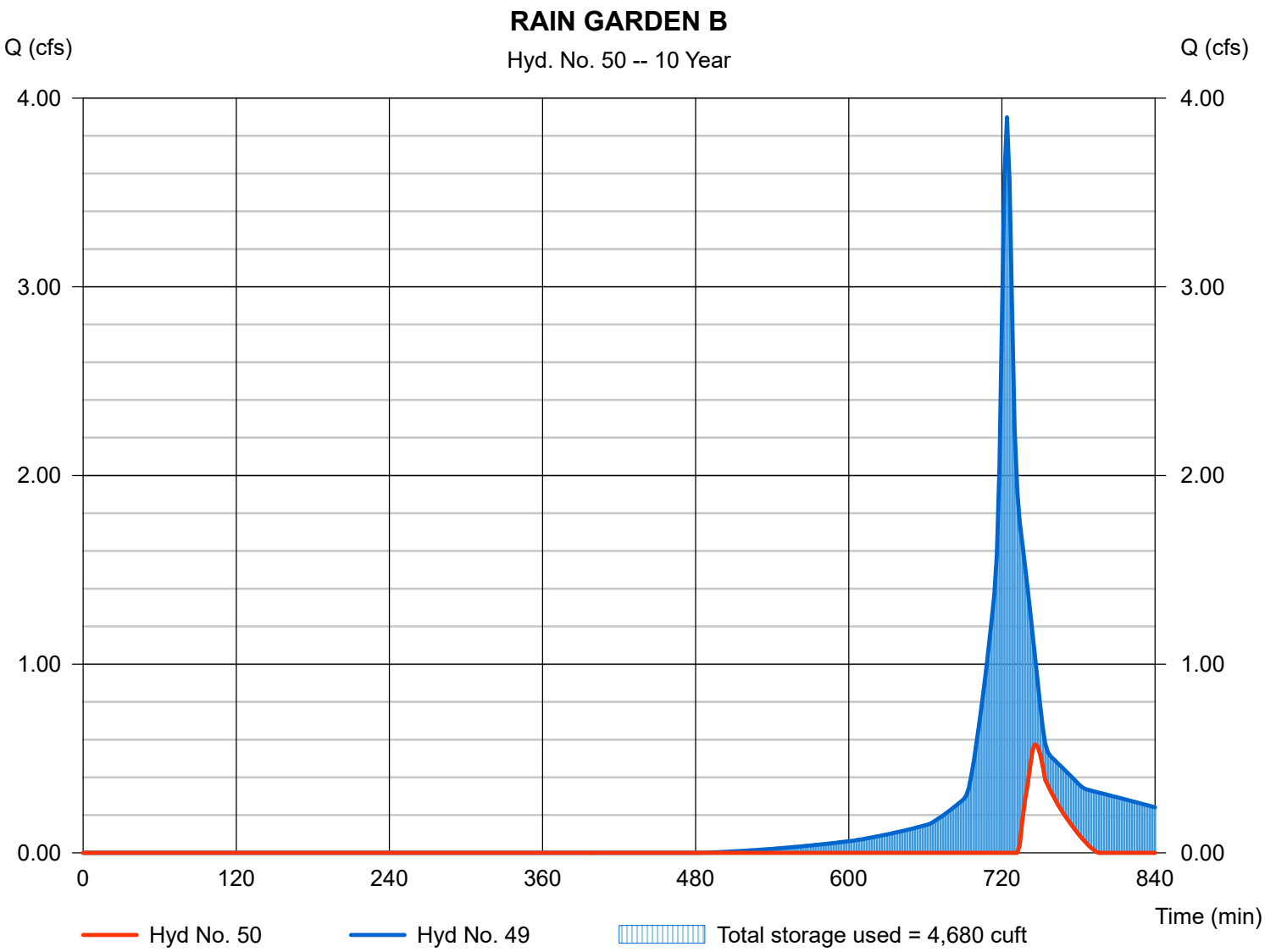
Hydraflow Hydrographs by Intelisolve v9.2 | Tuesday, Oct 6, 2026

Hyd. No. 50

RAIN GARDEN B

Hydrograph type	=	Reservoir	Peak discharge	=	0.575 cfs
Storm frequency	=	10 yrs	Time to peak	=	746 min
Time interval	=	2 min	Hyd. volume	=	898 cuft
Inflow hyd. No.	=	49 - SUB 9A 2026	Max. Elevation	=	303.24 ft
Reservoir name	=	RAIN GARDEN B	Max. Storage	=	4,680 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Hydrograph Report

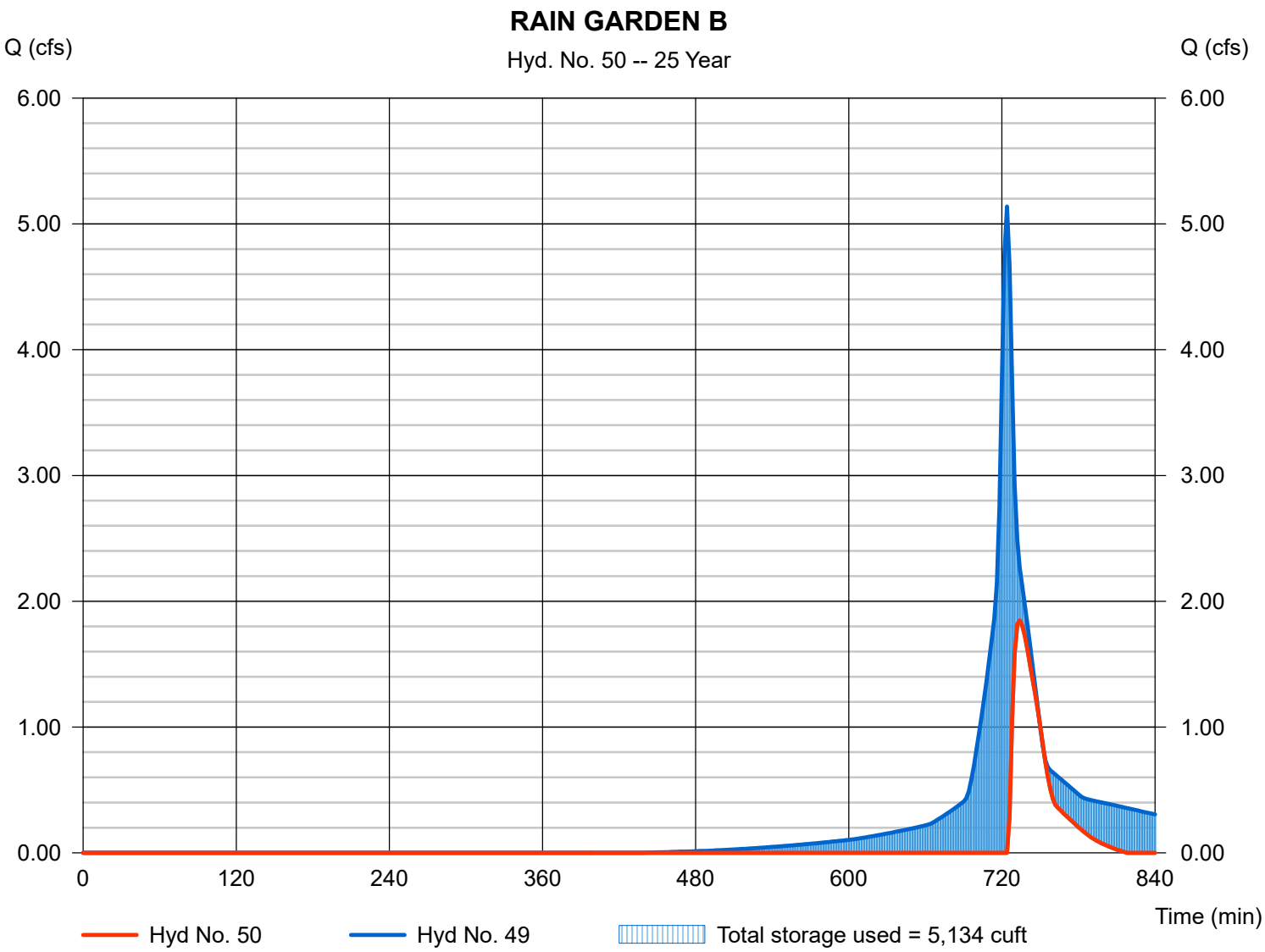
Hydraflow Hydrographs by Intelisolve v9.2 | Tuesday, Oct 6, 2026

Hyd. No. 50

RAIN GARDEN B

Hydrograph type	=	Reservoir	Peak discharge	=	1.848 cfs
Storm frequency	=	25 yrs	Time to peak	=	734 min
Time interval	=	2 min	Hyd. volume	=	3,064 cuft
Inflow hyd. No.	=	49 - SUB 9A 2026	Max. Elevation	=	303.45 ft
Reservoir name	=	RAIN GARDEN B	Max. Storage	=	5,134 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Hydrograph Report

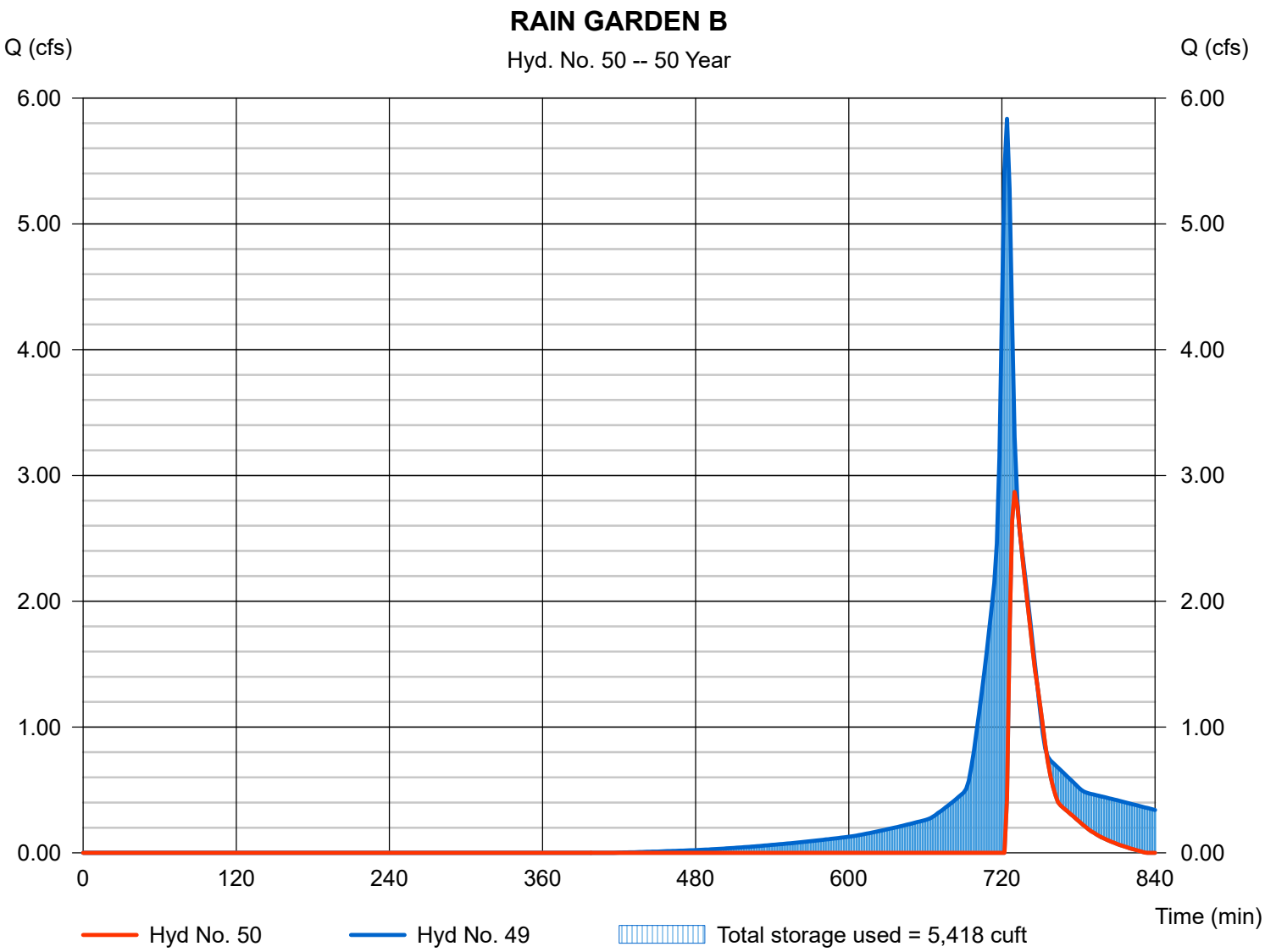
Hydraflow Hydrographs by Intelisolve v9.2 | Tuesday, Oct 6, 2026

Hyd. No. 50

RAIN GARDEN B

Hydrograph type	=	Reservoir	Peak discharge	=	2.868 cfs
Storm frequency	=	50 yrs	Time to peak	=	730 min
Time interval	=	2 min	Hyd. volume	=	4,379 cuft
Inflow hyd. No.	=	49 - SUB 9A 2026	Max. Elevation	=	303.59 ft
Reservoir name	=	RAIN GARDEN B	Max. Storage	=	5,418 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Hydrograph Report

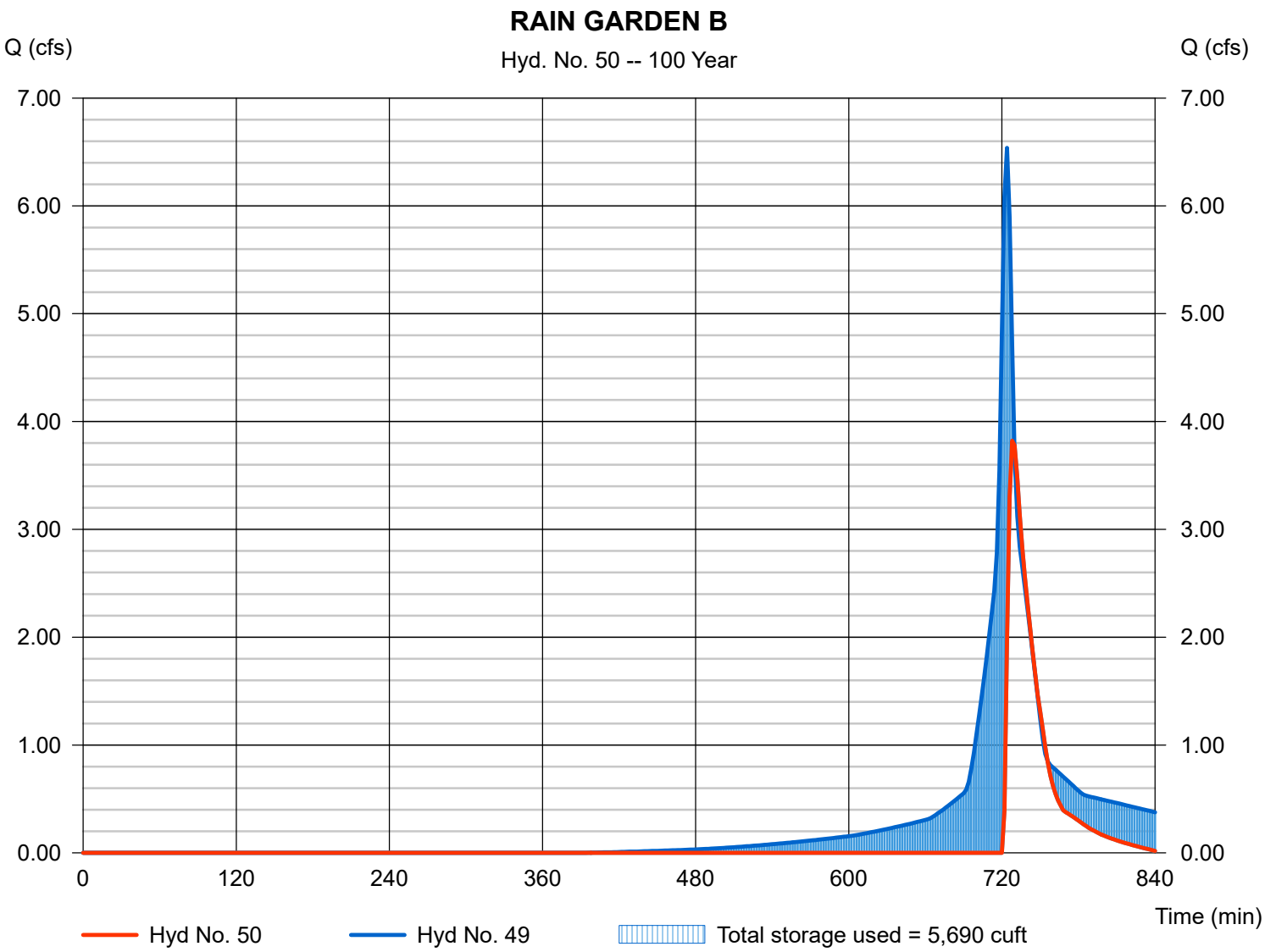
Hydraflow Hydrographs by Intelisolve v9.2 | Tuesday, Oct 6, 2026

Hyd. No. 50

RAIN GARDEN B

Hydrograph type	=	Reservoir	Peak discharge	=	3.822 cfs
Storm frequency	=	100 yrs	Time to peak	=	728 min
Time interval	=	2 min	Hyd. volume	=	5,754 cuft
Inflow hyd. No.	=	49 - SUB 9A 2026	Max. Elevation	=	303.73 ft
Reservoir name	=	RAIN GARDEN B	Max. Storage	=	5,690 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Pond Report

Hydraflow Hydrographs by Intelisolve v9.2 — Tuesday, Oct 6, 2026

Pond No. 2 - RAIN GARDEN B

Pond Data

Contours - User-defined contour areas. Conic method used for volume calculation. Begining Elevation = 300.00 ft

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	300.00	690	0	0
2.00	302.00	1,444	2,088	2,088
4.00	304.00	2,831	4,197	6,285

Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 12.00	0.00	0.00	0.00
Span (in)	= 12.00	0.00	0.00	0.00
No. Barrels	= 2	0	0	0
Invert El. (ft)	= 303.00	0.00	0.00	0.00
Length (ft)	= 58.00	0.00	0.00	0.00
Slope (%)	= 0.50	0.00	0.00	n/a
N-Value	= .013	.013	.013	n/a
Orifice Coeff.	= 0.60	0.60	0.60	0.60
Multi-Stage	= n/a	No	No	No

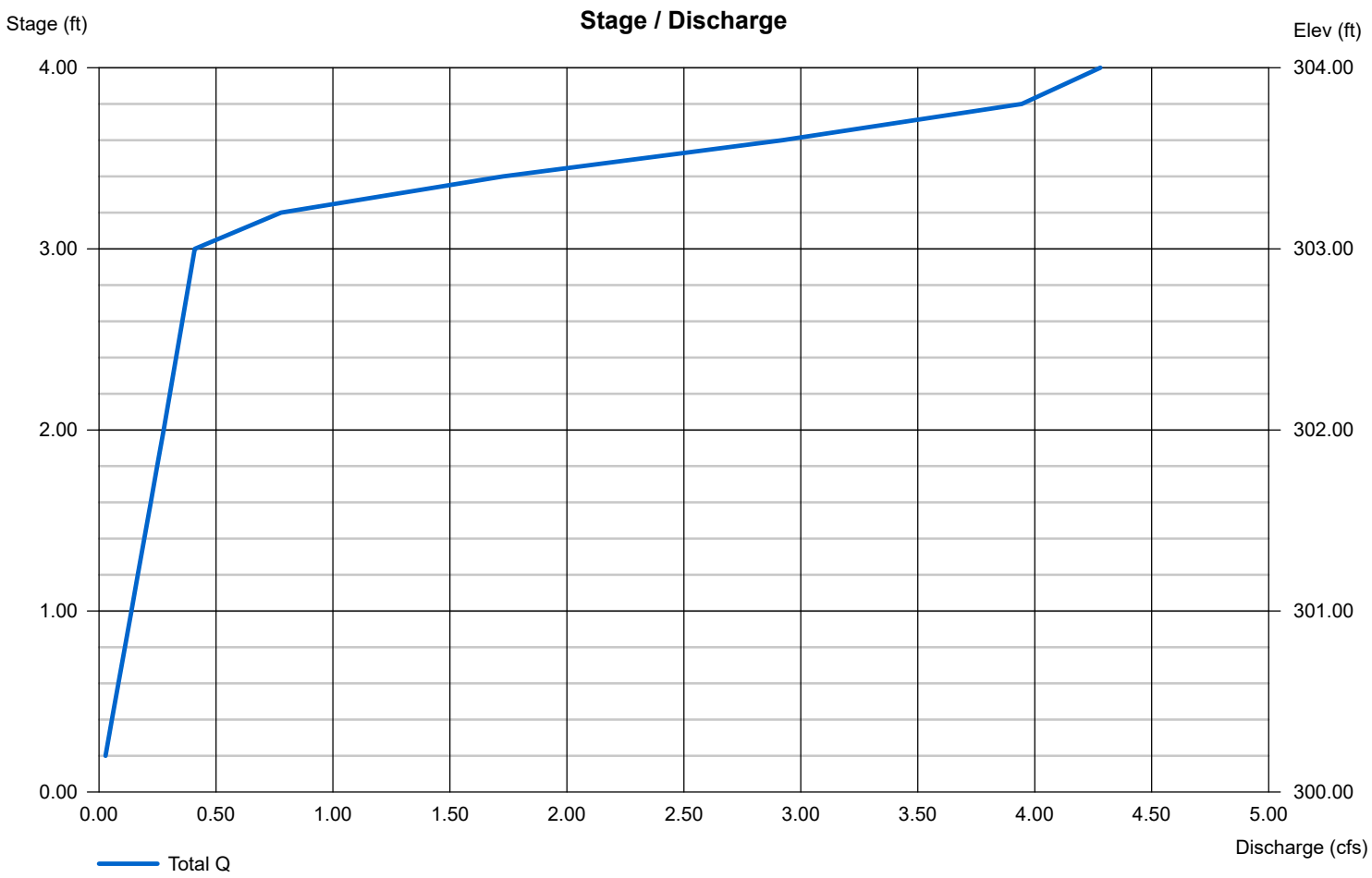
Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 0.00	0.00	0.00	0.00
Crest El. (ft)	= 0.00	0.00	0.00	0.00
Weir Coeff.	= 3.33	3.33	3.33	3.33
Weir Type	= ---	---	---	---
Multi-Stage	= No	No	No	No

Exfil.(in/hr) = 8.270 (by Contour)

TW Elev. (ft) = 0.00

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



Worksheet 2: Runoff curve number and runoff **SM-6944A**

Project: Village Green By DJC Date 9/17/26

Location: Devens, MA Checked _____ Date _____

Circle one: Present [Developed] Subcatchment P-9B

1. Runoff curve number (CN)

Soil name and hydrologic group (appendix A)	Cover description (cover type, treatment, and hydrologic condition: percent impervious: unconnected/connected impervious area ratio)	CN 1/ Table 2-2	CN 1/ Fig. 2-3	CN 1/ Fig. 2-4	Area Acres	Product of CN x Area
-	Impervious - Drive	98			0.12	11.78
-	Impervious - Building	98			0.04	4.08
A	Woods and Brush Good Condition	30			0.00	0.00
A	Open Space Good Condition	39			0.89	34.86
1/ Use only one CN source per line.				Totals =	1.06	50.72

CN (weighted) = $\frac{\text{total product}}{\text{total area}} = \frac{50.72}{1.06} = 48.05$; Use CN = 48.0

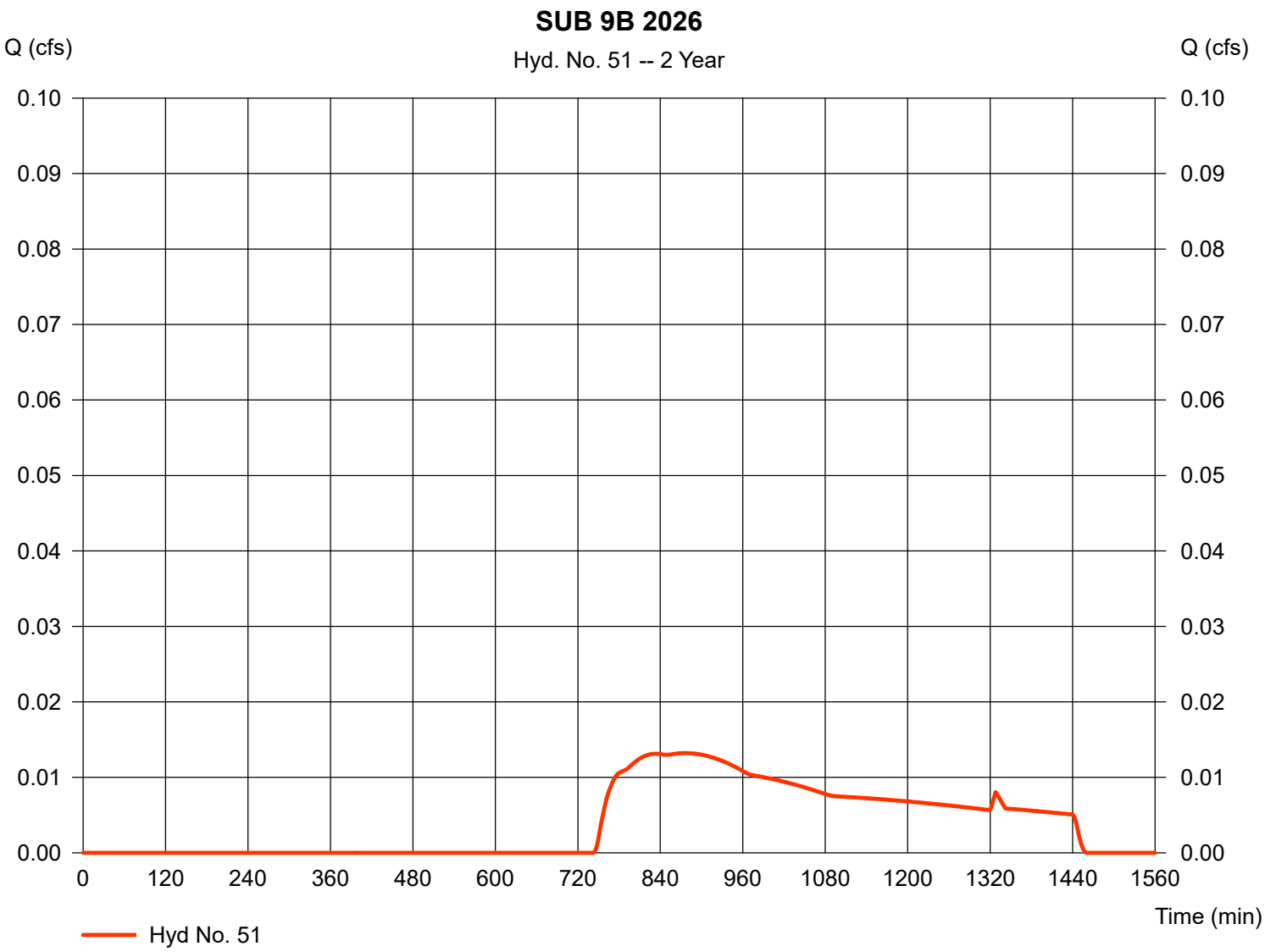
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.2 — Tuesday, Oct 6, 2026

Hyd. No. 51

SUB 9B 2026

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.013 cfs
Storm frequency	=	2 yrs	Time to peak	=	876 min
Time interval	=	2 min	Hyd. volume	=	357 cuft
Drainage area	=	1.060 ac	Curve number	=	48
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	USER	Time of conc. (Tc)	=	13.10 min
Total precip.	=	3.20 in	Distribution	=	Type III
Storm duration	=	24 hrs	Shape factor	=	484



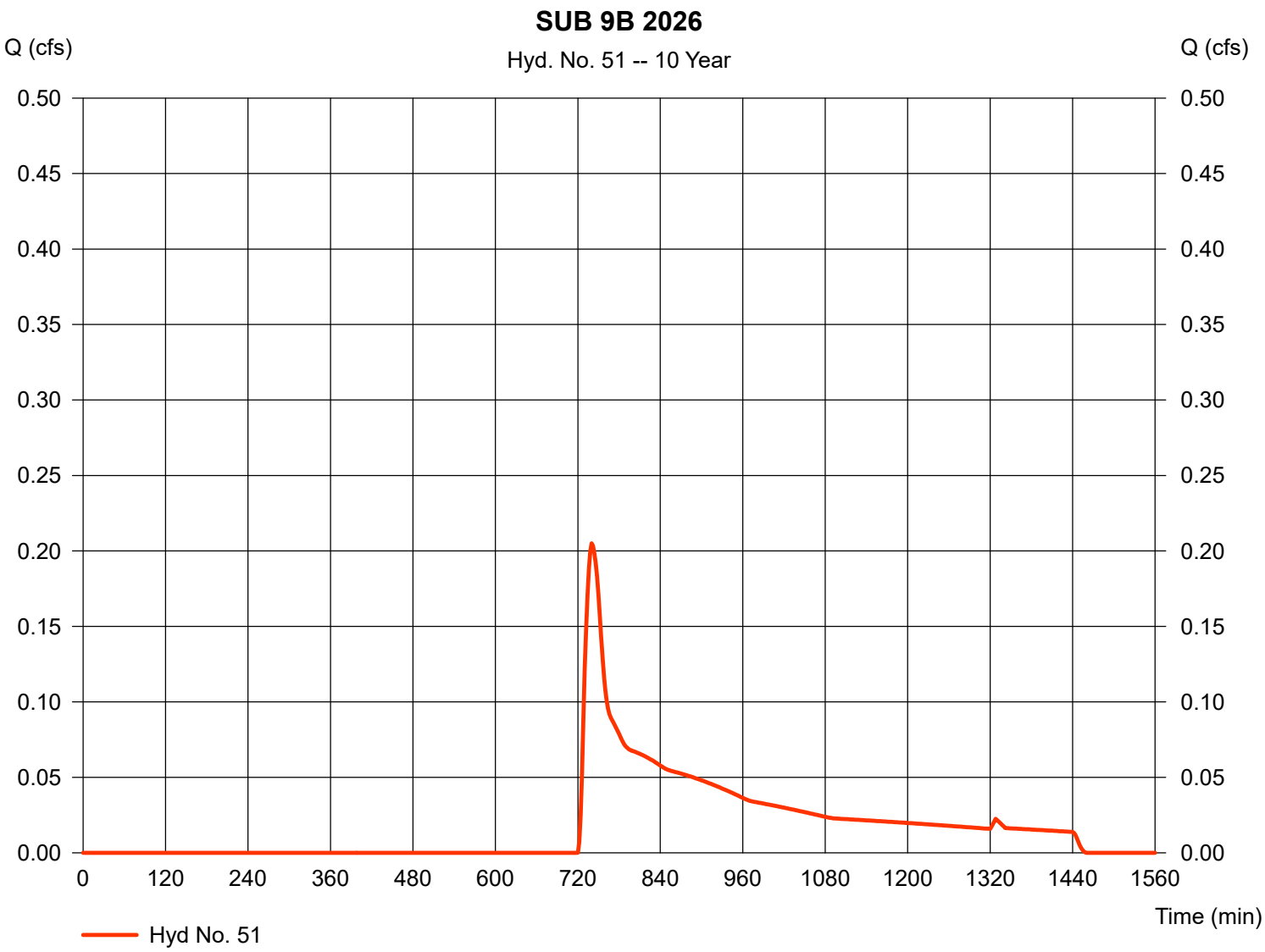
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.2 | Tuesday, Oct 6, 2026

Hyd. No. 51

SUB 9B 2026

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.205 cfs
Storm frequency	=	10 yrs	Time to peak	=	740 min
Time interval	=	2 min	Hyd. volume	=	1,638 cuft
Drainage area	=	1.060 ac	Curve number	=	48
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	USER	Time of conc. (Tc)	=	13.10 min
Total precip.	=	4.50 in	Distribution	=	Type III
Storm duration	=	24 hrs	Shape factor	=	484



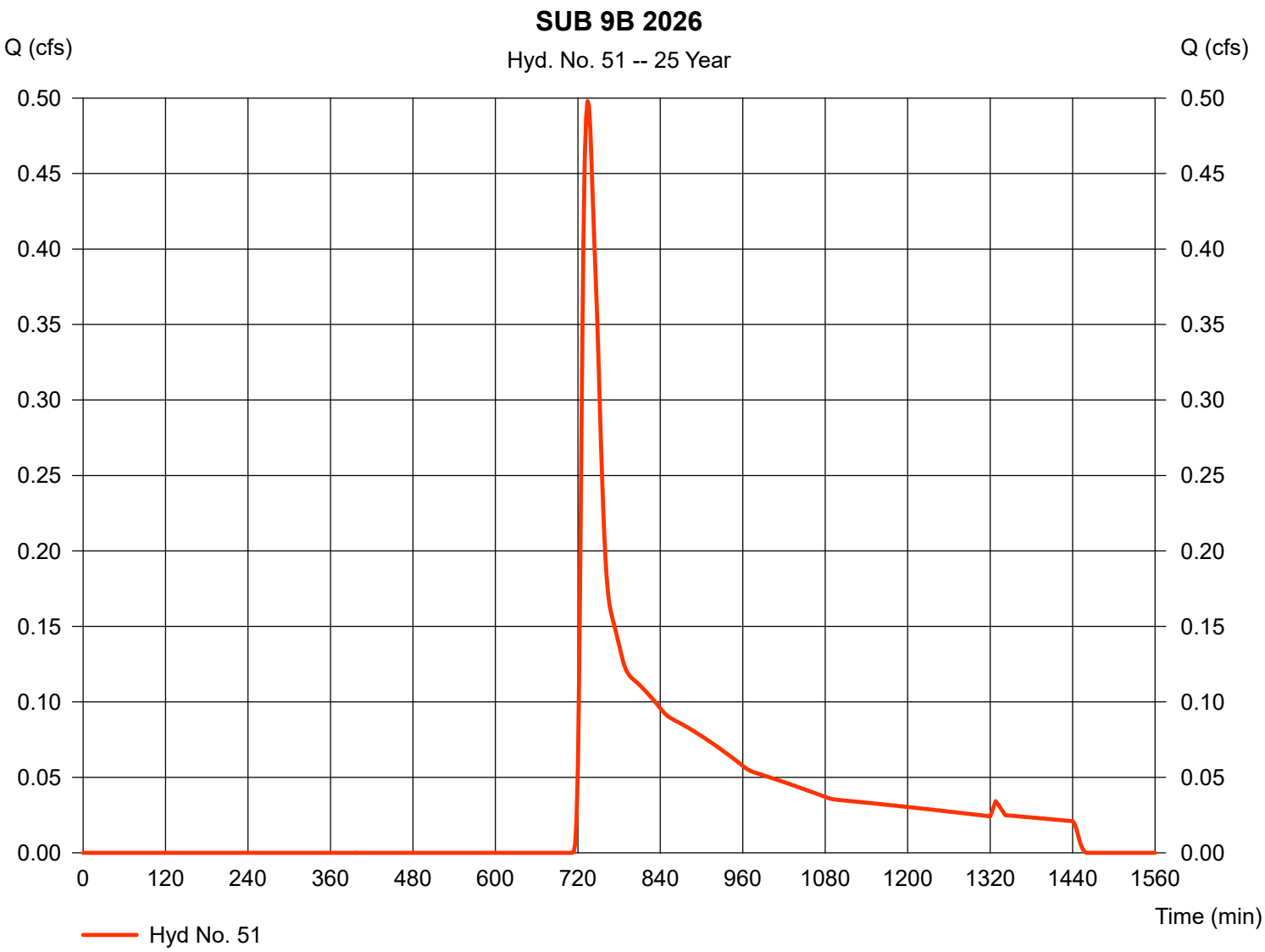
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.2 | Tuesday, Oct 6, 2026

Hyd. No. 51

SUB 9B 2026

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.498 cfs
Storm frequency	=	25 yrs	Time to peak	=	734 min
Time interval	=	2 min	Hyd. volume	=	2,949 cuft
Drainage area	=	1.060 ac	Curve number	=	48
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	USER	Time of conc. (Tc)	=	13.10 min
Total precip.	=	5.40 in	Distribution	=	Type III
Storm duration	=	24 hrs	Shape factor	=	484



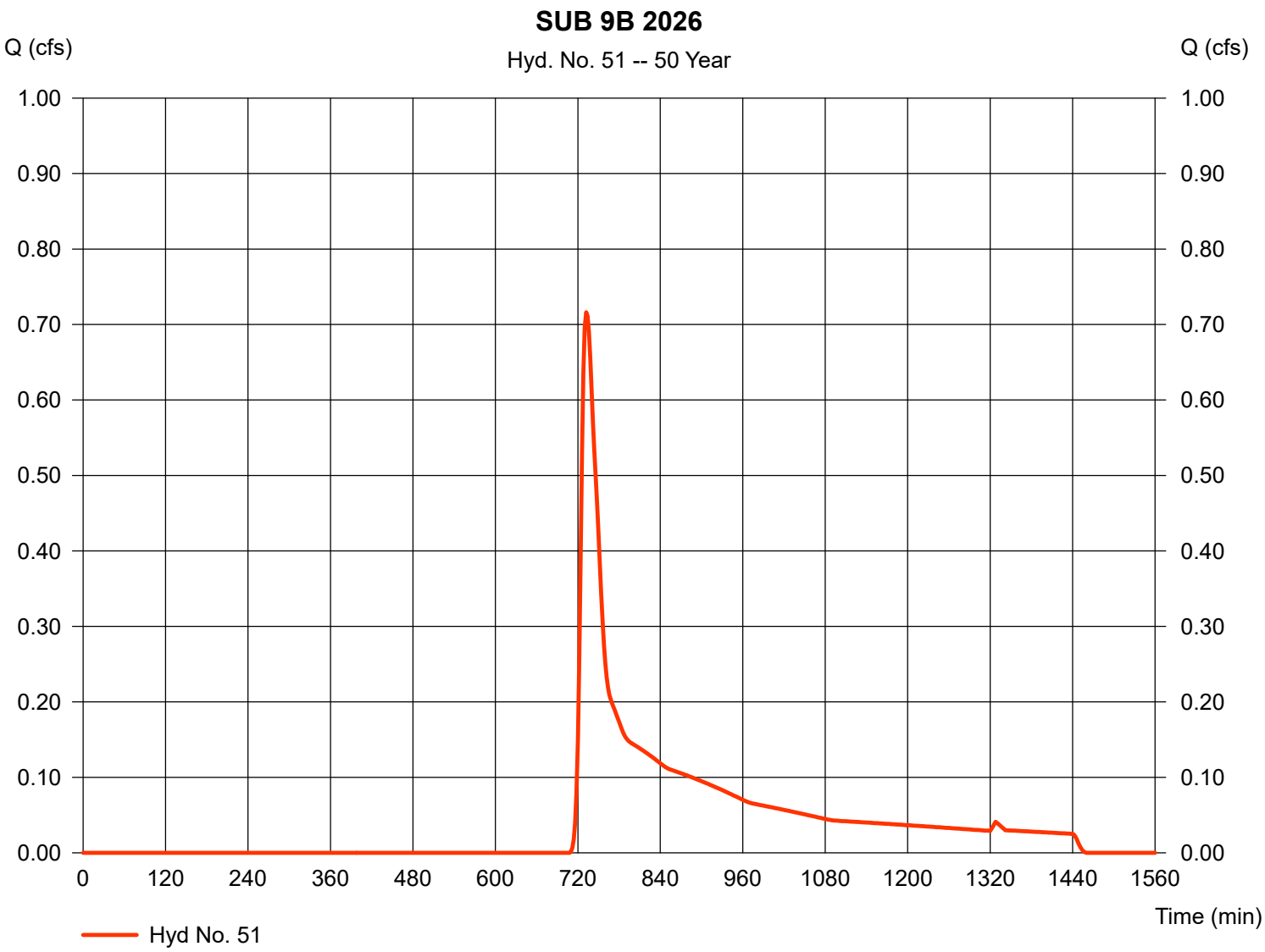
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.2 — Tuesday, Oct 6, 2026

Hyd. No. 51

SUB 9B 2026

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.716 cfs
Storm frequency	=	50 yrs	Time to peak	=	732 min
Time interval	=	2 min	Hyd. volume	=	3,796 cuft
Drainage area	=	1.060 ac	Curve number	=	48
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	USER	Time of conc. (Tc)	=	13.10 min
Total precip.	=	5.90 in	Distribution	=	Type III
Storm duration	=	24 hrs	Shape factor	=	484



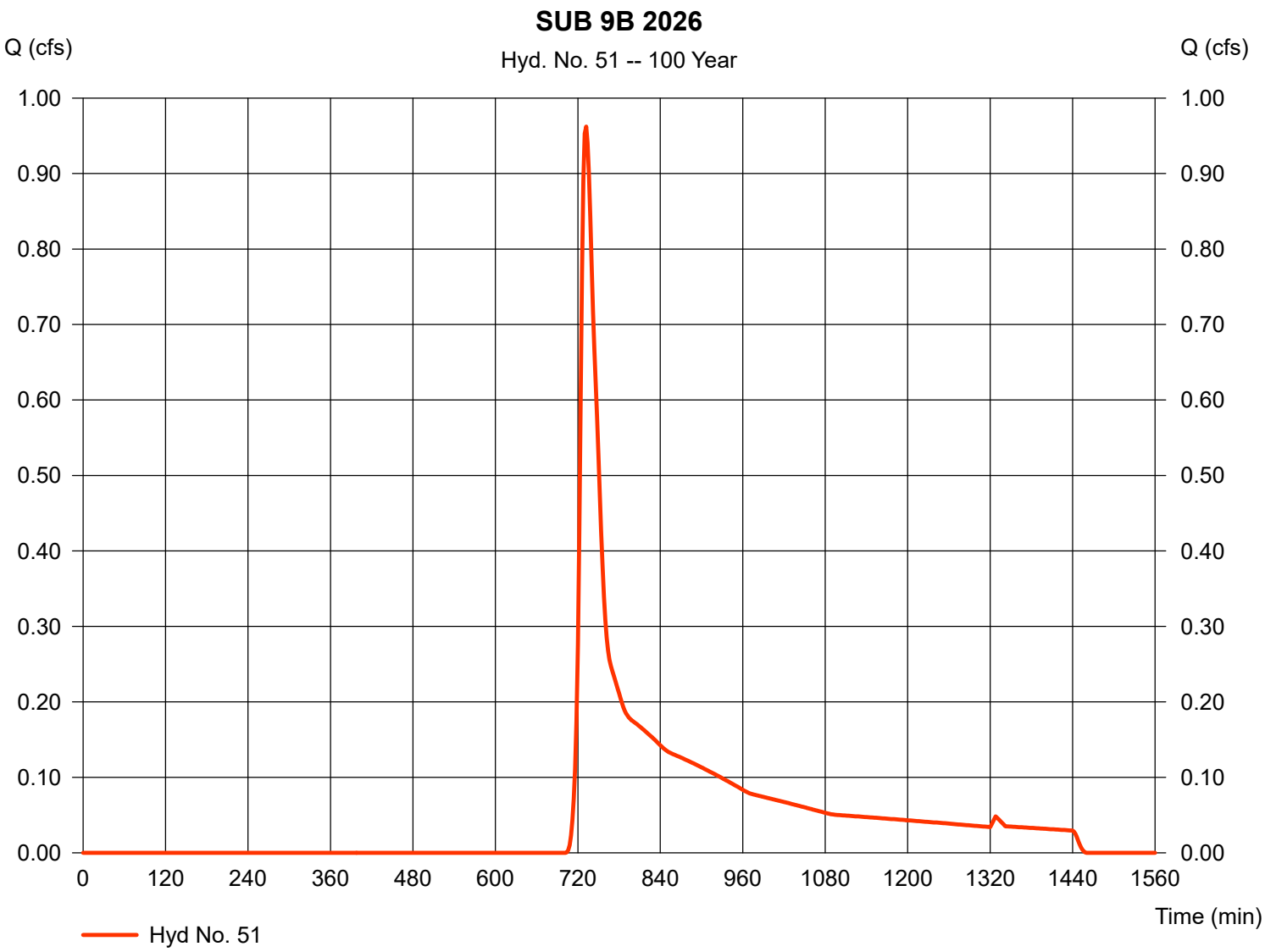
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.2 | Tuesday, Oct 6, 2026

Hyd. No. 51

SUB 9B 2026

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.962 cfs
Storm frequency	=	100 yrs	Time to peak	=	732 min
Time interval	=	2 min	Hyd. volume	=	4,720 cuft
Drainage area	=	1.060 ac	Curve number	=	48
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	USER	Time of conc. (Tc)	=	13.10 min
Total precip.	=	6.40 in	Distribution	=	Type III
Storm duration	=	24 hrs	Shape factor	=	484



Worksheet 2: Runoff curve number and runoff **SM-6944A**

Project: Village Green By DJC Date 9/17/26

Location: Devens, MA Checked _____ Date _____

Circle one: Present [Developed] Subcatchment P-X

1. Runoff curve number (CN)

Soil name and hydrologic group (appendix A)	Cover description (cover type, treatment, and hydrologic condition: percent impervious: unconnected/connected impervious area ratio)	CN 1/ Table 2-2	CN 1/ Fig. 2-3	CN 1/ Fig. 2-4	Area Acres	Product of CN x Area
-	Impervious-Parking Lot	98			0.15	15.06
-	Impervious - Building	98			0.00	0.00
A	Woods and Brush Good Condition	30			0.00	0.00
A	Open Space Good Condition	39			0.00	0.00
				Totals =	0.15	15.06

1/ Use only one CN source per line.

CN (weighted) = $\frac{\text{total product}}{\text{total area}} = \frac{15.06}{0.15} = 98.00$; Use CN = 98.0

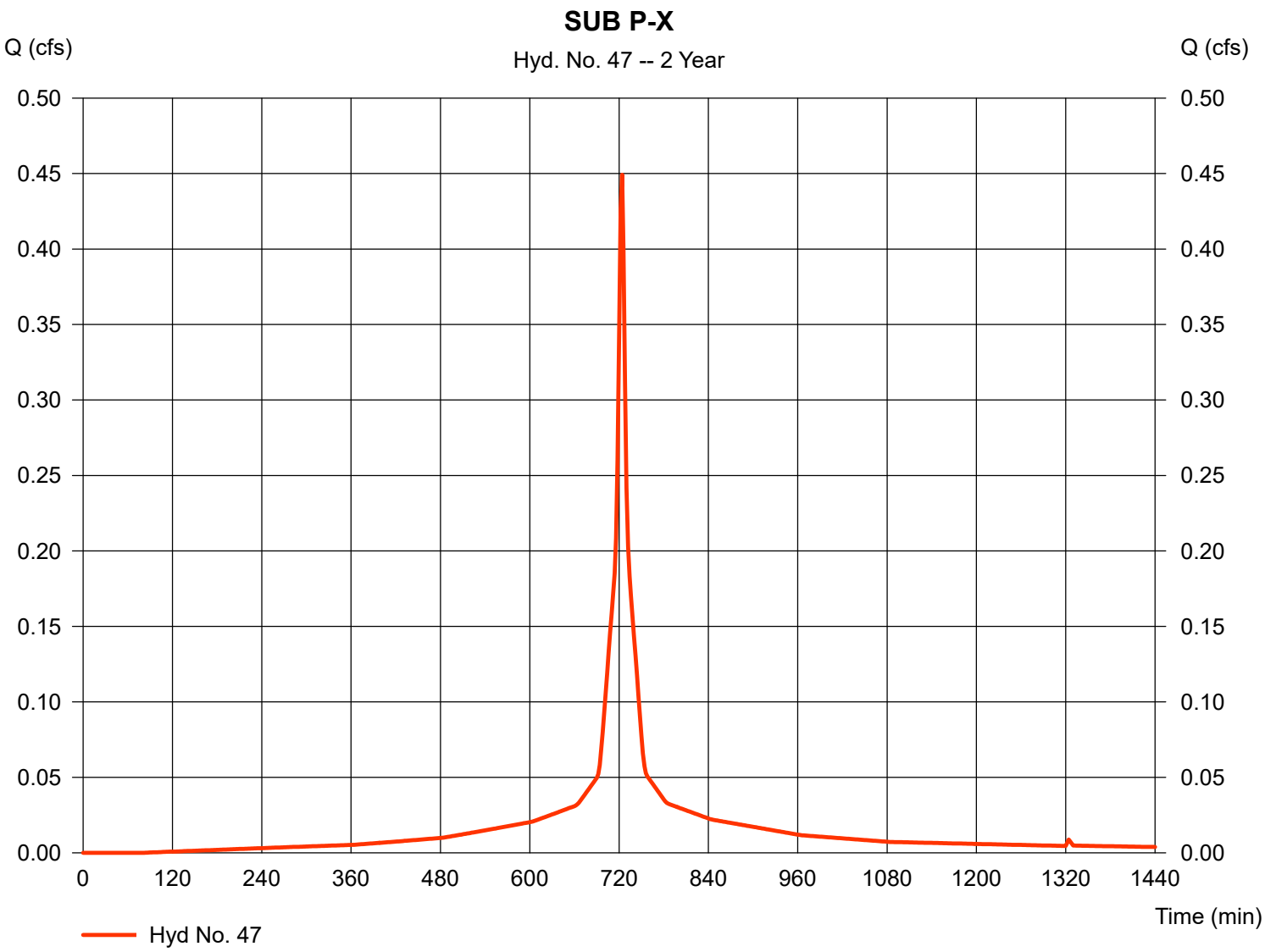
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.2 | Tuesday, Oct 6, 2026

Hyd. No. 47

SUB P-X

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.449 cfs
Storm frequency	=	2 yrs	Time to peak	=	724 min
Time interval	=	2 min	Hyd. volume	=	1,515 cuft
Drainage area	=	0.150 ac	Curve number	=	98
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	USER	Time of conc. (Tc)	=	6.00 min
Total precip.	=	3.20 in	Distribution	=	Type III
Storm duration	=	24 hrs	Shape factor	=	484



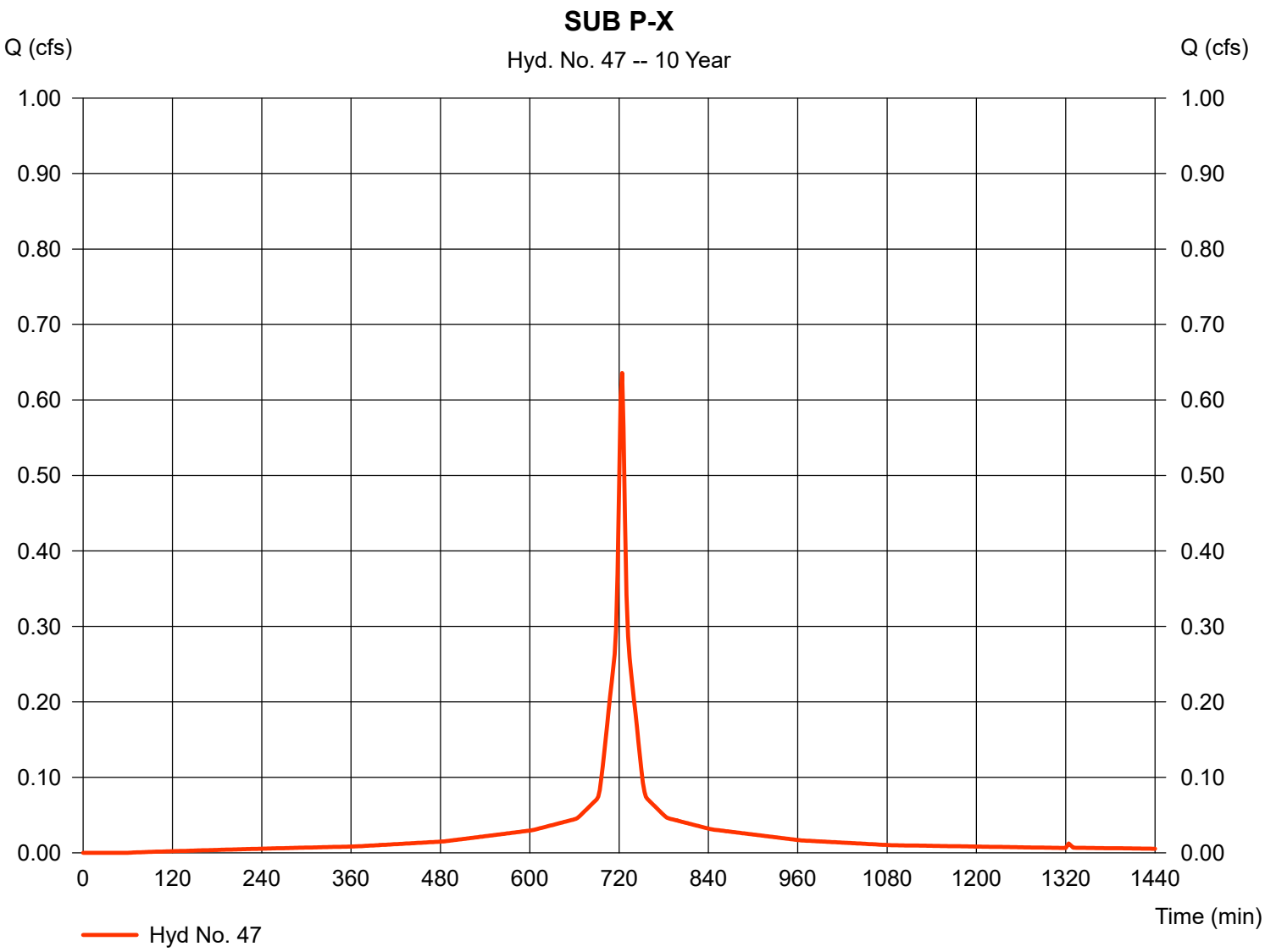
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.2 — Tuesday, Oct 6, 2026

Hyd. No. 47

SUB P-X

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.636 cfs
Storm frequency	=	10 yrs	Time to peak	=	724 min
Time interval	=	2 min	Hyd. volume	=	2,177 cuft
Drainage area	=	0.150 ac	Curve number	=	98
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	USER	Time of conc. (Tc)	=	6.00 min
Total precip.	=	4.50 in	Distribution	=	Type III
Storm duration	=	24 hrs	Shape factor	=	484



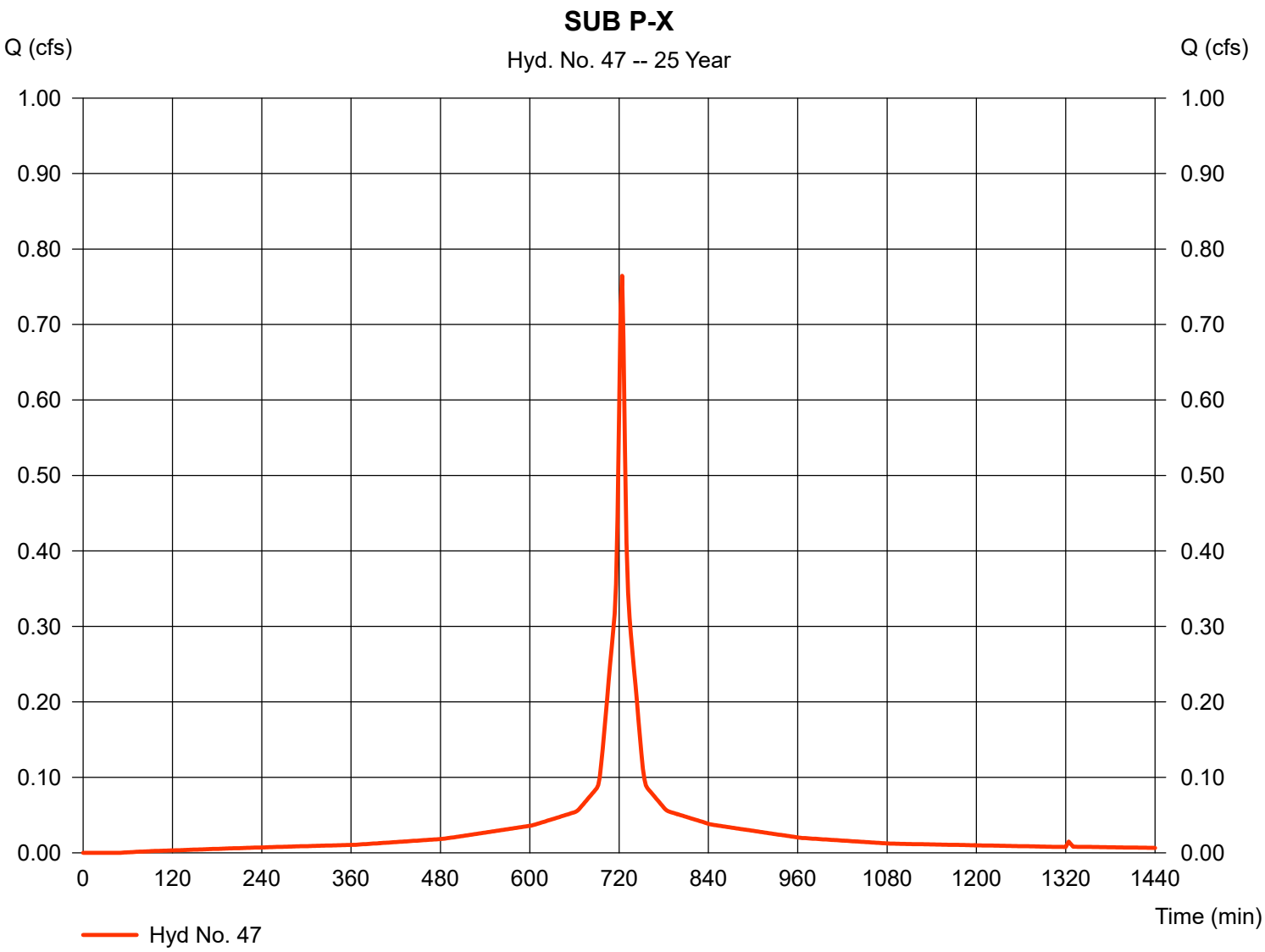
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.2 | Tuesday, Oct 6, 2026

Hyd. No. 47

SUB P-X

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.764 cfs
Storm frequency	=	25 yrs	Time to peak	=	724 min
Time interval	=	2 min	Hyd. volume	=	2,635 cuft
Drainage area	=	0.150 ac	Curve number	=	98
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	USER	Time of conc. (Tc)	=	6.00 min
Total precip.	=	5.40 in	Distribution	=	Type III
Storm duration	=	24 hrs	Shape factor	=	484



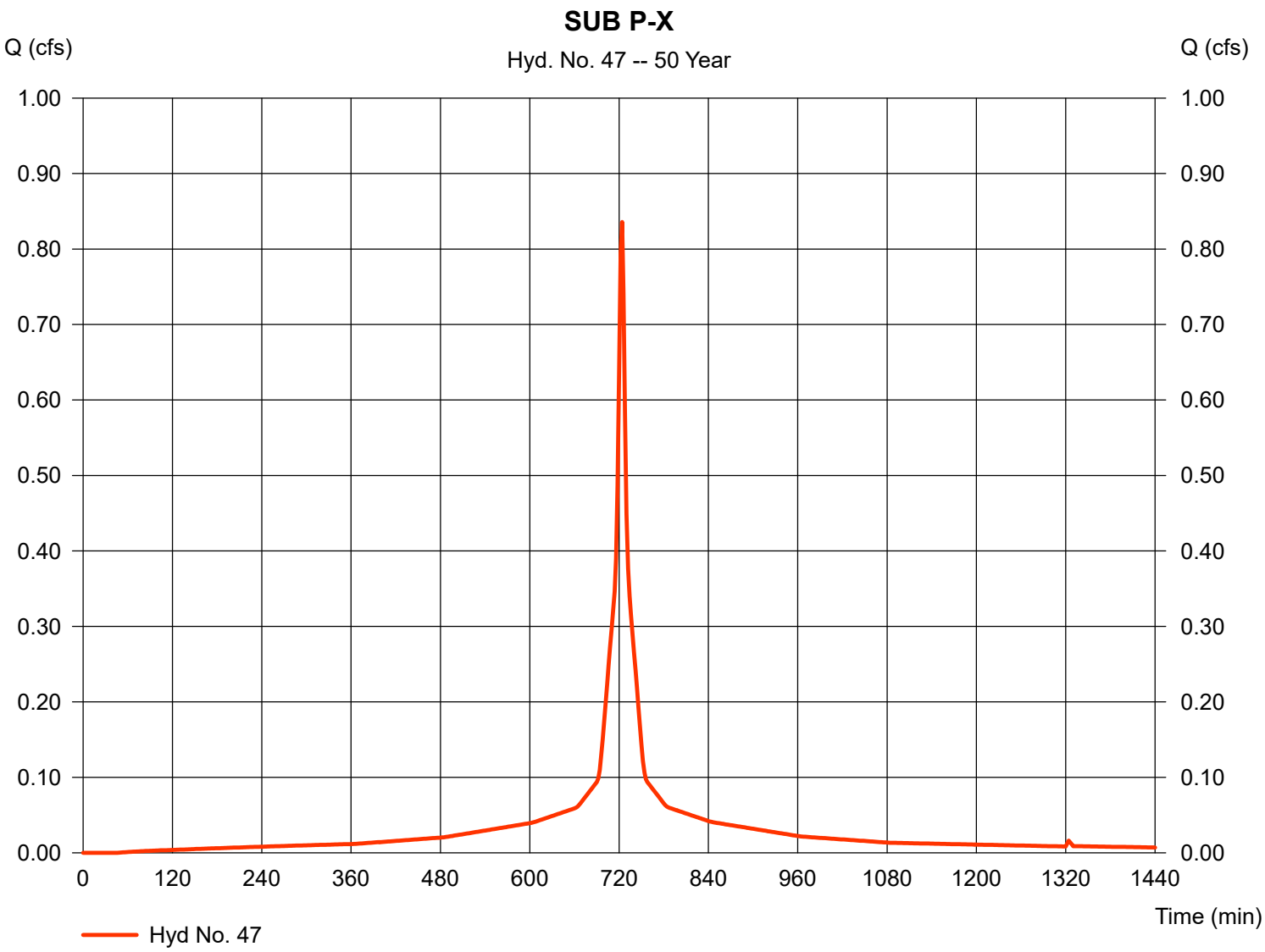
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.2 | Tuesday, Oct 6, 2026

Hyd. No. 47

SUB P-X

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.836 cfs
Storm frequency	=	50 yrs	Time to peak	=	724 min
Time interval	=	2 min	Hyd. volume	=	2,890 cuft
Drainage area	=	0.150 ac	Curve number	=	98
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	USER	Time of conc. (Tc)	=	6.00 min
Total precip.	=	5.90 in	Distribution	=	Type III
Storm duration	=	24 hrs	Shape factor	=	484



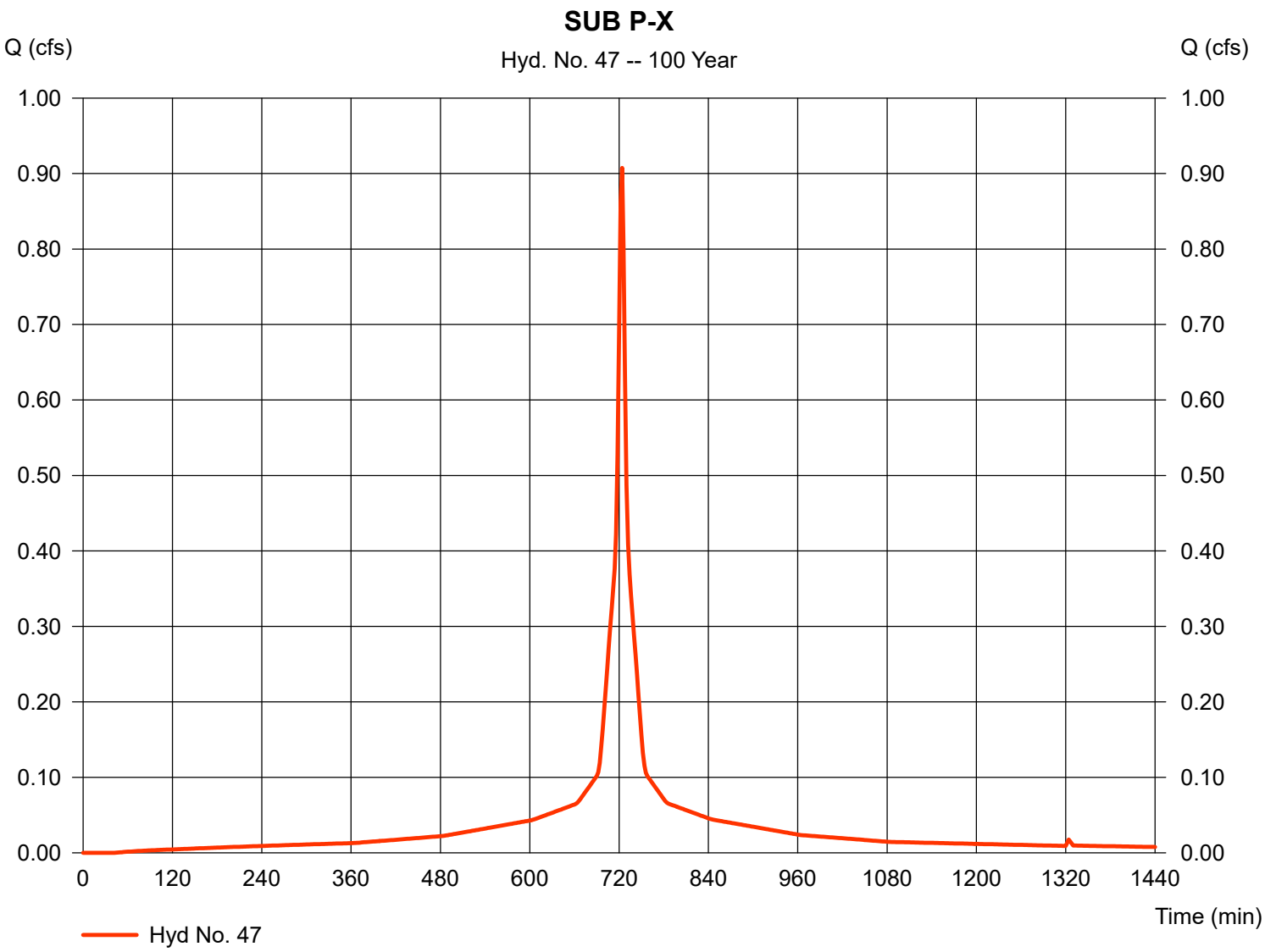
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.2 | Tuesday, Oct 6, 2026

Hyd. No. 47

SUB P-X

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.907 cfs
Storm frequency	=	100 yrs	Time to peak	=	724 min
Time interval	=	2 min	Hyd. volume	=	3,145 cuft
Drainage area	=	0.150 ac	Curve number	=	98
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	USER	Time of conc. (Tc)	=	6.00 min
Total precip.	=	6.40 in	Distribution	=	Type III
Storm duration	=	24 hrs	Shape factor	=	484



Hydrograph Report

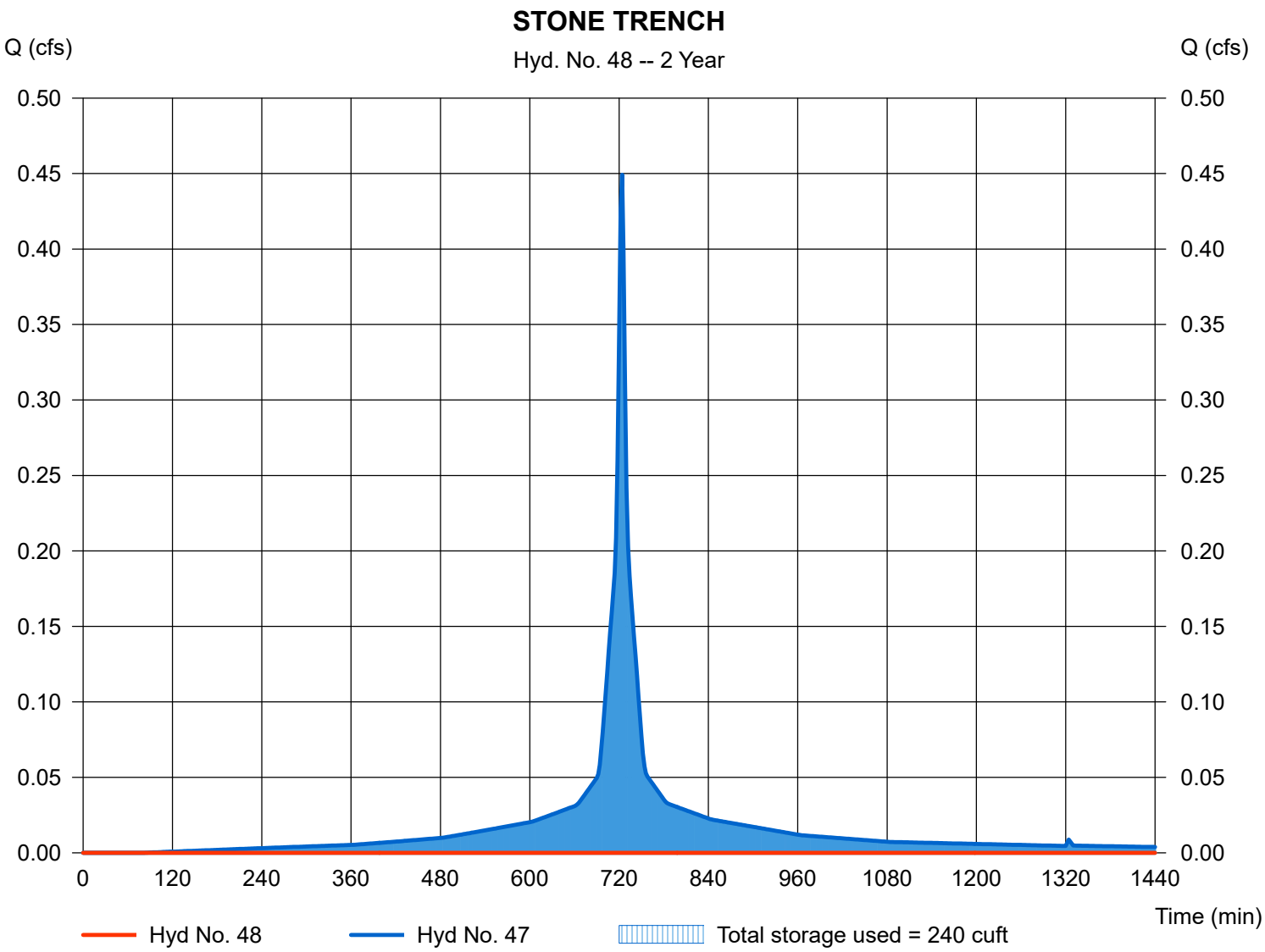
Hydraflow Hydrographs by Intelisolve v9.2 | Tuesday, Oct 6, 2026

Hyd. No. 48

STONE TRENCH

Hydrograph type	=	Reservoir	Peak discharge	=	0.000 cfs
Storm frequency	=	2 yrs	Time to peak	=	798 min
Time interval	=	2 min	Hyd. volume	=	0 cuft
Inflow hyd. No.	=	47 - SUB P-X	Max. Elevation	=	300.17 ft
Reservoir name	=	STONE TRENCH	Max. Storage	=	240 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Hydrograph Report

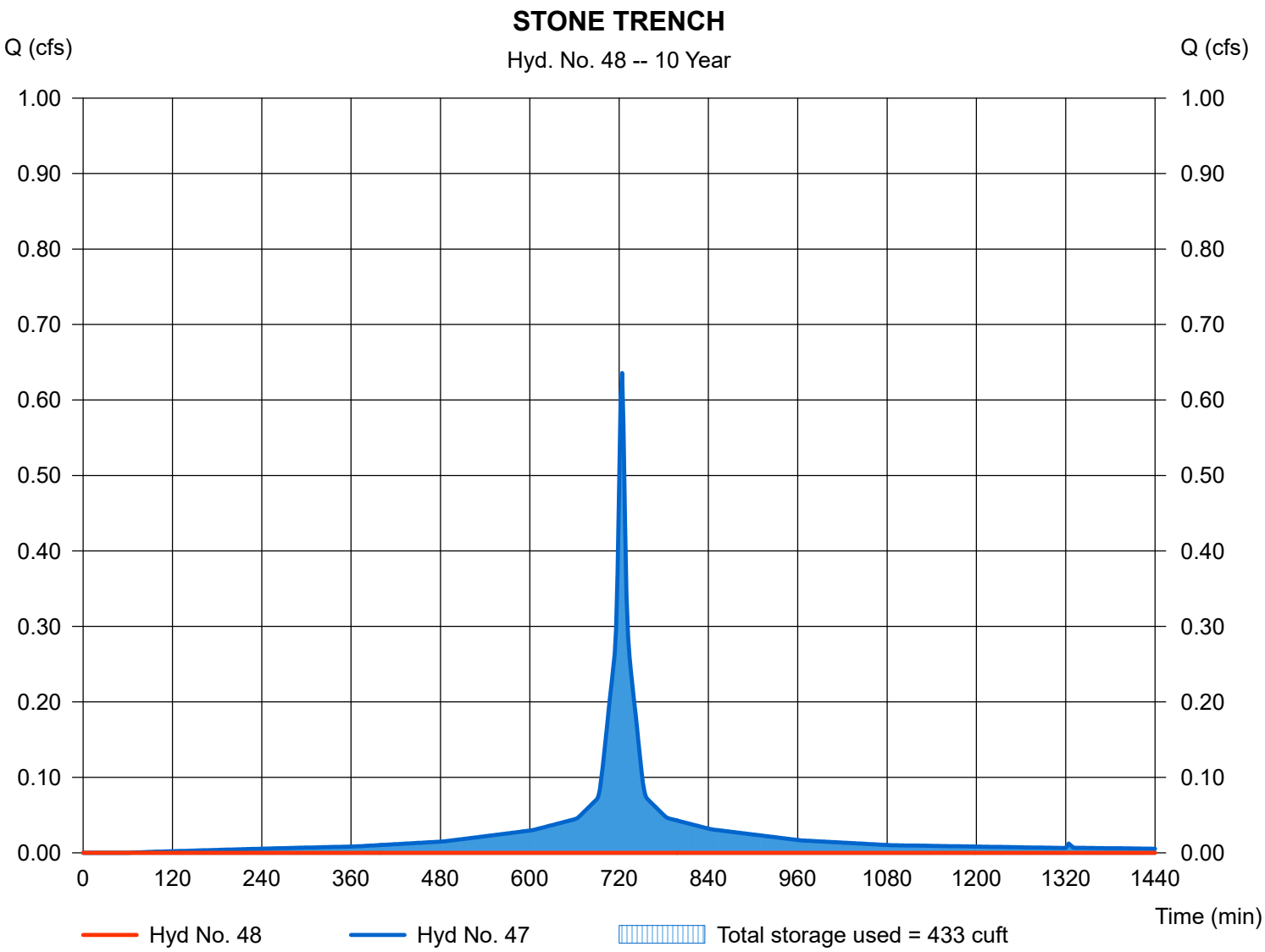
Hydraflow Hydrographs by Intelisolve v9.2 | Tuesday, Oct 6, 2026

Hyd. No. 48

STONE TRENCH

Hydrograph type	=	Reservoir	Peak discharge	=	0.000 cfs
Storm frequency	=	10 yrs	Time to peak	=	690 min
Time interval	=	2 min	Hyd. volume	=	0 cuft
Inflow hyd. No.	=	47 - SUB P-X	Max. Elevation	=	300.86 ft
Reservoir name	=	STONE TRENCH	Max. Storage	=	433 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Hydrograph Report

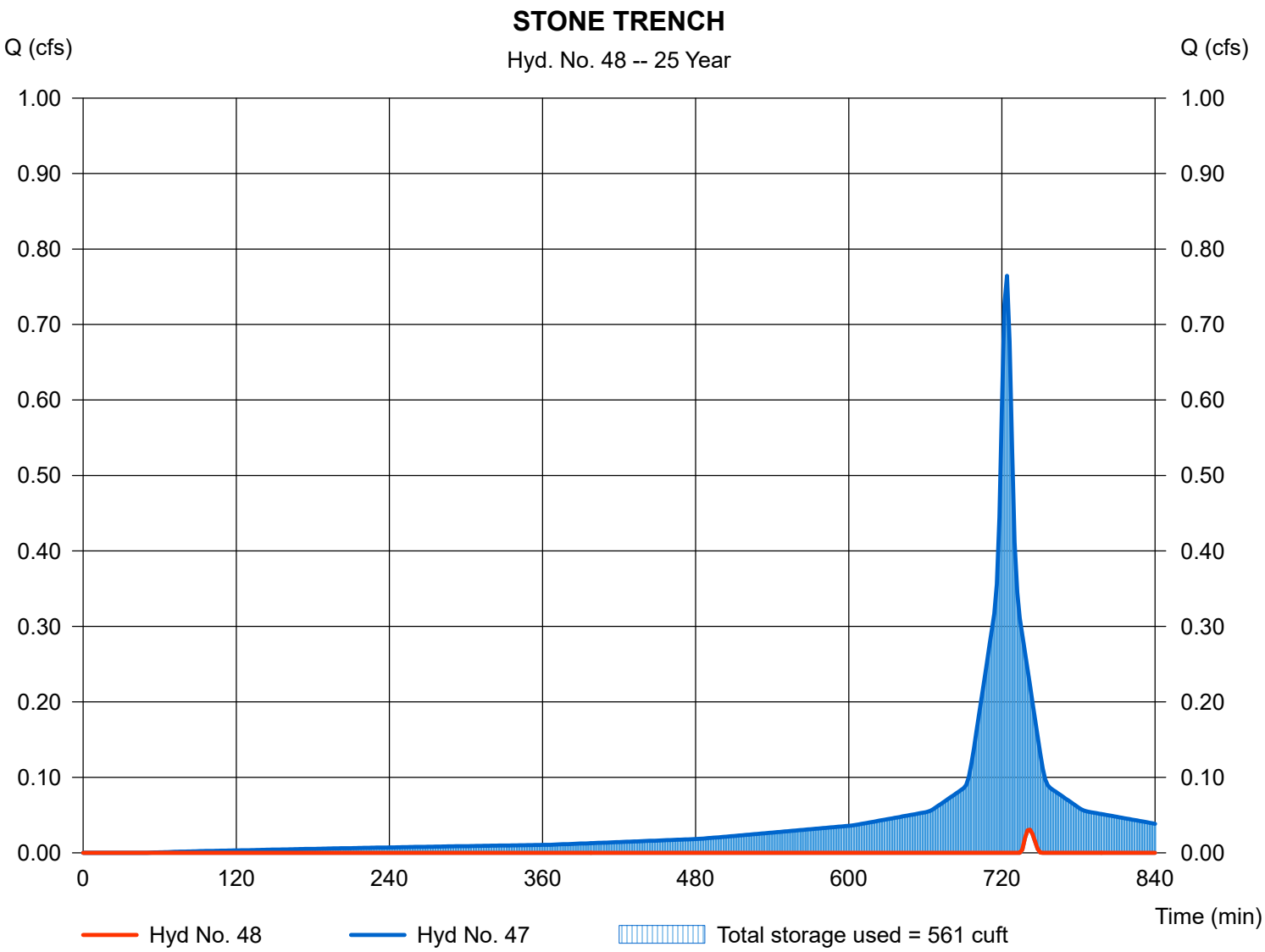
Hydraflow Hydrographs by Intelisolve v9.2 | Tuesday, Oct 6, 2026

Hyd. No. 48

STONE TRENCH

Hydrograph type	=	Reservoir	Peak discharge	=	0.031 cfs
Storm frequency	=	25 yrs	Time to peak	=	742 min
Time interval	=	2 min	Hyd. volume	=	16 cuft
Inflow hyd. No.	=	47 - SUB P-X	Max. Elevation	=	301.39 ft
Reservoir name	=	STONE TRENCH	Max. Storage	=	561 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Hydrograph Report

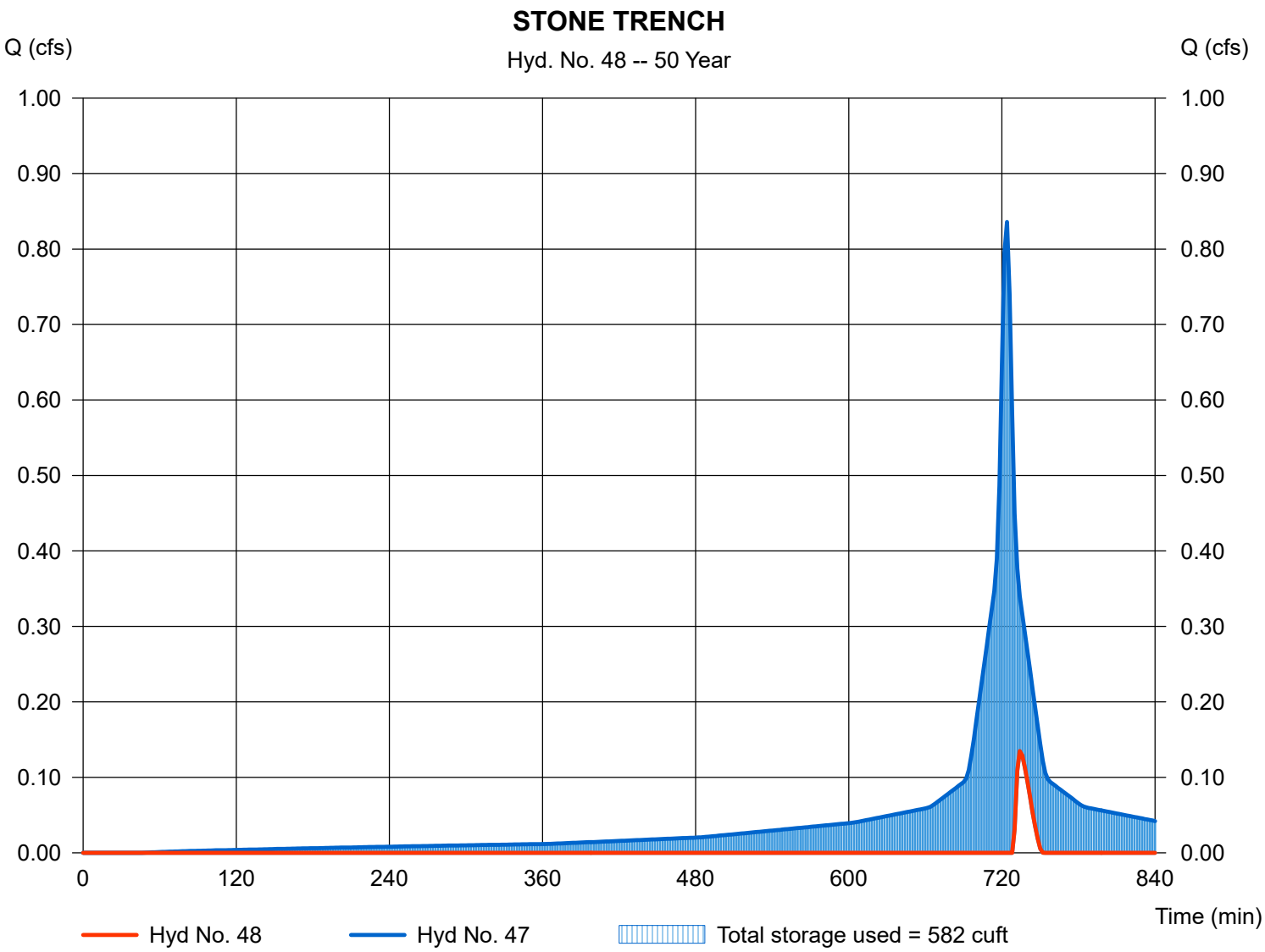
Hydraflow Hydrographs by Intelisolve v9.2 | Tuesday, Oct 6, 2026

Hyd. No. 48

STONE TRENCH

Hydrograph type	=	Reservoir	Peak discharge	=	0.135 cfs
Storm frequency	=	50 yrs	Time to peak	=	734 min
Time interval	=	2 min	Hyd. volume	=	96 cuft
Inflow hyd. No.	=	47 - SUB P-X	Max. Elevation	=	301.48 ft
Reservoir name	=	STONE TRENCH	Max. Storage	=	582 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Hydrograph Report

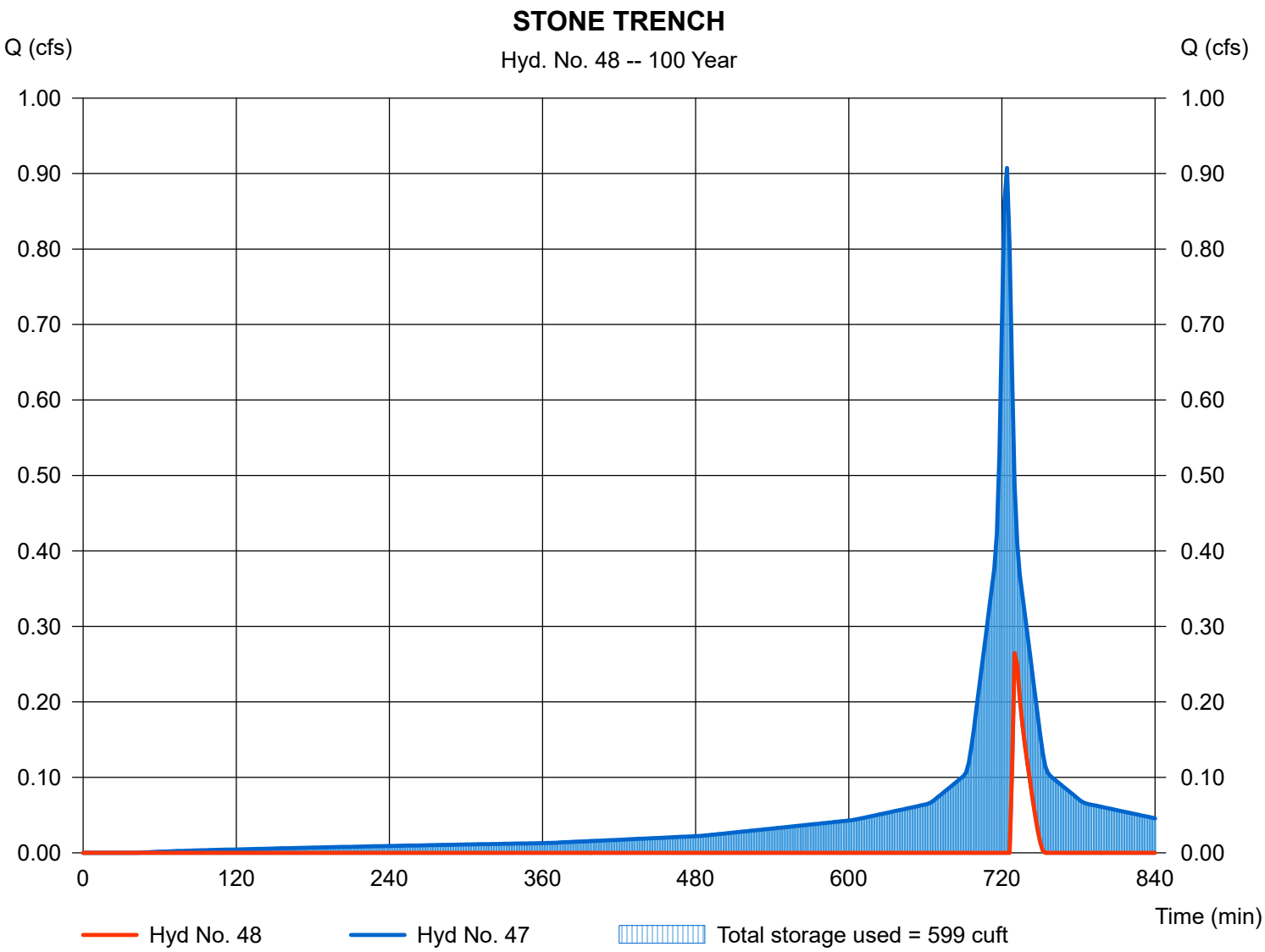
Hydraflow Hydrographs by Intelisolve v9.2 | Tuesday, Oct 6, 2026

Hyd. No. 48

STONE TRENCH

Hydrograph type	=	Reservoir	Peak discharge	=	0.265 cfs
Storm frequency	=	100 yrs	Time to peak	=	730 min
Time interval	=	2 min	Hyd. volume	=	184 cuft
Inflow hyd. No.	=	47 - SUB P-X	Max. Elevation	=	301.56 ft
Reservoir name	=	STONE TRENCH	Max. Storage	=	599 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Pond Report

Hydraflow Hydrographs by Intelisolve v9.2 — Tuesday, Oct 6, 2026

Pond No. 14 - STONE TRENCH

Pond Data

UG Chambers - Invert elev. = 300.11 ft, Rise x Span = 1.00 x 1.00 ft, Barrel Len = 106.00 ft, No. Barrels = 1, Slope = 0.00%, Headers = No
Encasement - Invert elev. = 299.11 ft, Width = 5.30 ft, Height = 2.50 ft, Voids = 40.00%

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	299.11	n/a	0	0
0.25	299.36	n/a	56	56
0.50	299.61	n/a	56	112
0.75	299.86	n/a	56	169
1.00	300.11	n/a	56	225
1.25	300.36	n/a	66	291
1.50	300.61	n/a	71	362
1.75	300.86	n/a	71	434
2.00	301.11	n/a	66	499
2.25	301.36	n/a	56	556
2.50	301.61	n/a	56	612

Culvert / Orifice Structures

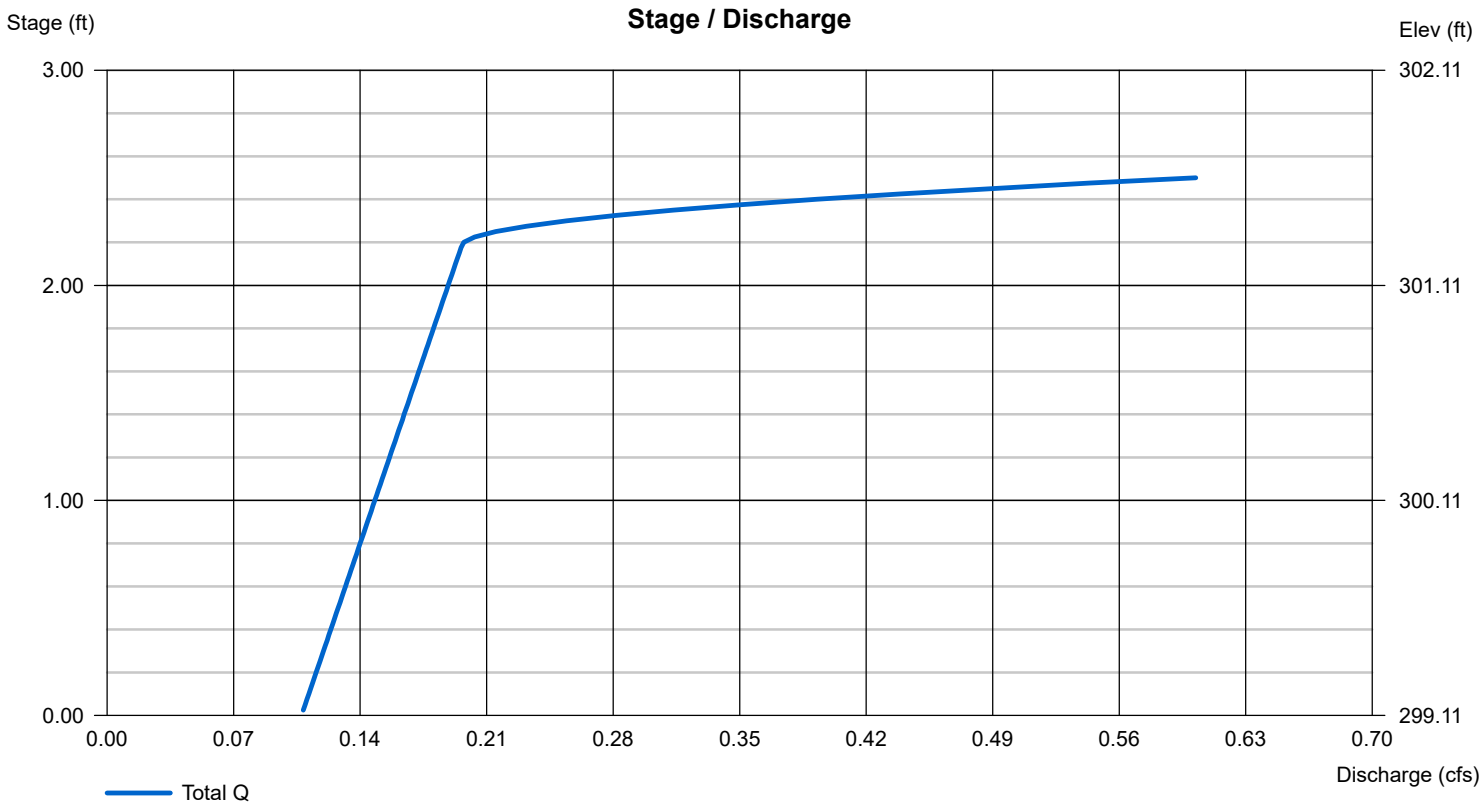
	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 12.00	0.00	0.00	0.00
Span (in)	= 12.00	0.00	0.00	0.00
No. Barrels	= 1	0	0	0
Invert El. (ft)	= 301.30	0.00	0.00	0.00
Length (ft)	= 21.00	0.00	0.00	0.00
Slope (%)	= 1.00	0.00	0.00	n/a
N-Value	= .013	.013	.013	n/a
Orifice Coeff.	= 0.60	0.60	0.60	0.60
Multi-Stage	= n/a	No	No	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 0.00	0.00	0.00	0.00
Crest El. (ft)	= 0.00	0.00	0.00	0.00
Weir Coeff.	= 3.33	3.33	3.33	3.33
Weir Type	= ---	---	---	---
Multi-Stage	= No	No	No	No

Exfil.(in/hr) = 8.270 (by Wet area)
TW Elev. (ft) = 0.00

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



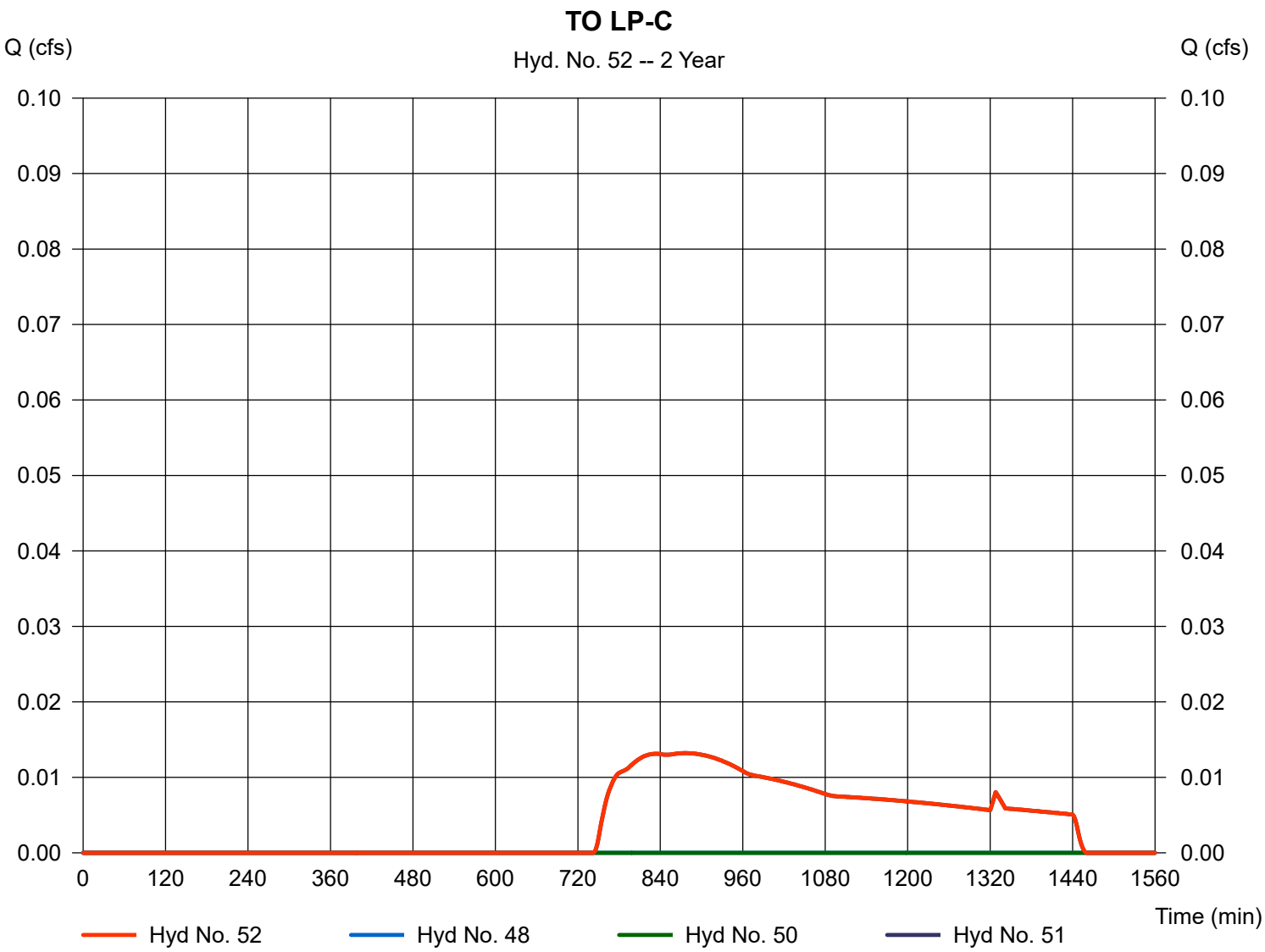
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.2 | Tuesday, Oct 6, 2026

Hyd. No. 52

TO LP-C

Hydrograph type	=	Combine	Peak discharge	=	0.013 cfs
Storm frequency	=	2 yrs	Time to peak	=	876 min
Time interval	=	2 min	Hyd. volume	=	357 cuft
Inflow hyds.	=	48, 50, 51	Contrib. drain. area	=	1.060 ac



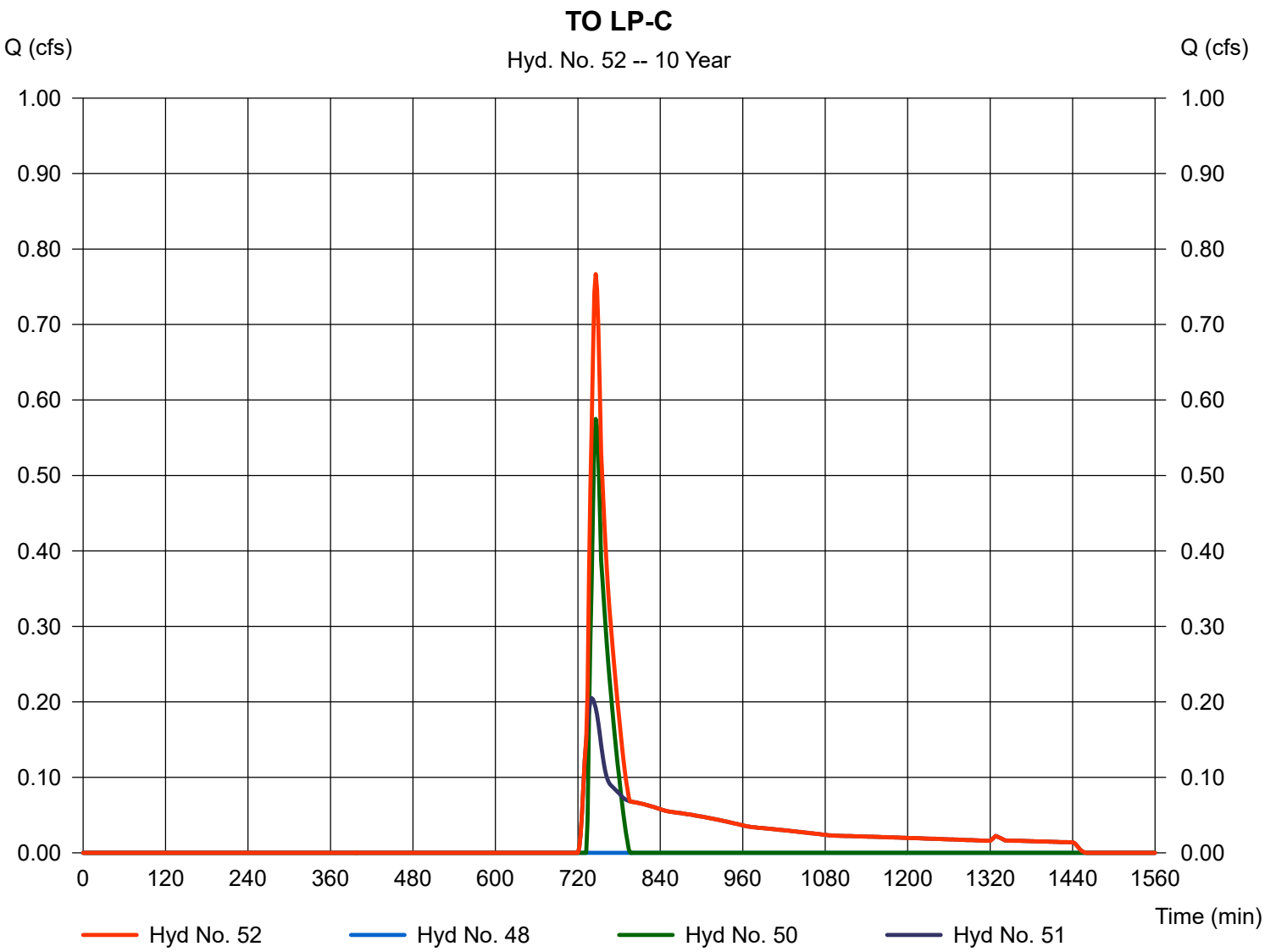
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.2 | Tuesday, Oct 6, 2026

Hyd. No. 52

TO LP-C

Hydrograph type	=	Combine	Peak discharge	=	0.767 cfs
Storm frequency	=	10 yrs	Time to peak	=	746 min
Time interval	=	2 min	Hyd. volume	=	2,537 cuft
Inflow hyds.	=	48, 50, 51	Contrib. drain. area	=	1.060 ac



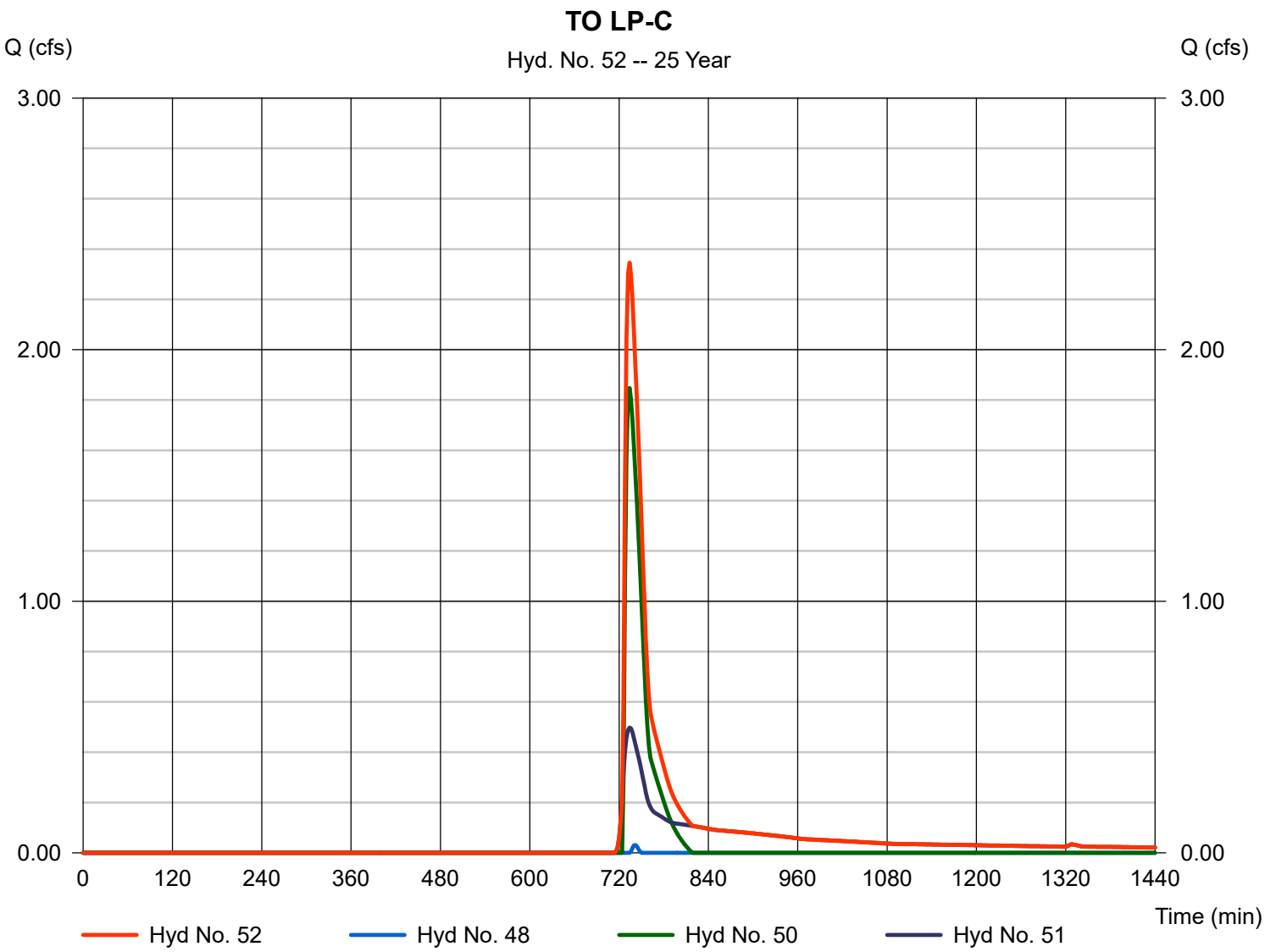
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.2 | Tuesday, Oct 6, 2026

Hyd. No. 52

TO LP-C

Hydrograph type	=	Combine	Peak discharge	=	2.346 cfs
Storm frequency	=	25 yrs	Time to peak	=	734 min
Time interval	=	2 min	Hyd. volume	=	6,013 cuft
Inflow hyds.	=	48, 50, 51	Contrib. drain. area	=	1.060 ac



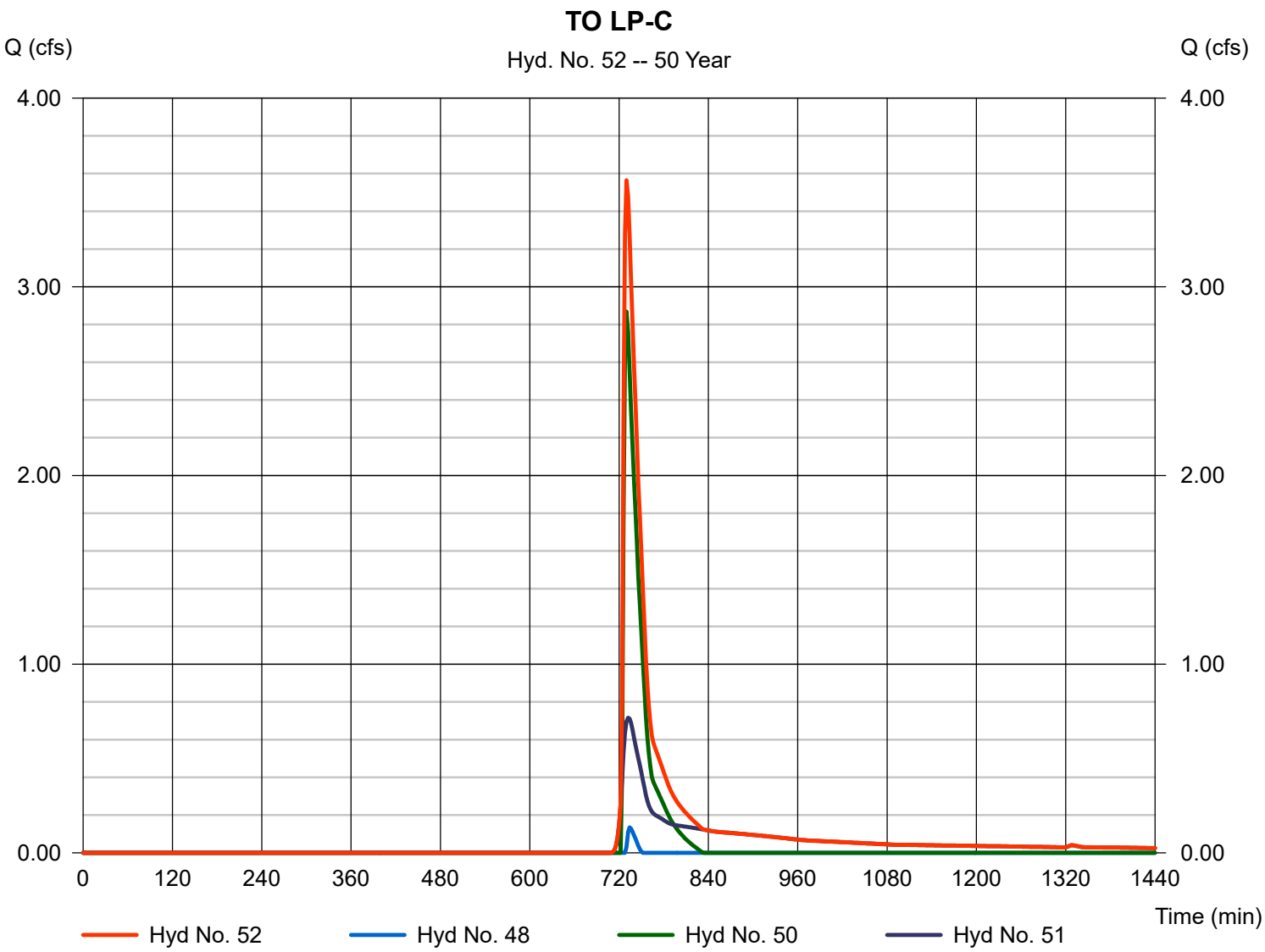
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.2 Tuesday, Oct 6, 2026

Hyd. No. 52

TO LP-C

Hydrograph type	=	Combine	Peak discharge	=	3.564 cfs
Storm frequency	=	50 yrs	Time to peak	=	730 min
Time interval	=	2 min	Hyd. volume	=	8,175 cuft
Inflow hyds.	=	48, 50, 51	Contrib. drain. area	=	1.060 ac



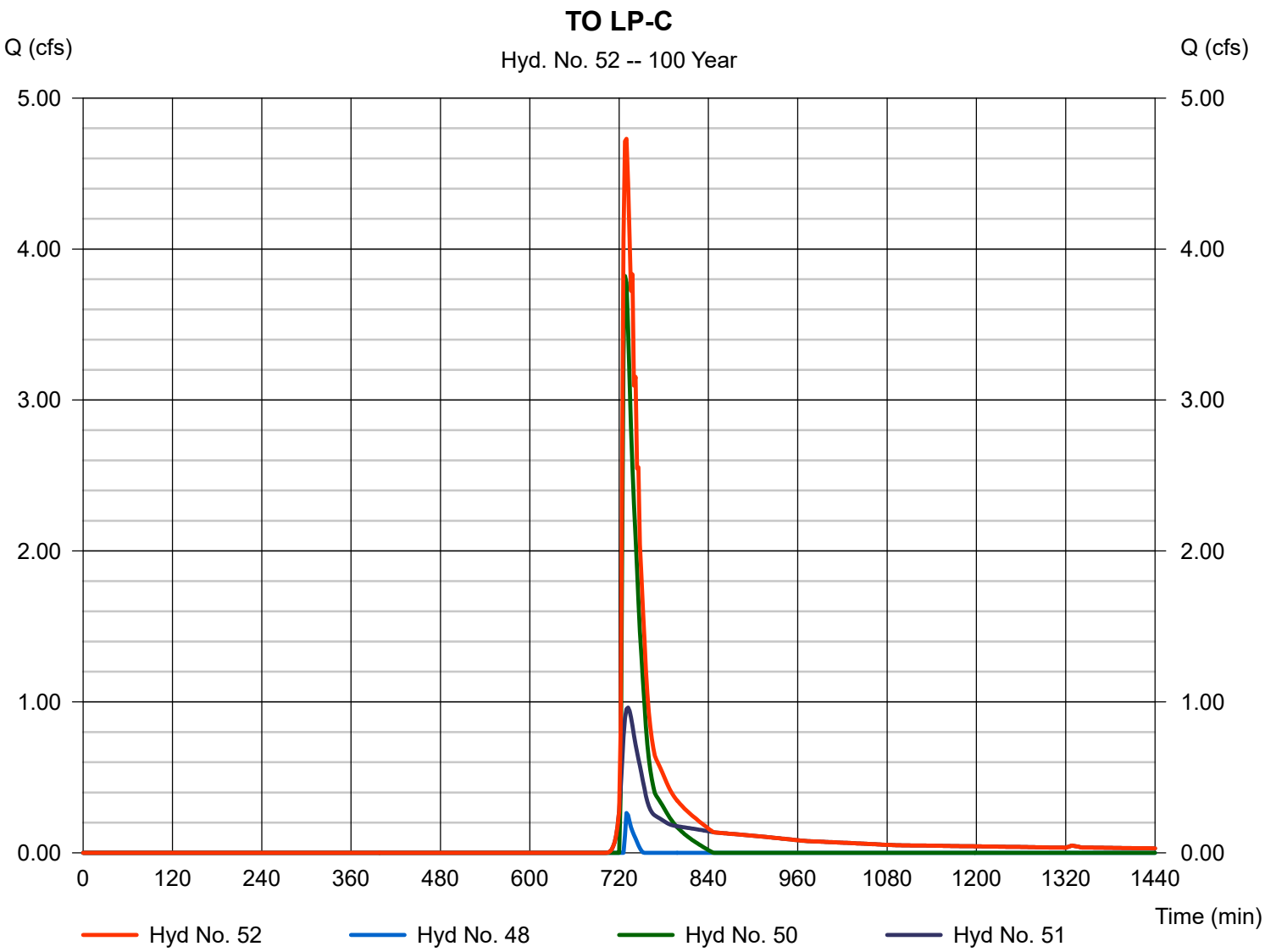
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.2 | Tuesday, Oct 6, 2026

Hyd. No. 52

TO LP-C

Hydrograph type	=	Combine	Peak discharge	=	4.730 cfs
Storm frequency	=	100 yrs	Time to peak	=	730 min
Time interval	=	2 min	Hyd. volume	=	10,598 cuft
Inflow hyds.	=	48, 50, 51	Contrib. drain. area	=	1.060 ac



Hydrograph Report

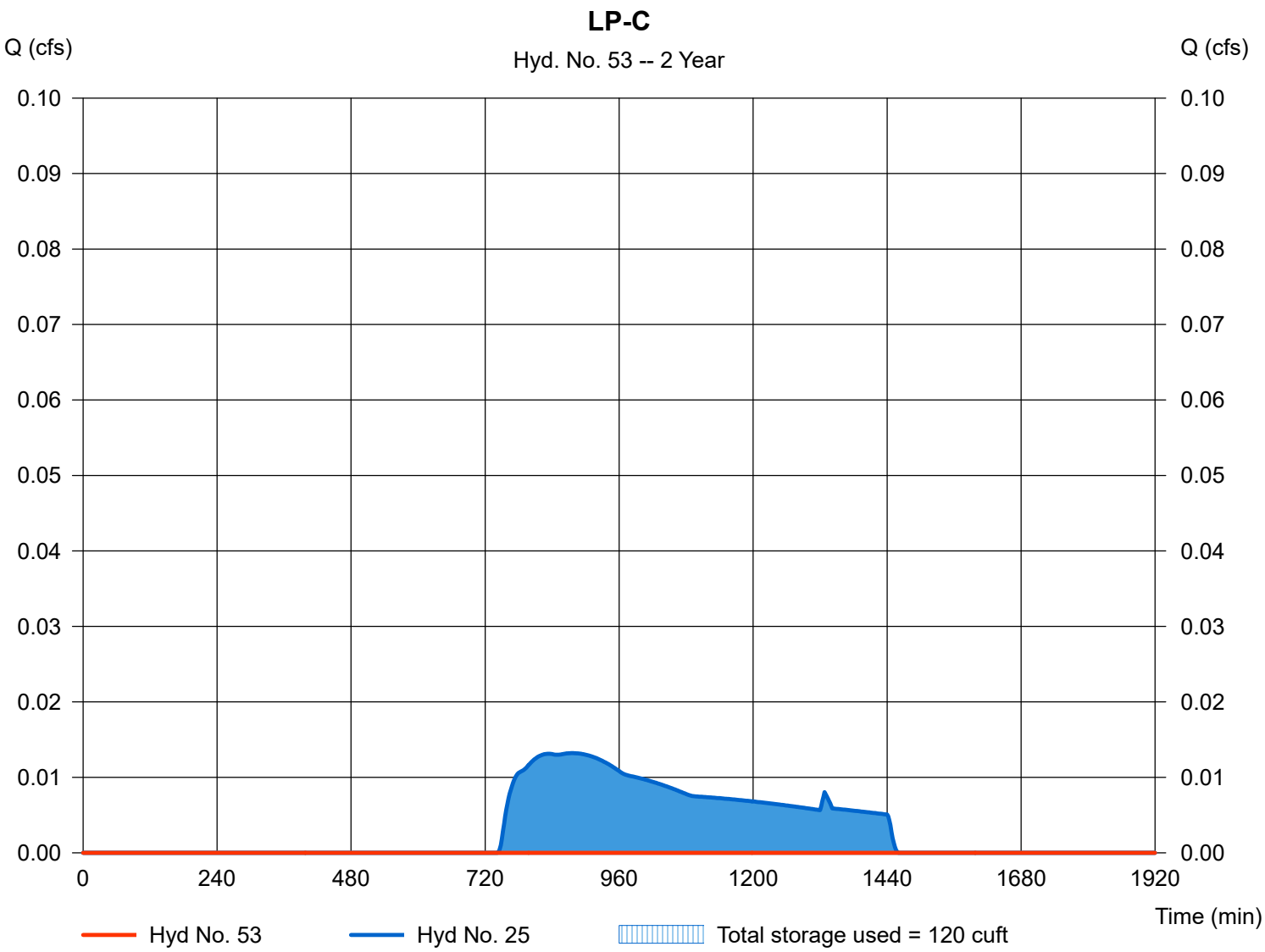
Hydraflow Hydrographs by Intelisolve v9.2 Tuesday, Oct 6, 2026

Hyd. No. 53

LP-C

Hydrograph type	=	Reservoir	Peak discharge	=	0.000 cfs
Storm frequency	=	2 yrs	Time to peak	=	898 min
Time interval	=	2 min	Hyd. volume	=	0 cuft
Inflow hyd. No.	=	25 - TO LP-C	Max. Elevation	=	296.19 ft
Reservoir name	=	LOW POINT C	Max. Storage	=	120 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Hydrograph Report

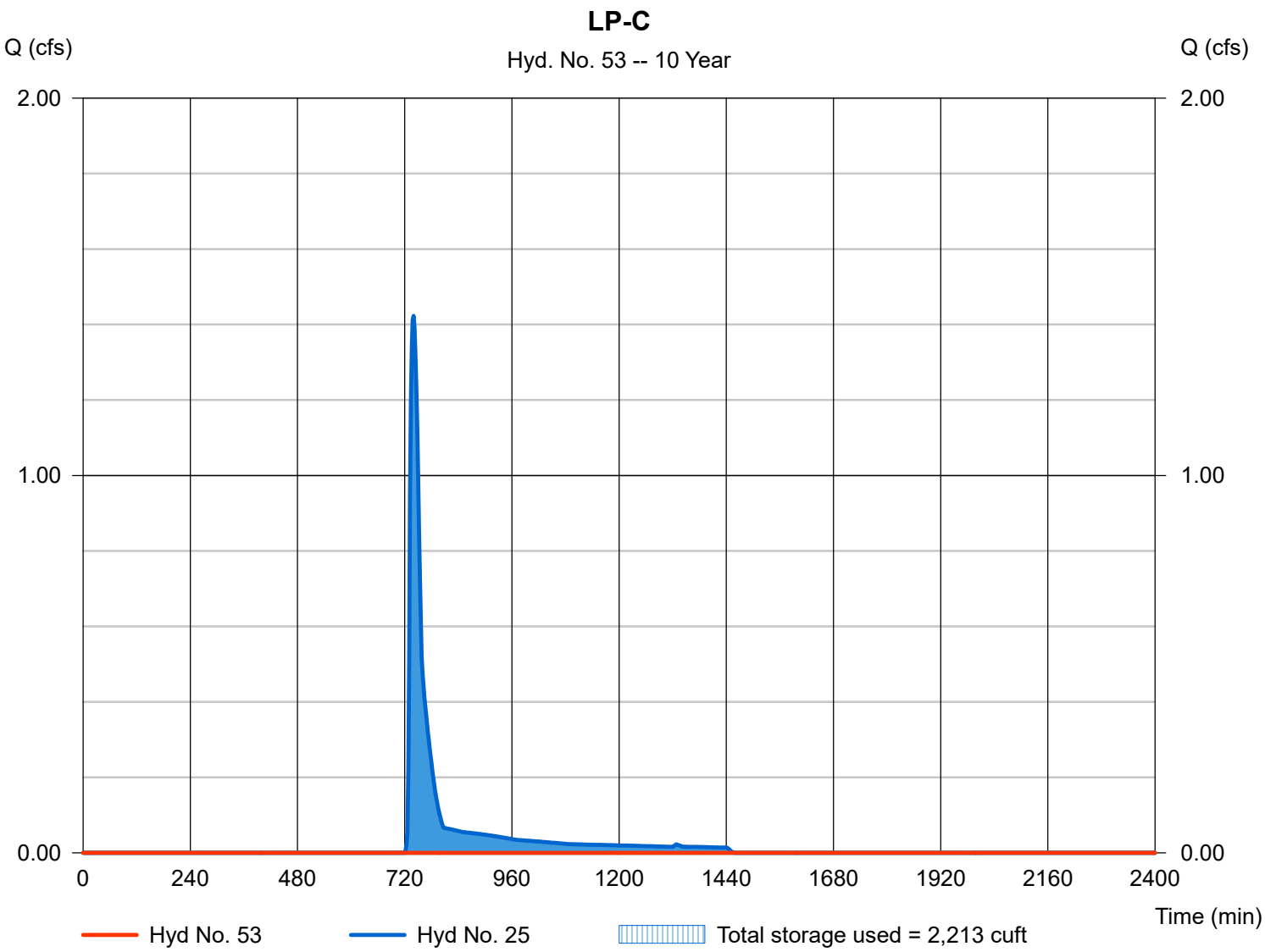
Hydraflow Hydrographs by Intelisolve v9.2 Tuesday, Oct 6, 2026

Hyd. No. 53

LP-C

Hydrograph type	=	Reservoir	Peak discharge	=	0.000 cfs
Storm frequency	=	10 yrs	Time to peak	=	814 min
Time interval	=	2 min	Hyd. volume	=	0 cuft
Inflow hyd. No.	=	25 - TO LP-C	Max. Elevation	=	298.50 ft
Reservoir name	=	LOW POINT C	Max. Storage	=	2,213 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Hydrograph Report

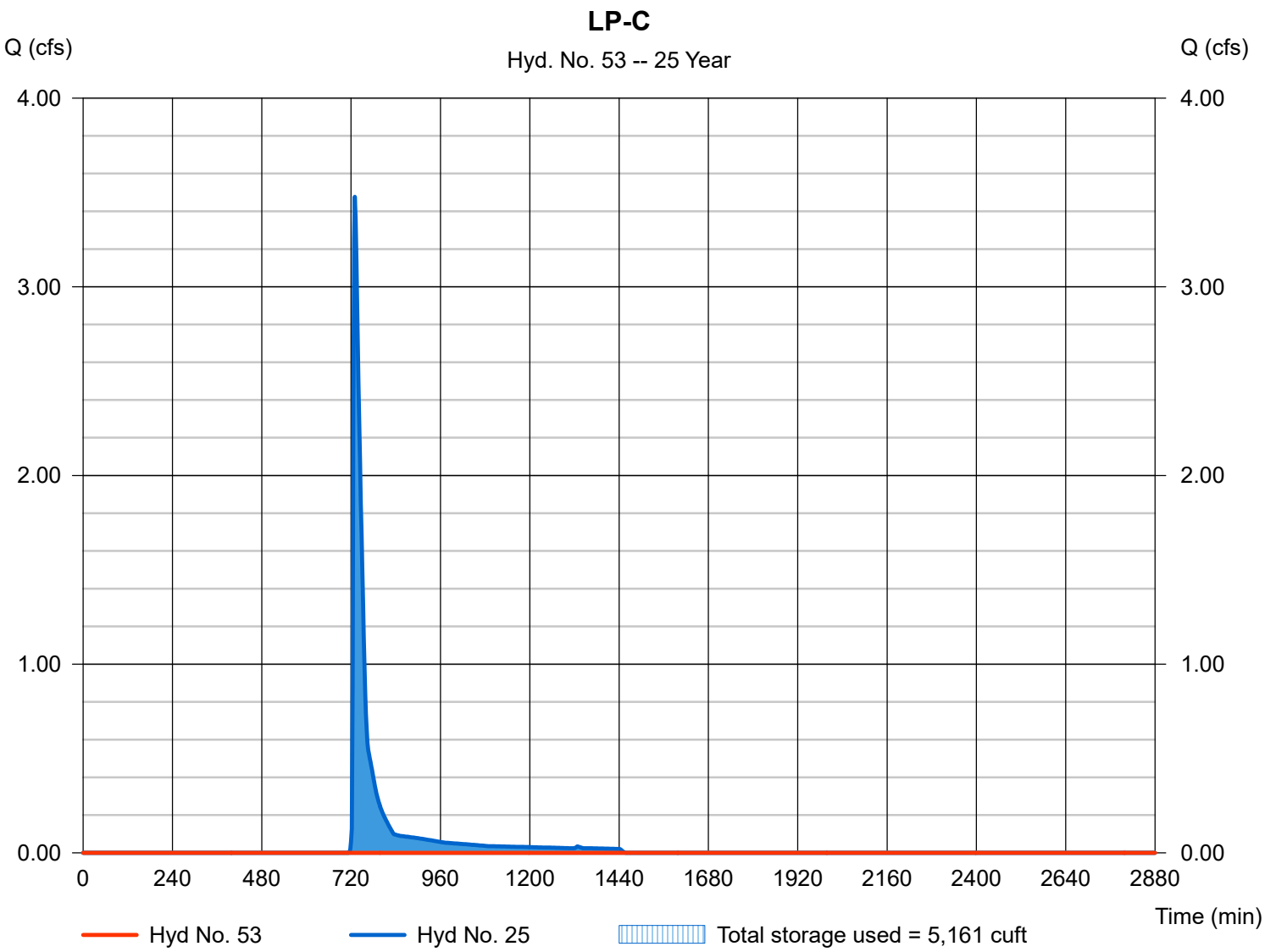
Hydraflow Hydrographs by Intelisolve v9.2 Tuesday, Oct 6, 2026

Hyd. No. 53

LP-C

Hydrograph type	=	Reservoir	Peak discharge	=	0.000 cfs
Storm frequency	=	25 yrs	Time to peak	=	1136 min
Time interval	=	2 min	Hyd. volume	=	0 cuft
Inflow hyd. No.	=	25 - TO LP-C	Max. Elevation	=	300.00 ft
Reservoir name	=	LOW POINT C	Max. Storage	=	5,161 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Hydrograph Report

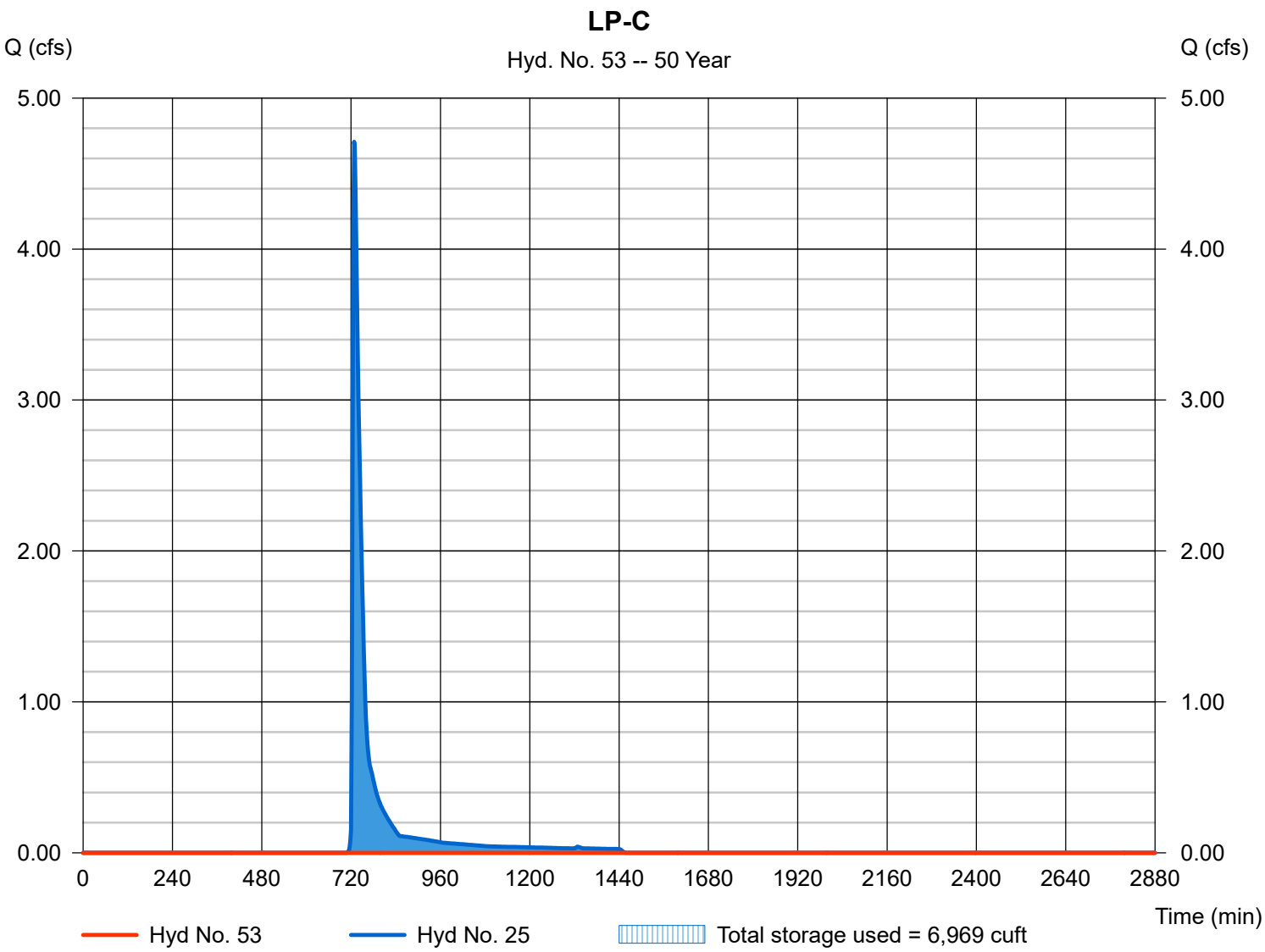
Hydraflow Hydrographs by Intelisolve v9.2 Tuesday, Oct 6, 2026

Hyd. No. 53

LP-C

Hydrograph type	=	Reservoir	Peak discharge	=	0.000 cfs
Storm frequency	=	50 yrs	Time to peak	=	754 min
Time interval	=	2 min	Hyd. volume	=	0 cuft
Inflow hyd. No.	=	25 - TO LP-C	Max. Elevation	=	300.49 ft
Reservoir name	=	LOW POINT C	Max. Storage	=	6,969 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Hydrograph Report

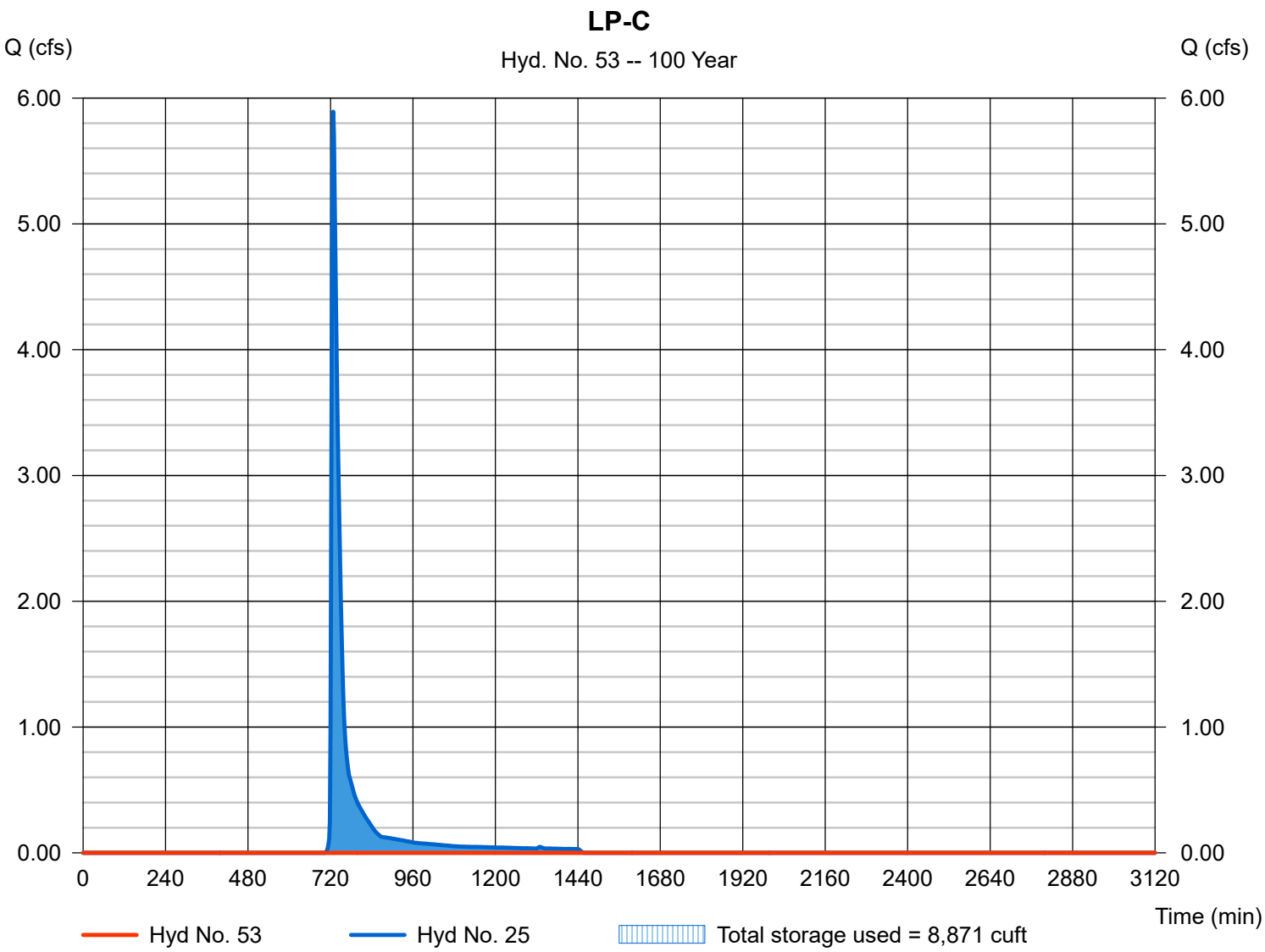
Hydraflow Hydrographs by Intelisolve v9.2 | Tuesday, Oct 6, 2026

Hyd. No. 53

LP-C

Hydrograph type	=	Reservoir	Peak discharge	=	0.000 cfs
Storm frequency	=	100 yrs	Time to peak	=	754 min
Time interval	=	2 min	Hyd. volume	=	0 cuft
Inflow hyd. No.	=	25 - TO LP-C	Max. Elevation	=	301.00 ft
Reservoir name	=	LOW POINT C	Max. Storage	=	8,871 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Pond Report

Hydraflow Hydrographs by Intelisolve v9.2 — Tuesday, Oct 6, 2026

Pond No. 3 - LOW POINT C

Pond Data

Contours - User-defined contour areas. Conic method used for volume calculation. Begining Elevation = 296.00 ft

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	296.00	92	0	0
2.00	298.00	1,397	1,232	1,232
4.00	300.00	2,580	3,917	5,148
6.00	302.00	5,014	7,460	12,608
8.00	304.00	8,435	13,300	25,908

Culvert / Orifice Structures

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

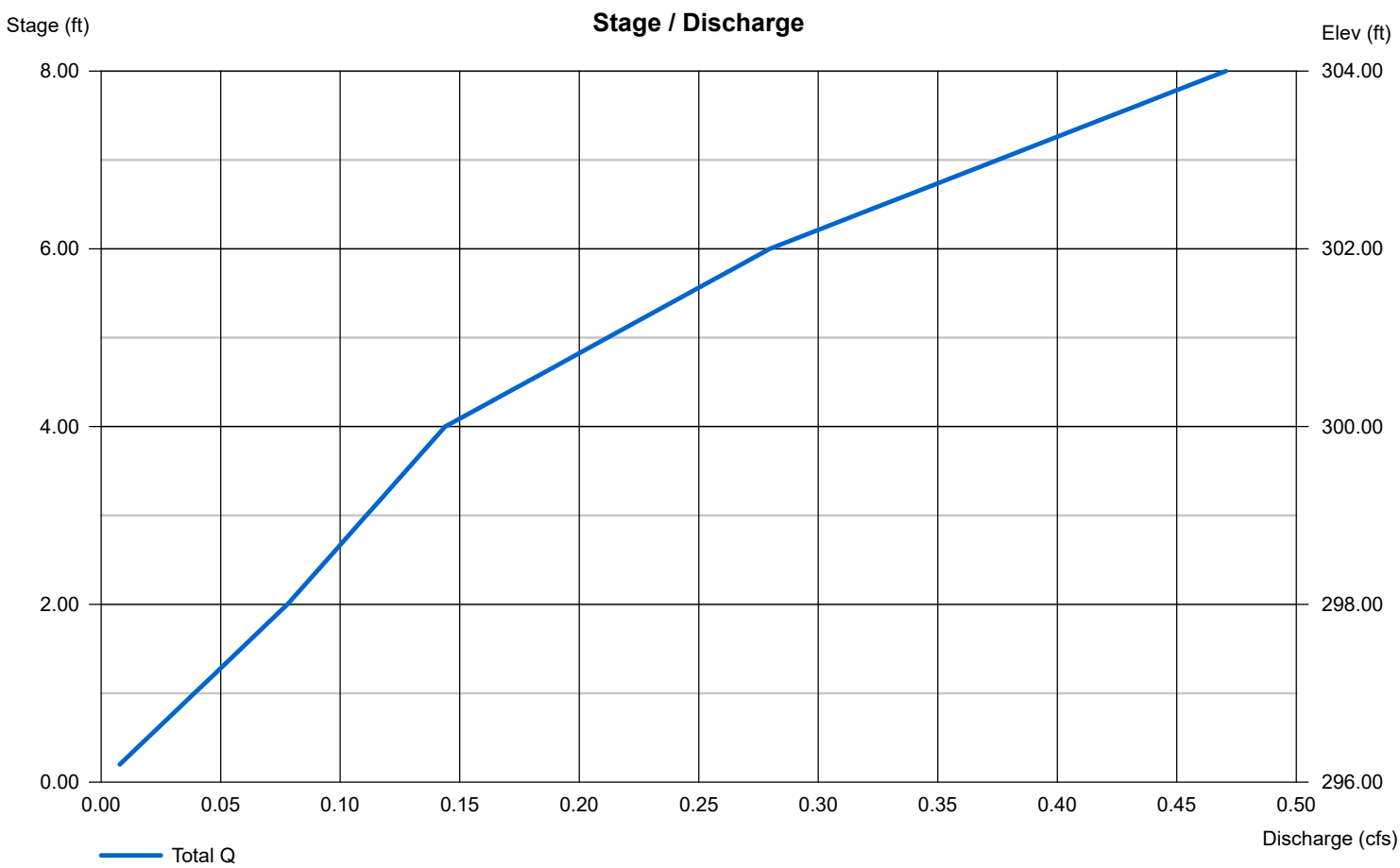
Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 0.00	0.00	0.00	0.00
Crest El. (ft)	= 0.00	0.00	0.00	0.00
Weir Coeff.	= 3.33	3.33	3.33	3.33
Weir Type	= ---	---	---	---
Multi-Stage	= No	No	No	No

Exfil.(in/hr) = 2.410 (by Contour)

TW Elev. (ft) = 0.00

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



Pipe Sizing Calculations

DESIGN STORM: 100 YEAR
DATE: **10/5/2026**
DONE BY: DJC
FILE: 6944A RATIONAL METHOD

STORM SEWER DESIGN

(ADS N-12)"n"= 0.012 4"-10"
(ADS N-12)"n"= 0.012 12"-36"
(ADS N-12)"n"= 0.012 42"-60"
(Cast Iron)"n"= 0.011

PROJECT: SM-6944A
LOCATION: 77 Grant Road, Devens, MA

FROM	TO	LENGTH (FT)	TRIBUTARY AREA INCR. (ACRES)	TRIBUTARY AREA TOTAL (ACRES)	TIME OF FLOW TO UPPER END (MIN)	TIME OF FLOW TIME IN SECTION (MIN)	RUNOFF COEFF. "C"	RAINFALL INTENSITY (IN/HR)	"Q" TOTAL RUNOFF (CFS)	SLOPE of PIPE (FT/FT)	DIAM (IN)	MANN. "n"	CAPACITY FULL (CFS)	VELOCITY FULL (FPS)	DESIGN FLOW VELOCITY (FPS)	DESIGN FLOW VELOCITY HEAD (FT)	DESIGN FLOW DEPTH OF FLOW (FT)	DESIGN FLOW TOTAL ENERGY HEAD (FT)	MANHOLE INVERT DROP (FT)	FALL IN PIPE (FT)	DRAIN INV. ELEVATION UPPER END	DRAIN INV. ELEVATION LOWER END	GROUND SURFACE UPPER END	GROUND SURFACE LOWER END
DRAINAGE MANHOLE	EXISTING DEPRESSION	21	0.15	0.15	10	0.08	0.90	7.6	1.05	0.010	12	0.012	3.85	4.91	4.17	0.27	0.36	0.62		0.21	301.30	301.09	306.30	301.09

Closed Drainage System **SM-6944A**

Project:	77 Grant Road	By	DJC	Date	9/17/2026
Location:	Devens, MA	Checked		Date	

Rational Method

Q = peak flow rate, (cfs)

i = rainfall intensity inches/hour

C = runoff coefficient,
C = 0.90 impervious
C = 0.20 landscaped / grass
C = 0.15 woods

A = area (ac)

ADDTL PARKING CATCH BASIN to **DMH**

Surface Cover	A (ac)	C	Product A x C
impervious	0.15	0.9	0.138347
lands/grass		0.2	0
woods		0.15	0
sum =	0.15	sum =	0.138347

C = **0.90** = total product / total area