



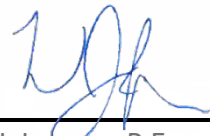
CIVIL ENGINEERING
ENVIRONMENTAL
SURVEYING
LANDSCAPE ARCHITECTURE
GEOTECHNICAL

STORMWATER MANAGEMENT REPORT

248 Stickles Pond Road
Block 151 Lot 21
Andover Township
Sussex County, New Jersey

Prepared For:
BHT Properties Group
5081 SW 48th Street, 1023
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TABLE OF CONTENTS

1. Project Description	3
1.1 Existing Conditions	3
1.2 Proposed Conditions	3
1.3 Soil Conditions	4
2. Methodology	5
2.1 Stormwater Runoff Calculation Methodology	5
2.2 Stormwater Runoff Quality	5
2.3 Groundwater Recharge	5
2.4 Non-Structural Stormwater Management Strategies	5
2.5 Stormwater Conveyance	6
3. Stormwater Analysis.....	6
3.1 Existing Conditions Stormwater Runoff Quantity	6
3.2 Proposed Conditions Stormwater Runoff Quantity	8
3.3 Stormwater Runoff Quality	12
3.4 Groundwater Recharge	12
3.5 Soil Erosion and Sediment Control	13
4. Conclusions.....	13



LIST OF APPENDICIES

Appendix A:	Drawing Exhibits
Appendix B:	Pre and Post Development Drainage Area Maps
Appendix C:	Curve Number Worksheets
Appendix D:	Hydrologic Analysis and Runoff Quantity Calculations
Appendix E:	Storm Sewer Sizing Calculations
Appendix F:	Water Quality Storm Hydrologic Analysis and Runoff Quantity Calculations
Appendix G:	Groundwater Recharge and Groundwater Mounding Calculations
Appendix H:	On Site Soil Testing
Appendix I:	Soil Erosion Measures
Appendix J:	Low Impact Development Checklist



1. PROJECT DESCRIPTION

1.1 Existing Conditions

The site is identified as 248 Stickles Pond Road and is located in the Township of Andover, County of Sussex, New Jersey. The tax parcel designation is Block 151, Lot 21. This project's overall property is the former Newton Airport. It is bordered by Stickles Pond to the Northeast and the Pequest River to the Northwest along the property lines. The total parcel area is 4,393,962 ft² (\pm 100.87 acres). The existing development features consist of 3 unoccupied buildings, multiple barns, multiple trailers and detached garages, paved driveways and an asphalt runaway. Currently, the site land cover consists of grassland and wooded areas. Field investigation for wetlands discovered the presence of freshwater wetlands on the property. The topographic relief of the property ranges from 588 to 645 feet about MSL. The surface topography fluctuates from moderately flat land along Stickles Pond Road, the southern part of the property, to various steep sections scattered throughout the property. There are no existing stormwater conveyance on the site that collects the generated stormwater runoff. Therefore, the stormwater runoff generated within the site is in its majority contained within the site boundaries and the remaining runoff it discharges toward the adjacent properties and Stickles Pond.

1.2 Proposed Conditions

The project proposes the construction of a \pm 12,860 square feet construction office building with storage areas designated to store construction equipment and construction materials such as aggregate, stones and other typical construction materials. The surface cover for the storage areas is asphalt millings. Access and parking on the site will include a two-way driveway from Stickles Pond Road and surface paved parking along the rear side of the construction office building. Amenities proposed for the site include a proposed concrete sidewalk along the front, side, and rear of the proposed building. The total limit of disturbance created by the construction of the proposed development is \pm 50.76 acres (\pm 51% of the total area of the site) and the net increase in impervious coverage is \pm 41.60 acres. The project is considered a major project in accordance with the NJDEP Phase II Stormwater Regulations, as it will include greater than 1.0 acre of disturbance and creates greater than 1/4 acre of new impervious surface. Stormwater on the proposed site will be controlled with:

- Four above-ground infiltration basins designed to capture, treat and infiltrate the stormwater runoff.

Due to the existing drainage characteristics of the site, four of the four proposed stormwater management systems have been designed to capture, treat and infiltrate the water quality storm event and the 2, 10, and 100-year storm events in order to meet the water quantity peak reduction requirements, water quality requirements, and the ground water requirements specified on N.J.A.C. 7:8-5.4 and N.J.A.C. 7:8-5.5. Analysis of the existing low points on site has been performed to show that no water leaves the site for the areas where the proposed basins have been designed to infiltrate the 2, 10, and 100-year storm events. An exception waiver is requested for the use of infiltration as part of the routing for the 2, 10 and 100-year storm events.



1.3 Soil Conditions

Per the United States Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) Web Soil Survey of Sussex County, the site is underlain by four soil types:

- FaxC - Farmington-Rock Outcrop Complex (0 to 15 percent slopes).
The Farmington series consists of shallow, well drained and somewhat excessively drained soils formed in till. They are nearly level to very steep soils on glaciated uplands. It is not on the hydric soils list;
- HdxpAb – Hazen-Paulins Kill Complex (0 to 3 percent slopes);
Hazen Hero Fredon soils are present surrounding the Paulins Kill and surrounding floodplains. This general soil unit consists of nearly level to very steep, deep, well drained and poorly drained soils, on river terraces, outwash terraces and kames. It is not on the hydric soils list;
- USFARC – Urban Land-Farmington-Rock Outcrop Complex (0 to 15 percent slopes).
Urban Land consists of nearly level to moderately steep areas where the soils have been altered or obscured by urban works and structures;
- RnfD – Rock Outcrop – Farmington-Galway Complex (15 to 35 percent slopes). Rock Outcrop consists of steep, well-drained soil. It is not on the hydric soil list.

Farmington-Rock Outcrop (FaxC) comprises 33% of the total disturbed area, Hazen-Paulins Kill (HdxpAb) comprises 59%, Urban Land-Farmington-Rock Outcrop (USFARC) comprises 5% and the remaining 3% of the total disturbed area is comprised by Rock Outcrop – Farmington-Galway (RnfD). Both FaxC, USFARC and RnfD are classified as Hydrologic Soil Group (HSG) 'D', and HdxpAb is classified as Hydrologic Soil Group (HSG) 'A'. A USDA NRCS Web Soil Survey map is included in Appendix A.

In situ soil testing was performed onsite in the location of the proposed stormwater management systems and along the areas with different USDA NRCS soil group classifications to obtain physical data regarding the infiltration rates of the site. The lab data results are included in Appendix H. The results obtained indicate that the site is well-drained within the proposed limit of disturbance. The obtained soil permeability rates were greater than 5.67 inches per hour; therefore, in accordance with NJ Stormwater BMP Manual Appendix E, the soil hydrologic groups can be classified as Hydrologic Soil Group 'A'.



2. METHODOLOGY

2.1 Stormwater Runoff Calculation Methodology

The stormwater quantity runoff analysis has been performed utilizing the Soil Conservation Service (SCS) Technical Release 55 (TR-55) "Urban Hydrology for Small Watersheds," revised June 1986. The site runoff has been calculated for the 2-, 10-, and 100-year storm frequencies in accordance with NJDEP's stormwater regulations for water quantity control (N.J.A.C. 7:8-5.4).

The analysis utilized the New Jersey 24-hour rainfall frequency data per NOAA precipitation frequency estimates with New Jersey region C rainfall distribution. The time of concentration (Tc) calculations were calculated based on the TR-55 methodology. Several potential Tc flow paths were analyzed in order to determine the most appropriate flow path. CN values were calculated for each drainage area. The summary of results and supporting calculations for the existing and proposed stormwater quantity runoff analysis can be found in Appendices B, C and D of this report.

2.2 Stormwater Runoff Quality

The stormwater runoff quality analysis has been performed in accordance with NJDEP's Stormwater Management Regulations (N.J.A.C. 7:8-5.5). This stormwater management plan serves to reduce the post-construction load of Total Suspended Solids (TSS) generated from the water quality design storm by 80 percent, as an annual average. This reduction has been applied to all areas of new development on the site. The water quality design storm consists of 1.25 inches of rain falling in 2 hours with the NJDEP distribution as illustrated in N.J.A.C. 7:8-5.5 "Table 1 - Water Quality Design Storm Distribution" (refer to Appendix H).

Four above-ground infiltration basins to obtain the required 80% TSS removal from the total proposed impervious area (refer to Appendix G).

2.3 Groundwater Recharge

A groundwater recharge analysis has been performed in accordance with NJDEP's Stormwater Management Rules (N.J.A.C. 7:8-5.4). The New Jersey Groundwater Recharge Spreadsheet (NJGRS) Version 2.0 (Updated November 2003) was utilized to determine the groundwater recharge associated with the site. Computations of the pre-development and post-development annual groundwater recharge rates and the annual recharge deficit was prepared based on the New Jersey Geological Survey Report GSR-32 "A Method for Evaluating Ground-Water Recharge Areas in New Jersey", which is incorporated into the NJGRS spreadsheet (refer to Appendix G of this report).

2.4 Non-Structural Stormwater Management Strategies

As per N.J.A.C. 7:8-5.3 requirements non-structural stormwater strategies have been incorporated into the design to the maximum extent practicable:

- The impervious surfaces are minimized on the project site to meet current codes and the runoff over the impervious surfaces flow into the proposed stormwater systems.
- The Time of Concentration decrease is minimized to the extent practicable.



- Land disturbance is being minimized to the extent practicable.
- Soil compaction will be minimized and any areas of over compaction will be mediated.
- Low maintenance trees and native grasses are proposed to encourage retention of all plantings.
- The use of natural open channel swales is utilized to convey the stormwater runoff through portions of the site where it is feasible.

2.5 Stormwater Conveyance

The storm sewer hydraulics is based upon the Manning Equation as defined in the “Handbook of Hydraulics,” by Brater and King, Sixth Edition. Storm sewer capacity is based on full depth gravity flow. Two stormwater conveyance pipes are proposed to convey the water to each of the two infiltration basins. Refer to Appendix E for calculations.

3. STORMWATER ANALYSIS

3.1 Existing Conditions Stormwater Runoff Quantity

The Pre-Development Drainage Area Plan (Appendix B) illustrates the existing drainage areas on site. The pre-development drainage areas have been delineated only within the proposed limit of disturbance anticipated by the proposed development. The site has been analyzed as nine distinct drainage areas: EDA-A, EDA-B, EDA-C, EDA-D, EDA-E, EDA-F, EDA-H, and EDA-I.

EDA-A is defined as 14.75 acres of site area that drains from the southern section of Stickles Pond Road and the middle-south section of the site toward a low point located east from the common property line with Block 151, Lot 20. The drainage area contains multiple land covers as follows: 8.68 acres of grassland, 4.61 acres of woods, and 1.46 acres of impervious area. A storage analysis has been performed for EDA-A to quantify the stormwater runoff volume that stays within the site depression point. The analysis showed that portions of the stormwater runoff for the 2-, 10-, and 100-year storm events overflow toward the existing basin located on Block 151, Lot 20.

EDA-B is defined as 29.88 acres of site area that drains from the north section of Stickles Pond Road and the middle-north section of the site toward the existing wetlands. The drainage area contains multiple land covers as follows: 12.21 acres of grassland, 14.47 acres of woods, and 3.0 acres of impervious area. The proposed development only disturbed 15.78 acres of EDA-B. To quantify the stormwater runoff requirements for the disturbed portion of EDA-B, the drainage area will be analyzed as EDA-B: Disturbed and EDA-B-Undisturbed. A storage analysis has been performed for EDA-B to quantify the stormwater runoff that stays within the site depression point. The analysis showed that the stormwater runoff for the 2-, 10-, and 100-year storm events is stored within the limits of the depression point associated with EDA-B and infiltrated to the ground.

EDA-C is comprised of 4.29 acres of site area that drains from the north section of Stickles Pond Road and east section of the site toward the Stickles Pond. The drainage area contains multiple



land covers as follows: 2.2 acres of grassland, 0.97 acres of woods, and 1.12 acres of impervious area.

EDA-D is comprised of 3.76 acres of site area that drains from the middle-north west section of the site and west section of the site toward a low point located east from the common property line with Block 151, Lot 20. The drainage area contains multiple land covers as follows: 0.43 acres of grassland, and 3.20 acres of woods. A storage analysis has been performed for EDA-D to quantify the stormwater runoff that stays within the site depression point. The analysis showed that the stormwater runoff for the 2-, 10-, and 100-year storm events is stored within the limits of the depression point associated with EDA-D and infiltrated to the ground.

EDA-E is comprised 4.69 acres of site area that drains from the middle-north west section of the site toward the north section of the site, to a point located along the common property line with Block 151, Lot 22. The drainage area contains 4.69 acres of woods.

EDA-F is comprised 0.97 acres of site area that drains from the west section of the site toward the adjacent property, Block 151, Lot 17. The drainage area contains 0.97 acres of woods.

EDA-H is comprised of 12.92 acres of site area that drains from the upper north section of the site toward a low point. The drainage area contains multiple land covers as follows: 8.92 acres of grassland and 4.0 acres of woods. A storage analysis has been performed for EDA-H to quantify the stormwater runoff that stays within the site depression point. The analysis showed that the stormwater runoff for the 2-, 10-, and 100-year storm events is stored within the limits of the depression point associated with EDA-H and infiltrated to the ground.

EDA-I is comprised of 1.10 acres of site area that drains from the upper northeast section of the site toward Stickles Pond. The drainage area contains 1.10 acres of woods. A storage analysis has been performed for EDA-I to quantify the stormwater runoff that stays within the site depression point. The analysis showed that the stormwater runoff for the 2-, 10-, and 100-year storm events is stored within the limits of the depression point associated with EDA-I and infiltrated to the ground.

The curve numbers (CN) and time of concentration (Tc) for the existing drainage areas have been calculated utilizing the TR-55 method for each drainage. Runoff hydrographs have been calculated for the 2-, 10-, and 100-years storm.

The pre-development runoff from the drainage areas is listed in the following table:

Drainage Area	2-year Storm	10-year Storm	100-year Storm
EDA-A; Pervious	1.052 CFS	7.310 CFS	27.23 CFS
EDA-A; Impervious	3.447 CFS	5.067 CFS	8.078 CFS
EDA-A	4.059 CFS	12.32 CFS	35.30 CFS
Low Point A	4.019 CFS	11.77 CFS	27.91 CFS
EDA-B: Pervious Disturbed	4.623 CFS	8.550 CFS	26.18 CFS
EDA-B: Impervious Disturbed	2.684 CFS	3.946 CFS	6.29 CFS
EDA-B: Disturbed	2.684 CFS	5.614 CFS	20.46 CFS
EDA-B: Pervious Undisturbed	0.134 CFS	2.634 CFS	17.96 CFS



EDA-B: Impervious Undisturbed	5.305 CFS	7.797 CFS	12.43 CFS
EDA-B: Undisturbed	5.305 CFS	8.370 CFS	27.81 CFS
EDA-B: Disturbed & Undisturbed Combined	6.796 CFS	10.81 CFS	37.39 CFS
Low Point B	0.00 CFS	0.00 CFS	0.00 CFS
EDA-C: Pervious	4.028 CFS	7.912 CFS	15.73 CFS
EDA-C: Impervious	4.090 CFS	6.007 CFS	9.571 CFS
EDA-C	7.596 CFS	13.11 CFS	24.00 CFS
EDA-D	5.388 CFS	10.55 CFS	20.91 CFS
Low Point D	0.000 CFS	0.000 CFS	0.000 CFS
EDA-E	6.409 CFS	12.58 CFS	25.00 CFS
EDA-F	1.543 CFS	2.911 CFS	5.610 CFS
EDA-H	0.000 CFS	0.097 CFS	3.352 CFS
Low Point H	0.000 CFS	0.000 CFS	0.000 CFS
EDA-I	0.000 CFS	0.000 CFS	0.064 CFS
Low Point I	0.000 CFS	0.000 CFS	0.000 CFS

Refer to Appendices B through D for a summary of the composite curve numbers (CN), pre-development peak discharge rates for the 2-, 10-, and 100-year storms, and the associated runoff hydrographs.

3.2 Proposed Conditions Stormwater Runoff Quantity

The Post-Development Drainage Area Plan (Appendix B), illustrates the proposed drainage areas for the post-development condition. The post-development drainage areas have been delineated only within the proposed limit of disturbance anticipated by the proposed development. To accommodate the proposed site development, the site has been analyzed as nine distinct drainage areas: PDA-A, PDA-B, PDA-C, PDA-D, PDA-E, PDA-F, PDA-H, and PDA-I.

PDA-A is comprised of 5.12 acres of site area along the lower south section of Stickles Pond Road and the lower south section of the site. PDA A is comprised of the proposed building, paved areas and lawn areas located along the lower south section of the site and the lower south section of the Stickles Pond Road. The stormwater runoff generated from PDA-A is captured, treated and attenuated by the proposed above-ground infiltration basin: SWM-A. Since in existing conditions the stormwater runoff generated by EDA-A for the 2-, 10-, and 100-year stormwater events is not contained within the site, the proposed infiltration basin SWM-A has been designed to provide the required peak flow reduction rates for the 2-, 10, and 100-year storms by using a permeability rate of 5 inches per hour. The permeability rate used has been obtained from the results obtained from the in-situ soil testing investigation (refer to Appendix H).

PDA-B is comprised of 26.23 acres of site area along the north section of Stickles Pond Road and the middle-north section and south section of the site. The stormwater runoff generated from PDA-B is captured, treated and infiltrated by the proposed above-ground infiltration basin: SWM-B.



For the purpose of analysis, PDA-B has been divided into three sub-drainage areas: PDA-B1, PDA-B2 and PDA-B3. Since in the existing conditions the stormwater runoff generated by EDA-B is contained within the site and its outlet point is through infiltration to the ground, the same approach has been used to define the point of discharge of the proposed pervious pavement system SWM-B. SWM-B has been designed to capture, treat and infiltrate the water quality storm, and the 2,10, and 100-year storms by using a permeability rate of 5 inches per hour. The permeability rate used has been obtained from the results obtained from the in-situ soil testing investigation (refer to Appendix H).

PDA-C is a 3.55 acres site area along the upper north section of Stickles Pond Road. It is comprised of lawn areas and the upper north section of the Stickles Pond Road. The stormwater runoff generated from PDA-C bypasses the proposed stormwater management systems and it drains to the existing Stickles Pond.

PDA-D is a 5.58 acres site area along the lower west section of the site. It is comprised of a portion of the proposed construction equipment and construction material storage area and lawn area. The stormwater runoff generated from PDA-D is captured, treated and infiltrated by the proposed above-ground infiltration basin: SWM-D. Since in the existing conditions the stormwater runoff generated by EDA-D is contained within the site and its outlet point is through infiltration to the ground, the same approach has been used to define the point of discharge of the proposed above-ground infiltration basin SWM-D. SWM-D has been designed to capture, treat and infiltrate the water quality storm, and the 2,10, and 100-year storms by using a permeability rate of 1 inch per hour. The permeability rate used has been obtained from the results obtained from the in-situ soil testing investigation (refer to Appendix H).

PDA-E is a 0.36 acres site area comprised of lawn area. The stormwater runoff generated by PDA-E bypasses the proposed stormwater management systems and discharges to the adjacent property, Block 151, Lot 22. Since the size of PDA-e has been reduced to produce a stormwater runoff less than or equal to the stormwater runoff produced by EDA-E, no increase in peak discharge toward Block 151, Lot 22 is expected to occur.

PDA-F is a 0.85 acres site area along the west section of the site. It is comprised of grass areas and it drains toward the adjacent property, Block 151, Lot 17. Since the size of PDA-F has been reduced to produce a stormwater runoff less than or equal to the stormwater runoff produced by EDA-F, no increase in peak discharge toward Block 151, Lot 22 is expected to occur.

PDA-H is comprised of 14.42 acres of site area along the upper north section of the site. It is comprised of a portion of the proposed construction equipment and construction material storage area and lawn areas located along the upper north section of the site. The stormwater runoff generated by PDA-H is captured, treated and infiltrated by a proposed above-ground infiltration basin: SWM-H. The proposed above-ground infiltration basin SWM-H1 has been designed to capture, treat and infiltrate the water quality storm and the 2, 10 and 100-year storms by using a permeability rate of 2 inches per hour. The permeability rate used has been obtained from the results obtained from the in-situ soil testing investigation (refer to Appendix H).

PDA-I is a 0.26 acres of site area located along the upper northeast section of the site. It is comprised of lawn areas and wooded areas. The stormwater runoff generated by PDA-I bypasses the proposed stormwater management systems and it drains to the existing Stickles Pond.



The post-development drainage area discharges, and the performance of the stormwater management systems are summarized in the tables below:

Table-2: Post-Development Drainage Areas Peak Discharge Summary			
Drainage Area	2-year Storm	10-year Storm	100-year Storm
PDA-A: Pervious	4.537 CFS	8.530 CFS	16.380 CFS
PDA-A: Impervious	9.413 CFS	13.830 CFS	22.030 CFS
PDA-A	13.950 CFS	22.360 CFS	38.410 CFS
SWM-A	1.157 CFS	7.536 CFS	22.300 CFS
PDA-B: Pervious	16.82 CFS	34.85 cfs	72.03 CFS
PDA-B: Impervious	50.42 CFS	74.05 CFS	117.99 CFS
PDA-B	67.24 CFS	108.90 CFS	190.02 CFS
SWM-B	0.000 CFS	0.000 CFS	0.000 CFS
PDA-B: Bypass to Wetlands	0.494 CFS	1.001 CFS	2.037 CFS
EDA-B: Undisturbed Pervious to Wetland	0.126 CFS	2.760 CFS	20.08 CFS
EDA-B: Undisturbed Impervious to Wetland	5.747 CFS	8.441 CFS	13.45 CFS
Flow to Wetland	6.240 CFS	10.57 CFS	32.94 CFS
Low Point B in Proposed Conditions	0.000 CFS	0.000 CFS	0.000 CFS
PDA-C: Pervious	7.113 CFS	12.52 CFS	22.84 CFS
PDA-C: Impervious	1.269 CFS	1.864 CFS	2.970 CFS
PDA-C	8.382 CFS	14.39 CFS	25.81 CFS
PDA-D: Pervious	2.169 CFS	3.653 CFS	6.429 CFS
PDA-D: Impervious	16.64 CFS	24.44 CFS	38.94 CFS
PDA-D	18.81 CFS	28.10 CFS	45.37 CFS
SWM-D	0.000 CFS	0.000 CFS	0.000 CFS
PDA-E	0.908 CFS	1.529 CFS	2.691 CFS
PDA-F	1.497 CFS	2.864 CFS	5.578 CFS
PDA-H: Pervious	6.308 CFS	13.68 CFS	29.22 CFS
PDA-H: Impervious	32.96 CFS	48.42 CFS	77.14 CFS
PDA-H	39.27 CFS	62.10 CFS	106.36 CFS
SWM-H	0.000 CFS	0.000 CFS	0.000 CFS
PDA-I	0.000 CFS	0.001 CFS	0.064 CFS
Low Point I	0.000 CFS	0.000 CFS	0.000 CFS



Table-3: Stormwater Management System Performance: SWM-A			
Storm	Peak Basin Discharge	Water Surface Elevation	Max. Storage
2-Yr	1.157 CFS	595.81 FT	15,909 CF
10-Yr	7.536 CFS	596.25 FT	21,943 CF
100-Yr	22.30 CFS	596.91 FT	31,439 CF

Table-5: Stormwater Management System Performance: SWM B			
Storm	Peak Basin Discharge	Water Surface Elevation	Max. Storage
2-Yr	0.000 CFS	598.62 FT	87,315 CF
10-Yr	0.000 CFS	599.00 FT	142,256 CF
100-Yr	0.000 CFS	599.89 FT	275,582 CF

Table-8: Stormwater Management System Performance: SWM-D			
Storm	Peak Basin Discharge	Water Surface Elevation	Max. Storage
2-Yr	0.000 CFS	601.75 FT	37,090 CF
10-Yr	0.000 CFS	602.67 FT	59,130 CF
100-Yr	0.000 CFS	604.27 FT	102,527 CF

Table-11: Stormwater Management System Performance: SWM-H			
Storm	Peak Basin Discharge	Water Surface Elevation	Max. Storage
2-Yr	0.000 CFS	597.35 FT	53,368 CF
10-Yr	0.000 CFS	598.21 FT	91,585 CF
100-Yr	0.000 CFS	599.78 FT	172,734 CF

The proposed Stormwater Management Systems provide the necessary detention time and storage to achieve the reduction factors required by N.J.A.C.7:8. A summary table has been provided below documenting the overall performance of the systems.

Table-12: Pre-Development and Post Development Peak Discharge Runoff Comparison Table					
Drainage Areas	Storm	Existing Peak Discharge	Reduction Required	Target Runoff	Proposed Peak Discharge
EDA-A PDA-A	2-Year	4.019 CFS	50%	2.001 CFS	1.157 CFS
	10-Year	11.77 CFS	75%	8.8275 CFS	7.536 CFS
	100-Year	27.91 CFS	80%	22.328 CFS	22.30 CFS
EDA-B PDA-B	2-Year	0.00 CFS	50%	0.00 CFS	0.00 CFS
	10-Year	0.00 CFS	75%	0.00 CFS	0.00 CFS
	100-Year	0.00 CFS	80%	0.00 CFS	0.00 CFS
EDA-C PDA-C	2-Year	7.596 CFS	>=	7.596 CFS	6.392 CFS
	10-Year	13.11 CFS	>=	13.11 CFS	11.05 CFS
	100-Year	24.00 CFS	>=	24.00 CFS	19.97 CFS
EDA-D PDA-D	2-Year	0.00 CFS	50%	0.00 CFS	0.00 CFS
	10-Year	0.00 CFS	75%	0.00 CFS	0.00 CFS
	100-Year	0.00 CFS	80%	0.00 CFS	0.00 CFS



EDA-E PDA-E	2-Year	6.409 CFS	>=	6.409 CFS	0.908 CFS
	10-Year	12.58 CFS	>=	12.58 CFS	1.529 CFS
	100-Year	25.00 CFS	>=	25.00 CFS	2.691 CFS
EDA-F PDA-F	2-Year	1.543 CFS	>=	1.543 CFS	1.497 CFS
	10-Year	2.911 CFS	>=	2.911 CFS	2.864 CFS
	100-Year	5.610 CFS	>=	5.610 CFS	5.578 CFS
EDA-H PDA-H	2-Year	0.000 CFS	50%	0.000 CFS	0.000 CFS
	10-Year	0.000 CFS	75%	0.0727 CFS	0.000 CFS
	100-Year	3.352 CFS	80%	2.68 CFS	0.000 CFS
EDA-I PDA-I	2-Year	0.000 CFS	>=	0.000 CFS	0.000 CFS
	10-Year	0.000 CFS	>=	0.000 CFS	0.000 CFS
	100-Year	0.000 CFS	>=	0.000 CFS	0.000 CFS

3.3 Stormwater Runoff Quality

Proposed runoff quality has achieved the required TSS removal, in accordance with NJDEP standards. The water quality storm calculations are contained in Appendix F. Quality treatment has been provided for PDA-A, PDA-B, PDA-D, and PDA-H through the use of four above-ground infiltration basins designed to treat the entire water quality storm volume without overflow. Consequently, the proposed above-ground infiltration basins qualify for an 80% TSS removal rate in accordance with NJDEP Phase II standards.

3.4 Groundwater Recharge

For the groundwater recharge calculations, the soil type chosen to model the site recharge capacity were based: Hazen, Sandy Land, and Urban Land. The web soil survey soil groups Farmington-Rock Outcrop and Rock Outcrop-Farmington-Galway are not in the available list of soils offered by The New Jersey Groundwater Recharge Spreadsheet (NJGRS) Version 2.0 (Updated November 2003). The soil type Sandy Land was chosen base on the results obtained from the on-site in situ soil investigations conducted at the site (refer to Appendix H).

The existing site has a total annual recharge of 3,733,11 C.F. The proposed development creates a groundwater recharge deficit of 2,666,400 C.F. Four above-ground infiltration basins have been proposed to infiltrate the groundwater recharge deficit. Table-13: Proposed Ground Water Recharge, shows the recharged volume obtained by each proposed stormwater management system.

SWM Name	Annual BMP Recharge Volume (CF)
SWM-A	316,560 CF
SWM-B	996,434 CF
SWM-D	583,220 CF
SWM-H	992,821 CF



Total Proposed Annual Recharge	2,889,035 CF
Net Annual Increase	222,635 CF

An annual recharge volume of 2,889,035 C.F. is observed in the post development conditions. A net increase in the annual recharge of 222,635 C.F. is observed. The analysis has been performed based upon the approved NJDEP Recharge Spreadsheet and can be found in Appendix G

3.5 Soil Erosion and Sediment Control

Soil Erosion and Sediment Control measures have been designed for the stormwater management system to ensure that water quality is maintained and that the system can safely and adequately control runoff from the property. Design calculations for the conduit outlet protections for the proposed above-ground infiltration basins can be found in Appendix I

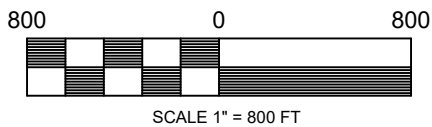
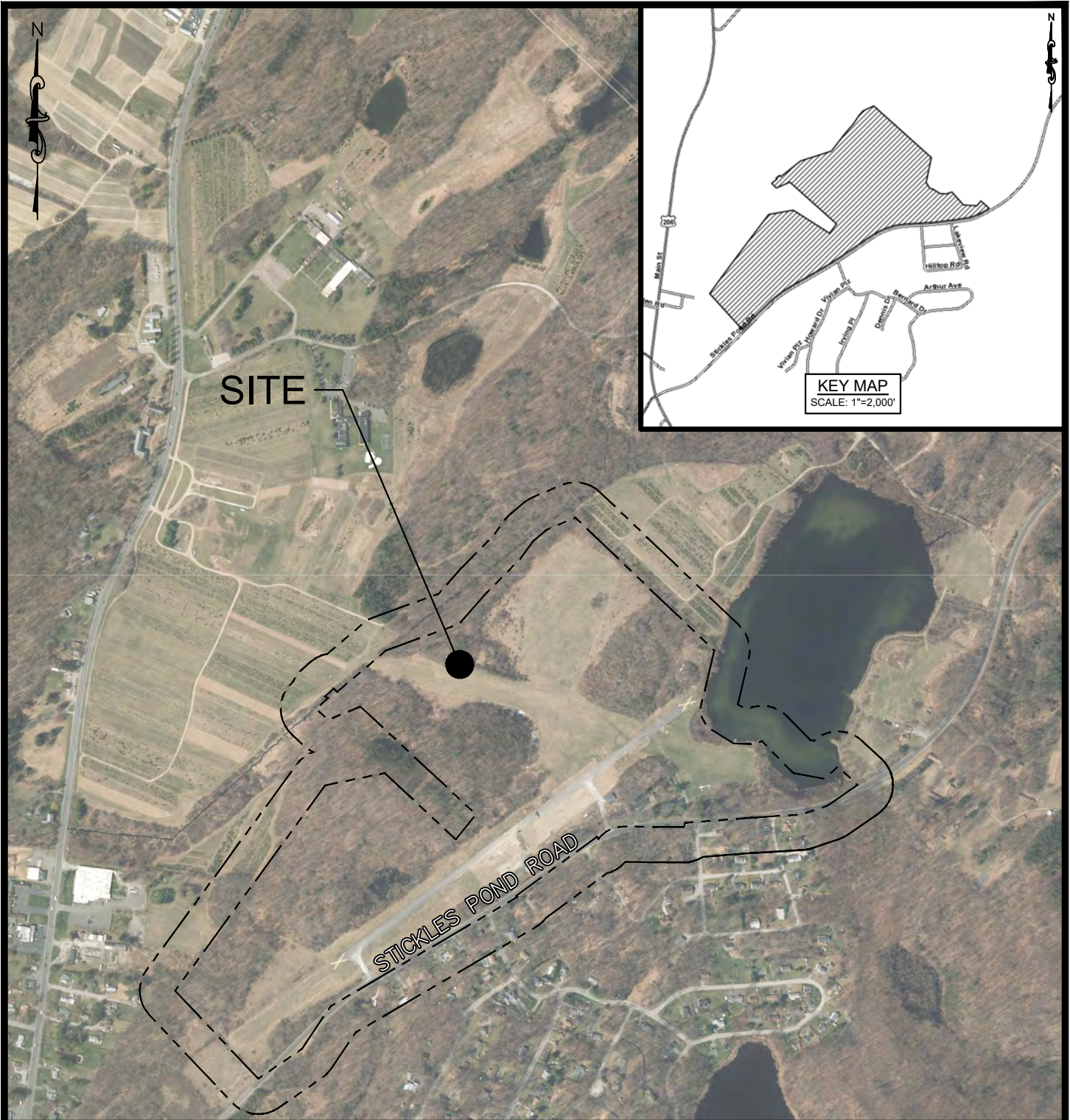
4. CONCLUSIONS

In conclusion, the proposed design includes a proposed stormwater management system for the property that meets all of the quantity, quality and recharge requirements outlined in the Stormwater Management Rules of N.J.A.C. 7:8. A waiver is requested for the use of infiltration in the routing of the 2, 10 and 100-year storm events. There is no existing stormwater conveyance system to which the proposed peak runoff rates can be discharged to.



APPENDIX A –
DRAWING EXHIBITS

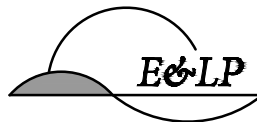




TITLE:

AERIAL MAP

140 WEST MAIN STREET, HIGH BRIDGE, NJ 08829
 (908) 238-0544 FAX: (908)238-9572
 C.O.A. #: 24GA28021500



A PROFESSIONAL ASSOCIATION

LOCATION:

BLOCK 151, LOT 21
 248 STICKLES POND ROAD
 TOWNSHIP OF ANDOVER,
 SUSSEX COUNTY, NJ

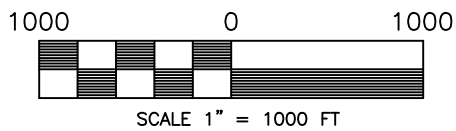
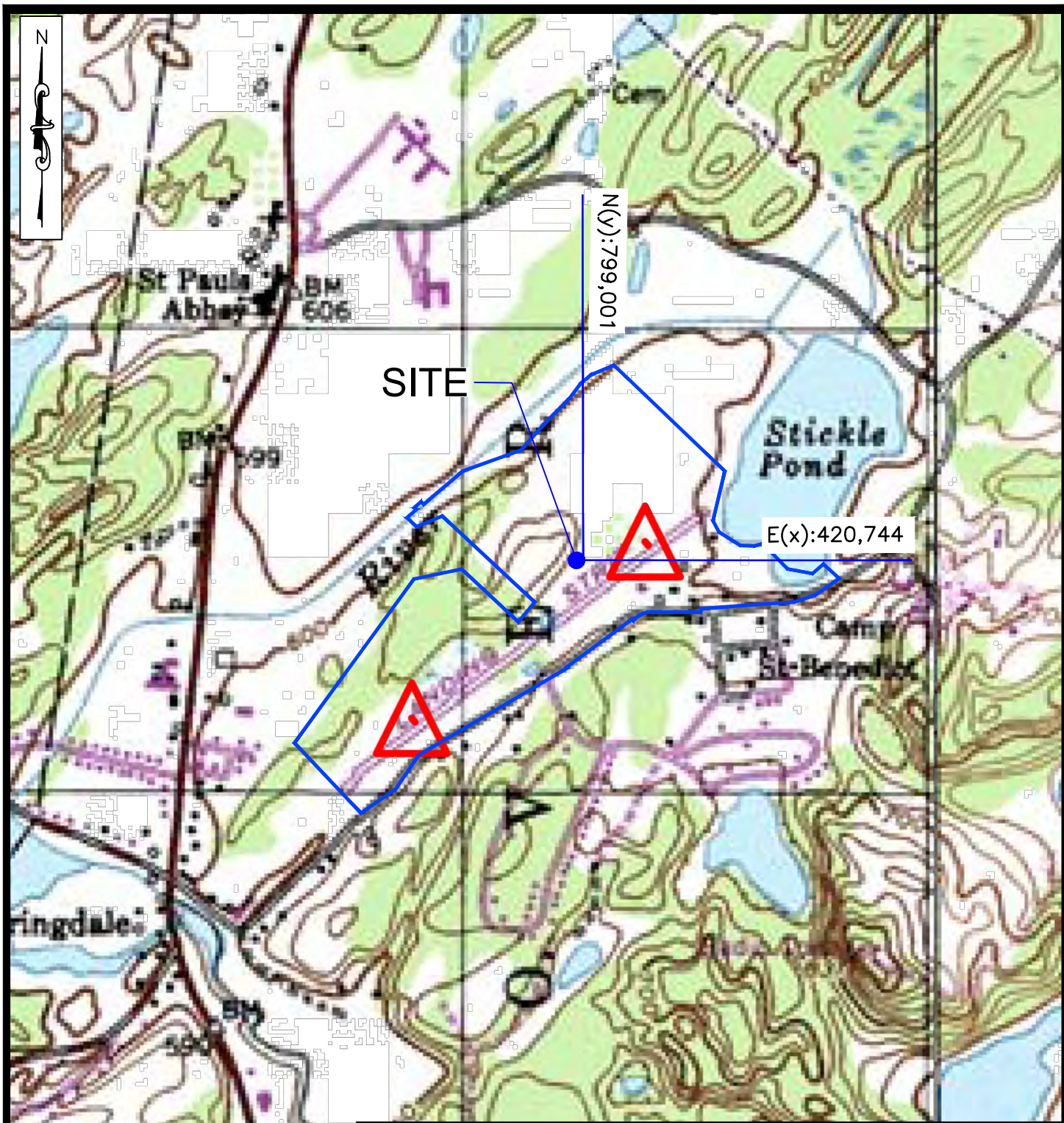
DATE: 10/22/2019

PROJECT NO.: 0119134

FILENAME: 01_AERIAL.DWG

FIGURE No.

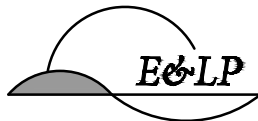
A1



TITLE:

USGS MAP

140 WEST MAIN STREET, HIGH BRIDGE, NJ 08829
 (908) 238-0544 FAX: (908)238-9572
 C.O.A. #: 24GA28021500



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LOCATION:

BLOCK 151, LOT 21
 248 STICKLES POND ROAD
 TOWNSHIP OF ANDOVER,
 SUSSEX COUNTY, NJ

DATE: 10/22/2019

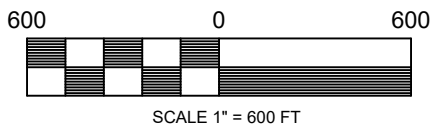
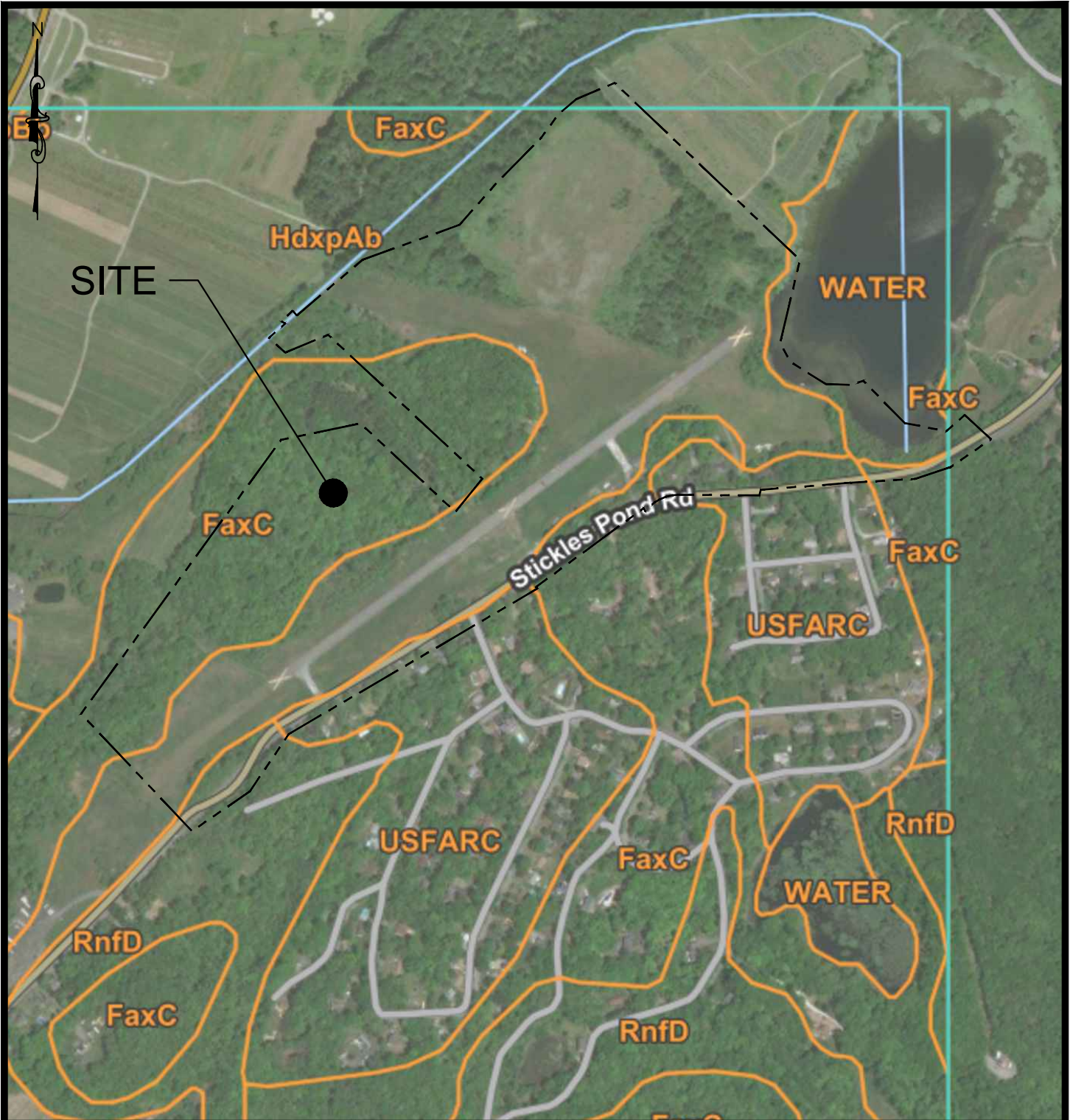
PROJECT NO.: 0119134

FILENAME: 02_USGS.DWG

FIGURE No.

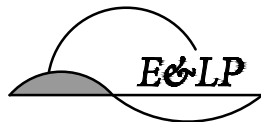
A2

REFERENCES: USGS NEWTON WEST QUAD



TITLE:

SOIL MAP



140 WEST MAIN STREET, HIGH BRIDGE, NJ 08829
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C.O.A. #: 24GA28021500

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LOCATION:

BLOCK 151, LOT 21
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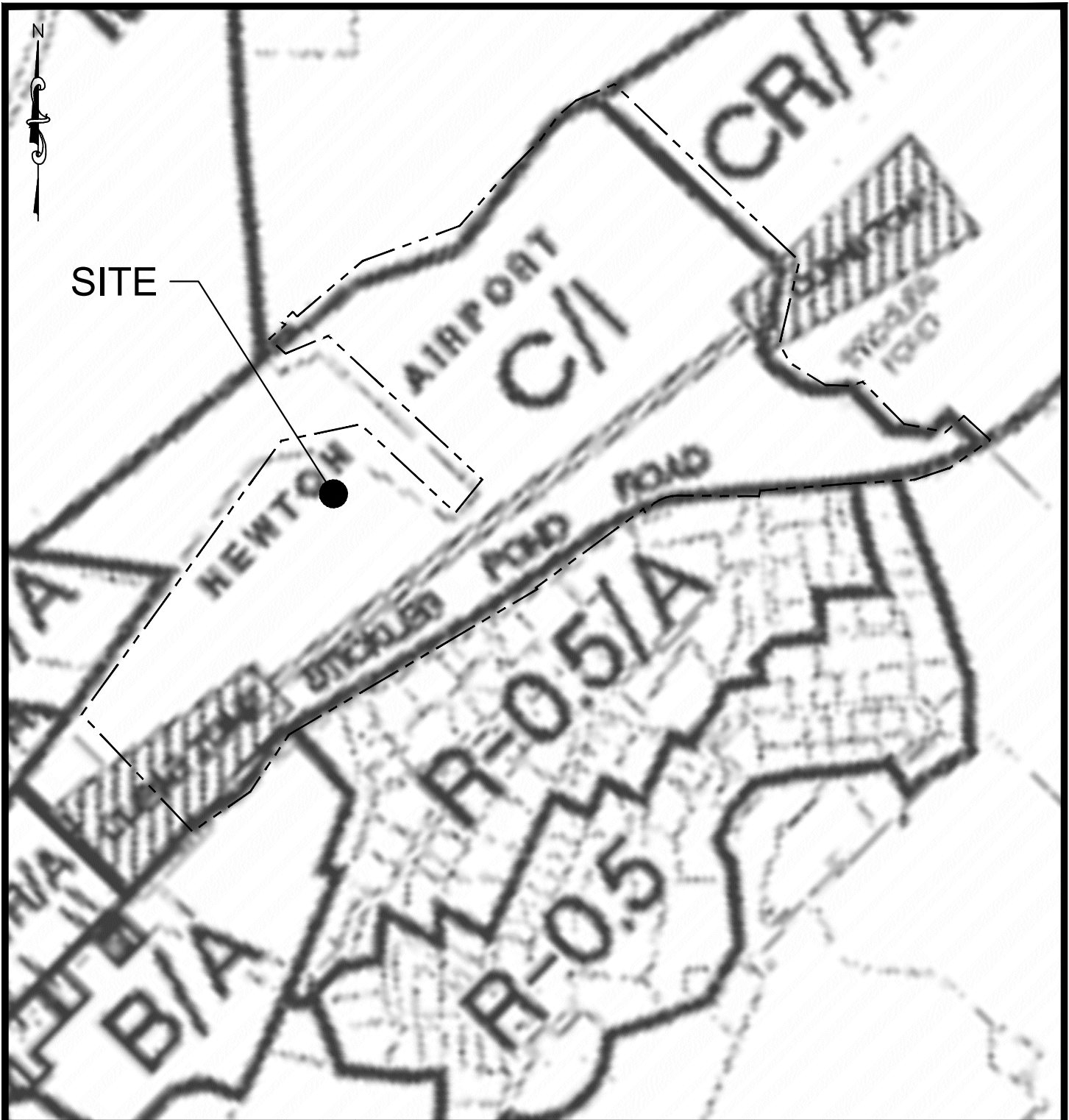
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PROJECT NO.: 0119134

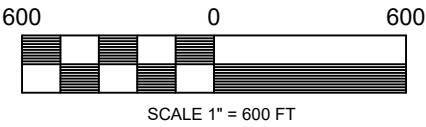
FILENAME: 03_SOILS.DWG

FIGURE No.

A3



SITE



TITLE: **ZONING MAP**

140 WEST MAIN STREET, HIGH BRIDGE, NJ 08829
 (908) 238-0544 FAX: (908)238-9572
 C.O.A. #: 24GA28021500

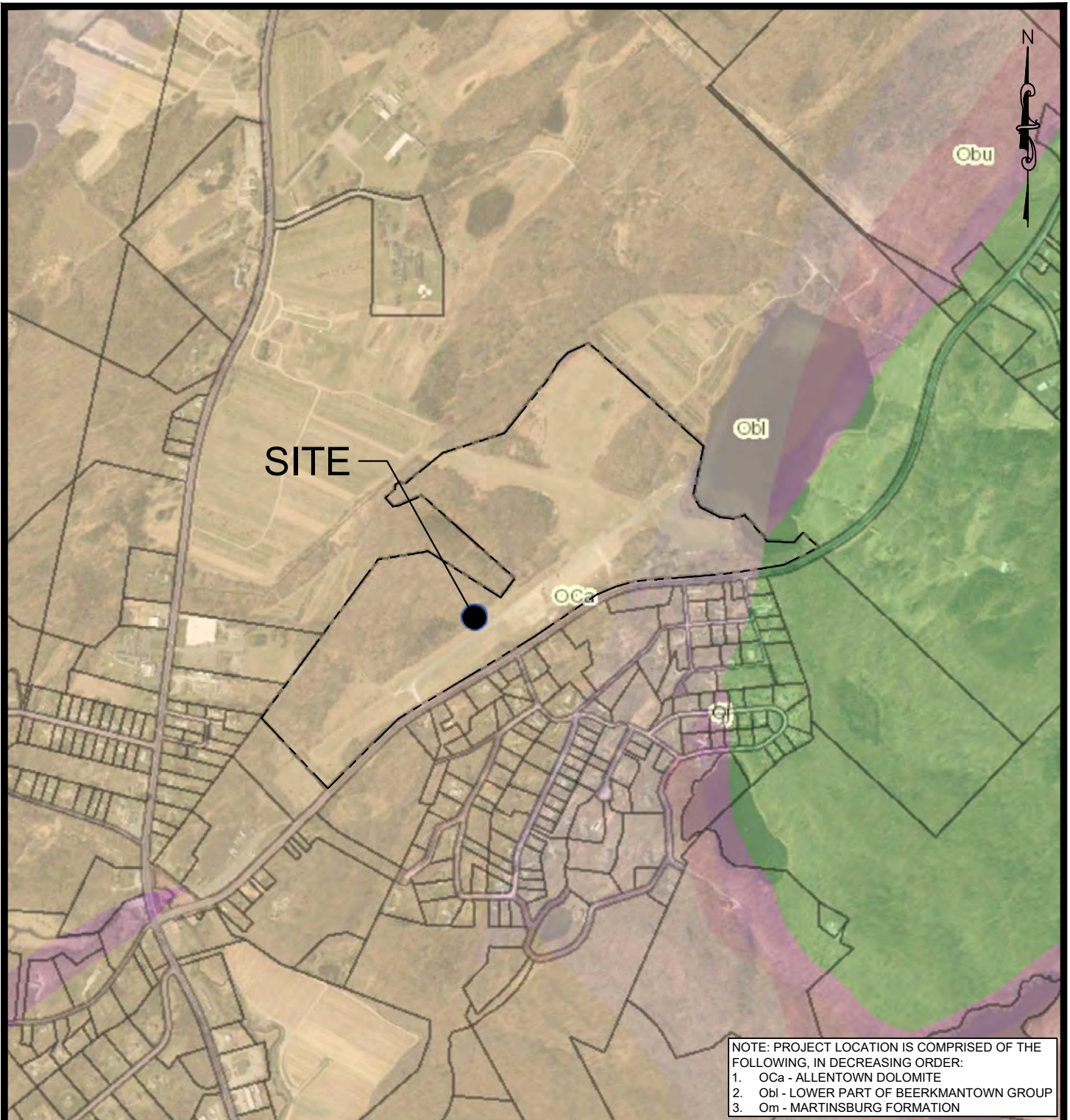
E&LP
 A PROFESSIONAL ASSOCIATION

LOCATION:
 BLOCK 151, LOT 21
 248 STICKLES POND ROAD
 TOWNSHIP OF ANDOVER,
 SUSSEX COUNTY, NJ

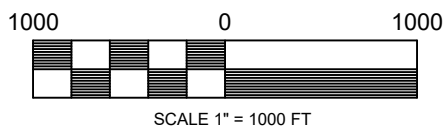
DATE: 10/22/2019
 PROJECT NO.: 0119134
 FILENAME: 04_ZONING.DWG

FIGURE No.
A4

IMAGERY SOURCE: ANDOVER TOWNSHIP ZONING MAP



NOTE: PROJECT LOCATION IS COMPRISED OF THE FOLLOWING, IN DECREASING ORDER:
 1. OCa - ALLENTOWN DOLOMITE
 2. Obl - LOWER PART OF BEERKMANTOWN GROUP
 3. Om - MARTINSBURG FORMATION



TITLE: **GEOLOGIC MAP**

140 WEST MAIN STREET, HIGH BRIDGE, NJ 08829
 (908) 238-0544 FAX: (908)238-9572
 C.O.A. #: 24GA28021500

E&LP

A PROFESSIONAL ASSOCIATION

LOCATION:
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 248 STICKLES POND ROAD
 TOWNSHIP OF ANDOVER,
 SUSSEX COUNTY, NJ

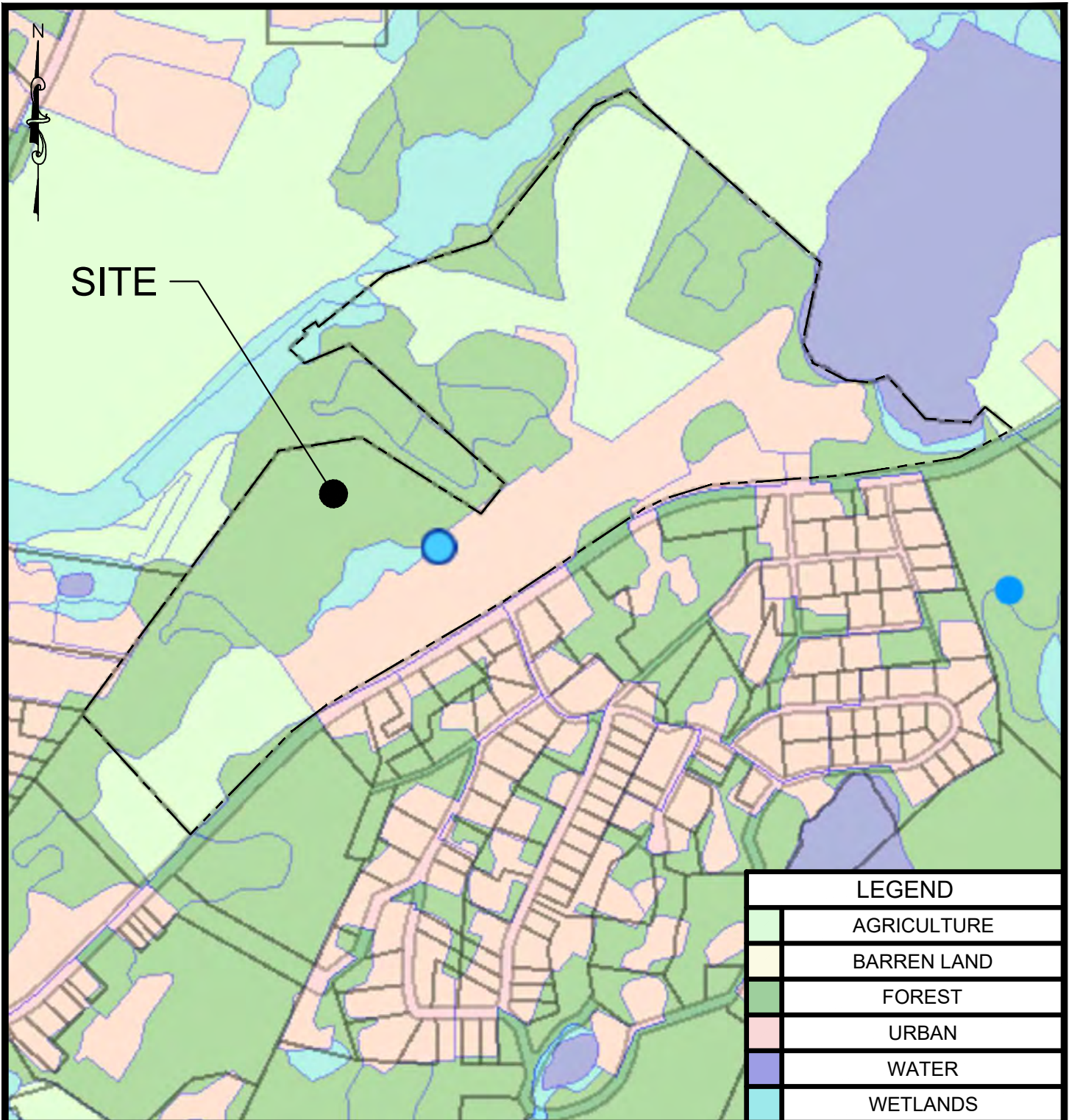
DATE: 10/22/2019

PROJECT NO.: 0119134

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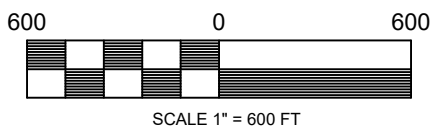
FIGURE No.
A5

REFERENCES: NJ GEOWEB



SITE

LEGEND	
	AGRICULTURE
	BARREN LAND
	FOREST
	URBAN
	WATER
	WETLANDS



TITLE: **LAND USE MAP**

140 WEST MAIN STREET, HIGH BRIDGE, NJ 08829
 (908) 238-0544 FAX: (908)238-9572
 C.O.A. #: 24GA28021500

E&LP

A PROFESSIONAL ASSOCIATION

LOCATION:
 BLOCK 151, LOT 21
 248 STICKLES POND ROAD
 TOWNSHIP OF ANDOVER,
 SUSSEX COUNTY, NJ

DATE: 10/22/2019

PROJECT NO.: 0119134

FILENAME: 06_LAND USE.DWG

FIGURE No.
A6

IMAGERY SOURCE: ANDOVER TOWNSHIP ZONING MAP



NOAA Atlas 14, Volume 2, Version 3
Location name: Andover Twp, New Jersey, USA*
Latitude: 41.026°, Longitude: -74.7583°
Elevation: 602.81 ft**
* source: ESRI Maps
** source: USGS



POINT PRECIPITATION FREQUENCY ESTIMATES

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

NOAA, National Weather Service, Silver Spring, Maryland

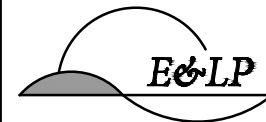
[PF tabular](#) | [PF graphical](#) | [Maps & aeriels](#)

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	0.327 (0.295-0.365)	0.391 (0.352-0.435)	0.468 (0.420-0.520)	0.527 (0.472-0.586)	0.605 (0.538-0.671)	0.667 (0.590-0.740)	0.730 (0.640-0.810)	0.798 (0.693-0.887)	0.896 (0.769-1.00)	0.973 (0.825-1.09)
10-min	0.514 (0.463-0.573)	0.616 (0.554-0.685)	0.737 (0.661-0.819)	0.825 (0.739-0.917)	0.942 (0.838-1.05)	1.03 (0.914-1.15)	1.13 (0.989-1.25)	1.22 (1.06-1.36)	1.36 (1.17-1.52)	1.47 (1.24-1.65)
15-min	0.637 (0.573-0.710)	0.763 (0.687-0.850)	0.916 (0.822-1.02)	1.03 (0.922-1.14)	1.18 (1.05-1.31)	1.29 (1.14-1.43)	1.41 (1.24-1.57)	1.53 (1.33-1.70)	1.70 (1.46-1.91)	1.84 (1.56-2.07)
30-min	0.856 (0.771-0.955)	1.04 (0.933-1.15)	1.28 (1.15-1.42)	1.46 (1.31-1.62)	1.70 (1.51-1.89)	1.89 (1.67-2.10)	2.09 (1.84-2.32)	2.30 (2.00-2.56)	2.61 (2.24-2.92)	2.86 (2.42-3.21)
60-min	1.06 (0.951-1.18)	1.29 (1.16-1.43)	1.62 (1.45-1.80)	1.88 (1.68-2.08)	2.23 (1.99-2.48)	2.53 (2.23-2.80)	2.84 (2.49-3.15)	3.18 (2.76-3.54)	3.67 (3.15-4.11)	4.09 (3.47-4.59)
2-hr	1.29 (1.16-1.42)	1.56 (1.42-1.73)	1.98 (1.78-2.19)	2.31 (2.07-2.55)	2.79 (2.49-3.07)	3.19 (2.83-3.52)	3.64 (3.20-4.01)	4.13 (3.60-4.57)	4.87 (4.18-5.41)	5.50 (4.66-6.14)
3-hr	1.44 (1.31-1.60)	1.74 (1.58-1.93)	2.19 (1.98-2.43)	2.55 (2.30-2.82)	3.07 (2.75-3.39)	3.51 (3.12-3.88)	3.99 (3.51-4.41)	4.51 (3.94-5.01)	5.31 (4.56-5.91)	5.98 (5.08-6.70)
6-hr	1.87 (1.70-2.06)	2.25 (2.05-2.48)	2.80 (2.55-3.09)	3.26 (2.96-3.59)	3.94 (3.55-4.33)	4.54 (4.05-4.99)	5.20 (4.59-5.72)	5.94 (5.18-6.54)	7.06 (6.05-7.81)	8.05 (6.80-8.93)
12-hr	2.33 (2.11-2.59)	2.81 (2.55-3.13)	3.52 (3.18-3.91)	4.13 (3.72-4.57)	5.05 (4.50-5.57)	5.86 (5.17-6.45)	6.77 (5.91-7.46)	7.80 (6.73-8.62)	9.40 (7.95-10.4)	10.8 (8.98-12.0)
24-hr	2.69 (2.50-2.93)	3.24 (3.01-3.52)	4.05 (3.75-4.39)	4.72 (4.36-5.11)	5.72 (5.25-6.18)	6.57 (6.00-7.09)	7.51 (6.81-8.09)	8.54 (7.69-9.19)	10.1 (8.96-10.8)	11.4 (10.0-12.2)
2-day	3.17 (2.95-3.43)	3.82 (3.55-4.13)	4.77 (4.43-5.15)	5.56 (5.14-5.99)	6.69 (6.16-7.20)	7.65 (7.01-8.23)	8.70 (7.92-9.34)	9.83 (8.89-10.6)	11.5 (10.3-12.3)	12.9 (11.4-13.8)
3-day	3.33 (3.10-3.58)	4.00 (3.73-4.32)	4.99 (4.64-5.37)	5.80 (5.38-6.24)	6.97 (6.44-7.48)	7.97 (7.32-8.53)	9.04 (8.25-9.67)	10.2 (9.24-10.9)	11.9 (10.7-12.7)	13.3 (11.8-14.2)
4-day	3.48 (3.25-3.74)	4.18 (3.91-4.50)	5.21 (4.85-5.59)	6.05 (5.62-6.48)	7.26 (6.71-7.76)	8.28 (7.62-8.84)	9.38 (8.58-10.0)	10.6 (9.60-11.3)	12.3 (11.1-13.1)	13.7 (12.3-14.7)
7-day	4.10 (3.84-4.41)	4.91 (4.59-5.27)	6.04 (5.65-6.48)	6.99 (6.51-7.49)	8.36 (7.75-8.93)	9.50 (8.78-10.1)	10.7 (9.86-11.5)	12.1 (11.0-12.9)	14.0 (12.7-15.0)	15.7 (14.0-16.7)
10-day	4.73 (4.44-5.05)	5.65 (5.30-6.03)	6.86 (6.43-7.32)	7.85 (7.34-8.37)	9.24 (8.62-9.85)	10.4 (9.65-11.1)	11.6 (10.7-12.3)	12.9 (11.8-13.7)	14.7 (13.4-15.7)	16.2 (14.7-17.3)
20-day	6.35 (5.98-6.74)	7.53 (7.09-7.99)	8.94 (8.42-9.49)	10.1 (9.47-10.7)	11.6 (10.9-12.3)	12.9 (12.0-13.6)	14.1 (13.2-15.0)	15.5 (14.4-16.4)	17.3 (15.9-18.3)	18.7 (17.2-19.9)
30-day	7.94 (7.51-8.40)	9.36 (8.85-9.89)	10.9 (10.3-11.5)	12.1 (11.4-12.8)	13.7 (12.9-14.4)	14.9 (14.0-15.8)	16.2 (15.2-17.1)	17.5 (16.3-18.4)	19.1 (17.8-20.2)	20.4 (18.9-21.6)
45-day	10.1 (9.62-10.7)	11.9 (11.3-12.5)	13.6 (12.9-14.3)	14.9 (14.2-15.7)	16.6 (15.8-17.5)	17.9 (17.0-18.9)	19.2 (18.2-20.2)	20.4 (19.3-21.5)	22.0 (20.7-23.2)	23.2 (21.8-24.5)
60-day	12.2 (11.5-12.8)	14.2 (13.5-15.0)	16.2 (15.4-17.0)	17.7 (16.8-18.6)	19.5 (18.6-20.6)	21.0 (19.9-22.1)	22.3 (21.1-23.5)	23.7 (22.4-24.9)	25.3 (23.9-26.7)	26.6 (25.0-28.0)

¹ Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).
 Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.
 Please refer to NOAA Atlas 14 document for more information.

TITLE: NOAA ATLAS 14 - POINT PRECIPITATION FREQUENCY ESTIMATES



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A PROFESSIONAL ASSOCIATION

LOCATION:
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 248 STICKLES POND ROAD
 TOWNSHIP OF ANDOVER,
 SUSSEX COUNTY, NJ

DATE: 10/22/2019
PROJECT NO.: 0119134
FILENAME: NOAA FREQUENCY.DWG

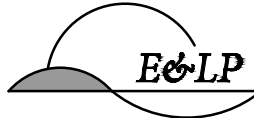
FIGURE No.
A7

TABLE 7.1
TYPICAL RUNOFF COEFFICIENTS (C VALUES) FOR 100 YEAR FREQUENCY STORM

Land Use Description	Hydrologic Soil Group			
	A	B	C	D
Cultivated land:				
without conservation treatment	0.49	0.67	0.81	0.88
with conservation treatment	0.27	0.43	0.61	0.67
Pasture or range land:				
poor condition	0.38	0.63	0.78	0.84
good condition	NA	0.25	0.51	0.65
Meadow: good condition	NA	NA	0.44	0.61
Wood or forest land:				
thin stand, poor cover, no mulch	NA	NA	0.59	0.79
good cover	NA	NA	0.45	0.59
Open spaces, lawns, parks, golf courses, cemeteries:				
good condition, grass cover on 75% or more of area	NA	0.25	0.51	0.65
fair condition, grass cover on 50-75% of area	NA	0.45	0.63	0.74
Commercial and business areas (85% impervious)	0.84	0.90	0.93	0.96
Industrial districts (72% impervious)	0.67	0.81	0.88	0.92
Residential:				
Average lot size	Average impervious			
1/8 acre	65%	0.59	0.76	0.86
1/4 acre	38%	0.25	0.55	0.70
1/2 acre	30%	NA	0.49	0.67
3/4 acre	25%	NA	0.45	0.65
1 acre	20%	NA	0.41	0.63
Paved parking lots, roofs, driveways, etc.		0.99	0.99	0.99
Streets and roads:				
paved with curbs and storm sewers		0.99	0.99	0.99
gravel		0.57	0.76	0.84
dirt		0.49	0.69	0.84

Note: NA denotes information is not available; design engineers should rely on another authoritative source.
 Source: New Jersey Department of Environmental Protection, Technical Manual for Land Use Regulation Program, Bureaus of Inland and Coastal Regulations, Stream Encroachment Permits (Trenton, New Jersey: Department of Environmental Protection, Revised September 1995) p. 12.

TITLE: NJRSIS TABLE 7.1: TYPICAL RUNOFF COEFFICIENTS



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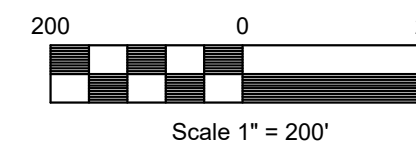
LOCATION:
 BLOCK 151, LOT 21
 248 STICKLES POND ROAD
 TOWNSHIP OF ANDOVER,
 SUSSEX COUNTY, NJ

DATE: 10/22/2019
 PROJECT NO.: 0119134
 FILENAME: RUNOFF COEFFICIENTS.DWG

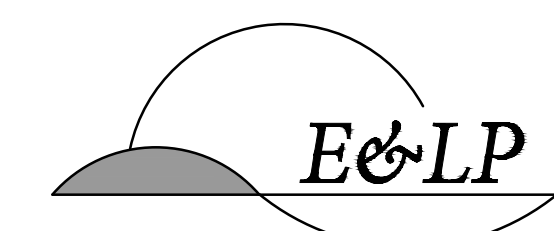
FIGURE No.
A8



APPENDIX B –
PRE AND POST DEVELOPMENT DRAINAGE AREA MAPS

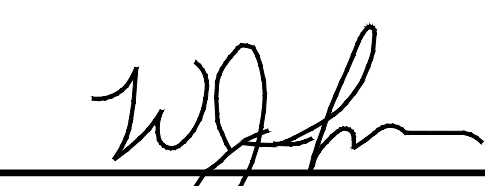


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PH. 908-238-0544 FAX. 908-238-9572
A PROFESSIONAL ASSOCIATION
CERTIFICATE OF AUTHORIZATION NO.: 24GA28021500 EXP. 8/31/2022

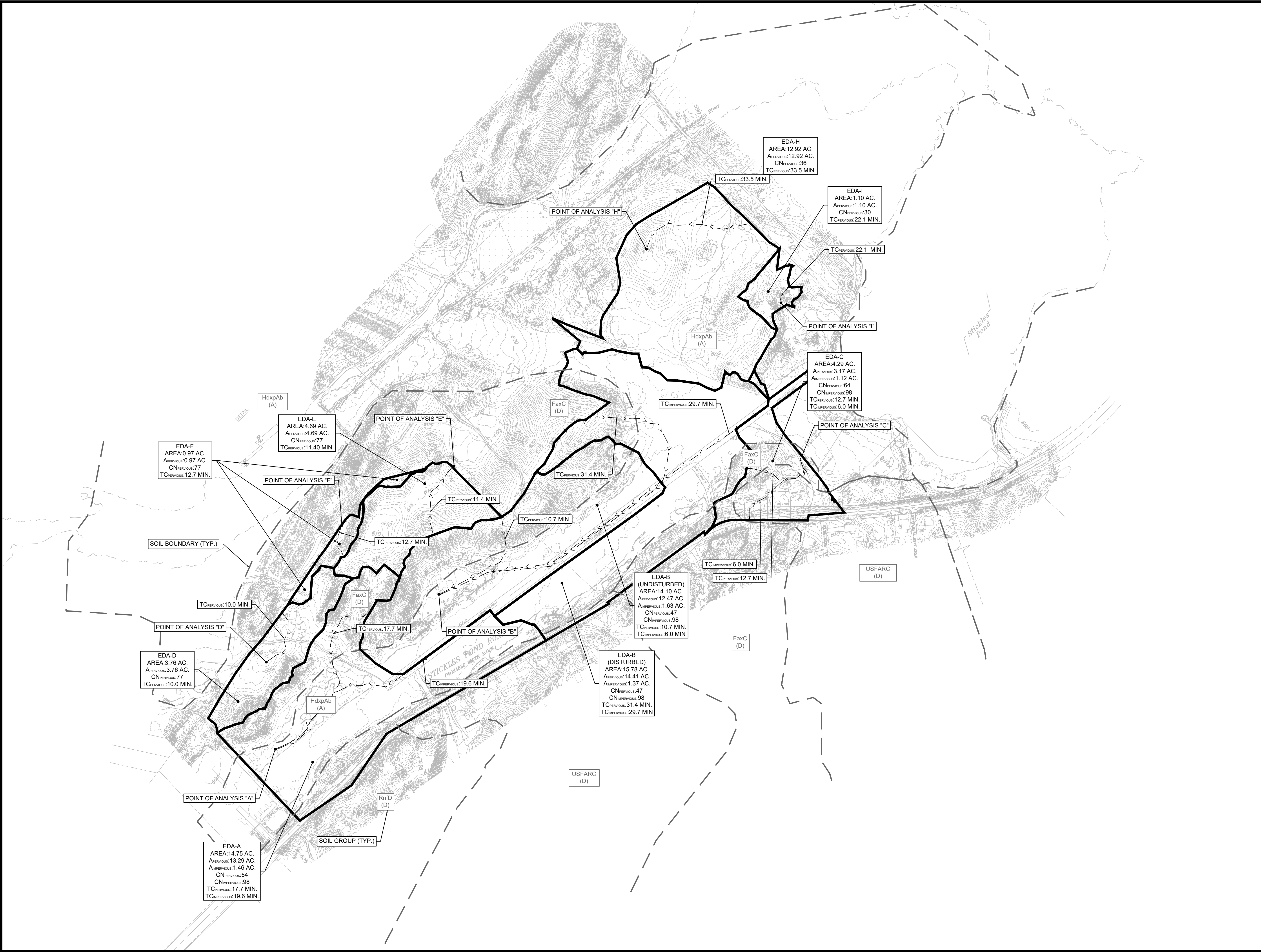
NO.	REVISION	BY	DATE
5.	PER TWP ENGINEER COMMENTS	RCG	3/8/2022
4.	PER TWP ENGINEER COMMENTS	OM	9/29/2021
3.	PER TWP ENGINEER COMMENTS	EAJ	1/26/2021
2.	PER TWP ENGINEER COMMENTS	EAJ	11/1/2020
1.	PER TWP ENGINEER COMMENTS	EAJ	2/6/2020

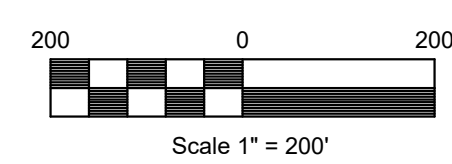
DATE: 03/08/2022

WAYNE J. INGRAM
PROFESSIONAL ENGINEER
N.J. P.E. NO. 24GB04258200

PROJECT:
248 STICKLES POND ROAD
BLOCK 151, LOT 21
ANDOVER TOWNSHIP
SUSSEX COUNTY NEW JERSEY

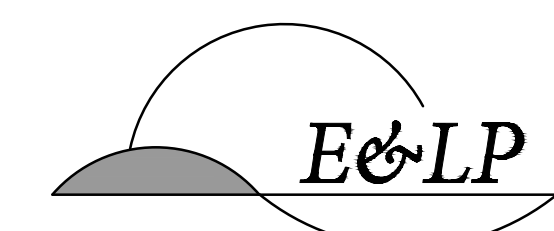
TITLE:
PRE-DEVELOPMENT
DRAINAGE AREA

JOB NO.:	19134	DRAWING NO.:	1 2
SCALE:	1" = 200'		
DESIGNED:	CBR		
CHECKED:	JAH		
FILENAME:	00_EX-WSHD.DWG		
DATE:	12/12/2019		



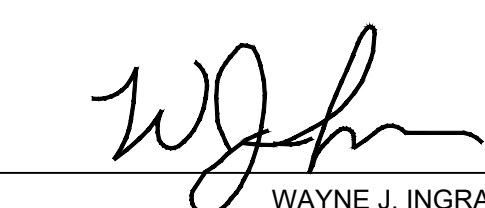


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A PROFESSIONAL ASSOCIATION
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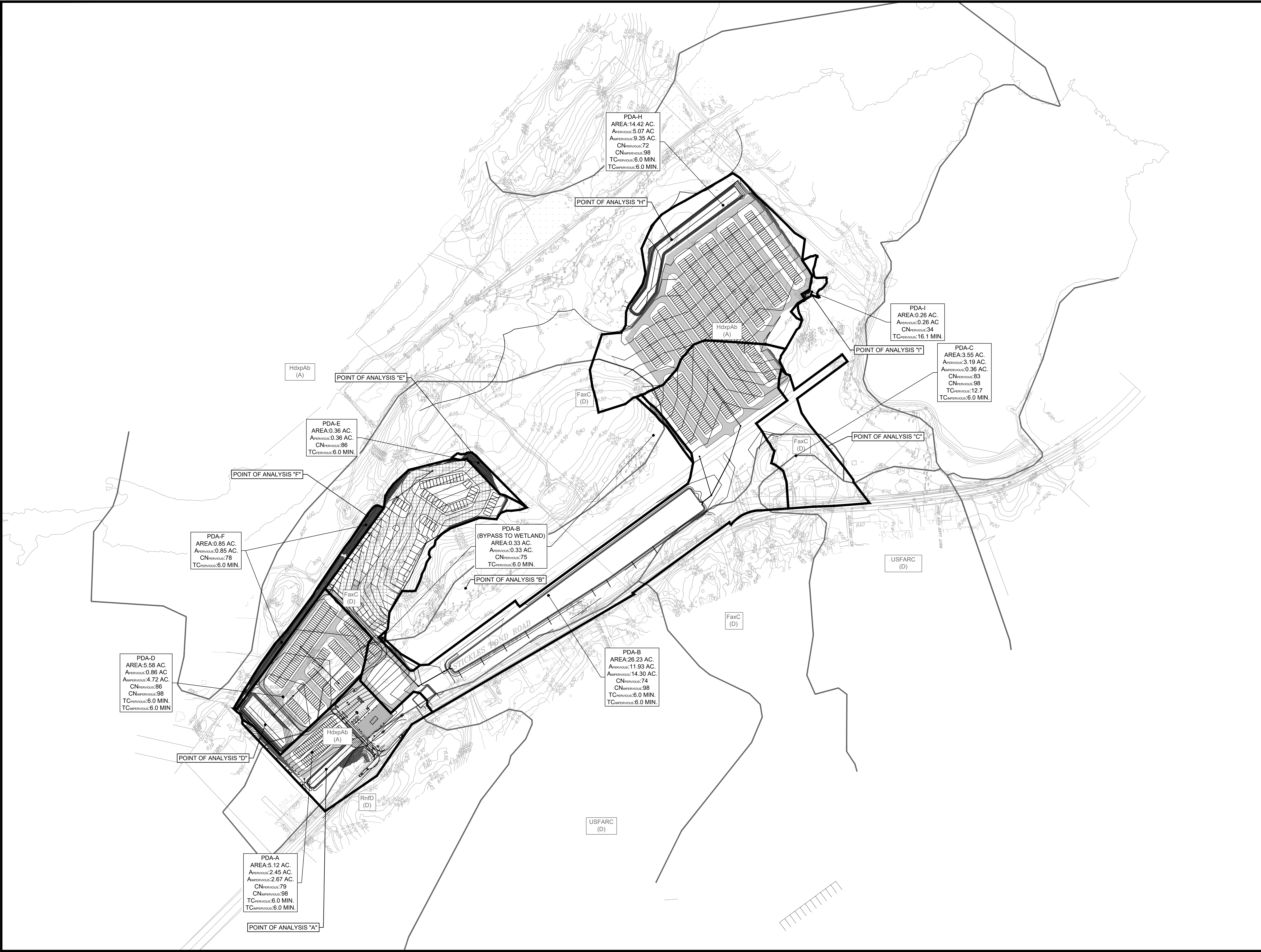
NO.	REVISION	BY	DATE
5.	PER TWP ENGINEER COMMENTS	RCG	3/8/2022
4.	PER TWP ENGINEER COMMENTS	OM	9/29/2021
3.	PER TWP ENGINEER COMMENTS	EAJ	1/26/2021
2.	PER TWP ENGINEER COMMENTS	EAJ	11/1/2020
1.	PER TWP ENGINEER COMMENTS	EAJ	2/6/2020

03/08/2022
DATE 
WAYNE J. INGRAM
PROFESSIONAL ENGINEER
N.J. P.E. NO. 24GB04258200

PROJECT:
248 STICKLES POND ROAD
BLOCK 151, LOT 21
ANDOVER TOWNSHIP
SUSSEX COUNTY NEW JERSEY

TITLE:
POST-DEVELOPMENT
DRAINAGE AREA

JOB NO.:	19134	DRAWING NO.:	2 2
SCALE:	1" = 200'		
DESIGNED:	CBR		
CHECKED:	JAH		
FILENAME:	00_PR-WSHD.DWG		
DATE:	09/30/2019		



PDA-H
AREA:14.42 AC.
A_{PERVIOUS}:5.07 AC.
A_{IMPERVIOUS}:9.35 AC.
CN_{PERVIOUS}:72
CN_{IMPERVIOUS}:98
TC_{PERVIOUS}:6.0 MIN.
TC_{IMPERVIOUS}:6.0 MIN.

PDA-I
AREA:0.26 AC.
A_{PERVIOUS}:0.26 AC.
A_{IMPERVIOUS}:0.00 AC.
CN_{PERVIOUS}:34
CN_{IMPERVIOUS}:98
TC_{PERVIOUS}:16.1 MIN.

PDA-C
AREA:3.55 AC.
A_{PERVIOUS}:3.19 AC.
A_{IMPERVIOUS}:0.36 AC.
CN_{PERVIOUS}:83
CN_{IMPERVIOUS}:98
TC_{PERVIOUS}:12.7
TC_{IMPERVIOUS}:6.0 MIN.

PDA-E
AREA:0.36 AC.
A_{PERVIOUS}:0.36 AC.
A_{IMPERVIOUS}:0.00 AC.
CN_{PERVIOUS}:86
CN_{IMPERVIOUS}:98
TC_{PERVIOUS}:6.0 MIN.

PDA-B (BYPASS TO WETLAND)
AREA:0.33 AC.
A_{PERVIOUS}:0.33 AC.
A_{IMPERVIOUS}:0.00 AC.
CN_{PERVIOUS}:75
CN_{IMPERVIOUS}:98
TC_{PERVIOUS}:6.0 MIN.

PDA-F
AREA:0.85 AC.
A_{PERVIOUS}:0.85 AC.
A_{IMPERVIOUS}:0.00 AC.
CN_{PERVIOUS}:78
CN_{IMPERVIOUS}:98
TC_{PERVIOUS}:6.0 MIN.

PDA-B
AREA:26.23 AC.
A_{PERVIOUS}:11.93 AC.
A_{IMPERVIOUS}:14.30 AC.
CN_{PERVIOUS}:74
CN_{IMPERVIOUS}:98
TC_{PERVIOUS}:6.0 MIN.
TC_{IMPERVIOUS}:6.0 MIN.

PDA-D
AREA:5.58 AC.
A_{PERVIOUS}:0.86 AC.
A_{IMPERVIOUS}:4.72 AC.
CN_{PERVIOUS}:86
CN_{IMPERVIOUS}:98
TC_{PERVIOUS}:6.0 MIN.
TC_{IMPERVIOUS}:6.0 MIN.

PDA-A
AREA:5.12 AC.
A_{PERVIOUS}:2.45 AC.
A_{IMPERVIOUS}:2.67 AC.
CN_{PERVIOUS}:79
CN_{IMPERVIOUS}:98
TC_{PERVIOUS}:6.0 MIN.
TC_{IMPERVIOUS}:6.0 MIN.



APPENDIX C –
CURVE NUMBER WORKSHEETS

248 Stickles Pond Road
Andover Township
Sussex County, NJ

By: EAJ
 Date: 23-Oct-19
 Chk'd: CN
 Revised: 1-Nov-20

EDA A - Pre-Developed (Pervious)

RUNOFF CURVE NUMBER CALCULATIONS:
 (S.C.S. TR-55 method)

Cover Description	Cn	Area		Product of CN x Area
		(sf)	(acres)	
Grassland (A)	39	332,648	7.64	297.82
Grassland (D)	80	45,453	1.04	83.48
Wood (A)	30	19,124	0.44	13.17
Wood (D)	77	181,596	4.17	321.00

Totals = 13.29 715.47

Composite Cn = $\frac{715.47}{13.29} = 54$

USE Cn = 54

248 Stickles Pond Road
Andover Township
Sussex County, NJ

By: EAJ
Date: 23-Oct-19
Chk'd: CN
Revised: 1-Nov-20

EDA A - Pre-Developed (Impervious)

RUNOFF CURVE NUMBER CALCULATIONS:

(S.C.S. TR-55 method)

Cover Description	Cn	Area		Product of CN x Area
		(sf)	(acres)	
Impervious	98	63,746	1.46	143.41

Totals =

1.46	143.41
------	--------

Composite Cn = $\frac{143.41}{1.46}$ = 98.00

USE Cn = 98.0

248 Stickles Pond Road
Andover Township
Sussex County, NJ

By: EAJ
 Date: 23-Oct-19
 Chk'd: CN
 Revised: 1-Nov-20

EDA B - Pre-Developed (Pervious)

RUNOFF CURVE NUMBER CALCULATIONS:

(S.C.S. TR-55 method)

Cover Description	Cn	Area		Product of CN x Area
		(sf)	(acres)	
Grassland (A)	39	490,193	11.25	438.88
Grassland (D)	80	41,674	0.96	76.54
Wood (A)	30	343,585	7.89	236.63
Wood (D)	77	295,233	6.78	521.88

Totals = 26.88 1273.92

Composite Cn = $\frac{1273.92}{26.88} = 47.40$

USE Cn = 47

248 Stickles Pond Road
Andover Township
Sussex County, NJ

By: EAJ
 Date: 23-Oct-19
 Chk'd: CN
 Revised: 1-Nov-20

EDA B - Pre-Developed (Impervious)

RUNOFF CURVE NUMBER CALCULATIONS:
 (S.C.S. TR-55 method)

Cover Description	Cn	Area		Product of CN x Area
		(sf)	(acres)	
Impervious	98	130,680	3.00	294.00

Totals = 3.00 294.00

Composite Cn = $\frac{294.00}{3.00}$ = 98.00

USE Cn = 98.0

248 Stickles Pond Road
Andover Township
Sussex County, NJ

By: EAJ
Date: 23-Oct-19
Chk'd: CN
Revised: 1-Nov-20

EDA C - Pre-Developed (Pervious)

RUNOFF CURVE NUMBER CALCULATIONS:

(S.C.S. TR-55 method)

Cover Description	Cn	Area		Product of CN x Area
		(sf)	(acres)	
Lawn (A)	68	46,284	1.06	72.25
Lawn (D)	89	49,557	1.14	101.25
Wood (A)	30	3,296	0.08	2.27
Wood (D)	77	38,897	0.89	68.76

Totals = 3.17 244.53

Composite Cn = $\frac{244.53}{3.17}$ = 77.17

USE Cn = 77

248 Stickles Pond Road
Andover Township
Sussex County, NJ

By: EAJ
 Date: 23-Oct-19
 Chk'd: CN
 Revised: 1-Nov-20

EDA C - Pre-Developed (Impervious)

RUNOFF CURVE NUMBER CALCULATIONS:

(S.C.S. TR-55 method)

Cover Description	Cn	Area		Product of CN x Area
		(sf)	(acres)	
Impervious	98	48,787	1.12	109.76

Totals =

1.12	109.76
------	--------

Composite Cn = $\frac{109.76}{1.12} = 98.00$

USE Cn = 98.0

248 Stickles Pond Road
Andover Township
Sussex County, NJ

By: EAJ
 Date: 23-Oct-19
 Chk'd: CN
 Revised: 1-Nov-20

EDA D - Pre-Developed (Pervious)

RUNOFF CURVE NUMBER CALCULATIONS:

(S.C.S. TR-55 method)

Cover Description	Cn	Area		Product of CN x Area
		(sf)	(acres)	
Grassland (D)	80	18,911	0.43	34.73
Wood (D)	77	144,703	3.32	255.79

Totals =

3.76	290.52
------	--------

Composite Cn = $\frac{290.52}{3.76}$ = 77.35

USE Cn = 77

248 Stickles Pond Road
Andover Township
Sussex County, NJ

By: EAJ
 Date: 23-Oct-19
 Chk'd: CN
 Revised: 1-Nov-20

EDA E - Pre-Developed (Pervious)

RUNOFF CURVE NUMBER CALCULATIONS:

(S.C.S. TR-55 method)

Cover Description	Cn	Area		Product of CN x Area
		(sf)	(acres)	
Wood (D)	77	204,296	4.69	361.13

Totals =

4.69	361.13
------	--------

Composite Cn = $\frac{361.13}{4.69}$ = 77.00

USE Cn = 77.0

248 Stickles Pond Road
Andover Township
Sussex County, NJ

By: EAJ
 Date: 23-Oct-19
 Chk'd: CN
 Revised: 1-Nov-20

EDA F - Pre-Developed (Pervious)

RUNOFF CURVE NUMBER CALCULATIONS:

(S.C.S. TR-55 method)

Cover Description	Cn	Area		Product of CN x Area
		(sf)	(acres)	
Wood (D)	77	42,253	0.97	74.69

Totals =

0.97	74.69
------	-------

Composite Cn = $\frac{74.69}{0.97}$ = 77.00

USE Cn = 77.0

248 Stickles Pond Road
Andover Township
Sussex County, NJ

By: EAJ
 Date: 23-Oct-19
 Chk'd: CN
 Revised: 1-Nov-20

EDA G - Pre-Developed (Pervious)

RUNOFF CURVE NUMBER CALCULATIONS:

(S.C.S. TR-55 method)

Cover Description	Cn	Area		Product of CN x Area
		(sf)	(acres)	
Grassland (A)	39	56,368	1.29	50.47
Grassland (D)	80	31,324	0.72	57.53
Wood (A)	30	11,763	0.27	8.10
Wood (D)	77	121,640	2.79	215.02

Totals = 5.08 331.12

Composite Cn = $\frac{331.12}{5.08} = 65.24$

USE Cn = 65

248 Stickles Pond Road
Andover Township
Sussex County, NJ

By: EAJ
 Date: 23-Oct-19
 Chk'd: CN
 Revised: 1-Nov-20

EDA H - Pre-Developed (Pervious)

RUNOFF CURVE NUMBER CALCULATIONS:
 (S.C.S. TR-55 method)

Cover Description	Cn	Area		Product of CN x Area
		(sf)	(acres)	
Grassland (A)	39	388,727	8.92	348.03
Wood (A)	30	174,178	4.00	119.96

Totals =

12.92	467.99
-------	--------

Composite Cn = $\frac{467.99}{12.92}$ = 36.22

USE Cn = 36

248 Stickles Pond Road
Andover Township
Sussex County, NJ

By: EAJ
 Date: 23-Oct-19
 Chk'd: CN
 Revised: 1-Nov-20

EDA I - Pre-Developed (Pervious)

RUNOFF CURVE NUMBER CALCULATIONS:

(S.C.S. TR-55 method)

Cover Description	Cn	Area		Product of CN x Area
		(sf)	(acres)	
Wood (A)	30	48,079	1.10	33.11

Totals =

1.10	33.11
------	-------

Composite Cn = $\frac{33.11}{1.10}$ = 30.00

USE Cn = 30

248 Stickles Pond Road
Andover Township
Sussex County, NJ

By: EAJ
 Date: 23-Oct-19
 Chk'd: CN
 Revised: 7-Mar-22

PDA A - Post-Developed (Pervious)

RUNOFF CURVE NUMBER CALCULATIONS:

(S.C.S. TR-55 method)

Cover Description	Cn	Area		Product of CN x Area
		(sf)	(acres)	
Lawn (A)	68	51,267	1.18	80.03
Lawn (D)	89	55,657	1.28	113.72

Totals =

2.45	193.75
------	--------

Composite Cn = $\frac{193.75}{2.45}$ = 78.93

USE Cn = 79

248 Stickles Pond Road
Andover Township
Sussex County, NJ

By: EAJ
Date: 23-Oct-19
Chk'd: CN
Revised: 7-Mar-22

PDA A - Post-Developed (Impervious)

RUNOFF CURVE NUMBER CALCULATIONS:

(S.C.S. TR-55 method)

Cover Description	Cn	Area		Product of CN x Area
		(sf)	(acres)	
Impervious	98	116515	2.67	262.13

Totals =

2.67	262.13
------	--------

Composite Cn = $\frac{262.13}{2.67}$ = 98.00

USE Cn = 98.0

248 Stickles Pond Road
Andover Township
Sussex County, NJ

By: EAJ
 Date: 23-Oct-19
 Chk'd: CN
 Revised: 1-Nov-20

PDA B - Post-Developed (Pervious)

RUNOFF CURVE NUMBER CALCULATIONS:
 (S.C.S. TR-55 method)

Cover Description	Cn	Area		Product of CN x Area
		(sf)	(acres)	
Lawn (A)	68	371,687	8.53	580.23
Lawn (D)	89	147,835	3.39	302.05

Totals =

11.93	882.28
-------	--------

Composite Cn = $\frac{882.28}{11.93} = 73.98$

USE Cn = 74

248 Stickles Pond Road
Andover Township
Sussex County, NJ

By: EAJ
Date: 23-Oct-19
Chk'd: CN
Revised: 7-Mar-22

PDA B - Post-Developed (Impervious)

RUNOFF CURVE NUMBER CALCULATIONS:

(S.C.S. TR-55 method)

Cover Description	Cn	Area		Product of CN x Area
		(sf)	(acres)	
Impervious	98	622,982	14.30	1401.57

Totals =

14.30	1401.57
-------	---------

Composite Cn = $\frac{1401.57}{14.30}$ = 98.00

USE Cn = 98

248 Stickles Pond Road
Andover Township
Sussex County, NJ

By: EAJ
Date: 23-Oct-19
Chk'd: CN
Revised: 7-Mar-22

PDA B - Post-Developed (Bypass)

RUNOFF CURVE NUMBER CALCULATIONS:

(S.C.S. TR-55 method)

Cover Description	Cn	Area		Product of CN x Area
		(sf)	(acres)	
Lawn (A)	68	9,637	0.22	15.04
Lawn (D)	89	4,526	0.10	9.25

Totals =

0.33	24.29
------	-------

Composite Cn = $\frac{24.29}{0.33} = 74.71$

USE Cn = 75

248 Stickles Pond Road
Andover Township
Sussex County, NJ

By: EAJ
 Date: 23-Oct-19
 Chk'd: CN
 Revised: 7-Mar-22

PDA C - Post-Developed (Pervious)

RUNOFF CURVE NUMBER CALCULATIONS:

(S.C.S. TR-55 method)

Cover Description	Cn	Area		Product of CN x Area
		(sf)	(acres)	
Lawn (A)	68	39,267	0.90	61.30
Lawn (D)	89	99,480	2.28	203.25

Totals =

3.19	264.55
------	--------

Composite Cn = $\frac{264.55}{3.19}$ = 83.06

USE Cn = 83

248 Stickles Pond Road
Andover Township
Sussex County, NJ

By: EAJ
Date: 23-Oct-19
Chk'd: CN
Revised: 7-Mar-22

PDA-C - Post-Developed (Impervious)

RUNOFF CURVE NUMBER CALCULATIONS:

(S.C.S. TR-55 method)

Cover Description	Cn	Area		Product of CN x Area
		(sf)	(acres)	
Impervious	98	15,700	0.36	35.32

Totals =

0.36	35.32
------	-------

$$\text{Composite Cn} = \frac{35.32}{0.36} = 98.00$$

USE Cn = 98.0

248 Stickles Pond Road
Andover Township
Sussex County, NJ

By: EAJ
Date: 23-Oct-19
Chk'd: CN
Revised: 7-Mar-22

PDA D - Post-Developed (Pervious)

RUNOFF CURVE NUMBER CALCULATIONS:

(S.C.S. TR-55 method)

Cover Description	Cn	Area		Product of CN x Area
		(sf)	(acres)	
Lawn (A)	68	5,870	0.13	9.16
Lawn (D)	89	31,668	0.73	64.70

Totals =

0.86	73.87
------	-------

Composite Cn = $\frac{73.87}{0.86}$ = 85.72

USE Cn = 86

248 Stickles Pond Road
Andover Township
Sussex County, NJ

By: EAJ
Date: 23-Oct-19
Chk'd: CN
Revised: 7-Mar-22

PDA D - Post-Developed (Impervious)

RUNOFF CURVE NUMBER CALCULATIONS:

(S.C.S. TR-55 method)

Cover Description	Cn	Area		Product of CN x Area
		(sf)	(acres)	
Impervious	98	205,679	4.72	462.73

Totals =

4.72	462.73
------	--------

Composite Cn = $\frac{462.73}{4.72}$ = 98.00

USE Cn = 98

248 Stickles Pond Road
Andover Township
Sussex County, NJ

By: EAJ
 Date: 23-Oct-19
 Chk'd: CN
 Revised: 1-Nov-20

PDA E1 - Post-Developed (Pervious)

RUNOFF CURVE NUMBER CALCULATIONS:

(S.C.S. TR-55 method)

Cover Description	Cn	Area		Product of CN x Area
		(sf)	(acres)	
Lawn (D)	86	15,682	0.36	30.96

Totals =

0.36	30.96
------	-------

$$\text{Composite Cn} = \frac{30.96}{0.36} = 86.00$$

USE Cn = 86

248 Stickles Pond Road
Andover Township
Sussex County, NJ

By: EAJ
 Date: 23-Oct-19
 Chk'd: CN
 Revised: 1-Nov-20

PDA F - Post-Developed (Pervious)

RUNOFF CURVE NUMBER CALCULATIONS:

(S.C.S. TR-55 method)

Cover Description	Cn	Area		Product of CN x Area
		(sf)	(acres)	
Meadow (D)	78	37,026	0.85	66.30

Totals =

0.85	66.30
------	-------

Composite Cn = $\frac{66.30}{0.85} = 78.00$

USE Cn = 78

248 Stickles Pond Road
Andover Township
Sussex County, NJ

By: EAJ
 Date: 23-Oct-19
 Chk'd: CN
 Revised: 7-Mar-22

PDA H1 - Post-Developed (Pervious)

RUNOFF CURVE NUMBER CALCULATIONS:

(S.C.S. TR-55 method)

Cover Description	Cn	Area		Product of CN x Area
		(sf)	(acres)	
Lawn (A)	68	174,967	4.02	273.13
Lawn (D)	89	46,000	1.06	93.99

Totals =

5.07	367.12
------	--------

$$\text{Composite Cn} = \frac{367.12}{5.07} = 72.37$$

USE Cn = 72

248 Stickles Pond Road
Andover Township
Sussex County, NJ

By: EAJ
Date: 23-Oct-19
Chk'd: CN
Revised: 7-Mar-22

PDA H1 - Post-Developed (Impervious)

RUNOFF CURVE NUMBER CALCULATIONS:

(S.C.S. TR-55 method)

Cover Description	Cn	Area		Product of CN x Area
		(sf)	(acres)	
*Impervious	98	407,093	9.35	915.87

Totals =

9.35	915.87
------	--------

Composite Cn = $\frac{915.87}{9.35}$ = 98.00

USE Cn = 98

248 Stickles Pond Road
Andover Township
Sussex County, NJ

By: EAJ
 Date: 23-Oct-19
 Chk'd: CN
 Revised: 1-Nov-20

PDA I - Post-Developed (Pervious)

RUNOFF CURVE NUMBER CALCULATIONS:

(S.C.S. TR-55 method)

Cover Description	Cn	Area		Product of CN x Area
		(sf)	(acres)	
Lawn (A)	68	1,307	0.03	2.04
Wood (A)	30	10200.26	0.23	7.02

Totals =

0.26	9.06
------	------

$$\text{Composite Cn} = \frac{9.06}{0.26} = 34.32$$

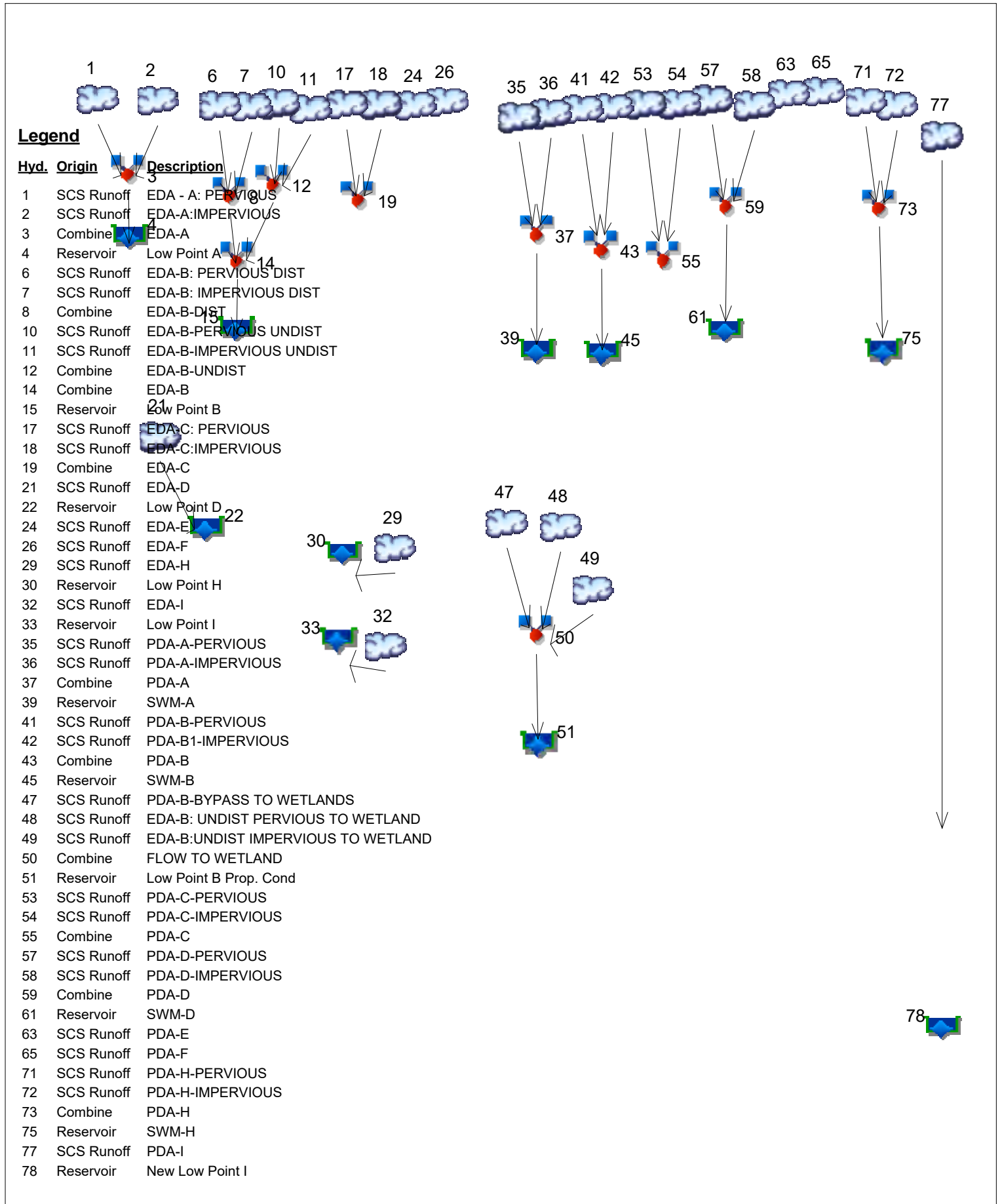
USE Cn = 34



APPENDIX D -
HYDROLOGIC ANALYSIS AND RUNOFF QUANTITY
CALCULATIONS

Watershed Model Schematic

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022



Hydrograph Return Period Recap

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

Hyd. No.	Hydrograph type (origin)	Inflow hyd(s)	Peak Outflow (cfs)								Hydrograph Description
			1-yr	2-yr	3-yr	5-yr	10-yr	25-yr	50-yr	100-yr	
1	SCS Runoff	----	----	1.052	----	----	7.310	----	----	27.23	EDA - A: PERVIOUS
2	SCS Runoff	----	----	3.447	----	----	5.067	----	----	8.078	EDA-A:IMPERVIOUS
3	Combine	1, 2	----	4.059	----	----	12.32	----	----	35.30	EDA-A
4	Reservoir	3	----	4.019	----	----	11.77	----	----	27.91	Low Point A
6	SCS Runoff	----	----	0.144	----	----	2.348	----	----	14.45	EDA-B: PERVIOUS DIST
7	SCS Runoff	----	----	2.684	----	----	3.946	----	----	6.290	EDA-B: IMPERVIOUS DIST
8	Combine	6, 7	----	2.684	----	----	5.614	----	----	20.46	EDA-B-DIST
10	SCS Runoff	----	----	0.129	----	----	2.828	----	----	20.57	EDA-B-PERVIOUS UNDIST
11	SCS Runoff	----	----	5.747	----	----	8.441	----	----	13.45	EDA-B-IMPERVIOUS UNDIST
12	Combine	10, 11	----	5.747	----	----	9.620	----	----	31.56	EDA-B-UNDIST
14	Combine	8, 12,	----	7.485	----	----	12.56	----	----	42.34	EDA-B
15	Reservoir	14	----	0.000	----	----	0.000	----	----	0.000	Low Point B
17	SCS Runoff	----	----	4.028	----	----	7.912	----	----	15.73	EDA-C: PERVIOUS
18	SCS Runoff	----	----	4.090	----	----	6.007	----	----	9.571	EDA-C:IMPERVIOUS
19	Combine	17, 18	----	7.596	----	----	13.11	----	----	24.00	EDA-C
21	SCS Runoff	----	----	5.388	----	----	10.55	----	----	20.91	EDA-D
22	Reservoir	21	----	0.000	----	----	0.000	----	----	0.000	Low Point D
24	SCS Runoff	----	----	6.409	----	----	12.58	----	----	25.00	EDA-E
26	SCS Runoff	----	----	1.543	----	----	2.911	----	----	5.610	EDA-F
29	SCS Runoff	----	----	0.000	----	----	0.097	----	----	3.352	EDA-H
30	Reservoir	29	----	0.000	----	----	0.000	----	----	0.000	Low Point H
32	SCS Runoff	----	----	0.000	----	----	0.000	----	----	0.064	EDA-I
33	Reservoir	32	----	0.000	----	----	0.000	----	----	0.000	Low Point I
35	SCS Runoff	----	----	4.537	----	----	8.530	----	----	16.38	PDA-A-PERVIOUS
36	SCS Runoff	----	----	9.413	----	----	13.83	----	----	22.03	PDA-A-IMPERVIOUS
37	Combine	35, 36	----	13.95	----	----	22.36	----	----	38.41	PDA-A
39	Reservoir	37	----	1.157	----	----	7.536	----	----	22.30	SWM-A
41	SCS Runoff	----	----	16.82	----	----	34.85	----	----	72.03	PDA-B-PERVIOUS

Hydrograph Return Period Recap

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

Hyd. No.	Hydrograph type (origin)	Inflow hyd(s)	Peak Outflow (cfs)								Hydrograph Description
			1-yr	2-yr	3-yr	5-yr	10-yr	25-yr	50-yr	100-yr	
42	SCS Runoff	-----	-----	50.42	-----	-----	74.05	-----	-----	117.99	PDA-B1-IMPERVIOUS
43	Combine	41, 42	-----	67.24	-----	-----	108.90	-----	-----	190.02	PDA-B
45	Reservoir	43	-----	0.000	-----	-----	0.000	-----	-----	0.000	SWM-B
47	SCS Runoff	-----	-----	0.494	-----	-----	1.001	-----	-----	2.037	PDA-B-BYPASS TO WETLANDS
48	SCS Runoff	-----	-----	0.126	-----	-----	2.760	-----	-----	20.08	EDA-B: UNDIST PERVIOUS TO WE
49	SCS Runoff	-----	-----	5.747	-----	-----	8.441	-----	-----	13.45	EDA-B:UNDIST IMPERVIOUS TO W
50	Combine	47, 48, 49	-----	6.240	-----	-----	10.57	-----	-----	32.94	FLOW TO WETLAND
51	Reservoir	50	-----	0.000	-----	-----	0.000	-----	-----	0.000	Low Point B Prop. Cond
53	SCS Runoff	-----	-----	5.450	-----	-----	9.647	-----	-----	17.67	PDA-C-PERVIOUS
54	SCS Runoff	-----	-----	1.269	-----	-----	1.864	-----	-----	2.970	PDA-C-IMPERVIOUS
55	Combine	53, 54	-----	6.392	-----	-----	11.05	-----	-----	19.97	PDA-C
57	SCS Runoff	-----	-----	2.169	-----	-----	3.653	-----	-----	6.429	PDA-D-PERVIOUS
58	SCS Runoff	-----	-----	16.64	-----	-----	24.44	-----	-----	38.94	PDA-D-IMPERVIOUS
59	Combine	57, 58	-----	18.81	-----	-----	28.10	-----	-----	45.37	PDA-D
61	Reservoir	59	-----	0.000	-----	-----	0.000	-----	-----	0.000	SWM-D
63	SCS Runoff	-----	-----	0.908	-----	-----	1.529	-----	-----	2.691	PDA-E
65	SCS Runoff	-----	-----	1.497	-----	-----	2.864	-----	-----	5.578	PDA-F
71	SCS Runoff	-----	-----	6.308	-----	-----	13.68	-----	-----	29.22	PDA-H-PERVIOUS
72	SCS Runoff	-----	-----	32.96	-----	-----	48.42	-----	-----	77.14	PDA-H-IMPERVIOUS
73	Combine	71, 72	-----	39.27	-----	-----	62.10	-----	-----	106.36	PDA-H
75	Reservoir	73	-----	0.000	-----	-----	0.000	-----	-----	0.000	SWM-H
77	SCS Runoff	-----	-----	0.000	-----	-----	0.001	-----	-----	0.064	PDA-I
78	Reservoir	77	-----	0.000	-----	-----	0.000	-----	-----	0.000	New Low Point I

Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description	
1	SCS Runoff	1.052	1	749	11,191	----	----	----	EDA - A: PERVIOUS	
2	SCS Runoff	3.447	1	734	15,938	----	----	----	EDA-A:IMPERVIOUS	
3	Combine	4.059	1	736	27,129	1, 2	----	----	EDA-A	
4	Reservoir	4.019	1	738	26,973	3	595.78	548	Low Point A	
6	SCS Runoff	0.144	1	815	4,164	----	----	----	EDA-B: PERVIOUS DIST	
7	SCS Runoff	2.684	1	741	14,956	----	----	----	EDA-B: IMPERVIOUS DIST	
8	Combine	2.684	1	741	19,119	6, 7	----	----	EDA-B-DIST	
10	SCS Runoff	0.129	1	800	3,643	----	----	----	EDA-B-PERVIOUS UNDIST	
11	SCS Runoff	5.747	1	727	18,350	----	----	----	EDA-B-IMPERVIOUS UNDIST	
12	Combine	5.747	1	727	21,994	10, 11	----	----	EDA-B-UNDIST	
14	Combine	7.485	1	727	41,113	8, 12,	----	----	EDA-B	
15	Reservoir	0.000	1	n/a	0	14	595.79	41,113	Low Point B	
17	SCS Runoff	4.028	1	731	14,051	----	----	----	EDA-C: PERVIOUS	
18	SCS Runoff	4.090	1	727	13,059	----	----	----	EDA-C:IMPERVIOUS	
19	Combine	7.596	1	728	27,110	17, 18	----	----	EDA-C	
21	SCS Runoff	5.388	1	729	16,931	----	----	----	EDA-D	
22	Reservoir	0.000	1	n/a	0	21	595.90	16,931	Low Point D	
24	SCS Runoff	6.409	1	730	21,496	----	----	----	EDA-E	
26	SCS Runoff	1.543	1	729	4,813	----	----	----	EDA-F	
29	SCS Runoff	0.000	1	n/a	0	----	----	----	EDA-H	
30	Reservoir	0.000	1	n/a	0	29	594.87	0.000	Low Point H	
32	SCS Runoff	0.000	1	n/a	0	----	----	----	EDA-I	
33	Reservoir	0.000	1	n/a	0	32	595.55	0.000	Low Point I	
35	SCS Runoff	4.537	1	727	12,536	----	----	----	PDA-A-PERVIOUS	
36	SCS Runoff	9.413	1	727	30,058	----	----	----	PDA-A-IMPERVIOUS	
37	Combine	13.95	1	727	42,594	35, 36	----	----	PDA-A	
39	Reservoir	1.157	1	752	2,850	37	595.81	15,909	SWM-A	
41	SCS Runoff	16.82	1	727	47,516	----	----	----	PDA-B-PERVIOUS	
Hydrologic Calculations - Water Quantity.gpw					Return Period: 2 Year			Wednesday, 03 / 9 / 2022		

Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

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	
42	SCS Runoff	50.42	1	727	160,987	----	----	----	PDA-B1-IMPERVIOUS	
43	Combine	67.24	1	727	208,503	41, 42	----	----	PDA-B	
45	Reservoir	0.000	1	762	0	43	598.62	87,315	SWM-B	
47	SCS Runoff	0.494	1	727	1,385	----	----	----	PDA-B-BYPASS TO WETLANDS	
48	SCS Runoff	0.126	1	800	3,556	----	----	----	EDA-B: UNDIST PERVIOUS TO WE	
49	SCS Runoff	5.747	1	727	18,350	----	----	----	EDA-B:UNDIST IMPERVIOUS TO W	
50	Combine	6.240	1	727	23,291	47, 48, 49	----	----	FLOW TO WETLAND	
51	Reservoir	0.000	1	n/a	0	50	595.43	23,291	Low Point B Prop. Cond	
53	SCS Runoff	5.450	1	731	18,718	----	----	----	PDA-C-PERVIOUS	
54	SCS Runoff	1.269	1	727	4,053	----	----	----	PDA-C-IMPERVIOUS	
55	Combine	6.392	1	729	22,770	53, 54	----	----	PDA-C	
57	SCS Runoff	2.169	1	727	6,020	----	----	----	PDA-D-PERVIOUS	
58	SCS Runoff	16.64	1	727	53,137	----	----	----	PDA-D-IMPERVIOUS	
59	Combine	18.81	1	727	59,157	57, 58	----	----	PDA-D	
61	Reservoir	0.000	1	1643	0	59	601.75	37,090	SWM-D	
63	SCS Runoff	0.908	1	727	2,520	----	----	----	PDA-E	
65	SCS Runoff	1.497	1	727	4,145	----	----	----	PDA-F	
71	SCS Runoff	6.308	1	727	18,117	----	----	----	PDA-H-PERVIOUS	
72	SCS Runoff	32.96	1	727	105,260	----	----	----	PDA-H-IMPERVIOUS	
73	Combine	39.27	1	727	123,377	71, 72	----	----	PDA-H	
75	Reservoir	0.000	1	723	0	73	597.35	53,368	SWM-H	
77	SCS Runoff	0.000	1	n/a	0	----	----	----	PDA-I	
78	Reservoir	0.000	1	n/a	0	77	597.10	0.000	New Low Point I	
Hydrologic Calculations - Water Quantity.gpw					Return Period: 2 Year			Wednesday, 03 / 9 / 2022		

Hydrograph Report

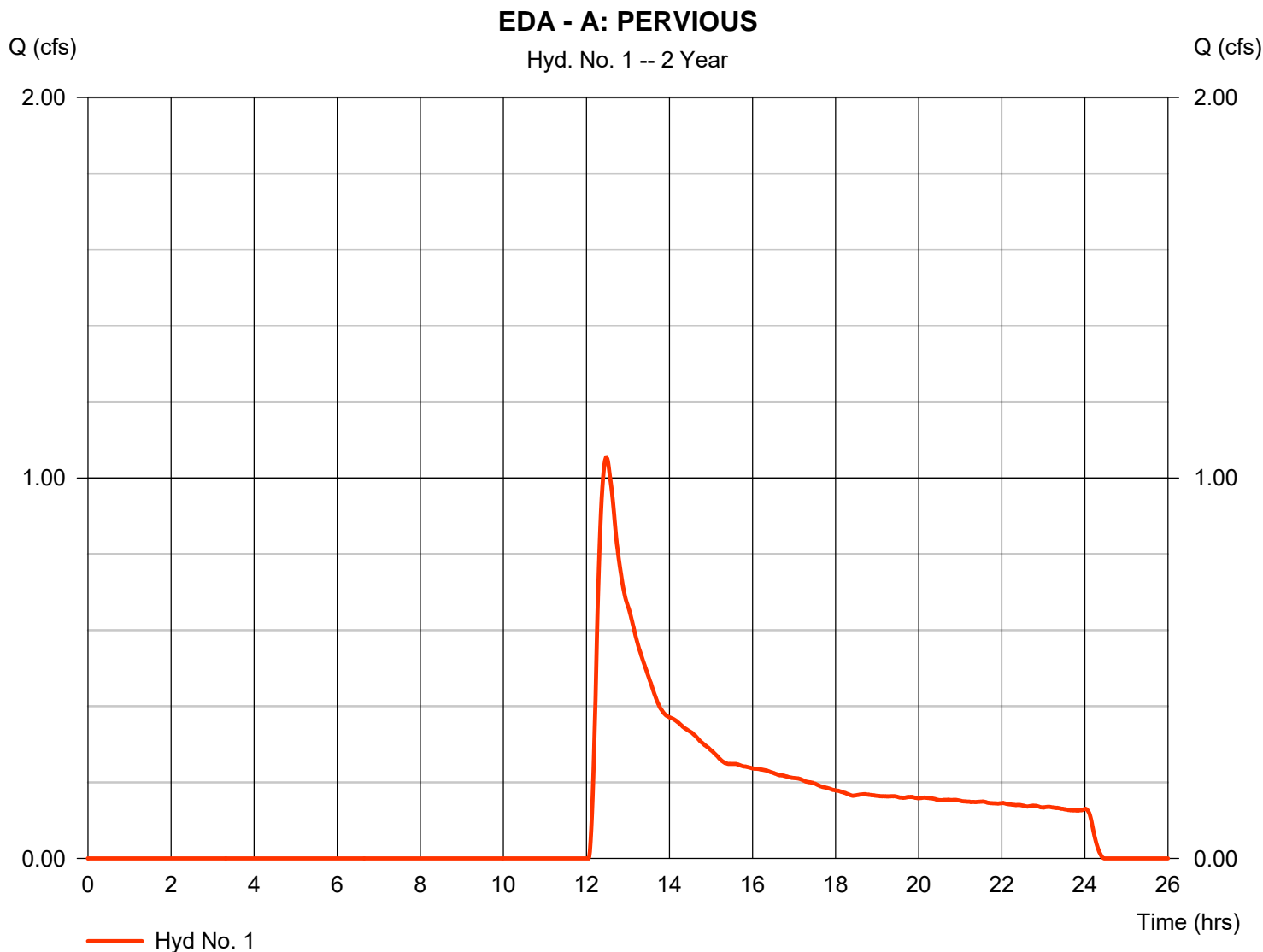
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

Wednesday, 03 / 9 / 2022

Hyd. No. 1

EDA - A: PERVIOUS

Hydrograph type	= SCS Runoff	Peak discharge	= 1.052 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.48 hrs
Time interval	= 1 min	Hyd. volume	= 11,191 cuft
Drainage area	= 13.290 ac	Curve number	= 54
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 17.70 min
Total precip.	= 3.24 in	Distribution	= Custom
Storm duration	= R:\Hydroflow Standards\NJ Reg Storm Rainfall Distribution\401A_C_1 min.cds		



Hydrograph Report

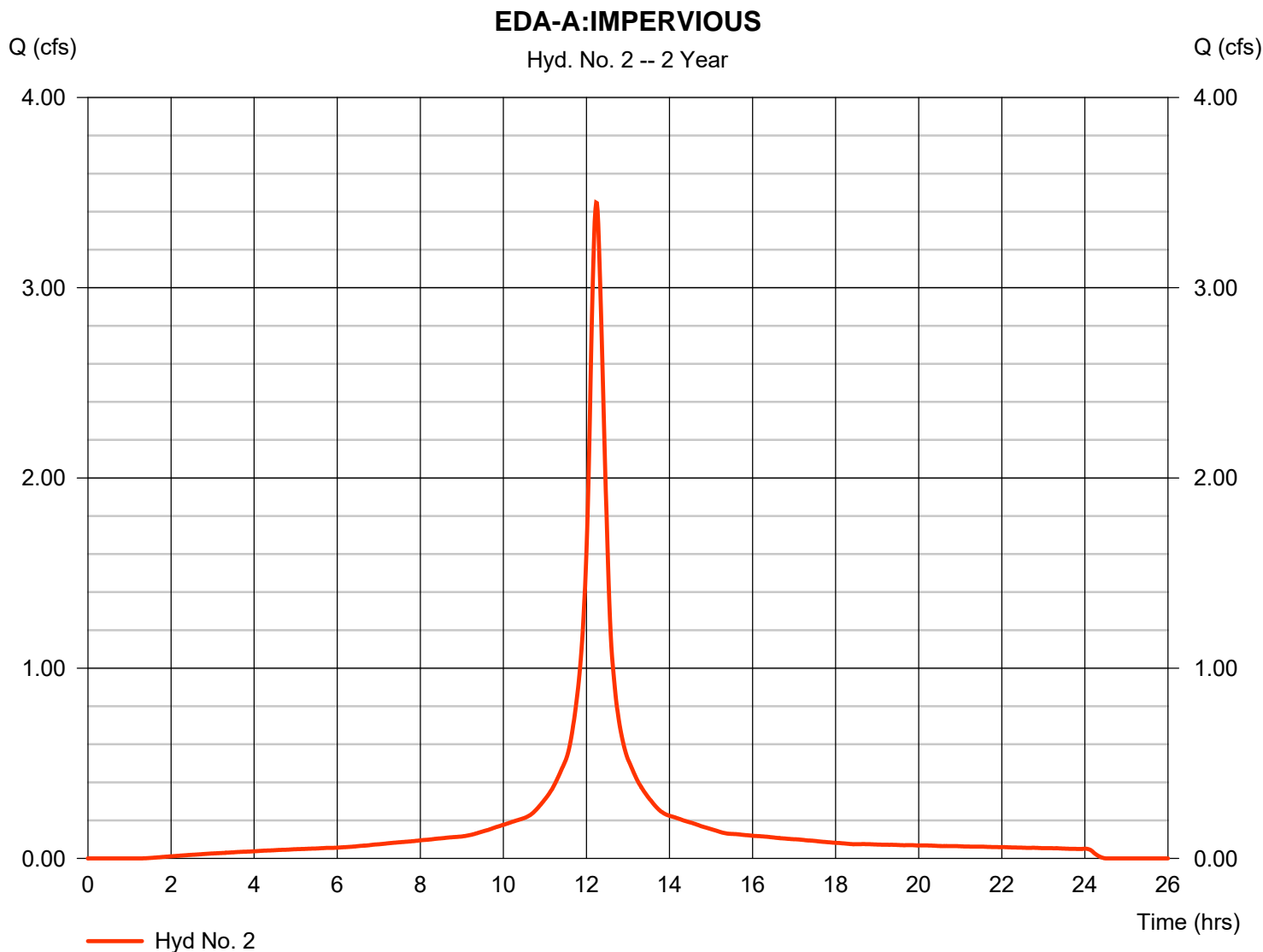
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

Wednesday, 03 / 9 / 2022

Hyd. No. 2

EDA-A:IMPERVIOUS

Hydrograph type	= SCS Runoff	Peak discharge	= 3.447 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.23 hrs
Time interval	= 1 min	Hyd. volume	= 15,938 cuft
Drainage area	= 1.460 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 19.60 min
Total precip.	= 3.24 in	Distribution	= Custom
Storm duration	= R:\Hydroflow Standards\NJ Reg Storm Rainfall Distribution\401A_C_1 min.cds		



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

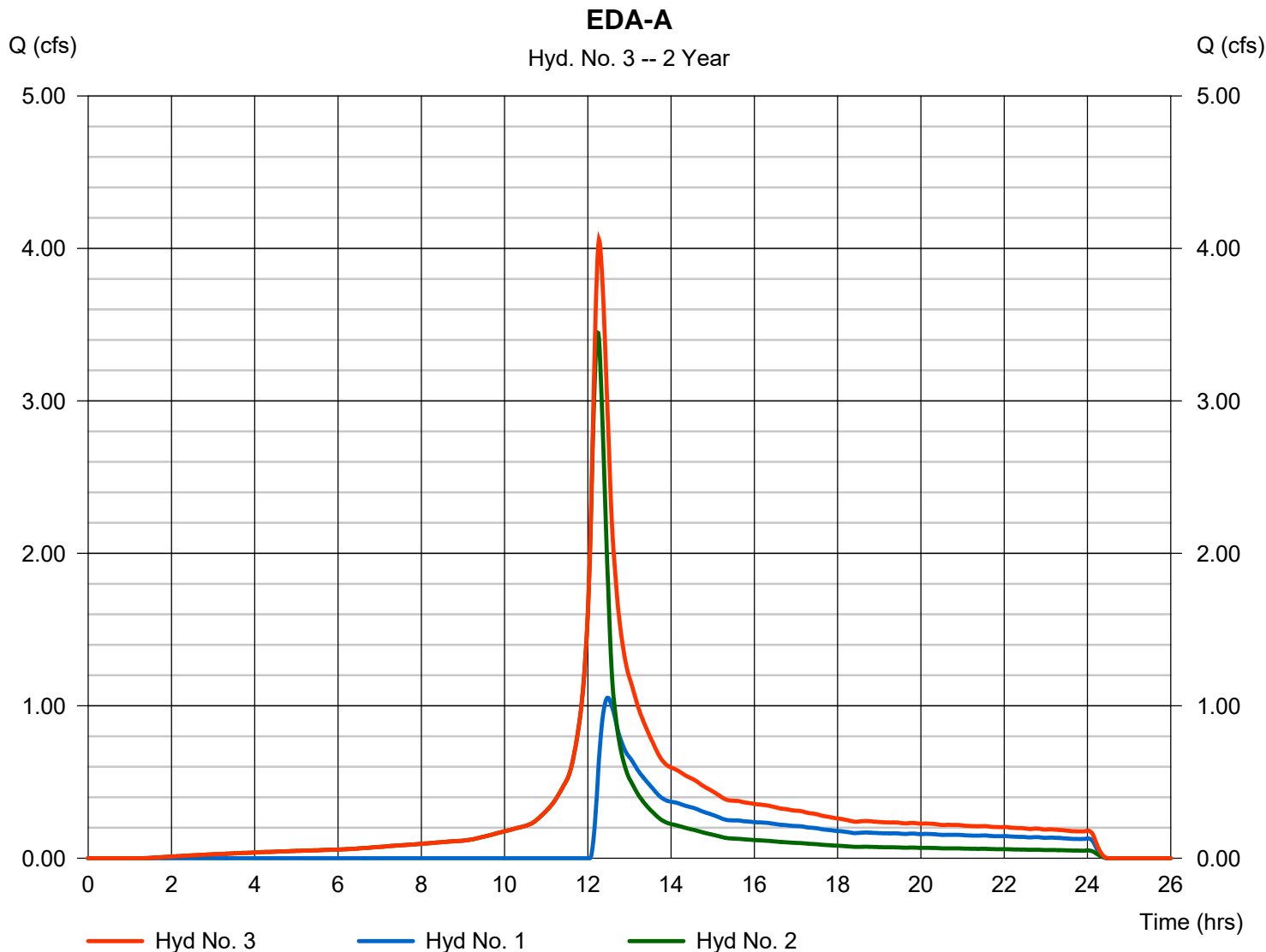
Wednesday, 03 / 9 / 2022

Hyd. No. 3

EDA-A

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

Peak discharge = 4.059 cfs
Time to peak = 12.27 hrs
Hyd. volume = 27,129 cuft
Contrib. drain. area = 14.750 ac



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

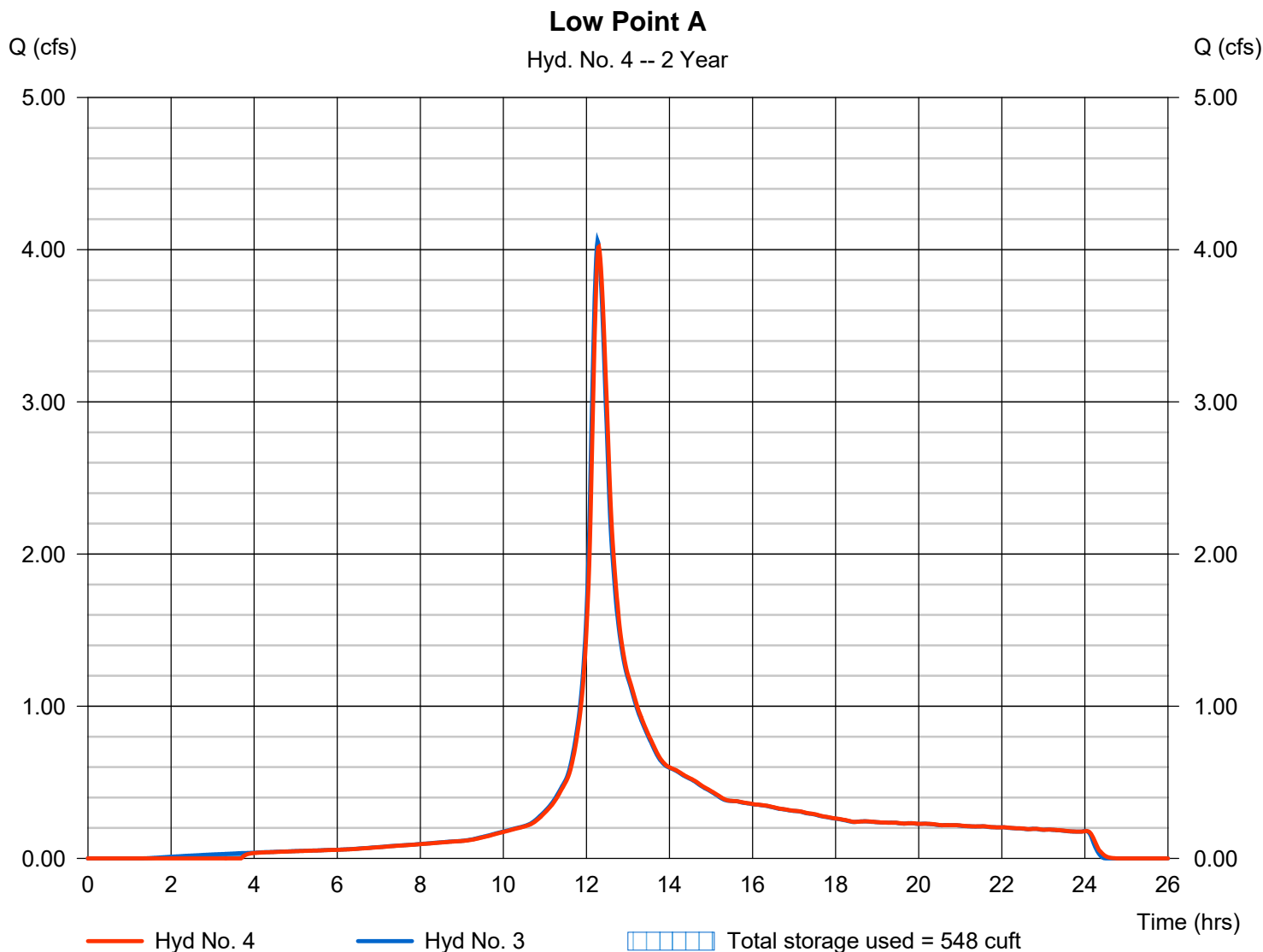
Wednesday, 03 / 9 / 2022

Hyd. No. 4

Low Point A

Hydrograph type	= Reservoir	Peak discharge	= 4.019 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.30 hrs
Time interval	= 1 min	Hyd. volume	= 26,973 cuft
Inflow hyd. No.	= 3 - EDA-A	Max. Elevation	= 595.78 ft
Reservoir name	= Low Point A	Max. Storage	= 548 cuft

Storage Indication method used.



Pond No. 7 - Low Point A

Pond Data

Contours -User-defined contour areas. Conic method used for volume calculation. Begining Elevation = 595.30 ft

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	595.30	00	0	0
0.10	595.40	188	6	6
0.20	595.50	732	43	49
0.30	595.60	1,429	106	155
0.40	595.70	2,194	180	335
0.50	595.80	3,054	261	597
0.70	596.00	14,420	1,606	2,202
0.80	596.10	23,684	1,885	4,088
1.20	596.50	68,646	17,686	21,774

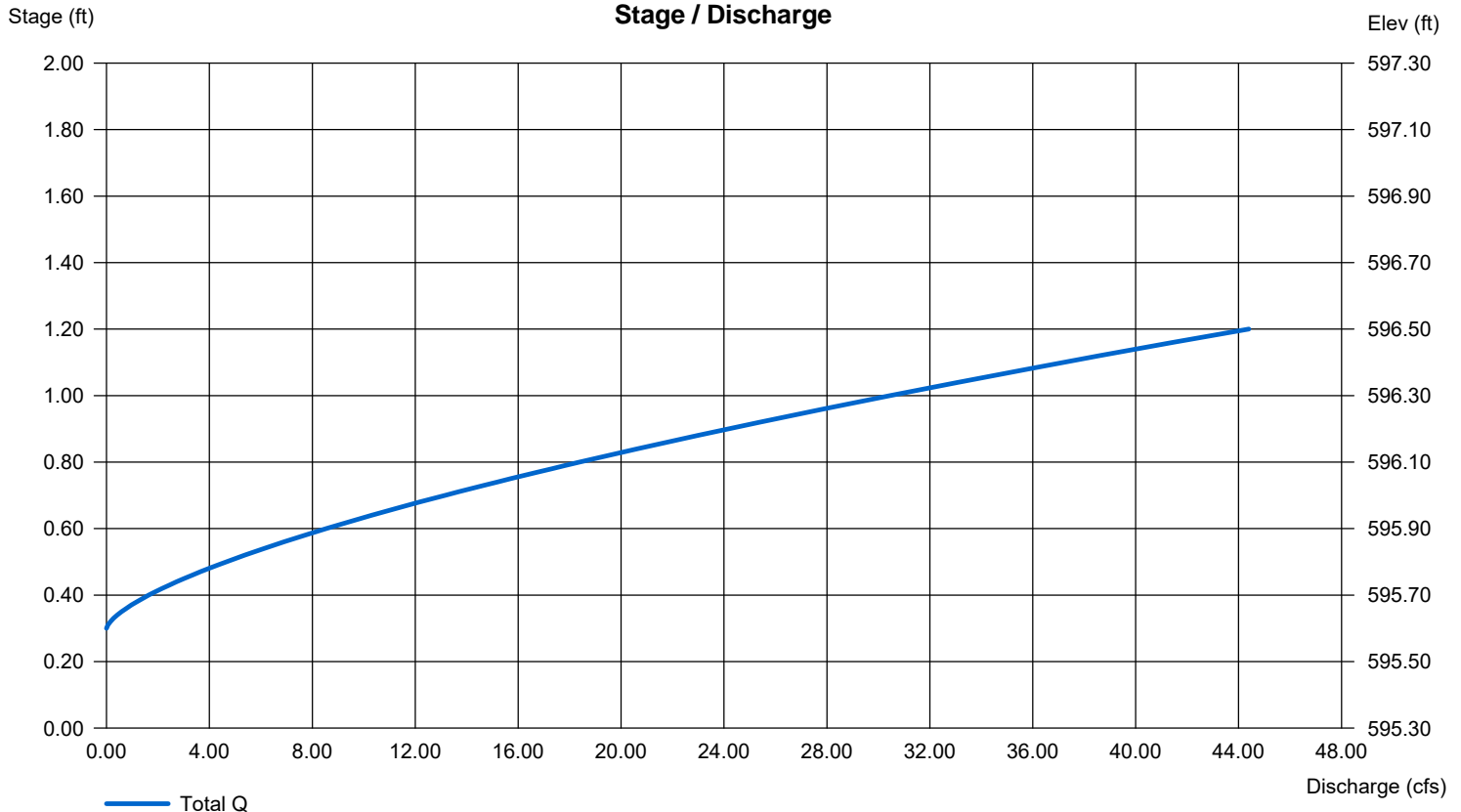
Culvert / Orifice Structures

	[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)	= 20.00	0.00	0.00	0.00
Crest El. (ft)	= 595.60	0.00	0.00	0.00
Weir Coeff.	= 2.60	3.33	3.33	3.33
Weir Type	= Broad	---	---	---
Multi-Stage	= No	No	No	No
Exfil.(in/hr)	= 0.000 (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).



Hydrograph Report

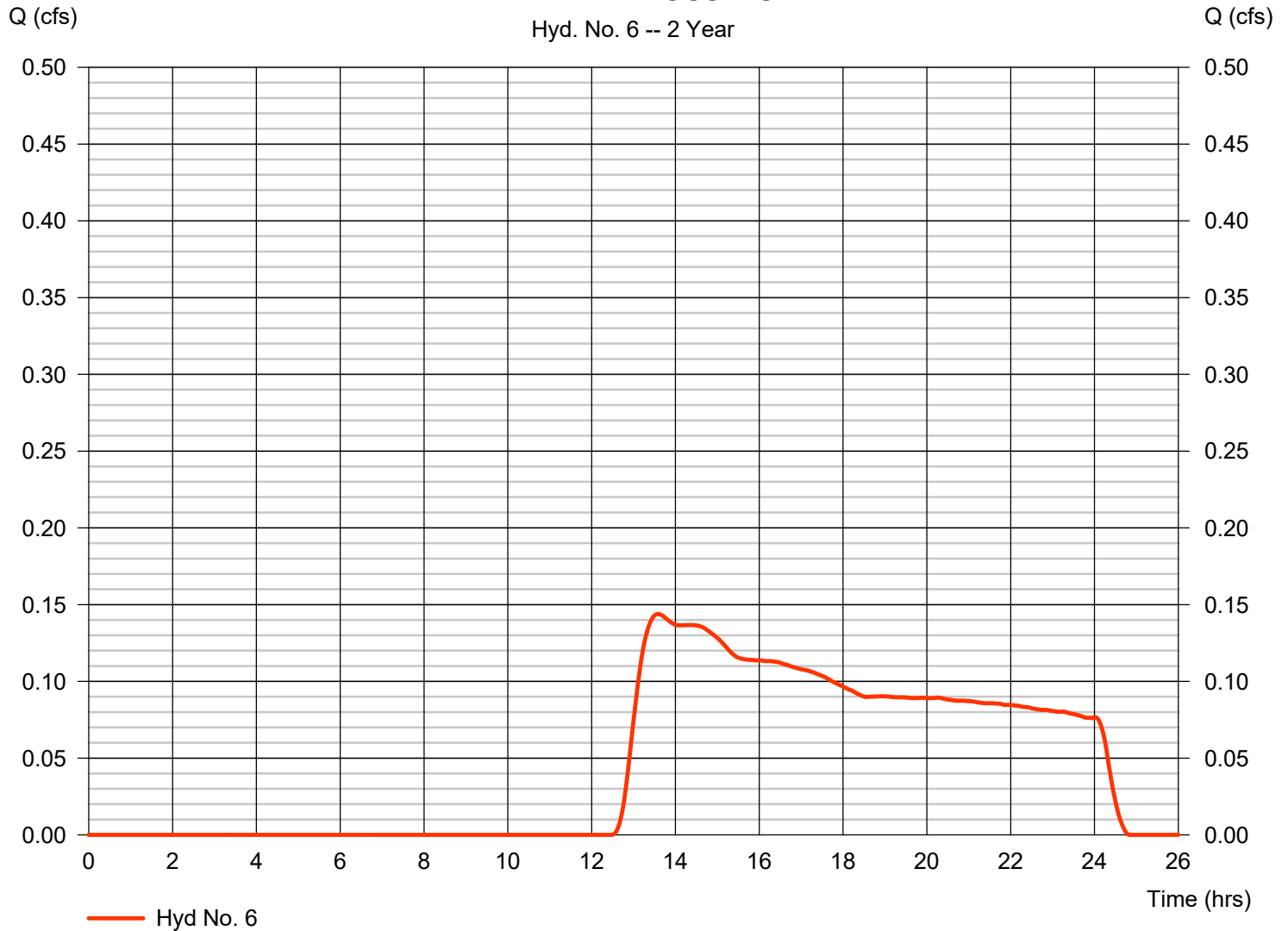
Hyd. No. 6

EDA-B: PERVIOUS DIST

Hydrograph type	= SCS Runoff	Peak discharge	= 0.144 cfs
Storm frequency	= 2 yrs	Time to peak	= 13.58 hrs
Time interval	= 1 min	Hyd. volume	= 4,164 cuft
Drainage area	= 14.410 ac	Curve number	= 47
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 31.40 min
Total precip.	= 3.24 in	Distribution	= Custom
Storm duration	= R:\Hydroflow Standards\NJ Reg Storm Rainfall Distribution\NOAA_C_1 min.cds		

EDA-B: PERVIOUS DIST

Hyd. No. 6 -- 2 Year



Hydrograph Report

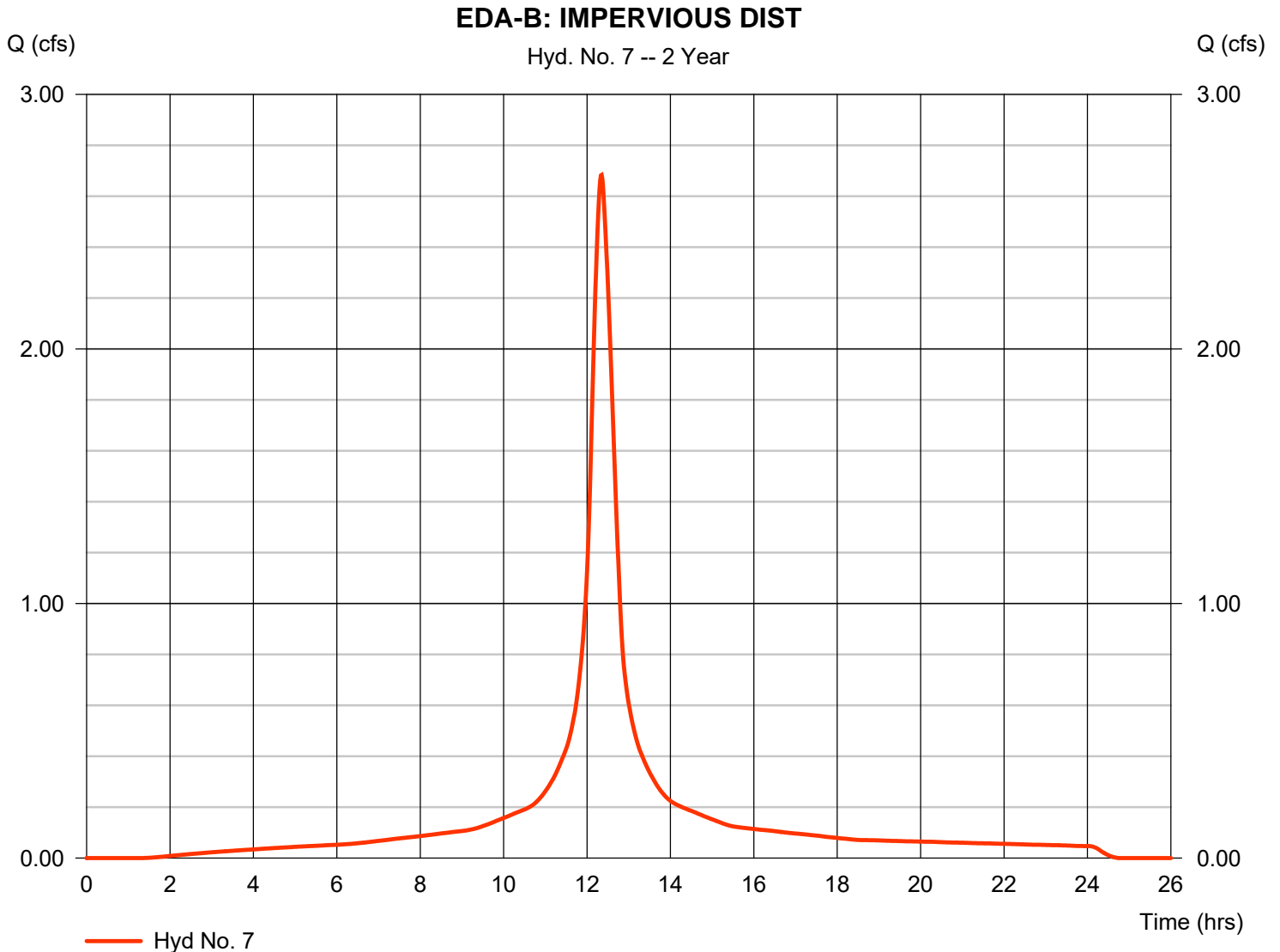
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

Wednesday, 03 / 9 / 2022

Hyd. No. 7

EDA-B: IMPERVIOUS DIST

Hydrograph type	= SCS Runoff	Peak discharge	= 2.684 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.35 hrs
Time interval	= 1 min	Hyd. volume	= 14,956 cuft
Drainage area	= 1.370 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 29.70 min
Total precip.	= 3.24 in	Distribution	= Custom
Storm duration	= R:\Hydroflow Standards\NJ Reg Slope Rainfall Distribution\NOAA_C_1 min.cds		



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

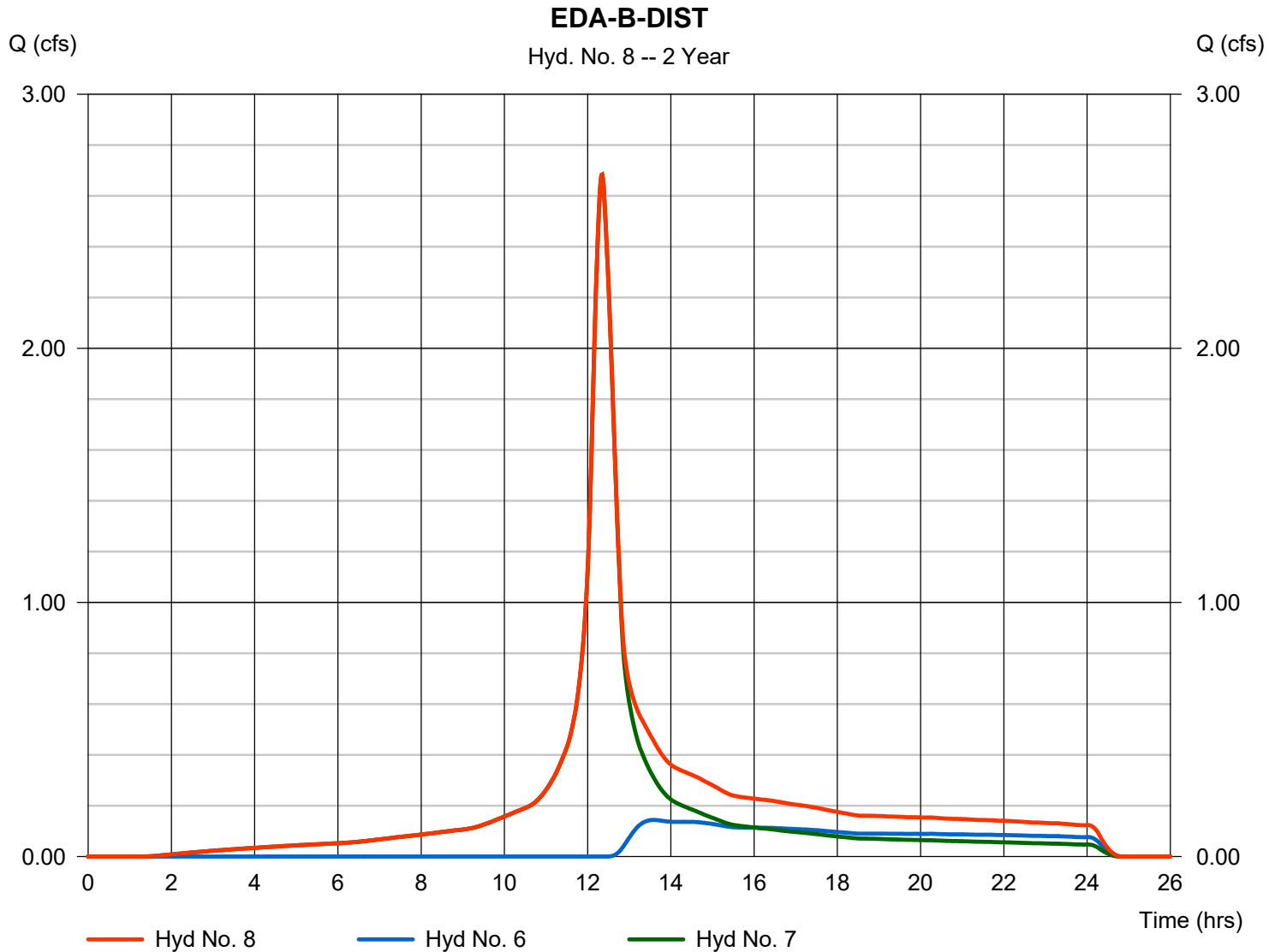
Wednesday, 03 / 9 / 2022

Hyd. No. 8

EDA-B-DIST

Hydrograph type = Combine
Storm frequency = 2 yrs
Time interval = 1 min
Inflow hyds. = 6, 7

Peak discharge = 2.684 cfs
Time to peak = 12.35 hrs
Hyd. volume = 19,119 cuft
Contrib. drain. area = 15.780 ac



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

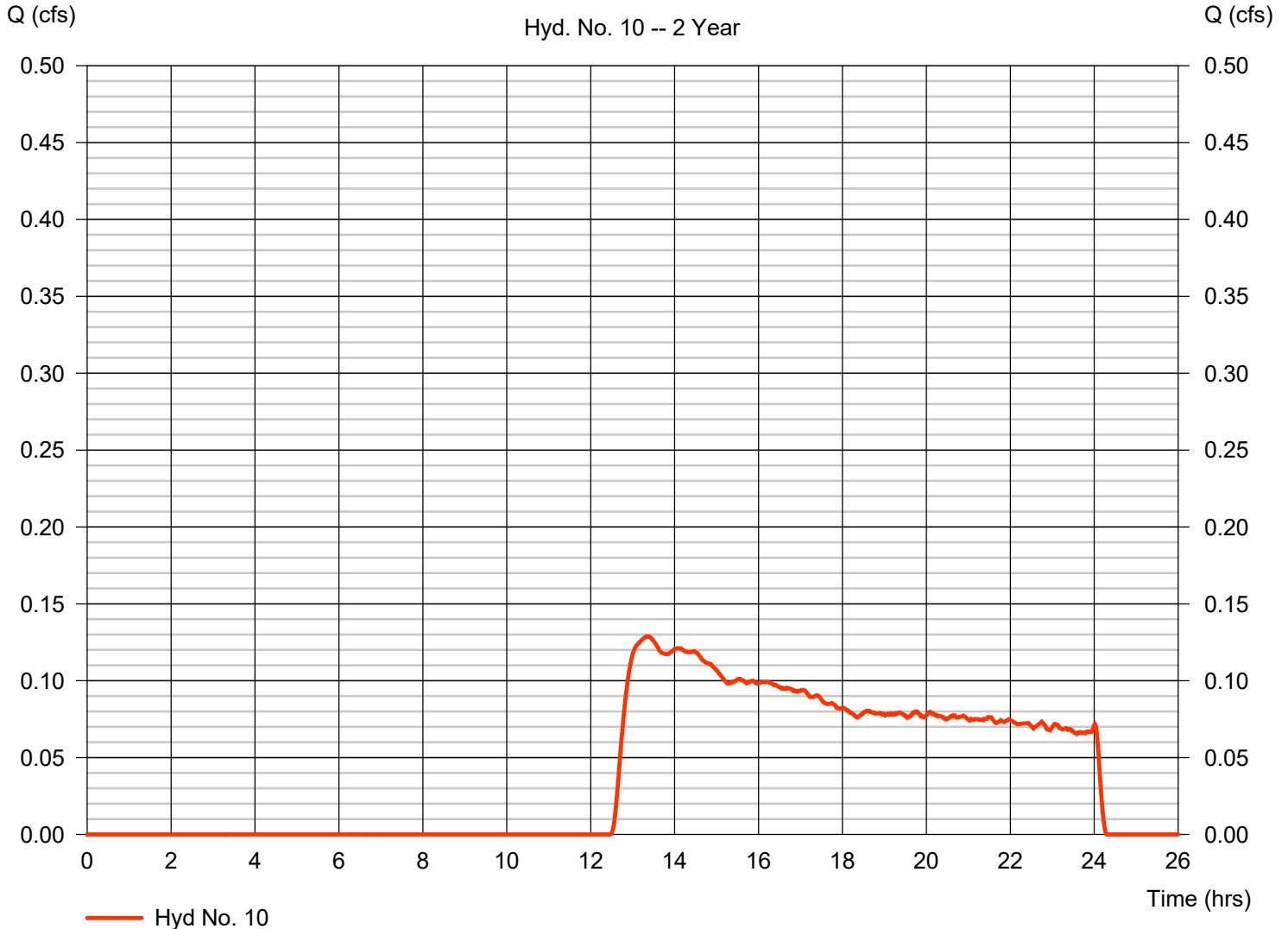
Wednesday, 03 / 9 / 2022

Hyd. No. 10

EDA-B-PERVIOUS UNDIST

Hydrograph type	= SCS Runoff	Peak discharge	= 0.129 cfs
Storm frequency	= 2 yrs	Time to peak	= 13.33 hrs
Time interval	= 1 min	Hyd. volume	= 3,643 cuft
Drainage area	= 12.470 ac	Curve number	= 47
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 10.70 min
Total precip.	= 3.24 in	Distribution	= Custom
Storm duration	= R:\Hydroflow Standards\NJ Reg Storm Rainfall Distribution\NOAA_C_1 min.cds		

EDA-B-PERVIOUS UNDIST



Hydrograph Report

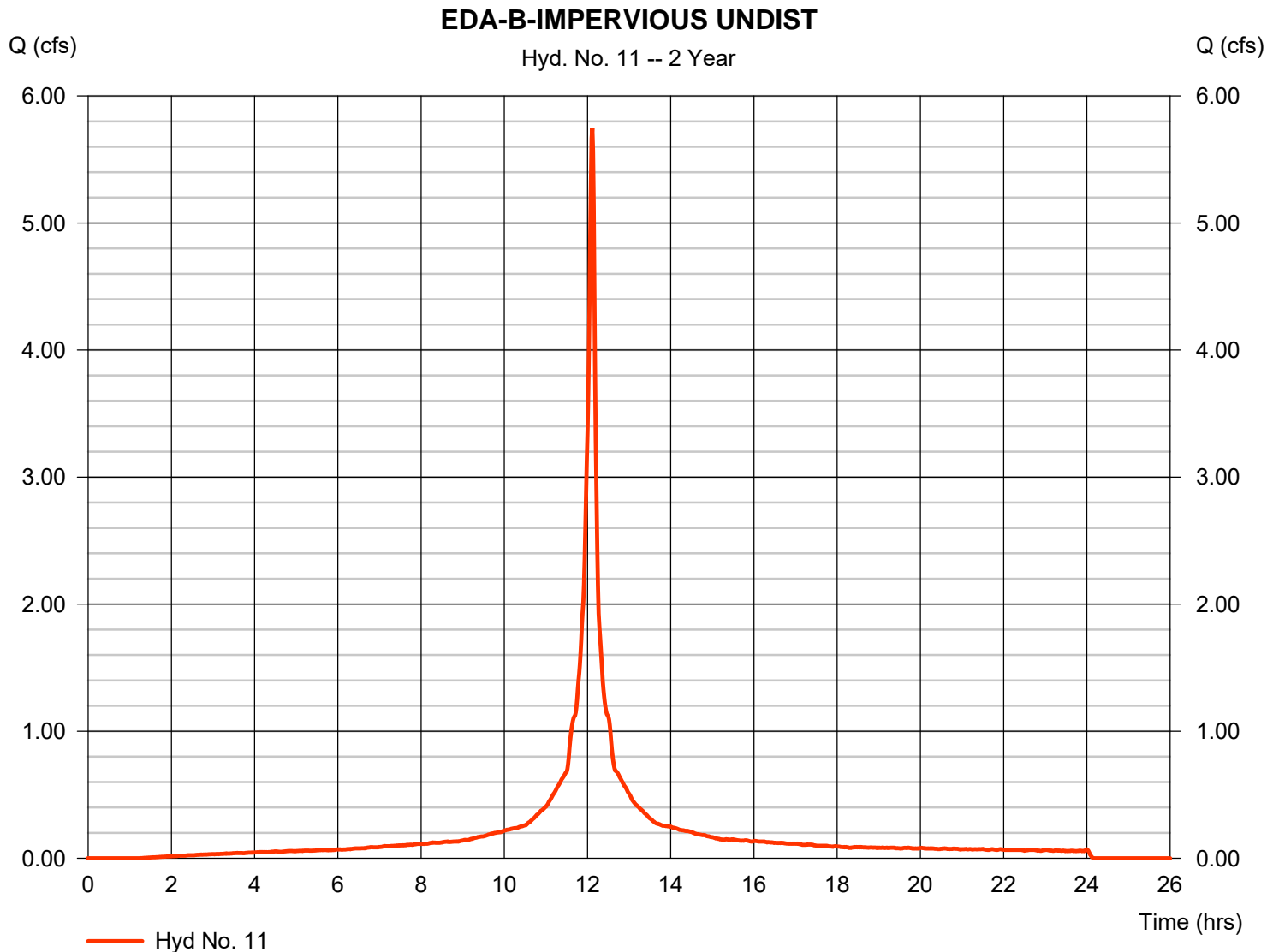
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

Wednesday, 03 / 9 / 2022

Hyd. No. 11

EDA-B-IMPERVIOUS UNDIST

Hydrograph type	= SCS Runoff	Peak discharge	= 5.747 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.12 hrs
Time interval	= 1 min	Hyd. volume	= 18,350 cuft
Drainage area	= 1.630 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 6.00 min
Total precip.	= 3.24 in	Distribution	= Custom
Storm duration	= R:\Hydroflow Standards\NJ Reg Storm Rainfall Distribution\NOAA_C_1 min.cds		



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

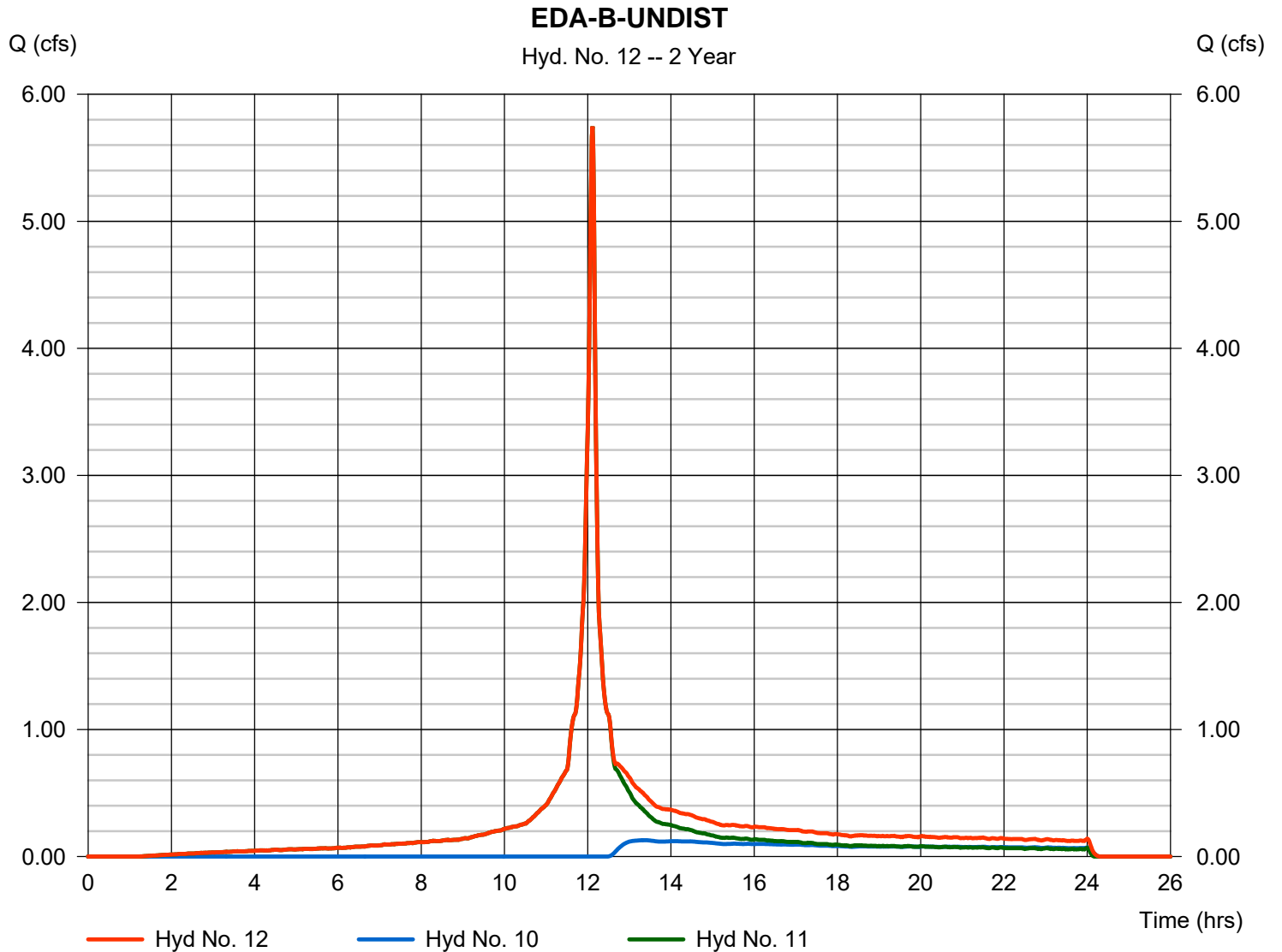
Wednesday, 03 / 9 / 2022

Hyd. No. 12

EDA-B-UNDIST

Hydrograph type = Combine
Storm frequency = 2 yrs
Time interval = 1 min
Inflow hyds. = 10, 11

Peak discharge = 5.747 cfs
Time to peak = 12.12 hrs
Hyd. volume = 21,994 cuft
Contrib. drain. area = 14.100 ac



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

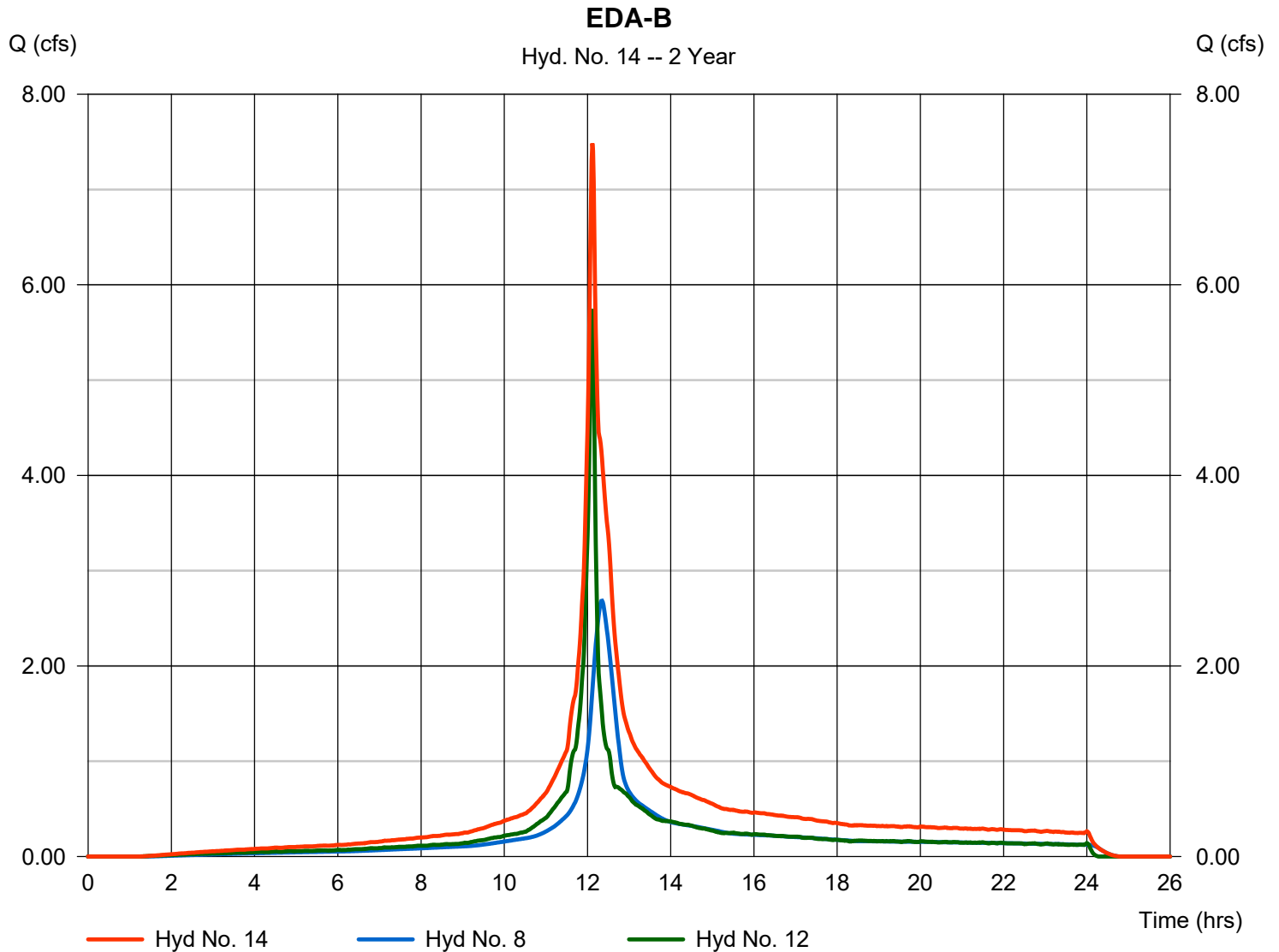
Wednesday, 03 / 9 / 2022

Hyd. No. 14

EDA-B

Hydrograph type = Combine
Storm frequency = 2 yrs
Time interval = 1 min
Inflow hyds. = 8, 12

Peak discharge = 7.485 cfs
Time to peak = 12.12 hrs
Hyd. volume = 41,113 cuft
Contrib. drain. area = 0.000 ac



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

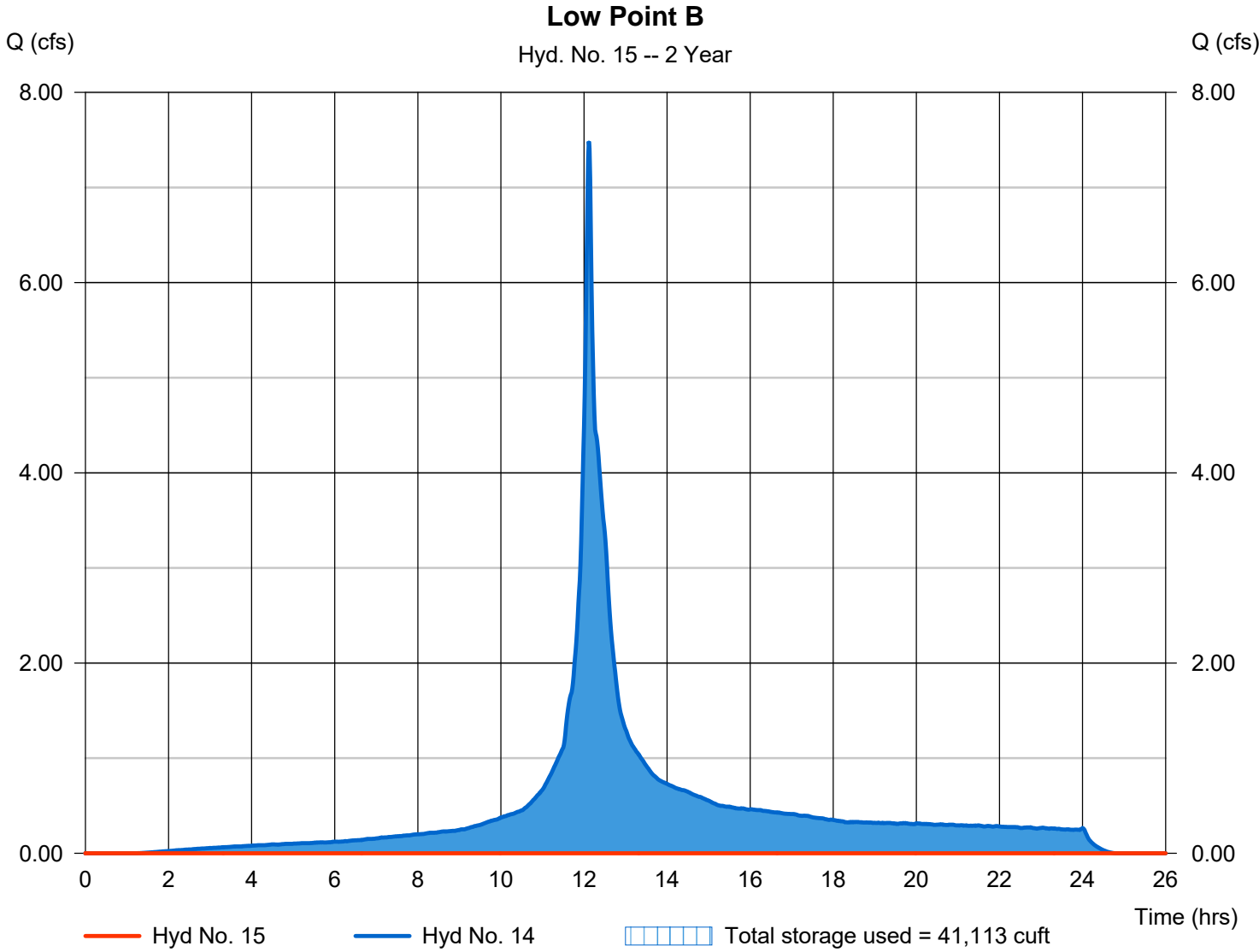
Wednesday, 03 / 9 / 2022

Hyd. No. 15

Low Point B

Hydrograph type	= Reservoir	Peak discharge	= 0.000 cfs
Storm frequency	= 2 yrs	Time to peak	= n/a
Time interval	= 1 min	Hyd. volume	= 0 cuft
Inflow hyd. No.	= 14 - EDA-B	Max. Elevation	= 595.79 ft
Reservoir name	= Low Point B	Max. Storage	= 41,113 cuft

Storage Indication method used.



Pond No. 8 - Low Point B

Pond Data

Contours -User-defined contour areas. Conic method used for volume calculation. Begining Elevation = 594.00 ft

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	594.00	00	0	0
1.50	595.50	48,866	24,431	24,431
3.50	597.50	64,871	113,348	137,779
4.50	598.50	76,140	70,423	208,202
4.60	598.60	121,500	9,791	217,993
5.00	599.00	122,100	48,718	266,711

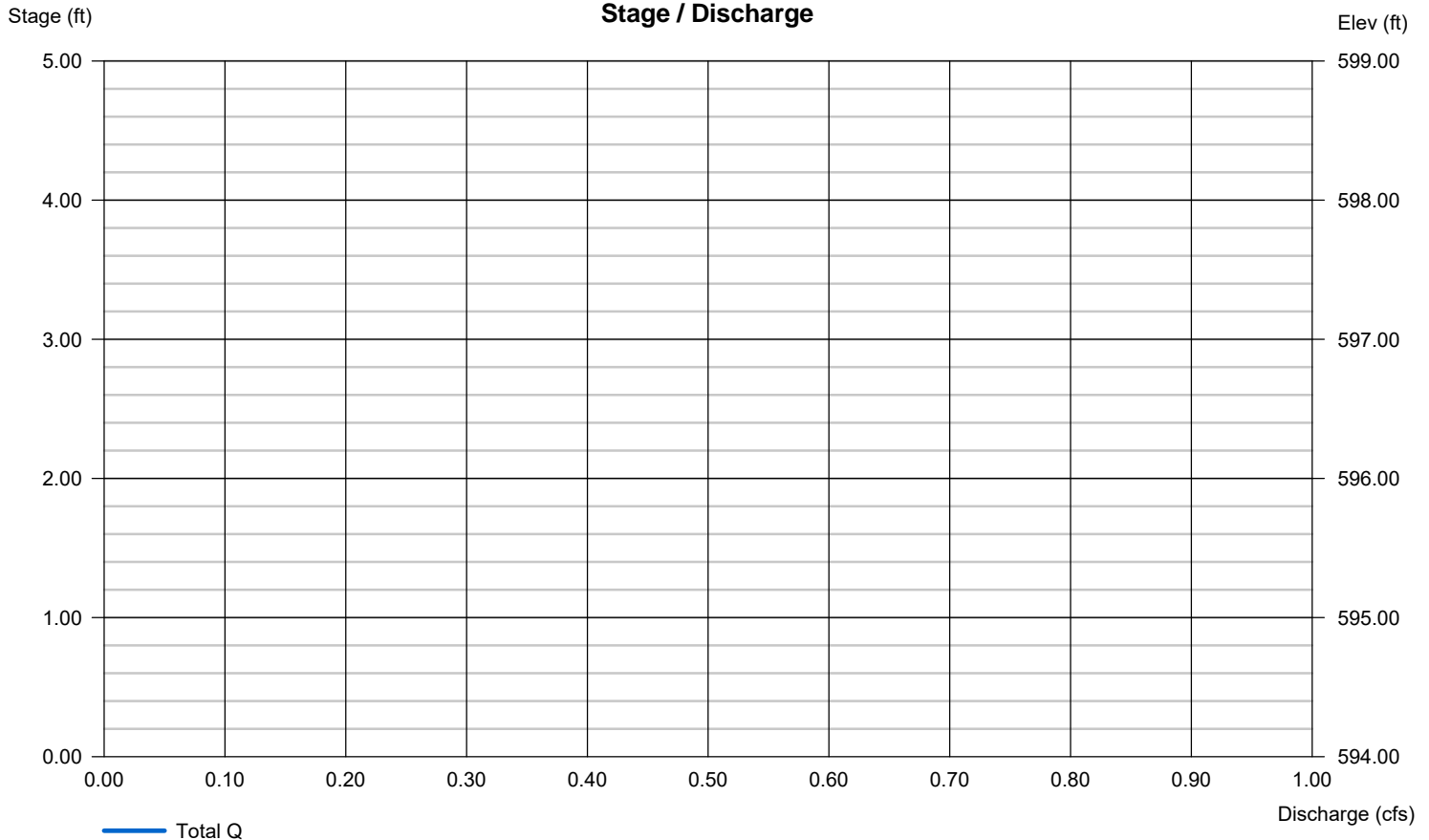
Culvert / Orifice Structures

	[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)	= 0.000	(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).



Hydrograph Report

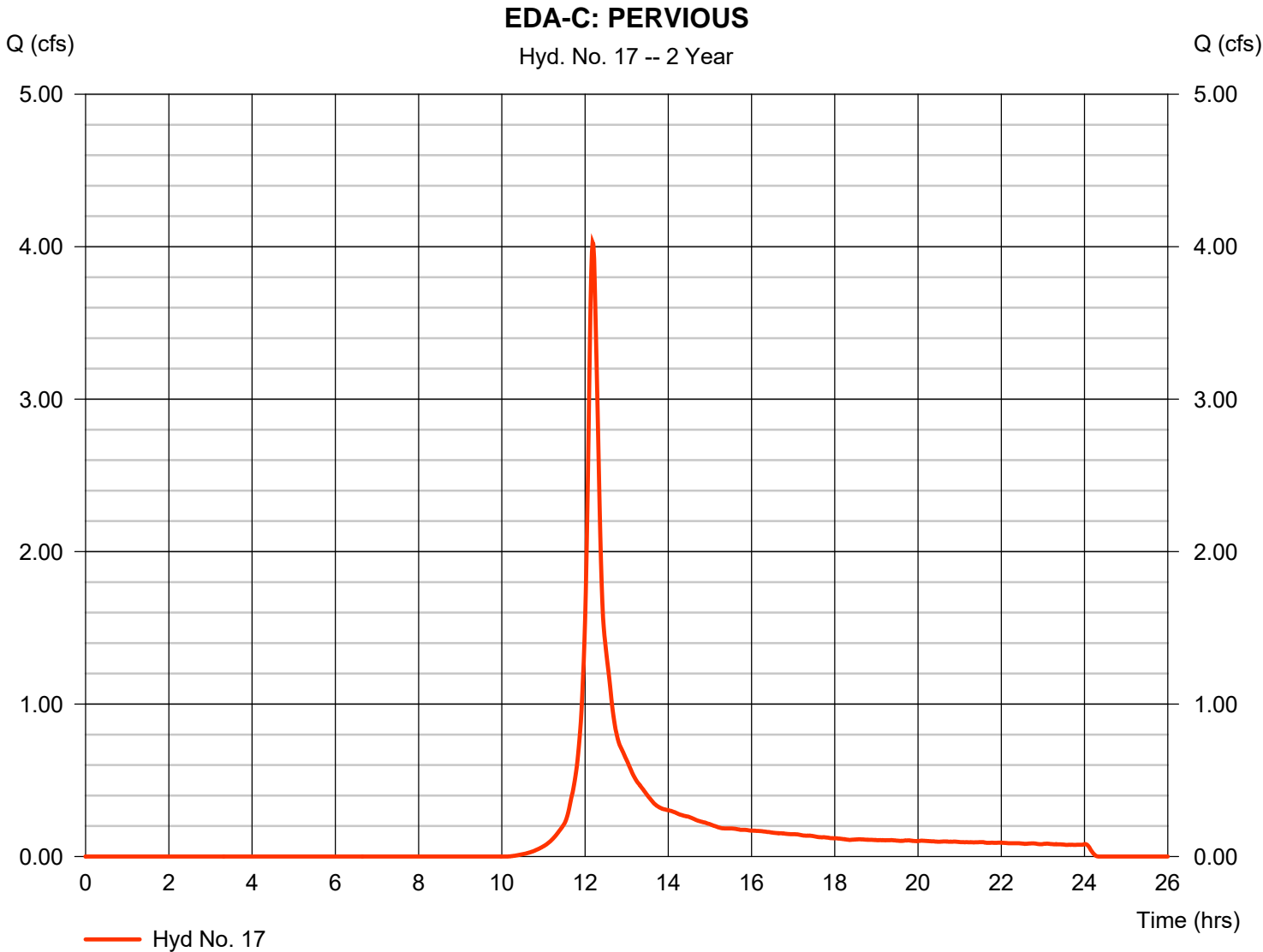
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

Wednesday, 03 / 9 / 2022

Hyd. No. 17

EDA-C: PERVIOUS

Hydrograph type	= SCS Runoff	Peak discharge	= 4.028 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.18 hrs
Time interval	= 1 min	Hyd. volume	= 14,051 cuft
Drainage area	= 3.170 ac	Curve number	= 77
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 12.70 min
Total precip.	= 3.24 in	Distribution	= Custom
Storm duration	= R:\Hydroflow Standards\NJ Reg Slope Rainfall Distribution\NOAA_C_1 min.cds		

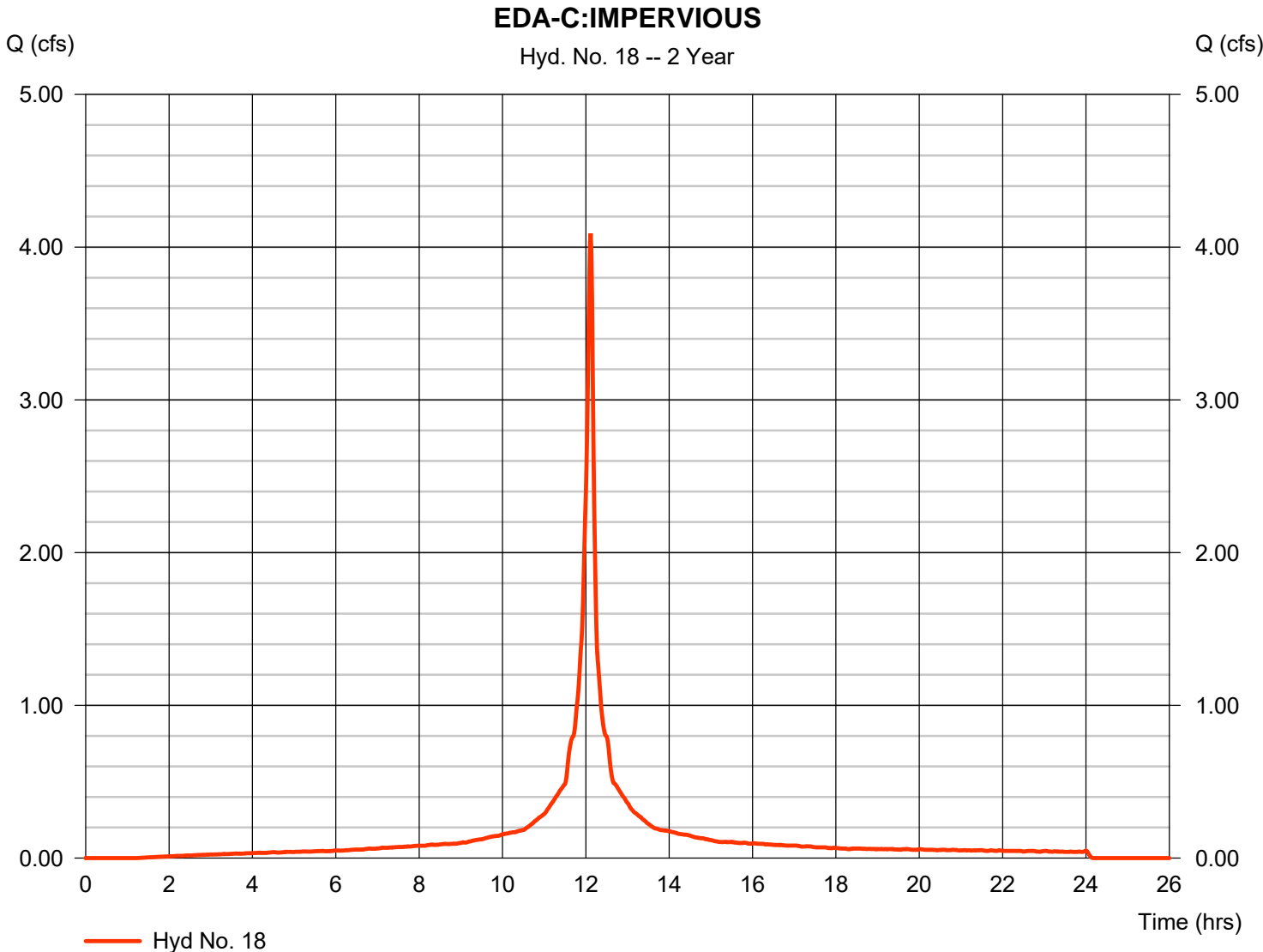


Hydrograph Report

Hyd. No. 18

EDA-C:IMPERVIOUS

Hydrograph type	= SCS Runoff	Peak discharge	= 4.090 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.12 hrs
Time interval	= 1 min	Hyd. volume	= 13,059 cuft
Drainage area	= 1.160 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 6.00 min
Total precip.	= 3.24 in	Distribution	= Custom
Storm duration	= R:\Hydroflow Standards\NJ Reg Slope Rainfall Distribution\40A_C_1 min.cds		



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

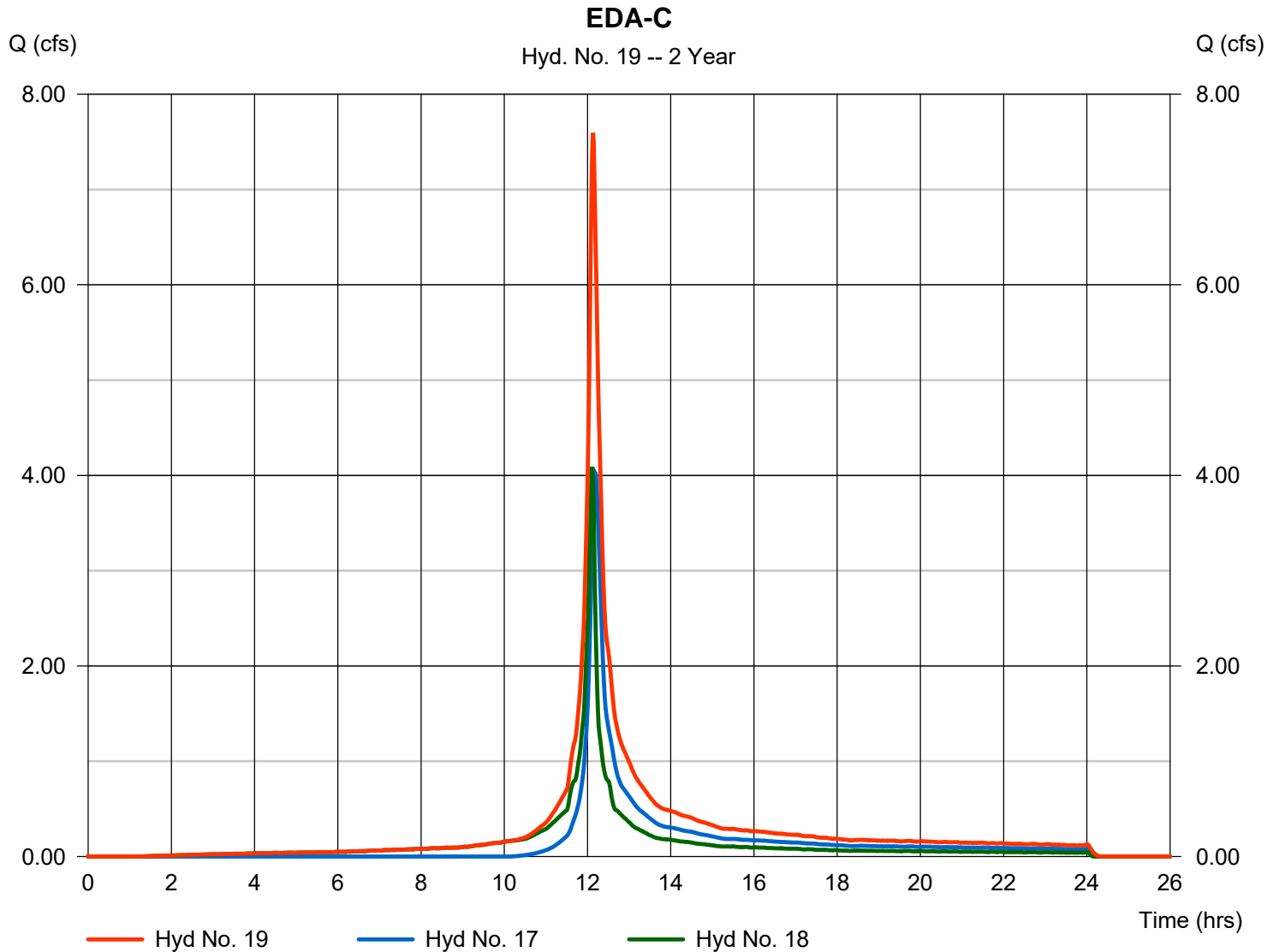
Wednesday, 03 / 9 / 2022

Hyd. No. 19

EDA-C

Hydrograph type = Combine
Storm frequency = 2 yrs
Time interval = 1 min
Inflow hyds. = 17, 18

Peak discharge = 7.596 cfs
Time to peak = 12.13 hrs
Hyd. volume = 27,110 cuft
Contrib. drain. area = 4.330 ac



Hydrograph Report

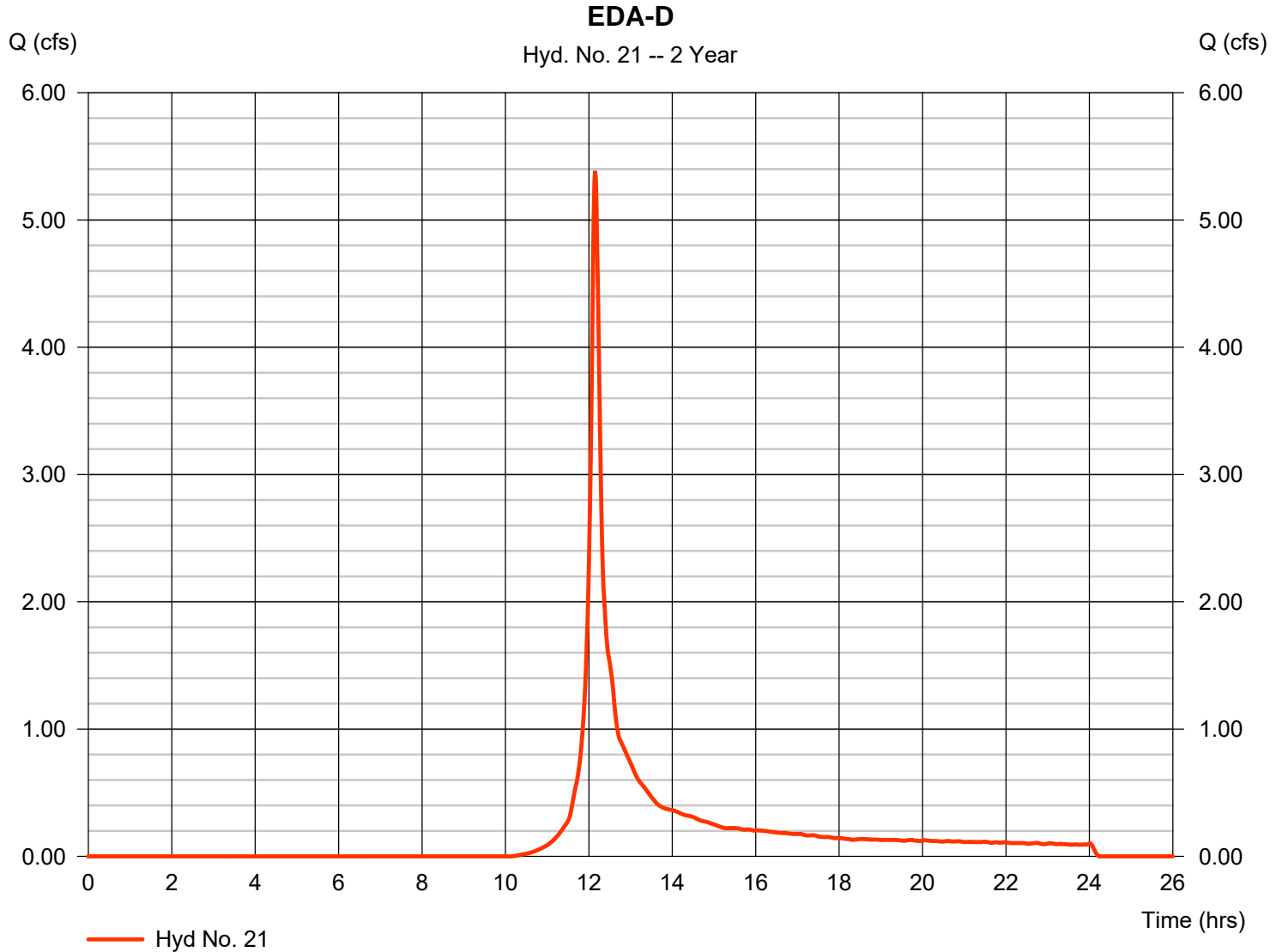
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

Wednesday, 03 / 9 / 2022

Hyd. No. 21

EDA-D

Hydrograph type	= SCS Runoff	Peak discharge	= 5.388 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.15 hrs
Time interval	= 1 min	Hyd. volume	= 16,931 cuft
Drainage area	= 3.760 ac	Curve number	= 77
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 10.00 min
Total precip.	= 3.24 in	Distribution	= Custom
Storm duration	= R:\Hydroflow Standards\NJ Reg Slope Rainfall Distribution\401A_C_1 min.cds		



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

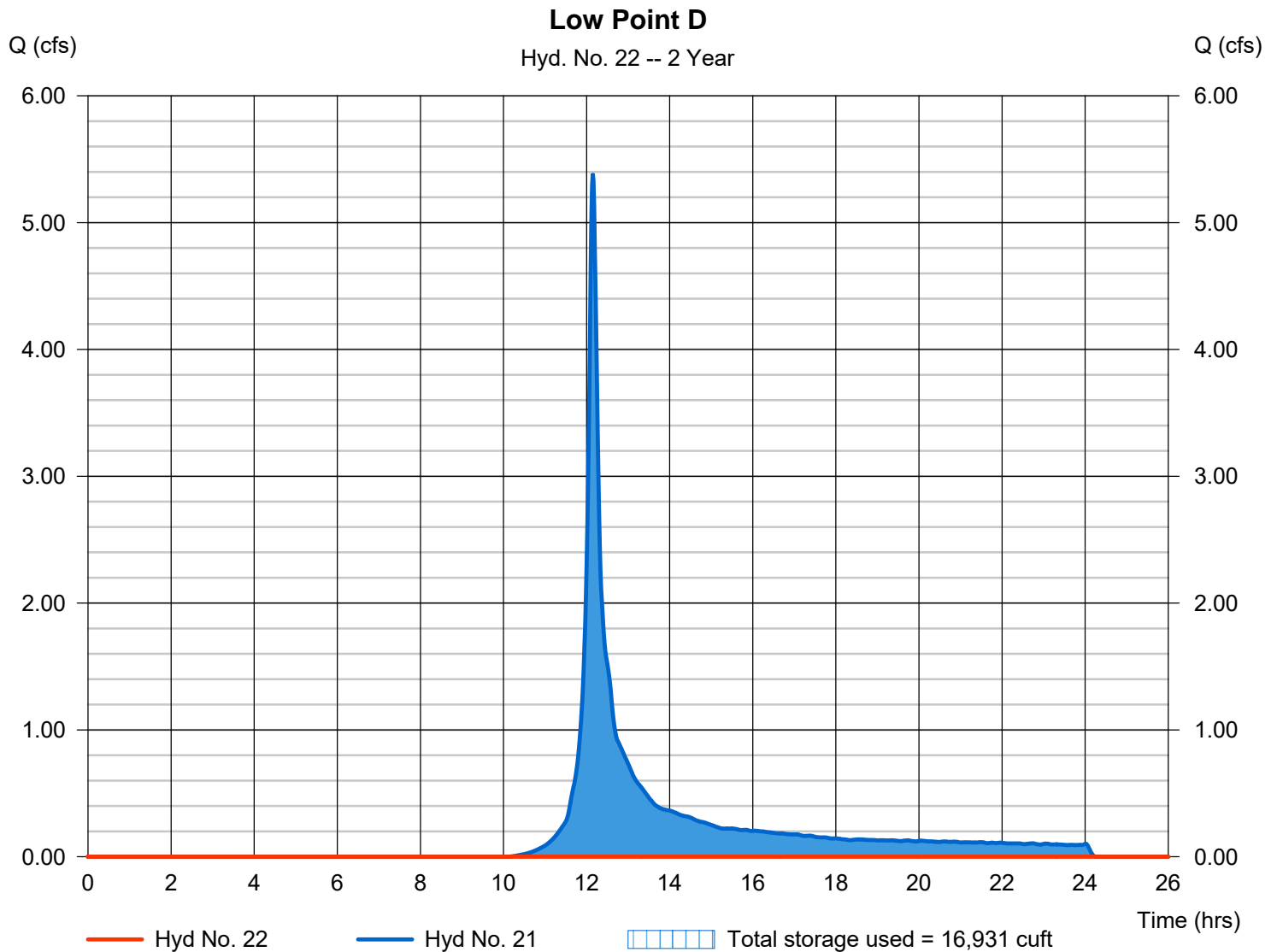
Wednesday, 03 / 9 / 2022

Hyd. No. 22

Low Point D

Hydrograph type	= Reservoir	Peak discharge	= 0.000 cfs
Storm frequency	= 2 yrs	Time to peak	= n/a
Time interval	= 1 min	Hyd. volume	= 0 cuft
Inflow hyd. No.	= 21 - EDA-D	Max. Elevation	= 595.90 ft
Reservoir name	= Low Point D	Max. Storage	= 16,931 cuft

Storage Indication method used.



Pond No. 9 - Low Point D

Pond Data

Contours -User-defined contour areas. Conic method used for volume calculation. Begining Elevation = 593.90 ft

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	593.90	00	0	0
0.10	594.00	2,578	86	86
0.60	594.50	5,085	1,880	1,966
1.10	595.00	8,458	3,350	5,316
1.60	595.50	12,358	5,173	10,489
2.10	596.00	19,917	7,993	18,482
2.60	596.50	26,666	11,604	30,086
3.10	597.00	35,125	15,398	45,483
3.60	597.50	42,848	19,459	64,943
4.10	598.00	51,114	23,458	88,401

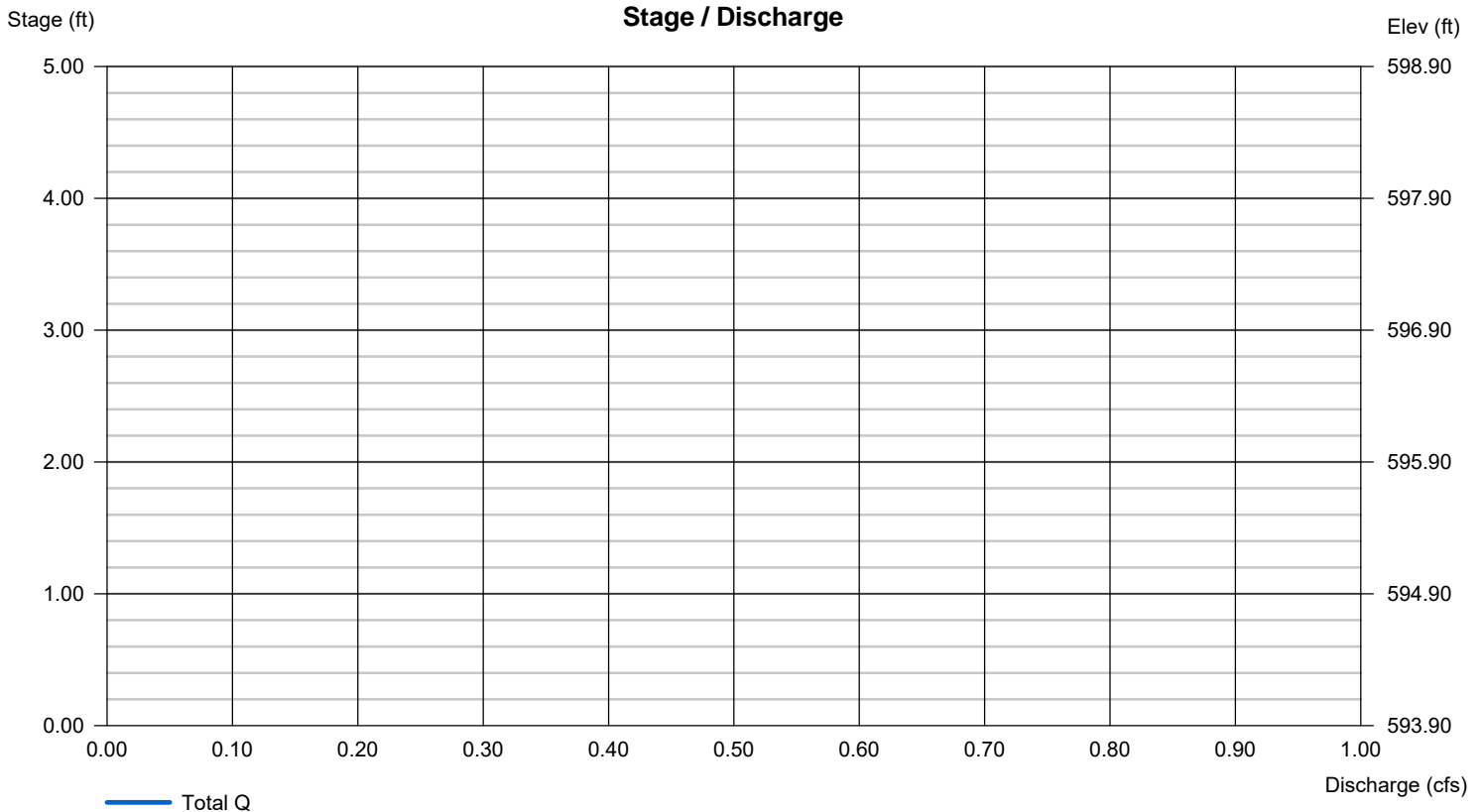
Culvert / Orifice Structures

	[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	= .000	.000	.000	n/a
Orifice Coeff.	= 0.00	0.00	0.00	0.00
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.	= 0.00	0.00	0.00	0.00
Weir Type	= ---	---	---	---
Multi-Stage	= No	No	No	No
Exfil.(in/hr)	= 0.000	(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

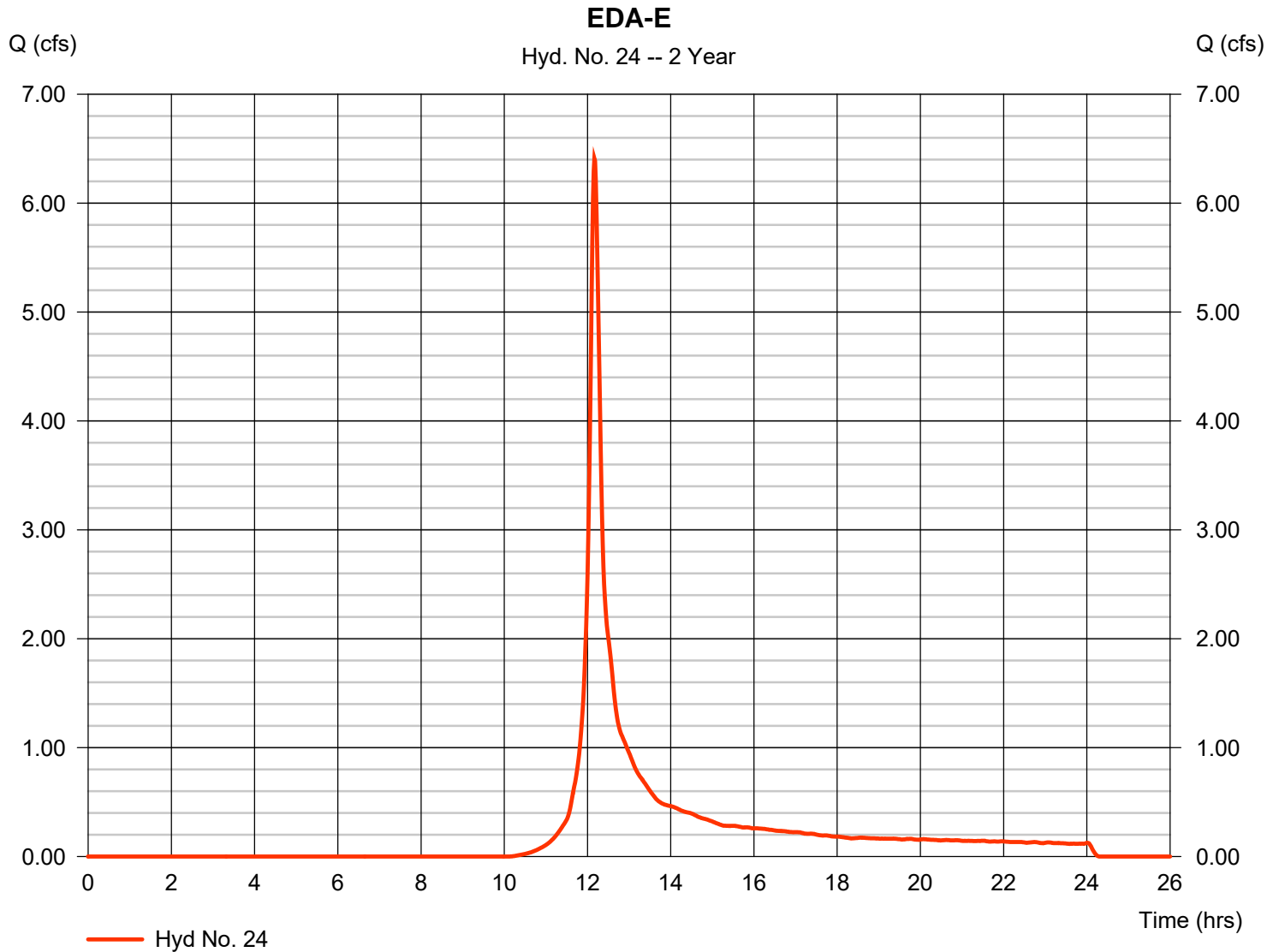
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

Wednesday, 03 / 9 / 2022

Hyd. No. 24

EDA-E

Hydrograph type	= SCS Runoff	Peak discharge	= 6.409 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.17 hrs
Time interval	= 1 min	Hyd. volume	= 21,496 cuft
Drainage area	= 4.690 ac	Curve number	= 77
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 11.40 min
Total precip.	= 3.24 in	Distribution	= Custom
Storm duration	= R:\Hydroflow Standards\NJ Reg Slope Rainfall Distribution\401A_C_1 min.cds		



Hydrograph Report

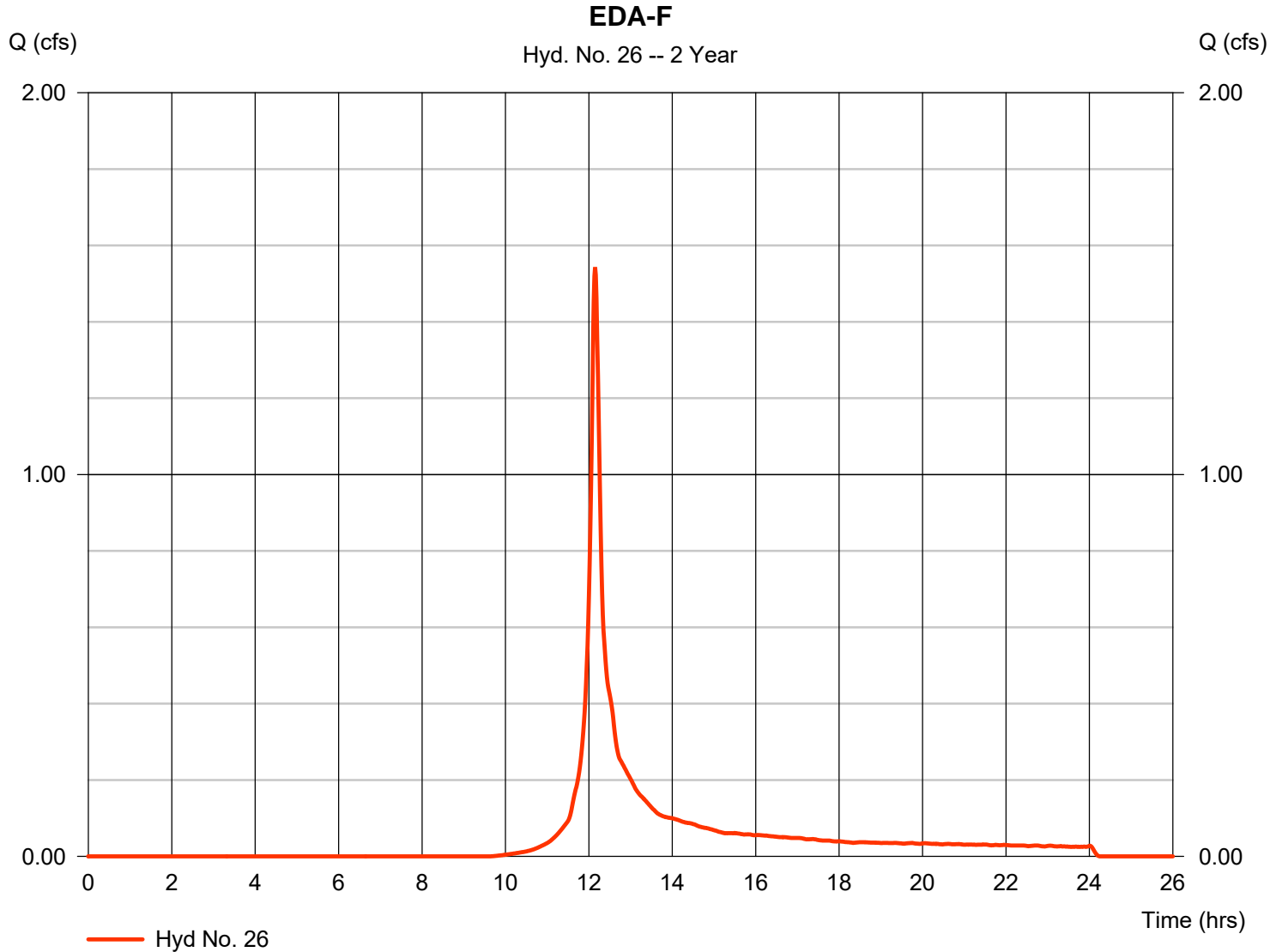
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

Wednesday, 03 / 9 / 2022

Hyd. No. 26

EDA-F

Hydrograph type	= SCS Runoff	Peak discharge	= 1.543 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.15 hrs
Time interval	= 1 min	Hyd. volume	= 4,813 cuft
Drainage area	= 0.970 ac	Curve number	= 79
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 10.00 min
Total precip.	= 3.24 in	Distribution	= Custom
Storm duration	= R:\Hydroflow Standards\NJ Reg Storm Rainfall Distribution\401A_C_1 min.cds		



Hydrograph Report

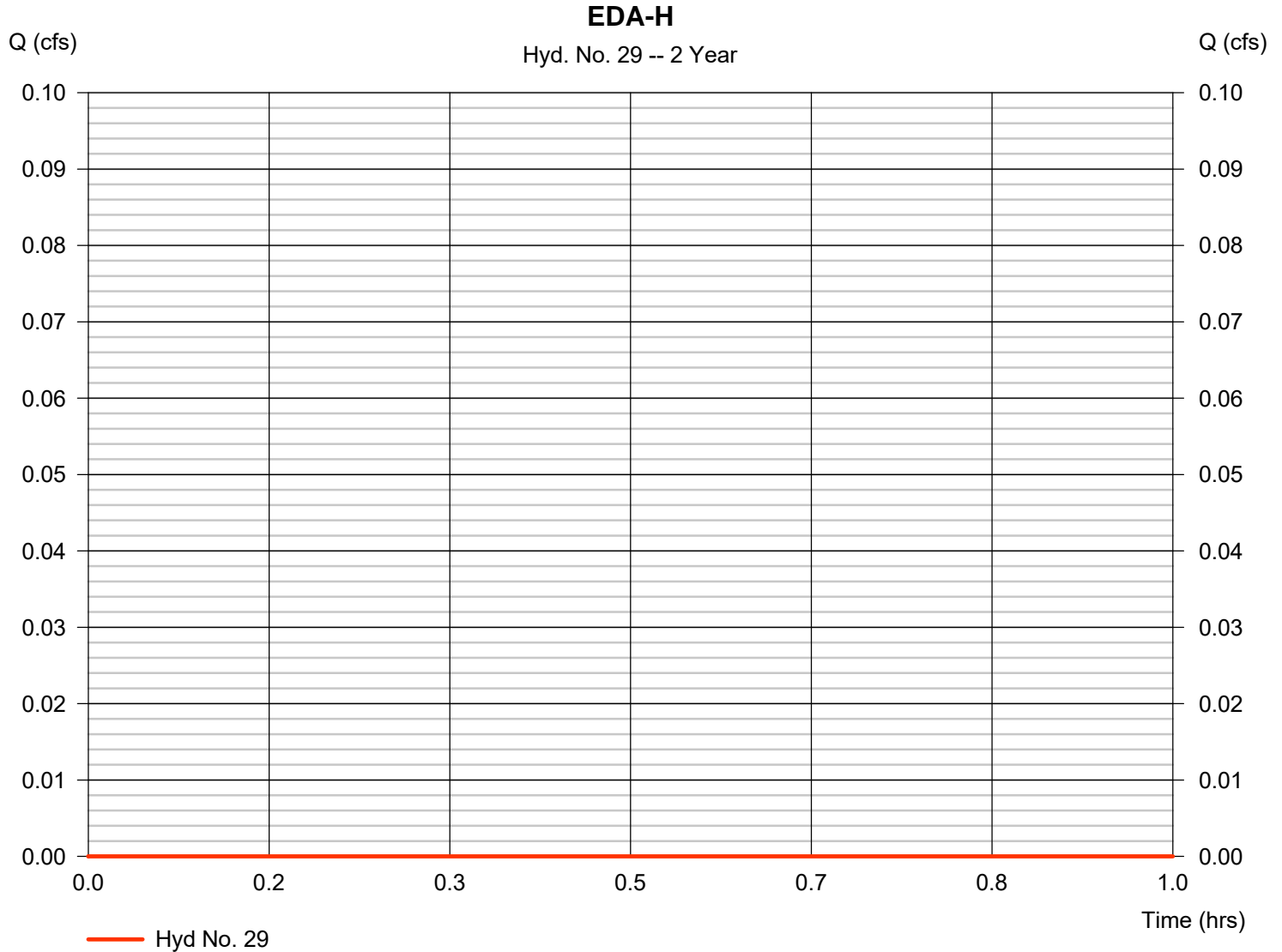
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

Wednesday, 03 / 9 / 2022

Hyd. No. 29

EDA-H

Hydrograph type	= SCS Runoff	Peak discharge	= 0.000 cfs
Storm frequency	= 2 yrs	Time to peak	= n/a
Time interval	= 1 min	Hyd. volume	= 0 cuft
Drainage area	= 12.920 ac	Curve number	= 36
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 33.50 min
Total precip.	= 3.24 in	Distribution	= Custom
Storm duration	= R:\Hydroflow Standards\NJ Reg Storm Rainfall Distribution\NOAA_C_1 min.cds		



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

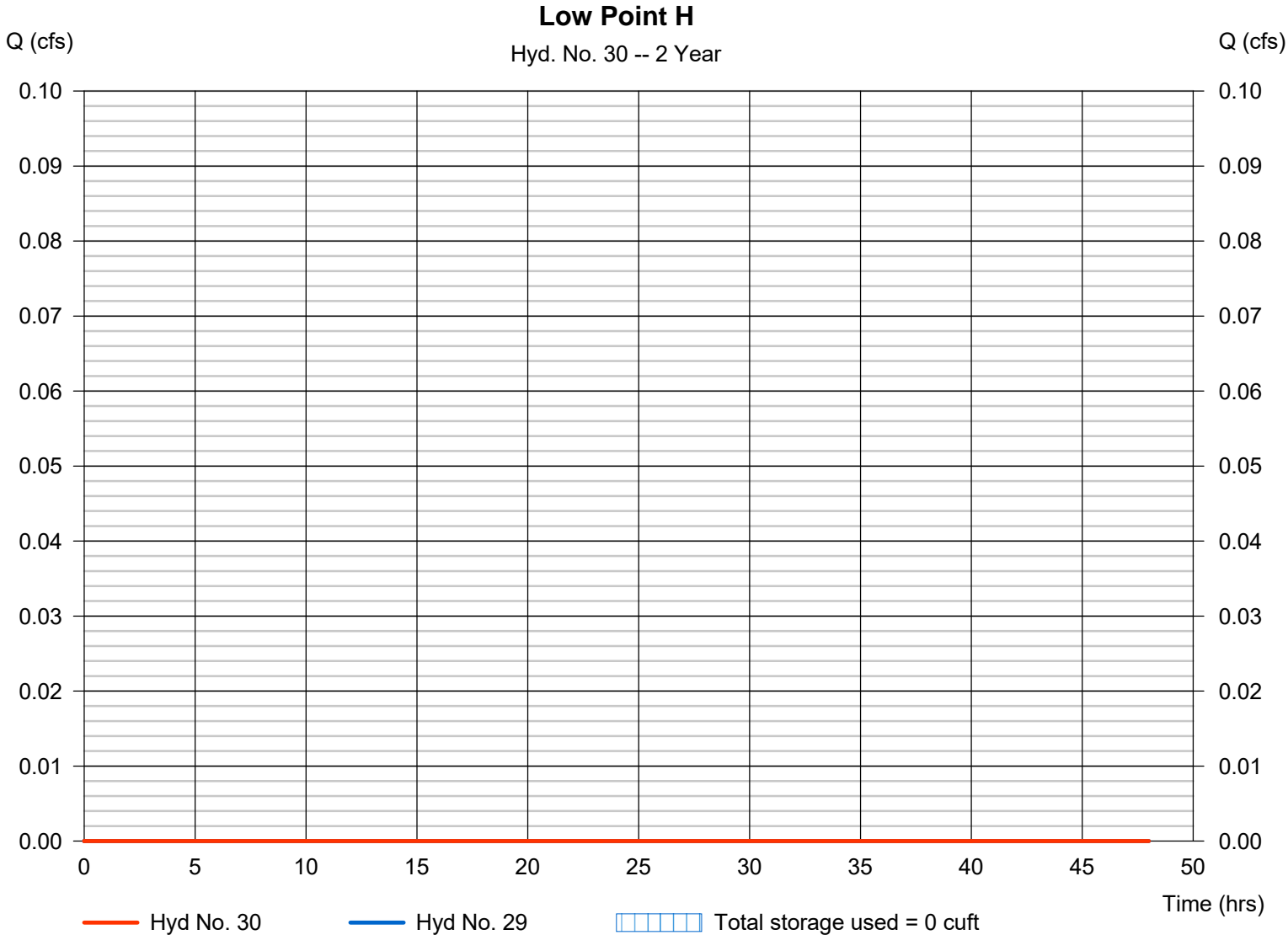
Wednesday, 03 / 9 / 2022

Hyd. No. 30

Low Point H

Hydrograph type	= Reservoir	Peak discharge	= 0.000 cfs
Storm frequency	= 2 yrs	Time to peak	= n/a
Time interval	= 1 min	Hyd. volume	= 0 cuft
Inflow hyd. No.	= 29 - EDA-H	Max. Elevation	= 594.87 ft
Reservoir name	= Low Point H	Max. Storage	= 0 cuft

Storage Indication method used.



Pond No. 10 - Low Point H

Pond Data

Contours -User-defined contour areas. Conic method used for volume calculation. Begining Elevation = 594.80 ft

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	594.80	00	0	0
0.70	595.50	6,133	1,431	1,431
1.20	596.00	12,353	4,531	5,962
1.70	596.50	17,030	7,314	13,276
2.20	597.00	22,505	9,851	23,127
2.70	597.50	27,028	12,365	35,492
3.20	598.00	32,037	14,747	50,239
3.70	598.50	36,433	17,104	67,343
4.20	599.00	41,351	19,431	86,774
4.70	599.50	45,806	21,778	108,551
5.20	600.00	50,617	24,094	132,645
5.70	600.50	55,998	26,640	159,285
6.20	601.00	61,741	29,420	188,705

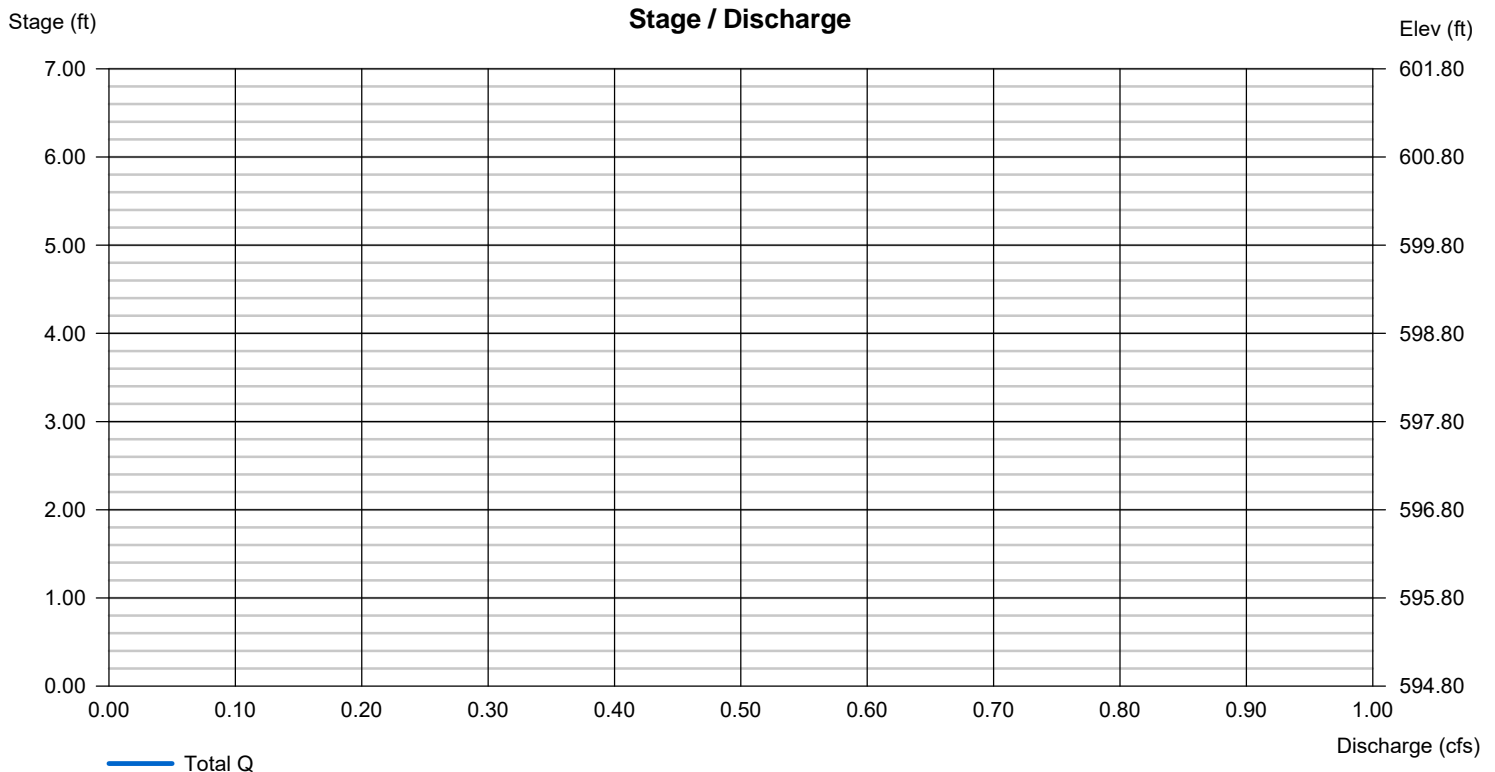
Culvert / Orifice Structures

	[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	= .000	.000	.000	n/a
Orifice Coeff.	= 0.00	0.00	0.00	0.00
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.	= 0.00	0.00	0.00	0.00
Weir Type	= ---	---	---	---
Multi-Stage	= No	No	No	No
Exfil.(in/hr)	= 0.000	(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).

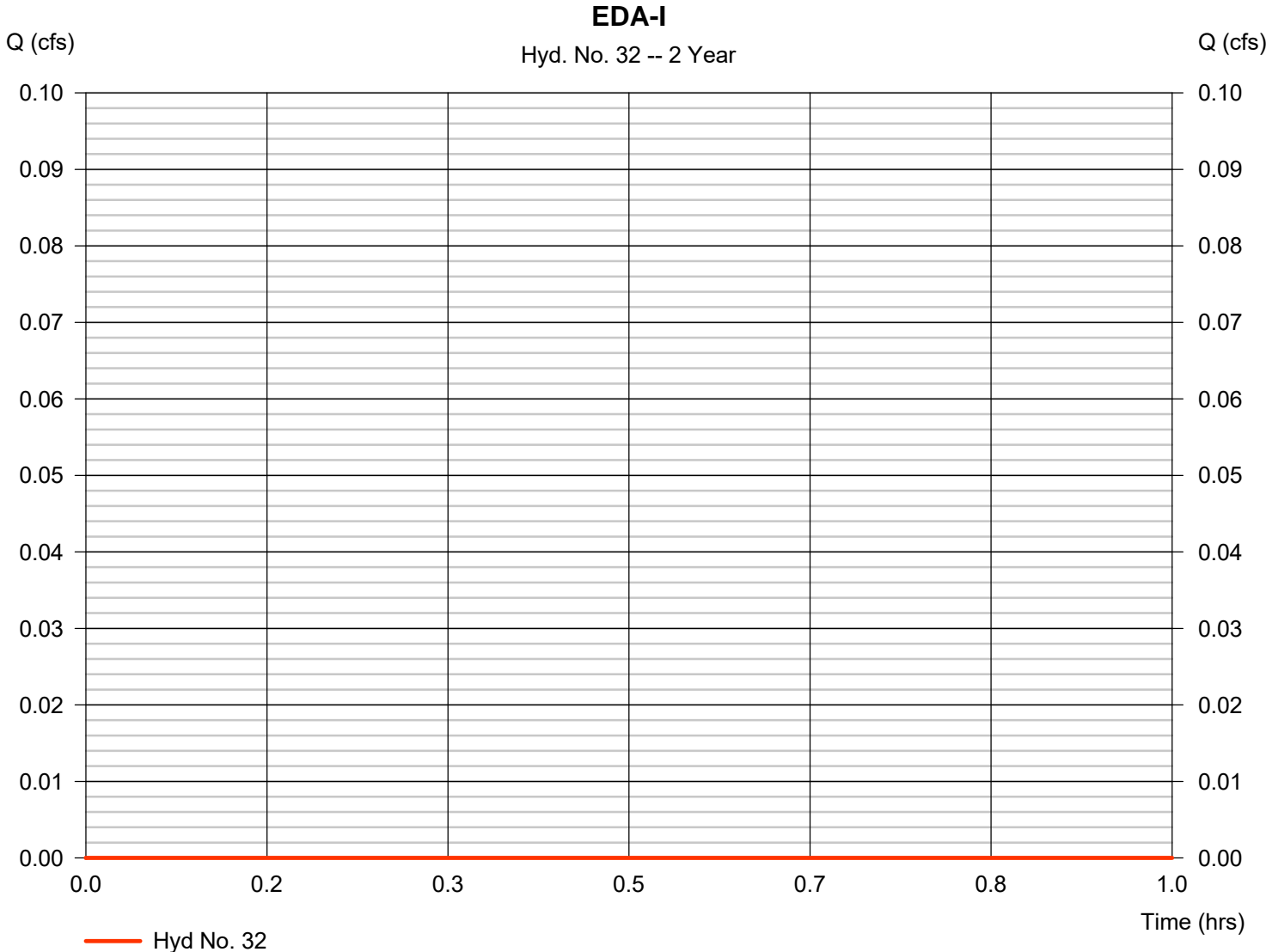


Hydrograph Report

Hyd. No. 32

EDA-I

Hydrograph type	= SCS Runoff	Peak discharge	= 0.000 cfs
Storm frequency	= 2 yrs	Time to peak	= n/a
Time interval	= 1 min	Hyd. volume	= 0 cuft
Drainage area	= 1.100 ac	Curve number	= 30
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 22.10 min
Total precip.	= 3.24 in	Distribution	= Custom
Storm duration	= R:\Hydroflow Standards\NJ Reg Storm Rainfall Distribution\NOAA_C_1 min.cds		



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

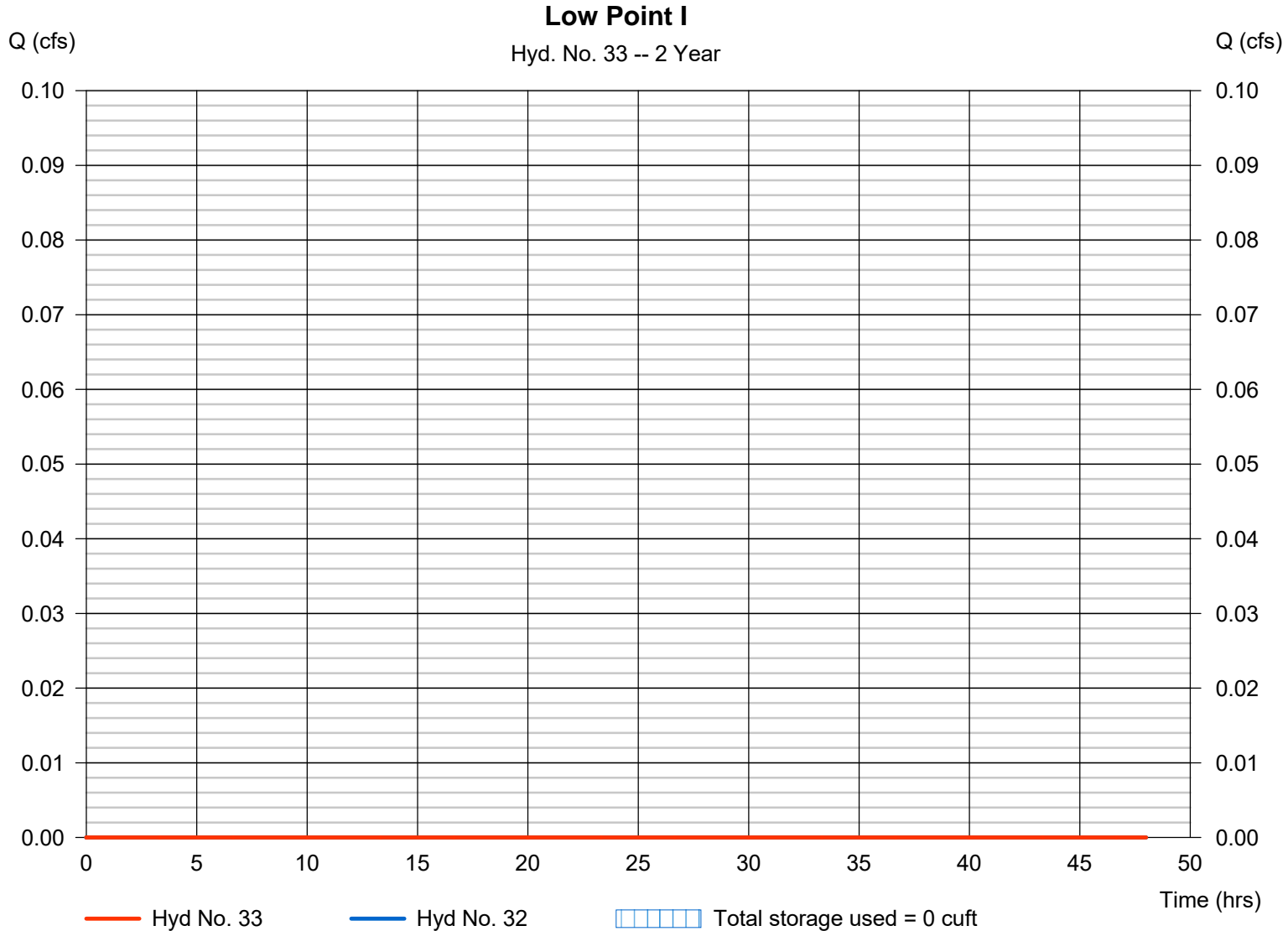
Wednesday, 03 / 9 / 2022

Hyd. No. 33

Low Point I

Hydrograph type	= Reservoir	Peak discharge	= 0.000 cfs
Storm frequency	= 2 yrs	Time to peak	= n/a
Time interval	= 1 min	Hyd. volume	= 0 cuft
Inflow hyd. No.	= 32 - EDA-I	Max. Elevation	= 595.55 ft
Reservoir name	= Low Point I	Max. Storage	= 0 cuft

Storage Indication method used.



Pond No. 11 - Low Point I

Pond Data

Contours -User-defined contour areas. Conic method used for volume calculation. Begining Elevation = 595.50 ft

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	595.50	00	0	0
0.50	596.00	325	54	54
1.00	596.50	1,000	316	370
1.50	597.00	1,450	609	979
2.00	597.50	1,699	786	1,766
2.50	598.00	1,980	919	2,684
3.00	598.50	2,260	1,059	3,743
3.50	599.00	2,568	1,206	4,949
4.00	599.50	2,875	1,360	6,309
4.50	600.00	3,204	1,519	7,828
5.00	600.50	3,556	1,689	9,517
5.50	601.00	3,921	1,868	11,385
6.00	601.50	4,371	2,072	13,457
6.50	602.00	4,865	2,308	15,765

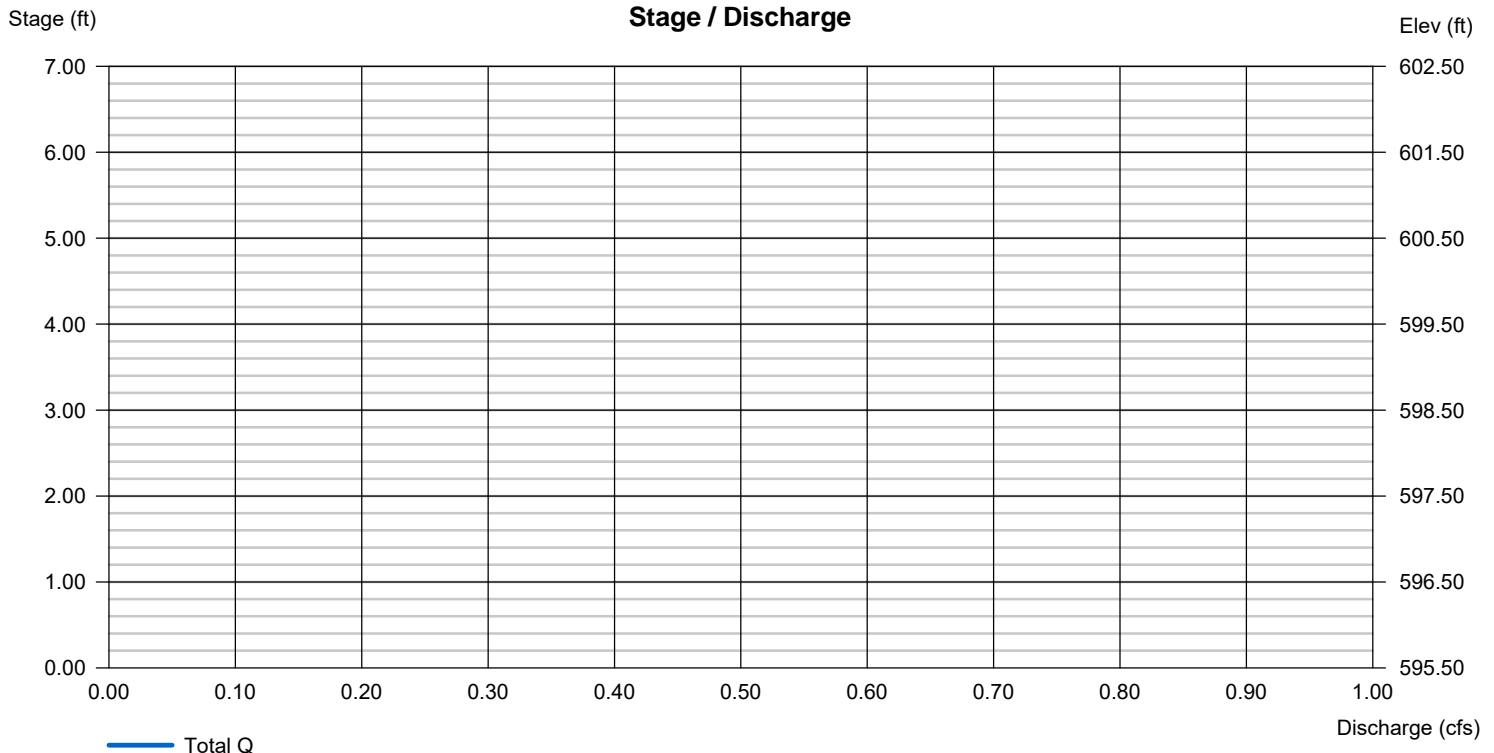
Culvert / Orifice Structures

	[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)	Inactive	0.00	0.00	0.00
Crest El. (ft)	= 0.00	0.00	0.00	0.00
Weir Coeff.	= 2.60	3.33	3.33	3.33
Weir Type	= Broad	---	---	---
Multi-Stage	= No	No	No	No
Exfil.(in/hr)	= 0.000 (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

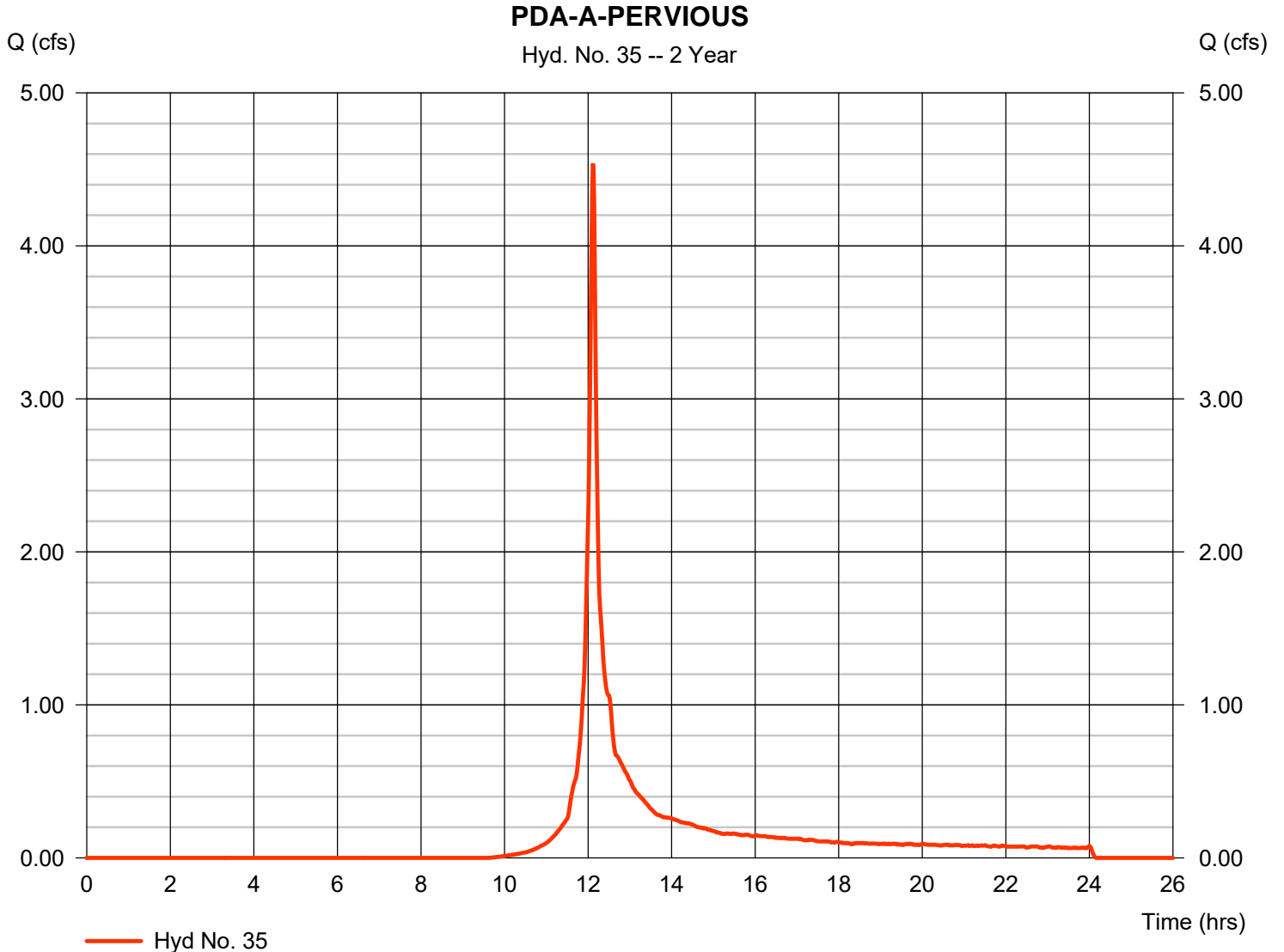
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

Wednesday, 03 / 9 / 2022

Hyd. No. 35

PDA-A-PERVIOUS

Hydrograph type	= SCS Runoff	Peak discharge	= 4.537 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.12 hrs
Time interval	= 1 min	Hyd. volume	= 12,536 cuft
Drainage area	= 2.450 ac	Curve number	= 79
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 6.00 min
Total precip.	= 3.24 in	Distribution	= Custom
Storm duration	= R:\Hydroflow Standards\NJ Reg Slope Rainfall Distribution\MOA_C_1 min.cds		



Hydrograph Report

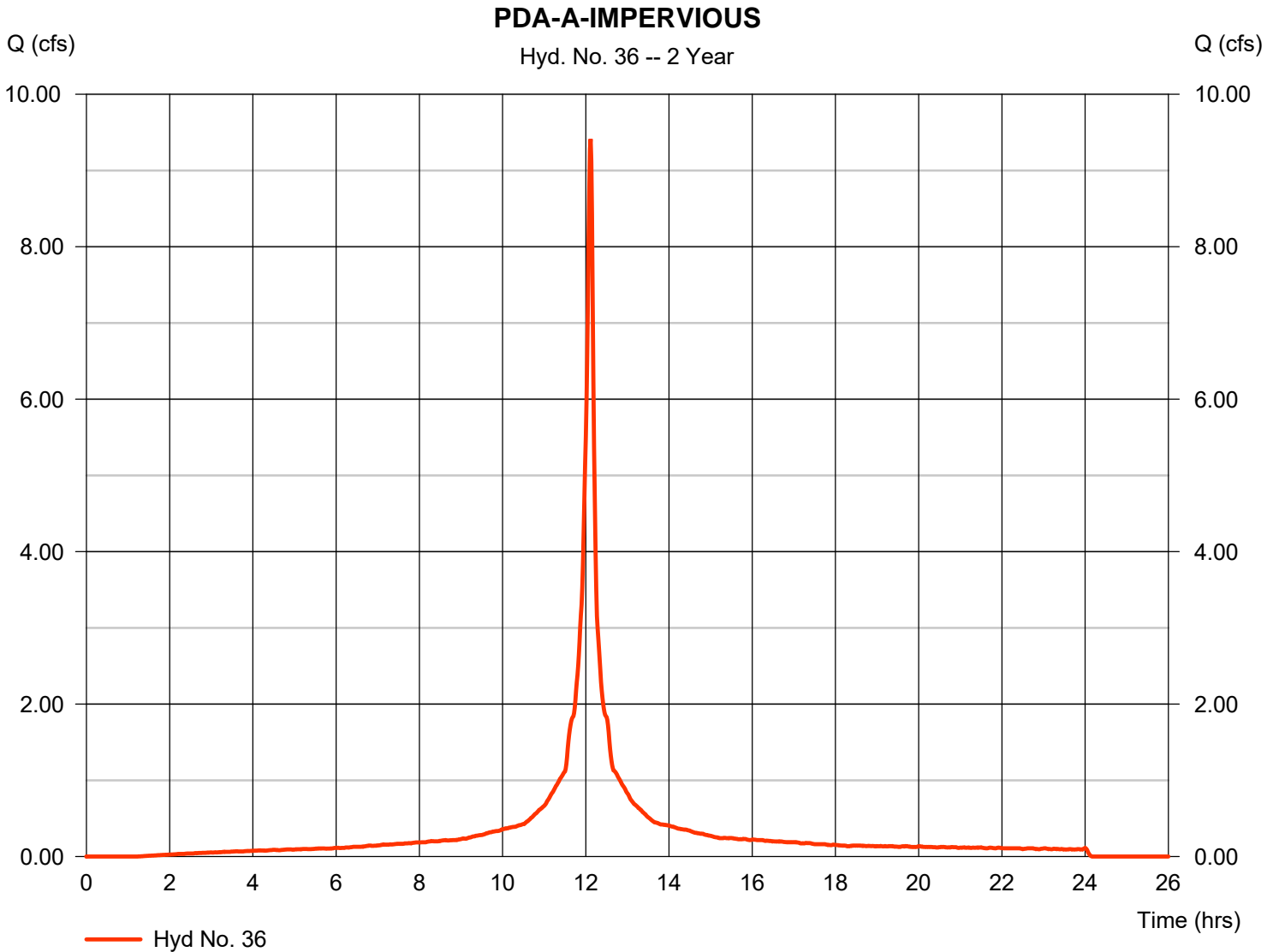
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

Wednesday, 03 / 9 / 2022

Hyd. No. 36

PDA-A-IMPERVIOUS

Hydrograph type	= SCS Runoff	Peak discharge	= 9.413 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.12 hrs
Time interval	= 1 min	Hyd. volume	= 30,058 cuft
Drainage area	= 2.670 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 6.00 min
Total precip.	= 3.24 in	Distribution	= Custom
Storm duration	= R:\Hydroflow Standards\NJ Reg Slope Rainfall Distribution\40A_C_1 min.cds		



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

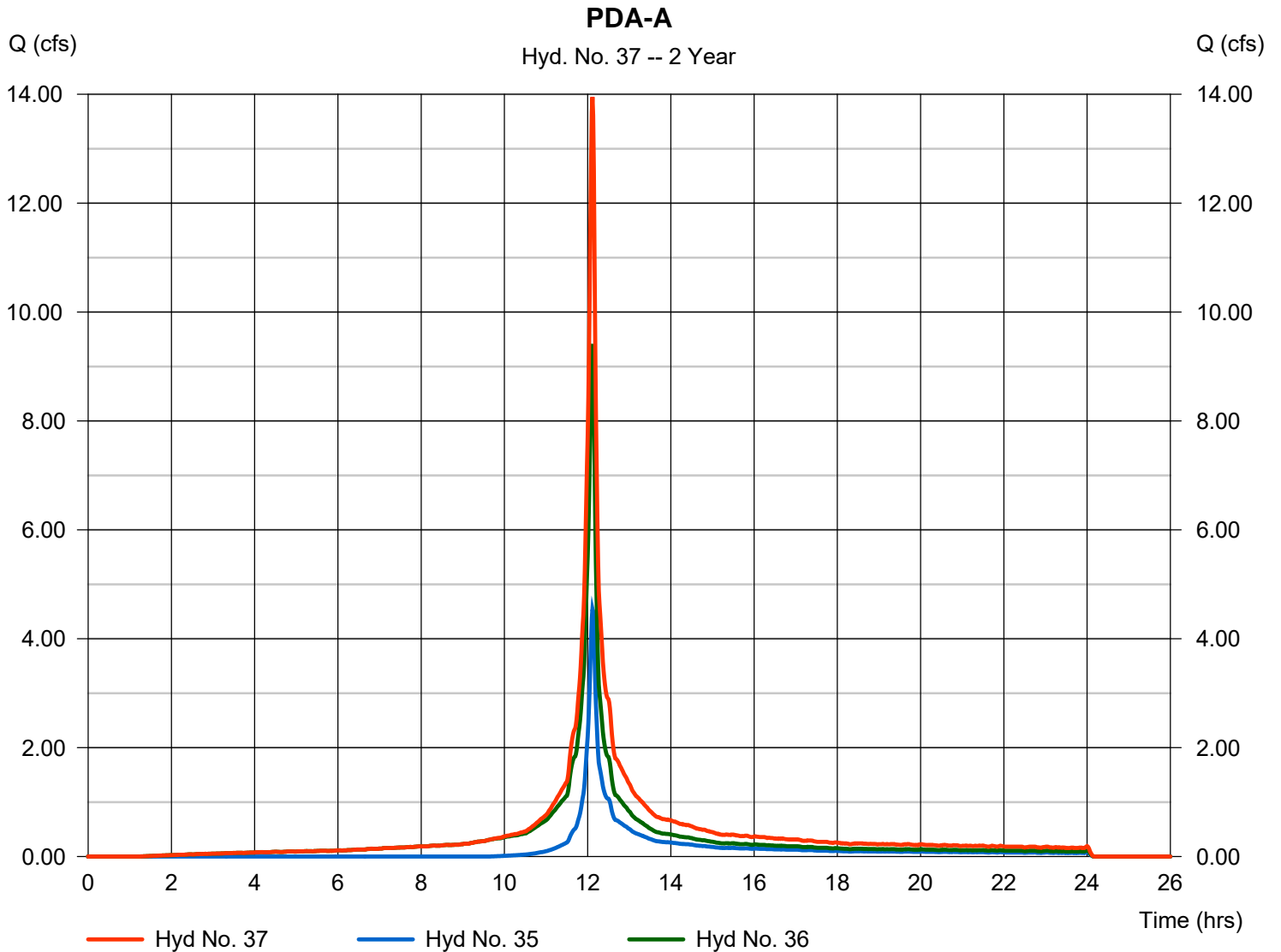
Wednesday, 03 / 9 / 2022

Hyd. No. 37

PDA-A

Hydrograph type = Combine
Storm frequency = 2 yrs
Time interval = 1 min
Inflow hyds. = 35, 36

Peak discharge = 13.95 cfs
Time to peak = 12.12 hrs
Hyd. volume = 42,594 cuft
Contrib. drain. area = 5.120 ac



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

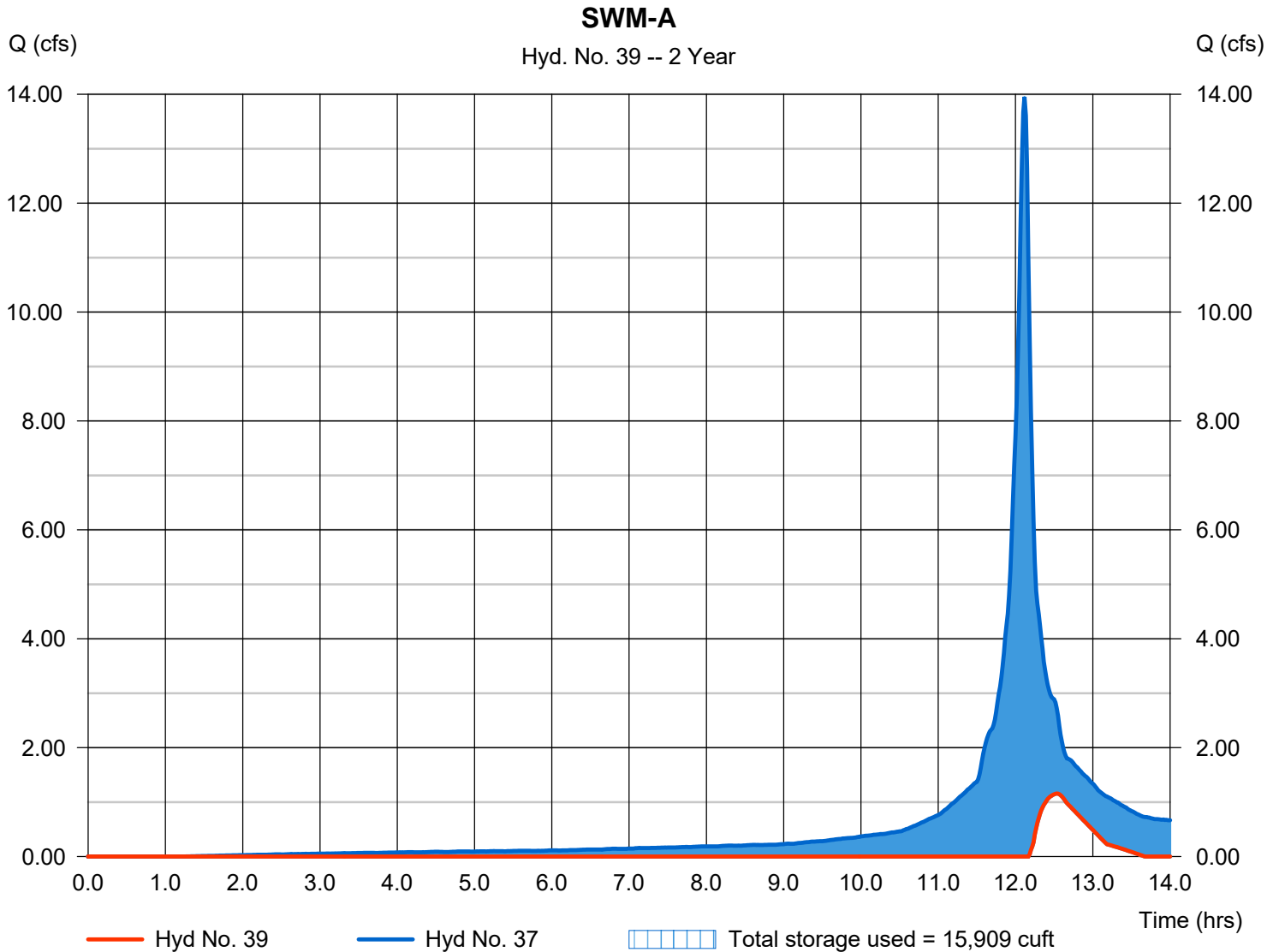
Wednesday, 03 / 9 / 2022

Hyd. No. 39

SWM-A

Hydrograph type	= Reservoir	Peak discharge	= 1.157 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.53 hrs
Time interval	= 1 min	Hyd. volume	= 2,850 cuft
Inflow hyd. No.	= 37 - PDA-A	Max. Elevation	= 595.81 ft
Reservoir name	= SWM-A	Max. Storage	= 15,909 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Pond No. 1 - SWM-A

Pond Data

Contours -User-defined contour areas. Conic method used for volume calculation. Begining Elevation = 594.50 ft

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	594.50	10,790	0	0
0.50	595.00	11,703	5,621	5,621
1.50	596.00	13,569	12,623	18,244
2.50	597.00	15,492	14,518	32,763

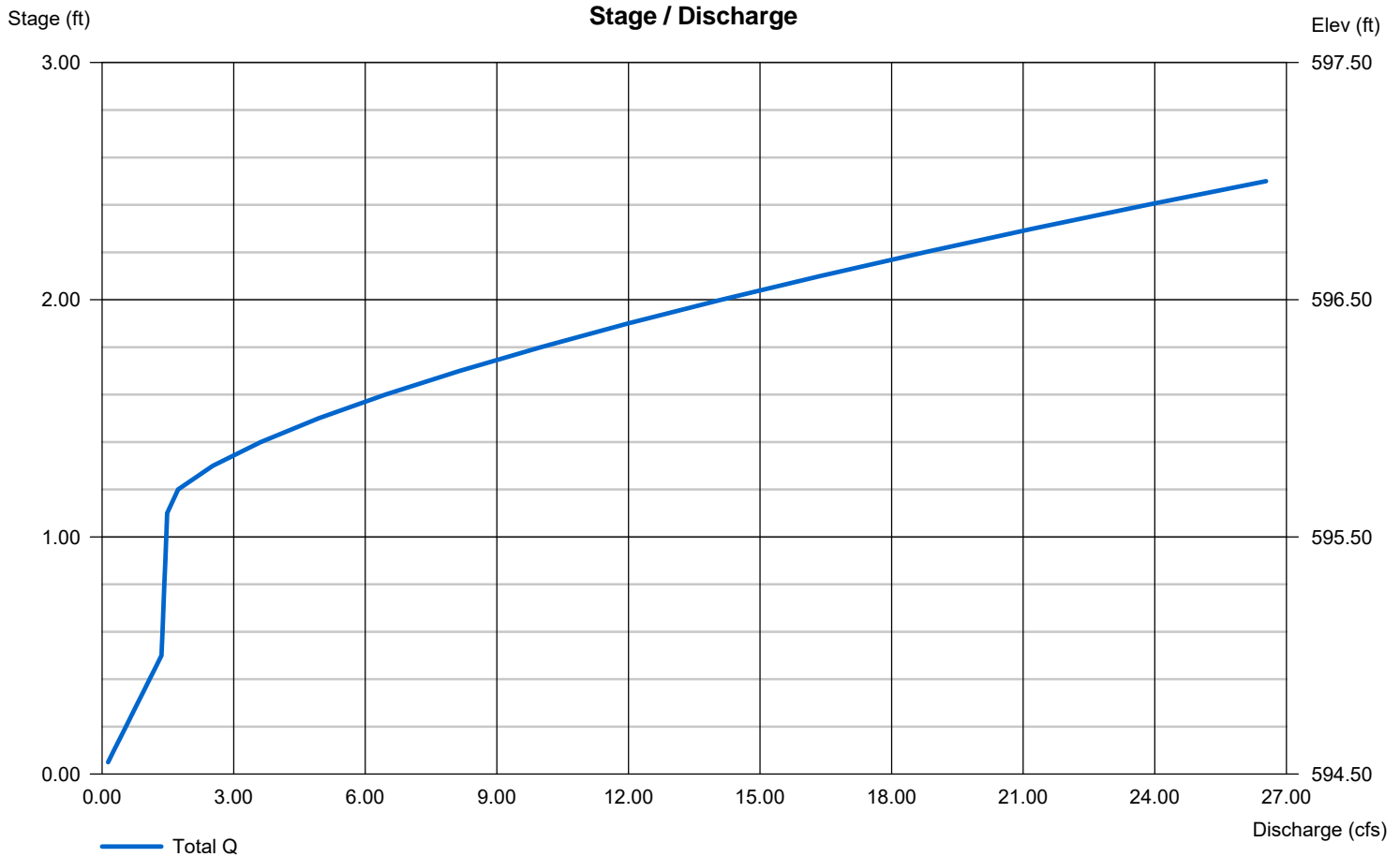
Culvert / Orifice Structures

	[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)	= 6.00	0.00	0.00	0.00
Crest El. (ft)	= 595.64	0.00	0.00	0.00
Weir Coeff.	= 2.60	3.33	3.33	3.33
Weir Type	= Broad	---	---	---
Multi-Stage	= No	No	No	No
Exfil.(in/hr)	= 5.000 (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).



Hydrograph Report

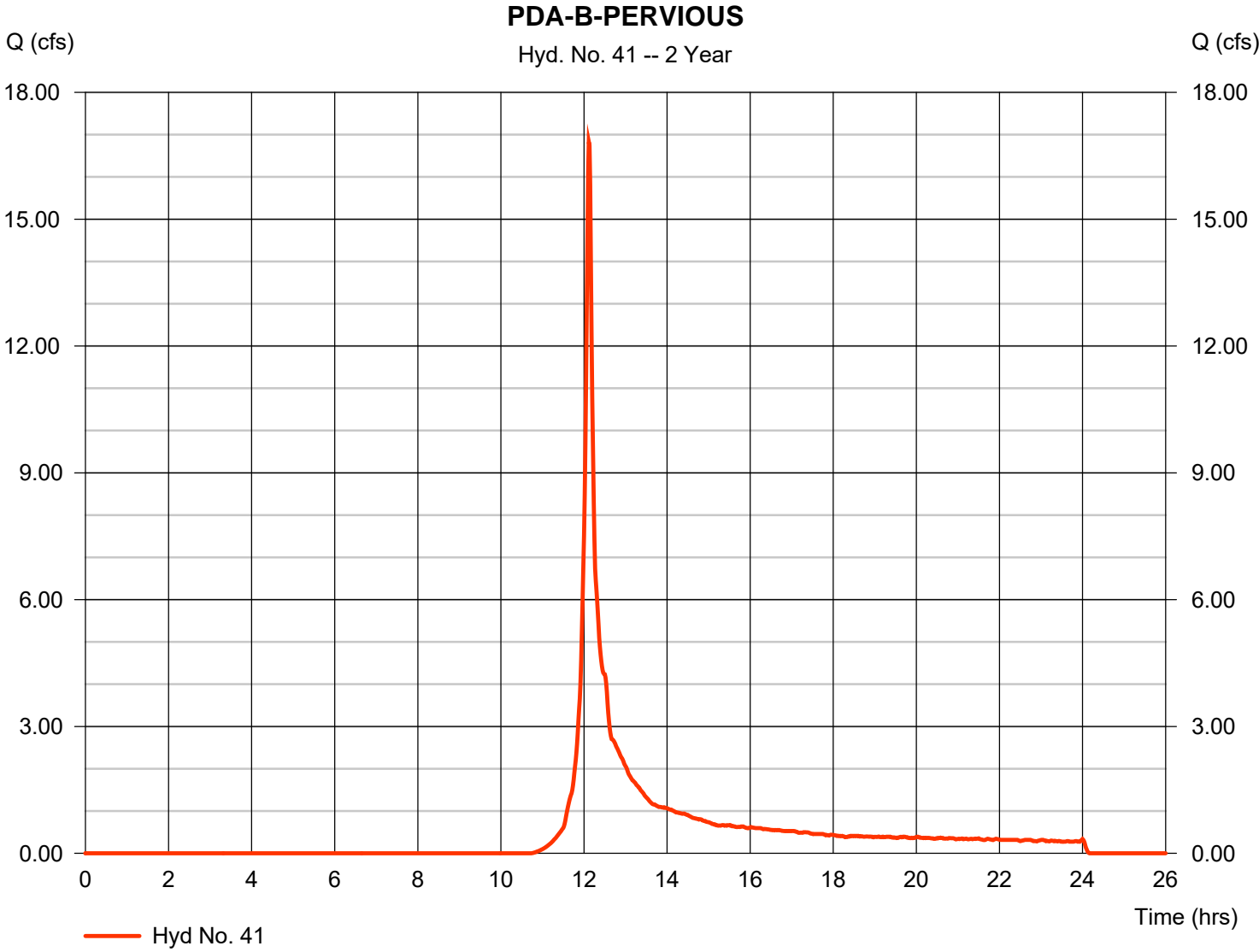
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

Wednesday, 03 / 9 / 2022

Hyd. No. 41

PDA-B-PERVIOUS

Hydrograph type	= SCS Runoff	Peak discharge	= 16.82 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.12 hrs
Time interval	= 1 min	Hyd. volume	= 47,516 cuft
Drainage area	= 11.930 ac	Curve number	= 74
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 6.00 min
Total precip.	= 3.24 in	Distribution	= Custom
Storm duration	= R:\Hydroflow Standards\NJ Reg Storm Rainfall Distribution\NOAA_C_1 min.cds		



Hydrograph Report

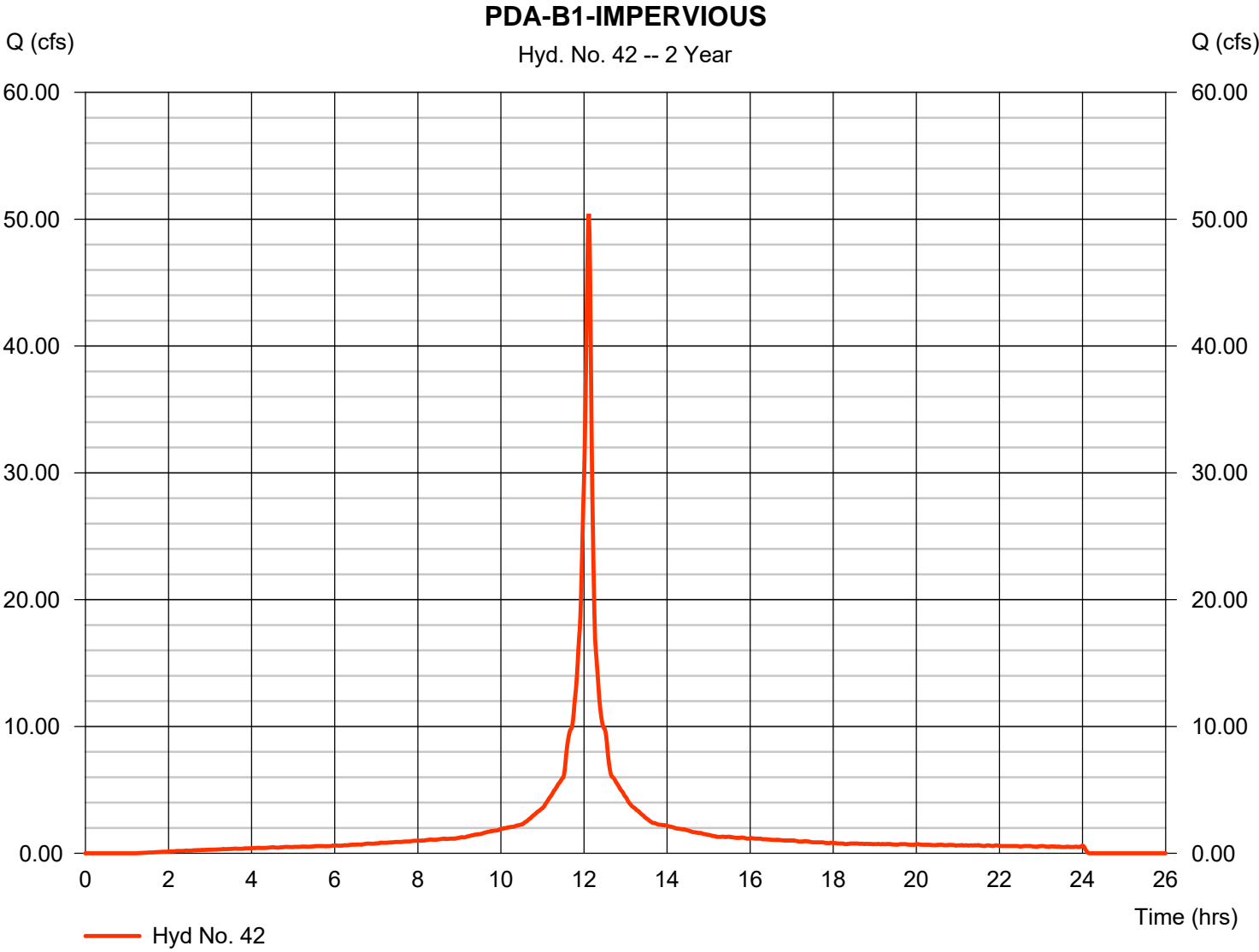
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

Wednesday, 03 / 9 / 2022

Hyd. No. 42

PDA-B1-IMPERVIOUS

Hydrograph type	= SCS Runoff	Peak discharge	= 50.42 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.12 hrs
Time interval	= 1 min	Hyd. volume	= 160,987 cuft
Drainage area	= 14.300 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 6.00 min
Total precip.	= 3.24 in	Distribution	= Custom
Storm duration	= R:\Hydroflow Standards\NJ Reg Storm Rainfall Distribution\40A_C_1 min.cds		



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

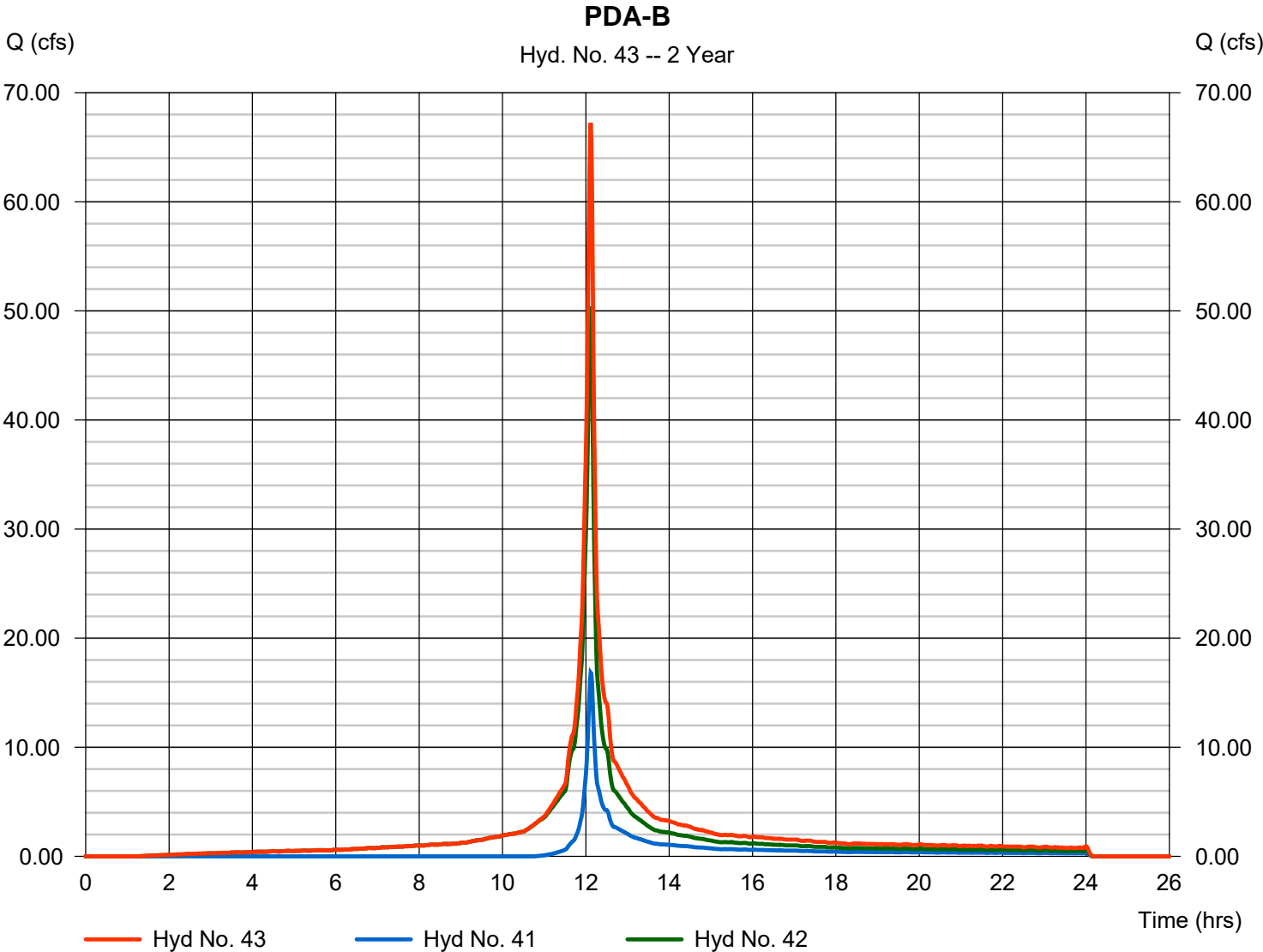
Wednesday, 03 / 9 / 2022

Hyd. No. 43

PDA-B

Hydrograph type = Combine
Storm frequency = 2 yrs
Time interval = 1 min
Inflow hyds. = 41, 42

Peak discharge = 67.24 cfs
Time to peak = 12.12 hrs
Hyd. volume = 208,503 cuft
Contrib. drain. area = 26.230 ac



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

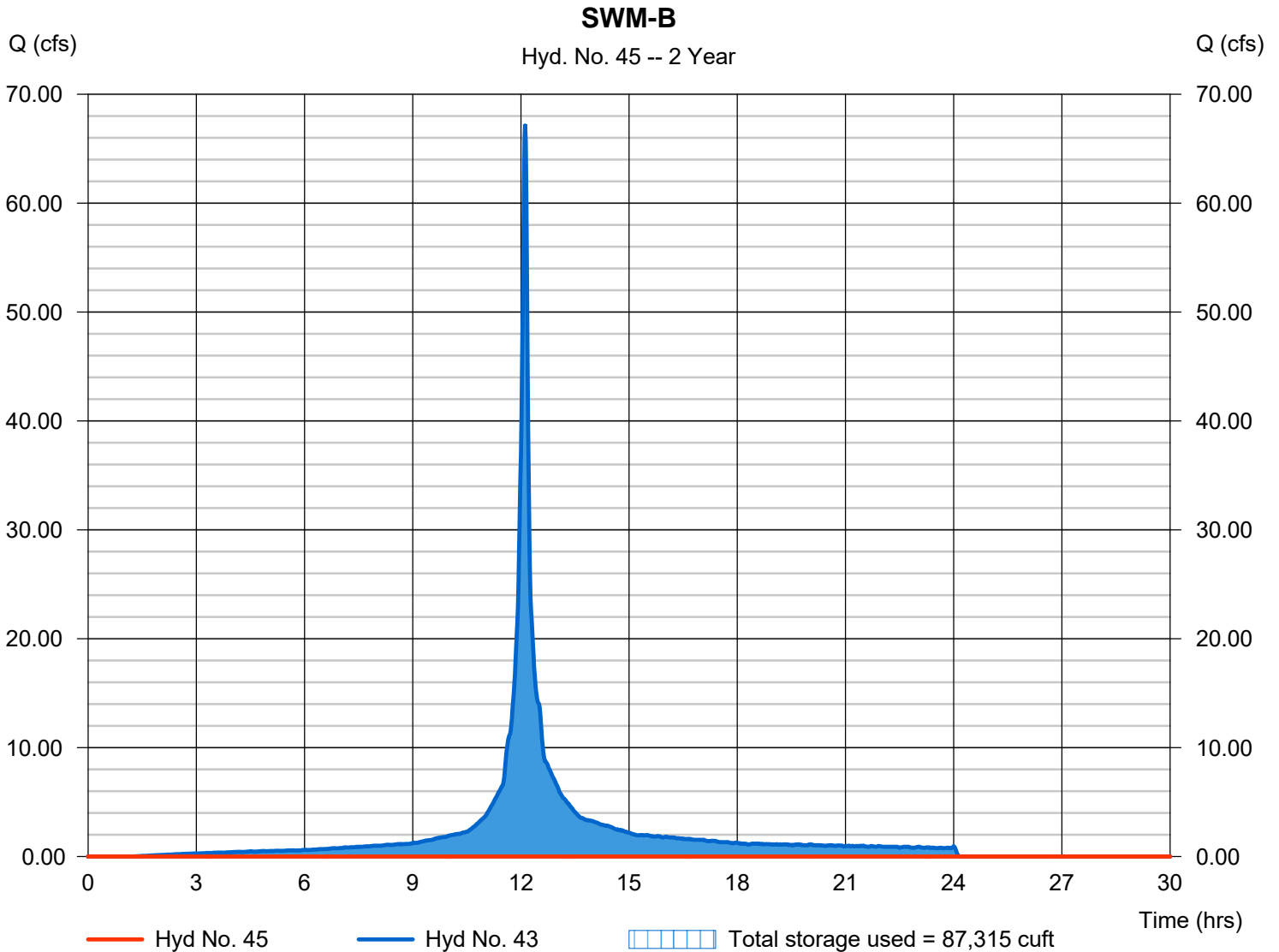
Wednesday, 03 / 9 / 2022

Hyd. No. 45

SWM-B

Hydrograph type	= Reservoir	Peak discharge	= 0.000 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.70 hrs
Time interval	= 1 min	Hyd. volume	= 0 cuft
Inflow hyd. No.	= 43 - PDA-B	Max. Elevation	= 598.62 ft
Reservoir name	= SWM-B1	Max. Storage	= 87,315 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Pond No. 2 - SWM-B1

Pond Data

Contours -User-defined contour areas. Conic method used for volume calculation. Begining Elevation = 598.00 ft

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	598.00	137,350	0	0
1.00	599.00	146,301	141,788	141,788
2.00	600.00	155,308	150,767	292,555
3.00	601.00	164,371	159,802	452,357
4.00	602.00	173,492	168,894	621,251

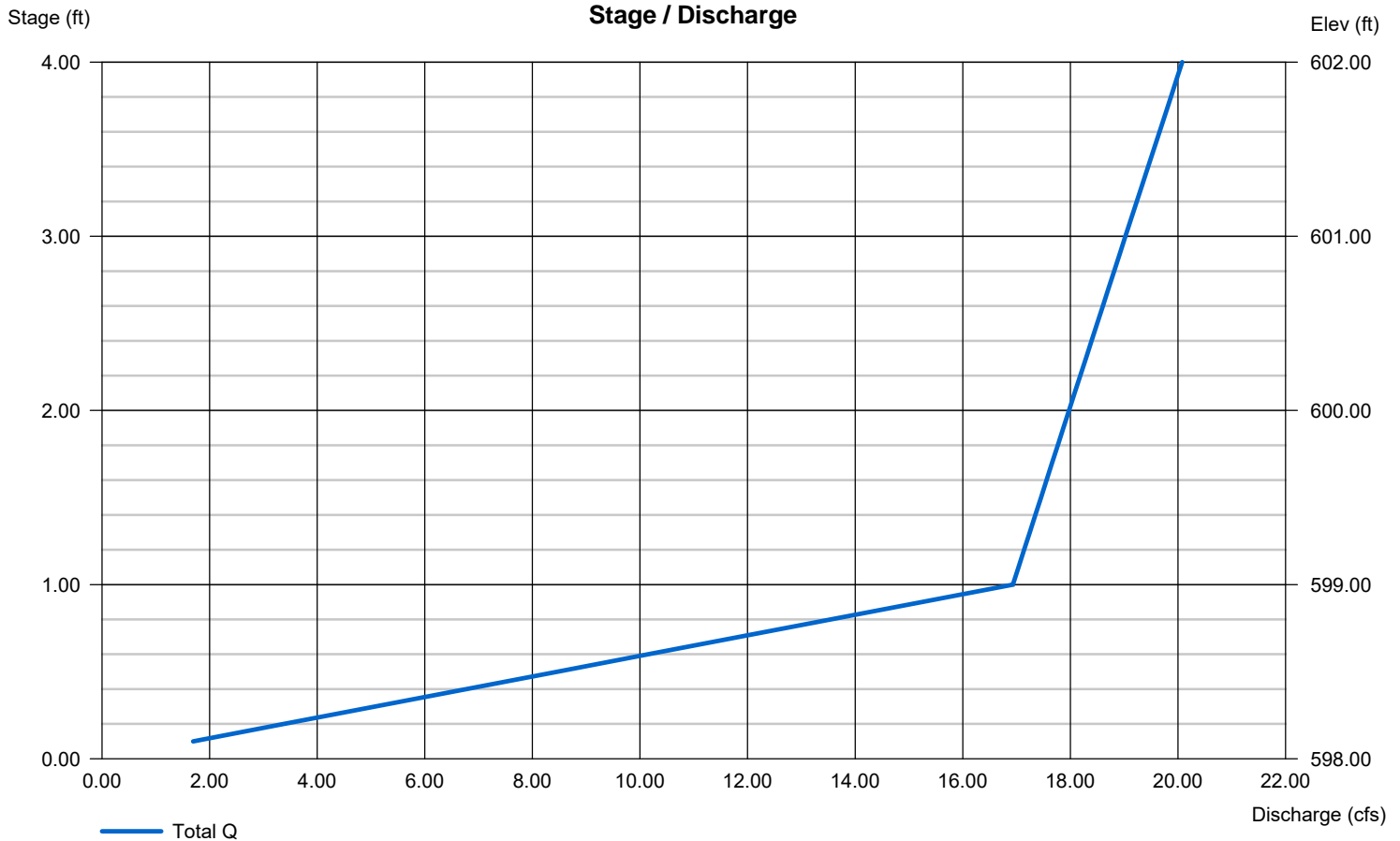
Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	Inactive	0.00	0.00	0.00
Span (in)	= 24.00	0.00	0.00	0.00
No. Barrels	= 1	0	0	0
Invert El. (ft)	= 598.00	0.00	0.00	0.00
Length (ft)	= 164.00	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)	Inactive	0.00	0.00	0.00
Crest El. (ft)	= 601.00	0.00	0.00	0.00
Weir Coeff.	= 3.33	3.33	3.33	3.33
Weir Type	= 1	---	---	---
Multi-Stage	= Yes	No	No	No
Exfil.(in/hr)	= 5.000 (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).



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

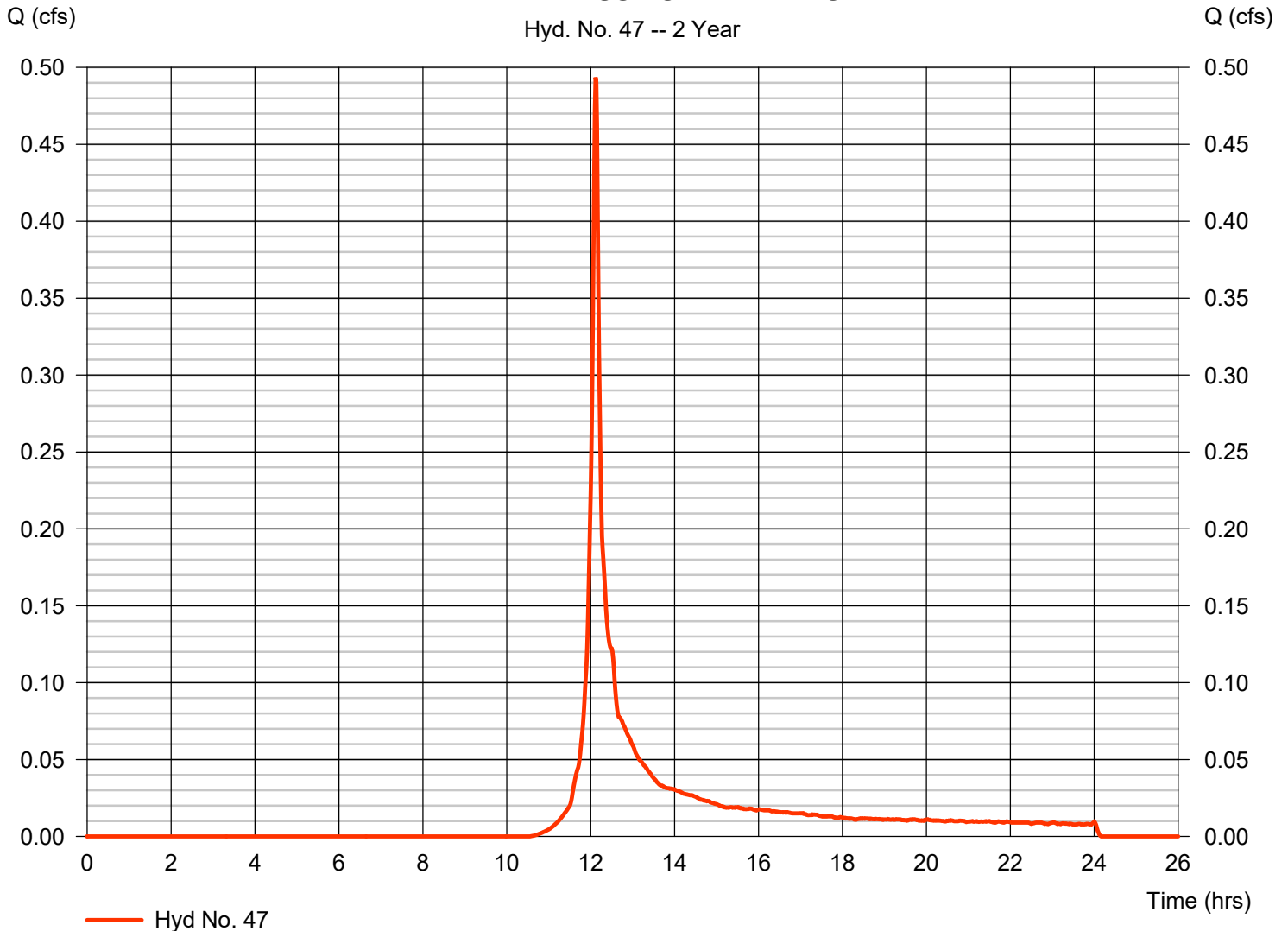
Wednesday, 03 / 9 / 2022

Hyd. No. 47

PDA-B-BYPASS TO WETLANDS

Hydrograph type	= SCS Runoff	Peak discharge	= 0.494 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.12 hrs
Time interval	= 1 min	Hyd. volume	= 1,385 cuft
Drainage area	= 0.330 ac	Curve number	= 75
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 6.00 min
Total precip.	= 3.24 in	Distribution	= Custom
Storm duration	= R:\Hydroflow Standards\NJ Reg Storm Rainfall Distribution\NOAA_C_1 min.cds		

PDA-B-BYPASS TO WETLANDS



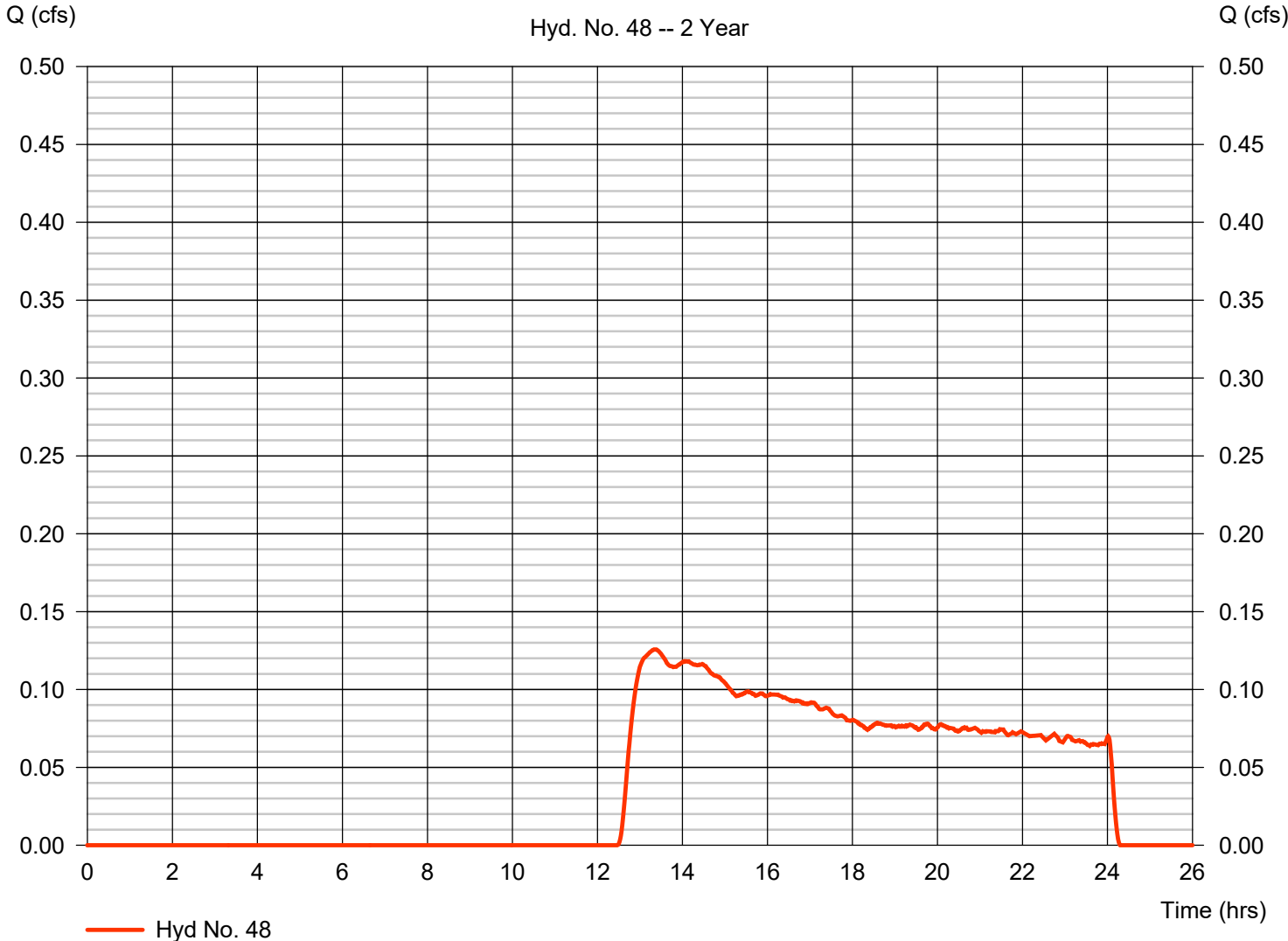
Hydrograph Report

Hyd. No. 48

EDA-B: UNDIST PERVIOUS TO WETLAND

Hydrograph type	= SCS Runoff	Peak discharge	= 0.126 cfs
Storm frequency	= 2 yrs	Time to peak	= 13.33 hrs
Time interval	= 1 min	Hyd. volume	= 3,556 cuft
Drainage area	= 12.170 ac	Curve number	= 47
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.70 min
Total precip.	= 3.24 in	Distribution	= Custom
Storm duration	= R:\Hydroflow Standards\NJ Reg Slope Rainfall Distribution\NOAA_C_1 min.cds		

EDA-B: UNDIST PERVIOUS TO WETLAND



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

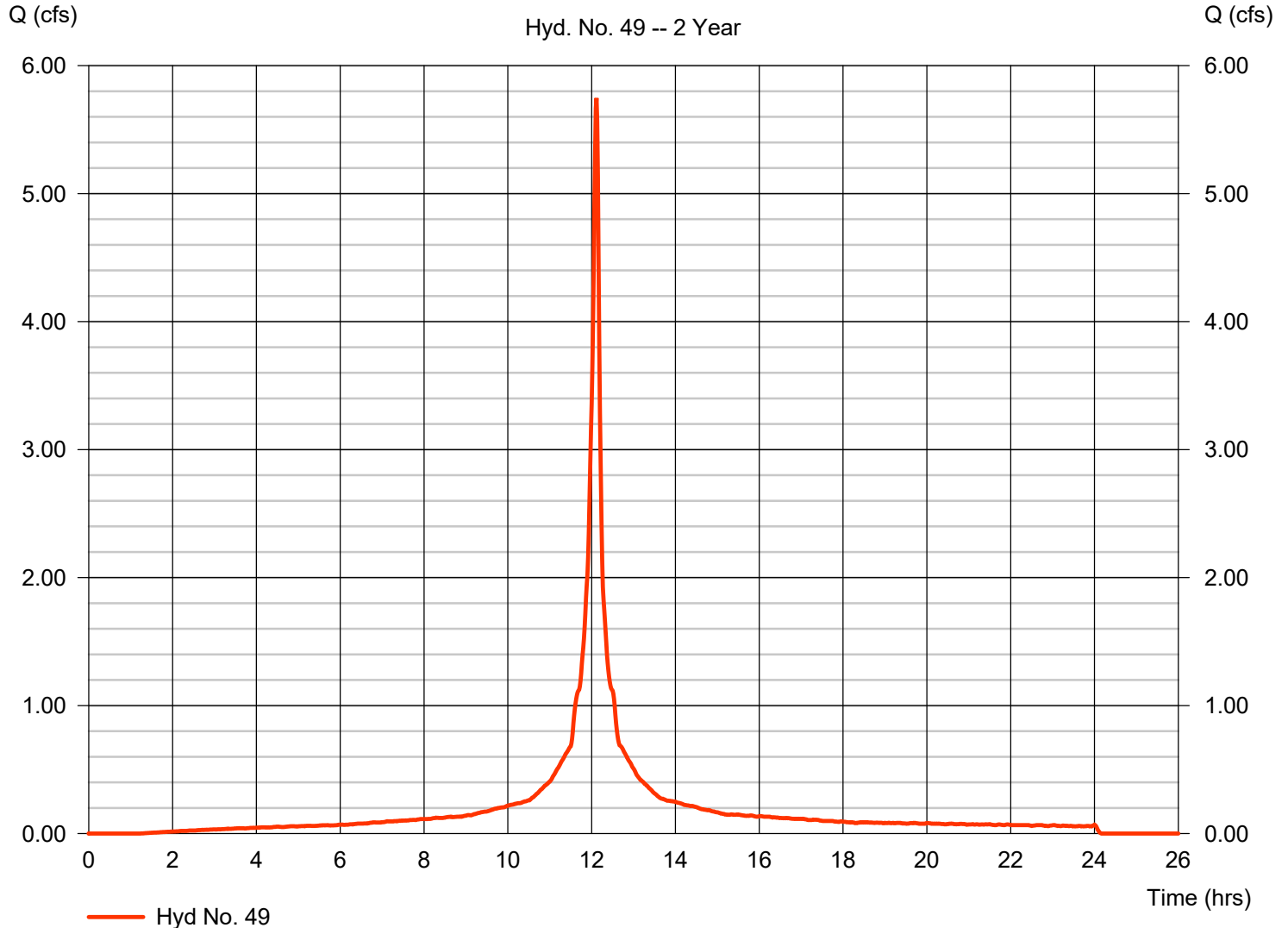
Wednesday, 03 / 9 / 2022

Hyd. No. 49

EDA-B:UNDIST IMPERVIOUS TO WETLAND

Hydrograph type	= SCS Runoff	Peak discharge	= 5.747 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.12 hrs
Time interval	= 1 min	Hyd. volume	= 18,350 cuft
Drainage area	= 1.630 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 6.00 min
Total precip.	= 3.24 in	Distribution	= Custom
Storm duration	= R:\Hydroflow Standards\NJ Reg Storm Rainfall Distribution\NOAA_C_1 min.cds		

EDA-B:UNDIST IMPERVIOUS TO WETLAND



Hydrograph Report

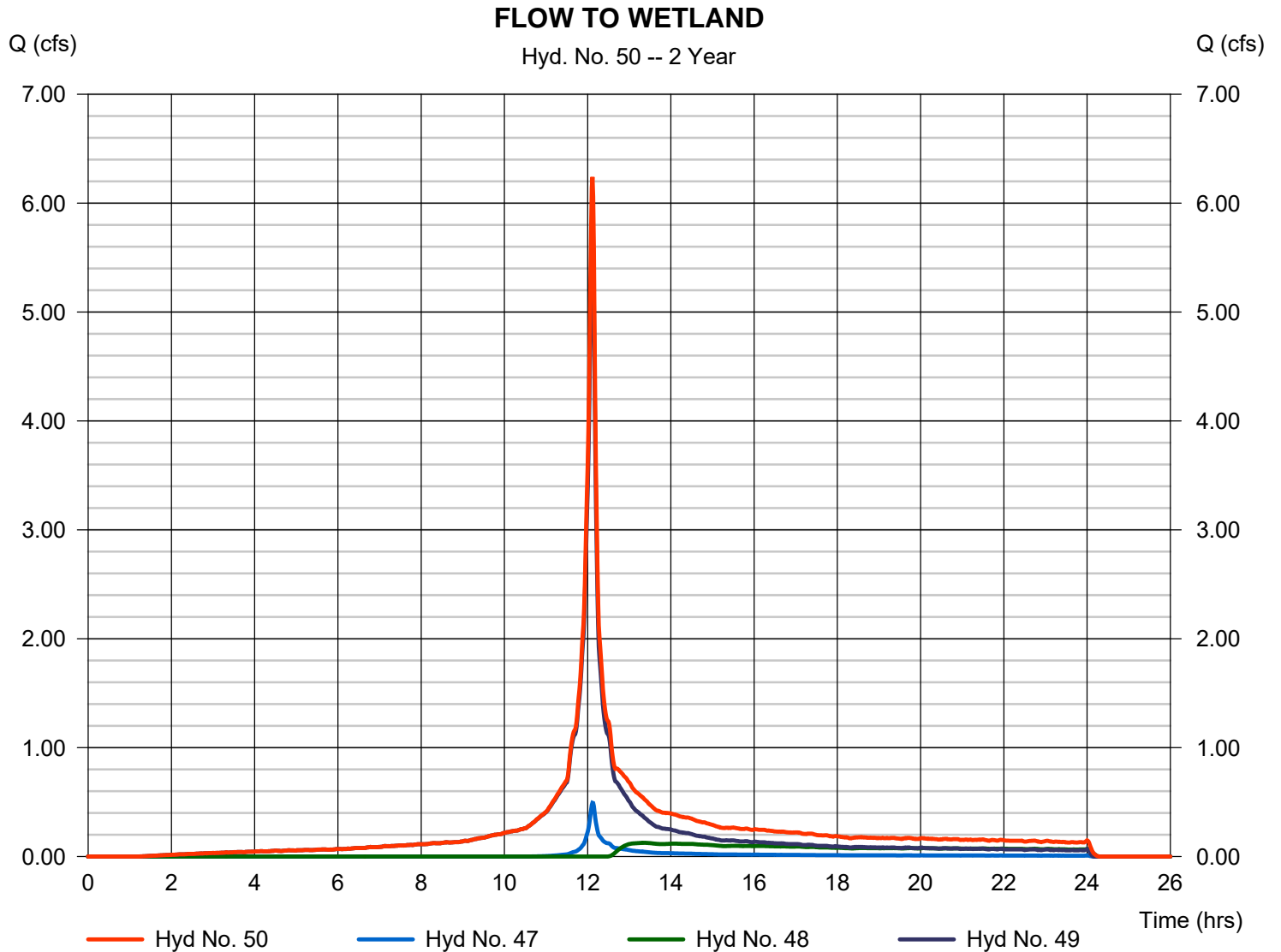
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

Wednesday, 03 / 9 / 2022

Hyd. No. 50

FLOW TO WETLAND

Hydrograph type	= Combine	Peak discharge	= 6.240 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.12 hrs
Time interval	= 1 min	Hyd. volume	= 23,291 cuft
Inflow hyds.	= 47, 48, 49	Contrib. drain. area	= 14.130 ac



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

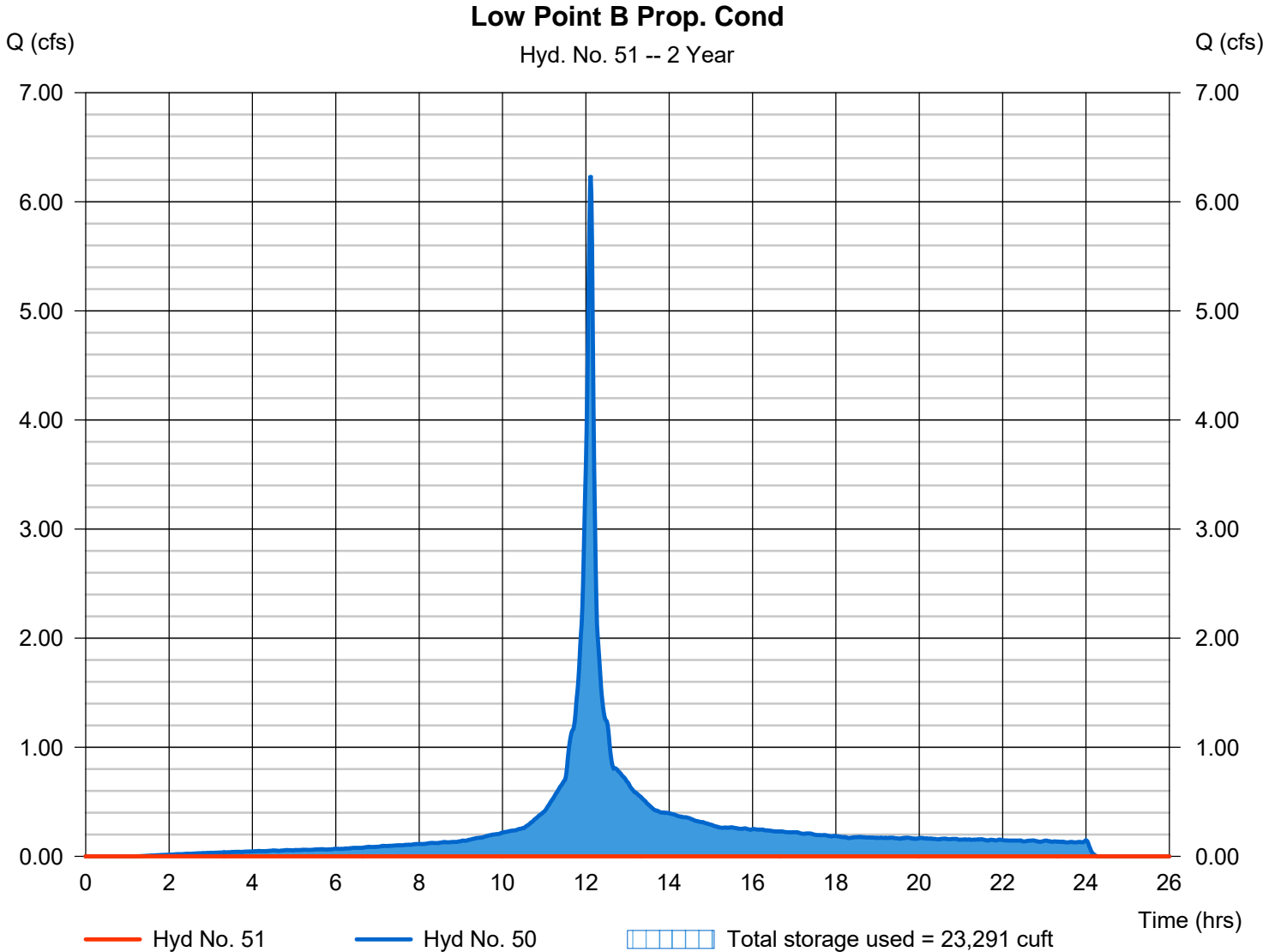
Wednesday, 03 / 9 / 2022

Hyd. No. 51

Low Point B Prop. Cond

Hydrograph type	= Reservoir	Peak discharge	= 0.000 cfs
Storm frequency	= 2 yrs	Time to peak	= n/a
Time interval	= 1 min	Hyd. volume	= 0 cuft
Inflow hyd. No.	= 50 - FLOW TO WETLAND	Max. Elevation	= 595.43 ft
Reservoir name	= Low Point B	Max. Storage	= 23,291 cuft

Storage Indication method used.



Pond No. 8 - Low Point B

Pond Data

Contours -User-defined contour areas. Conic method used for volume calculation. Begining Elevation = 594.00 ft

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	594.00	00	0	0
1.50	595.50	48,866	24,431	24,431
3.50	597.50	64,871	113,348	137,779
4.50	598.50	76,140	70,423	208,202
4.60	598.60	121,500	9,791	217,993
5.00	599.00	122,100	48,718	266,711

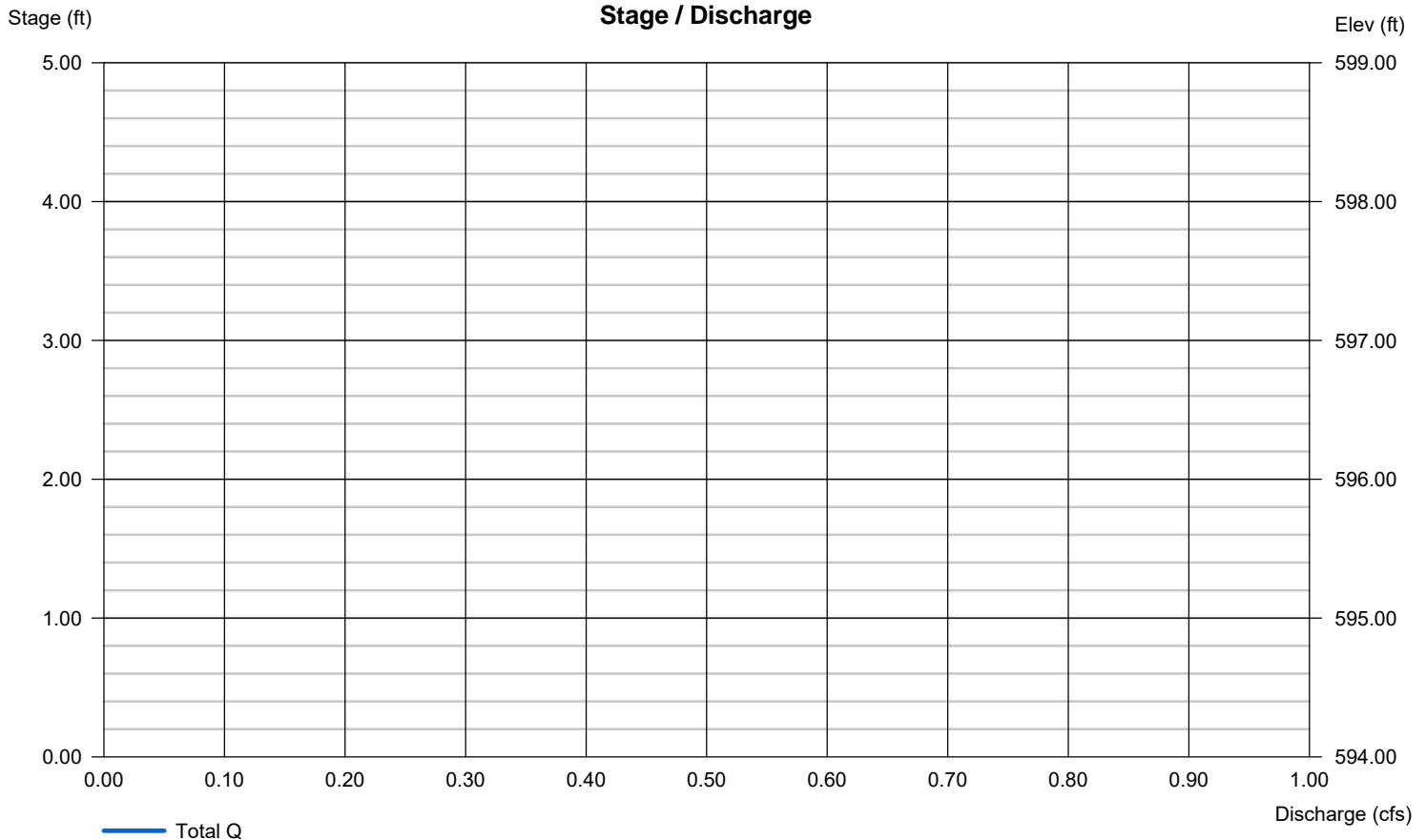
Culvert / Orifice Structures

	[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)	= 0.000	(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).



Hydrograph Report

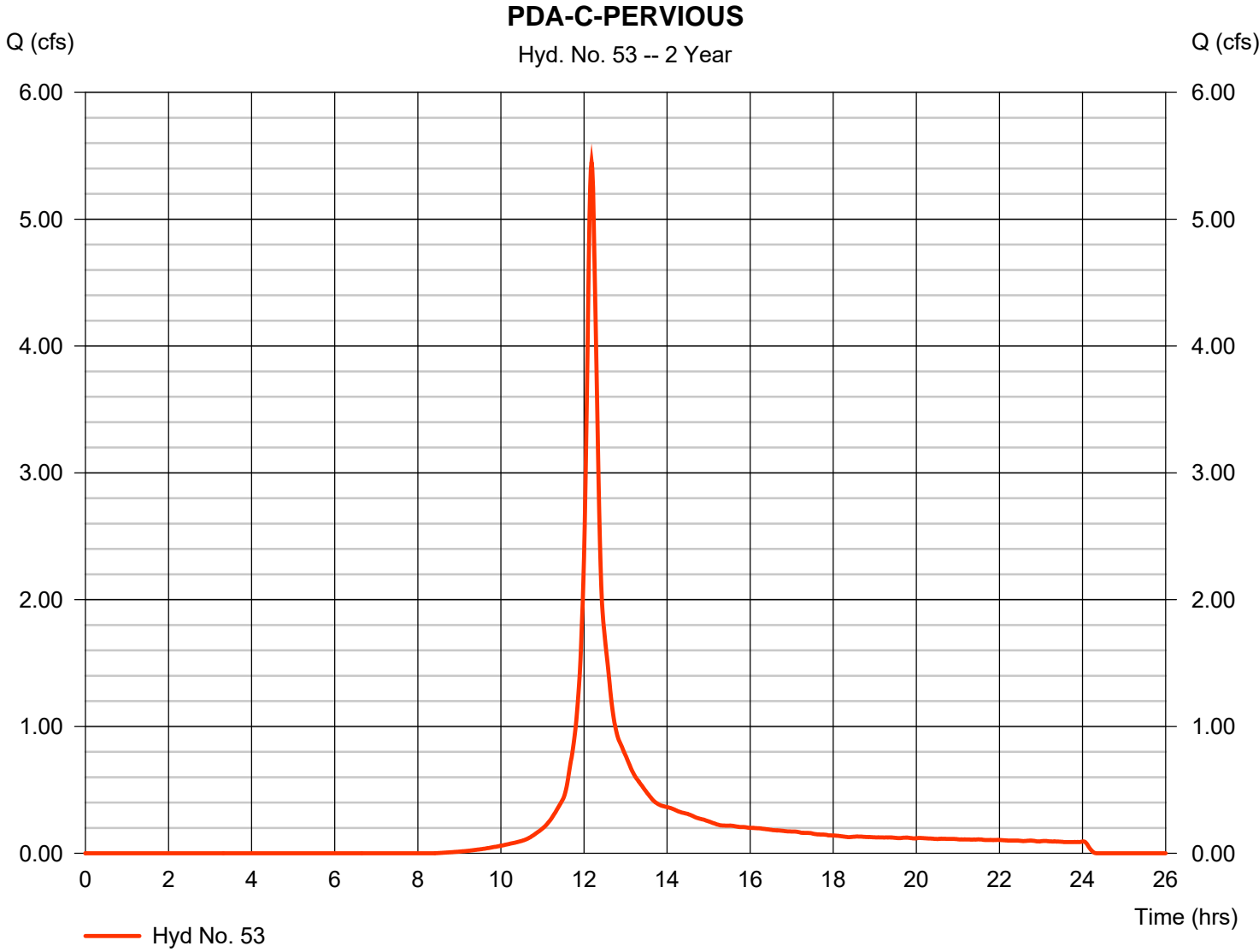
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

Wednesday, 03 / 9 / 2022

Hyd. No. 53

PDA-C-PERVIOUS

Hydrograph type	= SCS Runoff	Peak discharge	= 5.450 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.18 hrs
Time interval	= 1 min	Hyd. volume	= 18,718 cuft
Drainage area	= 3.190 ac	Curve number	= 83
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 12.70 min
Total precip.	= 3.24 in	Distribution	= Custom
Storm duration	= R:\Hydroflow Standards\NJ Reg Slope Rainfall Distribution\401A_C_1 min.cds		



Hydrograph Report

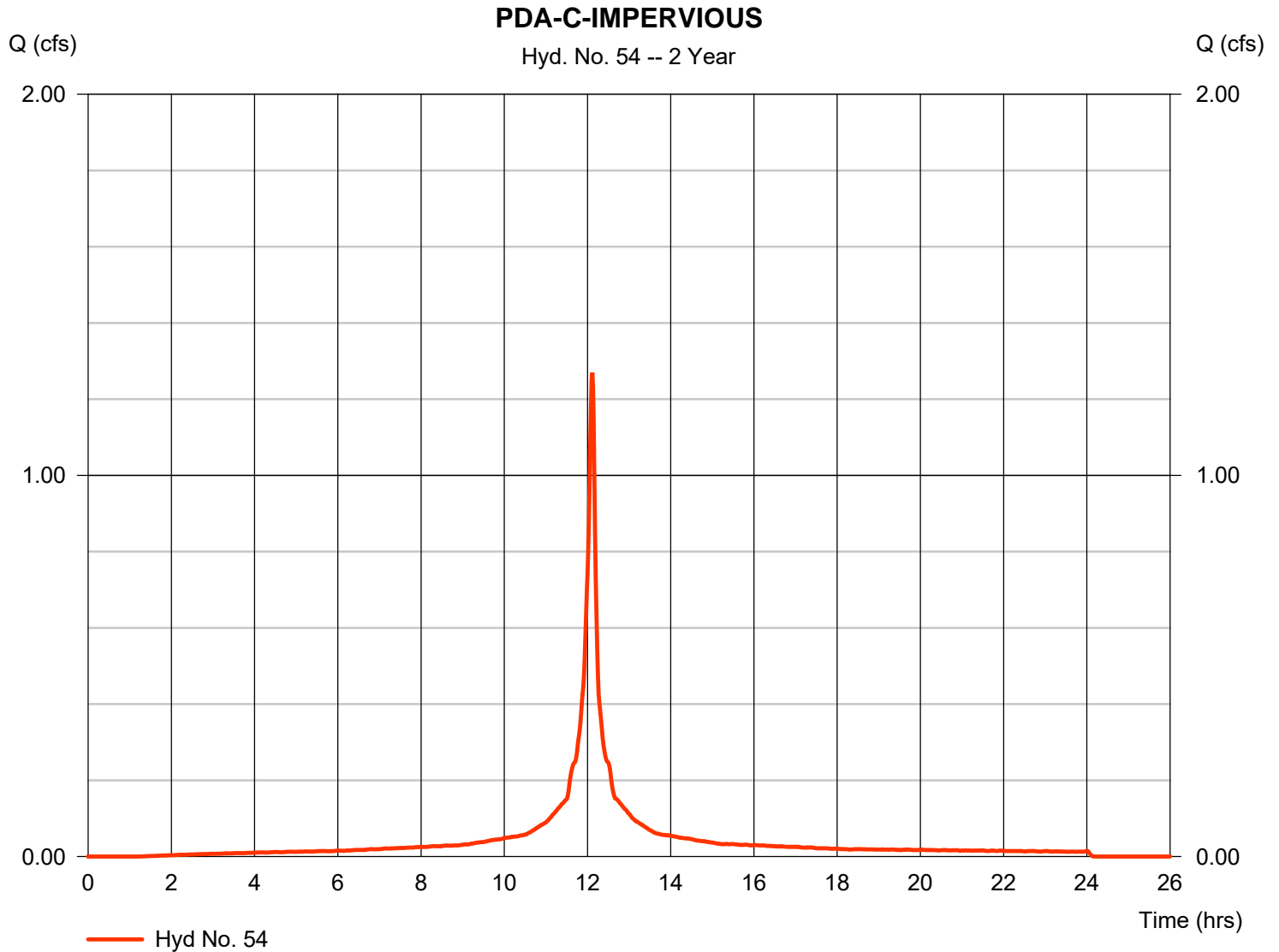
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

Wednesday, 03 / 9 / 2022

Hyd. No. 54

PDA-C-IMPERVIOUS

Hydrograph type	= SCS Runoff	Peak discharge	= 1.269 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.12 hrs
Time interval	= 1 min	Hyd. volume	= 4,053 cuft
Drainage area	= 0.360 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 6.00 min
Total precip.	= 3.24 in	Distribution	= Custom
Storm duration	= R:\Hydroflow Standards\NJ Reg Storm Rainfall Distribution\401A_C_1 min.cds		



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

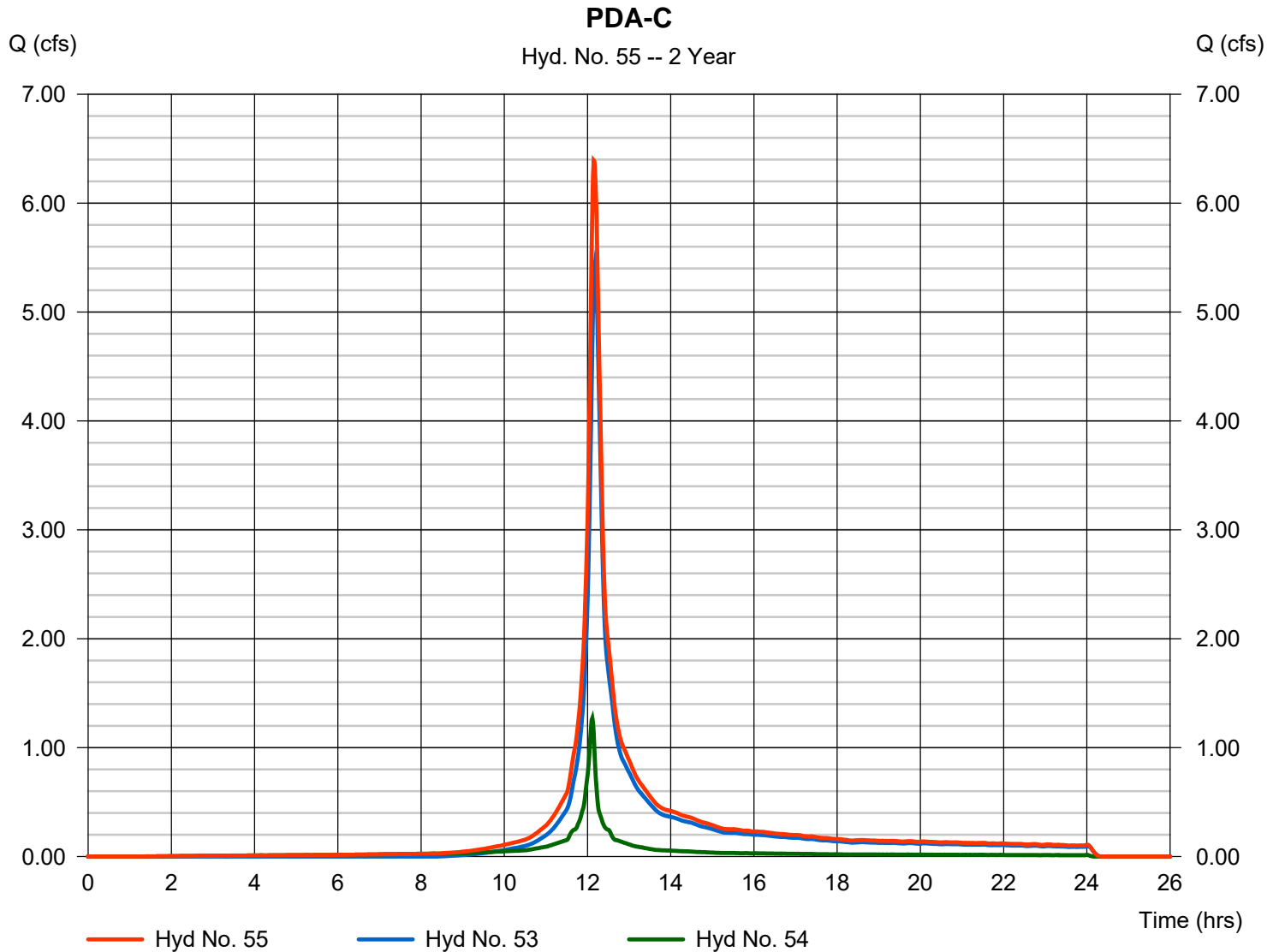
Wednesday, 03 / 9 / 2022

Hyd. No. 55

PDA-C

Hydrograph type = Combine
Storm frequency = 2 yrs
Time interval = 1 min
Inflow hyds. = 53, 54

Peak discharge = 6.392 cfs
Time to peak = 12.15 hrs
Hyd. volume = 22,770 cuft
Contrib. drain. area = 3.550 ac



Hydrograph Report

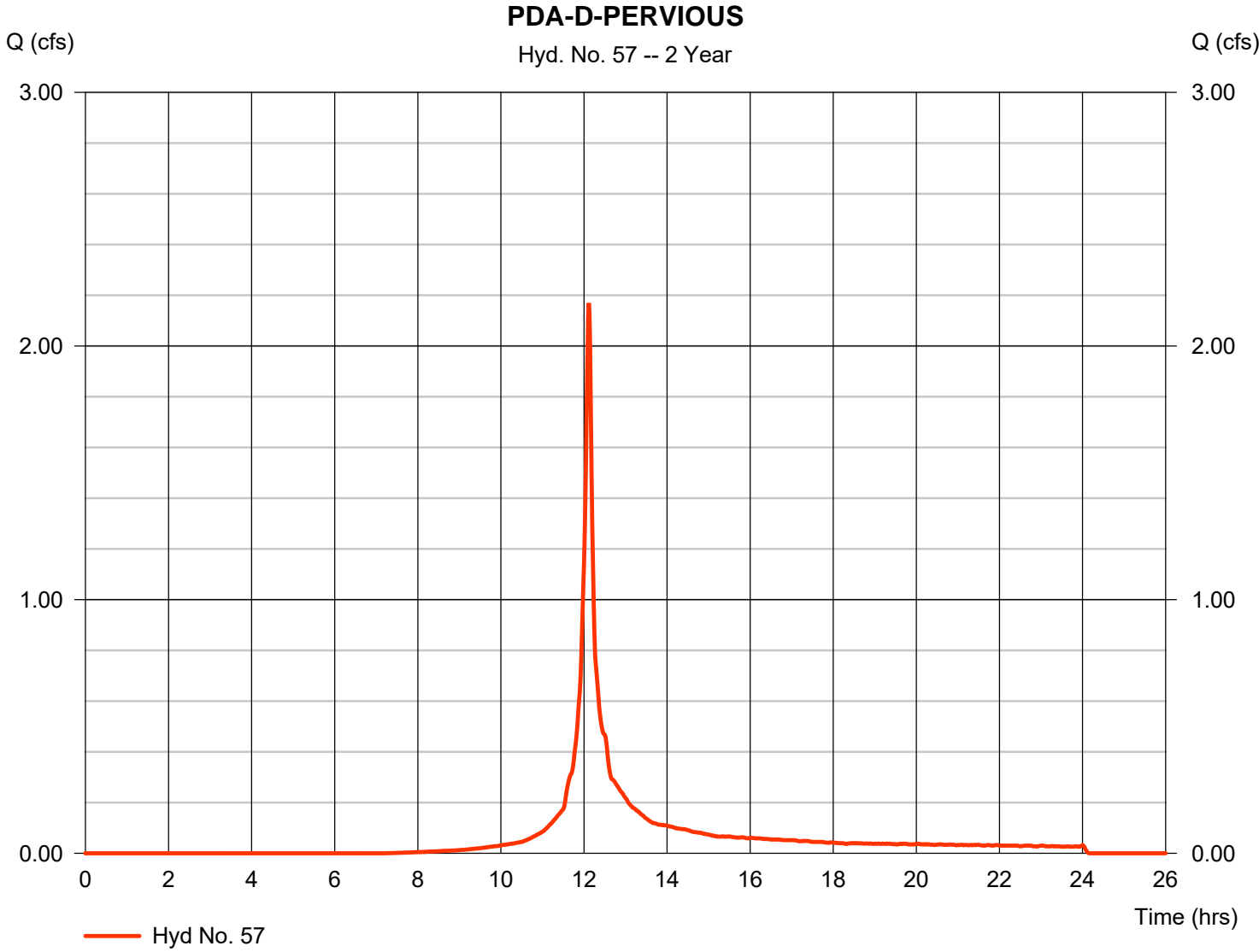
Hydroflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

Wednesday, 03 / 9 / 2022

Hyd. No. 57

PDA-D-PERVIOUS

Hydrograph type	= SCS Runoff	Peak discharge	= 2.169 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.12 hrs
Time interval	= 1 min	Hyd. volume	= 6,020 cuft
Drainage area	= 0.860 ac	Curve number	= 86
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 6.00 min
Total precip.	= 3.24 in	Distribution	= Custom
Storm duration	= R:\Hydroflow Standards\NJ Reg Storm Rainfall Distribution\401A_C_1 min.cds		



Hydrograph Report

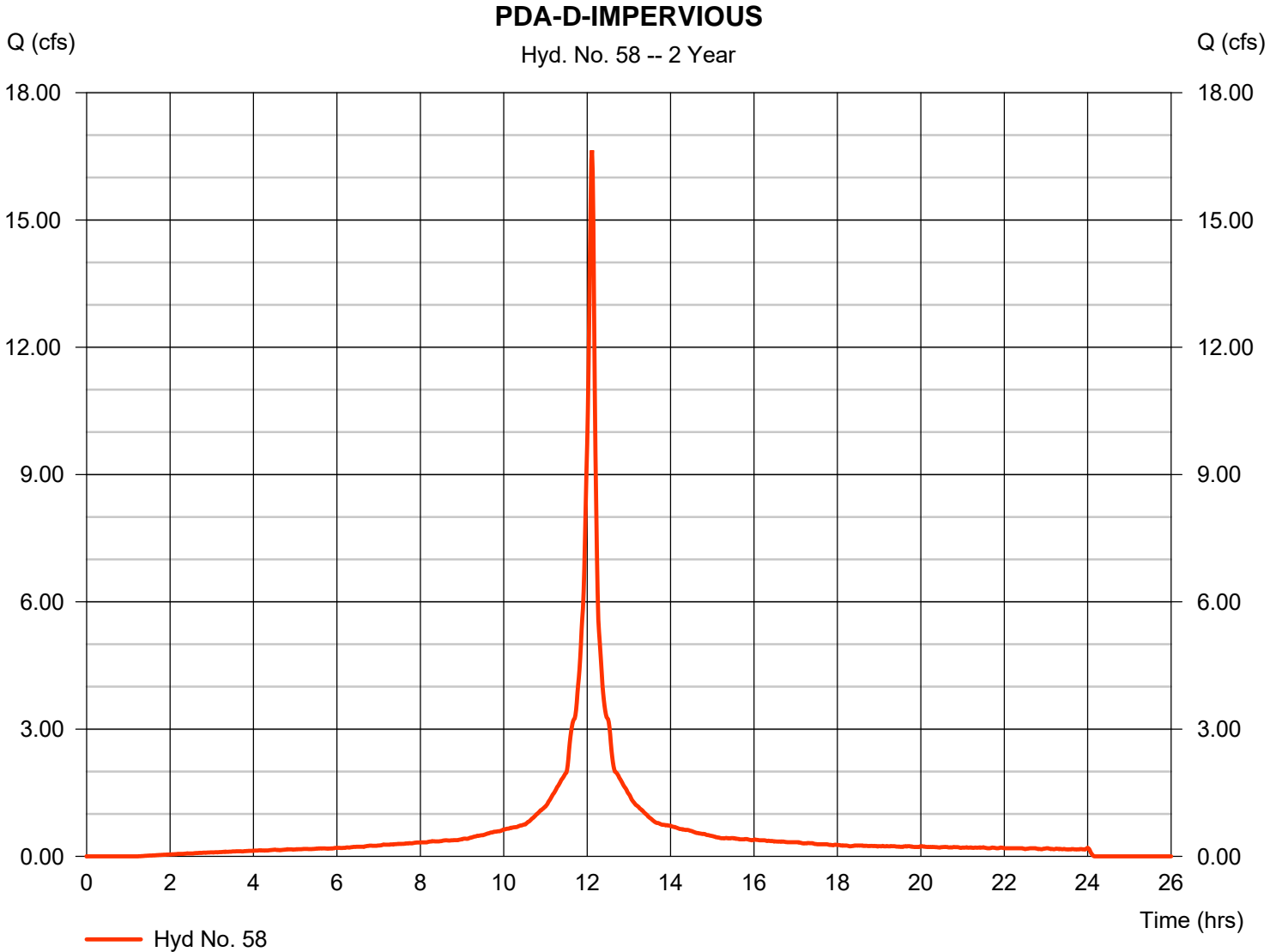
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

Wednesday, 03 / 9 / 2022

Hyd. No. 58

PDA-D-IMPERVIOUS

Hydrograph type	= SCS Runoff	Peak discharge	= 16.64 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.12 hrs
Time interval	= 1 min	Hyd. volume	= 53,137 cuft
Drainage area	= 4.720 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 6.00 min
Total precip.	= 3.24 in	Distribution	= Custom
Storm duration	= R:\Hydroflow Standards\NJ Reg Storm Rainfall Distribution\401A_C_1 min.cds		



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

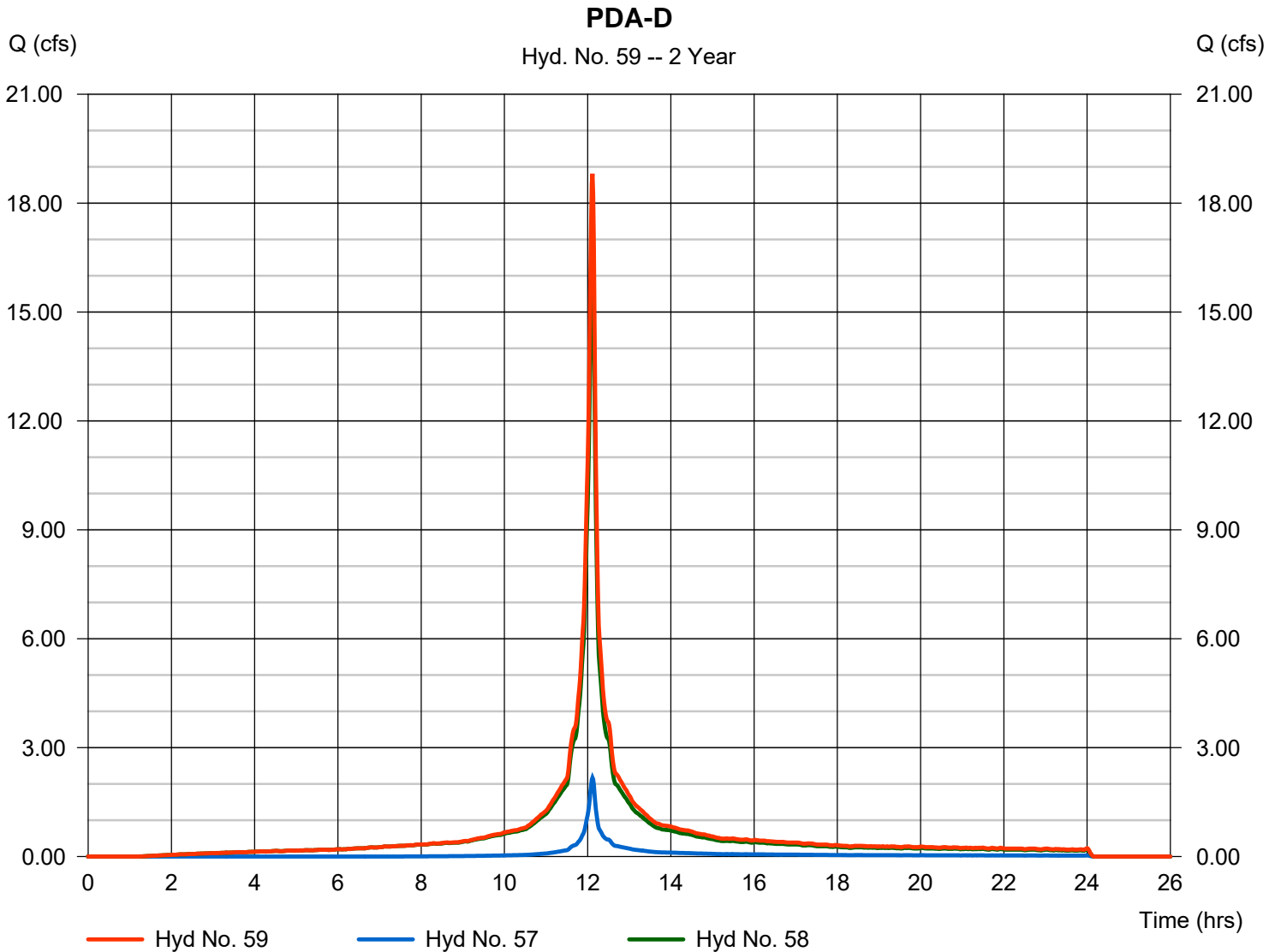
Wednesday, 03 / 9 / 2022

Hyd. No. 59

PDA-D

Hydrograph type = Combine
Storm frequency = 2 yrs
Time interval = 1 min
Inflow hyds. = 57, 58

Peak discharge = 18.81 cfs
Time to peak = 12.12 hrs
Hyd. volume = 59,157 cuft
Contrib. drain. area = 5.580 ac



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

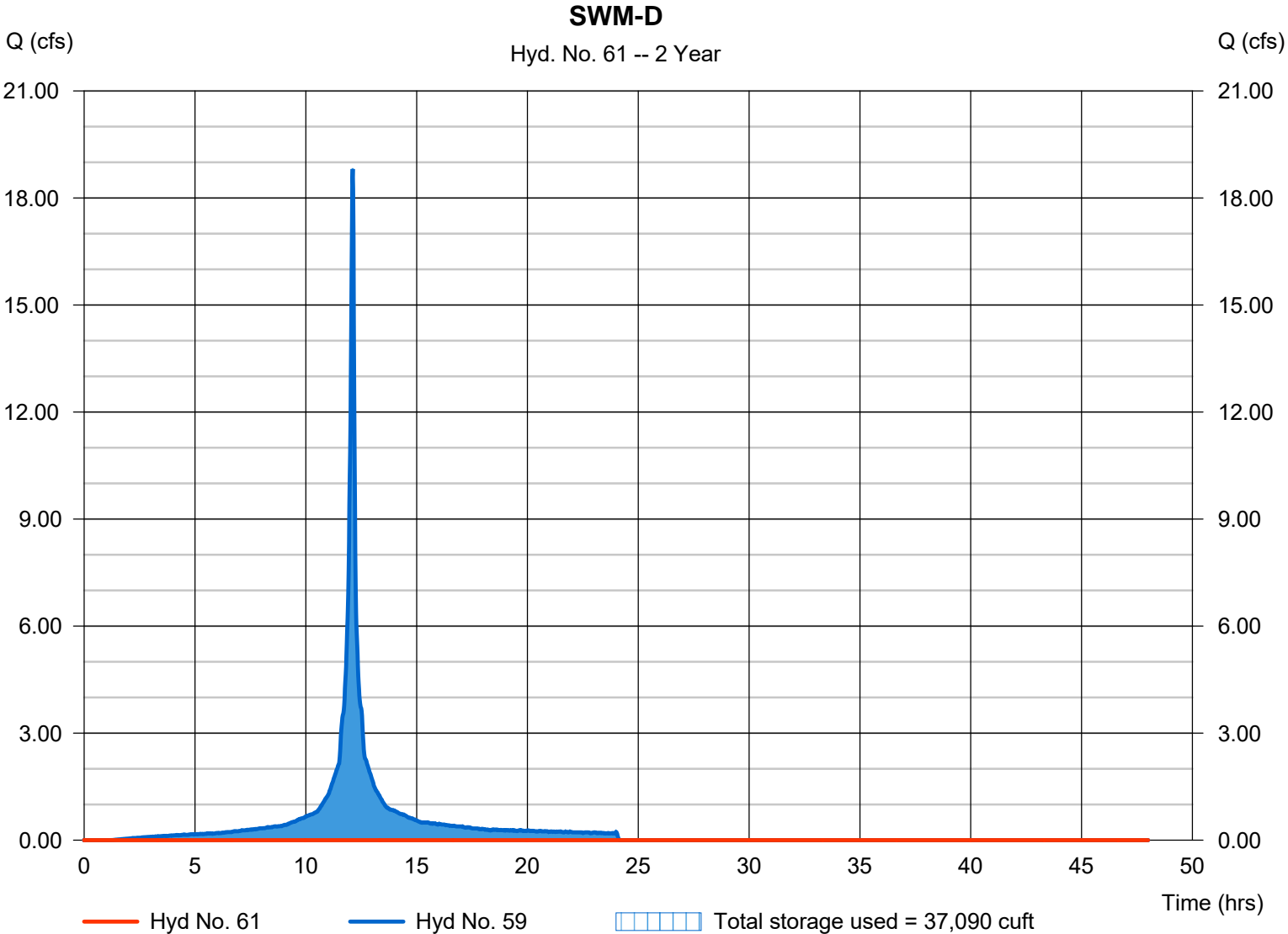
Wednesday, 03 / 9 / 2022

Hyd. No. 61

SWM-D

Hydrograph type	= Reservoir	Peak discharge	= 0.000 cfs
Storm frequency	= 2 yrs	Time to peak	= 27.38 hrs
Time interval	= 1 min	Hyd. volume	= 0 cuft
Inflow hyd. No.	= 59 - PDA-D	Max. Elevation	= 601.75 ft
Reservoir name	= SWM-D	Max. Storage	= 37,090 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Pond No. 4 - SWM-D

Pond Data

Contours -User-defined contour areas. Conic method used for volume calculation. Begining Elevation = 600.00 ft

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	600.00	19,016	0	0
1.00	601.00	21,302	20,146	20,146
2.00	602.00	23,634	22,456	42,602
3.00	603.00	26,011	24,811	67,413
4.00	604.00	28,434	27,211	94,624
4.50	604.50	29,904	14,582	109,205

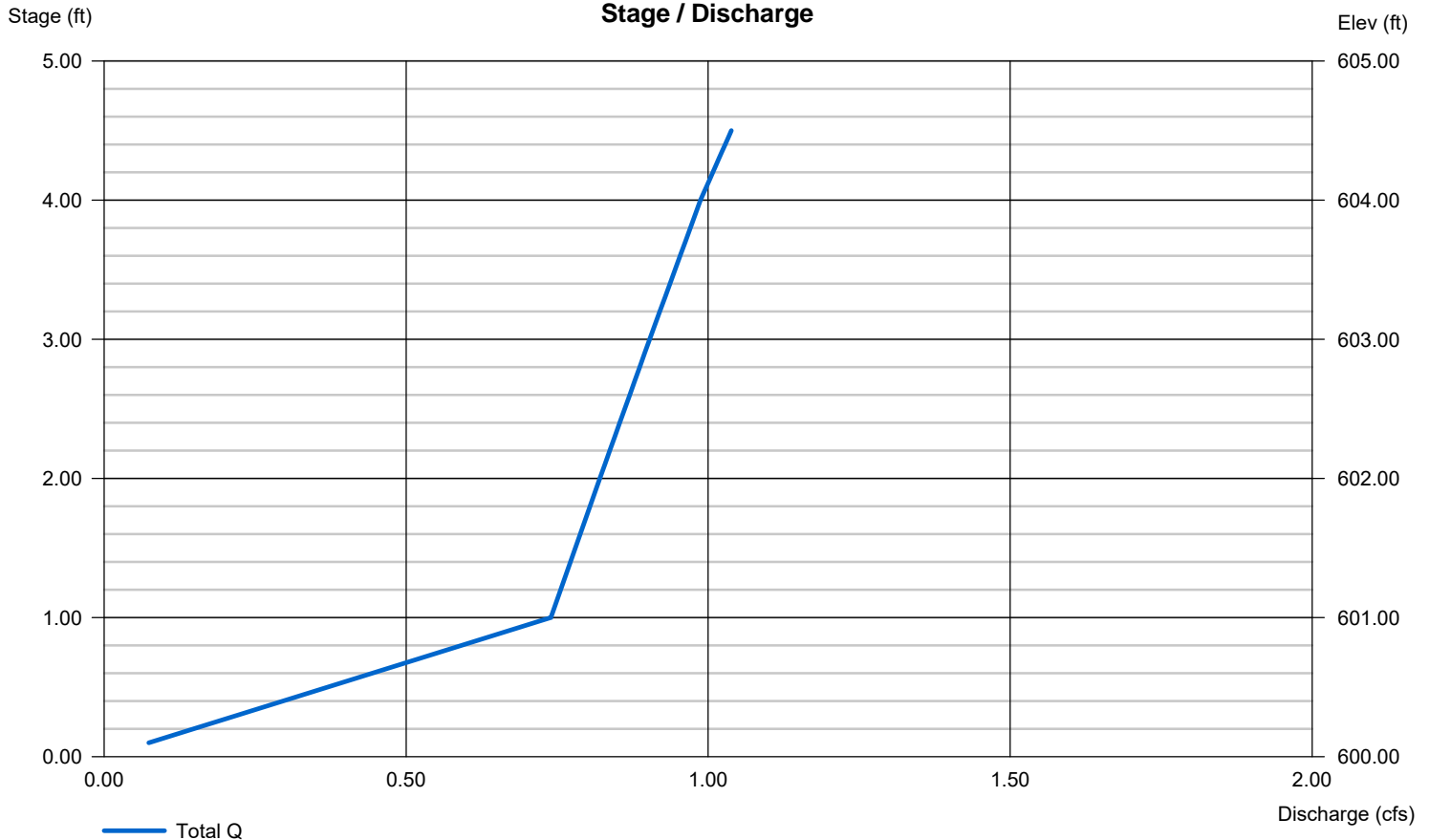
Culvert / Orifice Structures

	[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)	= 1.500 (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).



Hydrograph Report

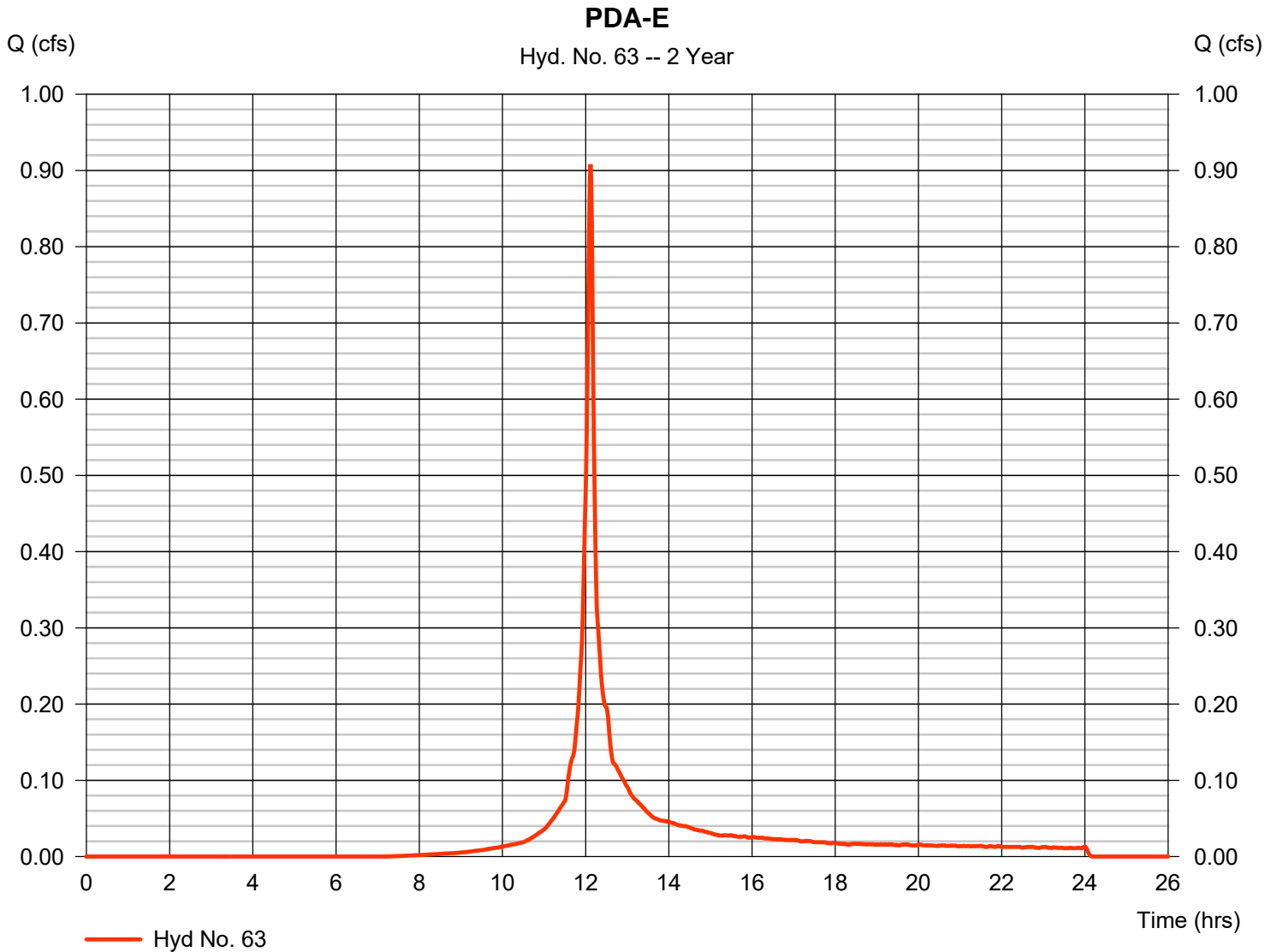
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

Wednesday, 03 / 9 / 2022

Hyd. No. 63

PDA-E

Hydrograph type	= SCS Runoff	Peak discharge	= 0.908 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.12 hrs
Time interval	= 1 min	Hyd. volume	= 2,520 cuft
Drainage area	= 0.360 ac	Curve number	= 86
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 6.00 min
Total precip.	= 3.24 in	Distribution	= Custom
Storm duration	= R:\Hydroflow Standards\NJ Reg Slope Rainfall Distribution\40A_C_1 min.cds		



Hydrograph Report

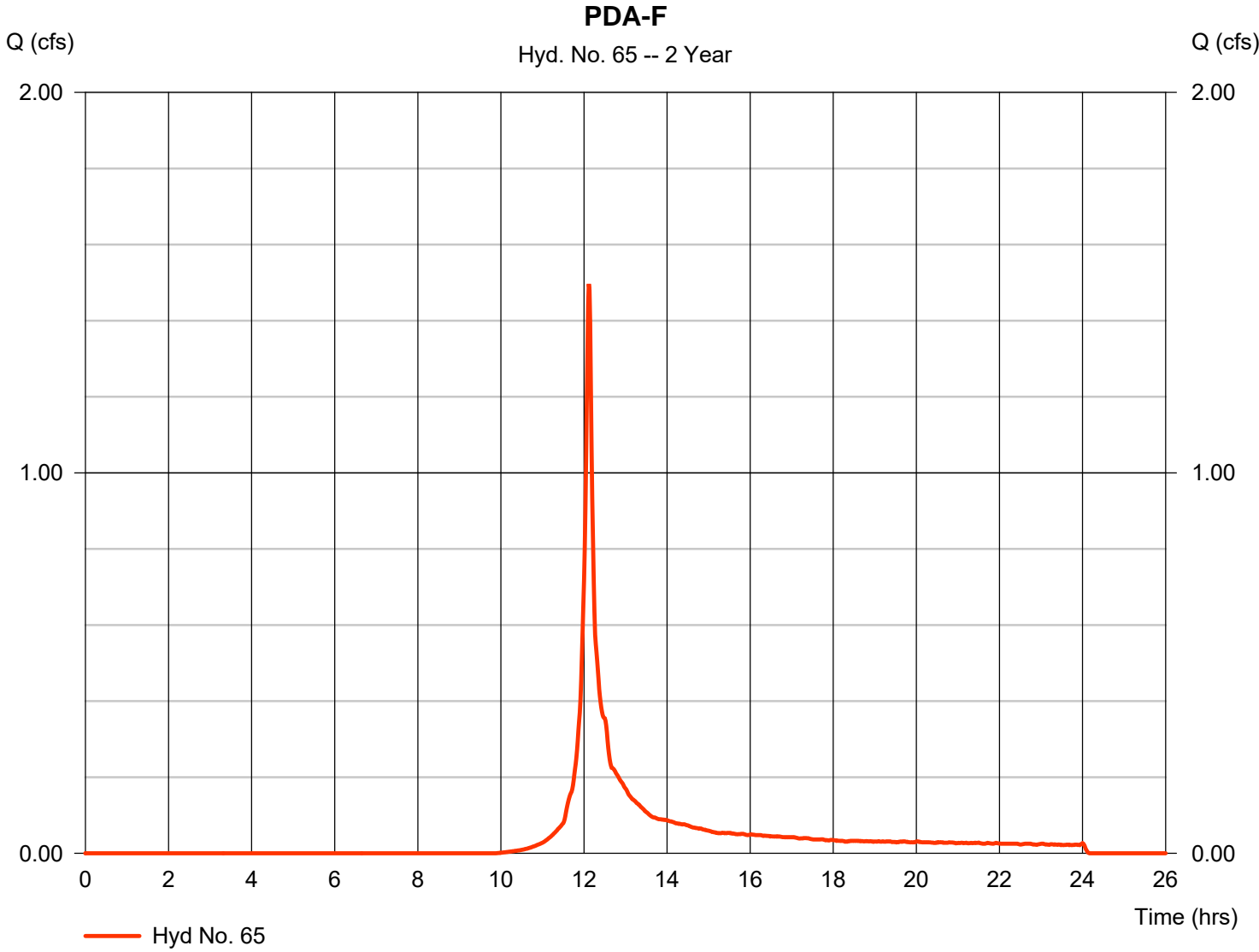
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

Wednesday, 03 / 9 / 2022

Hyd. No. 65

PDA-F

Hydrograph type	= SCS Runoff	Peak discharge	= 1.497 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.12 hrs
Time interval	= 1 min	Hyd. volume	= 4,145 cuft
Drainage area	= 0.850 ac	Curve number	= 78
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 6.00 min
Total precip.	= 3.24 in	Distribution	= Custom
Storm duration	= R:\Hydroflow Standards\NJ Reg Storm Rainfall Distribution\401A_C_1 min.cds		



Hydrograph Report

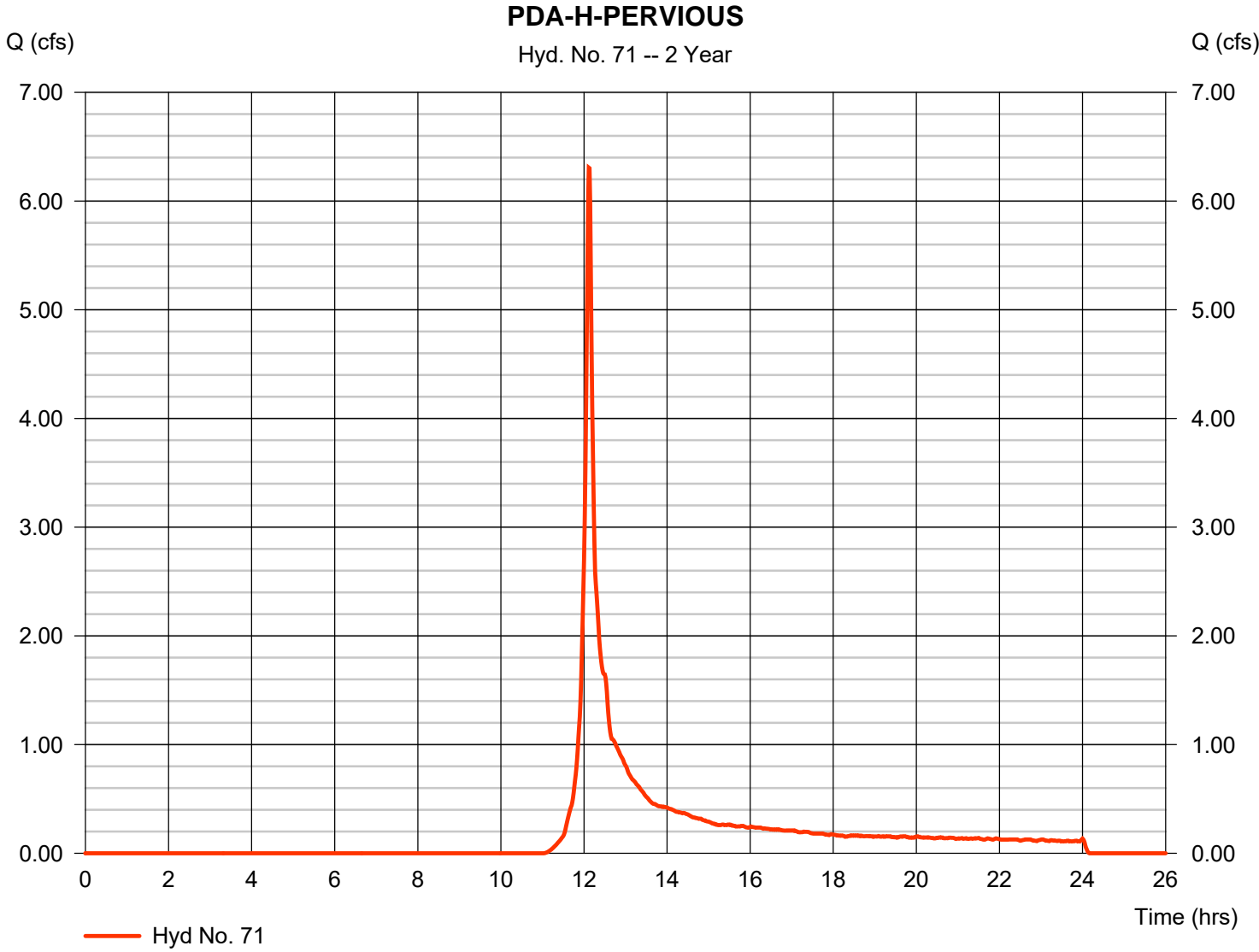
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

Wednesday, 03 / 9 / 2022

Hyd. No. 71

PDA-H-PERVIOUS

Hydrograph type	= SCS Runoff	Peak discharge	= 6.308 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.12 hrs
Time interval	= 1 min	Hyd. volume	= 18,117 cuft
Drainage area	= 5.070 ac	Curve number	= 72
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 6.00 min
Total precip.	= 3.24 in	Distribution	= Custom
Storm duration	= R:\Hydroflow Standards\NJ Reg Slope Rainfall Distribution\401A_C_1 min.cds		



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

Wednesday, 03 / 9 / 2022

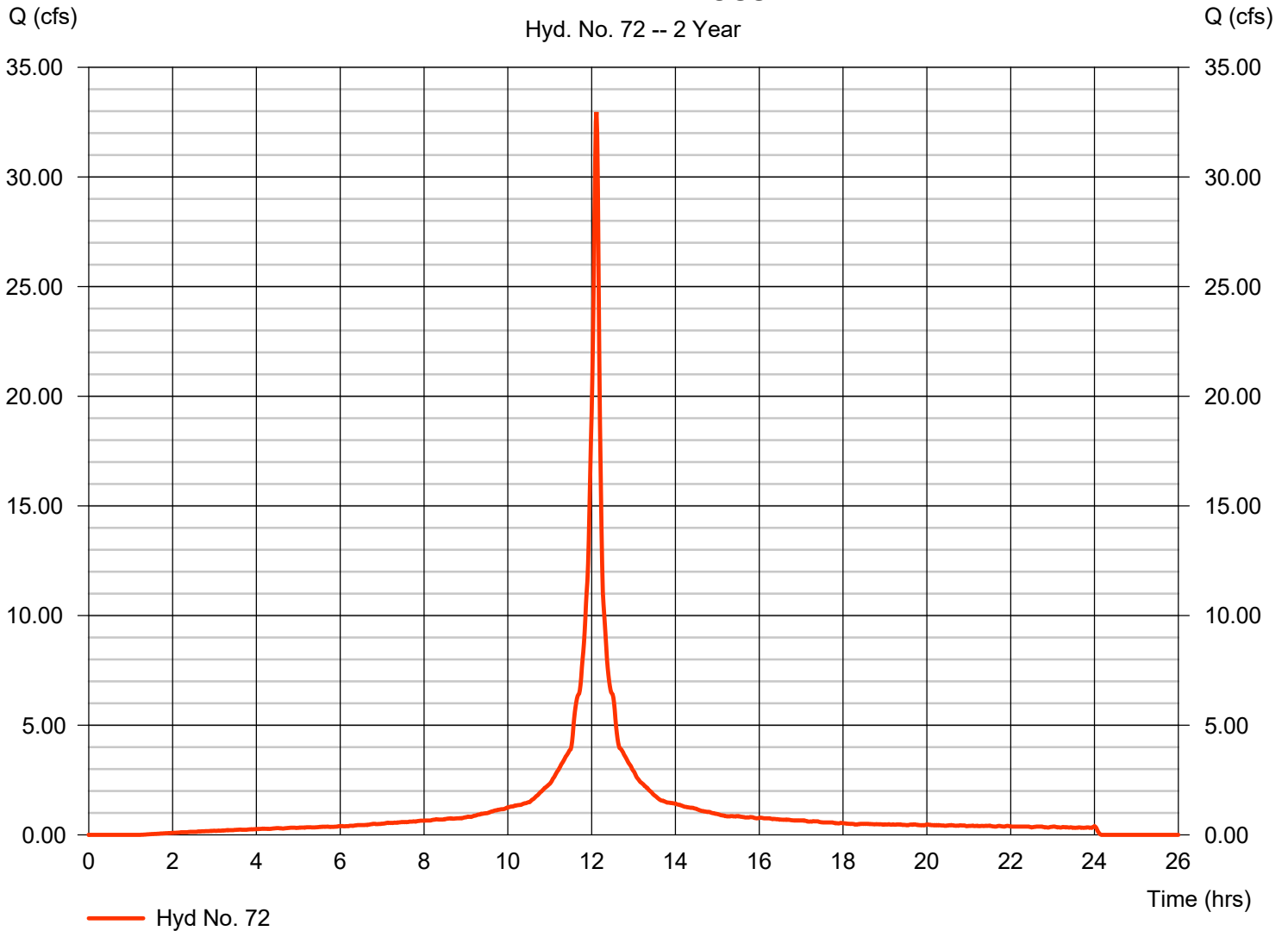
Hyd. No. 72

PDA-H-IMPERVIOUS

Hydrograph type	= SCS Runoff	Peak discharge	= 32.96 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.12 hrs
Time interval	= 1 min	Hyd. volume	= 105,260 cuft
Drainage area	= 9.350 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 6.00 min
Total precip.	= 3.24 in	Distribution	= Custom
Storm duration	= R:\Hydroflow Standards\NJ Reg Storm Rainfall Distribution\401A_C_1 min.cds		

PDA-H-IMPERVIOUS

Hyd. No. 72 -- 2 Year



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

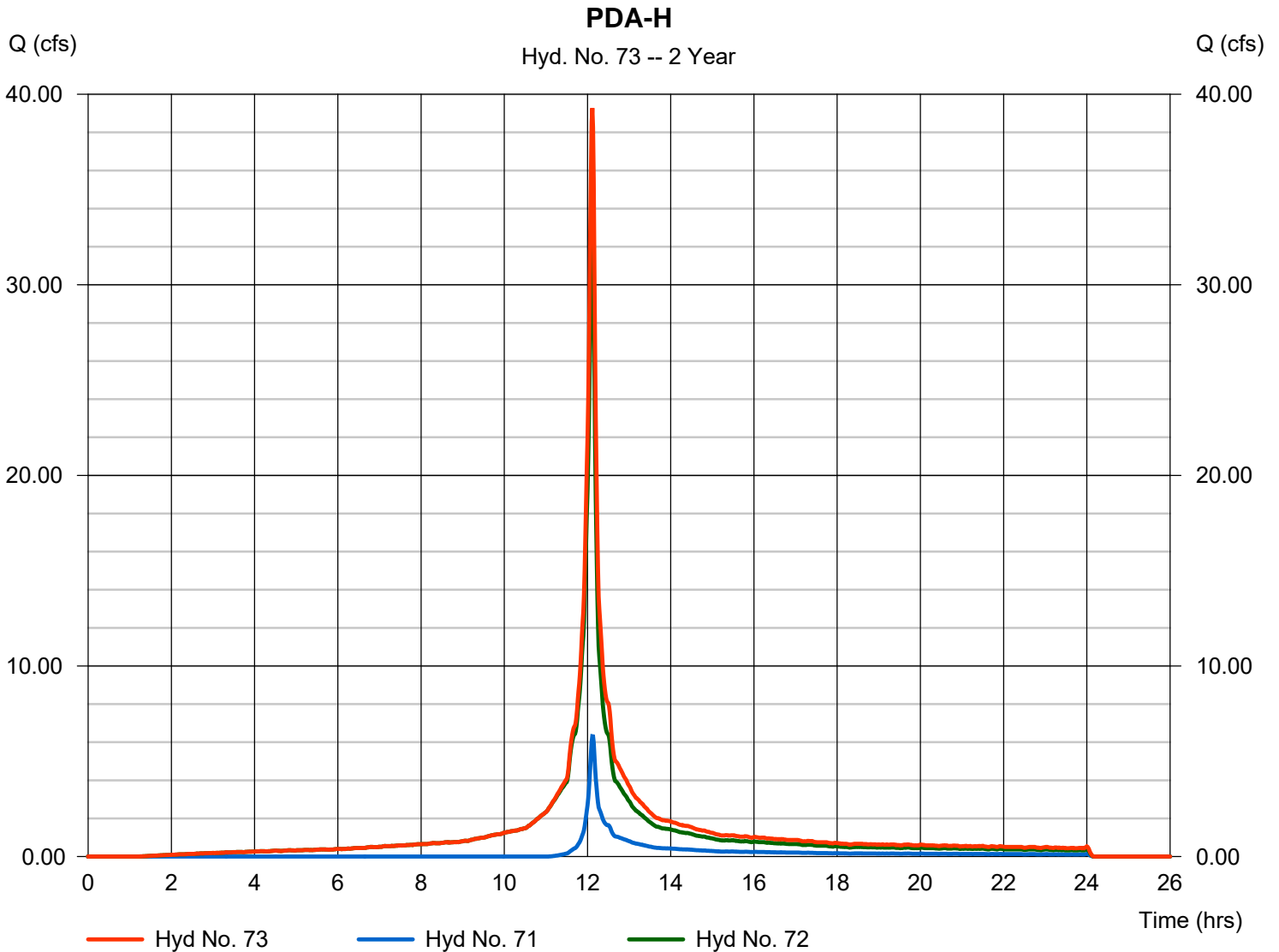
Wednesday, 03 / 9 / 2022

Hyd. No. 73

PDA-H

Hydrograph type = Combine
Storm frequency = 2 yrs
Time interval = 1 min
Inflow hyds. = 71, 72

Peak discharge = 39.27 cfs
Time to peak = 12.12 hrs
Hyd. volume = 123,377 cuft
Contrib. drain. area = 14.420 ac



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

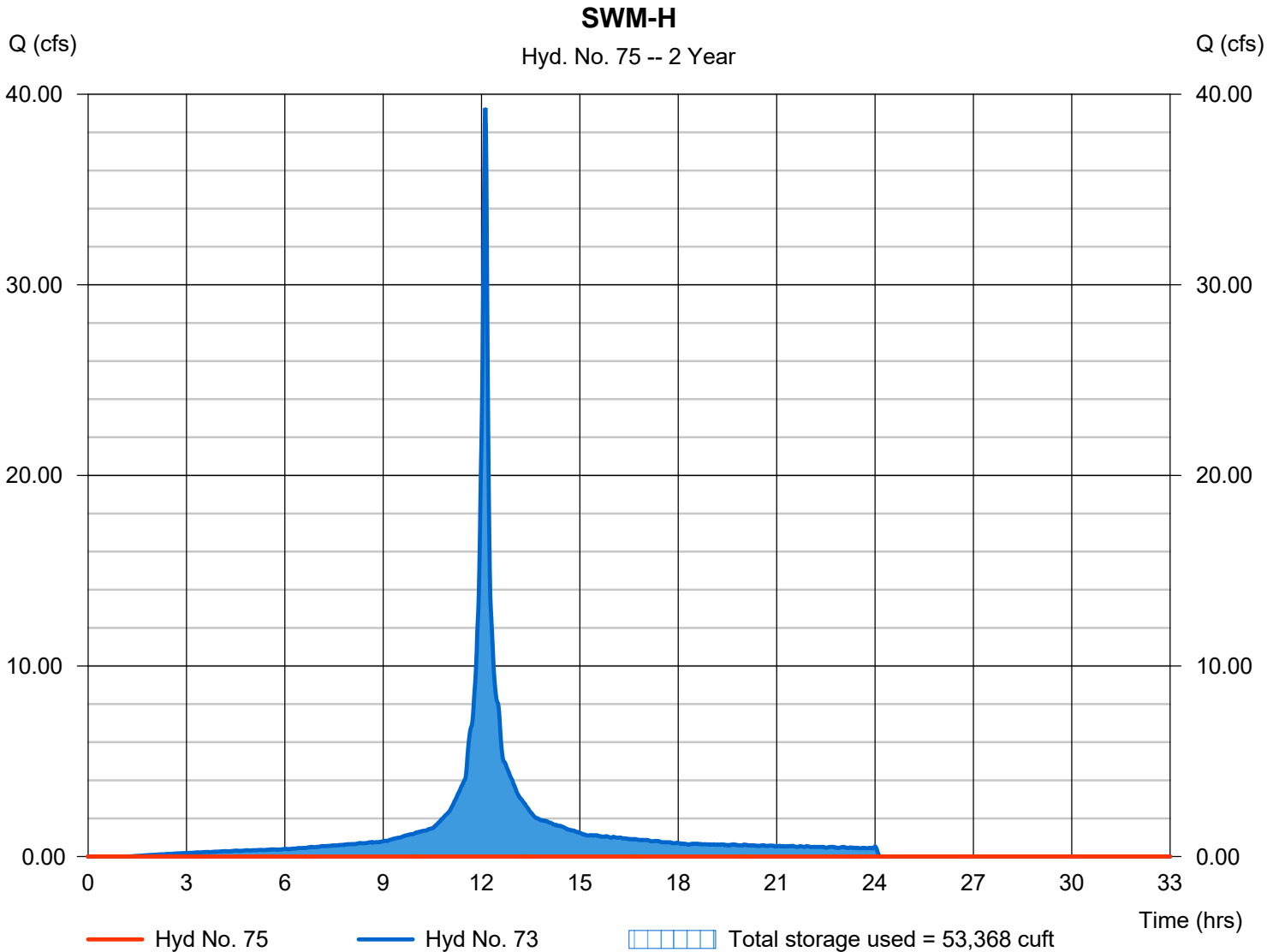
Wednesday, 03 / 9 / 2022

Hyd. No. 75

SWM-H

Hydrograph type	= Reservoir	Peak discharge	= 0.000 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.05 hrs
Time interval	= 1 min	Hyd. volume	= 0 cuft
Inflow hyd. No.	= 73 - PDA-H	Max. Elevation	= 597.35 ft
Reservoir name	= SWM-H	Max. Storage	= 53,368 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Pond No. 6 - SWM-H

Pond Data

Contours -User-defined contour areas. Conic method used for volume calculation. Begining Elevation = 596.00 ft

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	596.00	35,726	0	0
1.00	597.00	40,735	38,199	38,199
2.00	598.00	46,050	43,361	81,560
3.00	599.00	51,472	48,731	130,290
4.00	600.00	57,000	54,207	184,497

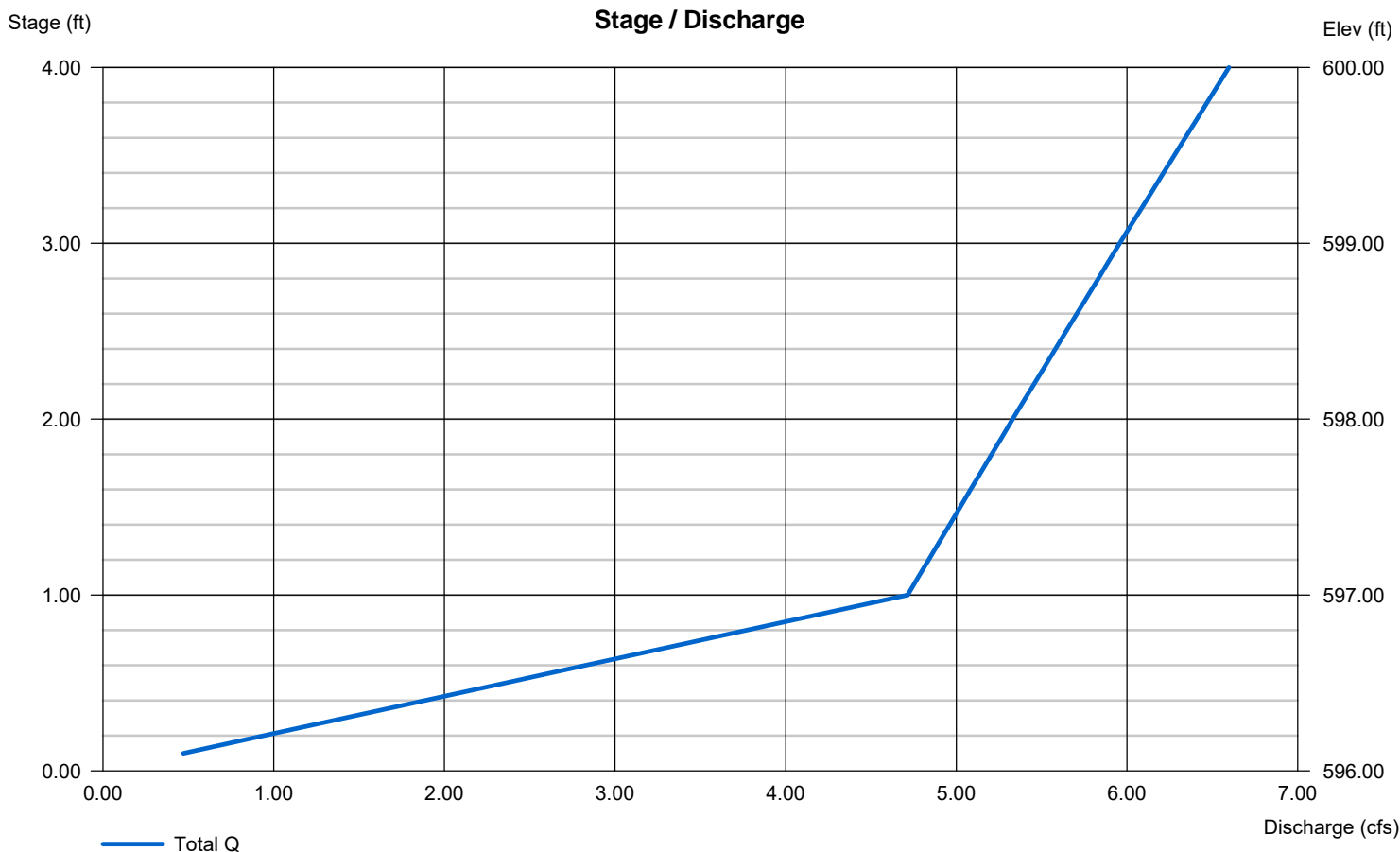
Culvert / Orifice Structures

	[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)	= 5.000 (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).



Hydrograph Report

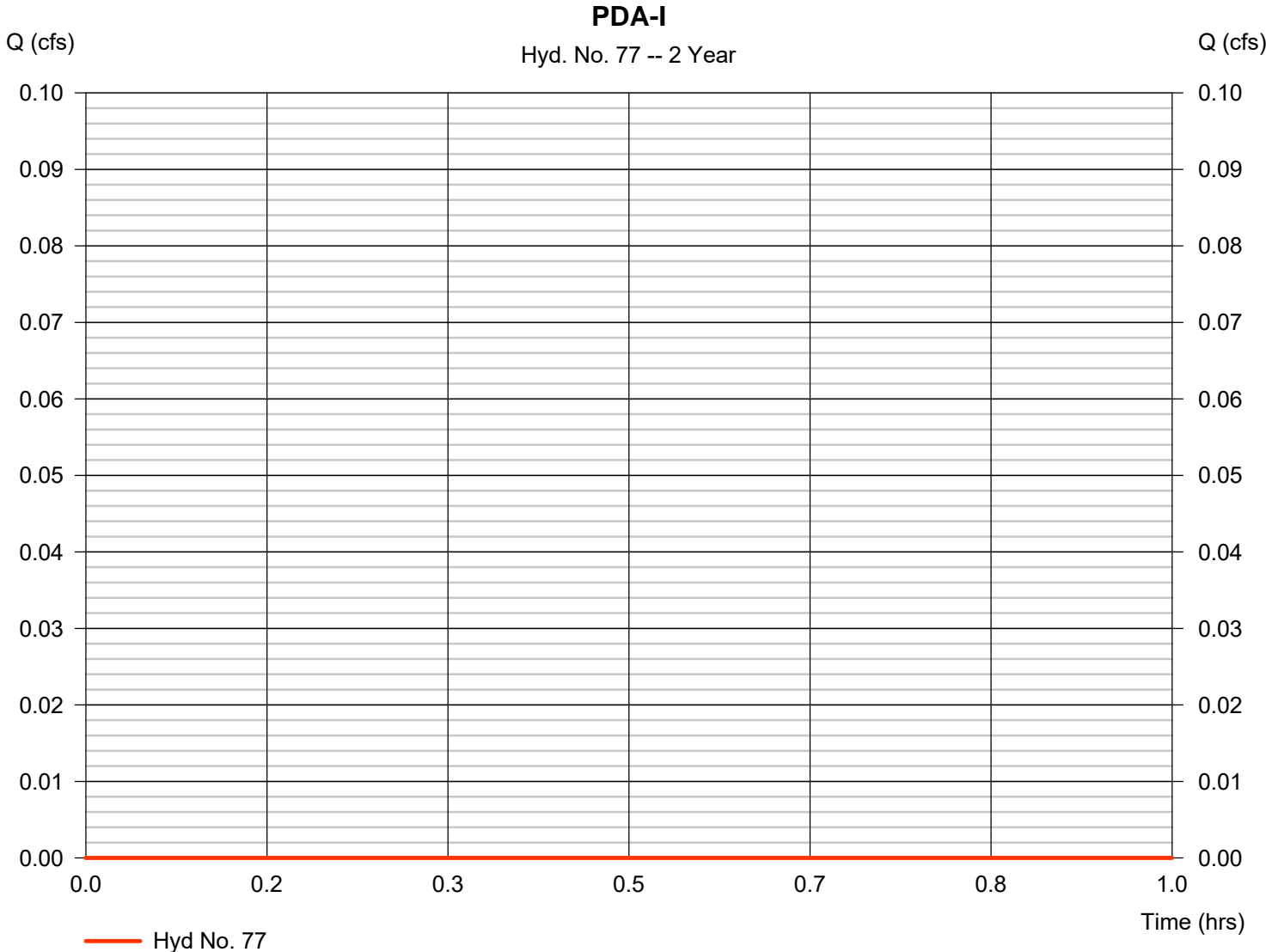
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

Wednesday, 03 / 9 / 2022

Hyd. No. 77

PDA-I

Hydrograph type	= SCS Runoff	Peak discharge	= 0.000 cfs
Storm frequency	= 2 yrs	Time to peak	= n/a
Time interval	= 1 min	Hyd. volume	= 0 cuft
Drainage area	= 0.260 ac	Curve number	= 34
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 6.00 min
Total precip.	= 3.24 in	Distribution	= Custom
Storm duration	= R:\Hydroflow Standards\NJ Reg Storm Rainfall Distribution\MOA_C_1 min.cds		



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

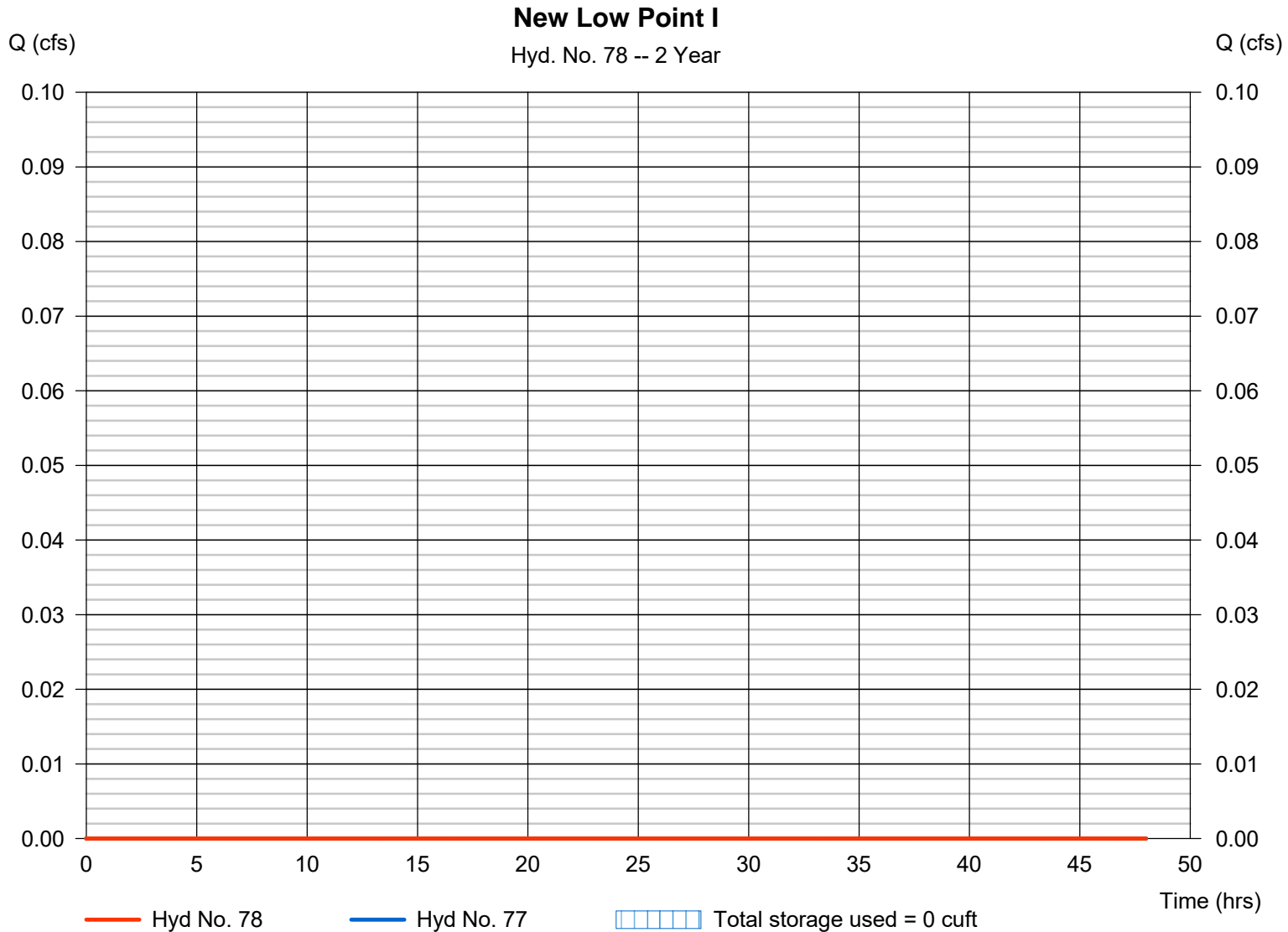
Wednesday, 03 / 9 / 2022

Hyd. No. 78

New Low Point I

Hydrograph type	= Reservoir	Peak discharge	= 0.000 cfs
Storm frequency	= 2 yrs	Time to peak	= n/a
Time interval	= 1 min	Hyd. volume	= 0 cuft
Inflow hyd. No.	= 77 - PDA-I	Max. Elevation	= 597.10 ft
Reservoir name	= New Low Point I	Max. Storage	= 0 cuft

Storage Indication method used.



Pond No. 12 - New Low Point I

Pond Data

Contours -User-defined contour areas. Conic method used for volume calculation. Begining Elevation = 597.00 ft

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	597.00	250	0	0
1.00	598.00	562	396	396
2.00	599.00	795	675	1,071

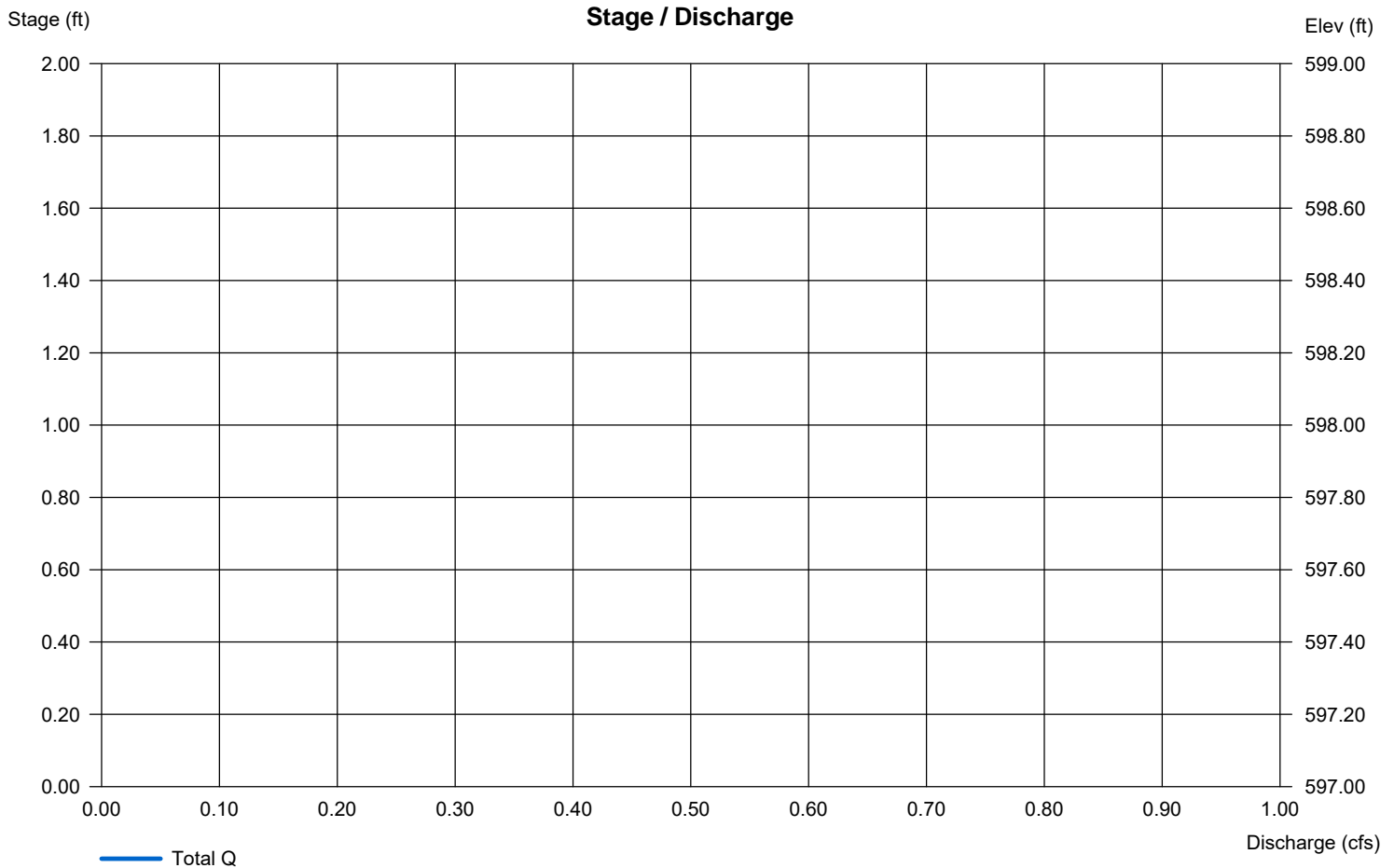
Culvert / Orifice Structures

	[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)	= 0.000	(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 Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

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	7.310	1	736	37,836	----	----	----	EDA - A: PERVIOUS
2	SCS Runoff	5.067	1	734	23,815	----	----	----	EDA-A:IMPERVIOUS
3	Combine	12.32	1	736	61,651	1, 2	----	----	EDA-A
4	Reservoir	11.77	1	739	61,495	3	595.97	1,973	Low Point A
6	SCS Runoff	2.348	1	759	23,448	----	----	----	EDA-B: PERVIOUS DIST
7	SCS Runoff	3.946	1	741	22,347	----	----	----	EDA-B: IMPERVIOUS DIST
8	Combine	5.614	1	745	45,796	6, 7	----	----	EDA-B-DIST
10	SCS Runoff	2.828	1	736	20,519	----	----	----	EDA-B-PERVIOUS UNDIST
11	SCS Runoff	8.441	1	727	27,419	----	----	----	EDA-B-IMPERVIOUS UNDIST
12	Combine	9.620	1	728	47,938	10, 11	----	----	EDA-B-UNDIST
14	Combine	12.56	1	728	93,734	8, 12,	----	----	EDA-B
15	Reservoir	0.000	1	n/a	0	14	596.72	93,734	Low Point B
17	SCS Runoff	7.912	1	731	27,172	----	----	----	EDA-C: PERVIOUS
18	SCS Runoff	6.007	1	727	19,513	----	----	----	EDA-C:IMPERVIOUS
19	Combine	13.11	1	728	46,685	17, 18	----	----	EDA-C
21	SCS Runoff	10.55	1	729	32,740	----	----	----	EDA-D
22	Reservoir	0.000	1	n/a	0	21	596.59	32,740	Low Point D
24	SCS Runoff	12.58	1	730	41,568	----	----	----	EDA-E
26	SCS Runoff	2.911	1	729	9,052	----	----	----	EDA-F
29	SCS Runoff	0.097	1	896	3,392	----	----	----	EDA-H
30	Reservoir	0.000	1	n/a	0	29	595.72	3,392	Low Point H
32	SCS Runoff	0.000	1	1444	1	----	----	----	EDA-I
33	Reservoir	0.000	1	n/a	0	32	595.55	0.678	Low Point I
35	SCS Runoff	8.530	1	727	23,577	----	----	----	PDA-A-PERVIOUS
36	SCS Runoff	13.83	1	727	44,913	----	----	----	PDA-A-IMPERVIOUS
37	Combine	22.36	1	727	68,490	35, 36	----	----	PDA-A
39	Reservoir	7.536	1	735	17,254	37	596.25	21,943	SWM-A
41	SCS Runoff	34.85	1	727	96,055	----	----	----	PDA-B-PERVIOUS

Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

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
42	SCS Runoff	74.05	1	727	240,548	----	----	----	PDA-B1-IMPERVIOUS
43	Combine	108.90	1	727	336,603	41, 42	----	----	PDA-B
45	Reservoir	0.000	1	790	0	43	599.00	142,256	SWM-B
47	SCS Runoff	1.001	1	727	2,757	----	----	----	PDA-B-BYPASS TO WETLANDS
48	SCS Runoff	2.760	1	736	20,025	----	----	----	EDA-B: UNDIST PERVIOUS TO WE
49	SCS Runoff	8.441	1	727	27,419	----	----	----	EDA-B:UNDIST IMPERVIOUS TO W
50	Combine	10.57	1	728	50,202	47, 48, 49	----	----	FLOW TO WETLAND
51	Reservoir	0.000	1	n/a	0	50	595.95	50,202	Low Point B Prop. Cond
53	SCS Runoff	9.647	1	731	33,409	----	----	----	PDA-C-PERVIOUS
54	SCS Runoff	1.864	1	727	6,056	----	----	----	PDA-C-IMPERVIOUS
55	Combine	11.05	1	729	39,464	53, 54	----	----	PDA-C
57	SCS Runoff	3.653	1	727	10,353	----	----	----	PDA-D-PERVIOUS
58	SCS Runoff	24.44	1	727	79,398	----	----	----	PDA-D-IMPERVIOUS
59	Combine	28.10	1	727	89,751	57, 58	----	----	PDA-D
61	Reservoir	0.000	1	642	0	59	602.67	59,130	SWM-D
63	SCS Runoff	1.529	1	727	4,334	----	----	----	PDA-E
65	SCS Runoff	2.864	1	727	7,904	----	----	----	PDA-F
71	SCS Runoff	13.68	1	727	37,808	----	----	----	PDA-H-PERVIOUS
72	SCS Runoff	48.42	1	727	157,282	----	----	----	PDA-H-IMPERVIOUS
73	Combine	62.10	1	727	195,089	71, 72	----	----	PDA-H
75	Reservoir	0.000	1	713	0	73	598.21	91,585	SWM-H
77	SCS Runoff	0.001	1	1440	35	----	----	----	PDA-I
78	Reservoir	0.000	1	n/a	0	77	597.10	34.5	New Low Point I

Hydrograph Report

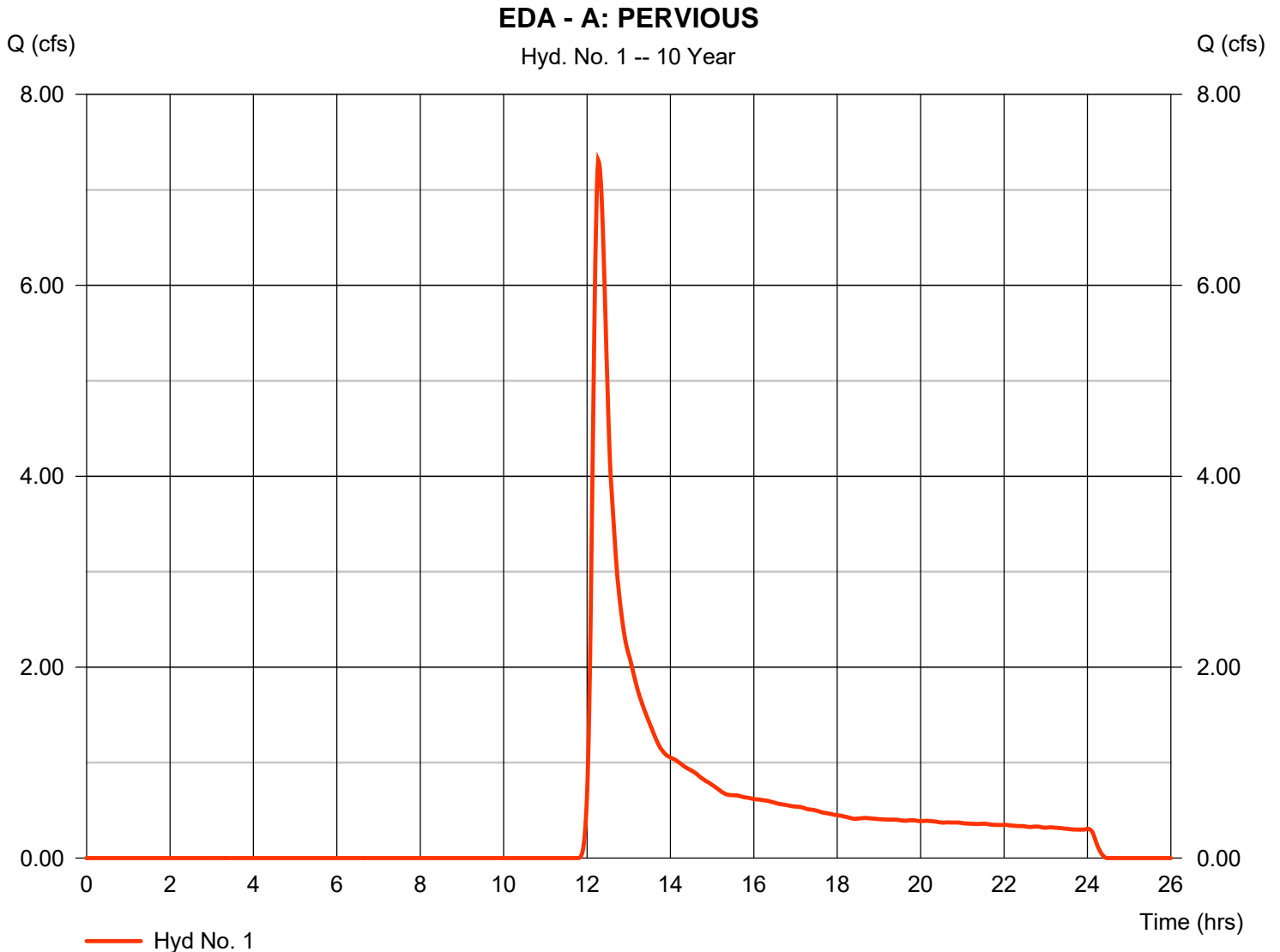
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

Wednesday, 03 / 9 / 2022

Hyd. No. 1

EDA - A: PERVIOUS

Hydrograph type	= SCS Runoff	Peak discharge	= 7.310 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.27 hrs
Time interval	= 1 min	Hyd. volume	= 37,836 cuft
Drainage area	= 13.290 ac	Curve number	= 54
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 17.70 min
Total precip.	= 4.73 in	Distribution	= Custom
Storm duration	= R:\Hydroflow Standards\NJ Reg Storm Data Distribution\401A_C_1 min.cds		



Hydrograph Report

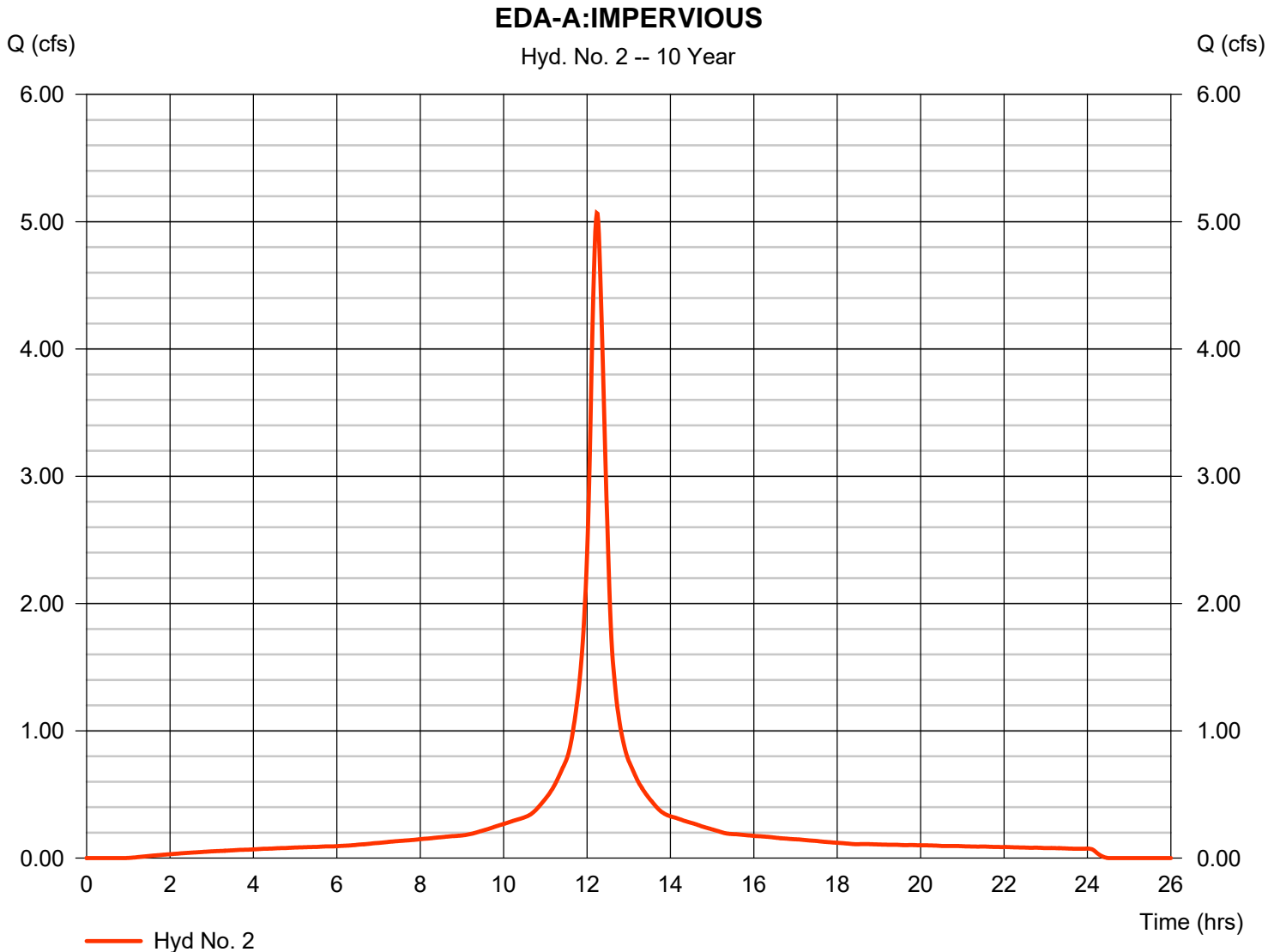
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

Wednesday, 03 / 9 / 2022

Hyd. No. 2

EDA-A:IMPERVIOUS

Hydrograph type	= SCS Runoff	Peak discharge	= 5.067 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.23 hrs
Time interval	= 1 min	Hyd. volume	= 23,815 cuft
Drainage area	= 1.460 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 19.60 min
Total precip.	= 4.73 in	Distribution	= Custom
Storm duration	= R:\Hydroflow Standards\NJ Reg Slope Rainfall Distribution\40A_C_1 min.cds		



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

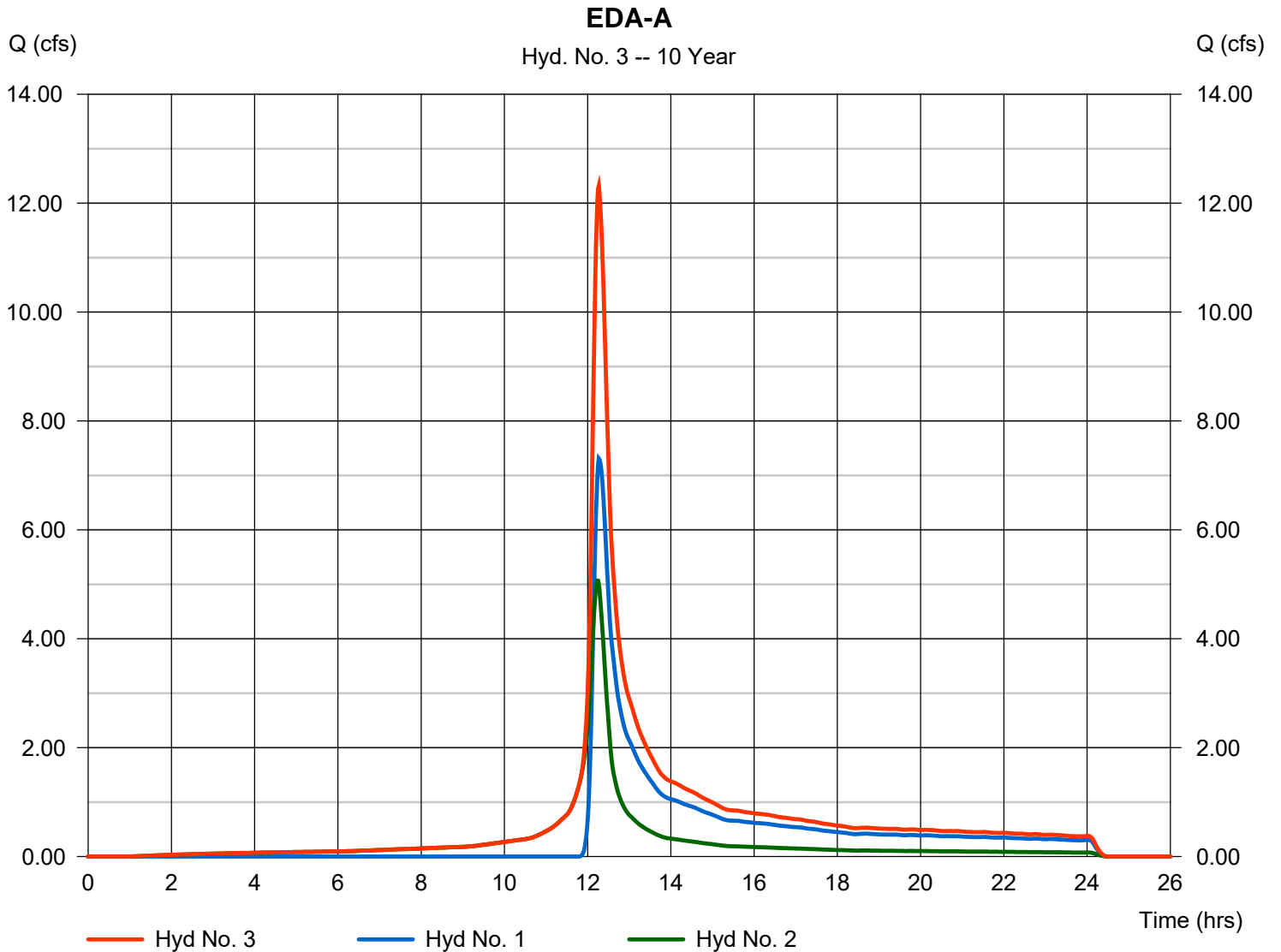
Wednesday, 03 / 9 / 2022

Hyd. No. 3

EDA-A

Hydrograph type = Combine
Storm frequency = 10 yrs
Time interval = 1 min
Inflow hyds. = 1, 2

Peak discharge = 12.32 cfs
Time to peak = 12.27 hrs
Hyd. volume = 61,651 cuft
Contrib. drain. area = 14.750 ac



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

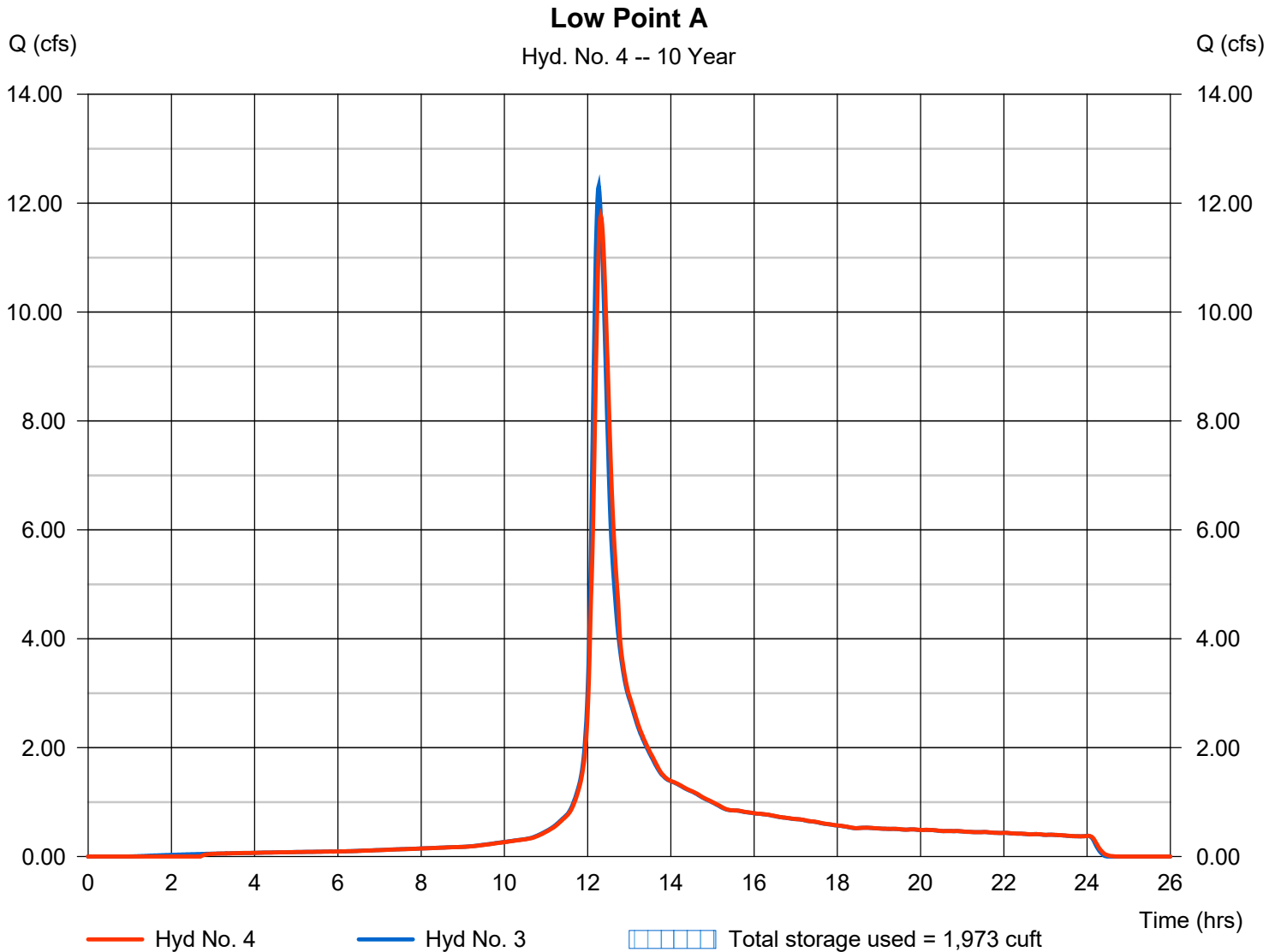
Wednesday, 03 / 9 / 2022

Hyd. No. 4

Low Point A

Hydrograph type	= Reservoir	Peak discharge	= 11.77 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.32 hrs
Time interval	= 1 min	Hyd. volume	= 61,495 cuft
Inflow hyd. No.	= 3 - EDA-A	Max. Elevation	= 595.97 ft
Reservoir name	= Low Point A	Max. Storage	= 1,973 cuft

Storage Indication method used.



Hydrograph Report

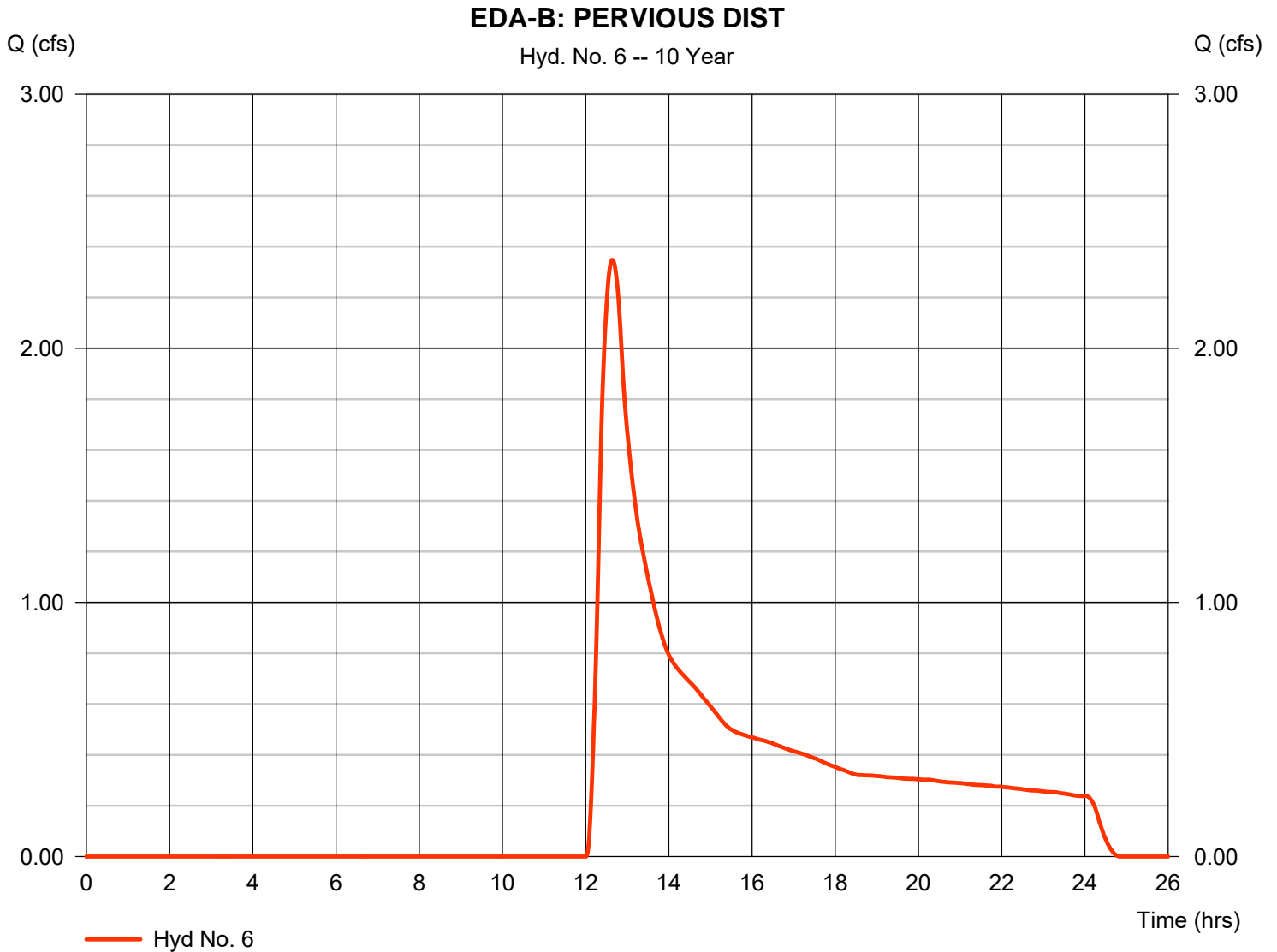
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

Wednesday, 03 / 9 / 2022

Hyd. No. 6

EDA-B: PERVIOUS DIST

Hydrograph type	= SCS Runoff	Peak discharge	= 2.348 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.65 hrs
Time interval	= 1 min	Hyd. volume	= 23,448 cuft
Drainage area	= 14.410 ac	Curve number	= 47
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 31.40 min
Total precip.	= 4.73 in	Distribution	= Custom
Storm duration	= R:\Hydroflow Standards\NJ Reg Storm Rainfall Distribution\NOAA_C_1 min.cds		



Hydrograph Report

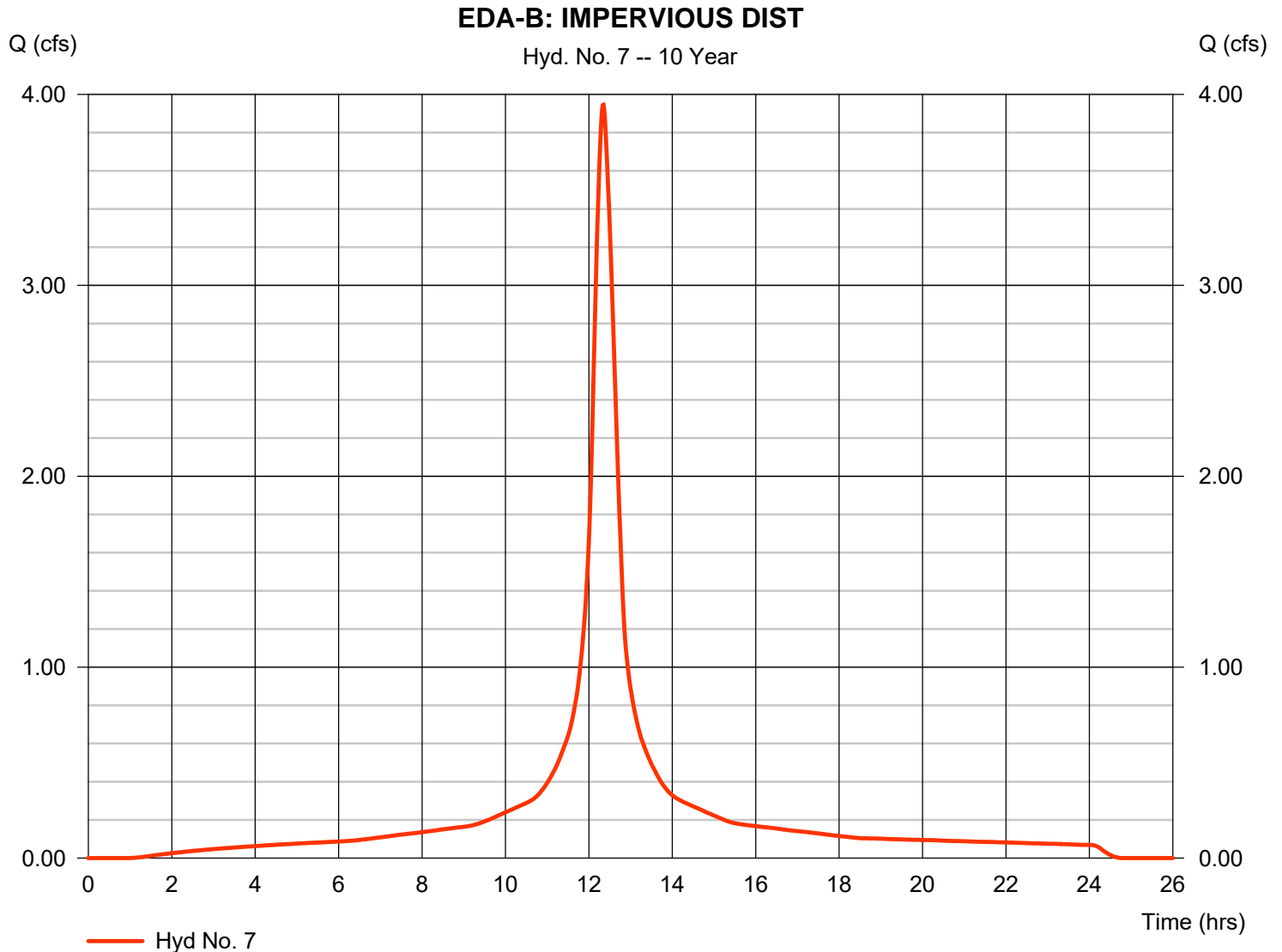
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

Wednesday, 03 / 9 / 2022

Hyd. No. 7

EDA-B: IMPERVIOUS DIST

Hydrograph type	= SCS Runoff	Peak discharge	= 3.946 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.35 hrs
Time interval	= 1 min	Hyd. volume	= 22,347 cuft
Drainage area	= 1.370 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 29.70 min
Total precip.	= 4.73 in	Distribution	= Custom
Storm duration	= R:\Hydroflow Standards\NJ Reg Slope Rainfall Distribution\401A_C_1 min.cds		



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

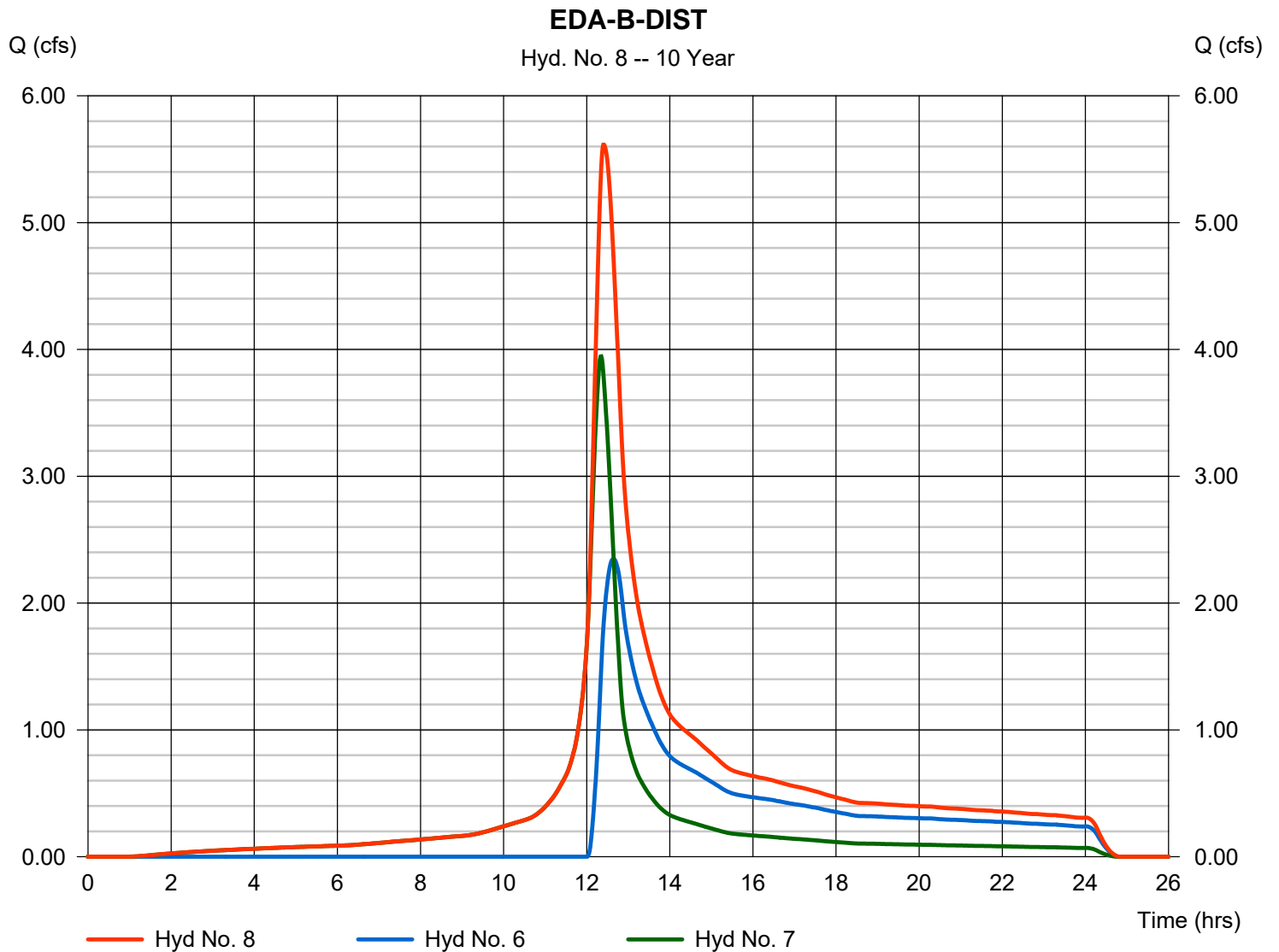
Wednesday, 03 / 9 / 2022

Hyd. No. 8

EDA-B-DIST

Hydrograph type = Combine
Storm frequency = 10 yrs
Time interval = 1 min
Inflow hyds. = 6, 7

Peak discharge = 5.614 cfs
Time to peak = 12.42 hrs
Hyd. volume = 45,796 cuft
Contrib. drain. area = 15.780 ac

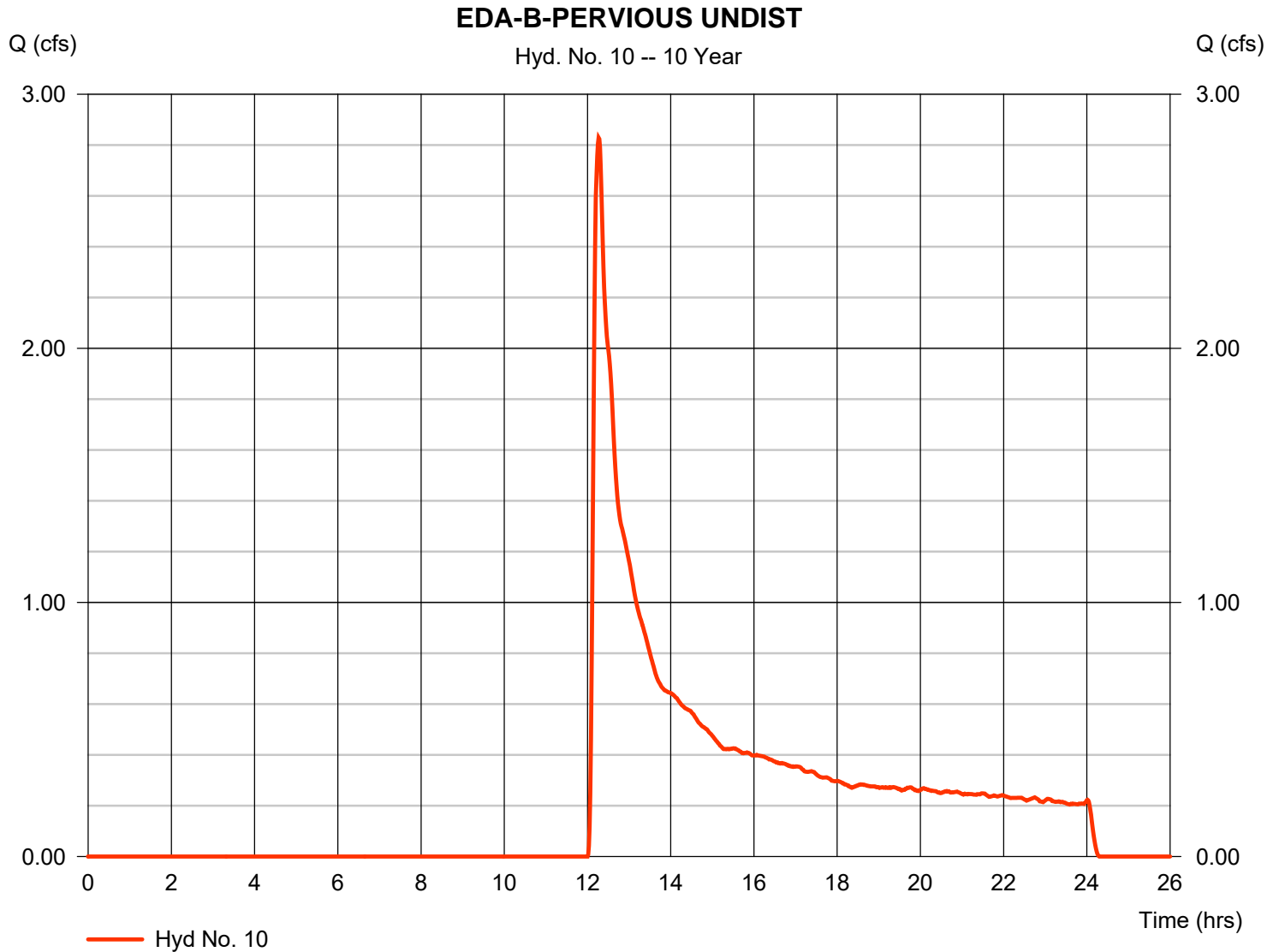


Hydrograph Report

Hyd. No. 10

EDA-B-PERVIOUS UNDIST

Hydrograph type	= SCS Runoff	Peak discharge	= 2.828 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.27 hrs
Time interval	= 1 min	Hyd. volume	= 20,519 cuft
Drainage area	= 12.470 ac	Curve number	= 47
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 10.70 min
Total precip.	= 4.73 in	Distribution	= Custom
Storm duration	= R:\Hydroflow Standards\NJ Reg Storm Rainfall Distribution\401A_C_1 min.cds		



Hydrograph Report

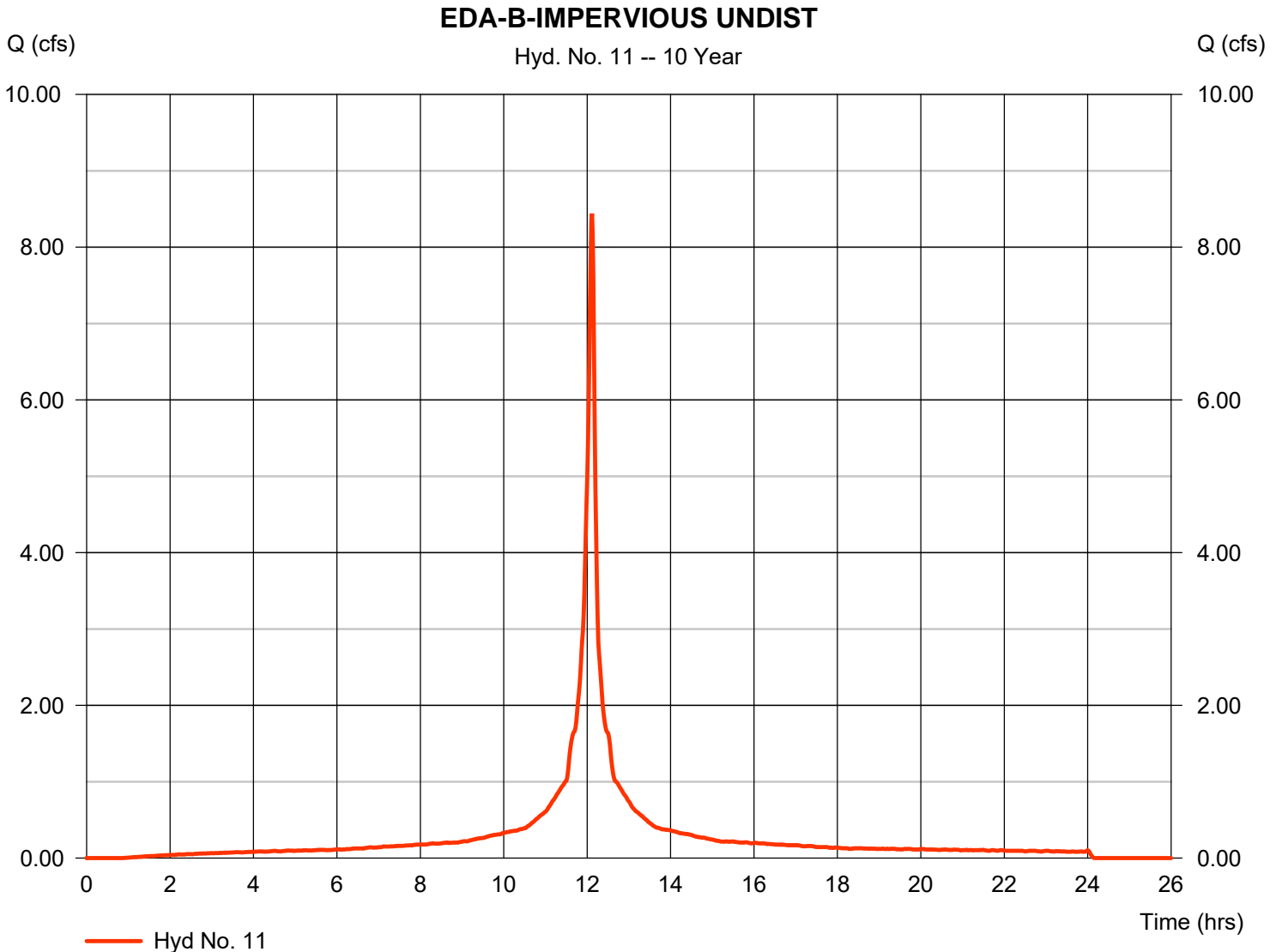
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

Wednesday, 03 / 9 / 2022

Hyd. No. 11

EDA-B-IMPERVIOUS UNDIST

Hydrograph type	= SCS Runoff	Peak discharge	= 8.441 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.12 hrs
Time interval	= 1 min	Hyd. volume	= 27,419 cuft
Drainage area	= 1.630 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 6.00 min
Total precip.	= 4.73 in	Distribution	= Custom
Storm duration	= R:\Hydroflow Standards\NJ Reg Storm Rainfall Distribution\NOAA_C_1 min.cds		



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

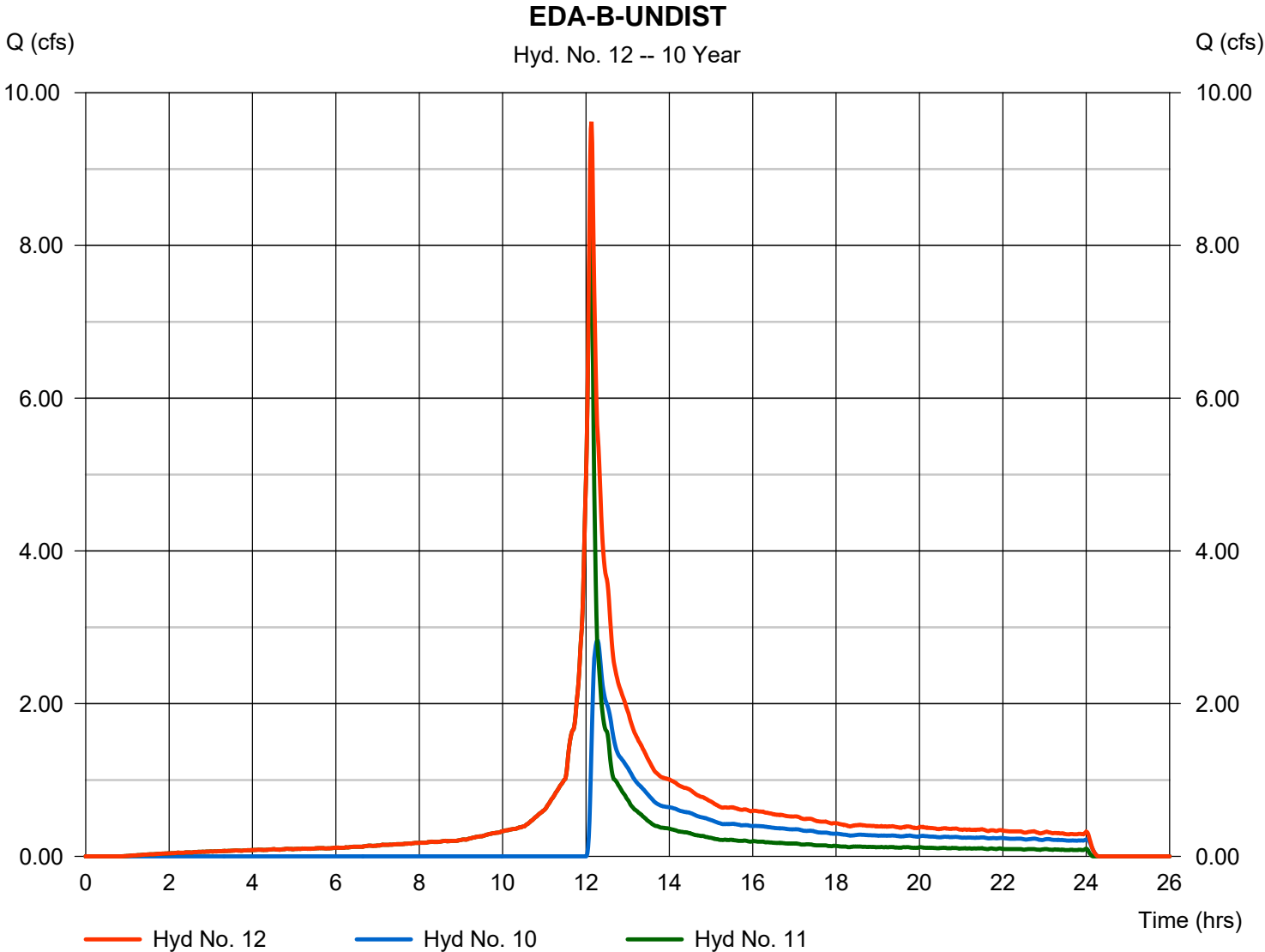
Wednesday, 03 / 9 / 2022

Hyd. No. 12

EDA-B-UNDIST

Hydrograph type = Combine
Storm frequency = 10 yrs
Time interval = 1 min
Inflow hyds. = 10, 11

Peak discharge = 9.620 cfs
Time to peak = 12.13 hrs
Hyd. volume = 47,938 cuft
Contrib. drain. area = 14.100 ac



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

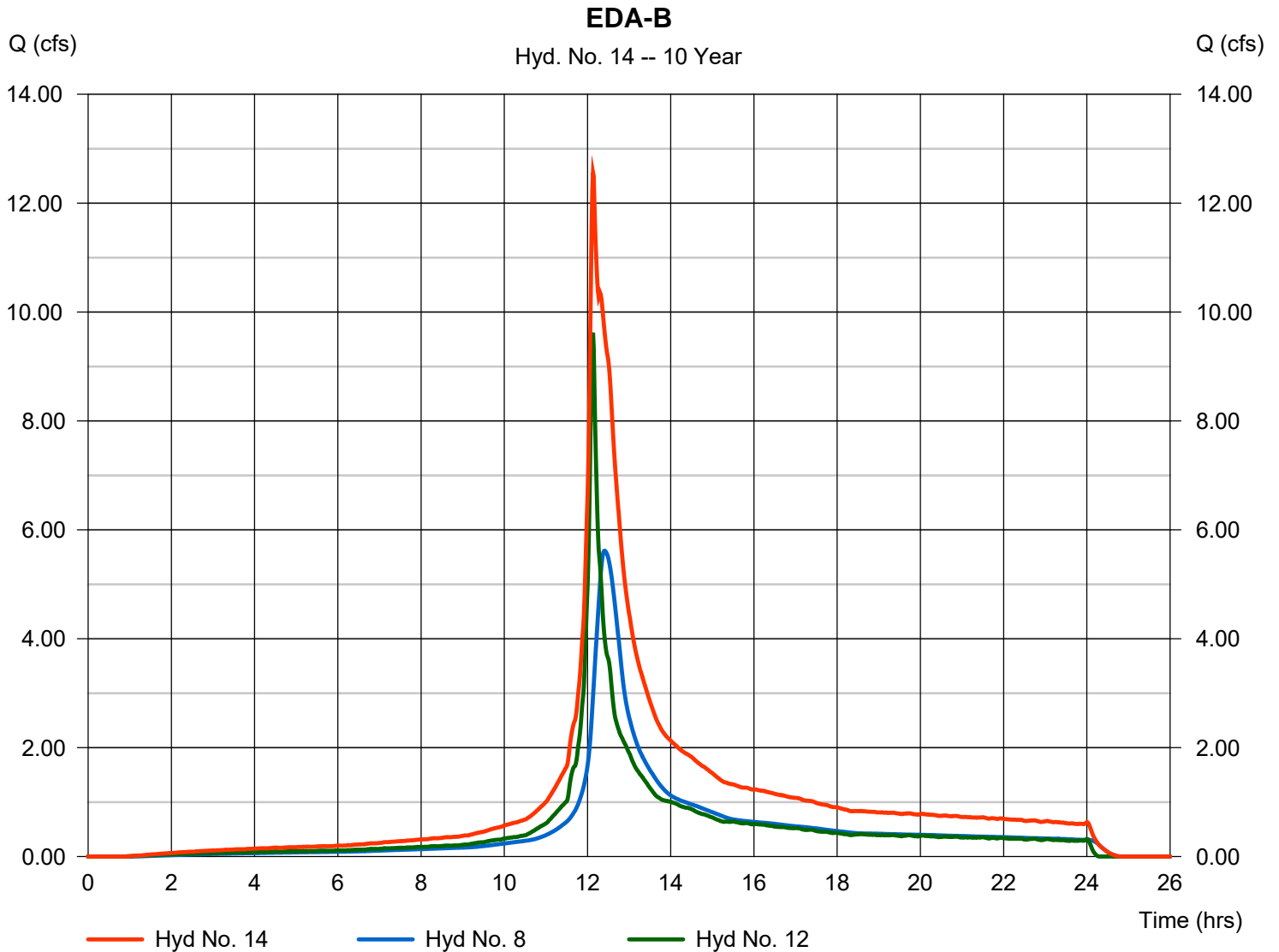
Wednesday, 03 / 9 / 2022

Hyd. No. 14

EDA-B

Hydrograph type = Combine
Storm frequency = 10 yrs
Time interval = 1 min
Inflow hyds. = 8, 12

Peak discharge = 12.56 cfs
Time to peak = 12.13 hrs
Hyd. volume = 93,734 cuft
Contrib. drain. area = 0.000 ac



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

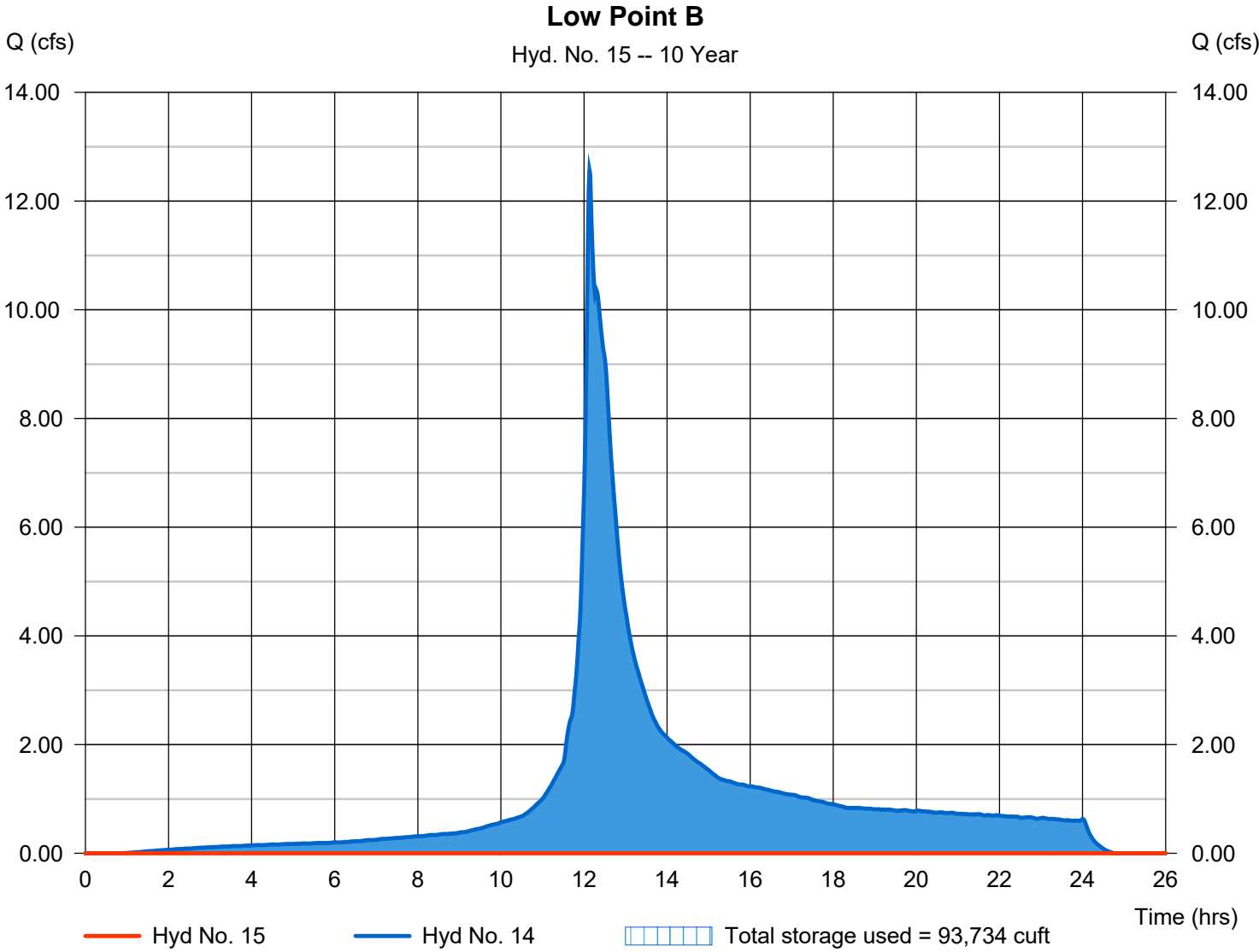
Wednesday, 03 / 9 / 2022

Hyd. No. 15

Low Point B

Hydrograph type	= Reservoir	Peak discharge	= 0.000 cfs
Storm frequency	= 10 yrs	Time to peak	= n/a
Time interval	= 1 min	Hyd. volume	= 0 cuft
Inflow hyd. No.	= 14 - EDA-B	Max. Elevation	= 596.72 ft
Reservoir name	= Low Point B	Max. Storage	= 93,734 cuft

Storage Indication method used.



Hydrograph Report

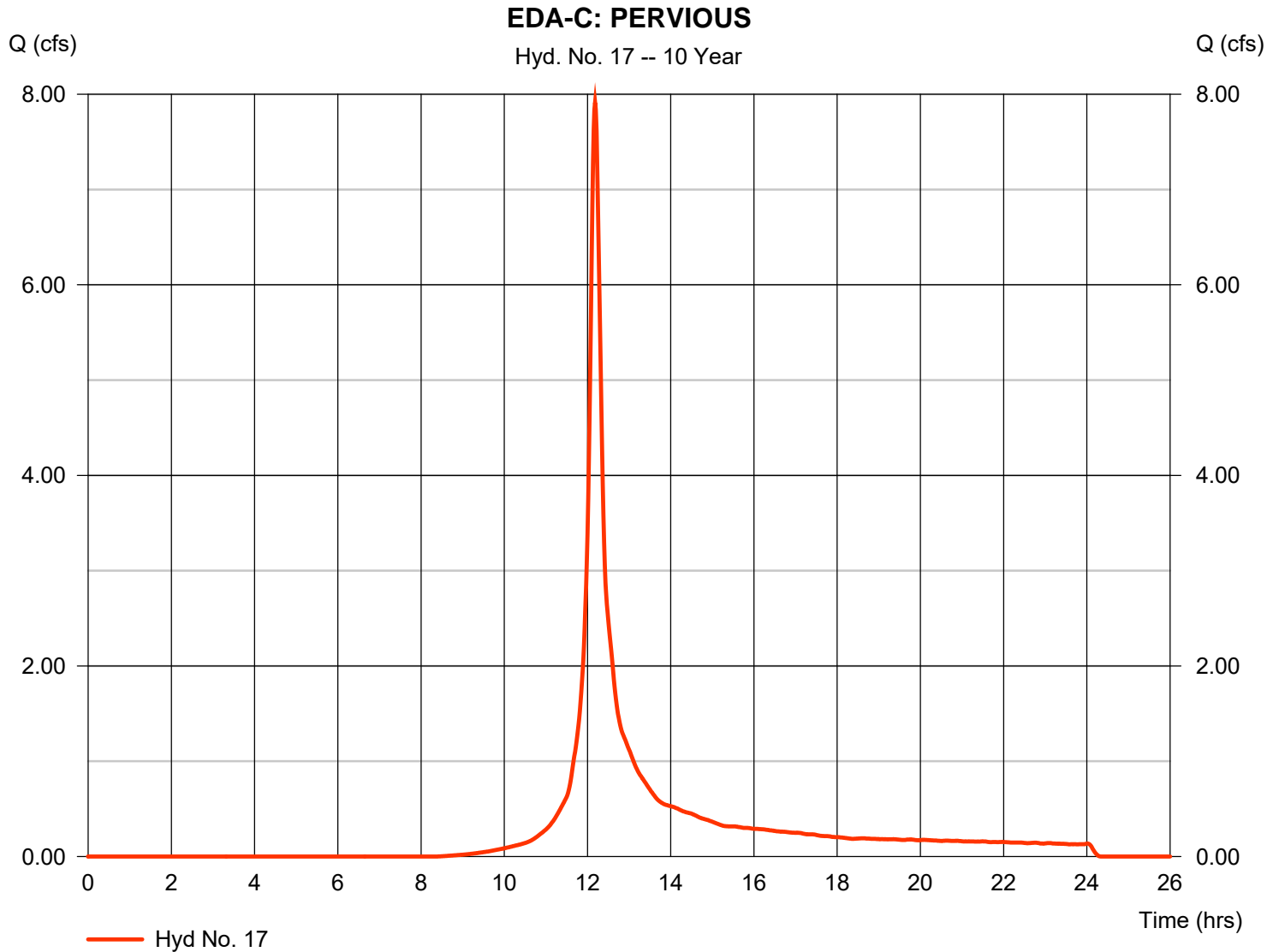
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Wednesday, 03 / 9 / 2022

Hyd. No. 17

EDA-C: PERVIOUS

Hydrograph type	= SCS Runoff	Peak discharge	= 7.912 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.18 hrs
Time interval	= 1 min	Hyd. volume	= 27,172 cuft
Drainage area	= 3.170 ac	Curve number	= 77
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 12.70 min
Total precip.	= 4.73 in	Distribution	= Custom
Storm duration	= R:\Hydroflow Standards\NJ Reg Slope Ratio Distribution\NOAA_C_1 min.cds		



Hydrograph Report

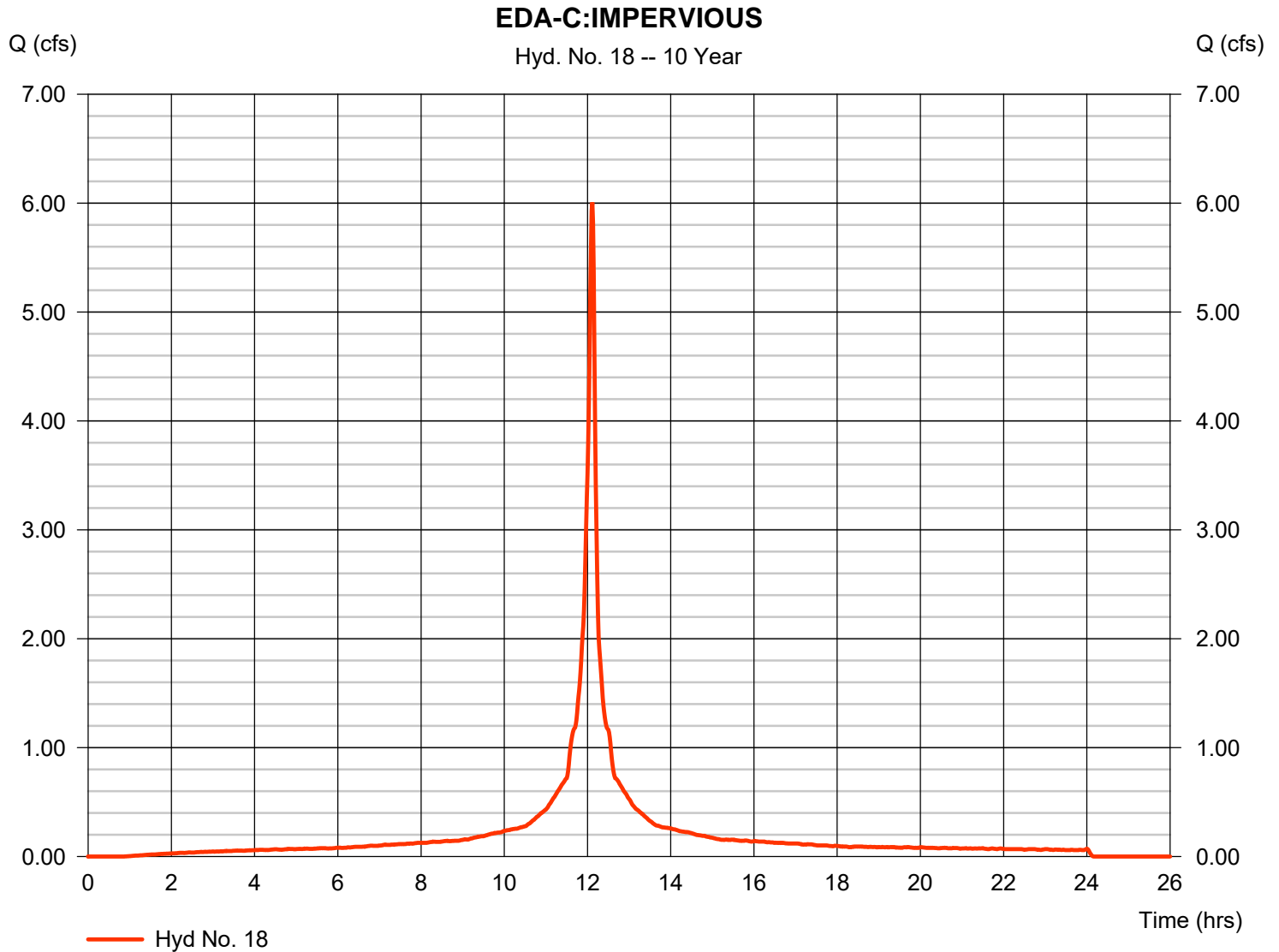
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

Wednesday, 03 / 9 / 2022

Hyd. No. 18

EDA-C:IMPERVIOUS

Hydrograph type	= SCS Runoff	Peak discharge	= 6.007 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.12 hrs
Time interval	= 1 min	Hyd. volume	= 19,513 cuft
Drainage area	= 1.160 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 6.00 min
Total precip.	= 4.73 in	Distribution	= Custom
Storm duration	= R:\Hydroflow Standards\NJ Reg Slope Rainfall Distribution\401A_C_1 min.cds		



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

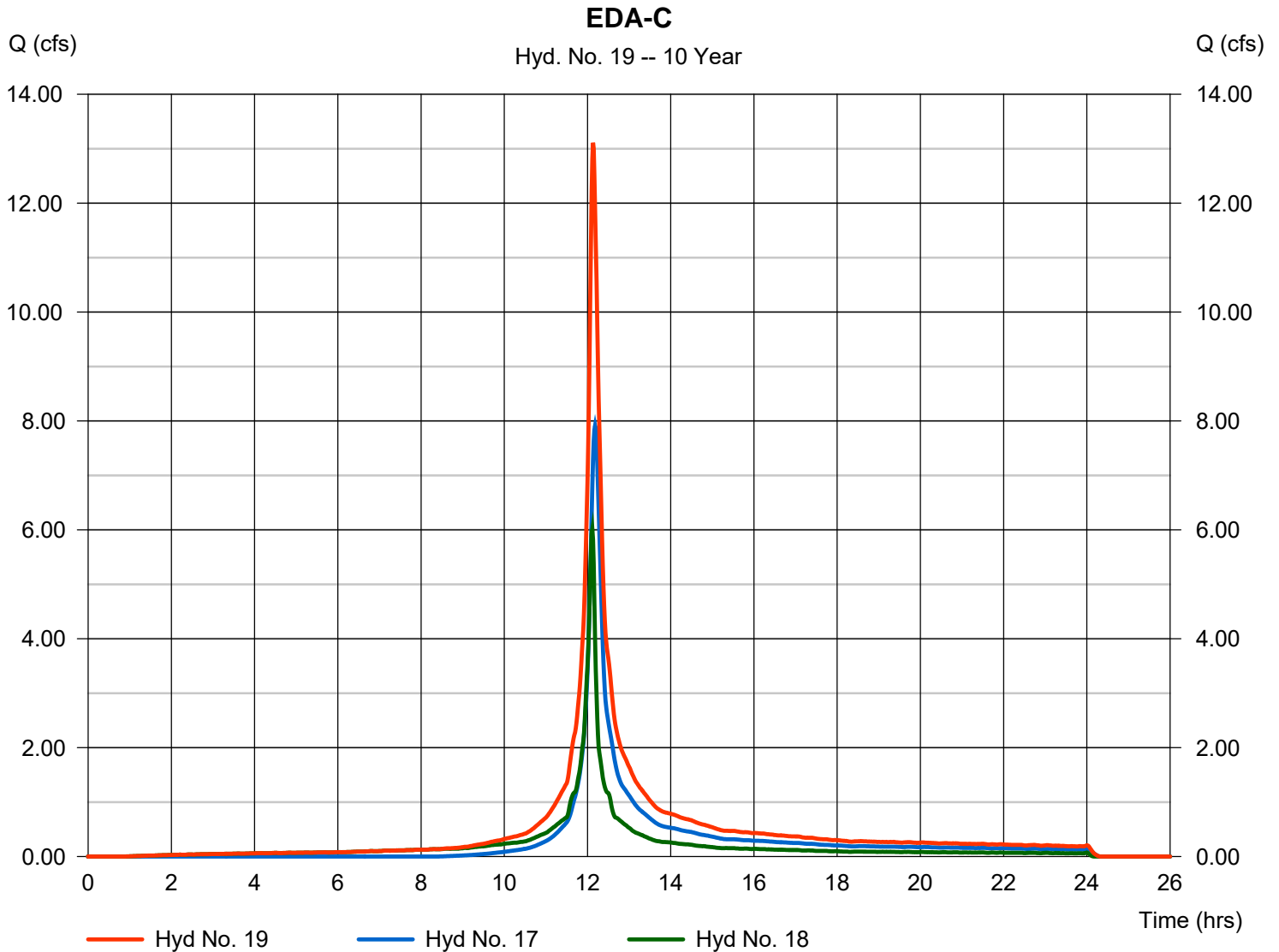
Wednesday, 03 / 9 / 2022

Hyd. No. 19

EDA-C

Hydrograph type = Combine
Storm frequency = 10 yrs
Time interval = 1 min
Inflow hyds. = 17, 18

Peak discharge = 13.11 cfs
Time to peak = 12.13 hrs
Hyd. volume = 46,685 cuft
Contrib. drain. area = 4.330 ac



Hydrograph Report

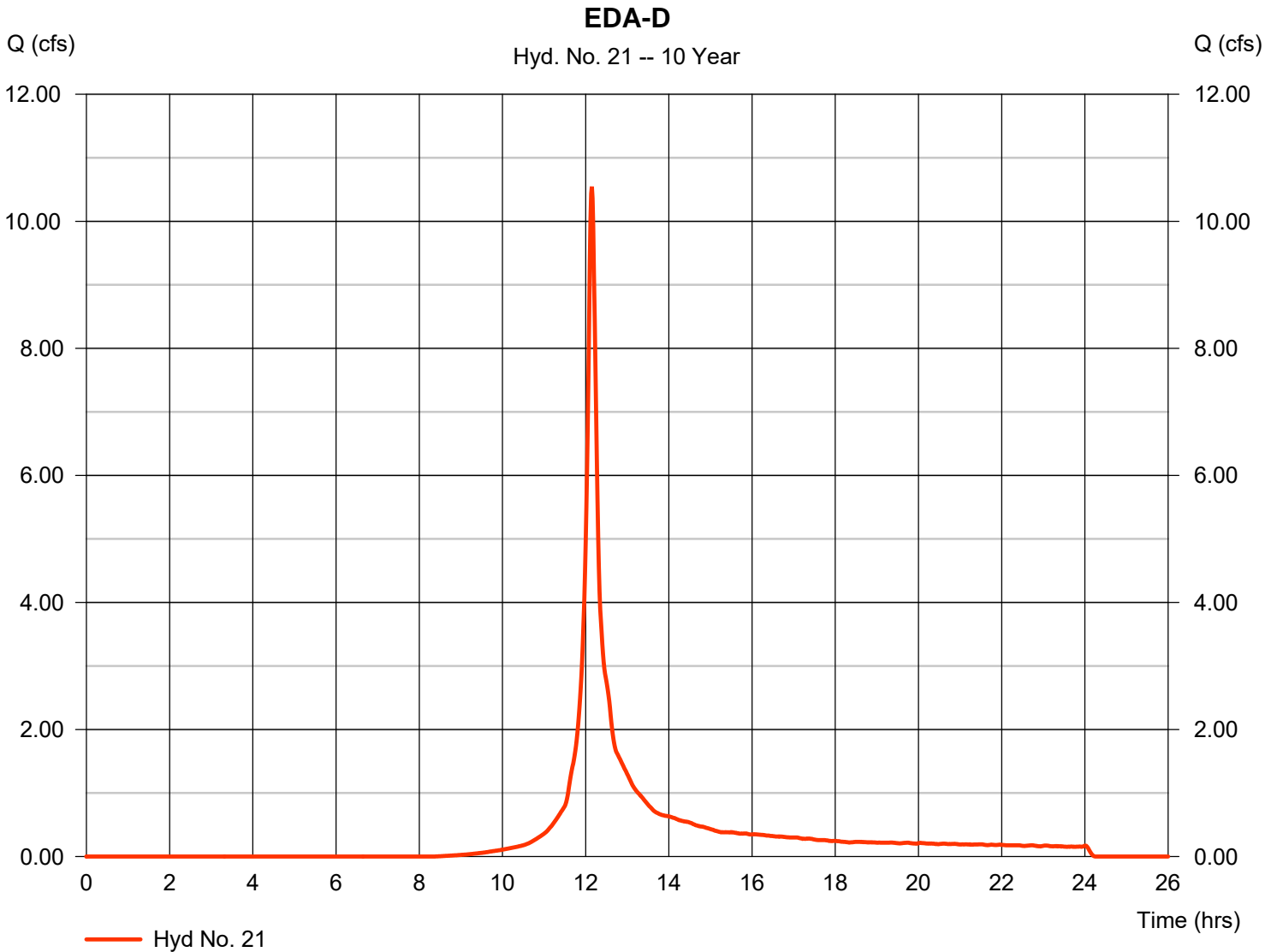
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

Wednesday, 03 / 9 / 2022

Hyd. No. 21

EDA-D

Hydrograph type	= SCS Runoff	Peak discharge	= 10.55 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.15 hrs
Time interval	= 1 min	Hyd. volume	= 32,740 cuft
Drainage area	= 3.760 ac	Curve number	= 77
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 10.00 min
Total precip.	= 4.73 in	Distribution	= Custom
Storm duration	= R:\Hydroflow Standards\NJ Reg Slope Rainfall Distribution\401A_C_1 min.cds		



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

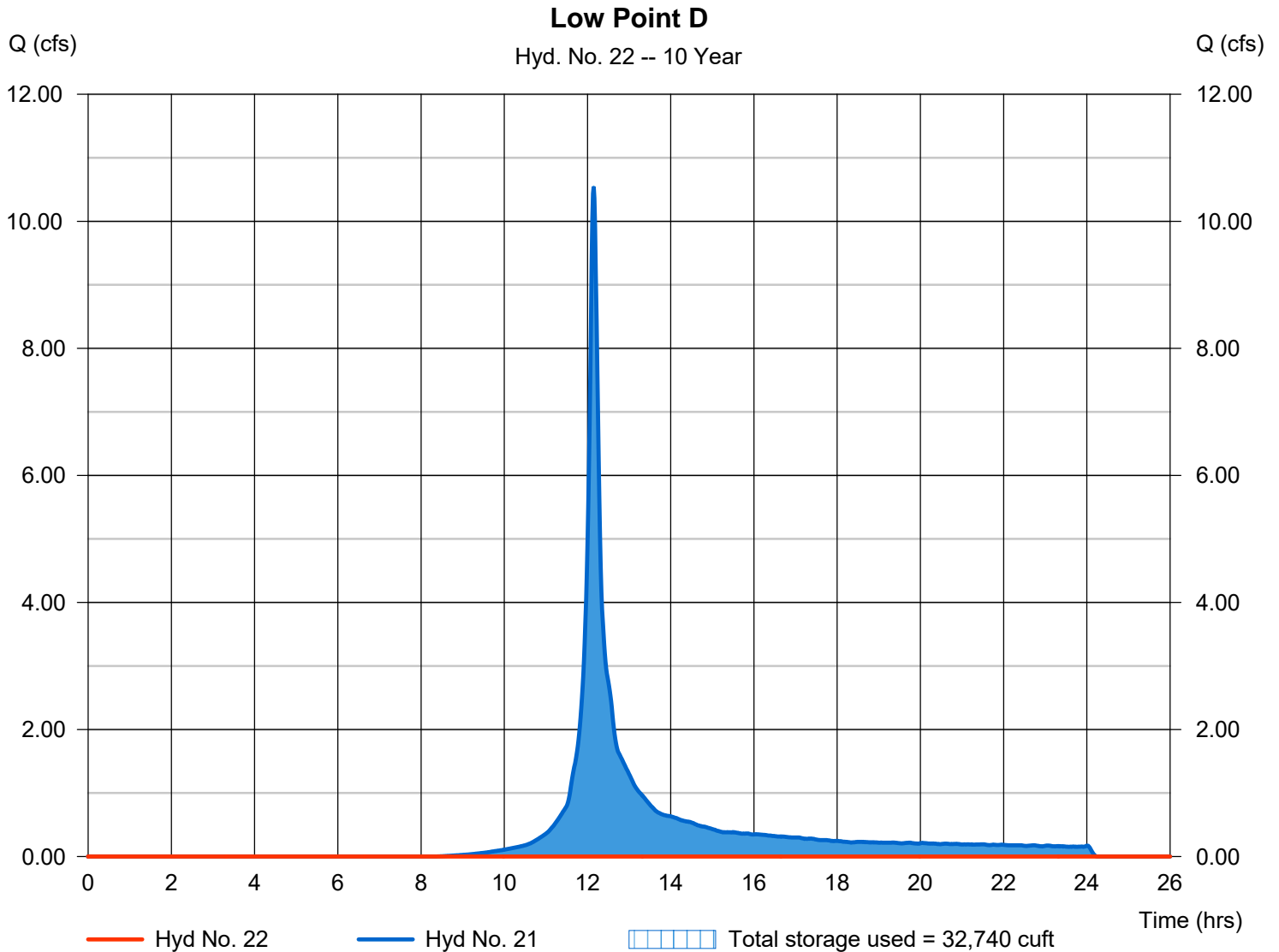
Wednesday, 03 / 9 / 2022

Hyd. No. 22

Low Point D

Hydrograph type	= Reservoir	Peak discharge	= 0.000 cfs
Storm frequency	= 10 yrs	Time to peak	= n/a
Time interval	= 1 min	Hyd. volume	= 0 cuft
Inflow hyd. No.	= 21 - EDA-D	Max. Elevation	= 596.59 ft
Reservoir name	= Low Point D	Max. Storage	= 32,740 cuft

Storage Indication method used.



Hydrograph Report

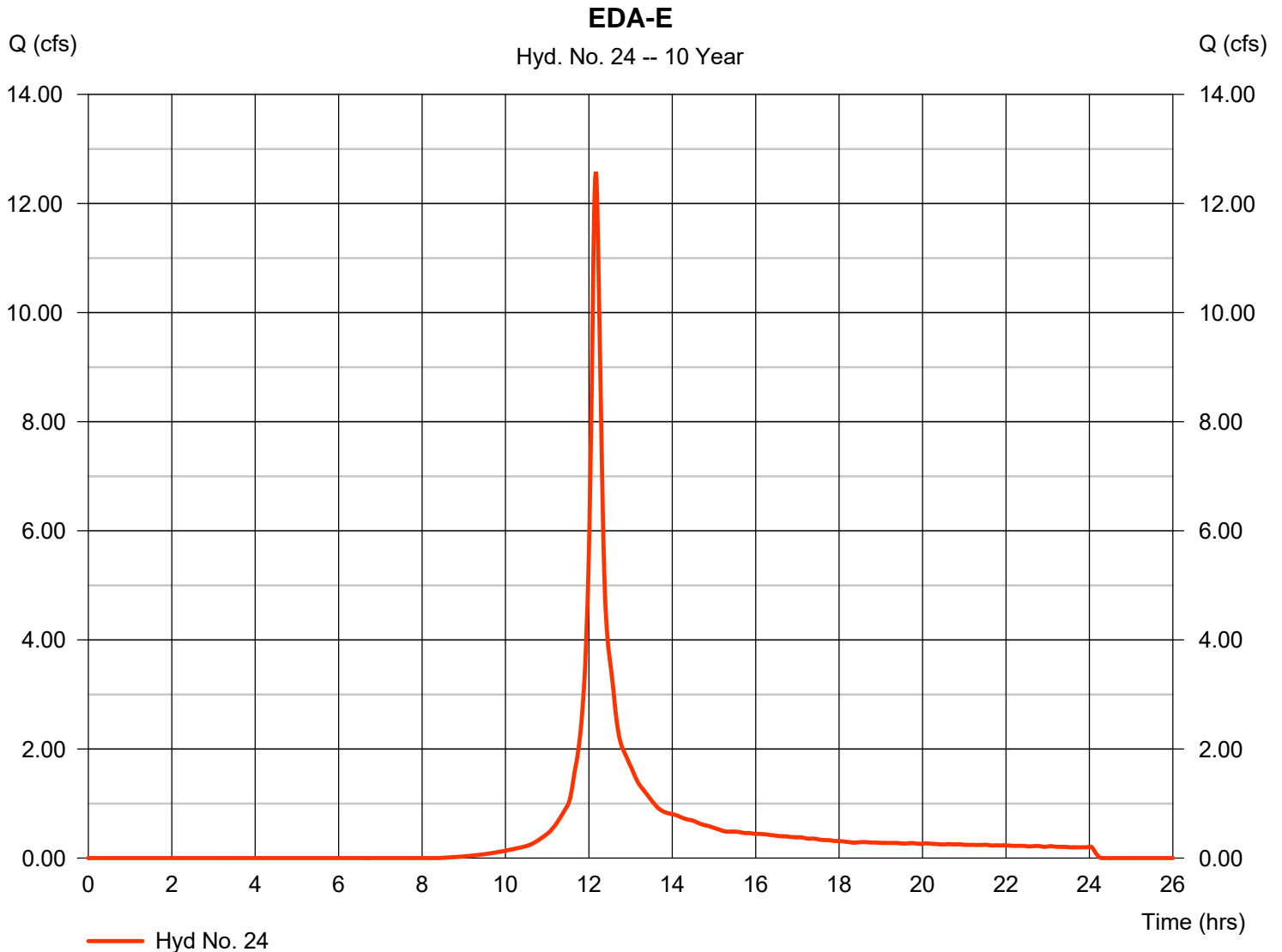
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

Wednesday, 03 / 9 / 2022

Hyd. No. 24

EDA-E

Hydrograph type	= SCS Runoff	Peak discharge	= 12.58 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.17 hrs
Time interval	= 1 min	Hyd. volume	= 41,568 cuft
Drainage area	= 4.690 ac	Curve number	= 77
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 11.40 min
Total precip.	= 4.73 in	Distribution	= Custom
Storm duration	= R:\Hydroflow Standards\NJ Reg Slope Rainfall Distribution\NOAA_C_1 min.cds		



Hydrograph Report

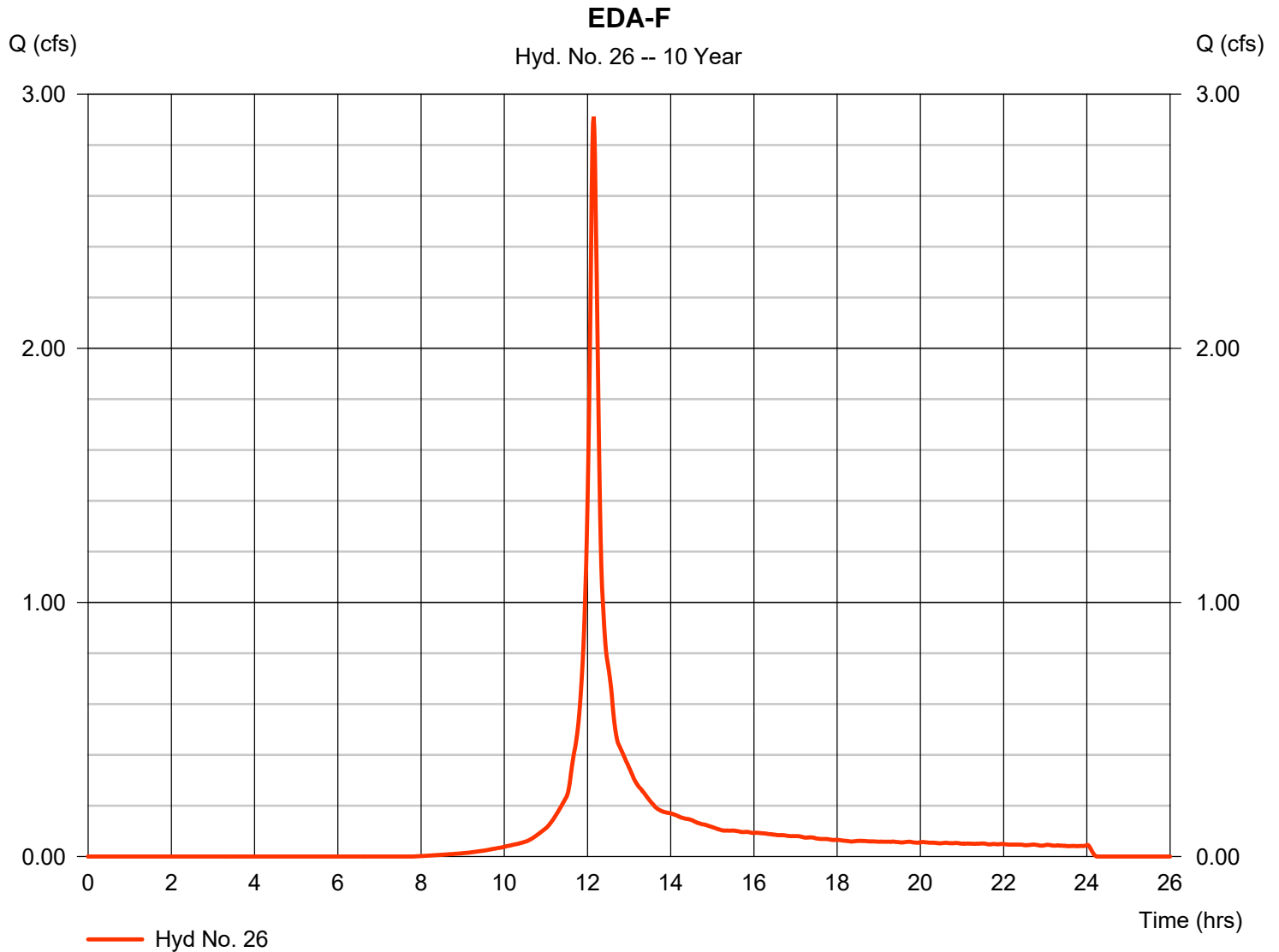
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

Wednesday, 03 / 9 / 2022

Hyd. No. 26

EDA-F

Hydrograph type	= SCS Runoff	Peak discharge	= 2.911 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.15 hrs
Time interval	= 1 min	Hyd. volume	= 9,052 cuft
Drainage area	= 0.970 ac	Curve number	= 79
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 10.00 min
Total precip.	= 4.73 in	Distribution	= Custom
Storm duration	= R:\Hydroflow Standards\NJ Reg Storm Rainfall Distribution\401A_C_1 min.cds		



Hydrograph Report

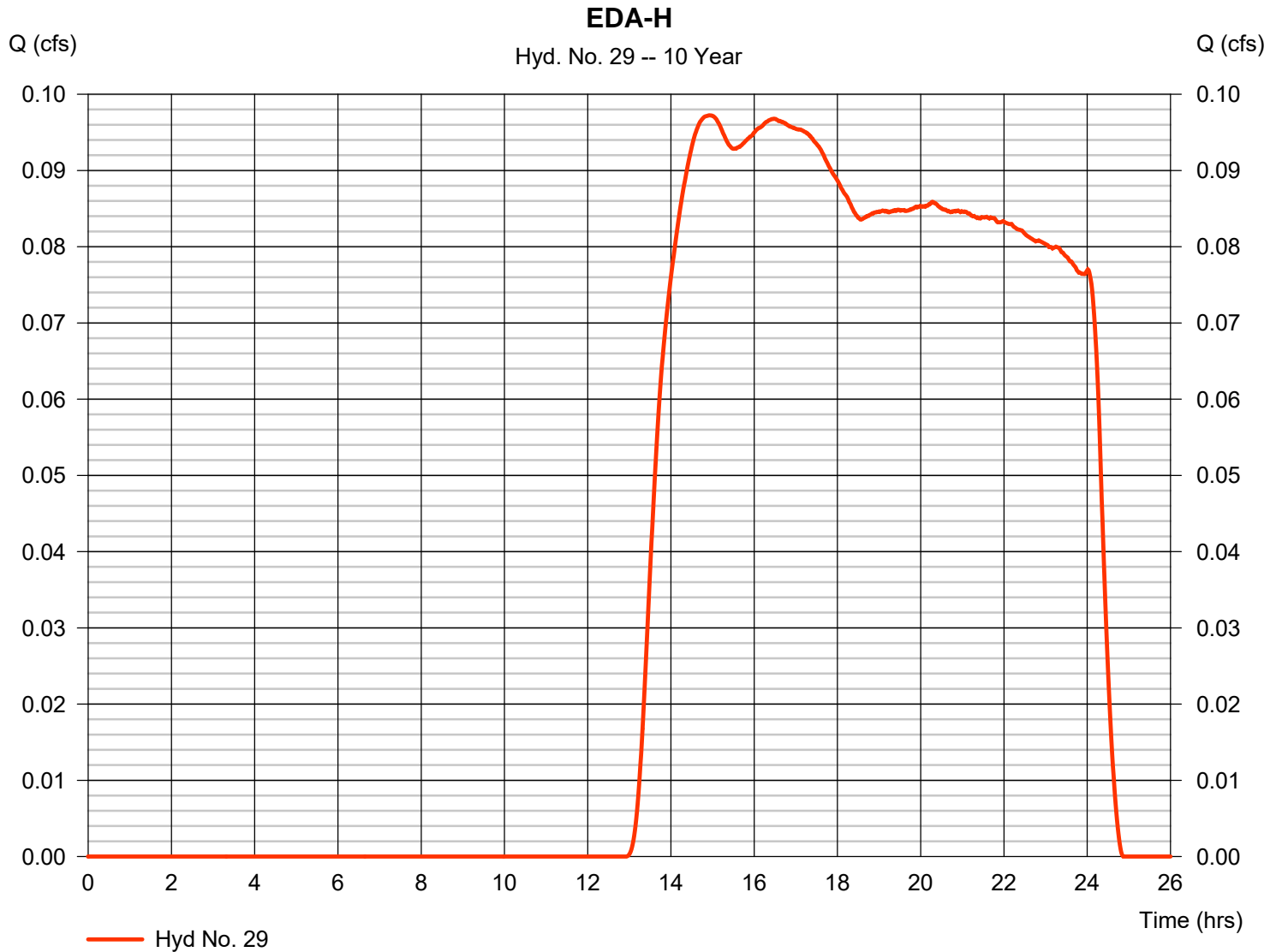
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

Wednesday, 03 / 9 / 2022

Hyd. No. 29

EDA-H

Hydrograph type	= SCS Runoff	Peak discharge	= 0.097 cfs
Storm frequency	= 10 yrs	Time to peak	= 14.93 hrs
Time interval	= 1 min	Hyd. volume	= 3,392 cuft
Drainage area	= 12.920 ac	Curve number	= 36
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 33.50 min
Total precip.	= 4.73 in	Distribution	= Custom
Storm duration	= R:\Hydroflow Standards\NJ Reg Storm Rainfall Distribution\401A_C_1 min.cds		



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

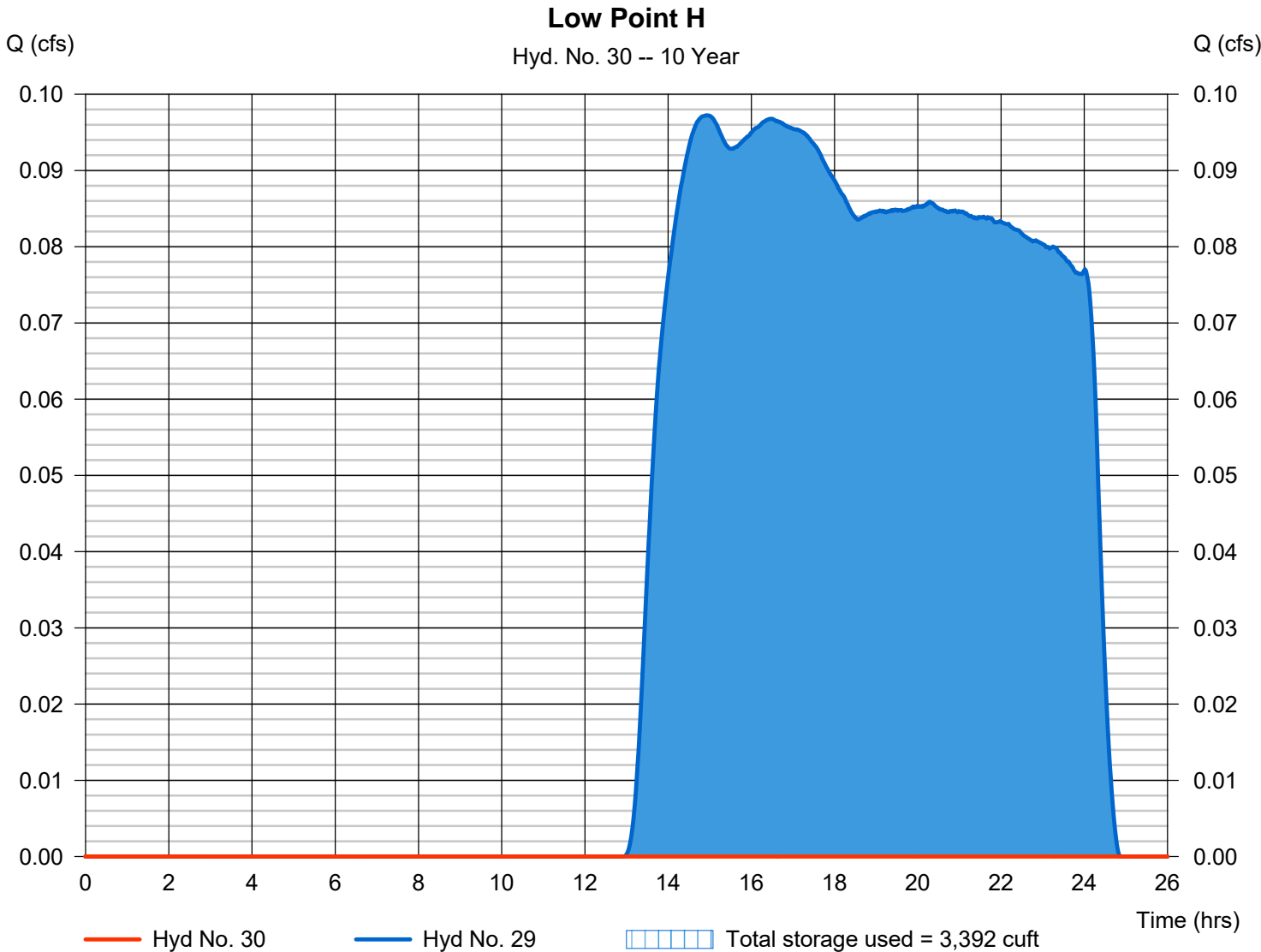
Wednesday, 03 / 9 / 2022

Hyd. No. 30

Low Point H

Hydrograph type	= Reservoir	Peak discharge	= 0.000 cfs
Storm frequency	= 10 yrs	Time to peak	= n/a
Time interval	= 1 min	Hyd. volume	= 0 cuft
Inflow hyd. No.	= 29 - EDA-H	Max. Elevation	= 595.72 ft
Reservoir name	= Low Point H	Max. Storage	= 3,392 cuft

Storage Indication method used.



Hydrograph Report

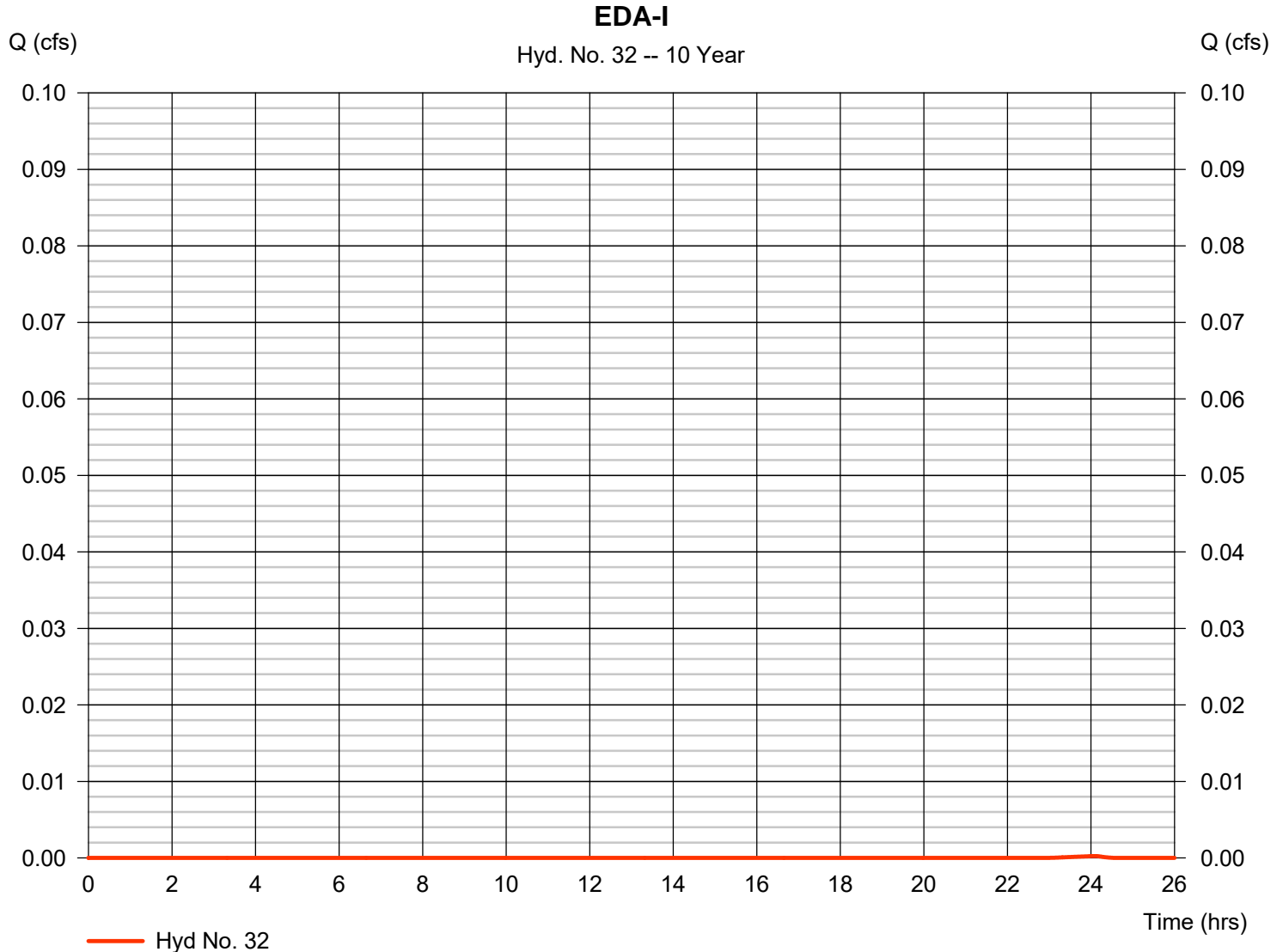
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

Wednesday, 03 / 9 / 2022

Hyd. No. 32

EDA-I

Hydrograph type	= SCS Runoff	Peak discharge	= 0.000 cfs
Storm frequency	= 10 yrs	Time to peak	= 24.07 hrs
Time interval	= 1 min	Hyd. volume	= 1 cuft
Drainage area	= 1.100 ac	Curve number	= 30
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 22.10 min
Total precip.	= 4.73 in	Distribution	= Custom
Storm duration	= R:\Hydroflow Standards\NJ Reg Slope Rainfall Distribution\401A_C_1 min.cds		



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

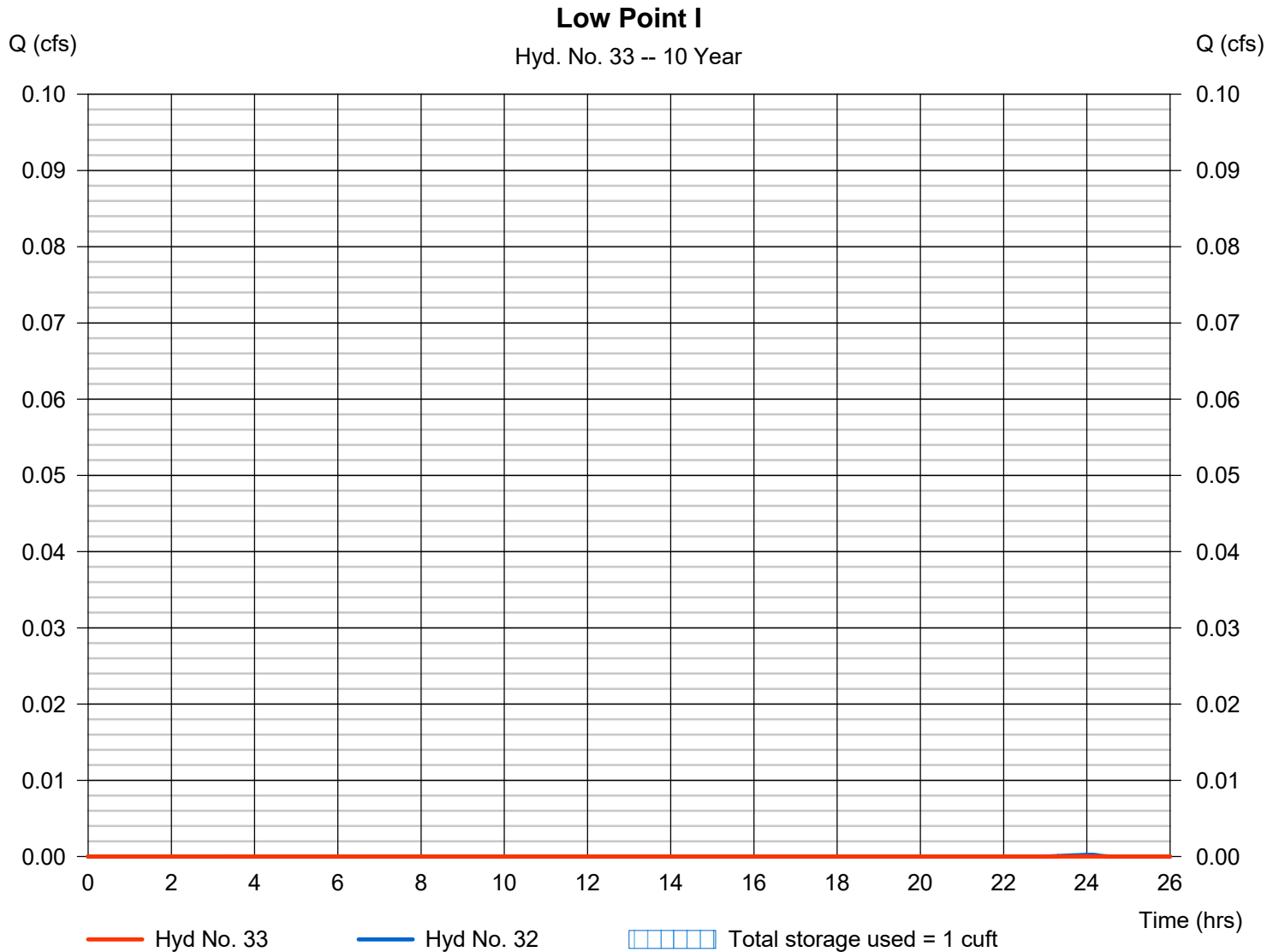
Wednesday, 03 / 9 / 2022

Hyd. No. 33

Low Point I

Hydrograph type	= Reservoir	Peak discharge	= 0.000 cfs
Storm frequency	= 10 yrs	Time to peak	= n/a
Time interval	= 1 min	Hyd. volume	= 0 cuft
Inflow hyd. No.	= 32 - EDA-I	Max. Elevation	= 595.55 ft
Reservoir name	= Low Point I	Max. Storage	= 1 cuft

Storage Indication method used.



Hydrograph Report

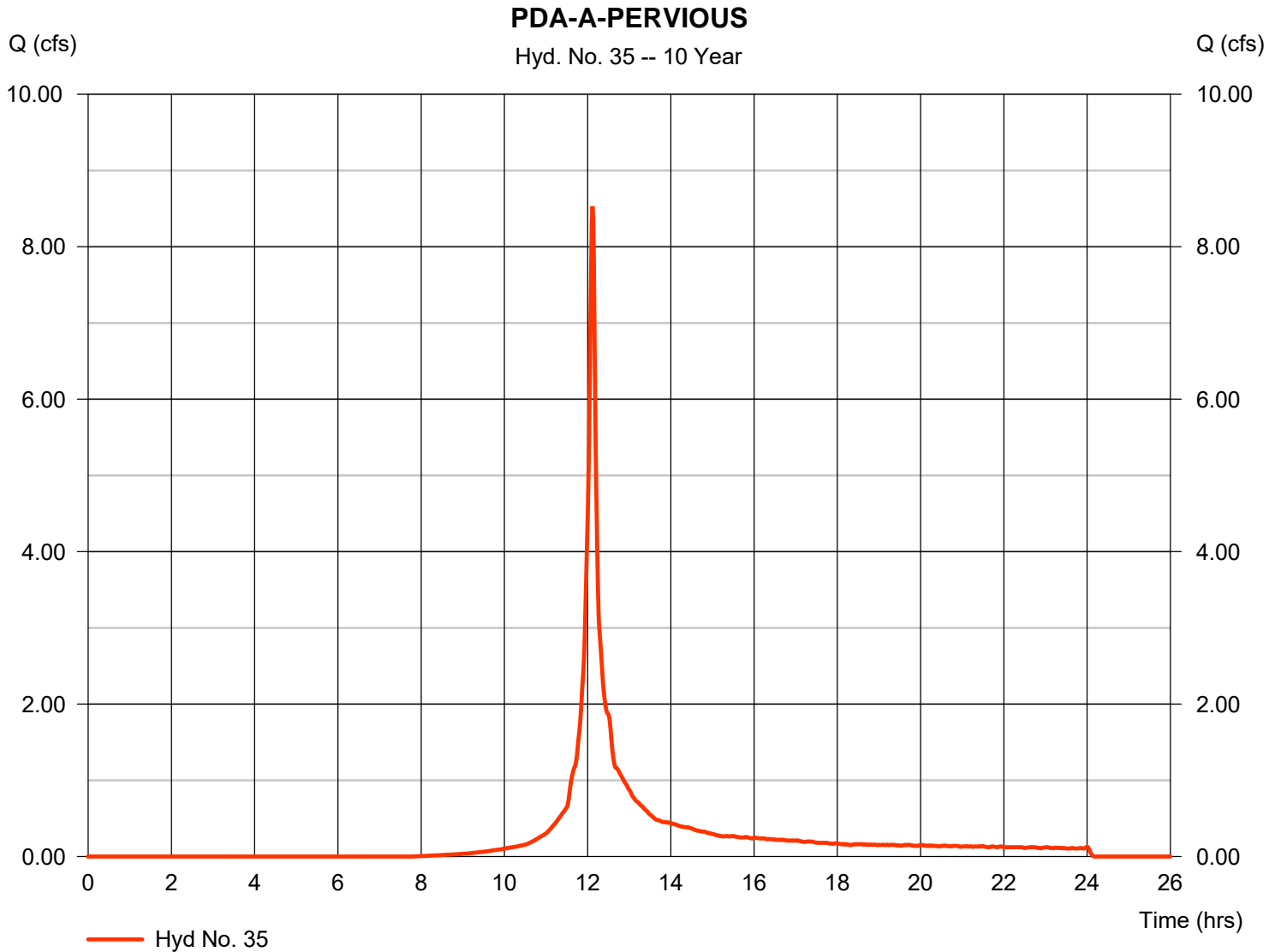
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Wednesday, 03 / 9 / 2022

Hyd. No. 35

PDA-A-PERVIOUS

Hydrograph type	= SCS Runoff	Peak discharge	= 8.530 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.12 hrs
Time interval	= 1 min	Hyd. volume	= 23,577 cuft
Drainage area	= 2.450 ac	Curve number	= 79
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 6.00 min
Total precip.	= 4.73 in	Distribution	= Custom
Storm duration	= R:\Hydroflow Standards\NJ Reg Storm Rainfall Distribution\NOAA_C_1 min.cds		



Hydrograph Report

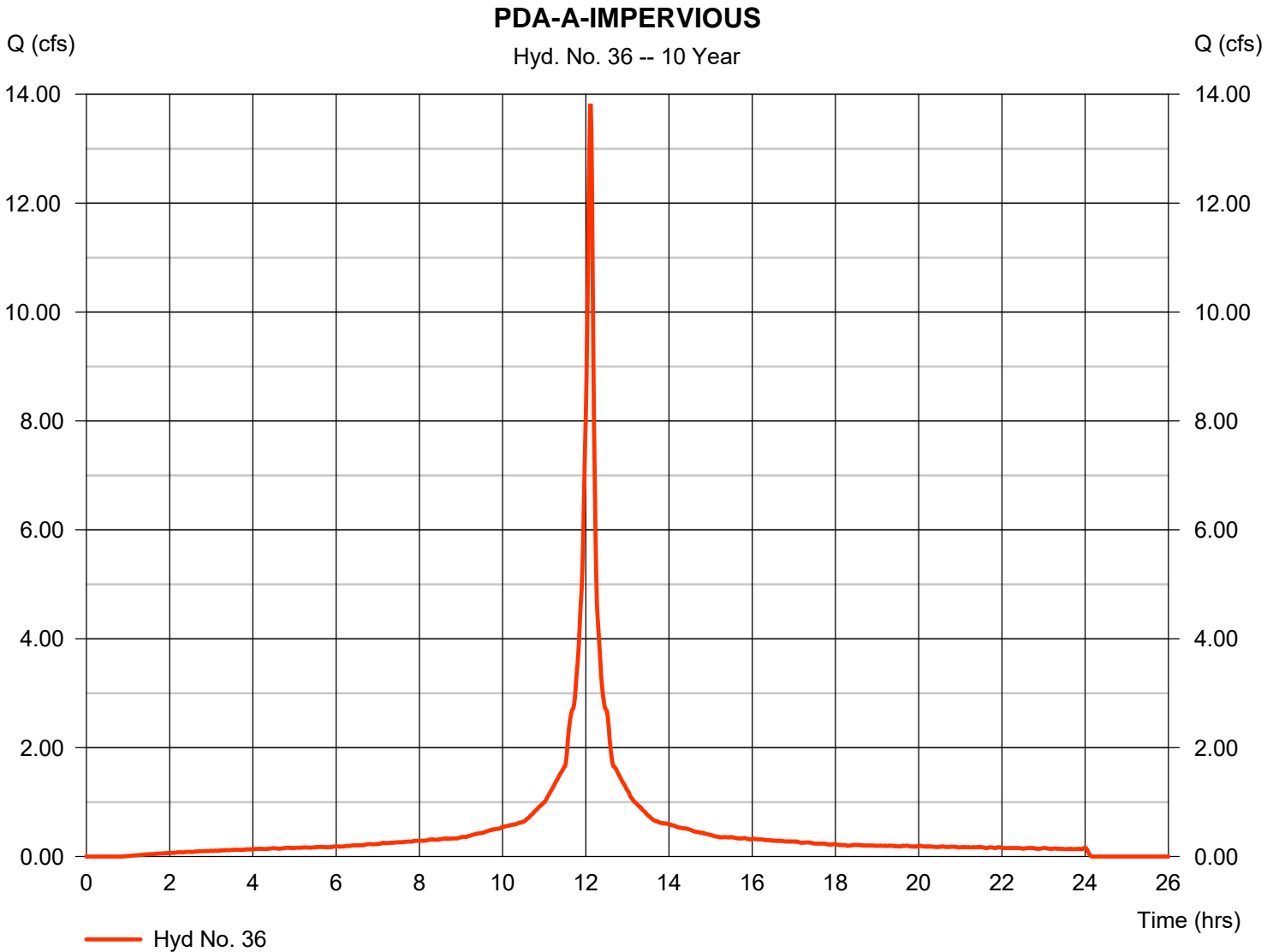
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

Wednesday, 03 / 9 / 2022

Hyd. No. 36

PDA-A-IMPERVIOUS

Hydrograph type	= SCS Runoff	Peak discharge	= 13.83 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.12 hrs
Time interval	= 1 min	Hyd. volume	= 44,913 cuft
Drainage area	= 2.670 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 6.00 min
Total precip.	= 4.73 in	Distribution	= Custom
Storm duration	= R:\Hydroflow Standards\NJ Reg Slope Rainfall Distribution\40A_C_1 min.cds		



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

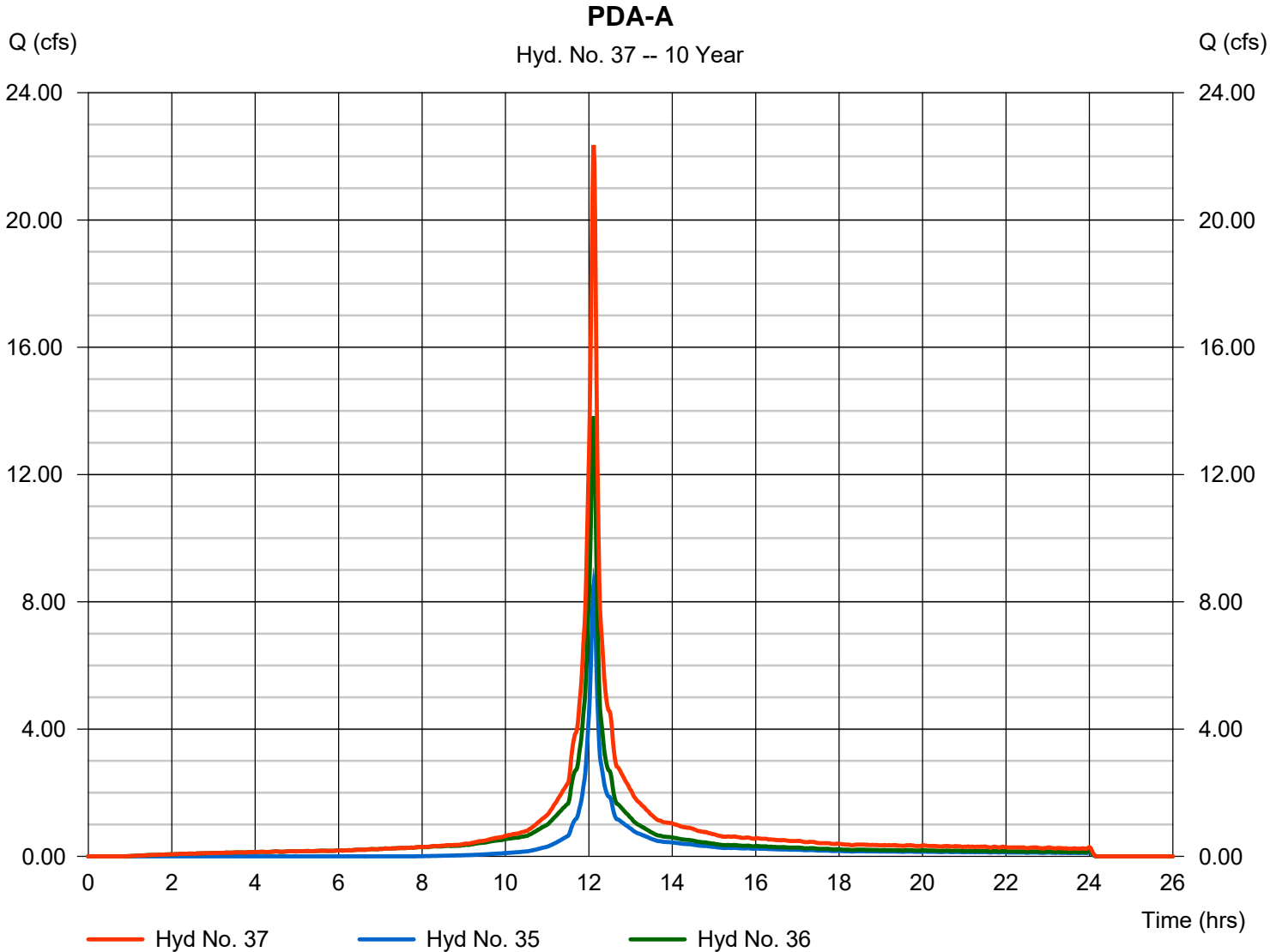
Wednesday, 03 / 9 / 2022

Hyd. No. 37

PDA-A

Hydrograph type = Combine
Storm frequency = 10 yrs
Time interval = 1 min
Inflow hyds. = 35, 36

Peak discharge = 22.36 cfs
Time to peak = 12.12 hrs
Hyd. volume = 68,490 cuft
Contrib. drain. area = 5.120 ac



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

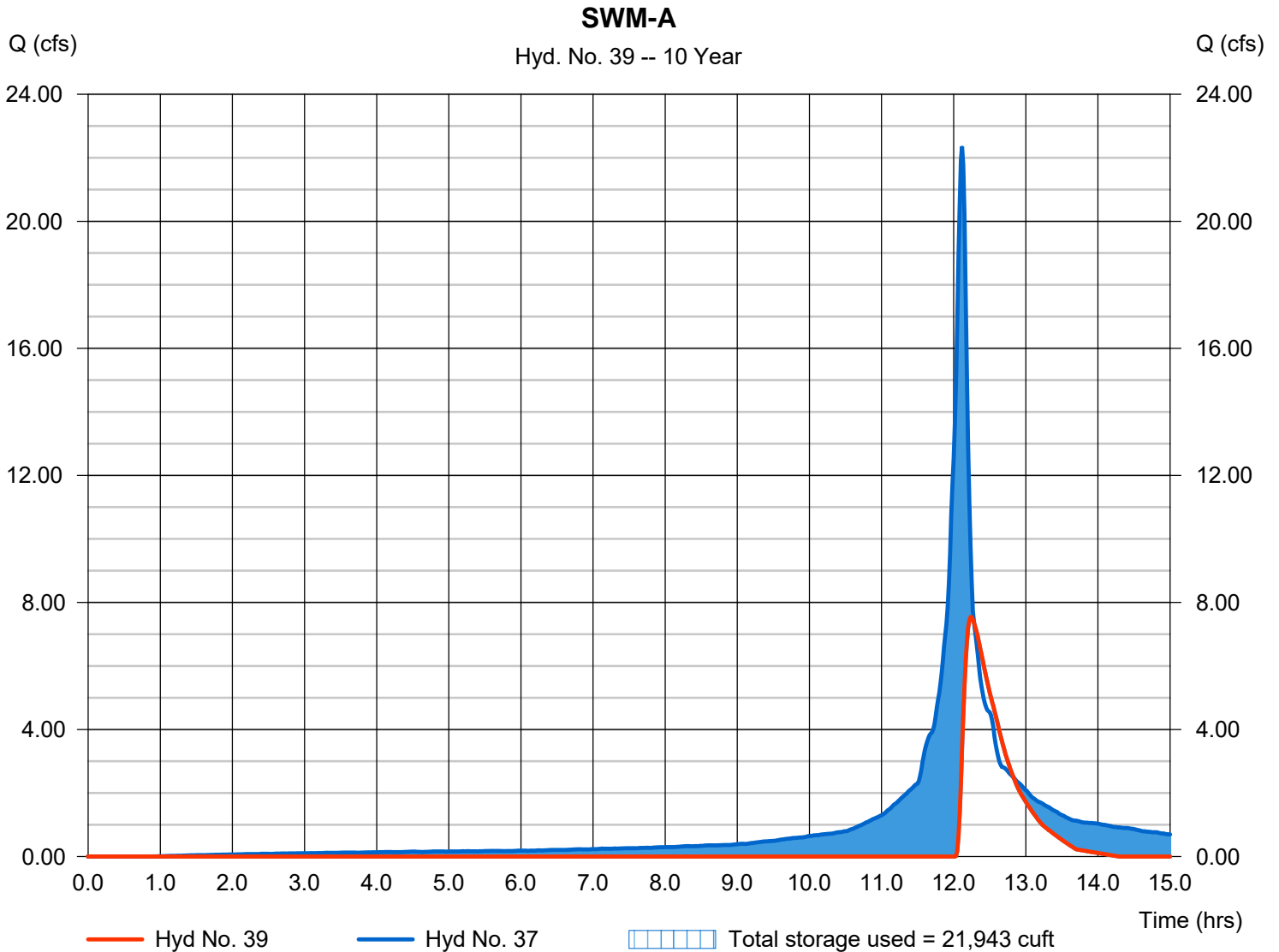
Wednesday, 03 / 9 / 2022

Hyd. No. 39

SWM-A

Hydrograph type	= Reservoir	Peak discharge	= 7.536 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.25 hrs
Time interval	= 1 min	Hyd. volume	= 17,254 cuft
Inflow hyd. No.	= 37 - PDA-A	Max. Elevation	= 596.25 ft
Reservoir name	= SWM-A	Max. Storage	= 21,943 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Hydrograph Report

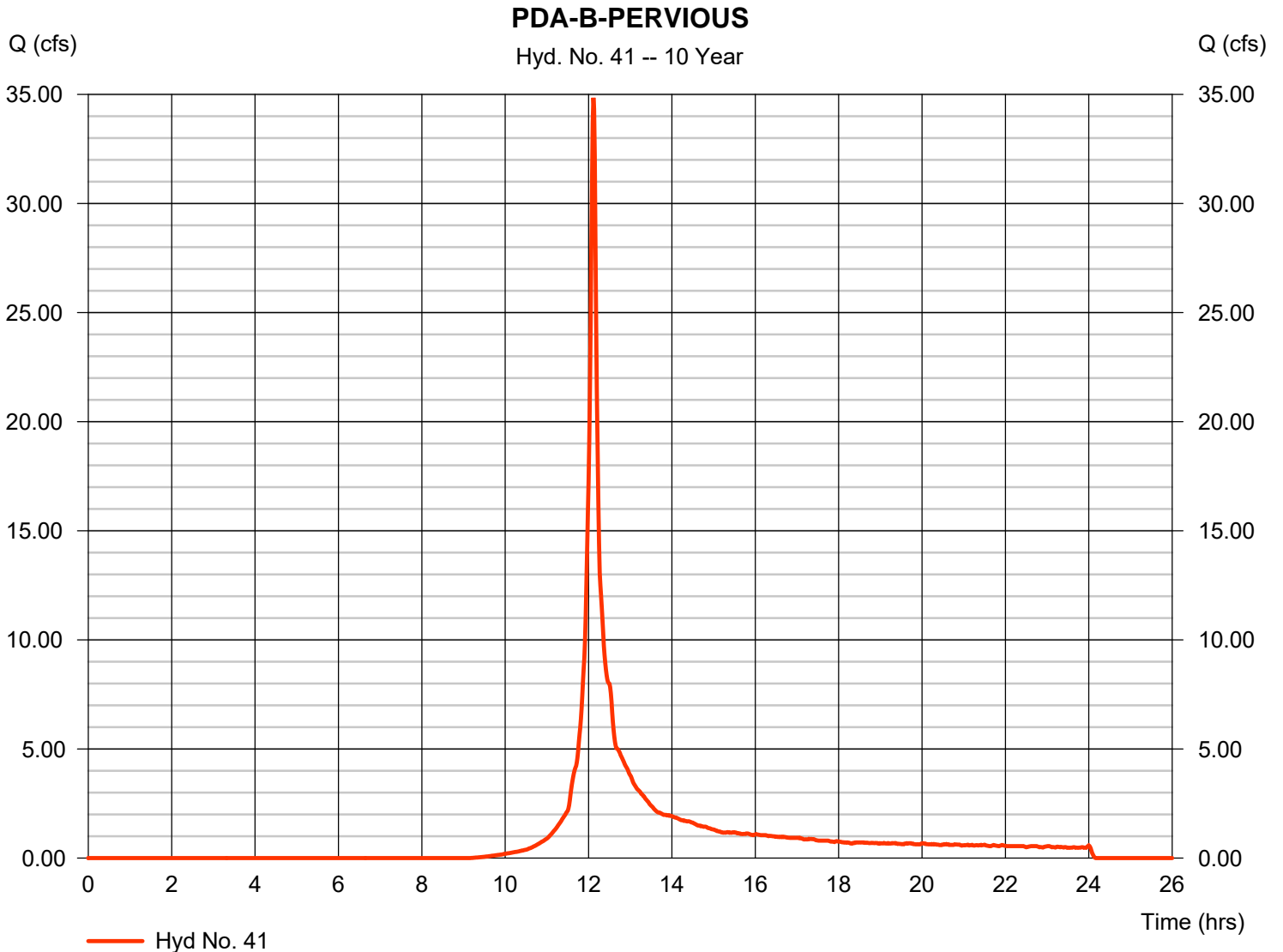
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Wednesday, 03 / 9 / 2022

Hyd. No. 41

PDA-B-PERVIOUS

Hydrograph type	= SCS Runoff	Peak discharge	= 34.85 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.12 hrs
Time interval	= 1 min	Hyd. volume	= 96,055 cuft
Drainage area	= 11.930 ac	Curve number	= 74
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 6.00 min
Total precip.	= 4.73 in	Distribution	= Custom
Storm duration	= R:\Hydroflow Standards\NJ Reg Storm Rainfall Distribution\40A_C_1 min.cds		



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

Wednesday, 03 / 9 / 2022

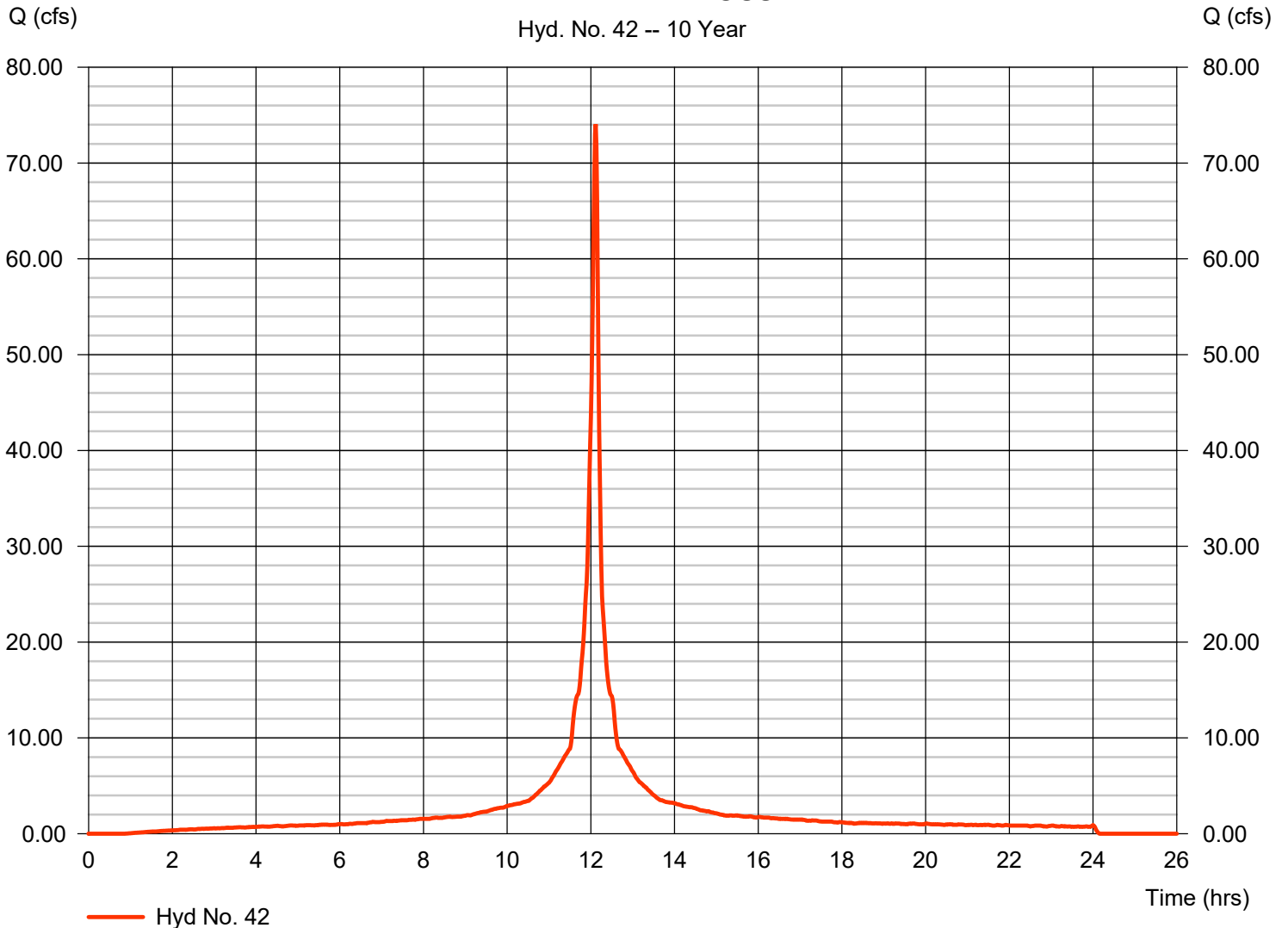
Hyd. No. 42

PDA-B1-IMPERVIOUS

Hydrograph type	= SCS Runoff	Peak discharge	= 74.05 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.12 hrs
Time interval	= 1 min	Hyd. volume	= 240,548 cuft
Drainage area	= 14.300 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 6.00 min
Total precip.	= 4.73 in	Distribution	= Custom
Storm duration	= R:\Hydroflow Standards\NJ Reg Storm Rainfall Distribution\40A_C_1 min.cds		

PDA-B1-IMPERVIOUS

Hyd. No. 42 -- 10 Year



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

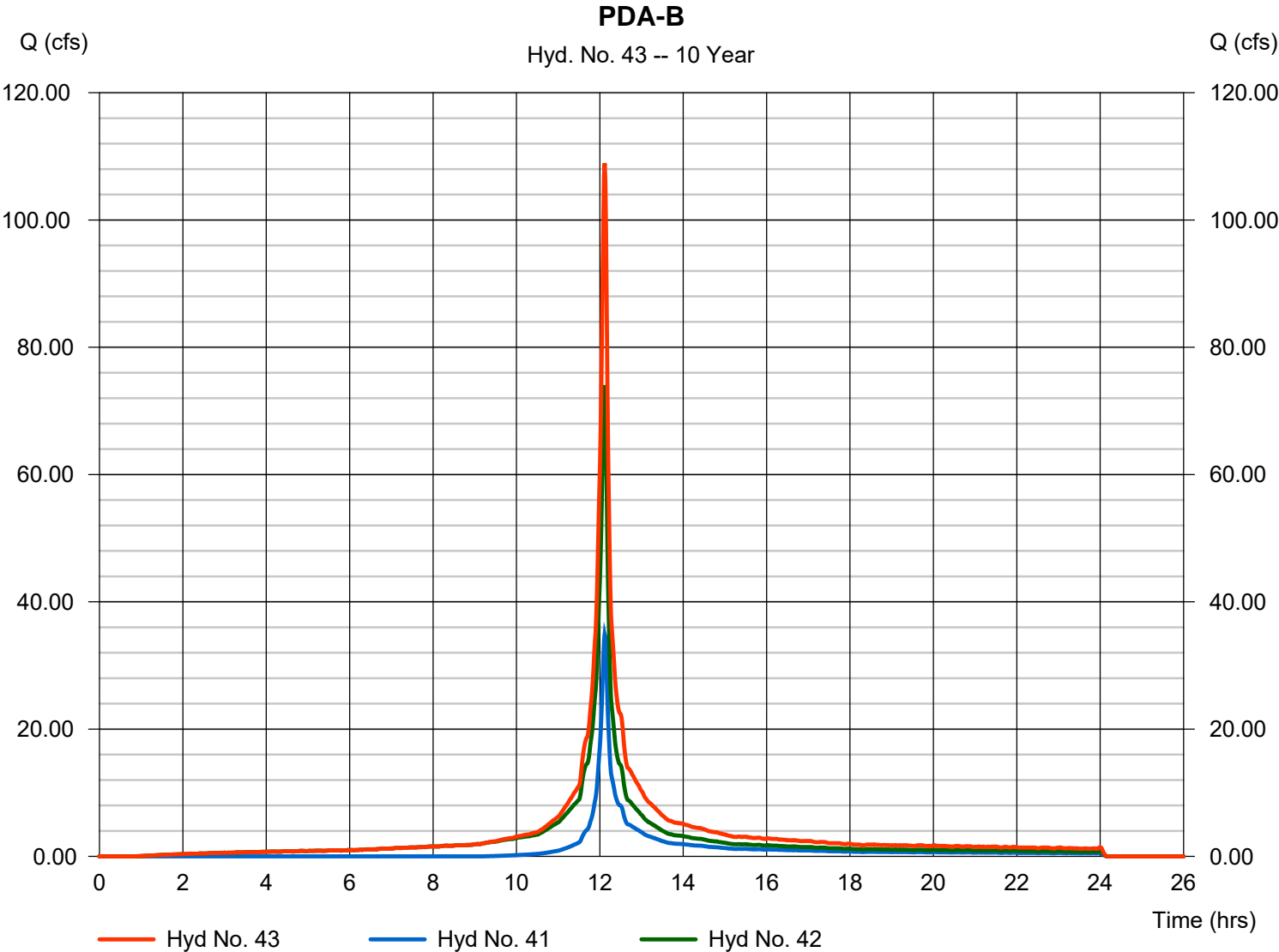
Wednesday, 03 / 9 / 2022

Hyd. No. 43

PDA-B

Hydrograph type = Combine
Storm frequency = 10 yrs
Time interval = 1 min
Inflow hyds. = 41, 42

Peak discharge = 108.90 cfs
Time to peak = 12.12 hrs
Hyd. volume = 336,603 cuft
Contrib. drain. area = 26.230 ac



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

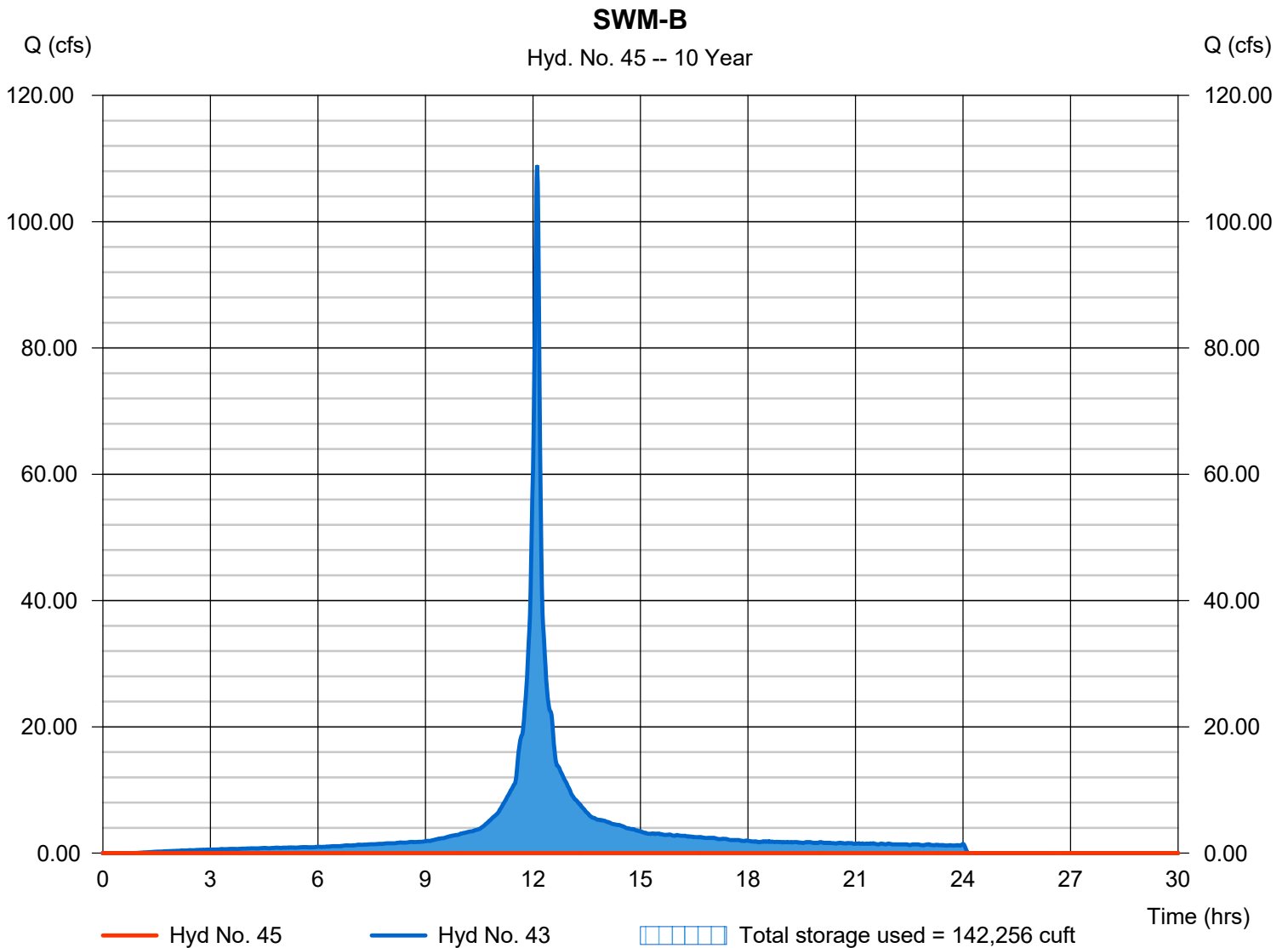
Wednesday, 03 / 9 / 2022

Hyd. No. 45

SWM-B

Hydrograph type	= Reservoir	Peak discharge	= 0.000 cfs
Storm frequency	= 10 yrs	Time to peak	= 13.17 hrs
Time interval	= 1 min	Hyd. volume	= 0 cuft
Inflow hyd. No.	= 43 - PDA-B	Max. Elevation	= 599.00 ft
Reservoir name	= SWM-B1	Max. Storage	= 142,256 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Hydrograph Report

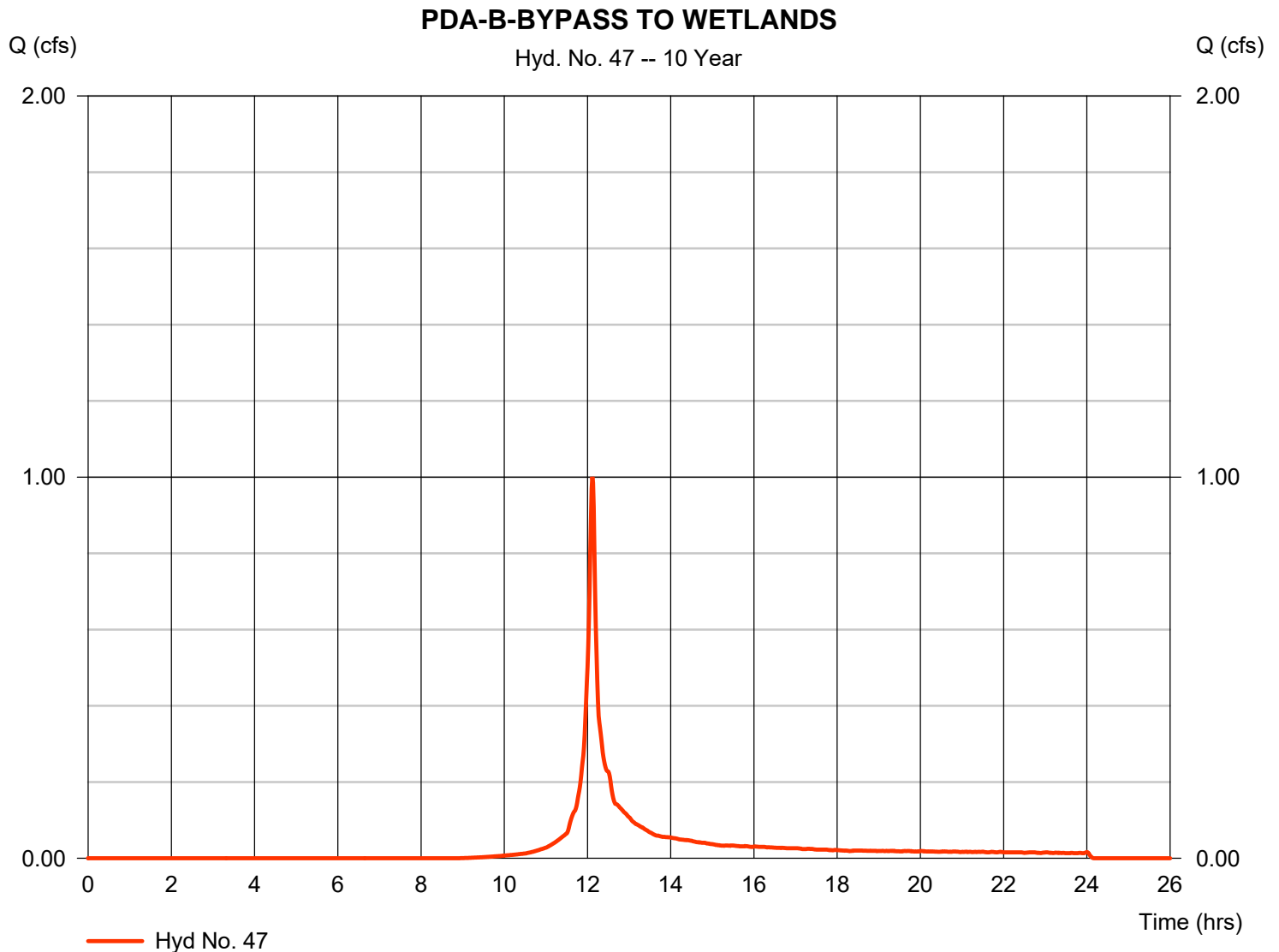
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

Wednesday, 03 / 9 / 2022

Hyd. No. 47

PDA-B-BYPASS TO WETLANDS

Hydrograph type	= SCS Runoff	Peak discharge	= 1.001 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.12 hrs
Time interval	= 1 min	Hyd. volume	= 2,757 cuft
Drainage area	= 0.330 ac	Curve number	= 75
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 6.00 min
Total precip.	= 4.73 in	Distribution	= Custom
Storm duration	= R:\Hydroflow Standards\NJ Reg Storm Rainfall Distribution\401A_C_1 min.cds		



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

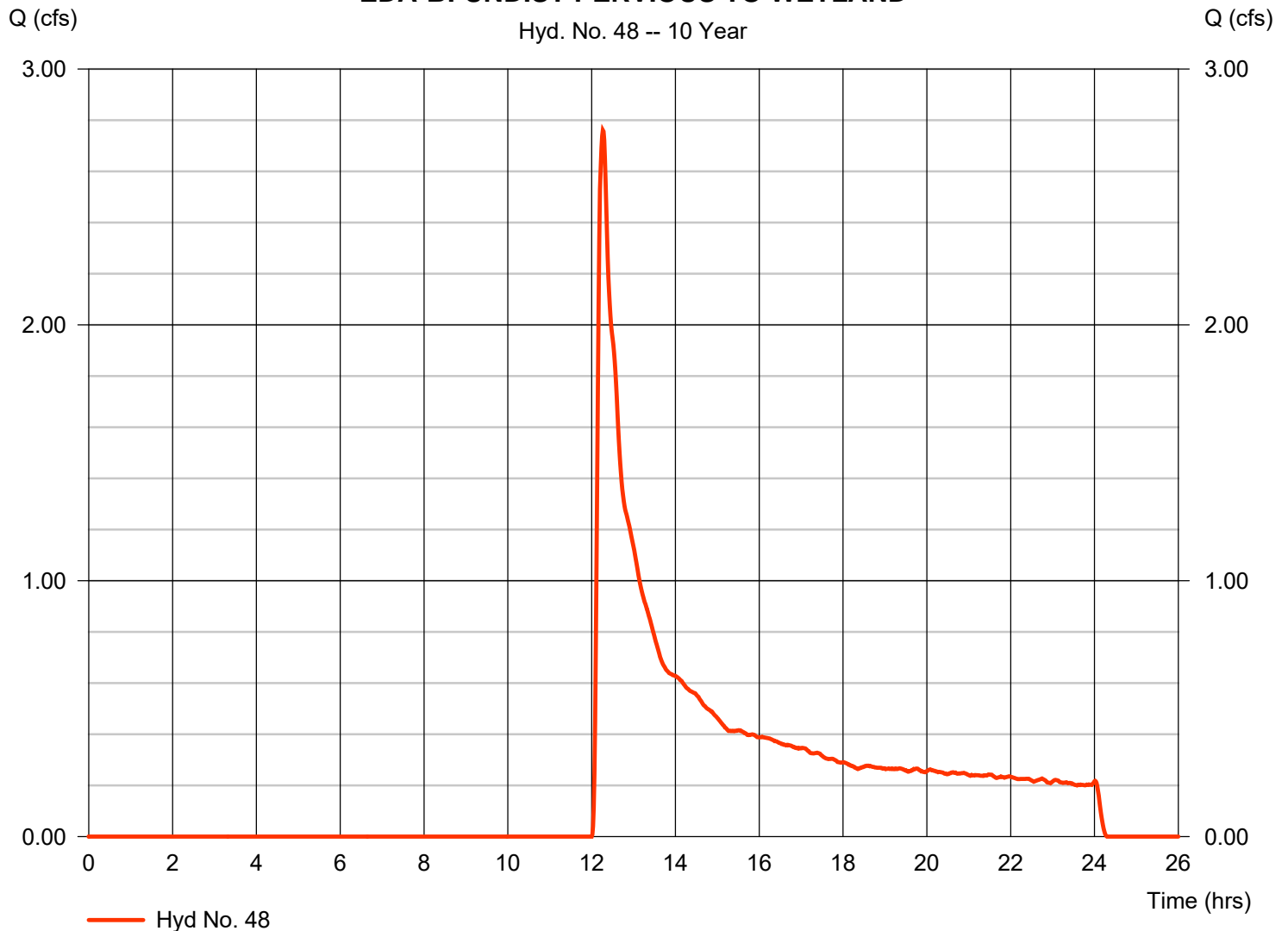
Wednesday, 03 / 9 / 2022

Hyd. No. 48

EDA-B: UNDIST PERVIOUS TO WETLAND

Hydrograph type	= SCS Runoff	Peak discharge	= 2.760 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.27 hrs
Time interval	= 1 min	Hyd. volume	= 20,025 cuft
Drainage area	= 12.170 ac	Curve number	= 47
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.70 min
Total precip.	= 4.73 in	Distribution	= Custom
Storm duration	= R:\Hydroflow Standards\NJ Reg Storm Rainfall Distribution\48AA_C_1 min.cds		

EDA-B: UNDIST PERVIOUS TO WETLAND



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

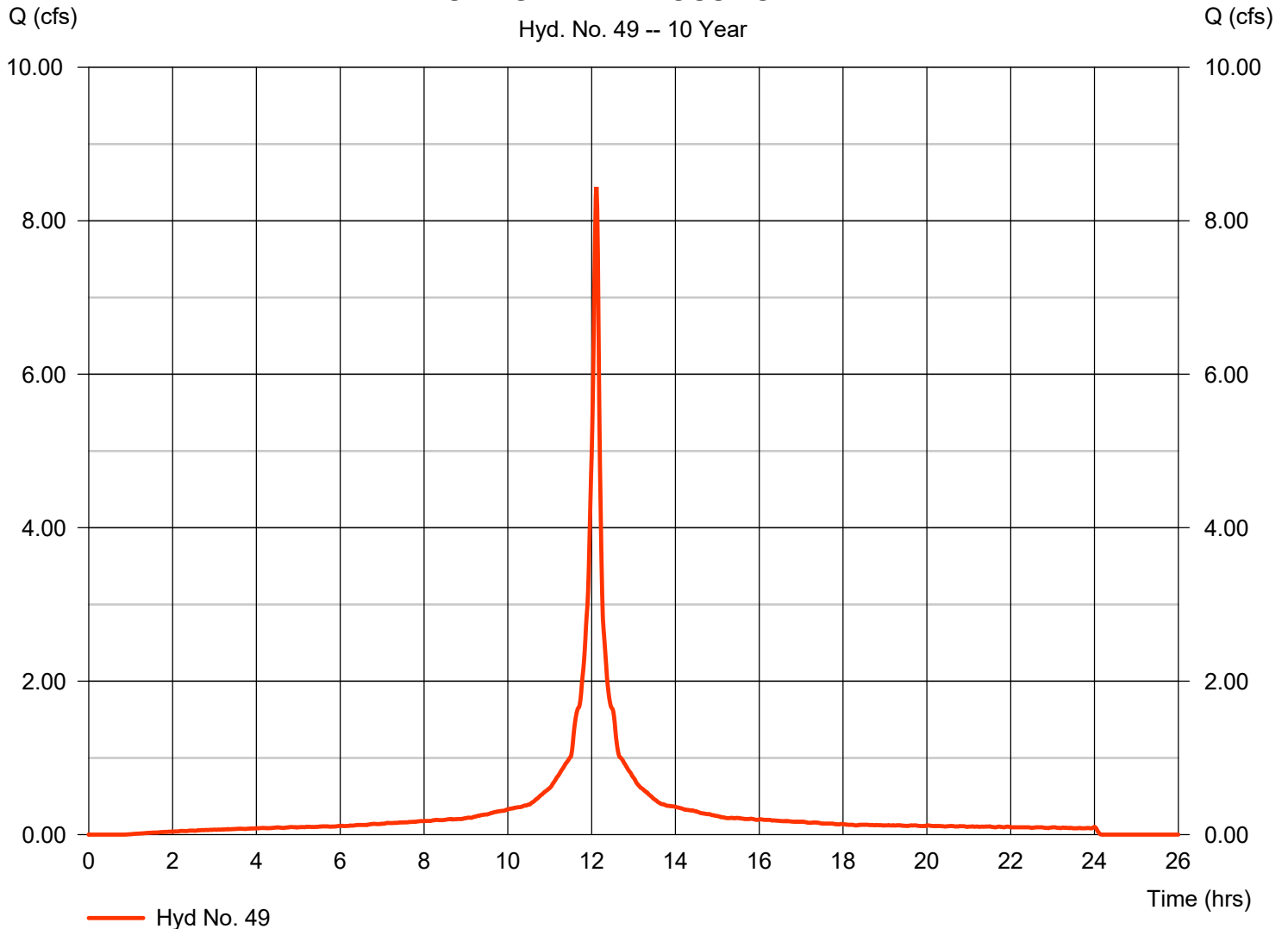
Wednesday, 03 / 9 / 2022

Hyd. No. 49

EDA-B:UNDIST IMPERVIOUS TO WETLAND

Hydrograph type	= SCS Runoff	Peak discharge	= 8.441 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.12 hrs
Time interval	= 1 min	Hyd. volume	= 27,419 cuft
Drainage area	= 1.630 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 6.00 min
Total precip.	= 4.73 in	Distribution	= Custom
Storm duration	= R:\Hydroflow Standards\NJ Reg Slope Rainfall Distribution\49A_C_1 min.cds		

EDA-B:UNDIST IMPERVIOUS TO WETLAND



Hydrograph Report

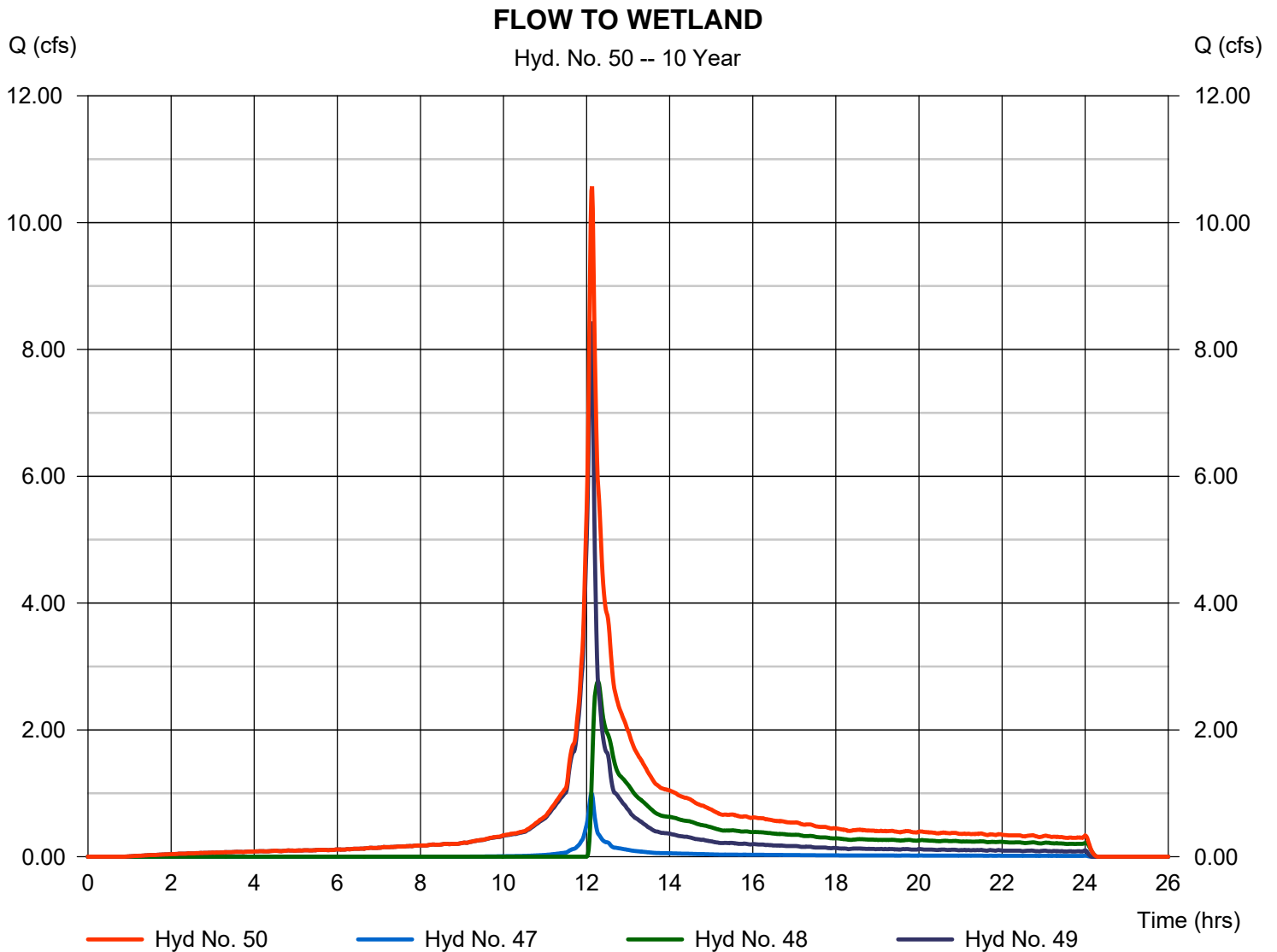
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Wednesday, 03 / 9 / 2022

Hyd. No. 50

FLOW TO WETLAND

Hydrograph type	= Combine	Peak discharge	= 10.57 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.13 hrs
Time interval	= 1 min	Hyd. volume	= 50,202 cuft
Inflow hyds.	= 47, 48, 49	Contrib. drain. area	= 14.130 ac



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

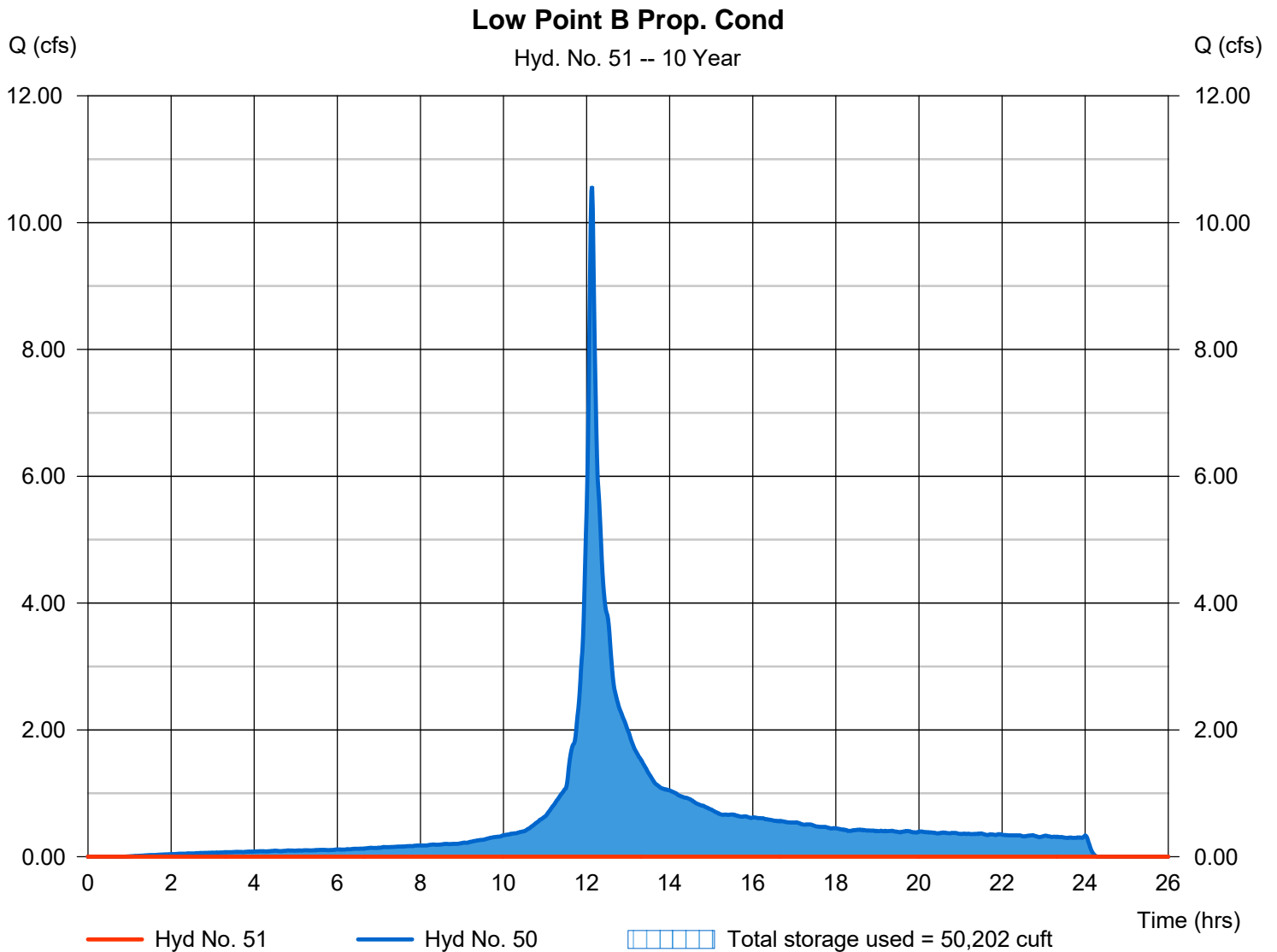
Wednesday, 03 / 9 / 2022

Hyd. No. 51

Low Point B Prop. Cond

Hydrograph type	= Reservoir	Peak discharge	= 0.000 cfs
Storm frequency	= 10 yrs	Time to peak	= n/a
Time interval	= 1 min	Hyd. volume	= 0 cuft
Inflow hyd. No.	= 50 - FLOW TO WETLAND	Max. Elevation	= 595.95 ft
Reservoir name	= Low Point B	Max. Storage	= 50,202 cuft

Storage Indication method used.



Hydrograph Report

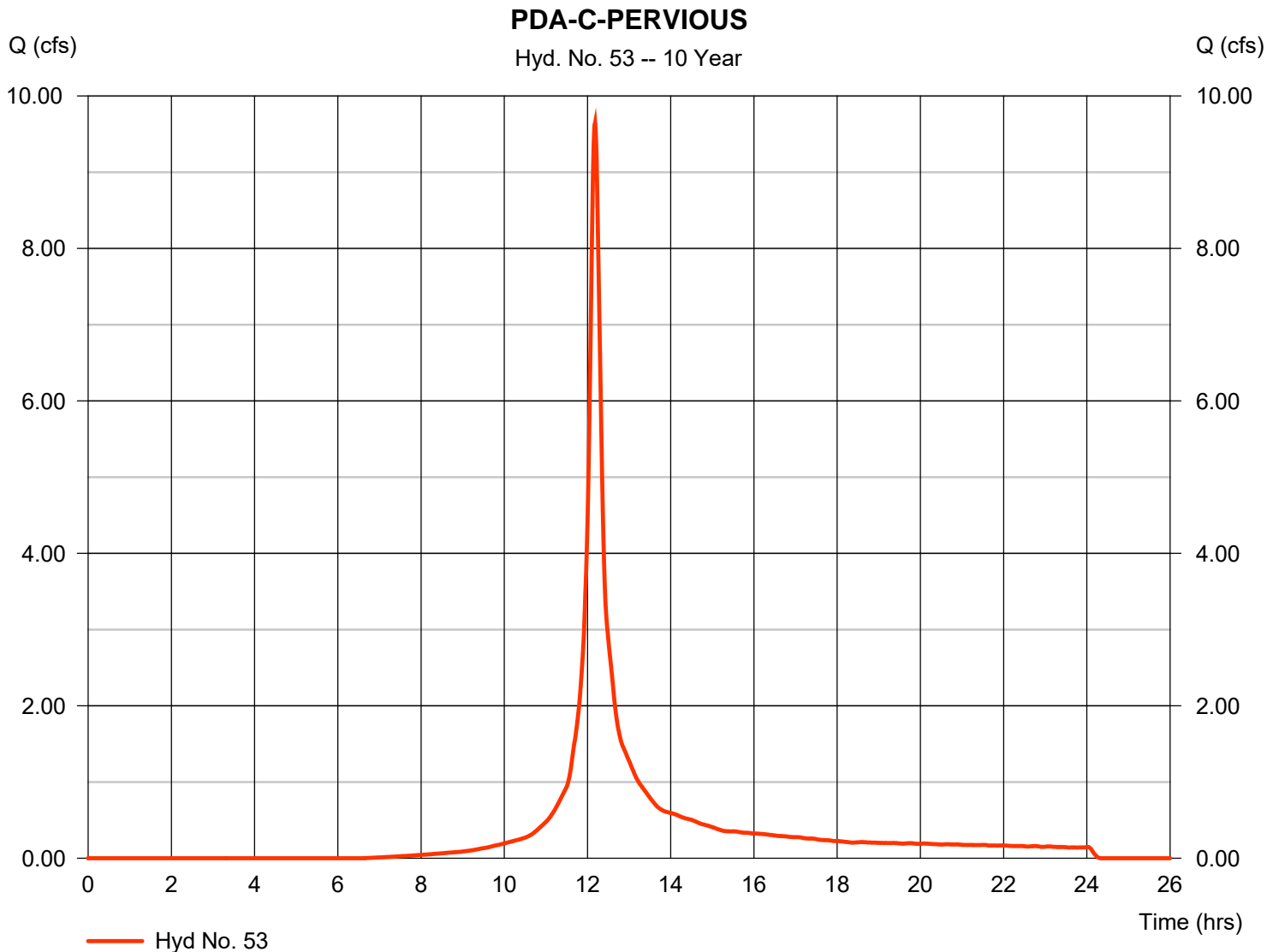
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

Wednesday, 03 / 9 / 2022

Hyd. No. 53

PDA-C-PERVIOUS

Hydrograph type	= SCS Runoff	Peak discharge	= 9.647 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.18 hrs
Time interval	= 1 min	Hyd. volume	= 33,409 cuft
Drainage area	= 3.190 ac	Curve number	= 83
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 12.70 min
Total precip.	= 4.73 in	Distribution	= Custom
Storm duration	= R:\Hydroflow Standards\NJ Reg Storm Rainfall Distribution\NOAA_C_1 min.cds		



Hydrograph Report

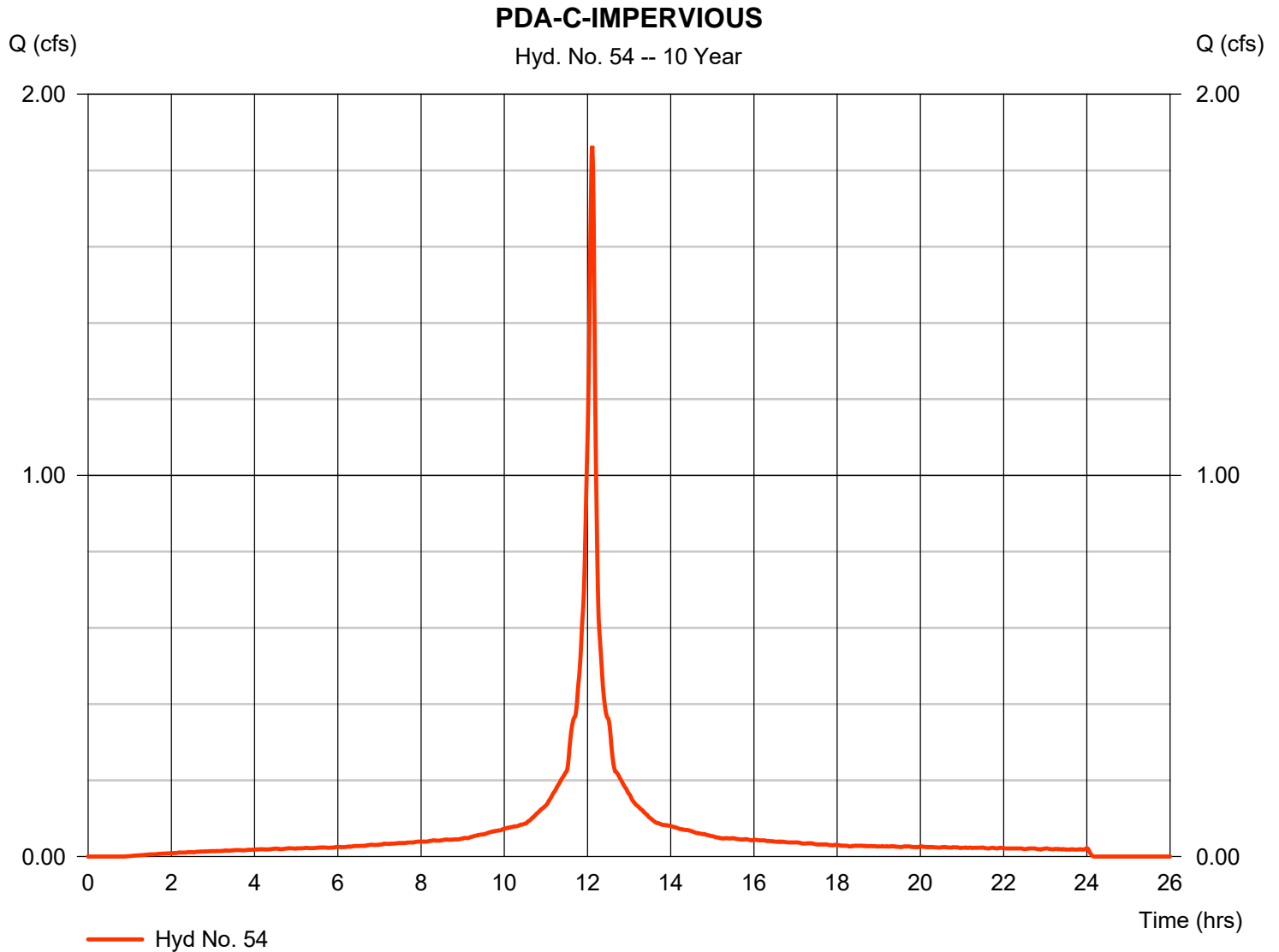
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

Wednesday, 03 / 9 / 2022

Hyd. No. 54

PDA-C-IMPERVIOUS

Hydrograph type	= SCS Runoff	Peak discharge	= 1.864 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.12 hrs
Time interval	= 1 min	Hyd. volume	= 6,056 cuft
Drainage area	= 0.360 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 6.00 min
Total precip.	= 4.73 in	Distribution	= Custom
Storm duration	= R:\Hydroflow Standards\NJ Reg Storm Rainfall Distribution\401A_C_1 min.cds		



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

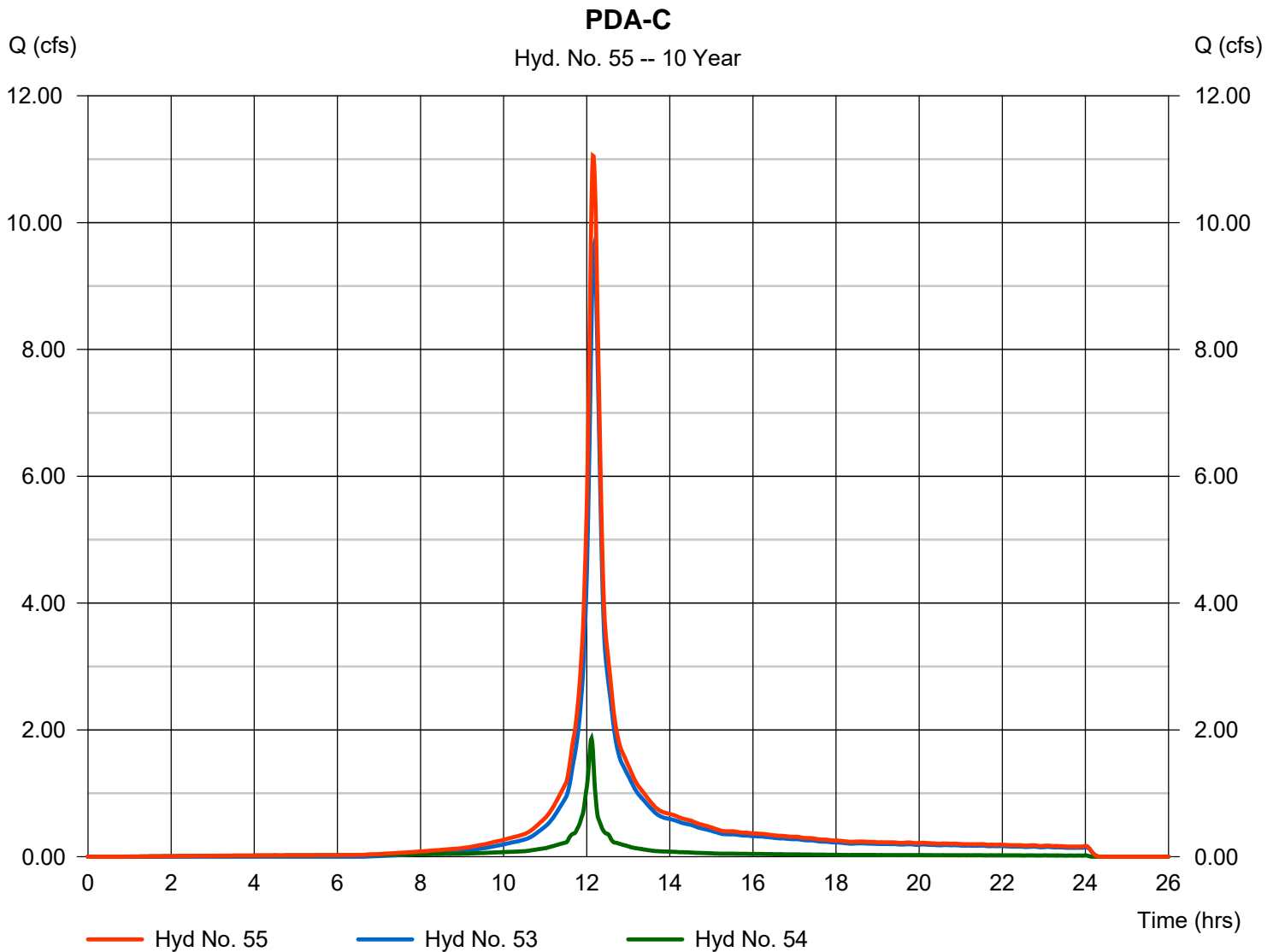
Wednesday, 03 / 9 / 2022

Hyd. No. 55

PDA-C

Hydrograph type = Combine
Storm frequency = 10 yrs
Time interval = 1 min
Inflow hyds. = 53, 54

Peak discharge = 11.05 cfs
Time to peak = 12.15 hrs
Hyd. volume = 39,464 cuft
Contrib. drain. area = 3.550 ac



Hydrograph Report

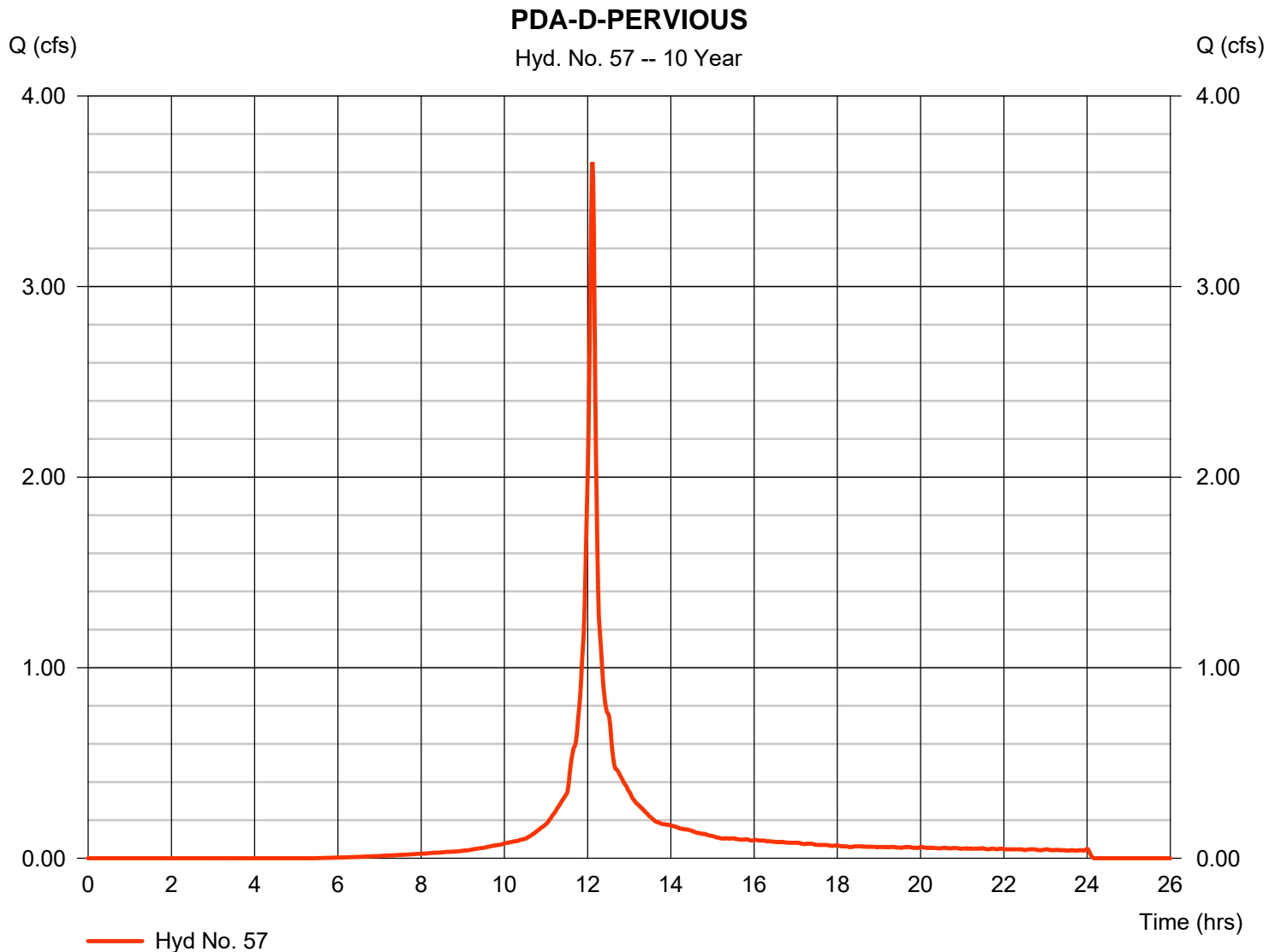
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

Wednesday, 03 / 9 / 2022

Hyd. No. 57

PDA-D-PERVIOUS

Hydrograph type	= SCS Runoff	Peak discharge	= 3.653 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.12 hrs
Time interval	= 1 min	Hyd. volume	= 10,353 cuft
Drainage area	= 0.860 ac	Curve number	= 86
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 6.00 min
Total precip.	= 4.73 in	Distribution	= Custom
Storm duration	= R:\Hydroflow Standards\NJ Reg Storm Rainfall Distribution\401A_C_1 min.cds		



Hydrograph Report

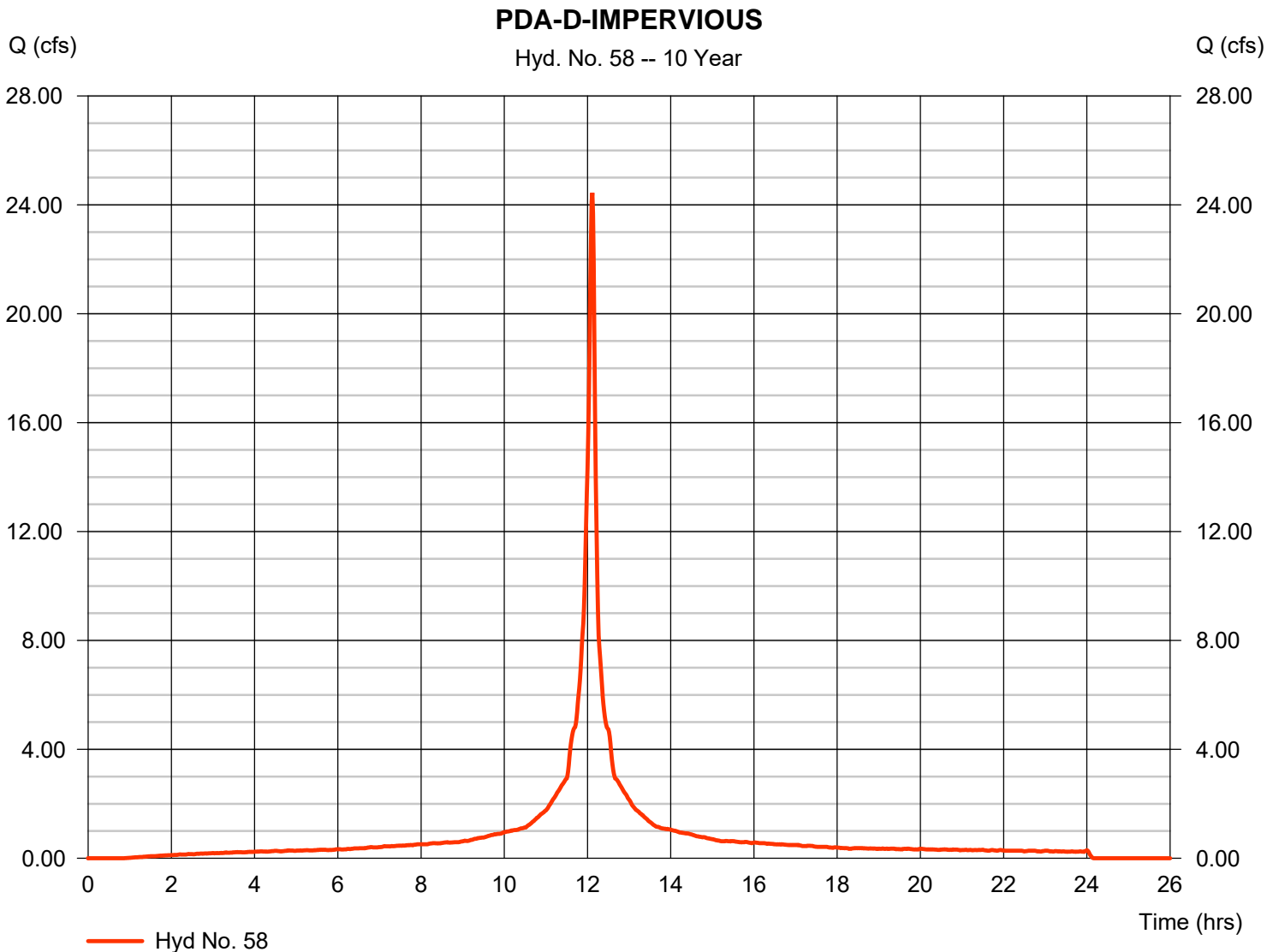
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

Wednesday, 03 / 9 / 2022

Hyd. No. 58

PDA-D-IMPERVIOUS

Hydrograph type	= SCS Runoff	Peak discharge	= 24.44 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.12 hrs
Time interval	= 1 min	Hyd. volume	= 79,398 cuft
Drainage area	= 4.720 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 6.00 min
Total precip.	= 4.73 in	Distribution	= Custom
Storm duration	= R:\Hydroflow Standards\NJ Reg Slope Rainfall Distribution\MOA_C_1 min.cds		



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

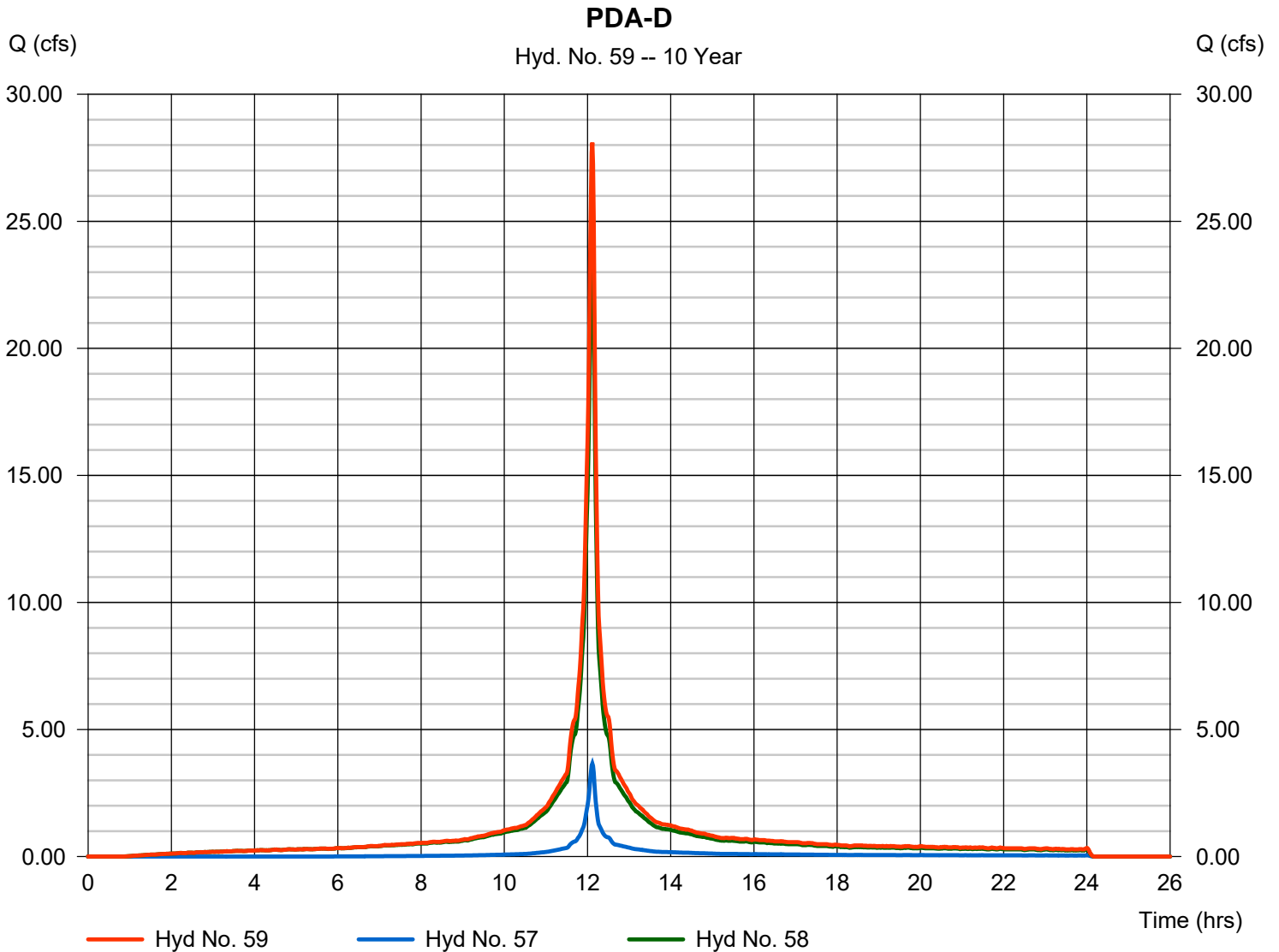
Wednesday, 03 / 9 / 2022

Hyd. No. 59

PDA-D

Hydrograph type = Combine
 Storm frequency = 10 yrs
 Time interval = 1 min
 Inflow hyds. = 57, 58

Peak discharge = 28.10 cfs
 Time to peak = 12.12 hrs
 Hyd. volume = 89,751 cuft
 Contrib. drain. area = 5.580 ac



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

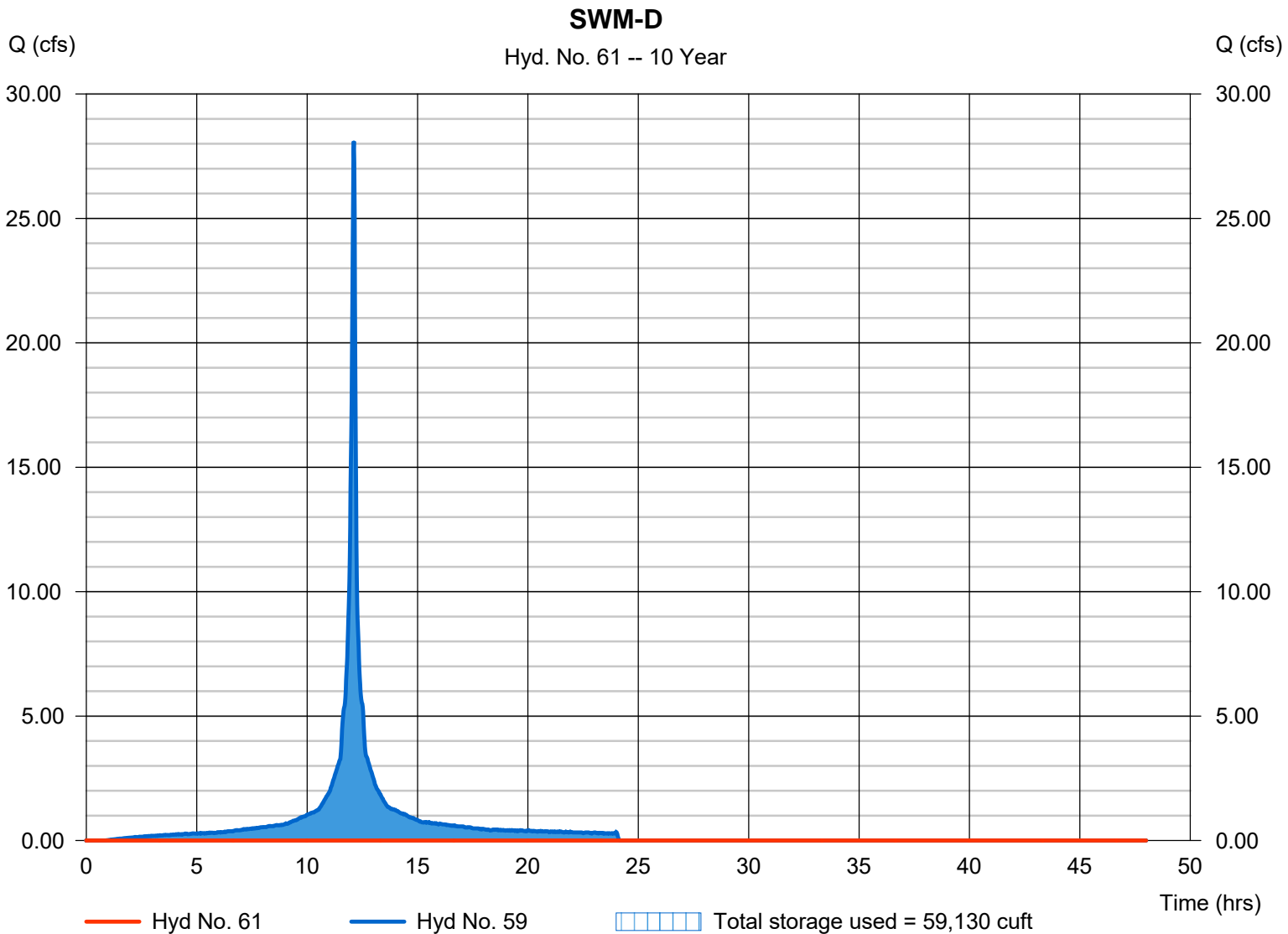
Wednesday, 03 / 9 / 2022

Hyd. No. 61

SWM-D

Hydrograph type	= Reservoir	Peak discharge	= 0.000 cfs
Storm frequency	= 10 yrs	Time to peak	= 10.70 hrs
Time interval	= 1 min	Hyd. volume	= 0 cuft
Inflow hyd. No.	= 59 - PDA-D	Max. Elevation	= 602.67 ft
Reservoir name	= SWM-D	Max. Storage	= 59,130 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Hydrograph Report

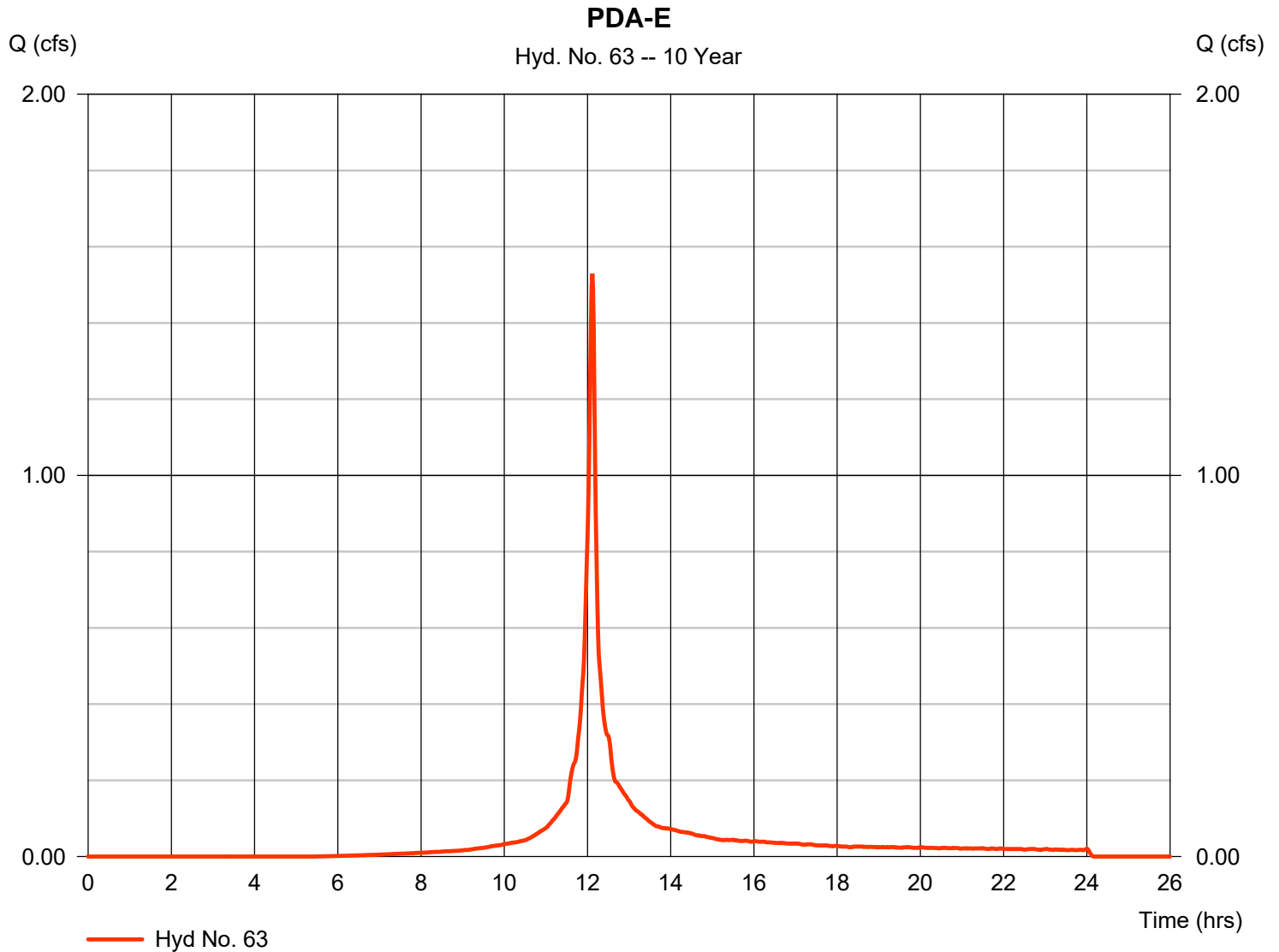
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

Wednesday, 03 / 9 / 2022

Hyd. No. 63

PDA-E

Hydrograph type	= SCS Runoff	Peak discharge	= 1.529 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.12 hrs
Time interval	= 1 min	Hyd. volume	= 4,334 cuft
Drainage area	= 0.360 ac	Curve number	= 86
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 6.00 min
Total precip.	= 4.73 in	Distribution	= Custom
Storm duration	= R:\Hydroflow Standards\NJ Reg Storm Rainfall Distribution\NOAA_C_1 min.cds		



Hydrograph Report

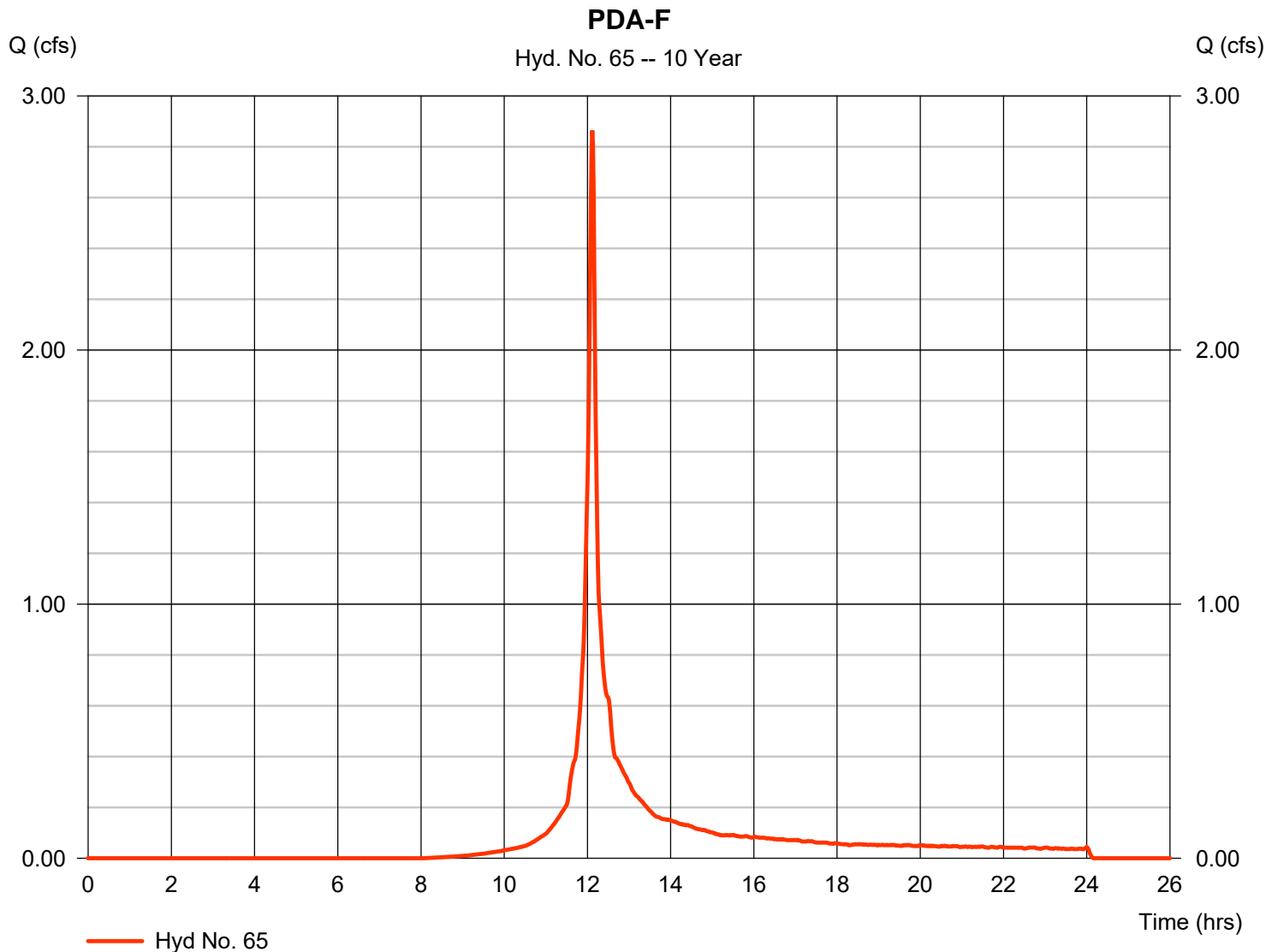
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Wednesday, 03 / 9 / 2022

Hyd. No. 65

PDA-F

Hydrograph type	= SCS Runoff	Peak discharge	= 2.864 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.12 hrs
Time interval	= 1 min	Hyd. volume	= 7,904 cuft
Drainage area	= 0.850 ac	Curve number	= 78
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 6.00 min
Total precip.	= 4.73 in	Distribution	= Custom
Storm duration	= R:\Hydroflow Standards\NJ Reg Storm Rainfall Distribution\NOAA_C_1 min.cds		



Hydrograph Report

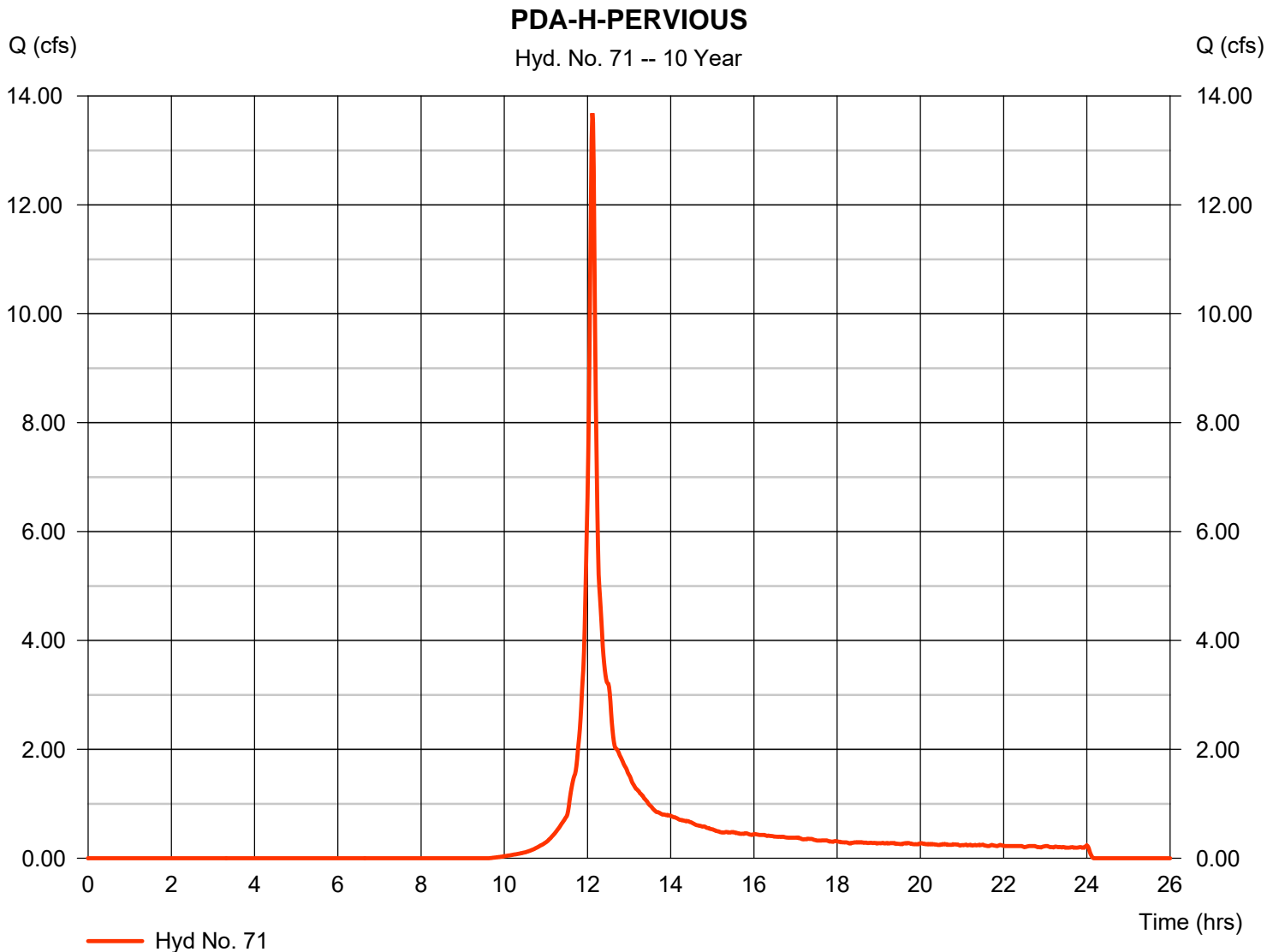
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

Wednesday, 03 / 9 / 2022

Hyd. No. 71

PDA-H-PERVIOUS

Hydrograph type	= SCS Runoff	Peak discharge	= 13.68 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.12 hrs
Time interval	= 1 min	Hyd. volume	= 37,808 cuft
Drainage area	= 5.070 ac	Curve number	= 72
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 6.00 min
Total precip.	= 4.73 in	Distribution	= Custom
Storm duration	= R:\Hydroflow Standards\NJ Reg Slope Rainfall Distribution\NOAA_C_1 min.cds		



Hydrograph Report

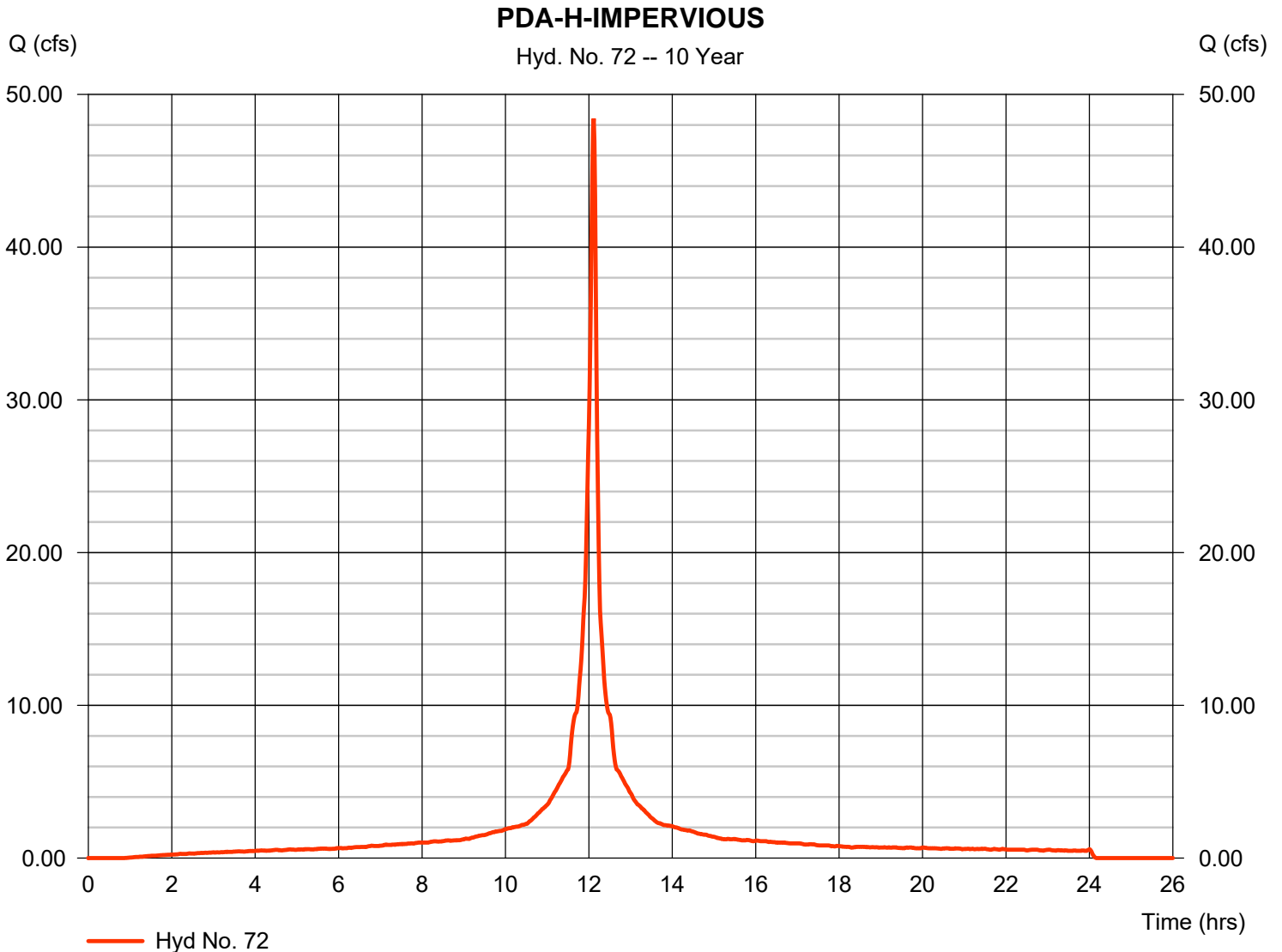
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

Wednesday, 03 / 9 / 2022

Hyd. No. 72

PDA-H-IMPERVIOUS

Hydrograph type	= SCS Runoff	Peak discharge	= 48.42 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.12 hrs
Time interval	= 1 min	Hyd. volume	= 157,282 cuft
Drainage area	= 9.350 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 6.00 min
Total precip.	= 4.73 in	Distribution	= Custom
Storm duration	= R:\Hydroflow Standards\NJ Reg Storm Rainfall Distribution\NOAA_C_1 min.cds		



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

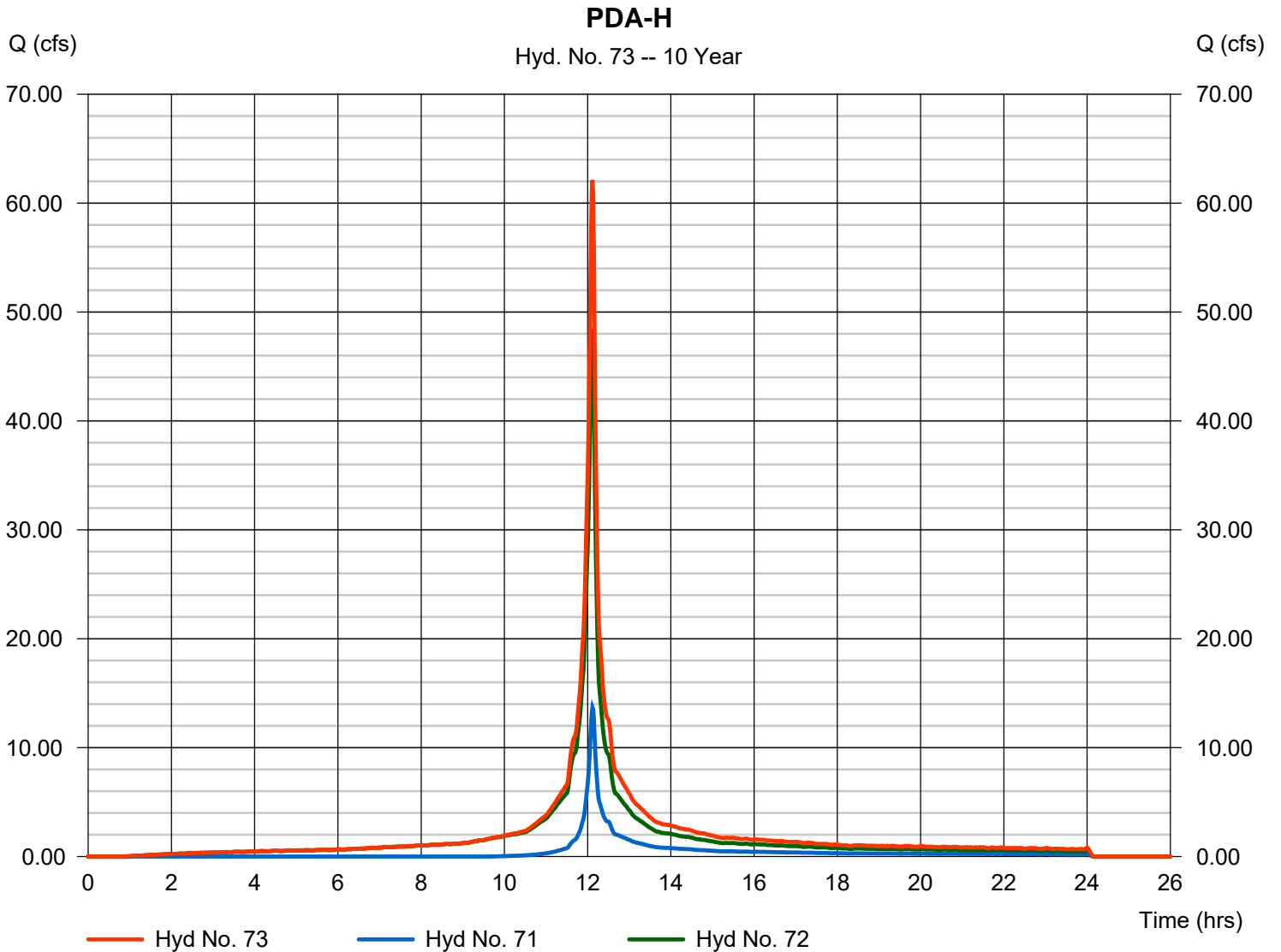
Wednesday, 03 / 9 / 2022

Hyd. No. 73

PDA-H

Hydrograph type = Combine
 Storm frequency = 10 yrs
 Time interval = 1 min
 Inflow hyds. = 71, 72

Peak discharge = 62.10 cfs
 Time to peak = 12.12 hrs
 Hyd. volume = 195,089 cuft
 Contrib. drain. area = 14.420 ac



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

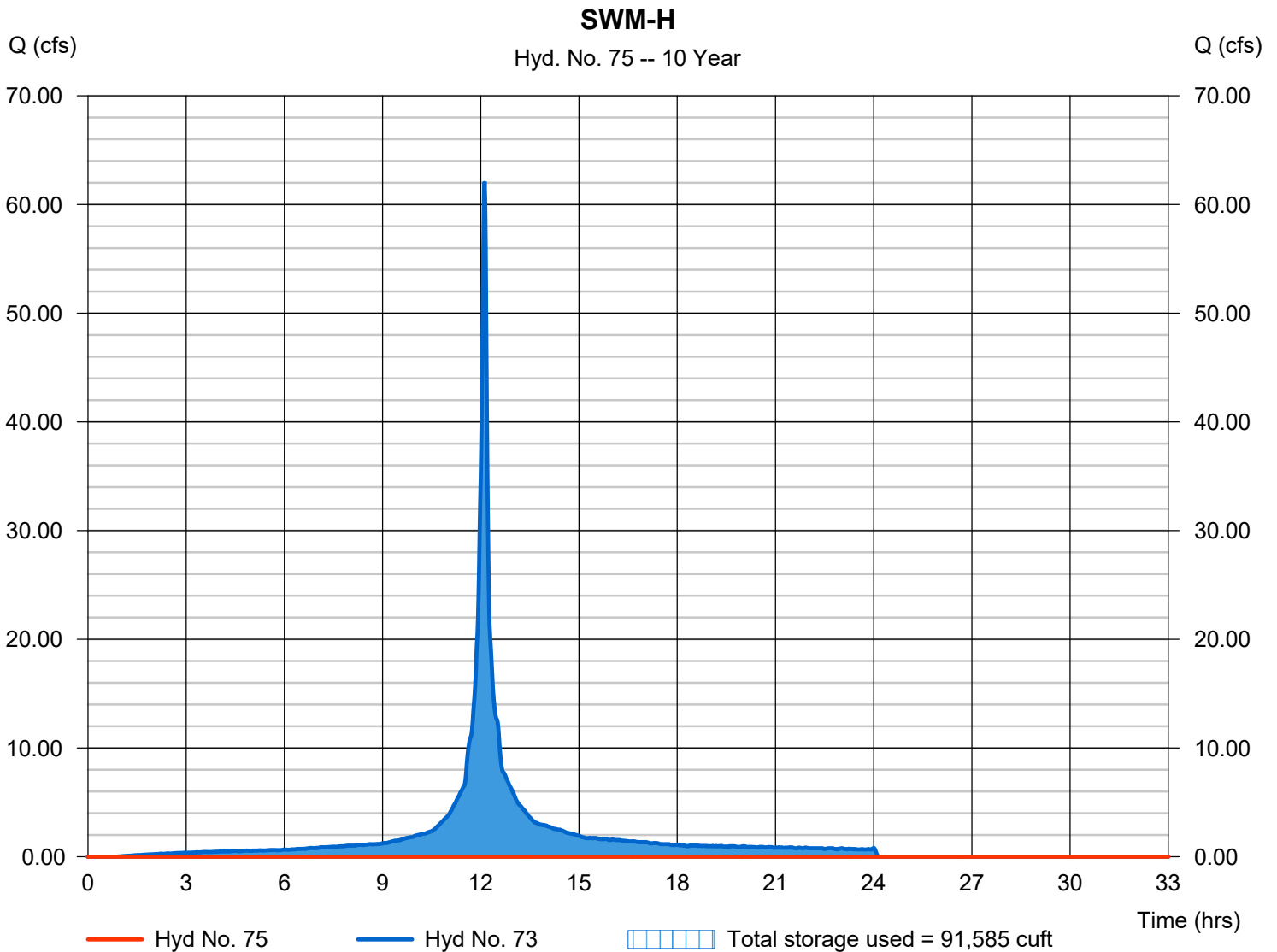
Wednesday, 03 / 9 / 2022

Hyd. No. 75

SWM-H

Hydrograph type	= Reservoir	Peak discharge	= 0.000 cfs
Storm frequency	= 10 yrs	Time to peak	= 11.88 hrs
Time interval	= 1 min	Hyd. volume	= 0 cuft
Inflow hyd. No.	= 73 - PDA-H	Max. Elevation	= 598.21 ft
Reservoir name	= SWM-H	Max. Storage	= 91,585 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Hydrograph Report

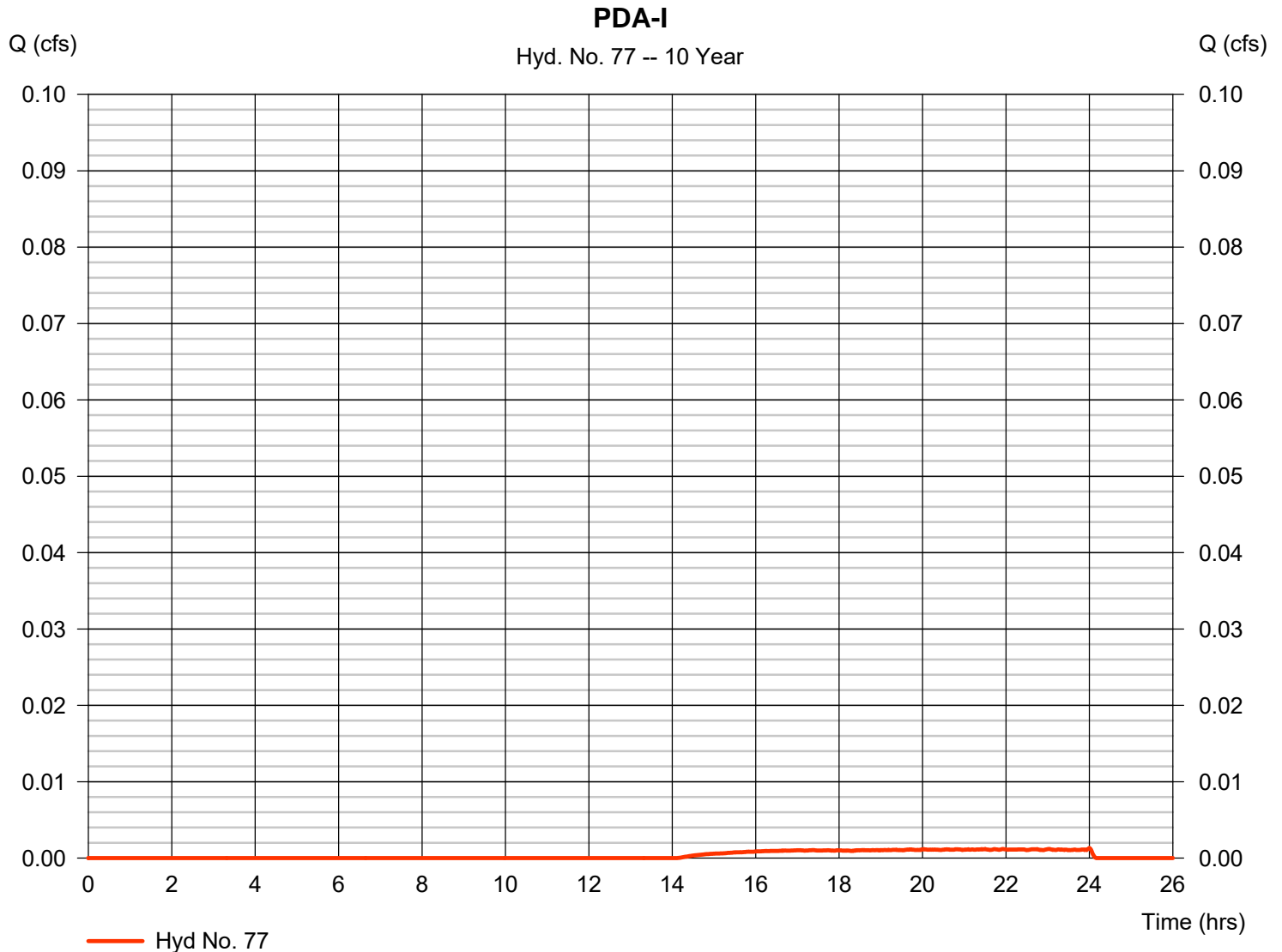
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

Wednesday, 03 / 9 / 2022

Hyd. No. 77

PDA-I

Hydrograph type	= SCS Runoff	Peak discharge	= 0.001 cfs
Storm frequency	= 10 yrs	Time to peak	= 24.00 hrs
Time interval	= 1 min	Hyd. volume	= 35 cuft
Drainage area	= 0.260 ac	Curve number	= 34
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 6.00 min
Total precip.	= 4.73 in	Distribution	= Custom
Storm duration	= R:\Hydroflow Standards\NJ Reg Slope Rainfall Distribution\NOAA_C_1 min.cds		



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

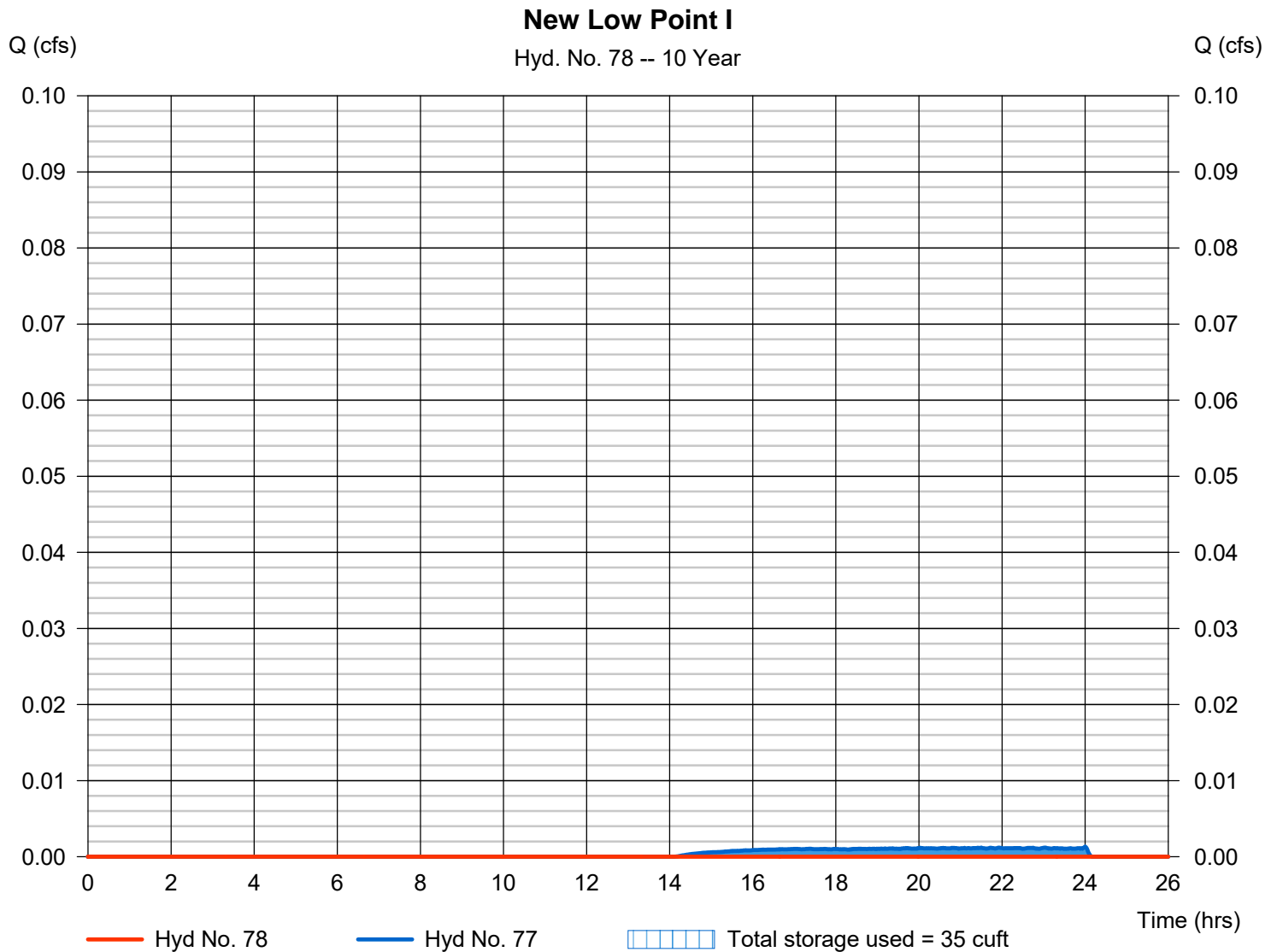
Wednesday, 03 / 9 / 2022

Hyd. No. 78

New Low Point I

Hydrograph type	= Reservoir	Peak discharge	= 0.000 cfs
Storm frequency	= 10 yrs	Time to peak	= n/a
Time interval	= 1 min	Hyd. volume	= 0 cuft
Inflow hyd. No.	= 77 - PDA-I	Max. Elevation	= 597.10 ft
Reservoir name	= New Low Point I	Max. Storage	= 35 cuft

Storage Indication method used.



Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

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	27.23	1	735	112,248	----	----	----	EDA - A: PERVIOUS	
2	SCS Runoff	8.078	1	734	38,532	----	----	----	EDA-A:IMPERVIOUS	
3	Combine	35.30	1	735	150,780	1, 2	----	----	EDA-A	
4	Reservoir	27.91	1	743	150,624	3	596.26	11,183	Low Point A	
6	SCS Runoff	14.45	1	746	87,943	----	----	----	EDA-B: PERVIOUS DIST	
7	SCS Runoff	6.290	1	741	36,157	----	----	----	EDA-B: IMPERVIOUS DIST	
8	Combine	20.46	1	744	124,100	6, 7	----	----	EDA-B-DIST	
10	SCS Runoff	20.57	1	731	76,956	----	----	----	EDA-B-PERVIOUS UNDIST	
11	SCS Runoff	13.45	1	727	44,363	----	----	----	EDA-B-IMPERVIOUS UNDIST	
12	Combine	31.56	1	729	121,320	10, 11	----	----	EDA-B-UNDIST	
14	Combine	42.34	1	730	245,420	8, 12,	----	----	EDA-B	
15	Reservoir	0.000	1	n/a	0	14	598.83	245,420	Low Point B	
17	SCS Runoff	15.73	1	731	54,675	----	----	----	EDA-C: PERVIOUS	
18	SCS Runoff	9.571	1	727	31,571	----	----	----	EDA-C:IMPERVIOUS	
19	Combine	24.00	1	728	86,247	17, 18	----	----	EDA-C	
21	SCS Runoff	20.91	1	729	65,881	----	----	----	EDA-D	
22	Reservoir	0.000	1	n/a	0	21	597.52	65,881	Low Point D	
24	SCS Runoff	25.00	1	730	83,643	----	----	----	EDA-E	
26	SCS Runoff	5.610	1	729	17,793	----	----	----	EDA-F	
29	SCS Runoff	3.352	1	760	33,535	----	----	----	EDA-H	
30	Reservoir	0.000	1	n/a	0	29	597.42	33,535	Low Point H	
32	SCS Runoff	0.064	1	774	1,222	----	----	----	EDA-I	
33	Reservoir	0.000	1	n/a	0	32	597.15	1,222	Low Point I	
35	SCS Runoff	16.38	1	727	46,347	----	----	----	PDA-A-PERVIOUS	
36	SCS Runoff	22.03	1	727	72,669	----	----	----	PDA-A-IMPERVIOUS	
37	Combine	38.41	1	727	119,016	35, 36	----	----	PDA-A	
39	Reservoir	22.30	1	731	49,402	37	596.91	31,439	SWM-A	
41	SCS Runoff	72.03	1	727	200,515	----	----	----	PDA-B-PERVIOUS	
Hydrologic Calculations - Water Quantity.gpw					Return Period: 100 Year			Wednesday, 03 / 9 / 2022		

Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

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	
42	SCS Runoff	117.99	1	727	389,200	----	----	----	PDA-B1-IMPERVIOUS	
43	Combine	190.02	1	727	589,715	41, 42	----	----	PDA-B	
45	Reservoir	0.000	1	1018	0	43	599.89	275,582	SWM-B	
47	SCS Runoff	2.037	1	727	5,685	----	----	----	PDA-B-BYPASS TO WETLANDS	
48	SCS Runoff	20.08	1	731	75,105	----	----	----	EDA-B: UNDIST PERVIOUS TO WE	
49	SCS Runoff	13.45	1	727	44,363	----	----	----	EDA-B:UNDIST IMPERVIOUS TO W	
50	Combine	32.94	1	729	125,153	47, 48, 49	----	----	FLOW TO WETLAND	
51	Reservoir	0.000	1	n/a	0	50	597.28	125,153	Low Point B Prop. Cond	
53	SCS Runoff	17.67	1	731	62,815	----	----	----	PDA-C-PERVIOUS	
54	SCS Runoff	2.970	1	727	9,798	----	----	----	PDA-C-IMPERVIOUS	
55	Combine	19.97	1	729	72,614	53, 54	----	----	PDA-C	
57	SCS Runoff	6.429	1	727	18,857	----	----	----	PDA-D-PERVIOUS	
58	SCS Runoff	38.94	1	727	128,463	----	----	----	PDA-D-IMPERVIOUS	
59	Combine	45.37	1	727	147,320	57, 58	----	----	PDA-D	
61	Reservoir	0.000	1	517	0	59	604.27	102,527	SWM-D	
63	SCS Runoff	2.691	1	727	7,893	----	----	----	PDA-E	
65	SCS Runoff	5.578	1	727	15,719	----	----	----	PDA-F	
71	SCS Runoff	29.22	1	727	80,989	----	----	----	PDA-H-PERVIOUS	
72	SCS Runoff	77.14	1	727	254,477	----	----	----	PDA-H-IMPERVIOUS	
73	Combine	106.36	1	727	335,466	71, 72	----	----	PDA-H	
75	Reservoir	0.000	1	637	0	73	599.78	172,734	SWM-H	
77	SCS Runoff	0.064	1	733	556	----	----	----	PDA-I	
78	Reservoir	0.000	1	n/a	0	77	598.24	556	New Low Point I	
Hydrologic Calculations - Water Quantity.gpw					Return Period: 100 Year			Wednesday, 03 / 9 / 2022		

Hydrograph Report

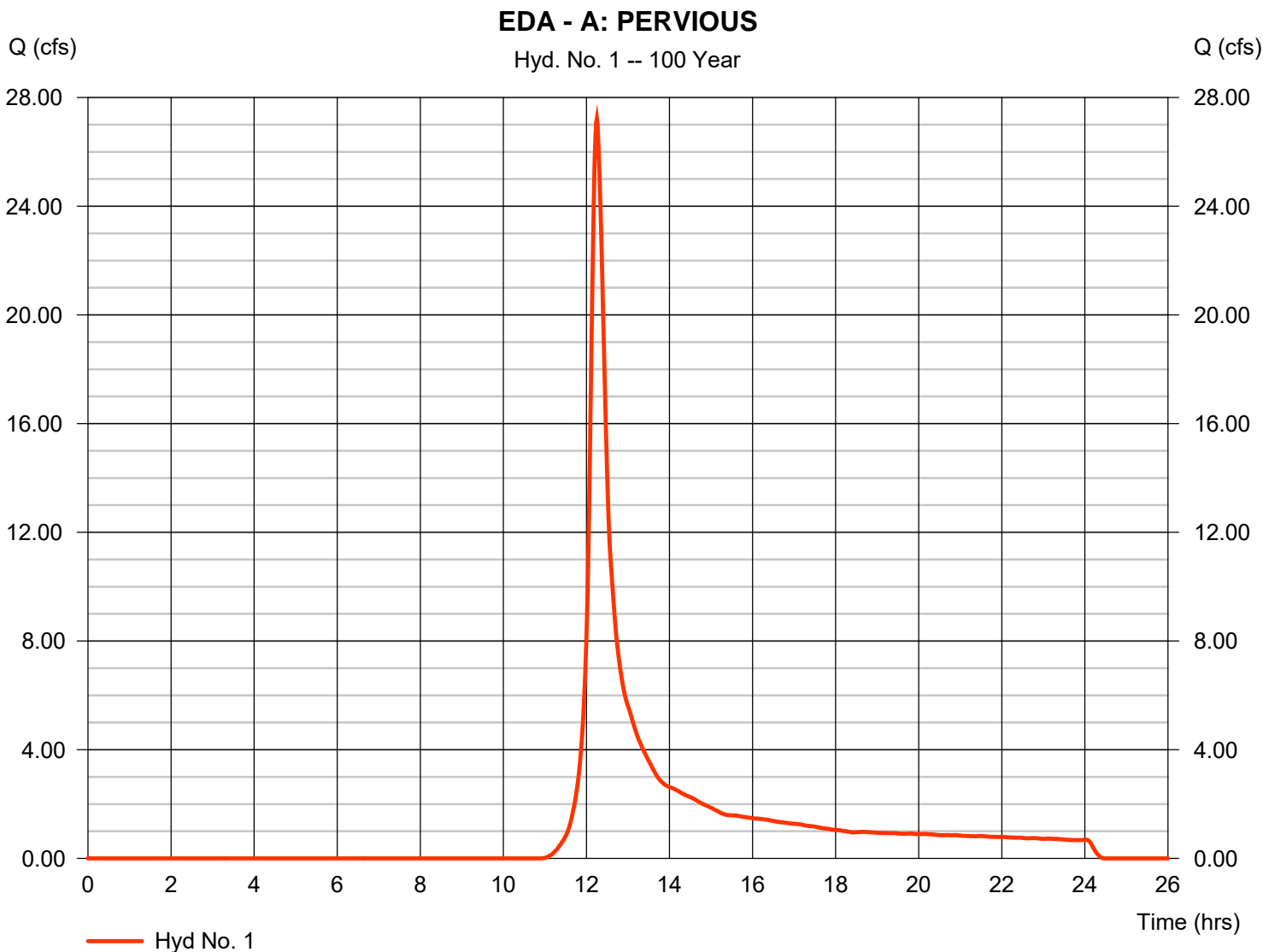
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

Wednesday, 03 / 9 / 2022

Hyd. No. 1

EDA - A: PERVIOUS

Hydrograph type	= SCS Runoff	Peak discharge	= 27.23 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.25 hrs
Time interval	= 1 min	Hyd. volume	= 112,248 cuft
Drainage area	= 13.290 ac	Curve number	= 54
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 17.70 min
Total precip.	= 7.51 in	Distribution	= Custom
Storm duration	= R:\Hydroflow Standards\NJ Reg Storm Rainfall Distribution\NOAA_C_1 min.cds		



Hydrograph Report

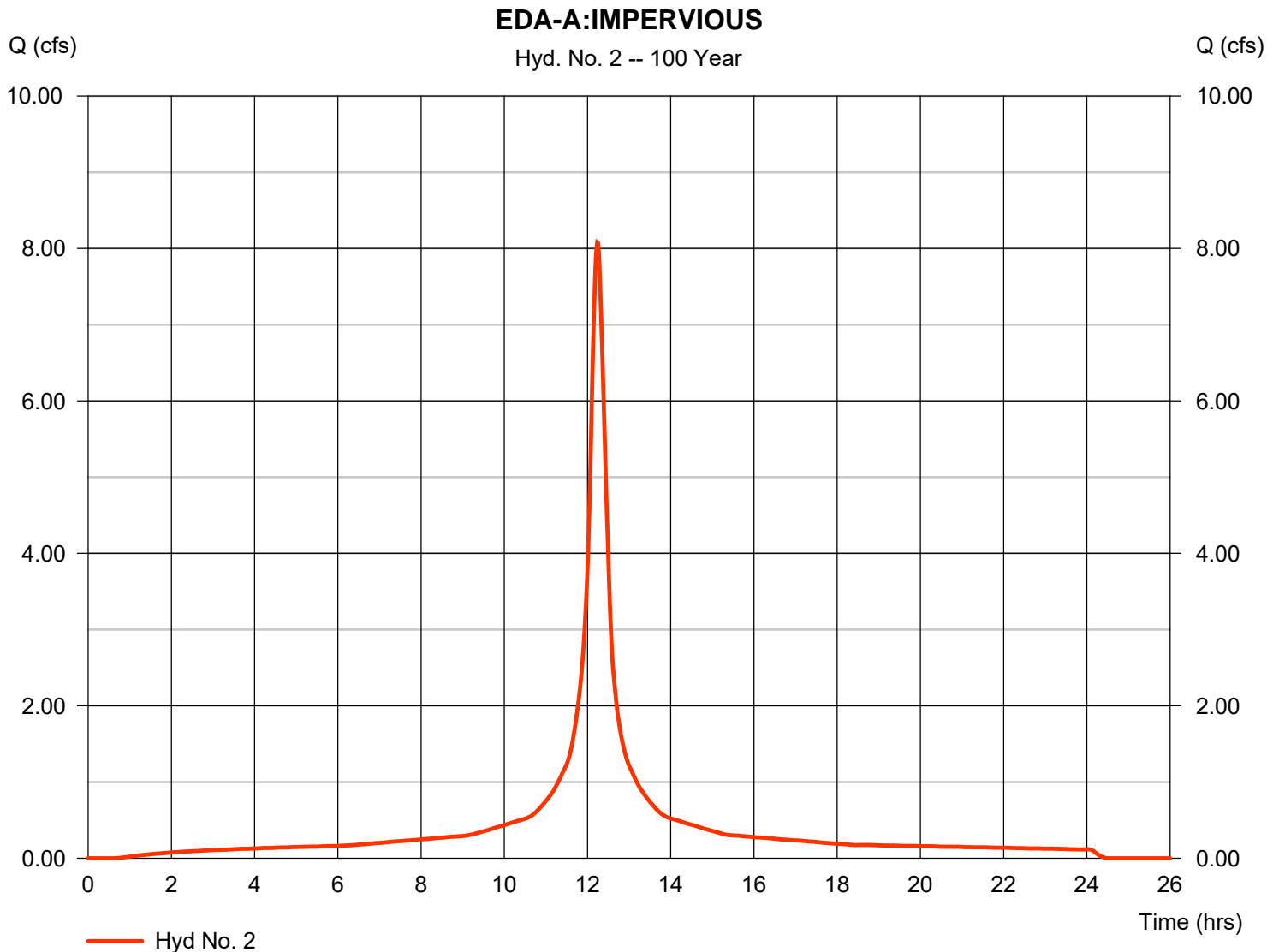
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

Wednesday, 03 / 9 / 2022

Hyd. No. 2

EDA-A:IMPERVIOUS

Hydrograph type	= SCS Runoff	Peak discharge	= 8.078 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.23 hrs
Time interval	= 1 min	Hyd. volume	= 38,532 cuft
Drainage area	= 1.460 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 19.60 min
Total precip.	= 7.51 in	Distribution	= Custom
Storm duration	= R:\Hydroflow Standards\NJ Reg Storm Rainfall Distribution\401A_C_1 min.cds		



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

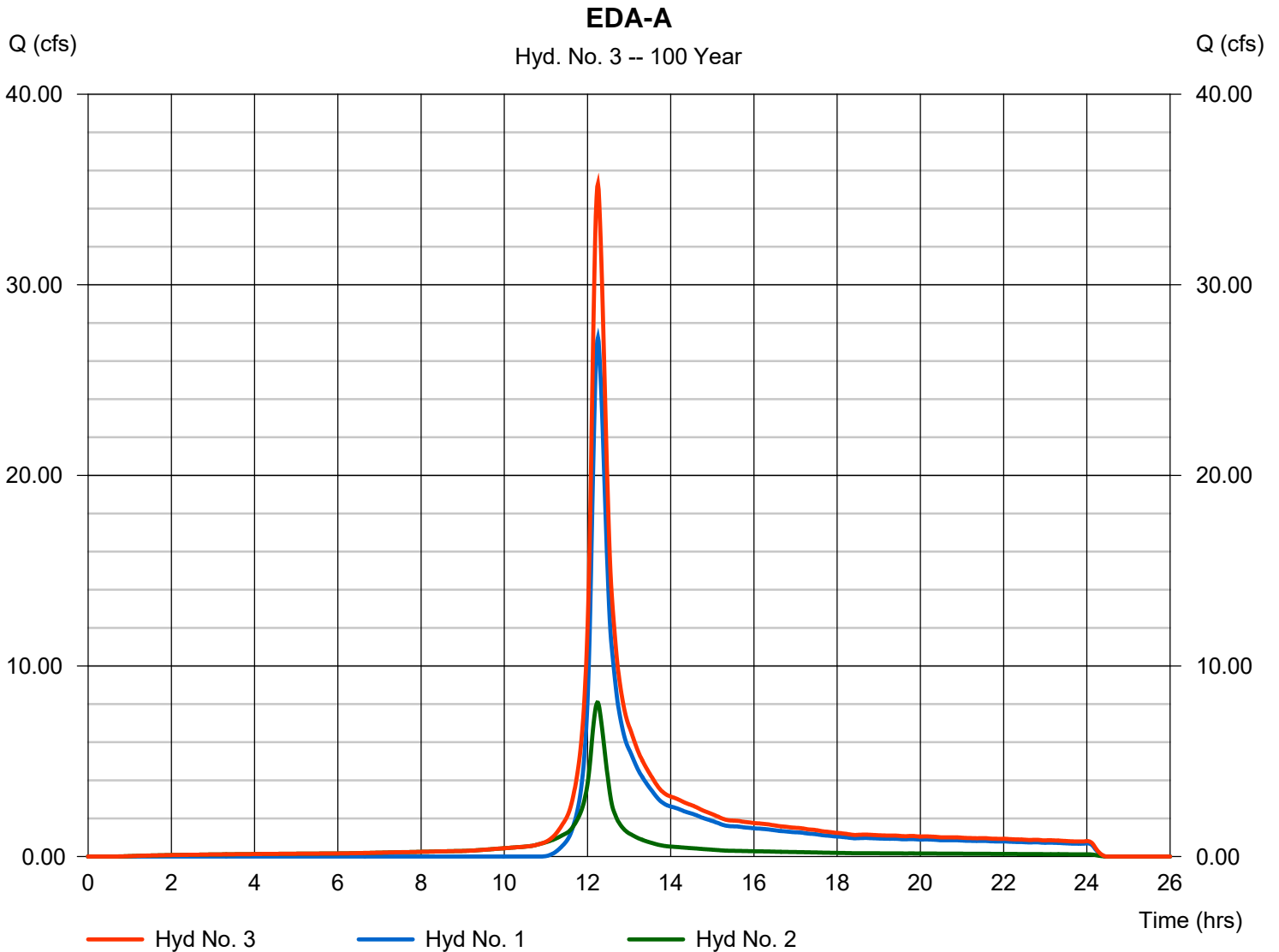
Wednesday, 03 / 9 / 2022

Hyd. No. 3

EDA-A

Hydrograph type = Combine
Storm frequency = 100 yrs
Time interval = 1 min
Inflow hyds. = 1, 2

Peak discharge = 35.30 cfs
Time to peak = 12.25 hrs
Hyd. volume = 150,780 cuft
Contrib. drain. area = 14.750 ac



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

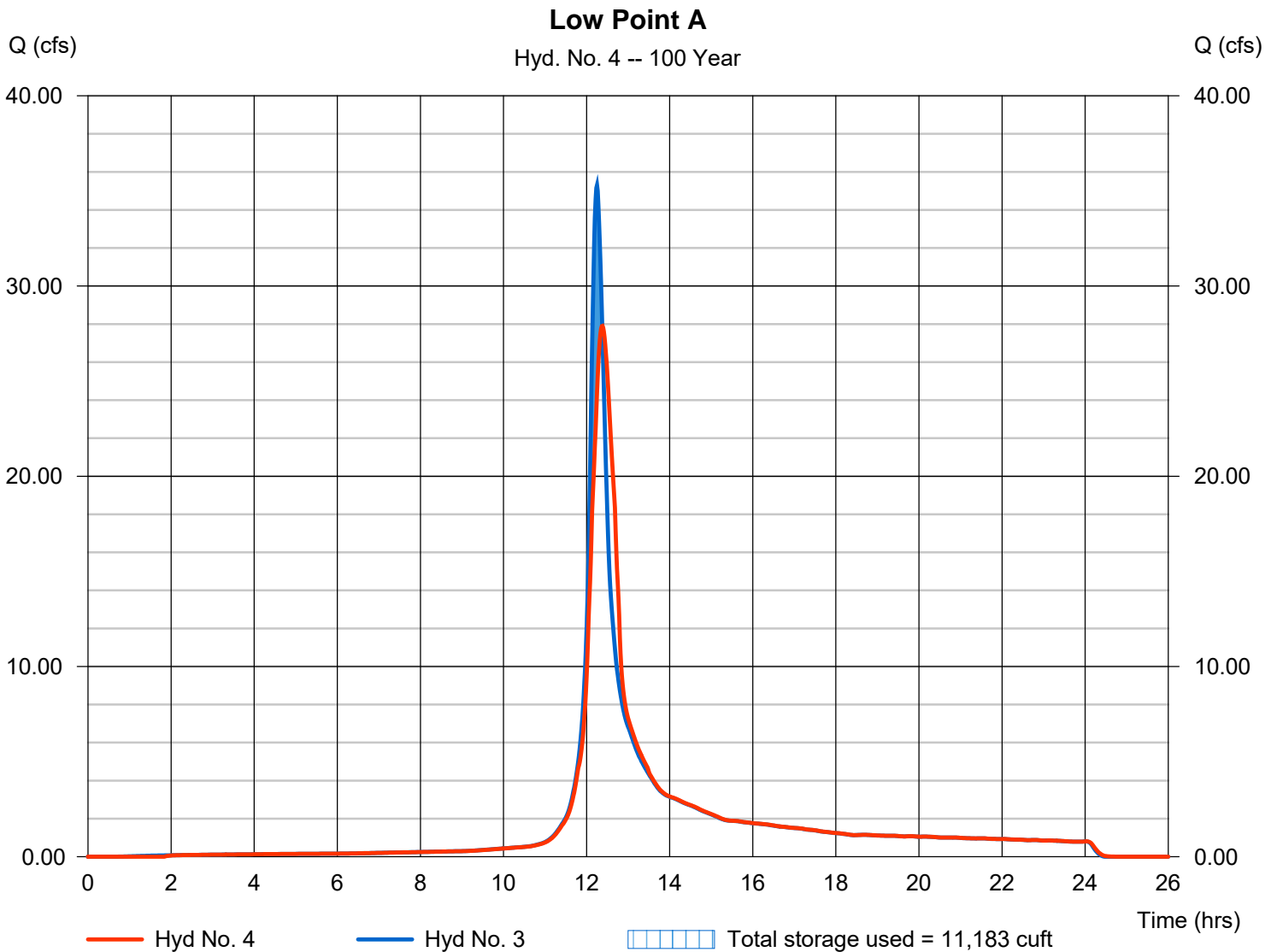
Wednesday, 03 / 9 / 2022

Hyd. No. 4

Low Point A

Hydrograph type	= Reservoir	Peak discharge	= 27.91 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.38 hrs
Time interval	= 1 min	Hyd. volume	= 150,624 cuft
Inflow hyd. No.	= 3 - EDA-A	Max. Elevation	= 596.26 ft
Reservoir name	= Low Point A	Max. Storage	= 11,183 cuft

Storage Indication method used.



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

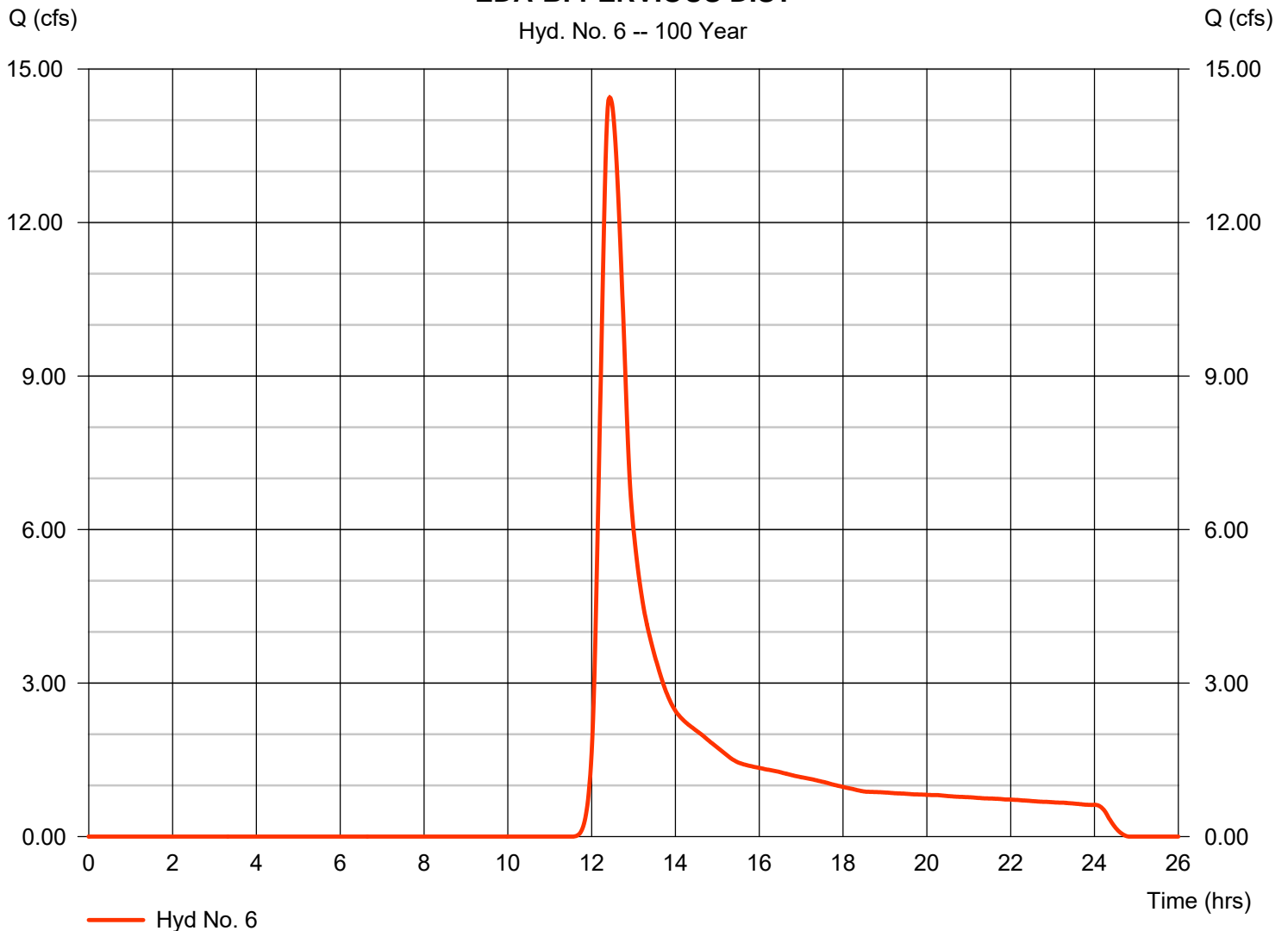
Wednesday, 03 / 9 / 2022

Hyd. No. 6

EDA-B: PERVIOUS DIST

Hydrograph type	= SCS Runoff	Peak discharge	= 14.45 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.43 hrs
Time interval	= 1 min	Hyd. volume	= 87,943 cuft
Drainage area	= 14.410 ac	Curve number	= 47
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 31.40 min
Total precip.	= 7.51 in	Distribution	= Custom
Storm duration	= R:\Hydroflow Standards\NJ Reg Storm Rainfall Distribution\NOAA_C_1 min.cds		

EDA-B: PERVIOUS DIST



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

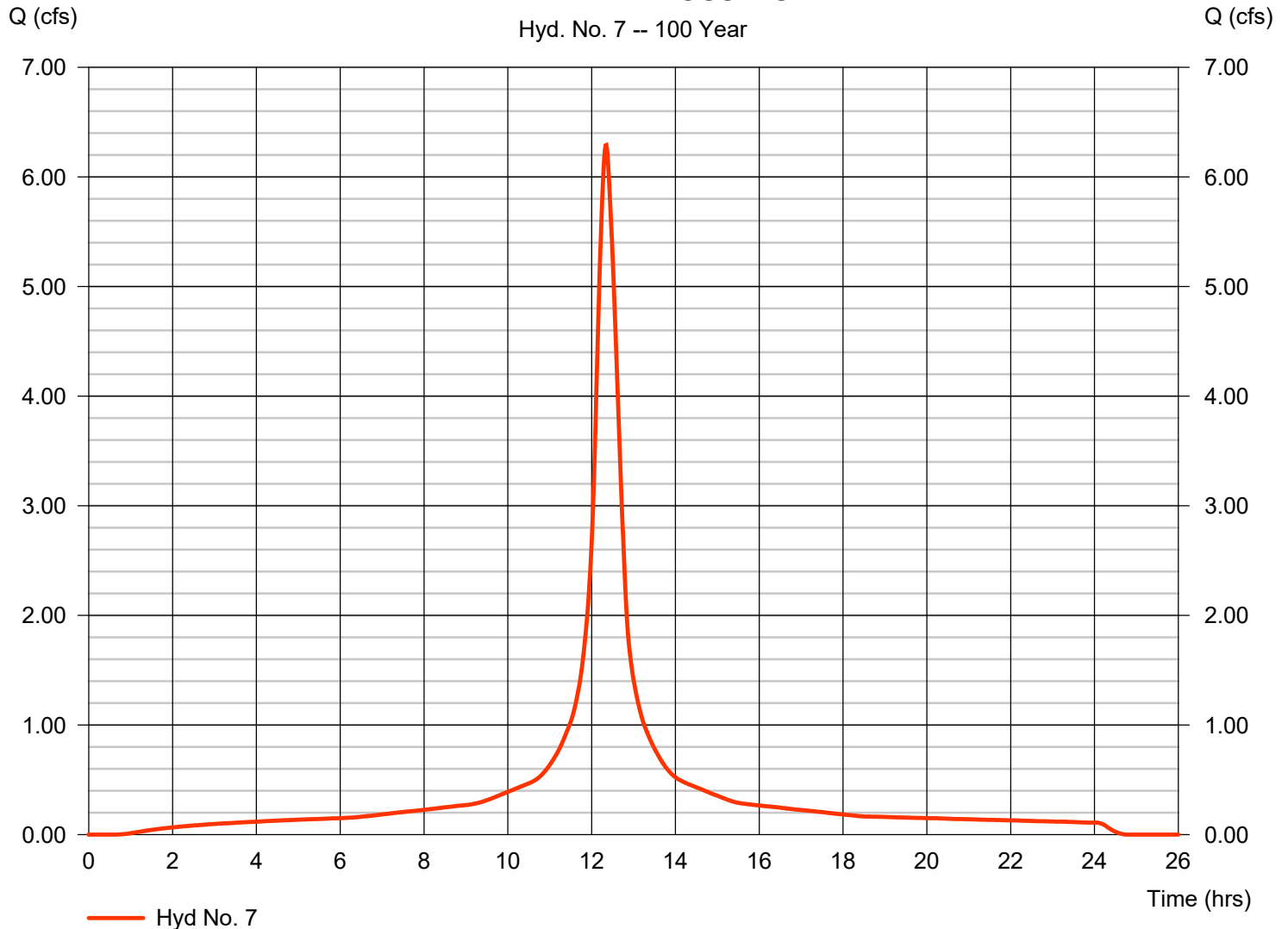
Wednesday, 03 / 9 / 2022

Hyd. No. 7

EDA-B: IMPERVIOUS DIST

Hydrograph type	= SCS Runoff	Peak discharge	= 6.290 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.35 hrs
Time interval	= 1 min	Hyd. volume	= 36,157 cuft
Drainage area	= 1.370 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 29.70 min
Total precip.	= 7.51 in	Distribution	= Custom
Storm duration	= R:\Hydroflow Standards\NJ Reg Storm Rainfall Distribution\401A_C_1 min.cds		

EDA-B: IMPERVIOUS DIST



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

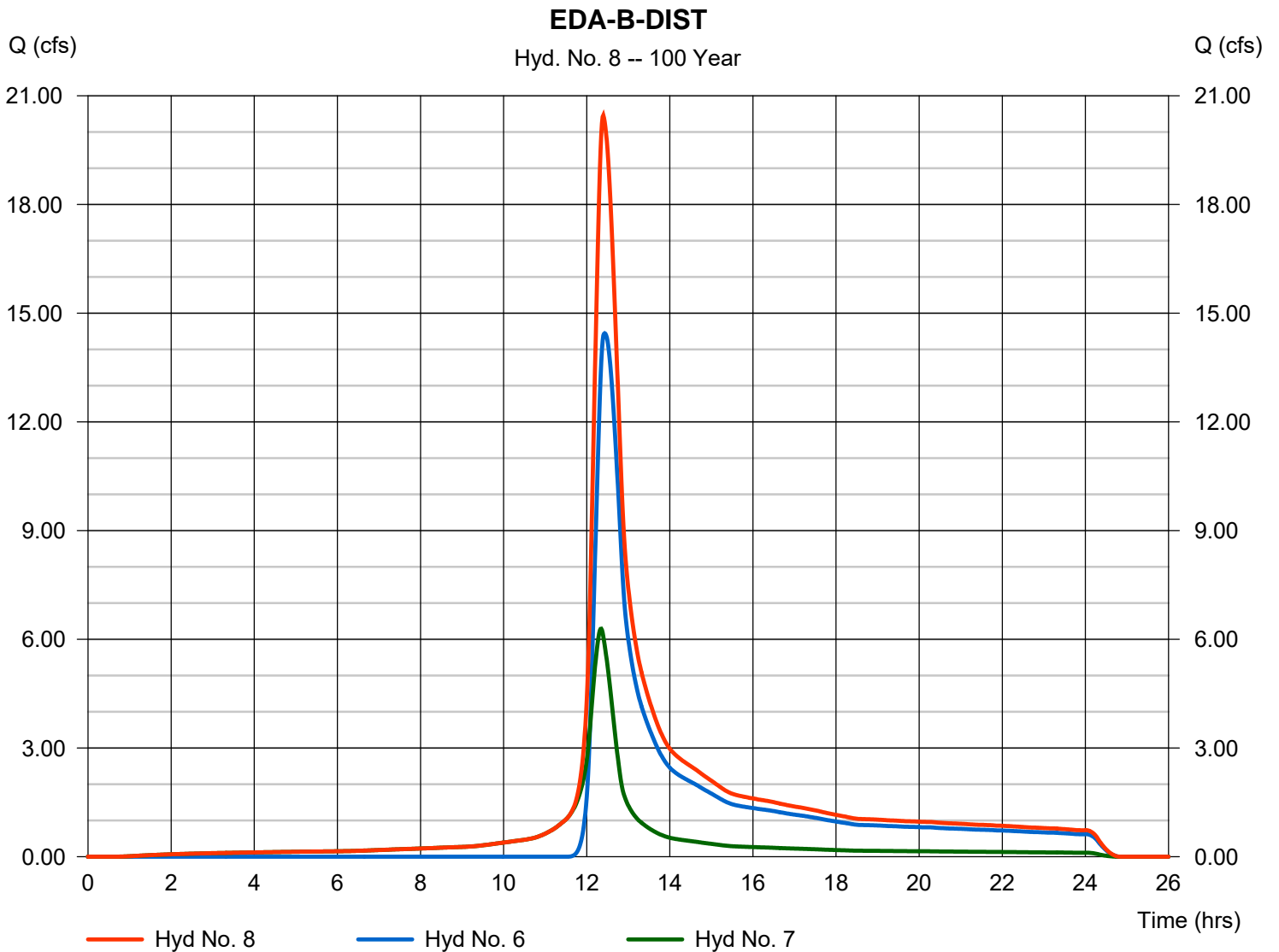
Wednesday, 03 / 9 / 2022

Hyd. No. 8

EDA-B-DIST

Hydrograph type = Combine
 Storm frequency = 100 yrs
 Time interval = 1 min
 Inflow hyds. = 6, 7

Peak discharge = 20.46 cfs
 Time to peak = 12.40 hrs
 Hyd. volume = 124,100 cuft
 Contrib. drain. area = 15.780 ac



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

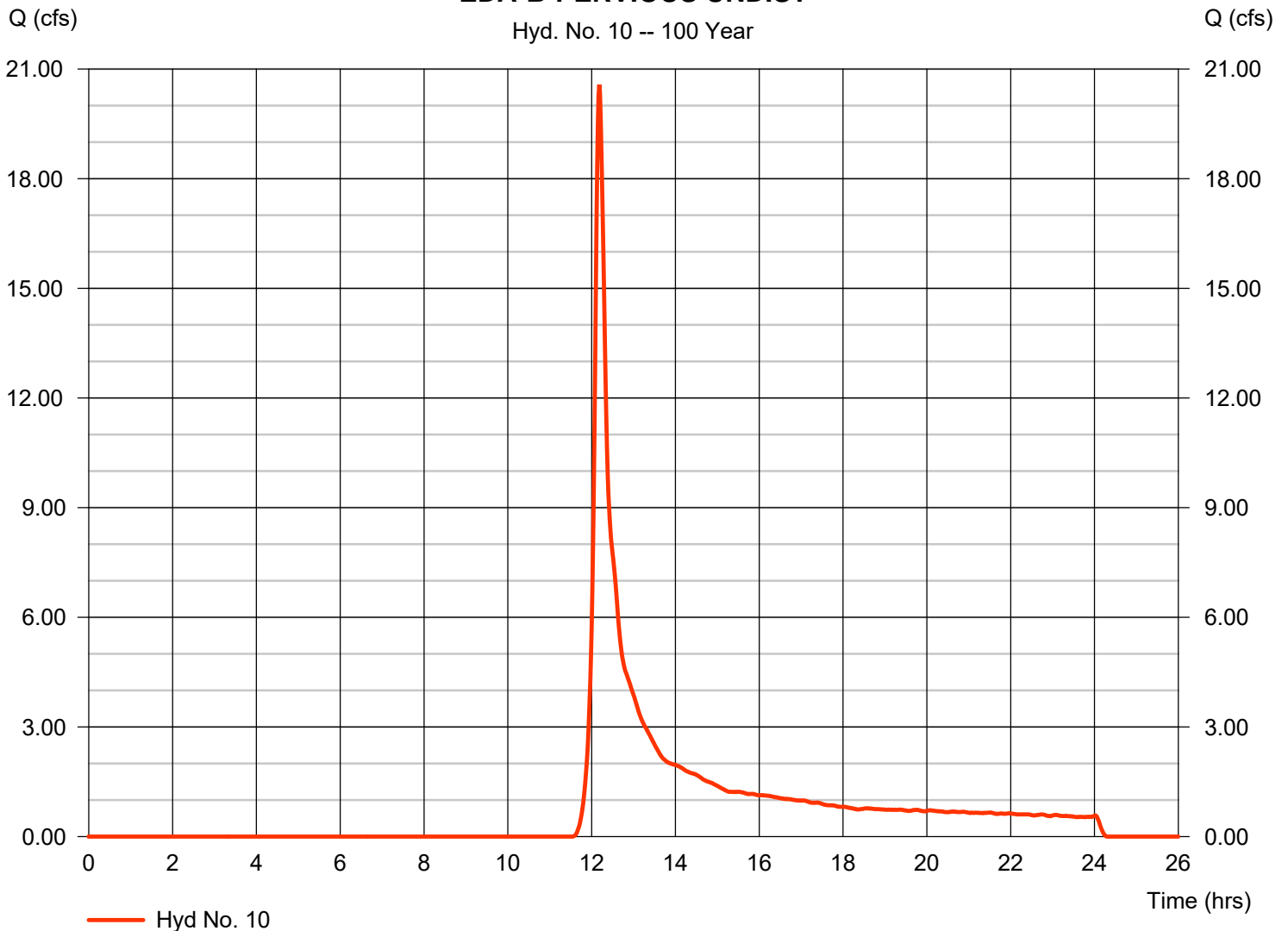
Wednesday, 03 / 9 / 2022

Hyd. No. 10

EDA-B-PERVIOUS UNDIST

Hydrograph type	= SCS Runoff	Peak discharge	= 20.57 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.18 hrs
Time interval	= 1 min	Hyd. volume	= 76,956 cuft
Drainage area	= 12.470 ac	Curve number	= 47
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 10.70 min
Total precip.	= 7.51 in	Distribution	= Custom
Storm duration	= R:\Hydroflow Standards\NJ Reg Storm Rainfall Distribution\40A_C_1 min.cds		

EDA-B-PERVIOUS UNDIST



Hydrograph Report

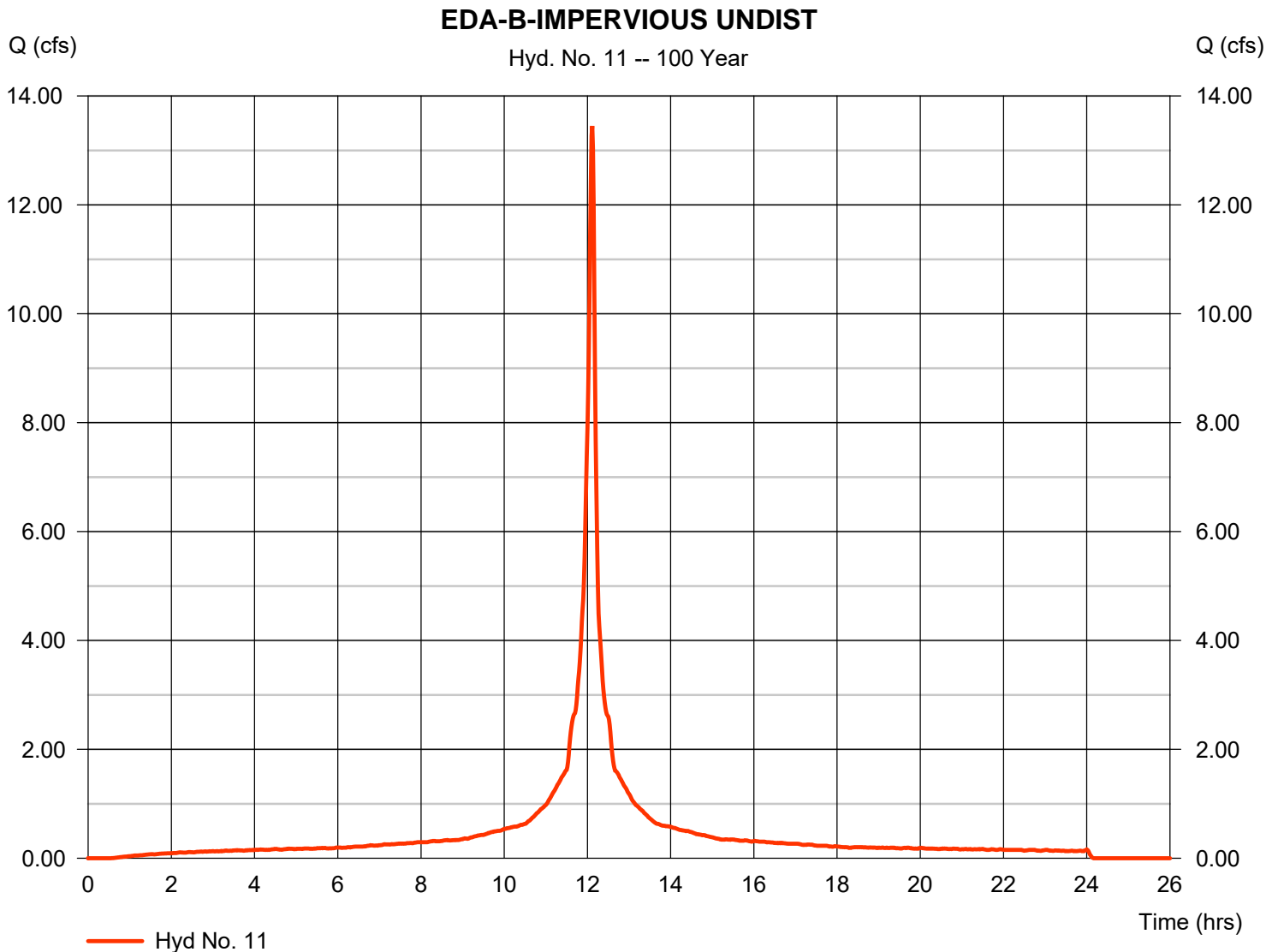
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

Wednesday, 03 / 9 / 2022

Hyd. No. 11

EDA-B-IMPERVIOUS UNDIST

Hydrograph type	= SCS Runoff	Peak discharge	= 13.45 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.12 hrs
Time interval	= 1 min	Hyd. volume	= 44,363 cuft
Drainage area	= 1.630 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 6.00 min
Total precip.	= 7.51 in	Distribution	= Custom
Storm duration	= R:\Hydroflow Standards\NJ Reg Slope Rainfall Distribution\NOAA_C_1 min.cds		



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

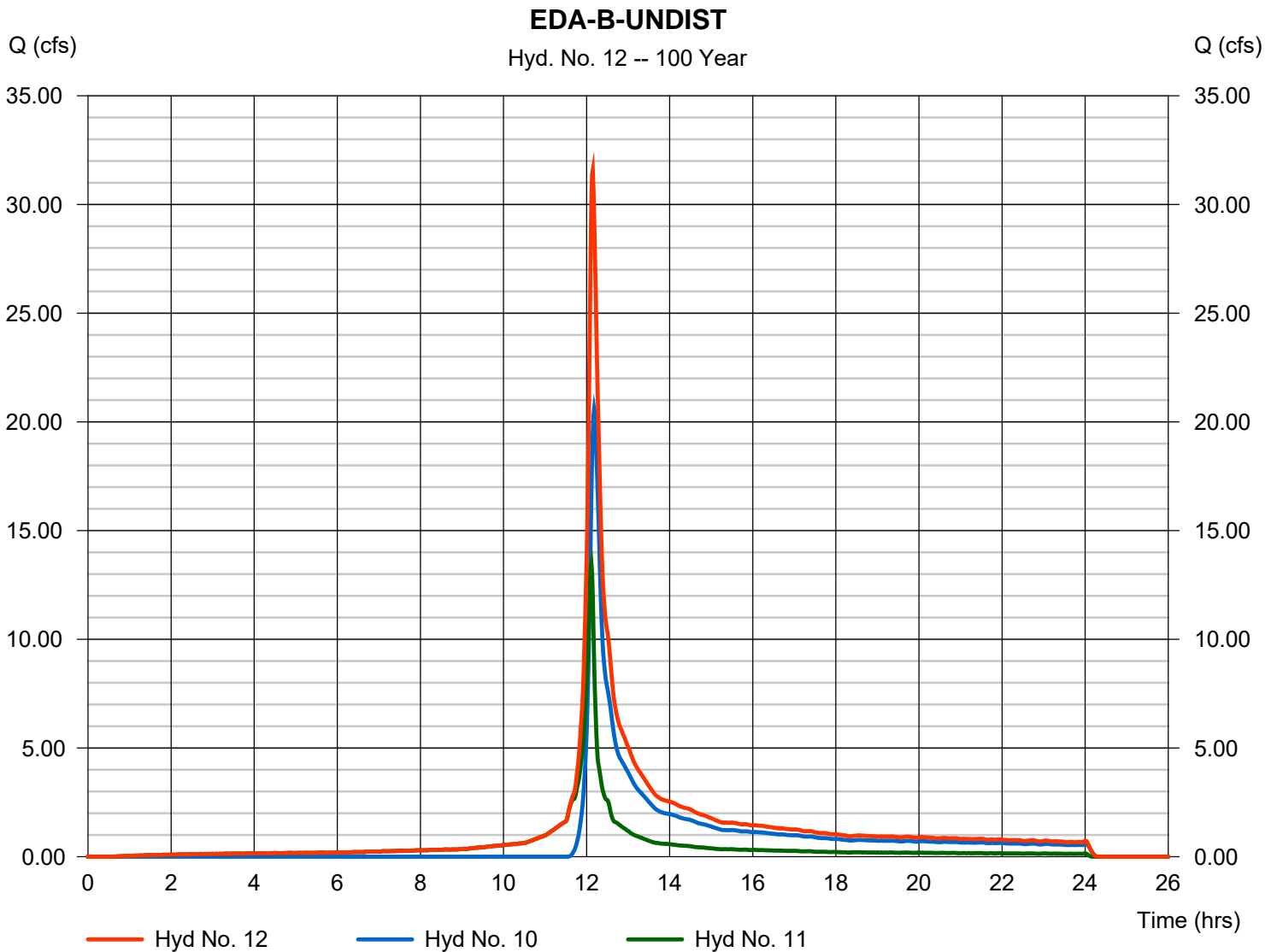
Wednesday, 03 / 9 / 2022

Hyd. No. 12

EDA-B-UNDIST

Hydrograph type = Combine
 Storm frequency = 100 yrs
 Time interval = 1 min
 Inflow hyds. = 10, 11

Peak discharge = 31.56 cfs
 Time to peak = 12.15 hrs
 Hyd. volume = 121,320 cuft
 Contrib. drain. area = 14.100 ac



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

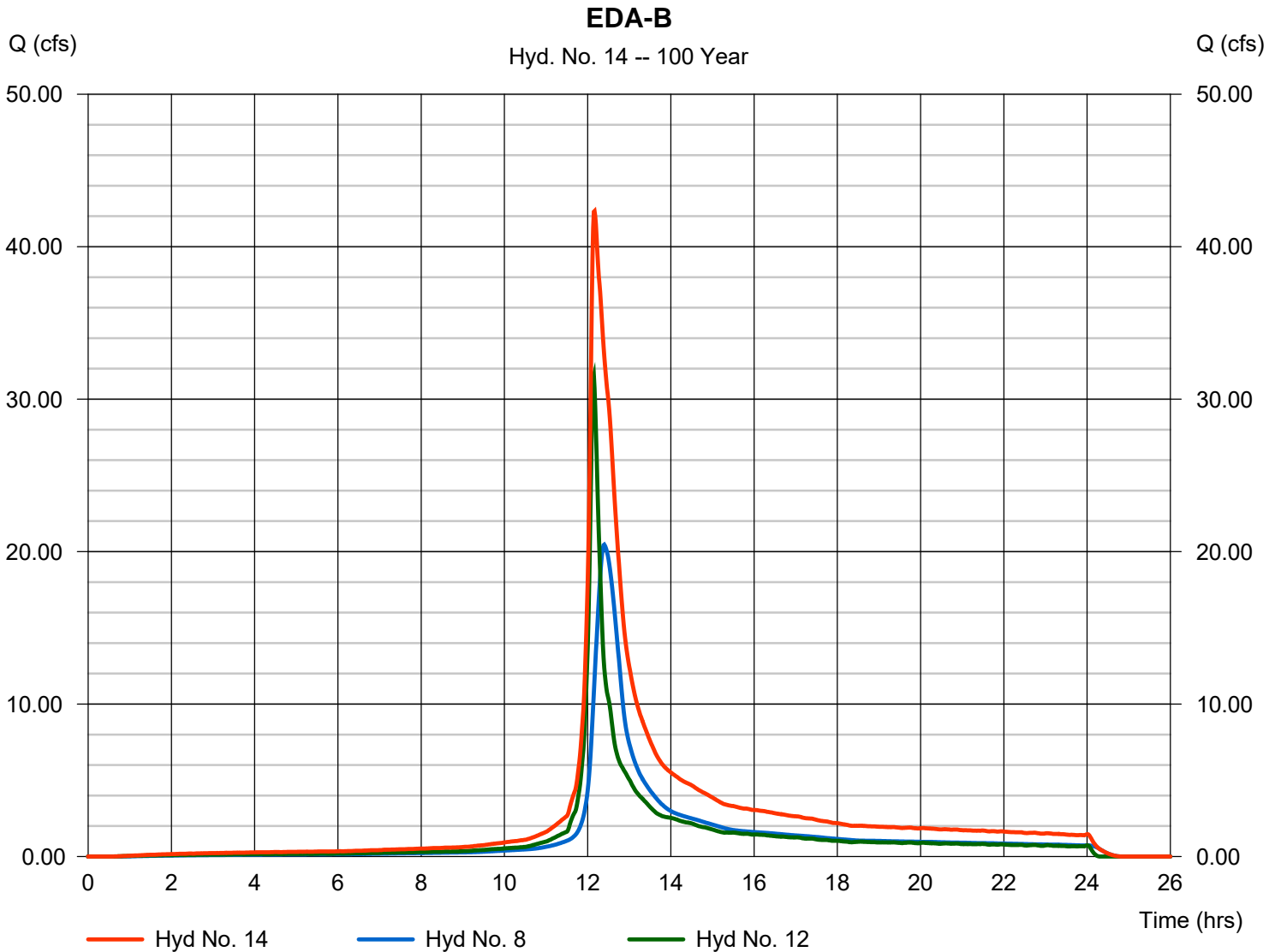
Wednesday, 03 / 9 / 2022

Hyd. No. 14

EDA-B

Hydrograph type = Combine
 Storm frequency = 100 yrs
 Time interval = 1 min
 Inflow hyds. = 8, 12

Peak discharge = 42.34 cfs
 Time to peak = 12.17 hrs
 Hyd. volume = 245,420 cuft
 Contrib. drain. area = 0.000 ac



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

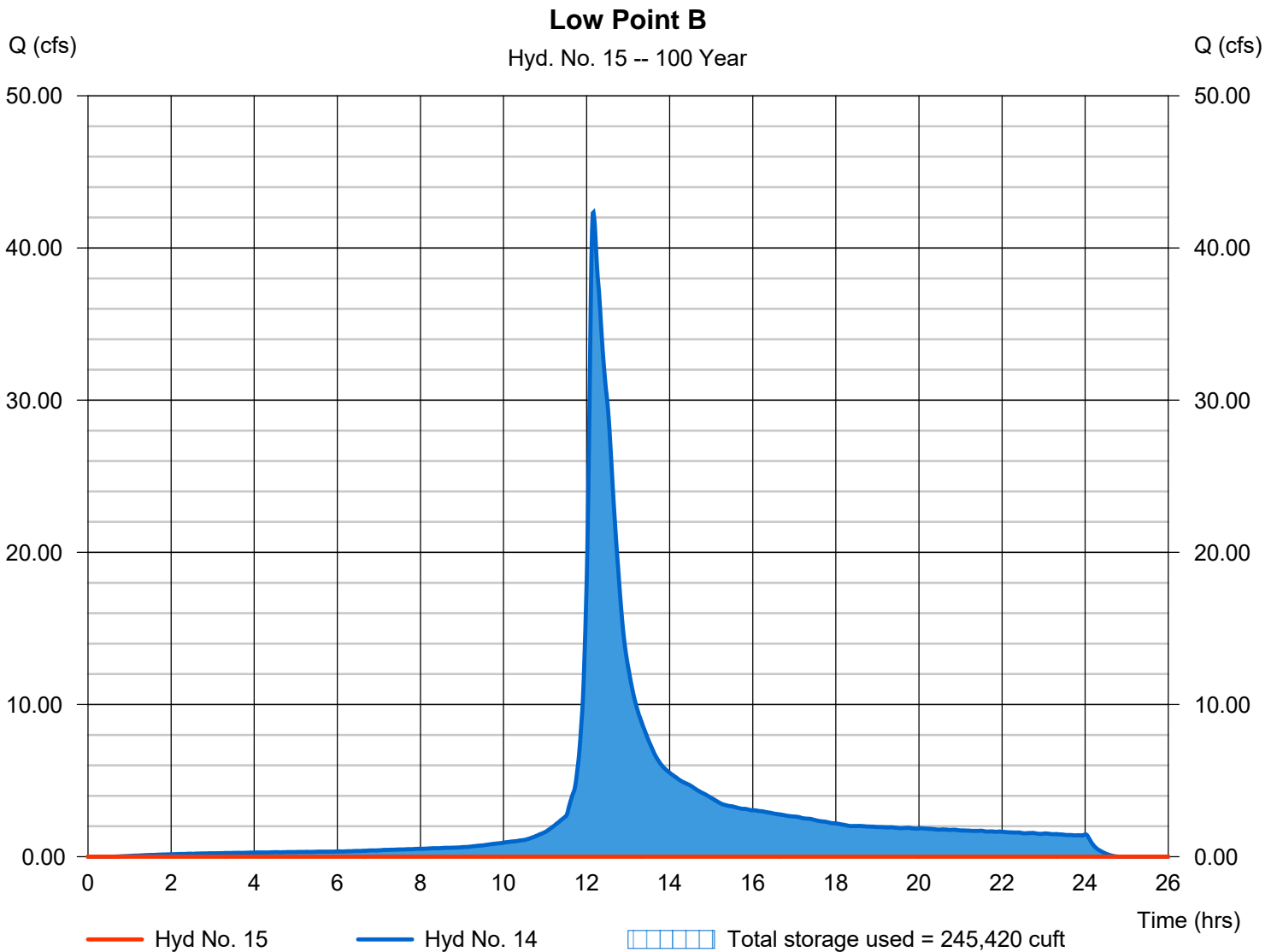
Wednesday, 03 / 9 / 2022

Hyd. No. 15

Low Point B

Hydrograph type	= Reservoir	Peak discharge	= 0.000 cfs
Storm frequency	= 100 yrs	Time to peak	= n/a
Time interval	= 1 min	Hyd. volume	= 0 cuft
Inflow hyd. No.	= 14 - EDA-B	Max. Elevation	= 598.83 ft
Reservoir name	= Low Point B	Max. Storage	= 245,420 cuft

Storage Indication method used.



Hydrograph Report

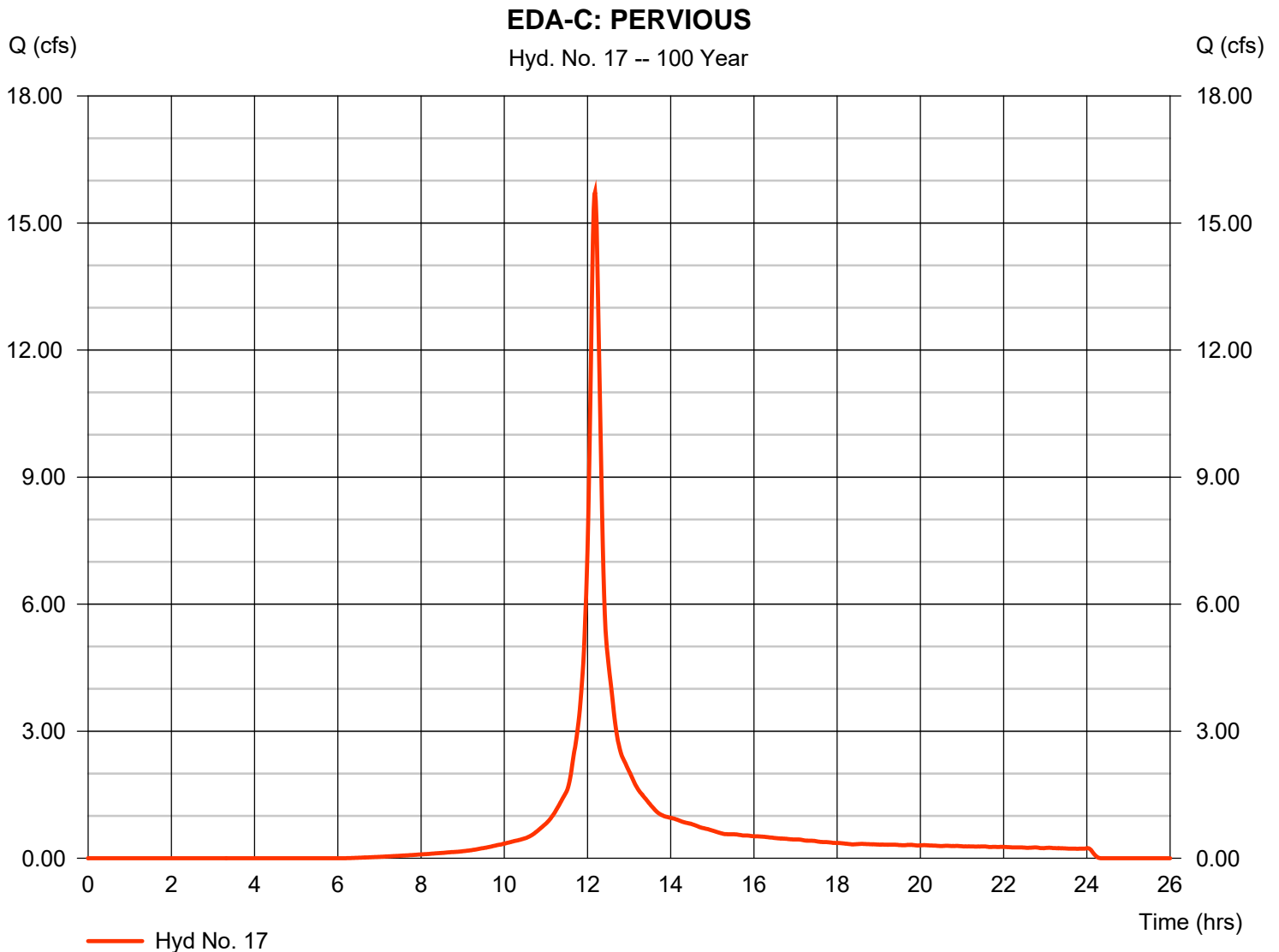
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

Wednesday, 03 / 9 / 2022

Hyd. No. 17

EDA-C: PERVIOUS

Hydrograph type	= SCS Runoff	Peak discharge	= 15.73 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.18 hrs
Time interval	= 1 min	Hyd. volume	= 54,675 cuft
Drainage area	= 3.170 ac	Curve number	= 77
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 12.70 min
Total precip.	= 7.51 in	Distribution	= Custom
Storm duration	= R:\Hydroflow Standards\NJ Reg Slope Rainfall Distribution\401A_C_1 min.cds		



Hydrograph Report

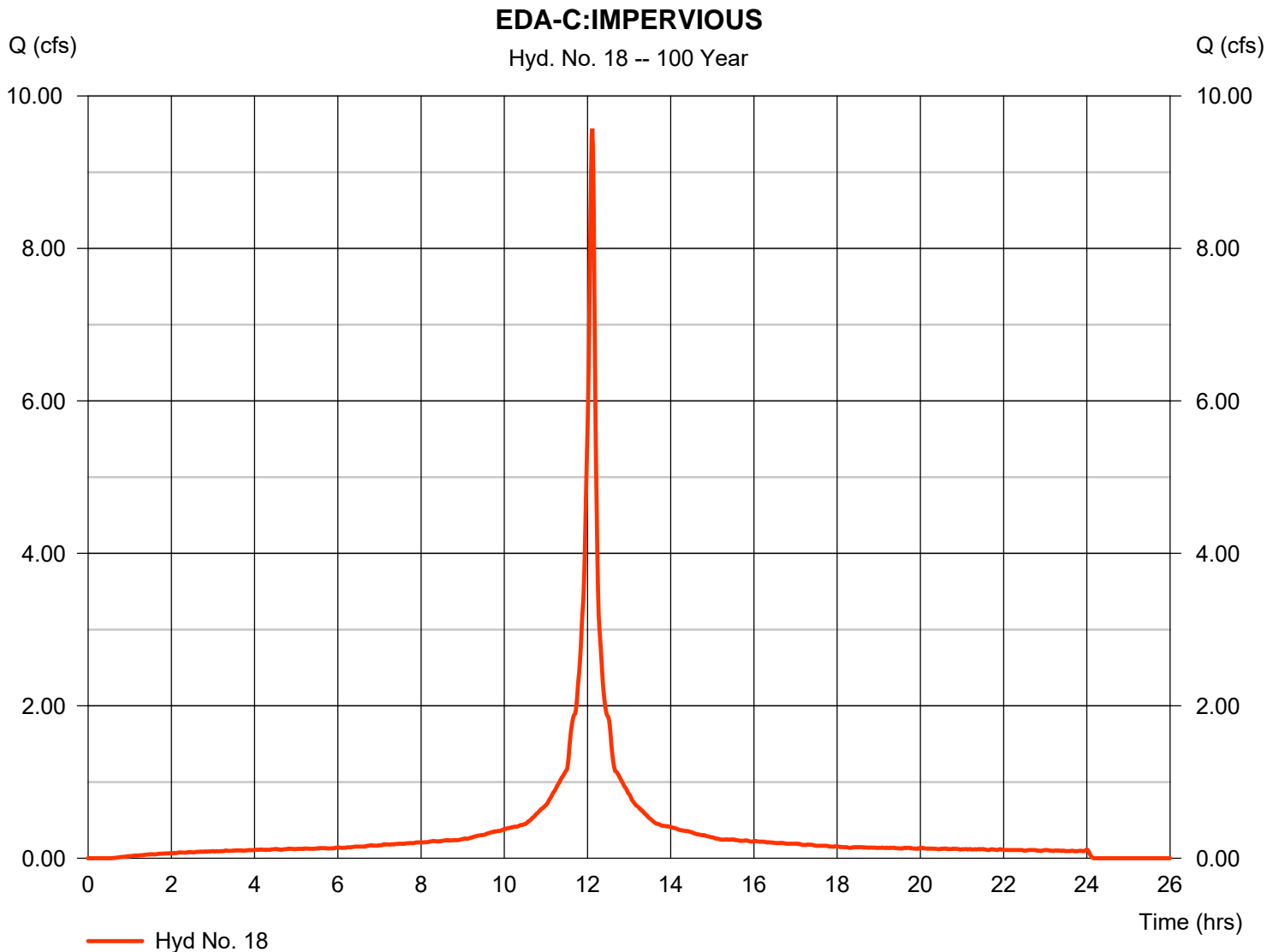
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

Wednesday, 03 / 9 / 2022

Hyd. No. 18

EDA-C:IMPERVIOUS

Hydrograph type	= SCS Runoff	Peak discharge	= 9.571 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.12 hrs
Time interval	= 1 min	Hyd. volume	= 31,571 cuft
Drainage area	= 1.160 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 6.00 min
Total precip.	= 7.51 in	Distribution	= Custom
Storm duration	= R:\Hydroflow Standards\NJ Reg Slope Rainfall Distribution\401A_C_1 min.cds		



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

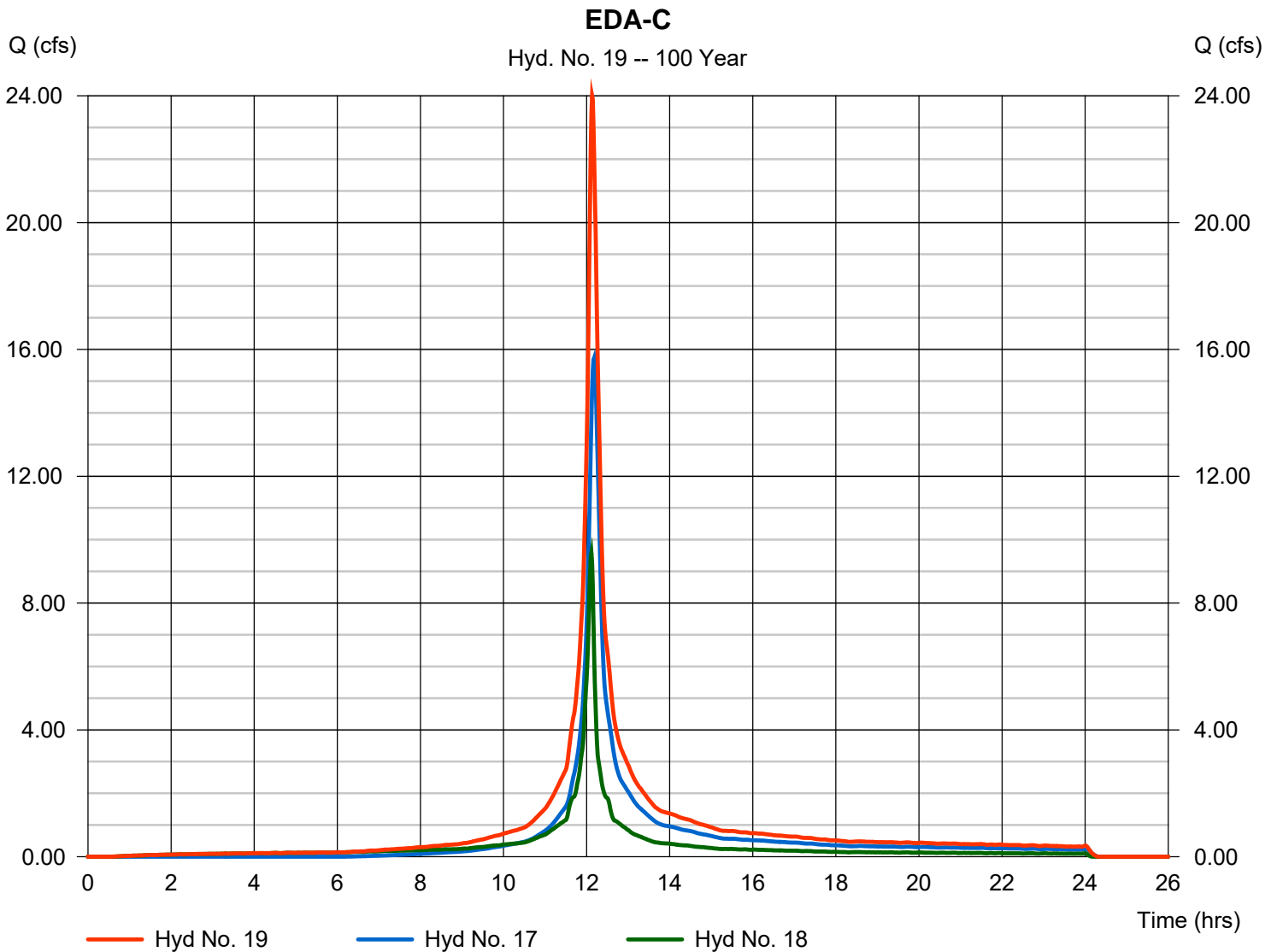
Wednesday, 03 / 9 / 2022

Hyd. No. 19

EDA-C

Hydrograph type = Combine
 Storm frequency = 100 yrs
 Time interval = 1 min
 Inflow hyds. = 17, 18

Peak discharge = 24.00 cfs
 Time to peak = 12.13 hrs
 Hyd. volume = 86,247 cuft
 Contrib. drain. area = 4.330 ac



Hydrograph Report

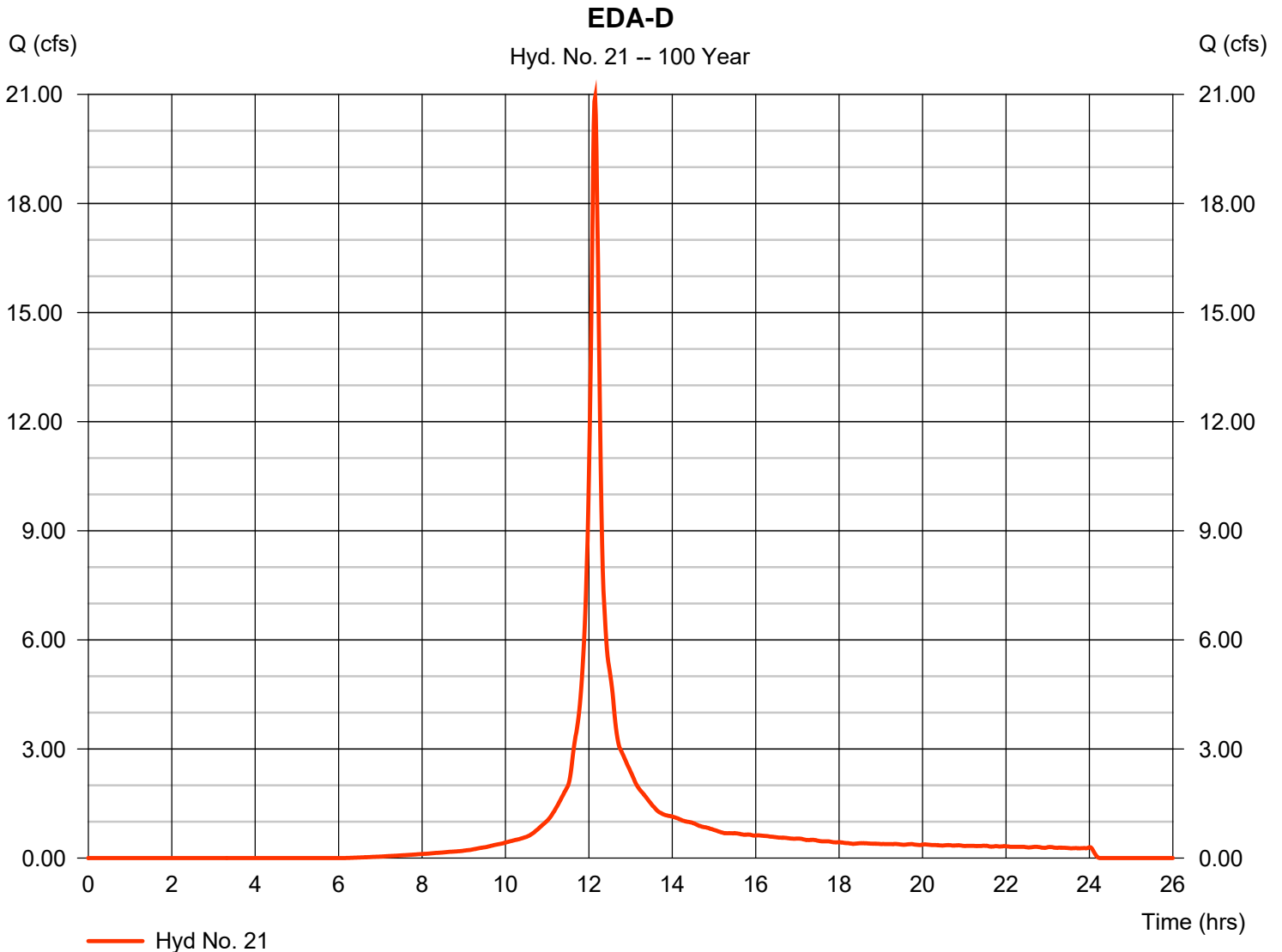
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

Wednesday, 03 / 9 / 2022

Hyd. No. 21

EDA-D

Hydrograph type	= SCS Runoff	Peak discharge	= 20.91 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.15 hrs
Time interval	= 1 min	Hyd. volume	= 65,881 cuft
Drainage area	= 3.760 ac	Curve number	= 77
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 10.00 min
Total precip.	= 7.51 in	Distribution	= Custom
Storm duration	= R:\Hydroflow Standards\NJ Reg Storm Rainfall Distribution\401A_C_1 min.cds		



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

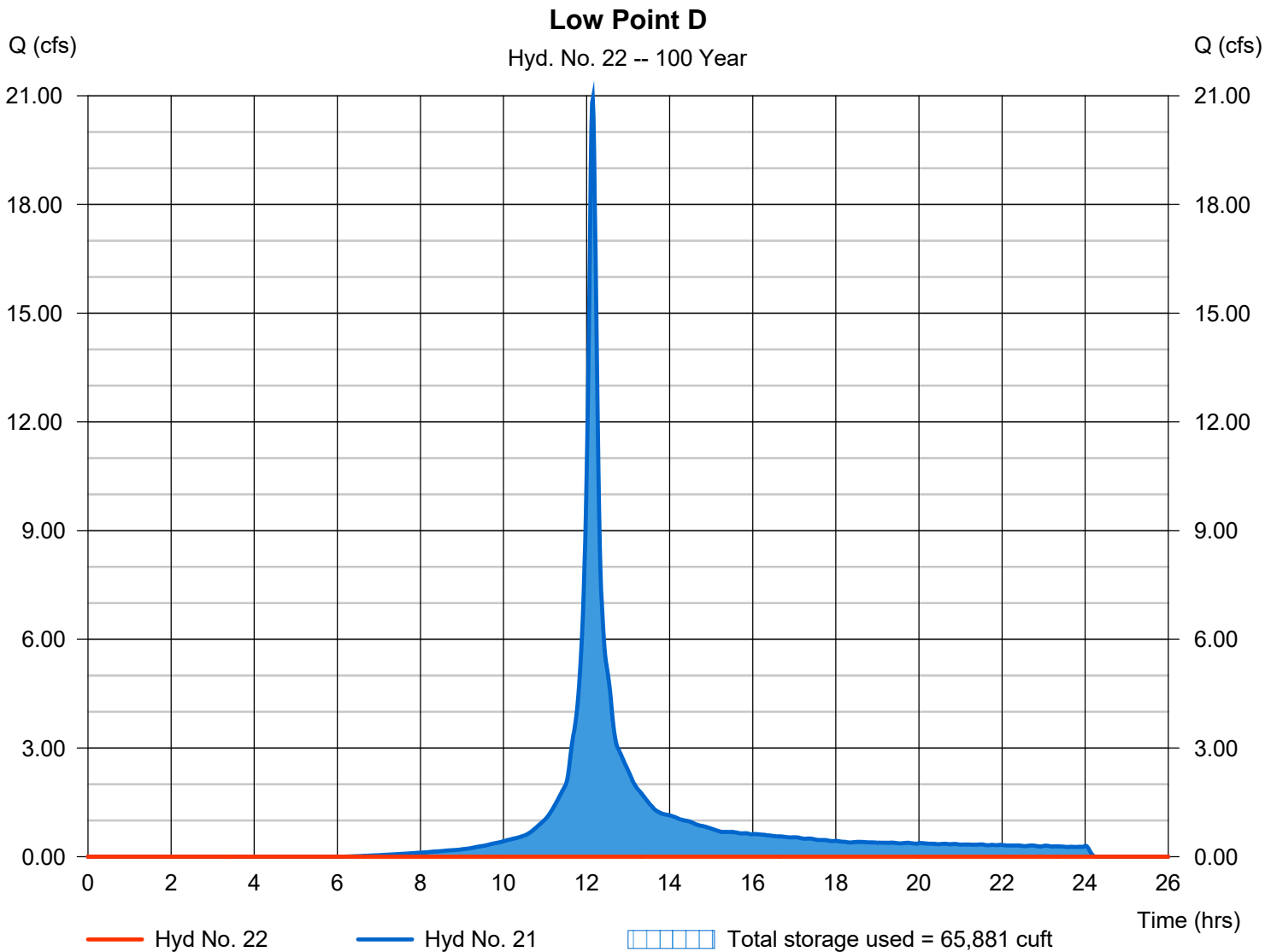
Wednesday, 03 / 9 / 2022

Hyd. No. 22

Low Point D

Hydrograph type	= Reservoir	Peak discharge	= 0.000 cfs
Storm frequency	= 100 yrs	Time to peak	= n/a
Time interval	= 1 min	Hyd. volume	= 0 cuft
Inflow hyd. No.	= 21 - EDA-D	Max. Elevation	= 597.52 ft
Reservoir name	= Low Point D	Max. Storage	= 65,881 cuft

Storage Indication method used.



Hydrograph Report

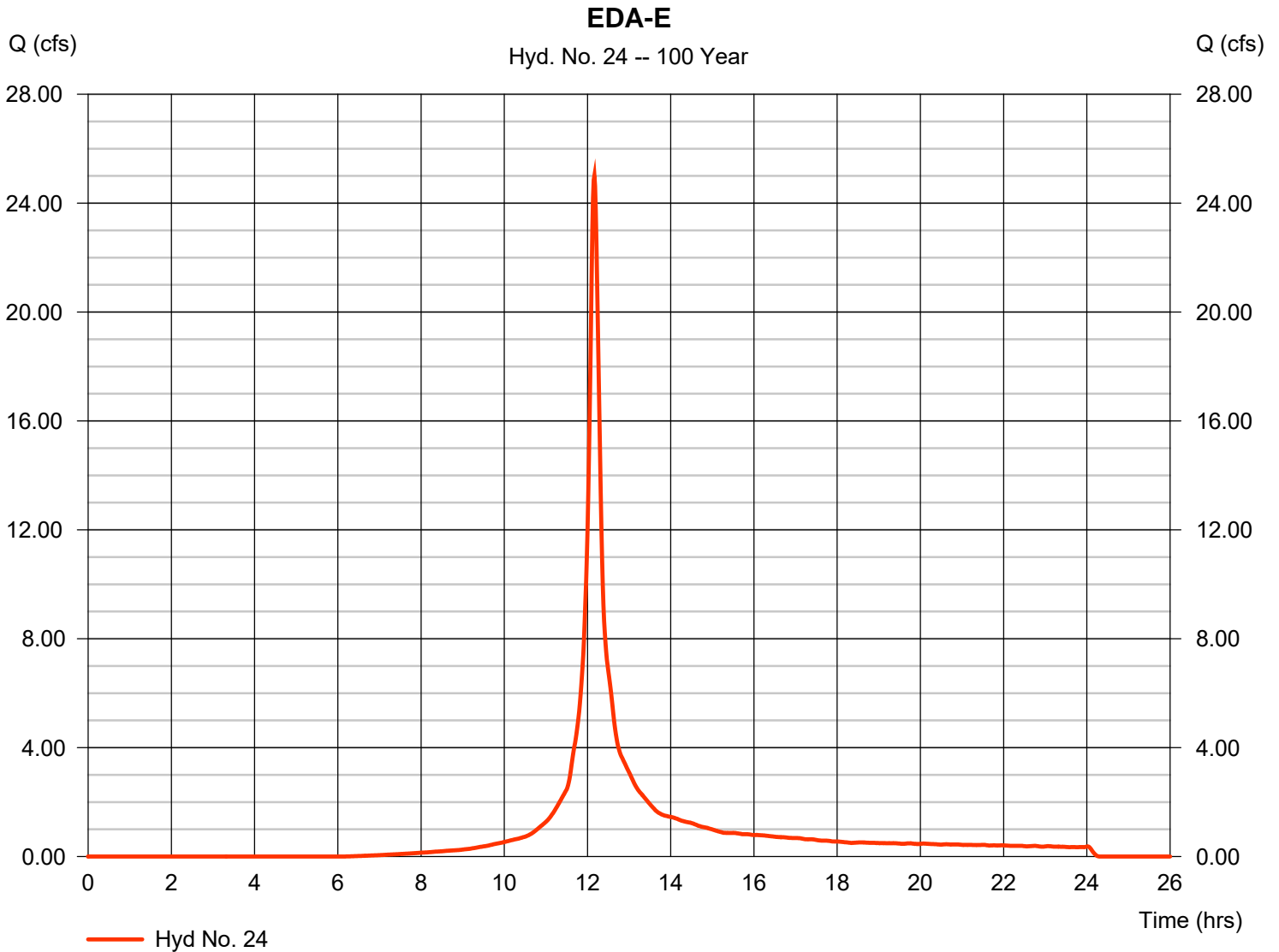
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

Wednesday, 03 / 9 / 2022

Hyd. No. 24

EDA-E

Hydrograph type	= SCS Runoff	Peak discharge	= 25.00 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.17 hrs
Time interval	= 1 min	Hyd. volume	= 83,643 cuft
Drainage area	= 4.690 ac	Curve number	= 77
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 11.40 min
Total precip.	= 7.51 in	Distribution	= Custom
Storm duration	= R:\Hydroflow Standards\NJ Reg Slope Rainfall Distribution\NOAA_C_1 min.cds		



Hydrograph Report

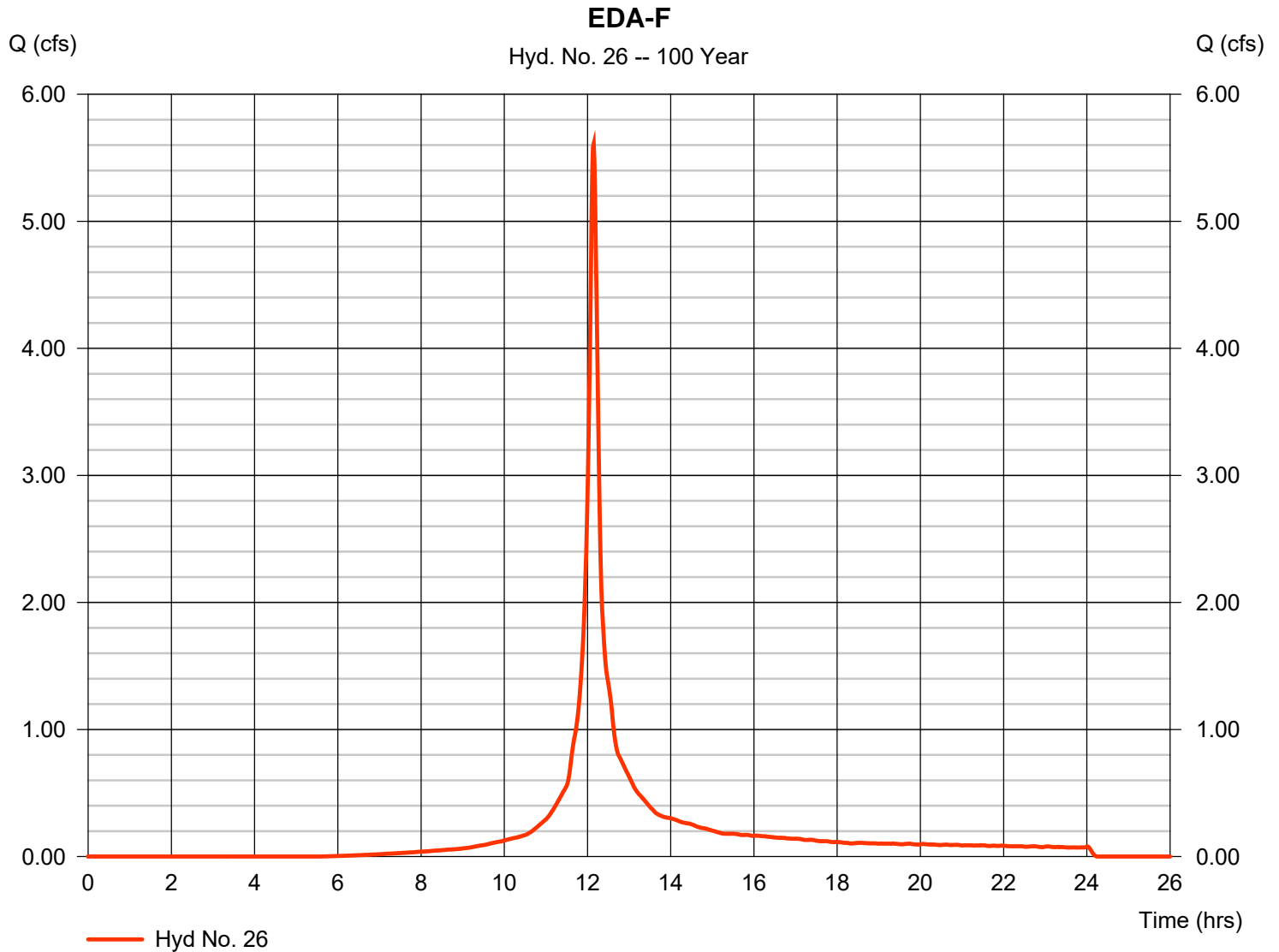
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

Wednesday, 03 / 9 / 2022

Hyd. No. 26

EDA-F

Hydrograph type	= SCS Runoff	Peak discharge	= 5.610 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.15 hrs
Time interval	= 1 min	Hyd. volume	= 17,793 cuft
Drainage area	= 0.970 ac	Curve number	= 79
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 10.00 min
Total precip.	= 7.51 in	Distribution	= Custom
Storm duration	= R:\Hydroflow Standards\NJ Reg Storm Rainfall Distribution\401A_C_1 min.cds		



Hydrograph Report

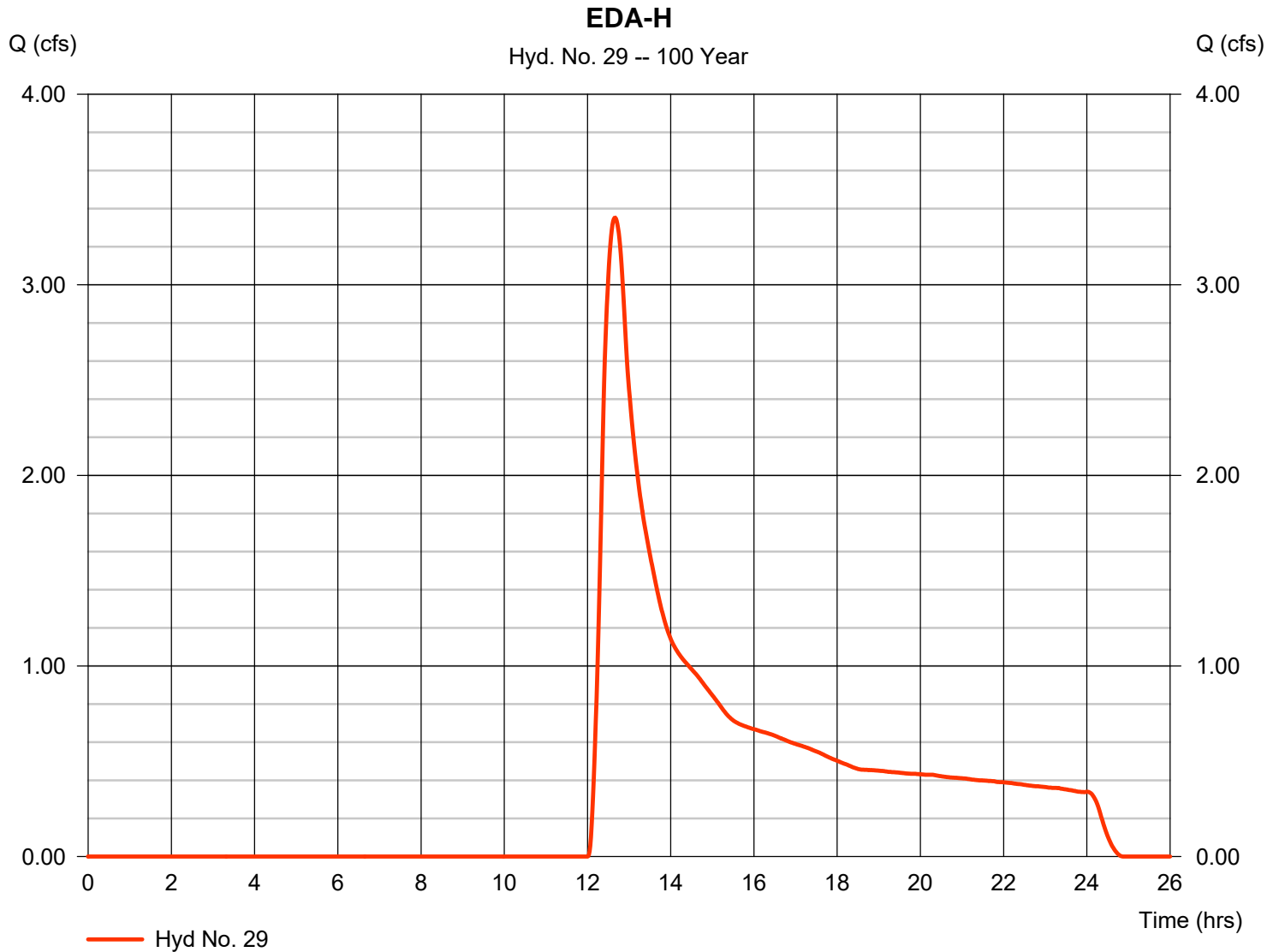
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

Wednesday, 03 / 9 / 2022

Hyd. No. 29

EDA-H

Hydrograph type	= SCS Runoff	Peak discharge	= 3.352 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.67 hrs
Time interval	= 1 min	Hyd. volume	= 33,535 cuft
Drainage area	= 12.920 ac	Curve number	= 36
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 33.50 min
Total precip.	= 7.51 in	Distribution	= Custom
Storm duration	= R:\Hydroflow Standards\NJ Reg Storm Rainfall Distribution\401A_C_1 min.cds		



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

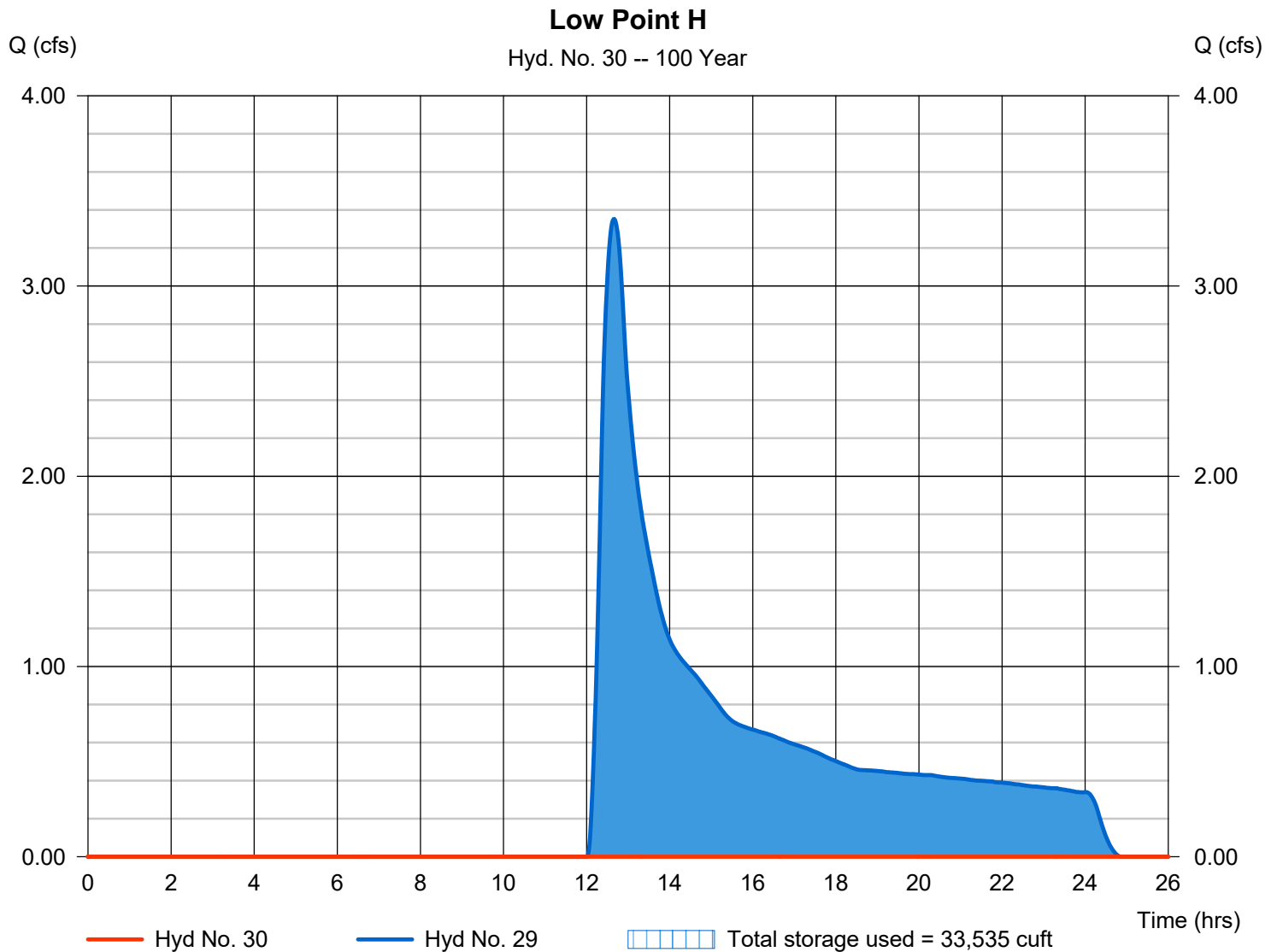
Wednesday, 03 / 9 / 2022

Hyd. No. 30

Low Point H

Hydrograph type	= Reservoir	Peak discharge	= 0.000 cfs
Storm frequency	= 100 yrs	Time to peak	= n/a
Time interval	= 1 min	Hyd. volume	= 0 cuft
Inflow hyd. No.	= 29 - EDA-H	Max. Elevation	= 597.42 ft
Reservoir name	= Low Point H	Max. Storage	= 33,535 cuft

Storage Indication method used.



Hydrograph Report

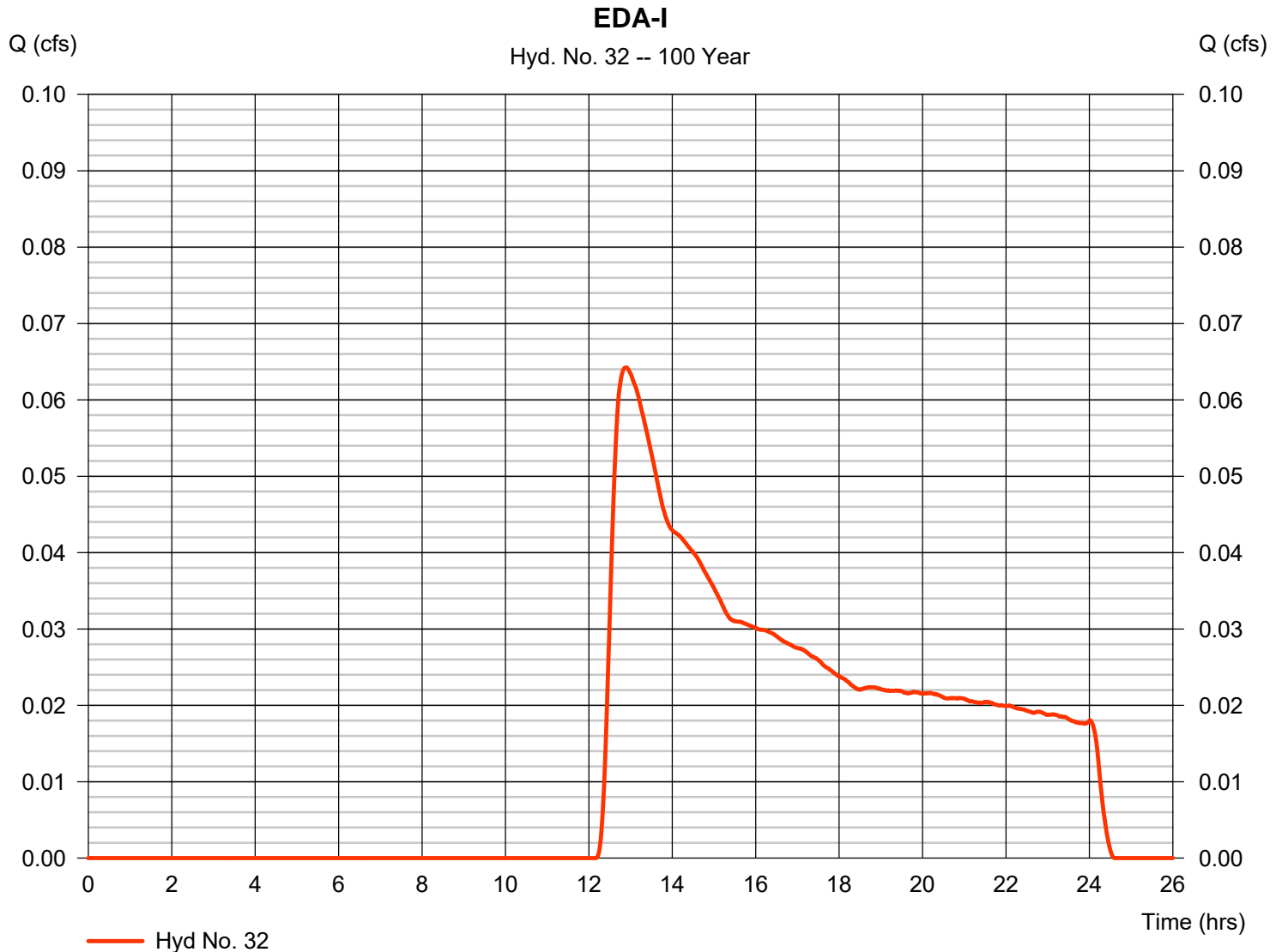
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

Wednesday, 03 / 9 / 2022

Hyd. No. 32

EDA-I

Hydrograph type	= SCS Runoff	Peak discharge	= 0.064 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.90 hrs
Time interval	= 1 min	Hyd. volume	= 1,222 cuft
Drainage area	= 1.100 ac	Curve number	= 30
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 22.10 min
Total precip.	= 7.51 in	Distribution	= Custom
Storm duration	= R:\Hydroflow Standards\NJ Reg Slope Rainfall Distribution\401A_C_1 min.cds		



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

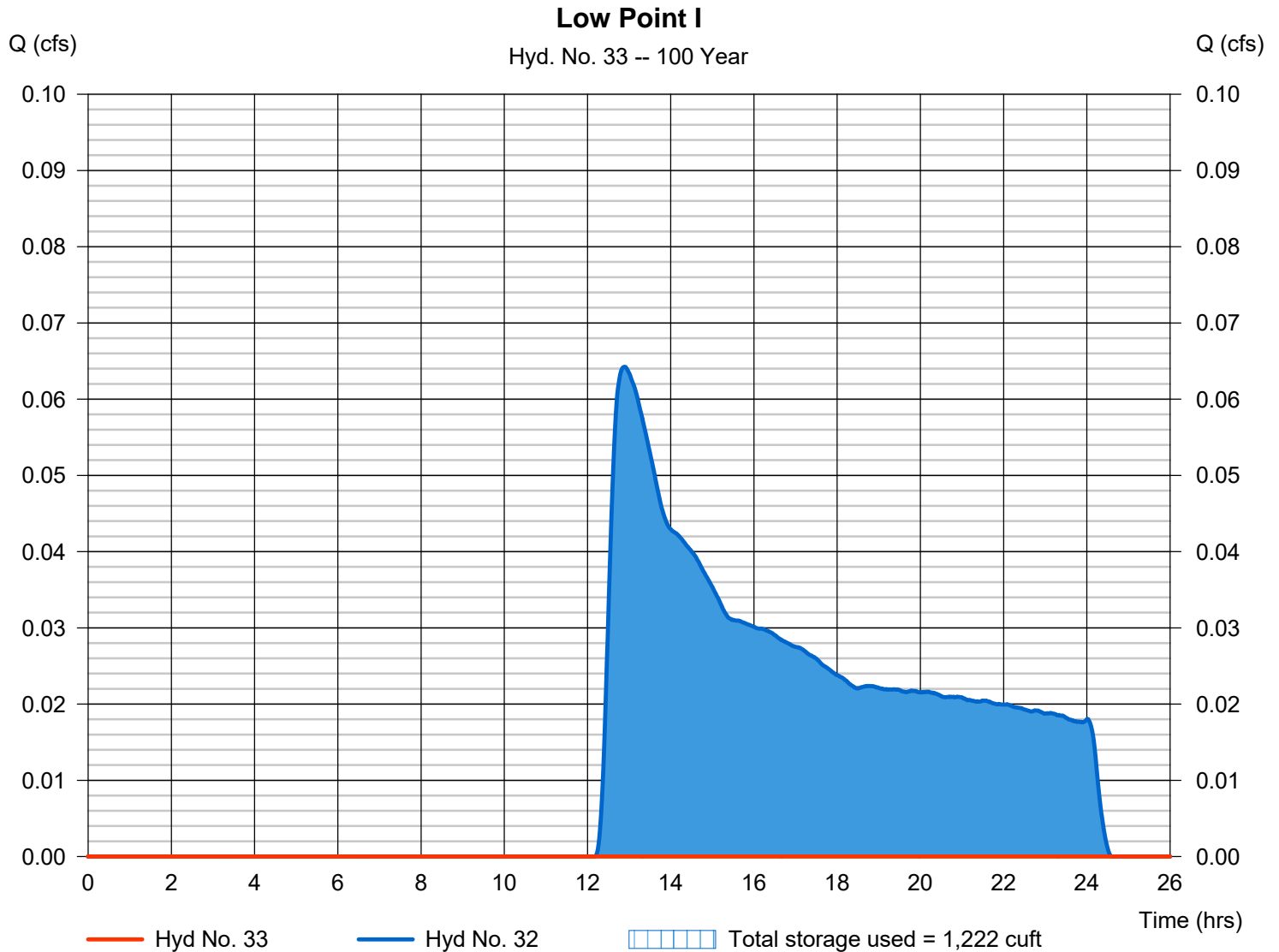
Wednesday, 03 / 9 / 2022

Hyd. No. 33

Low Point I

Hydrograph type	= Reservoir	Peak discharge	= 0.000 cfs
Storm frequency	= 100 yrs	Time to peak	= n/a
Time interval	= 1 min	Hyd. volume	= 0 cuft
Inflow hyd. No.	= 32 - EDA-I	Max. Elevation	= 597.15 ft
Reservoir name	= Low Point I	Max. Storage	= 1,222 cuft

Storage Indication method used.



Hydrograph Report

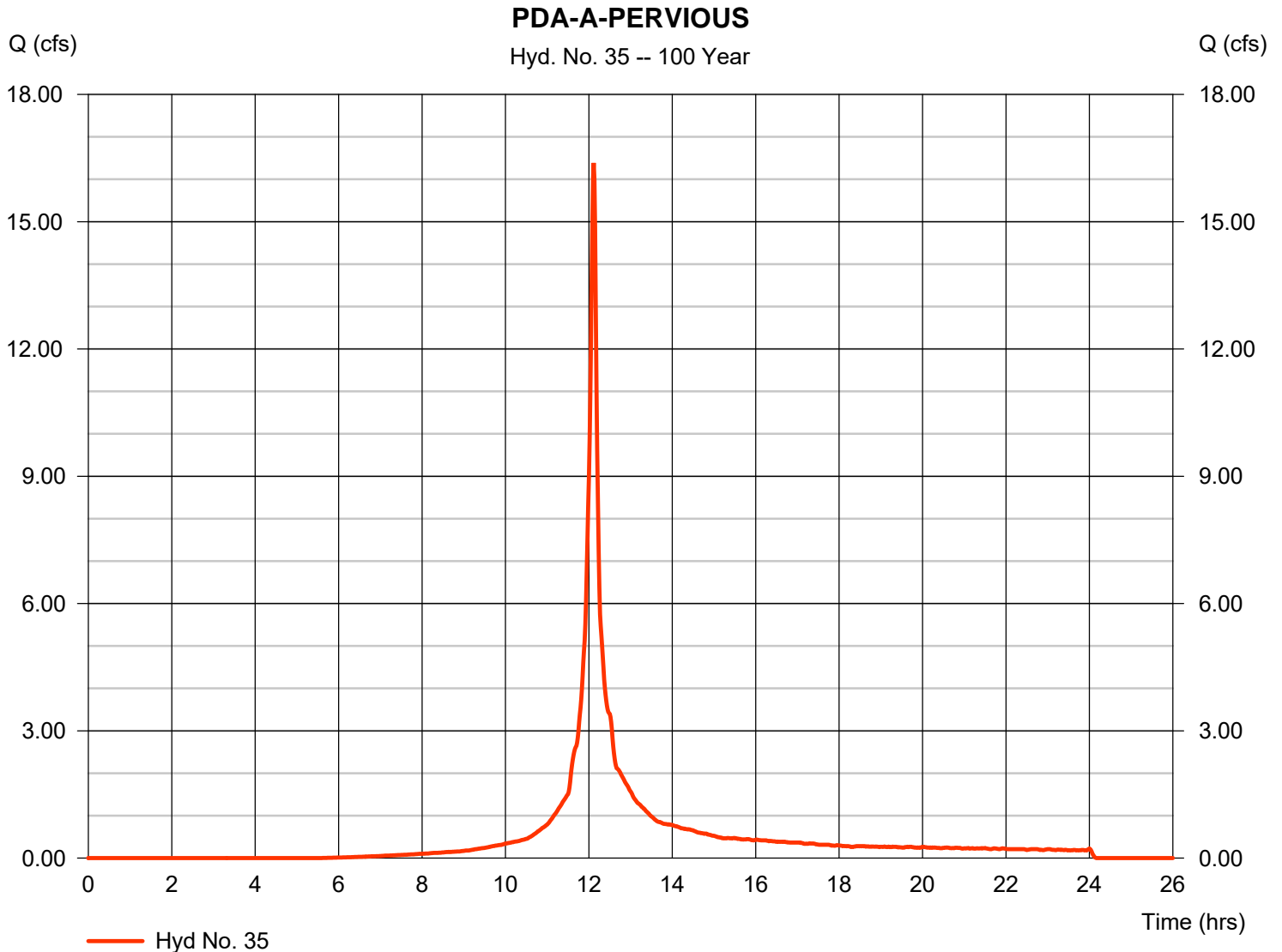
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Wednesday, 03 / 9 / 2022

Hyd. No. 35

PDA-A-PERVIOUS

Hydrograph type	= SCS Runoff	Peak discharge	= 16.38 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.12 hrs
Time interval	= 1 min	Hyd. volume	= 46,347 cuft
Drainage area	= 2.450 ac	Curve number	= 79
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 6.00 min
Total precip.	= 7.51 in	Distribution	= Custom
Storm duration	= R:\Hydroflow Standards\NJ Reg Storm Rainfall Distribution\401A_C_1 min.cds		



Hydrograph Report

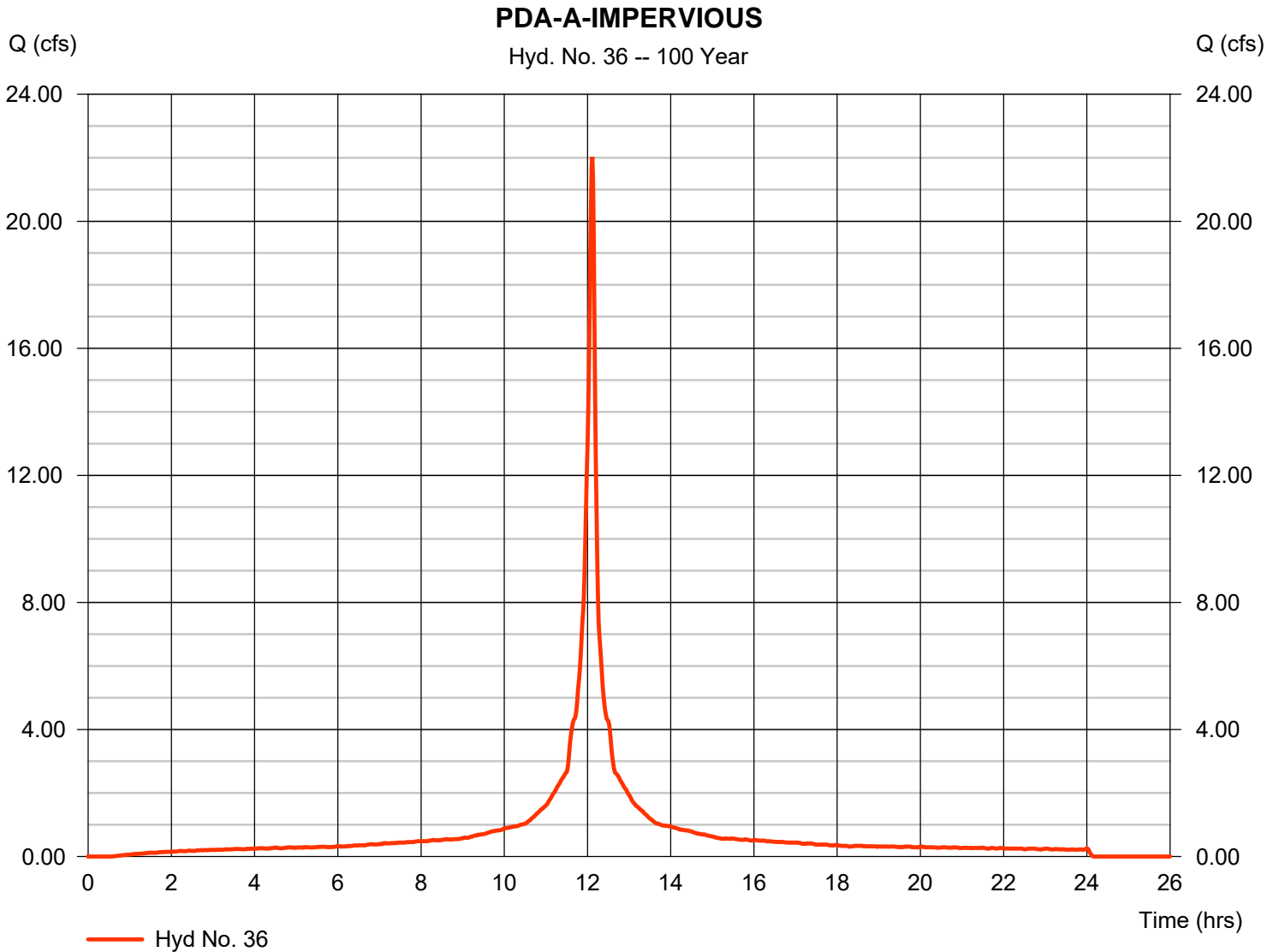
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

Wednesday, 03 / 9 / 2022

Hyd. No. 36

PDA-A-IMPERVIOUS

Hydrograph type	= SCS Runoff	Peak discharge	= 22.03 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.12 hrs
Time interval	= 1 min	Hyd. volume	= 72,669 cuft
Drainage area	= 2.670 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 6.00 min
Total precip.	= 7.51 in	Distribution	= Custom
Storm duration	= R:\Hydroflow Standards\NJ Reg Slope Rainfall Distribution\40A_C_1 min.cds		



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

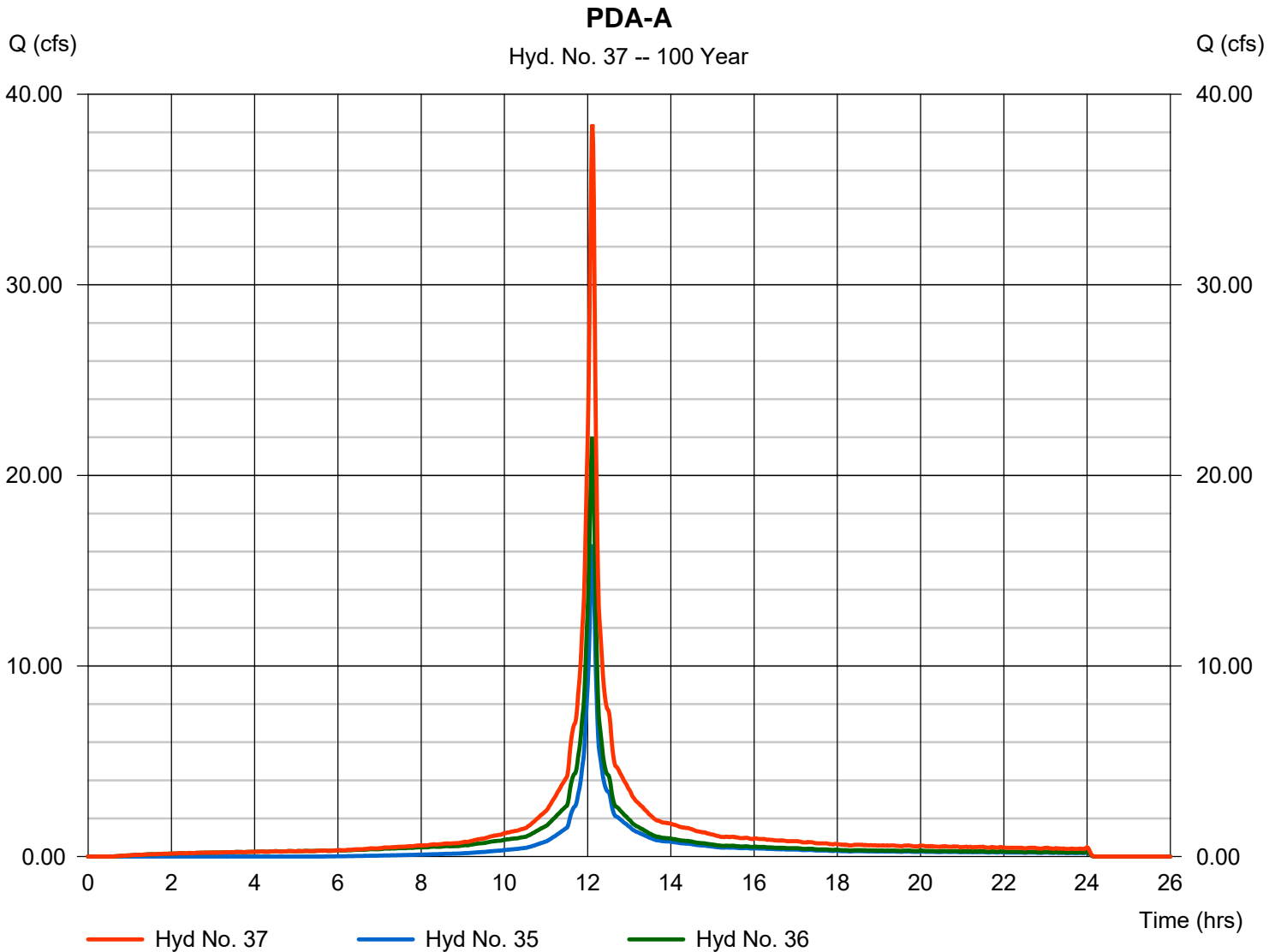
Wednesday, 03 / 9 / 2022

Hyd. No. 37

PDA-A

Hydrograph type = Combine
 Storm frequency = 100 yrs
 Time interval = 1 min
 Inflow hyds. = 35, 36

Peak discharge = 38.41 cfs
 Time to peak = 12.12 hrs
 Hyd. volume = 119,016 cuft
 Contrib. drain. area = 5.120 ac



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

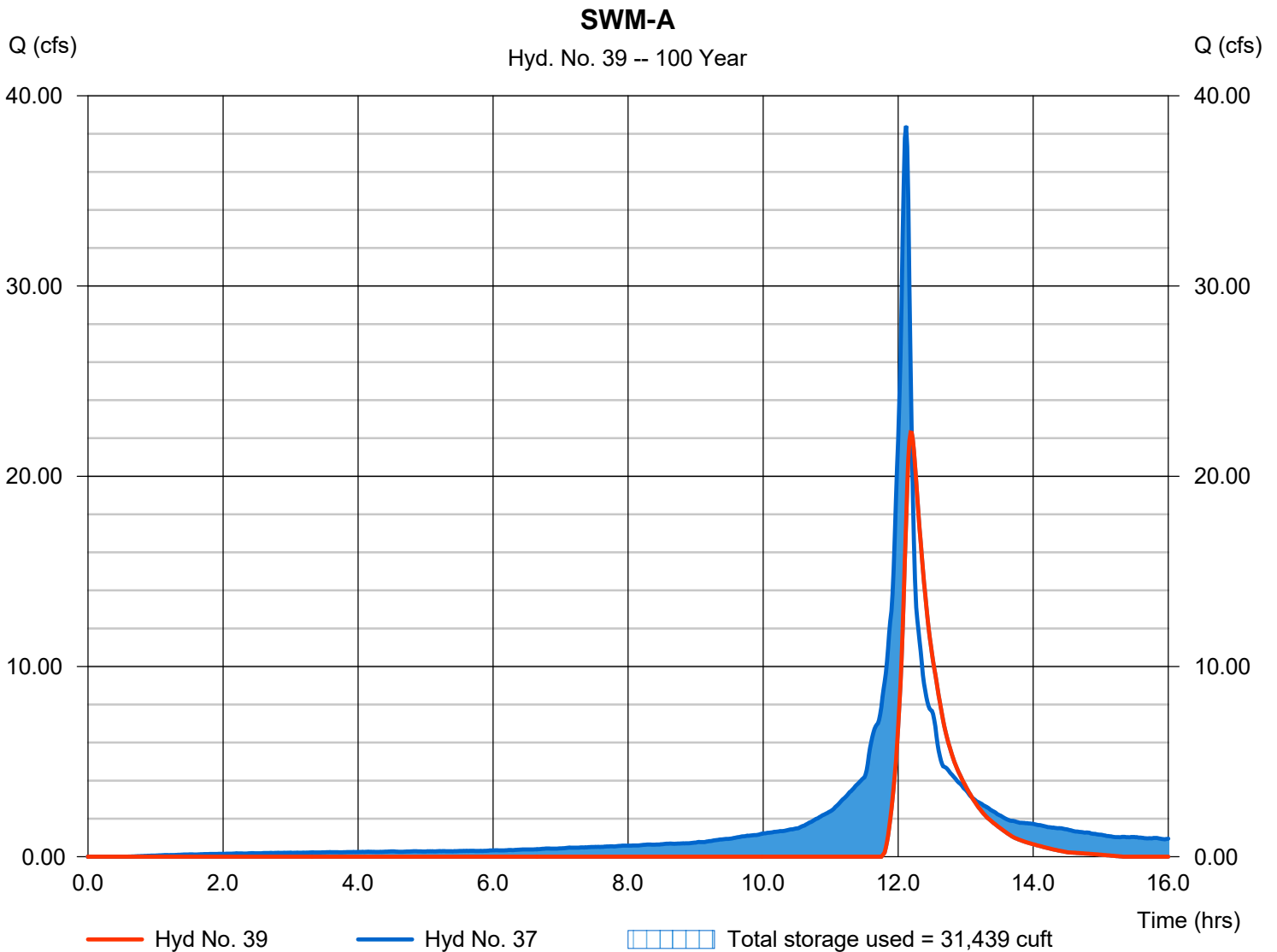
Wednesday, 03 / 9 / 2022

Hyd. No. 39

SWM-A

Hydrograph type	= Reservoir	Peak discharge	= 22.30 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.18 hrs
Time interval	= 1 min	Hyd. volume	= 49,402 cuft
Inflow hyd. No.	= 37 - PDA-A	Max. Elevation	= 596.91 ft
Reservoir name	= SWM-A	Max. Storage	= 31,439 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Hydrograph Report

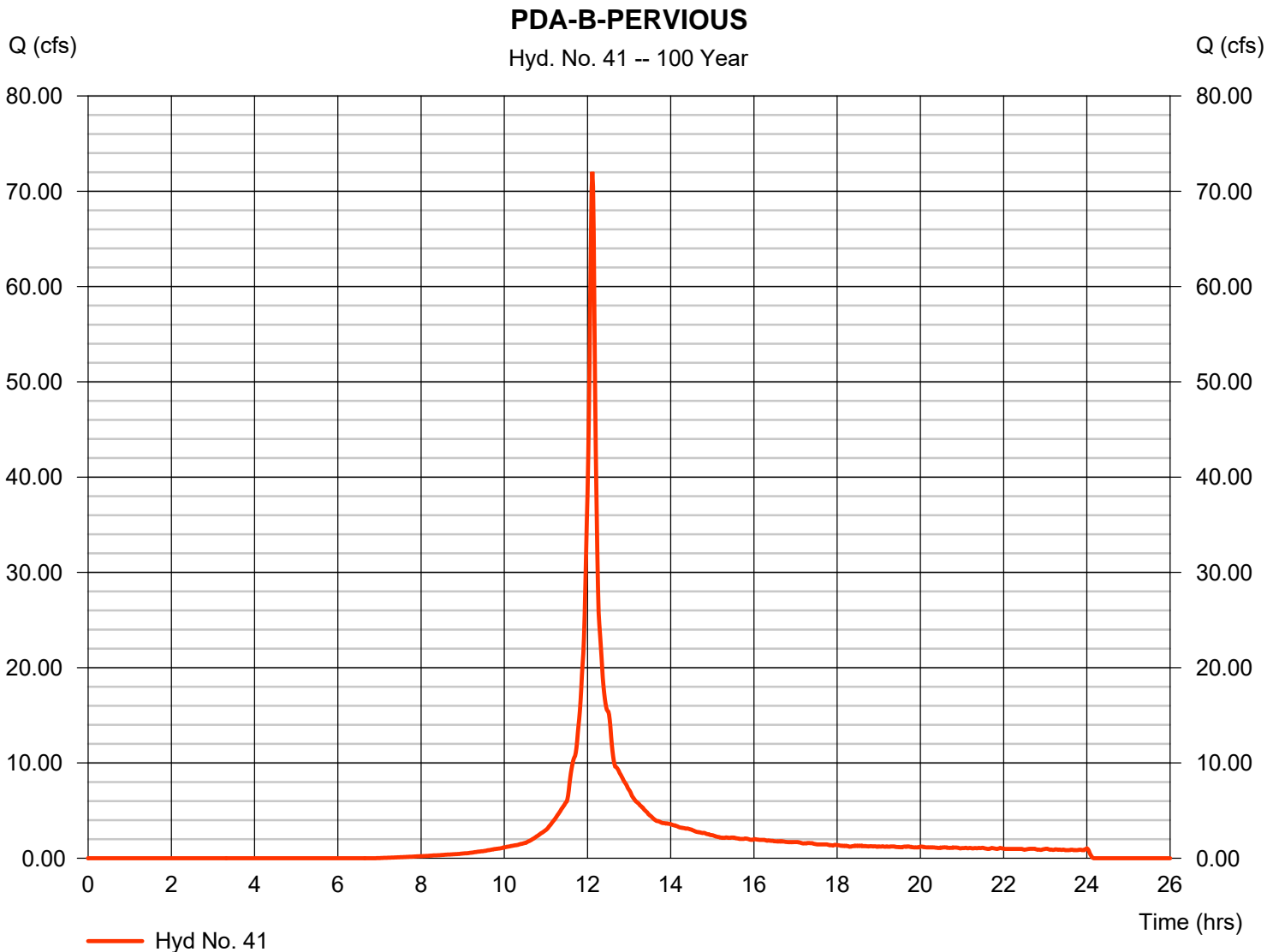
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

Wednesday, 03 / 9 / 2022

Hyd. No. 41

PDA-B-PERVIOUS

Hydrograph type	= SCS Runoff	Peak discharge	= 72.03 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.12 hrs
Time interval	= 1 min	Hyd. volume	= 200,515 cuft
Drainage area	= 11.930 ac	Curve number	= 74
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 6.00 min
Total precip.	= 7.51 in	Distribution	= Custom
Storm duration	= R:\Hydroflow Standards\NJ Reg Storm Rainfall Distribution\40A_C_1 min.cds		



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

Wednesday, 03 / 9 / 2022

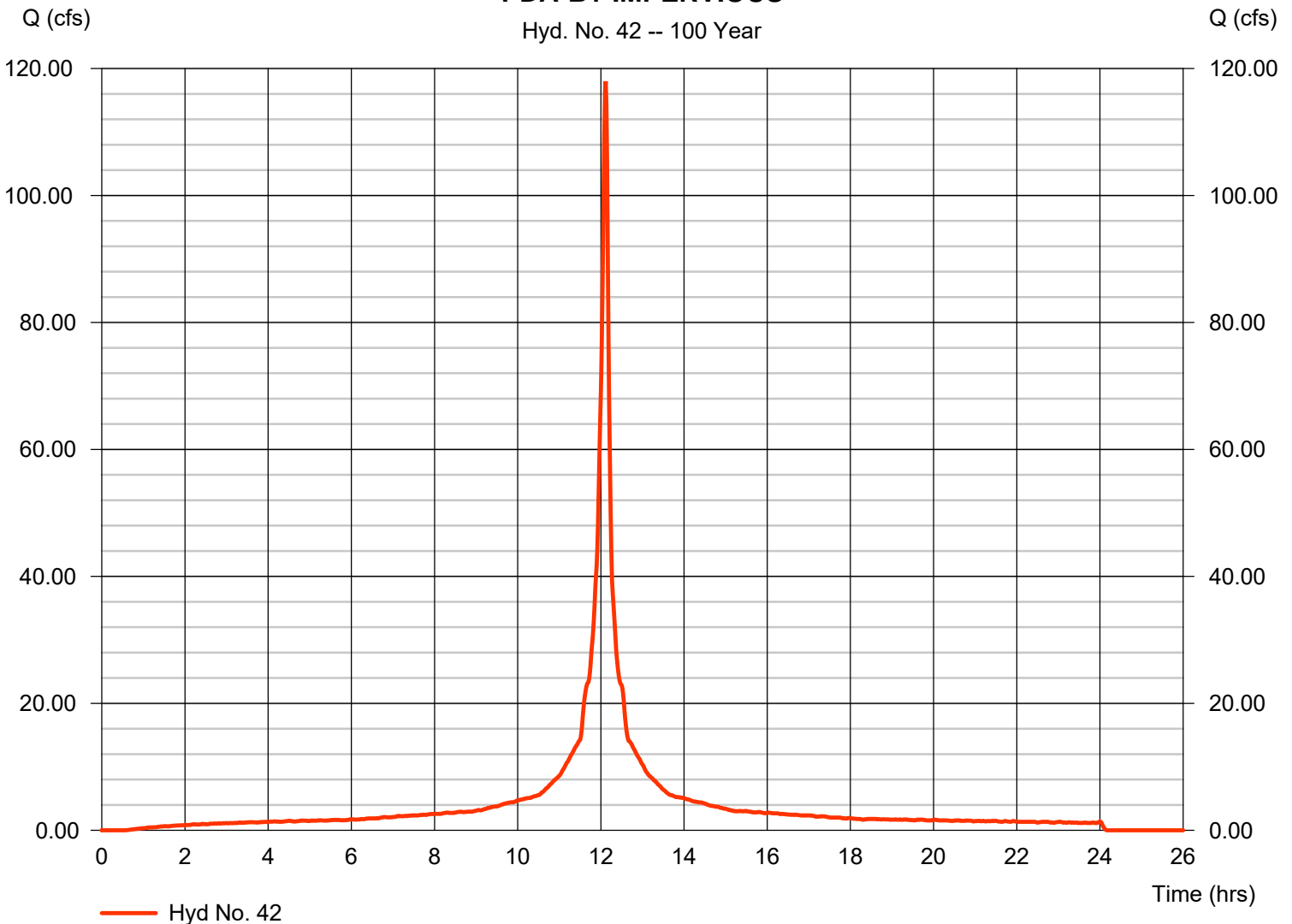
Hyd. No. 42

PDA-B1-IMPERVIOUS

Hydrograph type	= SCS Runoff	Peak discharge	= 117.99 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.12 hrs
Time interval	= 1 min	Hyd. volume	= 389,200 cuft
Drainage area	= 14.300 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 6.00 min
Total precip.	= 7.51 in	Distribution	= Custom
Storm duration	= R:\Hydroflow Standards\NJ Reg Storm Rainfall Distribution\401A_C_1 min.cds		

PDA-B1-IMPERVIOUS

Hyd. No. 42 -- 100 Year



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

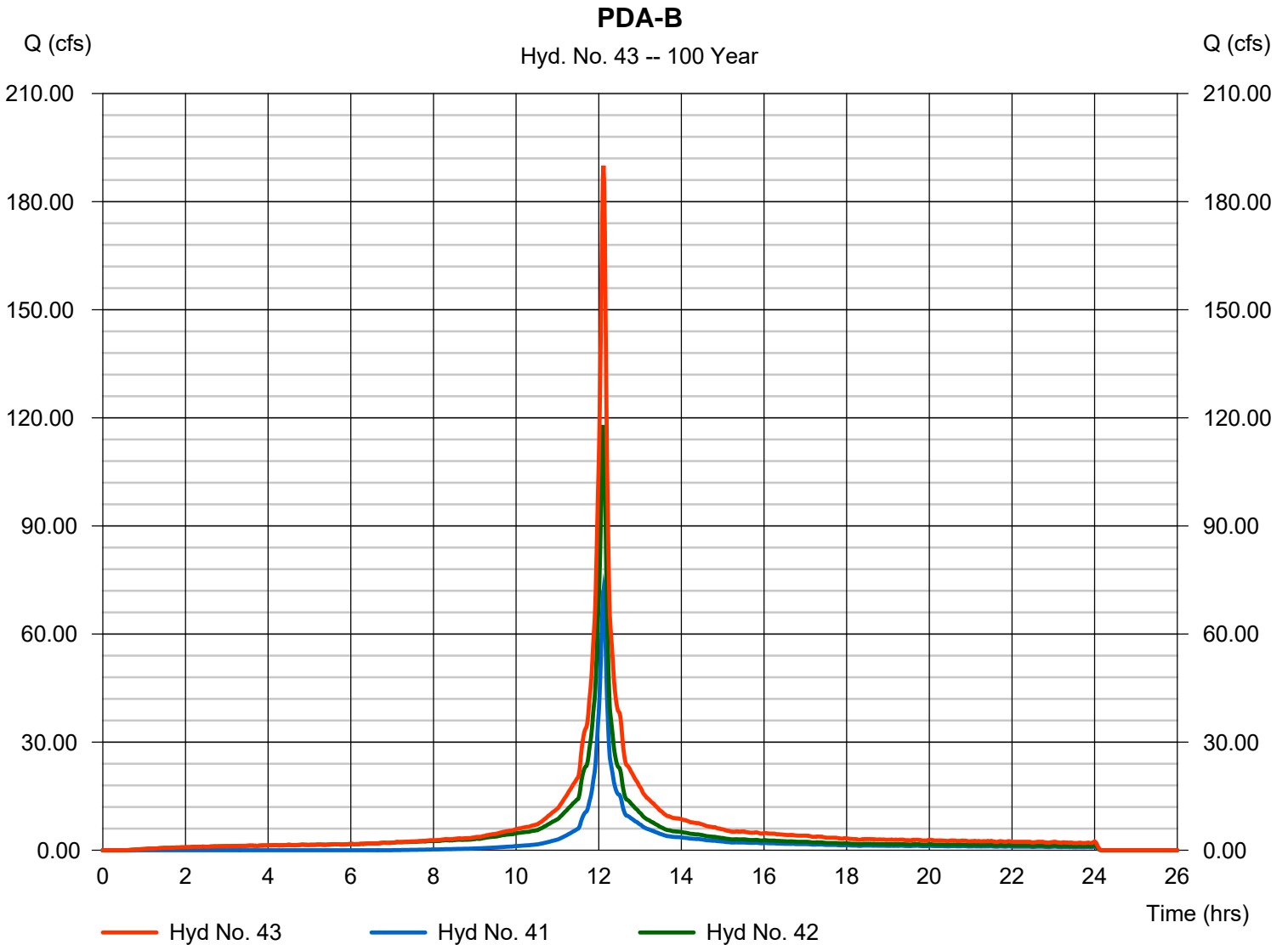
Wednesday, 03 / 9 / 2022

Hyd. No. 43

PDA-B

Hydrograph type = Combine
 Storm frequency = 100 yrs
 Time interval = 1 min
 Inflow hyds. = 41, 42

Peak discharge = 190.02 cfs
 Time to peak = 12.12 hrs
 Hyd. volume = 589,715 cuft
 Contrib. drain. area = 26.230 ac



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

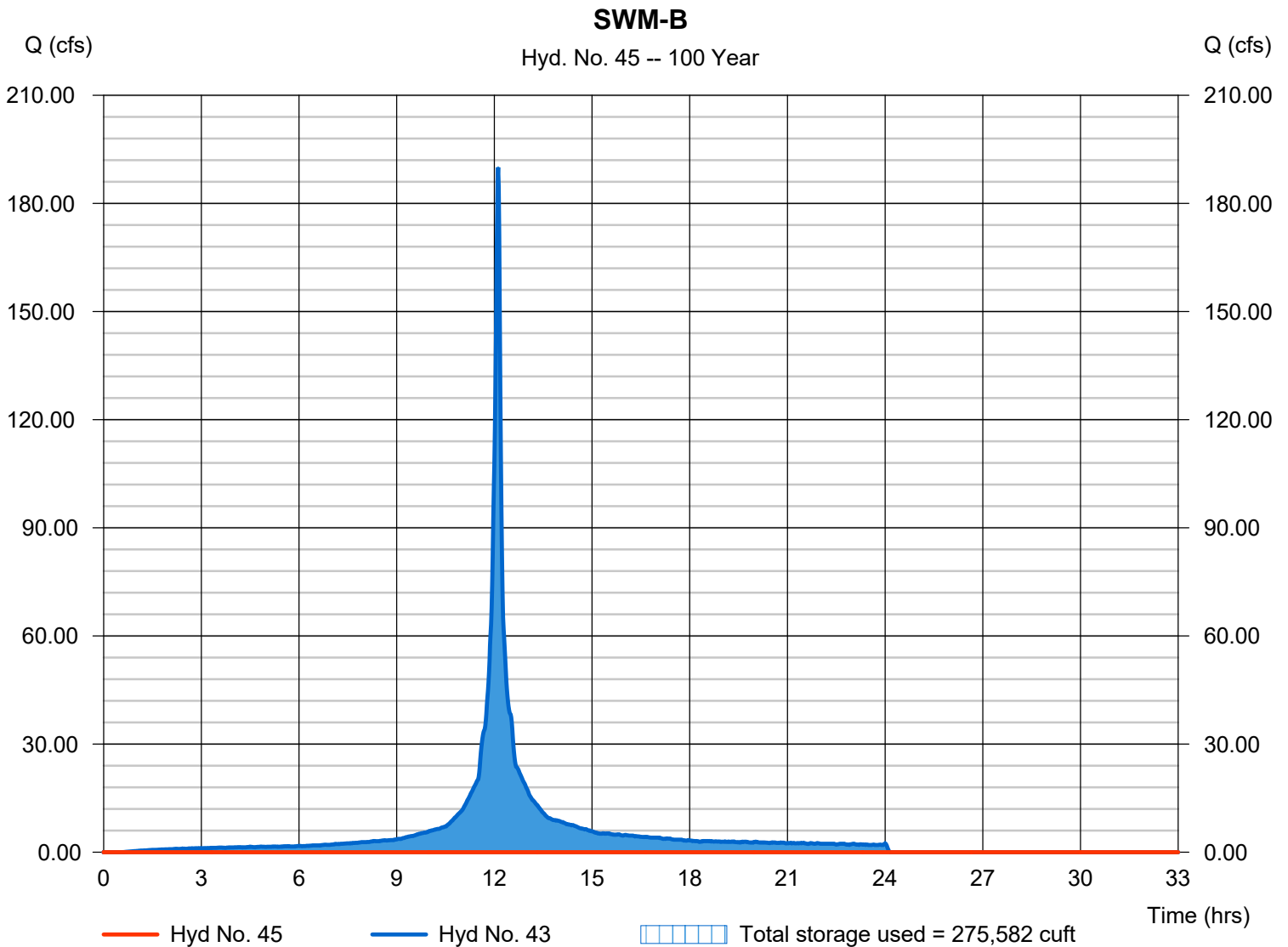
Wednesday, 03 / 9 / 2022

Hyd. No. 45

SWM-B

Hydrograph type	= Reservoir	Peak discharge	= 0.000 cfs
Storm frequency	= 100 yrs	Time to peak	= 16.97 hrs
Time interval	= 1 min	Hyd. volume	= 0 cuft
Inflow hyd. No.	= 43 - PDA-B	Max. Elevation	= 599.89 ft
Reservoir name	= SWM-B1	Max. Storage	= 275,582 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

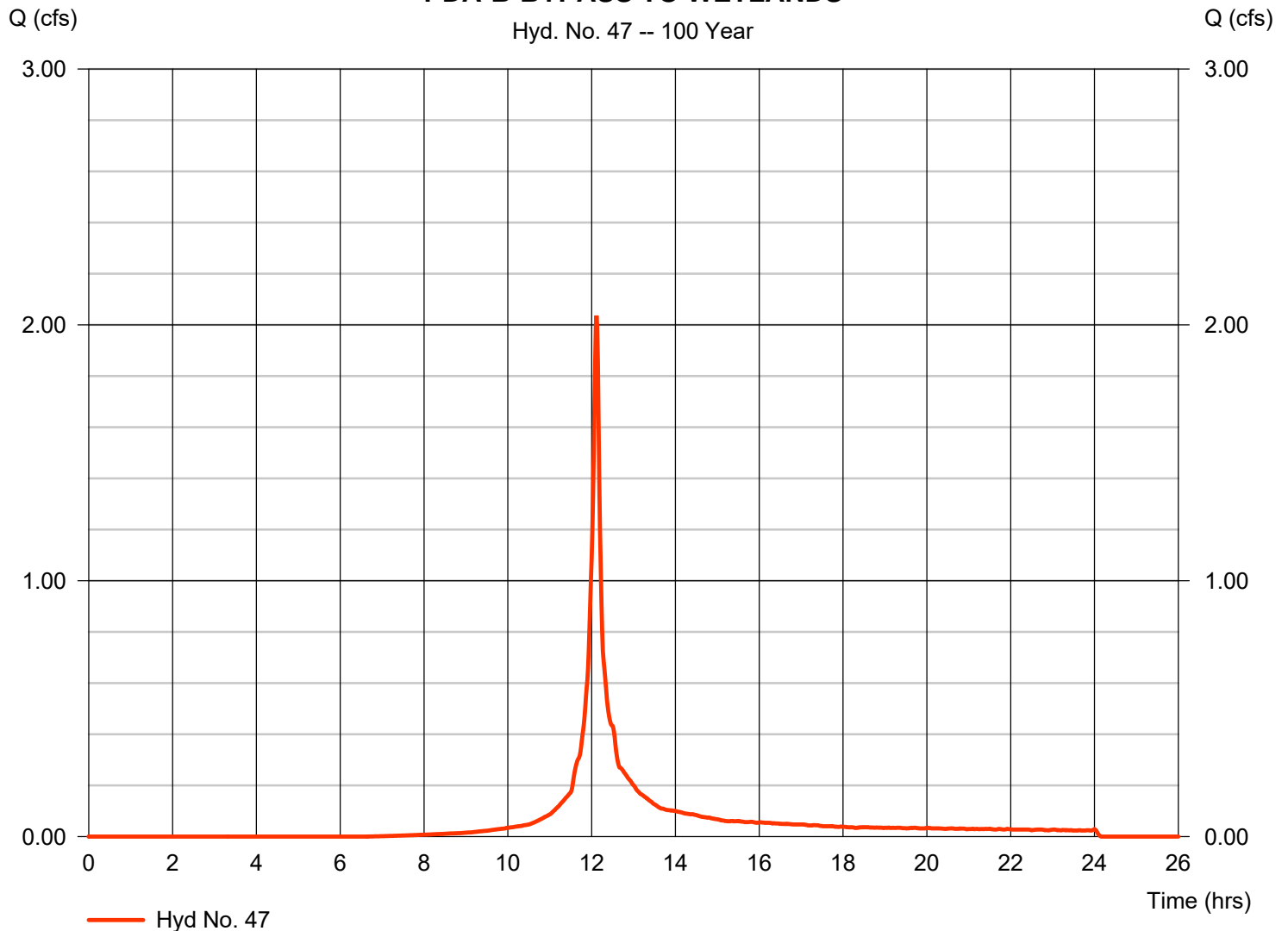
Wednesday, 03 / 9 / 2022

Hyd. No. 47

PDA-B-BYPASS TO WETLANDS

Hydrograph type	= SCS Runoff	Peak discharge	= 2.037 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.12 hrs
Time interval	= 1 min	Hyd. volume	= 5,685 cuft
Drainage area	= 0.330 ac	Curve number	= 75
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 6.00 min
Total precip.	= 7.51 in	Distribution	= Custom
Storm duration	= R:\Hydroflow Standards\NJ Reg Storm Rainfall Distribution\401A_C_1 min.cds		

PDA-B-BYPASS TO WETLANDS



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

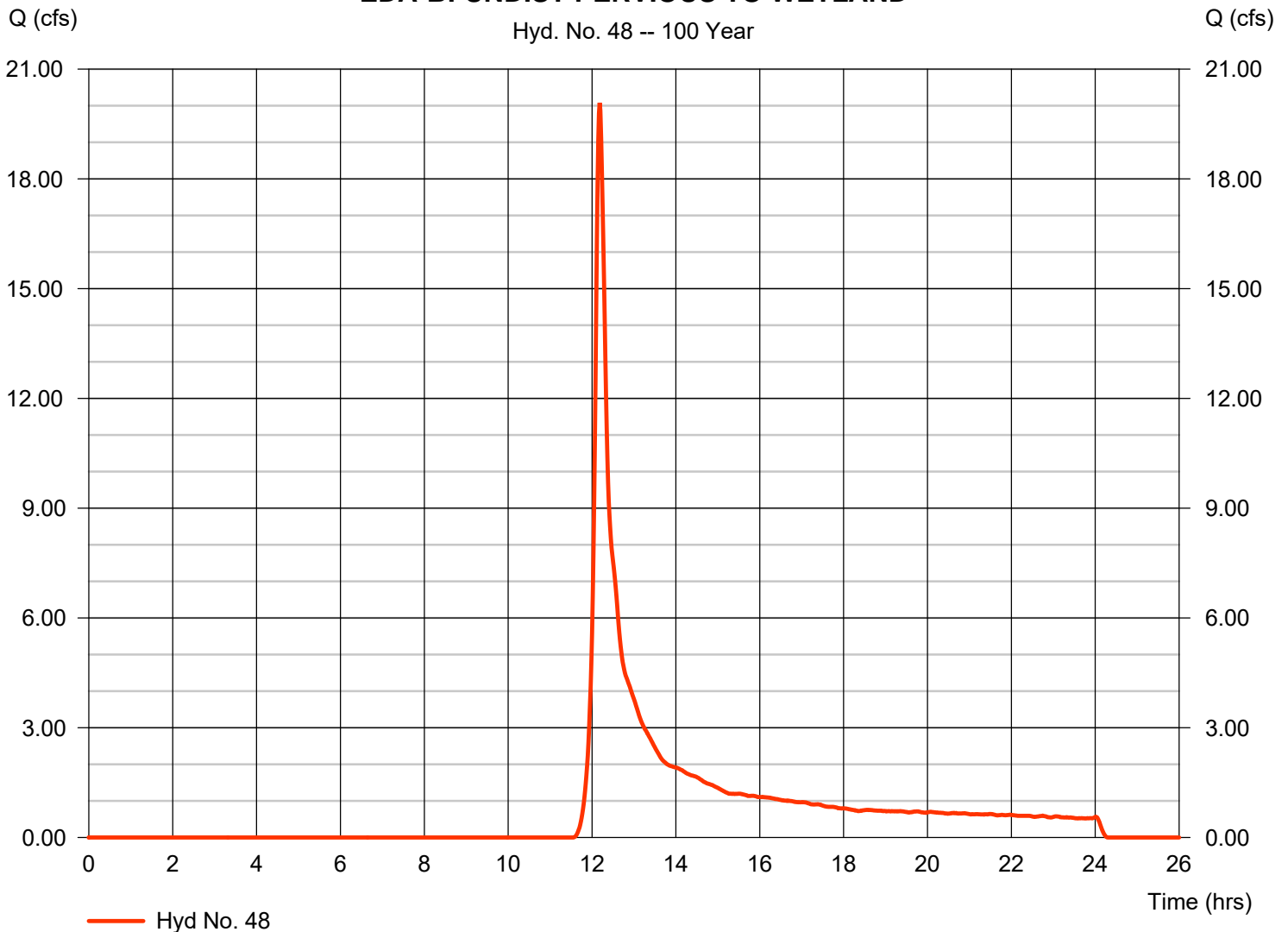
Wednesday, 03 / 9 / 2022

Hyd. No. 48

EDA-B: UNDIST PERVIOUS TO WETLAND

Hydrograph type	= SCS Runoff	Peak discharge	= 20.08 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.18 hrs
Time interval	= 1 min	Hyd. volume	= 75,105 cuft
Drainage area	= 12.170 ac	Curve number	= 47
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.70 min
Total precip.	= 7.51 in	Distribution	= Custom
Storm duration	= R:\Hydroflow Standards\NJ Reg Storm Rainfall Distribution\48A_C_1 min.cds		

EDA-B: UNDIST PERVIOUS TO WETLAND



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

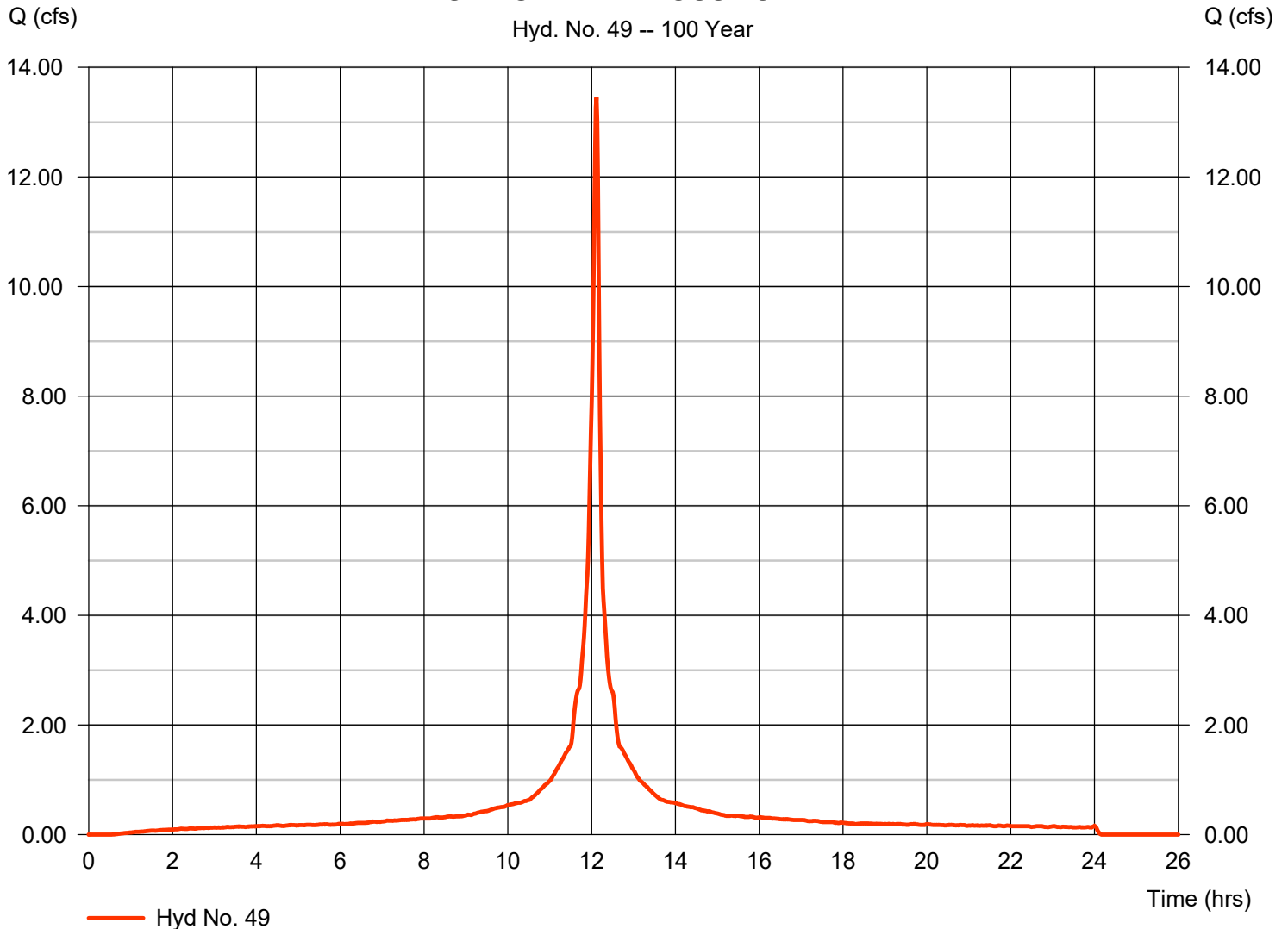
Wednesday, 03 / 9 / 2022

Hyd. No. 49

EDA-B:UNDIST IMPERVIOUS TO WETLAND

Hydrograph type	= SCS Runoff	Peak discharge	= 13.45 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.12 hrs
Time interval	= 1 min	Hyd. volume	= 44,363 cuft
Drainage area	= 1.630 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 6.00 min
Total precip.	= 7.51 in	Distribution	= Custom
Storm duration	= R:\Hydroflow Standards\NJ Reg Slope Rainfall Distribution\NOAA_C_1 min.cds		

EDA-B:UNDIST IMPERVIOUS TO WETLAND



Hydrograph Report

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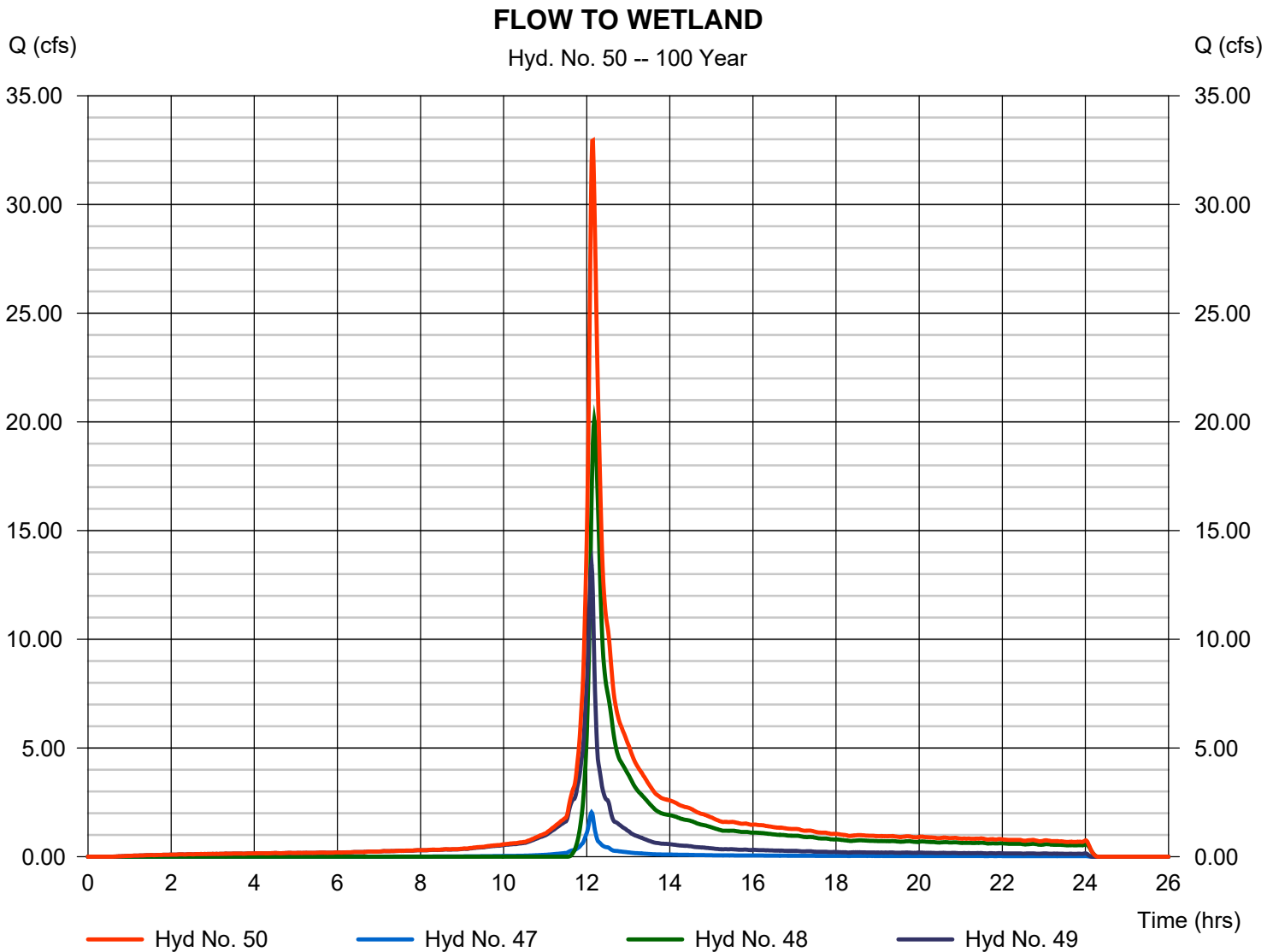
Wednesday, 03 / 9 / 2022

Hyd. No. 50

FLOW TO WETLAND

Hydrograph type = Combine
 Storm frequency = 100 yrs
 Time interval = 1 min
 Inflow hyds. = 47, 48, 49

Peak discharge = 32.94 cfs
 Time to peak = 12.15 hrs
 Hyd. volume = 125,153 cuft
 Contrib. drain. area = 14.130 ac



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

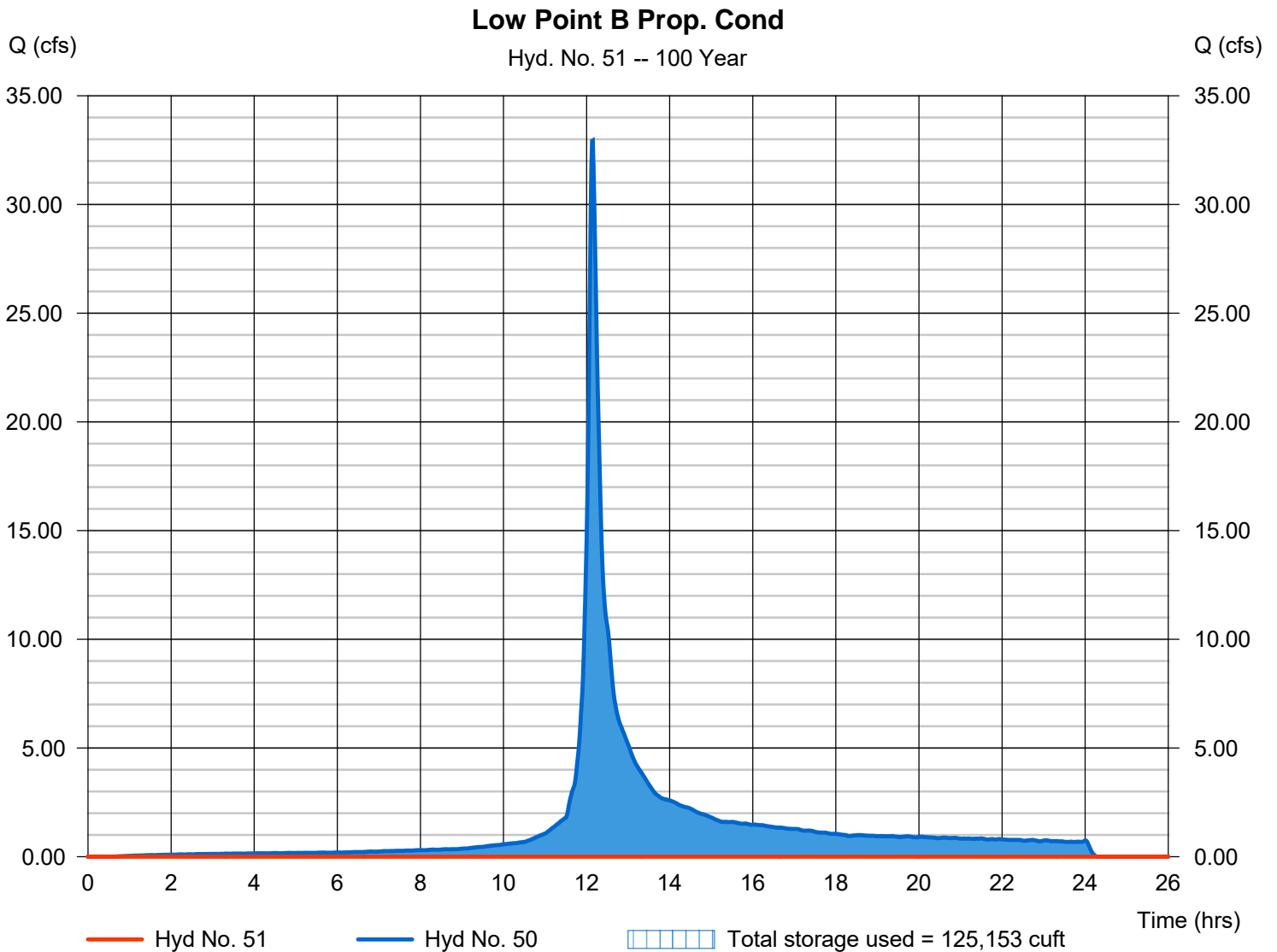
Wednesday, 03 / 9 / 2022

Hyd. No. 51

Low Point B Prop. Cond

Hydrograph type	= Reservoir	Peak discharge	= 0.000 cfs
Storm frequency	= 100 yrs	Time to peak	= n/a
Time interval	= 1 min	Hyd. volume	= 0 cuft
Inflow hyd. No.	= 50 - FLOW TO WETLAND	Max. Elevation	= 597.28 ft
Reservoir name	= Low Point B	Max. Storage	= 125,153 cuft

Storage Indication method used.



Hydrograph Report

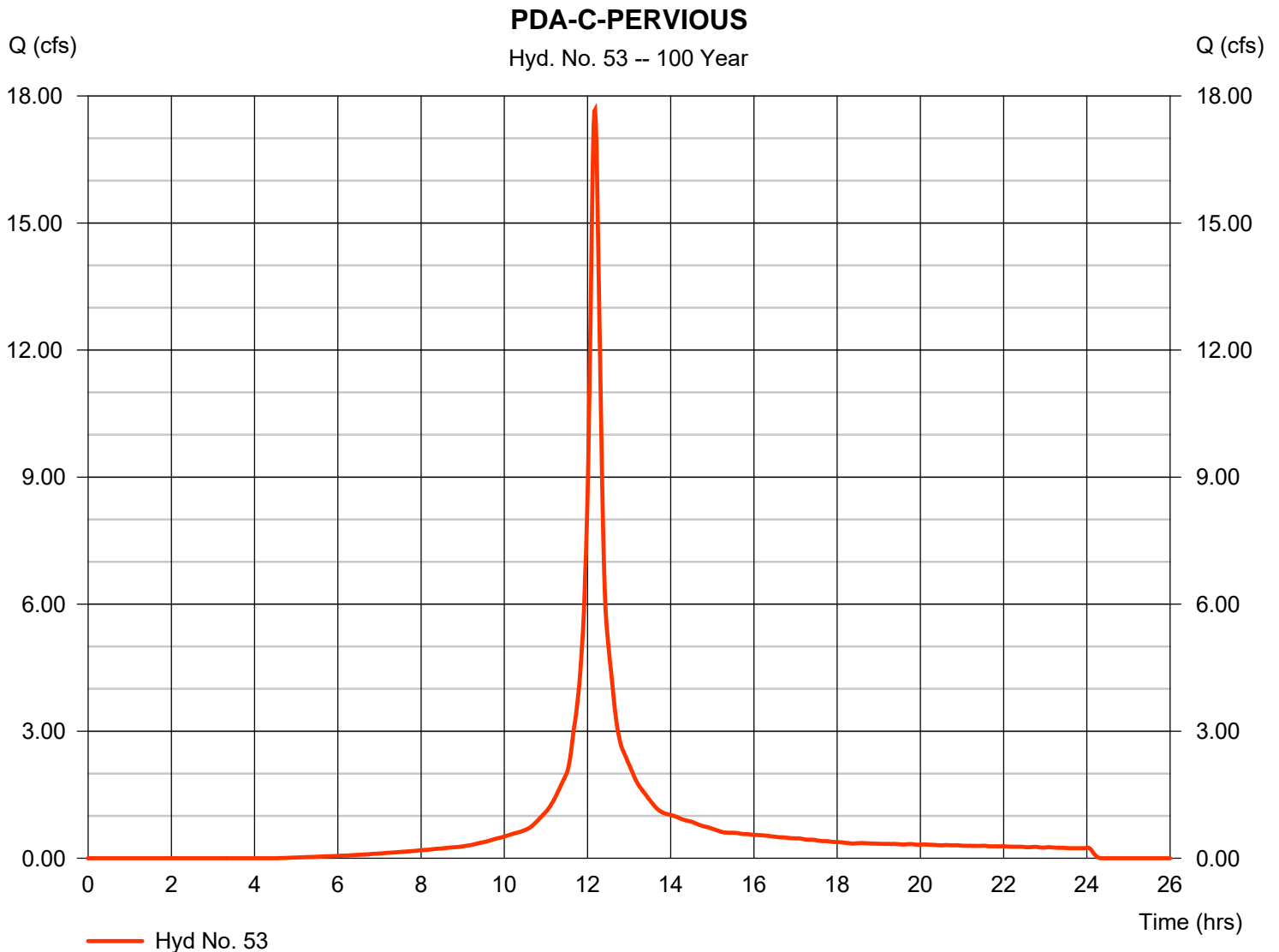
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

Wednesday, 03 / 9 / 2022

Hyd. No. 53

PDA-C-PERVIOUS

Hydrograph type	= SCS Runoff	Peak discharge	= 17.67 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.18 hrs
Time interval	= 1 min	Hyd. volume	= 62,815 cuft
Drainage area	= 3.190 ac	Curve number	= 83
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 12.70 min
Total precip.	= 7.51 in	Distribution	= Custom
Storm duration	= R:\Hydroflow Standards\NJ Reg Storm Rainfall Distribution\401A_C_1 min.cds		



Hydrograph Report

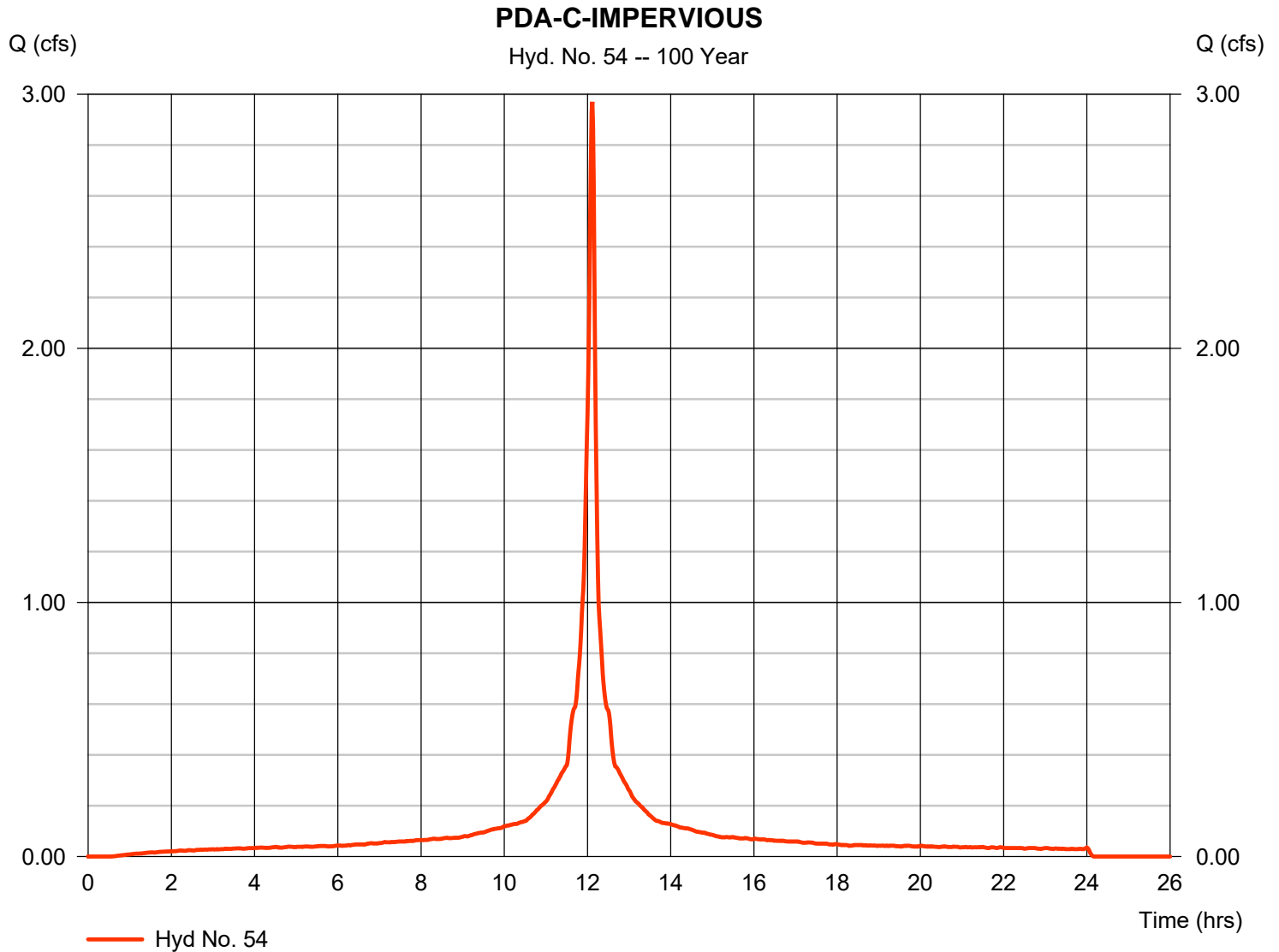
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

Wednesday, 03 / 9 / 2022

Hyd. No. 54

PDA-C-IMPERVIOUS

Hydrograph type	= SCS Runoff	Peak discharge	= 2.970 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.12 hrs
Time interval	= 1 min	Hyd. volume	= 9,798 cuft
Drainage area	= 0.360 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 6.00 min
Total precip.	= 7.51 in	Distribution	= Custom
Storm duration	= R:\Hydroflow Standards\NJ Reg Storm Rainfall Distribution\401A_C_1 min.cds		



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

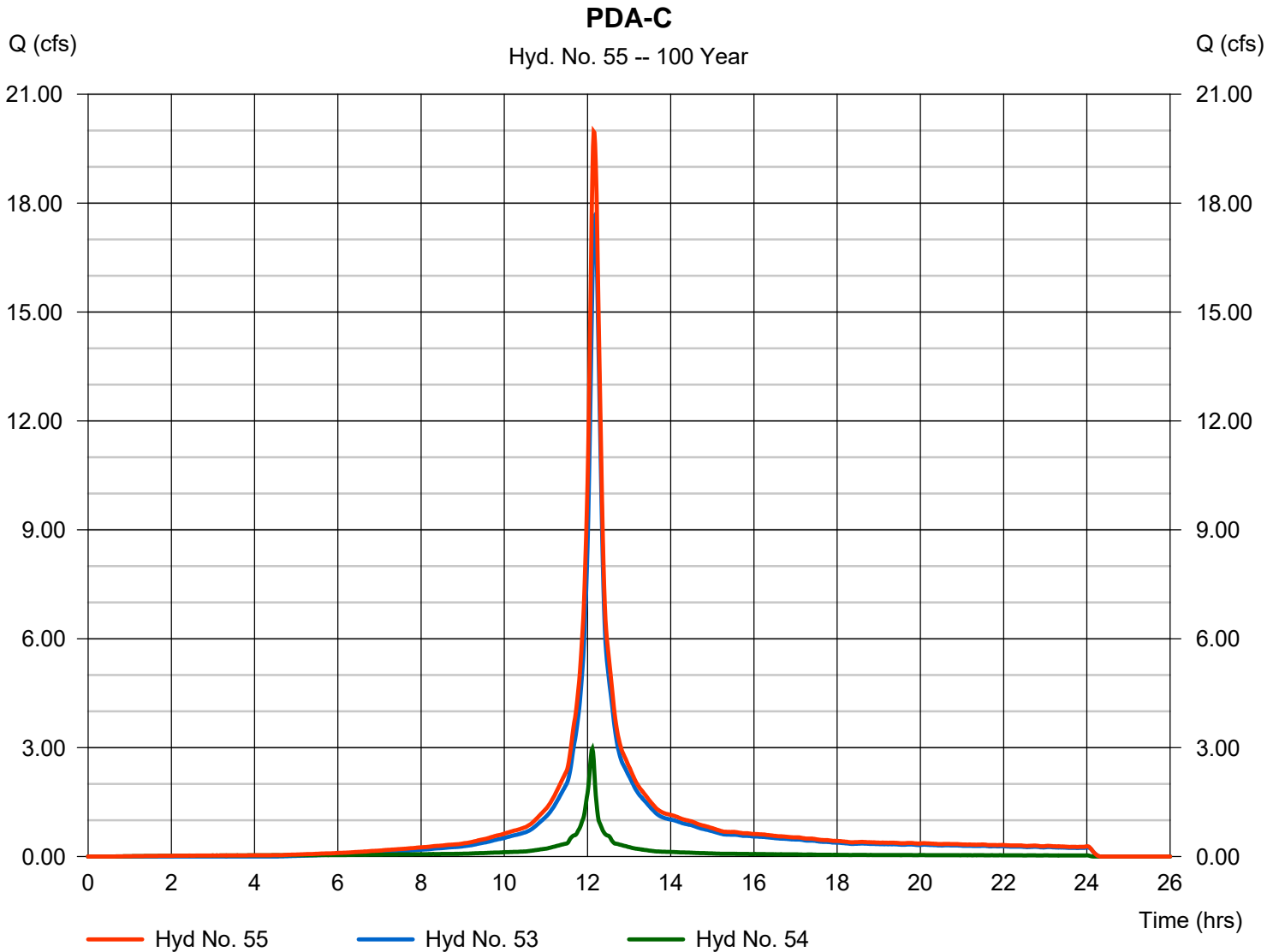
Wednesday, 03 / 9 / 2022

Hyd. No. 55

PDA-C

Hydrograph type = Combine
Storm frequency = 100 yrs
Time interval = 1 min
Inflow hyds. = 53, 54

Peak discharge = 19.97 cfs
Time to peak = 12.15 hrs
Hyd. volume = 72,614 cuft
Contrib. drain. area = 3.550 ac



Hydrograph Report

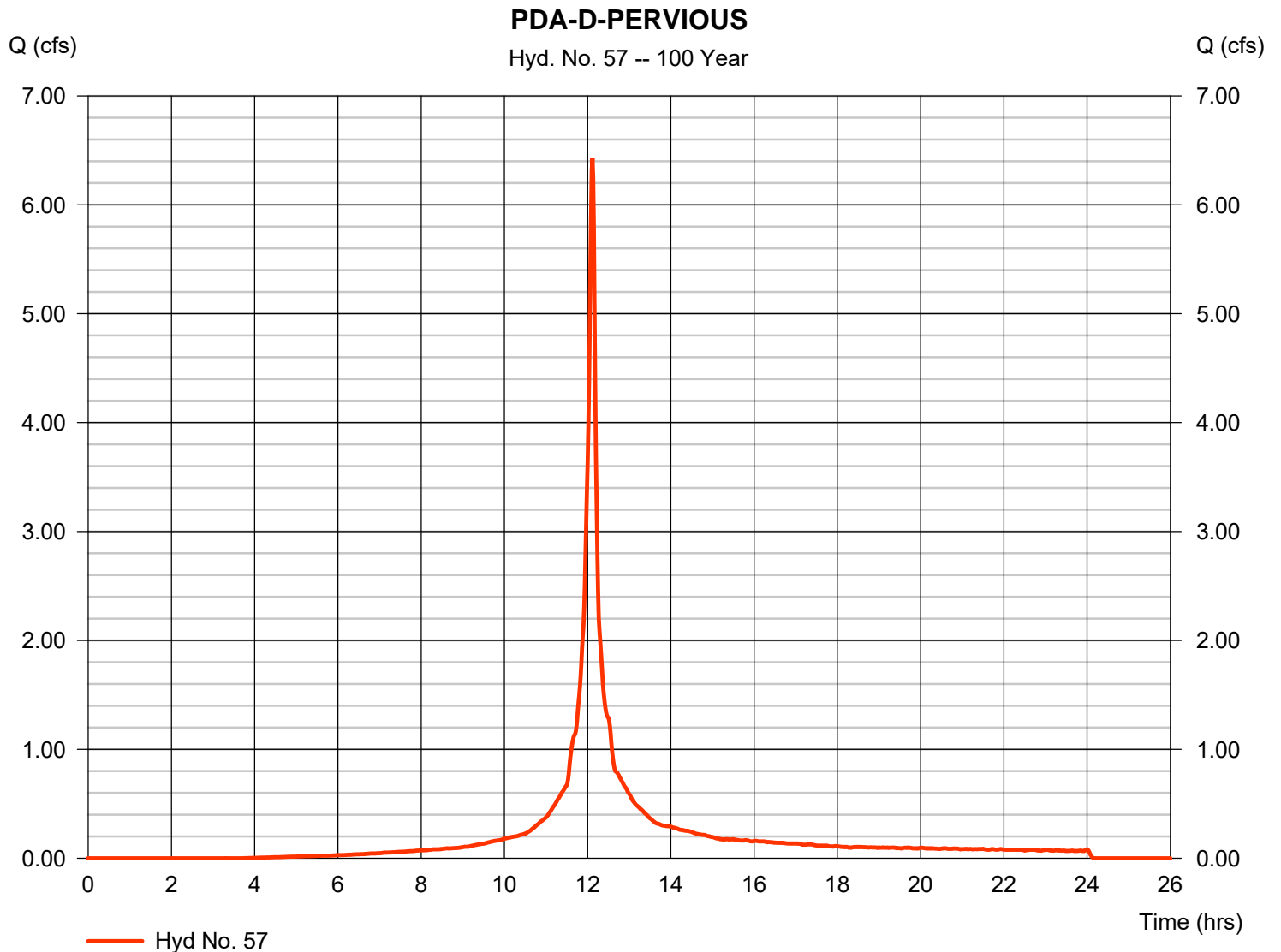
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

Wednesday, 03 / 9 / 2022

Hyd. No. 57

PDA-D-PERVIOUS

Hydrograph type	= SCS Runoff	Peak discharge	= 6.429 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.12 hrs
Time interval	= 1 min	Hyd. volume	= 18,857 cuft
Drainage area	= 0.860 ac	Curve number	= 86
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 6.00 min
Total precip.	= 7.51 in	Distribution	= Custom
Storm duration	= R:\Hydroflow Standards\NJ Reg Slope Rainfall Distribution\NOAA_C_1 min.cds		



Hydrograph Report

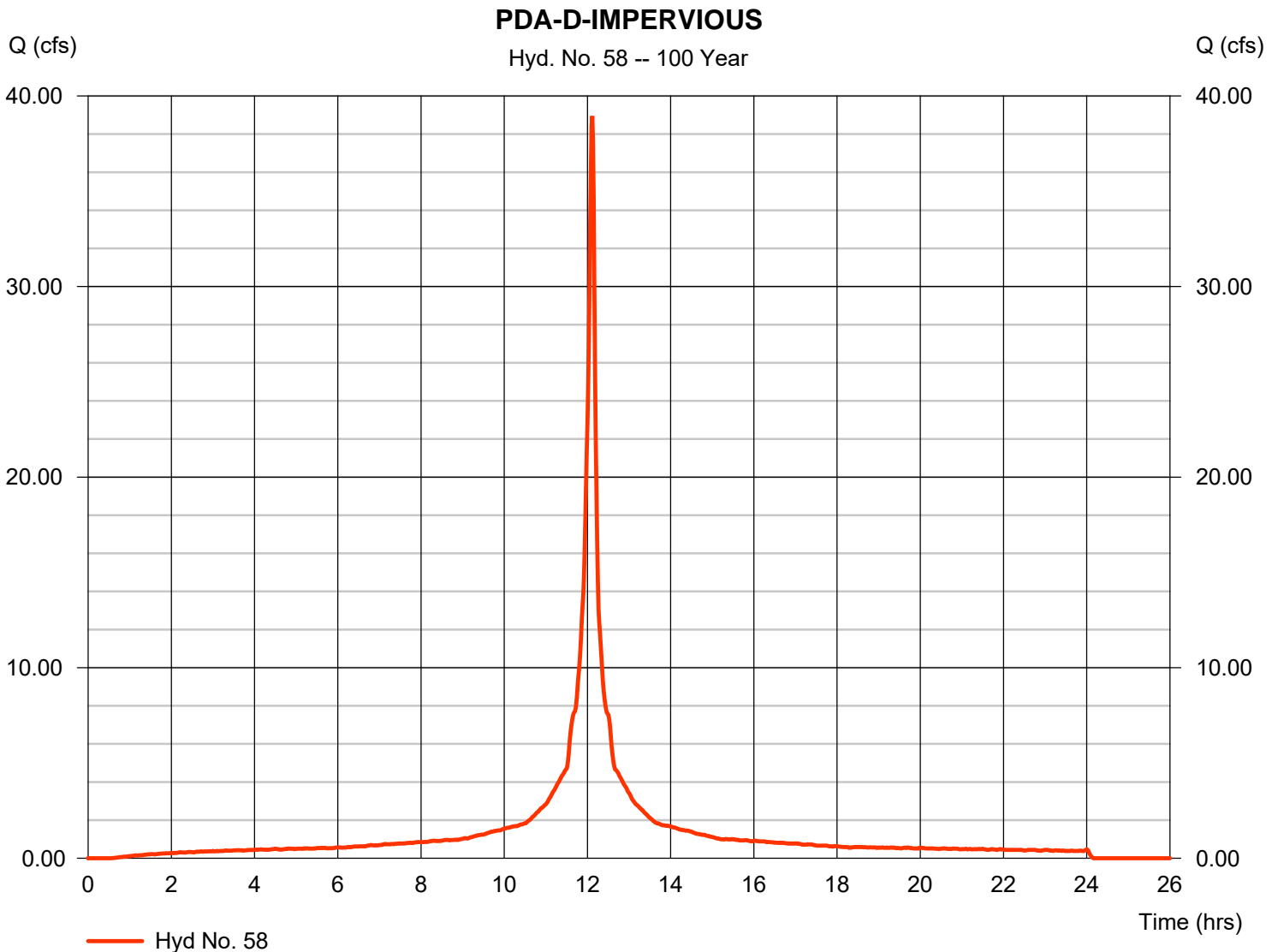
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

Wednesday, 03 / 9 / 2022

Hyd. No. 58

PDA-D-IMPERVIOUS

Hydrograph type	= SCS Runoff	Peak discharge	= 38.94 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.12 hrs
Time interval	= 1 min	Hyd. volume	= 128,463 cuft
Drainage area	= 4.720 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 6.00 min
Total precip.	= 7.51 in	Distribution	= Custom
Storm duration	= R:\Hydroflow Standards\NJ Reg Slope Rainfall Distribution\401A_C_1 min.cds		



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

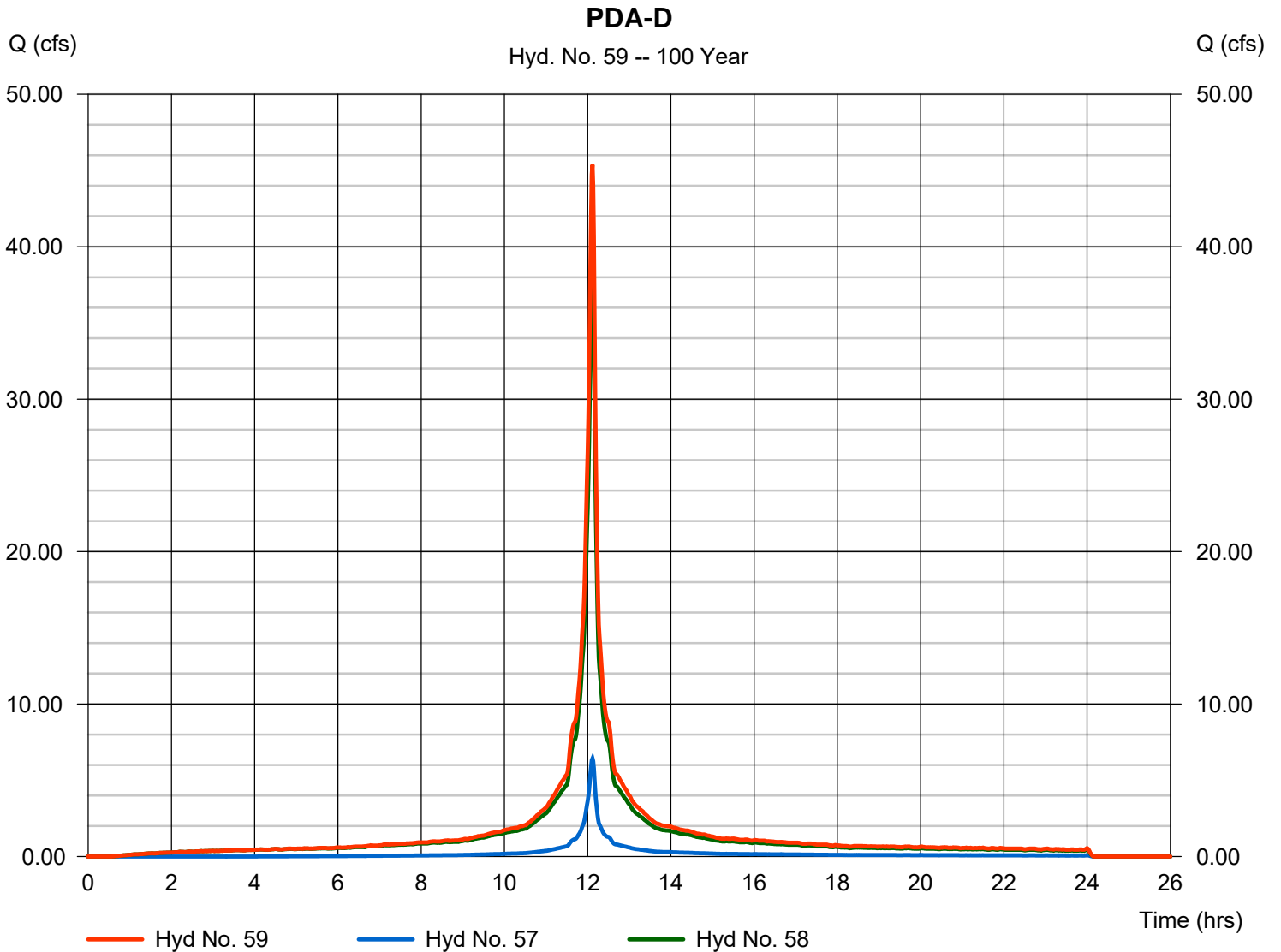
Wednesday, 03 / 9 / 2022

Hyd. No. 59

PDA-D

Hydrograph type = Combine
 Storm frequency = 100 yrs
 Time interval = 1 min
 Inflow hyds. = 57, 58

Peak discharge = 45.37 cfs
 Time to peak = 12.12 hrs
 Hyd. volume = 147,320 cuft
 Contrib. drain. area = 5.580 ac



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

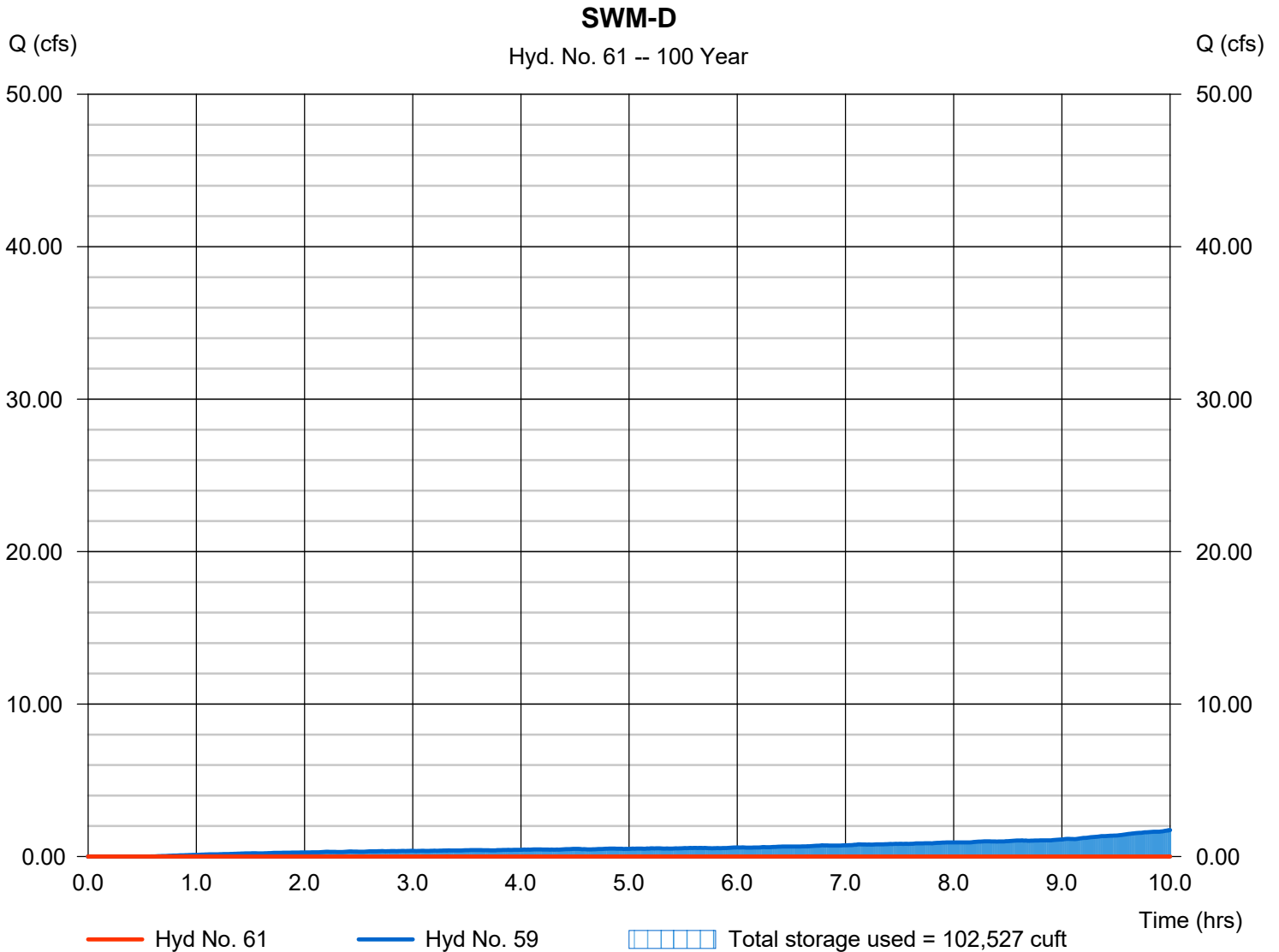
Wednesday, 03 / 9 / 2022

Hyd. No. 61

SWM-D

Hydrograph type	= Reservoir	Peak discharge	= 0.000 cfs
Storm frequency	= 100 yrs	Time to peak	= 8.62 hrs
Time interval	= 1 min	Hyd. volume	= 0 cuft
Inflow hyd. No.	= 59 - PDA-D	Max. Elevation	= 604.27 ft
Reservoir name	= SWM-D	Max. Storage	= 102,527 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Hydrograph Report

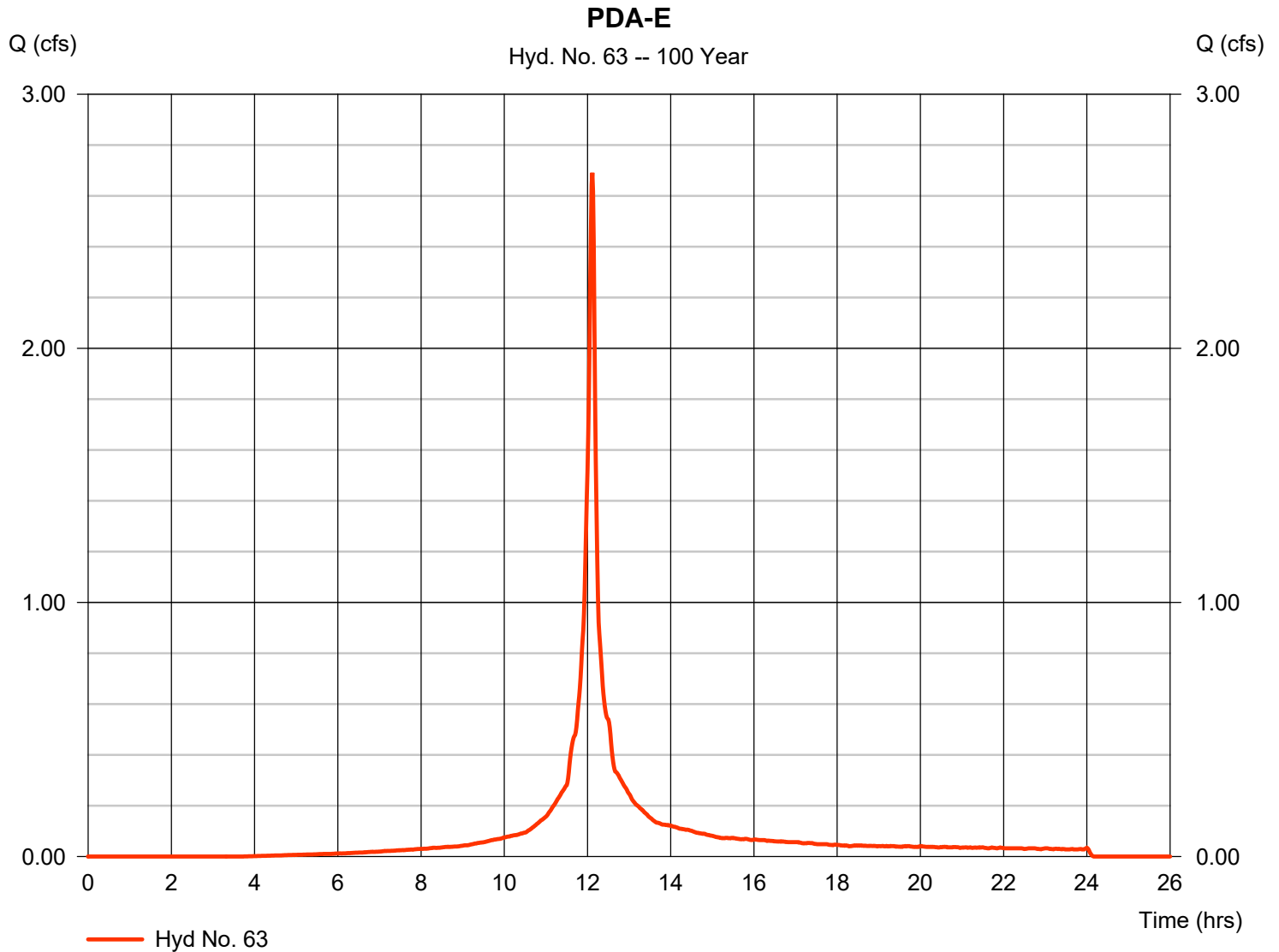
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

Wednesday, 03 / 9 / 2022

Hyd. No. 63

PDA-E

Hydrograph type	= SCS Runoff	Peak discharge	= 2.691 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.12 hrs
Time interval	= 1 min	Hyd. volume	= 7,893 cuft
Drainage area	= 0.360 ac	Curve number	= 86
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 6.00 min
Total precip.	= 7.51 in	Distribution	= Custom
Storm duration	= R:\Hydroflow Standards\NJ Reg Storm Rainfall Distribution\401A_C_1 min.cds		



Hydrograph Report

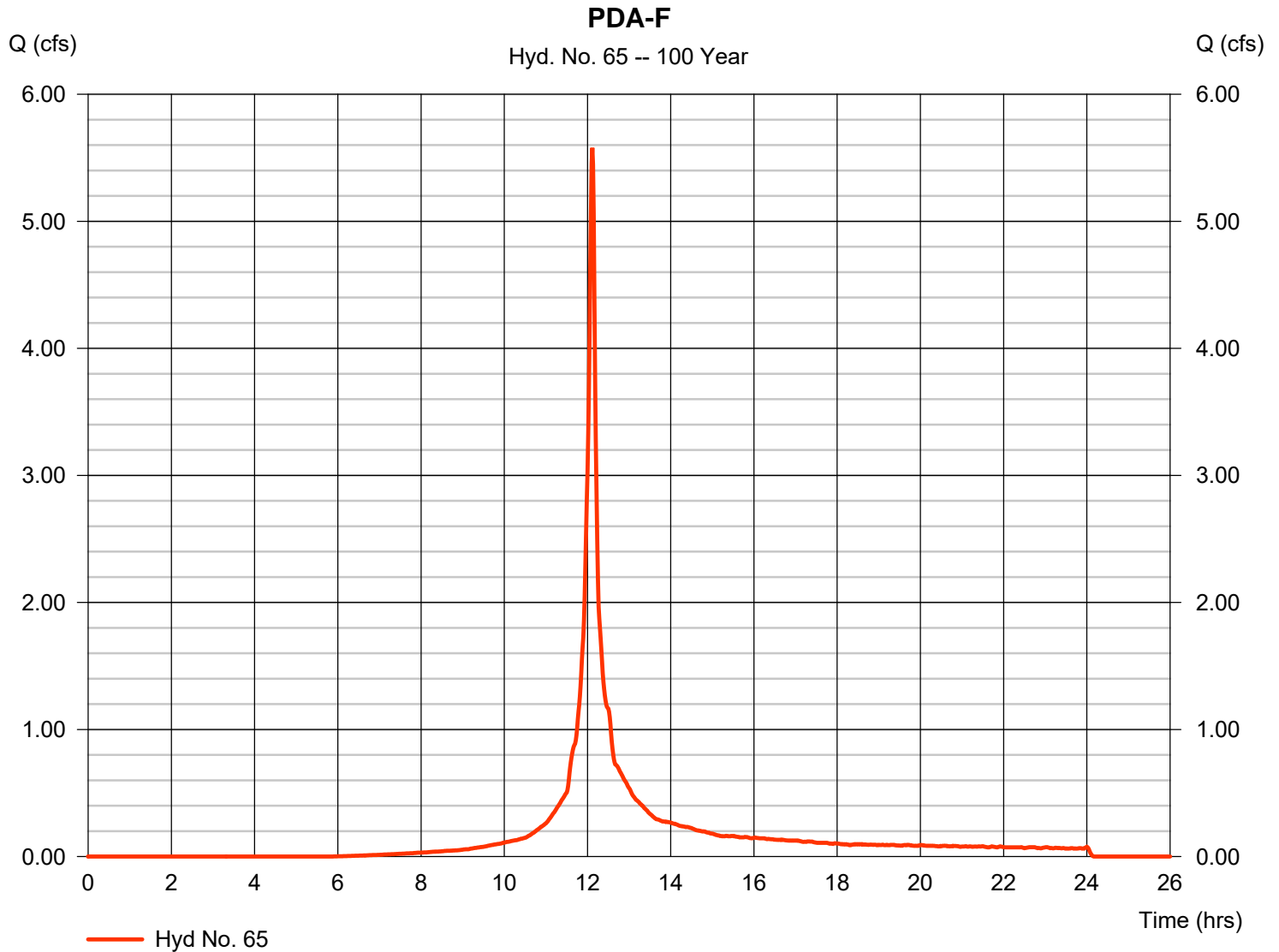
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

Wednesday, 03 / 9 / 2022

Hyd. No. 65

PDA-F

Hydrograph type	= SCS Runoff	Peak discharge	= 5.578 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.12 hrs
Time interval	= 1 min	Hyd. volume	= 15,719 cuft
Drainage area	= 0.850 ac	Curve number	= 78
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 6.00 min
Total precip.	= 7.51 in	Distribution	= Custom
Storm duration	= R:\Hydroflow Standards\NJ Reg Storm Rainfall Distribution\401A_C_1 min.cds		



Hydrograph Report

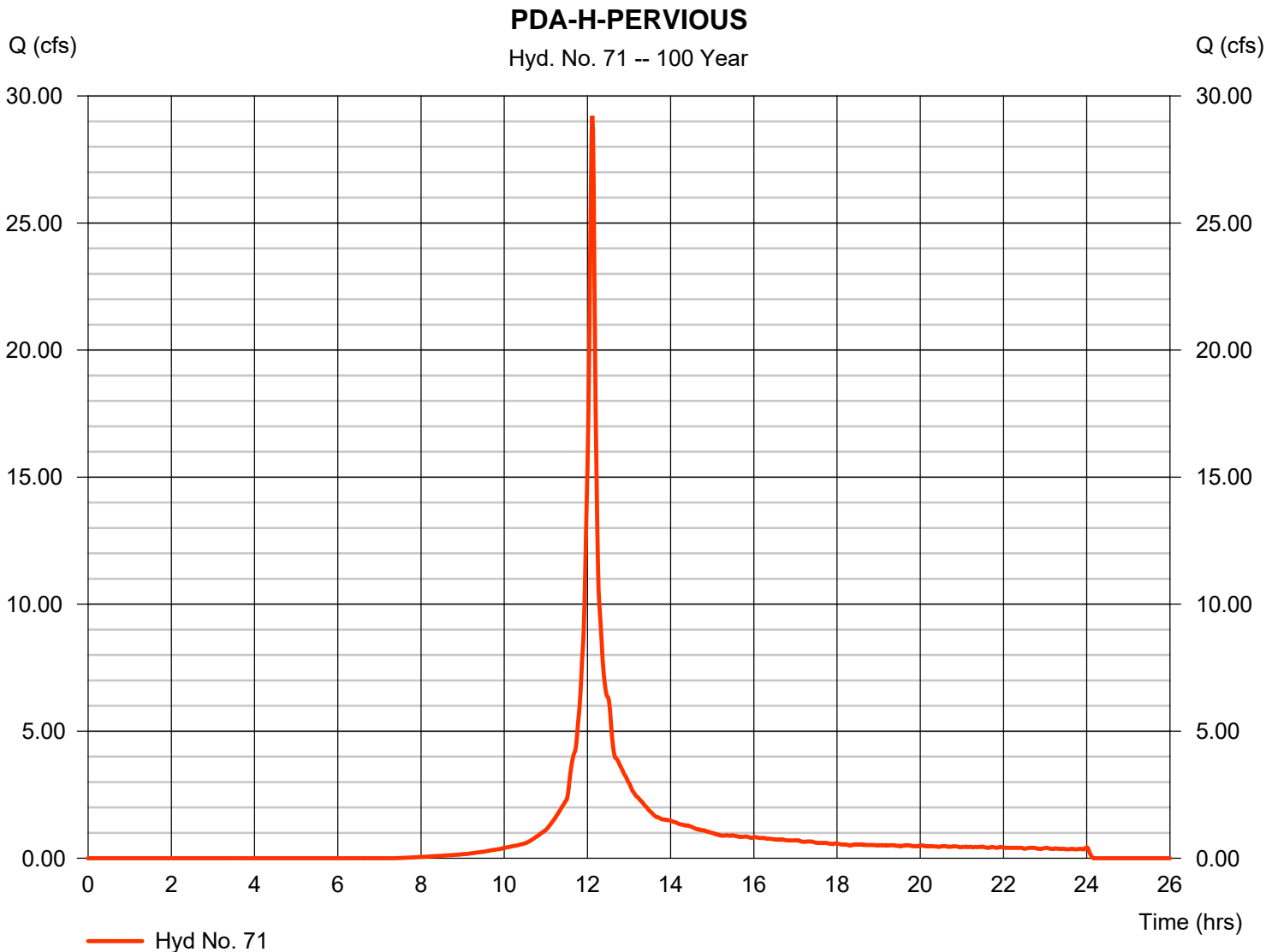
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

Wednesday, 03 / 9 / 2022

Hyd. No. 71

PDA-H-PERVIOUS

Hydrograph type	= SCS Runoff	Peak discharge	= 29.22 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.12 hrs
Time interval	= 1 min	Hyd. volume	= 80,989 cuft
Drainage area	= 5.070 ac	Curve number	= 72
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 6.00 min
Total precip.	= 7.51 in	Distribution	= Custom
Storm duration	= R:\Hydroflow Standards\NJ Reg Storm Rainfall Distribution\401A_C_1 min.cds		



Hydrograph Report

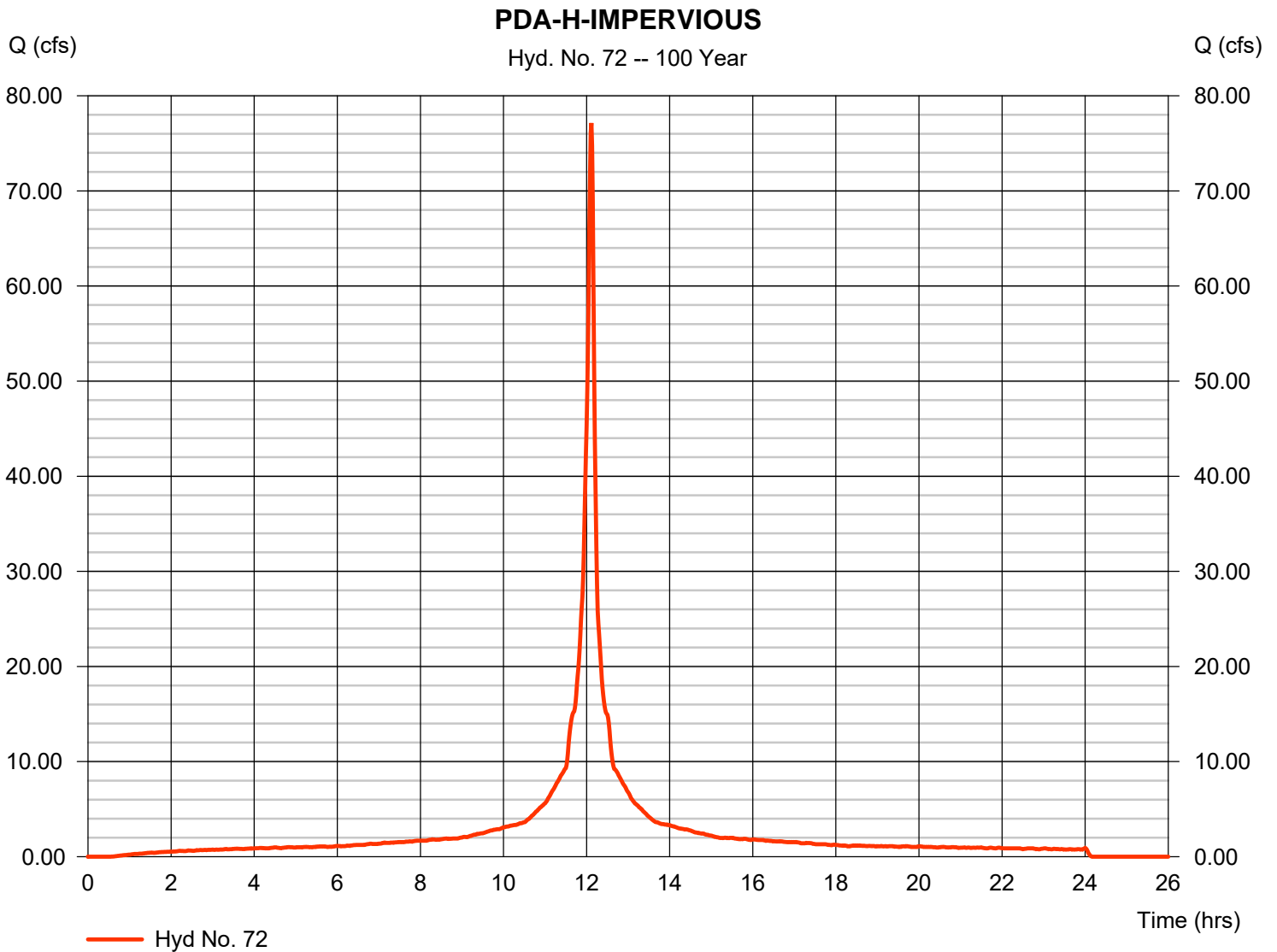
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

Wednesday, 03 / 9 / 2022

Hyd. No. 72

PDA-H-IMPERVIOUS

Hydrograph type	= SCS Runoff	Peak discharge	= 77.14 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.12 hrs
Time interval	= 1 min	Hyd. volume	= 254,477 cuft
Drainage area	= 9.350 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 6.00 min
Total precip.	= 7.51 in	Distribution	= Custom
Storm duration	= R:\Hydroflow Standards\NJ Reg Storm Rainfall Distribution\401A_C_1 min.cds		



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

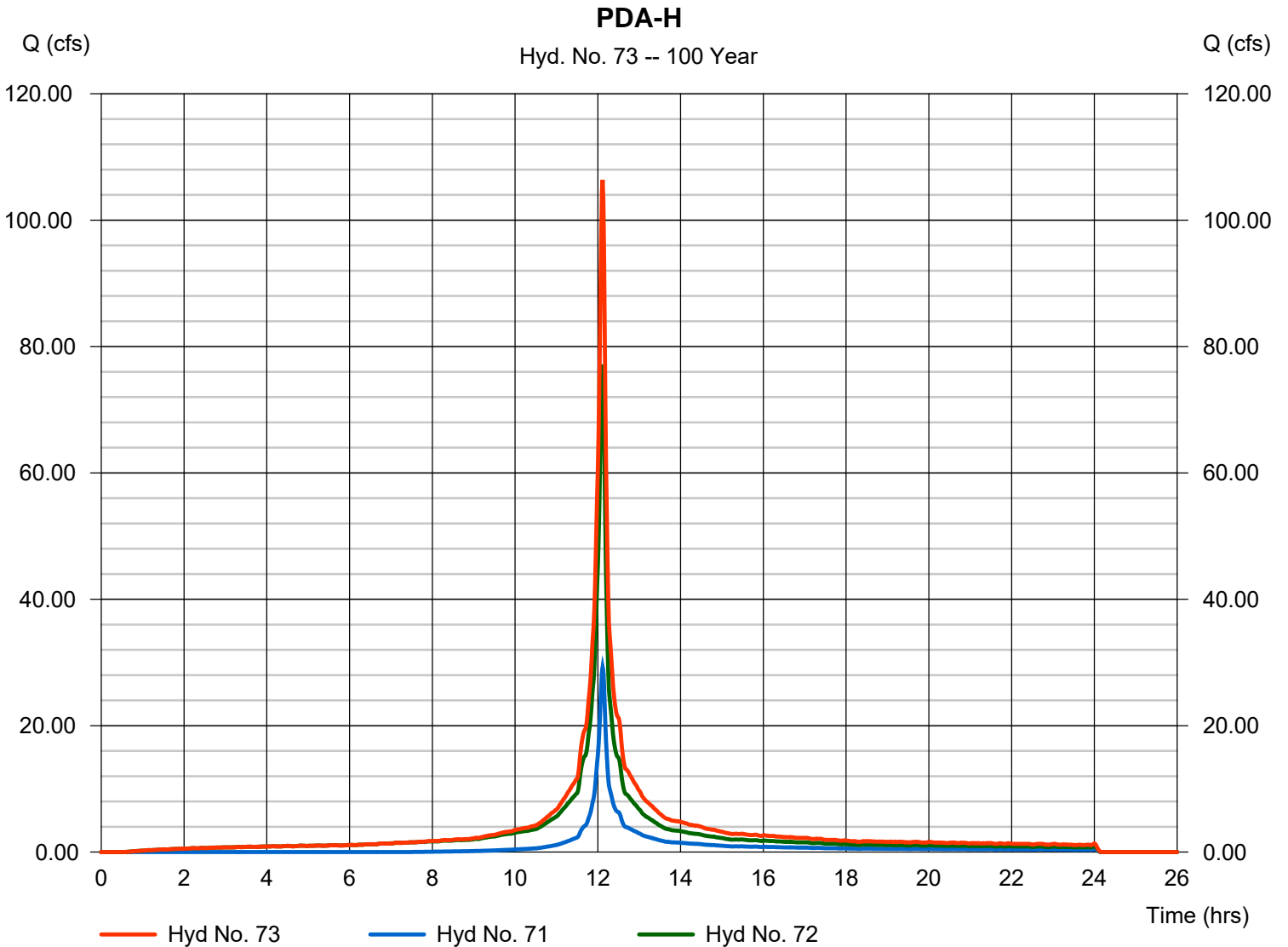
Wednesday, 03 / 9 / 2022

Hyd. No. 73

PDA-H

Hydrograph type = Combine
Storm frequency = 100 yrs
Time interval = 1 min
Inflow hyds. = 71, 72

Peak discharge = 106.36 cfs
Time to peak = 12.12 hrs
Hyd. volume = 335,466 cuft
Contrib. drain. area = 14.420 ac



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

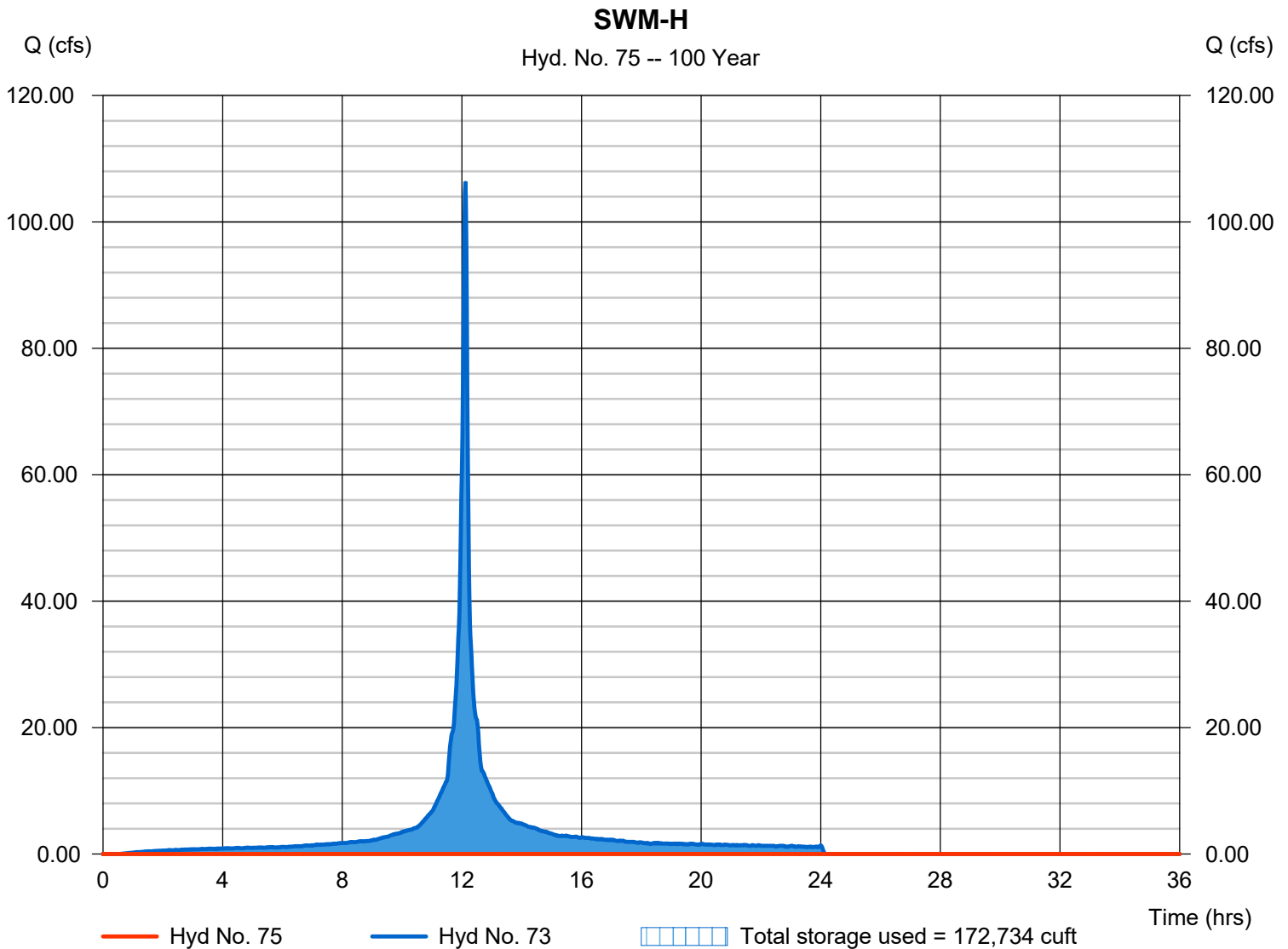
Wednesday, 03 / 9 / 2022

Hyd. No. 75

SWM-H

Hydrograph type	= Reservoir	Peak discharge	= 0.000 cfs
Storm frequency	= 100 yrs	Time to peak	= 10.62 hrs
Time interval	= 1 min	Hyd. volume	= 0 cuft
Inflow hyd. No.	= 73 - PDA-H	Max. Elevation	= 599.78 ft
Reservoir name	= SWM-H	Max. Storage	= 172,734 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Hydrograph Report

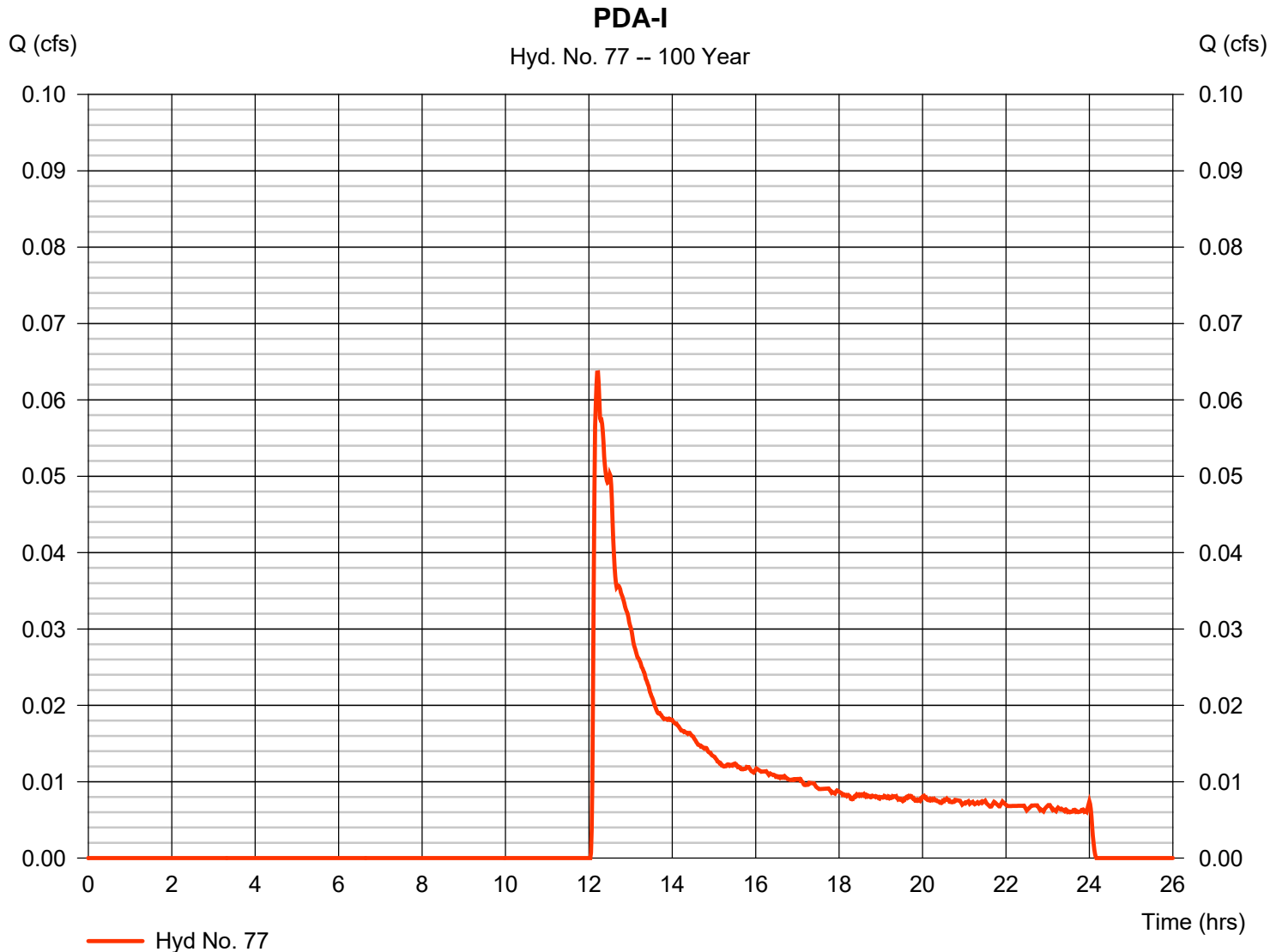
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

Wednesday, 03 / 9 / 2022

Hyd. No. 77

PDA-I

Hydrograph type	= SCS Runoff	Peak discharge	= 0.064 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.22 hrs
Time interval	= 1 min	Hyd. volume	= 556 cuft
Drainage area	= 0.260 ac	Curve number	= 34
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 6.00 min
Total precip.	= 7.51 in	Distribution	= Custom
Storm duration	= R:\Hydroflow Standards\NJ Reg Slope Rainfall Distribution\401A_C_1 min.cds		



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

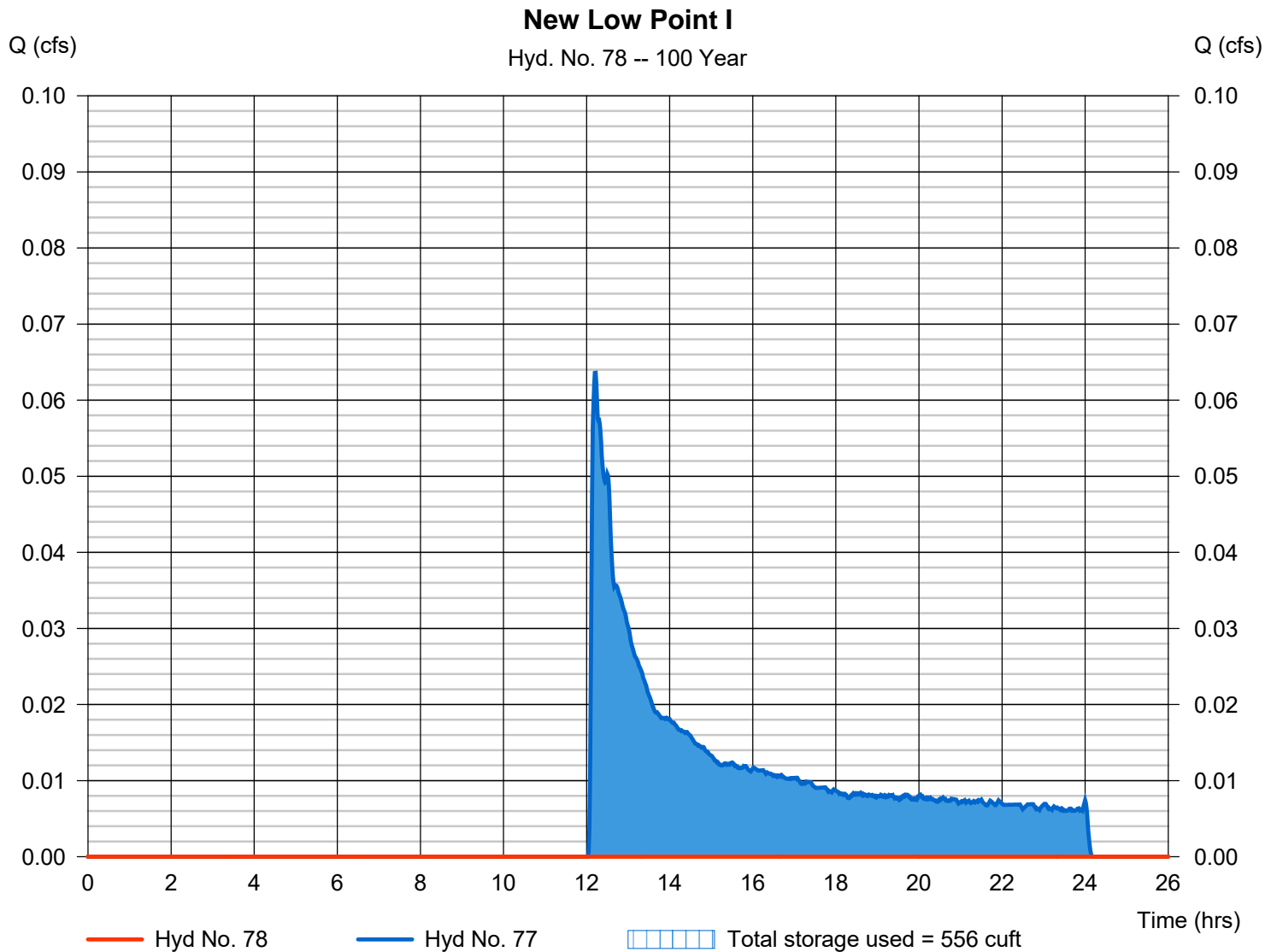
Wednesday, 03 / 9 / 2022

Hyd. No. 78

New Low Point I

Hydrograph type	= Reservoir	Peak discharge	= 0.000 cfs
Storm frequency	= 100 yrs	Time to peak	= n/a
Time interval	= 1 min	Hyd. volume	= 0 cuft
Inflow hyd. No.	= 77 - PDA-I	Max. Elevation	= 598.24 ft
Reservoir name	= New Low Point I	Max. Storage	= 556 cuft

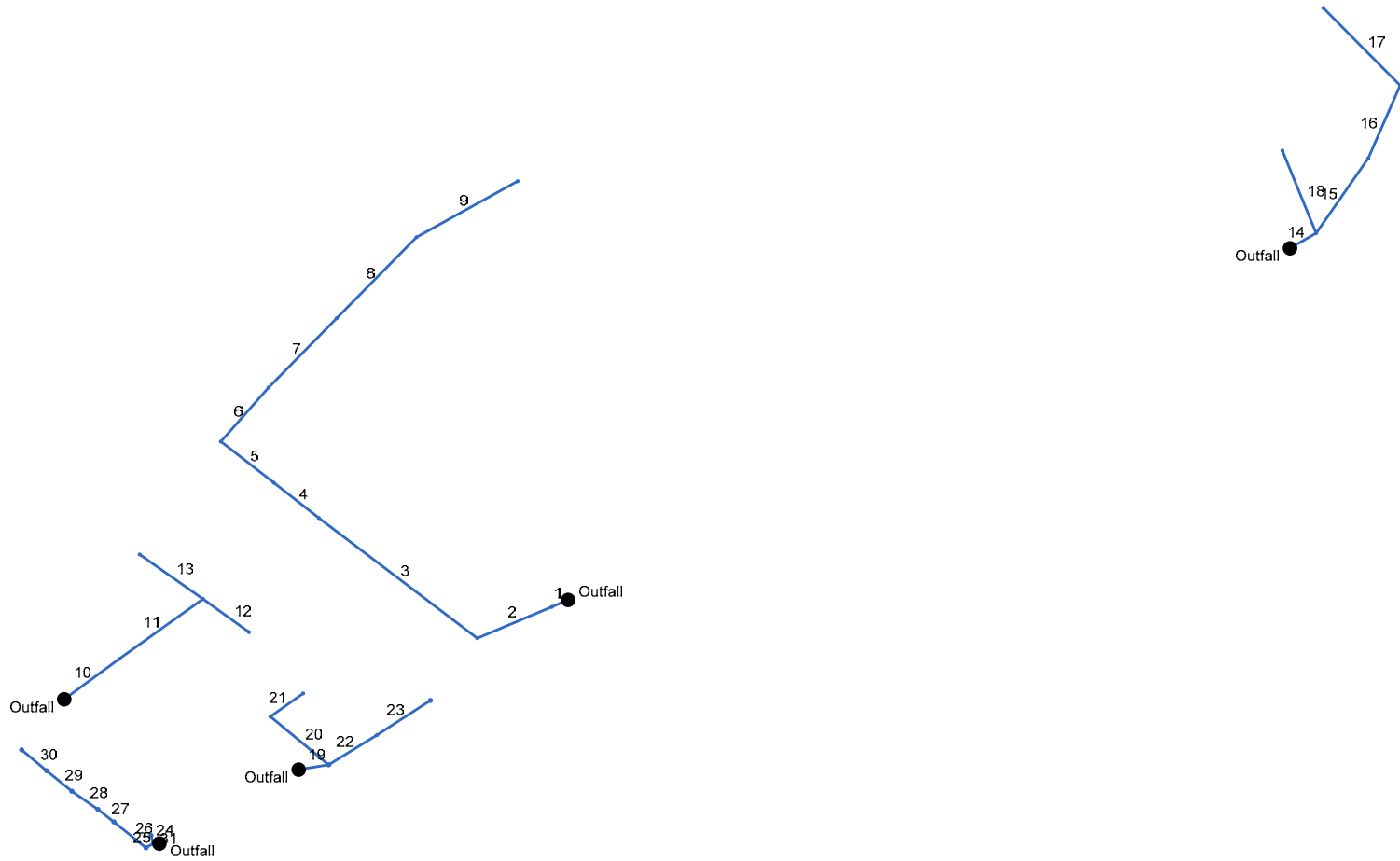
Storage Indication method used.





APPENDIX E –
STORM SEWER SIZING CALCULATIONS

Hydraflow Storm Sewers Extension for Autodesk® Civil 3D® Plan



Storm Sewer Tabulation

Station		Len (ft)	Drng Area		Rnoff coeff (C)	Area x C		Tc		Rain (l) (in/hr)	Total flow (cfs)	Cap full (cfs)	Vel (ft/s)	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
Line	To Line		Incr (ac)	Total (ac)		Incr	Total	Inlet (min)	Syst (min)					Size (in)	Slope (%)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	
1	End	31.125	0.50	7.25	0.99	0.50	7.18	10.0	13.9	5.0	36.12	40.61	7.75	33	0.50	596.92	597.08	598.92	599.11	599.89	599.41	Pipe - (59) (1)
2	1	141.775	1.00	6.75	0.99	0.99	6.68	10.0	13.6	5.1	34.05	35.59	7.89	30	0.64	597.11	598.02	599.24	600.00	599.41	600.24	Pipe - (59)
3	2	375.467	0.25	5.75	0.99	0.25	5.69	10.0	12.8	5.2	29.71	29.71	9.62	24	1.47	598.02	603.54	600.00	605.40	600.24	609.62	Pipe - (58)
4	3	108.067	0.50	5.50	0.99	0.50	5.45	10.0	12.6	5.3	28.63	29.35	9.44	24	1.68	603.54	605.36	605.40	607.20	609.62	609.78	Pipe - (23)
5	4	127.272	1.00	5.00	0.99	0.99	4.95	10.0	12.4	5.3	26.27	26.87	8.77	24	1.20	605.36	606.89	607.20	608.68	609.78	609.53	Pipe - (19) (1) (1)
6	5	143.690	1.00	4.00	0.99	0.99	3.96	10.0	12.0	5.4	21.29	21.73	7.43	24	0.79	606.89	608.02	608.68	609.67	609.53	611.29	Pipe - (19) (1) (1)
7	6	191.586	1.00	3.00	0.99	0.99	2.97	10.0	11.3	5.5	16.33	16.51	5.95	24	0.53	608.02	609.04	609.67	610.66	611.29	613.80	Pipe - (19) (1) (1)
8	7	224.123	1.00	2.00	0.99	0.99	1.98	10.0	10.7	5.6	11.13	11.35	7.14	18	1.17	609.74	612.36	610.94	613.64	613.80	615.98	Pipe - (19) (1)
9	8	208.661	1.00	1.00	0.99	0.99	0.99	10.0	10.0	5.8	5.73	7.00	5.47	15	1.00	612.61	614.70	613.64	615.67	615.98	617.13	Pipe - (19)
10	End	128.037	0.50	2.00	0.99	0.50	1.98	10.0	11.5	5.5	10.83	4.98	8.88	15	0.59	600.00	600.76	601.20	604.60	602.82	605.57	Pipe - (22)
11	10	192.835	0.50	1.50	0.99	0.50	1.49	10.0	11.0	5.6	8.26	4.94	6.73	15	0.50	600.76	601.72	604.78	607.48	605.57	606.72	Pipe - (20) (1)
12	11	106.302	0.50	0.50	0.99	0.50	0.50	10.0	10.0	5.8	2.86	4.94	2.33	15	0.50	601.72	602.25	608.18	608.36	606.72	607.23	Pipe - (24)
13	11	144.092	0.50	0.50	0.99	0.50	0.50	10.0	10.0	5.8	2.86	4.56	2.33	15	0.50	601.72	602.44	608.18	608.46	606.72	607.34	Pipe - (20)
14	End	54.894	1.00	7.00	0.99	0.99	6.93	10.0	11.9	5.4	37.33	46.78	7.38	36	0.49	597.70	597.97	599.69	600.02	601.33	601.72	Pipe - (36) (1)
15	14	187.930	1.50	4.50	0.99	1.49	4.46	10.0	11.3	5.5	24.56	29.01	5.76	30	0.50	598.52	599.46	600.80	601.32	601.72	603.00	Pipe - (36)
16	15	171.000	1.50	3.00	0.99	1.49	2.97	10.0	10.7	5.6	16.71	15.95	5.32	24	0.50	599.21	600.06	601.44	602.37	603.00	603.00	Pipe - (35)
17	16	214.788	1.50	1.50	0.99	1.49	1.49	10.0	10.0	5.8	8.59	8.83	4.86	18	0.71	599.51	601.03	602.74	604.18	603.00	604.50	Pipe - (38)
18	14	192.532	1.50	1.50	0.99	1.49	1.49	10.0	10.0	5.8	8.59	8.79	4.86	18	0.70	598.27	599.62	600.80	602.09	601.72	603.25	Pipe - (40)
19	End	50.843	0.25	1.00	0.99	0.25	0.99	10.0	13.2	5.2	5.11	44.67	4.37	24	3.32	594.50	596.19	595.30	596.99	596.50	601.99	Pipe - (18)
20	19	144.649	0.00	0.25	0.99	0.00	0.25	10.0	11.1	5.6	1.38	7.00	2.50	15	1.00	596.19	597.64	596.99	598.10	601.99	605.35	Pipe - (60) (1)
21	20	74.936	0.25	0.25	0.99	0.25	0.25	10.0	10.0	5.8	1.43	7.00	3.41	15	1.00	597.64	598.39	598.10	598.86	605.35	605.02	Pipe - (60)
22	19	103.828	0.25	0.50	0.99	0.25	0.50	10.0	11.7	5.4	2.69	6.97	3.69	15	0.99	596.19	597.22	596.99	597.88	601.99	600.90	Pipe - (16) (1)

Project File: 2022-03-08_SWM Pipe Sizing.stm

Number of lines: 31

Run Date: 3/9/2022

NOTES: Intensity = 51.01 / (Inlet time + 9.00) ^ 0.74; Return period = Yrs. 25 ; c = cir e = ellip b = box

Storm Sewer Tabulation

Station		Len (ft)	Drng Area		Rnoff coeff (C)	Area x C		Tc		Rain (l) (in/hr)	Total flow (cfs)	Cap full (cfs)	Vel (ft/s)	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
Line	To Line		Incr (ac)	Total (ac)		Incr	Total	Inlet (min)	Syst (min)					Size (in)	Slope (%)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	
23	22	117.558	0.25	0.25	0.99	0.25	0.25	10.0	10.0	5.8	1.43	7.01	2.78	15	1.00	597.22	598.40	597.88	598.87	600.90	600.90	Pipe - (16)
24	End	9.908	0.00	1.75	0.99	0.00	1.73	10.0	12.0	5.4	9.30	17.40	5.32	24	0.50	594.50	594.55	595.59	595.64	596.65	597.18	Pipe - (3) (1)
25	24	15.920	0.25	1.50	0.99	0.25	1.49	10.0	12.0	5.4	7.98	4.96	6.50	15	0.50	594.55	594.63	595.80	596.01	597.18	596.82	Pipe - (3)
26	25	78.319	0.25	1.25	0.99	0.25	1.24	10.0	11.8	5.4	6.70	4.94	5.46	15	0.50	594.63	595.02	596.66	597.38	596.82	596.92	Pipe - (8) (1) (1) (
27	26	38.648	0.25	1.00	0.99	0.25	0.99	10.0	11.6	5.4	5.39	5.03	4.39	15	0.52	595.02	595.22	597.45	597.68	596.92	597.49	Pipe - (8) (1) (1) (
28	27	59.263	0.25	0.75	0.99	0.25	0.74	10.0	11.3	5.5	4.09	4.89	3.33	15	0.49	595.22	595.51	597.73	597.93	597.49	598.46	Pipe - (8) (1) (1)
29	28	61.976	0.25	0.50	0.99	0.25	0.50	10.0	10.9	5.6	2.77	4.95	2.26	15	0.50	595.51	595.82	597.96	598.05	598.46	599.00	Pipe - (8) (1)
30	29	62.156	0.25	0.25	0.99	0.25	0.25	10.0	10.0	5.8	1.43	4.94	1.17	15	0.50	595.82	596.13	598.07	598.09	599.00	599.98	Pipe - (8)
31	24	18.071	0.25	0.25	0.99	0.25	0.25	10.0	10.0	5.8	1.43	6.44	2.31	15	1.00	594.55	594.73	595.64	595.20	597.18	597.41	Pipe - (57)

Project File: 2022-03-08_SWM Pipe Sizing.stm

Number of lines: 31

Run Date: 3/9/2022

NOTES: Intensity = 51.01 / (Inlet time + 9.00) ^ 0.74; Return period = Yrs. 25 ; c = cir e = ellip b = box

Hydraulic Grade Line Computations

Line	Size	Q	Downstream								Len	Upstream								Check		JL coeff	Minor loss
			Invert elev (ft)	HGL elev (ft)	Depth (ft)	Area (sqft)	Vel (ft/s)	Vel head (ft)	EGL elev (ft)	Sf (%)		Invert elev (ft)	HGL elev (ft)	Depth (ft)	Area (sqft)	Vel (ft/s)	Vel head (ft)	EGL elev (ft)	Sf (%)	Ave Sf (%)	Enrgy loss (ft)		
(1)	(in) (2)	(cfs) (3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(%) (11)	(ft) (12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(K) (23)	(ft) (24)
1	33	36.12	596.92	598.92	2.00	4.63	7.81	0.95	599.87	0.515	31.125	597.08	599.11	2.03	4.70	7.69	0.92	600.02	0.497	0.506	0.157	0.15	0.14
2	30	34.05	597.11	599.24	2.13	4.17	7.63	1.03	600.28	0.000	141.775	598.02	600.00 j	1.98**	4.17	8.16	1.03	601.04	0.000	0.000	n/a	0.97	n/a
3	24	29.71	598.02	600.00	1.98	3.04	9.47	1.48	601.49	0.000	375.467	603.54	605.40 j	1.86**	3.04	9.77	1.48	606.88	0.000	0.000	n/a	0.15	0.22
4	24	28.63	603.54	605.40	1.86	3.02	9.41	1.39	606.79	0.000	108.067	605.36	607.20 j	1.84**	3.02	9.47	1.39	608.59	0.000	0.000	n/a	0.15	n/a
5	24	26.27	605.36	607.20	1.84	2.97	8.69	1.22	608.42	0.000	127.272	606.89	608.68 j	1.79**	2.97	8.85	1.22	609.90	0.000	0.000	n/a	0.98	n/a
6	24	21.29	606.89	608.68	1.79	2.77	7.17	0.92	609.60	0.000	143.690	608.02	609.67	1.65**	2.77	7.68	0.92	610.59	0.000	0.000	n/a	0.15	n/a
7	24	16.33	608.02	609.67	1.65	2.77	5.89	0.54	610.21	0.515	191.586	609.04	610.66	1.62	2.72	6.01	0.56	611.22	0.536	0.526	1.007	0.15	0.08
8	18	11.13	609.74	610.94	1.20*	1.52	7.32	0.75	611.70	0.000	224.123	612.36	613.64	1.28**	1.60	6.95	0.75	614.39	0.000	0.000	n/a	0.35	0.26
9	15	5.73	612.61	613.64	1.03	1.02	5.32	0.49	614.13	0.000	208.661	614.70	615.67 j	0.97**	1.02	5.62	0.49	616.16	0.000	0.000	n/a	1.00	0.49
10	15	10.83	600.00	601.20	1.20*	1.21	8.94	1.24	602.44	2.450	128.037	600.76	604.60	1.25	1.23	8.82	1.21	605.81	2.812	2.631	3.369	0.15	0.18
11	15	8.26	600.76	604.78	1.25	1.23	6.73	0.71	605.49	1.396	192.835	601.72	607.48	1.25	1.23	6.73	0.70	608.18	1.395	1.396	2.691	1.00	0.70
12	15	2.86	601.72	608.18	1.25	1.23	2.33	0.08	608.26	0.168	106.302	602.25	608.36	1.25	1.23	2.33	0.08	608.44	0.168	0.168	0.178	1.00	0.08
13	15	2.86	601.72	608.18	1.25	1.23	2.33	0.08	608.26	0.197	144.092	602.44	608.46	1.25	1.23	2.33	0.08	608.55	0.197	0.197	0.283	1.00	0.08
14	36	37.33	597.70	599.69	1.99	4.98	7.50	0.87	600.56	0.517	54.894	597.97	600.02	2.05	5.14	7.26	0.82	600.84	0.477	0.497	0.273	0.95	0.78
15	30	24.56	598.52	600.80	2.28	4.69	5.23	0.43	601.22	0.313	187.930	599.46	601.32	1.86	3.91	6.28	0.61	601.93	0.441	0.377	0.709	0.20	0.12
16	24	16.71	599.21	601.44	2.00	3.14	5.32	0.44	601.88	0.546	171.000	600.06	602.37	2.00	3.14	5.32	0.44	602.81	0.546	0.546	0.933	0.84	0.37
17	18	8.59	599.51	602.74	1.50	1.77	4.86	0.37	603.11	0.670	214.788	601.03	604.18	1.50	1.77	4.86	0.37	604.55	0.669	0.670	1.438	1.00	0.37
18	18	8.59	598.27	600.80	1.50	1.77	4.86	0.37	601.16	0.670	192.532	599.62	602.09	1.50	1.77	4.86	0.37	602.45	0.669	0.670	1.289	1.00	0.37
19	24	5.11	594.50	595.30	0.80	1.17	4.35	0.30	595.60	0.000	50.843	596.19	596.99 j	0.80**	1.17	4.38	0.30	597.28	0.000	0.000	n/a	1.00	0.30
20	15	1.38	596.19	596.99	0.80	0.41	1.67	0.17	597.16	0.000	144.649	597.64	598.10 j	0.46**	0.41	3.32	0.17	598.28	0.000	0.000	n/a	1.00	0.17
21	15	1.43	597.64	598.10	0.46	0.41	3.46	0.18	598.28	0.000	74.936	598.39	598.86	0.47**	0.43	3.37	0.18	599.04	0.000	0.000	n/a	1.00	n/a

Project File: 2022-03-08_SWM Pipe Sizing.stm

Number of lines: 31

Run Date: 3/9/2022

Notes: * depth assumed; ** Critical depth.; j-Line contains hyd. jump ; c = cir e = ellip b = box

Hydraulic Grade Line Computations

Line	Size	Q	Downstream								Len	Upstream								Check		JL coeff	Minor loss
			Invert elev (ft)	HGL elev (ft)	Depth (ft)	Area (sqft)	Vel (ft/s)	Vel head (ft)	EGL elev (ft)	Sf (%)		Invert elev (ft)	HGL elev (ft)	Depth (ft)	Area (sqft)	Vel (ft/s)	Vel head (ft)	EGL elev (ft)	Sf (%)	Ave Sf (%)	Enrgy loss (ft)		
(1)	(in) (2)	(cfs) (3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(ft) (12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(K) (23)	(ft) (24)
22	15	2.69	596.19	596.99	0.80	0.65	3.26	0.26	597.25	0.000	103.828	597.22	597.88 j	0.66**	0.65	4.11	0.26	598.14	0.000	0.000	n/a	0.15	0.04
23	15	1.43	597.22	597.88	0.66	0.43	2.19	0.18	598.05	0.000	117.558	598.40	598.87 j	0.47**	0.43	3.37	0.18	599.05	0.000	0.000	n/a	1.00	n/a
24	24	9.30	594.50	595.59	1.09	1.75	5.31	0.44	596.03	0.000	9.908	594.55	595.64	1.09**	1.75	5.32	0.44	596.08	0.000	0.000	n/a	0.97	0.43
25	15	7.98	594.55	595.80	1.25	1.23	6.50	0.66	596.46	1.301	15.920	594.63	596.01	1.25	1.23	6.50	0.66	596.66	1.301	1.301	0.207	1.00	0.66
26	15	6.70	594.63	596.66	1.25	1.23	5.46	0.46	597.13	0.919	78.319	595.02	597.38	1.25	1.23	5.46	0.46	597.85	0.918	0.919	0.719	0.15	0.07
27	15	5.39	595.02	597.45	1.25	1.23	4.39	0.30	597.75	0.594	38.648	595.22	597.68	1.25	1.23	4.39	0.30	597.98	0.594	0.594	0.230	0.15	0.04
28	15	4.09	595.22	597.73	1.25	1.23	3.33	0.17	597.90	0.341	59.263	595.51	597.93	1.25	1.23	3.33	0.17	598.10	0.341	0.341	0.202	0.15	0.03
29	15	2.77	595.51	597.96	1.25	1.23	2.26	0.08	598.04	0.157	61.976	595.82	598.05	1.25	1.23	2.26	0.08	598.13	0.157	0.157	0.097	0.15	0.01
30	15	1.43	595.82	598.07	1.25	1.23	1.17	0.02	598.09	0.042	62.156	596.13	598.09	1.25	1.23	1.17	0.02	598.11	0.042	0.042	0.026	1.00	0.02
31	15	1.43	594.55	595.64	1.09	0.43	1.26	0.18	595.81	0.000	18.071	594.73	595.20	0.47**	0.43	3.37	0.18	595.38	0.000	0.000	n/a	1.00	n/a

Project File: 2022-03-08_SWM Pipe Sizing.stm

Number of lines: 31

Run Date: 3/9/2022

Notes: * depth assumed; ** Critical depth.; j-Line contains hyd. jump ; c = cir e = ellip b = box

General Procedure:

Hydraflow computes the HGL using the Bernoulli energy equation. Manning's equation is used to determine energy losses due to pipe friction. In a standard step, iterative procedure, Hydraflow assumes upstream HGLs until the energy equation balances. If the energy equation cannot balance, supercritical flow exists and critical depth is temporarily assumed at the upstream end. A supercritical flow Profile is then computed using the same procedure in a downstream direction using momentum principles.

Col. 1 The line number being computed. Calculations begin at Line 1 and proceed upstream.

Col. 2 The line size. In the case of non-circular pipes, the line rise is printed above the span.

Col. 3 Total flow rate in the line.

Col. 4 The elevation of the downstream invert.

Col. 5 Elevation of the hydraulic grade line at the downstream end. This is computed as the upstream HGL + Minor loss of this line's downstream line.

Col. 6 The downstream depth of flow inside the pipe (HGL - Invert elevation) but not greater than the line size.

Col. 7 Cross-sectional area of the flow at the downstream end.

Col. 8 The velocity of the flow at the downstream end, (Col. 3 / Col. 7).

Col. 9 Velocity head (Velocity squared / 2g).

Col. 10 The elevation of the energy grade line at the downstream end, HGL + Velocity head, (Col. 5 + Col. 9).

Col. 11 The friction slope at the downstream end (the S or Slope term in Manning's equation).

Col. 12 The line length.

Col. 13 The elevation of the upstream invert.

Col. 14 Elevation of the hydraulic grade line at the upstream end.

Col. 15 The upstream depth of flow inside the pipe (HGL - Invert elevation) but not greater than the line size.

Col. 16 Cross-sectional area of the flow at the upstream end.

Col. 17 The velocity of the flow at the upstream end, (Col. 3 / Col. 16).

Col. 18 Velocity head (Velocity squared / 2g).

Col. 19 The elevation of the energy grade line at the upstream end, HGL + Velocity head, (Col. 14 + Col. 18) .

Col. 20 The friction slope at the upstream end (the S or Slope term in Manning's equation).

Col. 21 The average of the downstream and upstream friction slopes.

Col. 22 Energy loss. Average $Sf/100 \times \text{Line Length}$ (Col. 21/100 x Col. 12). Equals (EGL upstream - EGL downstream) +/- tolerance.

Col. 23 The junction loss coefficient (K).

Col. 24 Minor loss. (Col. 23 x Col. 18). Is added to upstream HGL and used as the starting HGL for the next upstream line(s).



APPENDIX F –
WATER QUALITY STORM HYDROLOGIC ANALYSIS
AND RUNOFF QUANTITY CALCULATIONS

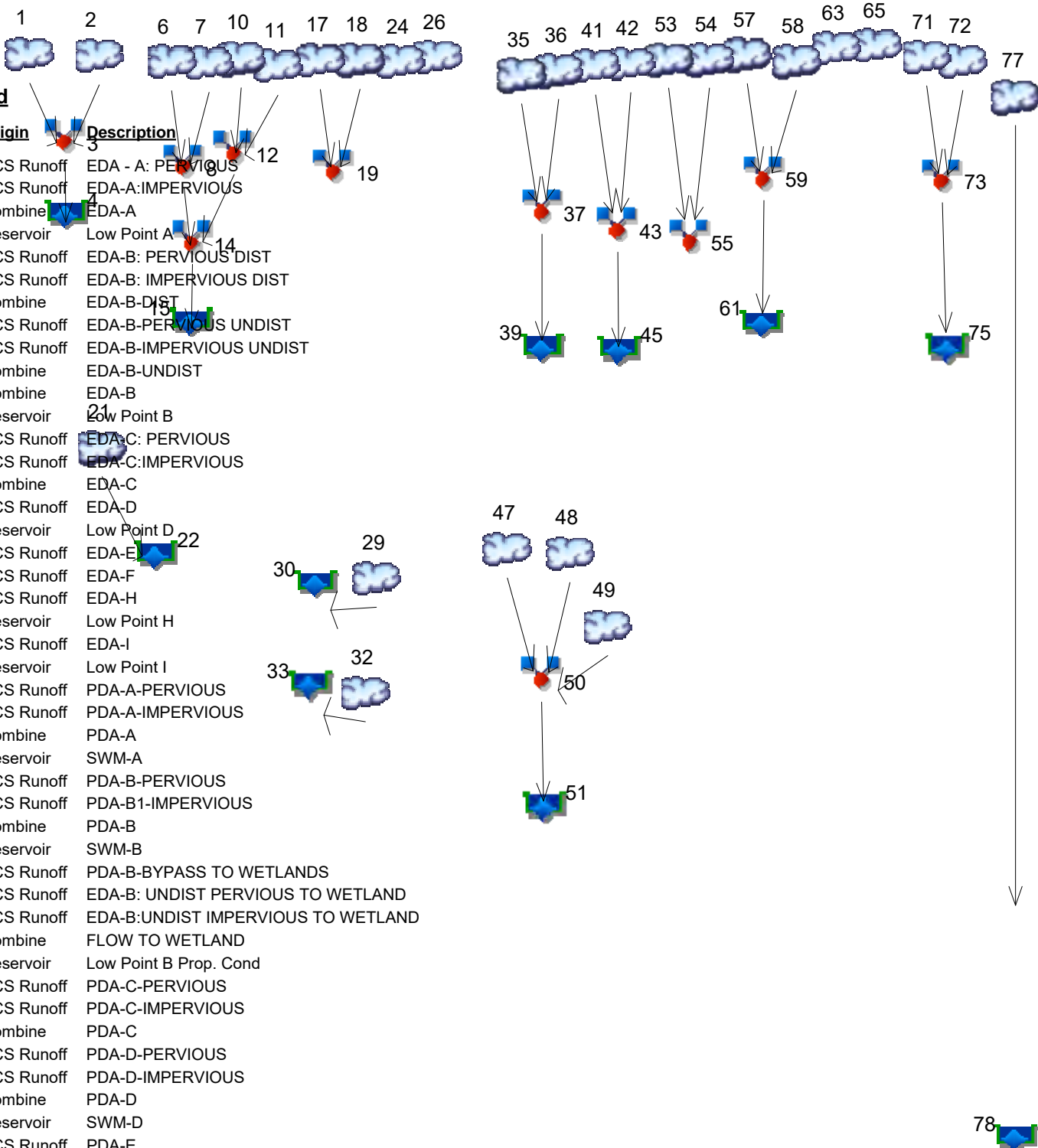


Watershed Model Schematic

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

Legend

Hyd.	Origin	Description
1	SCS Runoff	EDA - A: PERVIOUS
2	SCS Runoff	EDA-A: IMPERVIOUS
3	Combine	EDA-A
4	Reservoir	Low Point A
6	SCS Runoff	EDA-B: PERVIOUS DIST
7	SCS Runoff	EDA-B: IMPERVIOUS DIST
8	Combine	EDA-B-DIST
10	SCS Runoff	EDA-B-PERVIOUS UNDIST
11	SCS Runoff	EDA-B-IMPERVIOUS UNDIST
12	Combine	EDA-B-UNDIST
14	Combine	EDA-B
15	Reservoir	Low Point B
17	SCS Runoff	EDA-C: PERVIOUS
18	SCS Runoff	EDA-C: IMPERVIOUS
19	Combine	EDA-C
21	SCS Runoff	EDA-D
22	Reservoir	Low Point D
24	SCS Runoff	EDA-E
26	SCS Runoff	EDA-F
29	SCS Runoff	EDA-H
30	Reservoir	Low Point H
32	SCS Runoff	EDA-I
33	Reservoir	Low Point I
35	SCS Runoff	PDA-A-PERVIOUS
36	SCS Runoff	PDA-A-IMPERVIOUS
37	Combine	PDA-A
39	Reservoir	SWM-A
41	SCS Runoff	PDA-B-PERVIOUS
42	SCS Runoff	PDA-B1-IMPERVIOUS
43	Combine	PDA-B
45	Reservoir	SWM-B
47	SCS Runoff	PDA-B-BYPASS TO WETLANDS
48	SCS Runoff	EDA-B: UNDIST PERVIOUS TO WETLAND
49	SCS Runoff	EDA-B: UNDIST IMPERVIOUS TO WETLAND
50	Combine	FLOW TO WETLAND
51	Reservoir	Low Point B Prop. Cond
53	SCS Runoff	PDA-C-PERVIOUS
54	SCS Runoff	PDA-C-IMPERVIOUS
55	Combine	PDA-C
57	SCS Runoff	PDA-D-PERVIOUS
58	SCS Runoff	PDA-D-IMPERVIOUS
59	Combine	PDA-D
61	Reservoir	SWM-D
63	SCS Runoff	PDA-E
65	SCS Runoff	PDA-F
71	SCS Runoff	PDA-H-PERVIOUS
72	SCS Runoff	PDA-H-IMPERVIOUS
73	Combine	PDA-H
75	Reservoir	SWM-H
77	SCS Runoff	PDA-I
78	Reservoir	New Low Point I



Hydrograph Return Period Recap

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

Hyd. No.	Hydrograph type (origin)	Inflow hyd(s)	Peak Outflow (cfs)								Hydrograph Description
			1-yr	2-yr	3-yr	5-yr	10-yr	25-yr	50-yr	100-yr	
1	SCS Runoff	----	----	1.052	----	----	7.310	----	----	27.23	EDA - A: PERVIOUS
2	SCS Runoff	----	----	3.447	----	----	5.067	----	----	8.078	EDA-A:IMPERVIOUS
3	Combine	1, 2	----	4.059	----	----	12.32	----	----	35.30	EDA-A
4	Reservoir	3	----	4.019	----	----	11.77	----	----	27.91	Low Point A
6	SCS Runoff	----	----	0.144	----	----	2.348	----	----	14.45	EDA-B: PERVIOUS DIST
7	SCS Runoff	----	----	2.684	----	----	3.946	----	----	6.290	EDA-B: IMPERVIOUS DIST
8	Combine	6, 7	----	2.684	----	----	5.614	----	----	20.46	EDA-B-DIST
10	SCS Runoff	----	----	0.129	----	----	2.828	----	----	20.57	EDA-B-PERVIOUS UNDIST
11	SCS Runoff	----	----	5.747	----	----	8.441	----	----	13.45	EDA-B-IMPERVIOUS UNDIST
12	Combine	10, 11	----	5.747	----	----	9.620	----	----	31.56	EDA-B-UNDIST
14	Combine	8, 12,	----	7.485	----	----	12.56	----	----	42.34	EDA-B
15	Reservoir	14	----	0.000	----	----	0.000	----	----	0.000	Low Point B
17	SCS Runoff	----	----	4.028	----	----	7.912	----	----	15.73	EDA-C: PERVIOUS
18	SCS Runoff	----	----	4.090	----	----	6.007	----	----	9.571	EDA-C:IMPERVIOUS
19	Combine	17, 18	----	7.596	----	----	13.11	----	----	24.00	EDA-C
21	SCS Runoff	----	----	5.388	----	----	10.55	----	----	20.91	EDA-D
22	Reservoir	21	----	0.000	----	----	0.000	----	----	0.000	Low Point D
24	SCS Runoff	----	----	6.409	----	----	12.58	----	----	25.00	EDA-E
26	SCS Runoff	----	----	1.543	----	----	2.911	----	----	5.610	EDA-F
29	SCS Runoff	----	----	0.000	----	----	0.097	----	----	3.352	EDA-H
30	Reservoir	29	----	0.000	----	----	0.000	----	----	0.000	Low Point H
32	SCS Runoff	----	----	0.000	----	----	0.000	----	----	0.064	EDA-I
33	Reservoir	32	----	0.000	----	----	0.000	----	----	0.000	Low Point I
35	SCS Runoff	----	----	4.537	----	----	8.530	----	----	16.38	PDA-A-PERVIOUS
36	SCS Runoff	----	----	9.413	----	----	13.83	----	----	22.03	PDA-A-IMPERVIOUS
37	Combine	35, 36	----	13.95	----	----	22.36	----	----	38.41	PDA-A
39	Reservoir	37	----	1.157	----	----	7.536	----	----	22.30	SWM-A
41	SCS Runoff	----	----	16.82	----	----	34.85	----	----	72.03	PDA-B-PERVIOUS

Hydrograph Return Period Recap

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

Hyd. No.	Hydrograph type (origin)	Inflow hyd(s)	Peak Outflow (cfs)								Hydrograph Description
			1-yr	2-yr	3-yr	5-yr	10-yr	25-yr	50-yr	100-yr	
42	SCS Runoff	-----	-----	50.42	-----	-----	74.05	-----	-----	117.99	PDA-B1-IMPERVIOUS
43	Combine	41, 42	-----	67.24	-----	-----	108.90	-----	-----	190.02	PDA-B
45	Reservoir	43	-----	0.000	-----	-----	0.000	-----	-----	0.000	SWM-B
47	SCS Runoff	-----	-----	0.494	-----	-----	1.001	-----	-----	2.037	PDA-B-BYPASS TO WETLANDS
48	SCS Runoff	-----	-----	0.126	-----	-----	2.760	-----	-----	20.08	EDA-B: UNDIST PERVIOUS TO WE
49	SCS Runoff	-----	-----	5.747	-----	-----	8.441	-----	-----	13.45	EDA-B:UNDIST IMPERVIOUS TO W
50	Combine	47, 48, 49	-----	6.240	-----	-----	10.57	-----	-----	32.94	FLOW TO WETLAND
51	Reservoir	50	-----	0.000	-----	-----	0.000	-----	-----	0.000	Low Point B Prop. Cond
53	SCS Runoff	-----	-----	5.450	-----	-----	9.647	-----	-----	17.67	PDA-C-PERVIOUS
54	SCS Runoff	-----	-----	1.269	-----	-----	1.864	-----	-----	2.970	PDA-C-IMPERVIOUS
55	Combine	53, 54	-----	6.392	-----	-----	11.05	-----	-----	19.97	PDA-C
57	SCS Runoff	-----	-----	2.169	-----	-----	3.653	-----	-----	6.429	PDA-D-PERVIOUS
58	SCS Runoff	-----	-----	16.64	-----	-----	24.44	-----	-----	38.94	PDA-D-IMPERVIOUS
59	Combine	57, 58	-----	18.81	-----	-----	28.10	-----	-----	45.37	PDA-D
61	Reservoir	59	-----	0.000	-----	-----	0.000	-----	-----	0.000	SWM-D
63	SCS Runoff	-----	-----	0.908	-----	-----	1.529	-----	-----	2.691	PDA-E
65	SCS Runoff	-----	-----	1.497	-----	-----	2.864	-----	-----	5.578	PDA-F
71	SCS Runoff	-----	-----	6.308	-----	-----	13.68	-----	-----	29.22	PDA-H-PERVIOUS
72	SCS Runoff	-----	-----	32.96	-----	-----	48.42	-----	-----	77.14	PDA-H-IMPERVIOUS
73	Combine	71, 72	-----	39.27	-----	-----	62.10	-----	-----	106.36	PDA-H
75	Reservoir	73	-----	0.000	-----	-----	0.000	-----	-----	0.000	SWM-H
77	SCS Runoff	-----	-----	0.000	-----	-----	0.001	-----	-----	0.064	PDA-I
78	Reservoir	77	-----	0.000	-----	-----	0.000	-----	-----	0.000	New Low Point I

Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	1.052	1	749	11,191	----	----	----	EDA - A: PERVIOUS
2	SCS Runoff	3.447	1	734	15,938	----	----	----	EDA-A:IMPERVIOUS
3	Combine	4.059	1	736	27,129	1, 2	----	----	EDA-A
4	Reservoir	4.019	1	738	26,973	3	595.78	548	Low Point A
6	SCS Runoff	0.144	1	815	4,164	----	----	----	EDA-B: PERVIOUS DIST
7	SCS Runoff	2.684	1	741	14,956	----	----	----	EDA-B: IMPERVIOUS DIST
8	Combine	2.684	1	741	19,119	6, 7	----	----	EDA-B-DIST
10	SCS Runoff	0.129	1	800	3,643	----	----	----	EDA-B-PERVIOUS UNDIST
11	SCS Runoff	5.747	1	727	18,350	----	----	----	EDA-B-IMPERVIOUS UNDIST
12	Combine	5.747	1	727	21,994	10, 11	----	----	EDA-B-UNDIST
14	Combine	7.485	1	727	41,113	8, 12,	----	----	EDA-B
15	Reservoir	0.000	1	n/a	0	14	595.79	41,113	Low Point B
17	SCS Runoff	4.028	1	731	14,051	----	----	----	EDA-C: PERVIOUS
18	SCS Runoff	4.090	1	727	13,059	----	----	----	EDA-C:IMPERVIOUS
19	Combine	7.596	1	728	27,110	17, 18	----	----	EDA-C
21	SCS Runoff	5.388	1	729	16,931	----	----	----	EDA-D
22	Reservoir	0.000	1	n/a	0	21	595.90	16,931	Low Point D
24	SCS Runoff	6.409	1	730	21,496	----	----	----	EDA-E
26	SCS Runoff	1.543	1	729	4,813	----	----	----	EDA-F
29	SCS Runoff	0.000	1	n/a	0	----	----	----	EDA-H
30	Reservoir	0.000	1	n/a	0	29	594.87	0.000	Low Point H
32	SCS Runoff	0.000	1	n/a	0	----	----	----	EDA-I
33	Reservoir	0.000	1	n/a	0	32	595.55	0.000	Low Point I
35	SCS Runoff	4.537	1	727	12,536	----	----	----	PDA-A-PERVIOUS
36	SCS Runoff	9.413	1	727	30,058	----	----	----	PDA-A-IMPERVIOUS
37	Combine	13.95	1	727	42,594	35, 36	----	----	PDA-A
39	Reservoir	1.157	1	752	2,850	37	595.81	15,909	SWM-A
41	SCS Runoff	16.82	1	727	47,516	----	----	----	PDA-B-PERVIOUS
Hydrologic Calculations - Water Quantity.gpw					Return Period: 2 Year			Wednesday, 03 / 9 / 2022	

Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

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	
42	SCS Runoff	50.42	1	727	160,987	----	----	----	PDA-B1-IMPERVIOUS	
43	Combine	67.24	1	727	208,503	41, 42	----	----	PDA-B	
45	Reservoir	0.000	1	762	0	43	598.62	87,315	SWM-B	
47	SCS Runoff	0.494	1	727	1,385	----	----	----	PDA-B-BYPASS TO WETLANDS	
48	SCS Runoff	0.126	1	800	3,556	----	----	----	EDA-B: UNDIST PERVIOUS TO WE	
49	SCS Runoff	5.747	1	727	18,350	----	----	----	EDA-B:UNDIST IMPERVIOUS TO W	
50	Combine	6.240	1	727	23,291	47, 48, 49	----	----	FLOW TO WETLAND	
51	Reservoir	0.000	1	n/a	0	50	595.43	23,291	Low Point B Prop. Cond	
53	SCS Runoff	5.450	1	731	18,718	----	----	----	PDA-C-PERVIOUS	
54	SCS Runoff	1.269	1	727	4,053	----	----	----	PDA-C-IMPERVIOUS	
55	Combine	6.392	1	729	22,770	53, 54	----	----	PDA-C	
57	SCS Runoff	2.169	1	727	6,020	----	----	----	PDA-D-PERVIOUS	
58	SCS Runoff	16.64	1	727	53,137	----	----	----	PDA-D-IMPERVIOUS	
59	Combine	18.81	1	727	59,157	57, 58	----	----	PDA-D	
61	Reservoir	0.000	1	1643	0	59	601.75	37,090	SWM-D	
63	SCS Runoff	0.908	1	727	2,520	----	----	----	PDA-E	
65	SCS Runoff	1.497	1	727	4,145	----	----	----	PDA-F	
71	SCS Runoff	6.308	1	727	18,117	----	----	----	PDA-H-PERVIOUS	
72	SCS Runoff	32.96	1	727	105,260	----	----	----	PDA-H-IMPERVIOUS	
73	Combine	39.27	1	727	123,377	71, 72	----	----	PDA-H	
75	Reservoir	0.000	1	723	0	73	597.35	53,368	SWM-H	
77	SCS Runoff	0.000	1	n/a	0	----	----	----	PDA-I	
78	Reservoir	0.000	1	n/a	0	77	597.10	0.000	New Low Point I	
Hydrologic Calculations - Water Quantity.gpw					Return Period: 2 Year			Wednesday, 03 / 9 / 2022		

Hydrograph Report

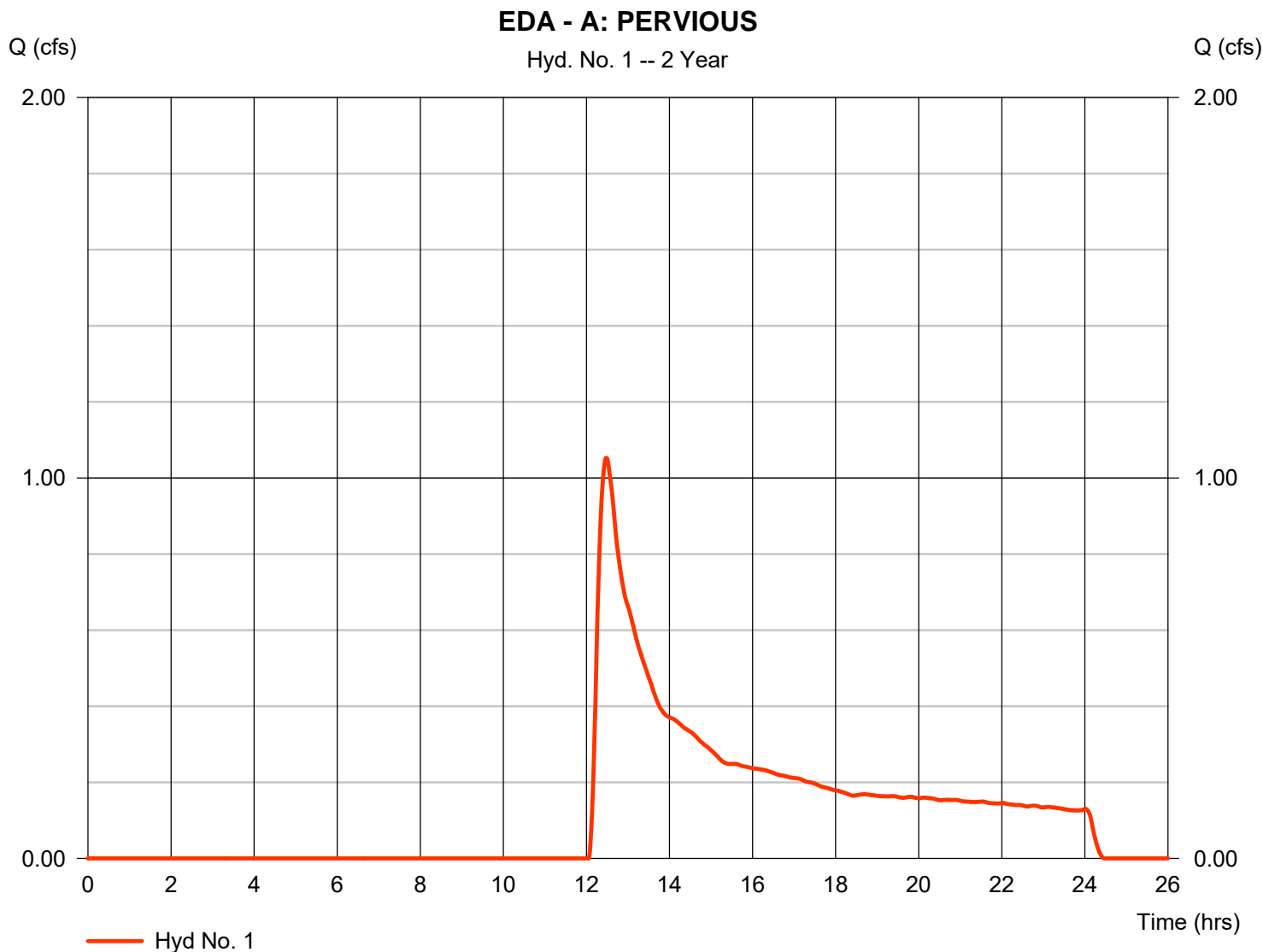
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

Wednesday, 03 / 9 / 2022

Hyd. No. 1

EDA - A: PERVIOUS

Hydrograph type	= SCS Runoff	Peak discharge	= 1.052 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.48 hrs
Time interval	= 1 min	Hyd. volume	= 11,191 cuft
Drainage area	= 13.290 ac	Curve number	= 54
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 17.70 min
Total precip.	= 3.24 in	Distribution	= Custom
Storm duration	= R:\Hydroflow Standards\NJ Reg Storm Rainfall Distribution\401A_C_1 min.cds		



Hydrograph Report

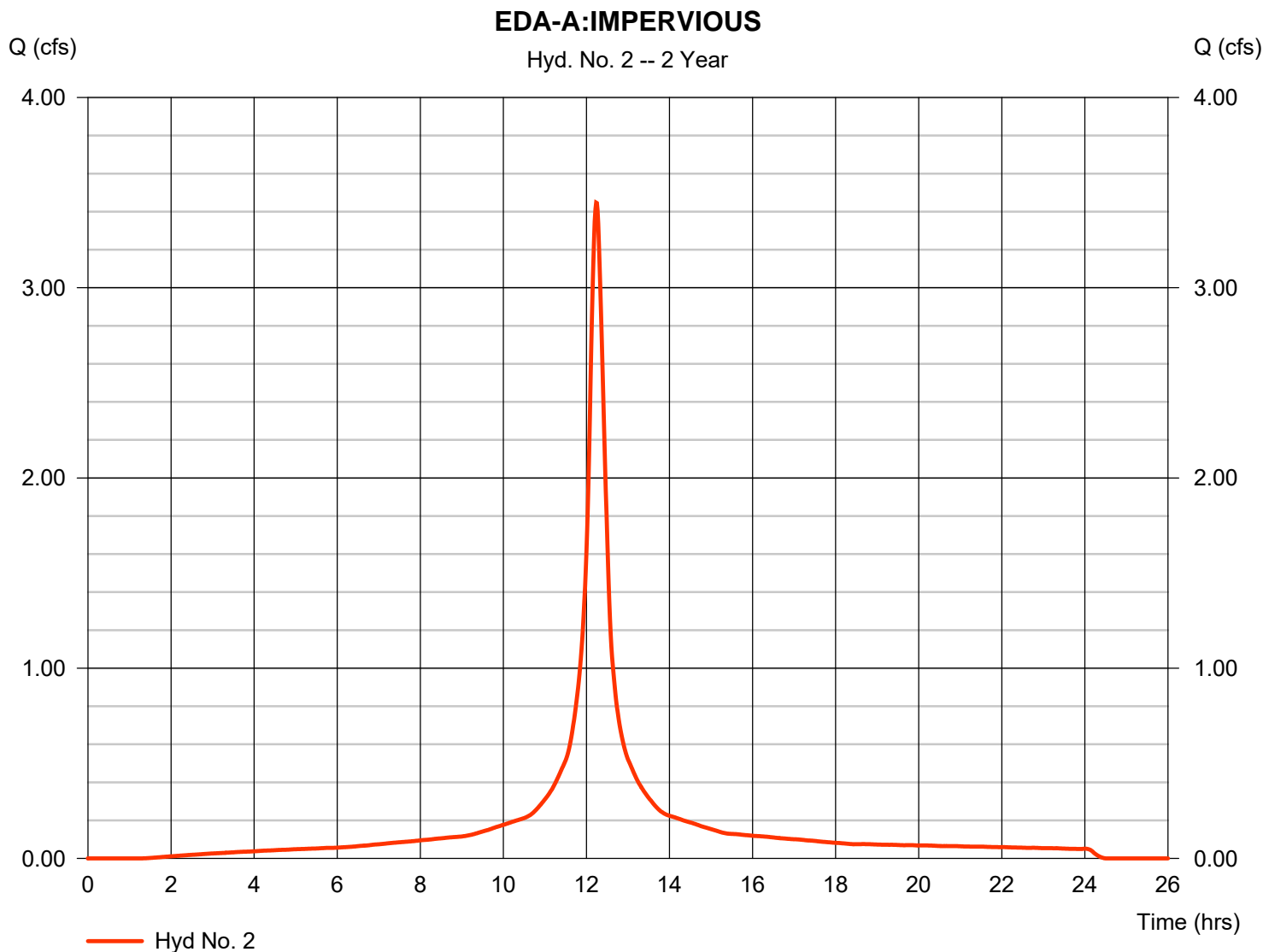
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

Wednesday, 03 / 9 / 2022

Hyd. No. 2

EDA-A:IMPERVIOUS

Hydrograph type	= SCS Runoff	Peak discharge	= 3.447 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.23 hrs
Time interval	= 1 min	Hyd. volume	= 15,938 cuft
Drainage area	= 1.460 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 19.60 min
Total precip.	= 3.24 in	Distribution	= Custom
Storm duration	= R:\Hydroflow Standards\NJ Reg Slope Rainfall Distribution\40A_C_1 min.cds		



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

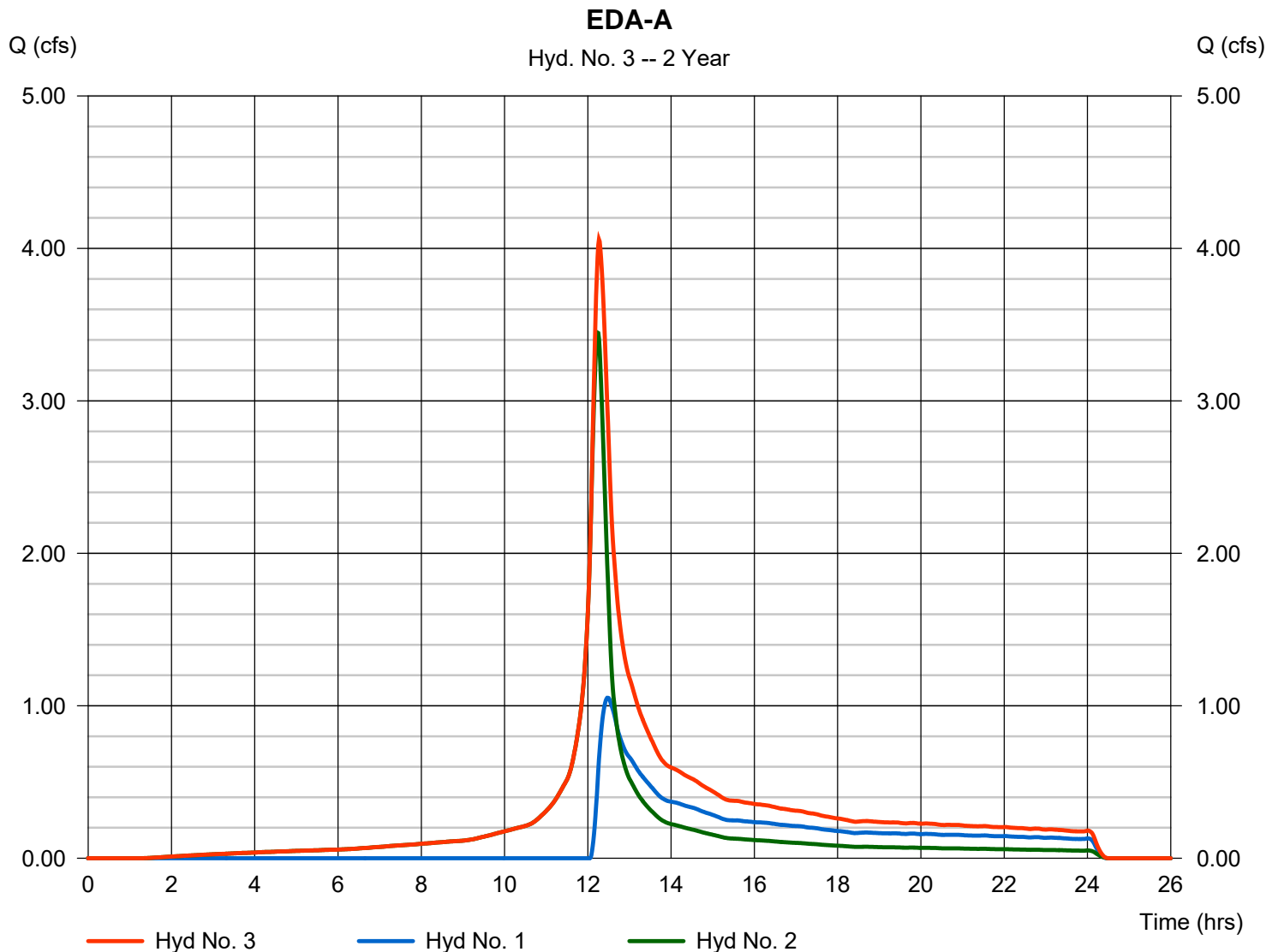
Wednesday, 03 / 9 / 2022

Hyd. No. 3

EDA-A

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

Peak discharge = 4.059 cfs
Time to peak = 12.27 hrs
Hyd. volume = 27,129 cuft
Contrib. drain. area = 14.750 ac



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

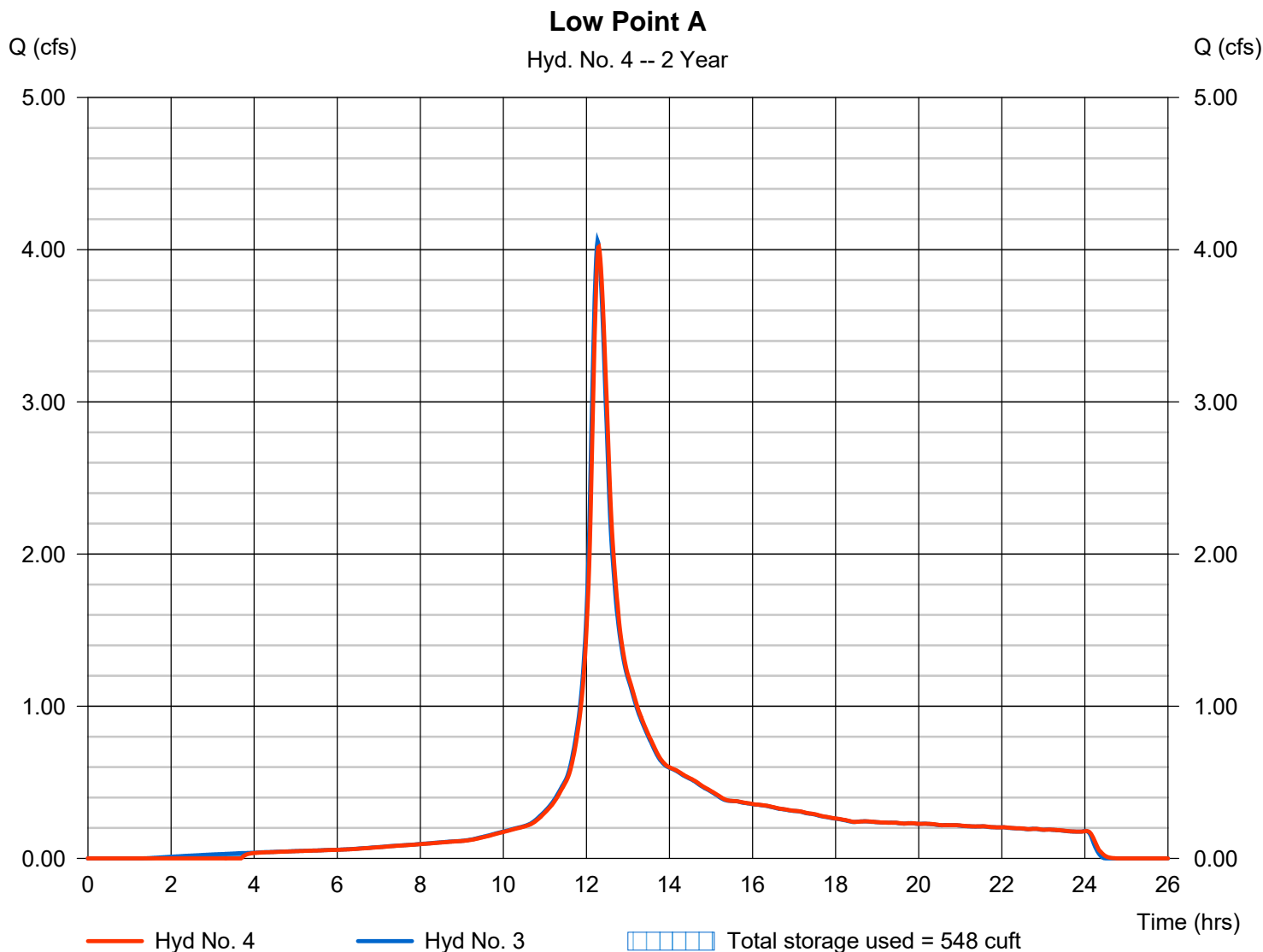
Wednesday, 03 / 9 / 2022

Hyd. No. 4

Low Point A

Hydrograph type	= Reservoir	Peak discharge	= 4.019 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.30 hrs
Time interval	= 1 min	Hyd. volume	= 26,973 cuft
Inflow hyd. No.	= 3 - EDA-A	Max. Elevation	= 595.78 ft
Reservoir name	= Low Point A	Max. Storage	= 548 cuft

Storage Indication method used.



Pond No. 7 - Low Point A

Pond Data

Contours -User-defined contour areas. Conic method used for volume calculation. Begining Elevation = 595.30 ft

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	595.30	00	0	0
0.10	595.40	188	6	6
0.20	595.50	732	43	49
0.30	595.60	1,429	106	155
0.40	595.70	2,194	180	335
0.50	595.80	3,054	261	597
0.70	596.00	14,420	1,606	2,202
0.80	596.10	23,684	1,885	4,088
1.20	596.50	68,646	17,686	21,774

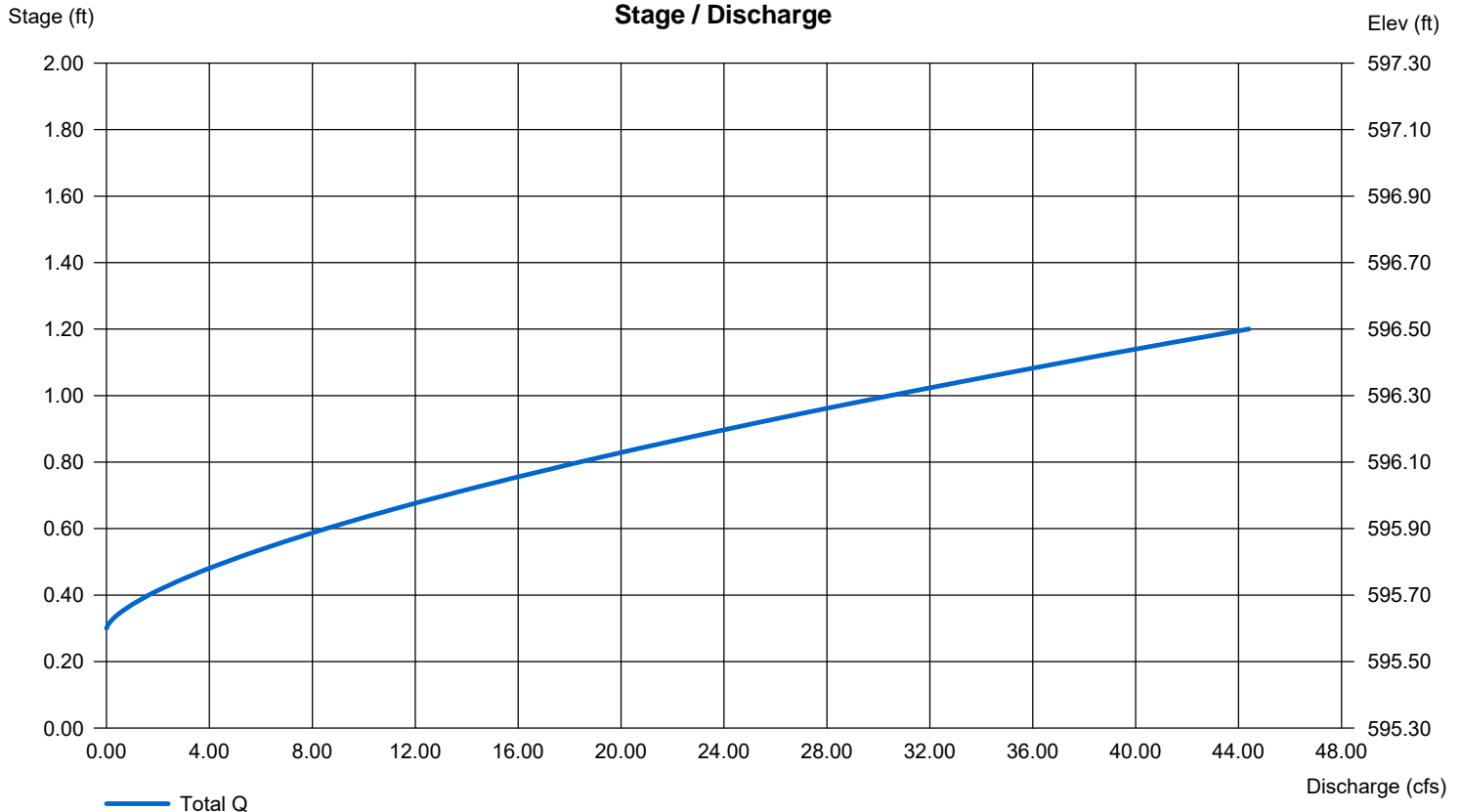
Culvert / Orifice Structures

	[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)	= 20.00	0.00	0.00	0.00
Crest El. (ft)	= 595.60	0.00	0.00	0.00
Weir Coeff.	= 2.60	3.33	3.33	3.33
Weir Type	= Broad	---	---	---
Multi-Stage	= No	No	No	No
Exfil.(in/hr)	= 0.000 (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).



Hydrograph Report

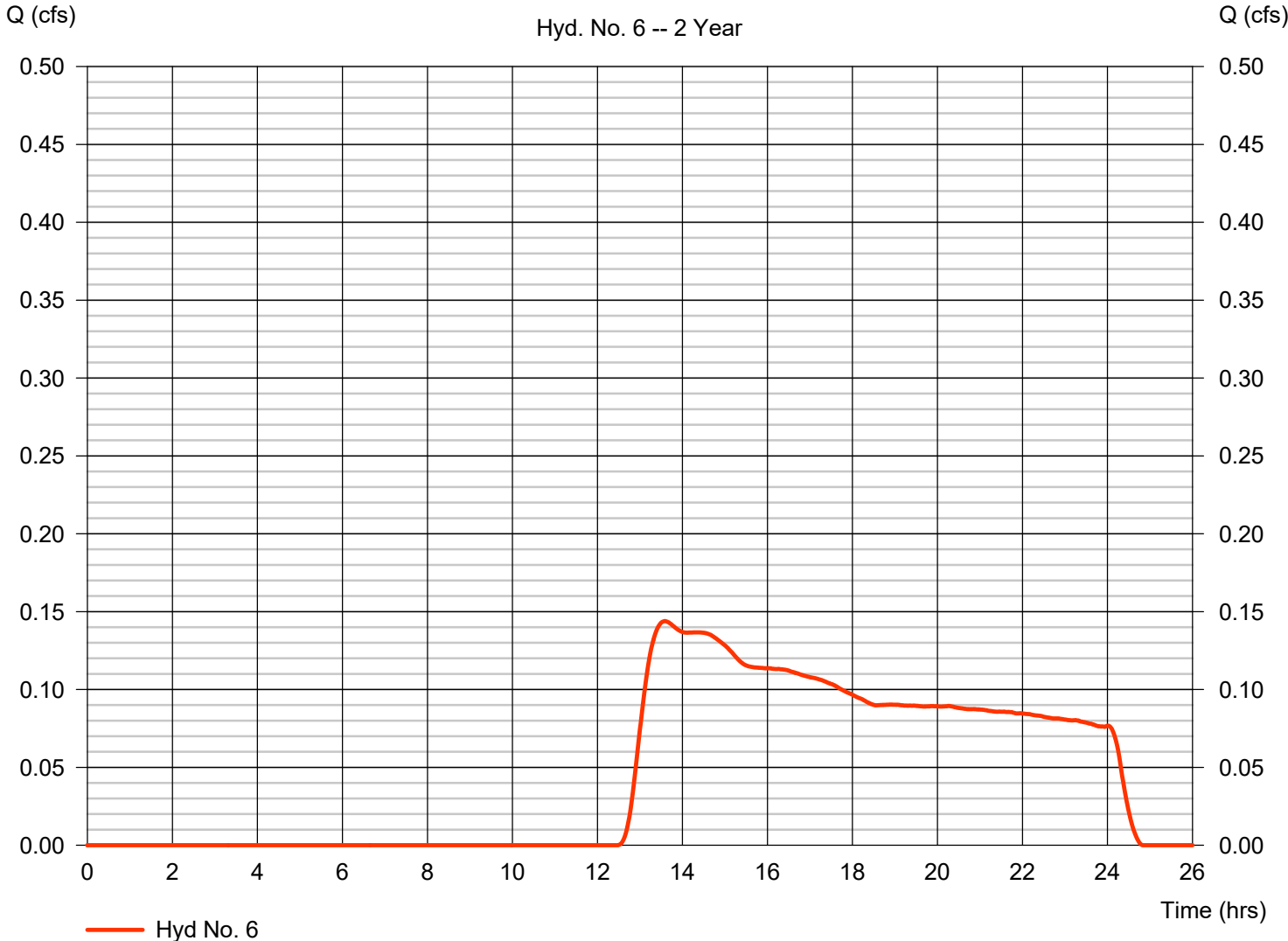
Hyd. No. 6

EDA-B: PERVIOUS DIST

Hydrograph type	= SCS Runoff	Peak discharge	= 0.144 cfs
Storm frequency	= 2 yrs	Time to peak	= 13.58 hrs
Time interval	= 1 min	Hyd. volume	= 4,164 cuft
Drainage area	= 14.410 ac	Curve number	= 47
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 31.40 min
Total precip.	= 3.24 in	Distribution	= Custom
Storm duration	= R:\Hydroflow Standards\NJ Reg Storm Rainfall Distribution\NOAA_C_1 min.cds		

EDA-B: PERVIOUS DIST

Hyd. No. 6 -- 2 Year



Hydrograph Report

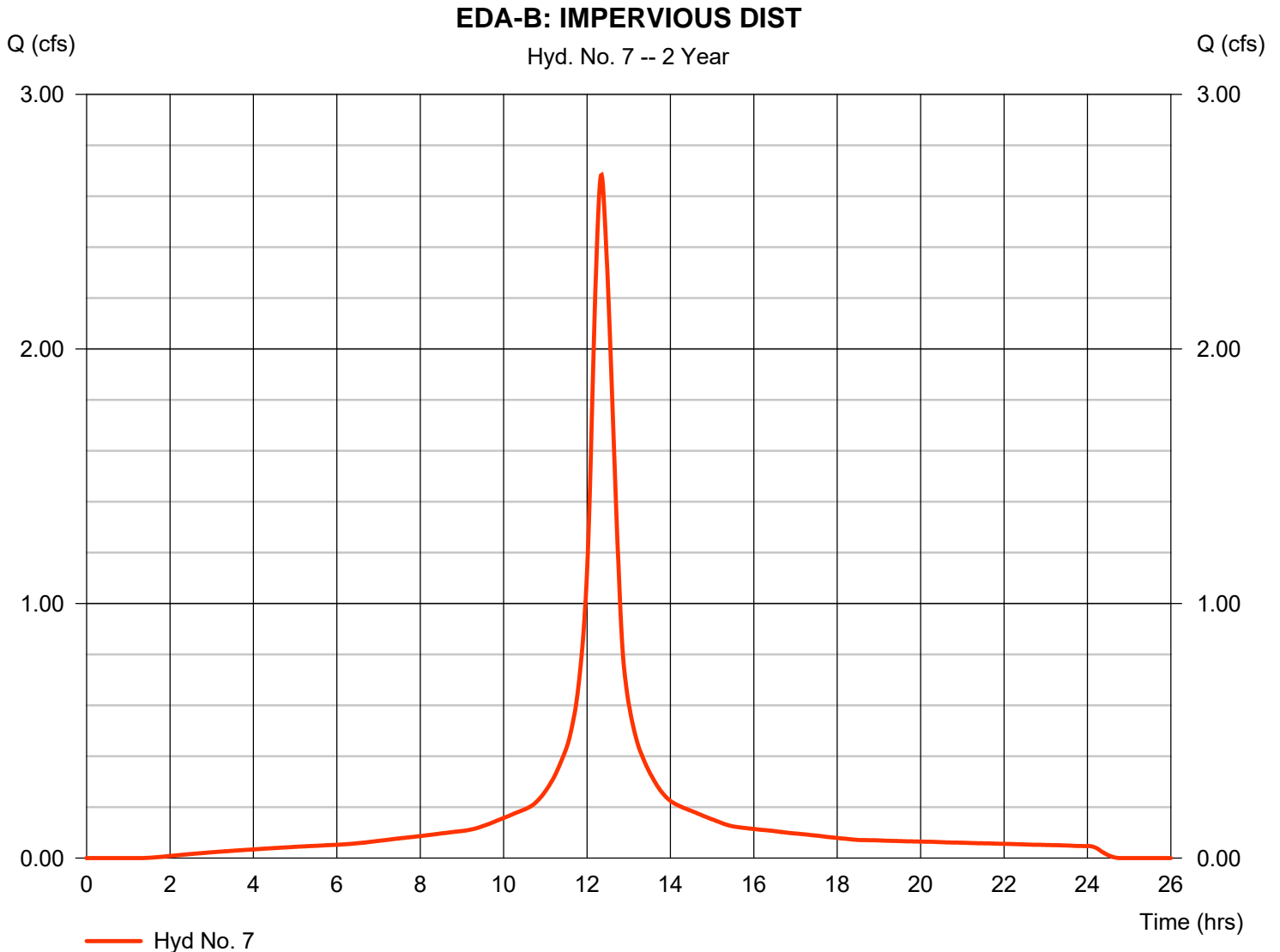
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Wednesday, 03 / 9 / 2022

Hyd. No. 7

EDA-B: IMPERVIOUS DIST

Hydrograph type	= SCS Runoff	Peak discharge	= 2.684 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.35 hrs
Time interval	= 1 min	Hyd. volume	= 14,956 cuft
Drainage area	= 1.370 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 29.70 min
Total precip.	= 3.24 in	Distribution	= Custom
Storm duration	= R:\Hydroflow Standards\NJ Reg Slope Rainfall Distribution\NOAA_C_1 min.cds		



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

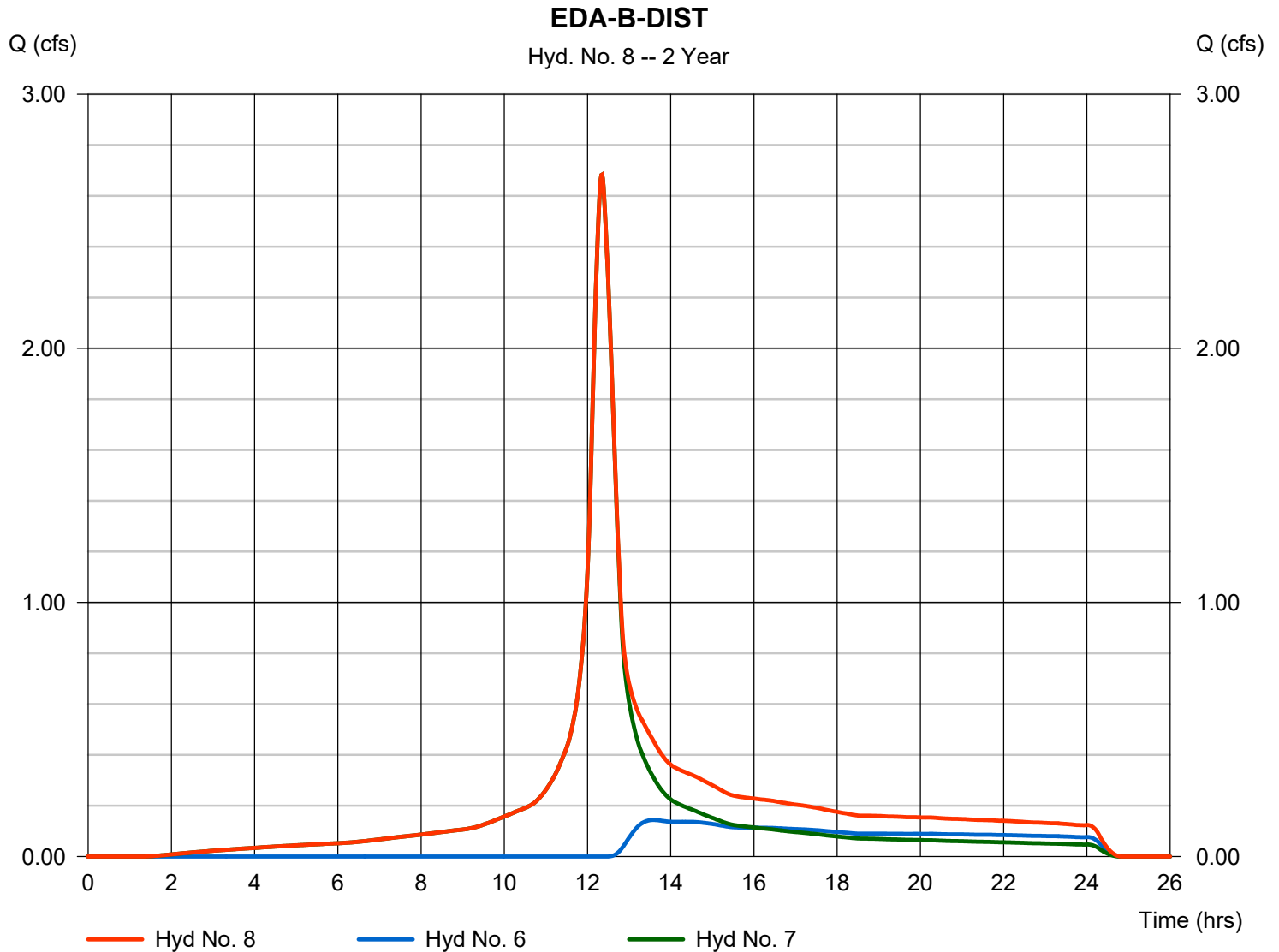
Wednesday, 03 / 9 / 2022

Hyd. No. 8

EDA-B-DIST

Hydrograph type = Combine
Storm frequency = 2 yrs
Time interval = 1 min
Inflow hyds. = 6, 7

Peak discharge = 2.684 cfs
Time to peak = 12.35 hrs
Hyd. volume = 19,119 cuft
Contrib. drain. area = 15.780 ac



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

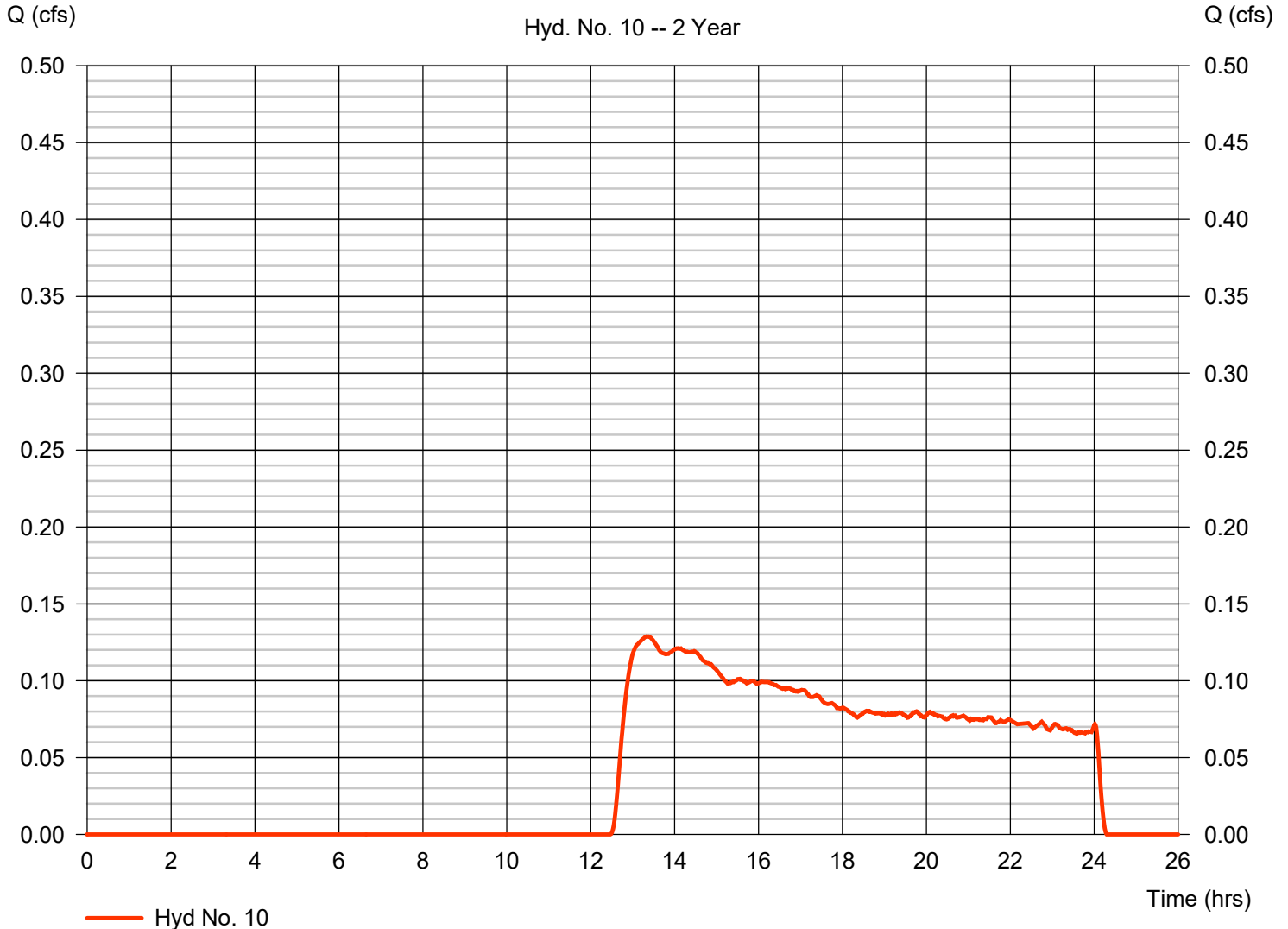
Wednesday, 03 / 9 / 2022

Hyd. No. 10

EDA-B-PERVIOUS UNDIST

Hydrograph type	= SCS Runoff	Peak discharge	= 0.129 cfs
Storm frequency	= 2 yrs	Time to peak	= 13.33 hrs
Time interval	= 1 min	Hyd. volume	= 3,643 cuft
Drainage area	= 12.470 ac	Curve number	= 47
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 10.70 min
Total precip.	= 3.24 in	Distribution	= Custom
Storm duration	= R:\Hydroflow Standards\NJ Reg Slope Rainfall Distribution\NOAA_C_1 min.cds		

EDA-B-PERVIOUS UNDIST



Hydrograph Report

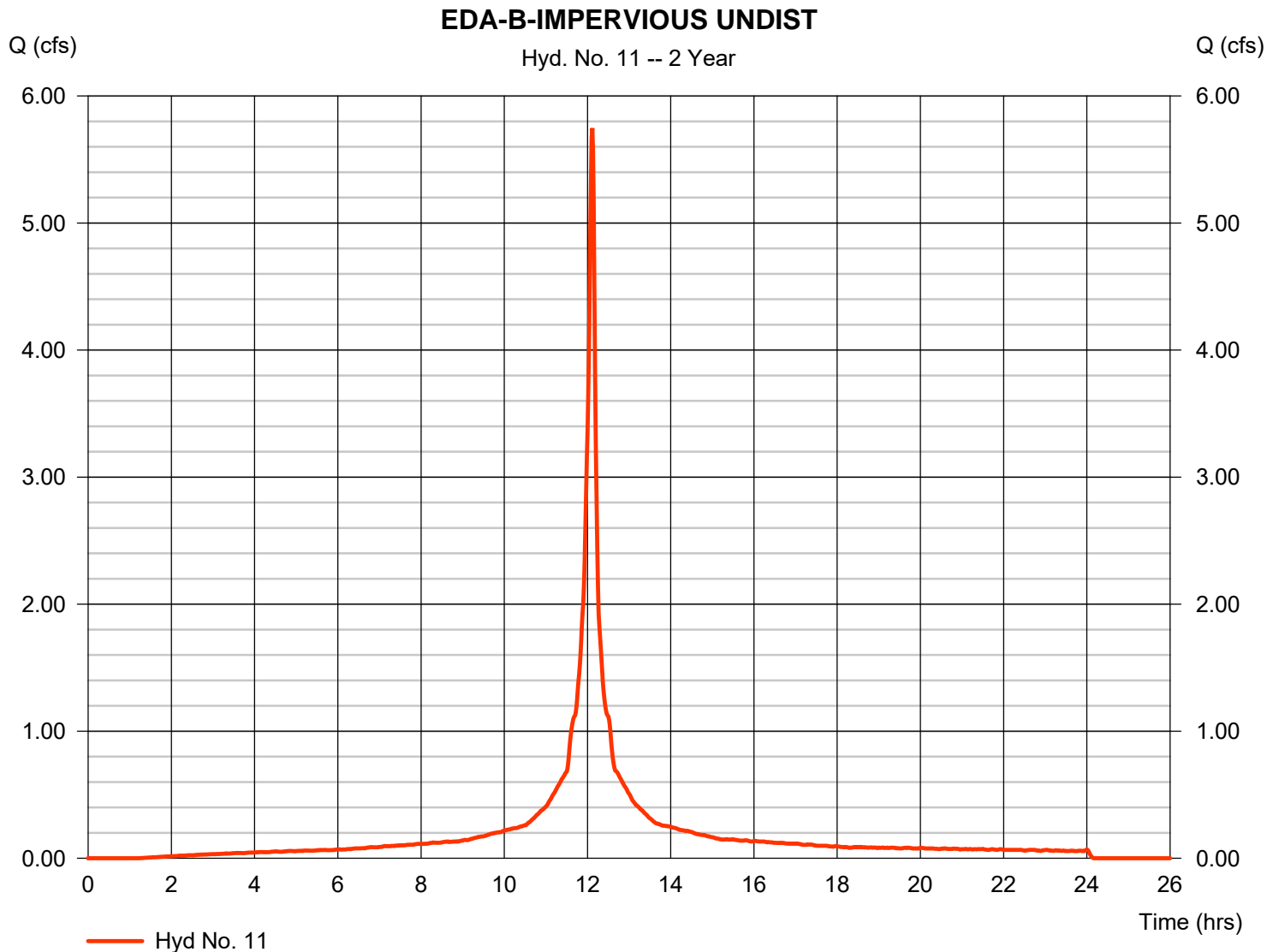
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

Wednesday, 03 / 9 / 2022

Hyd. No. 11

EDA-B-IMPERVIOUS UNDIST

Hydrograph type	= SCS Runoff	Peak discharge	= 5.747 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.12 hrs
Time interval	= 1 min	Hyd. volume	= 18,350 cuft
Drainage area	= 1.630 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 6.00 min
Total precip.	= 3.24 in	Distribution	= Custom
Storm duration	= R:\Hydroflow Standards\NJ Reg Storm Rainfall Distribution\NOAA_C_1 min.cds		



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

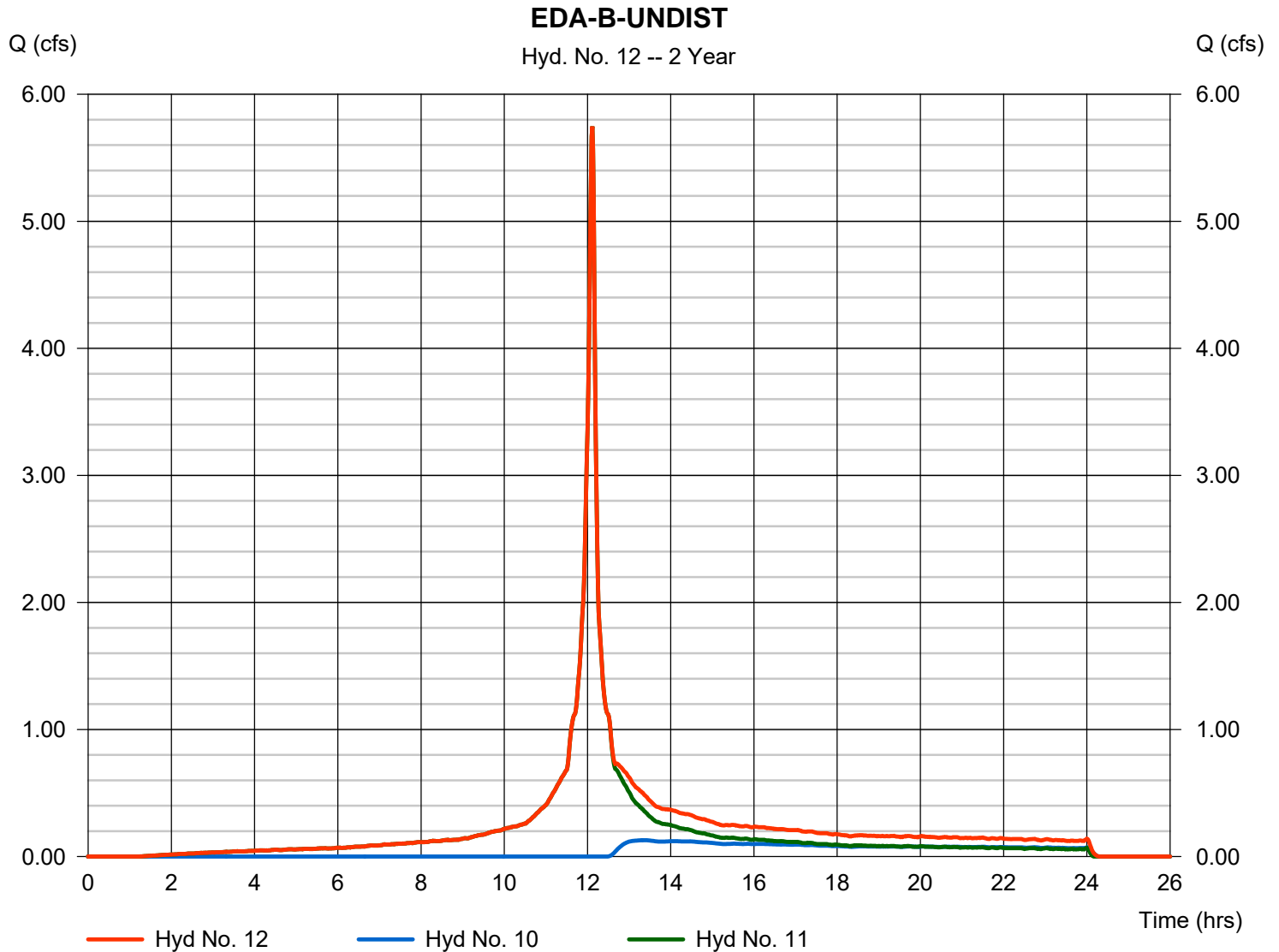
Wednesday, 03 / 9 / 2022

Hyd. No. 12

EDA-B-UNDIST

Hydrograph type = Combine
Storm frequency = 2 yrs
Time interval = 1 min
Inflow hyds. = 10, 11

Peak discharge = 5.747 cfs
Time to peak = 12.12 hrs
Hyd. volume = 21,994 cuft
Contrib. drain. area = 14.100 ac



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

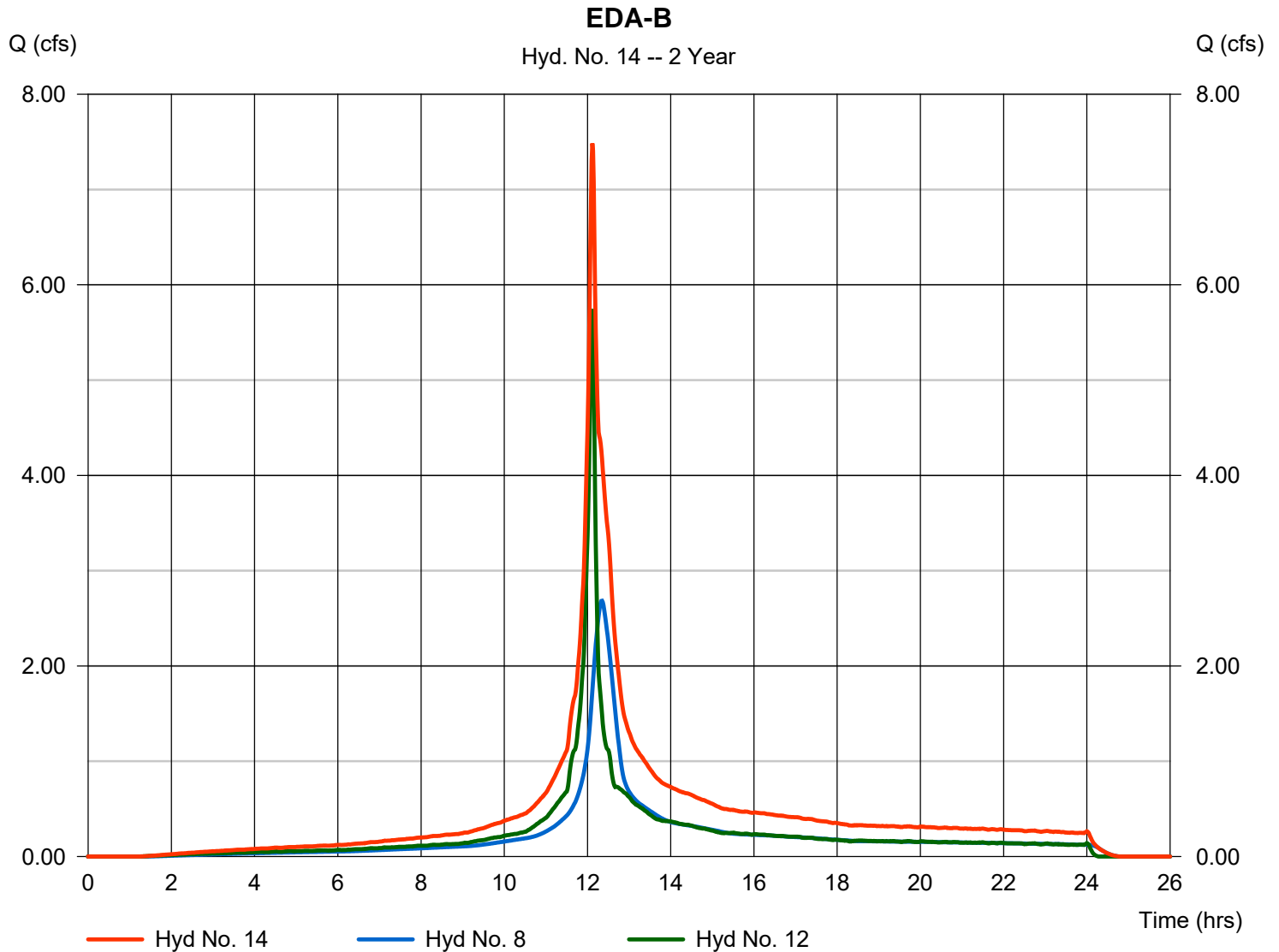
Wednesday, 03 / 9 / 2022

Hyd. No. 14

EDA-B

Hydrograph type = Combine
Storm frequency = 2 yrs
Time interval = 1 min
Inflow hyds. = 8, 12

Peak discharge = 7.485 cfs
Time to peak = 12.12 hrs
Hyd. volume = 41,113 cuft
Contrib. drain. area = 0.000 ac



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

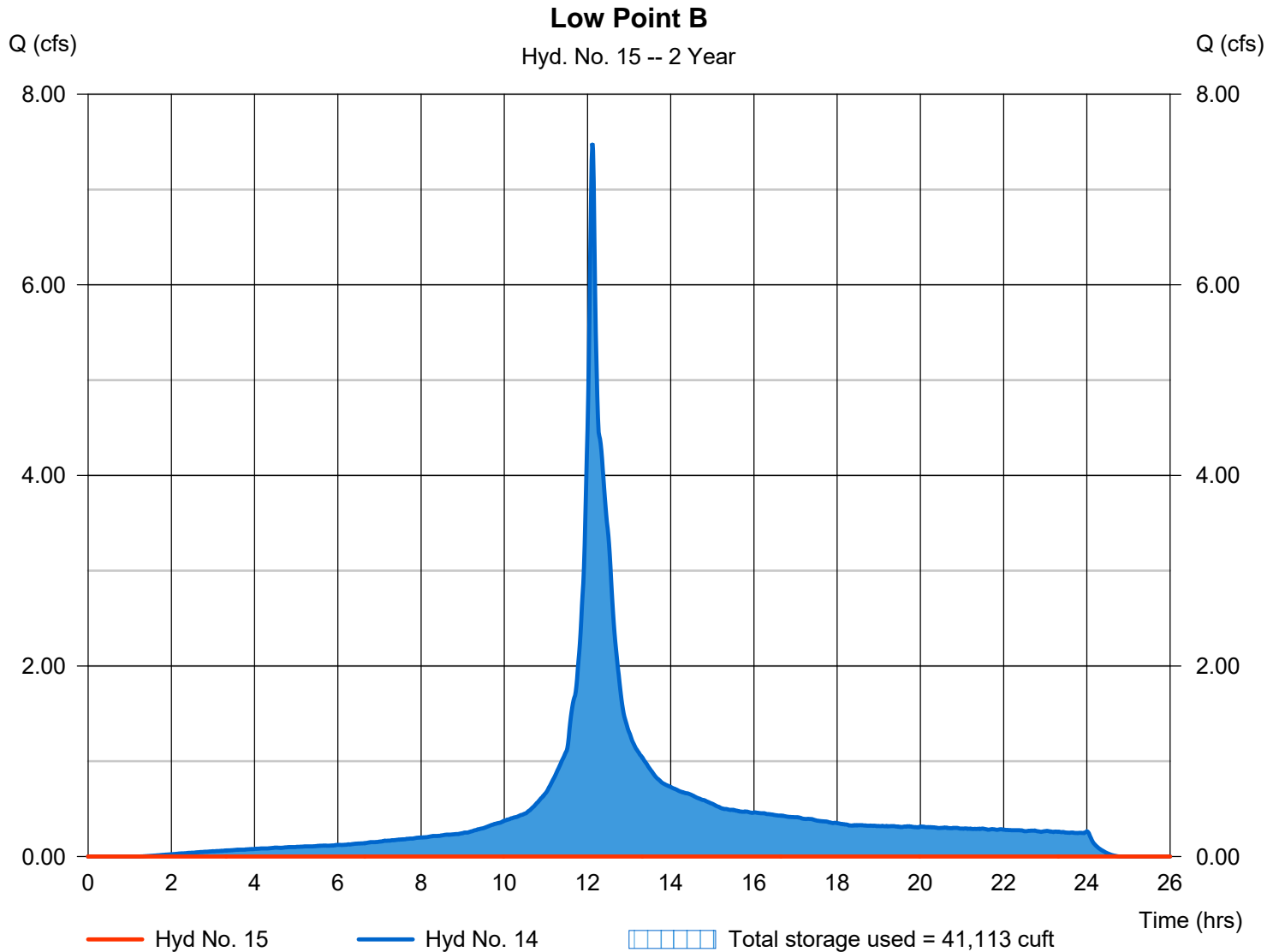
Wednesday, 03 / 9 / 2022

Hyd. No. 15

Low Point B

Hydrograph type	= Reservoir	Peak discharge	= 0.000 cfs
Storm frequency	= 2 yrs	Time to peak	= n/a
Time interval	= 1 min	Hyd. volume	= 0 cuft
Inflow hyd. No.	= 14 - EDA-B	Max. Elevation	= 595.79 ft
Reservoir name	= Low Point B	Max. Storage	= 41,113 cuft

Storage Indication method used.



Pond No. 8 - Low Point B

Pond Data

Contours -User-defined contour areas. Conic method used for volume calculation. Begining Elevation = 594.00 ft

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	594.00	00	0	0
1.50	595.50	48,866	24,431	24,431
3.50	597.50	64,871	113,348	137,779
4.50	598.50	76,140	70,423	208,202
4.60	598.60	121,500	9,791	217,993
5.00	599.00	122,100	48,718	266,711

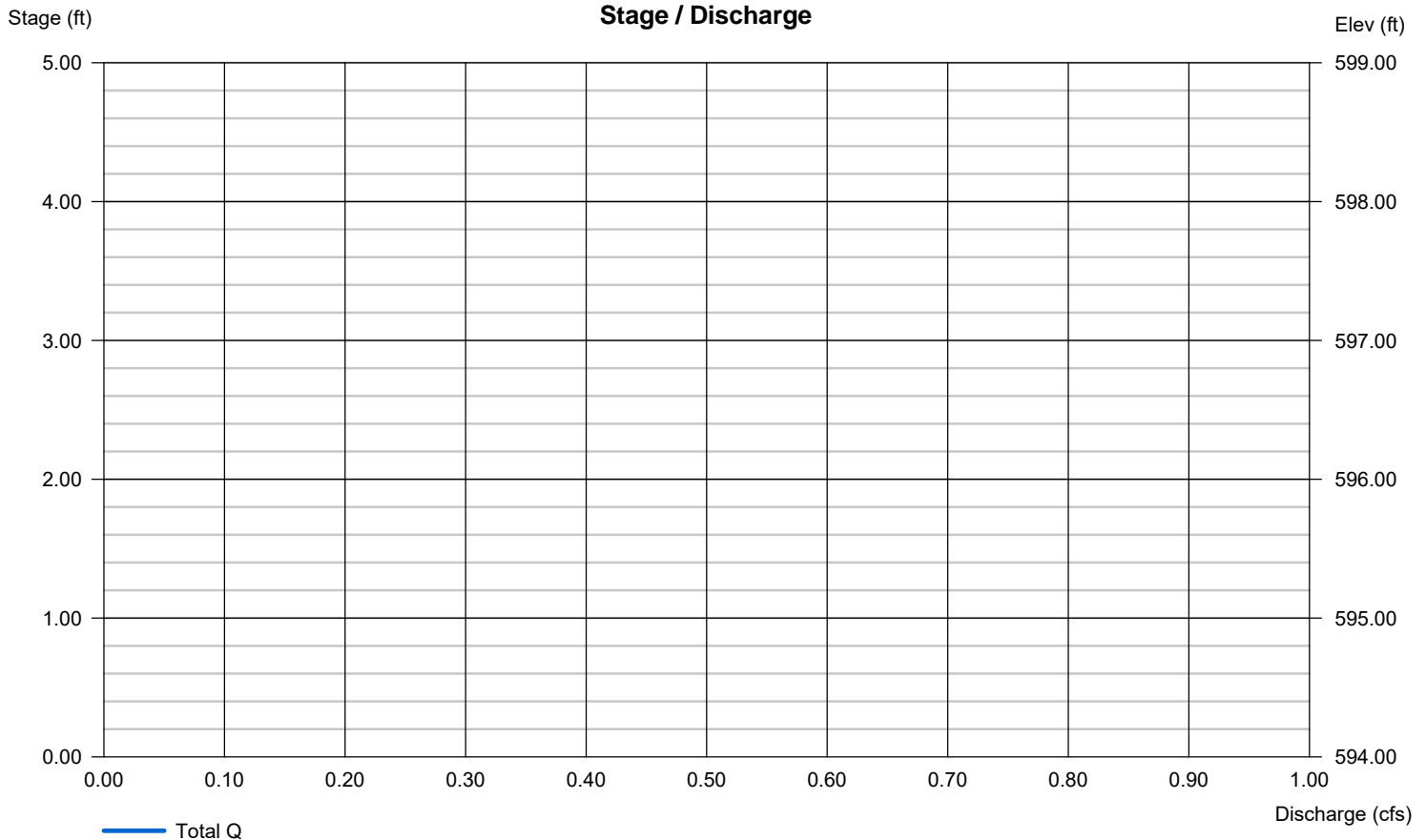
Culvert / Orifice Structures

	[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)	= 0.000	(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).



Hydrograph Report

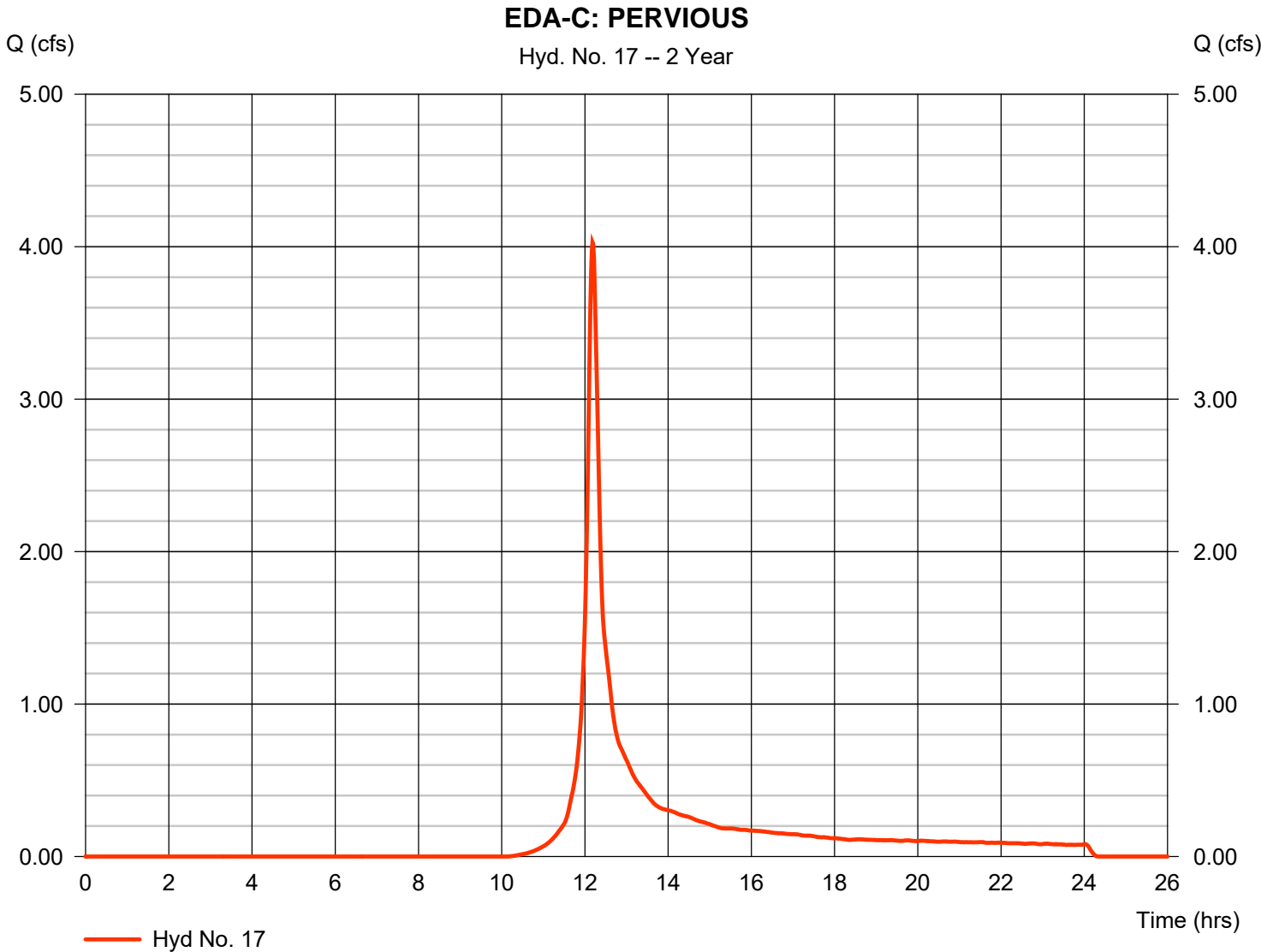
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Wednesday, 03 / 9 / 2022

Hyd. No. 17

EDA-C: PERVIOUS

Hydrograph type	= SCS Runoff	Peak discharge	= 4.028 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.18 hrs
Time interval	= 1 min	Hyd. volume	= 14,051 cuft
Drainage area	= 3.170 ac	Curve number	= 77
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 12.70 min
Total precip.	= 3.24 in	Distribution	= Custom
Storm duration	= R:\Hydroflow Standards\NJ Reg Slope Rainfall Distribution\NOAA_C_1 min.cds		

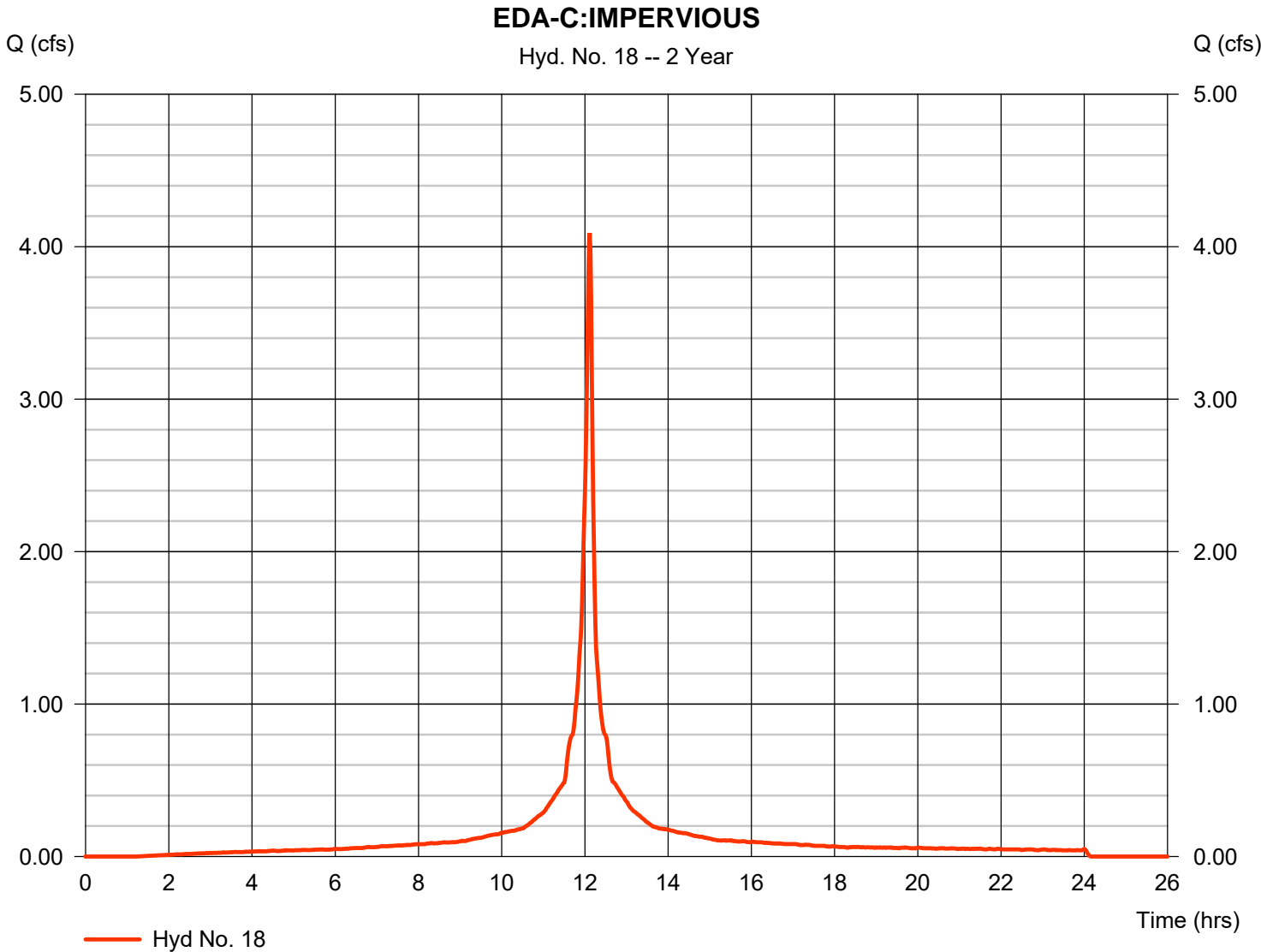


Hydrograph Report

Hyd. No. 18

EDA-C:IMPERVIOUS

Hydrograph type	= SCS Runoff	Peak discharge	= 4.090 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.12 hrs
Time interval	= 1 min	Hyd. volume	= 13,059 cuft
Drainage area	= 1.160 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 6.00 min
Total precip.	= 3.24 in	Distribution	= Custom
Storm duration	= R:\Hydroflow Standards\NJ Reg Slope Rainfall Distribution\40A_C_1 min.cds		



Hydrograph Report

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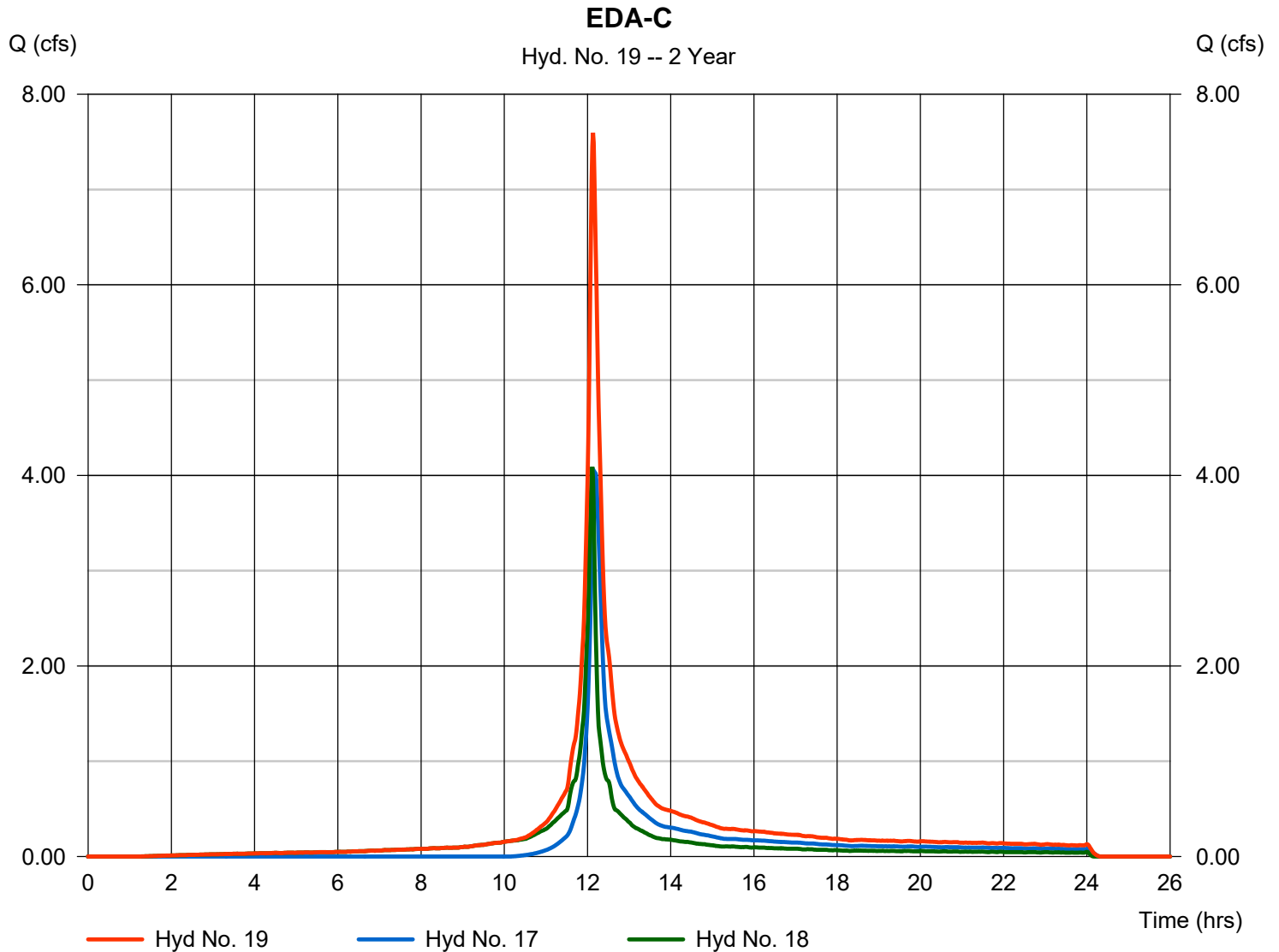
Wednesday, 03 / 9 / 2022

Hyd. No. 19

EDA-C

Hydrograph type = Combine
Storm frequency = 2 yrs
Time interval = 1 min
Inflow hyds. = 17, 18

Peak discharge = 7.596 cfs
Time to peak = 12.13 hrs
Hyd. volume = 27,110 cuft
Contrib. drain. area = 4.330 ac



Hydrograph Report

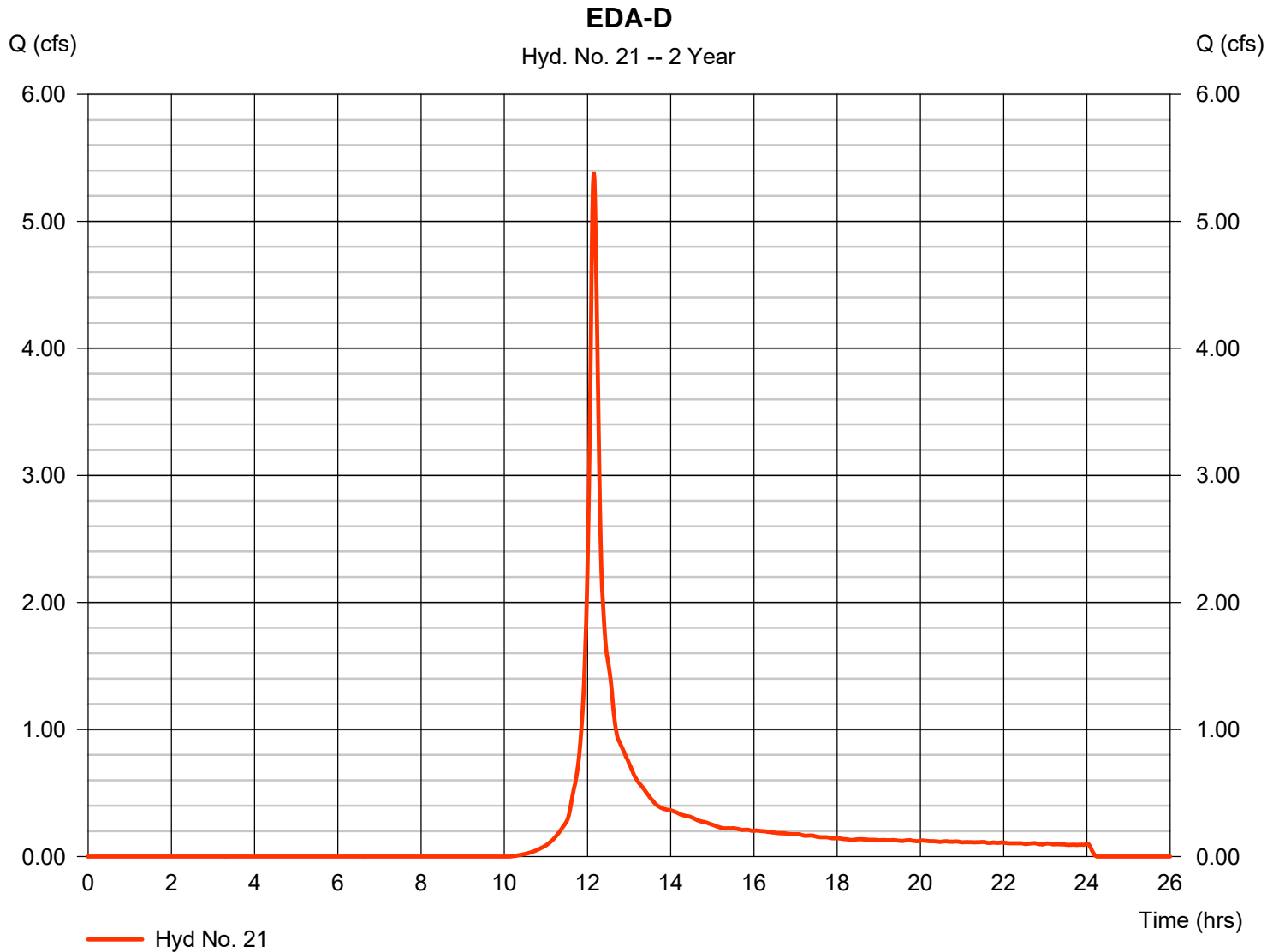
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

Wednesday, 03 / 9 / 2022

Hyd. No. 21

EDA-D

Hydrograph type	= SCS Runoff	Peak discharge	= 5.388 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.15 hrs
Time interval	= 1 min	Hyd. volume	= 16,931 cuft
Drainage area	= 3.760 ac	Curve number	= 77
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 10.00 min
Total precip.	= 3.24 in	Distribution	= Custom
Storm duration	= R:\Hydroflow Standards\NJ Reg Slope Rainfall Distribution\401A_C_1 min.cds		



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

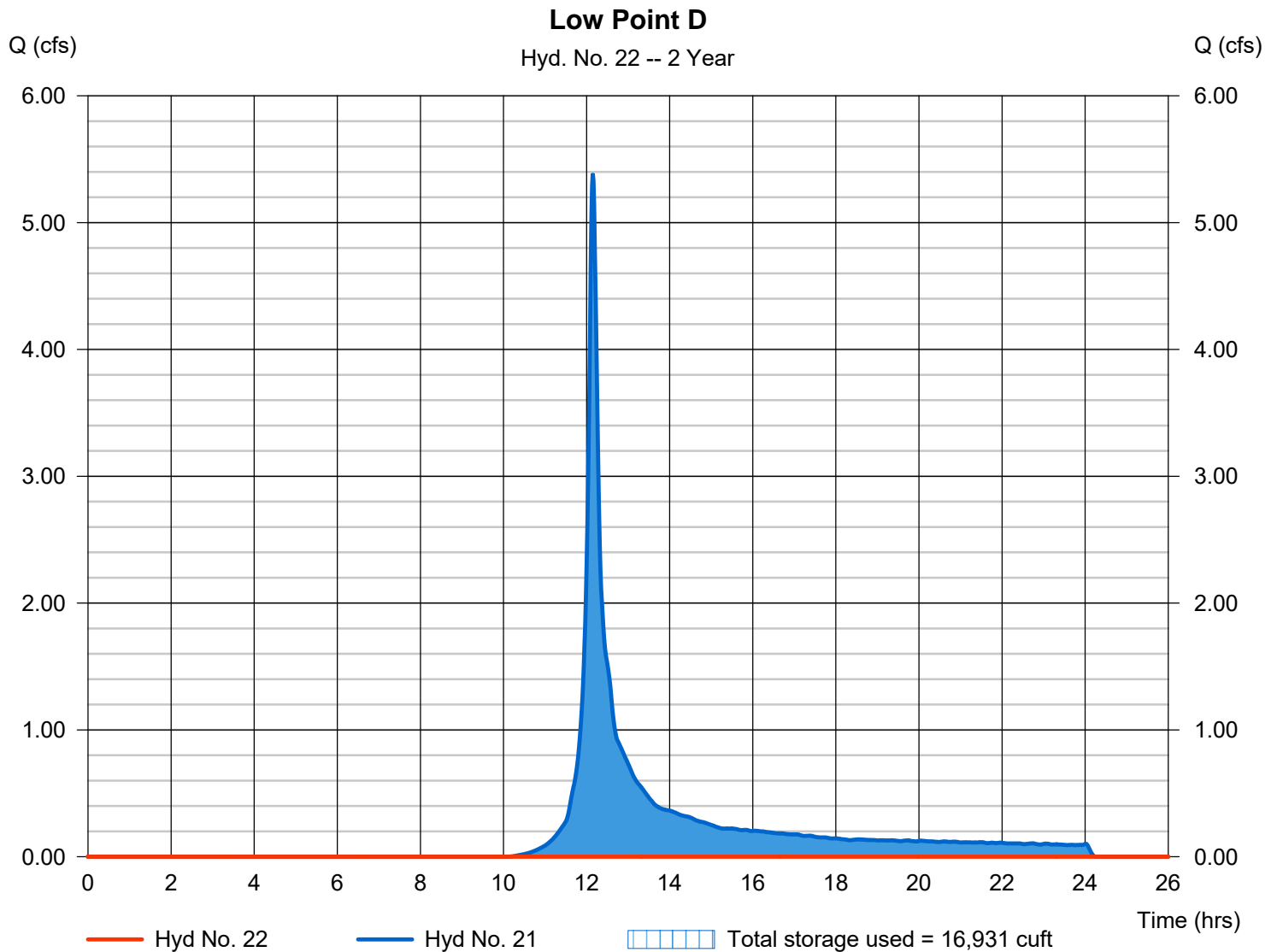
Wednesday, 03 / 9 / 2022

Hyd. No. 22

Low Point D

Hydrograph type	= Reservoir	Peak discharge	= 0.000 cfs
Storm frequency	= 2 yrs	Time to peak	= n/a
Time interval	= 1 min	Hyd. volume	= 0 cuft
Inflow hyd. No.	= 21 - EDA-D	Max. Elevation	= 595.90 ft
Reservoir name	= Low Point D	Max. Storage	= 16,931 cuft

Storage Indication method used.



Pond No. 9 - Low Point D

Pond Data

Contours -User-defined contour areas. Conic method used for volume calculation. Begining Elevation = 593.90 ft

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	593.90	00	0	0
0.10	594.00	2,578	86	86
0.60	594.50	5,085	1,880	1,966
1.10	595.00	8,458	3,350	5,316
1.60	595.50	12,358	5,173	10,489
2.10	596.00	19,917	7,993	18,482
2.60	596.50	26,666	11,604	30,086
3.10	597.00	35,125	15,398	45,483
3.60	597.50	42,848	19,459	64,943
4.10	598.00	51,114	23,458	88,401

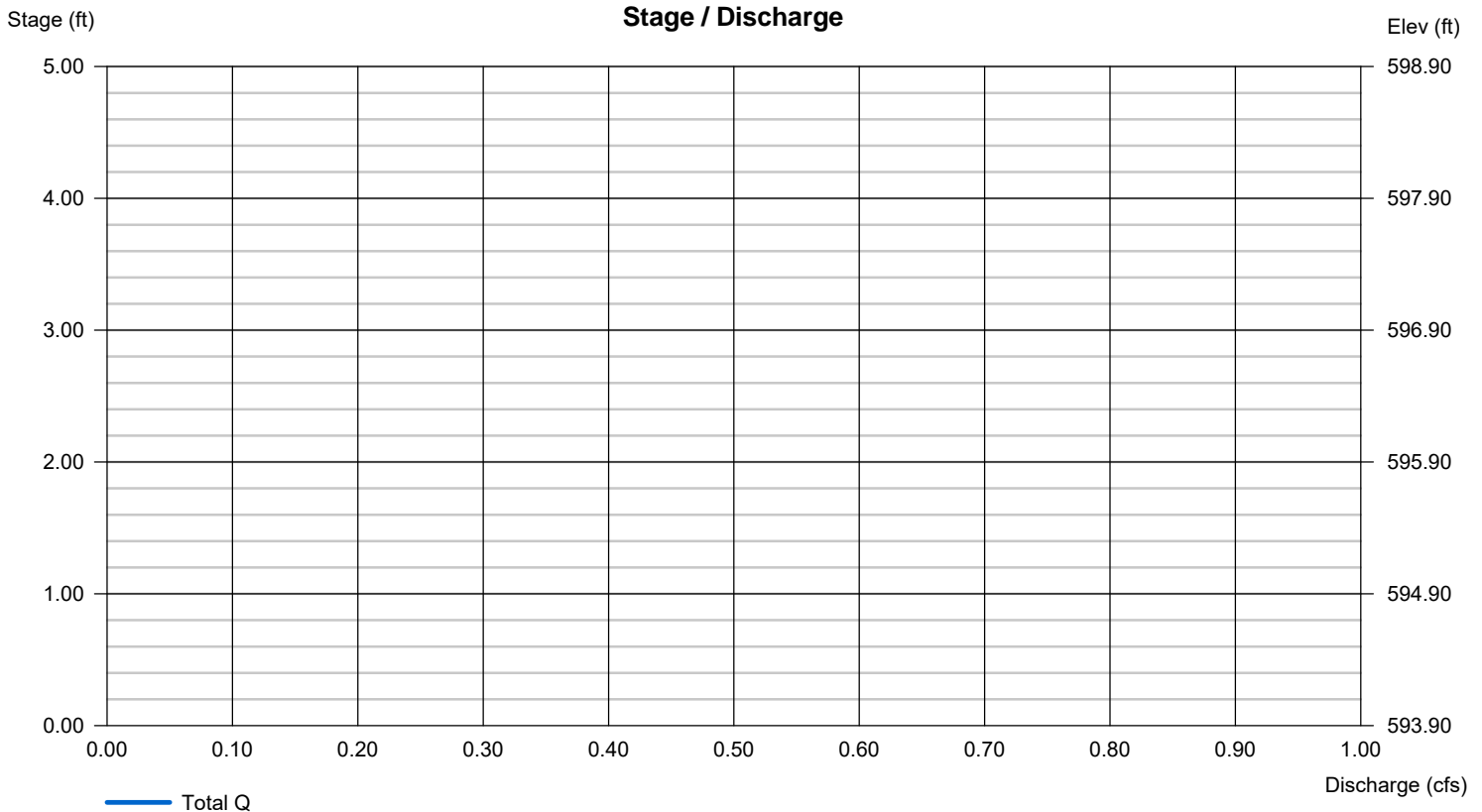
Culvert / Orifice Structures

	[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	= .000	.000	.000	n/a
Orifice Coeff.	= 0.00	0.00	0.00	0.00
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.	= 0.00	0.00	0.00	0.00
Weir Type	= ---	---	---	---
Multi-Stage	= No	No	No	No
Exfil.(in/hr)	= 0.000	(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

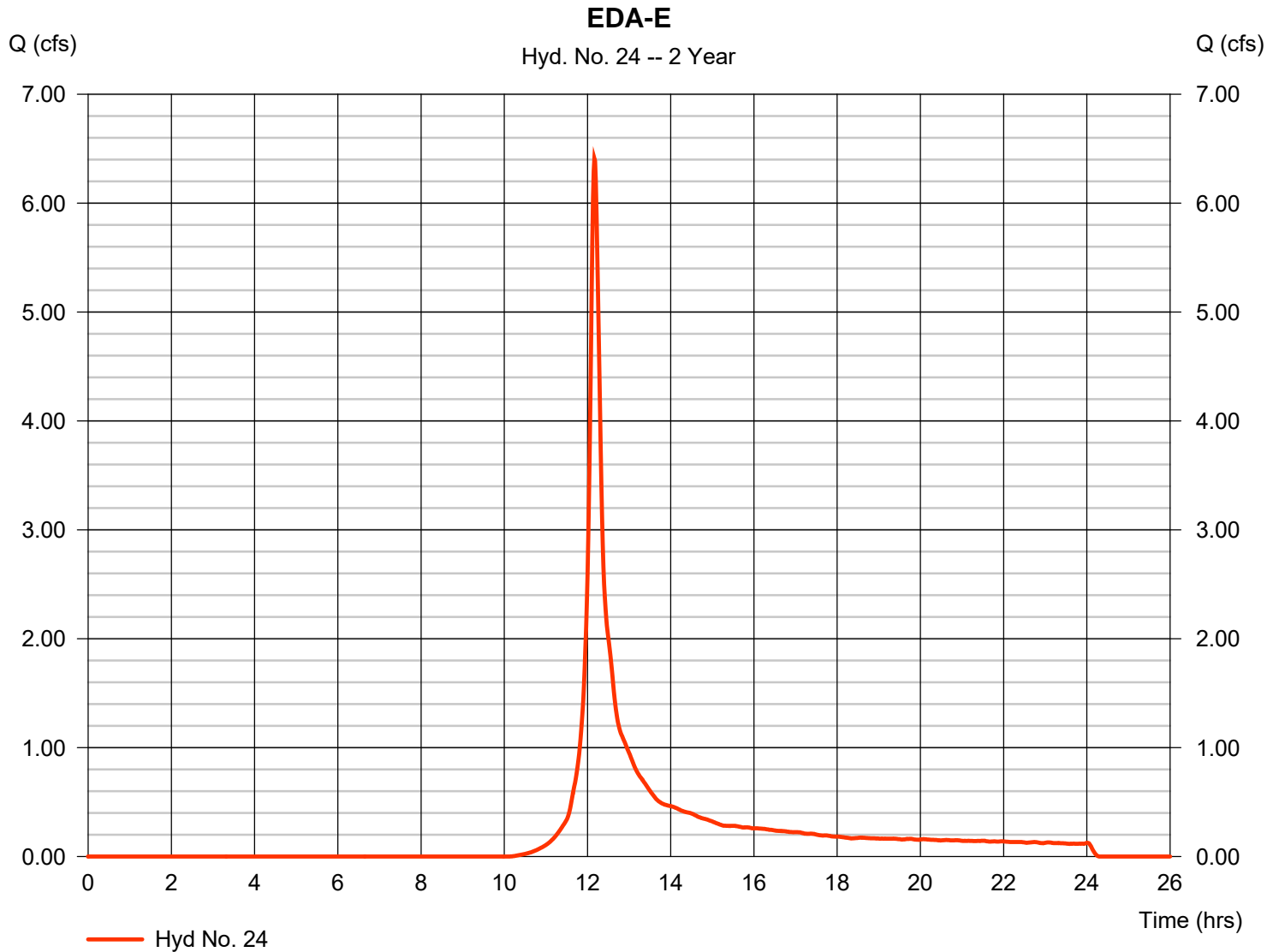
Hydroflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

Wednesday, 03 / 9 / 2022

Hyd. No. 24

EDA-E

Hydrograph type	= SCS Runoff	Peak discharge	= 6.409 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.17 hrs
Time interval	= 1 min	Hyd. volume	= 21,496 cuft
Drainage area	= 4.690 ac	Curve number	= 77
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 11.40 min
Total precip.	= 3.24 in	Distribution	= Custom
Storm duration	= R:\Hydroflow Standards\NJ Reg Slope Rainfall Distribution\401A_C_1 min.cds		



Hydrograph Report

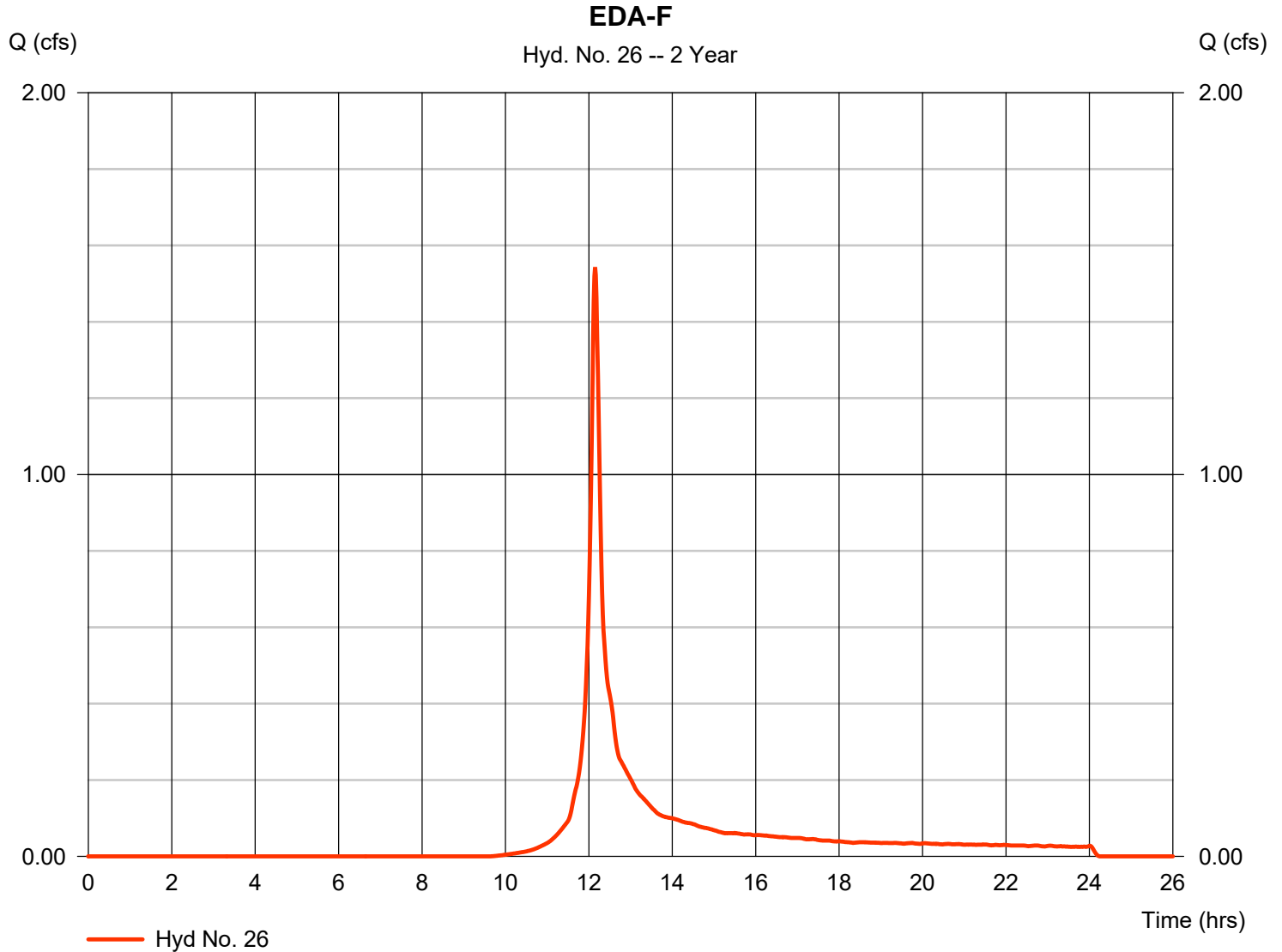
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

Wednesday, 03 / 9 / 2022

Hyd. No. 26

EDA-F

Hydrograph type	= SCS Runoff	Peak discharge	= 1.543 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.15 hrs
Time interval	= 1 min	Hyd. volume	= 4,813 cuft
Drainage area	= 0.970 ac	Curve number	= 79
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 10.00 min
Total precip.	= 3.24 in	Distribution	= Custom
Storm duration	= R:\Hydroflow Standards\NJ Reg Storm Rainfall Distribution\401A_C_1 min.cds		



Hydrograph Report

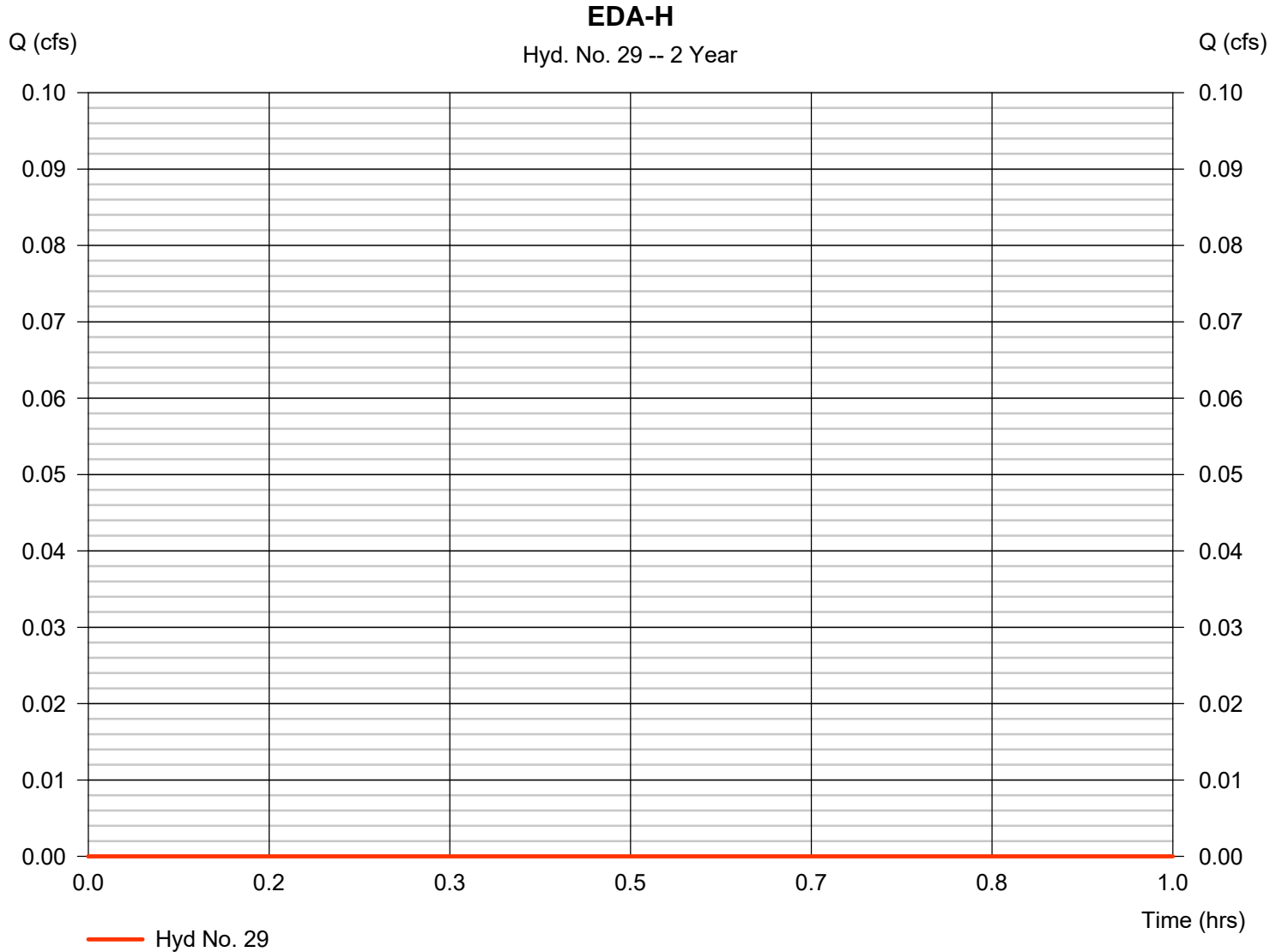
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

Wednesday, 03 / 9 / 2022

Hyd. No. 29

EDA-H

Hydrograph type	= SCS Runoff	Peak discharge	= 0.000 cfs
Storm frequency	= 2 yrs	Time to peak	= n/a
Time interval	= 1 min	Hyd. volume	= 0 cuft
Drainage area	= 12.920 ac	Curve number	= 36
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 33.50 min
Total precip.	= 3.24 in	Distribution	= Custom
Storm duration	= R:\Hydroflow Standards\NJ Reg Storm Rainfall Distribution\NOAA_C_1 min.cds		



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

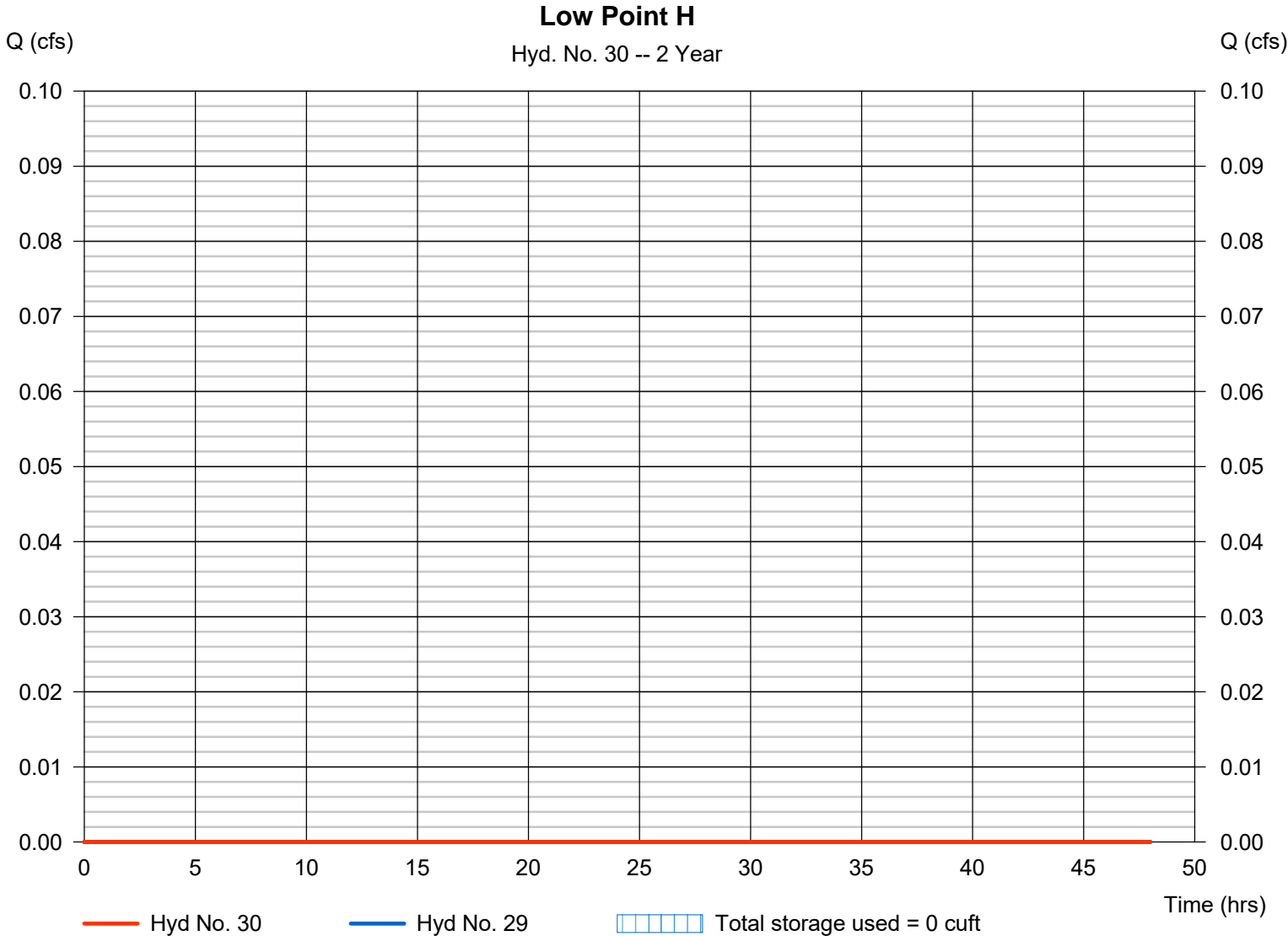
Wednesday, 03 / 9 / 2022

Hyd. No. 30

Low Point H

Hydrograph type	= Reservoir	Peak discharge	= 0.000 cfs
Storm frequency	= 2 yrs	Time to peak	= n/a
Time interval	= 1 min	Hyd. volume	= 0 cuft
Inflow hyd. No.	= 29 - EDA-H	Max. Elevation	= 594.87 ft
Reservoir name	= Low Point H	Max. Storage	= 0 cuft

Storage Indication method used.



Pond No. 10 - Low Point H

Pond Data

Contours -User-defined contour areas. Conic method used for volume calculation. Begining Elevation = 594.80 ft

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	594.80	00	0	0
0.70	595.50	6,133	1,431	1,431
1.20	596.00	12,353	4,531	5,962
1.70	596.50	17,030	7,314	13,276
2.20	597.00	22,505	9,851	23,127
2.70	597.50	27,028	12,365	35,492
3.20	598.00	32,037	14,747	50,239
3.70	598.50	36,433	17,104	67,343
4.20	599.00	41,351	19,431	86,774
4.70	599.50	45,806	21,778	108,551
5.20	600.00	50,617	24,094	132,645
5.70	600.50	55,998	26,640	159,285
6.20	601.00	61,741	29,420	188,705

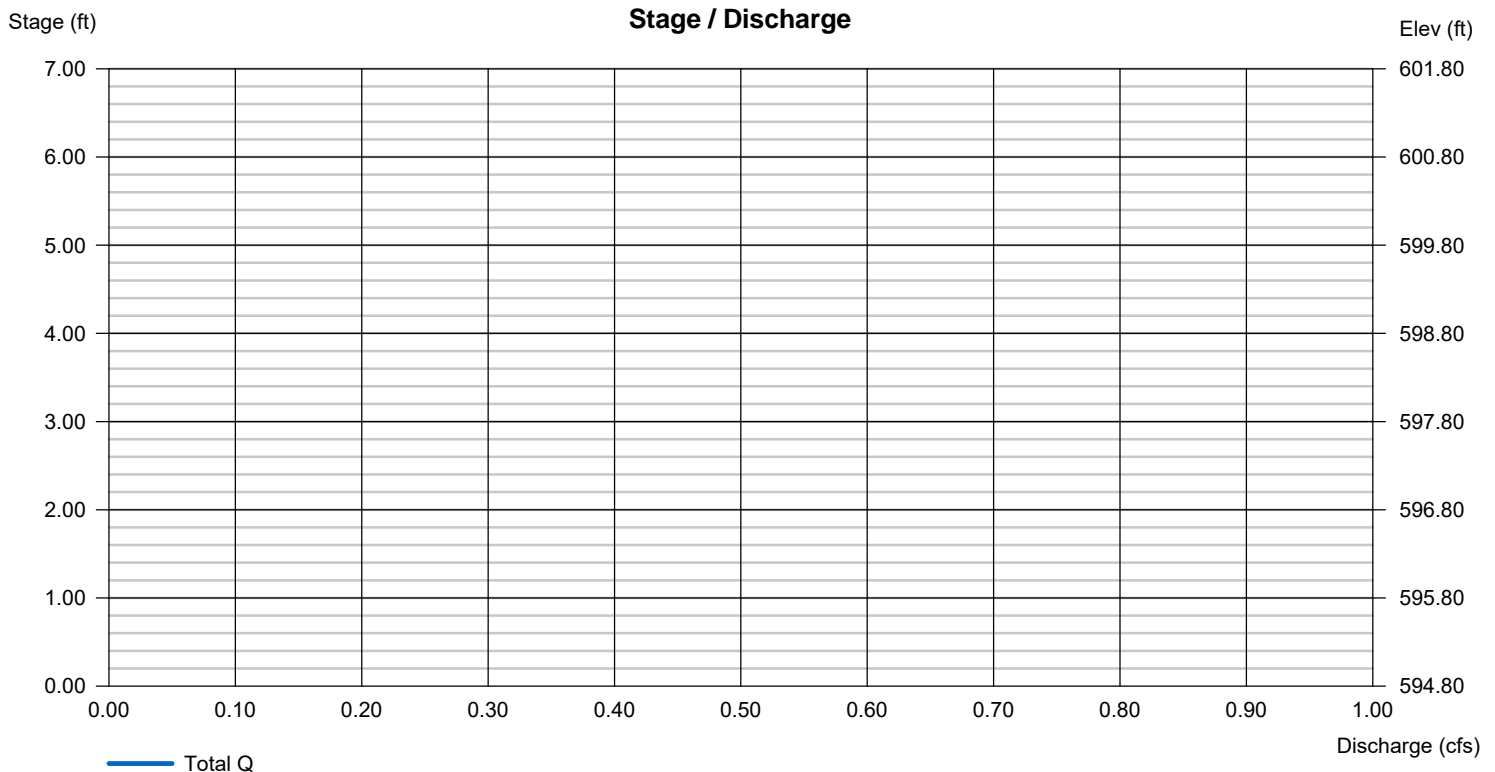
Culvert / Orifice Structures

	[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	= .000	.000	.000	n/a
Orifice Coeff.	= 0.00	0.00	0.00	0.00
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.	= 0.00	0.00	0.00	0.00
Weir Type	= ---	---	---	---
Multi-Stage	= No	No	No	No
Exfil.(in/hr)	= 0.000	(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

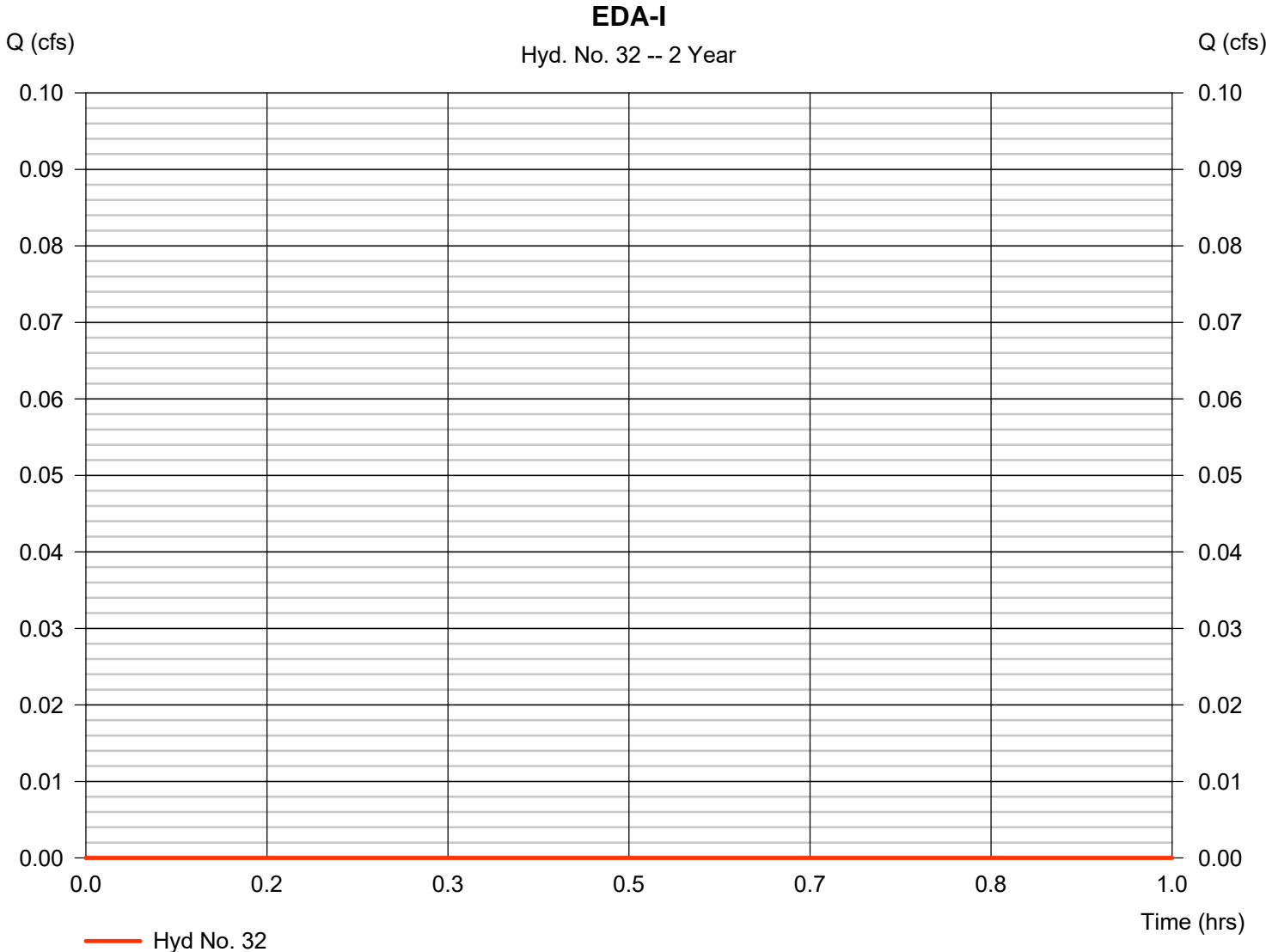
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Wednesday, 03 / 9 / 2022

Hyd. No. 32

EDA-I

Hydrograph type	= SCS Runoff	Peak discharge	= 0.000 cfs
Storm frequency	= 2 yrs	Time to peak	= n/a
Time interval	= 1 min	Hyd. volume	= 0 cuft
Drainage area	= 1.100 ac	Curve number	= 30
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 22.10 min
Total precip.	= 3.24 in	Distribution	= Custom
Storm duration	= R:\Hydroflow Standards\NJ Reg Storm Rainfall Distribution\NOAA_C_1 min.cds		



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

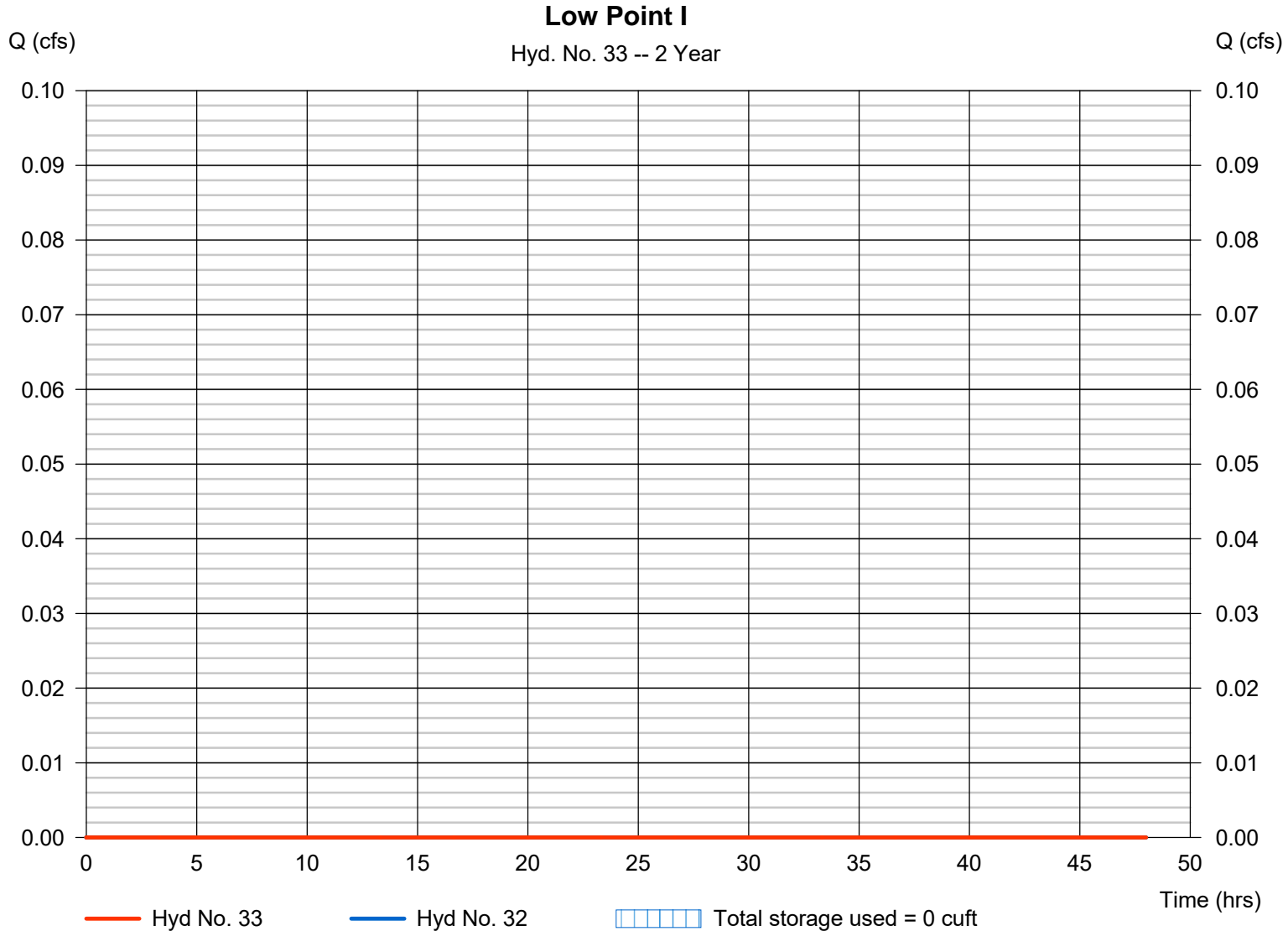
Wednesday, 03 / 9 / 2022

Hyd. No. 33

Low Point I

Hydrograph type	= Reservoir	Peak discharge	= 0.000 cfs
Storm frequency	= 2 yrs	Time to peak	= n/a
Time interval	= 1 min	Hyd. volume	= 0 cuft
Inflow hyd. No.	= 32 - EDA-I	Max. Elevation	= 595.55 ft
Reservoir name	= Low Point I	Max. Storage	= 0 cuft

Storage Indication method used.



Pond No. 11 - Low Point I

Pond Data

Contours -User-defined contour areas. Conic method used for volume calculation. Begining Elevation = 595.50 ft

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	595.50	00	0	0
0.50	596.00	325	54	54
1.00	596.50	1,000	316	370
1.50	597.00	1,450	609	979
2.00	597.50	1,699	786	1,766
2.50	598.00	1,980	919	2,684
3.00	598.50	2,260	1,059	3,743
3.50	599.00	2,568	1,206	4,949
4.00	599.50	2,875	1,360	6,309
4.50	600.00	3,204	1,519	7,828
5.00	600.50	3,556	1,689	9,517
5.50	601.00	3,921	1,868	11,385
6.00	601.50	4,371	2,072	13,457
6.50	602.00	4,865	2,308	15,765

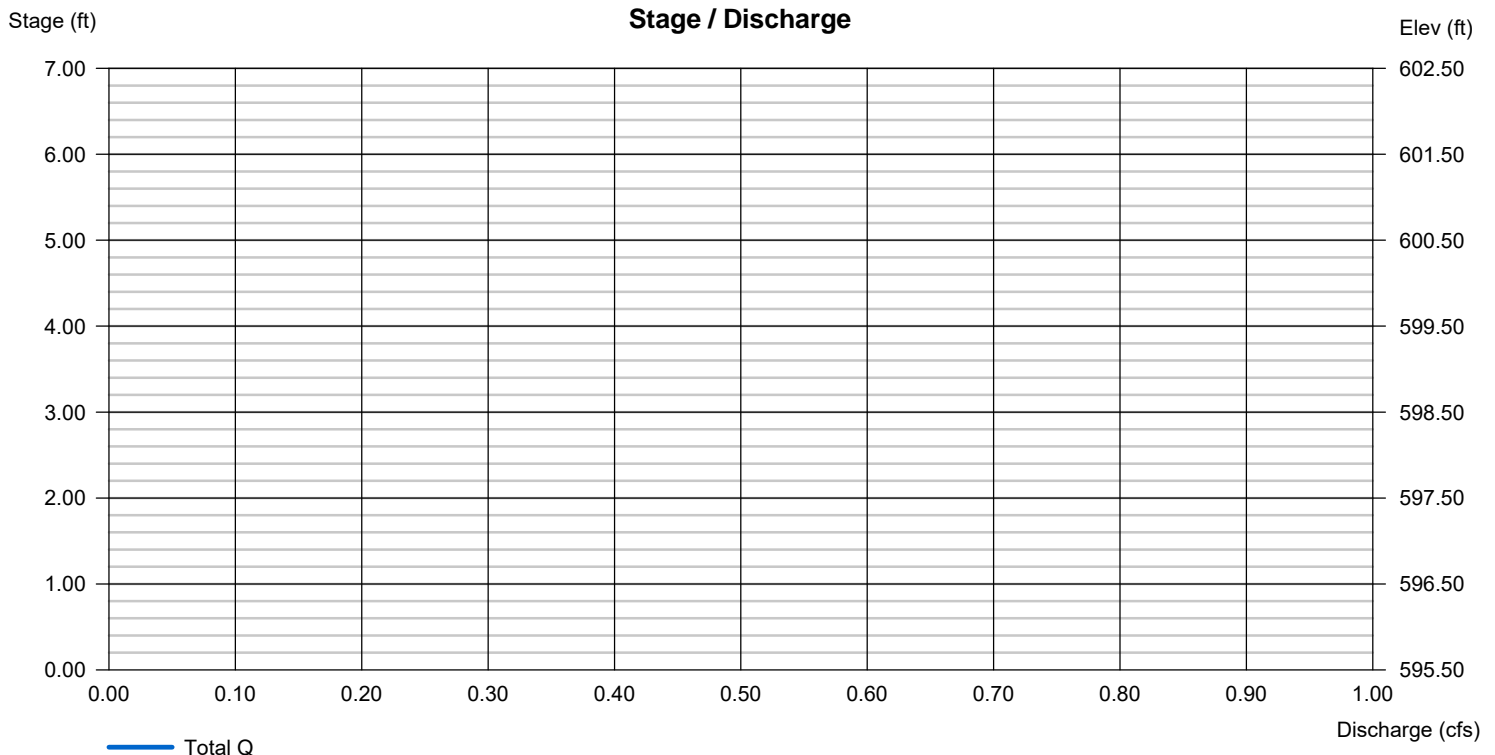
Culvert / Orifice Structures

	[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)	Inactive	0.00	0.00	0.00
Crest El. (ft)	= 0.00	0.00	0.00	0.00
Weir Coeff.	= 2.60	3.33	3.33	3.33
Weir Type	= Broad	---	---	---
Multi-Stage	= No	No	No	No
Exfil.(in/hr)	= 0.000 (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

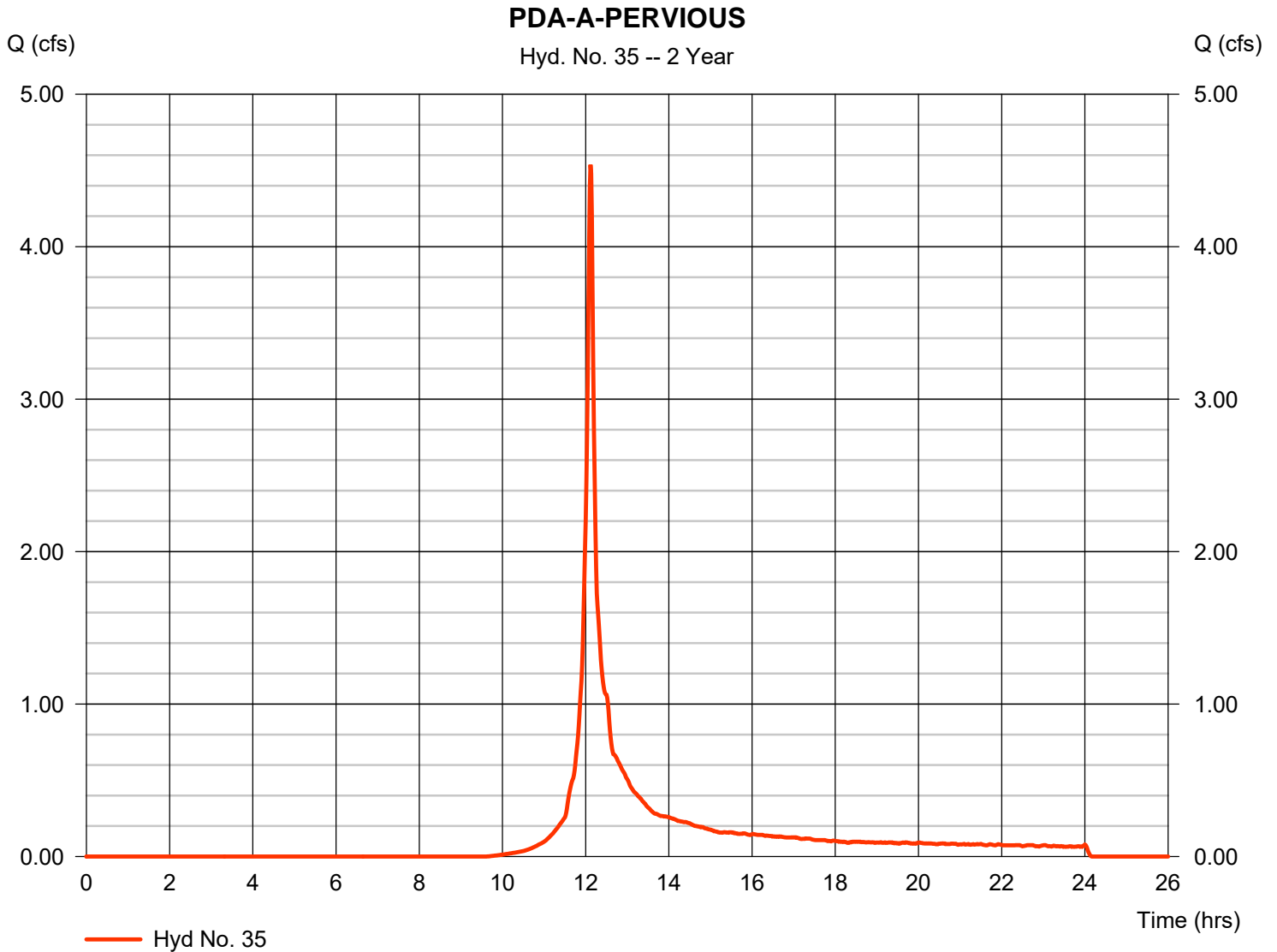
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Wednesday, 03 / 9 / 2022

Hyd. No. 35

PDA-A-PERVIOUS

Hydrograph type	= SCS Runoff	Peak discharge	= 4.537 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.12 hrs
Time interval	= 1 min	Hyd. volume	= 12,536 cuft
Drainage area	= 2.450 ac	Curve number	= 79
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 6.00 min
Total precip.	= 3.24 in	Distribution	= Custom
Storm duration	= R:\Hydroflow Standards\NJ Reg Slope Rainfall Distribution\401A_C_1 min.cds		



Hydrograph Report

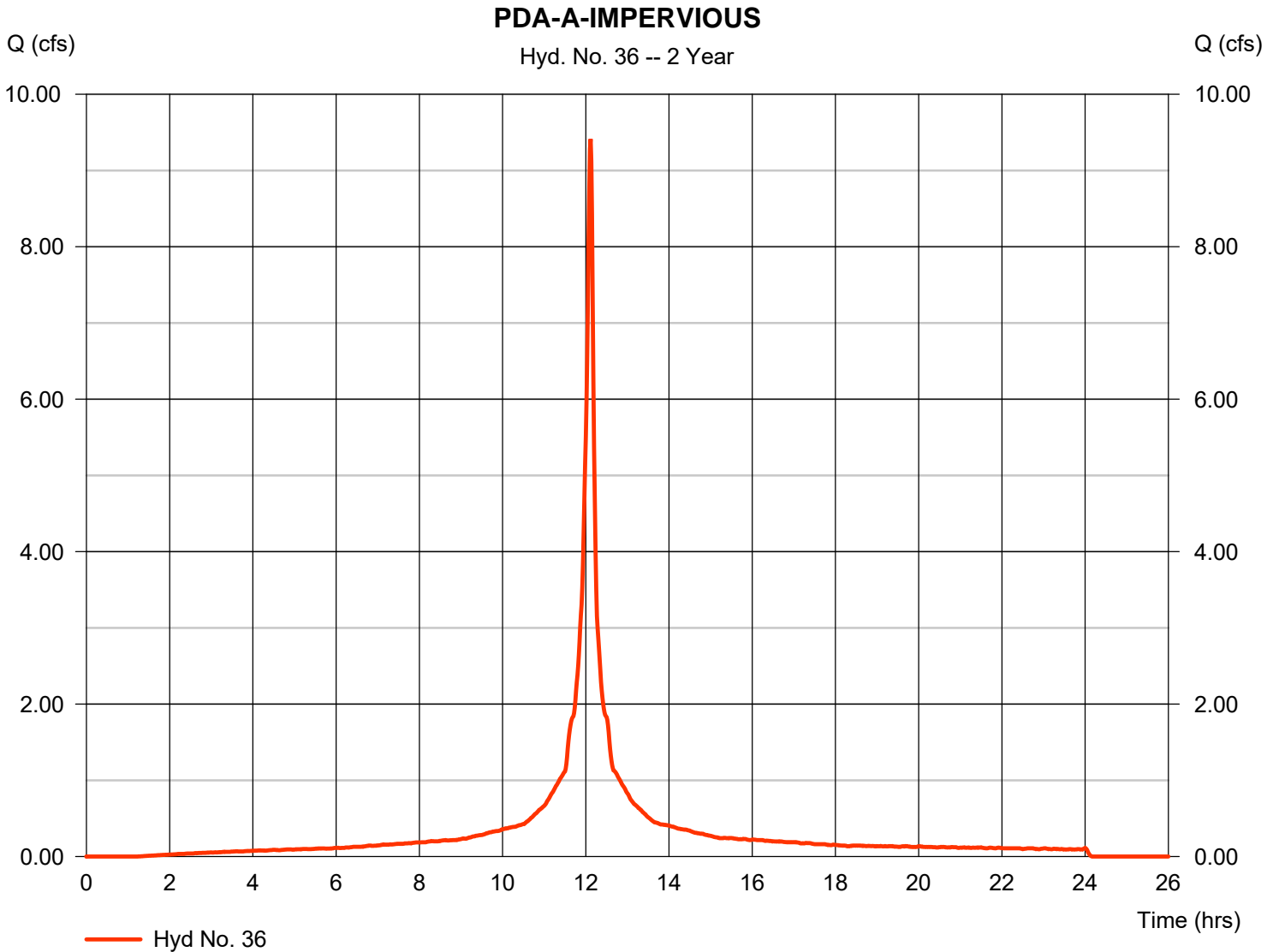
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Wednesday, 03 / 9 / 2022

Hyd. No. 36

PDA-A-IMPERVIOUS

Hydrograph type	= SCS Runoff	Peak discharge	= 9.413 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.12 hrs
Time interval	= 1 min	Hyd. volume	= 30,058 cuft
Drainage area	= 2.670 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 6.00 min
Total precip.	= 3.24 in	Distribution	= Custom
Storm duration	= R:\Hydroflow Standards\NJ Reg Storm Rainfall Distribution\401A_C_1 min.cds		



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

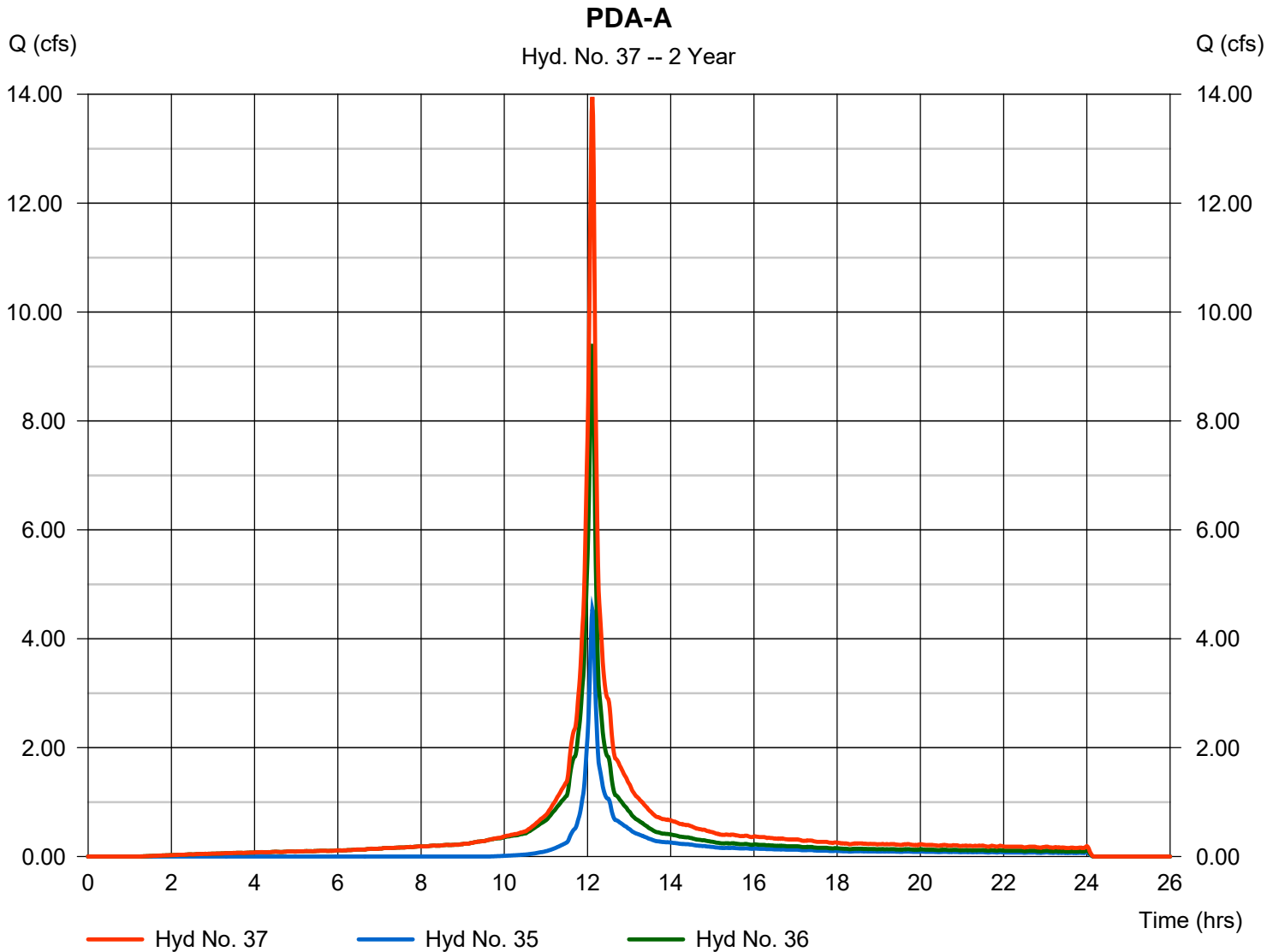
Wednesday, 03 / 9 / 2022

Hyd. No. 37

PDA-A

Hydrograph type = Combine
Storm frequency = 2 yrs
Time interval = 1 min
Inflow hyds. = 35, 36

Peak discharge = 13.95 cfs
Time to peak = 12.12 hrs
Hyd. volume = 42,594 cuft
Contrib. drain. area = 5.120 ac



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

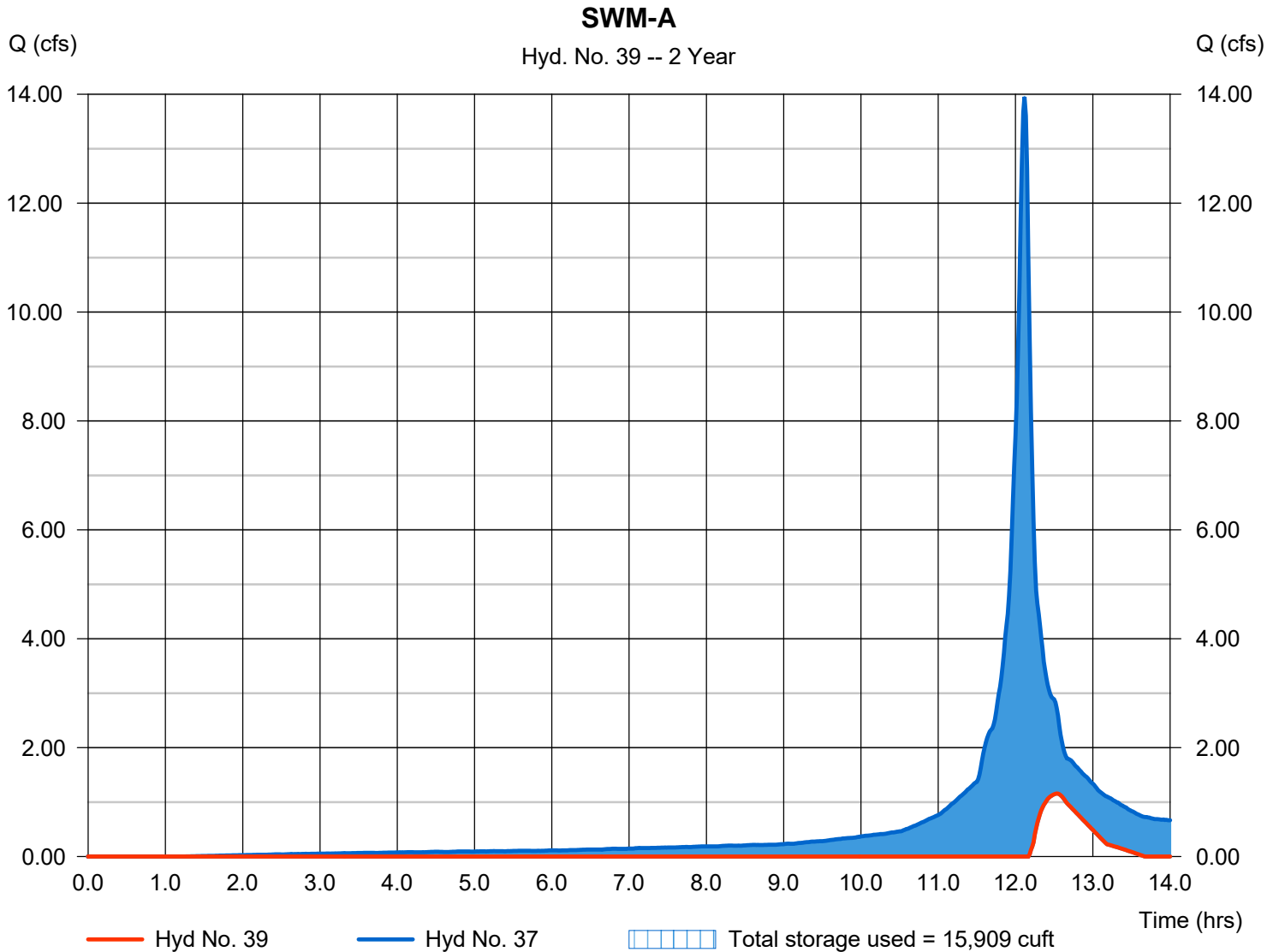
Wednesday, 03 / 9 / 2022

Hyd. No. 39

SWM-A

Hydrograph type	= Reservoir	Peak discharge	= 1.157 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.53 hrs
Time interval	= 1 min	Hyd. volume	= 2,850 cuft
Inflow hyd. No.	= 37 - PDA-A	Max. Elevation	= 595.81 ft
Reservoir name	= SWM-A	Max. Storage	= 15,909 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Pond No. 1 - SWM-A

Pond Data

Contours -User-defined contour areas. Conic method used for volume calculation. Begining Elevation = 594.50 ft

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	594.50	10,790	0	0
0.50	595.00	11,703	5,621	5,621
1.50	596.00	13,569	12,623	18,244
2.50	597.00	15,492	14,518	32,763

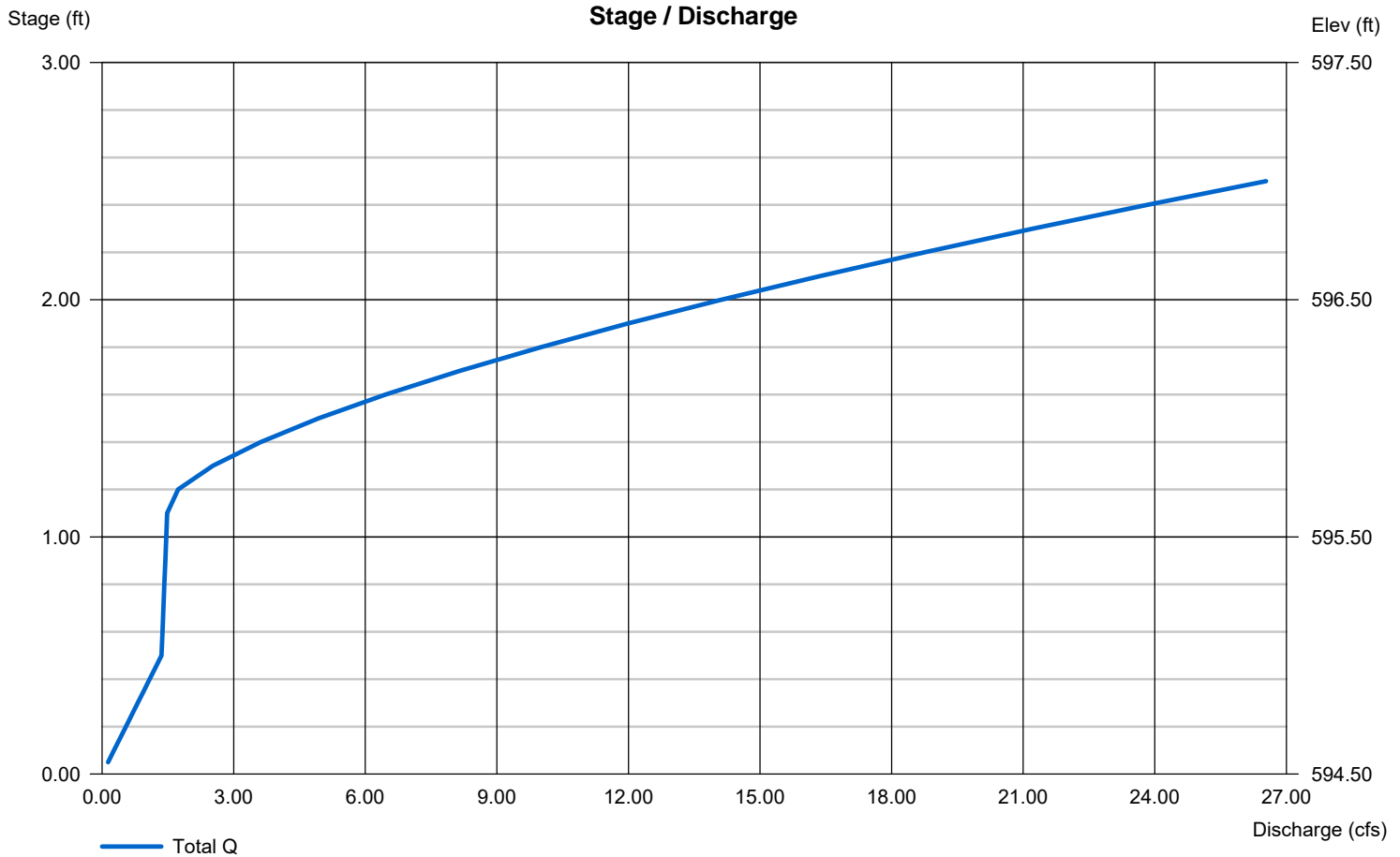
Culvert / Orifice Structures

	[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)	= 6.00	0.00	0.00	0.00
Crest El. (ft)	= 595.64	0.00	0.00	0.00
Weir Coeff.	= 2.60	3.33	3.33	3.33
Weir Type	= Broad	---	---	---
Multi-Stage	= No	No	No	No
Exfil.(in/hr)	= 5.000 (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).



Hydrograph Report

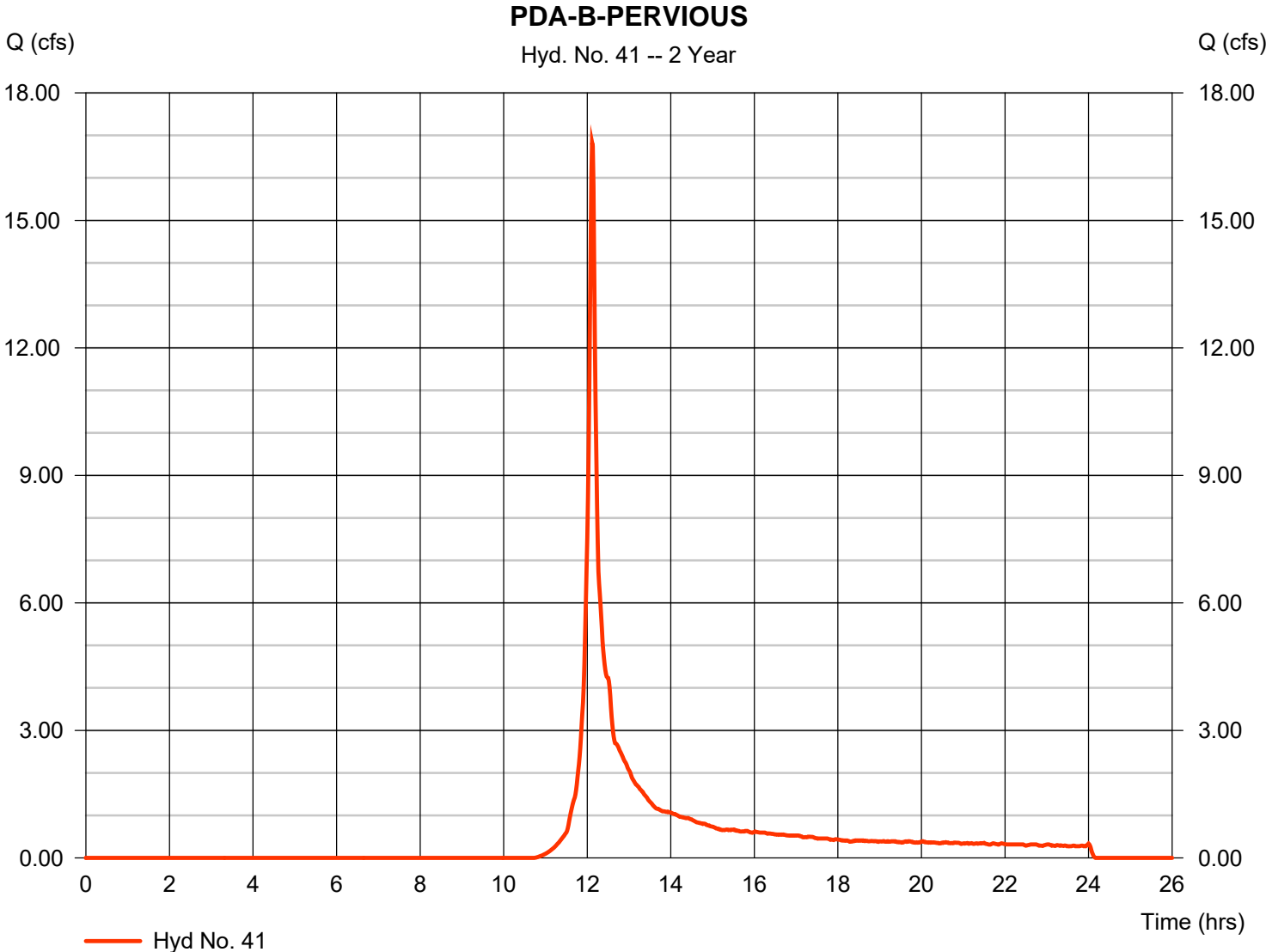
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Wednesday, 03 / 9 / 2022

Hyd. No. 41

PDA-B-PERVIOUS

Hydrograph type	= SCS Runoff	Peak discharge	= 16.82 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.12 hrs
Time interval	= 1 min	Hyd. volume	= 47,516 cuft
Drainage area	= 11.930 ac	Curve number	= 74
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 6.00 min
Total precip.	= 3.24 in	Distribution	= Custom
Storm duration	= R:\Hydroflow Standards\NJ Reg Storm Rainfall Distribution\NOAA_C_1 min.cds		



Hydrograph Report

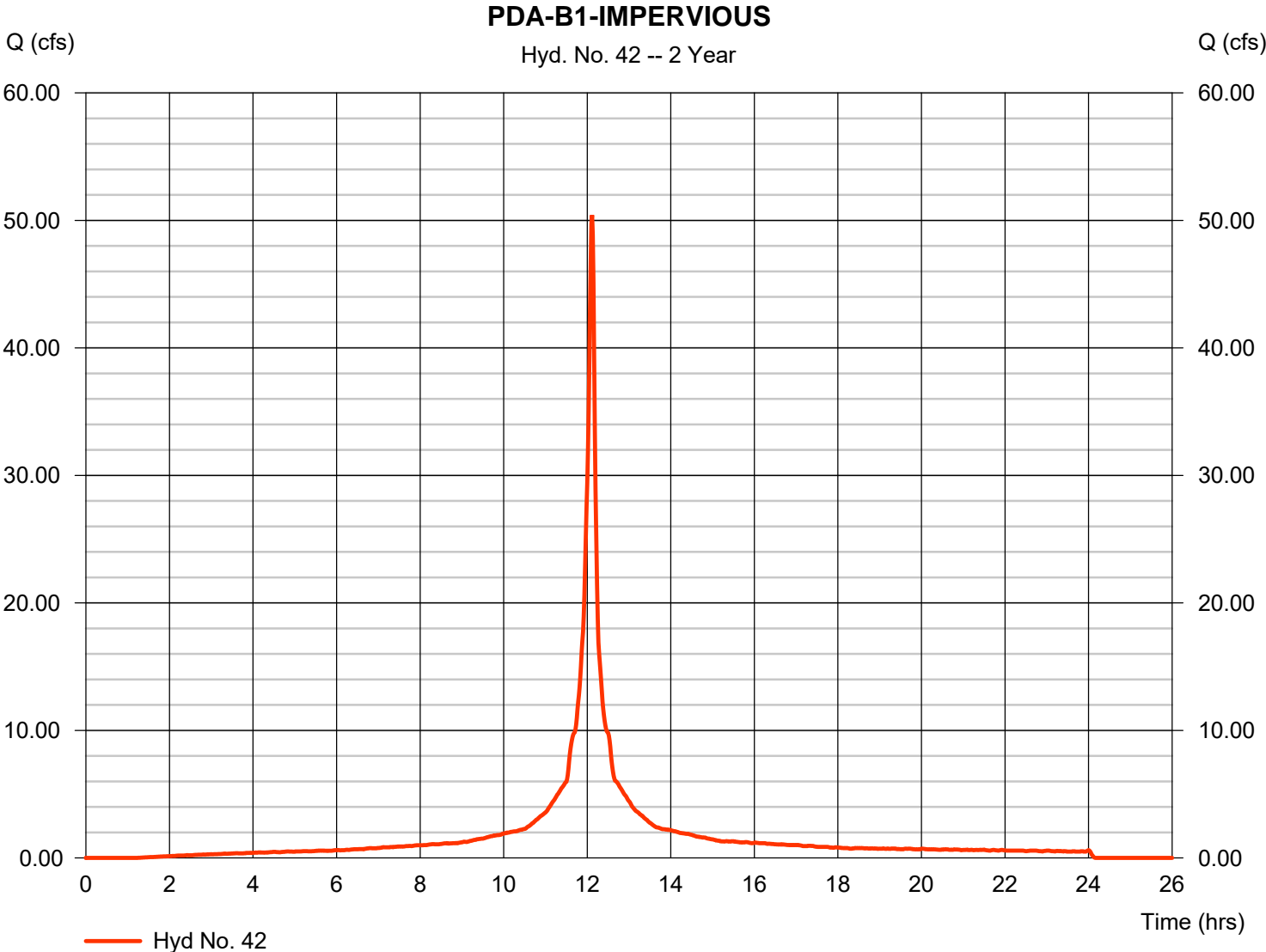
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Wednesday, 03 / 9 / 2022

Hyd. No. 42

PDA-B1-IMPERVIOUS

Hydrograph type	= SCS Runoff	Peak discharge	= 50.42 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.12 hrs
Time interval	= 1 min	Hyd. volume	= 160,987 cuft
Drainage area	= 14.300 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 6.00 min
Total precip.	= 3.24 in	Distribution	= Custom
Storm duration	= R:\Hydroflow Standards\NJ Reg Storm Rainfall Distribution\40A_C_1 min.cds		



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

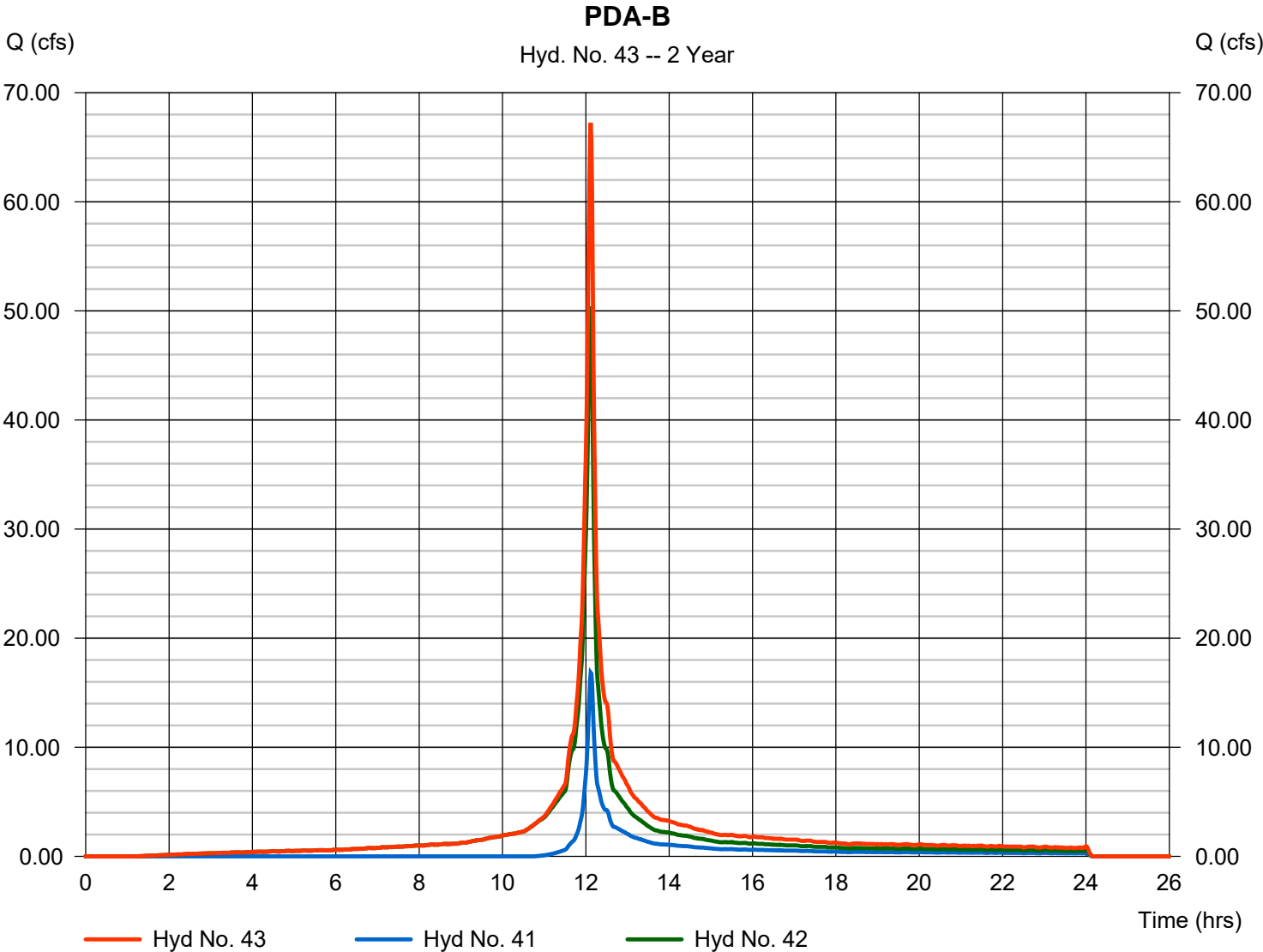
Wednesday, 03 / 9 / 2022

Hyd. No. 43

PDA-B

Hydrograph type = Combine
Storm frequency = 2 yrs
Time interval = 1 min
Inflow hyds. = 41, 42

Peak discharge = 67.24 cfs
Time to peak = 12.12 hrs
Hyd. volume = 208,503 cuft
Contrib. drain. area = 26.230 ac



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

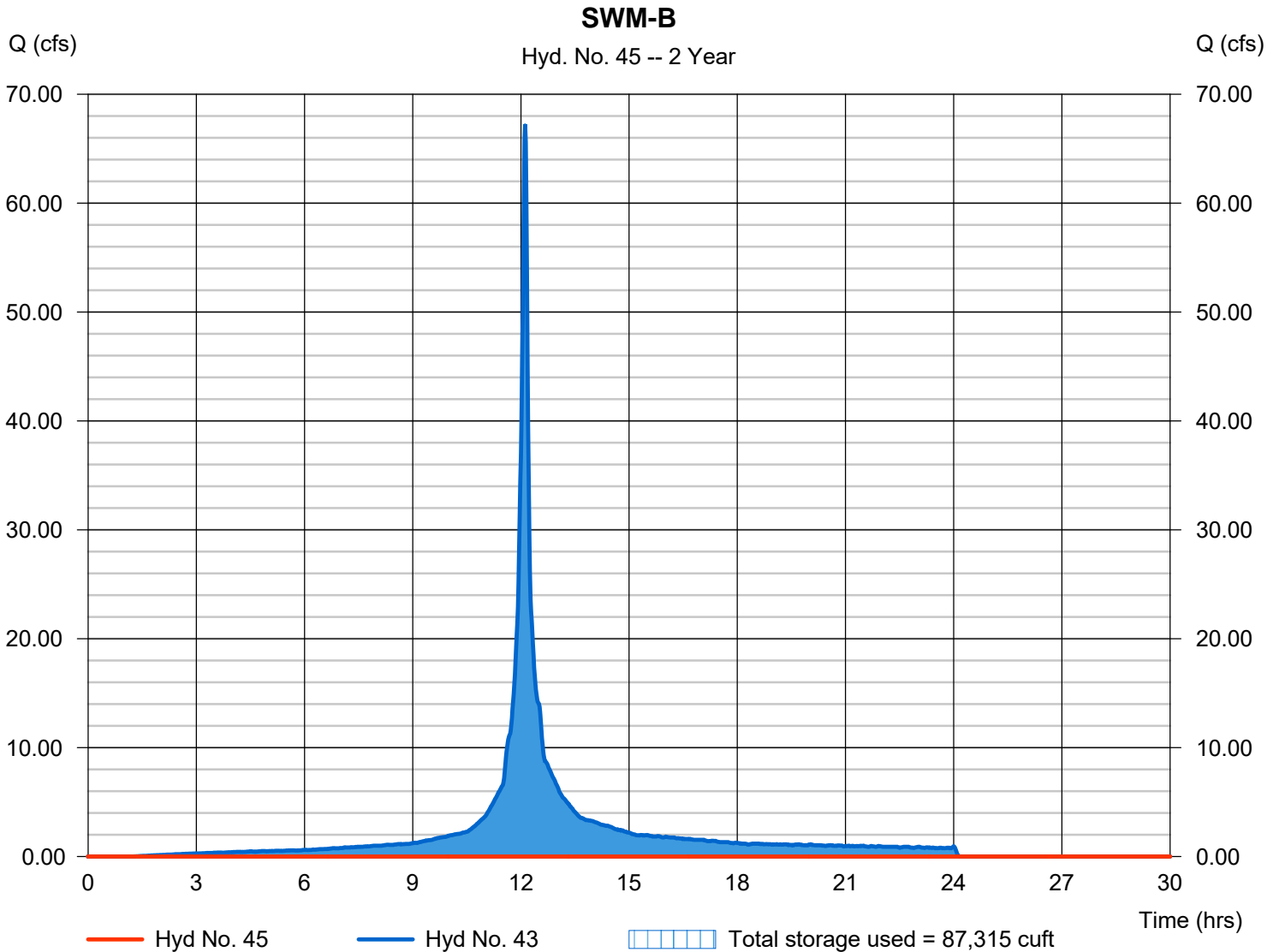
Wednesday, 03 / 9 / 2022

Hyd. No. 45

SWM-B

Hydrograph type	= Reservoir	Peak discharge	= 0.000 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.70 hrs
Time interval	= 1 min	Hyd. volume	= 0 cuft
Inflow hyd. No.	= 43 - PDA-B	Max. Elevation	= 598.62 ft
Reservoir name	= SWM-B1	Max. Storage	= 87,315 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Pond No. 2 - SWM-B1

Pond Data

Contours -User-defined contour areas. Conic method used for volume calculation. Begining Elevation = 598.00 ft

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	598.00	137,350	0	0
1.00	599.00	146,301	141,788	141,788
2.00	600.00	155,308	150,767	292,555
3.00	601.00	164,371	159,802	452,357
4.00	602.00	173,492	168,894	621,251

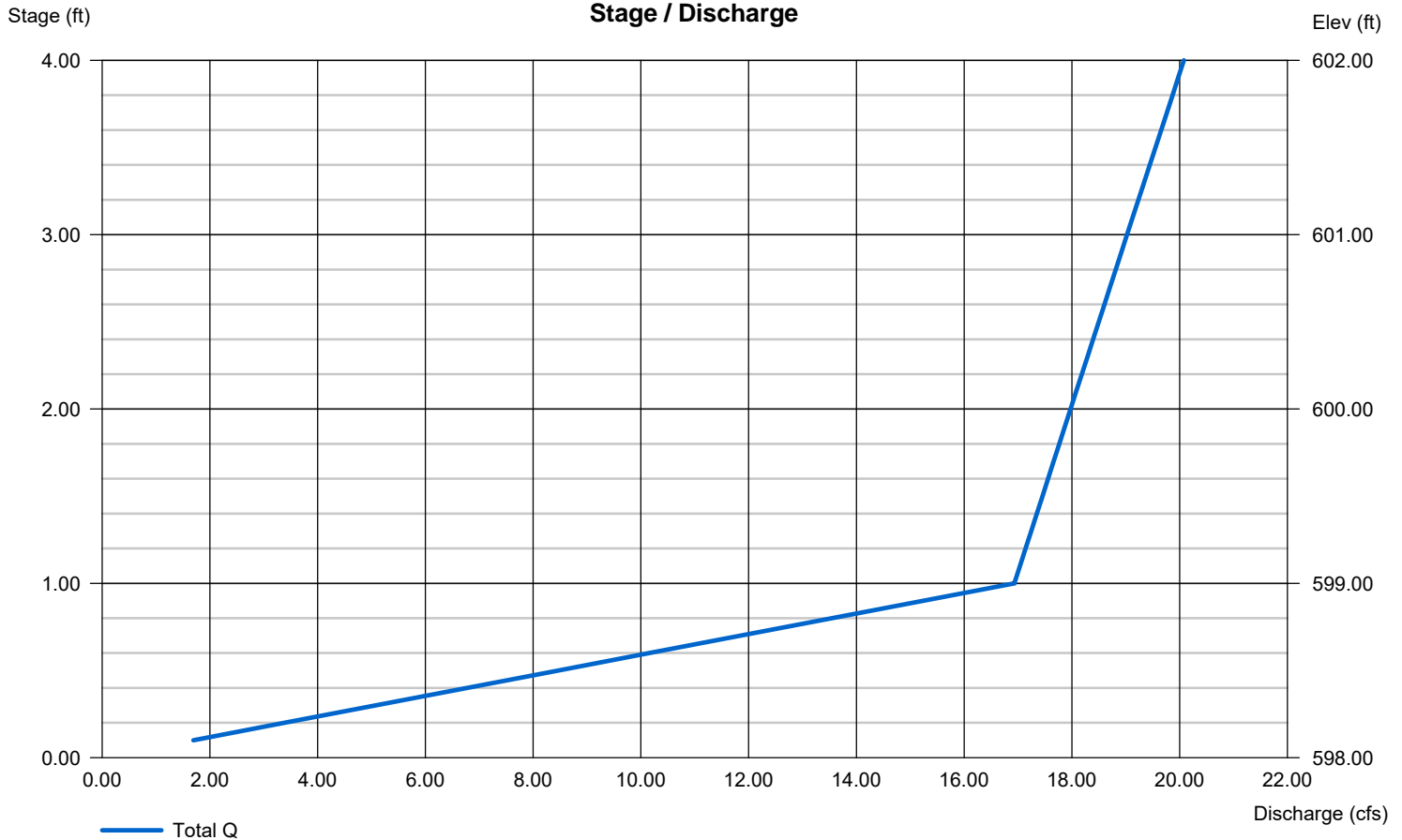
Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	Inactive	0.00	0.00	0.00
Span (in)	= 24.00	0.00	0.00	0.00
No. Barrels	= 1	0	0	0
Invert El. (ft)	= 598.00	0.00	0.00	0.00
Length (ft)	= 164.00	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)	Inactive	0.00	0.00	0.00
Crest El. (ft)	= 601.00	0.00	0.00	0.00
Weir Coeff.	= 3.33	3.33	3.33	3.33
Weir Type	= 1	---	---	---
Multi-Stage	= Yes	No	No	No
Exfil.(in/hr)	= 5.000 (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).



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

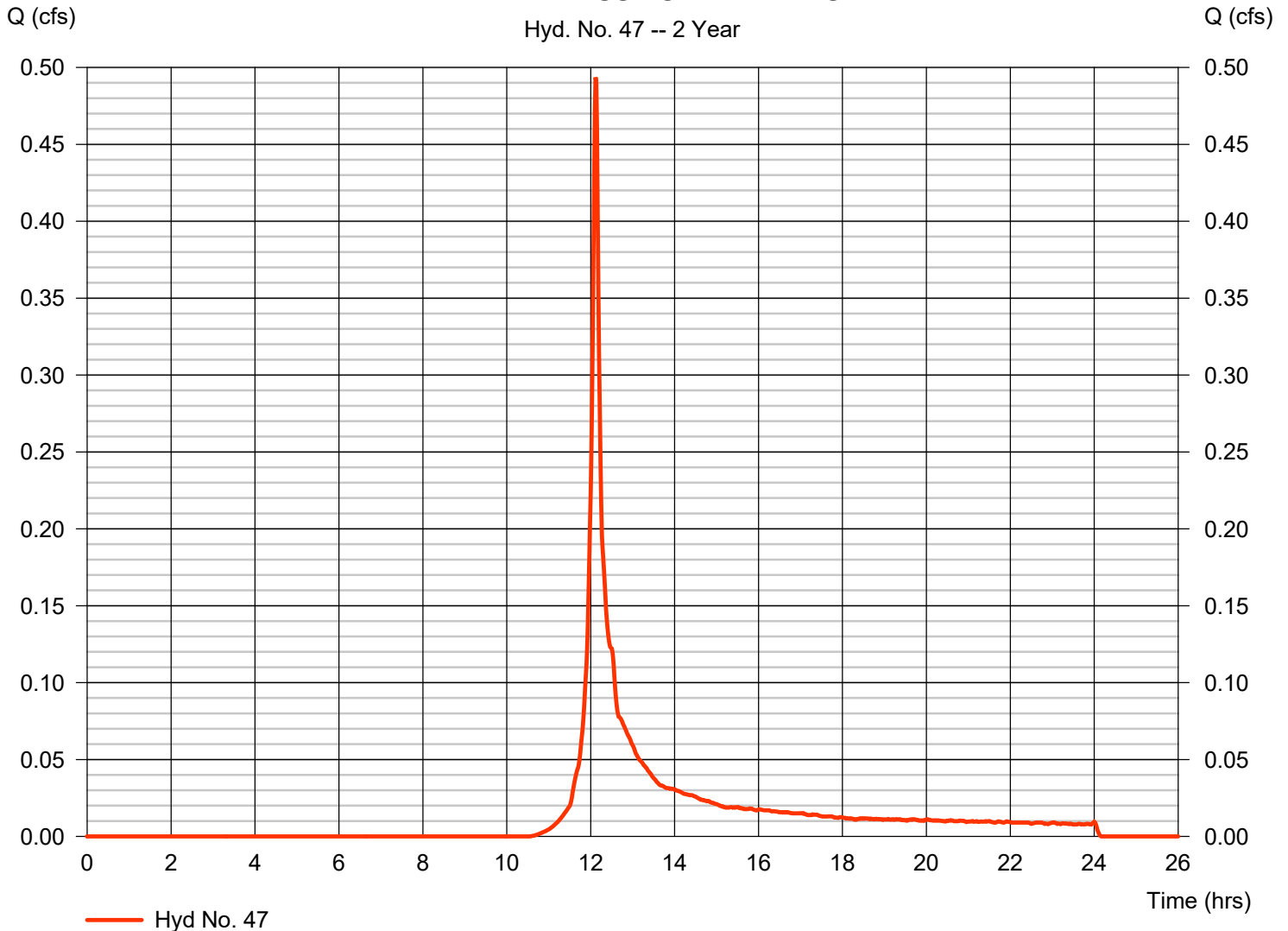
Wednesday, 03 / 9 / 2022

Hyd. No. 47

PDA-B-BYPASS TO WETLANDS

Hydrograph type	= SCS Runoff	Peak discharge	= 0.494 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.12 hrs
Time interval	= 1 min	Hyd. volume	= 1,385 cuft
Drainage area	= 0.330 ac	Curve number	= 75
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 6.00 min
Total precip.	= 3.24 in	Distribution	= Custom
Storm duration	= R:\Hydroflow Standards\NJ Reg Storm Rainfall Distribution\40A_C_1 min.cds		

PDA-B-BYPASS TO WETLANDS



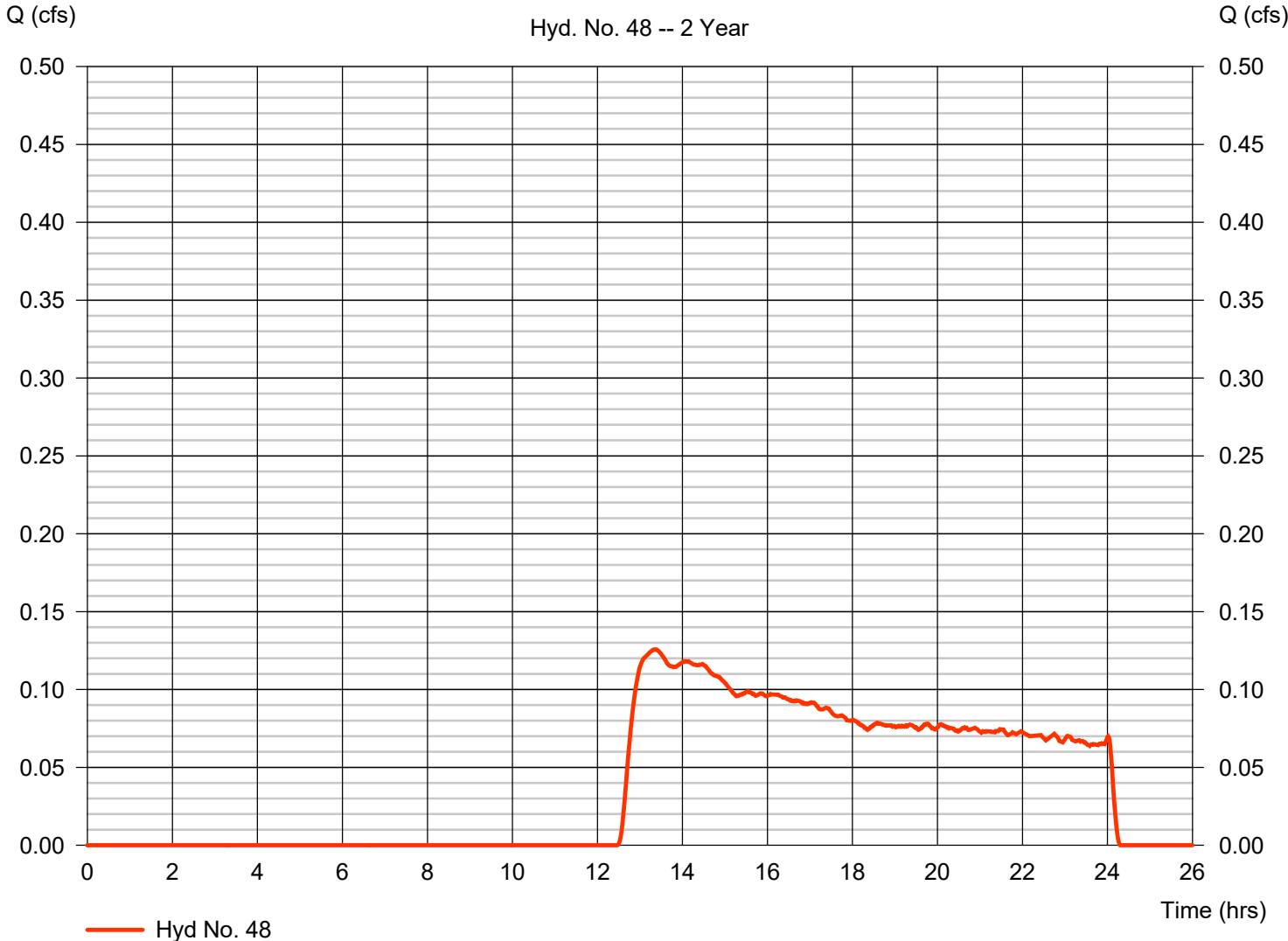
Hydrograph Report

Hyd. No. 48

EDA-B: UNDIST PERVIOUS TO WETLAND

Hydrograph type	= SCS Runoff	Peak discharge	= 0.126 cfs
Storm frequency	= 2 yrs	Time to peak	= 13.33 hrs
Time interval	= 1 min	Hyd. volume	= 3,556 cuft
Drainage area	= 12.170 ac	Curve number	= 47
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.70 min
Total precip.	= 3.24 in	Distribution	= Custom
Storm duration	= R:\Hydroflow Standards\NJ Reg Slope Rainfall Distribution\NOAA_C_1 min.cds		

EDA-B: UNDIST PERVIOUS TO WETLAND



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

Wednesday, 03 / 9 / 2022

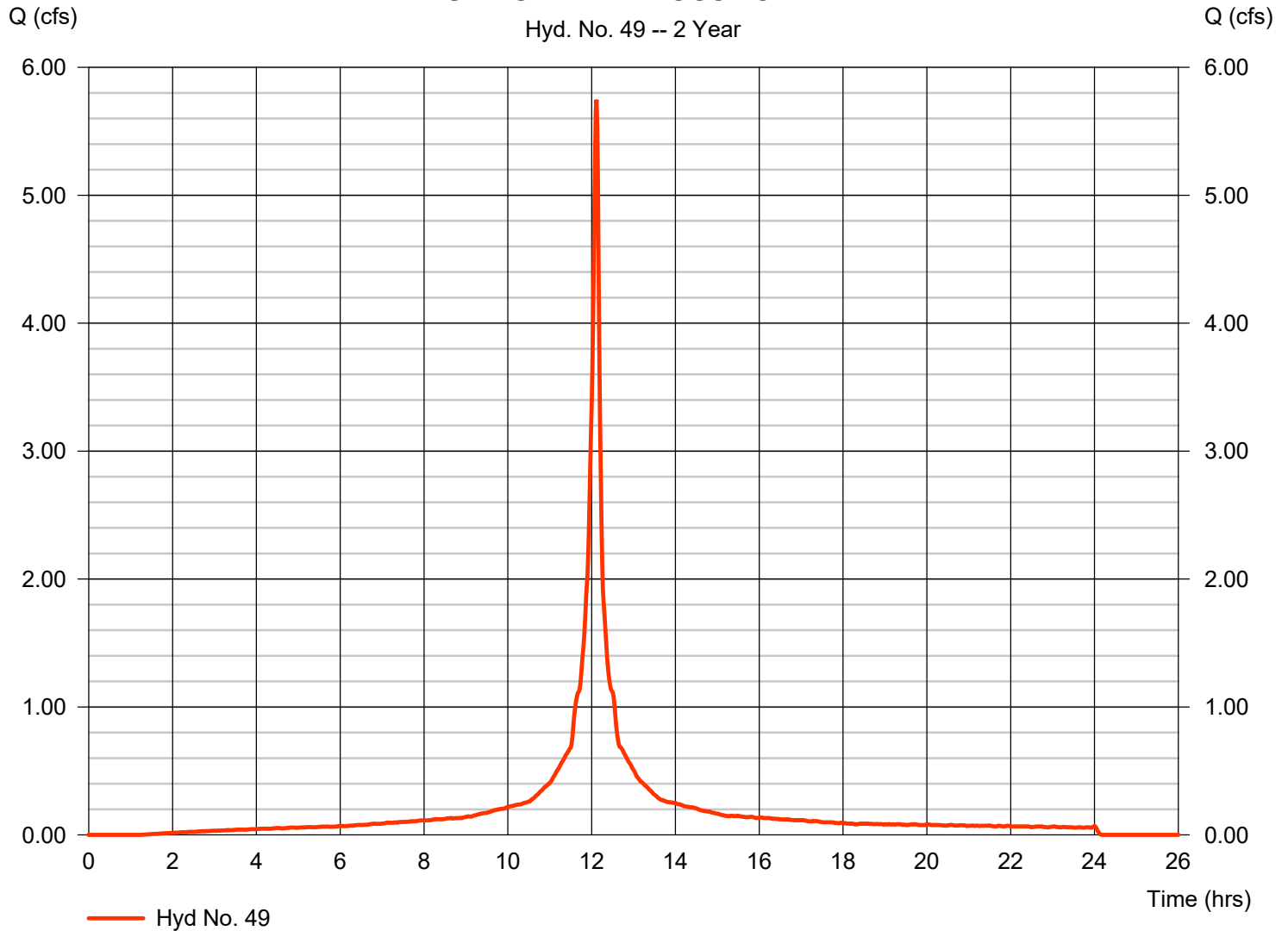
Hyd. No. 49

EDA-B:UNDIST IMPERVIOUS TO WETLAND

Hydrograph type	= SCS Runoff	Peak discharge	= 5.747 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.12 hrs
Time interval	= 1 min	Hyd. volume	= 18,350 cuft
Drainage area	= 1.630 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 6.00 min
Total precip.	= 3.24 in	Distribution	= Custom
Storm duration	= R:\Hydroflow Standards\NJ Reg Storm Rainfall Distribution\NOAA_C_1 min.cds		

EDA-B:UNDIST IMPERVIOUS TO WETLAND

Hyd. No. 49 -- 2 Year



Hydrograph Report

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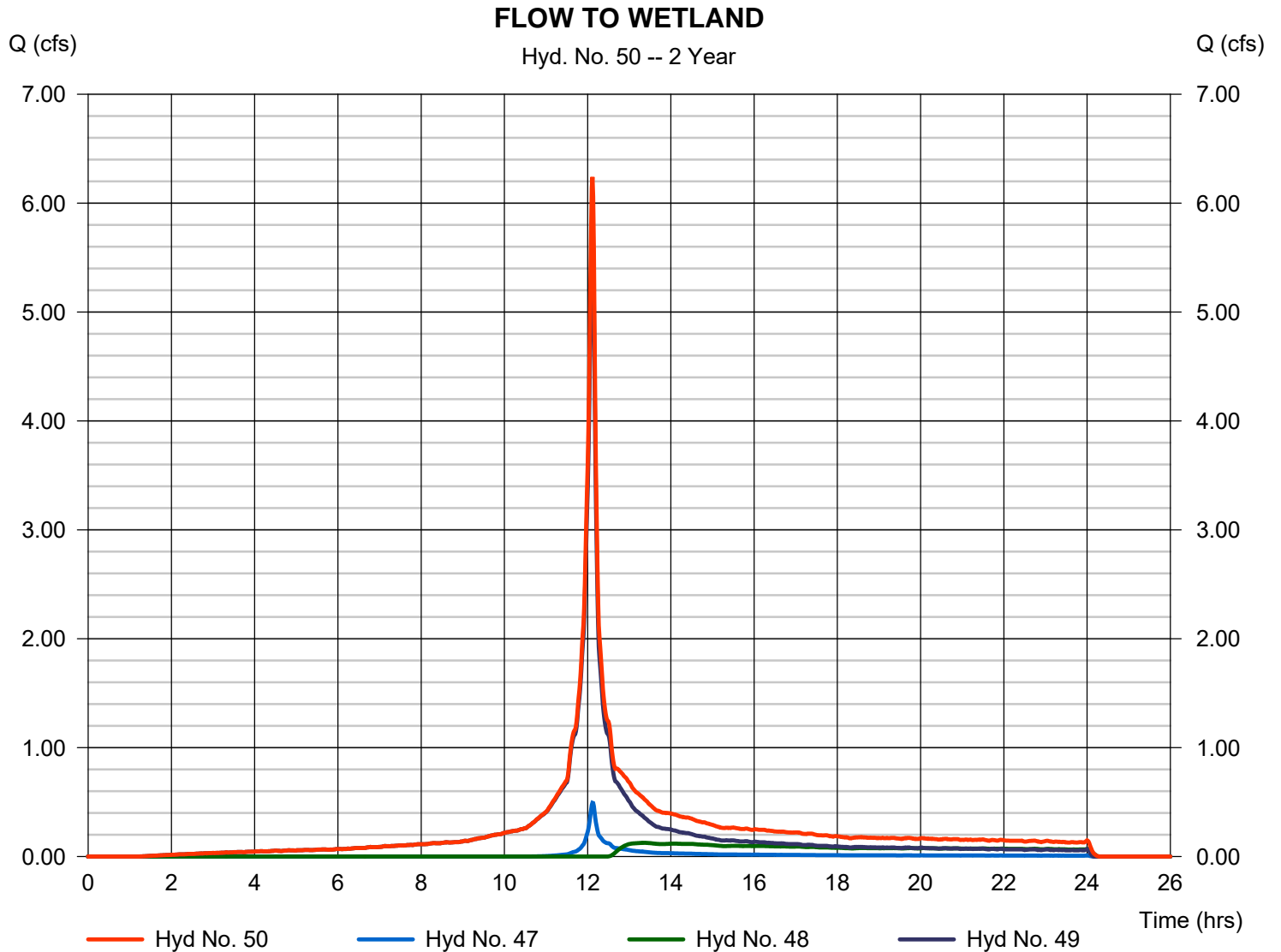
Wednesday, 03 / 9 / 2022

Hyd. No. 50

FLOW TO WETLAND

Hydrograph type = Combine
Storm frequency = 2 yrs
Time interval = 1 min
Inflow hyds. = 47, 48, 49

Peak discharge = 6.240 cfs
Time to peak = 12.12 hrs
Hyd. volume = 23,291 cuft
Contrib. drain. area = 14.130 ac



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

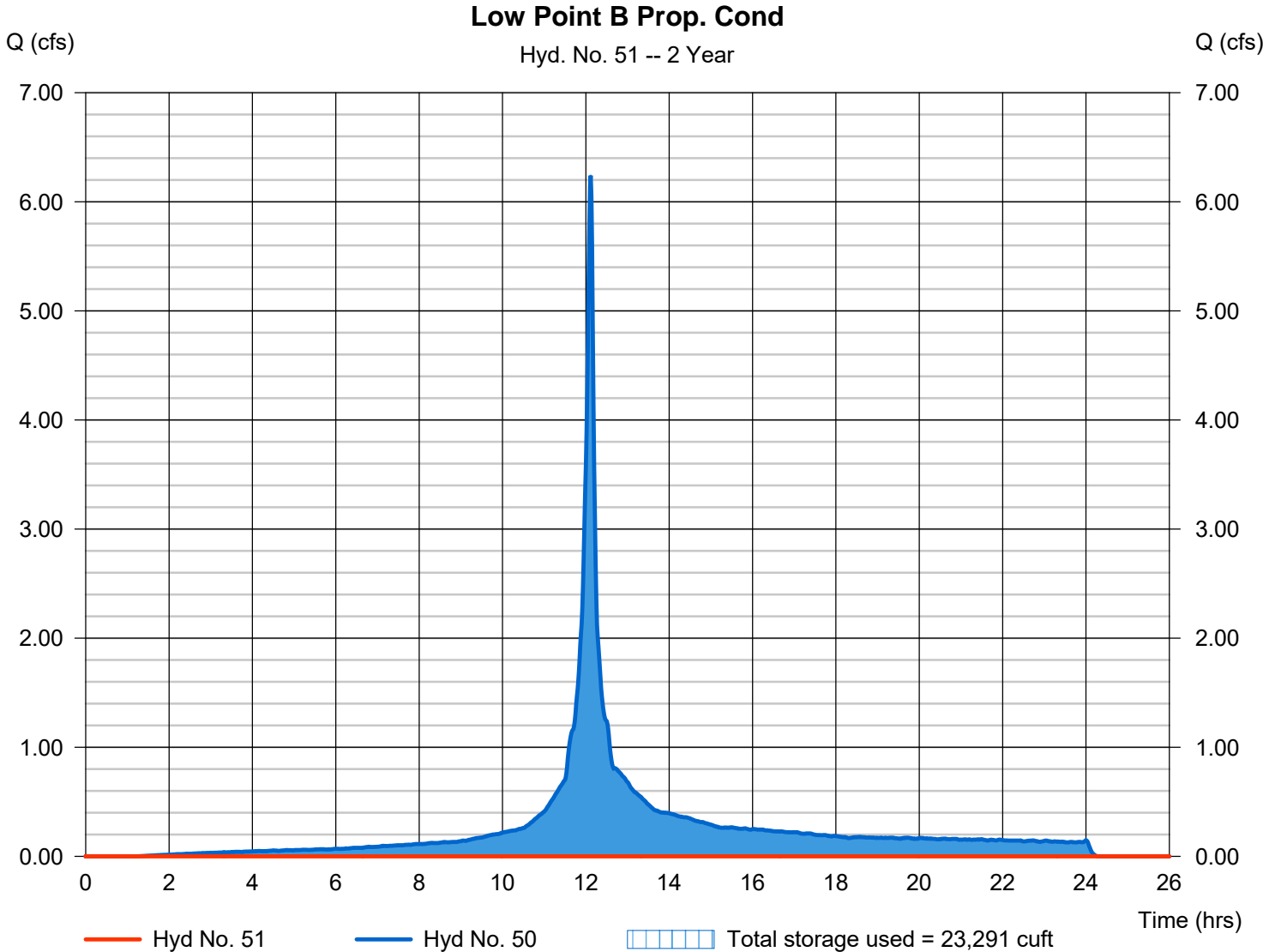
Wednesday, 03 / 9 / 2022

Hyd. No. 51

Low Point B Prop. Cond

Hydrograph type	= Reservoir	Peak discharge	= 0.000 cfs
Storm frequency	= 2 yrs	Time to peak	= n/a
Time interval	= 1 min	Hyd. volume	= 0 cuft
Inflow hyd. No.	= 50 - FLOW TO WETLAND	Max. Elevation	= 595.43 ft
Reservoir name	= Low Point B	Max. Storage	= 23,291 cuft

Storage Indication method used.



Pond No. 8 - Low Point B

Pond Data

Contours -User-defined contour areas. Conic method used for volume calculation. Begining Elevation = 594.00 ft

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	594.00	00	0	0
1.50	595.50	48,866	24,431	24,431
3.50	597.50	64,871	113,348	137,779
4.50	598.50	76,140	70,423	208,202
4.60	598.60	121,500	9,791	217,993
5.00	599.00	122,100	48,718	266,711

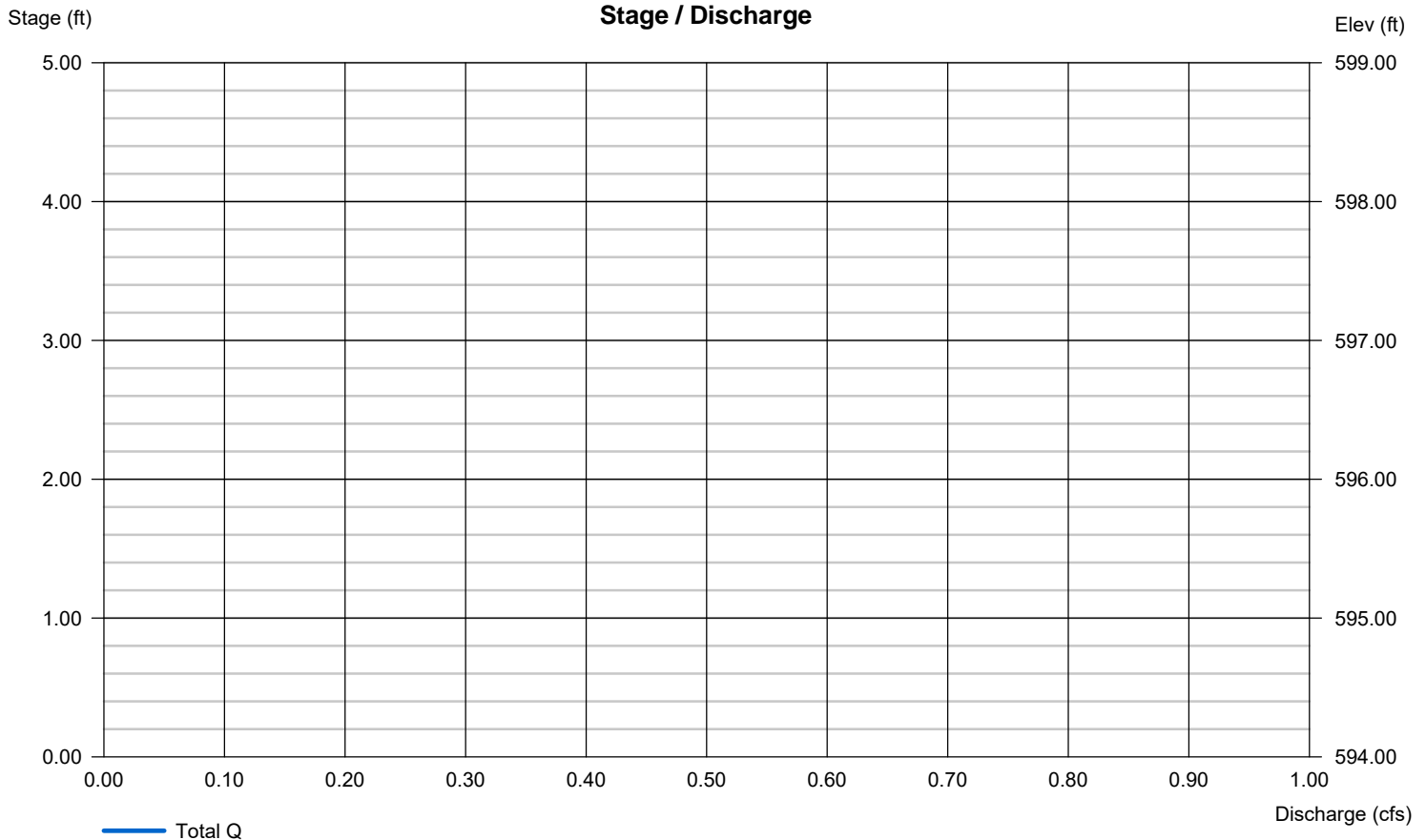
Culvert / Orifice Structures

	[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)	= 0.000	(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).



Hydrograph Report

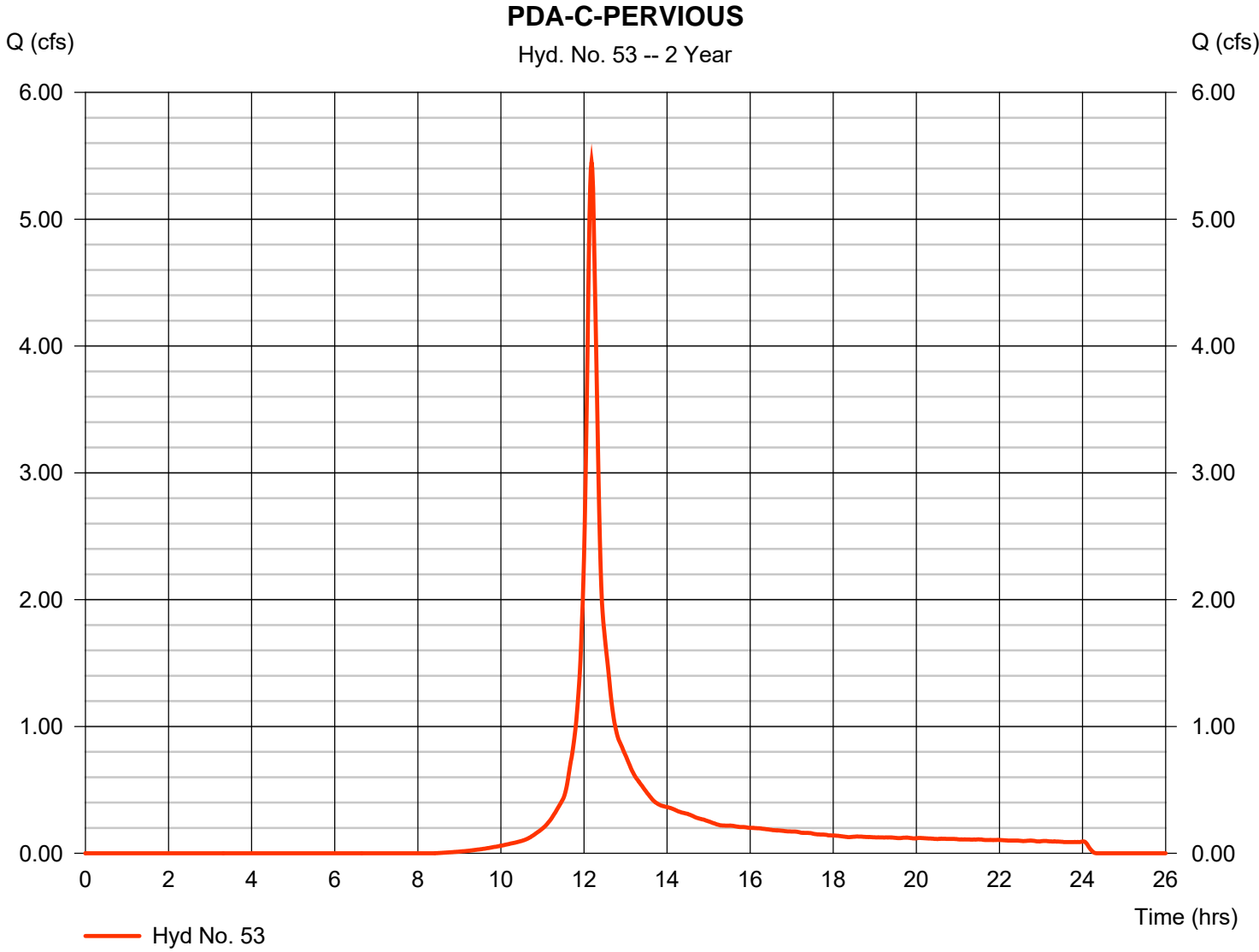
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Wednesday, 03 / 9 / 2022

Hyd. No. 53

PDA-C-PERVIOUS

Hydrograph type	= SCS Runoff	Peak discharge	= 5.450 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.18 hrs
Time interval	= 1 min	Hyd. volume	= 18,718 cuft
Drainage area	= 3.190 ac	Curve number	= 83
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 12.70 min
Total precip.	= 3.24 in	Distribution	= Custom
Storm duration	= R:\Hydroflow Standards\NJ Reg Slope Rainfall Distribution\NOAA_C_1 min.cds		



Hydrograph Report

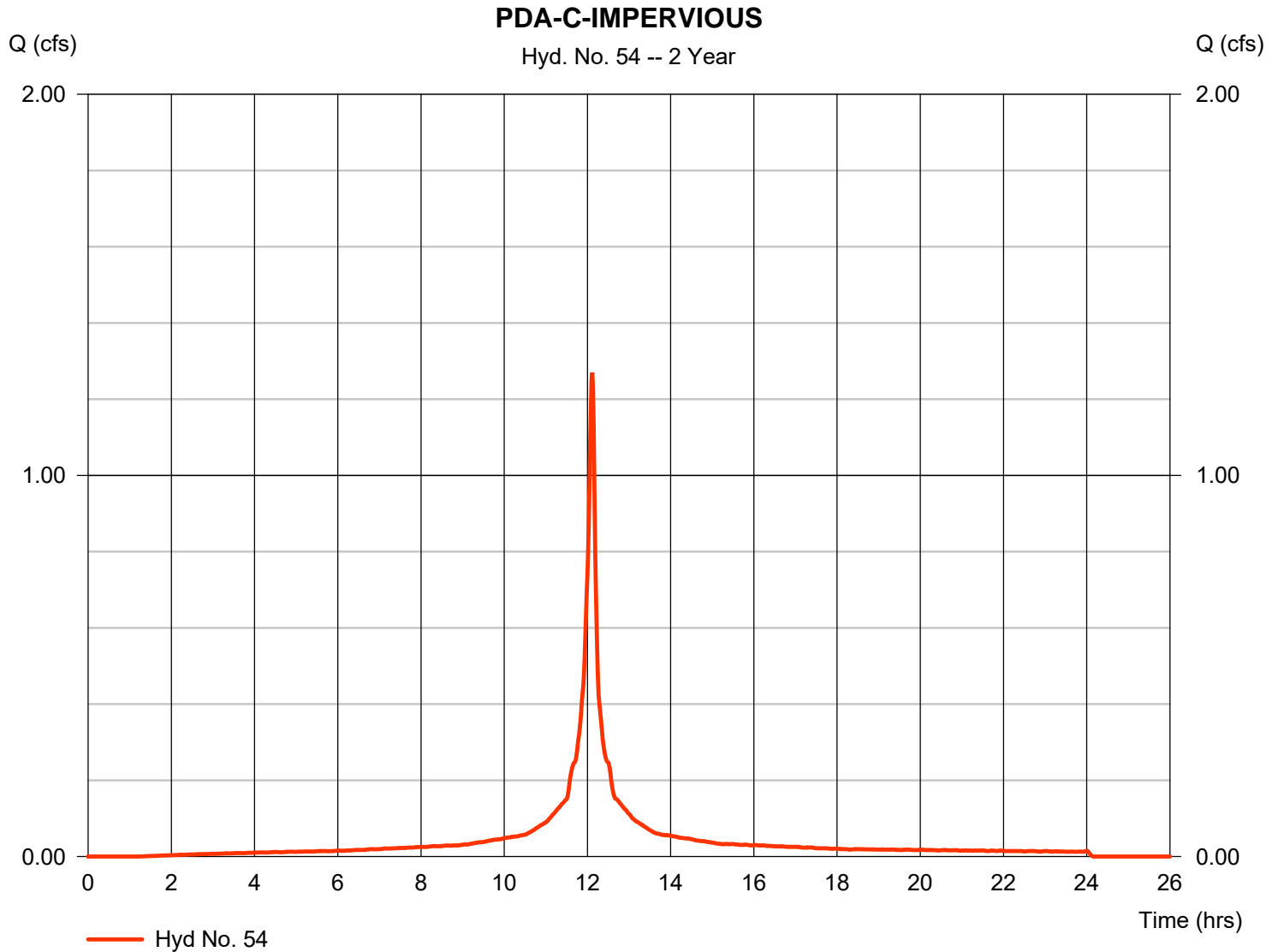
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

Wednesday, 03 / 9 / 2022

Hyd. No. 54

PDA-C-IMPERVIOUS

Hydrograph type	= SCS Runoff	Peak discharge	= 1.269 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.12 hrs
Time interval	= 1 min	Hyd. volume	= 4,053 cuft
Drainage area	= 0.360 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 6.00 min
Total precip.	= 3.24 in	Distribution	= Custom
Storm duration	= R:\Hydroflow Standards\NJ Reg Storm Rainfall Distribution\401A_C_1 min.cds		



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

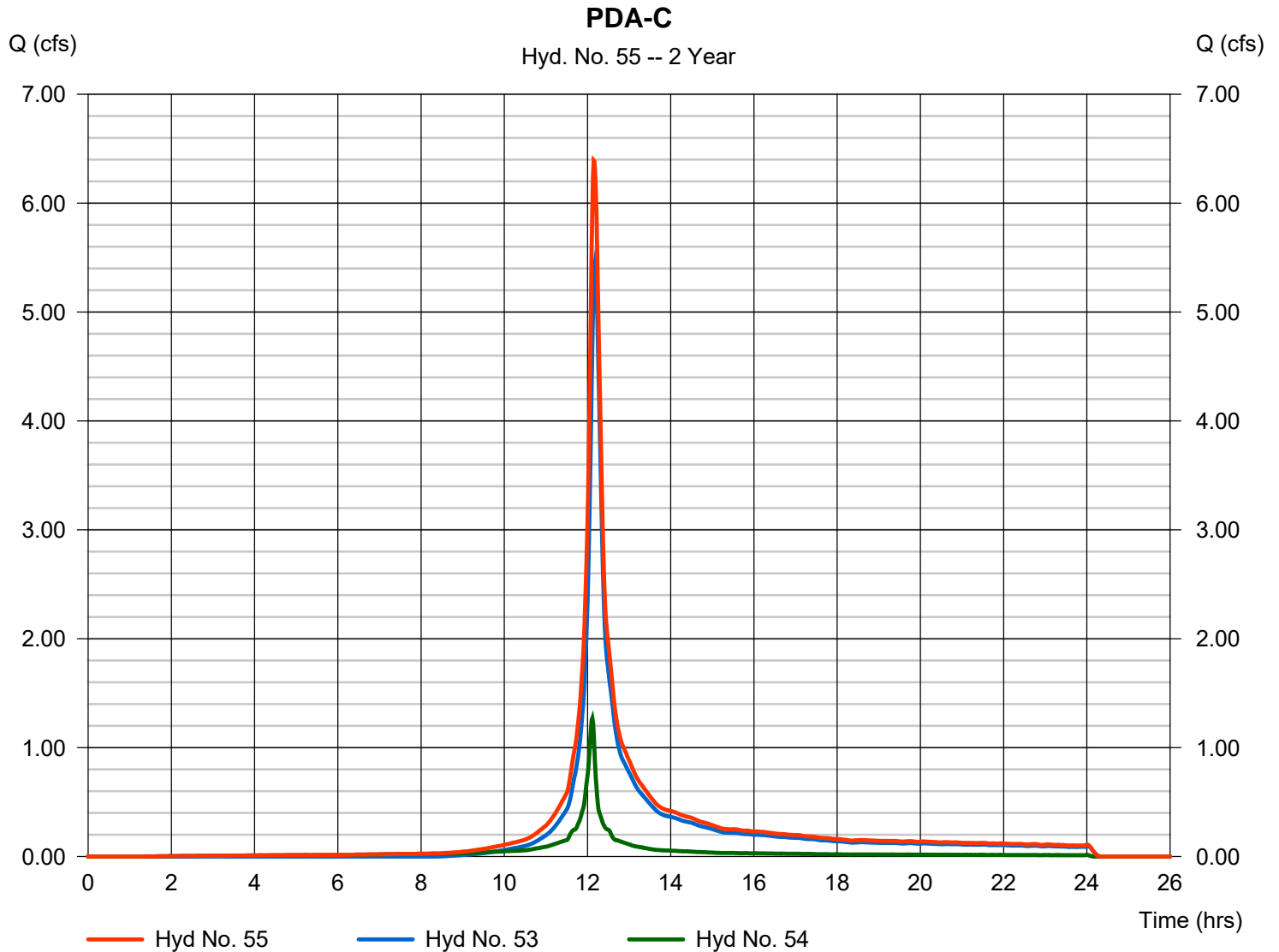
Wednesday, 03 / 9 / 2022

Hyd. No. 55

PDA-C

Hydrograph type = Combine
Storm frequency = 2 yrs
Time interval = 1 min
Inflow hyds. = 53, 54

Peak discharge = 6.392 cfs
Time to peak = 12.15 hrs
Hyd. volume = 22,770 cuft
Contrib. drain. area = 3.550 ac



Hydrograph Report

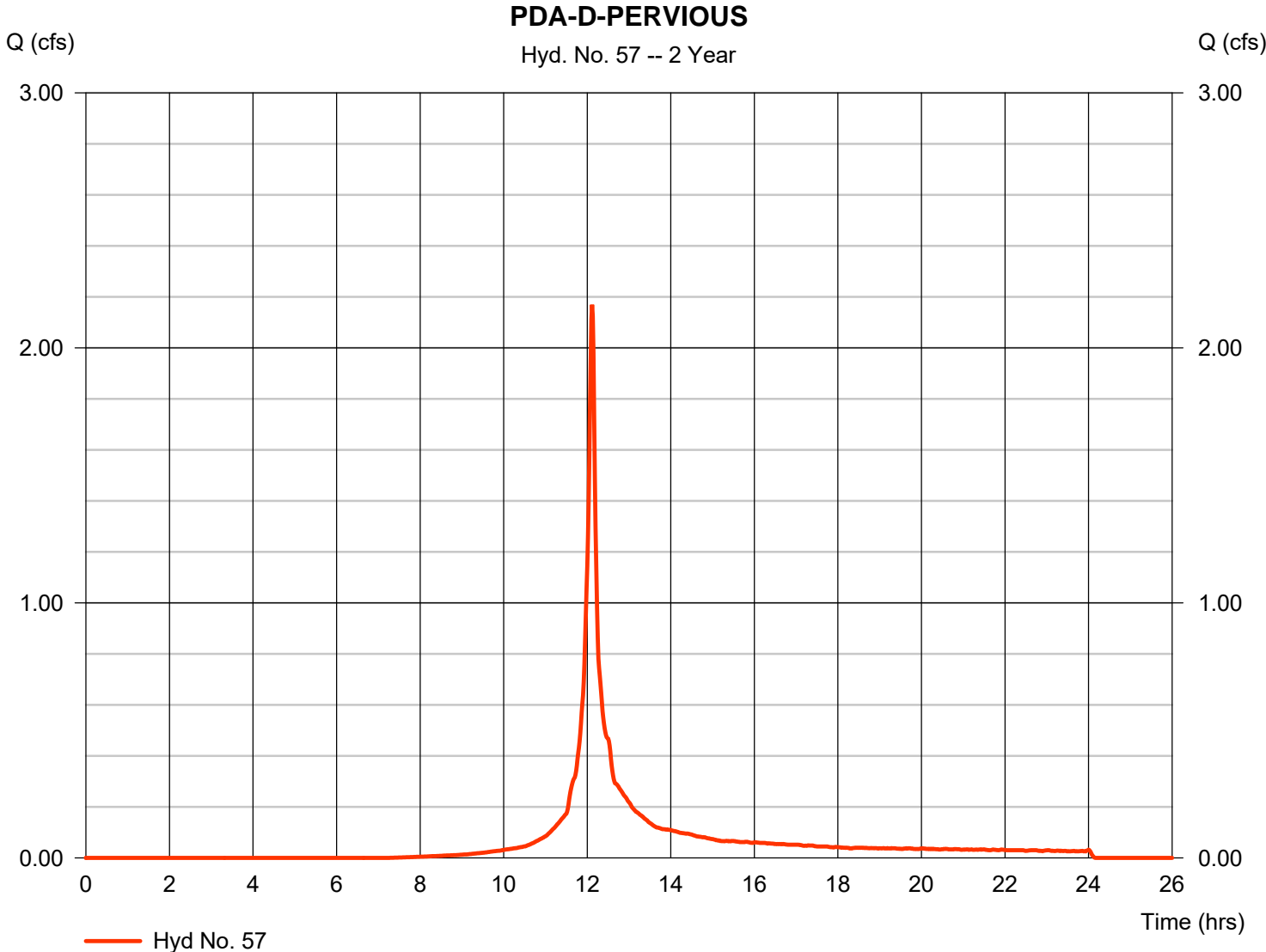
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

Wednesday, 03 / 9 / 2022

Hyd. No. 57

PDA-D-PERVIOUS

Hydrograph type	= SCS Runoff	Peak discharge	= 2.169 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.12 hrs
Time interval	= 1 min	Hyd. volume	= 6,020 cuft
Drainage area	= 0.860 ac	Curve number	= 86
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 6.00 min
Total precip.	= 3.24 in	Distribution	= Custom
Storm duration	= R:\Hydroflow Standards\NJ Reg Storm Rainfall Distribution\401A_C_1 min.cds		



Hydrograph Report

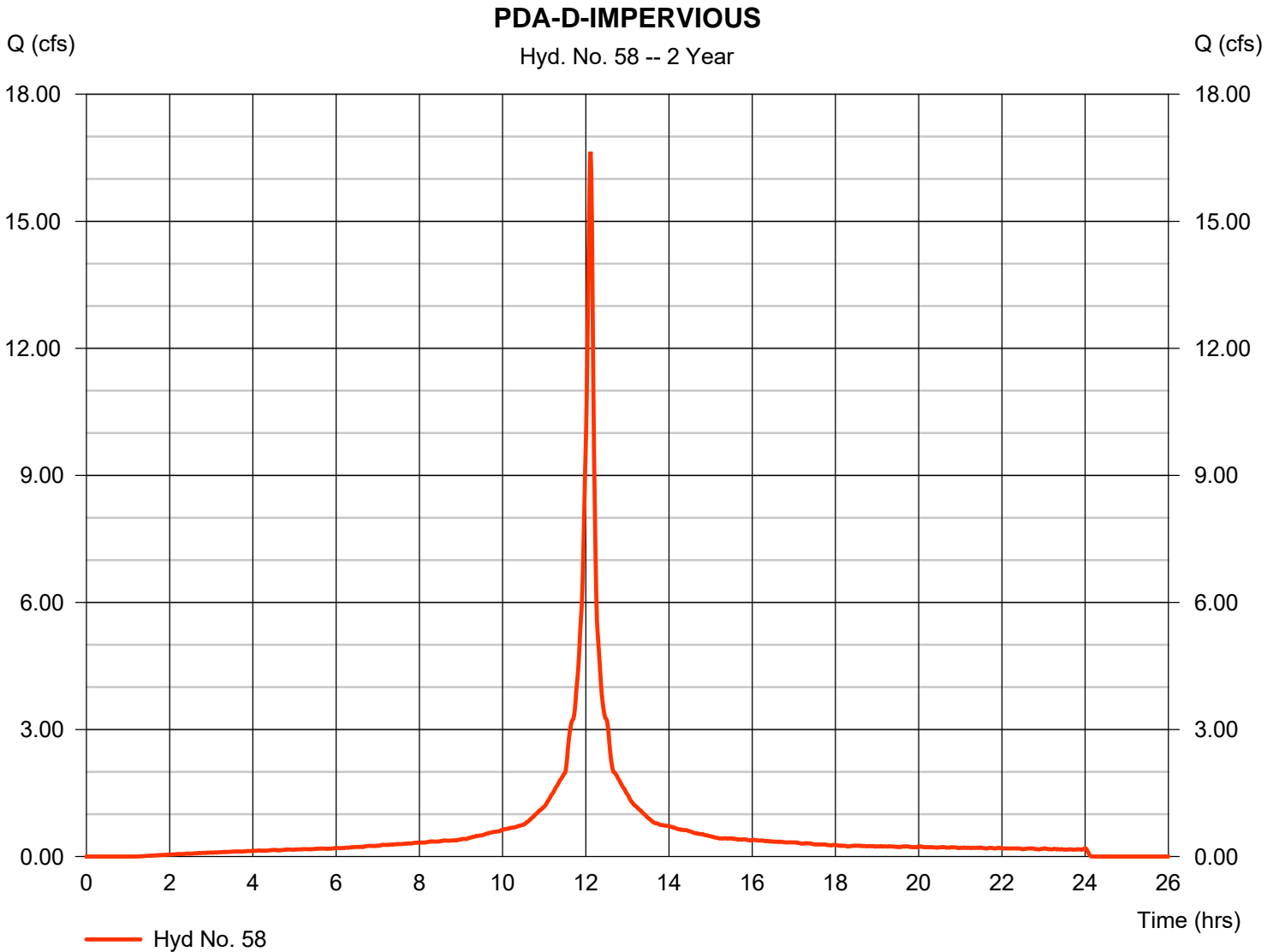
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

Wednesday, 03 / 9 / 2022

Hyd. No. 58

PDA-D-IMPERVIOUS

Hydrograph type	= SCS Runoff	Peak discharge	= 16.64 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.12 hrs
Time interval	= 1 min	Hyd. volume	= 53,137 cuft
Drainage area	= 4.720 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 6.00 min
Total precip.	= 3.24 in	Distribution	= Custom
Storm duration	= R:\Hydroflow Standards\NJ Reg Slope Rainfall Distribution\401A_C_1 min.cds		



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

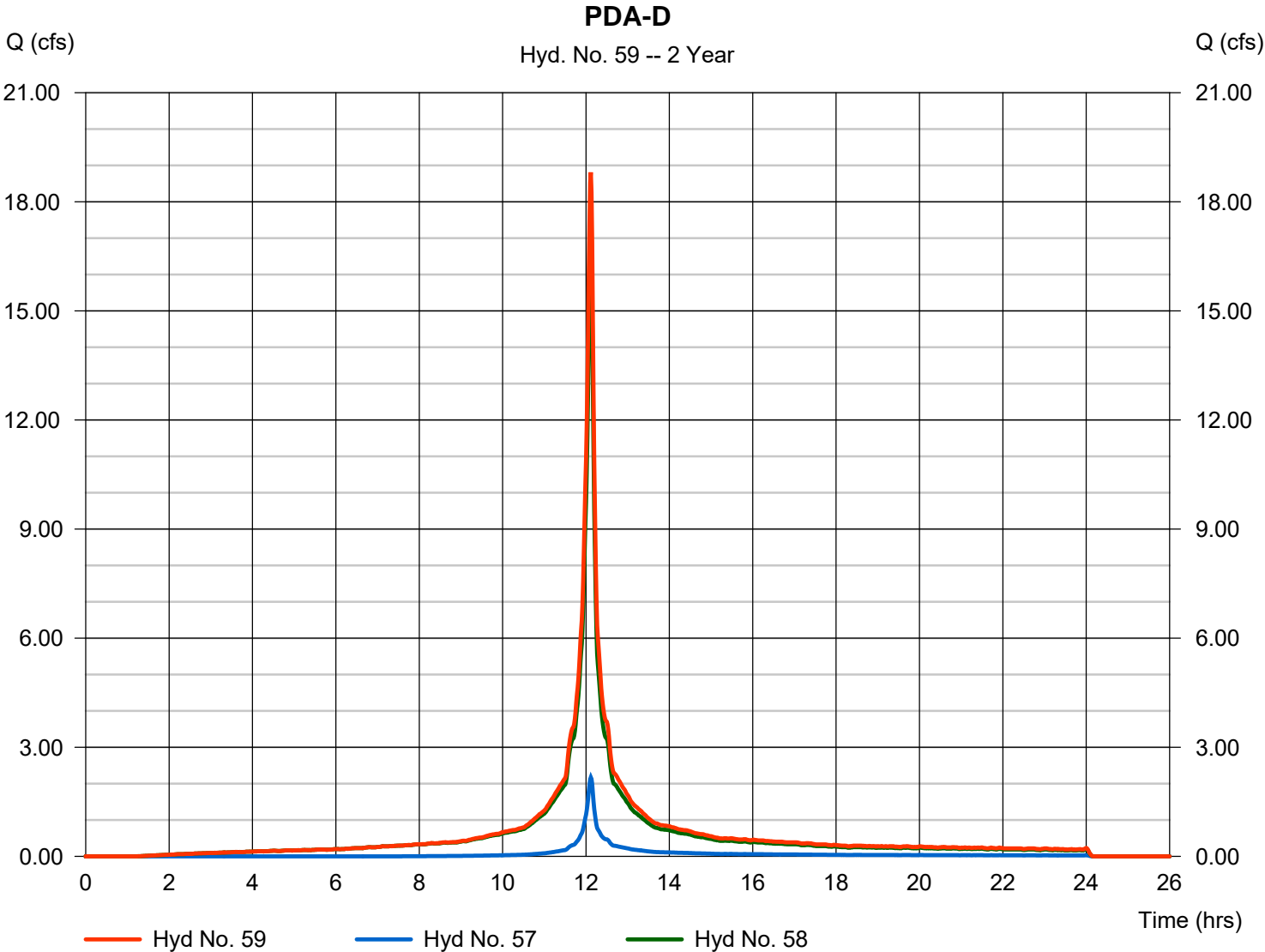
Wednesday, 03 / 9 / 2022

Hyd. No. 59

PDA-D

Hydrograph type = Combine
Storm frequency = 2 yrs
Time interval = 1 min
Inflow hyds. = 57, 58

Peak discharge = 18.81 cfs
Time to peak = 12.12 hrs
Hyd. volume = 59,157 cuft
Contrib. drain. area = 5.580 ac



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

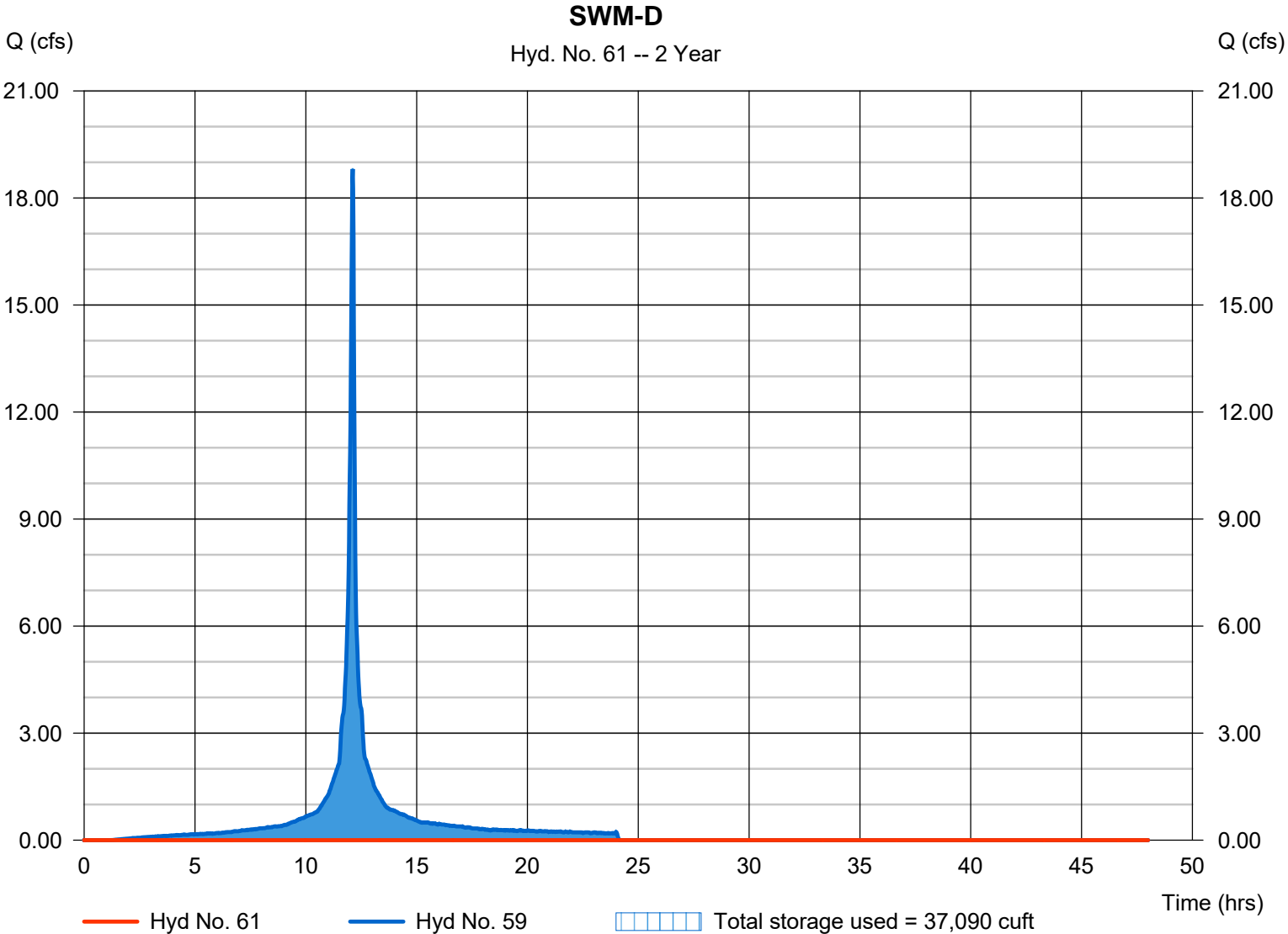
Wednesday, 03 / 9 / 2022

Hyd. No. 61

SWM-D

Hydrograph type	= Reservoir	Peak discharge	= 0.000 cfs
Storm frequency	= 2 yrs	Time to peak	= 27.38 hrs
Time interval	= 1 min	Hyd. volume	= 0 cuft
Inflow hyd. No.	= 59 - PDA-D	Max. Elevation	= 601.75 ft
Reservoir name	= SWM-D	Max. Storage	= 37,090 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Pond No. 4 - SWM-D

Pond Data

Contours -User-defined contour areas. Conic method used for volume calculation. Begining Elevation = 600.00 ft

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	600.00	19,016	0	0
1.00	601.00	21,302	20,146	20,146
2.00	602.00	23,634	22,456	42,602
3.00	603.00	26,011	24,811	67,413
4.00	604.00	28,434	27,211	94,624
4.50	604.50	29,904	14,582	109,205

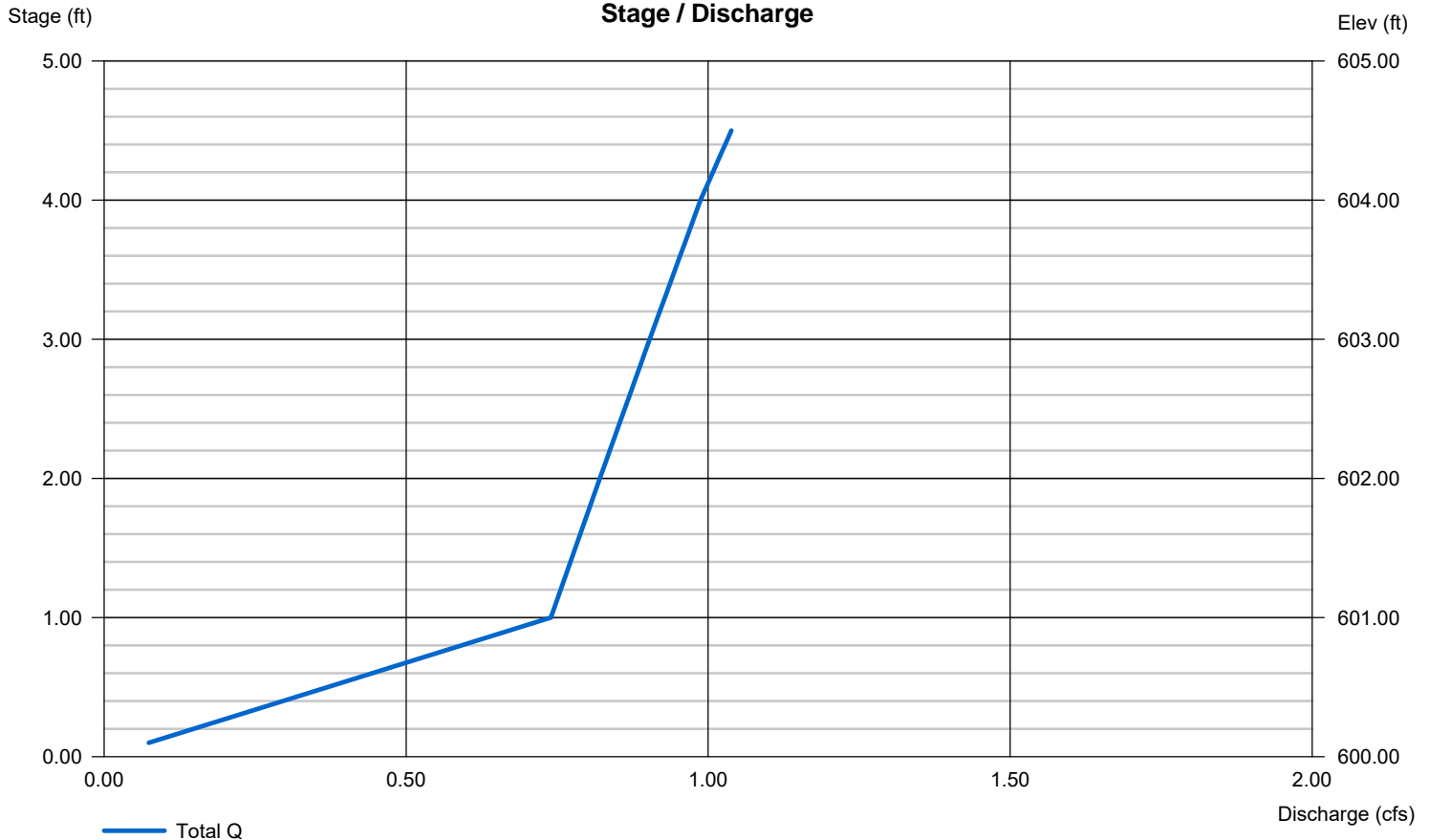
Culvert / Orifice Structures

	[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)	= 1.500 (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).



Hydrograph Report

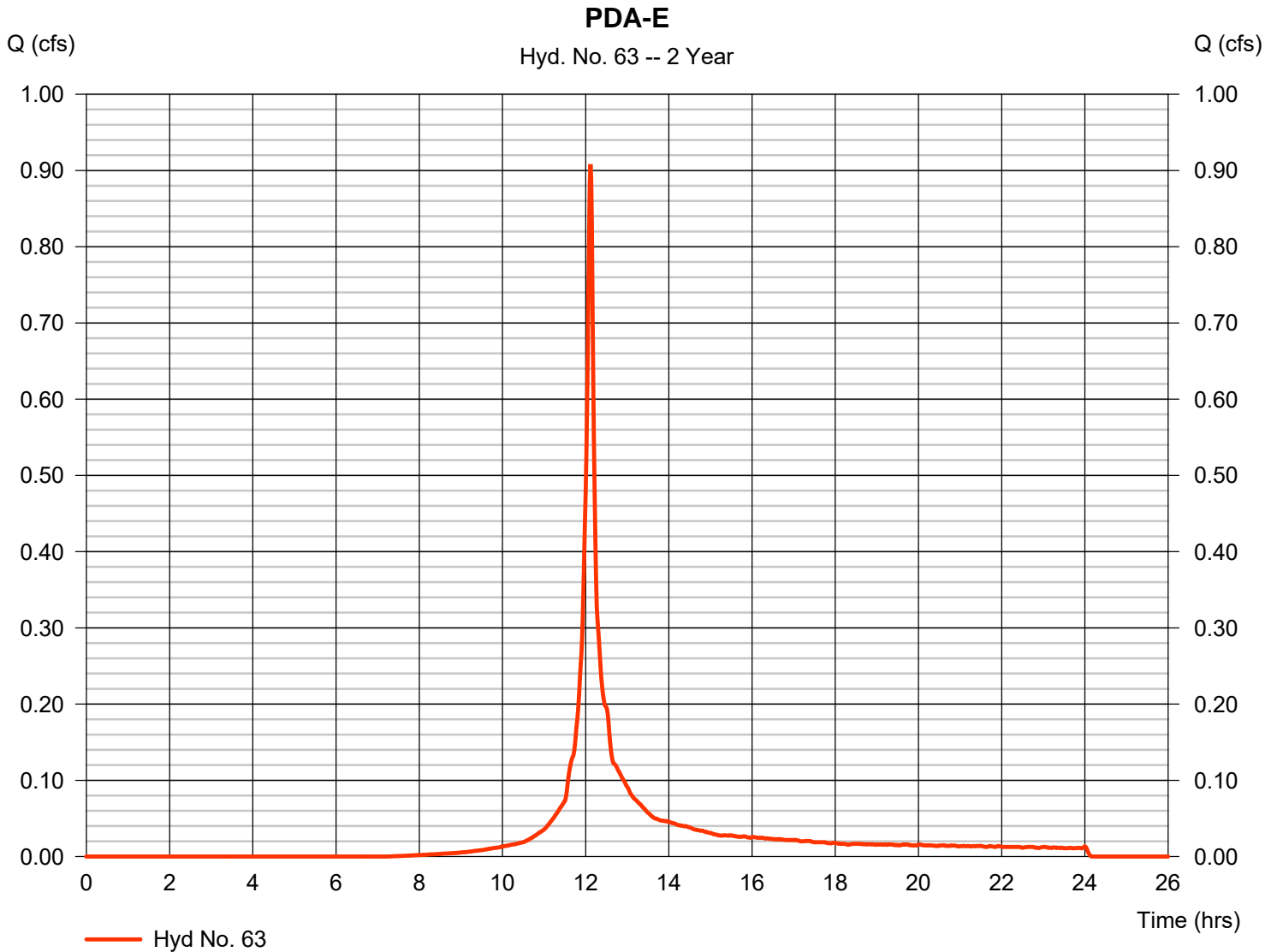
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

Wednesday, 03 / 9 / 2022

Hyd. No. 63

PDA-E

Hydrograph type	= SCS Runoff	Peak discharge	= 0.908 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.12 hrs
Time interval	= 1 min	Hyd. volume	= 2,520 cuft
Drainage area	= 0.360 ac	Curve number	= 86
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 6.00 min
Total precip.	= 3.24 in	Distribution	= Custom
Storm duration	= R:\Hydroflow Standards\NJ Reg Slope Rainfall Distribution\NOAA_C_1 min.cds		



Hydrograph Report

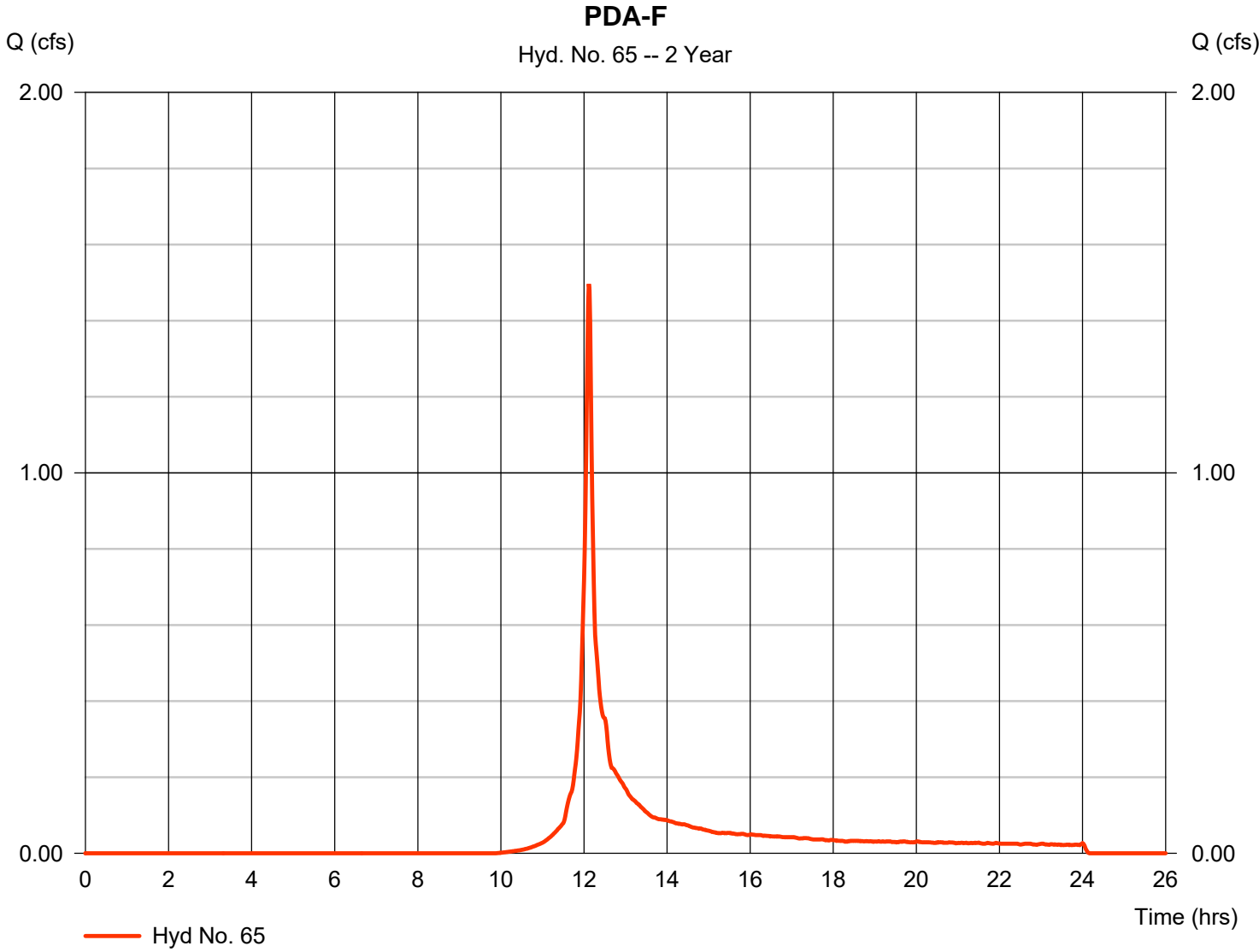
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

Wednesday, 03 / 9 / 2022

Hyd. No. 65

PDA-F

Hydrograph type	= SCS Runoff	Peak discharge	= 1.497 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.12 hrs
Time interval	= 1 min	Hyd. volume	= 4,145 cuft
Drainage area	= 0.850 ac	Curve number	= 78
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 6.00 min
Total precip.	= 3.24 in	Distribution	= Custom
Storm duration	= R:\Hydroflow Standards\NJ Reg Storm Rainfall Distribution\401A_C_1 min.cds		



Hydrograph Report

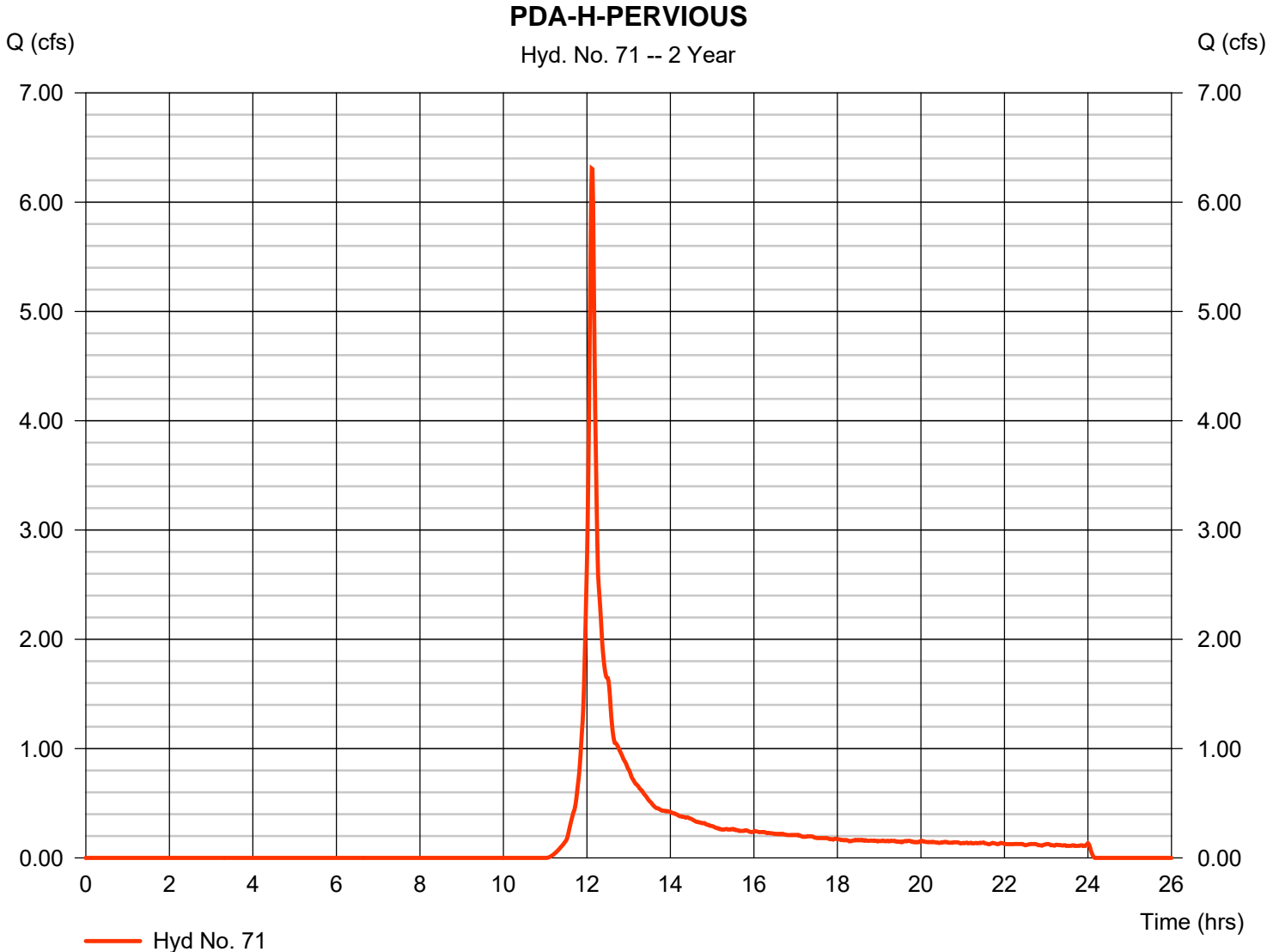
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

Wednesday, 03 / 9 / 2022

Hyd. No. 71

PDA-H-PERVIOUS

Hydrograph type	= SCS Runoff	Peak discharge	= 6.308 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.12 hrs
Time interval	= 1 min	Hyd. volume	= 18,117 cuft
Drainage area	= 5.070 ac	Curve number	= 72
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 6.00 min
Total precip.	= 3.24 in	Distribution	= Custom
Storm duration	= R:\Hydroflow Standards\NJ Reg Storm Rainfall Distribution\401A_C_1 min.cds		



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

Wednesday, 03 / 9 / 2022

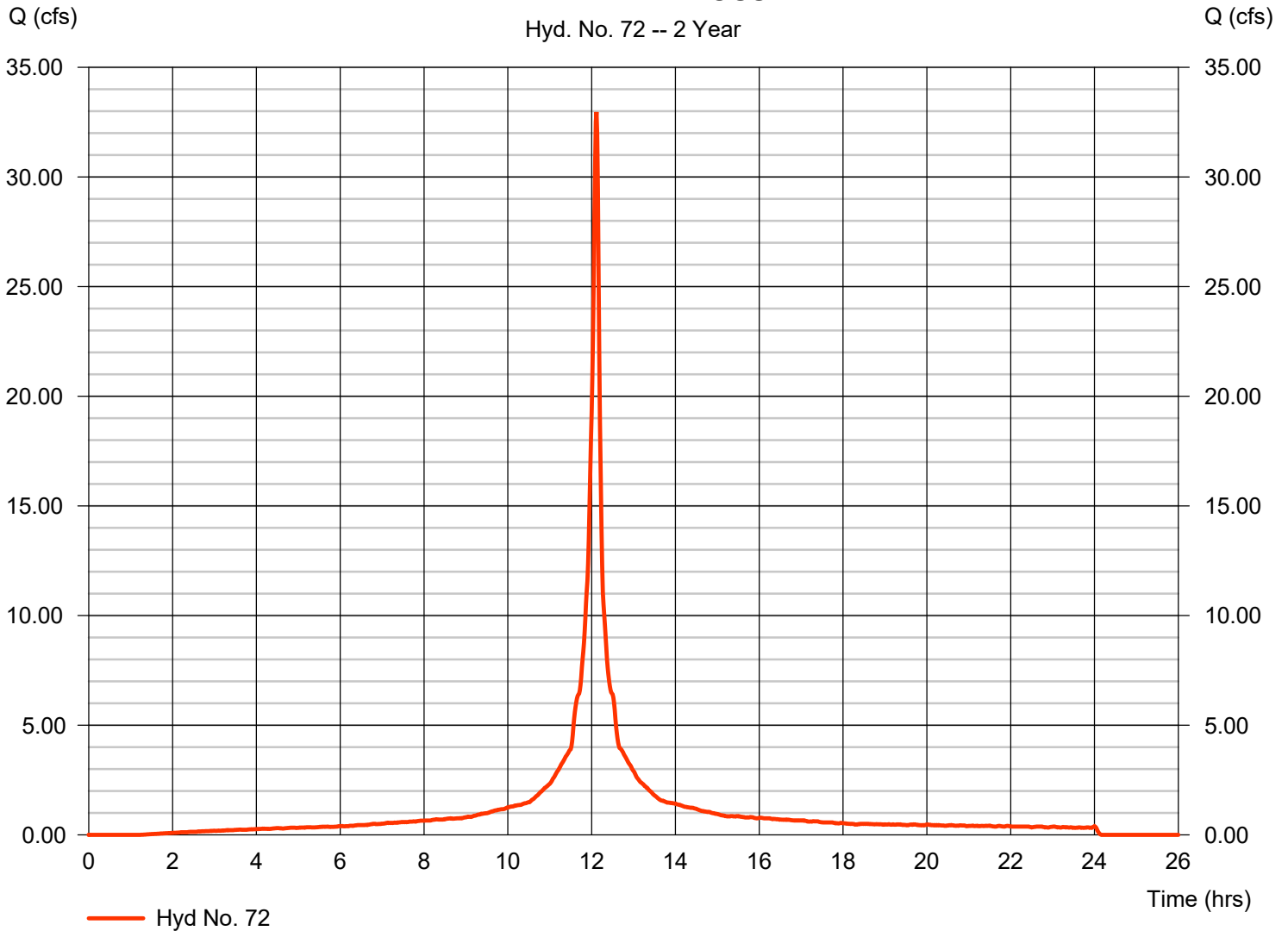
Hyd. No. 72

PDA-H-IMPERVIOUS

Hydrograph type	= SCS Runoff	Peak discharge	= 32.96 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.12 hrs
Time interval	= 1 min	Hyd. volume	= 105,260 cuft
Drainage area	= 9.350 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 6.00 min
Total precip.	= 3.24 in	Distribution	= Custom
Storm duration	= R:\Hydroflow Standards\NJ Reg Storm Rainfall Distribution\401A_C_1 min.cds		

PDA-H-IMPERVIOUS

Hyd. No. 72 -- 2 Year



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

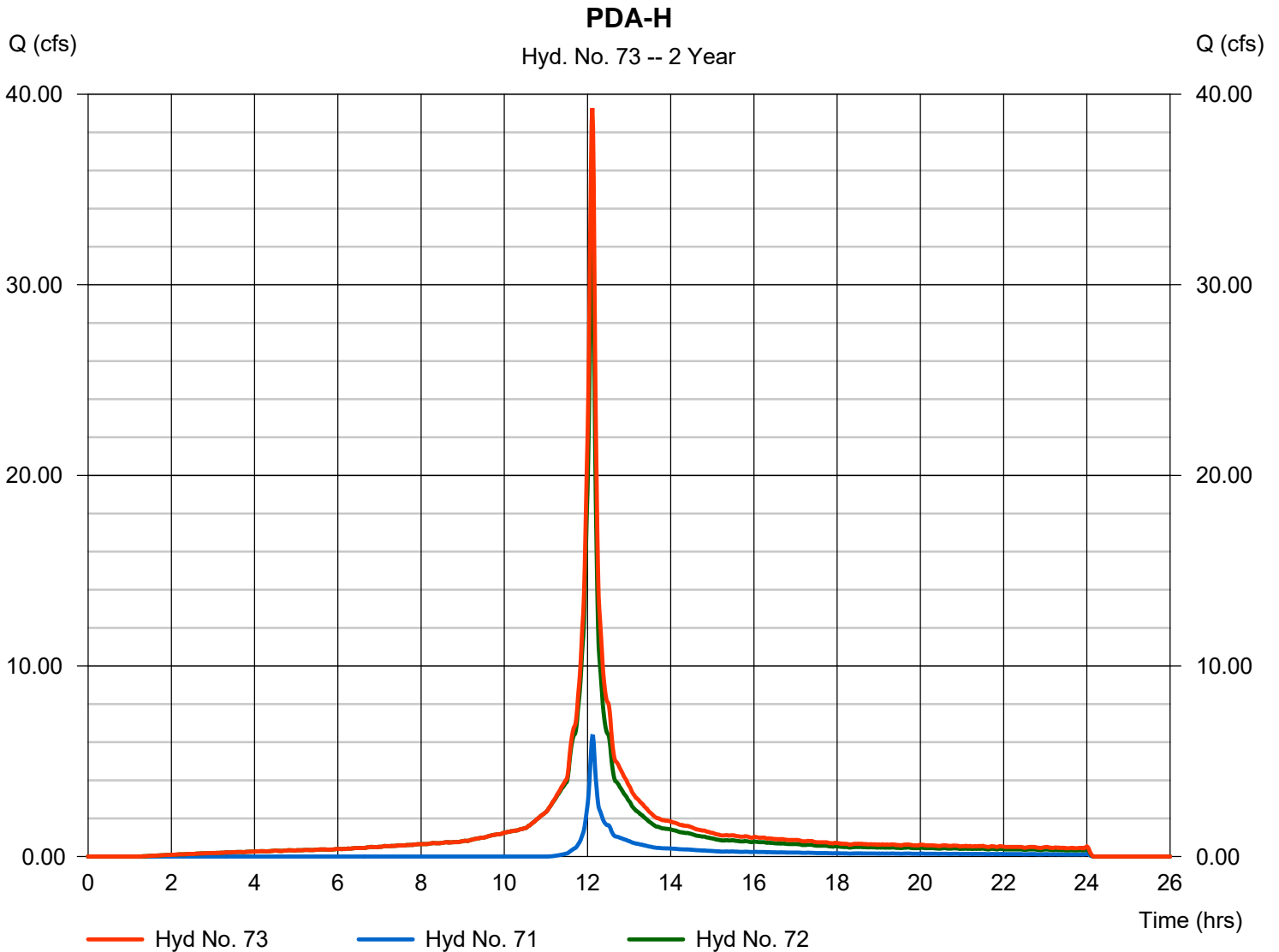
Wednesday, 03 / 9 / 2022

Hyd. No. 73

PDA-H

Hydrograph type = Combine
Storm frequency = 2 yrs
Time interval = 1 min
Inflow hyds. = 71, 72

Peak discharge = 39.27 cfs
Time to peak = 12.12 hrs
Hyd. volume = 123,377 cuft
Contrib. drain. area = 14.420 ac



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

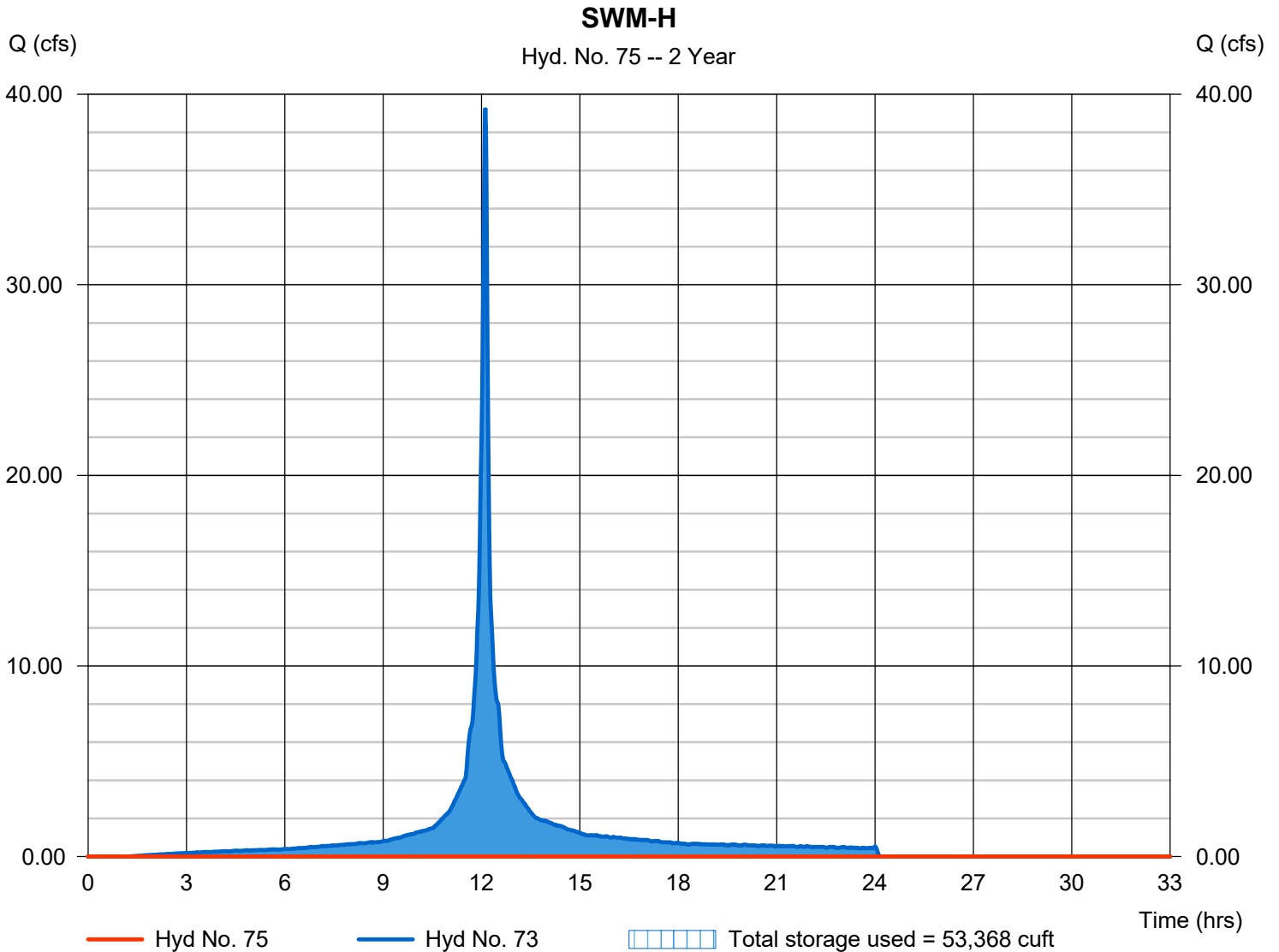
Wednesday, 03 / 9 / 2022

Hyd. No. 75

SWM-H

Hydrograph type	= Reservoir	Peak discharge	= 0.000 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.05 hrs
Time interval	= 1 min	Hyd. volume	= 0 cuft
Inflow hyd. No.	= 73 - PDA-H	Max. Elevation	= 597.35 ft
Reservoir name	= SWM-H	Max. Storage	= 53,368 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Pond No. 6 - SWM-H

Pond Data

Contours -User-defined contour areas. Conic method used for volume calculation. Begining Elevation = 596.00 ft

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	596.00	35,726	0	0
1.00	597.00	40,735	38,199	38,199
2.00	598.00	46,050	43,361	81,560
3.00	599.00	51,472	48,731	130,290
4.00	600.00	57,000	54,207	184,497

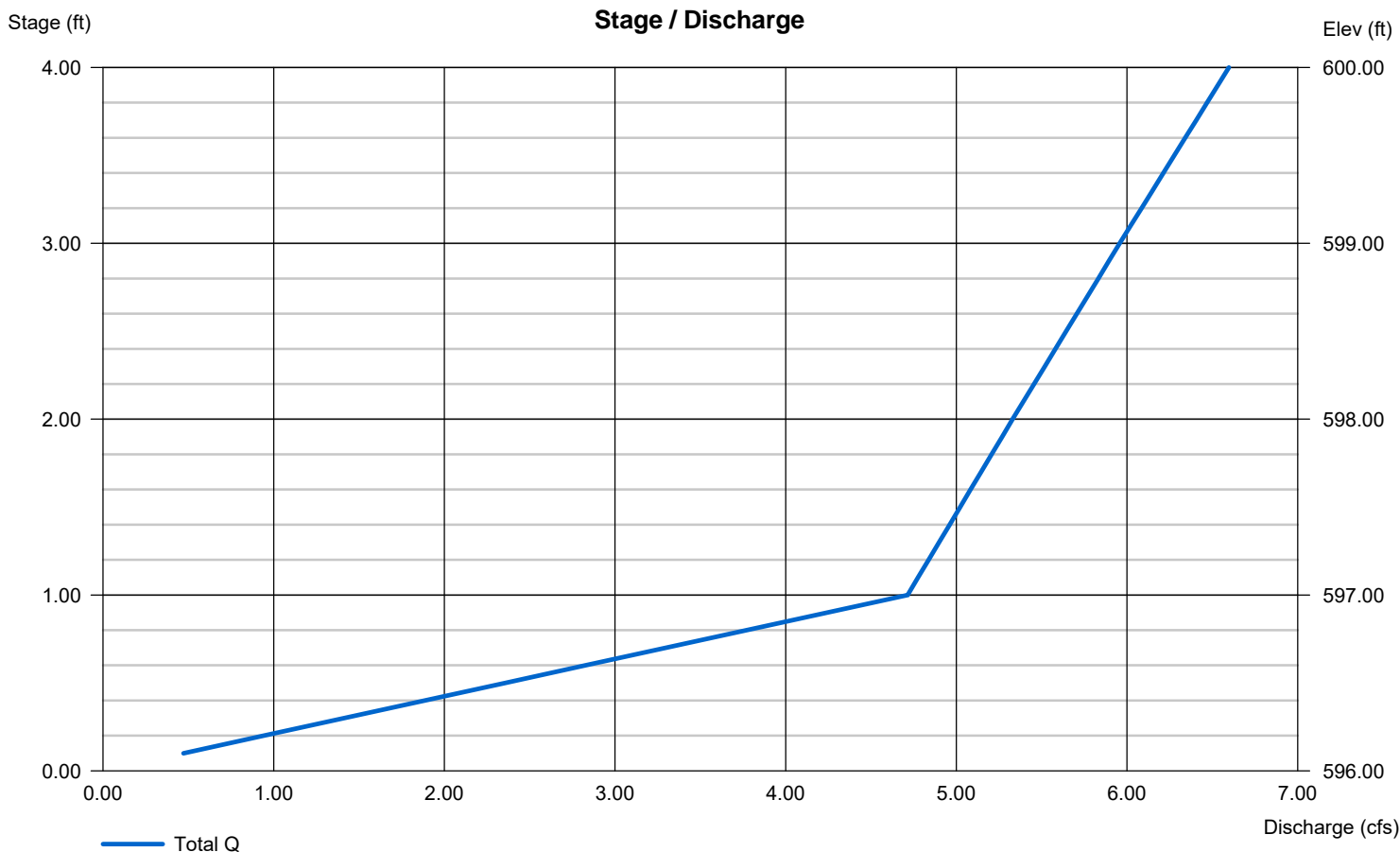
Culvert / Orifice Structures

	[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)	= 5.000 (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).



Hydrograph Report

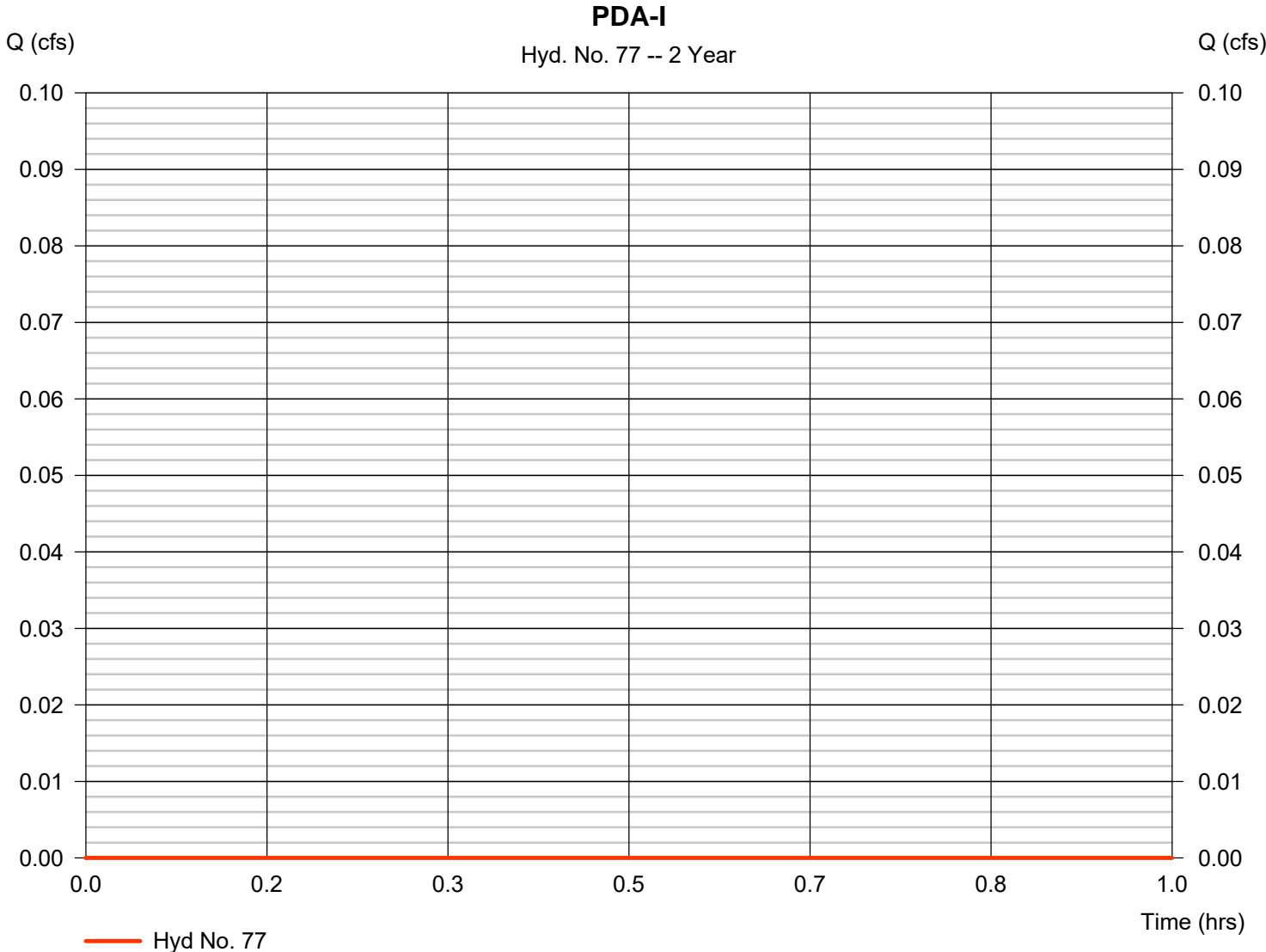
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

Wednesday, 03 / 9 / 2022

Hyd. No. 77

PDA-I

Hydrograph type	= SCS Runoff	Peak discharge	= 0.000 cfs
Storm frequency	= 2 yrs	Time to peak	= n/a
Time interval	= 1 min	Hyd. volume	= 0 cuft
Drainage area	= 0.260 ac	Curve number	= 34
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 6.00 min
Total precip.	= 3.24 in	Distribution	= Custom
Storm duration	= R:\Hydroflow Standards\NJ Reg Storm Rainfall Distribution\MOA_C_1 min.cds		



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

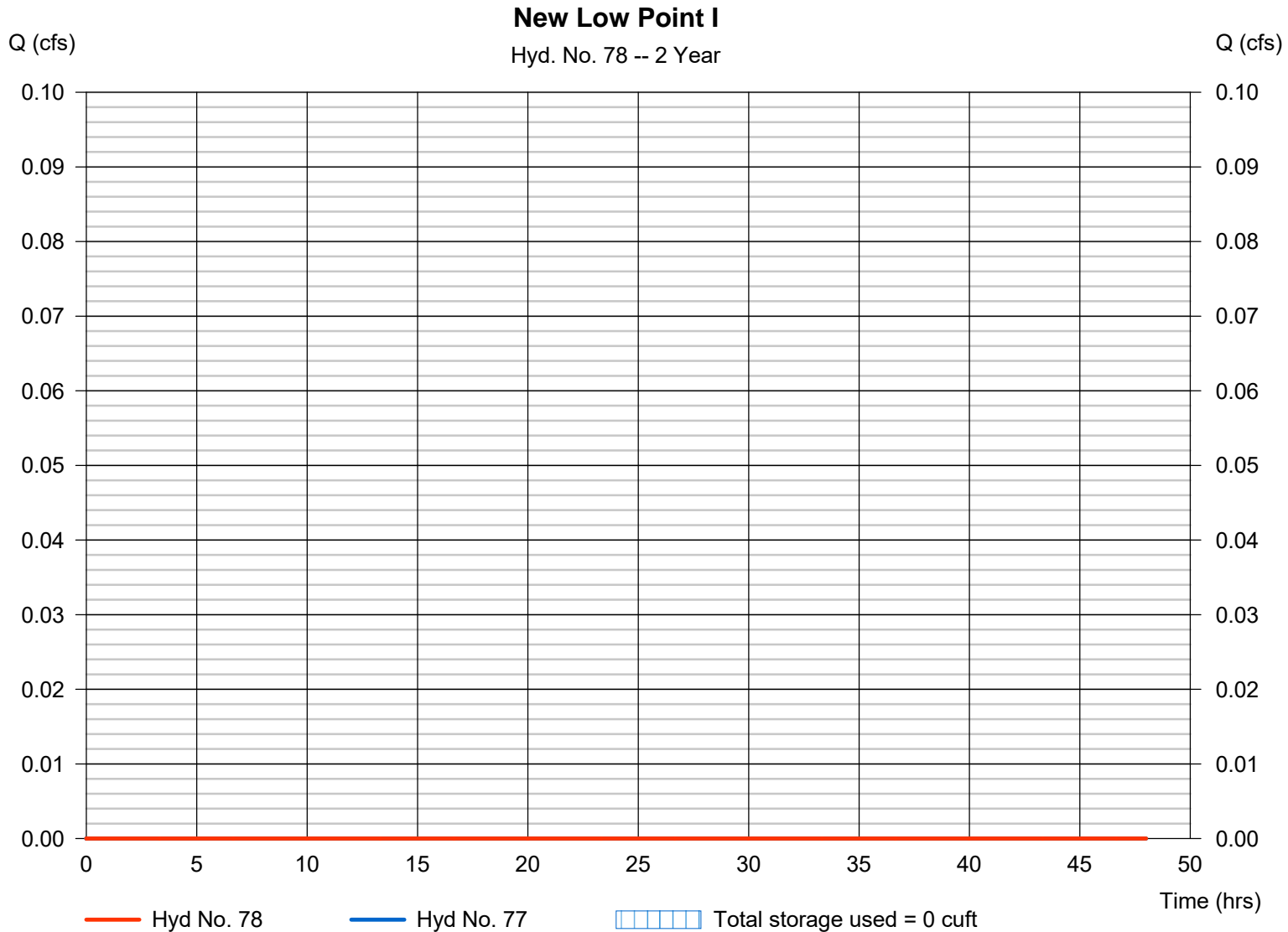
Wednesday, 03 / 9 / 2022

Hyd. No. 78

New Low Point I

Hydrograph type	= Reservoir	Peak discharge	= 0.000 cfs
Storm frequency	= 2 yrs	Time to peak	= n/a
Time interval	= 1 min	Hyd. volume	= 0 cuft
Inflow hyd. No.	= 77 - PDA-I	Max. Elevation	= 597.10 ft
Reservoir name	= New Low Point I	Max. Storage	= 0 cuft

Storage Indication method used.



Pond No. 12 - New Low Point I

Pond Data

Contours -User-defined contour areas. Conic method used for volume calculation. Begining Elevation = 597.00 ft

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	597.00	250	0	0
1.00	598.00	562	396	396
2.00	599.00	795	675	1,071

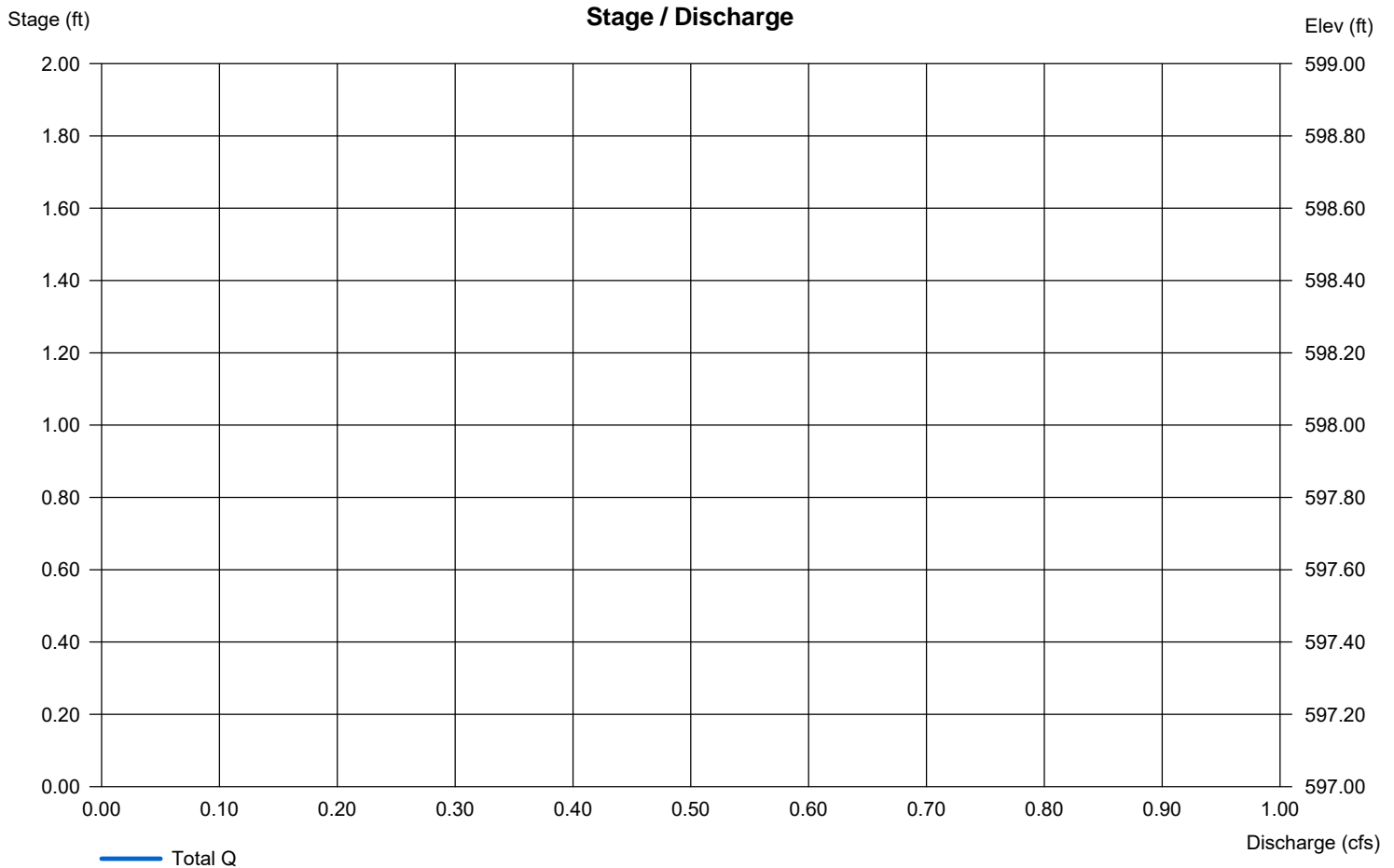
Culvert / Orifice Structures

	[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)	= 0.000 (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 Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

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	7.310	1	736	37,836	----	----	----	EDA - A: PERVIOUS	
2	SCS Runoff	5.067	1	734	23,815	----	----	----	EDA-A:IMPERVIOUS	
3	Combine	12.32	1	736	61,651	1, 2	----	----	EDA-A	
4	Reservoir	11.77	1	739	61,495	3	595.97	1,973	Low Point A	
6	SCS Runoff	2.348	1	759	23,448	----	----	----	EDA-B: PERVIOUS DIST	
7	SCS Runoff	3.946	1	741	22,347	----	----	----	EDA-B: IMPERVIOUS DIST	
8	Combine	5.614	1	745	45,796	6, 7	----	----	EDA-B-DIST	
10	SCS Runoff	2.828	1	736	20,519	----	----	----	EDA-B-PERVIOUS UNDIST	
11	SCS Runoff	8.441	1	727	27,419	----	----	----	EDA-B-IMPERVIOUS UNDIST	
12	Combine	9.620	1	728	47,938	10, 11	----	----	EDA-B-UNDIST	
14	Combine	12.56	1	728	93,734	8, 12,	----	----	EDA-B	
15	Reservoir	0.000	1	n/a	0	14	596.72	93,734	Low Point B	
17	SCS Runoff	7.912	1	731	27,172	----	----	----	EDA-C: PERVIOUS	
18	SCS Runoff	6.007	1	727	19,513	----	----	----	EDA-C:IMPERVIOUS	
19	Combine	13.11	1	728	46,685	17, 18	----	----	EDA-C	
21	SCS Runoff	10.55	1	729	32,740	----	----	----	EDA-D	
22	Reservoir	0.000	1	n/a	0	21	596.59	32,740	Low Point D	
24	SCS Runoff	12.58	1	730	41,568	----	----	----	EDA-E	
26	SCS Runoff	2.911	1	729	9,052	----	----	----	EDA-F	
29	SCS Runoff	0.097	1	896	3,392	----	----	----	EDA-H	
30	Reservoir	0.000	1	n/a	0	29	595.72	3,392	Low Point H	
32	SCS Runoff	0.000	1	1444	1	----	----	----	EDA-I	
33	Reservoir	0.000	1	n/a	0	32	595.55	0.678	Low Point I	
35	SCS Runoff	8.530	1	727	23,577	----	----	----	PDA-A-PERVIOUS	
36	SCS Runoff	13.83	1	727	44,913	----	----	----	PDA-A-IMPERVIOUS	
37	Combine	22.36	1	727	68,490	35, 36	----	----	PDA-A	
39	Reservoir	7.536	1	735	17,254	37	596.25	21,943	SWM-A	
41	SCS Runoff	34.85	1	727	96,055	----	----	----	PDA-B-PERVIOUS	
Hydrologic Calculations - Water Quantity.gpw					Return Period: 10 Year			Wednesday, 03 / 9 / 2022		

Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

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
42	SCS Runoff	74.05	1	727	240,548	----	----	----	PDA-B1-IMPERVIOUS
43	Combine	108.90	1	727	336,603	41, 42	----	----	PDA-B
45	Reservoir	0.000	1	790	0	43	599.00	142,256	SWM-B
47	SCS Runoff	1.001	1	727	2,757	----	----	----	PDA-B-BYPASS TO WETLANDS
48	SCS Runoff	2.760	1	736	20,025	----	----	----	EDA-B: UNDIST PERVIOUS TO WE
49	SCS Runoff	8.441	1	727	27,419	----	----	----	EDA-B:UNDIST IMPERVIOUS TO W
50	Combine	10.57	1	728	50,202	47, 48, 49	----	----	FLOW TO WETLAND
51	Reservoir	0.000	1	n/a	0	50	595.95	50,202	Low Point B Prop. Cond
53	SCS Runoff	9.647	1	731	33,409	----	----	----	PDA-C-PERVIOUS
54	SCS Runoff	1.864	1	727	6,056	----	----	----	PDA-C-IMPERVIOUS
55	Combine	11.05	1	729	39,464	53, 54	----	----	PDA-C
57	SCS Runoff	3.653	1	727	10,353	----	----	----	PDA-D-PERVIOUS
58	SCS Runoff	24.44	1	727	79,398	----	----	----	PDA-D-IMPERVIOUS
59	Combine	28.10	1	727	89,751	57, 58	----	----	PDA-D
61	Reservoir	0.000	1	642	0	59	602.67	59,130	SWM-D
63	SCS Runoff	1.529	1	727	4,334	----	----	----	PDA-E
65	SCS Runoff	2.864	1	727	7,904	----	----	----	PDA-F
71	SCS Runoff	13.68	1	727	37,808	----	----	----	PDA-H-PERVIOUS
72	SCS Runoff	48.42	1	727	157,282	----	----	----	PDA-H-IMPERVIOUS
73	Combine	62.10	1	727	195,089	71, 72	----	----	PDA-H
75	Reservoir	0.000	1	713	0	73	598.21	91,585	SWM-H
77	SCS Runoff	0.001	1	1440	35	----	----	----	PDA-I
78	Reservoir	0.000	1	n/a	0	77	597.10	34.5	New Low Point I

Hydrograph Report

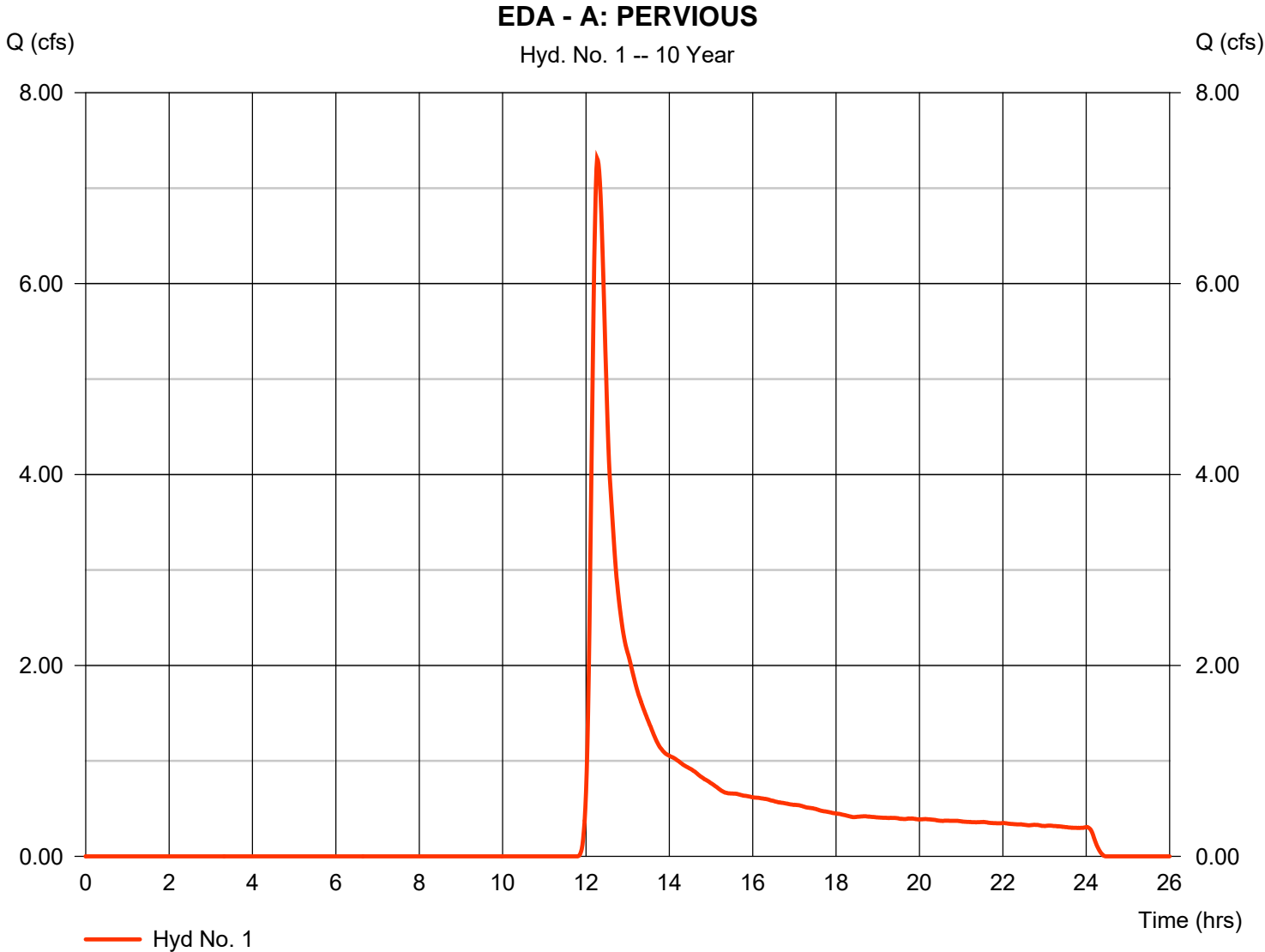
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

Wednesday, 03 / 9 / 2022

Hyd. No. 1

EDA - A: PERVIOUS

Hydrograph type	= SCS Runoff	Peak discharge	= 7.310 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.27 hrs
Time interval	= 1 min	Hyd. volume	= 37,836 cuft
Drainage area	= 13.290 ac	Curve number	= 54
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 17.70 min
Total precip.	= 4.73 in	Distribution	= Custom
Storm duration	= R:\Hydroflow Standards\NJ Reg Storm Data Distribution\401A_C_1 min.cds		



Hydrograph Report

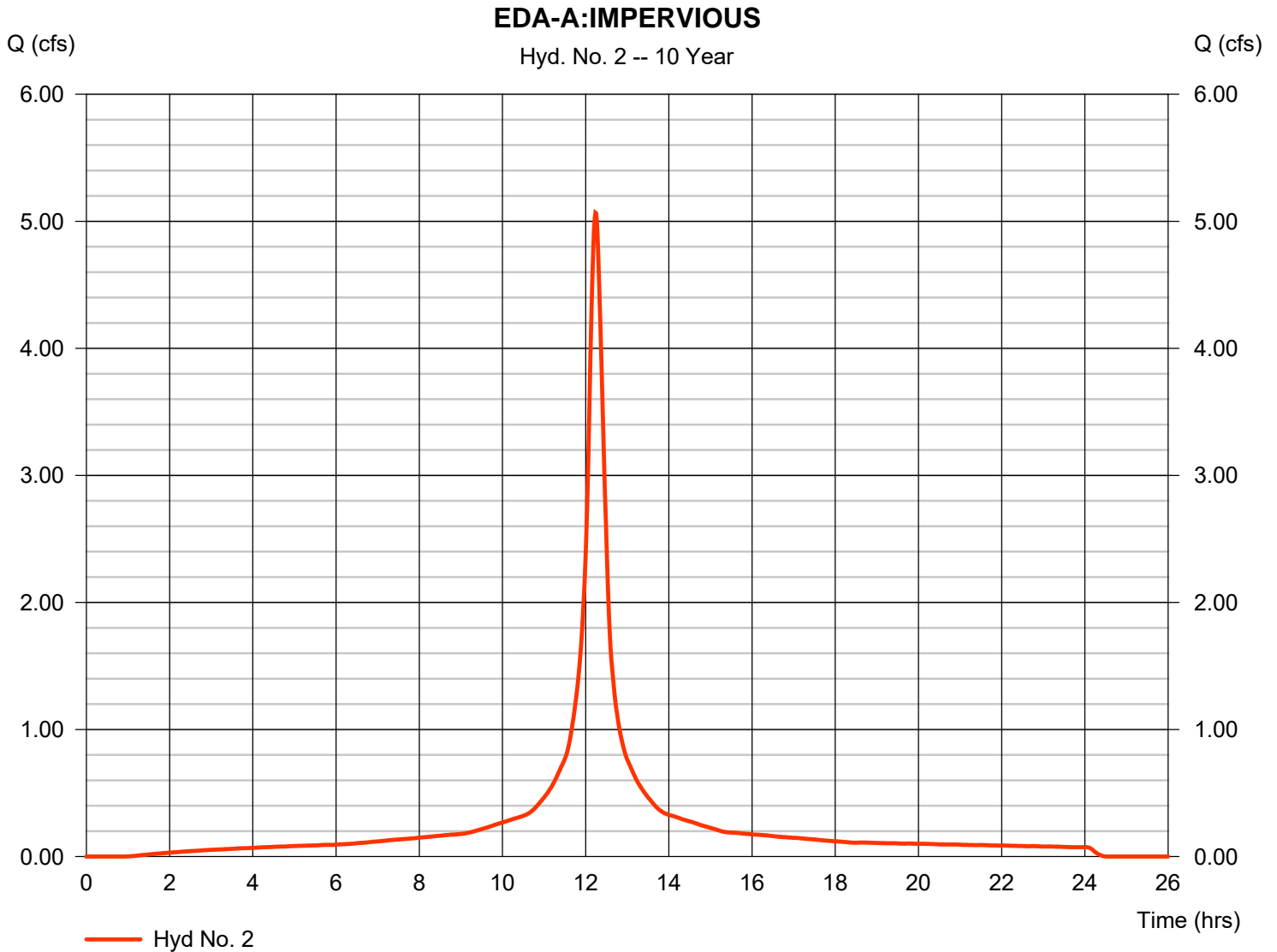
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

Wednesday, 03 / 9 / 2022

Hyd. No. 2

EDA-A:IMPERVIOUS

Hydrograph type	= SCS Runoff	Peak discharge	= 5.067 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.23 hrs
Time interval	= 1 min	Hyd. volume	= 23,815 cuft
Drainage area	= 1.460 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 19.60 min
Total precip.	= 4.73 in	Distribution	= Custom
Storm duration	= R:\Hydroflow Standards\NJ Reg Slope Rainfall Distribution\40A_C_1 min.cds		



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

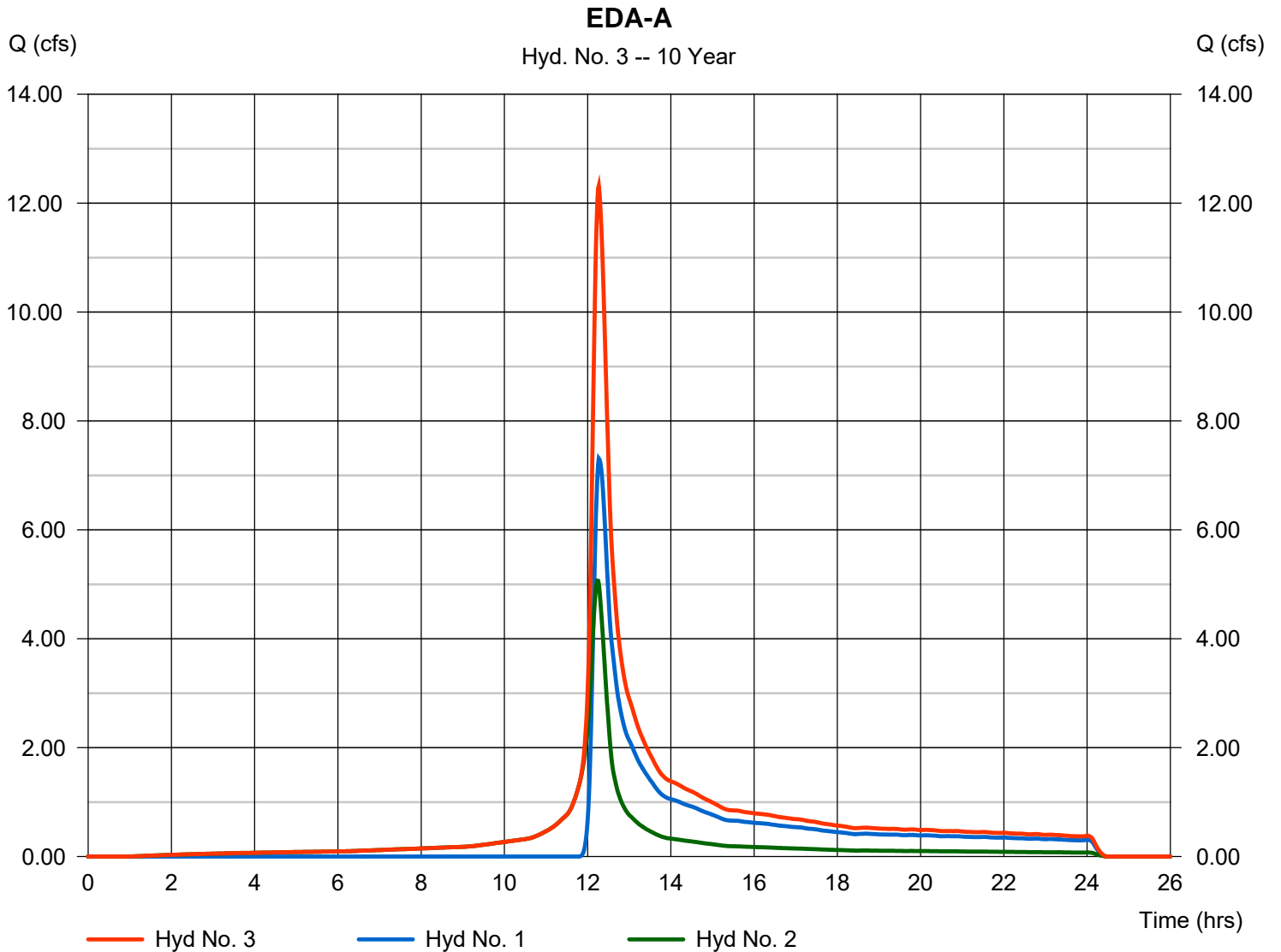
Wednesday, 03 / 9 / 2022

Hyd. No. 3

EDA-A

Hydrograph type = Combine
Storm frequency = 10 yrs
Time interval = 1 min
Inflow hyds. = 1, 2

Peak discharge = 12.32 cfs
Time to peak = 12.27 hrs
Hyd. volume = 61,651 cuft
Contrib. drain. area = 14.750 ac



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

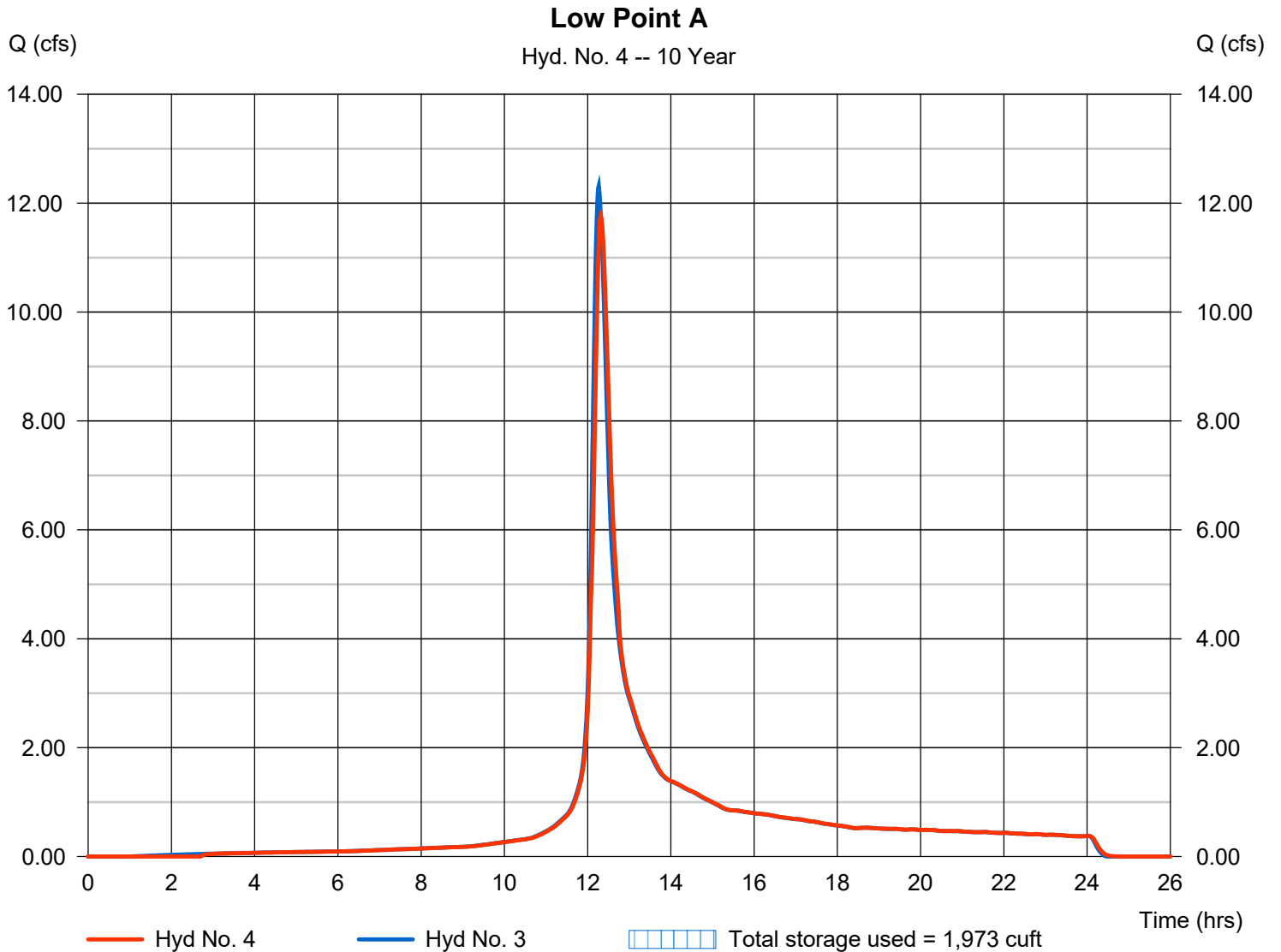
Wednesday, 03 / 9 / 2022

Hyd. No. 4

Low Point A

Hydrograph type	= Reservoir	Peak discharge	= 11.77 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.32 hrs
Time interval	= 1 min	Hyd. volume	= 61,495 cuft
Inflow hyd. No.	= 3 - EDA-A	Max. Elevation	= 595.97 ft
Reservoir name	= Low Point A	Max. Storage	= 1,973 cuft

Storage Indication method used.



Hydrograph Report

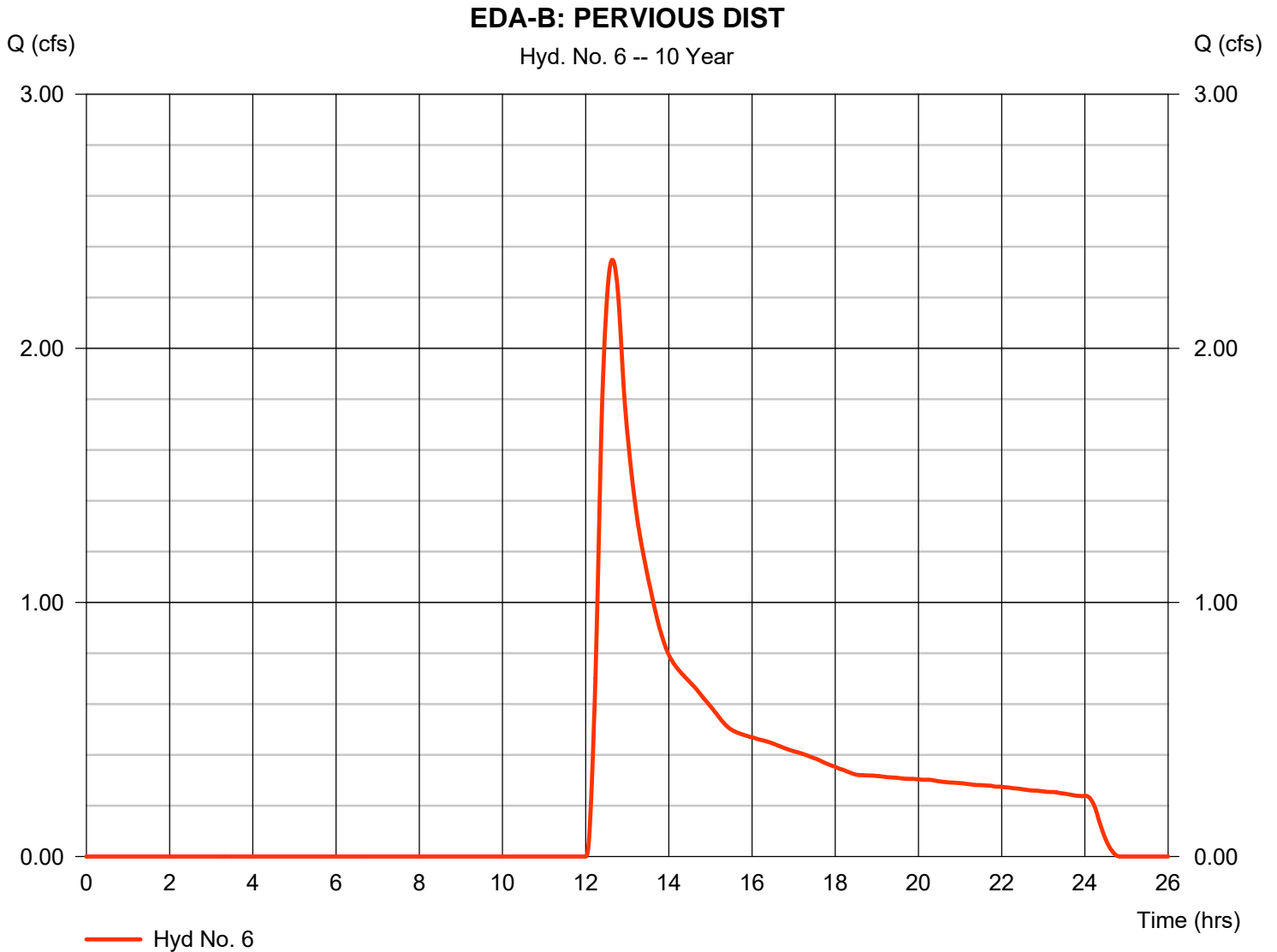
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

Wednesday, 03 / 9 / 2022

Hyd. No. 6

EDA-B: PERVIOUS DIST

Hydrograph type	= SCS Runoff	Peak discharge	= 2.348 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.65 hrs
Time interval	= 1 min	Hyd. volume	= 23,448 cuft
Drainage area	= 14.410 ac	Curve number	= 47
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 31.40 min
Total precip.	= 4.73 in	Distribution	= Custom
Storm duration	= R:\Hydroflow Standards\NJ Reg Storm Rainfall Distribution\NOAA_C_1 min.cds		



Hydrograph Report

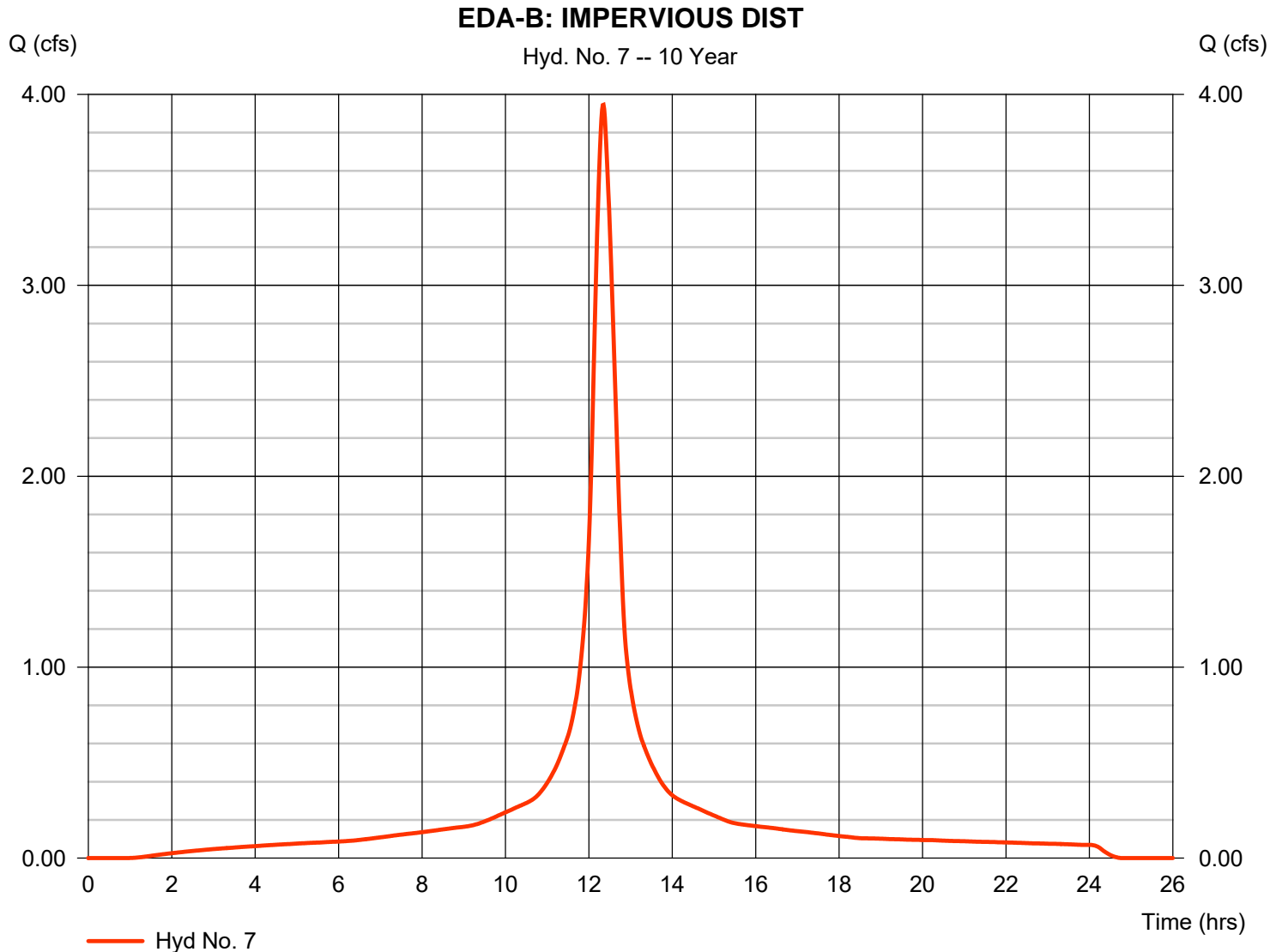
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

Wednesday, 03 / 9 / 2022

Hyd. No. 7

EDA-B: IMPERVIOUS DIST

Hydrograph type	= SCS Runoff	Peak discharge	= 3.946 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.35 hrs
Time interval	= 1 min	Hyd. volume	= 22,347 cuft
Drainage area	= 1.370 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 29.70 min
Total precip.	= 4.73 in	Distribution	= Custom
Storm duration	= R:\Hydroflow Standards\NJ Reg Slope Rainfall Distribution\401A_C_1 min.cds		



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

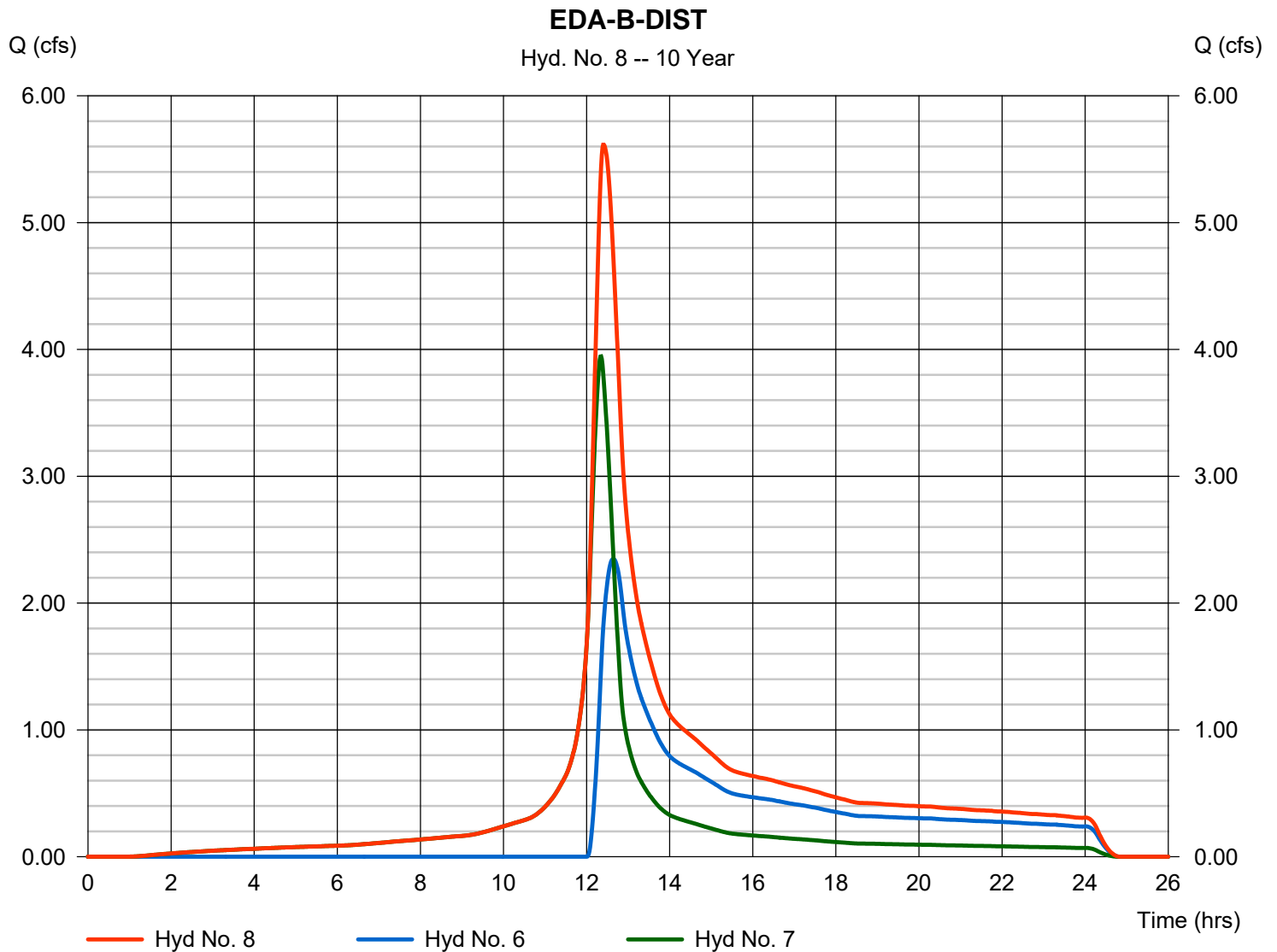
Wednesday, 03 / 9 / 2022

Hyd. No. 8

EDA-B-DIST

Hydrograph type = Combine
Storm frequency = 10 yrs
Time interval = 1 min
Inflow hyds. = 6, 7

Peak discharge = 5.614 cfs
Time to peak = 12.42 hrs
Hyd. volume = 45,796 cuft
Contrib. drain. area = 15.780 ac



Hydrograph Report

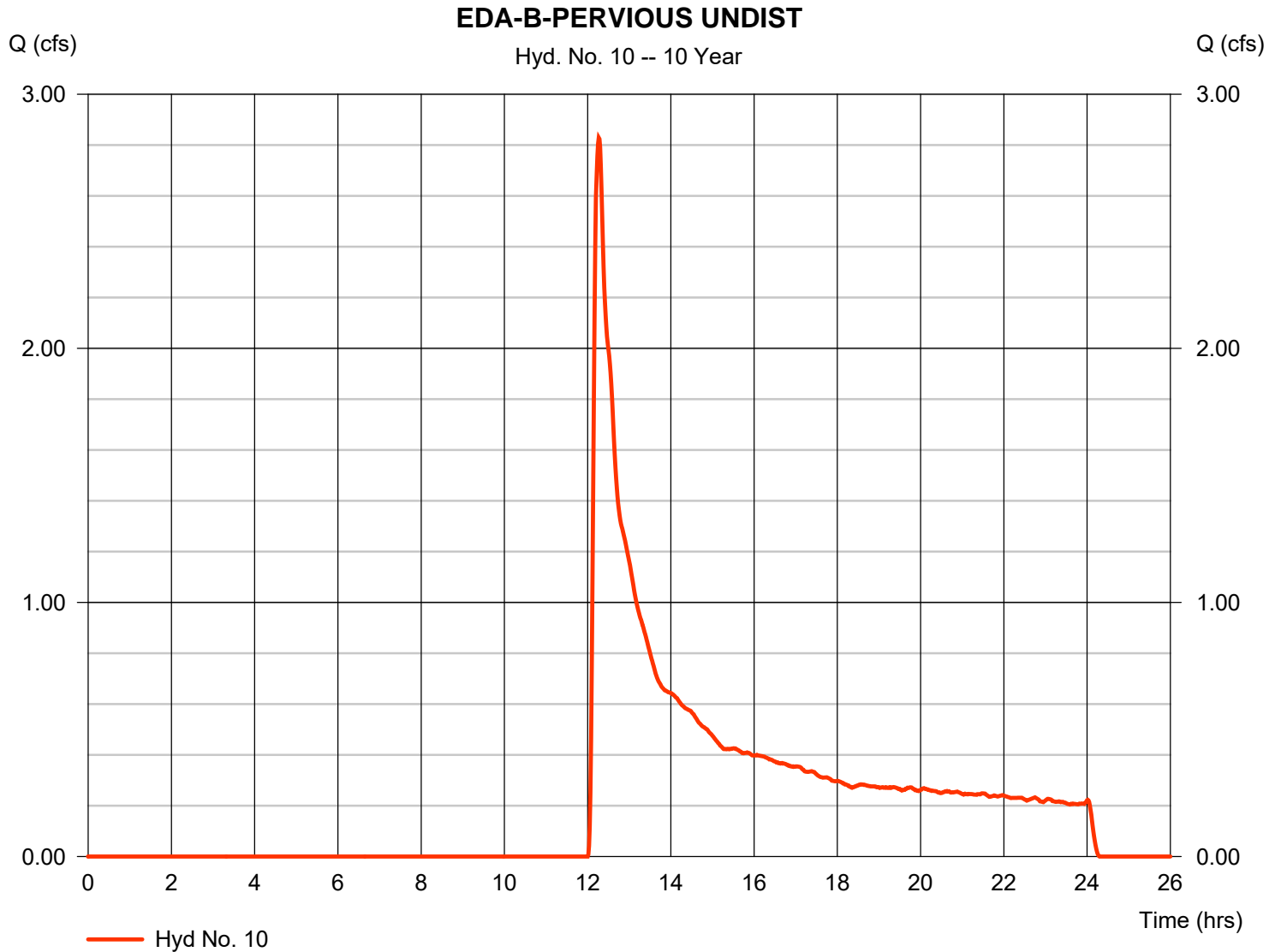
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

Wednesday, 03 / 9 / 2022

Hyd. No. 10

EDA-B-PERVIOUS UNDIST

Hydrograph type	= SCS Runoff	Peak discharge	= 2.828 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.27 hrs
Time interval	= 1 min	Hyd. volume	= 20,519 cuft
Drainage area	= 12.470 ac	Curve number	= 47
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 10.70 min
Total precip.	= 4.73 in	Distribution	= Custom
Storm duration	= R:\Hydroflow Standards\NJ Reg Storm Rainfall Distribution\401A_C_1 min.cds		



Hydrograph Report

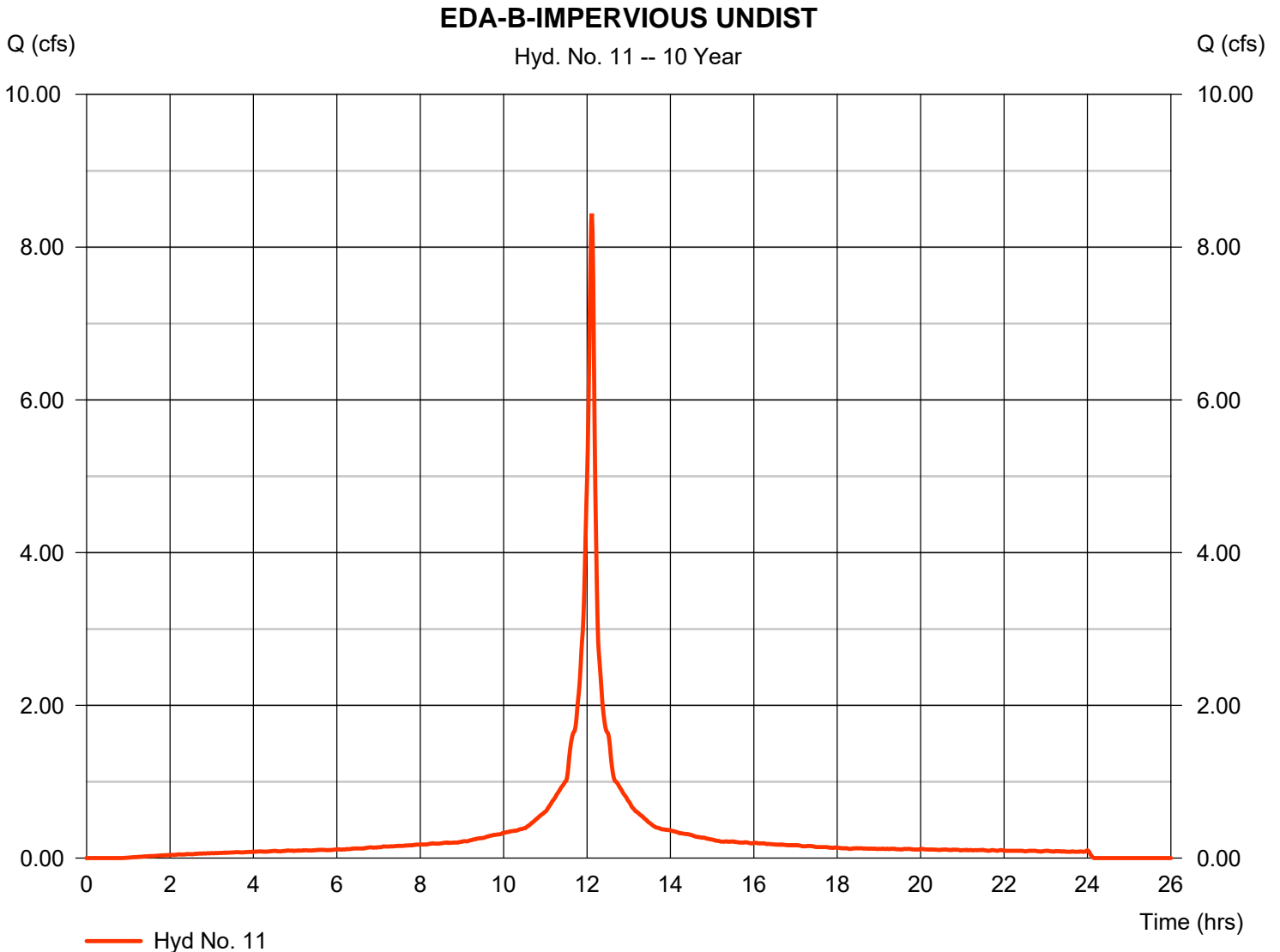
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

Wednesday, 03 / 9 / 2022

Hyd. No. 11

EDA-B-IMPERVIOUS UNDIST

Hydrograph type	= SCS Runoff	Peak discharge	= 8.441 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.12 hrs
Time interval	= 1 min	Hyd. volume	= 27,419 cuft
Drainage area	= 1.630 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 6.00 min
Total precip.	= 4.73 in	Distribution	= Custom
Storm duration	= R:\Hydroflow Standards\NJ Reg Storm Rainfall Distribution\401A_C_1 min.cds		



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

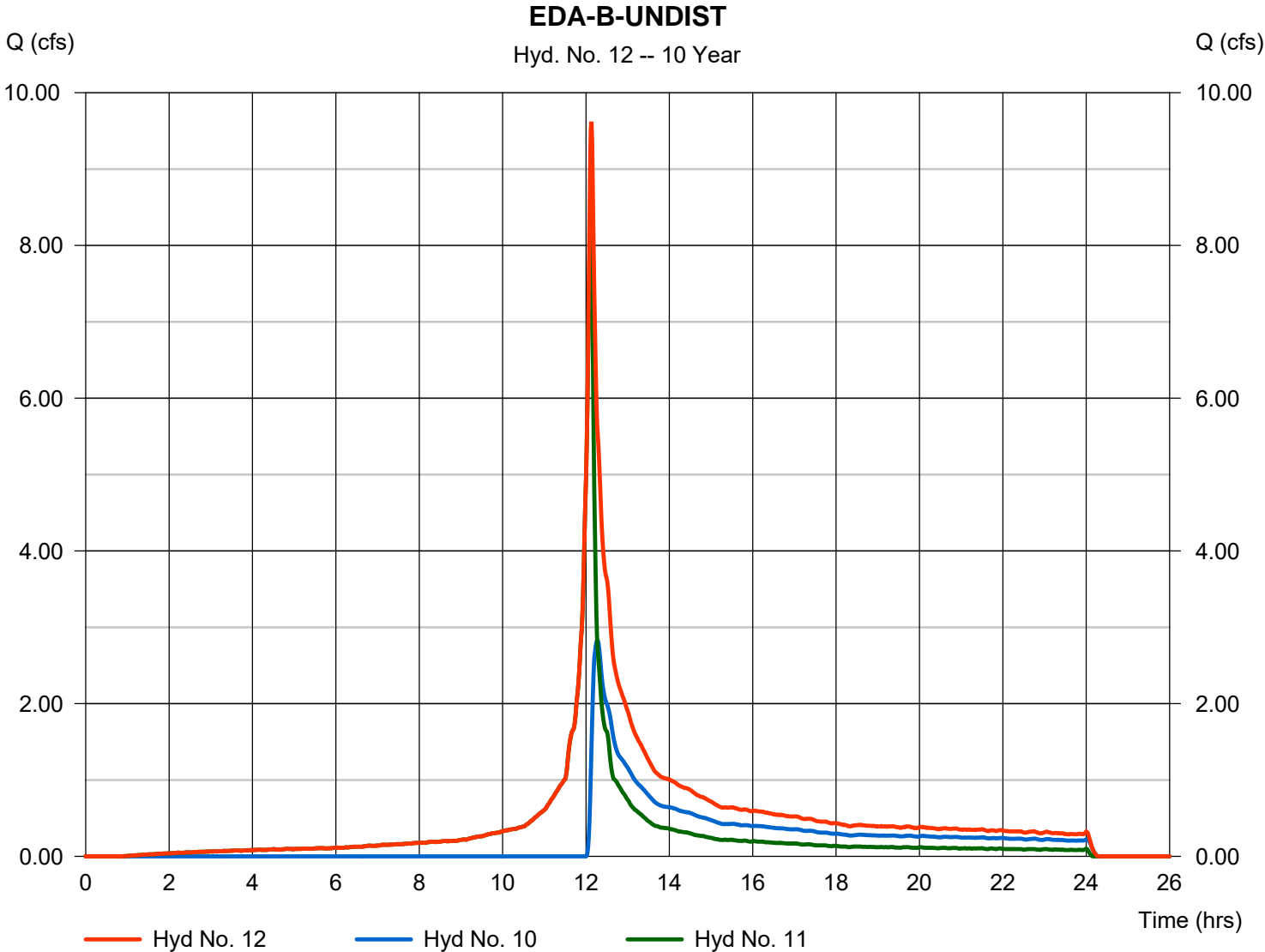
Wednesday, 03 / 9 / 2022

Hyd. No. 12

EDA-B-UNDIST

Hydrograph type = Combine
Storm frequency = 10 yrs
Time interval = 1 min
Inflow hyds. = 10, 11

Peak discharge = 9.620 cfs
Time to peak = 12.13 hrs
Hyd. volume = 47,938 cuft
Contrib. drain. area = 14.100 ac



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

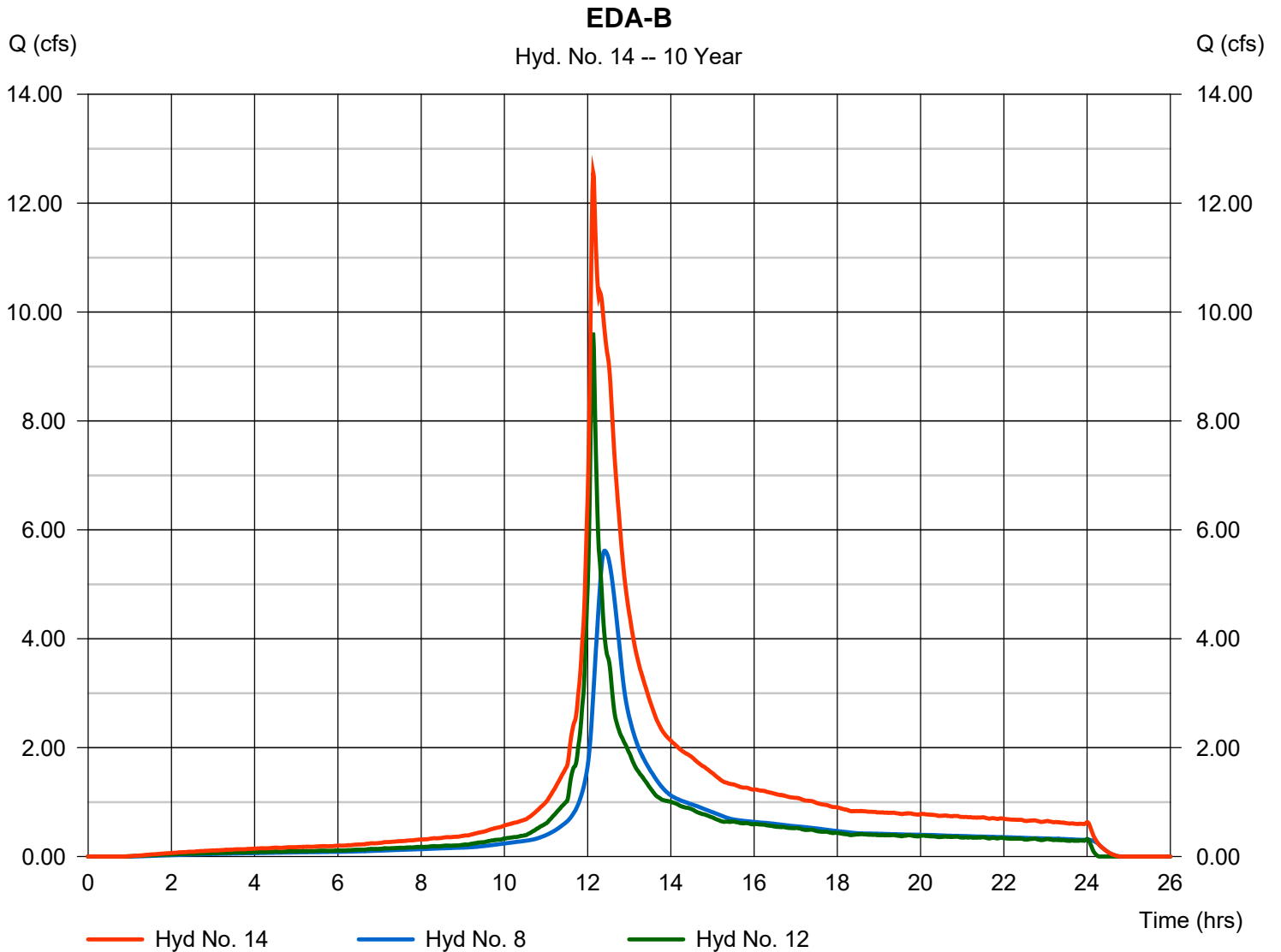
Wednesday, 03 / 9 / 2022

Hyd. No. 14

EDA-B

Hydrograph type = Combine
Storm frequency = 10 yrs
Time interval = 1 min
Inflow hyds. = 8, 12

Peak discharge = 12.56 cfs
Time to peak = 12.13 hrs
Hyd. volume = 93,734 cuft
Contrib. drain. area = 0.000 ac



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

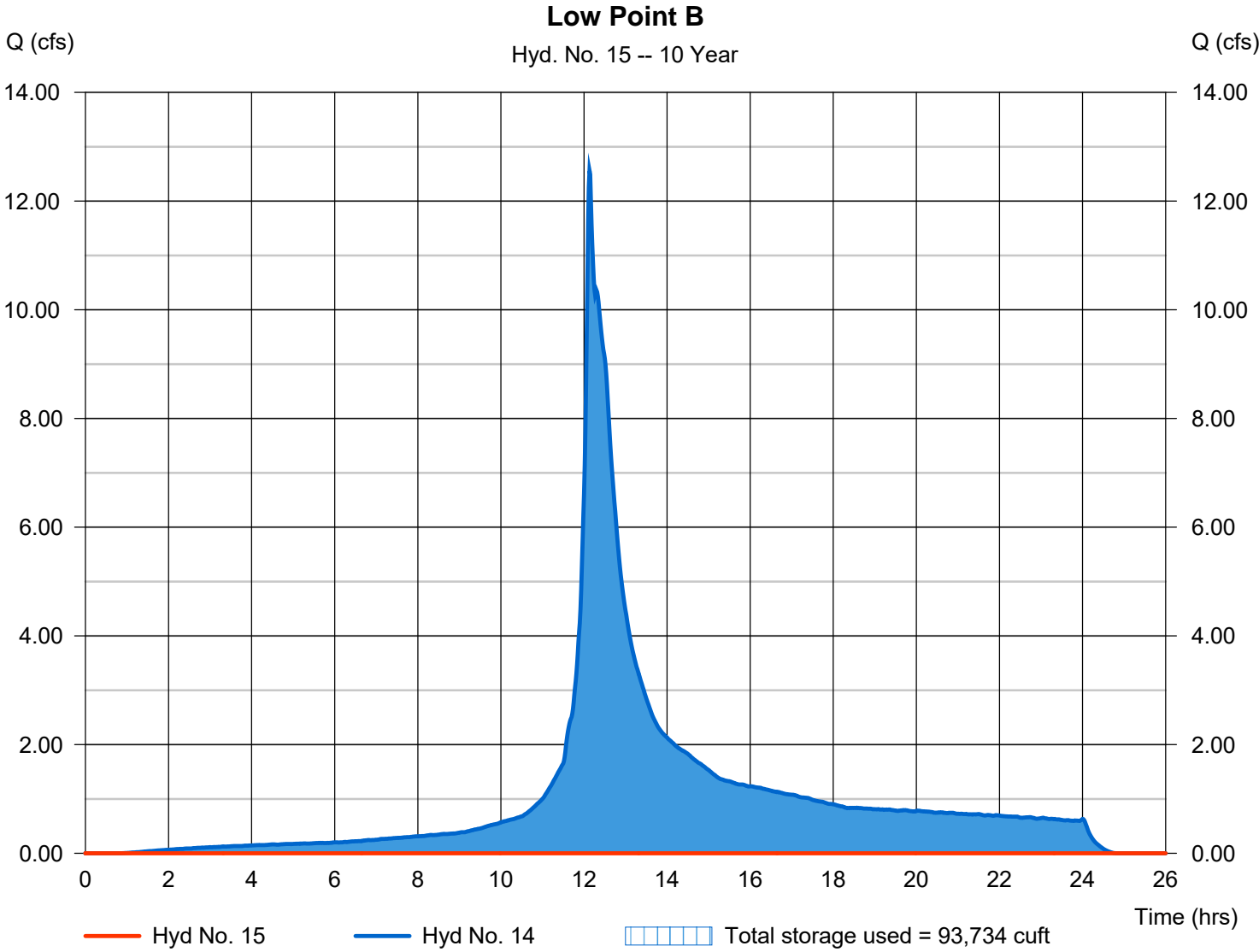
Wednesday, 03 / 9 / 2022

Hyd. No. 15

Low Point B

Hydrograph type	= Reservoir	Peak discharge	= 0.000 cfs
Storm frequency	= 10 yrs	Time to peak	= n/a
Time interval	= 1 min	Hyd. volume	= 0 cuft
Inflow hyd. No.	= 14 - EDA-B	Max. Elevation	= 596.72 ft
Reservoir name	= Low Point B	Max. Storage	= 93,734 cuft

Storage Indication method used.



Hydrograph Report

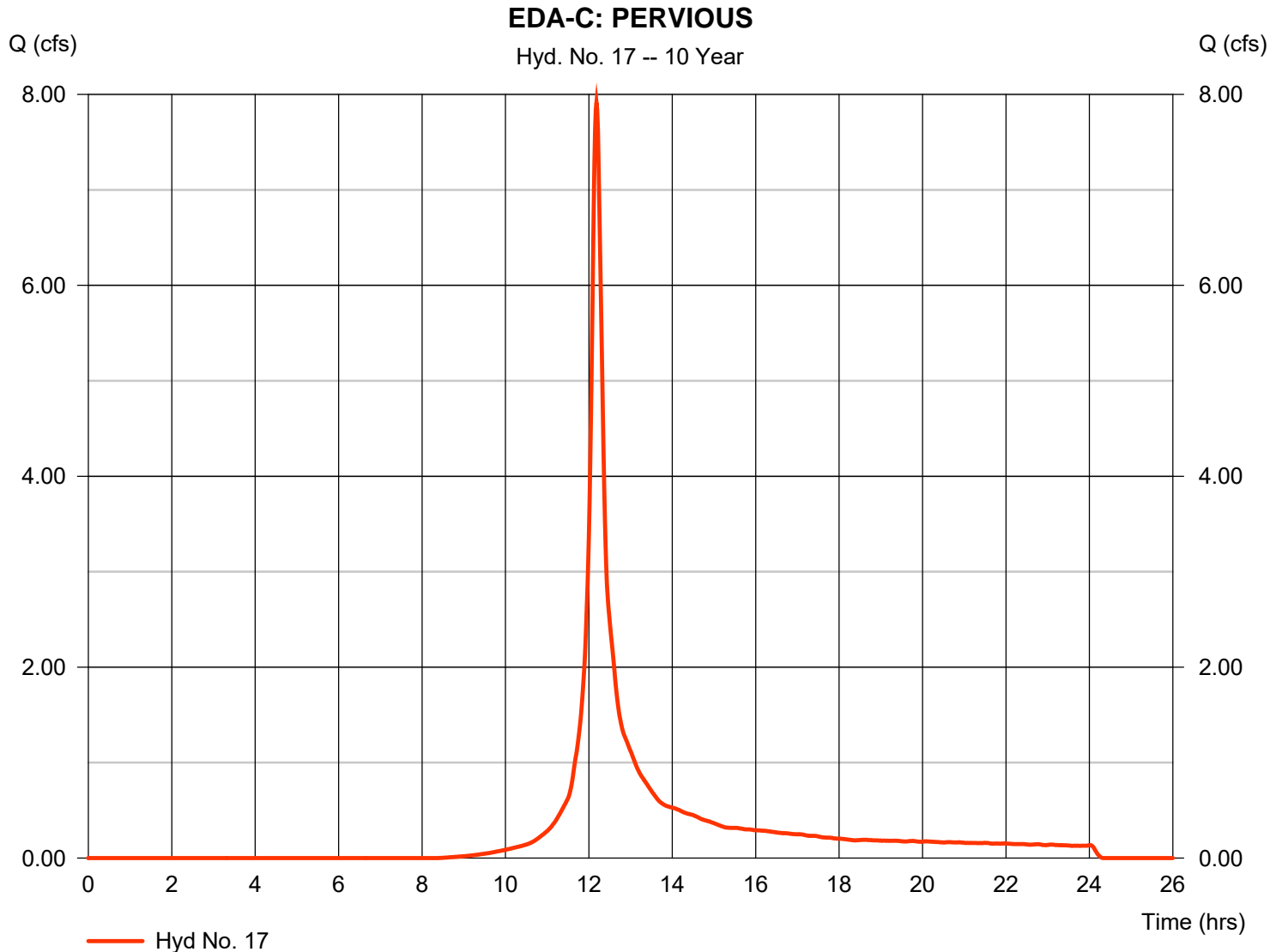
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

Wednesday, 03 / 9 / 2022

Hyd. No. 17

EDA-C: PERVIOUS

Hydrograph type	= SCS Runoff	Peak discharge	= 7.912 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.18 hrs
Time interval	= 1 min	Hyd. volume	= 27,172 cuft
Drainage area	= 3.170 ac	Curve number	= 77
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 12.70 min
Total precip.	= 4.73 in	Distribution	= Custom
Storm duration	= R:\Hydroflow Standards\NJ Reg Slope Rainfall Distribution\40A_C_1 min.cds		



Hydrograph Report

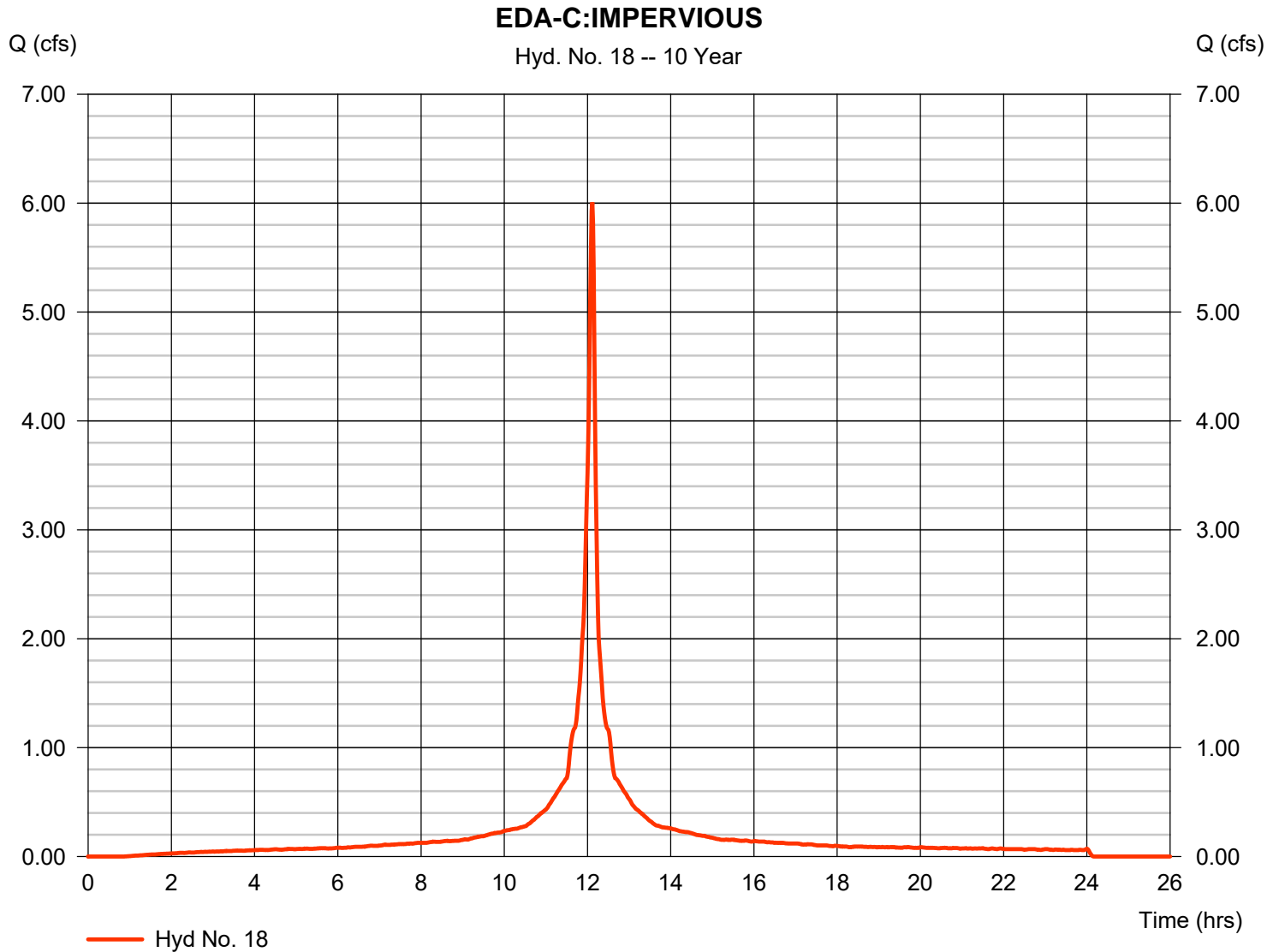
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

Wednesday, 03 / 9 / 2022

Hyd. No. 18

EDA-C:IMPERVIOUS

Hydrograph type	= SCS Runoff	Peak discharge	= 6.007 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.12 hrs
Time interval	= 1 min	Hyd. volume	= 19,513 cuft
Drainage area	= 1.160 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 6.00 min
Total precip.	= 4.73 in	Distribution	= Custom
Storm duration	= R:\Hydroflow Standards\NJ Reg Slope Rainfall Distribution\401A_C_1 min.cds		



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

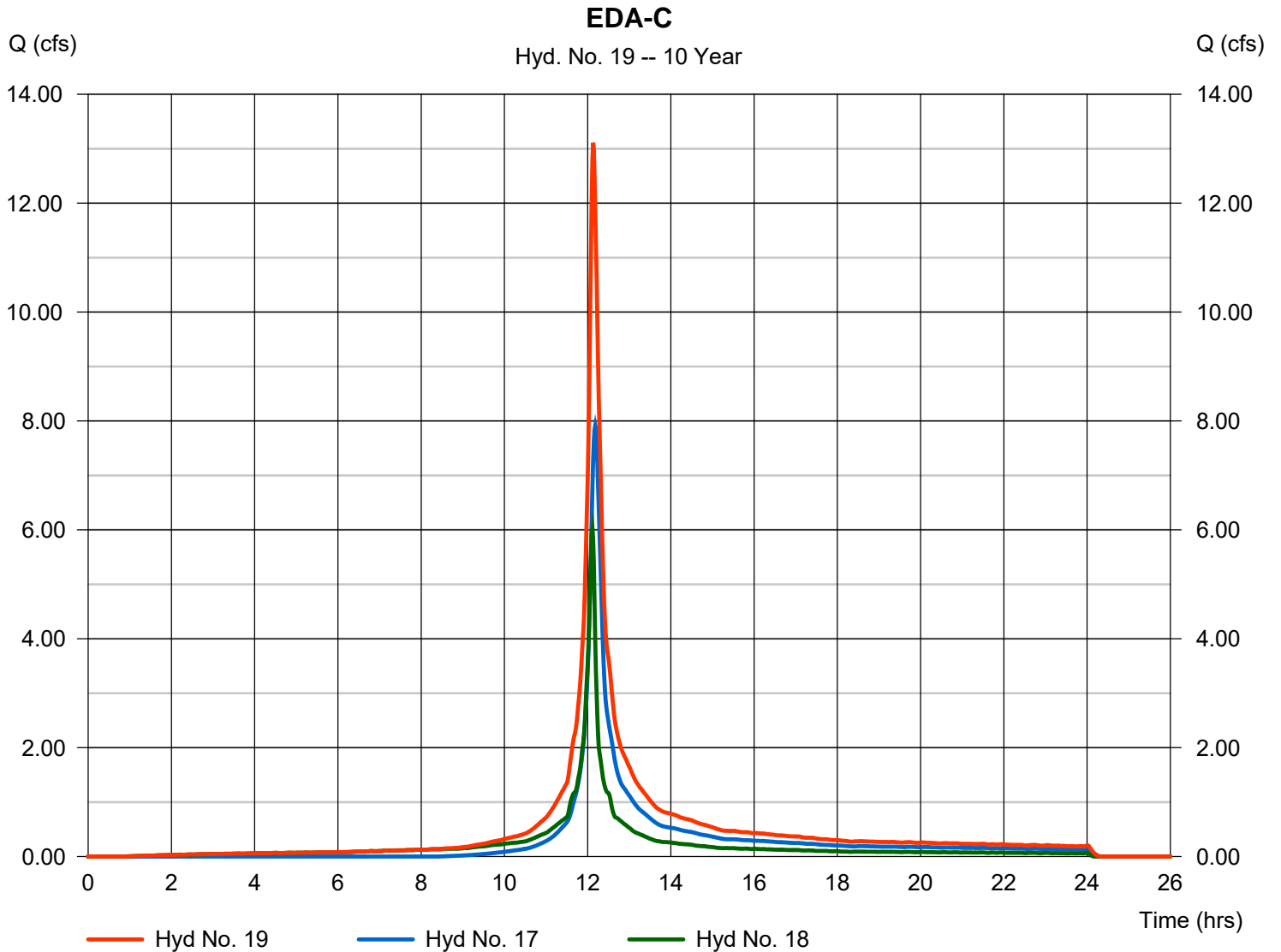
Wednesday, 03 / 9 / 2022

Hyd. No. 19

EDA-C

Hydrograph type = Combine
Storm frequency = 10 yrs
Time interval = 1 min
Inflow hyds. = 17, 18

Peak discharge = 13.11 cfs
Time to peak = 12.13 hrs
Hyd. volume = 46,685 cuft
Contrib. drain. area = 4.330 ac



Hydrograph Report

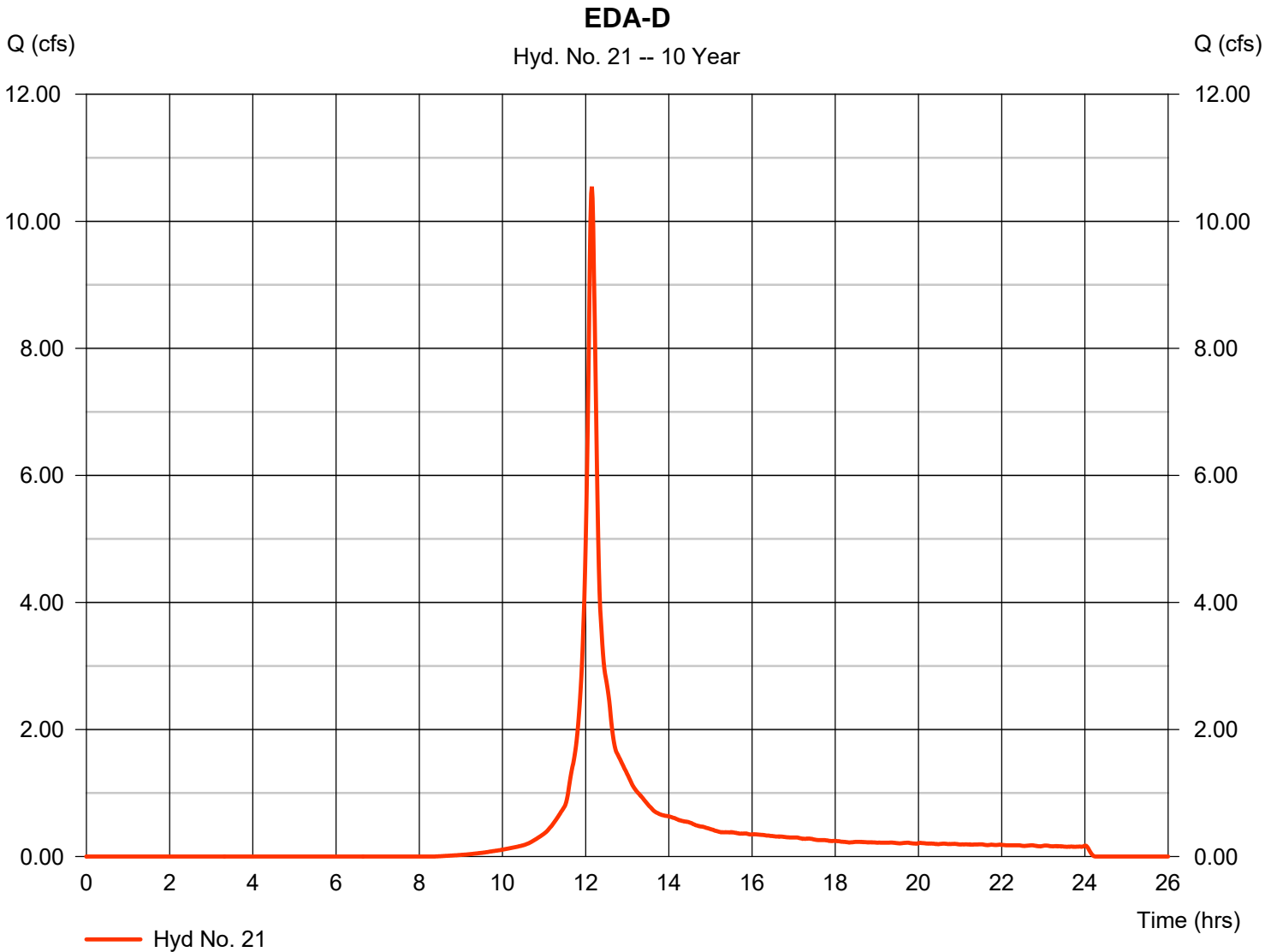
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Wednesday, 03 / 9 / 2022

Hyd. No. 21

EDA-D

Hydrograph type	= SCS Runoff	Peak discharge	= 10.55 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.15 hrs
Time interval	= 1 min	Hyd. volume	= 32,740 cuft
Drainage area	= 3.760 ac	Curve number	= 77
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 10.00 min
Total precip.	= 4.73 in	Distribution	= Custom
Storm duration	= R:\Hydroflow Standards\NJ Reg Slope Rainfall Distribution\401A_C_1 min.cds		



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

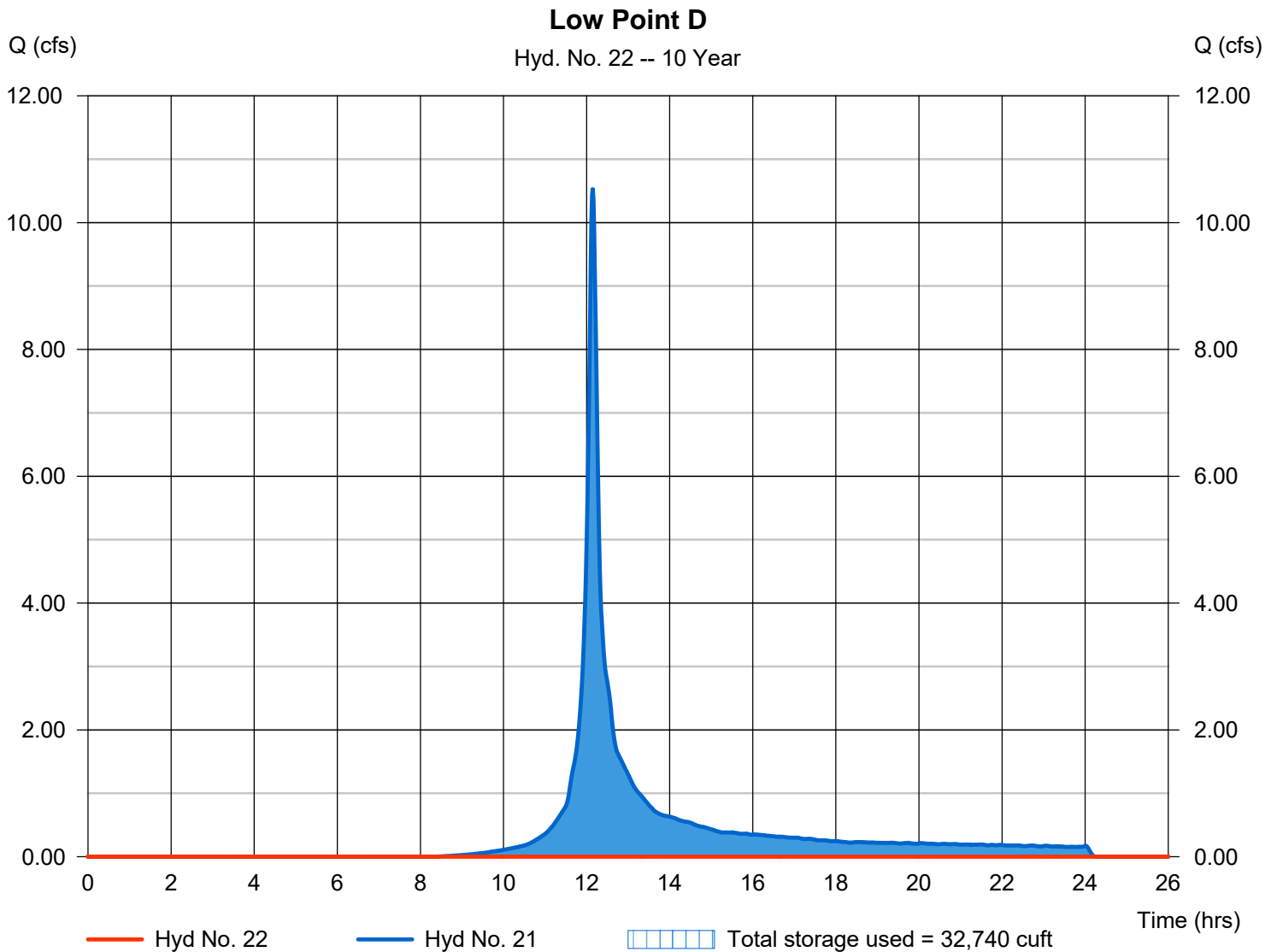
Wednesday, 03 / 9 / 2022

Hyd. No. 22

Low Point D

Hydrograph type	= Reservoir	Peak discharge	= 0.000 cfs
Storm frequency	= 10 yrs	Time to peak	= n/a
Time interval	= 1 min	Hyd. volume	= 0 cuft
Inflow hyd. No.	= 21 - EDA-D	Max. Elevation	= 596.59 ft
Reservoir name	= Low Point D	Max. Storage	= 32,740 cuft

Storage Indication method used.



Hydrograph Report

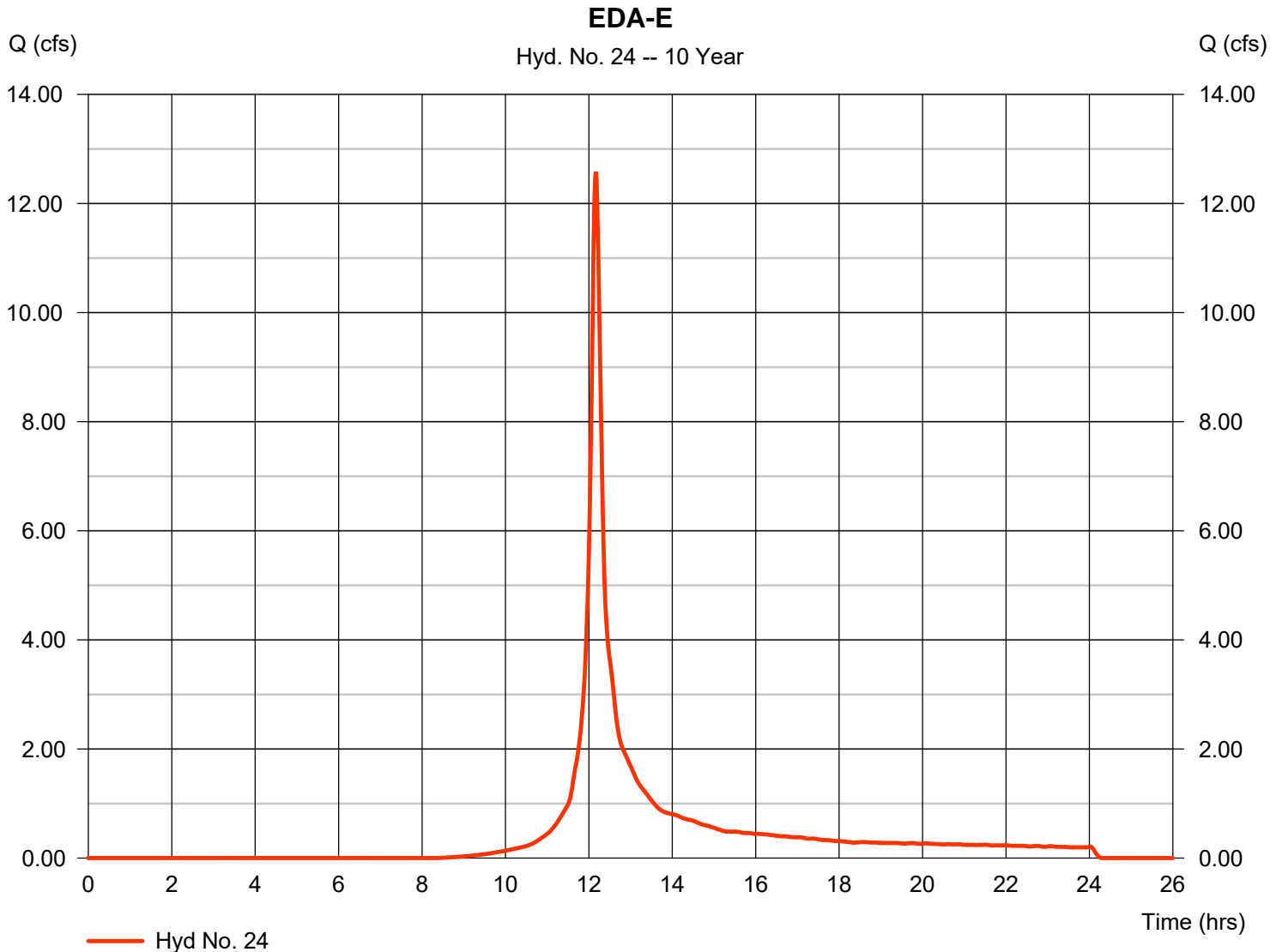
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

Wednesday, 03 / 9 / 2022

Hyd. No. 24

EDA-E

Hydrograph type	= SCS Runoff	Peak discharge	= 12.58 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.17 hrs
Time interval	= 1 min	Hyd. volume	= 41,568 cuft
Drainage area	= 4.690 ac	Curve number	= 77
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 11.40 min
Total precip.	= 4.73 in	Distribution	= Custom
Storm duration	= R:\Hydroflow Standards\NJ Reg Slope Rainfall Distribution\NOAA_C_1 min.cds		



Hydrograph Report

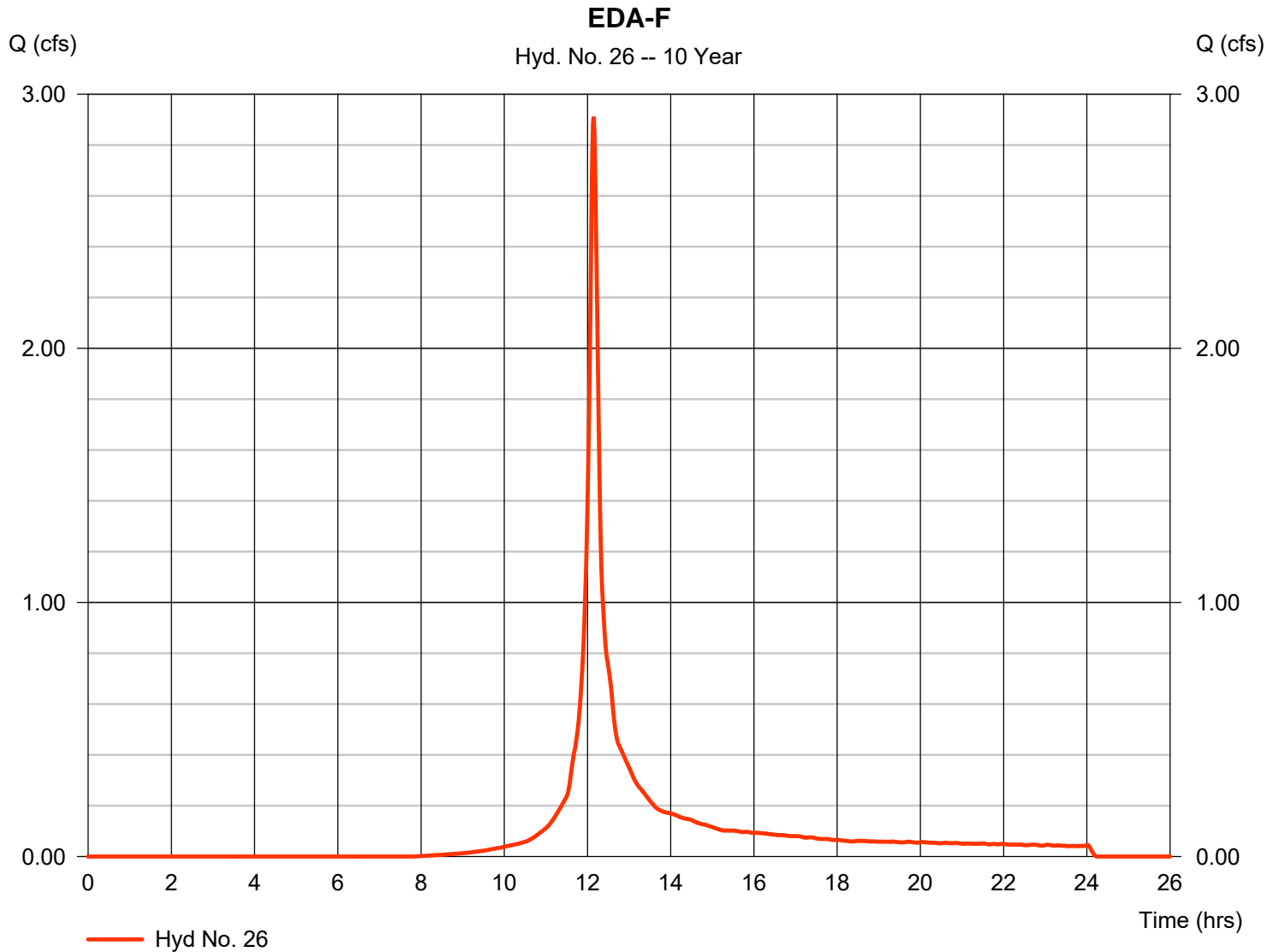
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

Wednesday, 03 / 9 / 2022

Hyd. No. 26

EDA-F

Hydrograph type	= SCS Runoff	Peak discharge	= 2.911 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.15 hrs
Time interval	= 1 min	Hyd. volume	= 9,052 cuft
Drainage area	= 0.970 ac	Curve number	= 79
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 10.00 min
Total precip.	= 4.73 in	Distribution	= Custom
Storm duration	= R:\Hydroflow Standards\NJ Reg Storm Rainfall Distribution\401A_C_1 min.cds		



Hydrograph Report

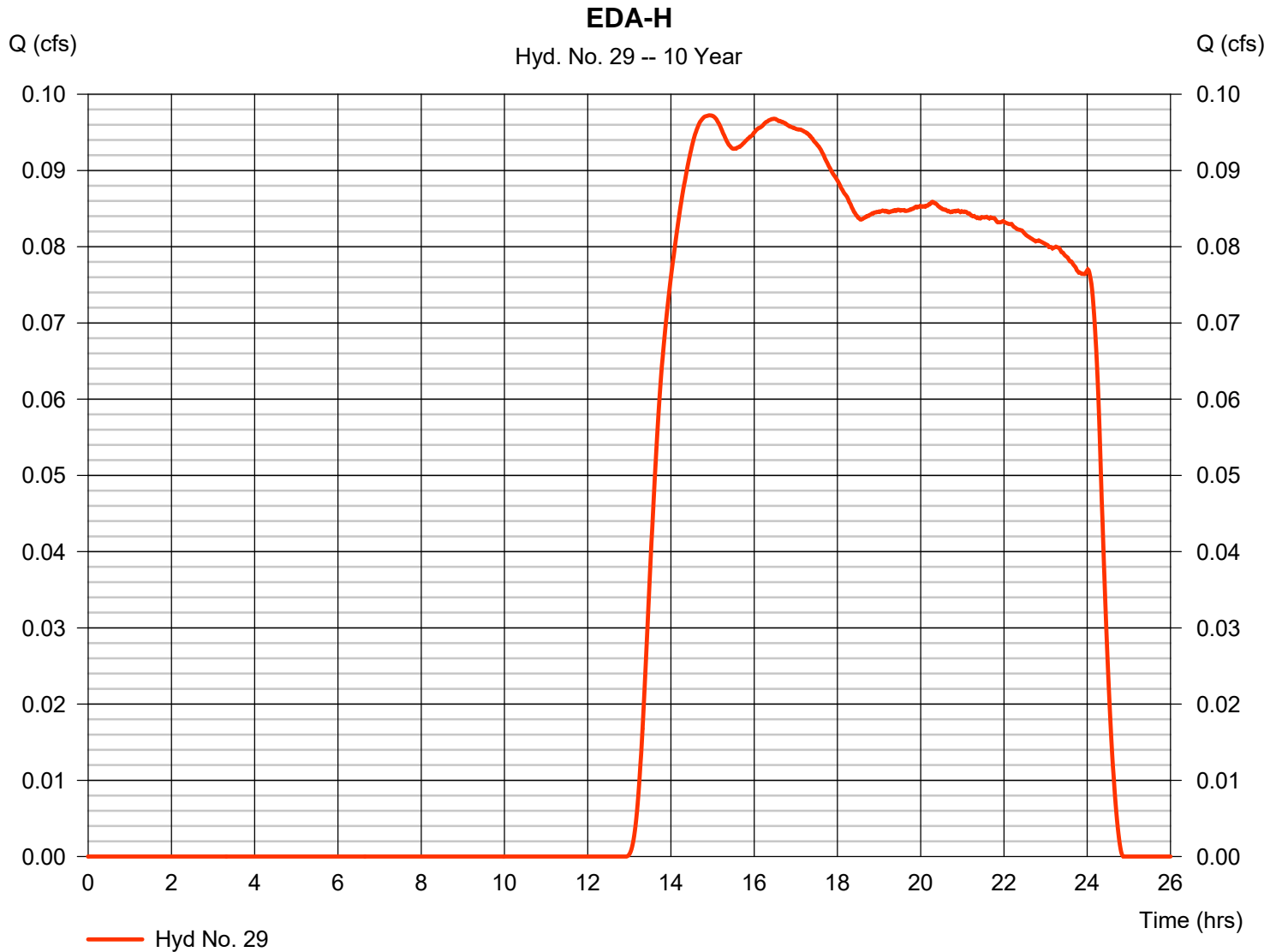
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

Wednesday, 03 / 9 / 2022

Hyd. No. 29

EDA-H

Hydrograph type	= SCS Runoff	Peak discharge	= 0.097 cfs
Storm frequency	= 10 yrs	Time to peak	= 14.93 hrs
Time interval	= 1 min	Hyd. volume	= 3,392 cuft
Drainage area	= 12.920 ac	Curve number	= 36
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 33.50 min
Total precip.	= 4.73 in	Distribution	= Custom
Storm duration	= R:\Hydroflow Standards\NJ Reg Storm Rainfall Distribution\NOAA_C_1 min.cds		



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

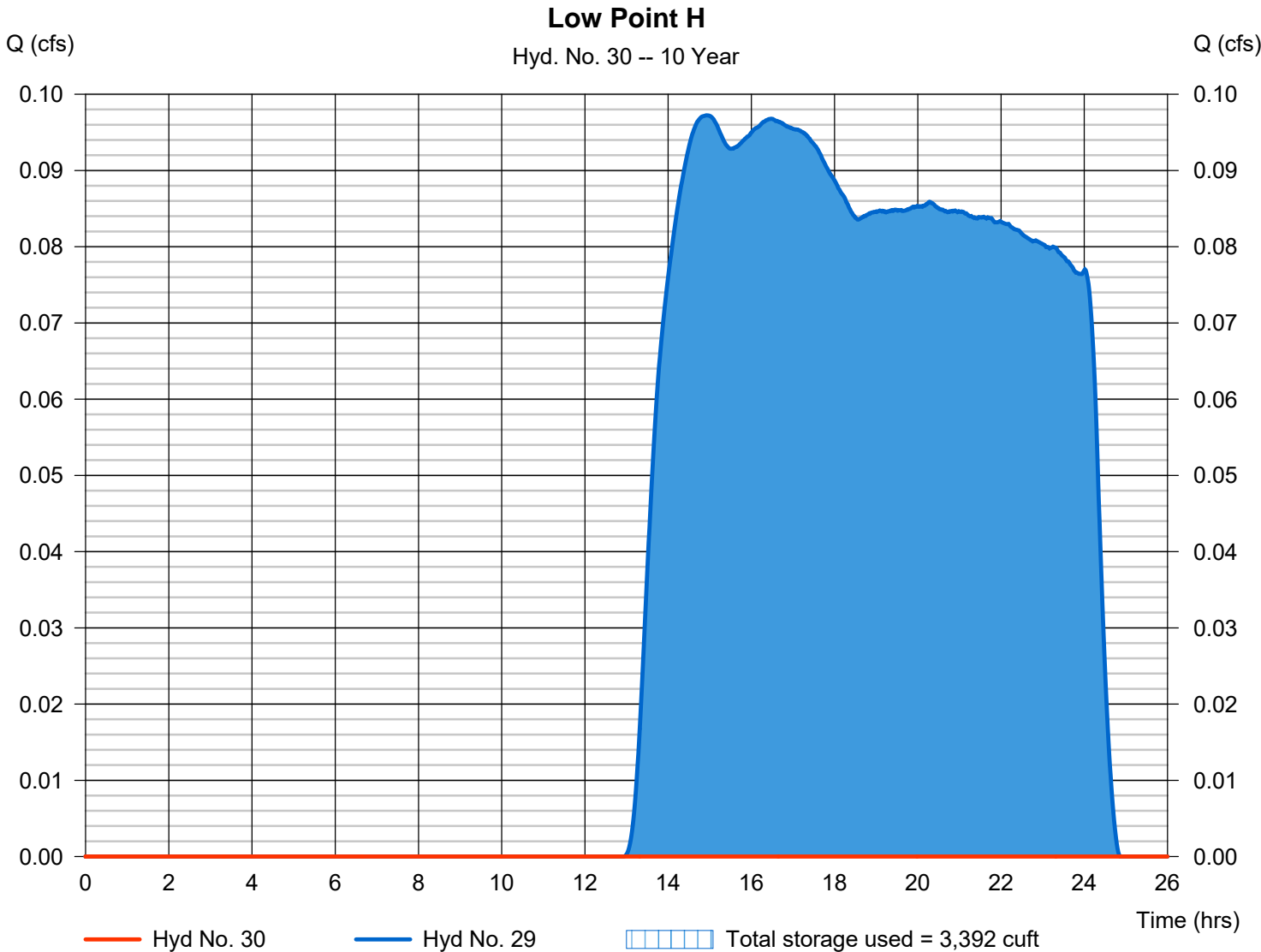
Wednesday, 03 / 9 / 2022

Hyd. No. 30

Low Point H

Hydrograph type	= Reservoir	Peak discharge	= 0.000 cfs
Storm frequency	= 10 yrs	Time to peak	= n/a
Time interval	= 1 min	Hyd. volume	= 0 cuft
Inflow hyd. No.	= 29 - EDA-H	Max. Elevation	= 595.72 ft
Reservoir name	= Low Point H	Max. Storage	= 3,392 cuft

Storage Indication method used.



Hydrograph Report

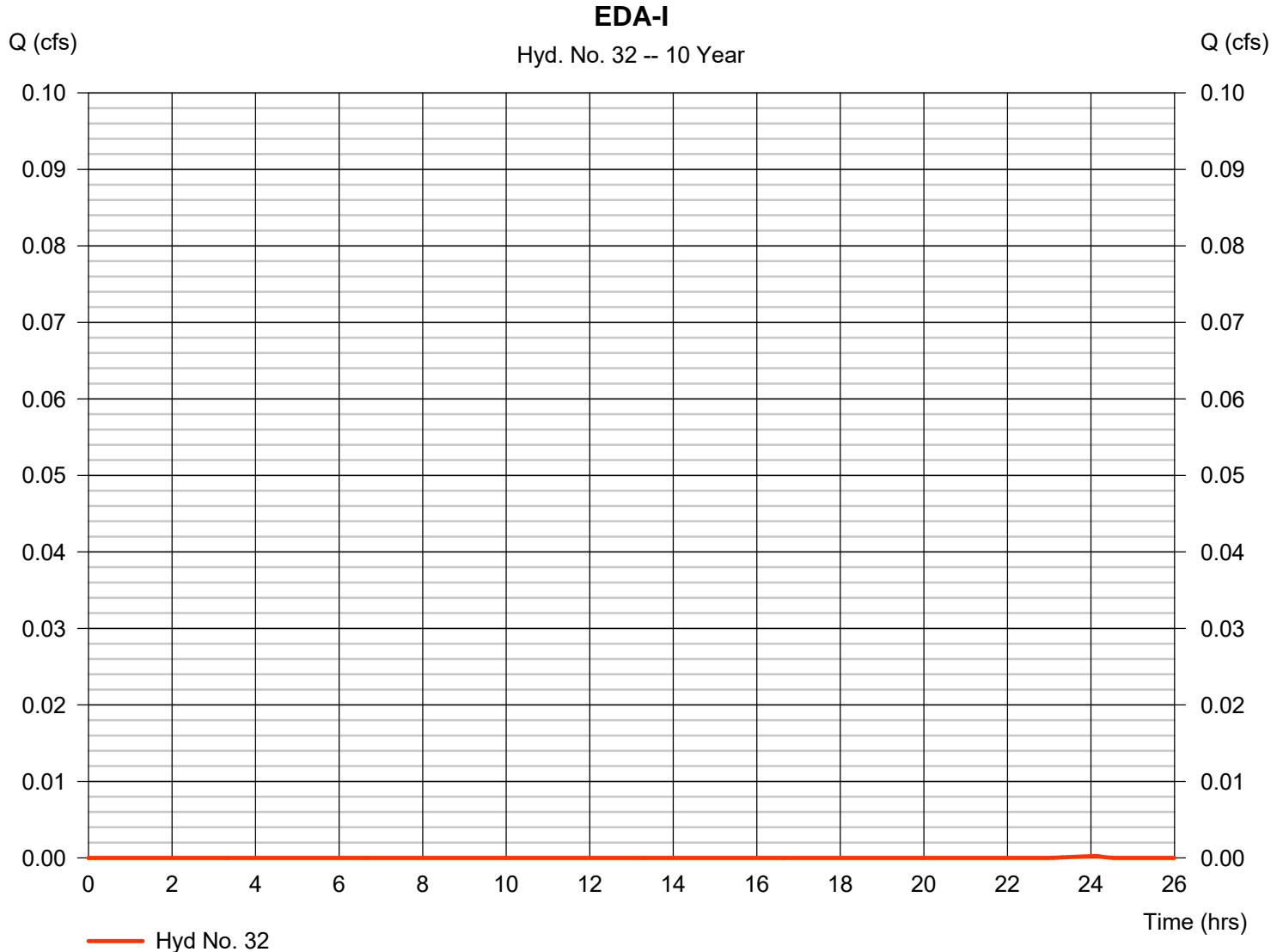
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

Wednesday, 03 / 9 / 2022

Hyd. No. 32

EDA-I

Hydrograph type	= SCS Runoff	Peak discharge	= 0.000 cfs
Storm frequency	= 10 yrs	Time to peak	= 24.07 hrs
Time interval	= 1 min	Hyd. volume	= 1 cuft
Drainage area	= 1.100 ac	Curve number	= 30
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 22.10 min
Total precip.	= 4.73 in	Distribution	= Custom
Storm duration	= R:\Hydroflow Standards\NJ Reg Slope Rainfall Distribution\401A_C_1 min.cds		



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

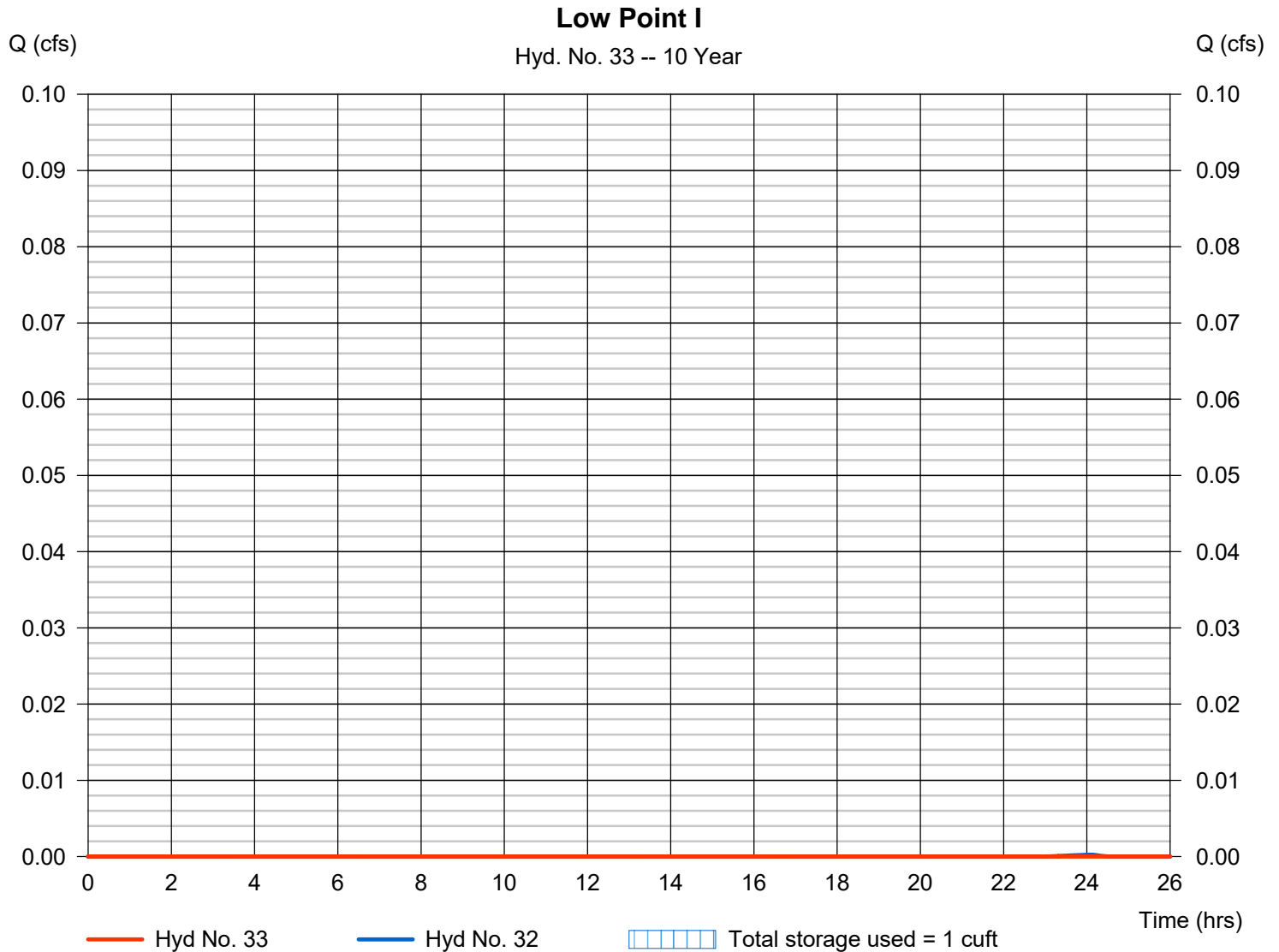
Wednesday, 03 / 9 / 2022

Hyd. No. 33

Low Point I

Hydrograph type	= Reservoir	Peak discharge	= 0.000 cfs
Storm frequency	= 10 yrs	Time to peak	= n/a
Time interval	= 1 min	Hyd. volume	= 0 cuft
Inflow hyd. No.	= 32 - EDA-I	Max. Elevation	= 595.55 ft
Reservoir name	= Low Point I	Max. Storage	= 1 cuft

Storage Indication method used.



Hydrograph Report

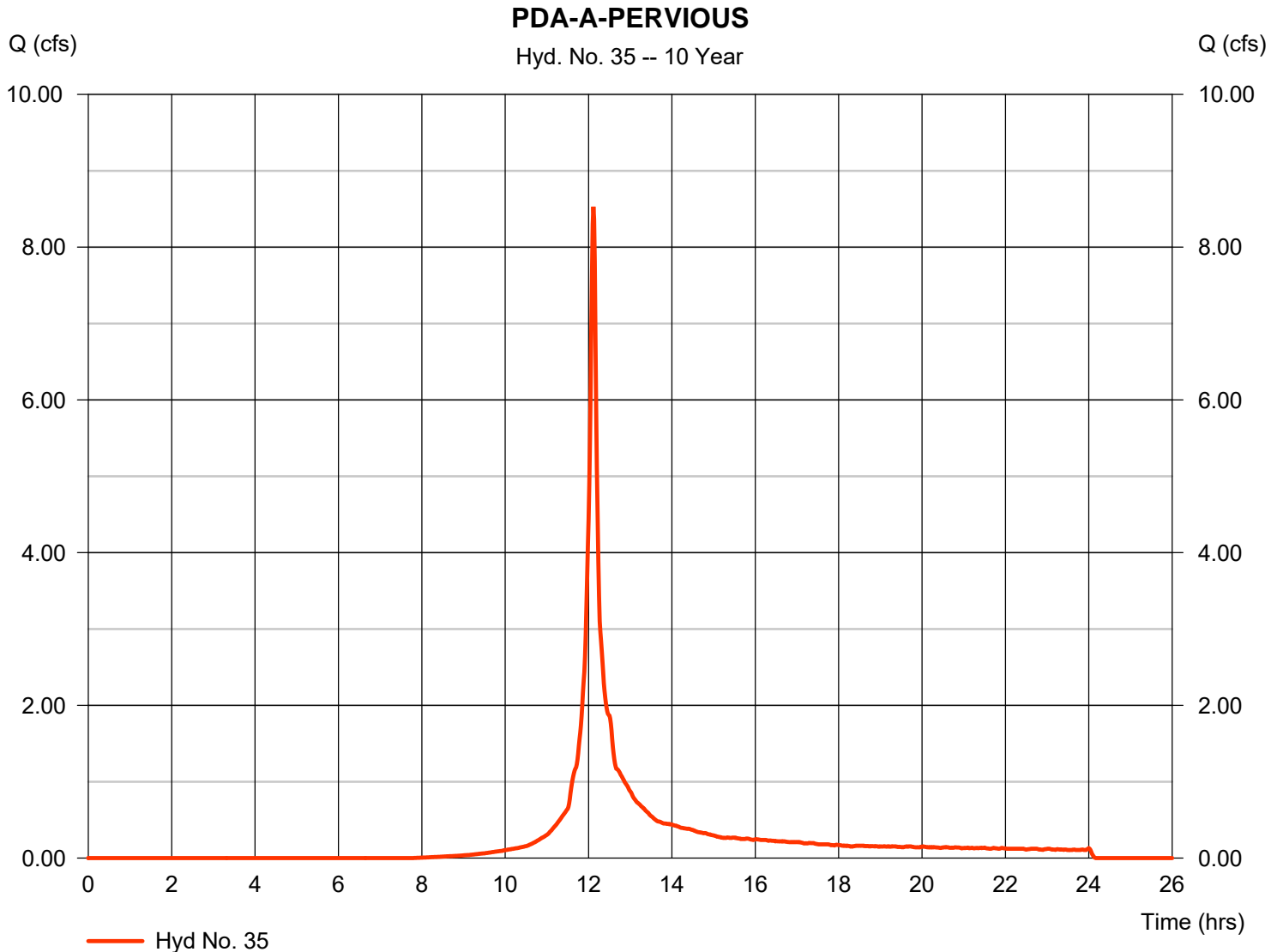
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

Wednesday, 03 / 9 / 2022

Hyd. No. 35

PDA-A-PERVIOUS

Hydrograph type	= SCS Runoff	Peak discharge	= 8.530 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.12 hrs
Time interval	= 1 min	Hyd. volume	= 23,577 cuft
Drainage area	= 2.450 ac	Curve number	= 79
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 6.00 min
Total precip.	= 4.73 in	Distribution	= Custom
Storm duration	= R:\Hydroflow Standards\NJ Reg Storm Rainfall Distribution\401A_C_1 min.cds		



Hydrograph Report

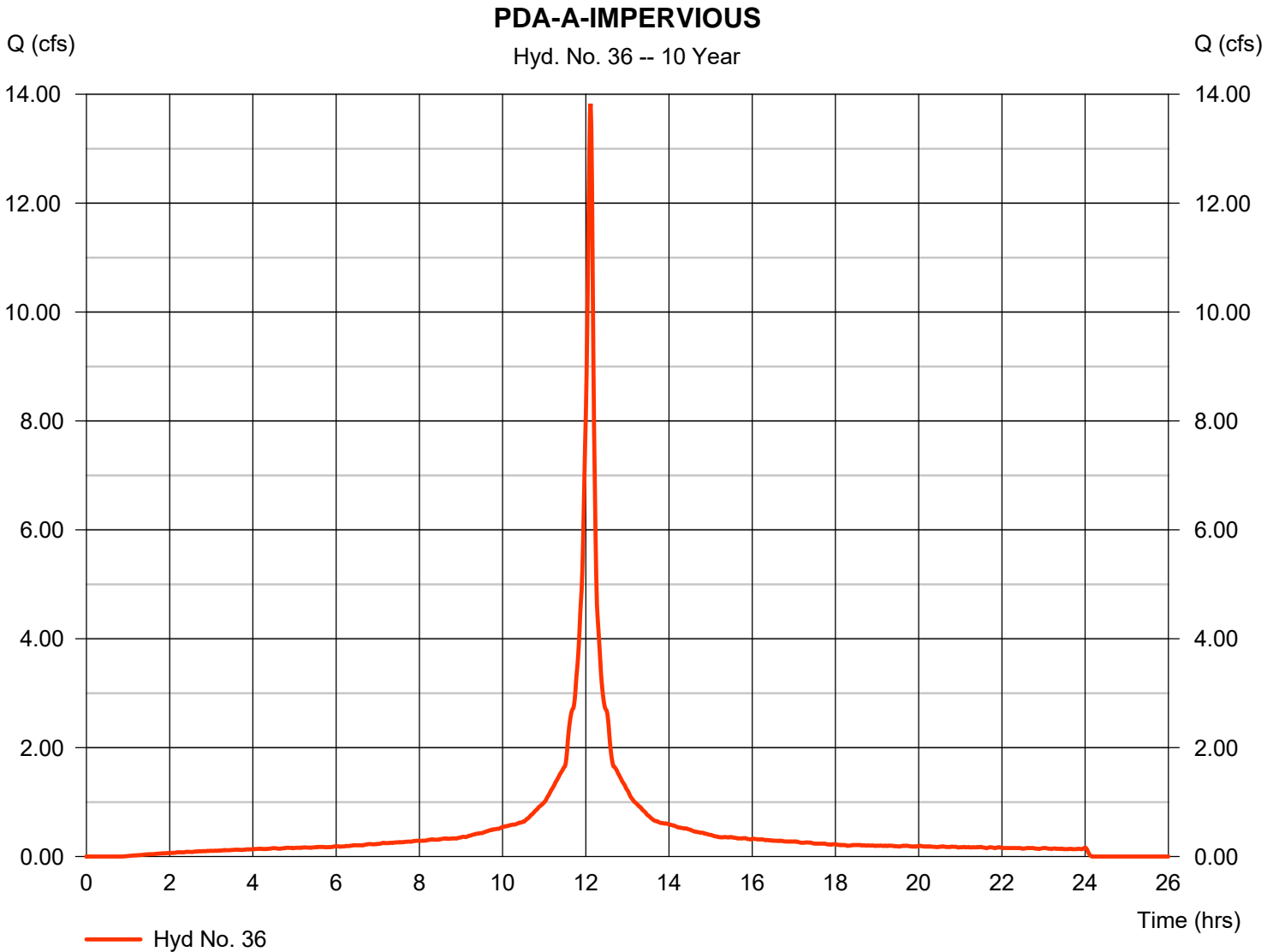
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

Wednesday, 03 / 9 / 2022

Hyd. No. 36

PDA-A-IMPERVIOUS

Hydrograph type	= SCS Runoff	Peak discharge	= 13.83 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.12 hrs
Time interval	= 1 min	Hyd. volume	= 44,913 cuft
Drainage area	= 2.670 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 6.00 min
Total precip.	= 4.73 in	Distribution	= Custom
Storm duration	= R:\Hydroflow Standards\NJ Reg Slope Rainfall Distribution\NOAA_C_1 min.cds		



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

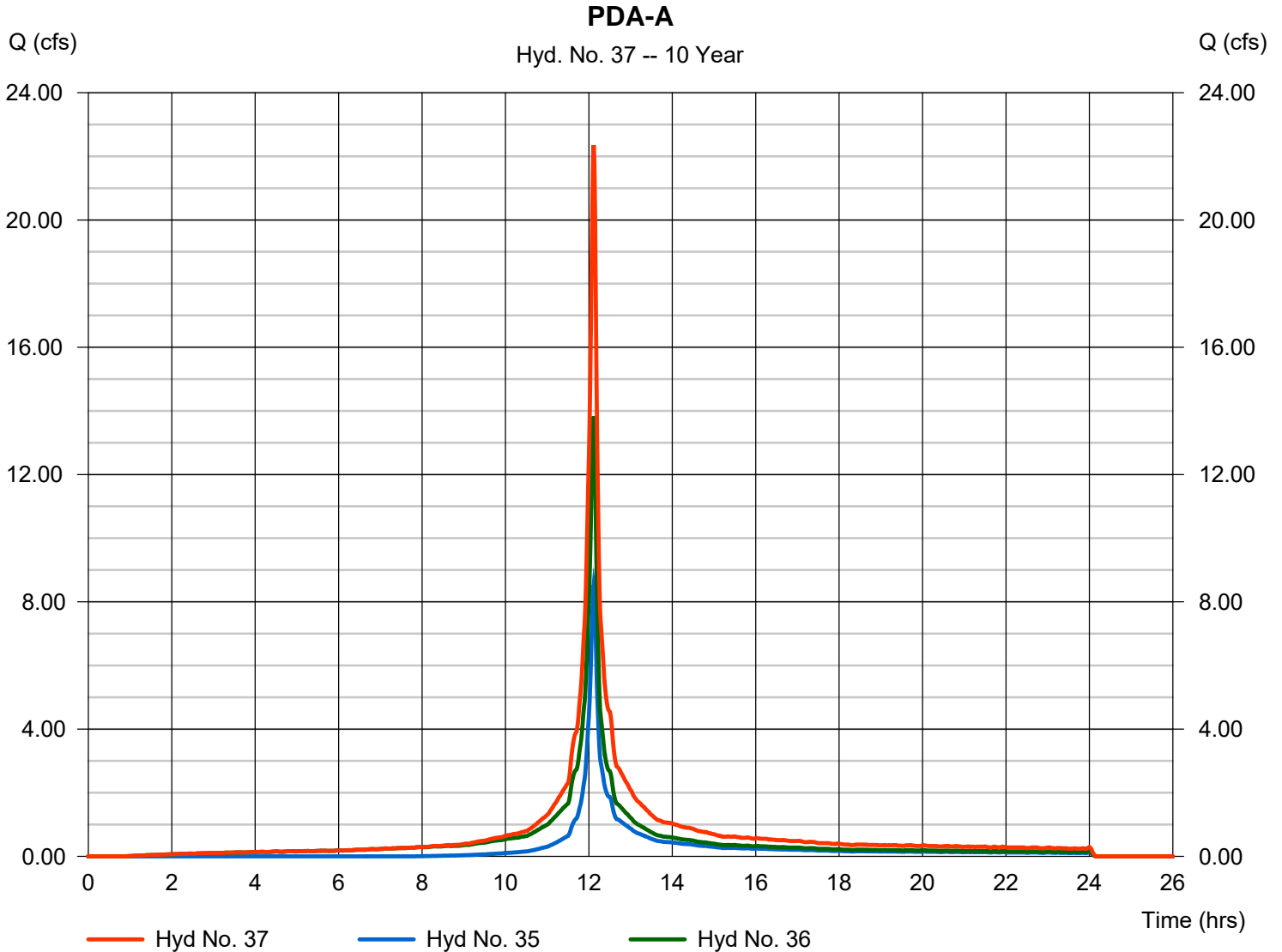
Wednesday, 03 / 9 / 2022

Hyd. No. 37

PDA-A

Hydrograph type = Combine
Storm frequency = 10 yrs
Time interval = 1 min
Inflow hyds. = 35, 36

Peak discharge = 22.36 cfs
Time to peak = 12.12 hrs
Hyd. volume = 68,490 cuft
Contrib. drain. area = 5.120 ac



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

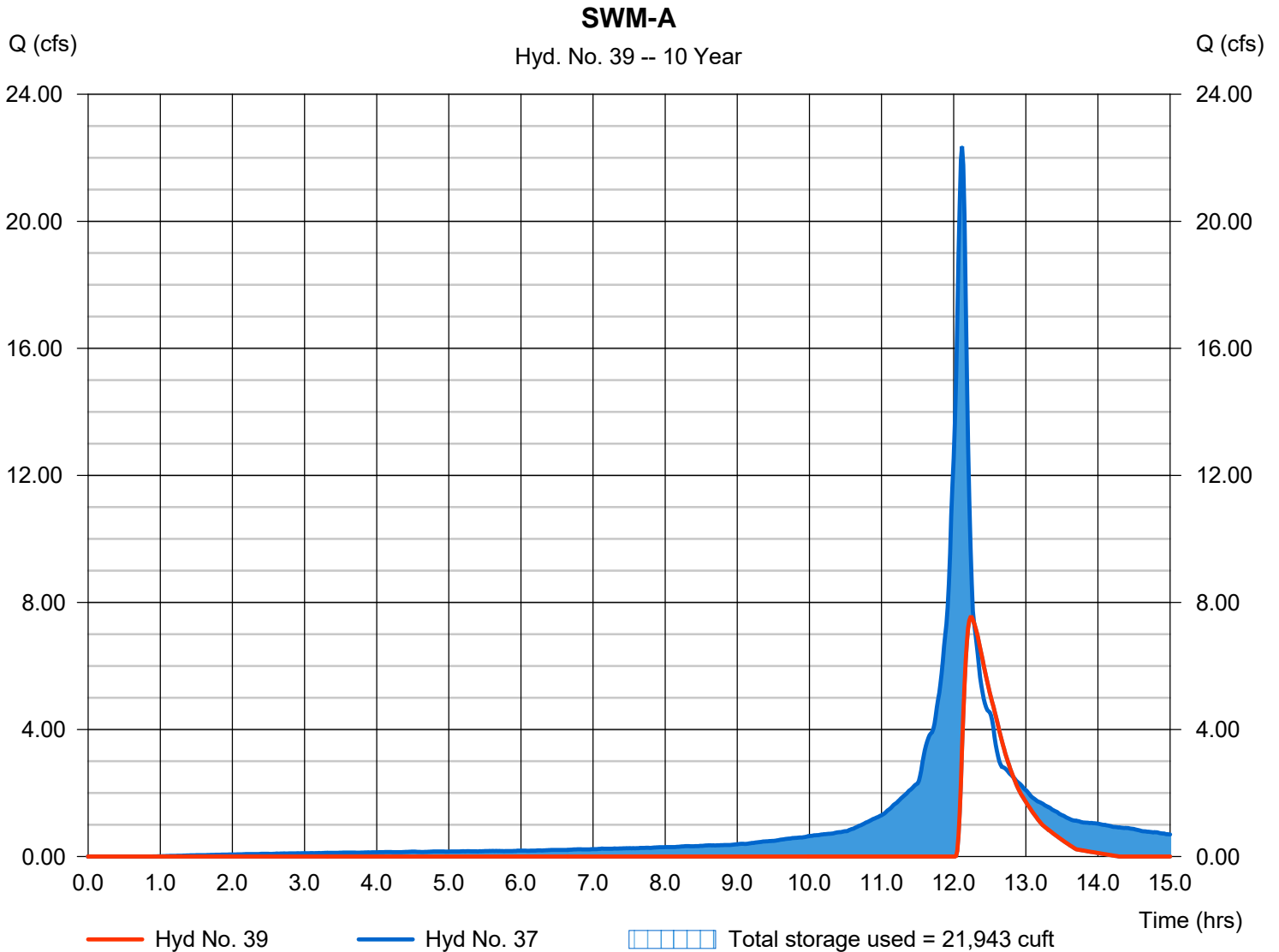
Wednesday, 03 / 9 / 2022

Hyd. No. 39

SWM-A

Hydrograph type	= Reservoir	Peak discharge	= 7.536 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.25 hrs
Time interval	= 1 min	Hyd. volume	= 17,254 cuft
Inflow hyd. No.	= 37 - PDA-A	Max. Elevation	= 596.25 ft
Reservoir name	= SWM-A	Max. Storage	= 21,943 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Hydrograph Report

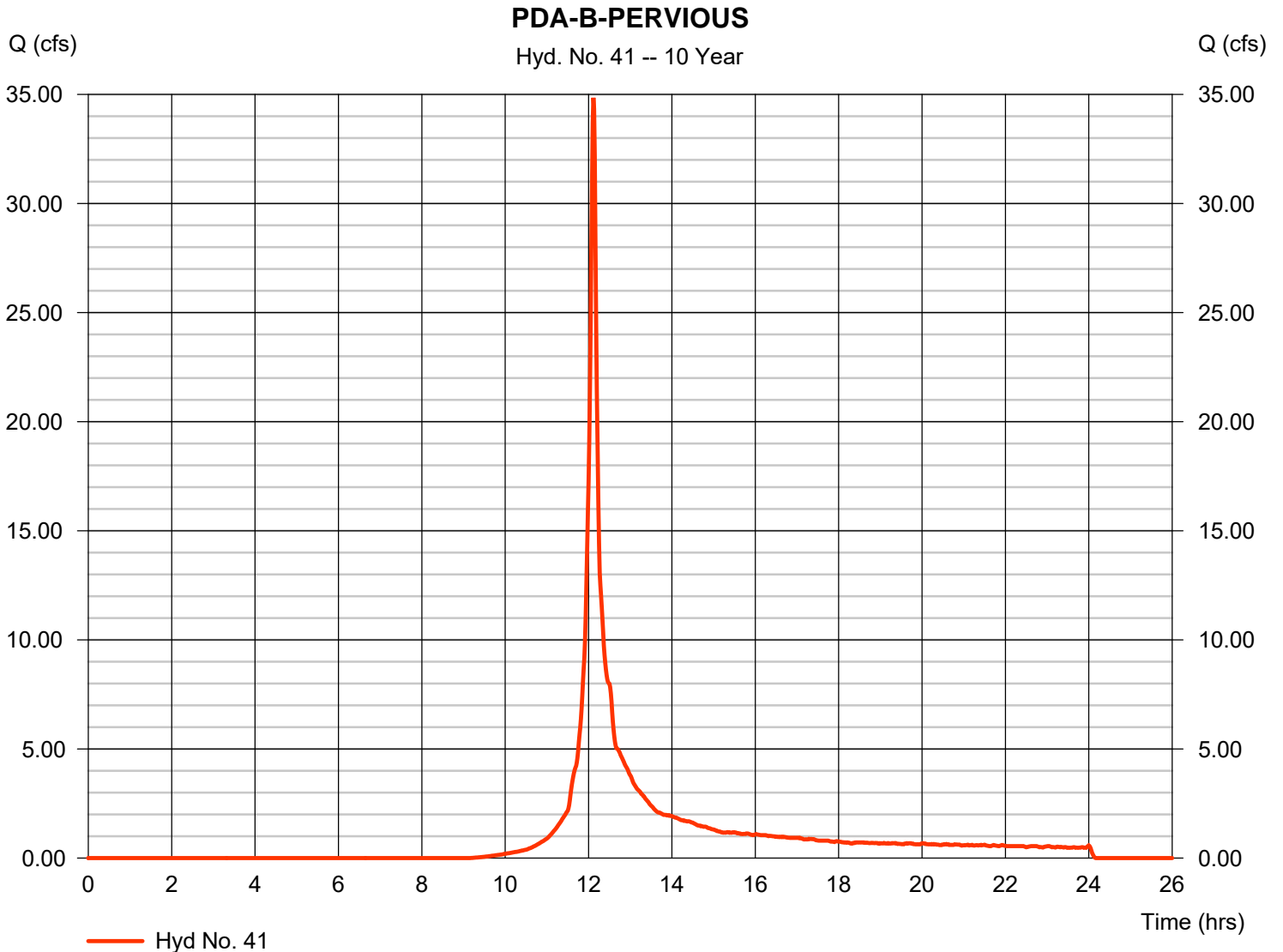
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

Wednesday, 03 / 9 / 2022

Hyd. No. 41

PDA-B-PERVIOUS

Hydrograph type	= SCS Runoff	Peak discharge	= 34.85 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.12 hrs
Time interval	= 1 min	Hyd. volume	= 96,055 cuft
Drainage area	= 11.930 ac	Curve number	= 74
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 6.00 min
Total precip.	= 4.73 in	Distribution	= Custom
Storm duration	= R:\Hydroflow Standards\NJ Reg Storm Rainfall Distribution\401A_C_1 min.cds		



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

Wednesday, 03 / 9 / 2022

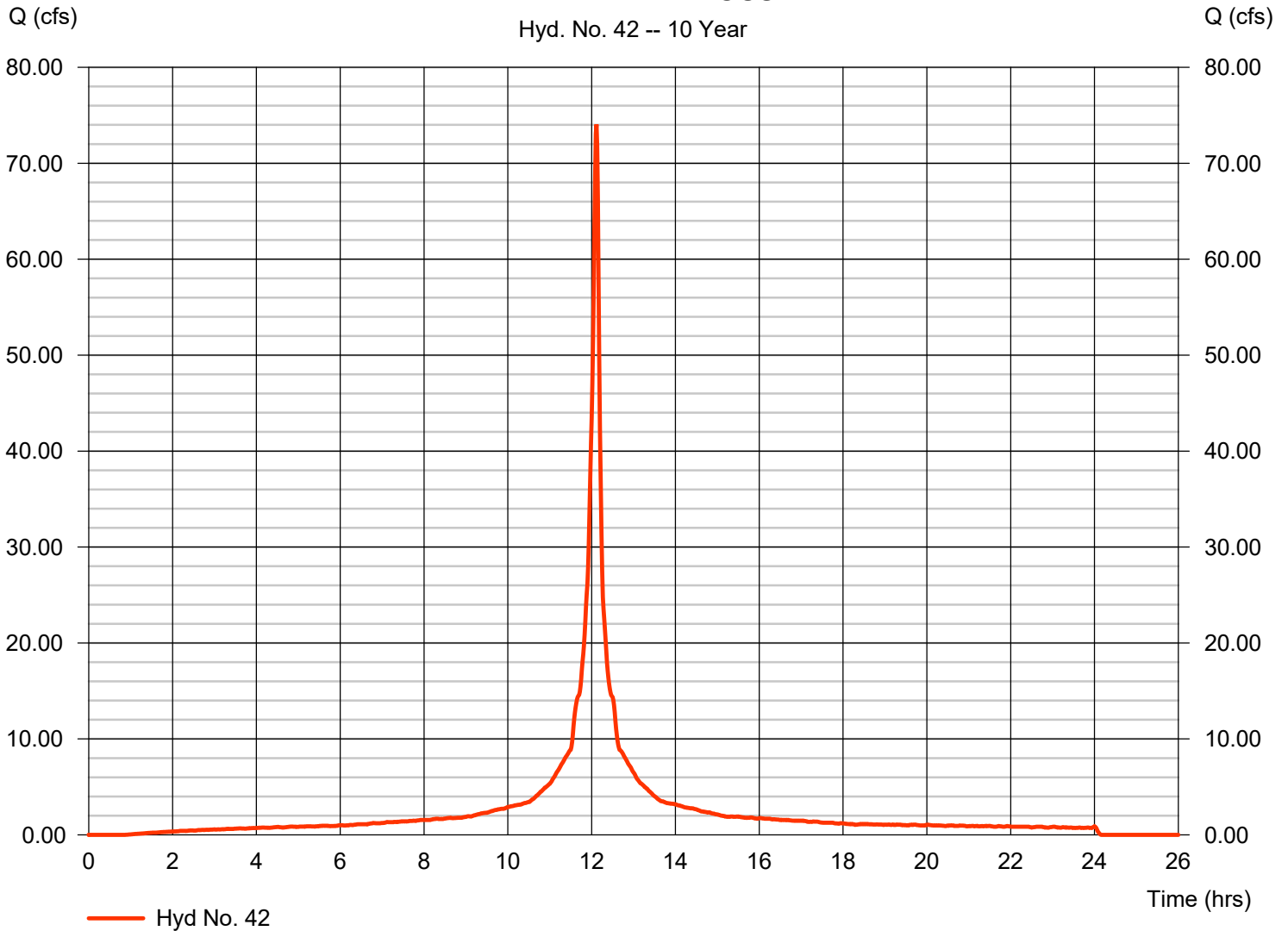
Hyd. No. 42

PDA-B1-IMPERVIOUS

Hydrograph type	= SCS Runoff	Peak discharge	= 74.05 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.12 hrs
Time interval	= 1 min	Hyd. volume	= 240,548 cuft
Drainage area	= 14.300 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 6.00 min
Total precip.	= 4.73 in	Distribution	= Custom
Storm duration	= R:\Hydroflow Standards\NJ Reg Storm Rainfall Distribution\40A_C_1 min.cds		

PDA-B1-IMPERVIOUS

Hyd. No. 42 -- 10 Year



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

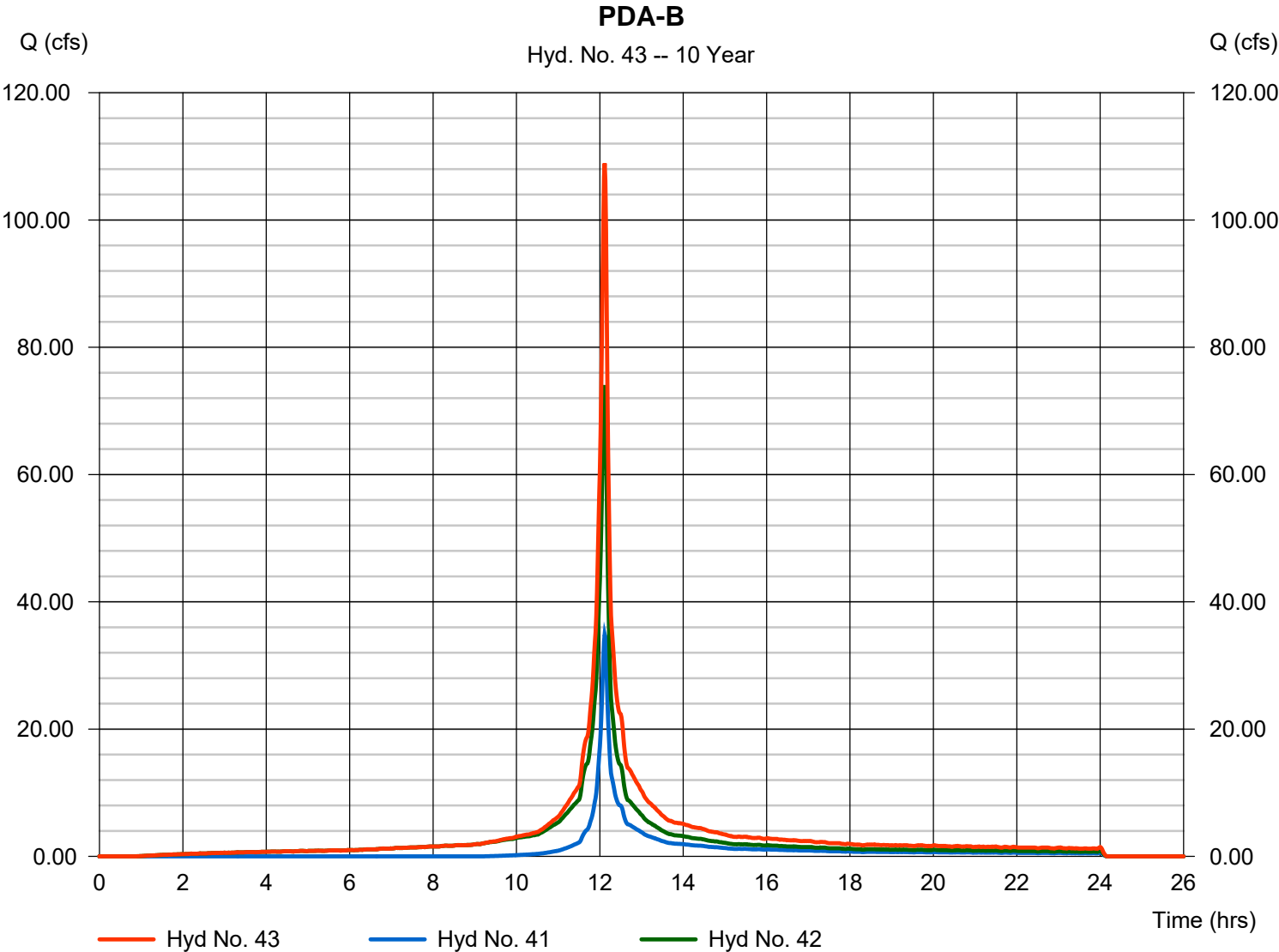
Wednesday, 03 / 9 / 2022

Hyd. No. 43

PDA-B

Hydrograph type = Combine
Storm frequency = 10 yrs
Time interval = 1 min
Inflow hyds. = 41, 42

Peak discharge = 108.90 cfs
Time to peak = 12.12 hrs
Hyd. volume = 336,603 cuft
Contrib. drain. area = 26.230 ac



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

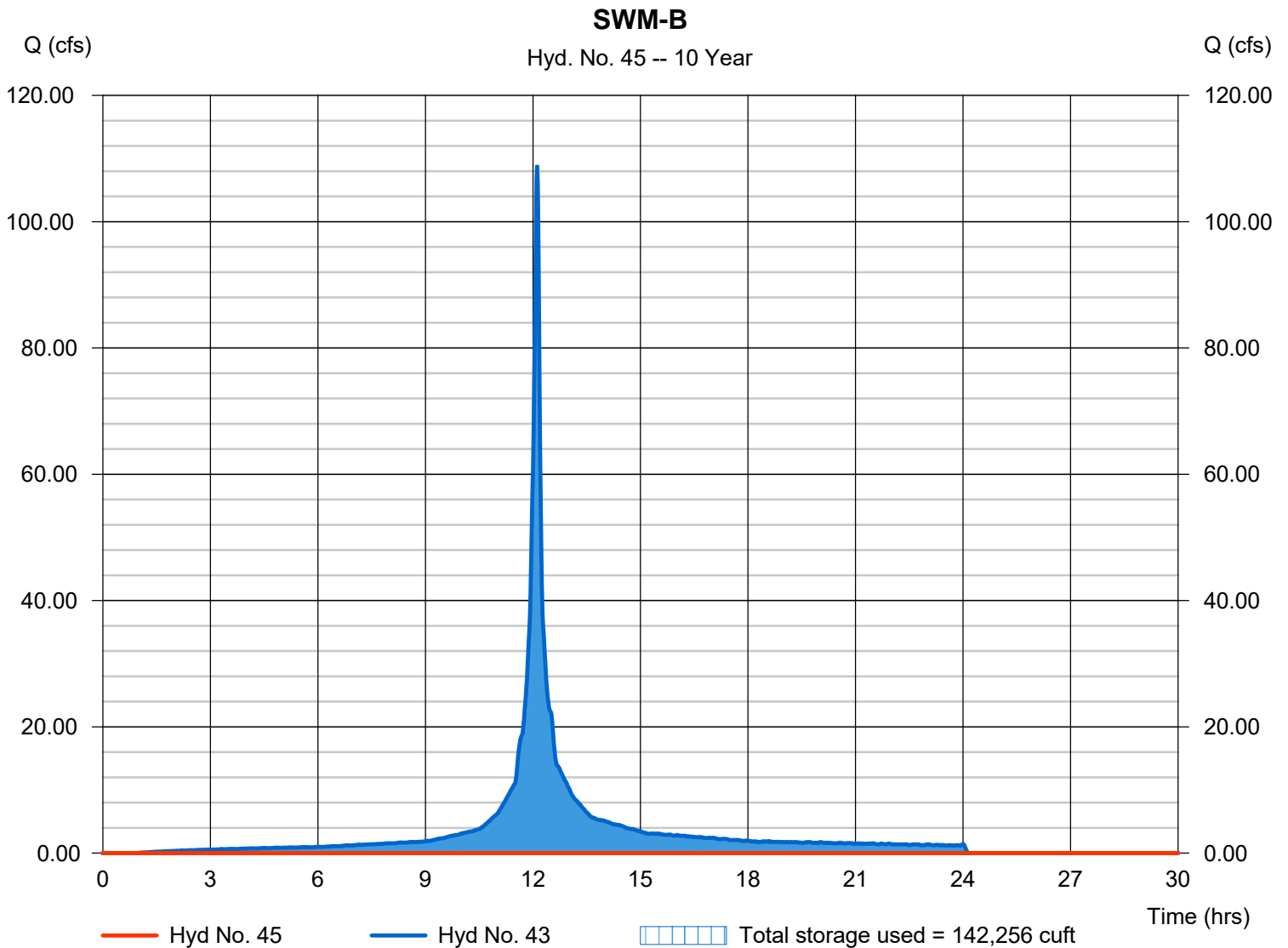
Wednesday, 03 / 9 / 2022

Hyd. No. 45

SWM-B

Hydrograph type	= Reservoir	Peak discharge	= 0.000 cfs
Storm frequency	= 10 yrs	Time to peak	= 13.17 hrs
Time interval	= 1 min	Hyd. volume	= 0 cuft
Inflow hyd. No.	= 43 - PDA-B	Max. Elevation	= 599.00 ft
Reservoir name	= SWM-B1	Max. Storage	= 142,256 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Hydrograph Report

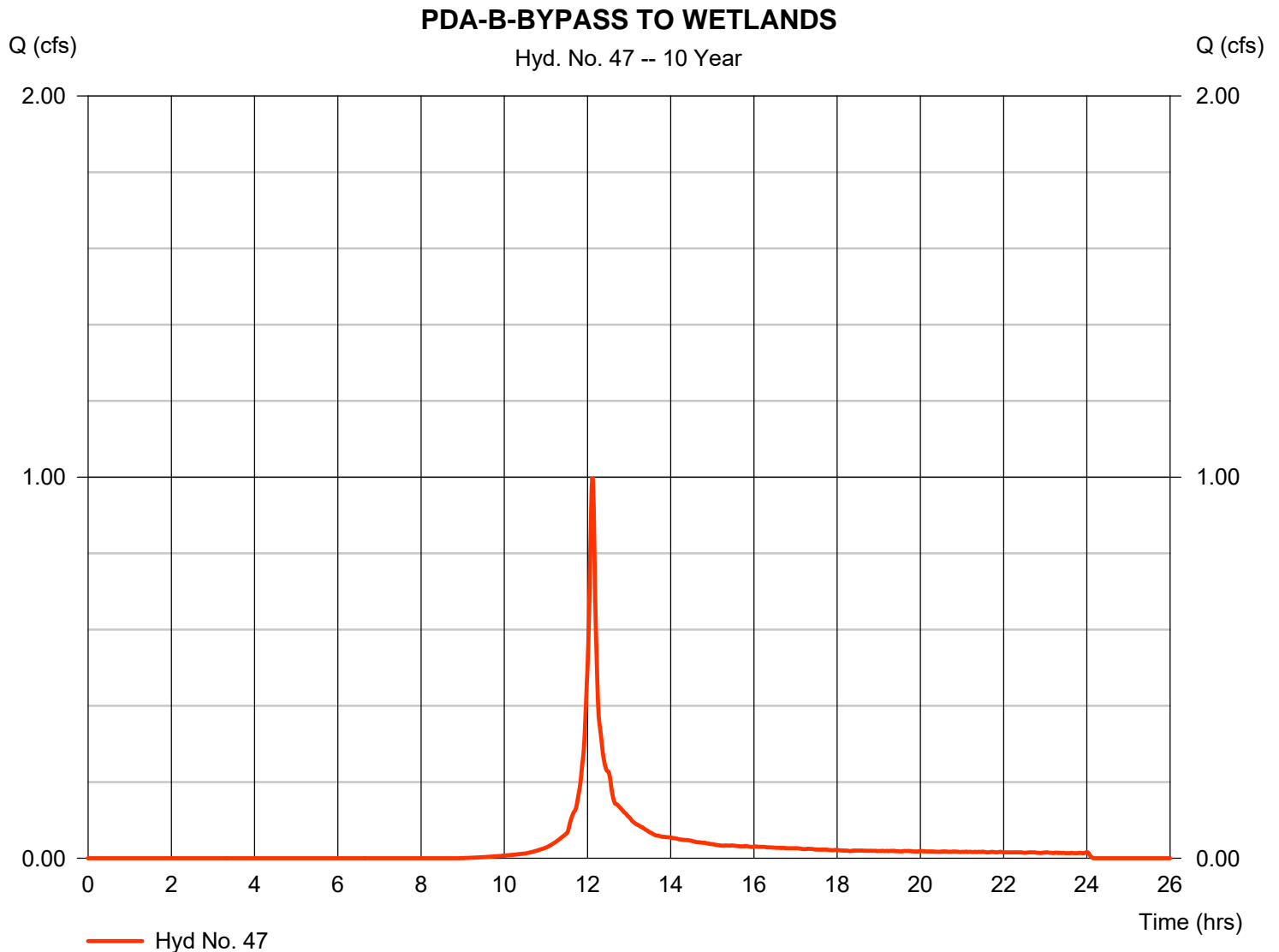
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

Wednesday, 03 / 9 / 2022

Hyd. No. 47

PDA-B-BYPASS TO WETLANDS

Hydrograph type	= SCS Runoff	Peak discharge	= 1.001 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.12 hrs
Time interval	= 1 min	Hyd. volume	= 2,757 cuft
Drainage area	= 0.330 ac	Curve number	= 75
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 6.00 min
Total precip.	= 4.73 in	Distribution	= Custom
Storm duration	= R:\Hydroflow Standards\NJ Reg Storm Rainfall Distribution\401A_C_1 min.cds		



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

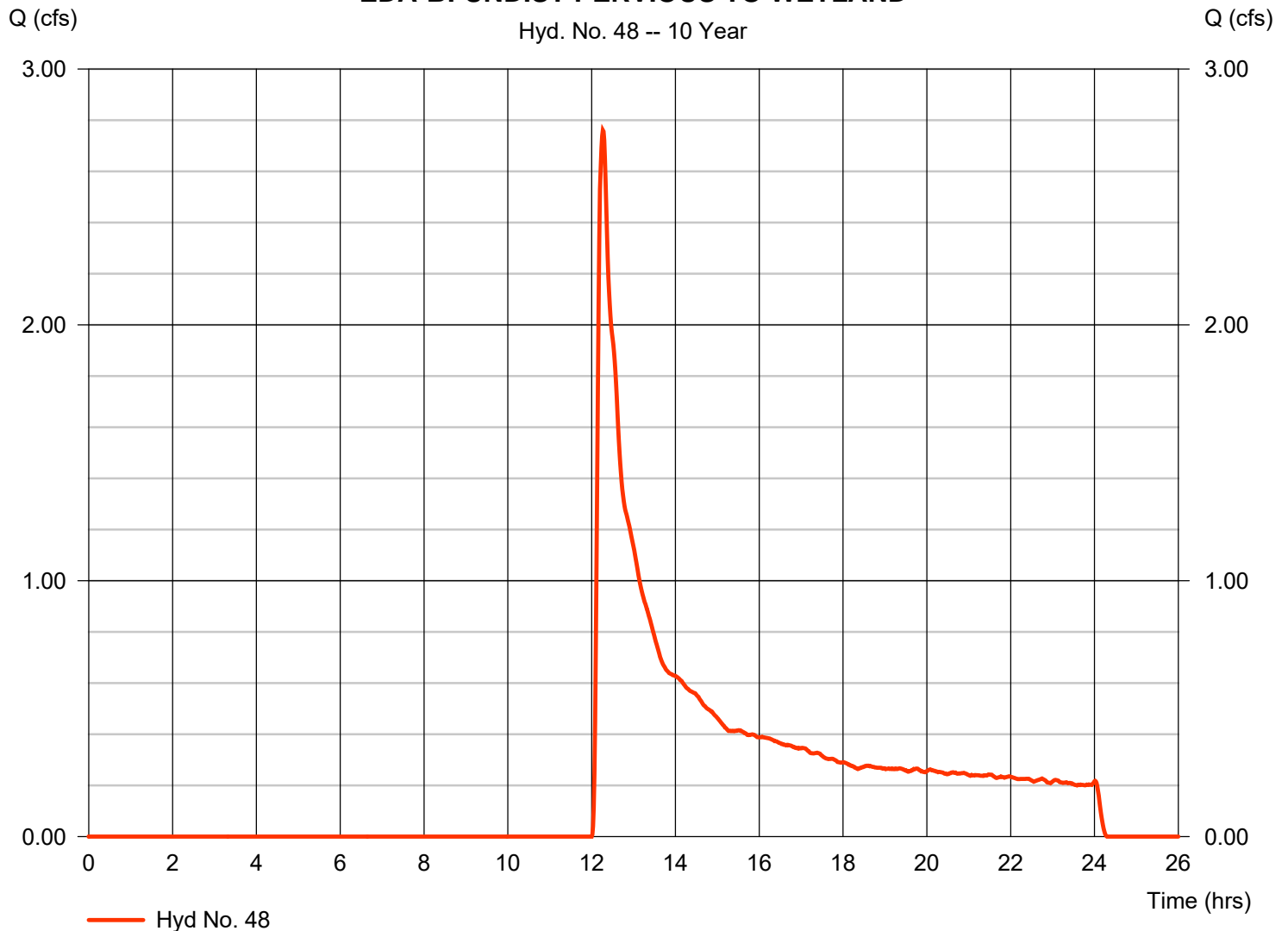
Wednesday, 03 / 9 / 2022

Hyd. No. 48

EDA-B: UNDIST PERVIOUS TO WETLAND

Hydrograph type	= SCS Runoff	Peak discharge	= 2.760 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.27 hrs
Time interval	= 1 min	Hyd. volume	= 20,025 cuft
Drainage area	= 12.170 ac	Curve number	= 47
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.70 min
Total precip.	= 4.73 in	Distribution	= Custom
Storm duration	= R:\Hydroflow Standards\NJ Reg Storm Rainfall Distribution\401A_C_1 min.cds		

EDA-B: UNDIST PERVIOUS TO WETLAND



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

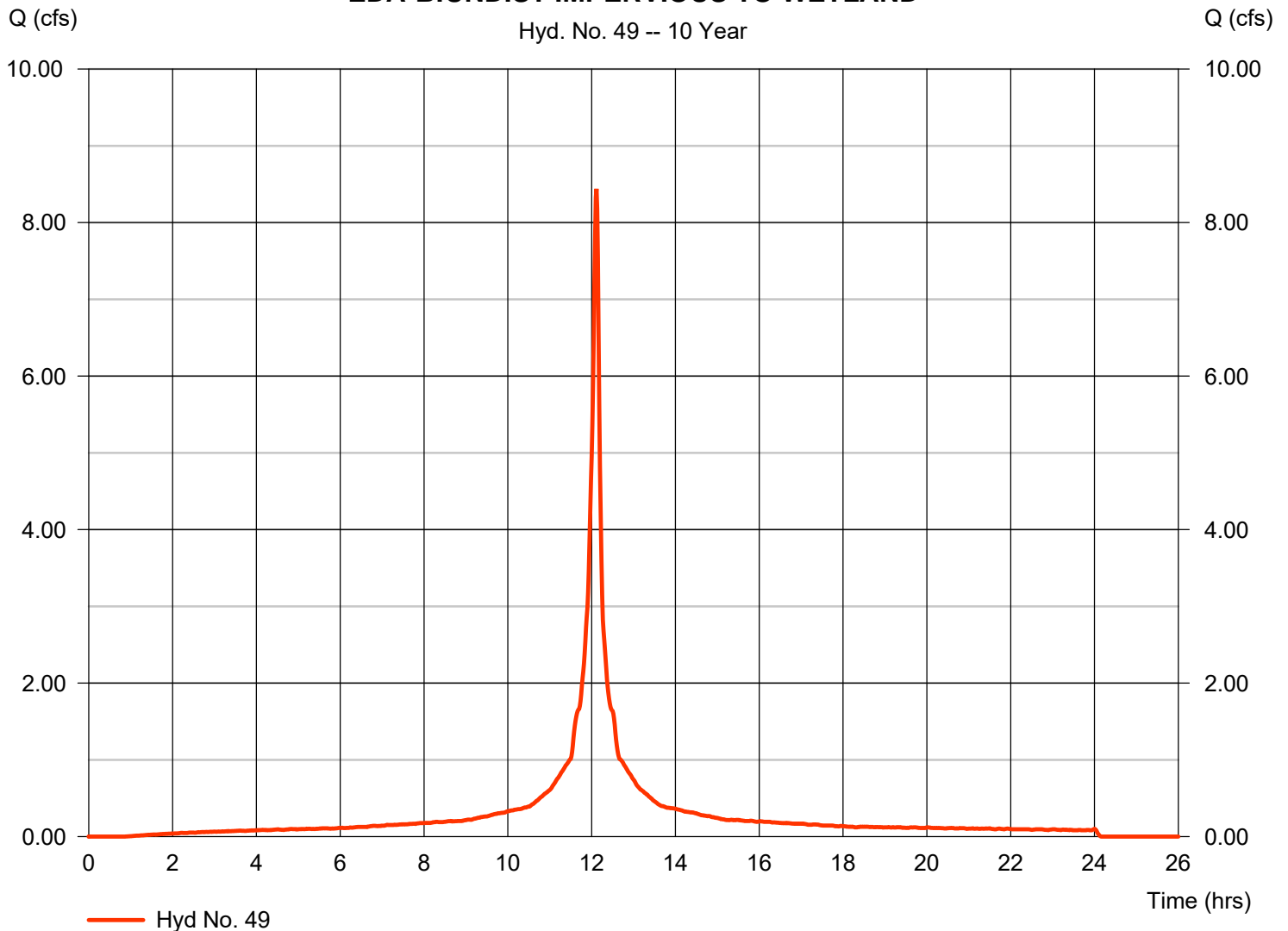
Wednesday, 03 / 9 / 2022

Hyd. No. 49

EDA-B:UNDIST IMPERVIOUS TO WETLAND

Hydrograph type	= SCS Runoff	Peak discharge	= 8.441 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.12 hrs
Time interval	= 1 min	Hyd. volume	= 27,419 cuft
Drainage area	= 1.630 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 6.00 min
Total precip.	= 4.73 in	Distribution	= Custom
Storm duration	= R:\Hydroflow Standards\NJ Reg Storm Rainfall Distribution\49A_C_1 min.cds		

EDA-B:UNDIST IMPERVIOUS TO WETLAND



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

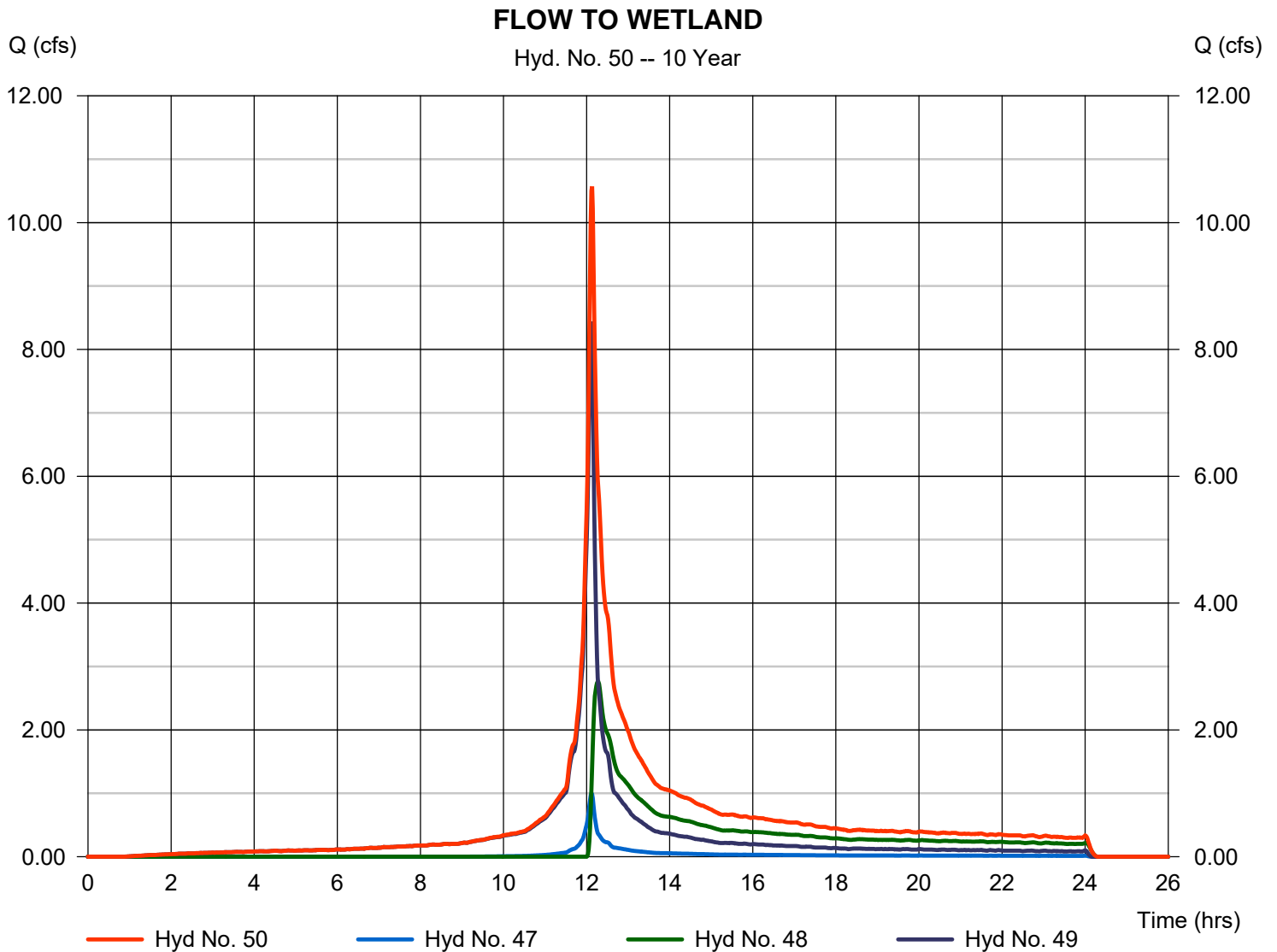
Wednesday, 03 / 9 / 2022

Hyd. No. 50

FLOW TO WETLAND

Hydrograph type = Combine
Storm frequency = 10 yrs
Time interval = 1 min
Inflow hyds. = 47, 48, 49

Peak discharge = 10.57 cfs
Time to peak = 12.13 hrs
Hyd. volume = 50,202 cuft
Contrib. drain. area = 14.130 ac



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

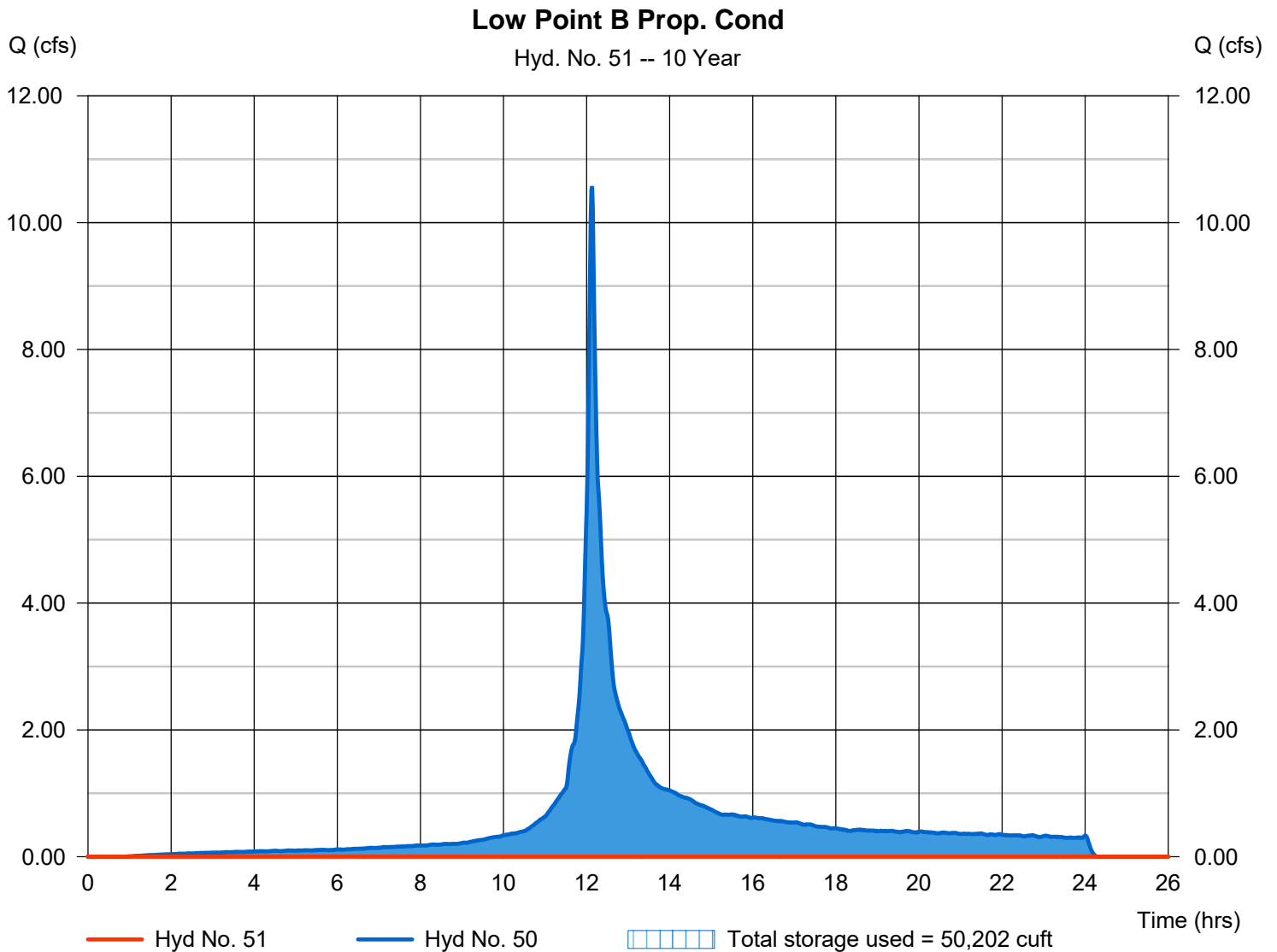
Wednesday, 03 / 9 / 2022

Hyd. No. 51

Low Point B Prop. Cond

Hydrograph type	= Reservoir	Peak discharge	= 0.000 cfs
Storm frequency	= 10 yrs	Time to peak	= n/a
Time interval	= 1 min	Hyd. volume	= 0 cuft
Inflow hyd. No.	= 50 - FLOW TO WETLAND	Max. Elevation	= 595.95 ft
Reservoir name	= Low Point B	Max. Storage	= 50,202 cuft

Storage Indication method used.



Hydrograph Report

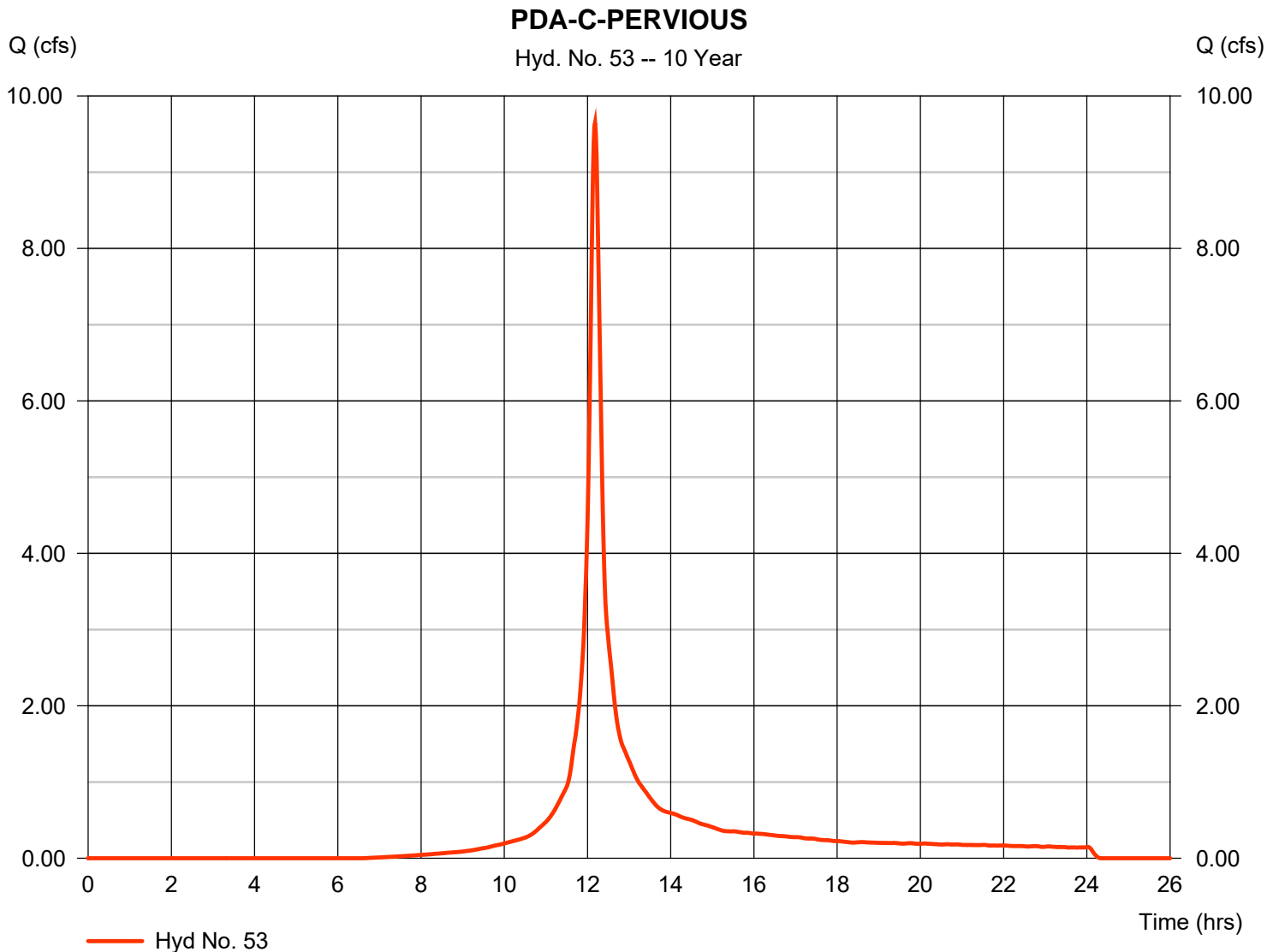
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

Wednesday, 03 / 9 / 2022

Hyd. No. 53

PDA-C-PERVIOUS

Hydrograph type	= SCS Runoff	Peak discharge	= 9.647 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.18 hrs
Time interval	= 1 min	Hyd. volume	= 33,409 cuft
Drainage area	= 3.190 ac	Curve number	= 83
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 12.70 min
Total precip.	= 4.73 in	Distribution	= Custom
Storm duration	= R:\Hydroflow Standards\NJ Reg Storm Rainfall Distribution\NOAA_C_1 min.cds		



Hydrograph Report

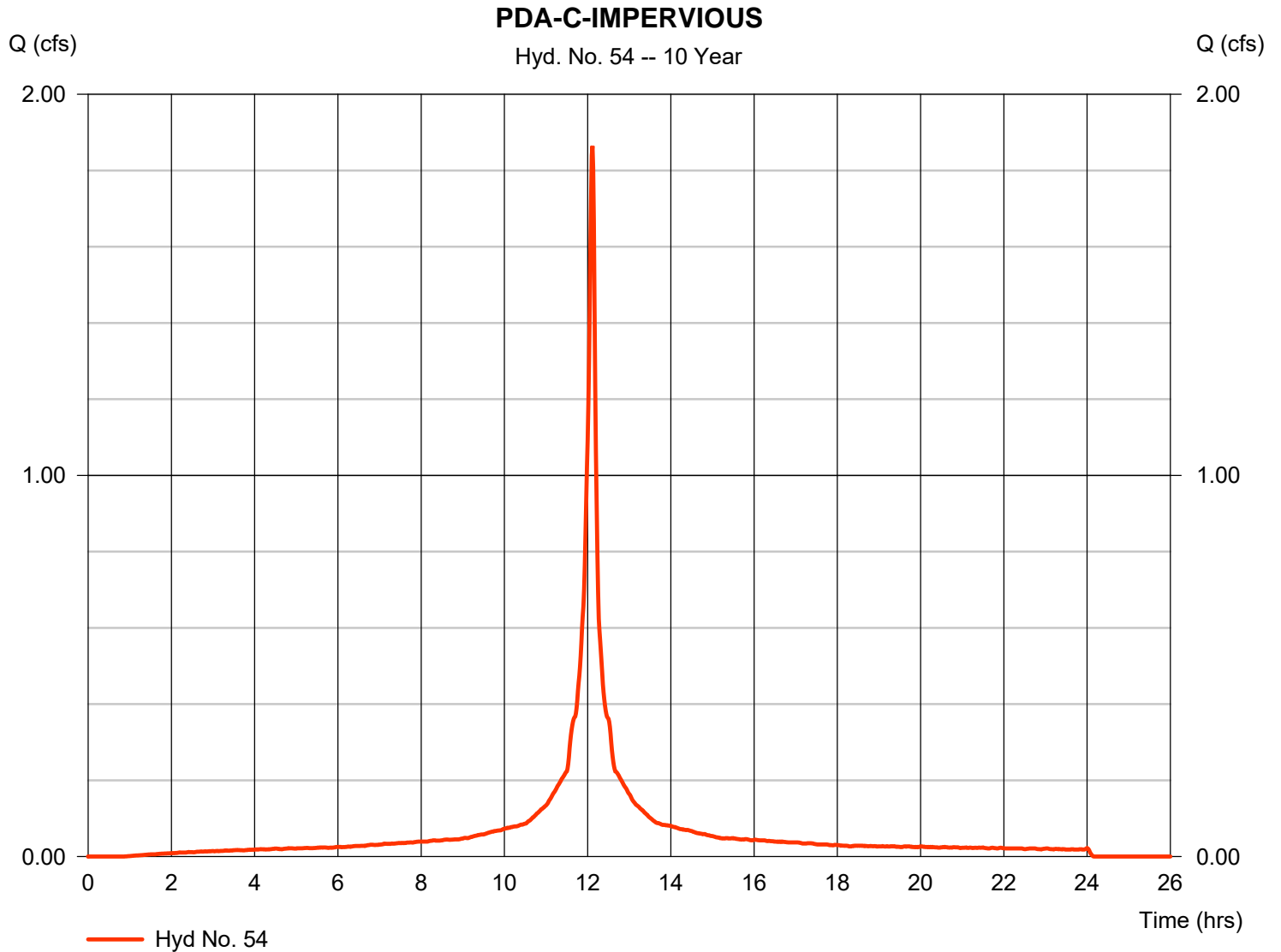
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

Wednesday, 03 / 9 / 2022

Hyd. No. 54

PDA-C-IMPERVIOUS

Hydrograph type	= SCS Runoff	Peak discharge	= 1.864 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.12 hrs
Time interval	= 1 min	Hyd. volume	= 6,056 cuft
Drainage area	= 0.360 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 6.00 min
Total precip.	= 4.73 in	Distribution	= Custom
Storm duration	= R:\Hydroflow Standards\NJ Reg Storm Rainfall Distribution\401A_C_1 min.cds		



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

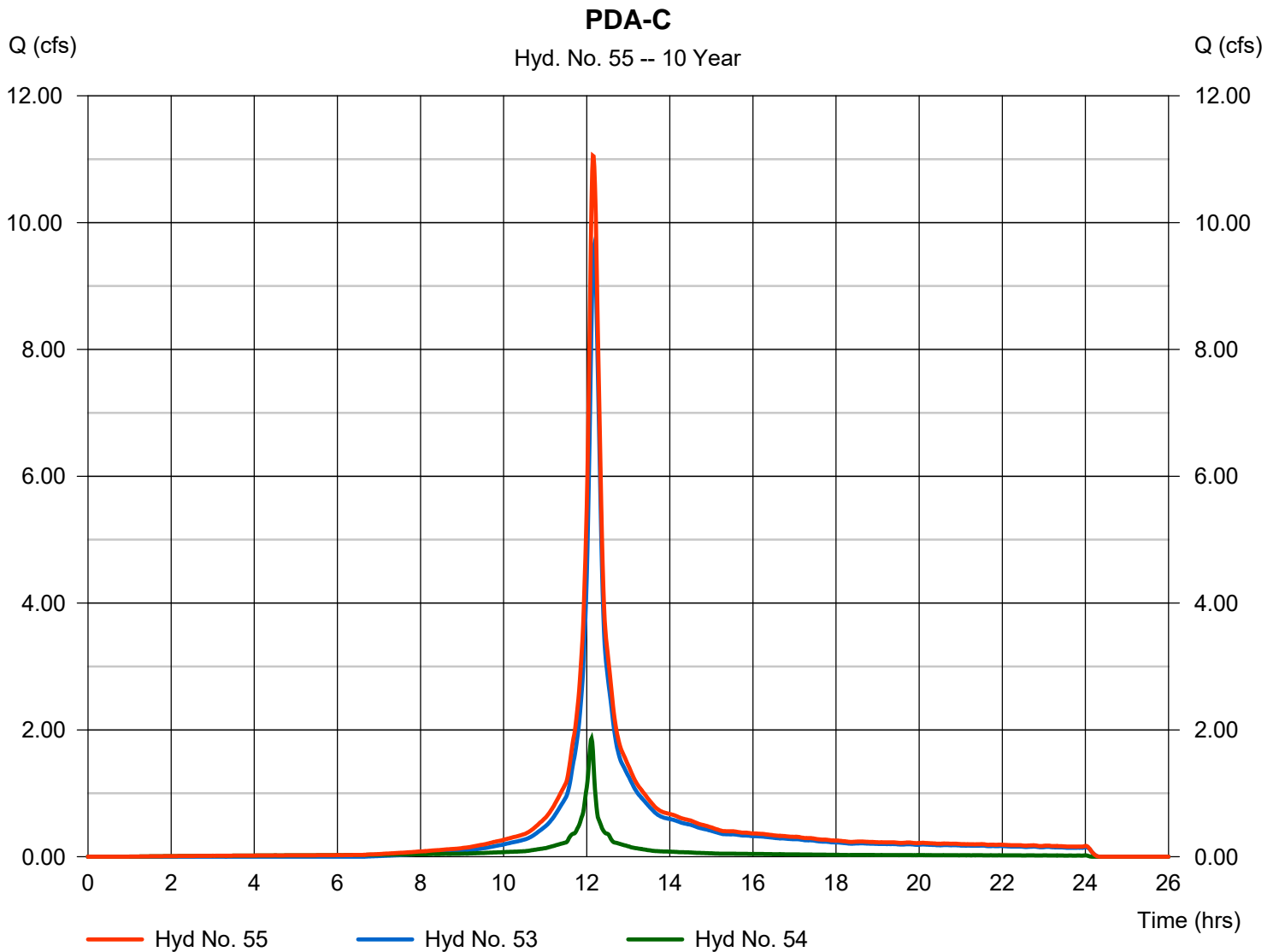
Wednesday, 03 / 9 / 2022

Hyd. No. 55

PDA-C

Hydrograph type = Combine
Storm frequency = 10 yrs
Time interval = 1 min
Inflow hyds. = 53, 54

Peak discharge = 11.05 cfs
Time to peak = 12.15 hrs
Hyd. volume = 39,464 cuft
Contrib. drain. area = 3.550 ac



Hydrograph Report

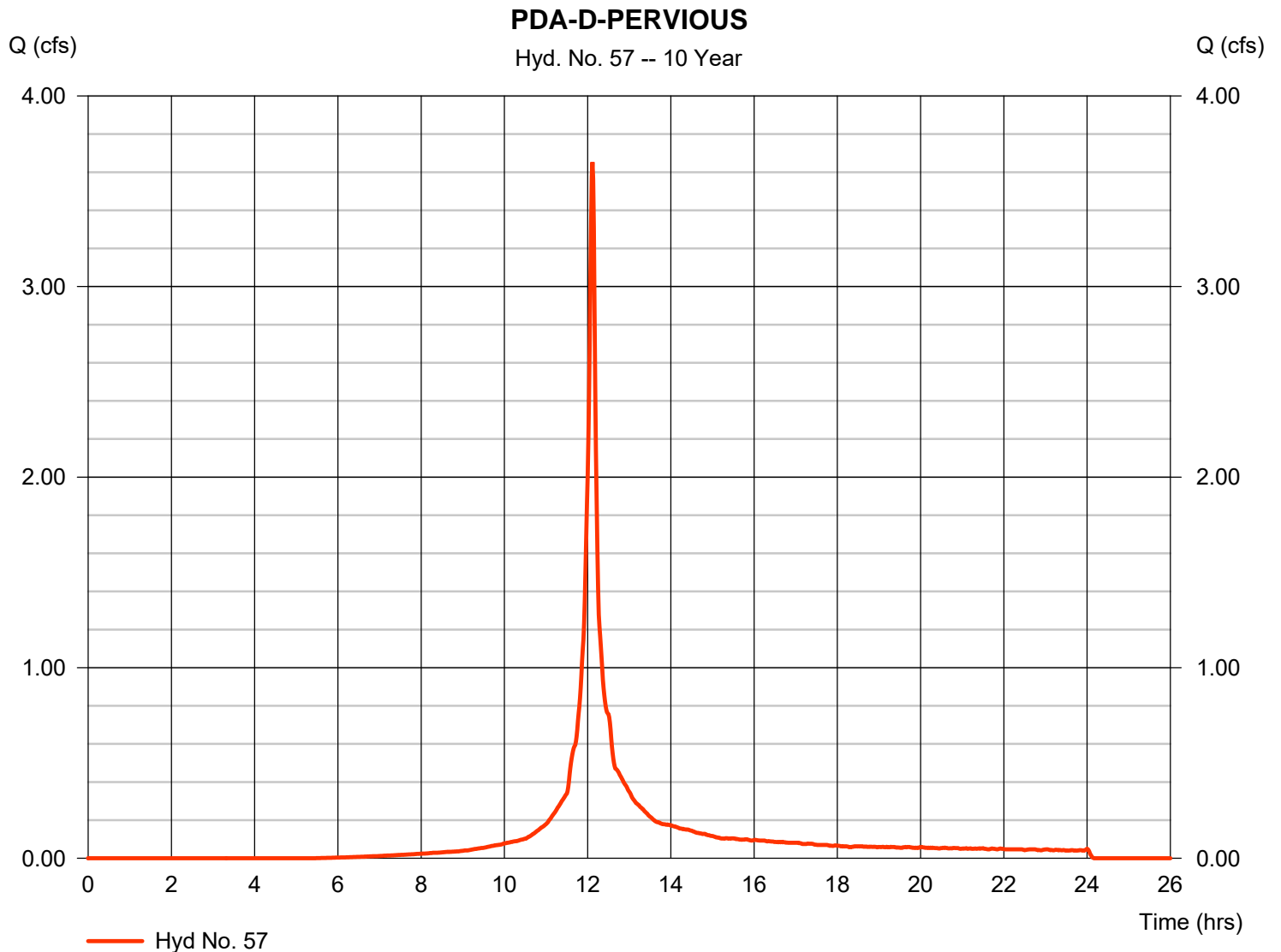
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

Wednesday, 03 / 9 / 2022

Hyd. No. 57

PDA-D-PERVIOUS

Hydrograph type	= SCS Runoff	Peak discharge	= 3.653 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.12 hrs
Time interval	= 1 min	Hyd. volume	= 10,353 cuft
Drainage area	= 0.860 ac	Curve number	= 86
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 6.00 min
Total precip.	= 4.73 in	Distribution	= Custom
Storm duration	= R:\Hydroflow Standards\NJ Reg Storm Rainfall Distribution\401A_C_1 min.cds		



Hydrograph Report

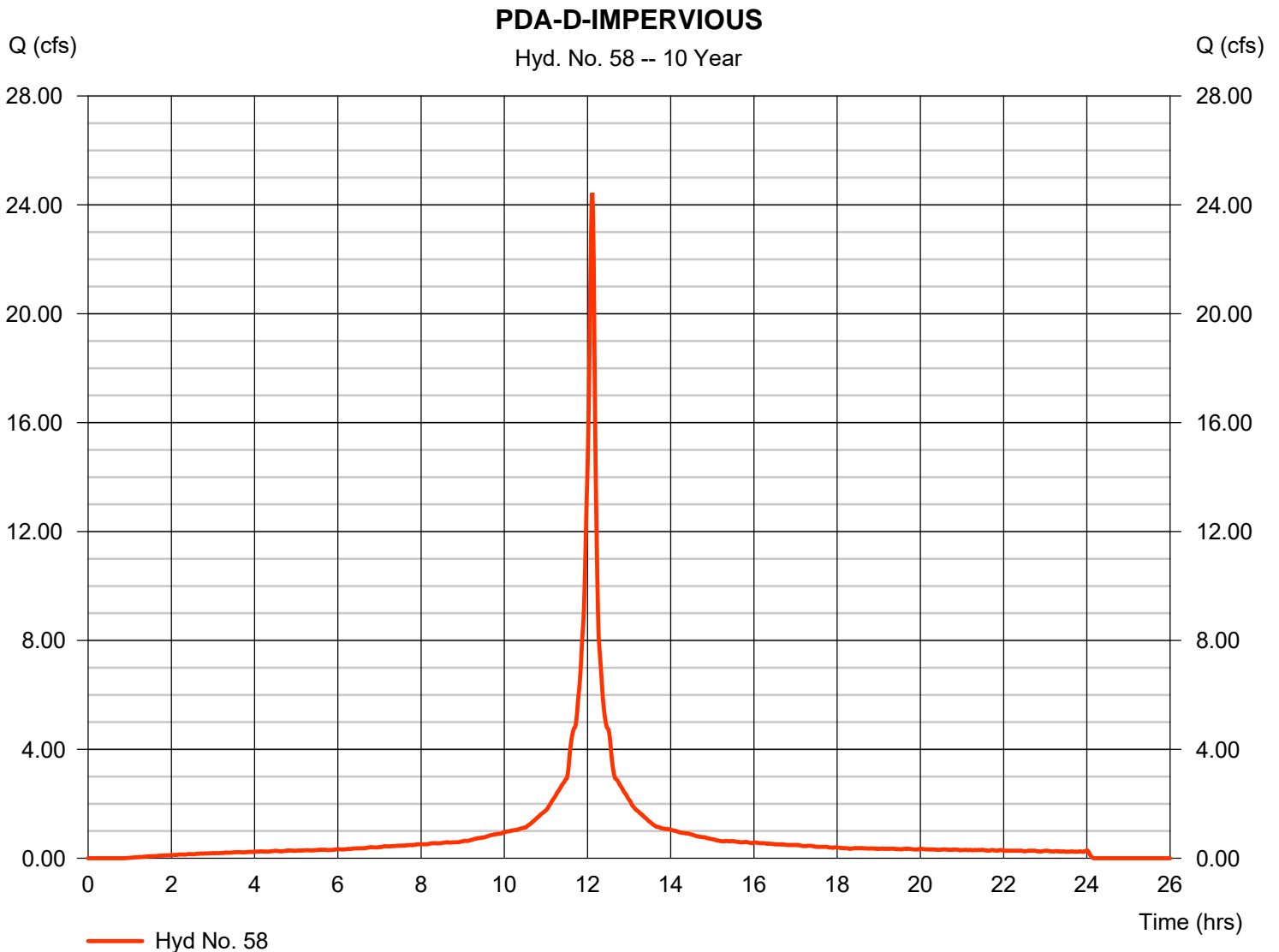
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

Wednesday, 03 / 9 / 2022

Hyd. No. 58

PDA-D-IMPERVIOUS

Hydrograph type	= SCS Runoff	Peak discharge	= 24.44 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.12 hrs
Time interval	= 1 min	Hyd. volume	= 79,398 cuft
Drainage area	= 4.720 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 6.00 min
Total precip.	= 4.73 in	Distribution	= Custom
Storm duration	= R:\Hydroflow Standards\NJ Reg Slope Rainfall Distribution\MOA_C_1 min.cds		



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

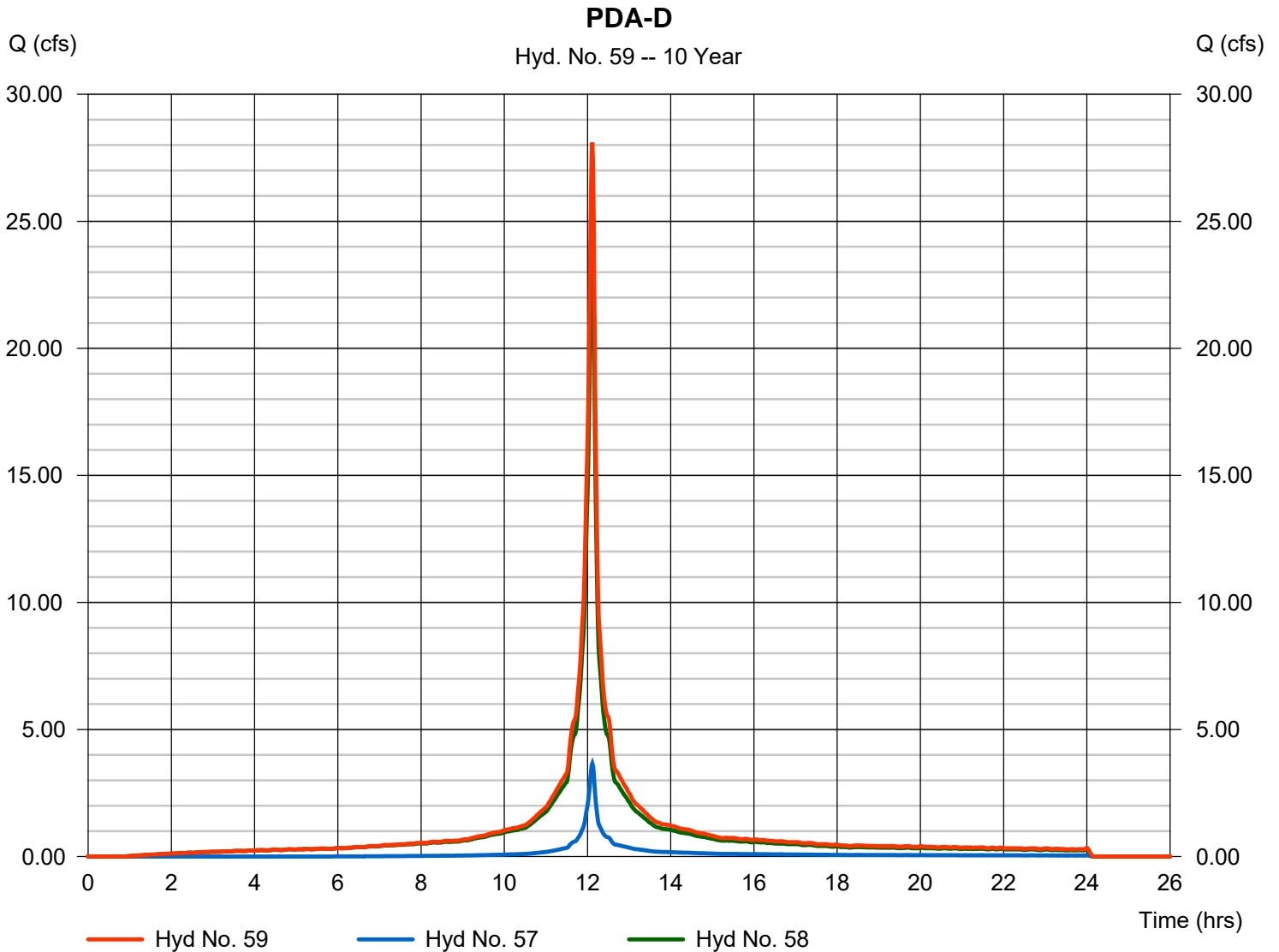
Wednesday, 03 / 9 / 2022

Hyd. No. 59

PDA-D

Hydrograph type = Combine
 Storm frequency = 10 yrs
 Time interval = 1 min
 Inflow hyds. = 57, 58

Peak discharge = 28.10 cfs
 Time to peak = 12.12 hrs
 Hyd. volume = 89,751 cuft
 Contrib. drain. area = 5.580 ac



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

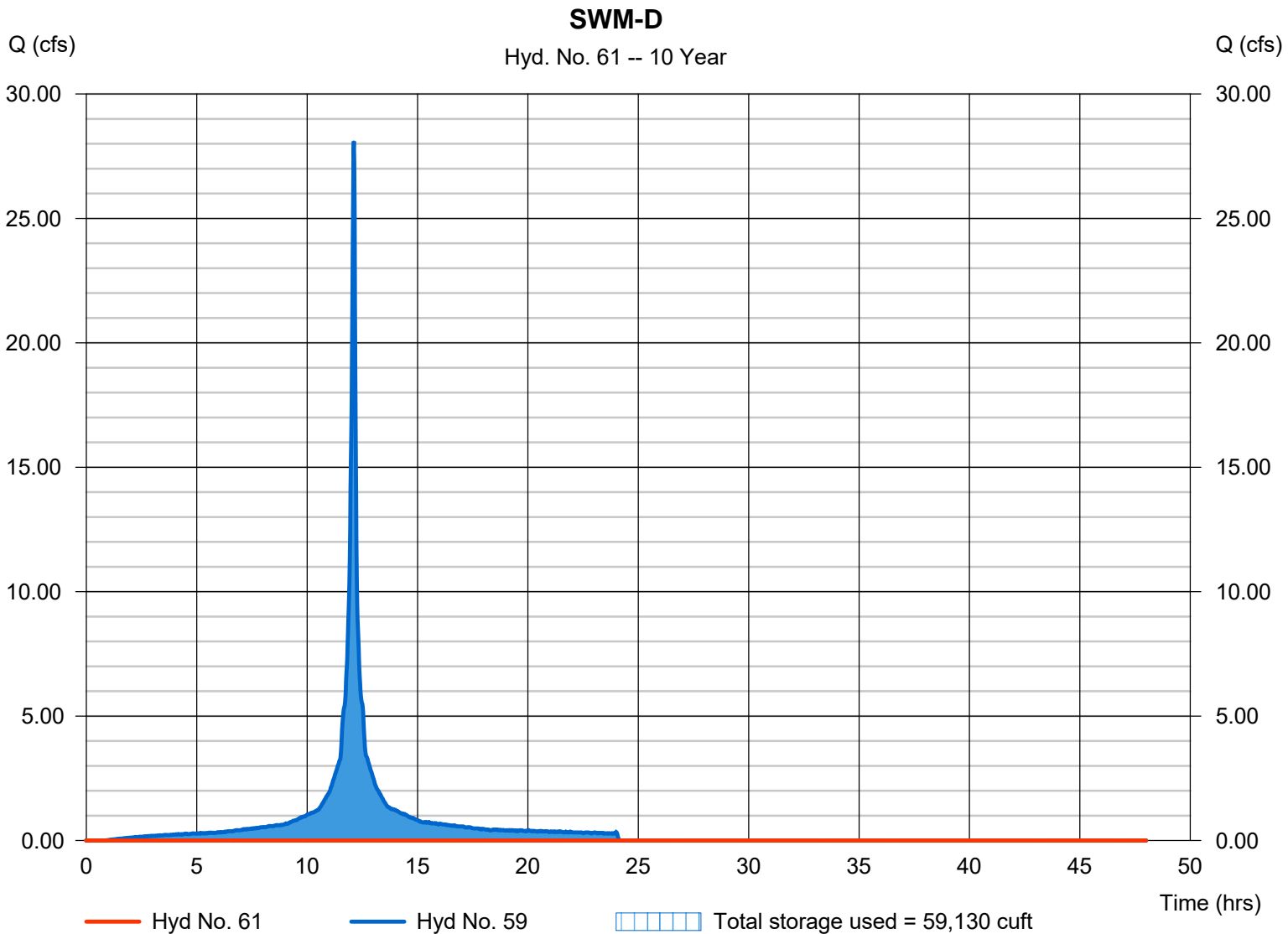
Wednesday, 03 / 9 / 2022

Hyd. No. 61

SWM-D

Hydrograph type	= Reservoir	Peak discharge	= 0.000 cfs
Storm frequency	= 10 yrs	Time to peak	= 10.70 hrs
Time interval	= 1 min	Hyd. volume	= 0 cuft
Inflow hyd. No.	= 59 - PDA-D	Max. Elevation	= 602.67 ft
Reservoir name	= SWM-D	Max. Storage	= 59,130 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Hydrograph Report

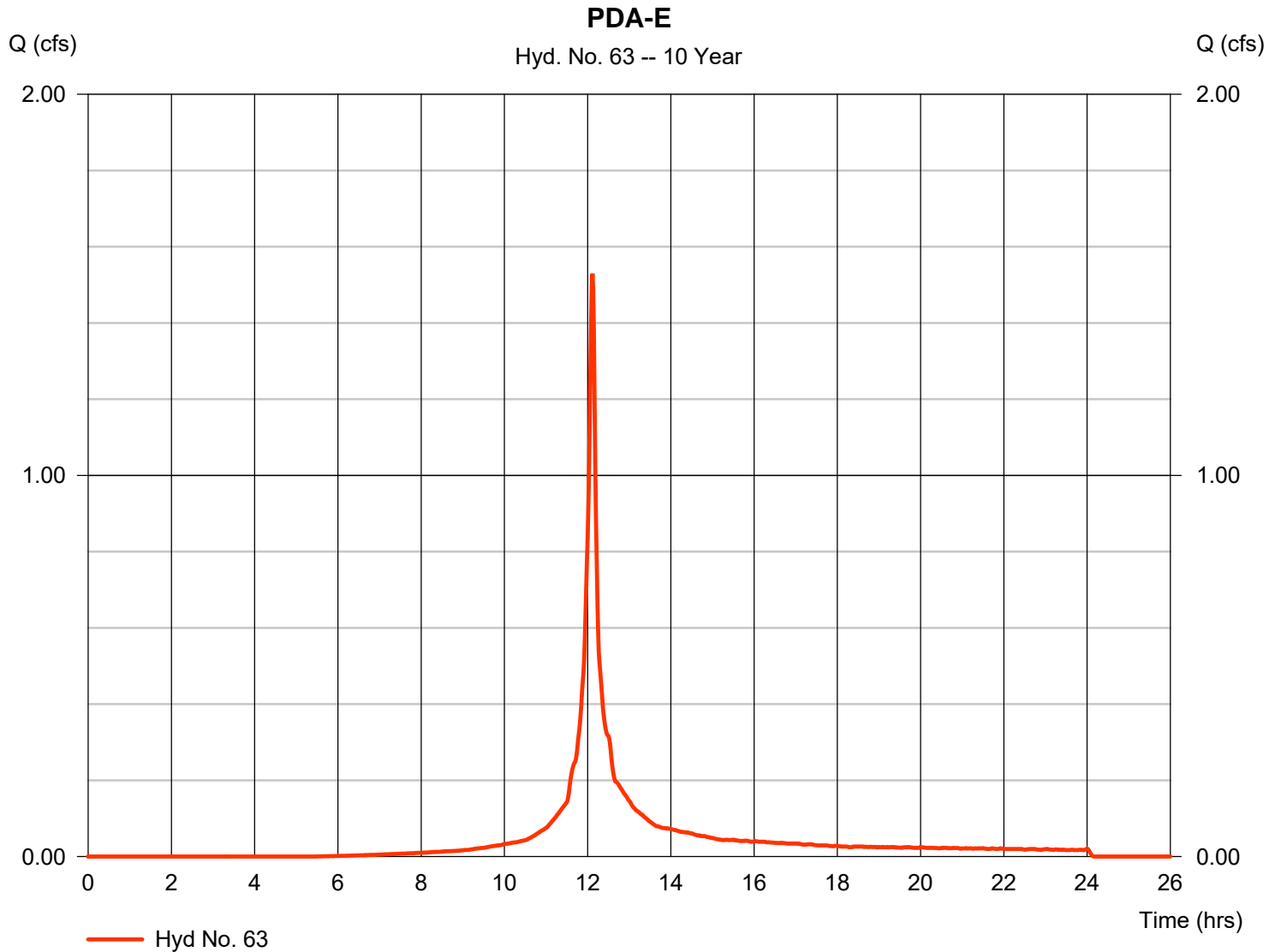
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

Wednesday, 03 / 9 / 2022

Hyd. No. 63

PDA-E

Hydrograph type	= SCS Runoff	Peak discharge	= 1.529 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.12 hrs
Time interval	= 1 min	Hyd. volume	= 4,334 cuft
Drainage area	= 0.360 ac	Curve number	= 86
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 6.00 min
Total precip.	= 4.73 in	Distribution	= Custom
Storm duration	= R:\Hydroflow Standards\NJ Reg Storm Rainfall Distribution\NOAA_C_1 min.cds		



Hydrograph Report

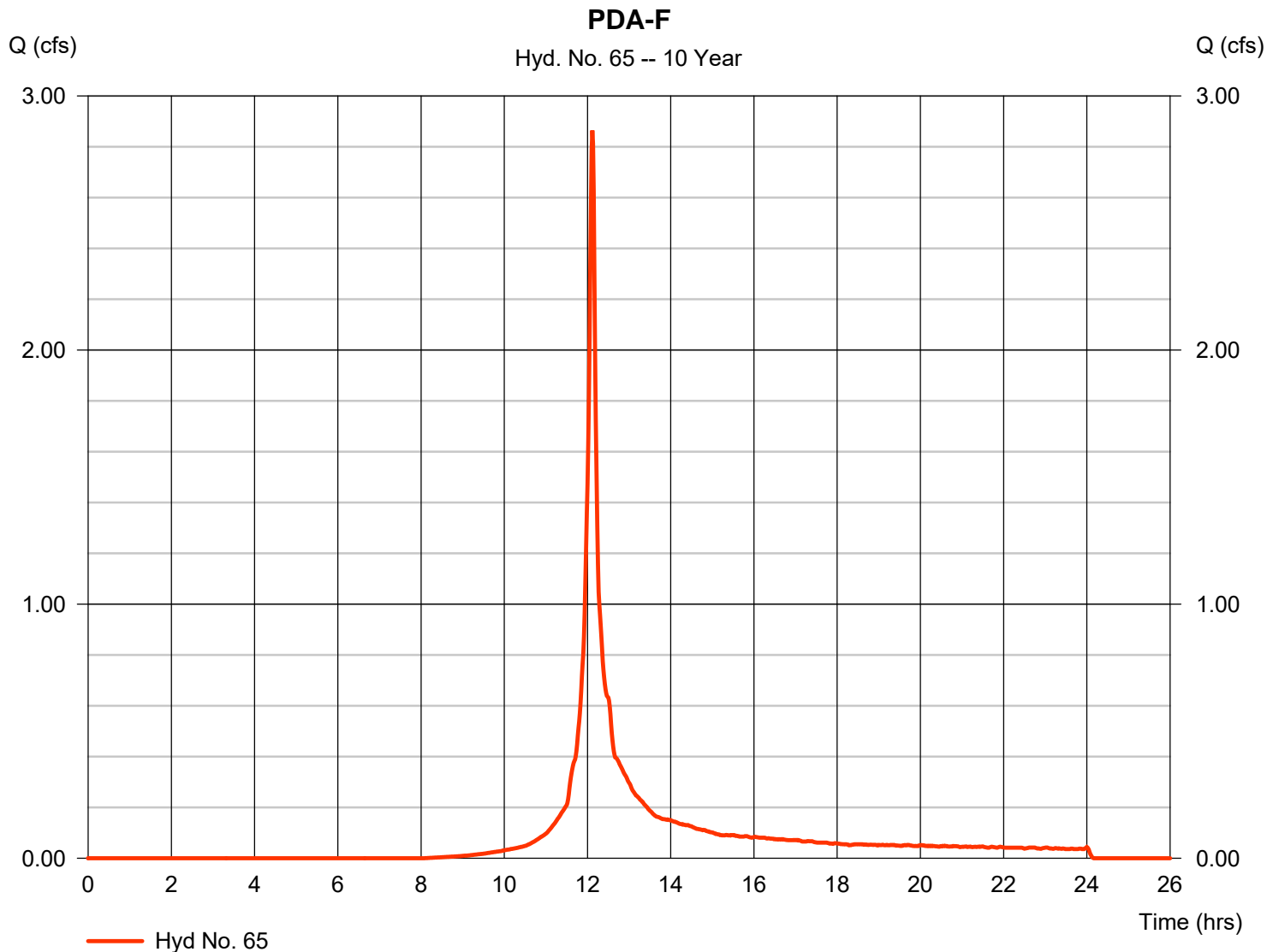
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

Wednesday, 03 / 9 / 2022

Hyd. No. 65

PDA-F

Hydrograph type	= SCS Runoff	Peak discharge	= 2.864 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.12 hrs
Time interval	= 1 min	Hyd. volume	= 7,904 cuft
Drainage area	= 0.850 ac	Curve number	= 78
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 6.00 min
Total precip.	= 4.73 in	Distribution	= Custom
Storm duration	= R:\Hydroflow Standards\NJ Reg Storm Rainfall Distribution\NOAA_C_1 min.cds		



Hydrograph Report

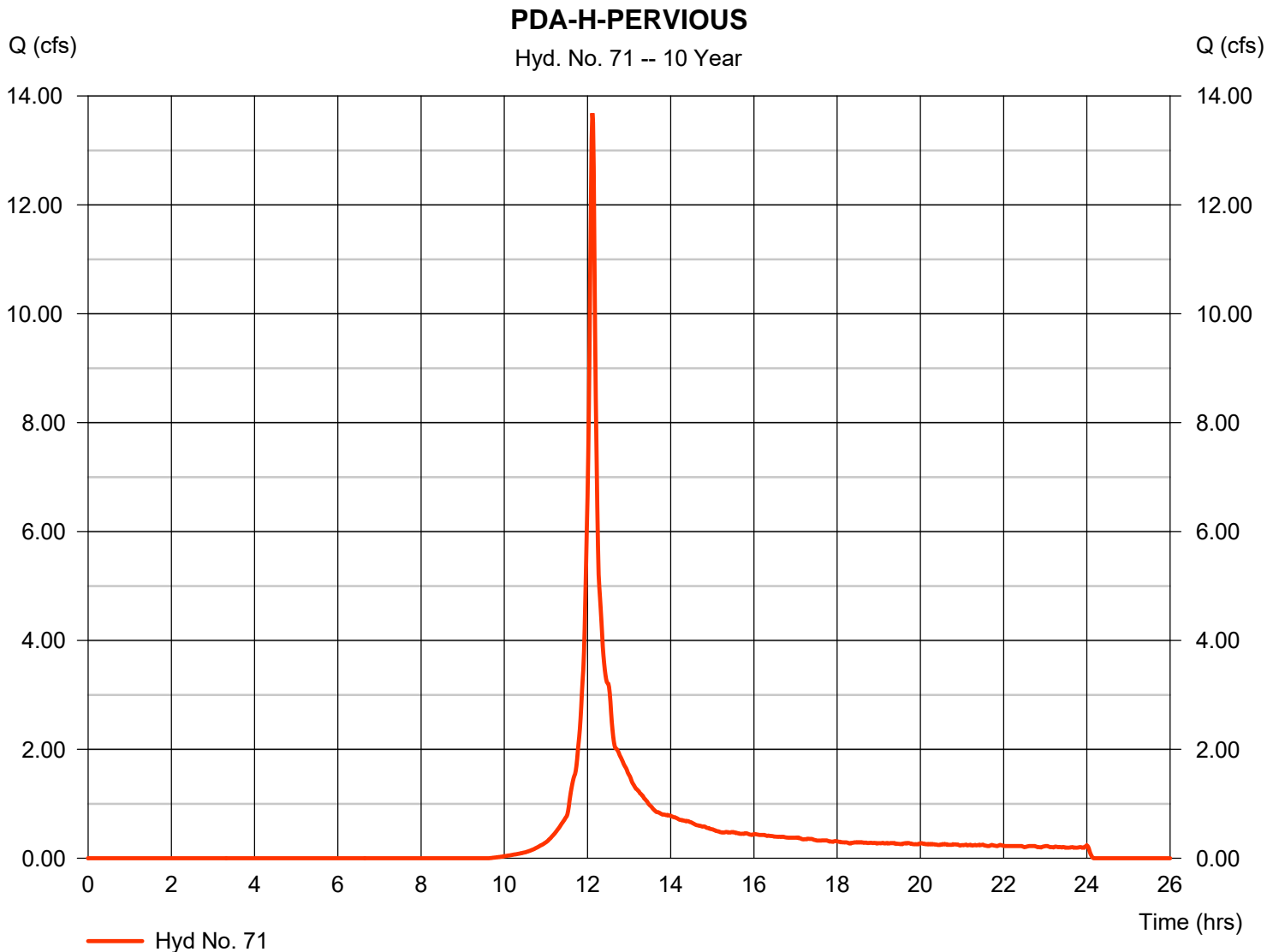
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

Wednesday, 03 / 9 / 2022

Hyd. No. 71

PDA-H-PERVIOUS

Hydrograph type	= SCS Runoff	Peak discharge	= 13.68 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.12 hrs
Time interval	= 1 min	Hyd. volume	= 37,808 cuft
Drainage area	= 5.070 ac	Curve number	= 72
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 6.00 min
Total precip.	= 4.73 in	Distribution	= Custom
Storm duration	= R:\Hydroflow Standards\NJ Reg Slope Rainfall Distribution\NOAA_C_1 min.cds		



Hydrograph Report

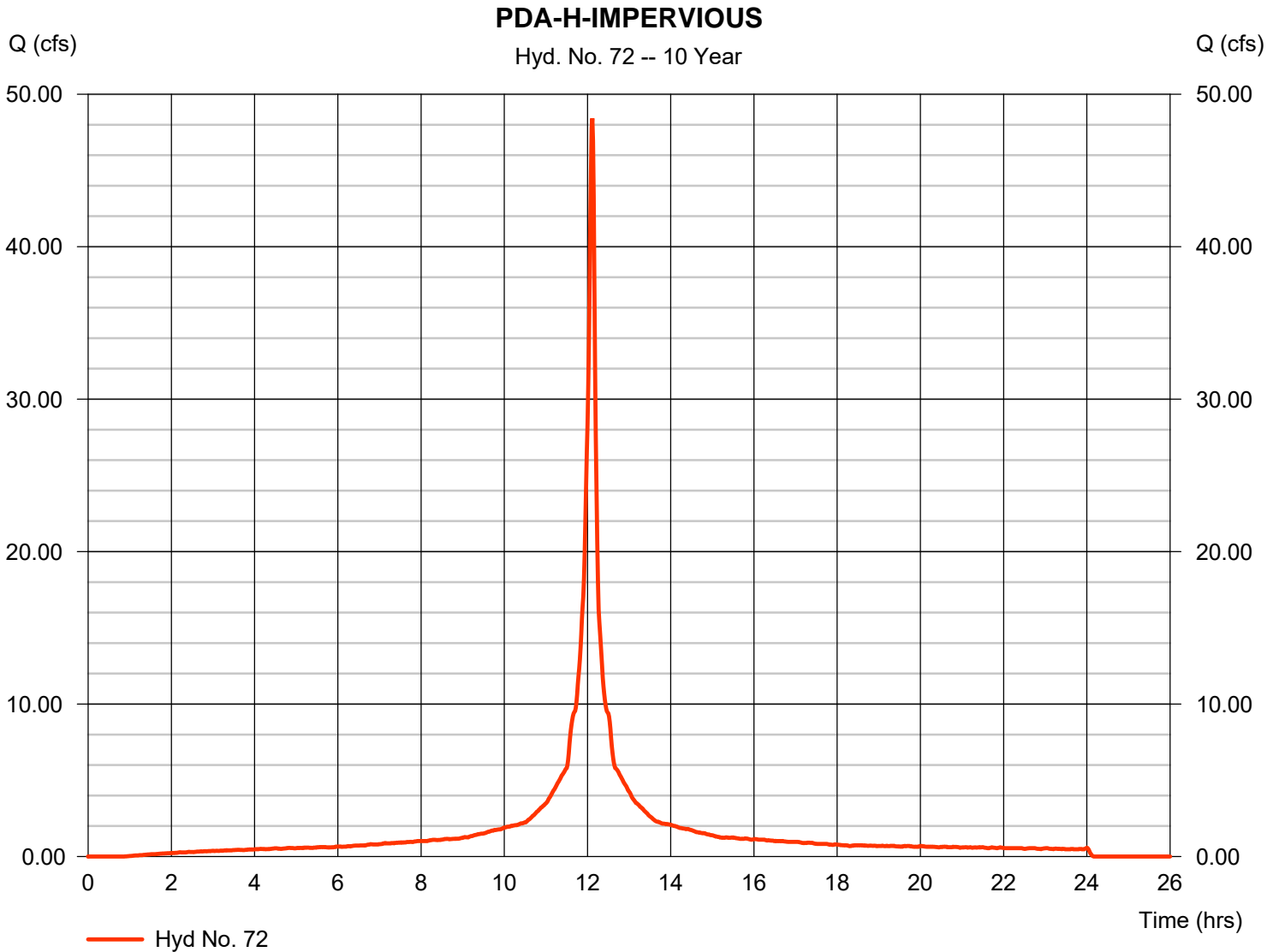
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

Wednesday, 03 / 9 / 2022

Hyd. No. 72

PDA-H-IMPERVIOUS

Hydrograph type	= SCS Runoff	Peak discharge	= 48.42 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.12 hrs
Time interval	= 1 min	Hyd. volume	= 157,282 cuft
Drainage area	= 9.350 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 6.00 min
Total precip.	= 4.73 in	Distribution	= Custom
Storm duration	= R:\Hydroflow Standards\NJ Reg Storm Rainfall Distribution\NOAA_C_1 min.cds		



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

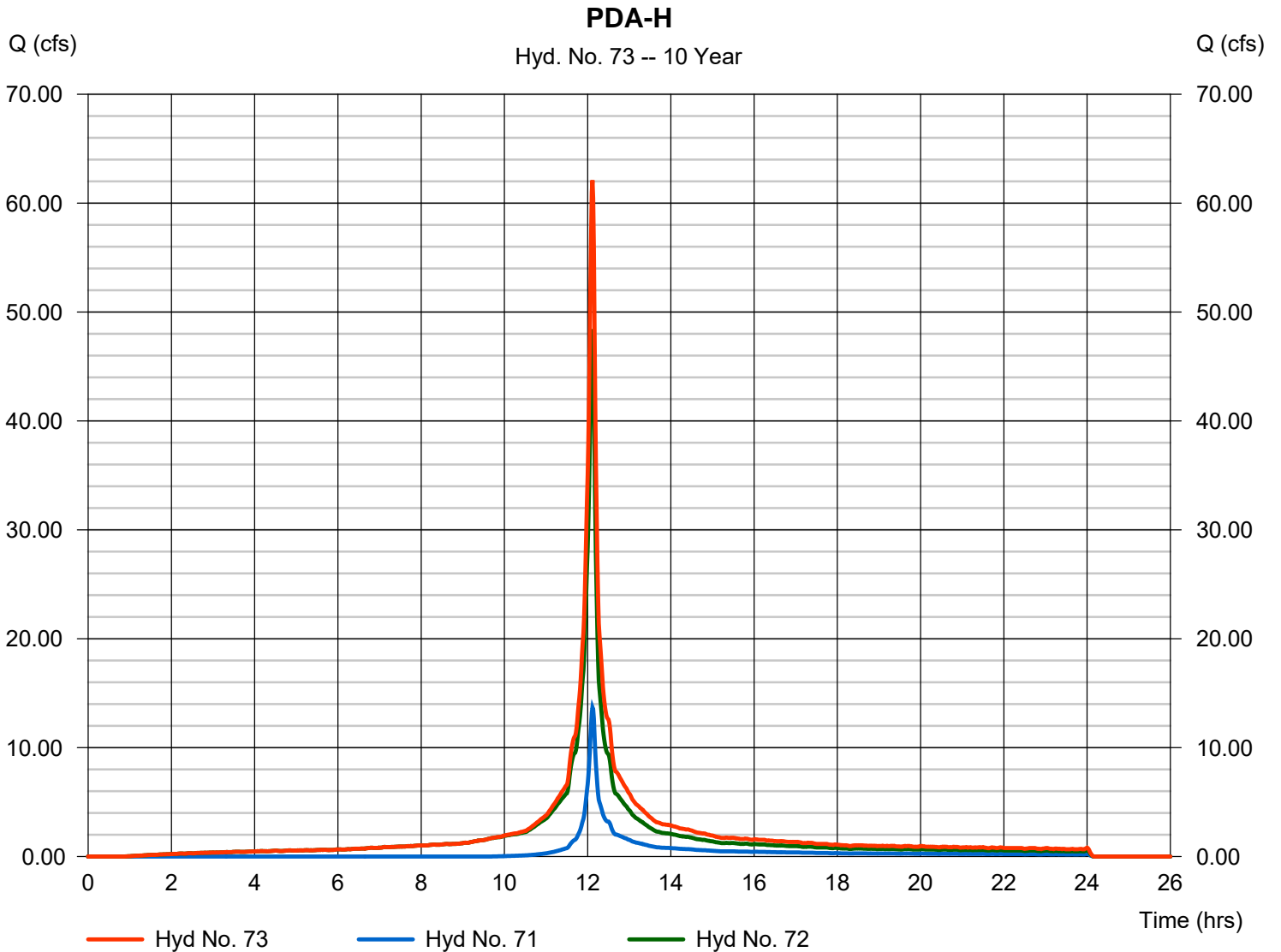
Wednesday, 03 / 9 / 2022

Hyd. No. 73

PDA-H

Hydrograph type = Combine
 Storm frequency = 10 yrs
 Time interval = 1 min
 Inflow hyds. = 71, 72

Peak discharge = 62.10 cfs
 Time to peak = 12.12 hrs
 Hyd. volume = 195,089 cuft
 Contrib. drain. area = 14.420 ac



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

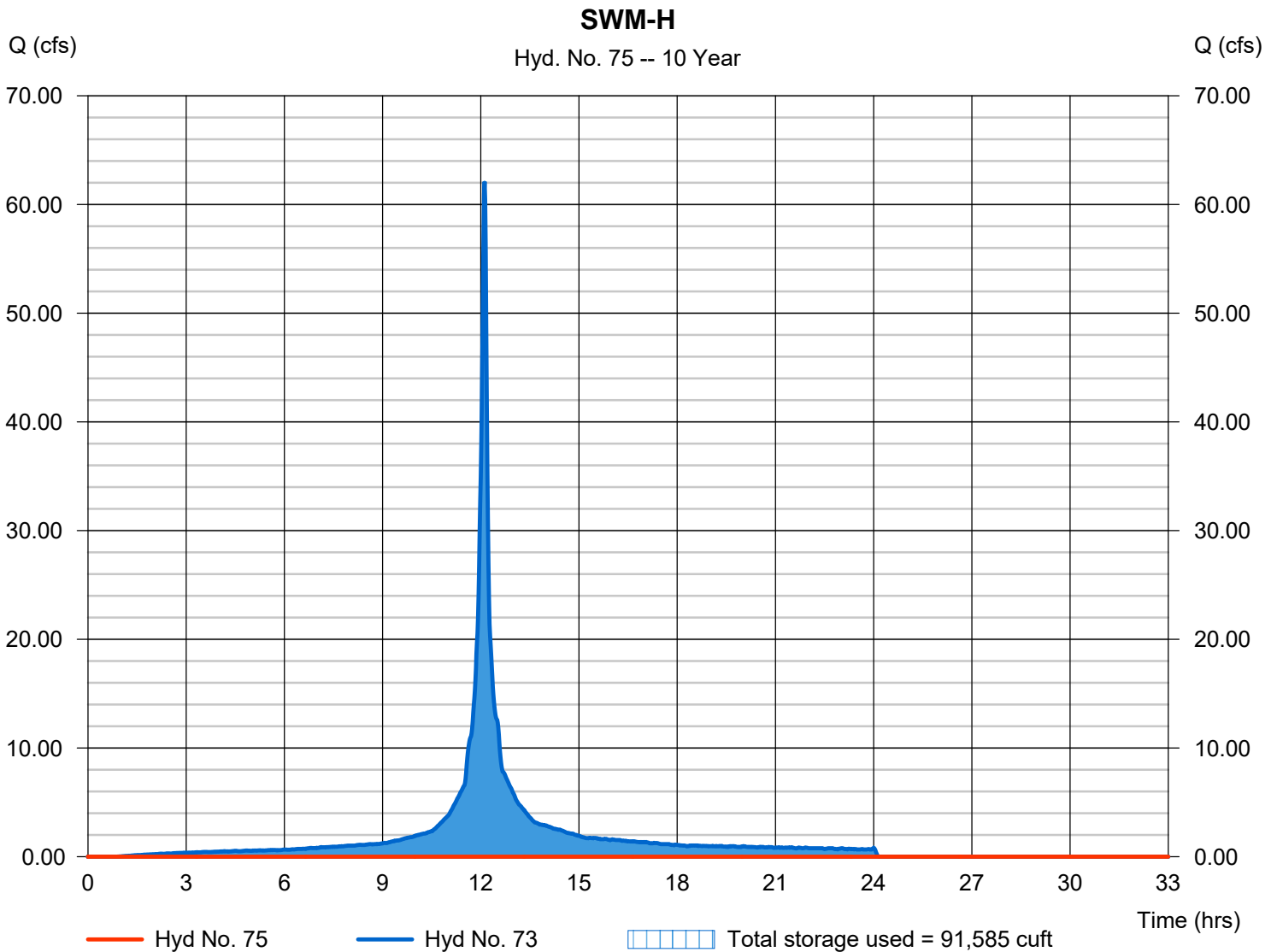
Wednesday, 03 / 9 / 2022

Hyd. No. 75

SWM-H

Hydrograph type	= Reservoir	Peak discharge	= 0.000 cfs
Storm frequency	= 10 yrs	Time to peak	= 11.88 hrs
Time interval	= 1 min	Hyd. volume	= 0 cuft
Inflow hyd. No.	= 73 - PDA-H	Max. Elevation	= 598.21 ft
Reservoir name	= SWM-H	Max. Storage	= 91,585 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Hydrograph Report

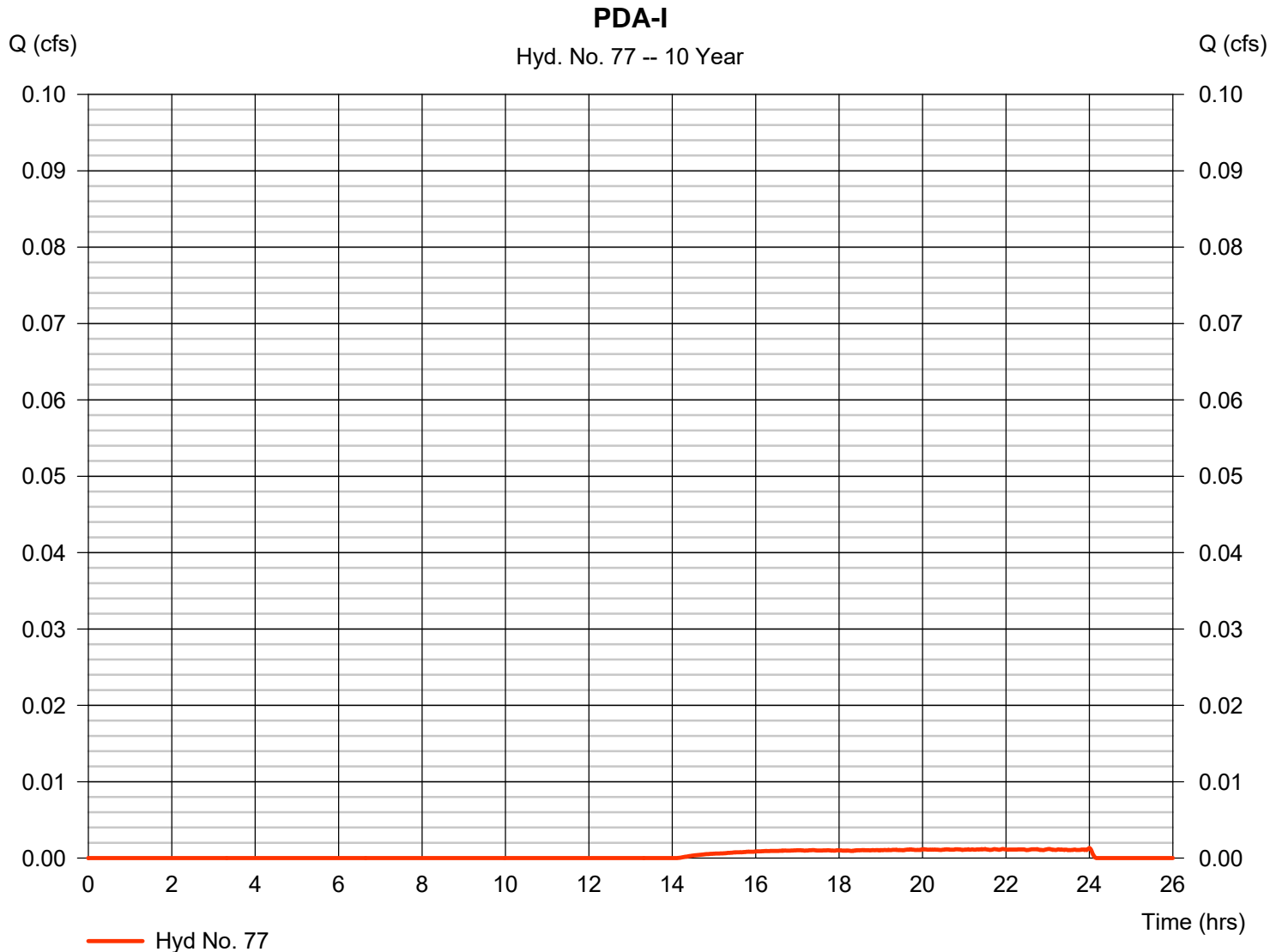
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

Wednesday, 03 / 9 / 2022

Hyd. No. 77

PDA-I

Hydrograph type	= SCS Runoff	Peak discharge	= 0.001 cfs
Storm frequency	= 10 yrs	Time to peak	= 24.00 hrs
Time interval	= 1 min	Hyd. volume	= 35 cuft
Drainage area	= 0.260 ac	Curve number	= 34
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 6.00 min
Total precip.	= 4.73 in	Distribution	= Custom
Storm duration	= R:\Hydroflow Standards\NJ Reg Slope Rainfall Distribution\NOAA_C_1 min.cds		



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

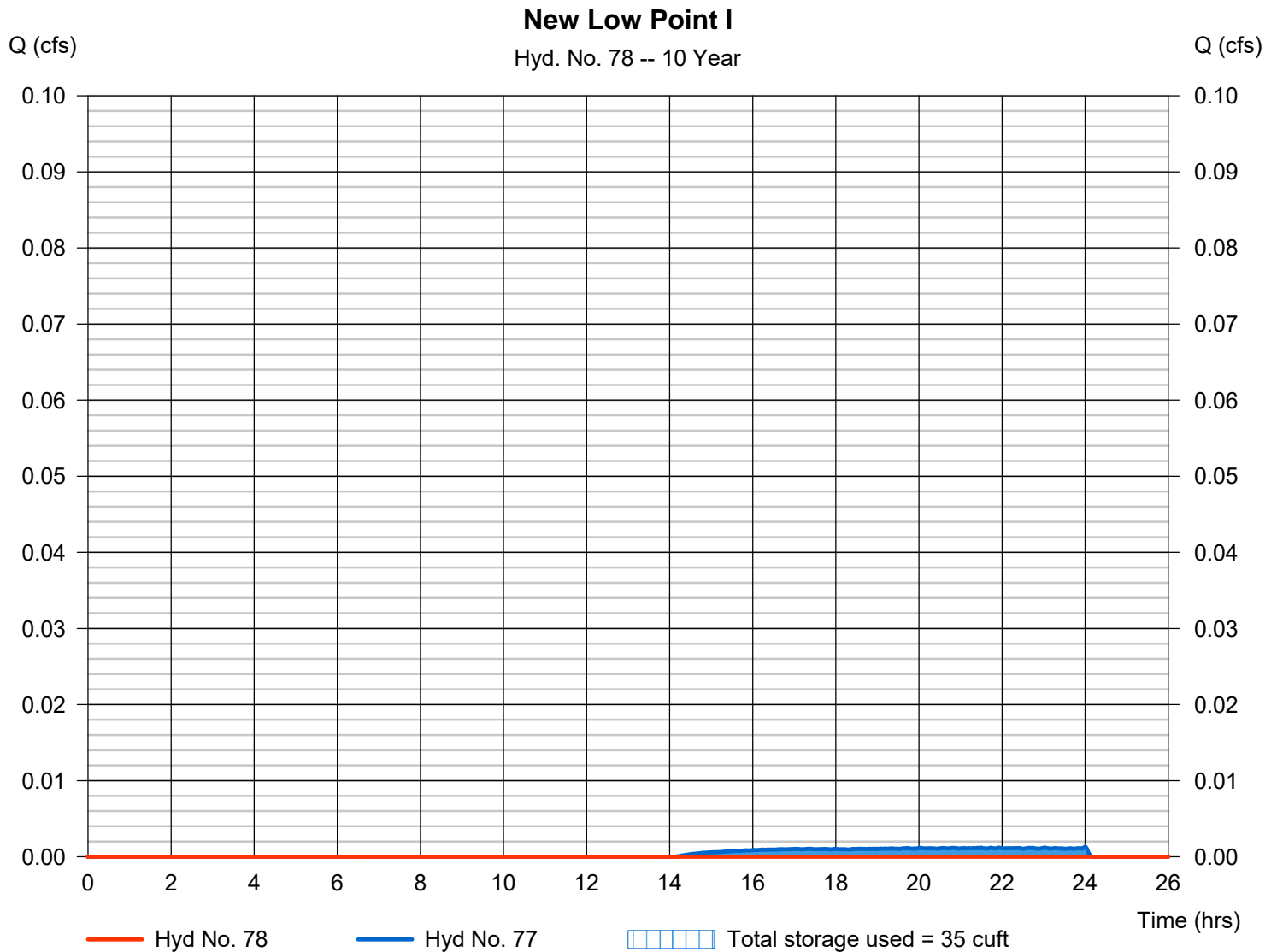
Wednesday, 03 / 9 / 2022

Hyd. No. 78

New Low Point I

Hydrograph type	= Reservoir	Peak discharge	= 0.000 cfs
Storm frequency	= 10 yrs	Time to peak	= n/a
Time interval	= 1 min	Hyd. volume	= 0 cuft
Inflow hyd. No.	= 77 - PDA-I	Max. Elevation	= 597.10 ft
Reservoir name	= New Low Point I	Max. Storage	= 35 cuft

Storage Indication method used.



Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

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	27.23	1	735	112,248	----	----	----	EDA - A: PERVIOUS	
2	SCS Runoff	8.078	1	734	38,532	----	----	----	EDA-A:IMPERVIOUS	
3	Combine	35.30	1	735	150,780	1, 2	----	----	EDA-A	
4	Reservoir	27.91	1	743	150,624	3	596.26	11,183	Low Point A	
6	SCS Runoff	14.45	1	746	87,943	----	----	----	EDA-B: PERVIOUS DIST	
7	SCS Runoff	6.290	1	741	36,157	----	----	----	EDA-B: IMPERVIOUS DIST	
8	Combine	20.46	1	744	124,100	6, 7	----	----	EDA-B-DIST	
10	SCS Runoff	20.57	1	731	76,956	----	----	----	EDA-B-PERVIOUS UNDIST	
11	SCS Runoff	13.45	1	727	44,363	----	----	----	EDA-B-IMPERVIOUS UNDIST	
12	Combine	31.56	1	729	121,320	10, 11	----	----	EDA-B-UNDIST	
14	Combine	42.34	1	730	245,420	8, 12,	----	----	EDA-B	
15	Reservoir	0.000	1	n/a	0	14	598.83	245,420	Low Point B	
17	SCS Runoff	15.73	1	731	54,675	----	----	----	EDA-C: PERVIOUS	
18	SCS Runoff	9.571	1	727	31,571	----	----	----	EDA-C:IMPERVIOUS	
19	Combine	24.00	1	728	86,247	17, 18	----	----	EDA-C	
21	SCS Runoff	20.91	1	729	65,881	----	----	----	EDA-D	
22	Reservoir	0.000	1	n/a	0	21	597.52	65,881	Low Point D	
24	SCS Runoff	25.00	1	730	83,643	----	----	----	EDA-E	
26	SCS Runoff	5.610	1	729	17,793	----	----	----	EDA-F	
29	SCS Runoff	3.352	1	760	33,535	----	----	----	EDA-H	
30	Reservoir	0.000	1	n/a	0	29	597.42	33,535	Low Point H	
32	SCS Runoff	0.064	1	774	1,222	----	----	----	EDA-I	
33	Reservoir	0.000	1	n/a	0	32	597.15	1,222	Low Point I	
35	SCS Runoff	16.38	1	727	46,347	----	----	----	PDA-A-PERVIOUS	
36	SCS Runoff	22.03	1	727	72,669	----	----	----	PDA-A-IMPERVIOUS	
37	Combine	38.41	1	727	119,016	35, 36	----	----	PDA-A	
39	Reservoir	22.30	1	731	49,402	37	596.91	31,439	SWM-A	
41	SCS Runoff	72.03	1	727	200,515	----	----	----	PDA-B-PERVIOUS	
Hydrologic Calculations - Water Quantity.gpw					Return Period: 100 Year			Wednesday, 03 / 9 / 2022		

Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

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	
42	SCS Runoff	117.99	1	727	389,200	----	----	----	PDA-B1-IMPERVIOUS	
43	Combine	190.02	1	727	589,715	41, 42	----	----	PDA-B	
45	Reservoir	0.000	1	1018	0	43	599.89	275,582	SWM-B	
47	SCS Runoff	2.037	1	727	5,685	----	----	----	PDA-B-BYPASS TO WETLANDS	
48	SCS Runoff	20.08	1	731	75,105	----	----	----	EDA-B: UNDIST PERVIOUS TO WE	
49	SCS Runoff	13.45	1	727	44,363	----	----	----	EDA-B:UNDIST IMPERVIOUS TO W	
50	Combine	32.94	1	729	125,153	47, 48, 49	----	----	FLOW TO WETLAND	
51	Reservoir	0.000	1	n/a	0	50	597.28	125,153	Low Point B Prop. Cond	
53	SCS Runoff	17.67	1	731	62,815	----	----	----	PDA-C-PERVIOUS	
54	SCS Runoff	2.970	1	727	9,798	----	----	----	PDA-C-IMPERVIOUS	
55	Combine	19.97	1	729	72,614	53, 54	----	----	PDA-C	
57	SCS Runoff	6.429	1	727	18,857	----	----	----	PDA-D-PERVIOUS	
58	SCS Runoff	38.94	1	727	128,463	----	----	----	PDA-D-IMPERVIOUS	
59	Combine	45.37	1	727	147,320	57, 58	----	----	PDA-D	
61	Reservoir	0.000	1	517	0	59	604.27	102,527	SWM-D	
63	SCS Runoff	2.691	1	727	7,893	----	----	----	PDA-E	
65	SCS Runoff	5.578	1	727	15,719	----	----	----	PDA-F	
71	SCS Runoff	29.22	1	727	80,989	----	----	----	PDA-H-PERVIOUS	
72	SCS Runoff	77.14	1	727	254,477	----	----	----	PDA-H-IMPERVIOUS	
73	Combine	106.36	1	727	335,466	71, 72	----	----	PDA-H	
75	Reservoir	0.000	1	637	0	73	599.78	172,734	SWM-H	
77	SCS Runoff	0.064	1	733	556	----	----	----	PDA-I	
78	Reservoir	0.000	1	n/a	0	77	598.24	556	New Low Point I	
Hydrologic Calculations - Water Quantity.gpw					Return Period: 100 Year			Wednesday, 03 / 9 / 2022		

Hydrograph Report

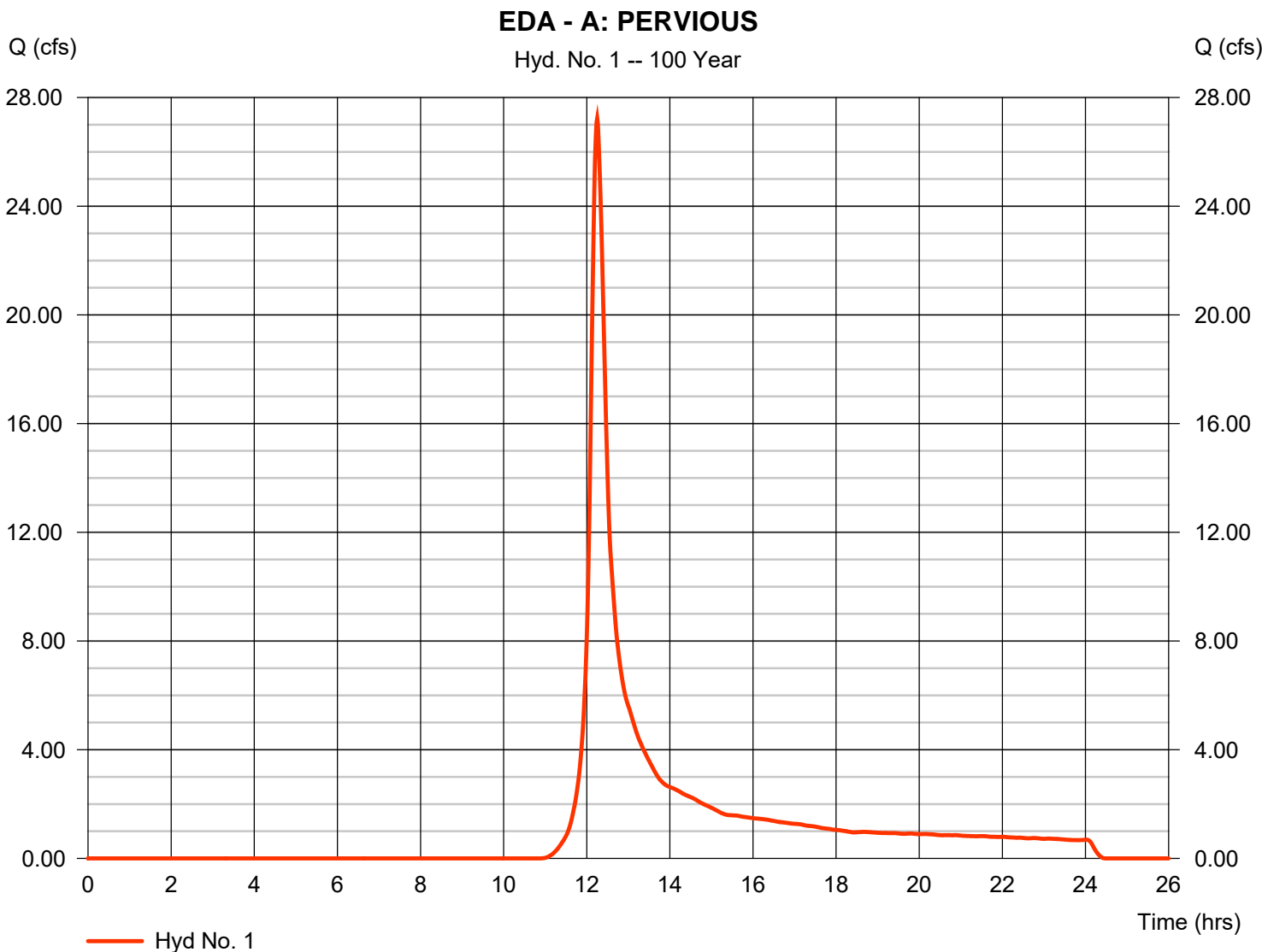
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

Wednesday, 03 / 9 / 2022

Hyd. No. 1

EDA - A: PERVIOUS

Hydrograph type	= SCS Runoff	Peak discharge	= 27.23 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.25 hrs
Time interval	= 1 min	Hyd. volume	= 112,248 cuft
Drainage area	= 13.290 ac	Curve number	= 54
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 17.70 min
Total precip.	= 7.51 in	Distribution	= Custom
Storm duration	= R:\Hydroflow Standards\NJ Reg Storm Rainfall Distribution\NOAA_C_1 min.cds		



Hydrograph Report

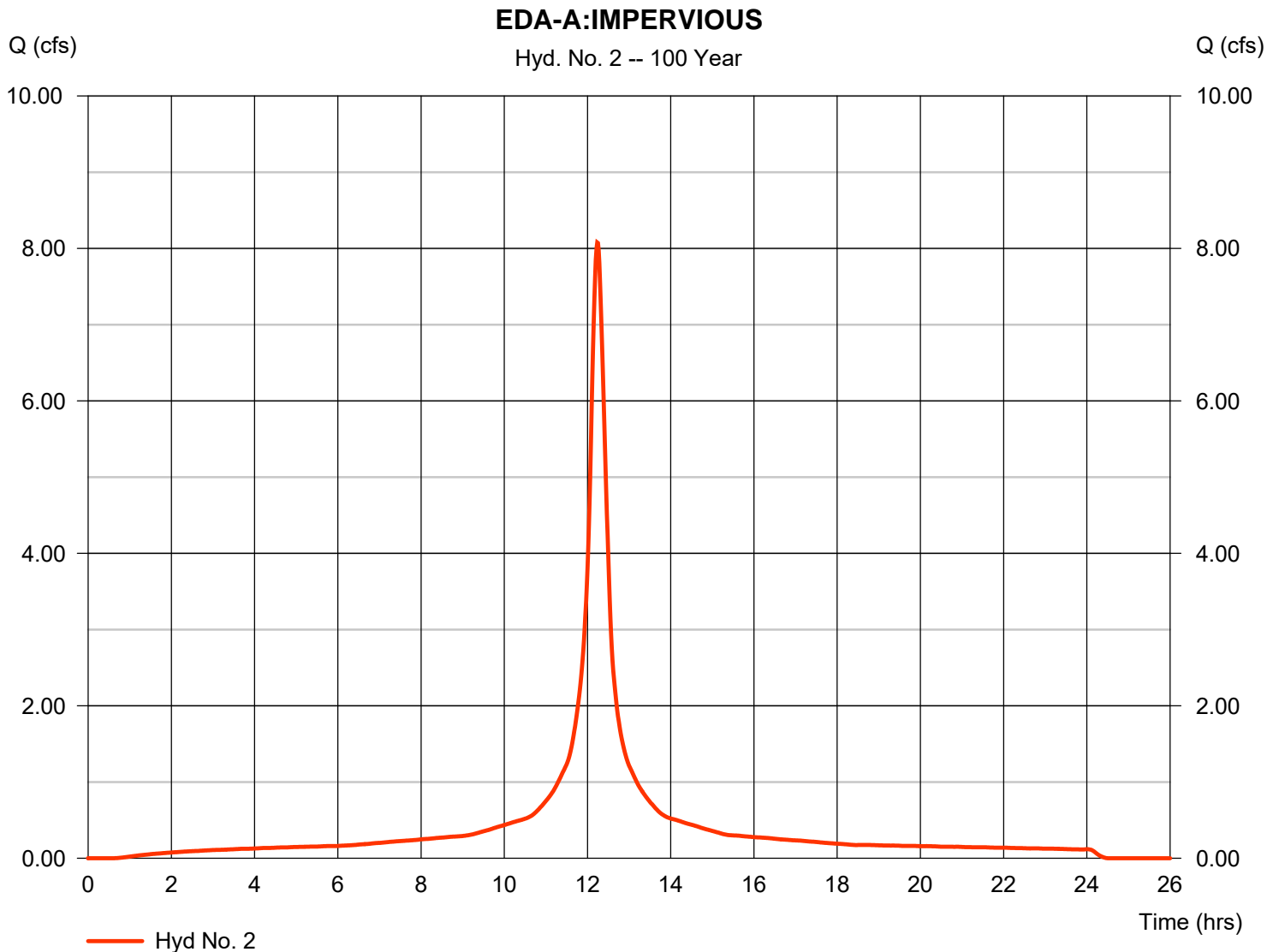
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

Wednesday, 03 / 9 / 2022

Hyd. No. 2

EDA-A:IMPERVIOUS

Hydrograph type	= SCS Runoff	Peak discharge	= 8.078 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.23 hrs
Time interval	= 1 min	Hyd. volume	= 38,532 cuft
Drainage area	= 1.460 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 19.60 min
Total precip.	= 7.51 in	Distribution	= Custom
Storm duration	= R:\Hydroflow Standards\NJ Reg Storm Rainfall Distribution\40A_C_1 min.cds		



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

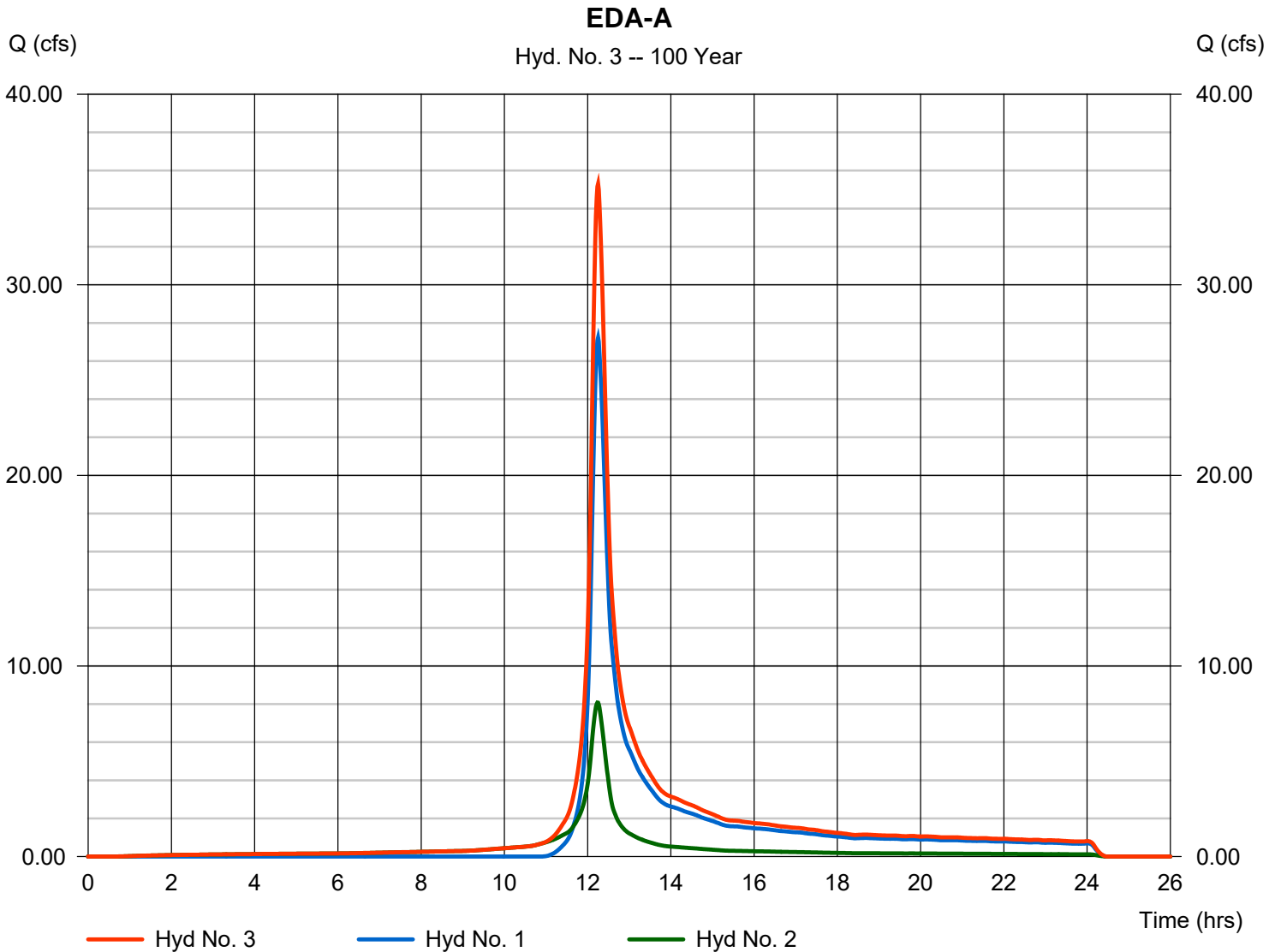
Wednesday, 03 / 9 / 2022

Hyd. No. 3

EDA-A

Hydrograph type = Combine
 Storm frequency = 100 yrs
 Time interval = 1 min
 Inflow hyds. = 1, 2

Peak discharge = 35.30 cfs
 Time to peak = 12.25 hrs
 Hyd. volume = 150,780 cuft
 Contrib. drain. area = 14.750 ac



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

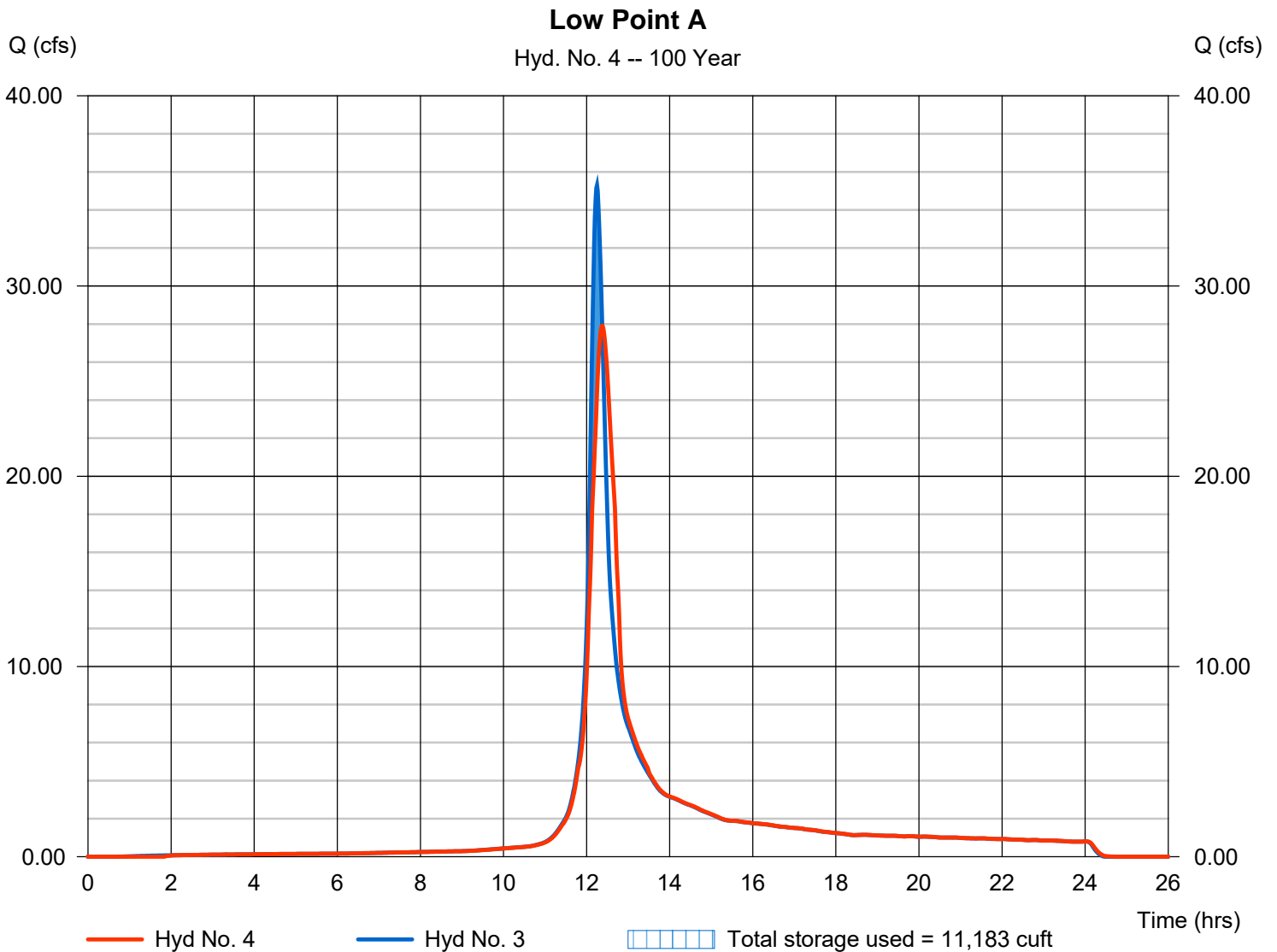
Wednesday, 03 / 9 / 2022

Hyd. No. 4

Low Point A

Hydrograph type	= Reservoir	Peak discharge	= 27.91 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.38 hrs
Time interval	= 1 min	Hyd. volume	= 150,624 cuft
Inflow hyd. No.	= 3 - EDA-A	Max. Elevation	= 596.26 ft
Reservoir name	= Low Point A	Max. Storage	= 11,183 cuft

Storage Indication method used.



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

Wednesday, 03 / 9 / 2022

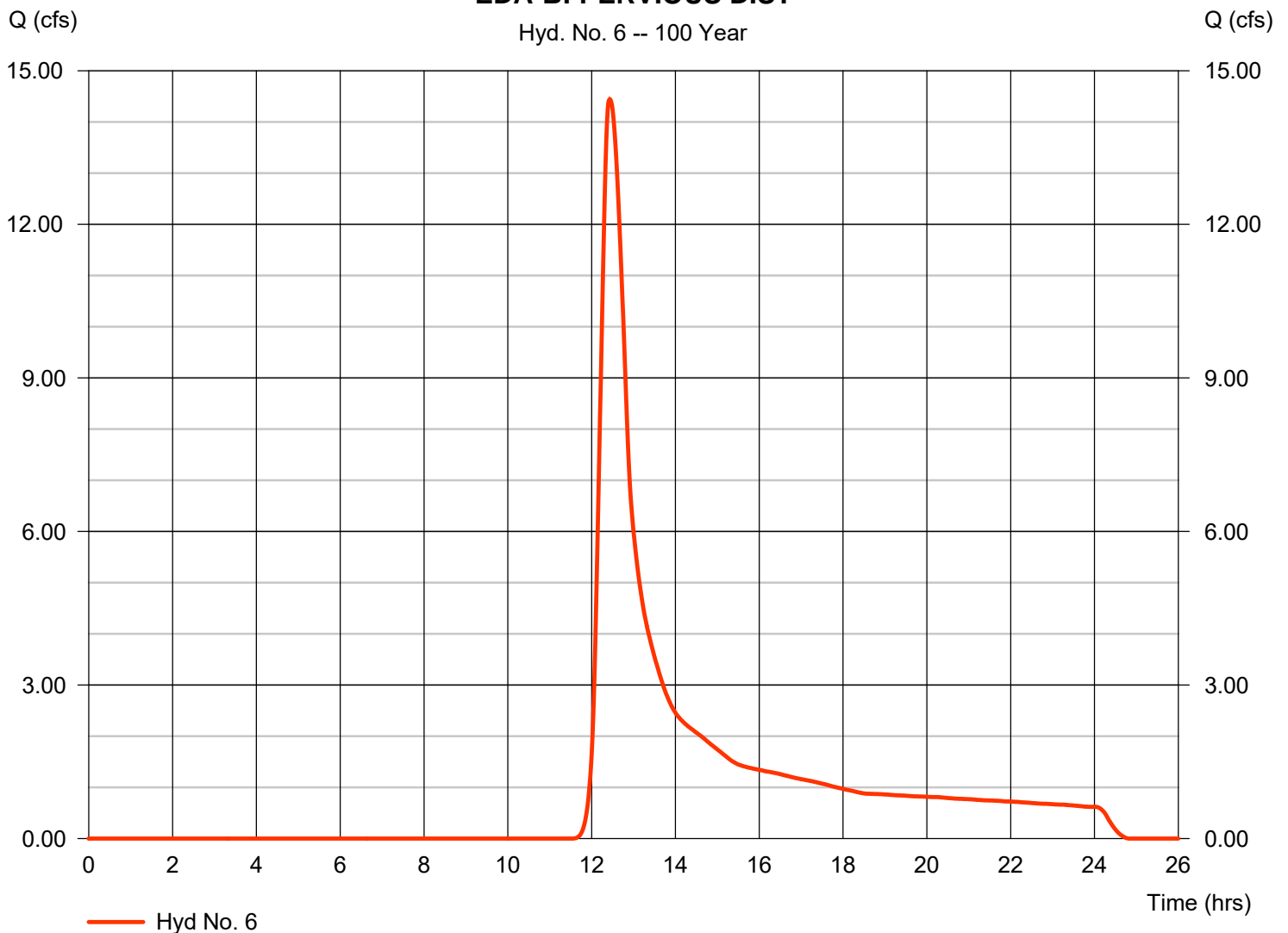
Hyd. No. 6

EDA-B: PERVIOUS DIST

Hydrograph type	= SCS Runoff	Peak discharge	= 14.45 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.43 hrs
Time interval	= 1 min	Hyd. volume	= 87,943 cuft
Drainage area	= 14.410 ac	Curve number	= 47
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 31.40 min
Total precip.	= 7.51 in	Distribution	= Custom
Storm duration	= R:\Hydroflow Standards\NJ Reg Storm Rainfall Distribution\NOAA_C_1 min.cds		

EDA-B: PERVIOUS DIST

Hyd. No. 6 -- 100 Year



Hydrograph Report

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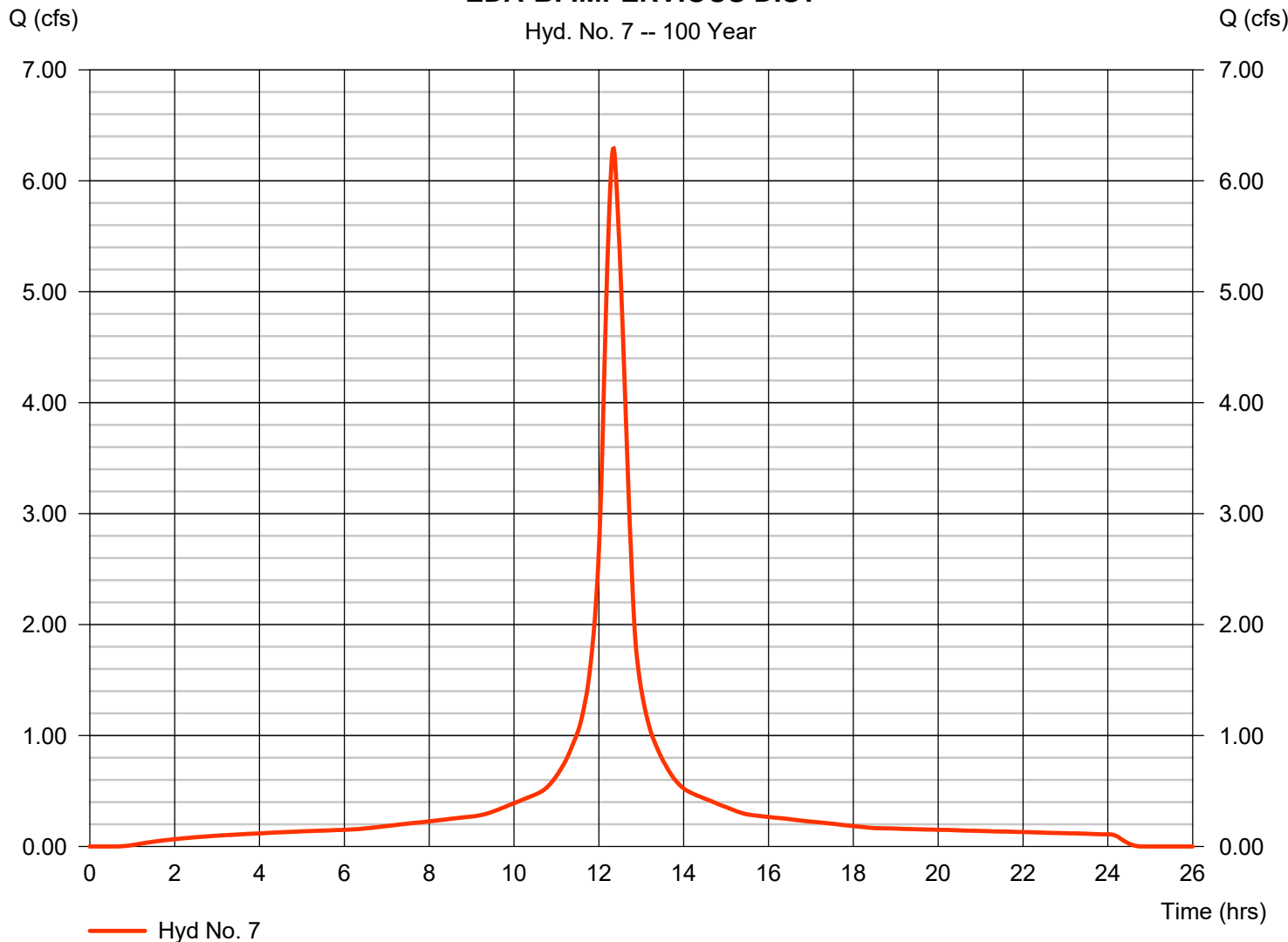
Wednesday, 03 / 9 / 2022

Hyd. No. 7

EDA-B: IMPERVIOUS DIST

Hydrograph type	= SCS Runoff	Peak discharge	= 6.290 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.35 hrs
Time interval	= 1 min	Hyd. volume	= 36,157 cuft
Drainage area	= 1.370 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 29.70 min
Total precip.	= 7.51 in	Distribution	= Custom
Storm duration	= R:\Hydroflow Standards\NJ Reg Storm Rainfall Distribution\40A_C_1 min.cds		

EDA-B: IMPERVIOUS DIST



Hydrograph Report

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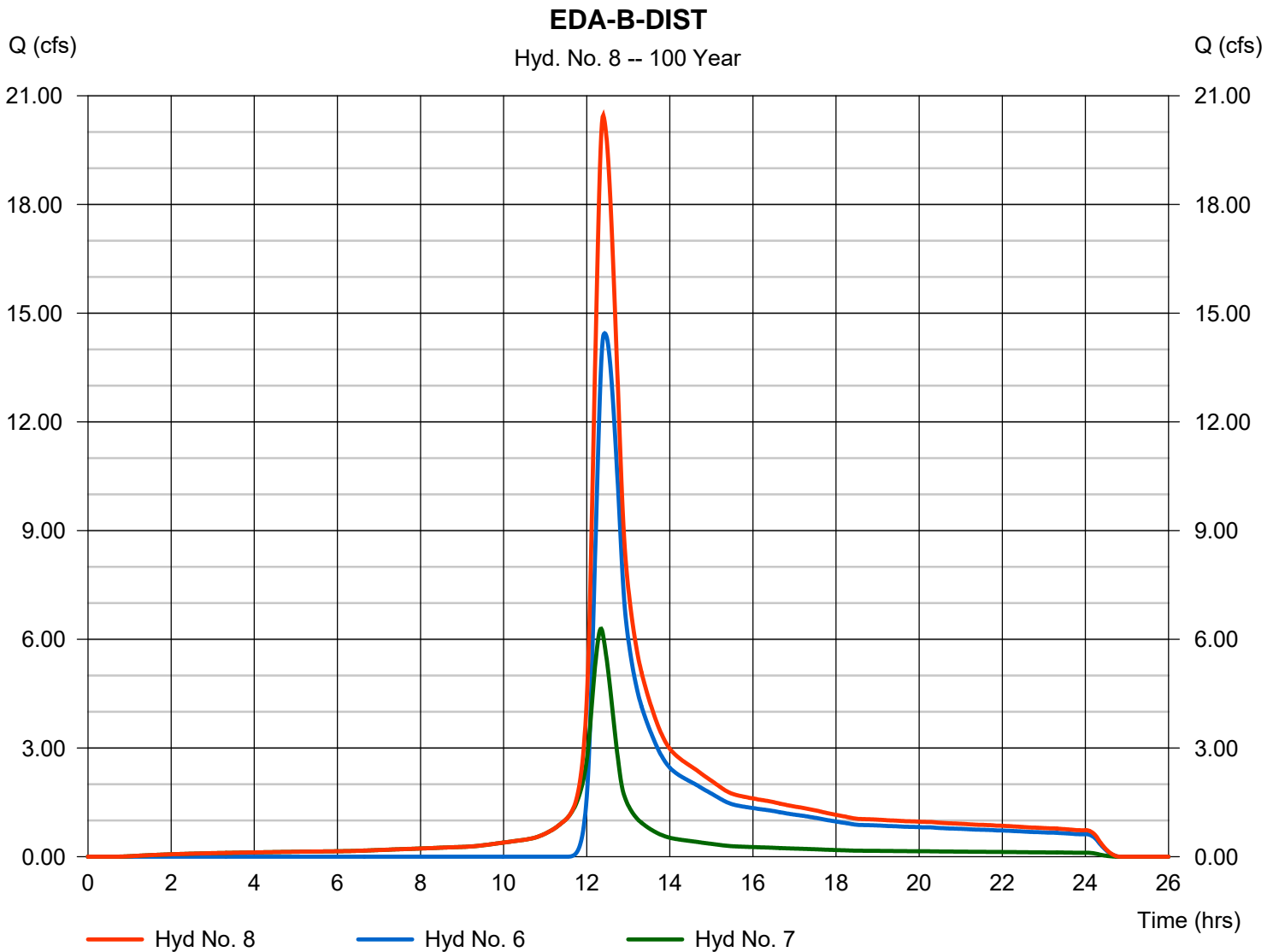
Wednesday, 03 / 9 / 2022

Hyd. No. 8

EDA-B-DIST

Hydrograph type = Combine
 Storm frequency = 100 yrs
 Time interval = 1 min
 Inflow hyds. = 6, 7

Peak discharge = 20.46 cfs
 Time to peak = 12.40 hrs
 Hyd. volume = 124,100 cuft
 Contrib. drain. area = 15.780 ac



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

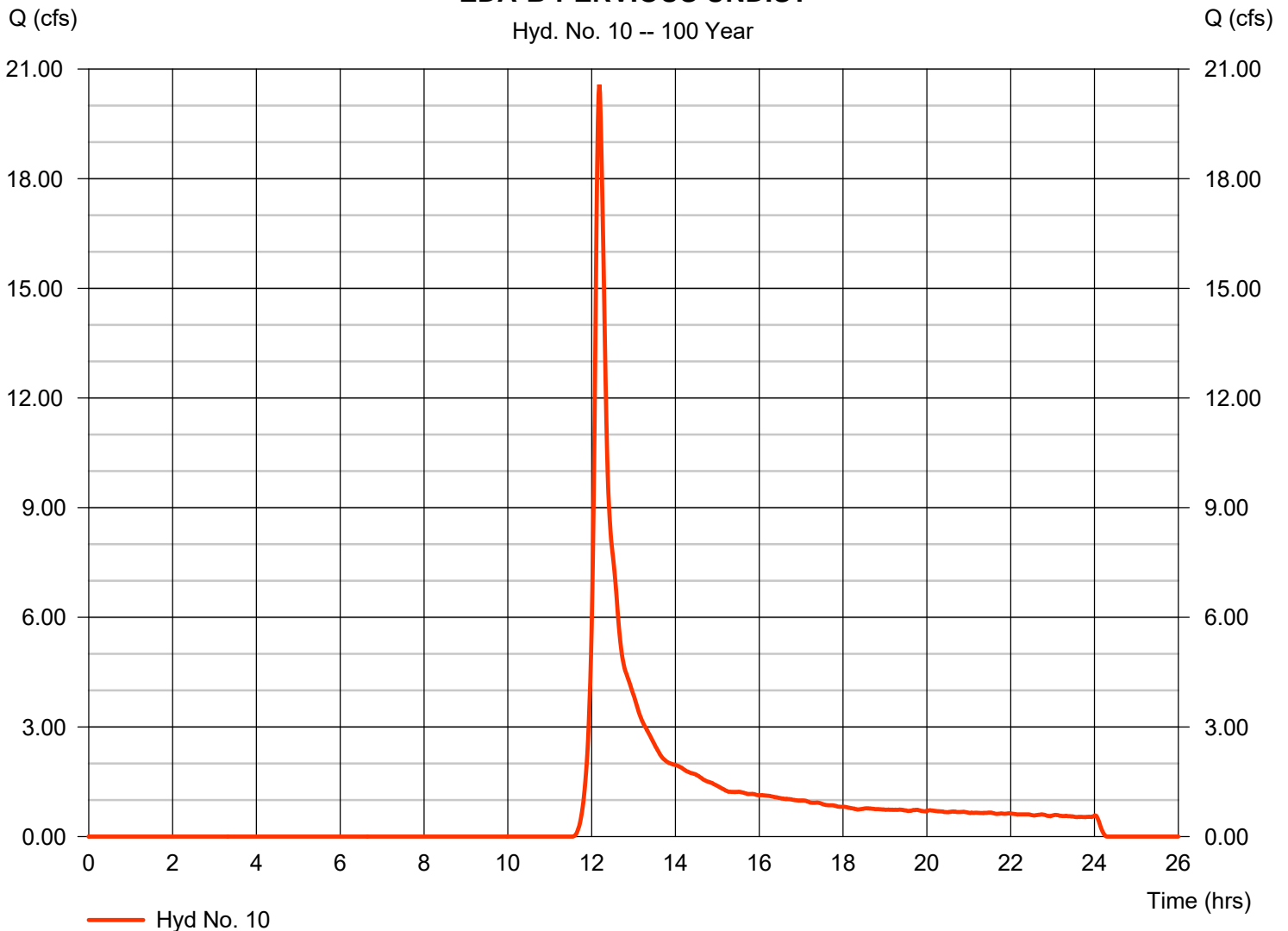
Wednesday, 03 / 9 / 2022

Hyd. No. 10

EDA-B-PERVIOUS UNDIST

Hydrograph type	= SCS Runoff	Peak discharge	= 20.57 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.18 hrs
Time interval	= 1 min	Hyd. volume	= 76,956 cuft
Drainage area	= 12.470 ac	Curve number	= 47
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 10.70 min
Total precip.	= 7.51 in	Distribution	= Custom
Storm duration	= R:\Hydroflow Standards\NJ Reg Storm Rainfall Distribution\401A_C_1 min.cds		

EDA-B-PERVIOUS UNDIST



Hydrograph Report

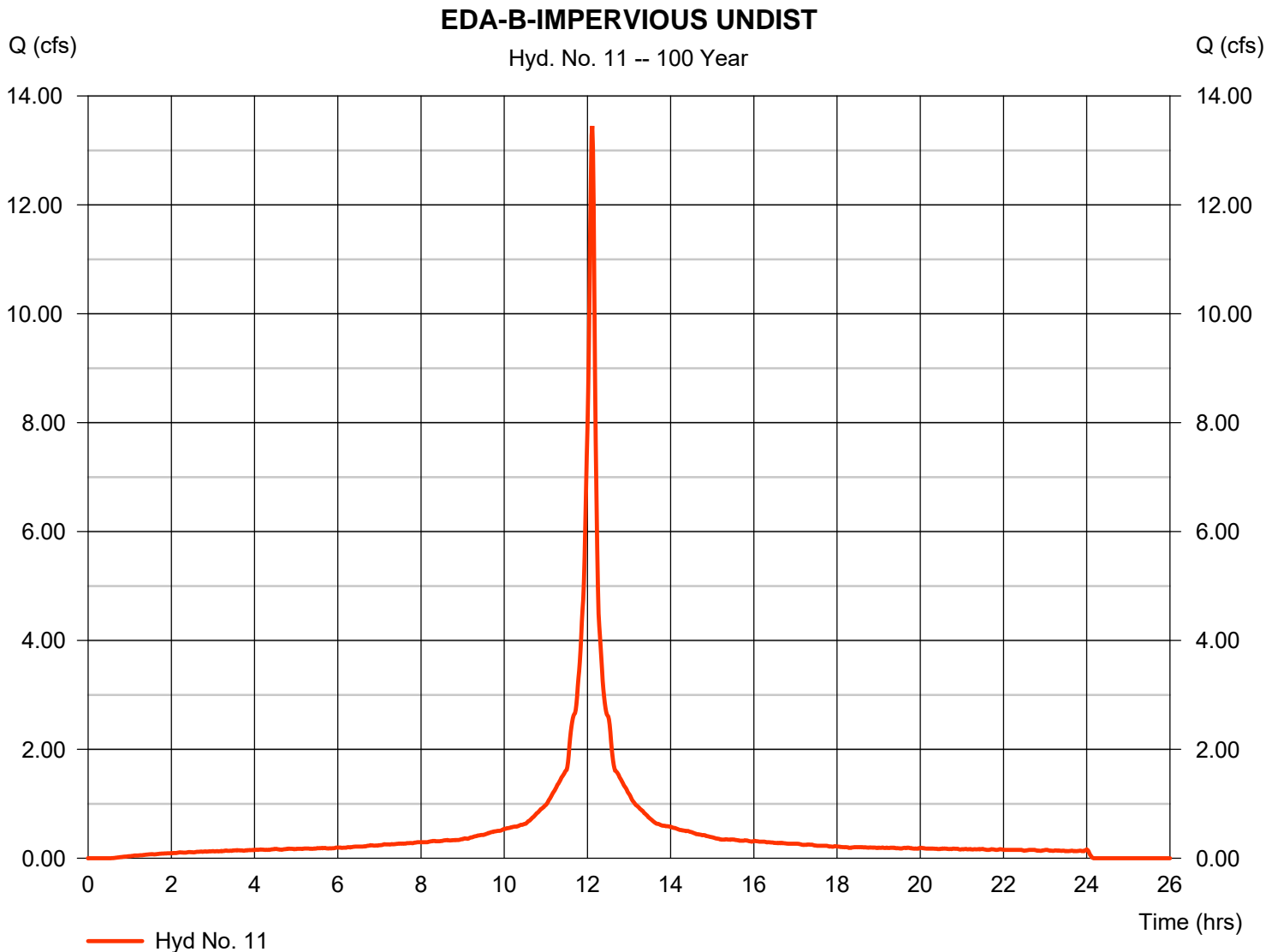
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

Wednesday, 03 / 9 / 2022

Hyd. No. 11

EDA-B-IMPERVIOUS UNDIST

Hydrograph type	= SCS Runoff	Peak discharge	= 13.45 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.12 hrs
Time interval	= 1 min	Hyd. volume	= 44,363 cuft
Drainage area	= 1.630 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 6.00 min
Total precip.	= 7.51 in	Distribution	= Custom
Storm duration	= R:\Hydroflow Standards\NJ Reg Slope Rainfall Distribution\NOAA_C_1 min.cds		



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

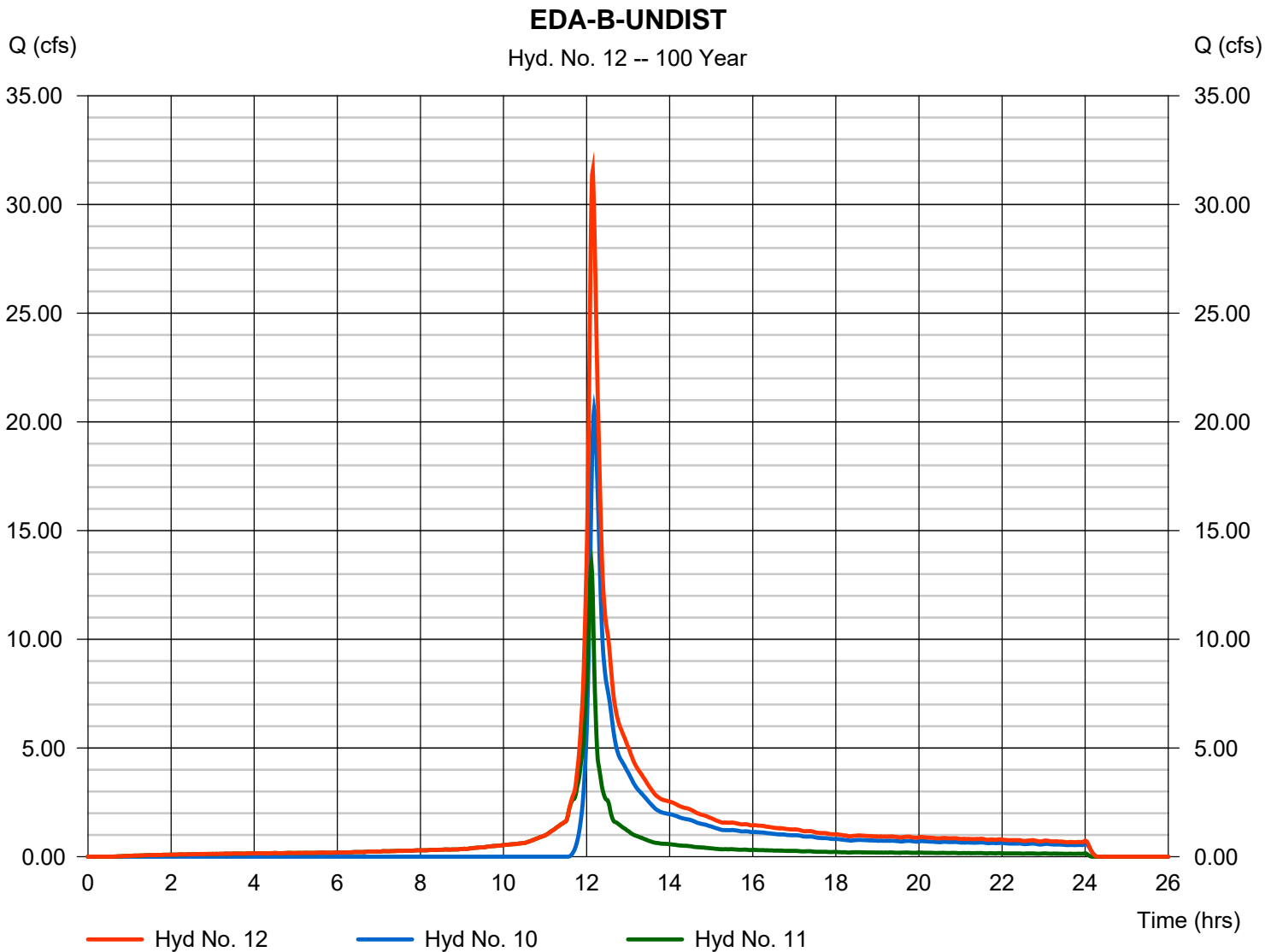
Wednesday, 03 / 9 / 2022

Hyd. No. 12

EDA-B-UNDIST

Hydrograph type = Combine
Storm frequency = 100 yrs
Time interval = 1 min
Inflow hyds. = 10, 11

Peak discharge = 31.56 cfs
Time to peak = 12.15 hrs
Hyd. volume = 121,320 cuft
Contrib. drain. area = 14.100 ac



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

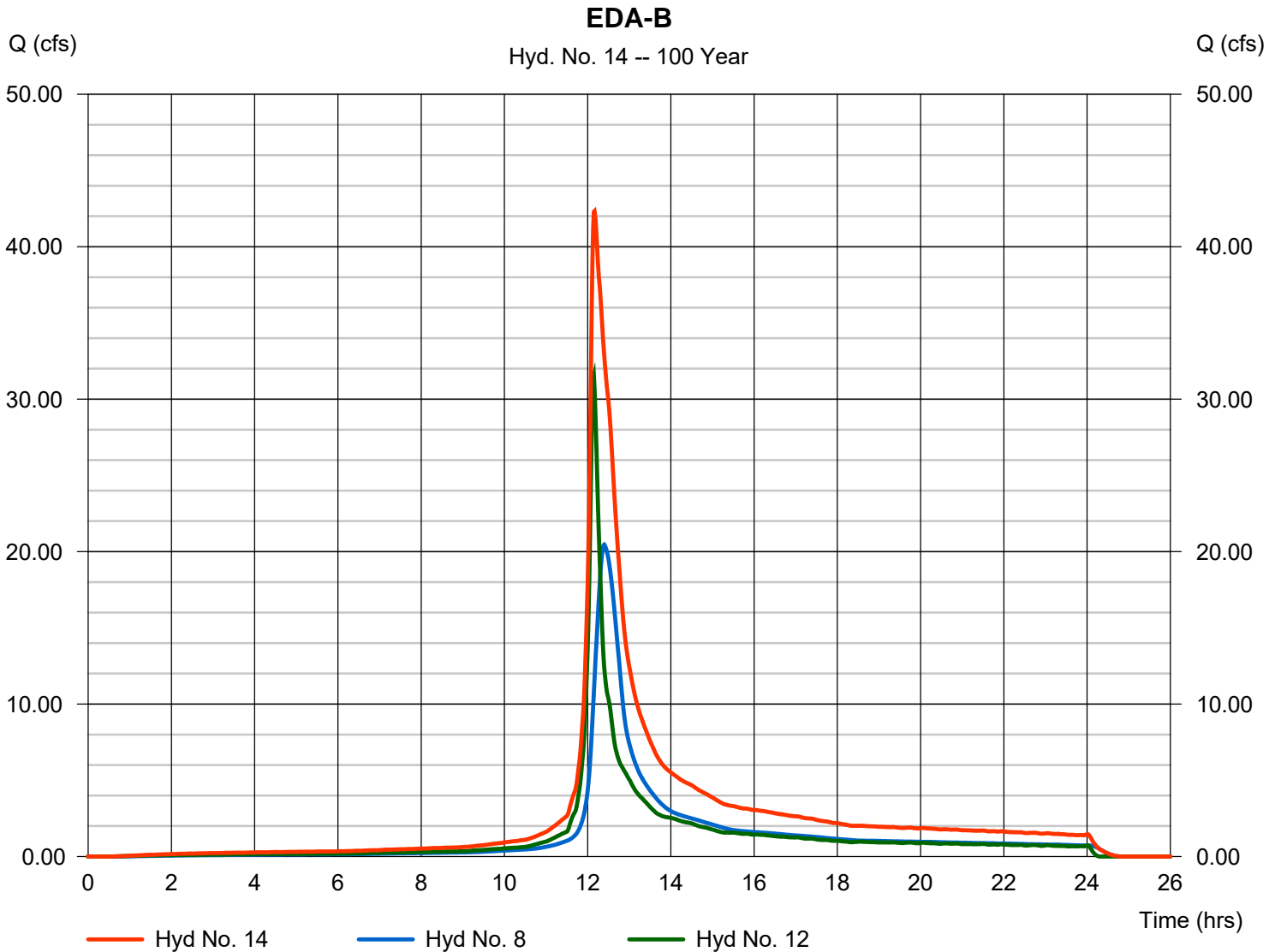
Wednesday, 03 / 9 / 2022

Hyd. No. 14

EDA-B

Hydrograph type = Combine
 Storm frequency = 100 yrs
 Time interval = 1 min
 Inflow hyds. = 8, 12

Peak discharge = 42.34 cfs
 Time to peak = 12.17 hrs
 Hyd. volume = 245,420 cuft
 Contrib. drain. area = 0.000 ac



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

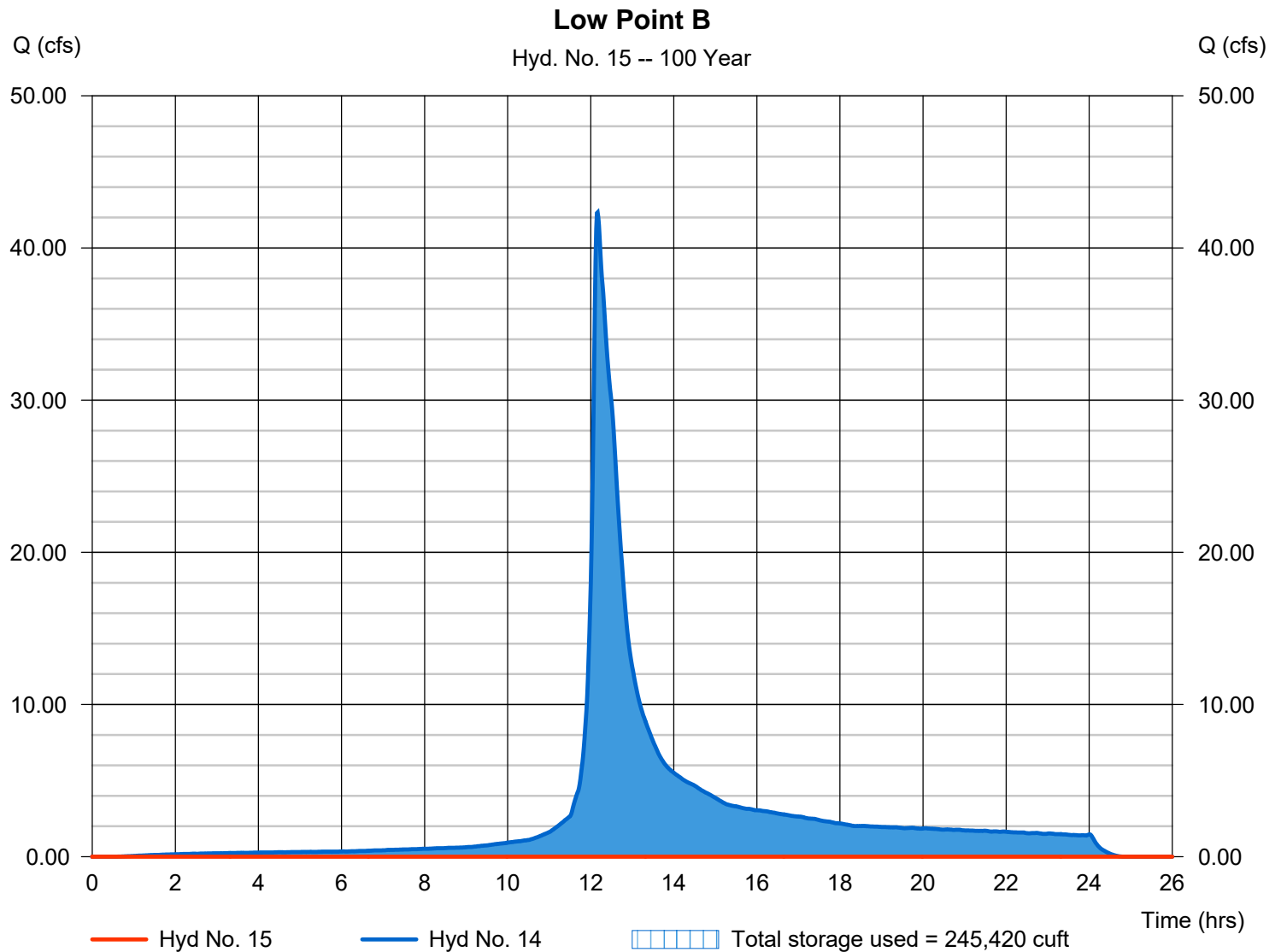
Wednesday, 03 / 9 / 2022

Hyd. No. 15

Low Point B

Hydrograph type	= Reservoir	Peak discharge	= 0.000 cfs
Storm frequency	= 100 yrs	Time to peak	= n/a
Time interval	= 1 min	Hyd. volume	= 0 cuft
Inflow hyd. No.	= 14 - EDA-B	Max. Elevation	= 598.83 ft
Reservoir name	= Low Point B	Max. Storage	= 245,420 cuft

Storage Indication method used.



Hydrograph Report

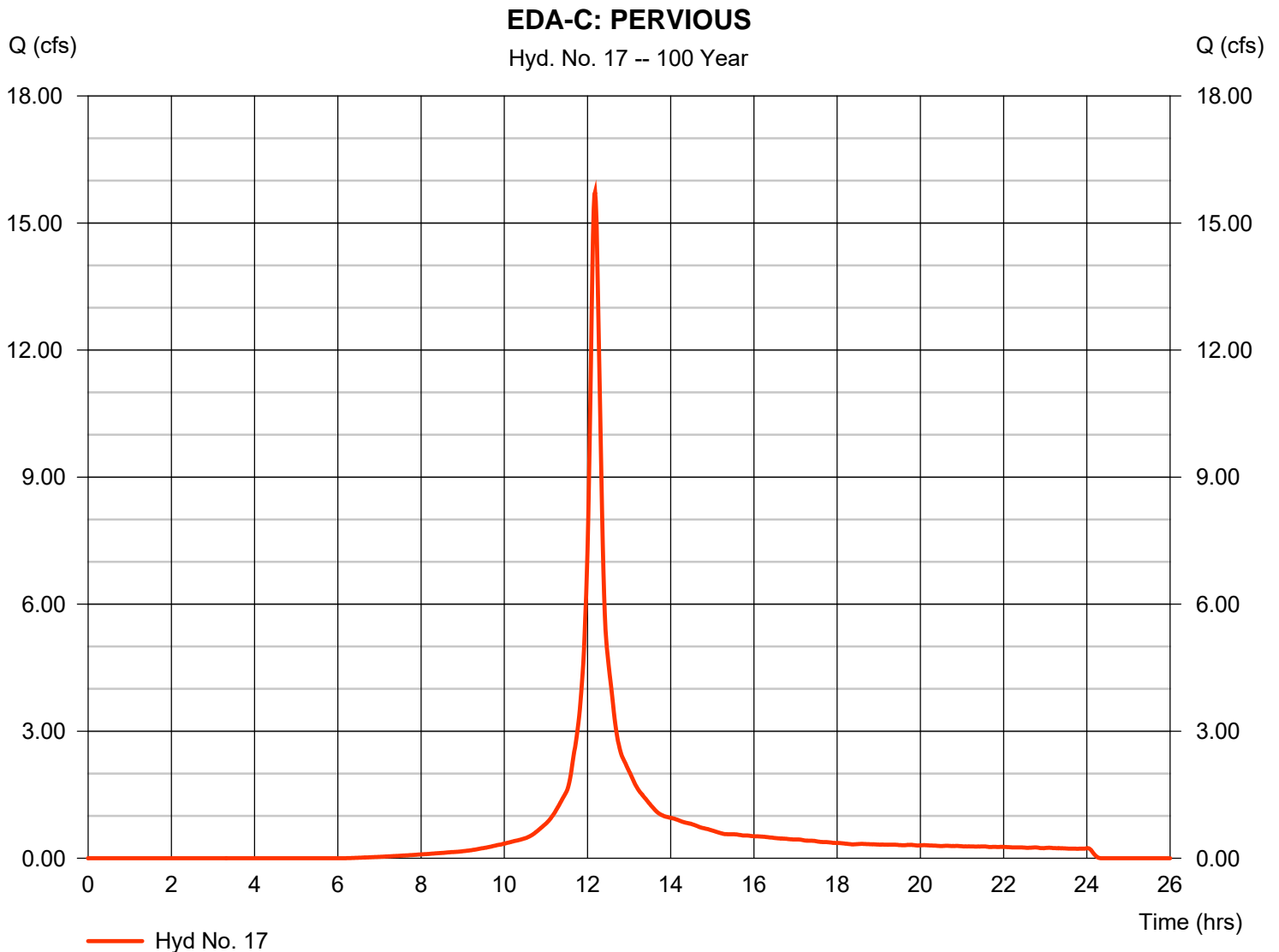
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Wednesday, 03 / 9 / 2022

Hyd. No. 17

EDA-C: PERVIOUS

Hydrograph type	= SCS Runoff	Peak discharge	= 15.73 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.18 hrs
Time interval	= 1 min	Hyd. volume	= 54,675 cuft
Drainage area	= 3.170 ac	Curve number	= 77
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 12.70 min
Total precip.	= 7.51 in	Distribution	= Custom
Storm duration	= R:\Hydroflow Standards\NJ Reg Slope Rainfall Distribution\401A_C_1 min.cds		



Hydrograph Report

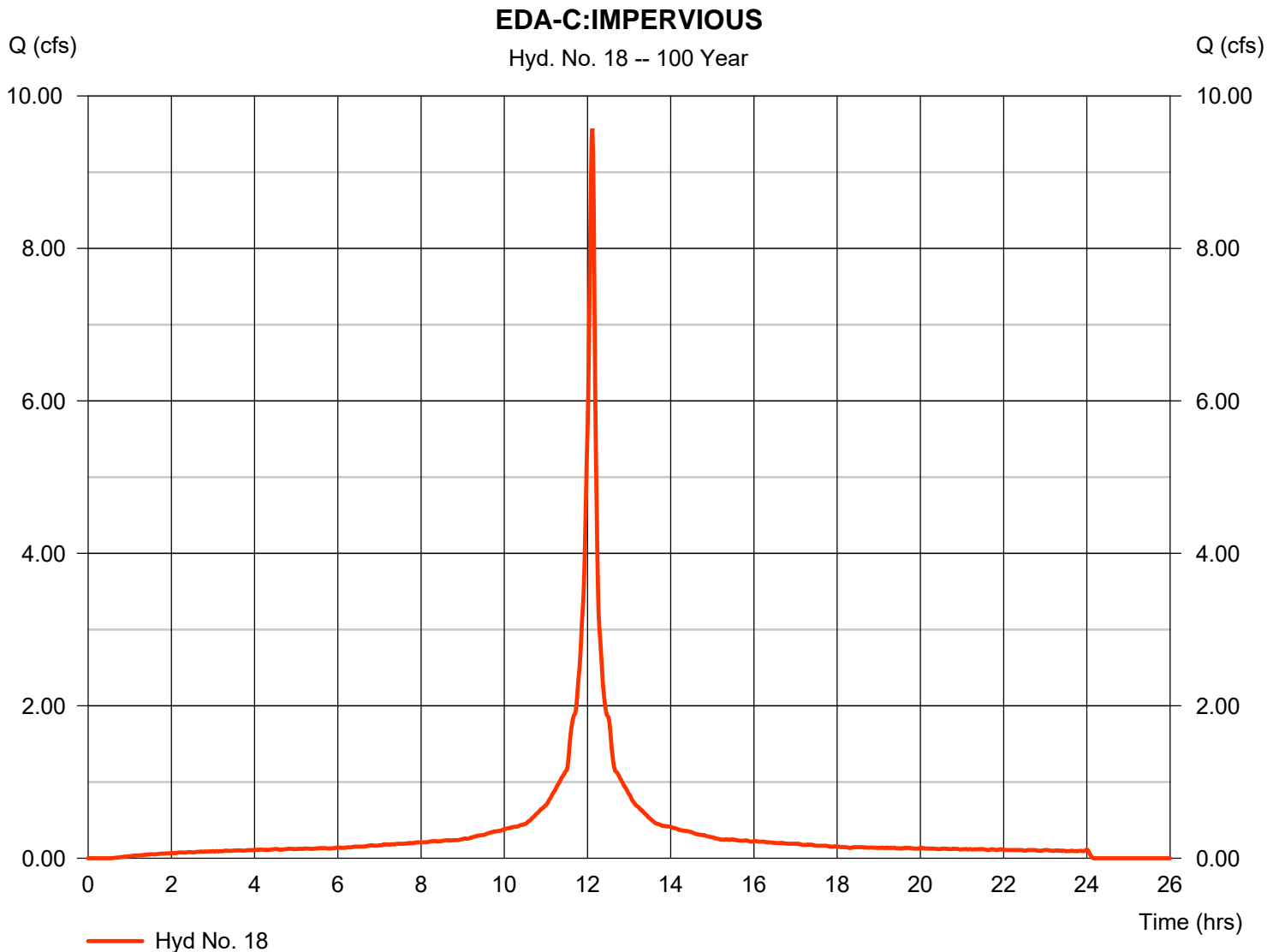
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

Wednesday, 03 / 9 / 2022

Hyd. No. 18

EDA-C:IMPERVIOUS

Hydrograph type	= SCS Runoff	Peak discharge	= 9.571 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.12 hrs
Time interval	= 1 min	Hyd. volume	= 31,571 cuft
Drainage area	= 1.160 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 6.00 min
Total precip.	= 7.51 in	Distribution	= Custom
Storm duration	= R:\Hydroflow Standards\NJ Reg Slope Rainfall Distribution\401A_C_1 min.cds		



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

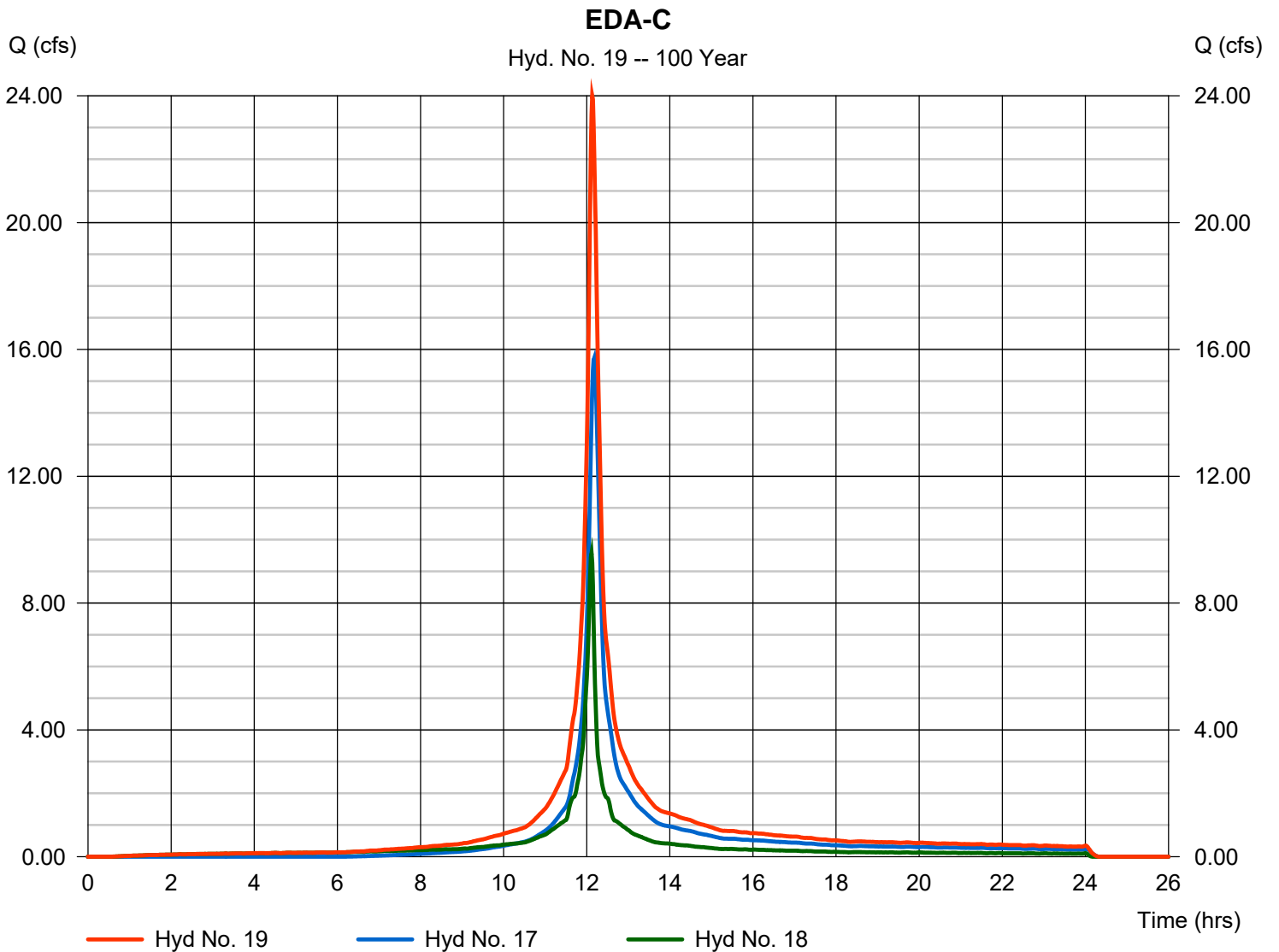
Wednesday, 03 / 9 / 2022

Hyd. No. 19

EDA-C

Hydrograph type = Combine
 Storm frequency = 100 yrs
 Time interval = 1 min
 Inflow hyds. = 17, 18

Peak discharge = 24.00 cfs
 Time to peak = 12.13 hrs
 Hyd. volume = 86,247 cuft
 Contrib. drain. area = 4.330 ac



Hydrograph Report

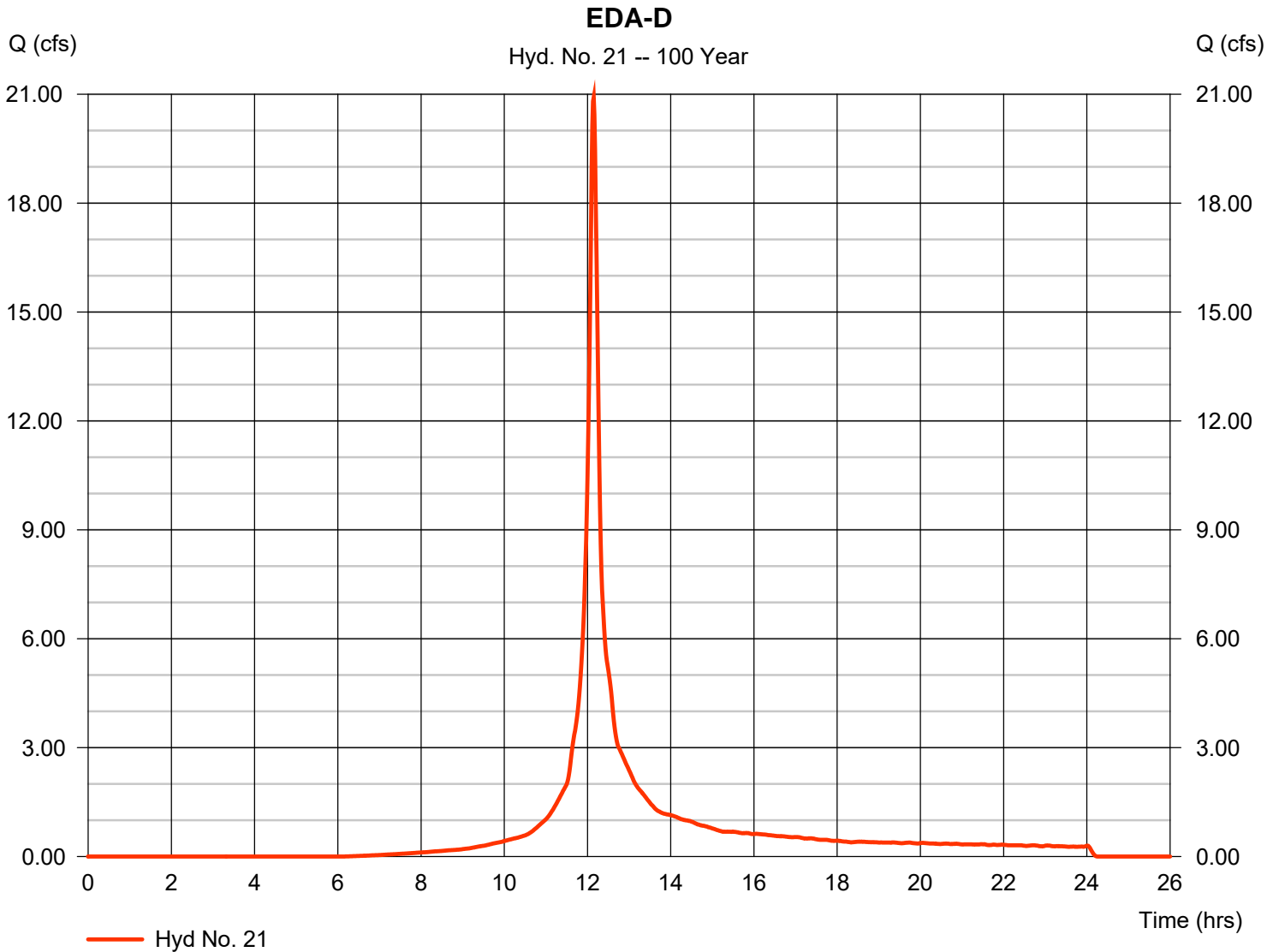
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Wednesday, 03 / 9 / 2022

Hyd. No. 21

EDA-D

Hydrograph type	= SCS Runoff	Peak discharge	= 20.91 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.15 hrs
Time interval	= 1 min	Hyd. volume	= 65,881 cuft
Drainage area	= 3.760 ac	Curve number	= 77
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 10.00 min
Total precip.	= 7.51 in	Distribution	= Custom
Storm duration	= R:\Hydroflow Standards\NJ Reg Storm Rainfall Distribution\401A_C_1 min.cds		



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

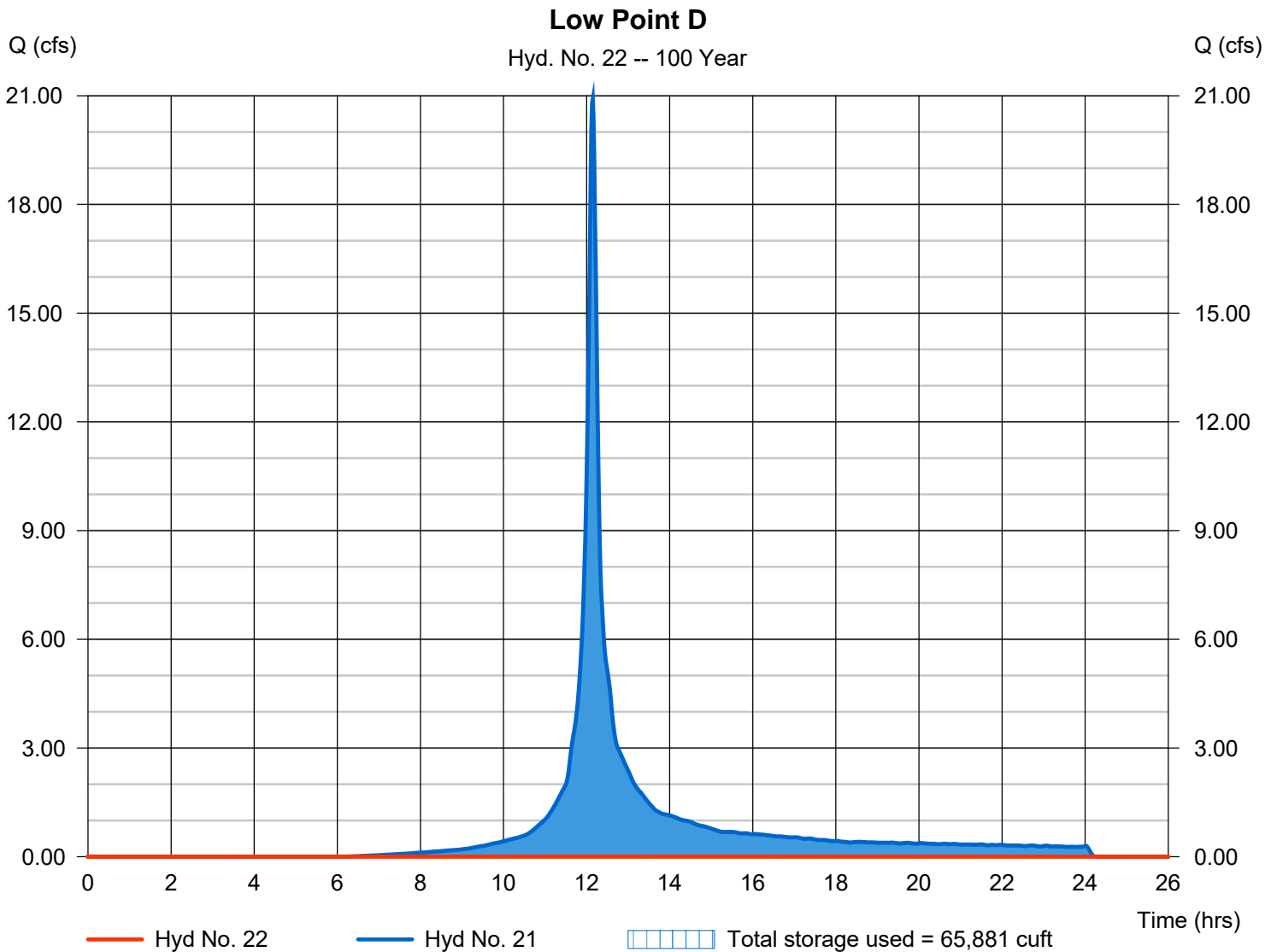
Wednesday, 03 / 9 / 2022

Hyd. No. 22

Low Point D

Hydrograph type	= Reservoir	Peak discharge	= 0.000 cfs
Storm frequency	= 100 yrs	Time to peak	= n/a
Time interval	= 1 min	Hyd. volume	= 0 cuft
Inflow hyd. No.	= 21 - EDA-D	Max. Elevation	= 597.52 ft
Reservoir name	= Low Point D	Max. Storage	= 65,881 cuft

Storage Indication method used.



Hydrograph Report

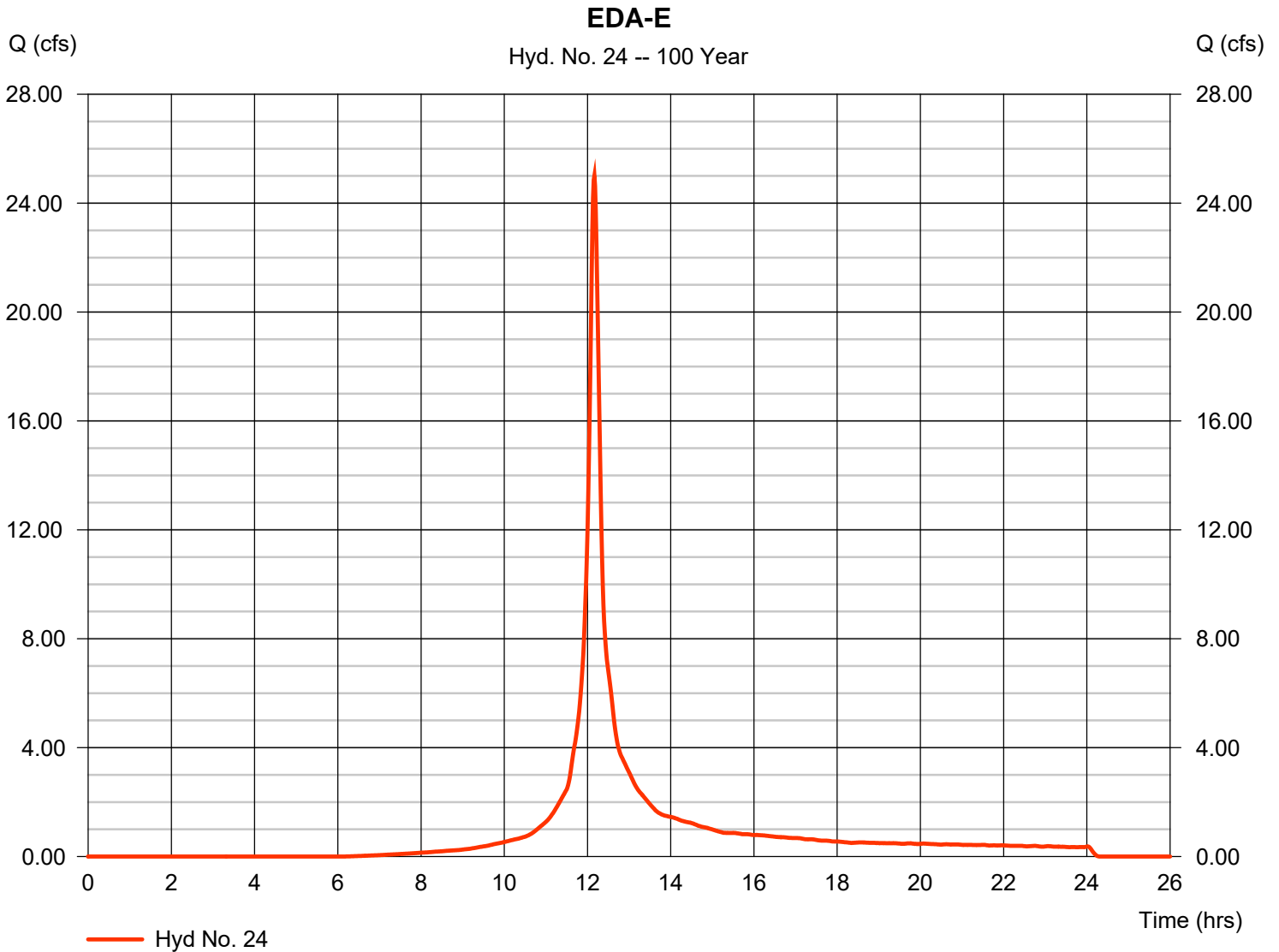
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Wednesday, 03 / 9 / 2022

Hyd. No. 24

EDA-E

Hydrograph type	= SCS Runoff	Peak discharge	= 25.00 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.17 hrs
Time interval	= 1 min	Hyd. volume	= 83,643 cuft
Drainage area	= 4.690 ac	Curve number	= 77
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 11.40 min
Total precip.	= 7.51 in	Distribution	= Custom
Storm duration	= R:\Hydroflow Standards\NJ Reg Slope Rainfall Distribution\401A_C_1 min.cds		



Hydrograph Report

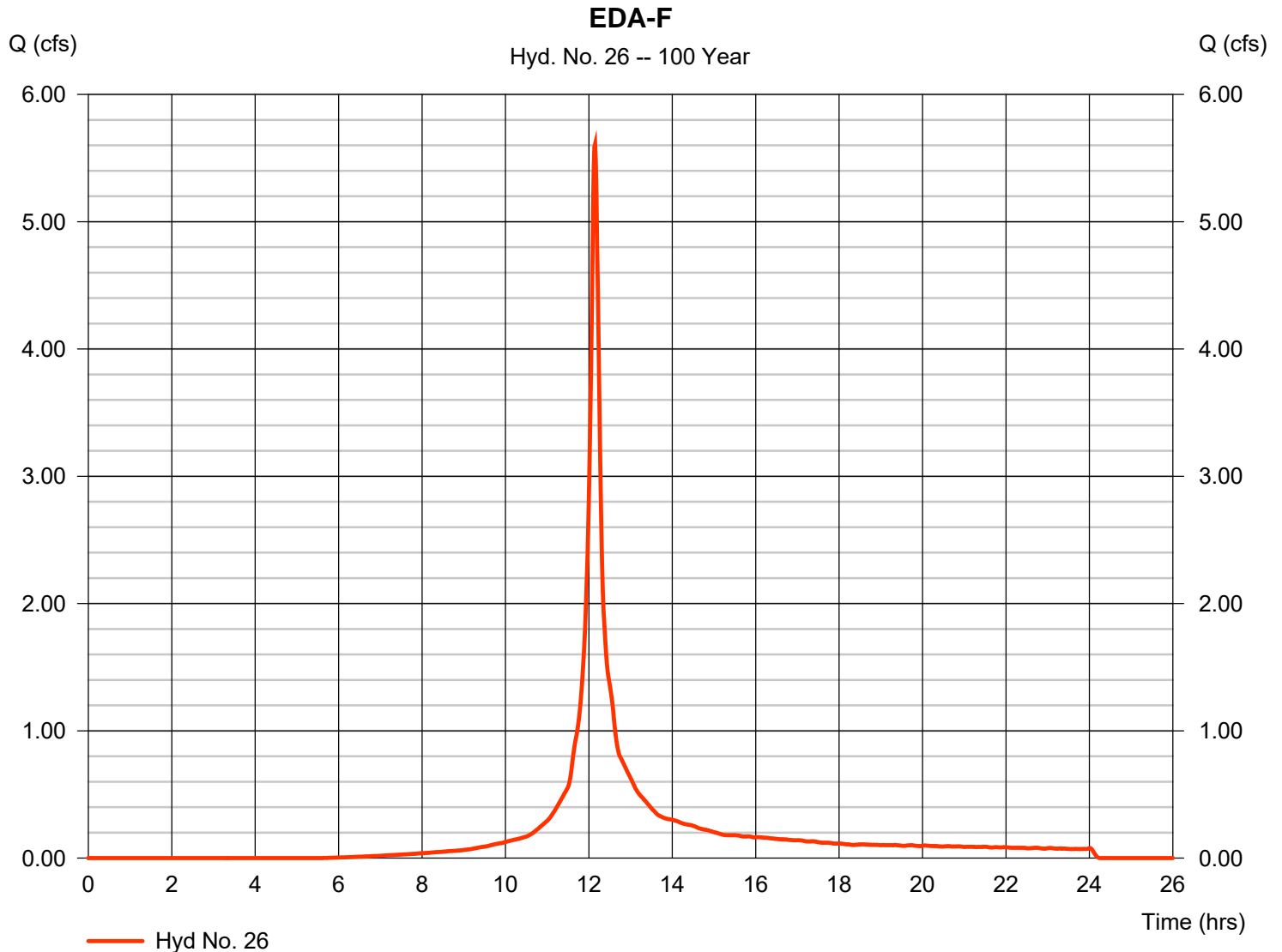
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

Wednesday, 03 / 9 / 2022

Hyd. No. 26

EDA-F

Hydrograph type	= SCS Runoff	Peak discharge	= 5.610 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.15 hrs
Time interval	= 1 min	Hyd. volume	= 17,793 cuft
Drainage area	= 0.970 ac	Curve number	= 79
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 10.00 min
Total precip.	= 7.51 in	Distribution	= Custom
Storm duration	= R:\Hydroflow Standards\NJ Reg Storm Rainfall Distribution\NOAA_C_1 min.cds		



Hydrograph Report

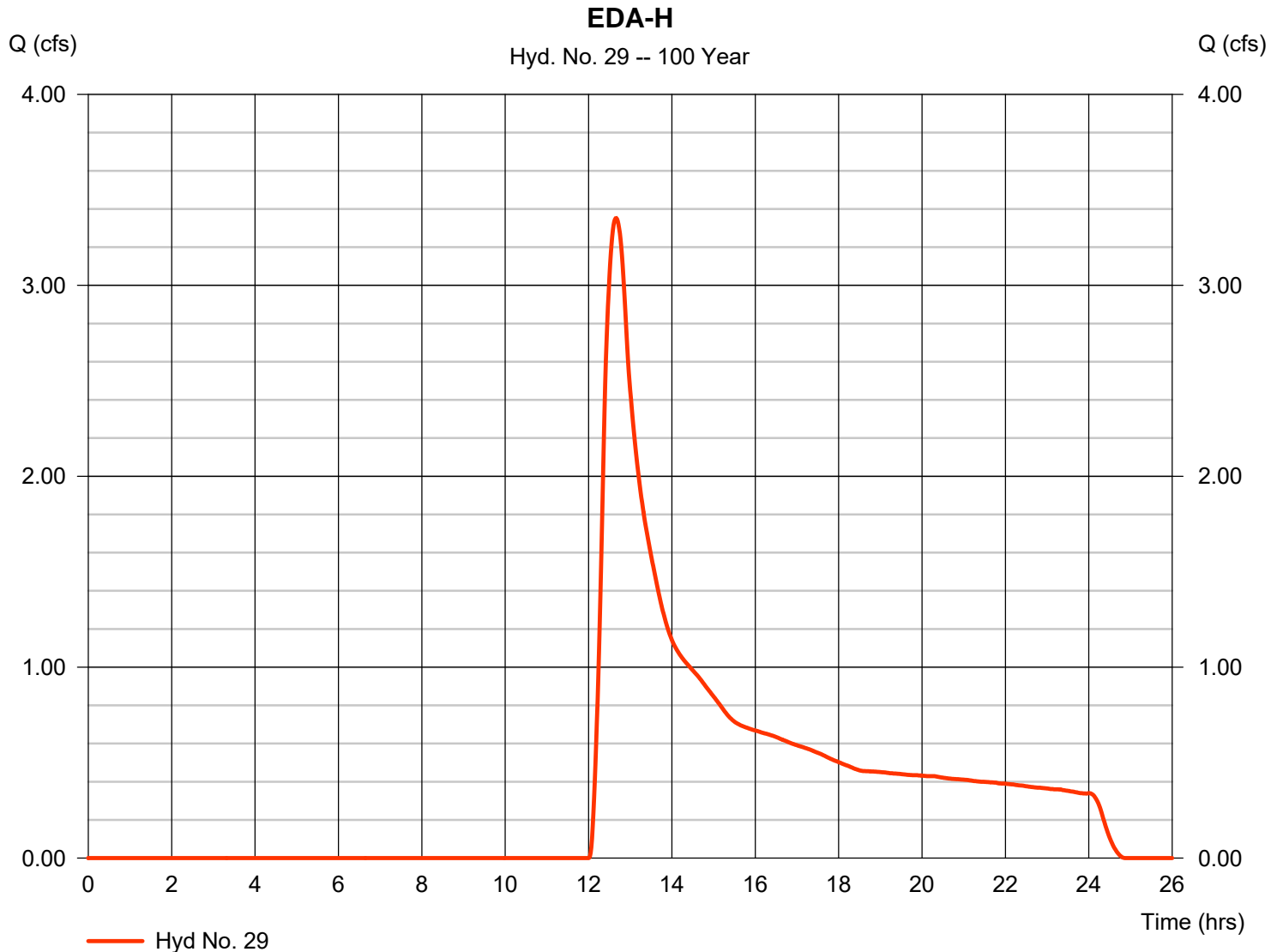
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Wednesday, 03 / 9 / 2022

Hyd. No. 29

EDA-H

Hydrograph type	= SCS Runoff	Peak discharge	= 3.352 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.67 hrs
Time interval	= 1 min	Hyd. volume	= 33,535 cuft
Drainage area	= 12.920 ac	Curve number	= 36
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 33.50 min
Total precip.	= 7.51 in	Distribution	= Custom
Storm duration	= R:\Hydroflow Standards\NJ Reg Storm Rainfall Distribution\40A_C_1 min.cds		



Hydrograph Report

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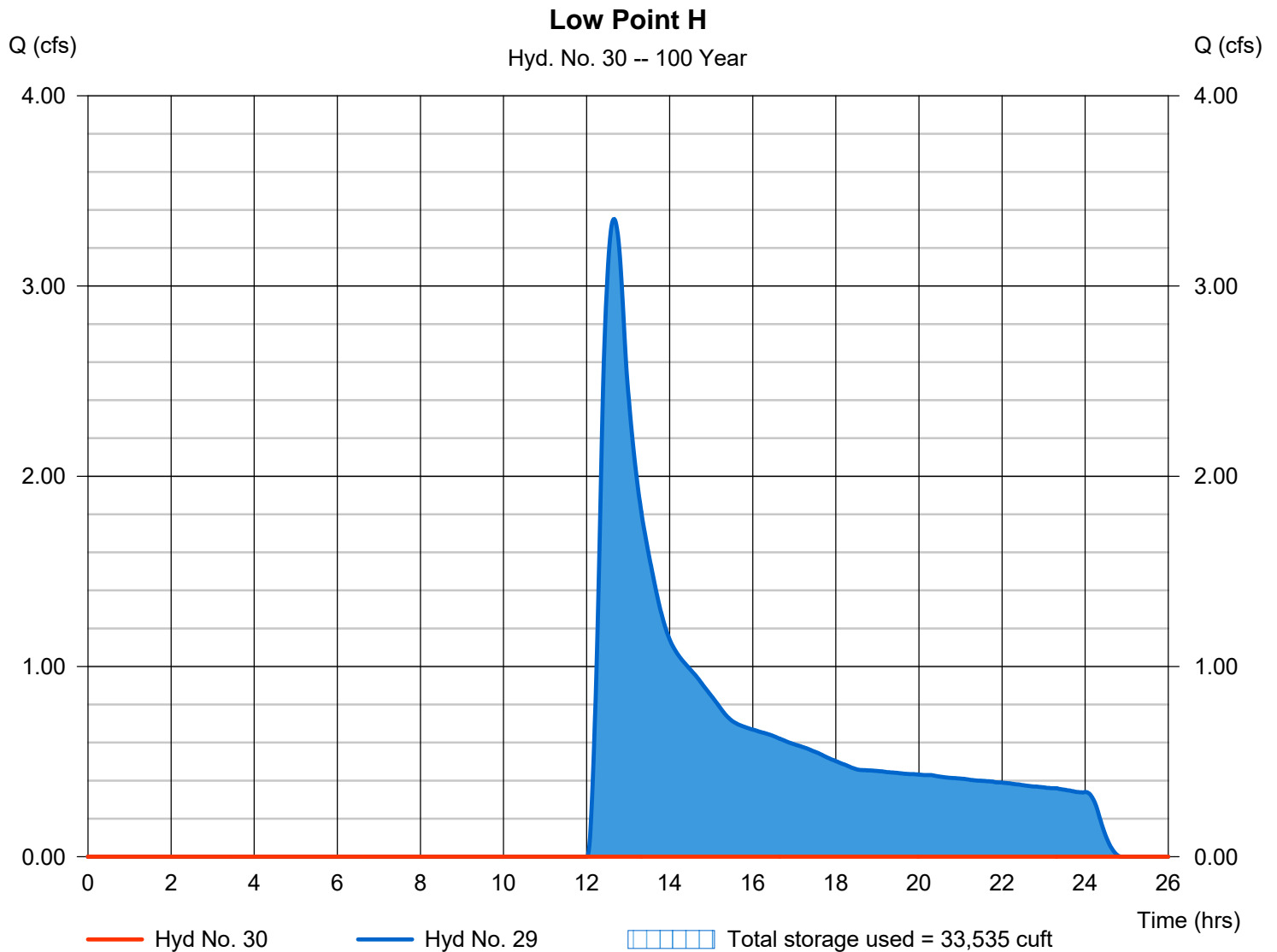
Wednesday, 03 / 9 / 2022

Hyd. No. 30

Low Point H

Hydrograph type	= Reservoir	Peak discharge	= 0.000 cfs
Storm frequency	= 100 yrs	Time to peak	= n/a
Time interval	= 1 min	Hyd. volume	= 0 cuft
Inflow hyd. No.	= 29 - EDA-H	Max. Elevation	= 597.42 ft
Reservoir name	= Low Point H	Max. Storage	= 33,535 cuft

Storage Indication method used.



Hydrograph Report

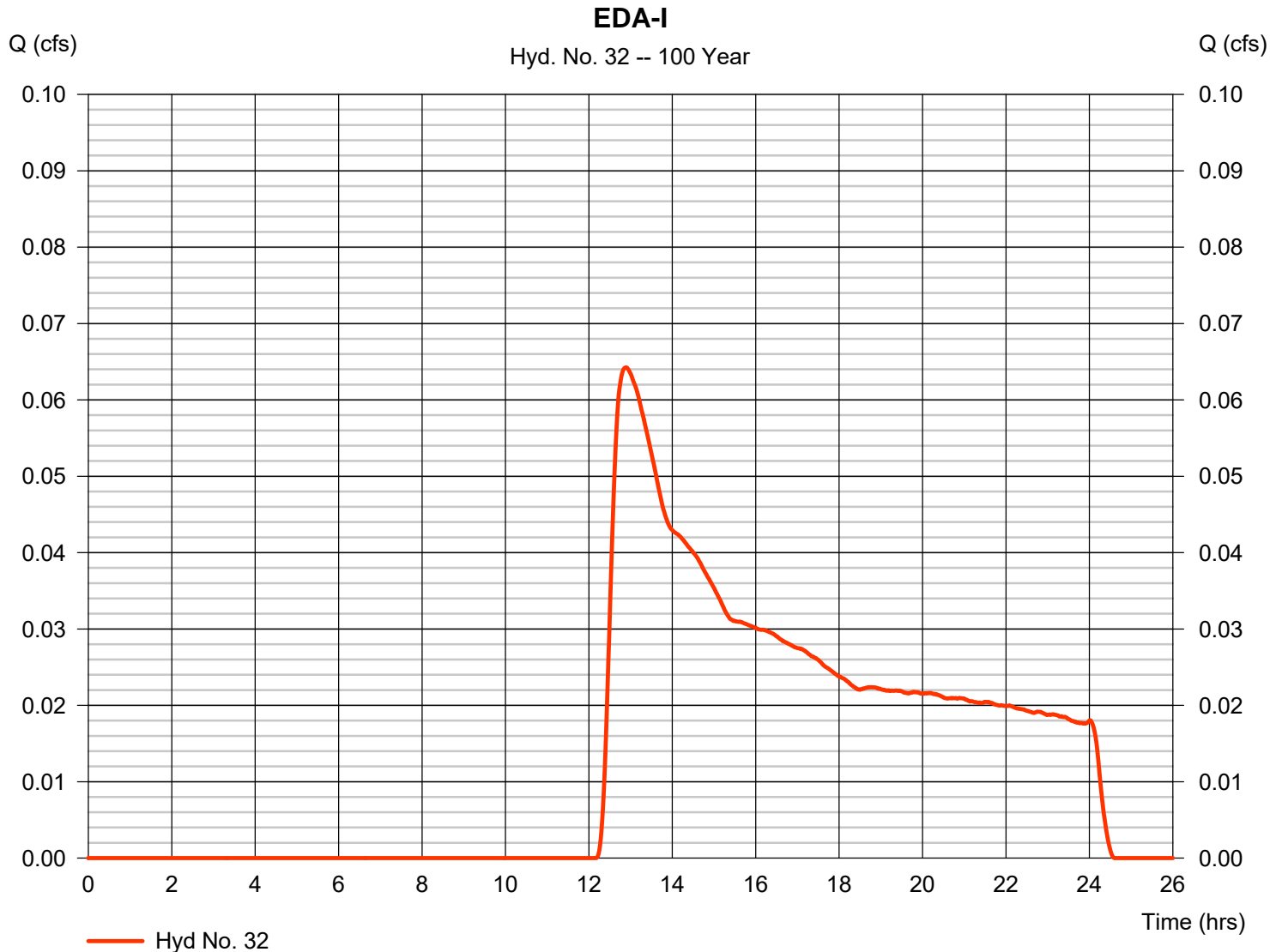
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Wednesday, 03 / 9 / 2022

Hyd. No. 32

EDA-I

Hydrograph type	= SCS Runoff	Peak discharge	= 0.064 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.90 hrs
Time interval	= 1 min	Hyd. volume	= 1,222 cuft
Drainage area	= 1.100 ac	Curve number	= 30
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 22.10 min
Total precip.	= 7.51 in	Distribution	= Custom
Storm duration	= R:\Hydroflow Standards\NJ Reg Slope Rainfall Distribution\40A_C_1 min.cds		



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

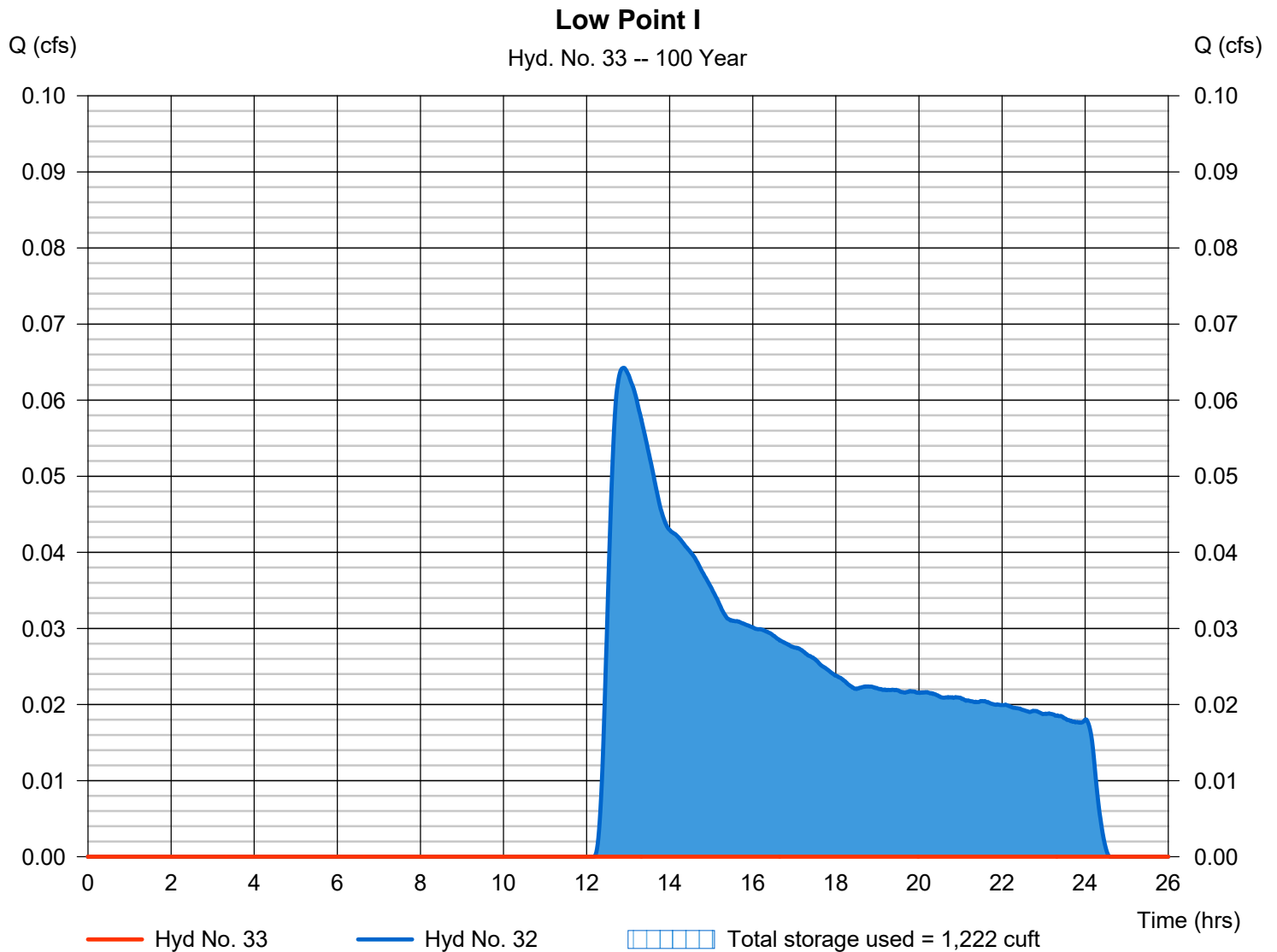
Wednesday, 03 / 9 / 2022

Hyd. No. 33

Low Point I

Hydrograph type	= Reservoir	Peak discharge	= 0.000 cfs
Storm frequency	= 100 yrs	Time to peak	= n/a
Time interval	= 1 min	Hyd. volume	= 0 cuft
Inflow hyd. No.	= 32 - EDA-I	Max. Elevation	= 597.15 ft
Reservoir name	= Low Point I	Max. Storage	= 1,222 cuft

Storage Indication method used.



Hydrograph Report

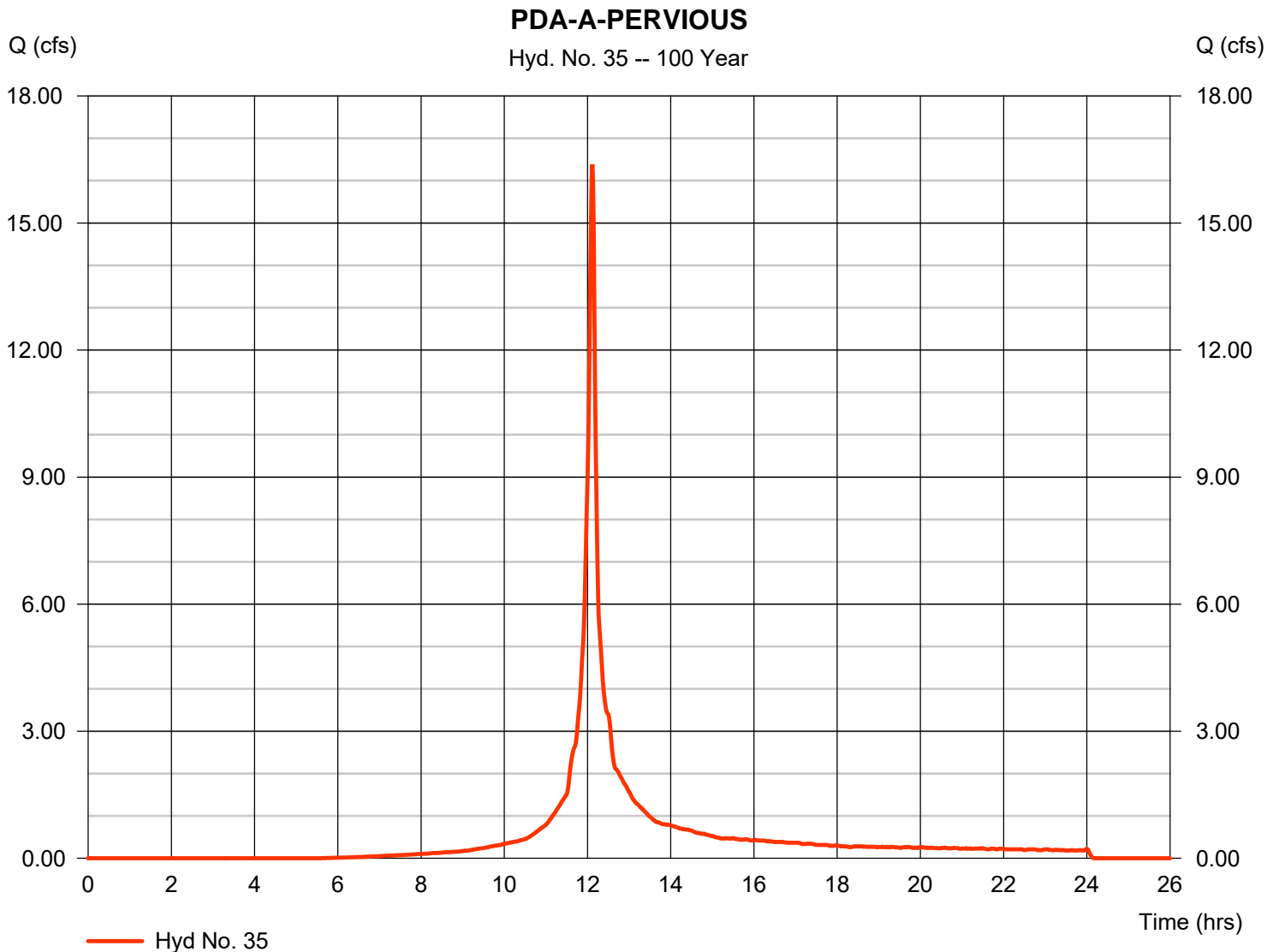
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Wednesday, 03 / 9 / 2022

Hyd. No. 35

PDA-A-PERVIOUS

Hydrograph type	= SCS Runoff	Peak discharge	= 16.38 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.12 hrs
Time interval	= 1 min	Hyd. volume	= 46,347 cuft
Drainage area	= 2.450 ac	Curve number	= 79
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 6.00 min
Total precip.	= 7.51 in	Distribution	= Custom
Storm duration	= R:\Hydroflow Standards\NJ Reg Storm Rainfall Distribution\401A_C_1 min.cds		



Hydrograph Report

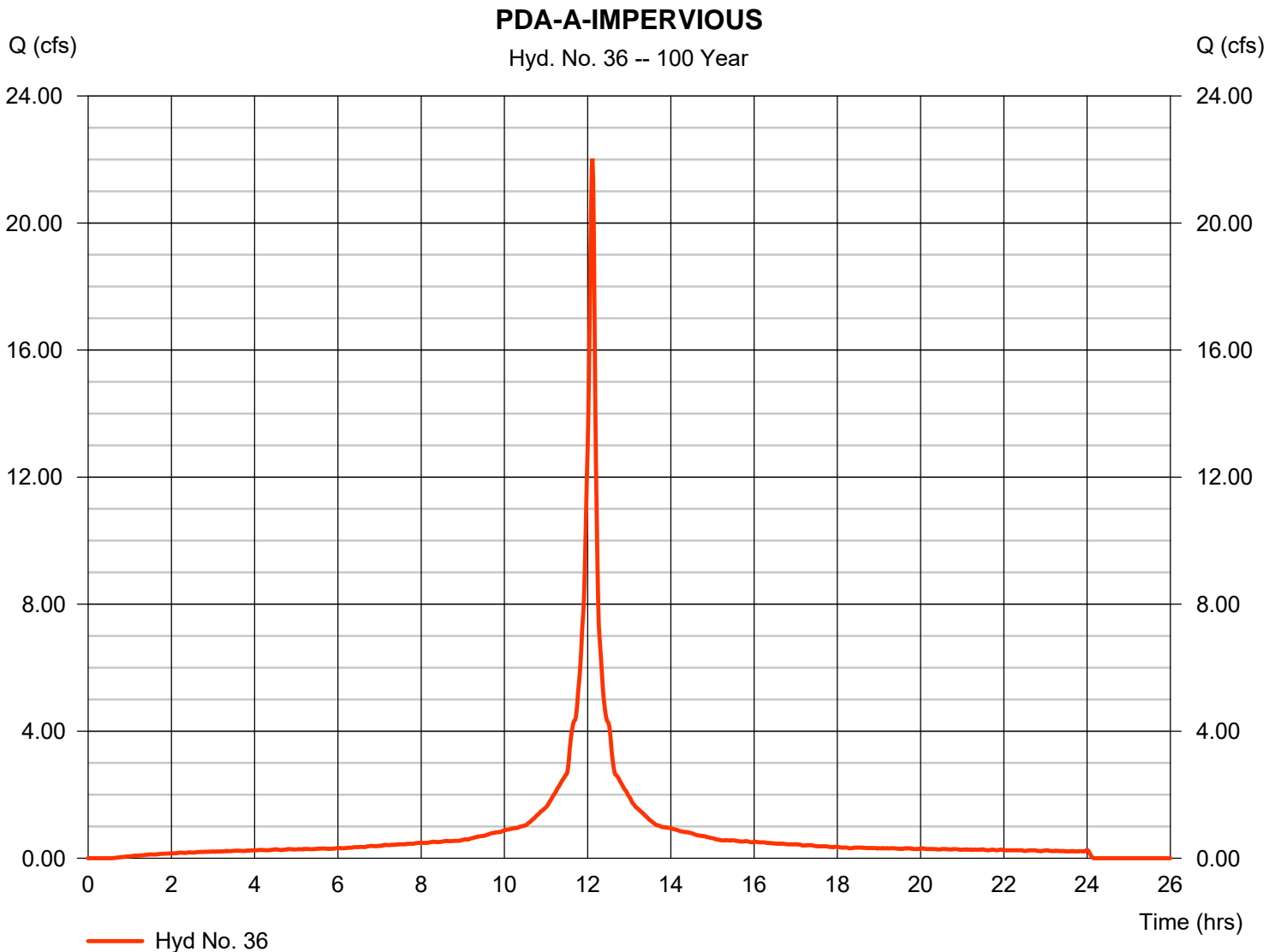
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Wednesday, 03 / 9 / 2022

Hyd. No. 36

PDA-A-IMPERVIOUS

Hydrograph type	= SCS Runoff	Peak discharge	= 22.03 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.12 hrs
Time interval	= 1 min	Hyd. volume	= 72,669 cuft
Drainage area	= 2.670 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 6.00 min
Total precip.	= 7.51 in	Distribution	= Custom
Storm duration	= R:\Hydroflow Standards\NJ Reg Slope Rainfall Distribution\40A_C_1 min.cds		



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

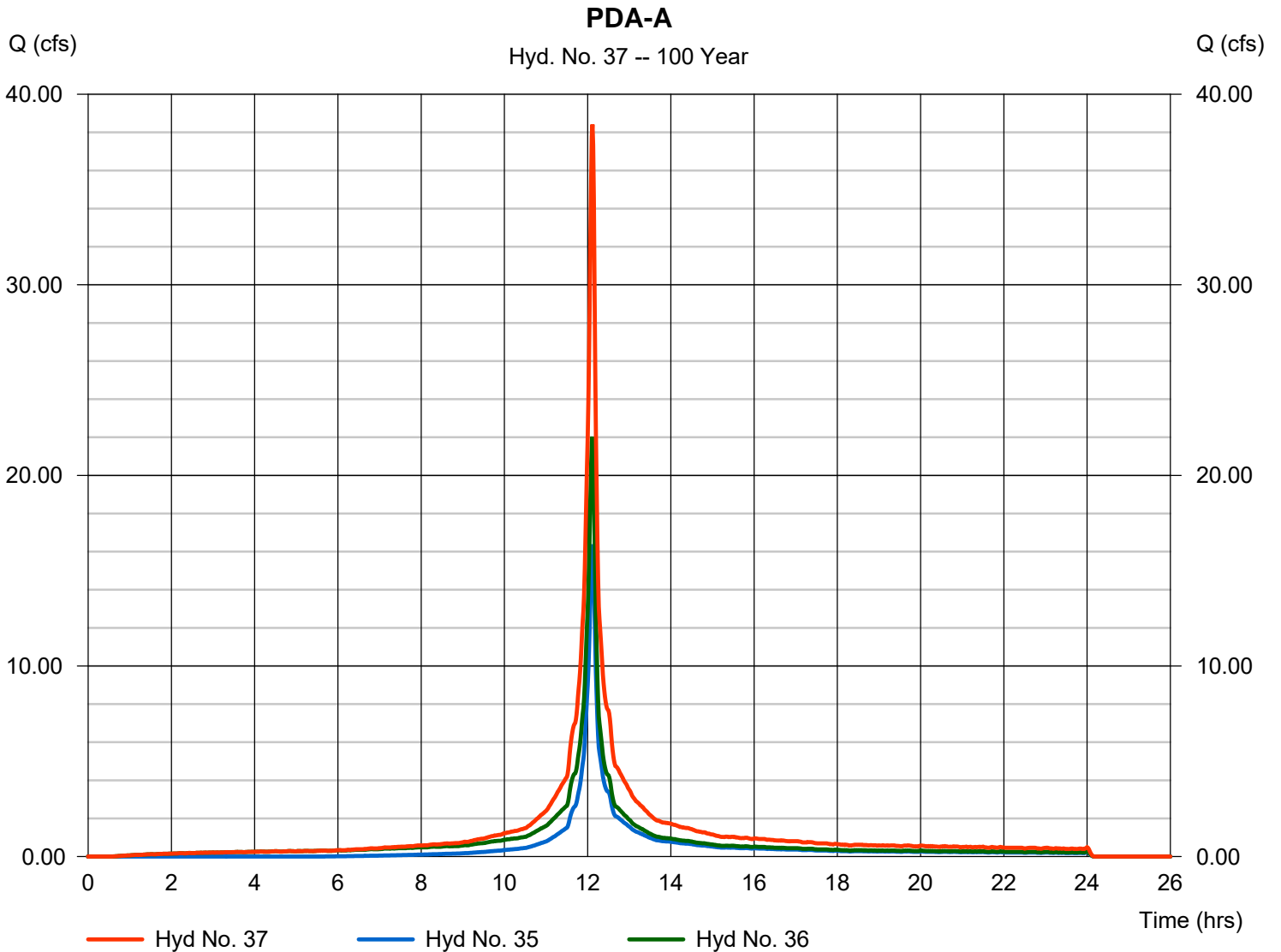
Wednesday, 03 / 9 / 2022

Hyd. No. 37

PDA-A

Hydrograph type = Combine
 Storm frequency = 100 yrs
 Time interval = 1 min
 Inflow hyds. = 35, 36

Peak discharge = 38.41 cfs
 Time to peak = 12.12 hrs
 Hyd. volume = 119,016 cuft
 Contrib. drain. area = 5.120 ac



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

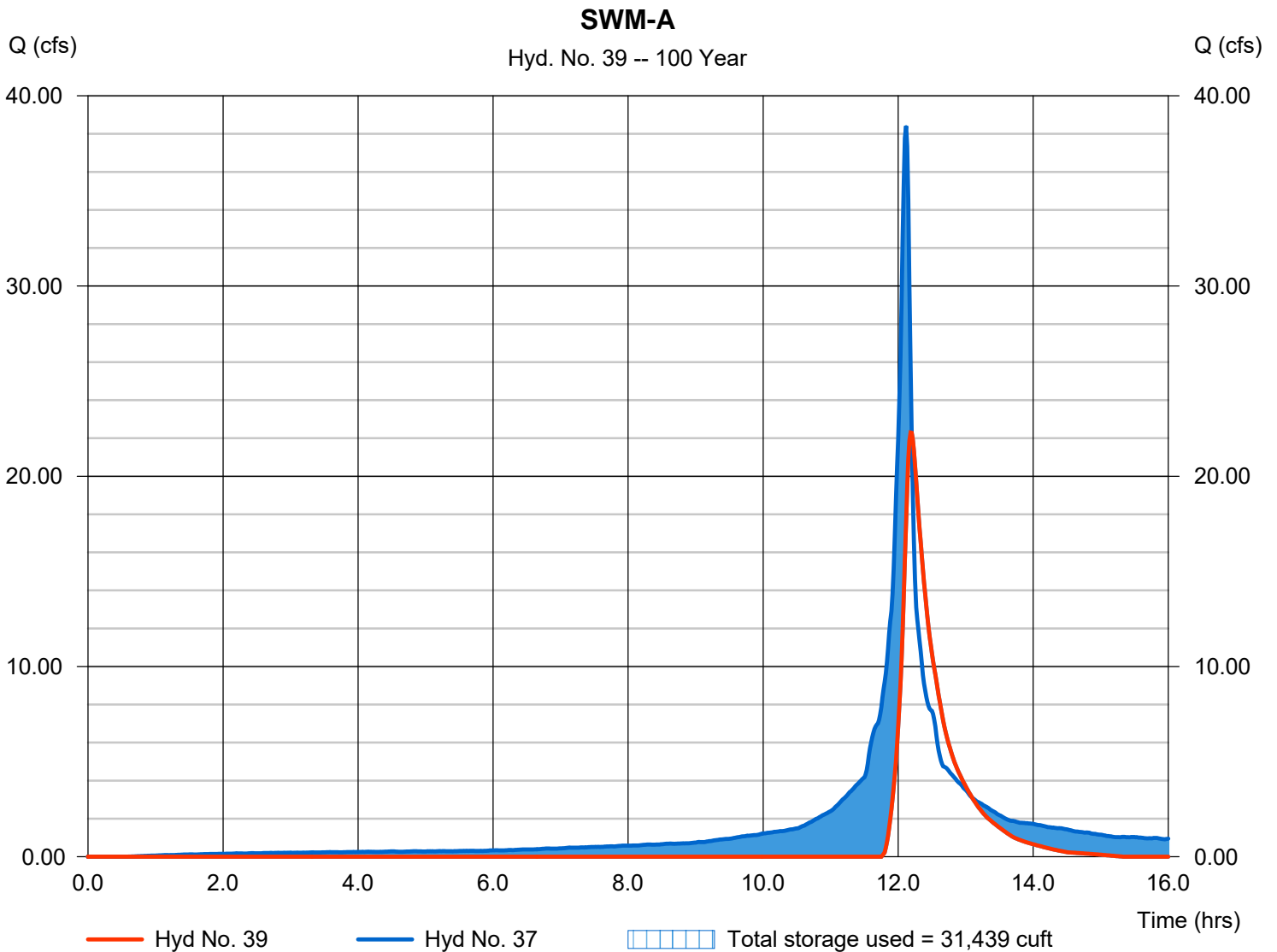
Wednesday, 03 / 9 / 2022

Hyd. No. 39

SWM-A

Hydrograph type	= Reservoir	Peak discharge	= 22.30 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.18 hrs
Time interval	= 1 min	Hyd. volume	= 49,402 cuft
Inflow hyd. No.	= 37 - PDA-A	Max. Elevation	= 596.91 ft
Reservoir name	= SWM-A	Max. Storage	= 31,439 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Hydrograph Report

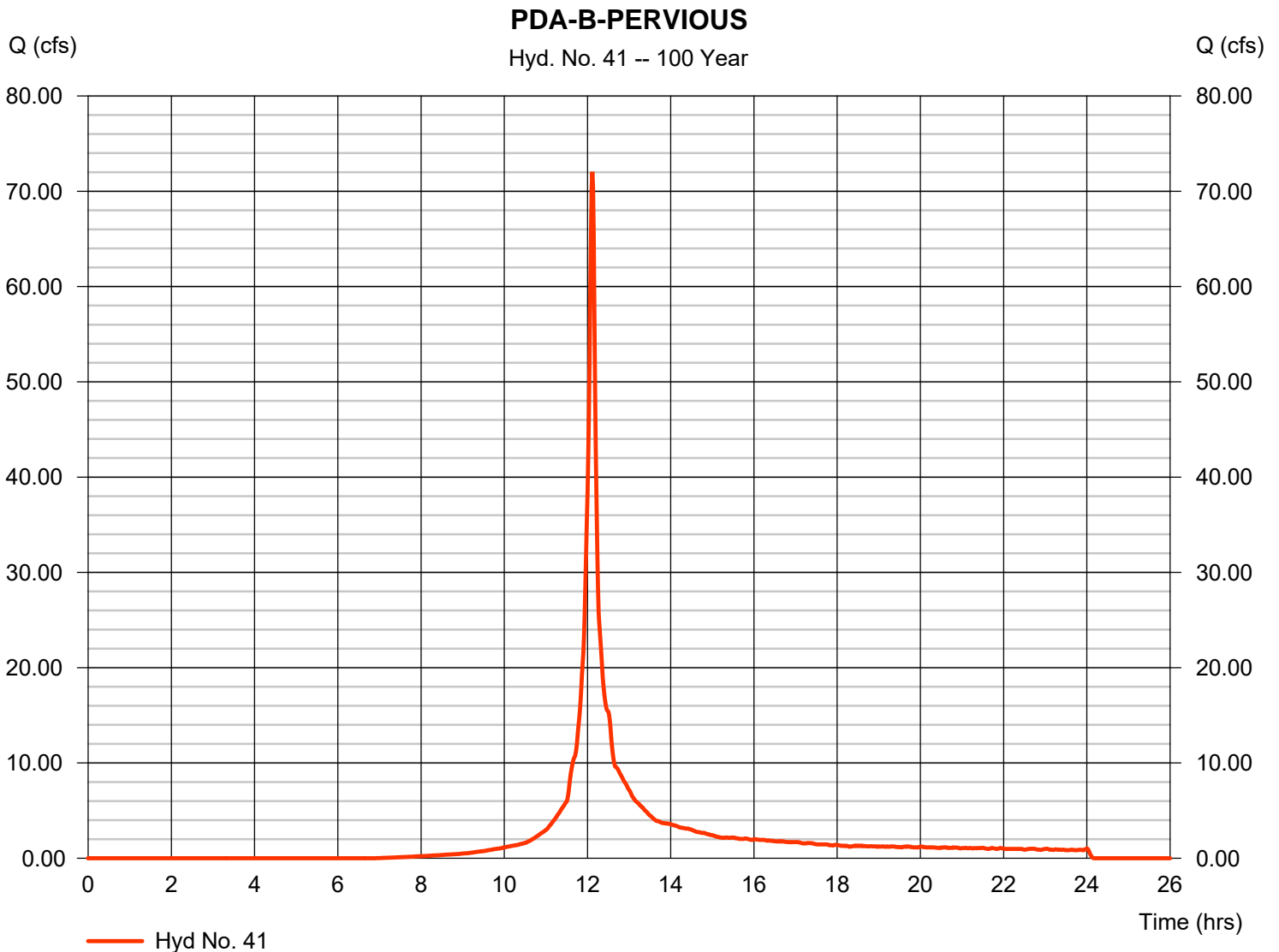
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

Wednesday, 03 / 9 / 2022

Hyd. No. 41

PDA-B-PERVIOUS

Hydrograph type	= SCS Runoff	Peak discharge	= 72.03 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.12 hrs
Time interval	= 1 min	Hyd. volume	= 200,515 cuft
Drainage area	= 11.930 ac	Curve number	= 74
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 6.00 min
Total precip.	= 7.51 in	Distribution	= Custom
Storm duration	= R:\Hydroflow Standards\NJ Reg Storm Rainfall Distribution\40A_C_1 min.cds		



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

Wednesday, 03 / 9 / 2022

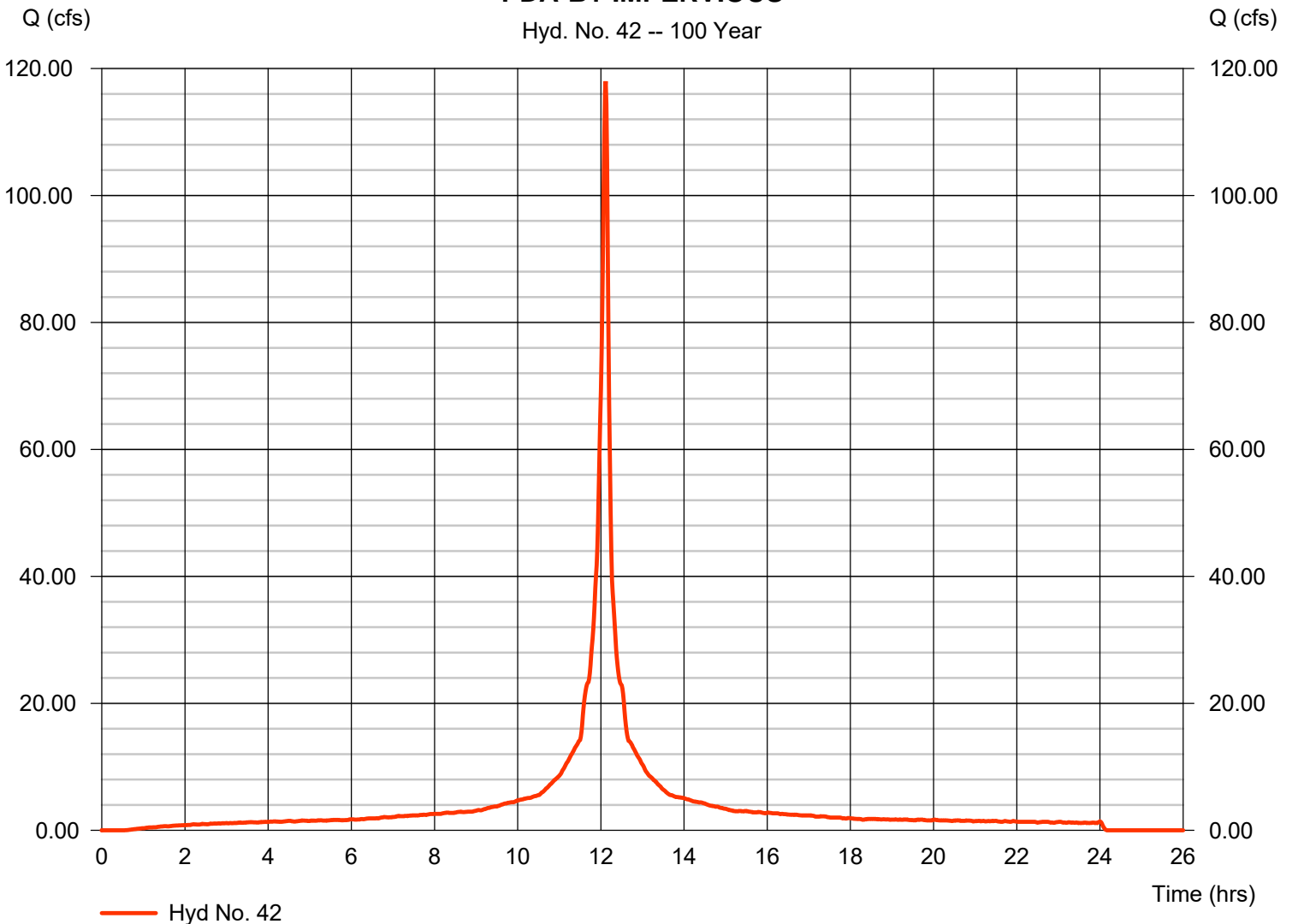
Hyd. No. 42

PDA-B1-IMPERVIOUS

Hydrograph type	= SCS Runoff	Peak discharge	= 117.99 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.12 hrs
Time interval	= 1 min	Hyd. volume	= 389,200 cuft
Drainage area	= 14.300 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 6.00 min
Total precip.	= 7.51 in	Distribution	= Custom
Storm duration	= R:\Hydroflow Standards\NJ Reg Storm Rainfall Distribution\401A_C_1 min.cds		

PDA-B1-IMPERVIOUS

Hyd. No. 42 -- 100 Year



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

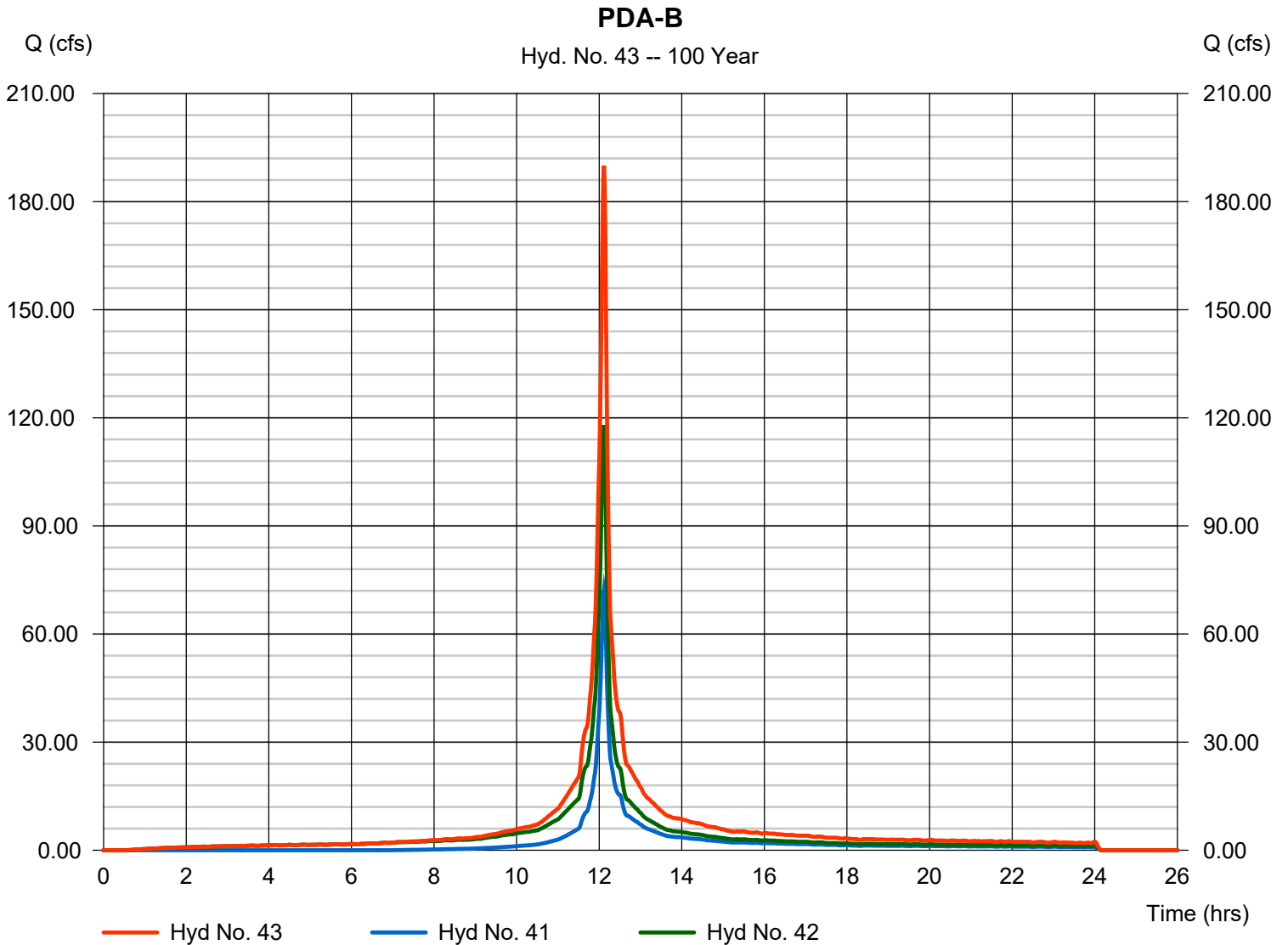
Wednesday, 03 / 9 / 2022

Hyd. No. 43

PDA-B

Hydrograph type = Combine
 Storm frequency = 100 yrs
 Time interval = 1 min
 Inflow hyds. = 41, 42

Peak discharge = 190.02 cfs
 Time to peak = 12.12 hrs
 Hyd. volume = 589,715 cuft
 Contrib. drain. area = 26.230 ac



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

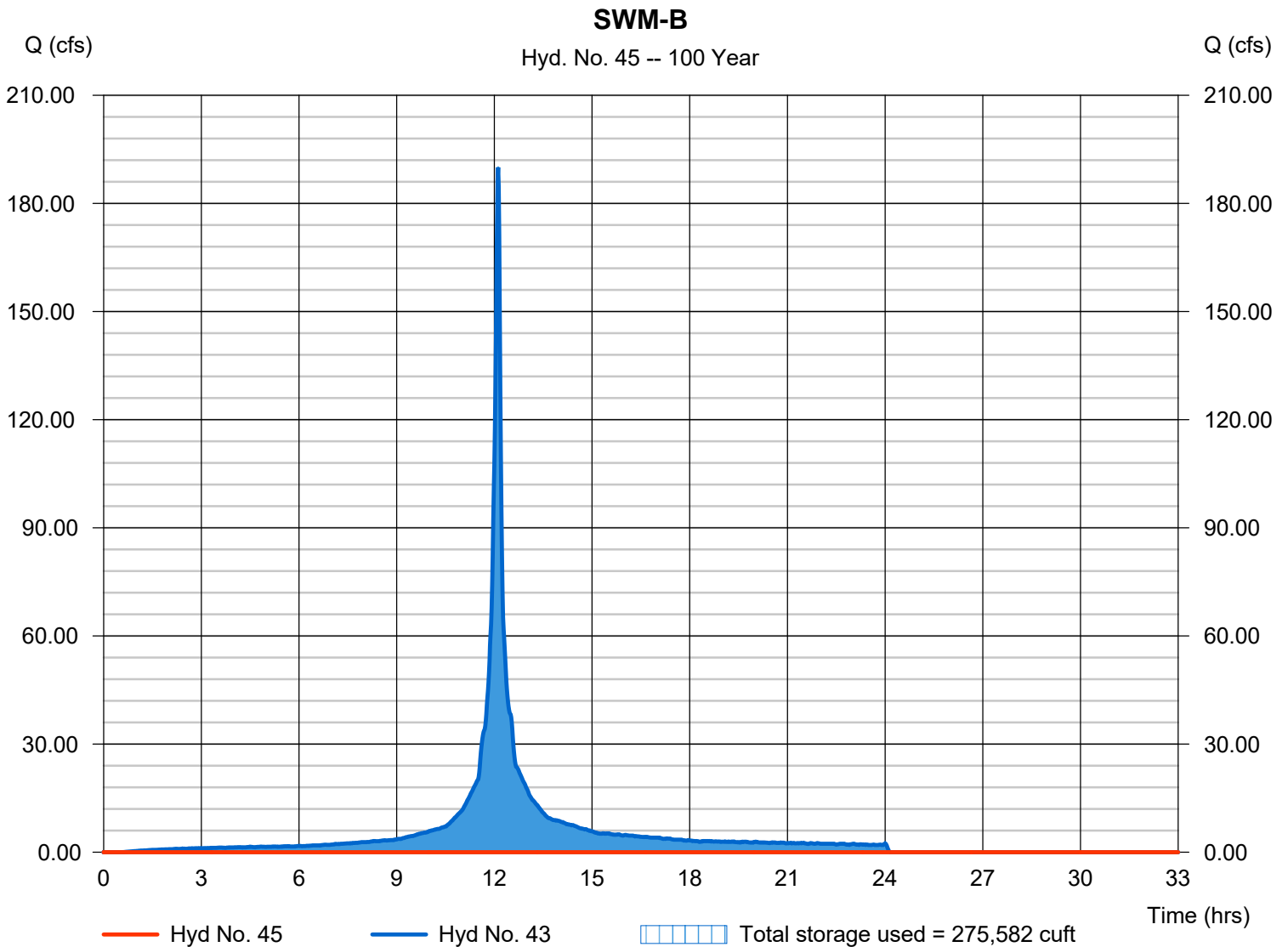
Wednesday, 03 / 9 / 2022

Hyd. No. 45

SWM-B

Hydrograph type	= Reservoir	Peak discharge	= 0.000 cfs
Storm frequency	= 100 yrs	Time to peak	= 16.97 hrs
Time interval	= 1 min	Hyd. volume	= 0 cuft
Inflow hyd. No.	= 43 - PDA-B	Max. Elevation	= 599.89 ft
Reservoir name	= SWM-B1	Max. Storage	= 275,582 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Hydrograph Report

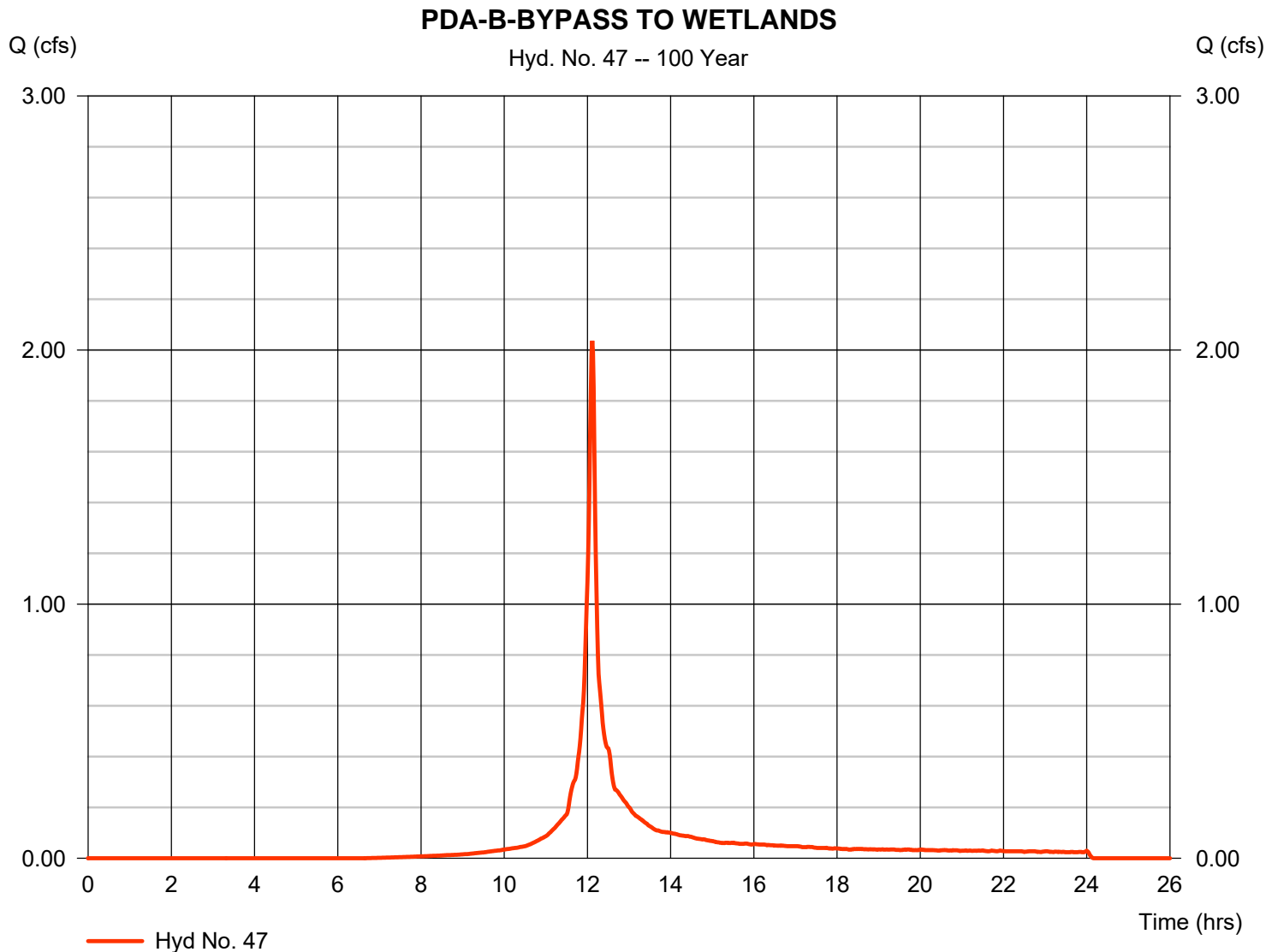
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

Wednesday, 03 / 9 / 2022

Hyd. No. 47

PDA-B-BYPASS TO WETLANDS

Hydrograph type	= SCS Runoff	Peak discharge	= 2.037 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.12 hrs
Time interval	= 1 min	Hyd. volume	= 5,685 cuft
Drainage area	= 0.330 ac	Curve number	= 75
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 6.00 min
Total precip.	= 7.51 in	Distribution	= Custom
Storm duration	= R:\Hydroflow Standards\NJ Reg Storm Rainfall Distribution\401A_C_1 min.cds		



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

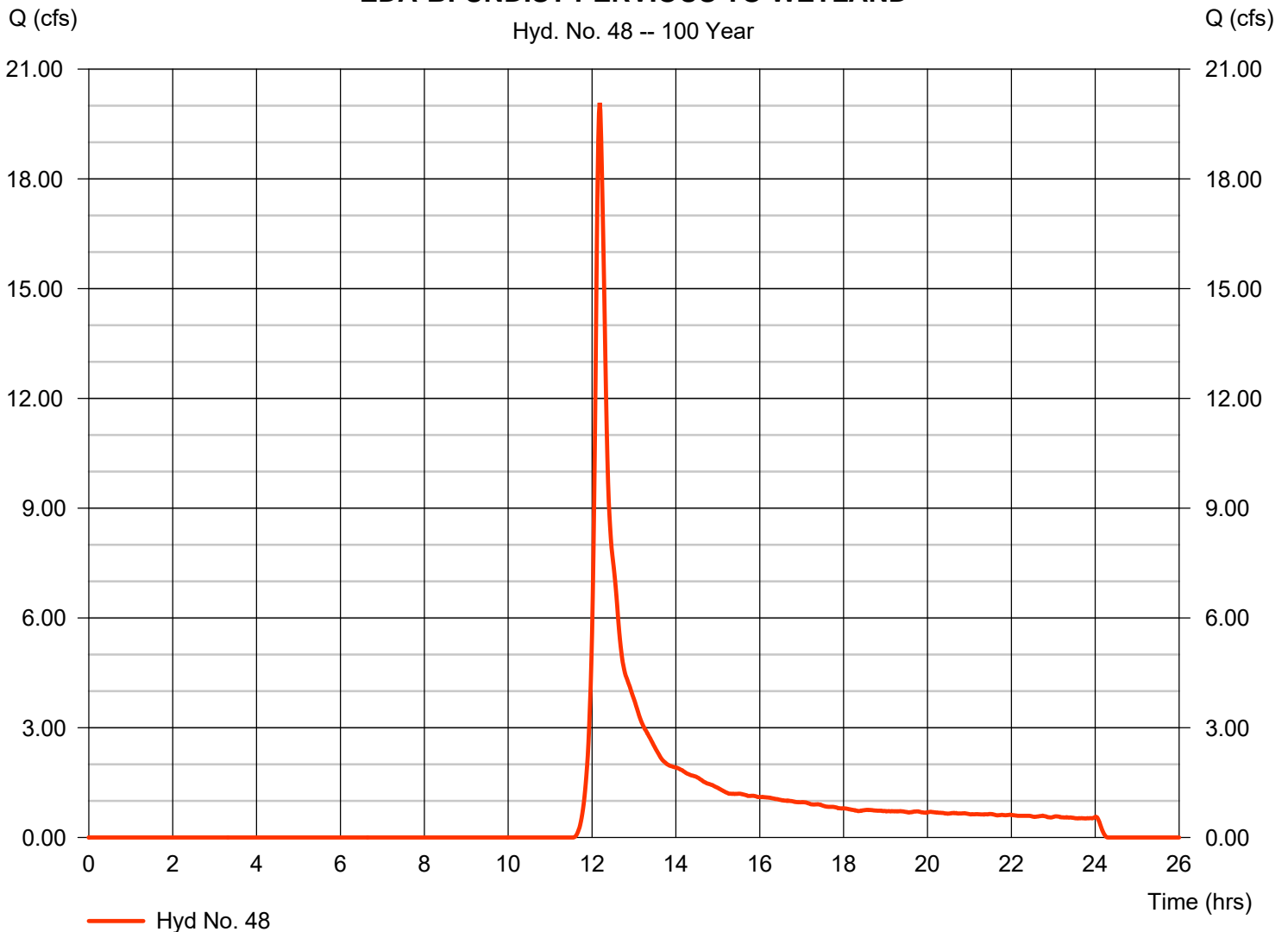
Wednesday, 03 / 9 / 2022

Hyd. No. 48

EDA-B: UNDIST PERVIOUS TO WETLAND

Hydrograph type	= SCS Runoff	Peak discharge	= 20.08 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.18 hrs
Time interval	= 1 min	Hyd. volume	= 75,105 cuft
Drainage area	= 12.170 ac	Curve number	= 47
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.70 min
Total precip.	= 7.51 in	Distribution	= Custom
Storm duration	= R:\Hydroflow Standards\NJ Reg Storm Rainfall Distribution\48A_C_1 min.cds		

EDA-B: UNDIST PERVIOUS TO WETLAND



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

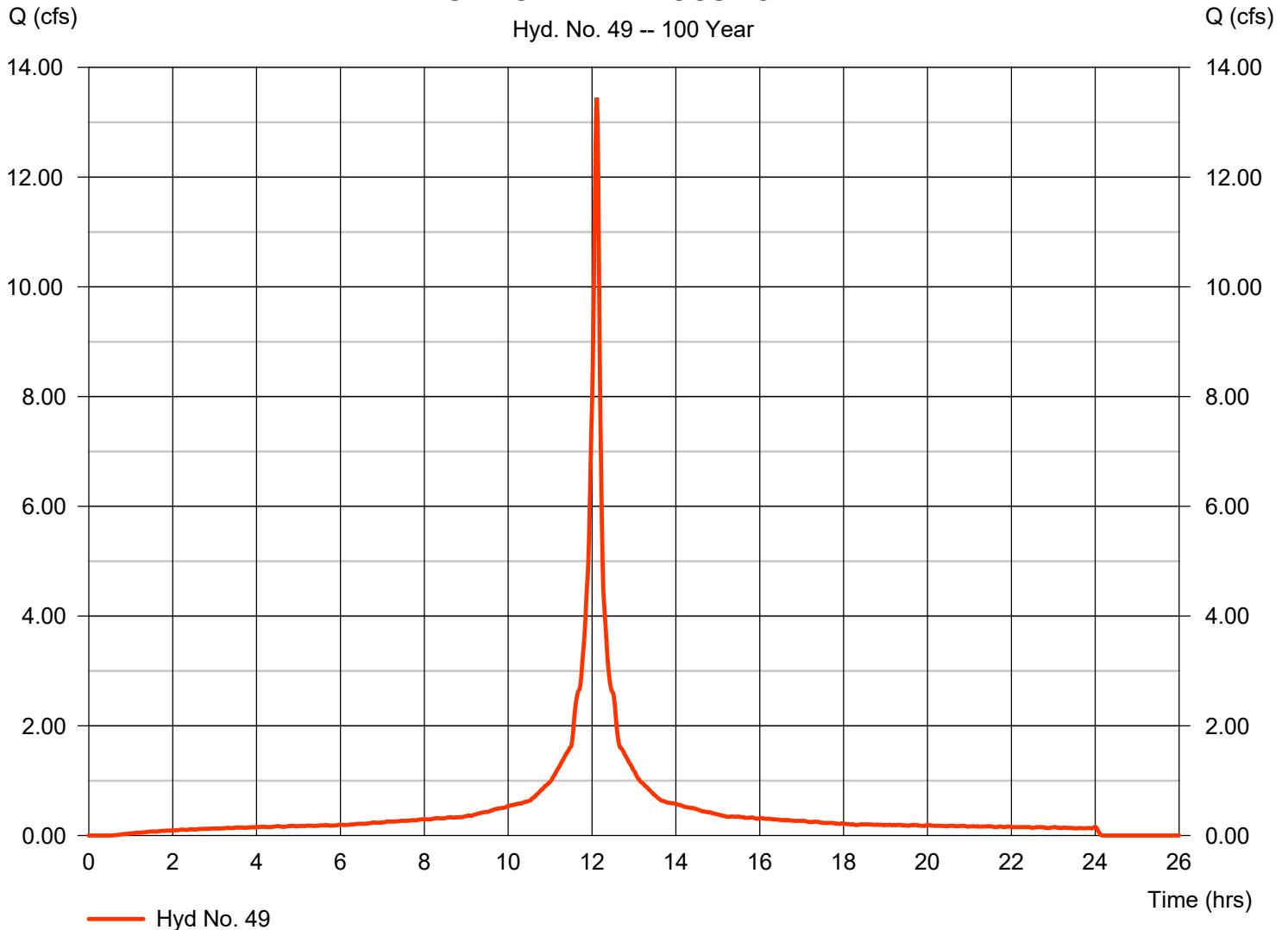
Wednesday, 03 / 9 / 2022

Hyd. No. 49

EDA-B:UNDIST IMPERVIOUS TO WETLAND

Hydrograph type	= SCS Runoff	Peak discharge	= 13.45 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.12 hrs
Time interval	= 1 min	Hyd. volume	= 44,363 cuft
Drainage area	= 1.630 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 6.00 min
Total precip.	= 7.51 in	Distribution	= Custom
Storm duration	= R:\Hydroflow Standards\NJ Reg Storm Rainfall Distribution\NOAA_C_1 min.cds		

EDA-B:UNDIST IMPERVIOUS TO WETLAND



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

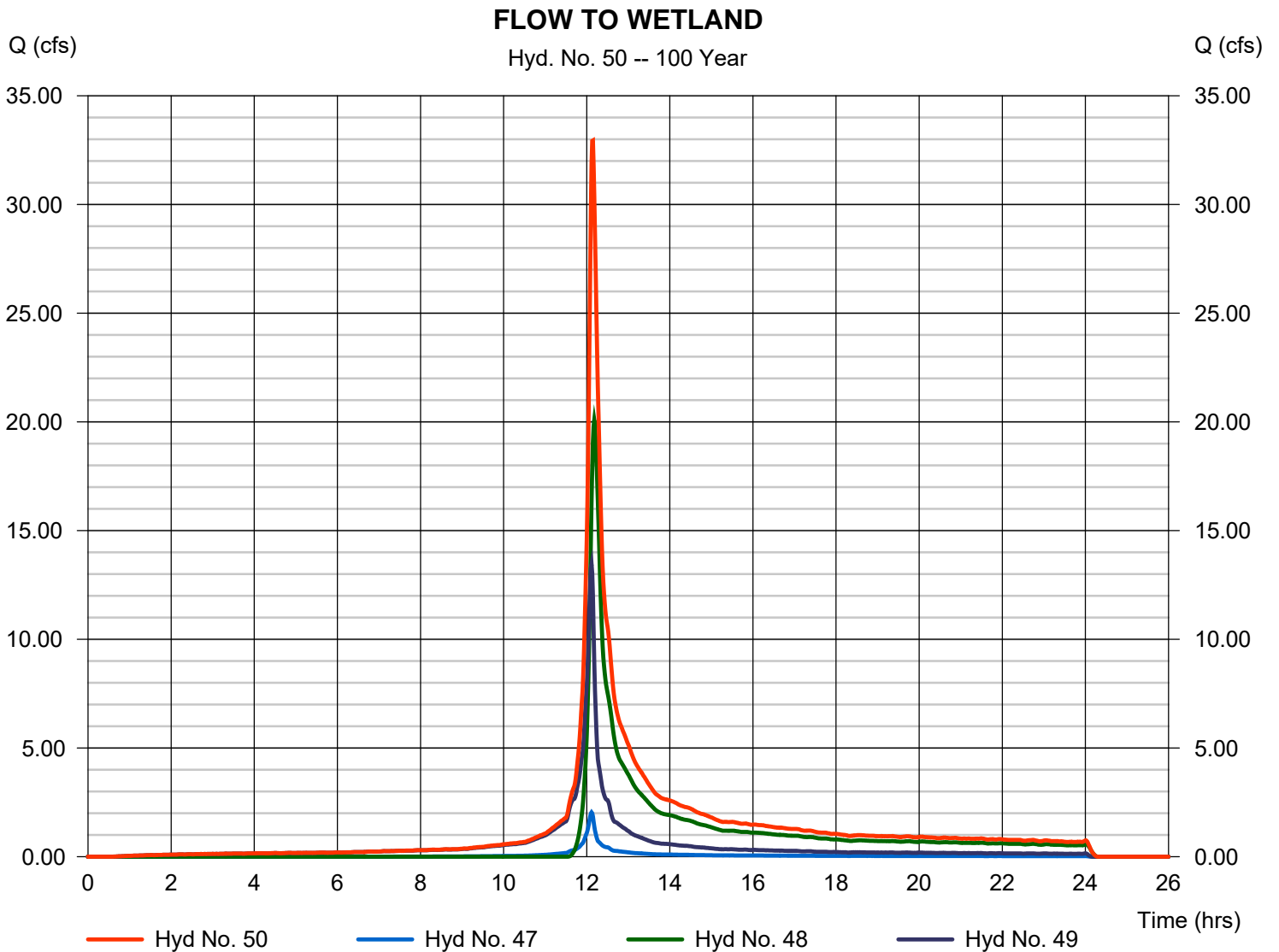
Wednesday, 03 / 9 / 2022

Hyd. No. 50

FLOW TO WETLAND

Hydrograph type = Combine
 Storm frequency = 100 yrs
 Time interval = 1 min
 Inflow hyds. = 47, 48, 49

Peak discharge = 32.94 cfs
 Time to peak = 12.15 hrs
 Hyd. volume = 125,153 cuft
 Contrib. drain. area = 14.130 ac



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

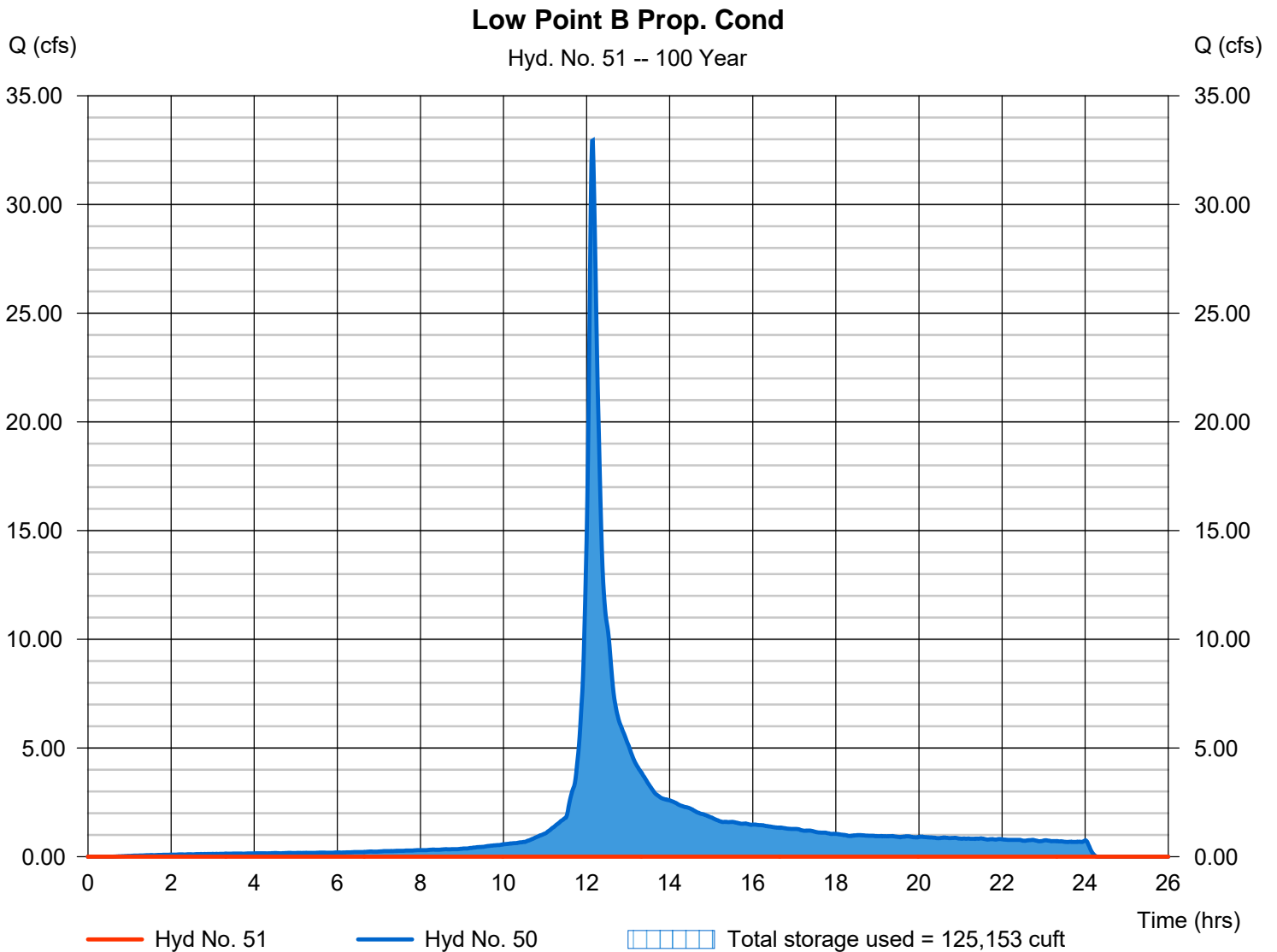
Wednesday, 03 / 9 / 2022

Hyd. No. 51

Low Point B Prop. Cond

Hydrograph type	= Reservoir	Peak discharge	= 0.000 cfs
Storm frequency	= 100 yrs	Time to peak	= n/a
Time interval	= 1 min	Hyd. volume	= 0 cuft
Inflow hyd. No.	= 50 - FLOW TO WETLAND	Max. Elevation	= 597.28 ft
Reservoir name	= Low Point B	Max. Storage	= 125,153 cuft

Storage Indication method used.



Hydrograph Report

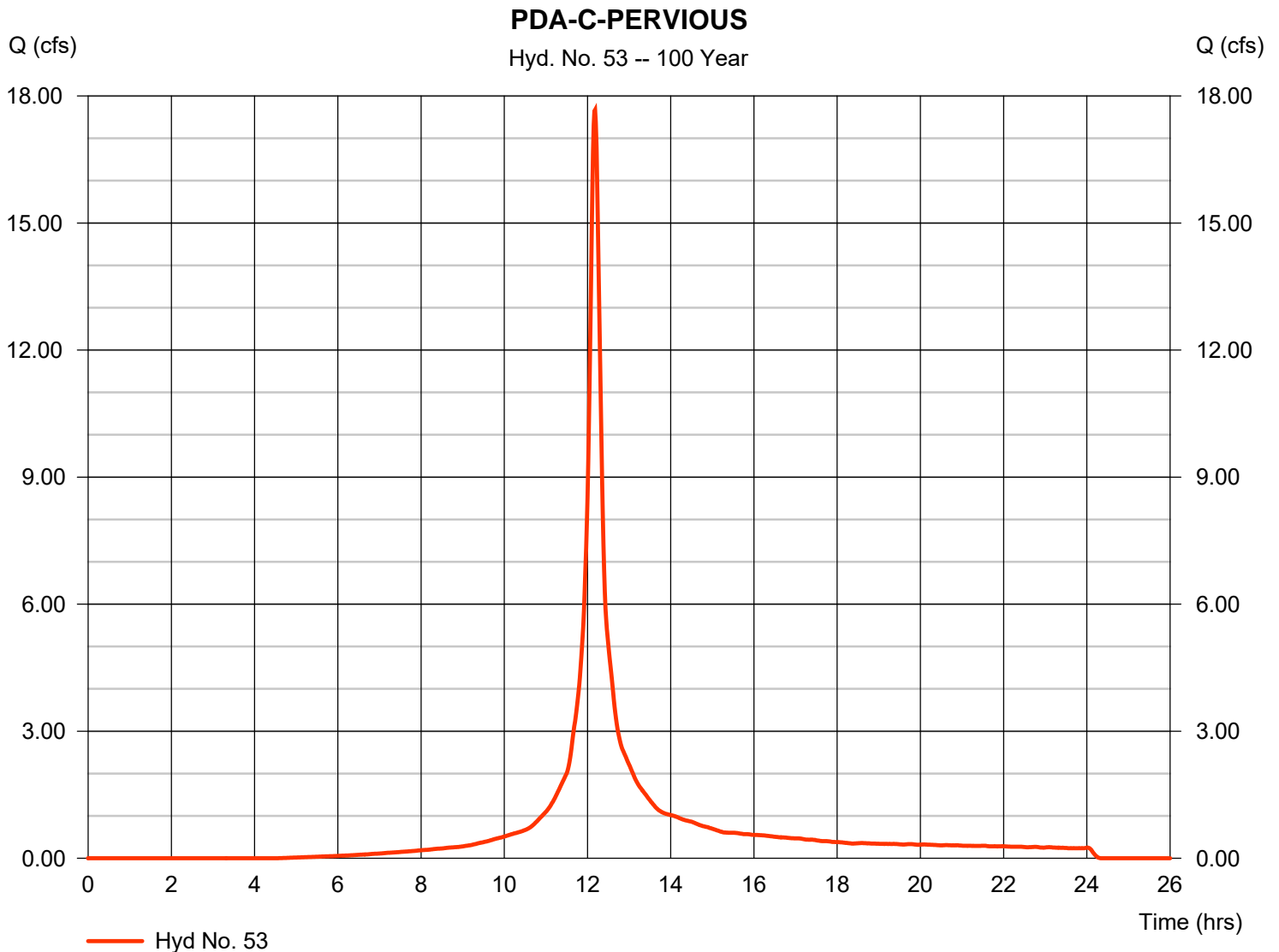
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

Wednesday, 03 / 9 / 2022

Hyd. No. 53

PDA-C-PERVIOUS

Hydrograph type	= SCS Runoff	Peak discharge	= 17.67 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.18 hrs
Time interval	= 1 min	Hyd. volume	= 62,815 cuft
Drainage area	= 3.190 ac	Curve number	= 83
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 12.70 min
Total precip.	= 7.51 in	Distribution	= Custom
Storm duration	= R:\Hydroflow Standards\NJ Reg Storm Rainfall Distribution\401A_C_1 min.cds		



Hydrograph Report

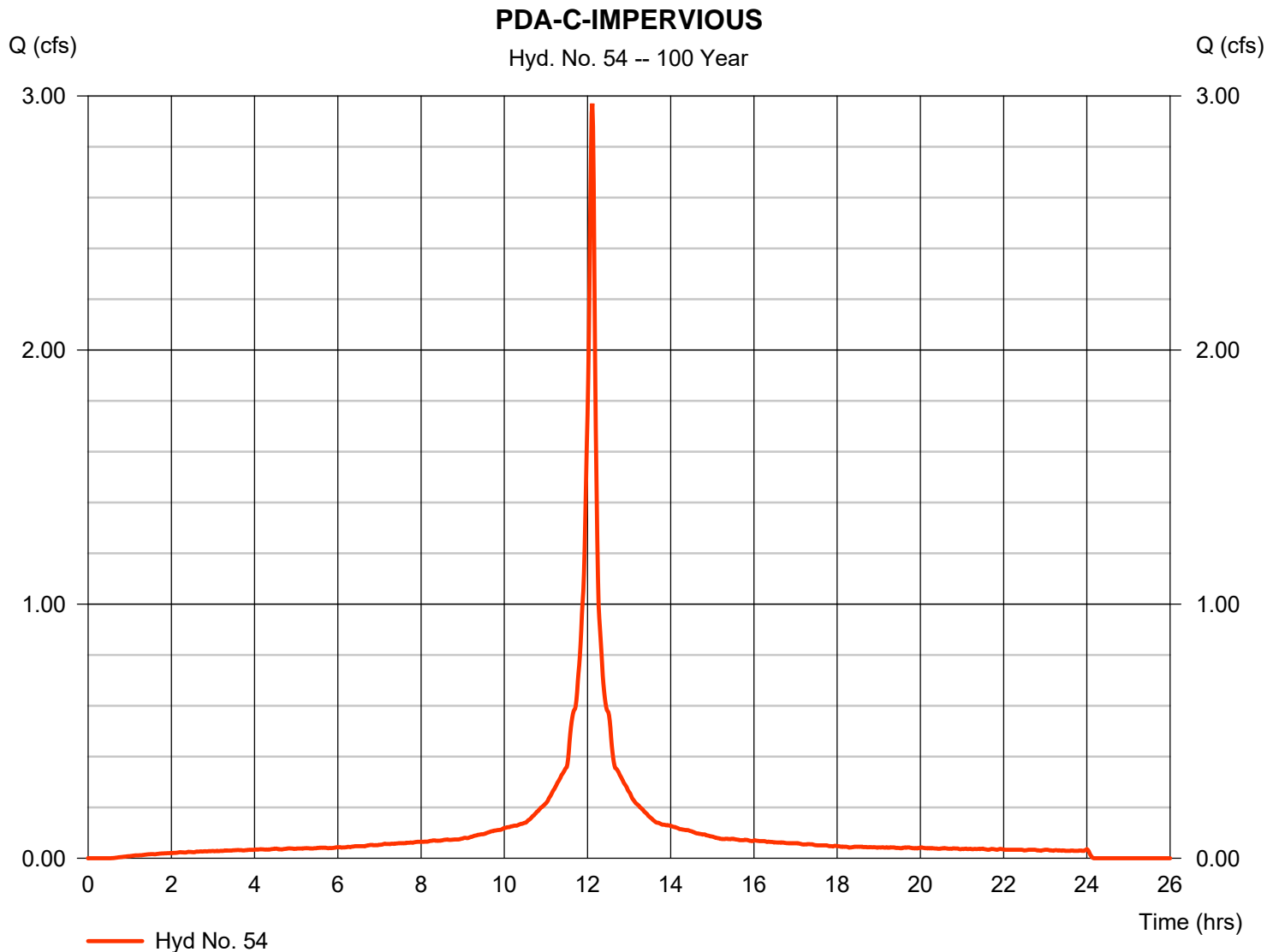
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

Wednesday, 03 / 9 / 2022

Hyd. No. 54

PDA-C-IMPERVIOUS

Hydrograph type	= SCS Runoff	Peak discharge	= 2.970 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.12 hrs
Time interval	= 1 min	Hyd. volume	= 9,798 cuft
Drainage area	= 0.360 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 6.00 min
Total precip.	= 7.51 in	Distribution	= Custom
Storm duration	= R:\Hydroflow Standards\NJ Reg Storm Rainfall Distribution\401A_C_1 min.cds		



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

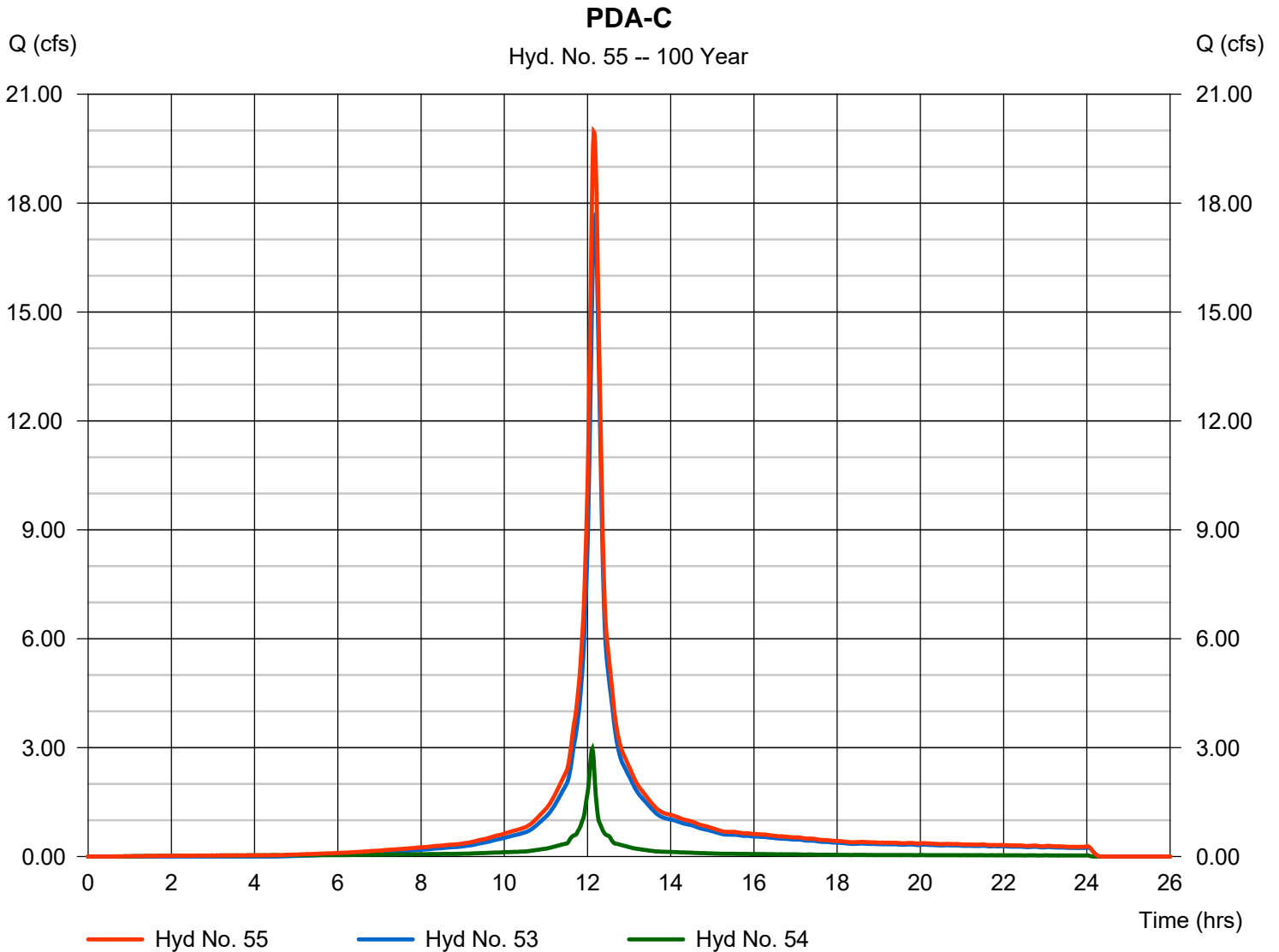
Wednesday, 03 / 9 / 2022

Hyd. No. 55

PDA-C

Hydrograph type = Combine
Storm frequency = 100 yrs
Time interval = 1 min
Inflow hyds. = 53, 54

Peak discharge = 19.97 cfs
Time to peak = 12.15 hrs
Hyd. volume = 72,614 cuft
Contrib. drain. area = 3.550 ac



Hydrograph Report

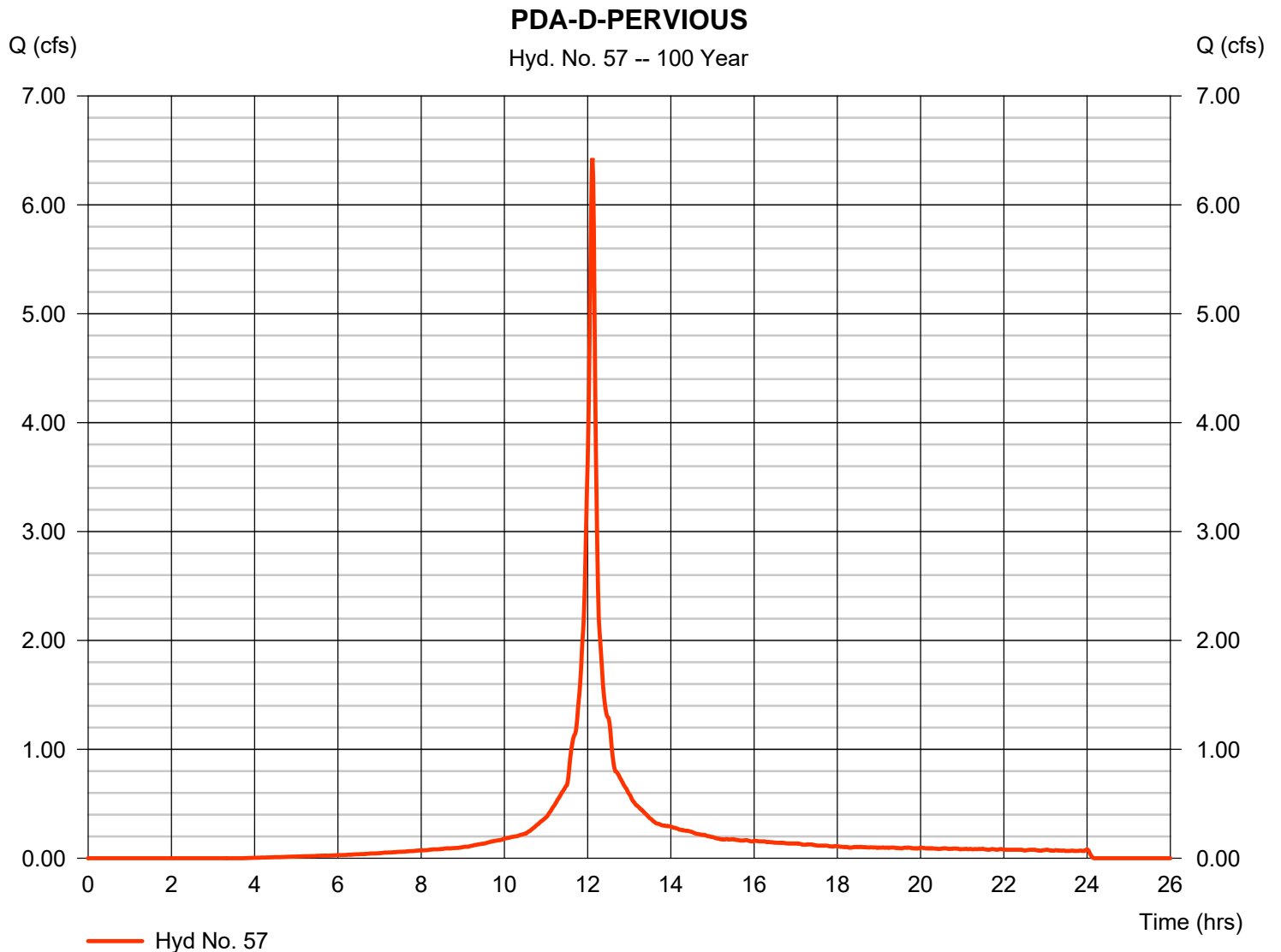
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

Wednesday, 03 / 9 / 2022

Hyd. No. 57

PDA-D-PERVIOUS

Hydrograph type	= SCS Runoff	Peak discharge	= 6.429 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.12 hrs
Time interval	= 1 min	Hyd. volume	= 18,857 cuft
Drainage area	= 0.860 ac	Curve number	= 86
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 6.00 min
Total precip.	= 7.51 in	Distribution	= Custom
Storm duration	= R:\Hydroflow Standards\NJ Reg. Rainfall Distribution\401A_C_1 min.cds		



Hydrograph Report

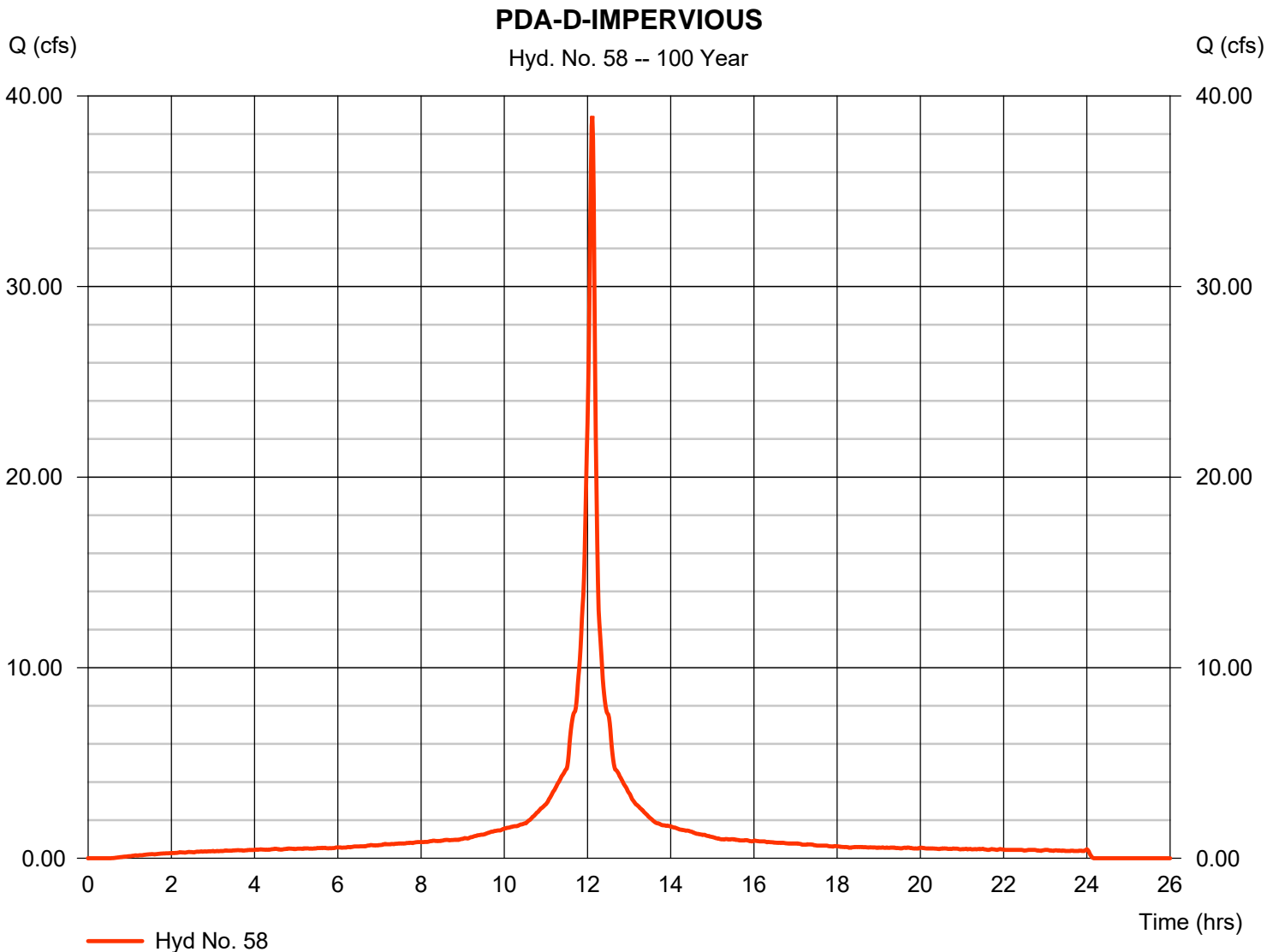
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

Wednesday, 03 / 9 / 2022

Hyd. No. 58

PDA-D-IMPERVIOUS

Hydrograph type	= SCS Runoff	Peak discharge	= 38.94 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.12 hrs
Time interval	= 1 min	Hyd. volume	= 128,463 cuft
Drainage area	= 4.720 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 6.00 min
Total precip.	= 7.51 in	Distribution	= Custom
Storm duration	= R:\Hydroflow Standards\NJ Reg Slope Rainfall Distribution\401A_C_1 min.cds		



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

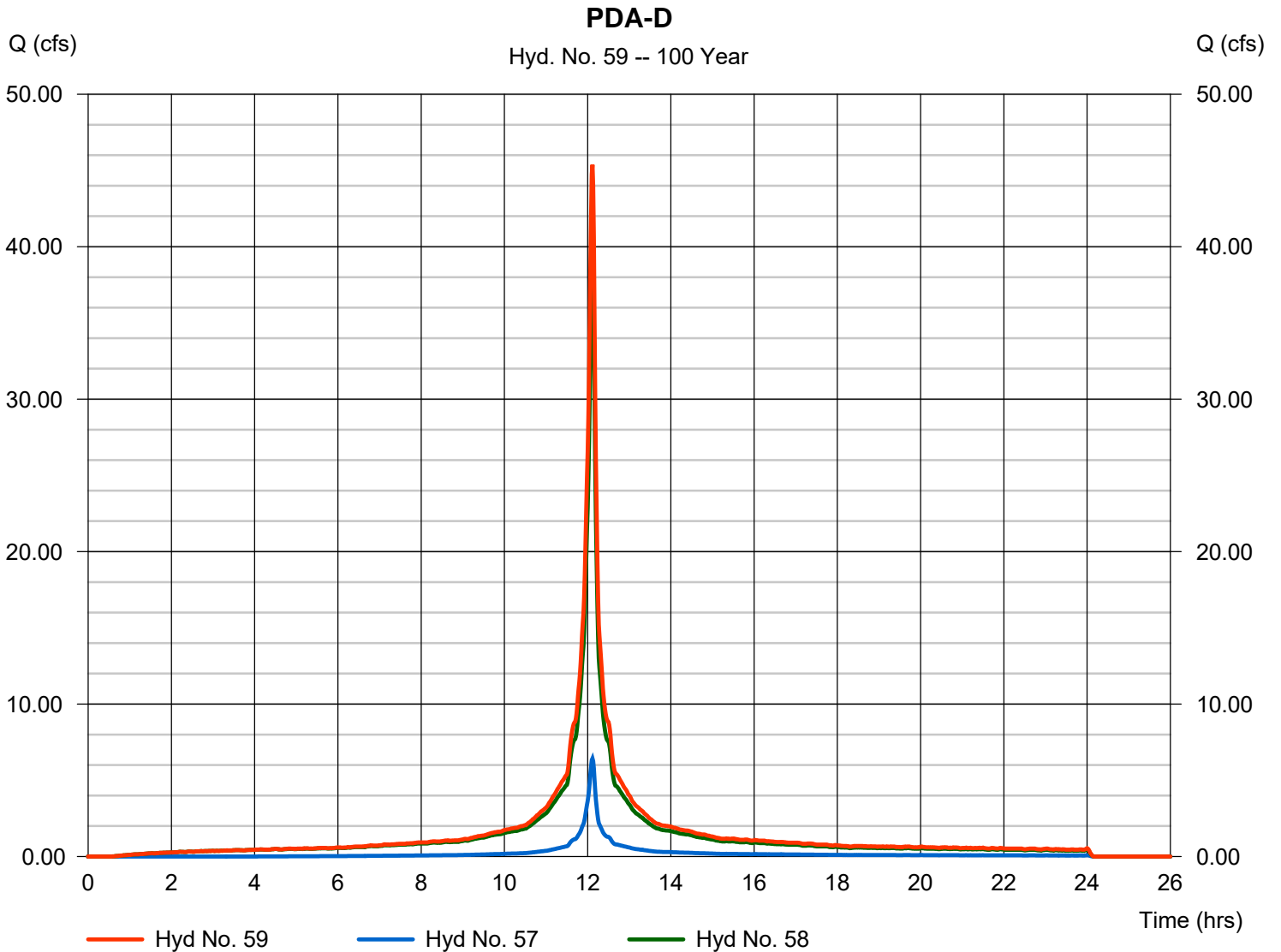
Wednesday, 03 / 9 / 2022

Hyd. No. 59

PDA-D

Hydrograph type = Combine
 Storm frequency = 100 yrs
 Time interval = 1 min
 Inflow hyds. = 57, 58

Peak discharge = 45.37 cfs
 Time to peak = 12.12 hrs
 Hyd. volume = 147,320 cuft
 Contrib. drain. area = 5.580 ac



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

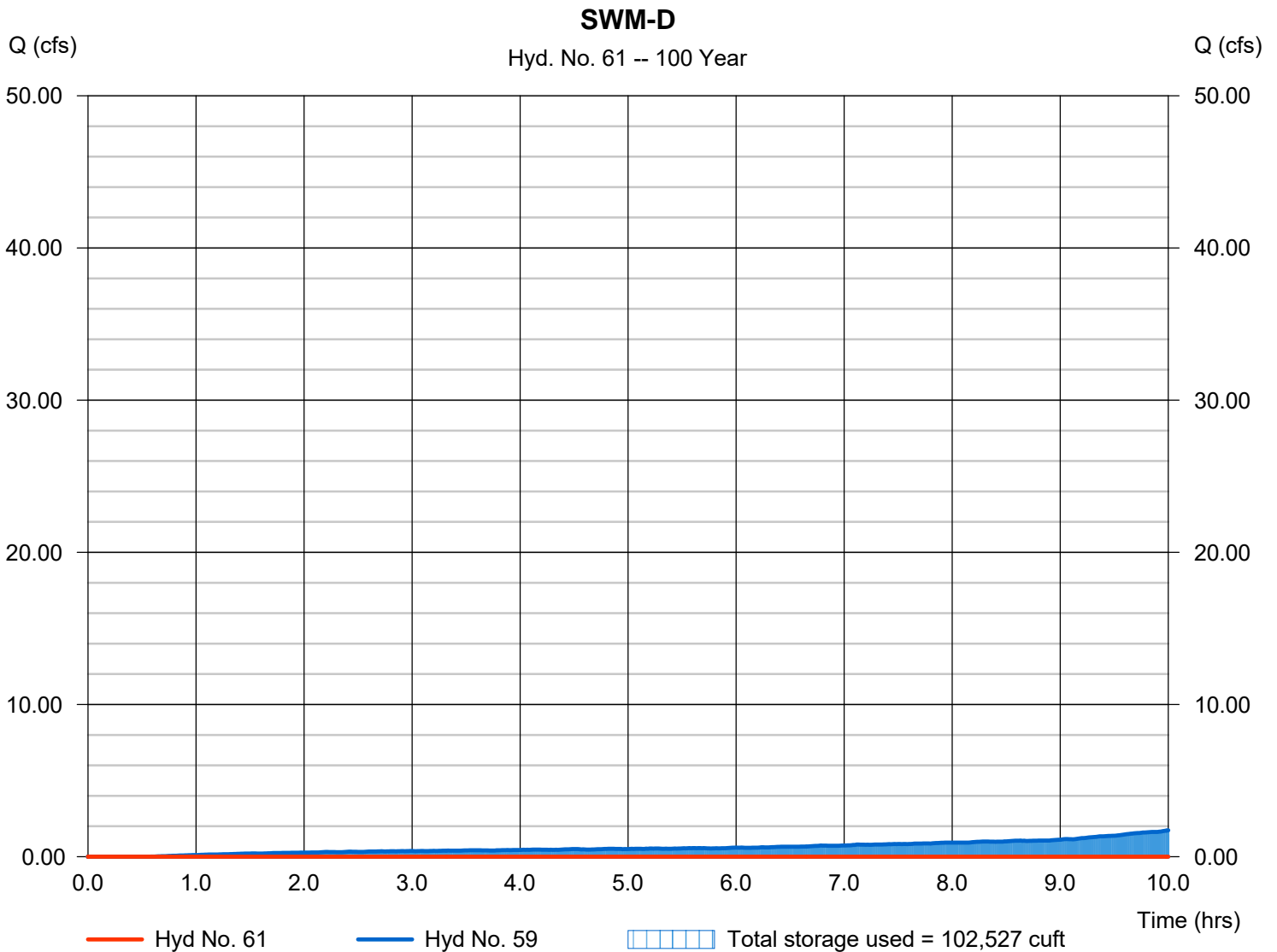
Wednesday, 03 / 9 / 2022

Hyd. No. 61

SWM-D

Hydrograph type	= Reservoir	Peak discharge	= 0.000 cfs
Storm frequency	= 100 yrs	Time to peak	= 8.62 hrs
Time interval	= 1 min	Hyd. volume	= 0 cuft
Inflow hyd. No.	= 59 - PDA-D	Max. Elevation	= 604.27 ft
Reservoir name	= SWM-D	Max. Storage	= 102,527 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Hydrograph Report

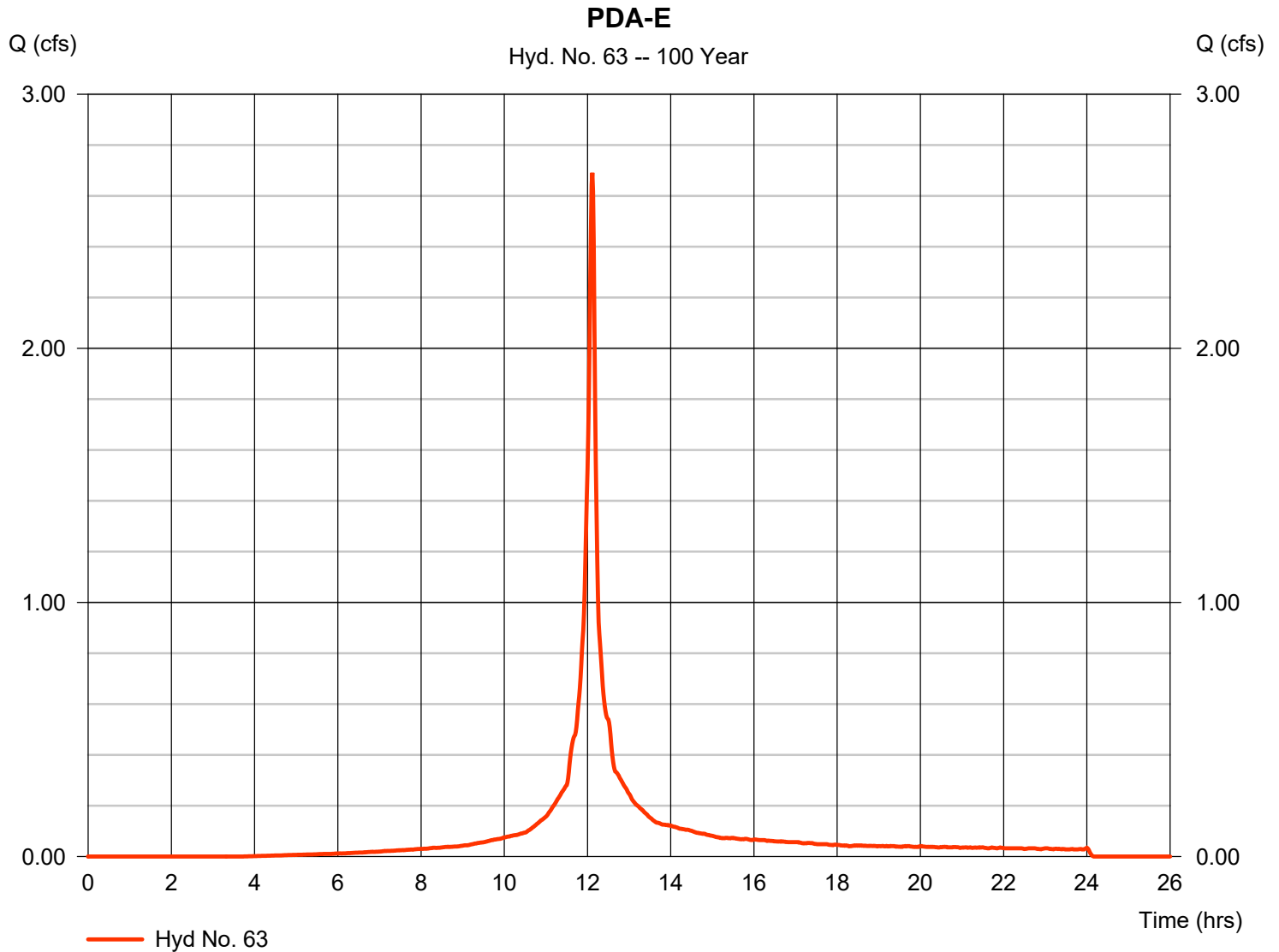
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

Wednesday, 03 / 9 / 2022

Hyd. No. 63

PDA-E

Hydrograph type	= SCS Runoff	Peak discharge	= 2.691 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.12 hrs
Time interval	= 1 min	Hyd. volume	= 7,893 cuft
Drainage area	= 0.360 ac	Curve number	= 86
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 6.00 min
Total precip.	= 7.51 in	Distribution	= Custom
Storm duration	= R:\Hydroflow Standards\NJ Reg Storm Rainfall Distribution\401A_C_1 min.cds		



Hydrograph Report

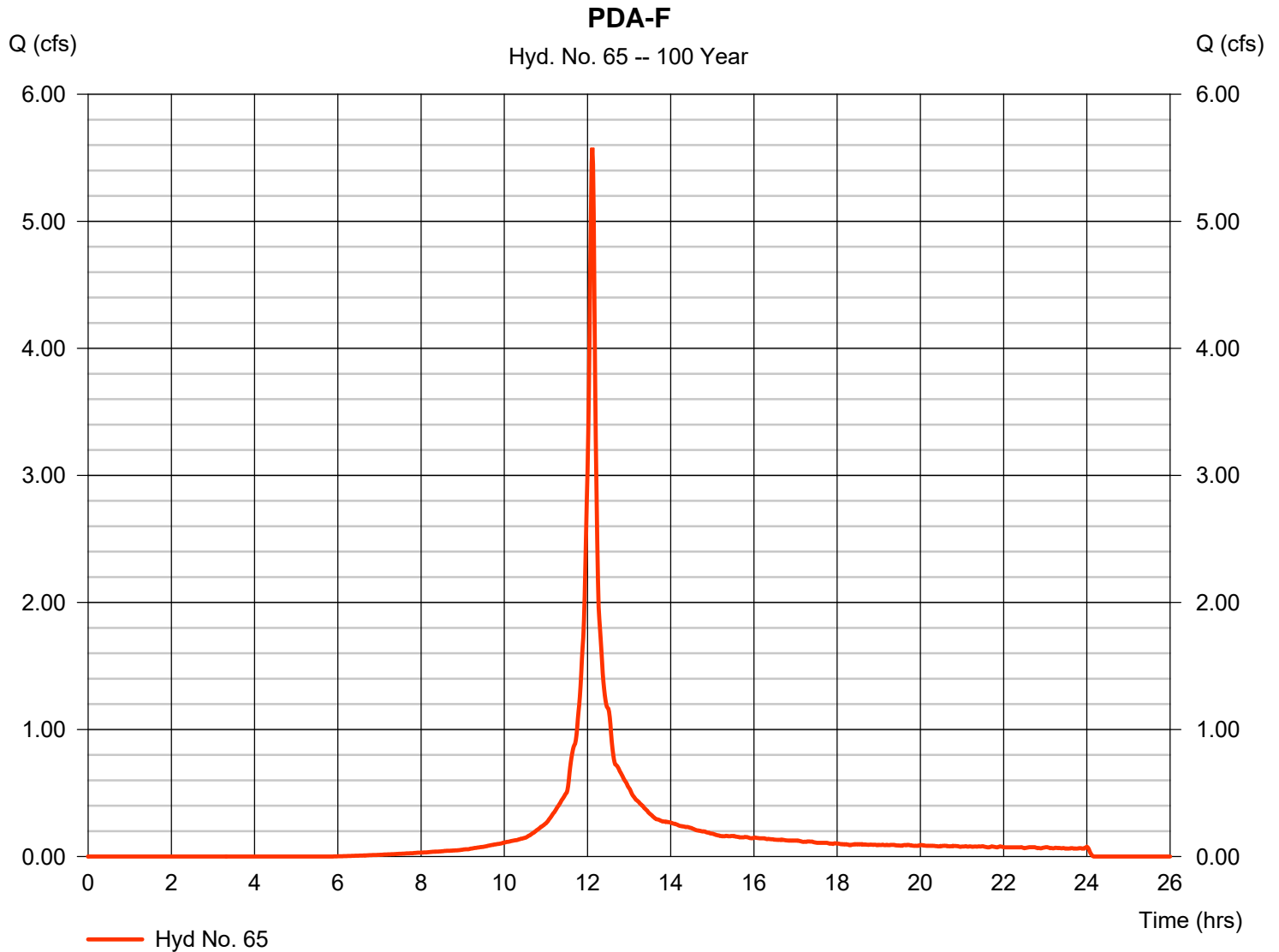
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

Wednesday, 03 / 9 / 2022

Hyd. No. 65

PDA-F

Hydrograph type	= SCS Runoff	Peak discharge	= 5.578 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.12 hrs
Time interval	= 1 min	Hyd. volume	= 15,719 cuft
Drainage area	= 0.850 ac	Curve number	= 78
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 6.00 min
Total precip.	= 7.51 in	Distribution	= Custom
Storm duration	= R:\Hydroflow Standards\NJ Reg Storm Rainfall Distribution\401A_C_1 min.cds		



Hydrograph Report

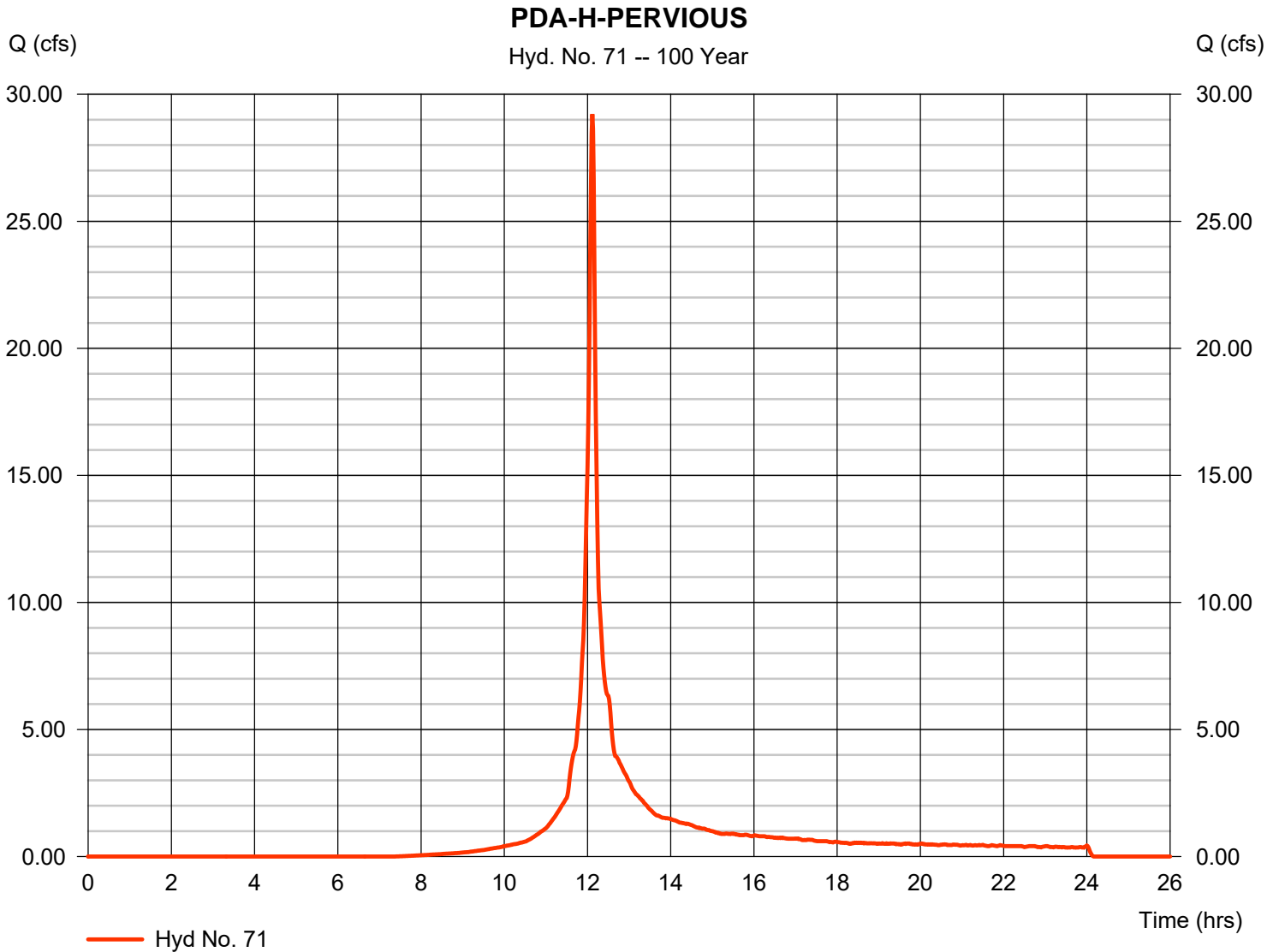
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

Wednesday, 03 / 9 / 2022

Hyd. No. 71

PDA-H-PERVIOUS

Hydrograph type	= SCS Runoff	Peak discharge	= 29.22 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.12 hrs
Time interval	= 1 min	Hyd. volume	= 80,989 cuft
Drainage area	= 5.070 ac	Curve number	= 72
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 6.00 min
Total precip.	= 7.51 in	Distribution	= Custom
Storm duration	= R:\Hydroflow Standards\NJ Reg Slope Rainfall Distribution\401A_C_1 min.cds		



Hydrograph Report

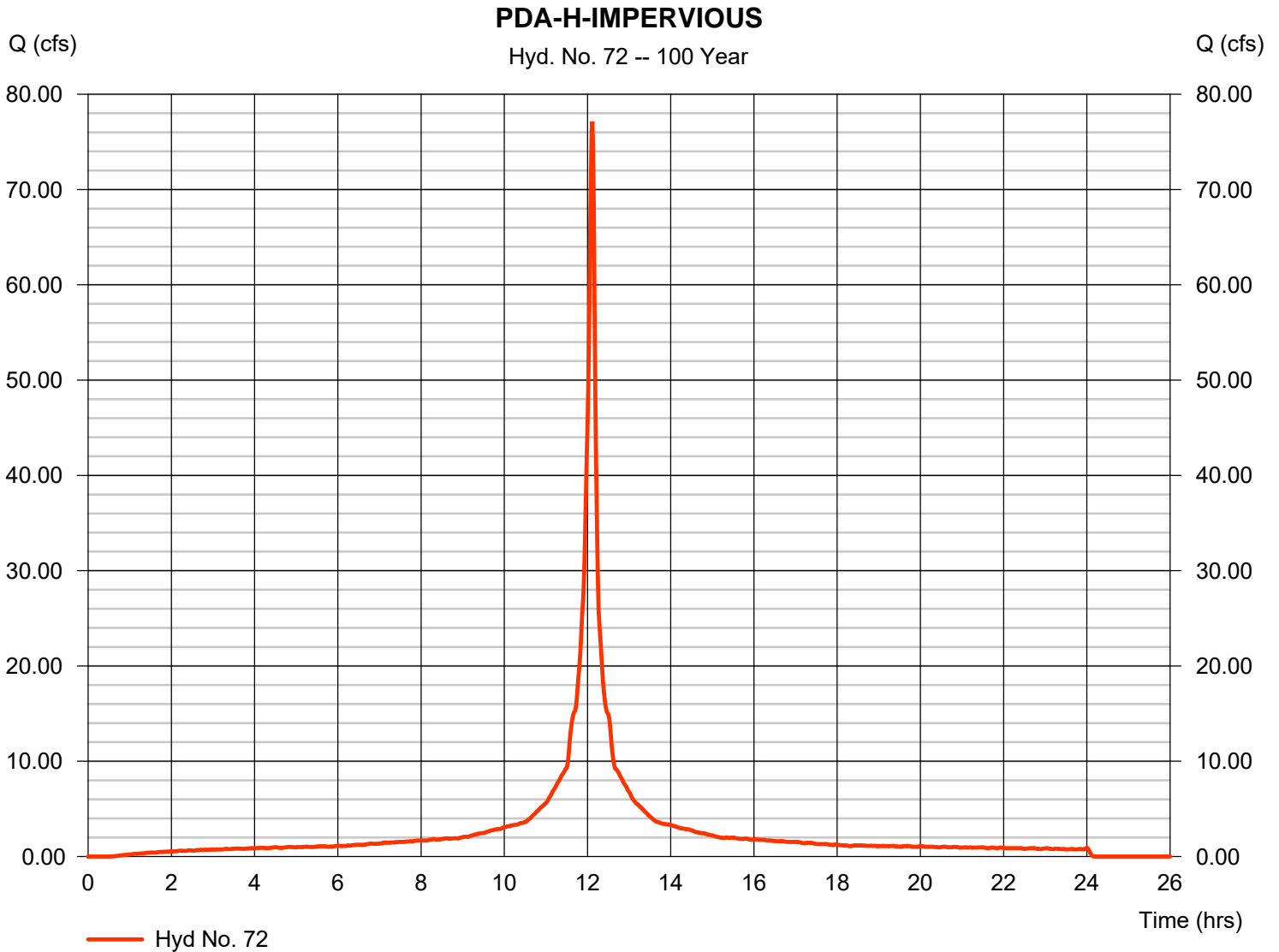
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

Wednesday, 03 / 9 / 2022

Hyd. No. 72

PDA-H-IMPERVIOUS

Hydrograph type	= SCS Runoff	Peak discharge	= 77.14 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.12 hrs
Time interval	= 1 min	Hyd. volume	= 254,477 cuft
Drainage area	= 9.350 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 6.00 min
Total precip.	= 7.51 in	Distribution	= Custom
Storm duration	= R:\Hydroflow Standards\NJ Reg Storm Rainfall Distribution\401A_C_1 min.cds		



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

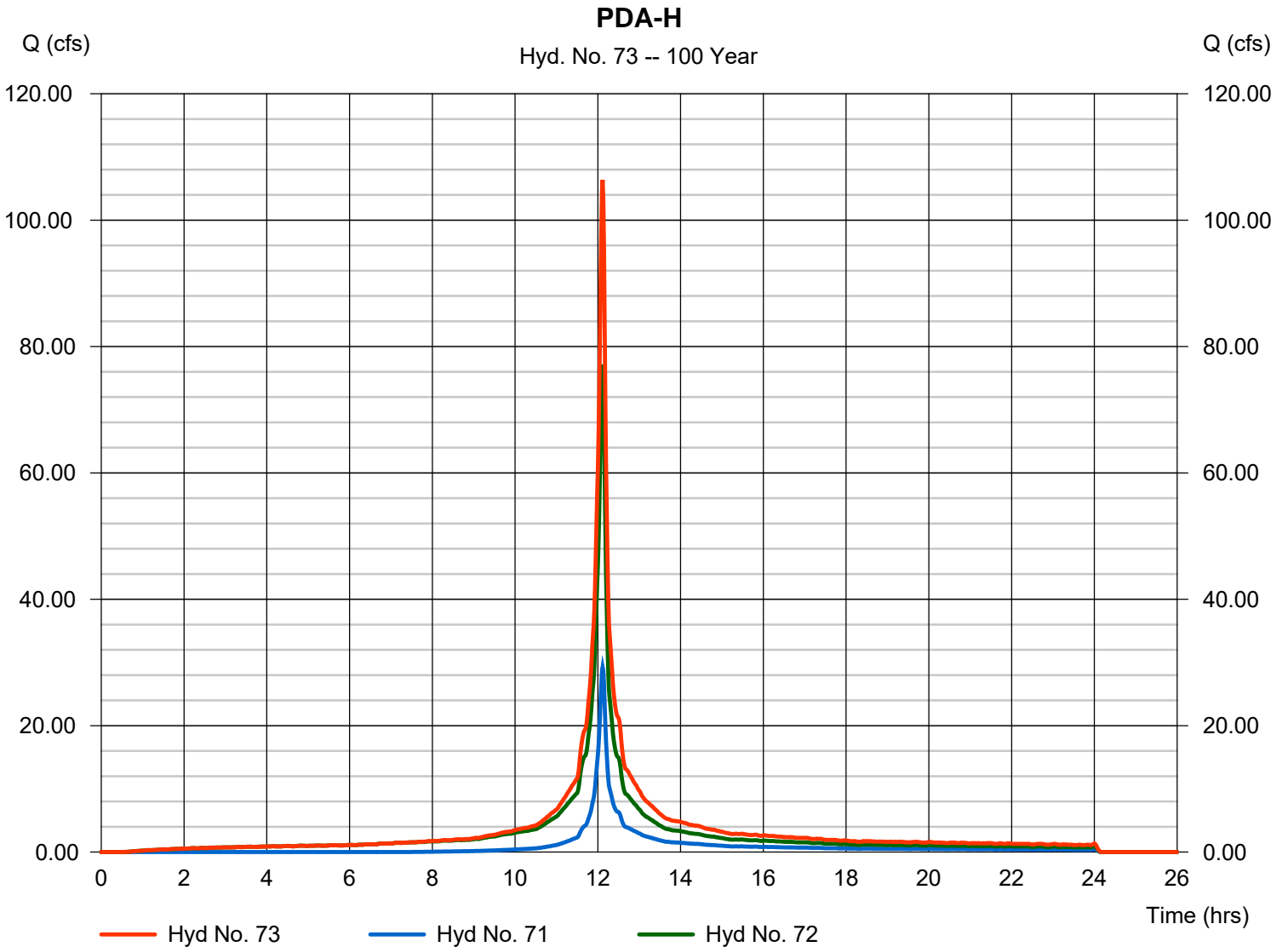
Wednesday, 03 / 9 / 2022

Hyd. No. 73

PDA-H

Hydrograph type = Combine
 Storm frequency = 100 yrs
 Time interval = 1 min
 Inflow hyds. = 71, 72

Peak discharge = 106.36 cfs
 Time to peak = 12.12 hrs
 Hyd. volume = 335,466 cuft
 Contrib. drain. area = 14.420 ac



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

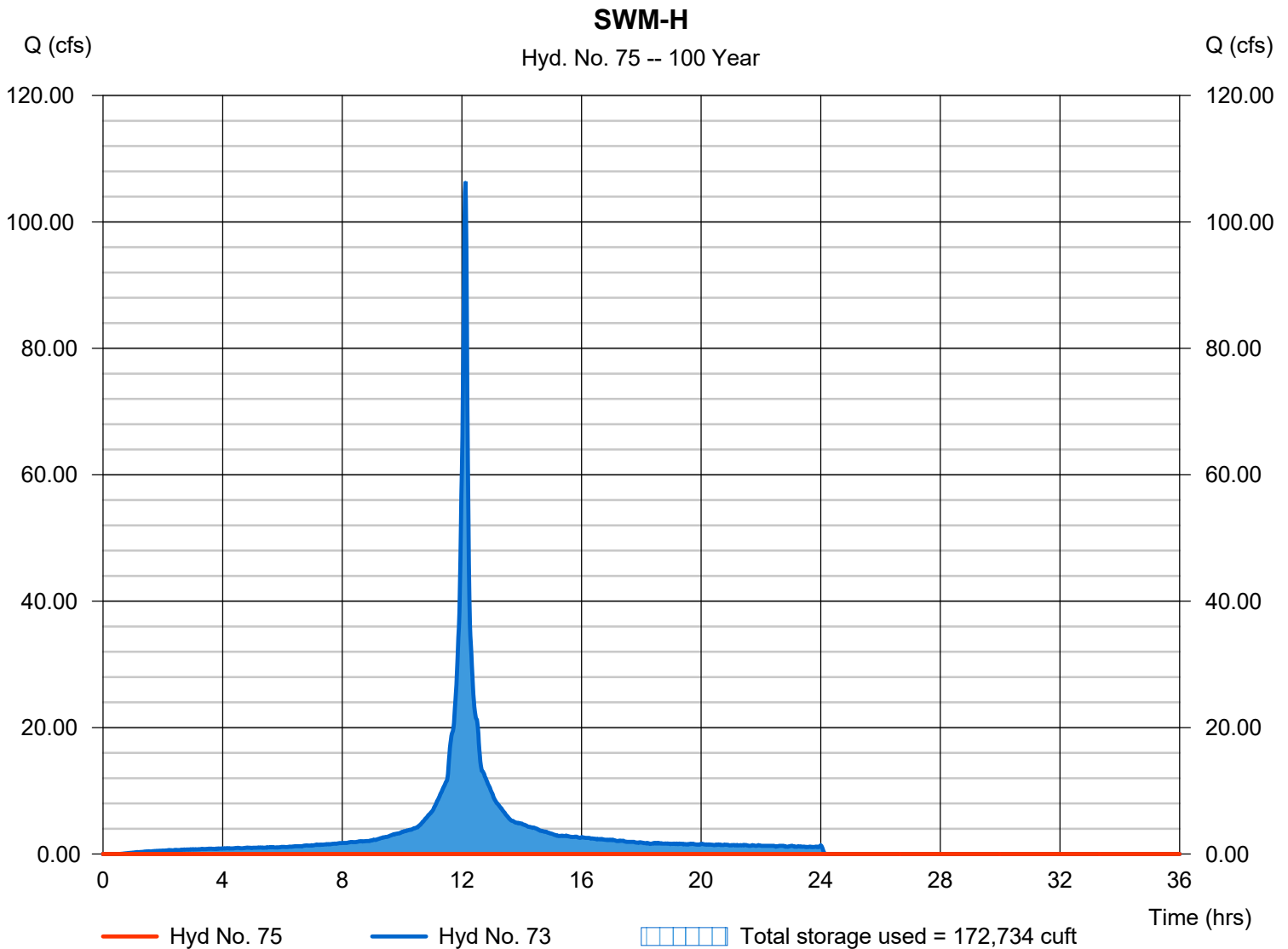
Wednesday, 03 / 9 / 2022

Hyd. No. 75

SWM-H

Hydrograph type	= Reservoir	Peak discharge	= 0.000 cfs
Storm frequency	= 100 yrs	Time to peak	= 10.62 hrs
Time interval	= 1 min	Hyd. volume	= 0 cuft
Inflow hyd. No.	= 73 - PDA-H	Max. Elevation	= 599.78 ft
Reservoir name	= SWM-H	Max. Storage	= 172,734 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Hydrograph Report

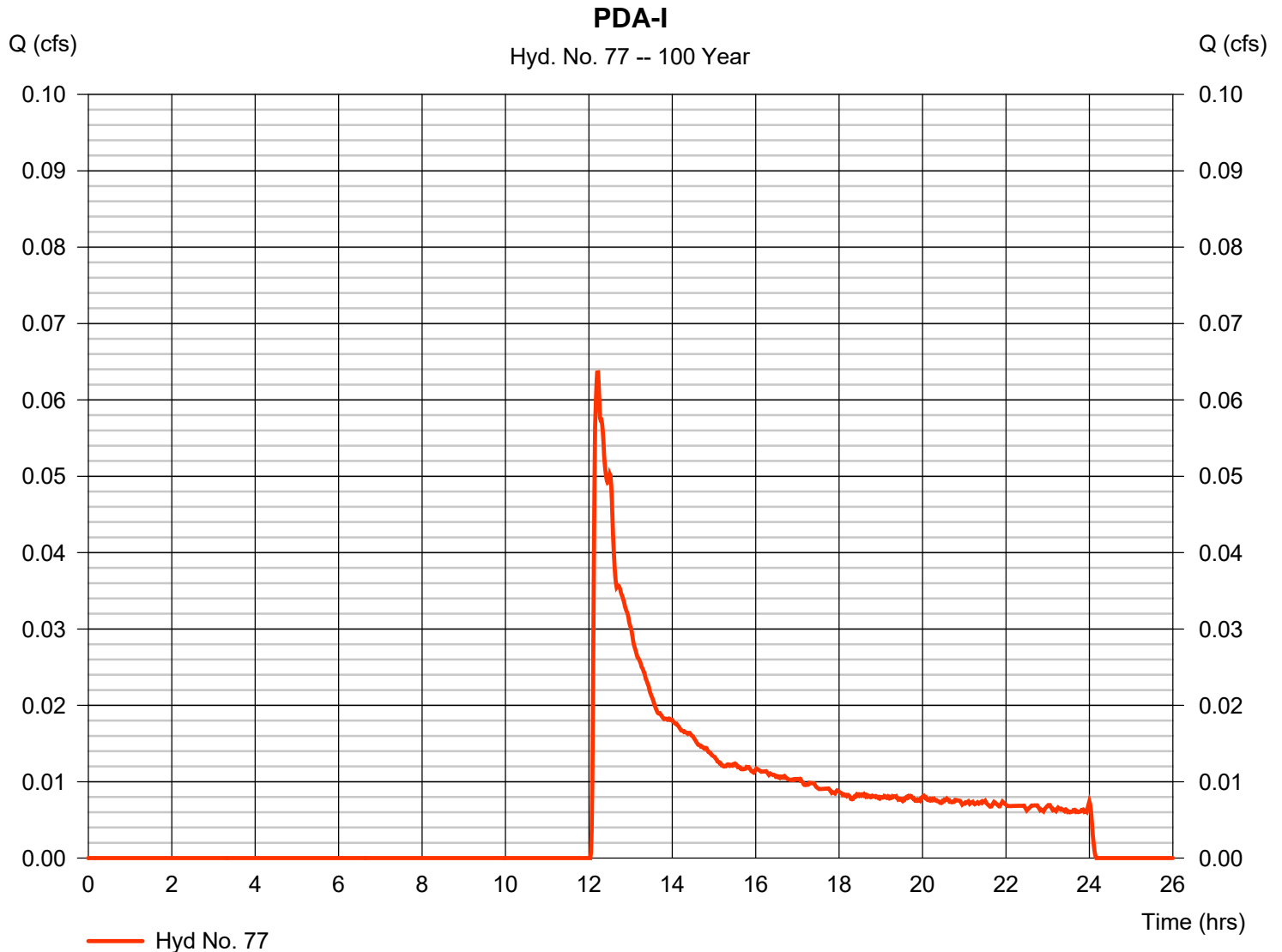
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

Wednesday, 03 / 9 / 2022

Hyd. No. 77

PDA-I

Hydrograph type	= SCS Runoff	Peak discharge	= 0.064 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.22 hrs
Time interval	= 1 min	Hyd. volume	= 556 cuft
Drainage area	= 0.260 ac	Curve number	= 34
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 6.00 min
Total precip.	= 7.51 in	Distribution	= Custom
Storm duration	= R:\Hydroflow Standards\NJ Reg Slope Rainfall Distribution\401A_C_1 min.cds		



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

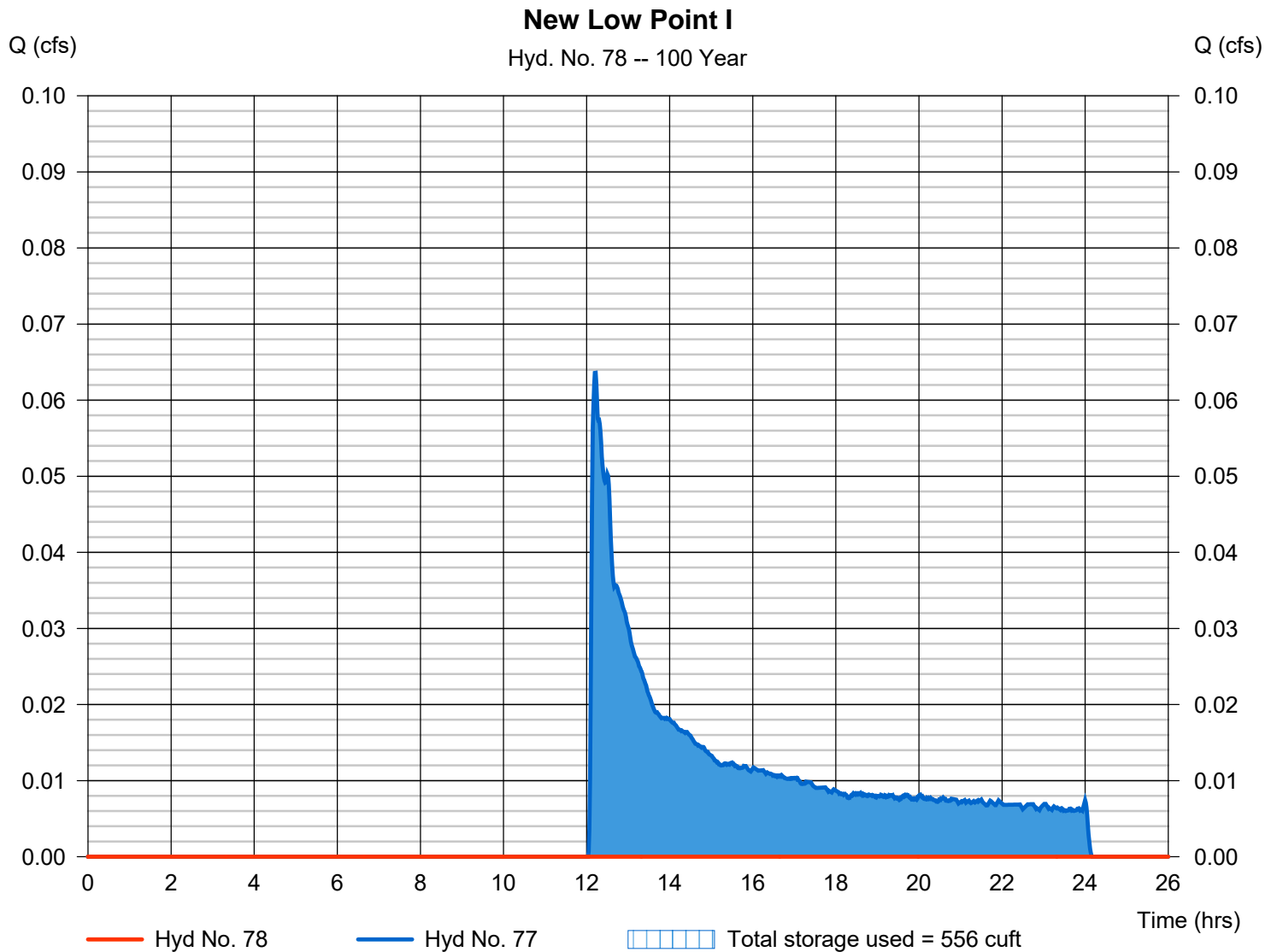
Wednesday, 03 / 9 / 2022

Hyd. No. 78

New Low Point I

Hydrograph type	= Reservoir	Peak discharge	= 0.000 cfs
Storm frequency	= 100 yrs	Time to peak	= n/a
Time interval	= 1 min	Hyd. volume	= 0 cuft
Inflow hyd. No.	= 77 - PDA-I	Max. Elevation	= 598.24 ft
Reservoir name	= New Low Point I	Max. Storage	= 556 cuft

Storage Indication method used.





APPENDIX G –
GROUNDWATER RECHARGE AND GROUNDWATER
MOUNDING CALCULATIONS



New Jersey
Groundwater
Recharge
Spreadsheet
Version 2.0

Annual Groundwater Recharge Analysis (based on GSR-32)

Select Township ↓	Average Annual P (in)	Climatic Factor
SUSSEX CO., ANDOVER TWP	43.9	1.60

Project Name:	Stickles Pond Road
Description:	Recharge Calculations
Analysis Date:	11/01/20

Pre-Developed Conditions					
Land Segment	Area (acres)	TR-55 Land Cover	Soil	Annual Recharge (in)	Annual Recharge (cu.ft)
1	30.66	Meadow, Pasture, Grassland or range	Hazen	16.2	1,807,889
2	8.24	Meadow, Pasture, Grassland or range	Sandy Land	17.4	519,199
3	2.75	Woods	Hazen	16.4	163,653
4	19.38	Woods	Sandy Land	17.7	1,242,370
5	4.94	Impervious areas	Urban Land*	0.0	-
6					
7	0				
8	0				
9	0				
10	0				
11	0				
12	0				
13	0				
14	0				
15	0				
Total =	66.0			Total Annual Recharge (in)	Total Annual Recharge (cu-ft)
				15.6	3,733,111

Post-Developed Conditions					
Land Segment	Area (acres)	TR-55 Land Cover	Soil	Annual Recharge (in)	Annual Recharge (cu.ft)
1	11.36	Open space	Hazen	16.1	662,345
2	6.23	Open space	Sandy Land	17.2	388,298
3	0.27	Woods	Hazen	16.4	16,068
4	48.11	Impervious areas	Urban Land*	0.0	-
5	0				
6	0				
7	0				
8	0				
9	0				
10	0				
11	0				
12	0				
13	0				
14	0				
15	0				
Total =	66.0			Total Annual Recharge (in)	Total Annual Recharge (cu.ft)
				4.5	1,066,711

Procedure to fill the Pre-Development and Post-Development Conditions Tables

For each land segment, first enter the area, then select TR-55 Land Cover, then select Soil. Start from the top of the table and proceed downward. Don't leave blank rows (with A=0) in between your segment entries. Rows with A=0 will not be displayed or used in calculations. For impervious areas outside of standard lots select "Impervious Areas" as the Land Cover. Soil type for impervious areas are only required if an infiltration facility will be built within these areas.

Annual Recharge Requirements Calculation ↓		Total Annual Recharge (in)	4.5	Total Annual Recharge (cu.ft)	1,066,711
% of Pre-Developed Annual Recharge to Preserve =	100%	Total Impervious Area (sq.ft)			2,095,672
Post-Development Annual Recharge Deficit=	2,666,400				(cubic feet)
Recharge Efficiency Parameters Calculations (area averages)					
RWC= 0.98	(in)	DRWC= 0.98	(in)		
ERWC = 0.20	(in)	EDRWC= 0.20	(in)		

Project Name		Description		Analysis Date		BMP or LID Type					
Stickles Pond Road		Recharge Calculations		11/01/20		Above-Ground SWM-A					
Recharge BMP Input Parameters				Root Zone Water capacity Calculated Parameters				Recharge Design Parameters			
Parameter	Symbol	Value	Unit	Parameter	Symbol	Value	Unit	Parameter	Symbol	Value	Unit
BMP Area	ABMP	10637.0	sq.ft	Empty Portion of RWC under Post-D Natural Recharge	ERWC	0.00	in	Inches of Runoff to capture	Qdesign	2.71	in
BMP Effective Depth, this is the design variable	dBMP	60.0	in	ERWC Modified to consider dEXC	EDRWC	0.00	in	Inches of Rainfall to capture	Pdesign	2.94	in
Upper level of the BMP surface (negative if above ground)	dBMPu	-60.0	in	Empty Portion of RWC under Infiltr. BMP	RERWC	0.00	in	Recharge Provided Avg. over Imp. Area		34.0	in
Depth of lower surface of BMP, must be >= dBMPu	dEXC	0.0	in					Runoff Captured Avg. over imp. Area		34.0	in
Post-development Land Segment Location of BMP	SegBMP	4	unitless								
Input Zero if Location is distributed or undetermined											
				BMP Calculated Size Parameters				CALCULATION CHECK MESSAGES			
				ABMP/Aimp	Aratio	0.08	unitless	Volume Balance--> Solve Problem to satisfy Annual Recharge dBMP Check----> OK dEXC Check----> OK BMP Location----> OK			
				BMP Volume	VBMP	53,185	cu.ft				
Parameters from Annual Recharge Worksheet				System Performance Calculated Parameters							
Post-D Deficit Recharge (or desired recharge volume)	Vdef	2,666,400	cu.ft	Annual BMP Recharge Volume		383,047	cu.ft	OTHER NOTES Pdesign is accurate only after BMP dimensions are updated to make rech volume= deficit volume. The portion of BMP infiltration prior to filling and the area occupied by BMP are ignored in these calculations. Results are sensitive to dBMP, make sure dBMP selected is small enough for BMP to empty in less than 3 days. For land Segment Location of BMP if you select "impervious areas" RWC will be minimal but not zero as determined by the soil type and a shallow root zone for this Land Cover allowing consideration of lateral flow and other losses.			
Post-D Impervious Area (or target Impervious Area)	Aimp	135,036	sq.ft	Avg BMP Recharge Efficiency		100.0%	Represents % Infiltration Recharged				
Root Zone Water Capacity	RWC	0.00	in	%Rainfall became Runoff		77.5%	%				
RWC Modified to consider dEXC	DRWC	0.00	in	%Runoff Infiltrated		100.0%	%				
Climatic Factor	C-factor	1.60	no units	%Runoff Recharged		6.4%	%				
Average Annual P	Pavg	43.9	in	%Rainfall Recharged		5.0%	%				
Recharge Requirement over Imp. Area	dr	15.3	in								
How to solve for different recharge volumes: By default the spreadsheet assigns the values of total deficit recharge volume "Vdef" and total proposed impervious area "Aimp" from the "Annual Recharge" sheet to "Vdef" and "Aimp" on this page. This allows solution for a single BMP to handle the entire recharge requirement assuming the runoff from entire impervious area is available to the BMP. To solve for a smaller BMP or a LID-IMP to recharge only part of the recharge requirement, set Vdef to your target value and Aimp to impervious area directly connected to your infiltration facility and then solve for ABMP or dBMP. To go back to the default configuration click the "Default Vdef & Aimp" button.											

Project Name		Description		Analysis Date	BMP or LID Type						
Stickles Pond Road		Recharge Calculations		11/01/20	Above-Ground SWM-B1						
Recharge BMP Input Parameters				Root Zone Water capacity Calculated Parameters				Recharge Design Parameters			
Parameter	Symbol	Value	Unit	Parameter	Symbol	Value	Unit	Parameter	Symbol	Value	Unit
BMP Area	ABMP	61258.0	sq.ft	Empty Portion of RWC under Post-D Natural Recharge	ERWC	0.00	in	Inches of Runoff to capture	Qdesign	2.71	in
BMP Effective Depth, this is the design variable	dBMP	48.0	in	ERWC Modified to consider dEXC	EDRWC	0.00	in	Inches of Rainfall to capture	Pdesign	2.94	in
Upper level of the BMP surface (negative if above ground)	dBMPu	-48.0	in	Empty Portion of RWC under Infiltr. BMP	RERWC	0.00	in	Recharge Provided Avg. over Imp. Area		34.0	in
Depth of lower surface of BMP, must be >= dBMPu	dEXC	0.0	in					Runoff Captured Avg. over imp. Area		34.0	in
Post-development Land Segment Location of BMP	SegBMP	4	unitless								
Input Zero if Location is distributed or undetermined											
				BMP Calculated Size Parameters				CALCULATION CHECK MESSAGES			
				ABMP/Aimp	Aratio	0.18	unitless	Volume Balance--> Solve Problem to satisfy Annual Recharge dBMP Check----> OK dEXC Check----> OK BMP Location----> OK			
				BMP Volume	VBMP	245,032	cu.ft				
Parameters from Annual Recharge Worksheet				System Performance Calculated Parameters							
Post-D Deficit Recharge (or desired recharge volume)	Vdef	2,666,400	cu.ft	Annual BMP Recharge Volume		992,821	cu.ft	OTHER NOTES Pdesign is accurate only after BMP dimensions are updated to make rech volume= deficit volume. The portion of BMP infiltration prior to filling and the area occupied by BMP are ignored in these calculations. Results are sensitive to dBMP, make sure dBMP selected is small enough for BMP to empty in less than 3 days. For land Segment Location of BMP if you select "impervious areas" RWC will be minimal but not zero as determined by the soil type and a shallow root zone for this Land Cover allowing consideration of lateral flow and other losses.			
Post-D Impervious Area (or target Impervious Area)	Aimp	350,000	sq.ft	Avg BMP Recharge Efficiency		100.0%	Represents % Infiltration Recharged				
Root Zone Water Capacity	RWC	0.00	in	%Rainfall became Runoff		77.5%	%				
RWC Modified to consider dEXC	DRWC	0.00	in	%Runoff Infiltrated		100.0%	%				
Climatic Factor	C-factor	1.60	no units	%Runoff Recharged		16.7%	%				
Average Annual P	Pavg	43.9	in	%Rainfall Recharged		12.9%	%				
Recharge Requirement over Imp. Area	dr	15.3	in								
How to solve for different recharge volumes: By default the spreadsheet assigns the values of total deficit recharge volume "Vdef" and total proposed impervious area "Aimp" from the "Annual Recharge" sheet to "Vdef" and "Aimp" on this page. This allows solution for a single BMP to handle the entire recharge requirement assuming the runoff from entire impervious area is available to the BMP. To solve for a smaller BMP or a LID-IMP to recharge only part of the recharge requirement, set Vdef to your target value and Aimp to impervious area directly connected to your infiltration facility and then solve for ABMP or dBMP. To go back to the default configuration click the "Default Vdef & Aimp" button.											

Project Name		Description		Analysis Date		BMP or LID Type					
Stickles Pond Road		Recharge Calculations		11/01/20		Above-Ground SWM-D					
Recharge BMP Input Parameters				Root Zone Water capacity Calculated Parameters				Recharge Design Parameters			
Parameter	Symbol	Value	Unit	Parameter	Symbol	Value	Unit	Parameter	Symbol	Value	Unit
BMP Area	ABMP	23768.0	sq.ft	Empty Portion of RWC under Post-D Natural Recharge	ERWC	0.00	in	Inches of Runoff to capture	Qdesign	2.71	in
BMP Effective Depth, this is the design variable	dBMP	84.0	in	ERWC Modified to consider dEXC	EDRWC	0.00	in	Inches of Rainfall to capture	Pdesign	2.94	in
Upper level of the BMP surface (negative if above ground)	dBMPu	-84.0	in	Empty Portion of RWC under Infiltr. BMP	RERWC	0.00	in	Recharge Provided Avg. over Imp. Area		34.0	in
Depth of lower surface of BMP, must be >= dBMPu	dEXC	0.0	in					Runoff Captured Avg. over imp. Area		34.0	in
Post-development Land Segment Location of BMP	SegBMP	4	unitless								
Input Zero if Location is distributed or undetermined											
				BMP Calculated Size Parameters				CALCULATION CHECK MESSAGES			
				ABMP/Aimp	Aratio	0.07	unitless	Volume Balance--> Solve Problem to satisfy Annual Recharge dBMP Check----> OK dEXC Check----> OK BMP Location----> OK			
				BMP Volume	VBMP	166,376	cu.ft				
Parameters from Annual Recharge Worksheet				System Performance Calculated Parameters				OTHER NOTES Pdesign is accurate only after BMP dimensions are updated to make rech volume= deficit volume. The portion of BMP infiltration prior to filling and the area occupied by BMP are ignored in these calculations. Results are sensitive to dBMP, make sure dBMP selected is small enough for BMP to empty in less than 3 days. For land Segment Location of BMP if you select "impervious areas" RWC will be minimal but not zero as determined by the soil type and a shallow root zone for this Land Cover allowing consideration of lateral flow and other losses.			
Post-D Deficit Recharge (or desired recharge volume)	Vdef	2,666,400	cu.ft	Annual BMP Recharge Volume		992,821	cu.ft				
Post-D Impervious Area (or target Impervious Area)	Aimp	350,000	sq.ft	Avg BMP Recharge Efficiency		100.0%	Represents % Infiltration Recharged				
Root Zone Water Capacity	RWC	0.00	in	%Rainfall became Runoff		77.5%	%				
RWC Modified to consider dEXC	DRWC	0.00	in	%Runoff Infiltrated		100.0%	%				
Climatic Factor	C-factor	1.60	no units	%Runoff Recharged		16.7%	%				
Average Annual P	Pavg	43.9	in	%Rainfall Recharged		12.9%	%				
Recharge Requirement over Imp. Area	dr	15.3	in								
How to solve for different recharge volumes: By default the spreadsheet assigns the values of total deficit recharge volume "Vdef" and total proposed impervious area "Aimp" from the "Annual Recharge" sheet to "Vdef" and "Aimp" on this page. This allows solution for a single BMP to handle the entire recharge requirement assuming the runoff from entire impervious area is available to the BMP. To solve for a smaller BMP or a LID-IMP to recharge only part of the recharge requirement, set Vdef to your target value and Aimp to impervious area directly connected to your infiltration facility and then solve for ABMP or dBMP. To go back to the default configuration click the "Default Vdef & Aimp" button.											

Project Name		Description		Analysis Date		BMP or LID Type					
Stickles Pond Road		Recharge Calculations		11/01/20		Above-Ground SWM-H					
Recharge BMP Input Parameters				Root Zone Water capacity Calculated Parameters				Recharge Design Parameters			
Parameter	Symbol	Value	Unit	Parameter	Symbol	Value	Unit	Parameter	Symbol	Value	Unit
BMP Area	ABMP	35726.0	sq.ft	Empty Portion of RWC under Post-D Natural Recharge	ERWC	0.00	in	Inches of Runoff to capture	Qdesign	2.71	in
BMP Effective Depth, this is the design variable	dBMP	48.0	in	ERWC Modified to consider dEXC	EDRWC	0.00	in	Inches of Rainfall to capture	Pdesign	2.94	in
Upper level of the BMP surface (negative if above ground)	dBMPu	-48.0	in	Empty Portion of RWC under Infiltr. BMP	RERWC	0.00	in	Recharge Provided Avg. over Imp. Area		34.0	in
Depth of lower surface of BMP, must be >= dBMPu	dEXC	0.0	in					Runoff Captured Avg. over imp. Area		34.0	in
Post-development Land Segment Location of BMP	SegBMP	4	unitless								
Input Zero if Location is distributed or undetermined											
				BMP Calculated Size Parameters				CALCULATION CHECK MESSAGES			
				ABMP/Aimp	Aratio	0.10	unitless	Volume Balance--> Solve Problem to satisfy Annual Recharge dBMP Check----> OK dEXC Check----> OK BMP Location----> OK			
				BMP Volume	VBMP	142,904	cu.ft				
Parameters from Annual Recharge Worksheet				System Performance Calculated Parameters							
Post-D Deficit Recharge (or desired recharge volume)	Vdef	2,666,400	cu.ft	Annual BMP Recharge Volume		992,821	cu.ft	OTHER NOTES Pdesign is accurate only after BMP dimensions are updated to make rech volume= deficit volume. The portion of BMP infiltration prior to filling and the area occupied by BMP are ignored in these calculations. Results are sensitive to dBMP, make sure dBMP selected is small enough for BMP to empty in less than 3 days. For land Segment Location of BMP if you select "impervious areas" RWC will be minimal but not zero as determined by the soil type and a shallow root zone for this Land Cover allowing consideration of lateral flow and other losses.			
Post-D Impervious Area (or target Impervious Area)	Aimp	350,000	sq.ft	Avg BMP Recharge Efficiency		100.0%	Represents % Infiltration Recharged				
Root Zone Water Capacity	RWC	0.00	in	%Rainfall became Runoff		77.5%	%				
RWC Modified to consider dEXC	DRWC	0.00	in	%Runoff Infiltrated		100.0%	%				
Climatic Factor	C-factor	1.60	no units	%Runoff Recharged		16.7%	%				
Average Annual P	Pavg	43.9	in	%Rainfall Recharged		12.9%	%				
Recharge Requirement over Imp. Area	dr	15.3	in								
How to solve for different recharge volumes: By default the spreadsheet assigns the values of total deficit recharge volume "Vdef" and total proposed impervious area "Aimp" from the "Annual Recharge" sheet to "Vdef" and "Aimp" on this page. This allows solution for a single BMP to handle the entire recharge requirement assuming the runoff from entire impervious area is available to the BMP. To solve for a smaller BMP or a LID-IMP to recharge only part of the recharge requirement, set Vdef to your target value and Aimp to impervious area directly connected to your infiltration facility and then solve for ABMP or dBMP. To go back to the default configuration click the "Default Vdef & Aimp" button.											

Input Values

5.00
0.150
5.00
20.000
136.500
2.55
10.00

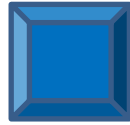
R Recharge rate (permeability rate) (in/hr)
Sy Specific yield, Sy (dimensionless)
 default value is 0.15; max value is 0.2 provided that a lab test data is submitted
Kh Horizontal hydraulic conductivity (in/hr)
 Kh = 5xRecharge Rate (R) in the costal plan; Kh=R outside the costal plan
x 1/2 length of basin (x direction, in feet)
y 1/2 width of basin (y direction, in feet)
t Duration of infiltration period (hours)
hi(0) Initial thickness of saturated zone (feet)

16.717
6.717

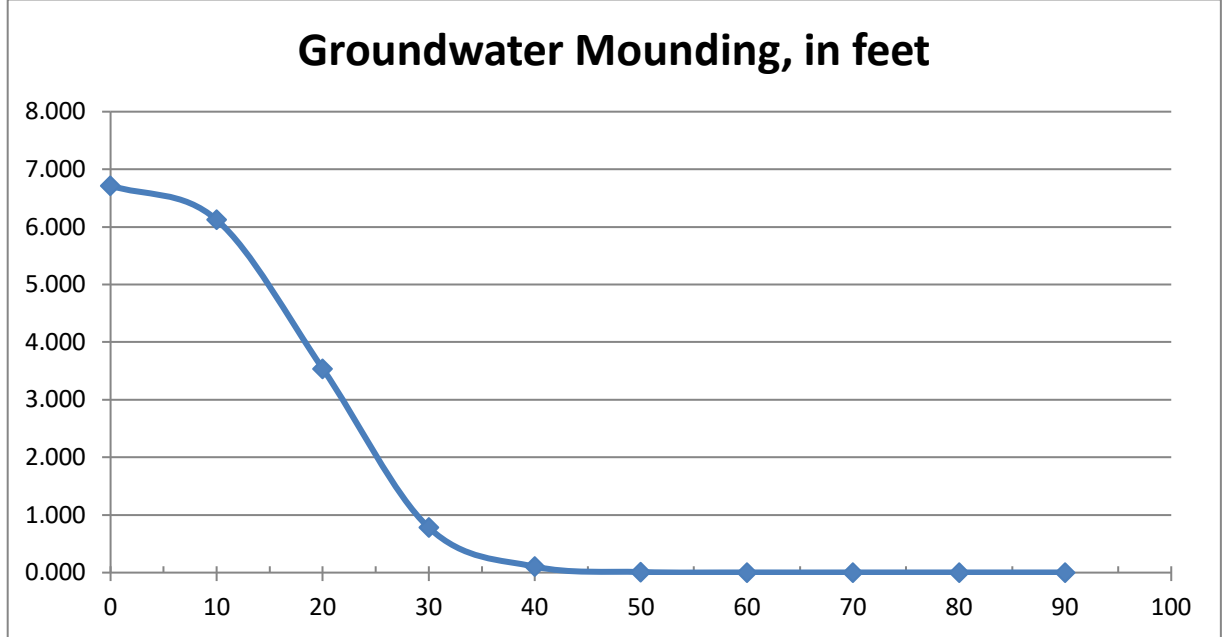
h(max) Maximum thickness of saturated zone (beneath center of basin at end of infiltration period)
Δh(max) Maximum groundwater mounding (beneath center of basin at end of infiltration period)

Distance from
 Ground-water center of basin in x
 Mounding, in feet direction, in feet

6.717	0
6.123	10
3.540	20
0.781	30
0.104	40
0.010	50
0.003	60
0.002	70
0.002	80
0.002	90



Re-Calculate Now



Disclaimer

This spreadsheet solving the Hantush (1967) equation for ground-water mounding beneath an infiltration basin is made available to the general public as a convenience for those wishing to replicate values documented in the USGS Scientific Investigations Report 2010-5102 "Groundwater mounding beneath hypothetical stormwater infiltration basins" or to calculate values based on user-specified site conditions. Any changes made to the spreadsheet (other than values identified as user-specified) after transmission from the USGS could have unintended, undesirable consequences. These consequences could include, but may not be limited to: erroneous output, numerical instabilities, and violations of underlying assumptions that are inherent in results presented in the accompanying USGS published report. The USGS assumes no responsibility for the consequences of any changes made to the spreadsheet. If changes are made to the spreadsheet, the user is responsible for documenting the changes and justifying the results and conclusions.

Input Values

5.00
0.150
5.00
49.000
704.000
1.41
10.00

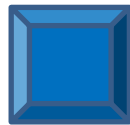
R Recharge rate (permeability rate) (in/hr)
Sy Specific yield, Sy (dimensionless)
 default value is 0.15; max value is 0.2 provided that a lab test data is submitted
Kh Horizontal hydraulic conductivity (in/hr)
 Kh = 5xRecharge Rate (R) in the costal plan; Kh=R outside the costal plan
x 1/2 length of basin (x direction, in feet)
y 1/2 width of basin (y direction, in feet)
t Duration of infiltration period (hours)
hi(0) Initial thickness of saturated zone (feet)

13.928
3.928

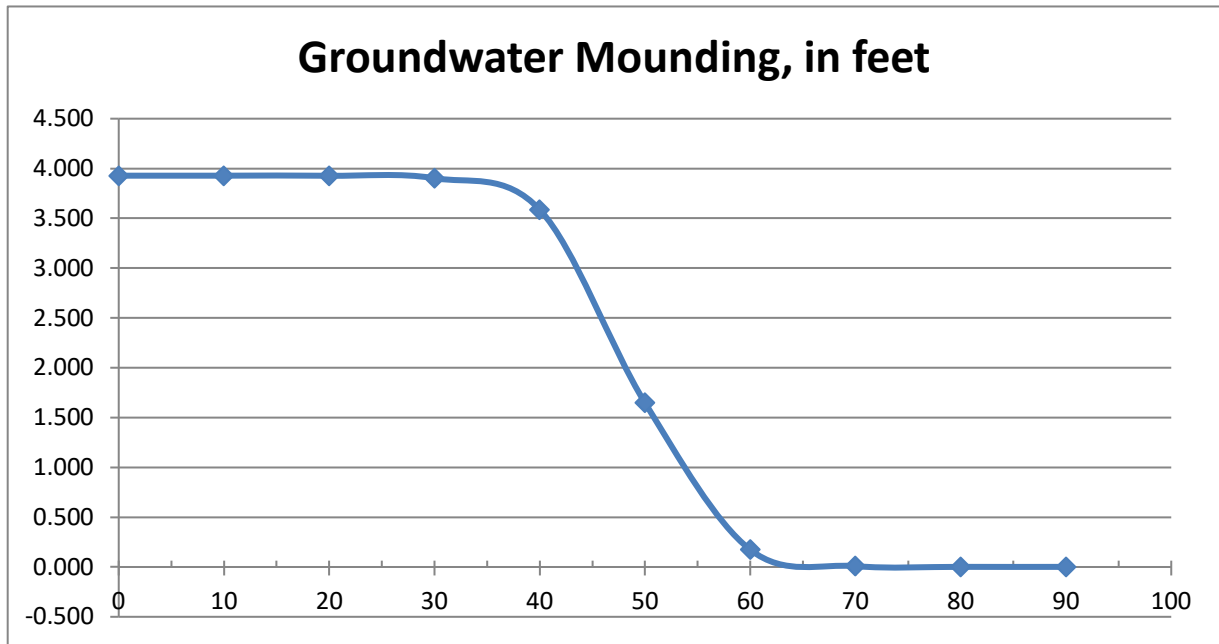
h(max) Maximum thickness of saturated zone (beneath center of basin at end of infiltration period)
Δh(max) Maximum groundwater mounding (beneath center of basin at end of infiltration period)

Distance from
 Ground-water center of basin in x
 Mounding, in feet direction, in feet

3.928	0
3.928	10
3.927	20
3.902	30
3.587	40
1.648	50
0.174	60
0.009	70
0.001	80
0.001	90



Re-Calculate Now



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Input Values

1.00
0.150
1.00
36.000
131.000
12.03
10.00

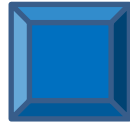
R Recharge rate (permeability rate) (in/hr)
Sy Specific yield, Sy (dimensionless)
 default value is 0.15; max value is 0.2 provided that a lab test data is submitted
Kh Horizontal hydraulic conductivity (in/hr)
 Kh = 5xRecharge Rate (R) in the costal plan; Kh=R outside the costal plan
x 1/2 length of basin (x direction, in feet)
y 1/2 width of basin (y direction, in feet)
t Duration of infiltration period (hours)
hi(0) Initial thickness of saturated zone (feet)

16.675
6.675

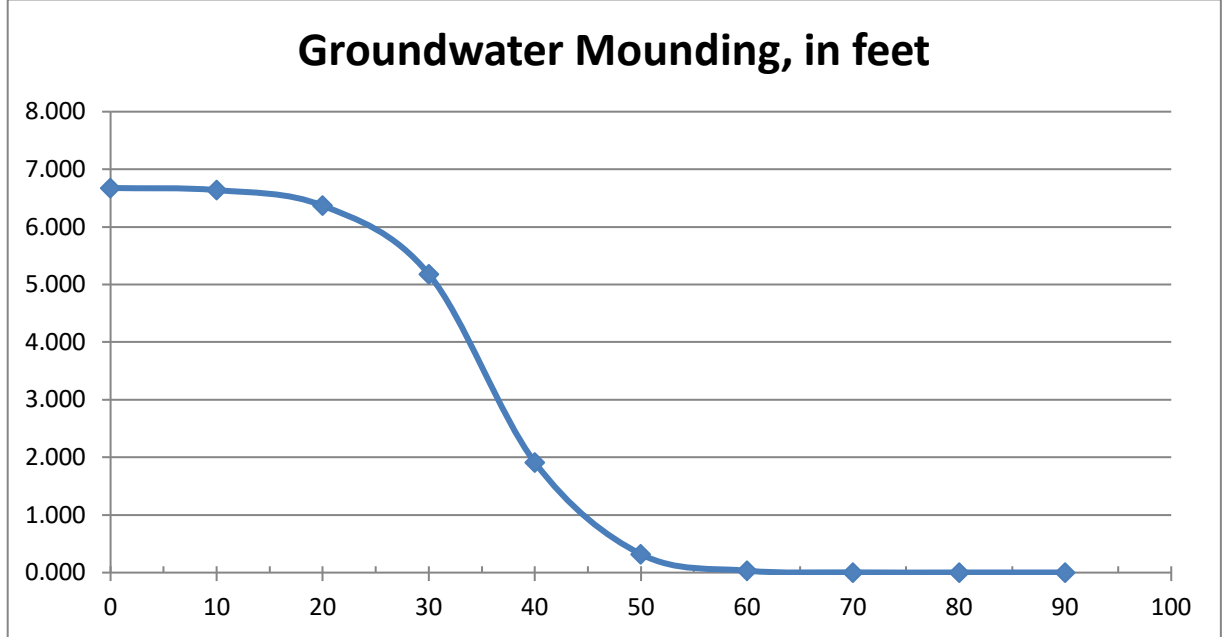
h(max) Maximum thickness of saturated zone (beneath center of basin at end of infiltration period)
Δh(max) Maximum groundwater mounding (beneath center of basin at end of infiltration period)

Distance from
 Ground-water center of basin in x
 Mounding, in feet direction, in feet

6.675	0
6.638	10
6.368	20
5.180	30
1.915	40
0.320	50
0.033	60
0.004	70
0.002	80
0.002	90



Re-Calculate Now



Disclaimer

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Input Values

2.00
0.150
2.00
23.100
385.764
2.65
10.00

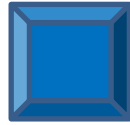
R Recharge rate (permeability rate) (in/hr)
Sy Specific yield, Sy (dimensionless)
 default value is 0.15; max value is 0.2 provided that a lab test data is submitted
Kh Horizontal hydraulic conductivity (in/hr)
 Kh = 5xRecharge Rate (R) in the costal plan; Kh=R outside the costal plan
x 1/2 length of basin (x direction, in feet)
y 1/2 width of basin (y direction, in feet)
t Duration of infiltration period (hours)
hi(0) Initial thickness of saturated zone (feet)

12.942
2.942

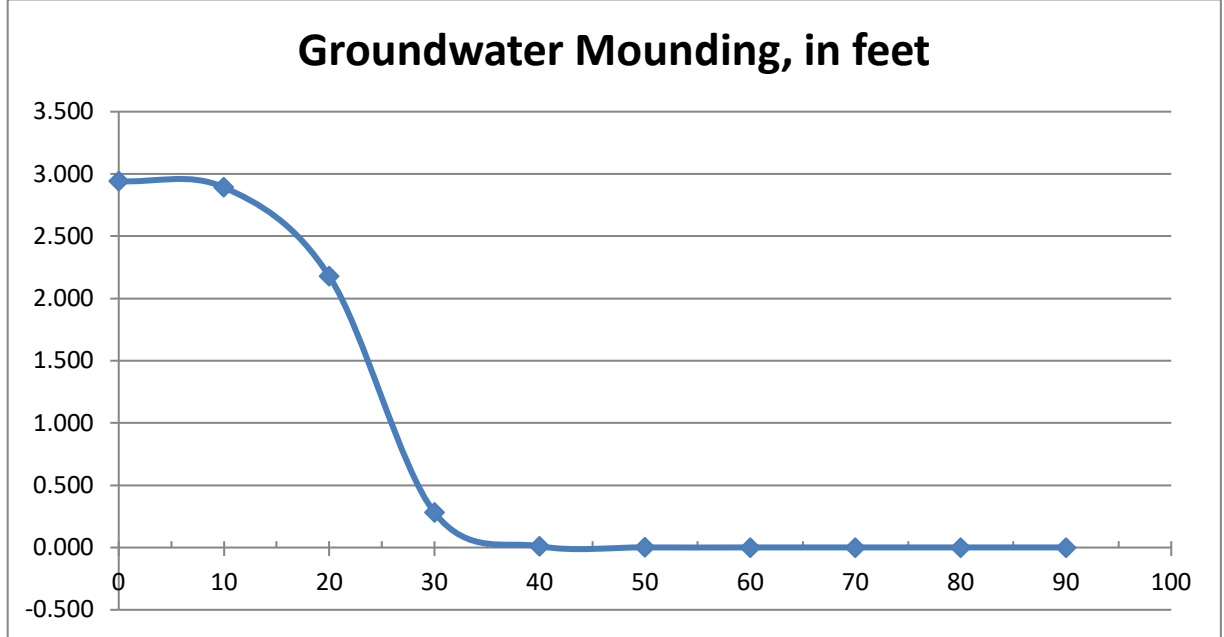
h(max) Maximum thickness of saturated zone (beneath center of basin at end of infiltration period)
Δh(max) Maximum groundwater mounding (beneath center of basin at end of infiltration period)

Distance from
 Ground-water center of basin in x
 Mounding, in feet direction, in feet

2.942	0
2.892	10
2.179	20
0.281	30
0.010	40
0.001	50
0.001	60
0.001	70
0.001	80
0.001	90

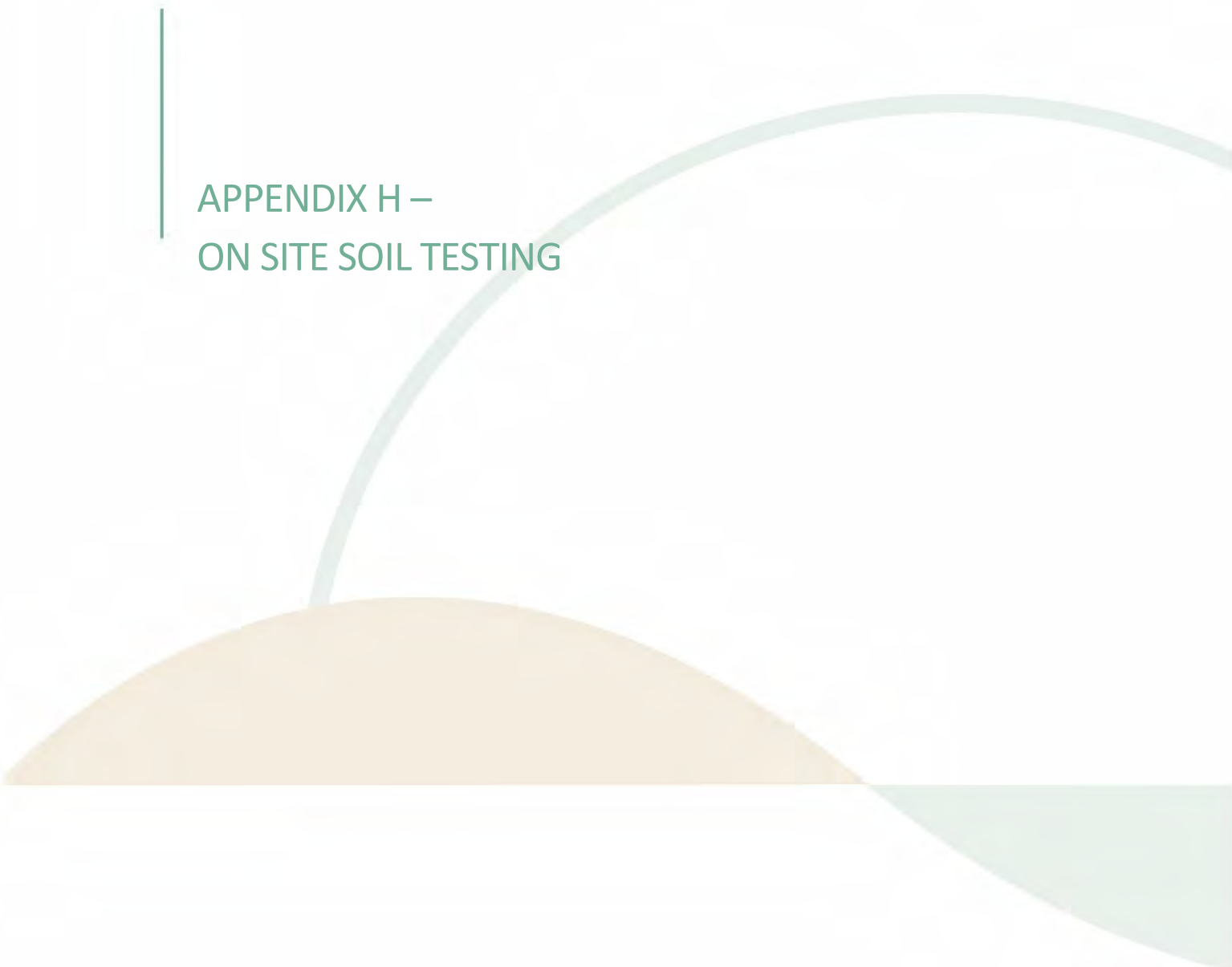


Re-Calculate Now



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APPENDIX H –
ON SITE SOIL TESTING

Engineering & Land Planning Associates

Project:	BHT Andover	Date:	10/22/2019
Location:	BHT Andover	Sample:	In Place
Test By:	Annika Asplund	Log Number:	SL-1
		Depth:	48"

				<u>Disturbed</u>	
L=	4.500	T1=	117	Tube Weight	686
H1=	6.000	T2=	311	Gross Weight	1,034
H2=	4.500	T3=	330	Net Weight	348
r=	1.125	T4=	346		
R=	1.125	T5=	419	Sample Vol. (in ³)	17.88328125
		T(sec.)=	419	(cm ³)	293.1069797
		T(min.)=	6.98	Bulk Density	1.187279813
Soil Permeability:			<u>11.12</u>		
Soil Class:			<u>K4</u>		

$$K(\text{in/hr}) = 60 \text{ min/hr} \times \frac{L(\text{in})}{T(\text{min})} \times \frac{r^2}{R^2} \times \ln\left(\frac{H_1}{H_2}\right) \quad [\text{Equation 4}]$$

Where:

- K = permeability of the soil sample, in inches per hour;
- L = length of the soil core, in inches;
- T = time required for the water level to drop from H₁ to H₂ during the final test interval, in minutes,;
- r = radius of the standpipe, in centimeters or inches;
- R = radius of the soil core, in the same units as "r";
- H₁ = height of the water level above the rim of the test basin at the beginning of each test interval, in inches; and
- H₂ = height of the water level above the rim of the test basin at the end of each test interval, in inches.

[Note: When the standpipe is not used, the term r²/R² is omitted from the equation.]

Engineering & Land Planning Associates

Project:	BHT Andover	Date:	10/22/2019
Location:	BHT Andover	Sample:	In Place
Test By:	Kevin Meininger	Log Number:	SL-2
		Depth:	48"

				<u>Disturbed</u>	
L=	3.250	T1=	117	Tube Weight	694
H1=	5.000	T2=	116	Gross Weight	982
H2=	3.250	T3=	124	Net Weight	288
r=	1.125	T4=	125		
R=	1.125	T5=	125	Sample Vol. (in ³)	12.91570313
		T(sec.)=	125	(cm ³)	211.6883742
		T(min.)=	2.08	Bulk Density	1.360490396
Soil Permeability:				<u>40.32</u>	
Soil Class:				<u>K5</u>	

$$K(\text{in/hr}) = 60 \text{ min/hr} \times \frac{L(\text{in})}{T(\text{min})} \times \frac{r^2}{R^2} \times \ln\left(\frac{H_1}{H_2}\right) \quad [\text{Equation 4}]$$

Where:

- K = permeability of the soil sample, in inches per hour;
- L = length of the soil core, in inches;
- T = time required for the water level to drop from H₁ to H₂ during the final test interval, in minutes,;
- r = radius of the standpipe, in centimeters or inches;
- R = radius of the soil core, in the same units as "r";
- H₁ = height of the water level above the rim of the test basin at the beginning of each test interval, in inches; and
- H₂ = height of the water level above the rim of the test basin at the end of each test interval, in inches.

[Note: When the standpipe is not used, the term r²/R² is omitted from the equation.]

Engineering & Land Planning Associates

Project:	BHT Andover	Date:	10/22/2019
Location:	BHT Andover	Sample:	In Place
Test By:	Kevin Meininger	Log Number:	SL-3
		Depth:	48"

				<u>Disturbed</u>	
L=	4.000	T1=	15	Tube Weight	694
H1=	5.000	T2=	16	Gross Weight	1,083
H2=	4.000	T3=	23	Net Weight	389
r=	1.125	T4=	23		
R=	1.125	T5=	23	Sample Vol. (in ³)	15.89625
		T(sec.)=	23	(cm ³)	260.5395375
		T(min.)=	0.38	Bulk Density	1.493055541
Soil Permeability:				<u>139.71</u>	
Soil Class:				<u>K5</u>	

$$K(\text{in/hr}) = 60 \text{ min/hr} \times \frac{L(\text{in})}{T(\text{min})} \times \frac{r^2}{R^2} \times \ln\left(\frac{H_1}{H_2}\right) \quad [\text{Equation 4}]$$

Where:

- K = permeability of the soil sample, in inches per hour;
- L = length of the soil core, in inches;
- T = time required for the water level to drop from H₁ to H₂ during the final test interval, in minutes,;
- r = radius of the standpipe, in centimeters or inches;
- R = radius of the soil core, in the same units as "r";
- H₁ = height of the water level above the rim of the test basin at the beginning of each test interval, in inches; and
- H₂ = height of the water level above the rim of the test basin at the end of each test interval, in inches.

[Note: When the standpipe is not used, the term r²/R² is omitted from the equation.]

Engineering & Land Planning Associates

Project:	BHT Andover	Date:	10/22/2019
Location:	BHT Andover	Sample:	In Place
Test By:	Annika Asplund	Log Number:	SL-4
		Depth:	100"

				<u>Disturbed</u>	
L=	4.000	T1=	62	Tube Weight	686
H1=	5.000	T2=	102	Gross Weight	1,037
H2=	4.000	T3=	126	Net Weight	351
r=	1.125	T4=	166		
R=	1.125	T5=	127	Sample Vol. (in ³)	15.89625
		T(sec.)=	127	(cm ³)	260.5395375
		T(min.)=	2.12	Bulk Density	1.347204357
Soil Permeability:				<u>25.30</u>	
Soil Class:				<u>K5</u>	

$$K(\text{in/hr}) = 60 \text{ min/hr} \times \frac{L(\text{in})}{T(\text{min})} \times \frac{r^2}{R^2} \times \ln\left(\frac{H_1}{H_2}\right) \quad [\text{Equation 4}]$$

Where:

- K = permeability of the soil sample, in inches per hour;
- L = length of the soil core, in inches;
- T = time required for the water level to drop from H₁ to H₂ during the final test interval, in minutes,;
- r = radius of the standpipe, in centimeters or inches;
- R = radius of the soil core, in the same units as "r";
- H₁ = height of the water level above the rim of the test basin at the beginning of each test interval, in inches; and
- H₂ = height of the water level above the rim of the test basin at the end of each test interval, in inches.

[Note: When the standpipe is not used, the term r²/R² is omitted from the equation.]

Engineering & Land Planning Associates

Project:	BHT Andover	Date:	10/22/2019
Location:	BHT Andover	Sample:	In Place
Test By:	Kevin Meininger	Log Number:	SL-5
		Depth:	56"

				<u>Disturbed</u>	
L=	3.000	T1=	35	Tube Weight	694
H1=	5.000	T2=	37	Gross Weight	1,058
H2=	3.000	T3=	32	Net Weight	364
r=	1.125	T4=	33		
R=	1.125	T5=	34	Sample Vol. (in ³)	11.9221875
		T(sec.)=	34	(cm ³)	195.4046531
		T(min.)=	0.57	Bulk Density	1.862801086
Soil Permeability:					<u>162.26</u>
Soil Class:					<u>K5</u>

$$K(\text{in/hr}) = 60 \text{ min/hr} \times \frac{L(\text{in})}{T(\text{min})} \times \frac{r^2}{R^2} \times \ln\left(\frac{H_1}{H_2}\right) \quad [\text{Equation 4}]$$

Where:

- K = permeability of the soil sample, in inches per hour;
- L = length of the soil core, in inches;
- T = time required for the water level to drop from H₁ to H₂ during the final test interval, in minutes,;
- r = radius of the standpipe, in centimeters or inches;
- R = radius of the soil core, in the same units as "r";
- H₁ = height of the water level above the rim of the test basin at the beginning of each test interval, in inches; and
- H₂ = height of the water level above the rim of the test basin at the end of each test interval, in inches.

[Note: When the standpipe is not used, the term r²/R² is omitted from the equation.]

Engineering & Land Planning Associates

Project:	BHT Andover	Date:	10/22/2019
Location:	BHT Andover	Sample:	In Place
Test By:	Kevin Meininger	Log Number:	SL- 6
		Depth:	48"

				<u>Disturbed</u>	
L=	4.000	T1=	15	Tube Weight	694
H1=	5.000	T2=	16	Gross Weight	1,083
H2=	4.000	T3=	23	Net Weight	389
r=	1.125	T4=	23		
R=	1.125	T5=	23	Sample Vol. (in ³)	15.89625
		T(sec.)=	23	(cm ³)	260.5395375
		T(min.)=	0.38	Bulk Density	1.493055541
Soil Permeability:					
					<u>139.71</u>
Soil Class:					<u>K5</u>

$$K(\text{in/hr}) = 60 \text{ min/hr} \times \frac{L(\text{in})}{T(\text{min})} \times \frac{r^2}{R^2} \times \ln\left(\frac{H_1}{H_2}\right) \quad [\text{Equation 4}]$$

Where:

- K = permeability of the soil sample, in inches per hour;
- L = length of the soil core, in inches;
- T = time required for the water level to drop from H₁ to H₂ during the final test interval, in minutes,;
- r = radius of the standpipe, in centimeters or inches;
- R = radius of the soil core, in the same units as "r";
- H₁ = height of the water level above the rim of the test basin at the beginning of each test interval, in inches; and
- H₂ = height of the water level above the rim of the test basin at the end of each test interval, in inches.

[Note: When the standpipe is not used, the term r²/R² is omitted from the equation.]

Engineering & Land Planning Associates

Project:	BHT Andover	Date:	10/22/2019
Location:	BHT Andover	Sample:	In Place
Test By:	Kevin Meininger	Log Number:	SL-7
		Depth:	30"

				<u>Disturbed</u>	
L=	3.250	T1=	68	Tube Weight	694
H1=	5.500	T2=	69	Gross Weight	975
H2=	3.250	T3=	116	Net Weight	281
r=	1.125	T4=	115		
R=	1.125	T5=	117	Sample Vol. (in ³)	12.91570313
		T(sec.)=	117	(cm ³)	211.6883742
		T(min.)=	1.95	Bulk Density	1.327422921
Soil Permeability:			<u>52.61</u>		
Soil Class:			<u>K5</u>		

$$K(\text{in/hr}) = 60 \text{ min/hr} \times \frac{L(\text{in})}{T(\text{min})} \times \frac{r^2}{R^2} \times \ln\left(\frac{H_1}{H_2}\right) \quad [\text{Equation 4}]$$

Where:

- K = permeability of the soil sample, in inches per hour;
- L = length of the soil core, in inches;
- T = time required for the water level to drop from H₁ to H₂ during the final test interval, in minutes,;
- r = radius of the standpipe, in centimeters or inches;
- R = radius of the soil core, in the same units as "r";
- H₁ = height of the water level above the rim of the test basin at the beginning of each test interval, in inches; and
- H₂ = height of the water level above the rim of the test basin at the end of each test interval, in inches.

[Note: When the standpipe is not used, the term r²/R² is omitted from the equation.]



Municipality: Andover Township Block: 151 Lot: 21

Soil Log and Interpretation

1 Soil Log #: SL-1 Date of Soil Log: 1/4/22 Method: Profile Pit
2 Log: Site "B"

Depth (inches) Munsell Color Name & Symbol; Estimated Textural Class; Estimated Volume % Coarse Fragments; Structure; Consistence; Mottling Abundance, Size and Contrast

- 0 - 11" Topsoil;
- 11 - 83" 7.5YR 5/2; Loamy Sand; 10% Gravel, 5% Cobble, 2% Stone; Few, Fine, Distinct Mottling @ 66-108" 5YR 5/6 in Color; Single Grain, Moist, Loose;
- 83 - 121" 10YR 4/1; Loamy Sand; 10% Gravel, 5% Cobble, 2% Stone Single Grain, Saturated, Loose;

Sample Taken @ 120"

3 Ground Water Observations:

Seepage Observed - Depth (inches): 72"
 Pit Flooded - Depth (inches): _____ after _____ hours of observation

4 Soil Limiting Zones (Check ALL applicable categories):

- Fractured Rock Substratum - Depth to Top: _____
- Massive Rock Substratum - Depth to Top: _____
- Excessively Coarse Horizon - Depth Top to Bottom: _____
- Excessively Coarse Substratum - Depth to Top: _____
- Hydraulically Restrictive Horizon - Depth Top to Bottom: _____
- Hydraulically Restrictive Substratum - Depth to Top: _____
- Perched Zone of Saturation - Depth Top to Bottom: _____
- Regional Zone of Saturation - Depth to Top: 66"

5 I hereby certify that the information furnished on this form is true and accurate. I am aware that falsification of data is a violation of the Water Pollution Control Act (N.J.S.A. 58:10A-1 et seq.) and is subject to penalties as prescribed in N.J.A.C. 7:14-8.

Signature of Site Evaluator: [Signature] Date: _____
Signature and Seal of Professional Engineer: [Signature]
License #: 24GB0425282 Date: _____



Municipality: Andover Township Block: 151 Lot: 21

Soil Log and Interpretation

1 Soil Log #: SL-2 Date of Soil Log: 1/4/22 Method: Profile Pit
2 Log: Site "B"

Depth (inches)	Munsell Color Name & Symbol; Estimated Textural Class; Estimated Volume % Coarse Fragments; Structure; Consistence; Mottling Abundance, Size and Contrast
0 - 13"	Topsoil;
13 - 75"	7.5YR 5/2; Sandy Loam; 10% Gravel, 5% Cobble; Single Grain, Moist, Loose;
75 - 140"	10YR 4/1; Sandy Loam; 25% Gravel, 10% Cobble, 2% Stone Single Grain, Moist, Loose;

Samples Taken @ 60" and 130"

3 Ground Water Observations:

Seepage Observed - Depth (inches): 103"
 Pit Flooded - Depth (inches): 130" after 5 minutes of observation

4 Soil Limiting Zones (Check ALL applicable categories):

- Fractured Rock Substratum - Depth to Top: _____
- Massive Rock Substratum - Depth to Top: _____
- Excessively Coarse Horizon - Depth Top to Bottom: _____
- Excessively Coarse Substratum - Depth to Top: _____
- Hydraulically Restrictive Horizon - Depth Top to Bottom: _____
- Hydraulically Restrictive Substratum - Depth to Top: _____
- Perched Zone of Saturation - Depth Top to Bottom: _____
- Regional Zone of Saturation - Depth to Top: 103"

5 I hereby certify that the information furnished on this form is true and accurate. I am aware that falsification of data is a violation of the Water Pollution Control Act (N.J.S.A. 58:10A-1 et seq.) and is subject to penalties as prescribed in N.J.A.C. 7:14-8.

Signature of Site Evaluator: [Signature] Date: _____
Signature and Seal of Professional Engineer: [Signature]
License #: 24GB0425282 Date: _____



Municipality: Andover Township Block: 151 Lot: 21

Soil Log and Interpretation

1 Soil Log #: SL-3 Date of Soil Log: 1/4/22 Method: Profile Pit
2 Log: Site "B"

Depth (inches) Munsell Color Name & Symbol; Estimated Textural Class; Estimated Volume % Coarse Fragments; Structure; Consistence; Mottling Abundance, Size and Contrast

0 - 12"	Topsoil;
12 - 80"	7.5YR 5/3; Sandy Loam; 10% Gravel, 5% Cobble; Single Grain, Moist, Loose;
80 - 120"	10YR 4/1; Sandy Loam; 15% Gravel, 10% Cobble, 2% Stone Single Grain, Moist, Loose; Samples Taken @ 130"

3 Ground Water Observations:

Seepage Observed - Depth (inches): 95"
 Pit Flooded - Depth (inches): _____ after _____ hours of observation

4 Soil Limiting Zones (Check ALL applicable categories):

- Fractured Rock Substratum - Depth to Top: _____
- Massive Rock Substratum - Depth to Top: _____
- Excessively Coarse Horizon - Depth Top to Bottom: _____
- Excessively Coarse Substratum - Depth to Top: _____
- Hydraulically Restrictive Horizon - Depth Top to Bottom: _____
- Hydraulically Restrictive Substratum - Depth to Top: _____
- Perched Zone of Saturation - Depth Top to Bottom: _____
- Regional Zone of Saturation - Depth to Top: 80"

5 I hereby certify that the information furnished on this form is true and accurate. I am aware that falsification of data is a violation of the Water Pollution Control Act (N.J.S.A. 58:10A-1 et seq.) and is subject to penalties as prescribed in N.J.A.C. 7:14-8.

Signature of Site Evaluator: [Signature] Date: _____
Signature and Seal of Professional Engineer: [Signature]
License #: 24GB0425282 Date: _____



Municipality: Andover Township Block: 151 Lot: 21

Soil Log and Interpretation

1 Soil Log #: SL-5 Date of Soil Log: 1/4/22 Method: Profile Pit
2 Log: Site "B"

Depth (inches) Munsell Color Name & Symbol; Estimated Textural Class; Estimated Volume % Coarse Fragments; Structure; Consistence; Mottling Abundance, Size and Contrast

- 0 - 13" Topsoil;
- 13 - 74" 7.5YR 5/3; Sandy Loam; 15% Gravel, 10% Cobble, 2% Stone; Single Grain, Moist, Loose;
- 74 - 137" 10YR 4/1; Sandy Loam; 20% Gravel, 15% Cobble, 10% Stone; Single Grain, Moist, Loose;

Sample Taken @ 130"

3 Ground Water Observations:

Seepage Observed - Depth (inches): 106"
 Pit Flooded - Depth (inches): 123" after 5 minutes of observation

4 Soil Limiting Zones (Check ALL applicable categories):

- Fractured Rock Substratum - Depth to Top: _____
- Massive Rock Substratum - Depth to Top: _____
- Excessively Coarse Horizon - Depth Top to Bottom: _____
- Excessively Coarse Substratum - Depth to Top: _____
- Hydraulically Restrictive Horizon - Depth Top to Bottom: _____
- Hydraulically Restrictive Substratum - Depth to Top: _____
- Perched Zone of Saturation - Depth Top to Bottom: _____
- Regional Zone of Saturation - Depth to Top: 106"

5 I hereby certify that the information furnished on this form is true and accurate. I am aware that falsification of data is a violation of the Water Pollution Control Act (N.J.S.A. 58:10A-1 et seq.) and is subject to penalties as prescribed in N.J.A.C. 7:14-8.

Signature of Site Evaluator: [Signature] Date: _____
Signature and Seal of Professional Engineer: [Signature]
License #: 24GB0425282 Date: _____



Municipality: Andover Township Block: 151 Lot: 21

Soil Log and Interpretation

1 Soil Log #: SL-6 Date of Soil Log: 1/4/22 Method: Profile Pit
2 Log: Site "B"

Depth (inches) Munsell Color Name & Symbol; Estimated Textural Class; Estimated Volume % Coarse Fragments; Structure; Consistence; Mottling Abundance, Size and Contrast

- 0 - 11" Topsoil;
- 11 - 60" 7.5YR 4/4; Sandy Loam; 15% Gravel, 15% Cobble, 2% Stone; Single Grain, Moist, Loose;
- 60 - 133" 10YR 4/1; Sandy Loam; 20% Gravel, 20% Cobble, 5% Stone; Single Grain, Moist, Loose;

Sample Taken @ 120"

3 Ground Water Observations:

Seepage Observed - Depth (inches): 106"
 Pit Flooded - Depth (inches): _____ after _____ minutes of observation

4 Soil Limiting Zones (Check ALL applicable categories):

- Fractured Rock Substratum - Depth to Top: _____
- Massive Rock Substratum - Depth to Top: _____
- Excessively Coarse Horizon - Depth Top to Bottom: _____
- Excessively Coarse Substratum - Depth to Top: _____
- Hydraulically Restrictive Horizon - Depth Top to Bottom: _____
- Hydraulically Restrictive Substratum - Depth to Top: _____
- Perched Zone of Saturation - Depth Top to Bottom: _____
- Regional Zone of Saturation - Depth to Top: 106"

5 I hereby certify that the information furnished on this form is true and accurate. I am aware that falsification of data is a violation of the Water Pollution Control Act (N.J.S.A. 58:10A-1 et seq.) and is subject to penalties as prescribed in N.J.A.C. 7:14-8.

Signature of Site Evaluator: [Signature] Date: _____
Signature and Seal of Professional Engineer: [Signature]
License #: 24GB0425282 Date: _____



Municipality: Andover Township Block: 151 Lot: 21

Soil Log and Interpretation

1 Soil Log #: SL-7 Date of Soil Log: 1/4/22 Method: Profile Pit
2 Log: Site "B"

Depth (inches)	Munsell Color Name & Symbol; Estimated Textural Class; Estimated Volume % Coarse Fragments; Structure; Consistence; Mottling Abundance, Size and Contrast
0 - 14"	Topsoil;
14 - 73"	5YR 5/6; Clay Loam; 10% Gravel, 5% Cobble, 2% Stone; SAB, Moist, Friable;
73 - 135"	10YR 4/1; Sandy Loam; 20% Gravel, 10% Cobble, 2% Stone; Single Grain, Moist, Loose;

Samples Taken @ 60" and 120"

3 Ground Water Observations:

Seepage Observed - Depth (inches): 105"
 Pit Flooded - Depth (inches): 125" after 5 minutes of observation

4 Soil Limiting Zones (Check ALL applicable categories):

Fractured Rock Substratum - Depth to Top: _____

Massive Rock Substratum - Depth to Top: _____

Excessively Coarse Horizon - Depth Top to Bottom: _____

Excessively Coarse Substratum - Depth to Top: _____

Hydraulically Restrictive Horizon - Depth Top to Bottom: _____

Hydraulically Restrictive Substratum - Depth to Top: _____

Perched Zone of Saturation - Depth Top to Bottom: _____

Regional Zone of Saturation - Depth to Top: 105"

5 I hereby certify that the information furnished on this form is true and accurate. I am aware that falsification of data is a violation of the Water Pollution Control Act (N.J.S.A. 58:10A-1 et seq.) and is subject to penalties as prescribed in N.J.A.C. 7:14-8.

Signature of Site Evaluator: [Signature] Date: _____
Signature and Seal of Professional Engineer: [Signature]
License #: 24GB0425282 Date: _____



Municipality: Andover Township Block: 151 Lot: 21

Soil Log and Interpretation

1 Soil Log #: SL-8 Date of Soil Log: 1/4/22 Method: Profile Pit
2 Log: Site "B"

Depth (inches)	Munsell Color Name & Symbol; Estimated Textural Class; Estimated Volume % Coarse Fragments; Structure; Consistence; Mottling Abundance, Size and Contrast
0 - 16"	Topsoil;
16 - 68"	5YR 5/6; Clay Loam; 5% Gravel, 5% Cobble; SAB, Moist, Friable;
68 - 130"	10YR 4/1; Sandy Loam; 10% Gravel, 10% Cobble, 2% Stone; Single Grain, Moist, Loose;

Sample Taken @ 120"

3 Ground Water Observations:

Seepage Observed - Depth (inches): 112"
 Pit Flooded - Depth (inches): _____ after _____ minutes of observation

4 Soil Limiting Zones (Check ALL applicable categories):

- Fractured Rock Substratum - Depth to Top: _____
- Massive Rock Substratum - Depth to Top: _____
- Excessively Coarse Horizon - Depth Top to Bottom: _____
- Excessively Coarse Substratum - Depth to Top: _____
- Hydraulically Restrictive Horizon - Depth Top to Bottom: _____
- Hydraulically Restrictive Substratum - Depth to Top: _____
- Perched Zone of Saturation - Depth Top to Bottom: _____
- Regional Zone of Saturation - Depth to Top: 112"

5 I hereby certify that the information furnished on this form is true and accurate. I am aware that falsification of data is a violation of the Water Pollution Control Act (N.J.S.A. 58:10A-1 et seq.) and is subject to penalties as prescribed in N.J.A.C. 7:14-8.

Signature of Site Evaluator: [Signature] Date: _____

Signature and Seal of Professional Engineer: [Signature]

License #: 24GB0425282 Date: _____



Municipality: Andover Township Block: 151 Lot: 21

Soil Log and Interpretation

1 Soil Log #: SL-9 Date of Soil Log: 1/4/22 Method: Profile Pit
2 Log: Site "B"

Depth (inches) Munsell Color Name & Symbol; Estimated Textural Class; Estimated Volume % Coarse Fragments; Structure; Consistence; Mottling Abundance, Size and Contrast

0 - 11" Topsoil;

11 - 64" 5YR 5/6; Sandy Clay Loam; 10% Gravel, 10% Cobble; SAB, Moist, Friable;

64 - 125" 10YR 4/1; Sandy Clay Loam; 15% Gravel, 10% Cobble, 2% Stone; Common, Medium, Distinct Mottling @ 105-110", 10YR 7/1 in Color; SAB, Moist, Loose;

Sample Taken @ 120"

3 Ground Water Observations:

Seepage Observed - Depth (inches): 104"
 Pit Flooded - Depth (inches): _____ after _____ minutes of observation

4 Soil Limiting Zones (Check ALL applicable categories):

Fractured Rock Substratum - Depth to Top: _____
 Massive Rock Substratum - Depth to Top: _____
 Excessively Coarse Horizon - Depth Top to Bottom: _____
 Excessively Coarse Substratum - Depth to Top: _____
 Hydraulically Restrictive Horizon - Depth Top to Bottom: _____
 Hydraulically Restrictive Substratum - Depth to Top: _____
 Perched Zone of Saturation - Depth Top to Bottom: _____
 Regional Zone of Saturation - Depth to Top: 104"

5 I hereby certify that the information furnished on this form is true and accurate. I am aware that falsification of data is a violation of the Water Pollution Control Act (N.J.S.A. 58:10A-1 et seq.) and is subject to penalties as prescribed in N.J.A.C. 7:14-8.

Signature of Site Evaluator: [Signature] Date: _____

Signature and Seal of Professional Engineer: [Signature]

License #: 24GB0425282 Date: _____



Municipality: Andover Township Block: 151 Lot: 21

Soil Log and Interpretation

1 Soil Log #: SL-10 Date of Soil Log: 1/4/22 Method: Profile Pit
2 Log: Site "B"

Depth (inches) Munsell Color Name & Symbol; Estimated Textural Class; Estimated Volume % Coarse Fragments; Structure; Consistence; Mottling Abundance, Size and Contrast

0 - 12" Topsoil;

12 - 72" 5YR 5/6; Sandy Clay Loam; 20% Gravel, 20% Cobble, 5% Stone; SAB, Moist, Friable;

72 - 126" 10YR 4/2; Sand; 5% Gravel, 10% Cobble; Single Grain, Moist, Loose;

Sample Taken @ 100"

3 Ground Water Observations:

Seepage Observed - Depth (inches): 104"
 Pit Flooded - Depth (inches): _____ after _____ minutes of observation

4 Soil Limiting Zones (Check ALL applicable categories):

Fractured Rock Substratum - Depth to Top: _____
 Massive Rock Substratum - Depth to Top: _____
 Excessively Coarse Horizon - Depth Top to Bottom: _____
 Excessively Coarse Substratum - Depth to Top: _____
 Hydraulically Restrictive Horizon - Depth Top to Bottom: _____
 Hydraulically Restrictive Substratum - Depth to Top: _____
 Perched Zone of Saturation - Depth Top to Bottom: _____
 Regional Zone of Saturation - Depth to Top: 104"

5 I hereby certify that the information furnished on this form is true and accurate. I am aware that falsification of data is a violation of the Water Pollution Control Act (N.J.S.A. 58:10A-1 et seq.) and is subject to penalties as prescribed in N.J.A.C. 7:14-8.

Signature of Site Evaluator: [Signature] Date: _____
Signature and Seal of Professional Engineer: [Signature]
License #: 24GB0425282 Date: _____



Municipality: Andover Township Block: 151 Lot: 21

Soil Log and Interpretation

1 Soil Log #: SL-11 Date of Soil Log: 1/5/22 Method: Profile Pit
2 Log: Site "B"

Depth (inches)	Munsell Color Name & Symbol; Estimated Textural Class; Estimated Volume % Coarse Fragments; Structure; Consistence; Mottling Abundance, Size and Contrast
0 - 9"	Topsoil;
9 - 68"	10YR 5/3; Sandy Loam; 10% Gravel, 5% Cobble; Single Grain, Moist, Loose;
68 - 140"	10YR 4/1; Sandy Loam; 15% Gravel, 10% Cobble, 2% Stone; Single Grain, Moist, Loose;

Sample Taken @ 130"

3 Ground Water Observations:

Seepage Observed - Depth (inches): 115"
 Pit Flooded - Depth (inches): _____ after _____ minutes of observation

4 Soil Limiting Zones (Check ALL applicable categories):

- Fractured Rock Substratum - Depth to Top: _____
- Massive Rock Substratum - Depth to Top: _____
- Excessively Coarse Horizon - Depth Top to Bottom: _____
- Excessively Coarse Substratum - Depth to Top: _____
- Hydraulically Restrictive Horizon - Depth Top to Bottom: _____
- Hydraulically Restrictive Substratum - Depth to Top: _____
- Perched Zone of Saturation - Depth Top to Bottom: _____
- Regional Zone of Saturation - Depth to Top: 115"

5 I hereby certify that the information furnished on this form is true and accurate. I am aware that falsification of data is a violation of the Water Pollution Control Act (N.J.S.A. 58:10A-1 et seq.) and is subject to penalties as prescribed in N.J.A.C. 7:14-8.

Signature of Site Evaluator: [Signature] Date: _____
Signature and Seal of Professional Engineer: [Signature]
License #: 24GB0425282 Date: _____



Municipality: Andover Township Block: 151 Lot: 21

Soil Log and Interpretation

1 Soil Log #: SL-12 Date of Soil Log: 1/5/22 Method: Profile Pit
2 Log: Site "B"

Depth (inches) Munsell Color Name & Symbol; Estimated Textural Class; Estimated Volume % Coarse Fragments; Structure; Consistence; Mottling Abundance, Size and Contrast

0 - 11" Topsoil;

11 - 76" 10YR 5/3; Sandy Clay Loam; 15% Gravel, 5% Cobble, 10% Stone; SAB, Moist, Friable;

76 - 145" 10YR 4/1; Sandy Loam; 20% Gravel, 10% Cobble, 5% Stone; Single Grain, Moist, Loose;

Samples Taken @ 60" and 130"

3 Ground Water Observations:

Seepage Observed - Depth (inches): 130"
 Pit Flooded - Depth (inches): _____ after _____ minutes of observation

4 Soil Limiting Zones (Check ALL applicable categories):

____ Fractured Rock Substratum - Depth to Top: _____
____ Massive Rock Substratum - Depth to Top: _____
____ Excessively Coarse Horizon - Depth Top to Bottom: _____
____ Excessively Coarse Substratum - Depth to Top: _____
____ Hydraulically Restrictive Horizon - Depth Top to Bottom: _____
____ Hydraulically Restrictive Substratum - Depth to Top: _____
____ Perched Zone of Saturation - Depth Top to Bottom: _____
 Regional Zone of Saturation - Depth to Top: 130"

5 I hereby certify that the information furnished on this form is true and accurate. I am aware that falsification of data is a violation of the Water Pollution Control Act (N.J.S.A. 58:10A-1 et seq.) and is subject to penalties as prescribed in N.J.A.C. 7:14-8.

Signature of Site Evaluator: [Signature] Date: _____
Signature and Seal of Professional Engineer: [Signature]
License #: 24GB0425282 Date: _____



Municipality: Andover Township Block: 151 Lot: 21

Soil Log and Interpretation

1 Soil Log #: SL-13 Date of Soil Log: 1/5/22 Method: Profile Pit
2 Log: Site "B"

Depth (inches)	Munsell Color Name & Symbol; Estimated Textural Class; Estimated Volume % Coarse Fragments; Structure; Consistence; Mottling Abundance, Size and Contrast
0 - 10"	Topsoil;
10 - 85"	10YR 5/3; Sandy Clay Loam; 15% Gravel, 10% Cobble, 10% Stone; SAB, Moist, Friable;
85 - 120"	10YR 4/1; Sandy Clay Loam; 20% Gravel, 15% Cobble, 10% Stone; SAB, Moist, Friable;

Sample Taken @ 120"

3 Ground Water Observations:

Seepage Observed - Depth (inches): 120"
 Pit Flooded - Depth (inches): _____ after _____ minutes of observation

4 Soil Limiting Zones (Check ALL applicable categories):

- Fractured Rock Substratum - Depth to Top: _____
- Massive Rock Substratum - Depth to Top: _____
- Excessively Coarse Horizon - Depth Top to Bottom: _____
- Excessively Coarse Substratum - Depth to Top: _____
- Hydraulically Restrictive Horizon - Depth Top to Bottom: _____
- Hydraulically Restrictive Substratum - Depth to Top: _____
- Perched Zone of Saturation - Depth Top to Bottom: _____
- Regional Zone of Saturation - Depth to Top: 120"

5 I hereby certify that the information furnished on this form is true and accurate. I am aware that falsification of data is a violation of the Water Pollution Control Act (N.J.S.A. 58:10A-1 et seq.) and is subject to penalties as prescribed in N.J.A.C. 7:14-8.

Signature of Site Evaluator: [Signature] Date: _____

Signature and Seal of Professional Engineer: [Signature]

License #: 24GB0425282 Date: _____



Municipality: Andover Township Block: 151 Lot: 21

Soil Log and Interpretation

1 Soil Log #: SL-14 Date of Soil Log: 1/5/22 Method: Profile Pit
2 Log: Site "B"

Depth (inches) Munsell Color Name & Symbol; Estimated Textural Class; Estimated Volume % Coarse Fragments; Structure; Consistence; Mottling Abundance, Size and Contrast

0 - 9" Topsoil;

9 - 33" 10YR 5/3; Sandy Loam; 10% Gravel, 10% Cobble, 5% Stone; Single Grain, Moist, Loose;

33 - 108" 10YR 4/1; Sandy Loam; 20% Gravel, 15% Cobble, 10% Stone; Single Grain, Moist, Loose; Shallow Rock Shelves Observed; Machine Refusal @ 108"

Sample Taken @ 100"

3 Ground Water Observations:

Seepage Observed - Depth (inches): _____
Pit Flooded - Depth (inches): _____ after _____ minutes of observation

4 Soil Limiting Zones (Check ALL applicable categories):

____ Fractured Rock Substratum - Depth to Top: _____
X Massive Rock Substratum - Depth to Top: 108"
____ Excessively Coarse Horizon - Depth Top to Bottom: _____
____ Excessively Coarse Substratum - Depth to Top: _____
____ Hydraulically Restrictive Horizon - Depth Top to Bottom: _____
____ Hydraulically Restrictive Substratum - Depth to Top: _____
____ Perched Zone of Saturation - Depth Top to Bottom: _____
____ Regional Zone of Saturation - Depth to Top: _____

5 I hereby certify that the information furnished on this form is true and accurate. I am aware that falsification of data is a violation of the Water Pollution Control Act (N.J.S.A. 58:10A-1 et seq.) and is subject to penalties as prescribed in N.J.A.C. 7:14-8.

Signature of Site Evaluator: [Signature] Date: _____
Signature and Seal of Professional Engineer: [Signature]
License #: 24GB0425282 Date: _____



Municipality: Andover Township Block: 151 Lot: 21

Soil Log and Interpretation

1 Soil Log #: SL-15 Date of Soil Log: 1/5/22 Method: Profile Pit
2 Log: Site "B"

Depth (inches)	Munsell Color Name & Symbol; Estimated Textural Class; Estimated Volume % Coarse Fragments; Structure; Consistence; Mottling Abundance, Size and Contrast
0 - 11"	Topsoil;
11 - 54"	10YR 5/3; Sandy Loam; 15% Gravel, 10% Cobble, 2% Stone; SAB, Moist, Friable;
54 - 136"	10YR 4/1; Sandy Loam; 20% Gravel, 15% Cobble, 5% Stone; Single Grain, Moist, Loose;

Sample Taken @ 130"

3 Ground Water Observations:

Seepage Observed - Depth (inches): 125"
 Pit Flooded - Depth (inches): _____ after _____ minutes of observation

4 Soil Limiting Zones (Check ALL applicable categories):

- Fractured Rock Substratum - Depth to Top: _____
- Massive Rock Substratum - Depth to Top: _____
- Excessively Coarse Horizon - Depth Top to Bottom: _____
- Excessively Coarse Substratum - Depth to Top: _____
- Hydraulically Restrictive Horizon - Depth Top to Bottom: _____
- Hydraulically Restrictive Substratum - Depth to Top: _____
- Perched Zone of Saturation - Depth Top to Bottom: _____
- Regional Zone of Saturation - Depth to Top: 125"

5 I hereby certify that the information furnished on this form is true and accurate. I am aware that falsification of data is a violation of the Water Pollution Control Act (N.J.S.A. 58:10A-1 et seq.) and is subject to penalties as prescribed in N.J.A.C. 7:14-8.

Signature of Site Evaluator: [Signature] Date: _____
Signature and Seal of Professional Engineer: [Signature]
License #: 24GB0425282 Date: _____



Municipality: Andover Township Block: 151 Lot: 21

Soil Log and Interpretation

1 Soil Log #: SL-16 Date of Soil Log: 1/5/22 Method: Profile Pit
2 Log: Site "D"

Depth (inches) Munsell Color Name & Symbol; Estimated Textural Class; Estimated Volume % Coarse Fragments; Structure; Consistence; Mottling Abundance, Size and Contrast

0 - 10" Topsoil;
10 - 47" 7.5YR 4/6; Sandy Clay Loam; 10% Gravel, 5% Cobble, 5% Stone; SAB, Moist, Friable;
47 - 128" 10YR 5/4; Sandy Loam; 15% Gravel, 10% Cobble, 5% Stone; Single Grain, Moist, Loose; Machine Refusal @ 128"

Sample Taken @ 128"

3 Ground Water Observations:

Seepage Observed - Depth (inches): _____
Pit Flooded - Depth (inches): _____ after _____ minutes of observation

4 Soil Limiting Zones (Check ALL applicable categories):

____ Fractured Rock Substratum - Depth to Top: _____
X Massive Rock Substratum - Depth to Top: 128"
____ Excessively Coarse Horizon - Depth Top to Bottom: _____
____ Excessively Coarse Substratum - Depth to Top: _____
____ Hydraulically Restrictive Horizon - Depth Top to Bottom: _____
____ Hydraulically Restrictive Substratum - Depth to Top: _____
____ Perched Zone of Saturation - Depth Top to Bottom: _____
____ Regional Zone of Saturation - Depth to Top: _____

5 I hereby certify that the information furnished on this form is true and accurate. I am aware that falsification of data is a violation of the Water Pollution Control Act (N.J.S.A. 58:10A-1 et seq.) and is subject to penalties as prescribed in N.J.A.C. 7:14-8.

Signature of Site Evaluator: [Signature] Date: _____
Signature and Seal of Professional Engineer: [Signature]
License #: 24GB0425282 Date: _____



Municipality: Andover Township Block: 151 Lot: 21

Soil Log and Interpretation

1 Soil Log #: SL-17 Date of Soil Log: 1/6/22 Method: Profile Pit

2 Log: Site "D"

Depth (inches) Munsell Color Name & Symbol; Estimated Textural Class; Estimated Volume % Coarse Fragments; Structure; Consistence; Mottling Abundance, Size and Contrast

0 - 9"

Topsoil;

9 - 54"

7.5YR 4/6; Sandy Clay Loam; 25% Gravel, 25% Cobble, 25% Stone; Massive, Moist, Firm; Machine Refusal @ 54"
Sample Taken @ 50"

3 Ground Water Observations:

Seepage Observed - Depth (inches): _____

Pit Flooded - Depth (inches): _____ after _____ minutes of observation

4 Soil Limiting Zones (Check ALL applicable categories):

- Fractured Rock Substratum - Depth to Top: _____
- Massive Rock Substratum - Depth to Top: 54"
- Excessively Coarse Horizon - Depth Top to Bottom: _____
- Excessively Coarse Substratum - Depth to Top: _____
- Hydraulically Restrictive Horizon - Depth Top to Bottom: _____
- Hydraulically Restrictive Substratum - Depth to Top: _____
- Perched Zone of Saturation - Depth Top to Bottom: _____
- Regional Zone of Saturation - Depth to Top: _____

5 I hereby certify that the information furnished on this form is true and accurate. I am aware that falsification of data is a violation of the Water Pollution Control Act (N.J.S.A. 58:10A-1 et seq.) and is subject to penalties as prescribed in N.J.A.C. 7:14-8.

Signature of Site Evaluator: [Signature] Date: _____

Signature and Seal of Professional Engineer: [Signature]

License #: 24GB0425282 Date: _____



Municipality: Andover Township Block: 151 Lot: 21

Soil Log and Interpretation

1 Soil Log #: SL-18 Date of Soil Log: 1/6/22 Method: Profile Pit
2 Log: Site "D"

Depth (inches)	Munsell Color Name & Symbol; Estimated Textural Class; Estimated Volume % Coarse Fragments; Structure; Consistence; Mottling Abundance, Size and Contrast
0 - 11"	Topsoil;
11 - 50"	7.5YR 4/6; Sandy Clay Loam; 10% Gravel, 5% Cobble; SAB, Moist, Friable;
50 - 161"	10YR 4/2; Loamy Sand; 15% Gravel, 10% Cobble; Single Grain, Moist, Loose;

Sample Taken @ 160"

3 Ground Water Observations:

Seepage Observed - Depth (inches): 158"
 Pit Flooded - Depth (inches): _____ after _____ minutes of observation

4 Soil Limiting Zones (Check ALL applicable categories):

- Fractured Rock Substratum - Depth to Top: _____
- Massive Rock Substratum - Depth to Top: _____
- Excessively Coarse Horizon - Depth Top to Bottom: _____
- Excessively Coarse Substratum - Depth to Top: _____
- Hydraulically Restrictive Horizon - Depth Top to Bottom: _____
- Hydraulically Restrictive Substratum - Depth to Top: _____
- Perched Zone of Saturation - Depth Top to Bottom: _____
- Regional Zone of Saturation - Depth to Top: 158"

5 I hereby certify that the information furnished on this form is true and accurate. I am aware that falsification of data is a violation of the Water Pollution Control Act (N.J.S.A. 58:10A-1 et seq.) and is subject to penalties as prescribed in N.J.A.C. 7:14-8.

Signature of Site Evaluator: [Signature] Date: _____

Signature and Seal of Professional Engineer: [Signature]

License #: 24GB0425282 Date: _____



Municipality: Andover Township Block: 151 Lot: 21

Soil Log and Interpretation

1 Soil Log #: SL-19 Date of Soil Log: 1/6/22 Method: Profile Pit
2 Log: Site "D"

Depth (inches)	Munsell Color Name & Symbol; Estimated Textural Class; Estimated Volume % Coarse Fragments; Structure; Consistence; Mottling Abundance, Size and Contrast
0 - 9"	Topsoil;
9 - 49"	7.5YR 4/6; Sandy Clay Loam; 10% Gravel, 5% Cobble; SAB, Moist, Friable;
49 - 129"	10YR 4/2; Loamy Sand; 15% Gravel, 10% Cobble, 2% Stone; Single Grain, Moist, Loose;

Sample Taken @ 120"

3 Ground Water Observations:

Seepage Observed - Depth (inches): 97"
 Pit Flooded - Depth (inches): _____ after _____ minutes of observation

4 Soil Limiting Zones (Check ALL applicable categories):

- Fractured Rock Substratum - Depth to Top: _____
- Massive Rock Substratum - Depth to Top: _____
- Excessively Coarse Horizon - Depth Top to Bottom: _____
- Excessively Coarse Substratum - Depth to Top: _____
- Hydraulically Restrictive Horizon - Depth Top to Bottom: _____
- Hydraulically Restrictive Substratum - Depth to Top: _____
- Perched Zone of Saturation - Depth Top to Bottom: _____
- Regional Zone of Saturation - Depth to Top: 97"

5 I hereby certify that the information furnished on this form is true and accurate. I am aware that falsification of data is a violation of the Water Pollution Control Act (N.J.S.A. 58:10A-1 et seq.) and is subject to penalties as prescribed in N.J.A.C. 7:14-8.

Signature of Site Evaluator: [Signature] Date: _____
Signature and Seal of Professional Engineer: [Signature]
License #: 24GB0425282 Date: _____



Municipality: Andover Township Block: 151 Lot: 21

Soil Log and Interpretation

1 Soil Log #: SL-20 Date of Soil Log: 1/6/22 Method: Profile Pit
2 Log: Site "A"

Depth (inches) Munsell Color Name & Symbol; Estimated Textural Class; Estimated Volume % Coarse Fragments; Structure; Consistence; Mottling Abundance, Size and Contrast

0 - 10" Topsoil;

10 - 79" 7.5YR 4/6; Sandy Loam; 10% Gravel, 5% Cobble, 2% Stone; Few, Medium, Prominent Mottling @ 47-66", 5YR 5/8 in Color; SAB, Moist, Friable;

79 - 145" 10YR 4/2; Sandy Loam; 15% Gravel, 10% Cobble, 2% Stone; Single Grain, Moist, Loose;

Sample Taken @ 130"

3 Ground Water Observations:

Seepage Observed - Depth (inches): 99"
 Pit Flooded - Depth (inches): _____ after _____ minutes of observation

4 Soil Limiting Zones (Check ALL applicable categories):

- Fractured Rock Substratum - Depth to Top: _____
- Massive Rock Substratum - Depth to Top: _____
- Excessively Coarse Horizon - Depth Top to Bottom: _____
- Excessively Coarse Substratum - Depth to Top: _____
- Hydraulically Restrictive Horizon - Depth Top to Bottom: _____
- Hydraulically Restrictive Substratum - Depth to Top: _____
- Perched Zone of Saturation - Depth Top to Bottom: _____
- Regional Zone of Saturation - Depth to Top: 47"

5 I hereby certify that the information furnished on this form is true and accurate. I am aware that falsification of data is a violation of the Water Pollution Control Act (N.J.S.A. 58:10A-1 et seq.) and is subject to penalties as prescribed in N.J.A.C. 7:14-8.

Signature of Site Evaluator: [Signature] Date: _____
Signature and Seal of Professional Engineer: [Signature]
License #: 24GB0425282 Date: _____



Municipality: Andover Township Block: 151 Lot: 21

Soil Log and Interpretation

1 Soil Log #: SL-21 Date of Soil Log: 1/6/22 Method: Profile Pit
2 Log: Site "A"

Depth (inches)	Munsell Color Name & Symbol; Estimated Textural Class; Estimated Volume % Coarse Fragments; Structure; Consistence; Mottling Abundance, Size and Contrast
0 - 11"	Topsoil;
11 - 61"	7.5YR 4/6; Sandy Clay Loam; 10% Gravel, 5% Cobble; SAB, Moist, Friable;
61 - 138"	10YR 4/2; Sandy Loam; 15% Gravel, 10% Cobble, 2% Stone; Single Grain, Moist, Loose;

Sample Taken @ 130"

3 Ground Water Observations:

Seepage Observed - Depth (inches): 106"
 Pit Flooded - Depth (inches): _____ after _____ minutes of observation

4 Soil Limiting Zones (Check ALL applicable categories):

- Fractured Rock Substratum - Depth to Top: _____
- Massive Rock Substratum - Depth to Top: _____
- Excessively Coarse Horizon - Depth Top to Bottom: _____
- Excessively Coarse Substratum - Depth to Top: _____
- Hydraulically Restrictive Horizon - Depth Top to Bottom: _____
- Hydraulically Restrictive Substratum - Depth to Top: _____
- Perched Zone of Saturation - Depth Top to Bottom: _____
- Regional Zone of Saturation - Depth to Top: 106"

5 I hereby certify that the information furnished on this form is true and accurate. I am aware that falsification of data is a violation of the Water Pollution Control Act (N.J.S.A. 58:10A-1 et seq.) and is subject to penalties as prescribed in N.J.A.C. 7:14-8.

Signature of Site Evaluator: [Signature] Date: _____
Signature and Seal of Professional Engineer: [Signature]
License #: 24GB0425282 Date: _____



Municipality: Andover Township Block: 151 Lot: 21

Soil Log and Interpretation

1 Soil Log #: SL-22 Date of Soil Log: 1/6/22 Method: Profile Pit
2 Log: Site "A"

Depth (inches)	Munsell Color Name & Symbol; Estimated Textural Class; Estimated Volume % Coarse Fragments; Structure; Consistence; Mottling Abundance, Size and Contrast
0 - 8"	Topsoil;
8 - 30"	7.5YR 4/6; Sandy Clay Loam; 10% Gravel, 10% Cobble, 2% Stone; SAB, Moist, Friable;
30 - 81"	10YR 4/2; Loamy Sand; 5% Gravel, 5% Cobble, 2% Stone; Single Grain, Moist, Loose;
81 - 145"	10YR 4/2; Sand; 2% Gravel, 2% Cobble, 2% Stone; Single Grain, Moist, Loose;

Samples Taken @ 30" and 120"

3 Ground Water Observations:

Seepage Observed - Depth (inches): 92"
 Pit Flooded - Depth (inches): _____ after _____ minutes of observation

4 Soil Limiting Zones (Check ALL applicable categories):

- Fractured Rock Substratum - Depth to Top: _____
- Massive Rock Substratum - Depth to Top: _____
- Excessively Coarse Horizon - Depth Top to Bottom: _____
- Excessively Coarse Substratum - Depth to Top: _____
- Hydraulically Restrictive Horizon - Depth Top to Bottom: _____
- Hydraulically Restrictive Substratum - Depth to Top: _____
- Perched Zone of Saturation - Depth Top to Bottom: _____
- Regional Zone of Saturation - Depth to Top: 92"

5 I hereby certify that the information furnished on this form is true and accurate. I am aware that falsification of data is a violation of the Water Pollution Control Act (N.J.S.A. 58:10A-1 et seq.) and is subject to penalties as prescribed in N.J.A.C. 7:14-8.

Signature of Site Evaluator: [Signature] Date: _____
Signature and Seal of Professional Engineer: [Signature]
License #: 24GB0425282 Date: _____



Municipality: Andover Township Block: 151 Lot: 21

Soil Log and Interpretation

1 Soil Log #: SL-23 Date of Soil Log: 1/6/22 Method: Profile Pit
2 Log: Site "H"

Depth (inches)	Munsell Color Name & Symbol; Estimated Textural Class; Estimated Volume % Coarse Fragments; Structure; Consistence; Mottling Abundance, Size and Contrast
0 - 9"	Topsoil;
9 - 45"	7.5YR 4/6; Clay Loam; 15% Gravel, 10% Cobble; SAB, Moist, Friable;
45 - 141"	10YR 4/2; Sandy Loam; 15% Gravel, 10% Cobble, 2% Stone; Single Grain, Moist, Loose;

Sample Taken @ 140"

3 Ground Water Observations:

Seepage Observed - Depth (inches): 106"
 Pit Flooded - Depth (inches): _____ after _____ minutes of observation

4 Soil Limiting Zones (Check ALL applicable categories):

- Fractured Rock Substratum - Depth to Top: _____
- Massive Rock Substratum - Depth to Top: _____
- Excessively Coarse Horizon - Depth Top to Bottom: _____
- Excessively Coarse Substratum - Depth to Top: _____
- Hydraulically Restrictive Horizon - Depth Top to Bottom: _____
- Hydraulically Restrictive Substratum - Depth to Top: _____
- Perched Zone of Saturation - Depth Top to Bottom: _____
- Regional Zone of Saturation - Depth to Top: 106"

5 I hereby certify that the information furnished on this form is true and accurate. I am aware that falsification of data is a violation of the Water Pollution Control Act (N.J.S.A. 58:10A-1 et seq.) and is subject to penalties as prescribed in N.J.A.C. 7:14-8.

Signature of Site Evaluator: [Signature] Date: _____
Signature and Seal of Professional Engineer: [Signature]
License #: 24GB0425282 Date: _____



Municipality: Andover Township Block: 151 Lot: 21

Soil Log and Interpretation

1 Soil Log #: SL-24 Date of Soil Log: 1/6/22 Method: Profile Pit
2 Log: Site "H"

Depth (inches) Munsell Color Name & Symbol; Estimated Textural Class; Estimated Volume % Coarse Fragments; Structure; Consistence; Mottling Abundance, Size and Contrast

0 - 13" Topsoil;

13 - 66" 7.5YR 4/6; Clay Loam; 10% Gravel, 5% Cobble, 2% Stone; SAB, Moist, Friable;

66 - 149" 10YR 4/1; Sand; 5% Gravel, 2% Cobble; Single Grain, Moist, Loose;

Sample Taken @ 120"

3 Ground Water Observations:

Seepage Observed - Depth (inches): 120"
 Pit Flooded - Depth (inches): _____ after _____ minutes of observation

4 Soil Limiting Zones (Check ALL applicable categories):

- Fractured Rock Substratum - Depth to Top: _____
- Massive Rock Substratum - Depth to Top: _____
- Excessively Coarse Horizon - Depth Top to Bottom: _____
- Excessively Coarse Substratum - Depth to Top: _____
- Hydraulically Restrictive Horizon - Depth Top to Bottom: _____
- Hydraulically Restrictive Substratum - Depth to Top: _____
- Perched Zone of Saturation - Depth Top to Bottom: _____
- Regional Zone of Saturation - Depth to Top: 120"

5 I hereby certify that the information furnished on this form is true and accurate. I am aware that falsification of data is a violation of the Water Pollution Control Act (N.J.S.A. 58:10A-1 et seq.) and is subject to penalties as prescribed in N.J.A.C. 7:14-8.

Signature of Site Evaluator: [Signature] Date: _____

Signature and Seal of Professional Engineer: [Signature]

License #: 24GB0425282 Date: _____



Municipality: Andover Township Block: 151 Lot: 21

Soil Log and Interpretation

1 Soil Log #: SL-25 Date of Soil Log: 1/6/22 Method: Profile Pit
2 Log: Site "H"

Depth (inches) Munsell Color Name & Symbol; Estimated Textural Class; Estimated Volume % Coarse Fragments; Structure; Consistence; Mottling Abundance, Size and Contrast

0 - 13" Topsoil;

13 - 70" 7.5YR 4/6; Clay Loam; 15% Gravel, 10% Cobble, 2% Stone; SAB, Moist, Friable;

70 - 100" 10YR 4/1; Sand; 5% Gravel, 2% Cobble; Single Grain, Moist, Loose;

Sample Taken @ 100"

Note: Material so loose, sides of pit repeatedly caved in, massive undermining observed, could not dig deep enough to find water table.

3 Ground Water Observations:

Seepage Observed - Depth (inches): _____
Pit Flooded - Depth (inches): _____ after _____ minutes of observation

4 Soil Limiting Zones (Check ALL applicable categories):

- _____ Fractured Rock Substratum - Depth to Top: _____
- _____ Massive Rock Substratum - Depth to Top: _____
- _____ Excessively Coarse Horizon - Depth Top to Bottom: _____
- _____ Excessively Coarse Substratum - Depth to Top: _____
- _____ Hydraulically Restrictive Horizon - Depth Top to Bottom: _____
- _____ Hydraulically Restrictive Substratum - Depth to Top: _____
- _____ Perched Zone of Saturation - Depth Top to Bottom: _____
- _____ Regional Zone of Saturation - Depth to Top: _____

5 I hereby certify that the information furnished on this form is true and accurate. I am aware that falsification of data is a violation of the Water Pollution Control Act (N.J.S.A. 58:10A-1 et seq.) and is subject to penalties as prescribed in N.J.A.C. 7:14-8.

Signature of Site Evaluator: [Signature] Date: _____

Signature and Seal of Professional Engineer: [Signature]

License #: 24GB0425282 Date: _____



Municipality: Andover Township Block: 151 Lot: 21

Soil Log and Interpretation

1 Soil Log #: SL-26 Date of Soil Log: 1/6/22 Method: Profile Pit
2 Log: Site "H"

Depth (inches) Munsell Color Name & Symbol; Estimated Textural Class; Estimated Volume % Coarse Fragments; Structure; Consistence; Mottling Abundance, Size and Contrast

0 - 11" Topsoil;

11 - 77" 7.5YR 4/6; Sandy Clay Loam; 15% Gravel, 10% Cobble, 5% Stone; SAB, Moist, Friable;

77 - 140" 10YR 2/1; Sand; 2% Gravel, 2% Cobble; Single Grain, Moist, Loose;

Sample Taken @ 140

3 Ground Water Observations:

Seepage Observed - Depth (inches): _____
Pit Flooded - Depth (inches): _____ after _____ minutes of observation

4 Soil Limiting Zones (Check ALL applicable categories):

_____ Fractured Rock Substratum - Depth to Top: _____
_____ Massive Rock Substratum - Depth to Top: _____
_____ Excessively Coarse Horizon - Depth Top to Bottom: _____
_____ Excessively Coarse Substratum - Depth to Top: _____
_____ Hydraulically Restrictive Horizon - Depth Top to Bottom: _____
_____ Hydraulically Restrictive Substratum - Depth to Top: _____
_____ Perched Zone of Saturation - Depth Top to Bottom: _____
_____ Regional Zone of Saturation - Depth to Top: _____

5 I hereby certify that the information furnished on this form is true and accurate. I am aware that falsification of data is a violation of the Water Pollution Control Act (N.J.S.A. 58:10A-1 et seq.) and is subject to penalties as prescribed in N.J.A.C. 7:14-8.

Signature of Site Evaluator: [Signature] Date: _____

Signature and Seal of Professional Engineer: [Signature]

License #: 24GB0425282 Date: _____



Municipality: Andover Township Block: 151 Lot: 21

Soil Log and Interpretation

1 Soil Log #: SL-27 Date of Soil Log: 1/6/22 Method: Profile Pit
2 Log: Site "H"

Depth (inches)	Munsell Color Name & Symbol; Estimated Textural Class; Estimated Volume % Coarse Fragments; Structure; Consistence; Mottling Abundance, Size and Contrast
0 - 10"	Topsoil;
10 - 78"	7.5YR 4/6; Clay Loam; 10% Gravel, 10% Cobble, 2% Stone; SAB, Moist, Friable;
78 - 155"	10YR 4/1; Sandy Loam; 20% Gravel, 15% Cobble, 2% Stone; Single Grain, Moist, Loose;

Sample Taken @ 150

3 Ground Water Observations:

Seepage Observed - Depth (inches): _____
Pit Flooded - Depth (inches): _____ after _____ minutes of observation

4 Soil Limiting Zones (Check ALL applicable categories):

- _____ Fractured Rock Substratum - Depth to Top: _____
- _____ Massive Rock Substratum - Depth to Top: _____
- _____ Excessively Coarse Horizon - Depth Top to Bottom: _____
- _____ Excessively Coarse Substratum - Depth to Top: _____
- _____ Hydraulically Restrictive Horizon - Depth Top to Bottom: _____
- _____ Hydraulically Restrictive Substratum - Depth to Top: _____
- _____ Perched Zone of Saturation - Depth Top to Bottom: _____
- _____ Regional Zone of Saturation - Depth to Top: _____

5 I hereby certify that the information furnished on this form is true and accurate. I am aware that falsification of data is a violation of the Water Pollution Control Act (N.J.S.A. 58:10A-1 et seq.) and is subject to penalties as prescribed in N.J.A.C. 7:14-8.

Signature of Site Evaluator: [Signature] Date: _____

Signature and Seal of Professional Engineer: [Signature]

License #: 24GB0425282 Date: _____



APPENDIX I –
SOIL EROSION MEASURES



PROJECT- 248 STICKLES POND RC
 NUMBER- 19134
 BY- EAJ
 DATE- 11/2/2020

RIPRAP APRON CALCULATIONS FOR SWM-A1 (HW-A8)

 Do = 2.00
 Wo = 2.00
 TW = 0.40 (0.2 Do ASSUMED)
 Q = 9.61 CFS MAX. FLOW BASED ON HW
 Y = DEPTH OF SCOUR HOLE BELOW INVERT
 q = 4.81 CFS/FT (Q/Wo)

CASE 1 - TW < 1/2 Do

La = $1.8 (q/(Do^{0.5})) + 7Do$ = 20.12 FEET
 USE 21.0 FEET
 Wa = $3Wo + La$ = 27.0 FEET
 USE 27.0 FEET

CASE 2 - TW > 1/2 Do

La = $3*Do (q/(Do^{0.5}))$ = 20.39 FEET
 USE 21.0 FEET
 Wa = $3Wo + 0.4La$ = 14.4 FEET
 USE 15.0 FEET

RIPRAP SIZING

D50 = $\frac{0.02}{Tw} q^{1.33 \times 12}$ = 4.84 INCHES
 USE 5.0 INCHES



PROJECT- 248 STICKLES POND RC
 NUMBER- 19134
 BY- EAJ
 DATE- 11/2/2020

RIPRAP APRON CALCULATIONS FOR SWM-A1 (HW-A1)

 Do = 2.00
 Wo = 2.00
 TW = 0.40 (0.2 Do ASSUMED)
 Q = 8.85 CFS MAX. FLOW BASED ON HW
 Y = DEPTH OF SCOUR HOLE BELOW INVERT
 q= 4.43 CFS/FT (Q/Wo)

CASE 1 - TW < 1/2 Do

La = $1.8 (q/(Do^{0.5})) + 7Do$ = 19.63 FEET
 USE 20.0 FEET
 Wa = $3Wo + La$ = 26.0 FEET
 USE 26.0 FEET

CASE 2 - TW > 1/2 Do

La = $3*Do (q/(Do^{0.5}))$ = 18.77 FEET
 USE 19.0 FEET
 Wa = $3Wo + 0.4La$ = 13.6 FEET
 USE 14.0 FEET

RIPRAP SIZING

D50 = $\frac{0.02}{Tw} q^{1.33 \times 12}$ = 4.34 INCHES
 USE 5.0 INCHES



PROJECT- 248 STICKLES POND RC
 NUMBER- 19134
 BY- EAJ
 DATE- 11/2/2020

RIPRAP APRON CALCULATIONS FOR SWM-A1 (HW-B1)

 Do = 2.00
 Wo = 2.00
 TW = 0.40 (0.2 Do ASSUMED)
 Q = 7.97 CFS MAX. FLOW BASED ON HW
 Y = DEPTH OF SCOUR HOLE BELOW INVERT
 q = 3.99 CFS/FT (Q/Wo)

CASE 1 - TW < 1/2 Do

La = $1.8 (q/(Do^{0.5})) + 7Do$ = 19.07 FEET
 USE 20.0 FEET
 Wa = $3Wo + La$ = 26.0 FEET
 USE 26.0 FEET

CASE 2 - TW > 1/2 Do

La = $3*Do (q/(Do^{0.5}))$ = 16.91 FEET
 USE 17.0 FEET
 Wa = $3Wo + 0.4La$ = 12.8 FEET
 USE 13.0 FEET

RIPRAP SIZING

D50 = $\frac{0.02}{Tw} q^{1.33 \times 12}$ = 3.77 INCHES
 USE 4.0 INCHES



PROJECT- 248 STICKLES POND RC
 NUMBER- 19134
 BY- EAJ
 DATE- 11/2/2020

RIPRAP APRON CALCULATIONS FOR SWM-A1 (HW-B20)

 Do = 3.00
 Wo = 3.00
 TW = 0.60 (0.2 Do ASSUMED)
 Q = 42.60 CFS MAX. FLOW BASED ON HW
 Y = DEPTH OF SCOUR HOLE BELOW INVERT
 q= 14.20 CFS/FT (Q/Wo)

CASE 1 - TW < 1/2 Do

La = $1.8 (q/(Do^{0.5})) + 7Do$ = 35.76 FEET
 USE 36.0 FEET
 Wa = $3Wo + La$ = 45.0 FEET
 USE 45.0 FEET

CASE 2 - TW > 1/2 Do

La = $3*Do (q/(Do^{0.5}))$ = 73.79 FEET
 USE 74.0 FEET
 Wa = $3Wo + 0.4La$ = 38.6 FEET
 USE 39.0 FEET

RIPRAP SIZING

D50 = $\frac{0.02}{Tw} q^{1.33 \times 12}$ = 13.63 INCHES
 USE 14.0 INCHES



PROJECT- 248 STICKLES POND RC
 NUMBER- 19134
 BY- EAJ
 DATE- 11/2/2020

RIPRAP APRON CALCULATIONS FOR SWM-A1 (HW-B20)

 Do = 3.00
 Wo = 3.00
 TW = 0.60 (0.2 Do ASSUMED)
 Q = 41.69 CFS MAX. FLOW BASED ON HW
 Y = DEPTH OF SCOUR HOLE BELOW INVERT
 q= 13.90 CFS/FT (Q/Wo)

CASE 1 - TW < 1/2 Do

La = $1.8 (q/(Do^{0.5})) + 7Do$ = 35.44 FEET
 USE 36.0 FEET
 Wa = $3Wo + La$ = 45.0 FEET
 USE 45.0 FEET

CASE 2 - TW > 1/2 Do

La = $3*Do (q/(Do^{0.5}))$ = 72.21 FEET
 USE 73.0 FEET
 Wa = $3Wo + 0.4La$ = 38.2 FEET
 USE 39.0 FEET

RIPRAP SIZING

D50 = $\frac{0.02}{Tw} q^{1.33 \times 12}$ = 13.25 INCHES
 USE 14.0 INCHES



PROJECT- 248 STICKLES POND RC
 NUMBER- 19134
 BY- EAJ
 DATE- 11/2/2020

RIPRAP APRON CALCULATIONS FOR SWM-A1 (HW-G1)

 Do = 2.00
 Wo = 2.00
 TW = 0.40 (0.2 Do ASSUMED)
 Q = 13.85 CFS MAX. FLOW BASED ON HW
 Y = DEPTH OF SCOUR HOLE BELOW INVERT
 q = 6.93 CFS/FT (Q/Wo)

CASE 1 - TW < 1/2 Do

La = $1.8 (q/(Do^{0.5})) + 7Do$ = 22.81 FEET
 USE 23.0 FEET
 Wa = $3Wo + La$ = 29.0 FEET
 USE 29.0 FEET

CASE 2 - TW > 1/2 Do

La = $3*Do (q/(Do^{0.5}))$ = 29.38 FEET
 USE 30.0 FEET
 Wa = $3Wo + 0.4La$ = 18.0 FEET
 USE 18.0 FEET

RIPRAP SIZING

D50 = $\frac{0.02}{Tw} q^{1.33 \times 12}$ = 7.87 INCHES
 USE 8.0 INCHES



APPENDIX J –
LOW IMPACT DEVELOPMENT CHECKLIST

New Jersey Stormwater Best Management Practices Manual

February 2004

A P P E N D I X A

Low Impact Development Checklist

A checklist for identifying nonstructural stormwater management strategies incorporated into proposed land development

According to the NJDEP Stormwater Management Rules at N.J.A.C. 7:8, the groundwater recharge, stormwater quality, and stormwater quantity standards established by the Rules for major land development projects must be met by incorporating nine specific nonstructural stormwater management strategies into the project's design to the maximum extent practicable.

To accomplish this, the Rules require an applicant seeking land development approval from a regulatory board or agency to identify those nonstructural strategies that have been incorporated into the project's design. In addition, if an applicant contends that it is not feasible to incorporate any of the specific strategies into the project's design, particularly for engineering, environmental, or safety reasons, the Rules further require that the applicant provide a basis for that contention.

This checklist has been prepared to assist applicants, site designers, and regulatory boards and agencies in ensuring that the nonstructural stormwater management requirements of the Rules are met. It provides an applicant with a means to identify both the nonstructural strategies incorporated into the development's design and the specific low impact development BMPs (LID-BMPs) that have been used to do so. It can also help an applicant explain the engineering, environmental, and/or safety reasons that a specific nonstructural strategy could not be incorporated into the development's design.

The checklist can also assist municipalities and other land development review agencies in the development of specific requirements for both nonstructural strategies and LID-BMPs in zoning and/or land use ordinances and regulations. As such, where requirements consistent with the Rules have been adopted, they may supersede this checklist.

Finally, the checklist can be used during a pre-design meeting between an applicant and pertinent review personnel to discuss local nonstructural strategies and LID-BMPs requirements in order to optimize the development's nonstructural stormwater management design.

Since this checklist is intended to promote the use of nonstructural stormwater management strategies and provide guidance in their incorporation in land development projects, municipalities are permitted to revise it as necessary to meet the goals and objectives of their specific stormwater management program and plan within the limits of N.J.A.C. 7:8.

Low Impact Development Checklist

A checklist for identifying nonstructural stormwater management strategies incorporated into proposed land development

Municipality: Andover Township

County: Sussex County Date: 11/02/2019

Review board or agency: Planning Board of Andover Township

Proposed land development name: 248 Stickles Pond Road

Lot(s): 1 Block(s): 151

Project or application number: _____

Applicant's name: BHT Properties Group, C/O Ram Adar

Applicant's address: 5081 SW 48th Street, 1023, Davie, Florida 33314

Telephone: 305-433-7805 Fax: _____

Email address: _____

Designer's name: Wayne Ingram, Engineering & Land Planning Associates, Inc

Designer's address: 140 West Main Street, High Bridge, NJ 08829

Telephone: 908-238-0544 Fax: _____

Email address: Wayne@elp-inc.com

Part 2: Review of Local Stormwater Management Regulations

Title and date of stormwater management regulations used in development design:

N.J.A.C. 7:8 - June 20, 2016

Do regulations include nonstructural requirements? Yes: No:

If yes, briefly describe: Protect areas that provide water quality benefits, minimize impervious surfaces, maximize the protection of natural drainage features and vegetation, minimize land disturbance and soil compaction (N.J.A.C. 7:8-5.3).

List LID-BMPs prohibited by local regulations: N/A

Pre-design meeting held? Yes: Date: _____ No:

Meeting held with: X

Pre-design site walk held? Yes: Date: _____ No:

Site walk held with: _____

Other agencies with stormwater review jurisdiction:

Name: Andover Township Planning Board

Required approval: Preliminary and Final Major Site Plan

Name: Sussex County Soil Conservation District

Required approval: Soil Erosion & Sediment Control Plan Certification

Name: NJ DEP

Required approval: Wetland General Permit, Wetland LOI, Flood Hazard Area Permit

Part 3: Nonstructural Strategies and LID-BMPs in Design

3.1 Vegetation and Landscaping

Effective management of both existing and proposed site vegetation can reduce a development's adverse impacts on groundwater recharges and runoff quality and quantity. This section of the checklist helps identify the vegetation and landscaping strategies and nonstructural LID-BMPs that have been incorporated into the proposed development's design to help maintain existing recharge rates and/or minimize or prevent increases in runoff quantity and pollutant loading.

A. Has an inventory of existing site vegetation been performed? Yes: _____ No: X

If yes, was this inventory a factor in the site's layout and design? Yes: _____ No: _____

B. Does the site design utilize any of the following nonstructural LID-BMPs?

Preservation of natural areas? Yes: X No: _____ If yes, specify % of site: _____

Native ground cover? Yes: X No: _____ If yes, specify % of site: _____

Vegetated buffers? Yes: X No: _____ If yes, specify % of site: _____

C. Do the land development regulations require these nonstructural LID-BMPs?

Preservation of natural areas? Yes: _____ No: X If yes, specify % of site: _____

Native ground cover? Yes: _____ No: X If yes, specify % of site: _____

Vegetated buffers? Yes: _____ No: X If yes, specify % of site: _____

D. If vegetated filter strips or buffers are utilized, specify their functions:

Reduce runoff volume increases through lower runoff coefficient: Yes: _____ No: X

Reduce runoff pollutant loads through runoff treatment: Yes: _____ No: X

Maintain groundwater recharge by preserving natural areas: Yes: X No: _____

3.2 Minimize Land Disturbance

Minimizing land disturbance is a nonstructural LID-BMP that can be applied during both the development's construction and post-construction phases. This section of the checklist helps identify those land disturbance strategies and nonstructural LID-BMPs that have been incorporated into the proposed development's design to minimize land disturbance and the resultant change in the site's hydrologic character.

A. Have inventories of existing site soils and slopes been performed? Yes: X No: _____

If yes, were these inventories factors in the site's layout and design? Yes: X No: _____

B. Does the development's design utilize any of the following nonstructural LID-BMPs?

Restrict permanent site disturbance by land owners? Yes: _____ No: X

If yes, how: _____

Restrict temporary site disturbance during construction? Yes: X No: _____

If yes, how: Access to the property is limited to the construction entrance only. The limit of disturbance will be fenced to prevent encroachment by equipment or materials.

Consider soils and slopes in selecting disturbance limits? Yes: X No: _____

If yes, how: Slope disturbance was limited to the greatest extents possible, while also proposing a safe design.

C. Specify percentage of site to be cleared: ±55% of Disturbed Area Regraded: ±45% of Disturbed area

D. Specify percentage of cleared areas done so for buildings: ±1% of Disturbed Area

For driveways and parking: ±30% of Disturbed Area For roadways: N/A

E. What design criteria and/or site changes would be required to reduce the percentages in C and D above?

In order to reduce the percentages listed in C and D, the project scope would need to be significantly reduced.

F. Specify site's hydrologic soil group (HSG) percentages:

HSG A: 40% HSG B: _____ HSG C: _____ HSG D: 60%

G. Specify percentage of each HSG that will be permanently disturbed:

HSG A: 95% HSG B: _____ HSG C: _____ HSG D: 87%

H. Locating site disturbance within areas with less permeable soils (HSG C and D) and minimizing disturbance within areas with greater permeable soils (HSG A and B) can help maintain groundwater recharge rates and reduce runoff volume increases. In light of the HSG percentages in F and G above, what other practical measures if any can be taken to achieve this?

To compensate for the permanent disturbance to hydrologic soil group A and D, measures have been taken to maintain groundwater recharge: Six above-ground infiltration basins have been proposed to compensate the groundwater recharge deficit generated by the proposed development.

I. Does the site include Karst topography?

Yes: _____ No: X

If yes, discuss measures taken to limit Karst impacts:

3.3 Impervious Area Management

New impervious surfaces at a development site can have the greatest adverse effect on groundwater recharge and stormwater quality and quantity. This section of the checklist helps identify those nonstructural strategies and LID-BMPs that have been incorporated into a proposed development's design to comprehensively manage the extent and impacts of new impervious surfaces.

A. Specify impervious cover at site: Existing: 4.94 Acres Proposed: 48.11 Acres

B. Specify maximum site impervious coverage allowed by regulations: 60.50 Acres
(4% of Total Site Area)

C. Compare proposed street cartway widths with those required by regulations:

Type of Street	Proposed Cartway Width (feet)	Required Cartway Width (feet)
Residential access – low intensity		
Residential access – medium intensity		
Residential access – high intensity with parking		
Residential access – high intensity without parking		
Neighborhood		
Minor collector – low intensity without parking		
Minor collector – with one parking lane		
Minor collector – with two parking lanes		
Minor collector – without parking		
Major collector		

D. Compare proposed parking space dimensions with those required by regulations:

Proposed: 9'x18' Regulations: 9'x18'

E. Compare proposed number of parking spaces with those required by regulations:

Proposed: 11 Parking Spaces Regulations: 11 Parking Spaces

F. Specify percentage of total site impervious cover created by buildings:

By driveways and parking: 19% By roadways: n/a

G. What design criteria and/or site changes would be required to reduce the percentages in F above?

In order to reduce the percentages listed above, the project scope would need
to be significantly reduced.

H. Specify percentage of total impervious area that will be unconnected:

Total site: 0% Buildings: _____ Driveways and parking: _____ Roads: _____

I. Specify percentage of total impervious area that will be porous:

Total site: 0% Buildings: 0% Driveways and parking: 0% Roads: _____

J. Specify percentage of total building roof area that will be vegetated: 0%

K. Specify percentage of total parking area located beneath buildings: 0%

L. Specify percentage of total parking located within multi-level parking deck: 0%

3.4 Time of Concentration Modifications

Decreasing a site's time of concentration (Tc) can lead directly to increased site runoff rates which, in turn, can create new and/or aggravate existing erosion and flooding problems downstream. This section of the checklist helps identify those nonstructural strategies and LID-BMPs that have been incorporated into the proposed development's design to effectively minimize such Tc decreases.

When reviewing Tc modification strategies, it is important to remember that a drainage area's Tc should reflect the general conditions throughout the area. As a result, Tc modifications must generally be applied throughout a drainage area, not just along a specific Tc route.

A. Specify percentage of site's total stormwater conveyance system length that will be:

Storm sewer: 5% Vegetated swale: 2% Natural channel: _____

Stormwater management facility: 93% Other: _____

Note: the total length of the stormwater conveyance system should be measured from the site's downstream property line to the downstream limit of sheet flow at the system's headwaters.

B. What design criteria and/or site changes would be required to reduce the storm sewer percentages and increase the vegetated swale and natural channel percentages in A above?

In order to reduce the storm sewer percentages and increase the vegetated swale and natural channel percentages, the project would need to be significantly altered. Due to the existing topography, and proposed scope of work, additional vegetated swales are not suitable.

C. In conveyance system subareas that have overland or sheet flow over impervious surfaces or turf grass, what practical and effective site changes can be made to:

Decrease overland flow slope: _____

In order to reduce the overland flow slopes, a larger disturbance would be required. Due to the presence of wetlands with transition areas and the encroachment of floodway, the site slope need to be maximized to the most practical extent.

Increase overland flow roughness: The project would need need to be significantly modified in order to increase overland flow roughness. Due to the proposed use, it is impractical

to make any modifications without affecting the layout and usability of the facilities.

3.5 Preventative Source Controls

The most effective way to address water quality concerns is by pollution prevention. This section of the checklist helps identify those nonstructural strategies and LID-BMPs that have been incorporated into the proposed development's design to reduce the exposure of pollutants to prevent their release into the stormwater runoff.

A. Trash Receptacles

Specify the number of trash receptacles provided: 1 for building

Specify the spacing between the trash receptacles: N/A

Compare trash receptacles proposed with those required by regulations:

Proposed: N/A Regulations: N/A

B. Pet Waste Stations

Specify the number of pet waste stations provided: N/A

Specify the spacing between the pet waste stations: N/A

Compare pet waste stations proposed with those required by regulations:

Proposed: N/A Regulations: N/A

C. Inlets, Trash Racks, and Other Devices that Prevent Discharge of Large Trash and Debris

Specify percentage of total inlets that comply with the NJPDES storm drain inlet criteria: 5 Inlets

D. Maintenance

Specify the frequency of the following maintenance activities:

Street sweeping: Proposed: N/A Regulations: N/A

Litter collection: Proposed: Per Township Regulations: N/A

Identify other stormwater management measures on the site that prevent discharge of large trash and debris:

Inlet silt sacks and NJDEPS-approved inlets grates.

E. Prevention and Containment of Spills

Identify locations where pollutants are located on the site, and the features that prevent these pollutants from being exposed to stormwater runoff:

Pollutant: N/A Location: N/A

Feature utilized to prevent pollutant exposure, harmful accumulation, or contain spills:

Pollutant: N/A Location: N/A

Feature utilized to prevent pollutant exposure, harmful accumulation, or contain spills:

Pollutant: N/A Location: N/A

Feature utilized to prevent pollutant exposure, harmful accumulation, or contain spills:

Pollutant: N/A Location: N/A

Feature utilized to prevent pollutant exposure, harmful accumulation, or contain spills:

Pollutant: N/A Location: N/A

Part 4: Compliance with Nonstructural Requirements of NJDEP Stormwater Management Rules

1. Based upon the checklist responses above, indicate which nonstructural strategies have been incorporated into the proposed development's design in accordance with N.J.A.C. 7:8-5.3(b):

No.	Nonstructural Strategy	Yes	No
1.	Protect areas that provide water quality benefits or areas particularly susceptible to erosion and sediment loss.	X	
2.	Minimize impervious surfaces and break up or disconnect the flow of runoff over impervious surfaces.	X	
3.	Maximize the protection of natural drainage features and vegetation.	X	
4.	Minimize the decrease in the pre-construction time of concentration.	X	
5.	Minimize land disturbance including clearing and grading.	X	
6.	Minimize soil compaction.	X	
7.	Provide low maintenance landscaping that encourages retention and planting of native vegetation and minimizes the use of lawns, fertilizers, and pesticides.	X	
8.	Provide vegetated open-channel conveyance systems discharge into and through stable vegetated areas.	X	
9.	Provide preventative source controls.	X	

2. For those strategies that have not been incorporated into the proposed development's design, provide engineering, environmental, and/or safety reasons. Attached additional pages as necessary.
