APPENDIX M

Engineering Reports

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M.2 | SIGNATURE EAST – SITE DRAWINGS

M.3 | SIGNATURE SOUTH – ENGINEER'S REPORT

M.4 | SIGNATURE SOUTH – SITE DRAWINGS

APPENDIX M.3

Signature South – Engineer's Report

ENGINEERING REPORT

For

Signature South Expansion

Borough of Moonachie: Block 76, Lot 1.02
Borough of Teterboro: Block 203, Lot 1
Bergen County, New Jersey

Prepared For:

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1.0 INTRODUCTION

This report presents an evaluation of stormwater runoff from the proposed development of the Signature Flight Support South expansion project to be constructed at the Port Authority of New York and New Jersey's (PANYNJ) Teterboro Airport located on Block 76, Lot 1.02 in Moonachie, New Jersey and Block 203, Lot 1 in Teterboro, New Jersey. Refer to Figure 1 – USGS Site Location Plan and Figure 3 – Tax Map.

The proposed stormwater management system was designed in accordance with the following:

- N.J.A.C. 7:8 Stormwater Management Regulations;
- New Jersey Stormwater Best Management Practices (BMP) Manual; and
- Standards for Soil Erosion and Sediment Control in New Jersey.

2.0 PROJECT DESCRIPTION

2.1 Existing Site Description

Signature Flight Support, LLC currently leases of 24.8 acres at Teterboro Airport located in the Borough of Moonachie, Bergen County (see Figure 1 – USGS Site Location Map). Signature Flight Support provides private jet services for travel to and from the New York–New Jersey metropolitan area. The existing leased area contains three airplane maintenance hangars, a terminal, fuel facility, and apron area and is located east of the southern end of Runway 9-24.

The existing topography of the project site is relatively flat with elevations ranging from about 1.5 to 3.0 NAVD 88.

The site is tributary to the West Riser Ditch and Berry's Creek. Stormwater currently flows overland to the north and south. The portion of the site flowing to the south will be undisturbed. The portion of the site flowing to the north will be the area where development is proposed. The stormwater runoff in this area is collected and conveyed by the existing culverts under the Signature aircraft apron and is eventually discharged back into a tributary of the West Riser Ditch.

2.1.1 Soils

The existing on-site soils are fill materials underlain by the tidal marsh peat, silt and clay. They are categorized as Westbrook, Ipswich, and Sandyhook (TrkAv) and Udorthents (UdwB and UdwuB) (see Figure 5 – Soils Map). These underlying soils experience poor drainage because of flat land surface, low permeability, and tidal fluctuations.

2.1.2 Tidal Floodplain

The 100-year floodplain elevation at Teterboro Airport is elevation 8 NAVD 88 (see Figure 8 – FEMA Preliminary Firm Map).

2.1.3 Groundwater

A field investigation was completed in February and March of 2026 to support the proposed stormwater BMP design. Twenty-two exploratory test pits were excavated to obtain the seasonal high-water table. The groundwater onsite generally ranges from elevation –0.8' to +3.0'. These results are included in Appendix H.

Additionally, Web Soil Survey notes the groundwater conditions are at the surface (TrkAv) and approximately 18 to 42 inches below the surface (UdwB) based on the soil types (see Appendix B).

2.2 Proposed Project Description

Signature is proposing to expand its facilities onto approximately 9.5 acres within a proposed 16.7-acre lease area. As shown on CS-101, the Signature South expansion project includes two 40,000-square-foot hangars with adjoining apron, 22,500-square-feet of office space, and a parking lot. A portion of the proposed apron extends to existing Taxiway "N" to give planes access to and from the runways. Parking-lot construction will add 91 vehicle spaces for pilots, flight attendants, mechanics, dispatchers, passengers and vendors. A new road is proposed to provide access these hangars from the southwest. Construction activities will result in a total disturbance area of about 9.5 acres north of the existing facility.

Fill will be placed into approximately 7.18 acres of freshwater emergent and forested scrub-shrub wetlands in order to construct the hangars and apron area. The first floor of the hangars and offices will be constructed at a finished floor elevation of 9.0 feet.

Stormwater runoff generated from the new impervious area will be conveyed by a proposed storm sewer system beneath the apron, parking lot and access road. The stormwater runoff from the redevelopment area will be collected, treated and discharged to the existing stormwater infrastructure to the airport operations to the west which ultimately discharges to the west riser ditch through and existing outfall.

The proposed stormwater management system consists of the following:

- Two (3) Small-scale Underground Detention Basins;
- Eight (8) manufactured treatment devices @ 80% TSS Removal;
- Three (3) Pervious Pavement Systems lined with underdrains; and
- A subsurface collection system consisting of catch basins, manholes, and pipes.

Refer to Drawings CG101 Grading and Drainage Plan and CS502 and CS503 Site Details.

Additionally, above-ground BMPs were not considered for this project to be consistent with the guidelines contained in the Federal Aviation Administration (FAA) Circular 150/5200-33C and 150/5320-5D regarding hazardous wildlife attractants on or near airports. Additional support for the design approach and BMP selection is further described in the Green

Infrastructure Hardship Exception Memo prepared by Langan Engineering and Bohler Engineering provided under a separate cover.

3.0 STORMWATER MANAGEMENT DESIGN REQUIREMENTS

The proposed project will result in over ¼ acre of net new impervious area and 1 acre of disturbance and is therefore considered a major development as defined by the New Jersey's stormwater management regulations, N.J.A.C. 7:8. Projects that qualify as major developments are required to design stormwater management systems that address:

- Water Quality
- Water Quantity
- Groundwater Recharge

Each of the design requirements is discussed in more detail in the following sections of this report.

3.1 Stormwater Quality Standards

3.1.1 Design Criteria

Stormwater quality management for the site has been designed using the pollutant removal requirements set forth in the NJDEP Stormwater Management Rules (N.J.A.C. 7:8-5.5). For new development, the standards require an 80% reduction of the post-construction load of total suspended solids (TSS) in stormwater runoff generated from the water quality design storm as compared to the pre-construction load for all motor vehicle/airplane pavement areas.

The NJDEP stormwater quality design storm consisting of 1.25 inches of rainfall in two hours with a variable distribution was used in the stormwater quality analysis.

Construction of open stormwater detention/infiltration basins is discouraged as part of the bird hazard control measures pursuant to the FAA Advisor Circular 150/5320-5D and 150/5200-33C: "Hazardous Wildlife Attractants on or Near Airports". The FAA encourages the use of underground stormwater systems since they are less attractive to wildlife.

3.1.2 Quality Analysis

The design complies with the stormwater quality requirements by incorporating NJDEP approved manufacturing treatment devices and three segregated areas of pervious pavement, which will treat the stormwater runoff at 80% TSS removal according to N.J.A.C 7:8-5.5(b). All pervious pavement systems have been designed with a liner and underdrain and comply with the maximum contributory area of 3:1 ratio and maximum drainage time of 72 hours. They also comply with the maximum 1-foot depth into groundwater.

Prior to discharging surface runoff to the underground systems, the water will pass through CONTECH High Capacity (HC) Kraken Filter Vaults, a NJDEP certified below-grade

manufactured treatment device (MTD) as the required pretreatment measure. This device is approved for an 80% TSS removal rate and has been sized for the peak flow generated by the NJDEP water quality storm. The stormwater design proposes 8 HC Kraken Filter Vaults: six 8' x 14' vaults and two 8' x 16' vaults downstream of bypass/diversion structures diverting larger storm events to the underground detention basins for quantity control.

Regulations permit stormwater runoff from roofs to bypass the water quality measures. As such, the runoff from the two hangars is conveyed directly to the underground detention systems bypassing the manufactured treatment devices.

Water quality hydrographs and the proposed manufactured treatment pretreatment details are provided in Appendix E. Refer to the tables below for more detailed water quality design elements:

Supporting calculations and documentation for the Contech Kraken Filter units can be found in Appendix E.

3.2 Stormwater Quantity Management

3.2.1 Design Criteria

The proposed stormwater quantity management design is in accordance with NJDEP N.J.A.C. 7:8- 5.6. The stormwater management quantity design will comply with the following requirements listed below and is further described in Section 3.2.2 of this report:

- N.J.A.C. 7:8-5.6(b)(3): The post-construction peak runoff rates for the 2, 10, and 100-year storm events are 50, 75, and 80 percent, respectively, of the pre-construction peak runoff rates for those watersheds that are affected by the proposed onsite improvements.

3.2.2 Design Methodology/ Tailwater

The stormwater quantity calculations were performed using the method described by the USDA Natural Resources Conservation Service (NRCS) Publication TR-55, "Urban Hydrology for Small Watersheds." TR-55 outlines procedures for calculating peak runoff rates resulting from precipitation events and procedures for developing runoff hydrographs. The TR-55 procedure simulates runoff from a watershed using the drainage area, curve number (CN), time of concentration (Tc) and a prescribed rainfall distribution. As prescribed in the New Jersey Stormwater Best Management Practices Manual, hydrographs have been computed separately for pervious and impervious areas.

The curve number is a land sensitive coefficient that dictates the relationship between total rainfall depth and direct stormwater runoff. CN values were determined based on the coverage of soil group and land use in each area of the watershed. The NRCS classification system evaluates the runoff potential of a soil according to its infiltration and transmission

rates. "A" soils have a lower CN value and the lowest runoff potential and "D" soils have a higher CN value and the greatest runoff potential. Soils throughout the project area are primarily rated as NRCS hydrologic soil group D as shown in Figure 5 - Soils Maps. The following curve numbers were used:

Table 3.2.2A: Runoff Curve Numbers

Hydrologic Soil Group	Land Cover	Hydrologic Condition	CN
D	Open Space	Good	80
D	Brush	Good	73
D	Woods	Good	77
Hydrologic Soil Group	**Impervious Area Land Cover**		**CN**
-	Paved parking lots, roofs, driveways, etc.		98
D	Gravel		91

The time of concentration is defined as the time for runoff to travel from the hydraulically most distant point of the watershed to a point of interest. Values of the time of concentration were determined based on land cover and slope of the flow path using methods described in TR-55. The McCuen-Spiess limitation was used to determine the maximum sheet flow length for proposed conditions. A minimum time of concentration of two minutes was used for both existing and proposed conditions due to a software limitation within Hydrology Studio. This software requires a minimum time of concentration of two minutes to develop hydrographs that use one-minute intervals.

The National Oceanic and Atmospheric Administration (NOAA) Type D cumulative rainfall distribution was used in the analysis. The NOAA National Weather Service (NWS) Precipitation Frequency Data Servicer (PFDS) was used to determine the 24-hour rainfall frequency data used for stormwater quantity calculations. Refer to Appendix A - Rainfall Data. The total rainfall depth for each return-period storm was taken for Teterboro and multiplied by the Current and Future Precipitation Adjustment Factors for Bergen County to ensure compliance with current and projected rainfall.

Table 3.2.2B: Precipitation Adjustment Factors

Storm Frequency	NOAA Precipitation Depth (inches)	Current Precipitation Adjustment Factor	Current Rainfall Depth (inches)	Projected Precipitation Change Factor	Projected Rainfall Depth (inches)
2-year	3.32	1.01	3.35	1.20	3.98
10-year	5.02	1.03	5.17	1.23	6.17
100-year	8.31	1.06	8.81	1.37	11.38

Additionally, the project site was designed to comply with the requirements of N.J.A.C 7:13-12.2(c) for a stormwater management BMP located within and discharging within a flood hazard area. The tailwater impacting the proposed development was determined from a previously approved offsite watershed analysis completed for the West Riser Ditch titled Stormwater Management Report for First Aviation Services Expansion, dated October 12, 2016 prepared by Langan Engineering and Environmental Services, Inc. (NJDEP Permit No.0200-06-0005.1 FHA 160004) and a previously approved hydrologic and hydraulic analysis titled Vincent Place Stormwater Pumping Station and Housing Units (Volumes 1 and 2), revised March 2004, prepared by Dewberry-Goodkind, Inc. (NJDEP File No. 0262-03-0001.1 FHA 030001). Using the offsite watershed analysis contained in the Langan report, it was determined that at the time of the peak discharge from the site, the flow in the West Riser Ditch was approximately 184 cfs. Using the HEC-RAS models included in the Dewberry-Goodkind report, it was determined that a flow rate of 184 cfs would result in a water surface elevation of 2.6. This value was included as tailwater at the discharge location of the existing conveyance system located at the Signature Aviation TEB South terminal, which is the conveyance system that this project will discharge to. The existing infrastructure was modelled to determine the resulting upstream hydraulic grade line that would impose a tailwater condition on each of the proposed BMPs to demonstrate the BMPs would function as designed during the 100- year storm event using future rainfall values. Since the 100-year future storm event would produce the worst case tailwater scenario, this storm event was considered as the most conservative case for tailwater impacts to the proposed BMPs. Please refer to Appendix D for detailed calculations.

3.2.3 Existing Drainage Description

The existing drainage onsite largely consists of overland flow from the southern portions of the lease area generally flowing north and west towards the existing infrastructure on the developed land to the west. This runoff is collected and conveyed under the existing development on the adjacent parcel to an existing culvert ultimately draining to the West Riser Ditch. There are two other small areas that sheet flow south into the wetland and another that sheet flows to the existing drainage infrastructure under the operating aircraft apron west of the site.

The project analyzes runoff at three discharge locations. It consists of four overall watersheds, with Point of Analysis 1 broken out into disturbed and undisturbed areas for applying peak reduction factors. These watersheds are shown on Drawing DA100 and further described below.

POA-1

Watershed A is located along the northern and western portion of the site and conveys runoff directly to the existing stormwater infrastructure for the adjacent developed area. The watershed is currently undeveloped and is largely a wetland comprised of a mix of grass, brush, and wooded cover with a section of compacted gravel around the perimeter. This watershed is proposed to be developed as part of the project improvements.

Watershed B is located along the southern and eastern areas of the site and conveys runoff directly to the existing stormwater infrastructure for the adjacent developed area (same Point of Analysis as A above). The watershed is currently undeveloped and is largely a wetland comprised of a mix of grass, brush, and wooded cover with a section of compacted gravel around the perimeter. This watershed is proposed to remain undeveloped as part of the project improvements.

POA-2

Watershed C is located at the southern portion of the site and conveys runoff to the south and east. The watershed is currently undeveloped and is largely a wetland comprised of a mix of brush and wood cover. This watershed is proposed to be developed as part of the project improvements.

POA-3

Watershed D is located at the western portion of the site and conveys runoff directly to the existing stormwater infrastructure for the adjacent developed area west of the project site. The watershed is currently developed and is comprised of pavement on the existing aircraft apron. This watershed is proposed to be developed as part of the project improvements.

Existing flows at the analysis points are summarized in the tables below:

Table 3.2.3a: Summary of Existing Peak Runoff Rates (Current Rainfall)

Storm Frequency (year)	POA - 1 (cfs)	POA - 2 (cfs)	POA - 3 (cfs)
2	11.58	0.26	0.49
10	18.79	0.54	0.76
100	39.02	1.13	1.30

Table 3.2.3b: Summary of Existing Peak Runoff Rates (Projected Rainfall)

Storm Frequency (year)	POA-1 (cfs)	POA - 2 (cfs)	POA - 3 (cfs)
2	15.96	0.36	0.59
10	24.95	0.70	0.91
100	54.99	1.55	1.68

Supporting calculations for the existing analysis can be found in Appendix C.

3.2.4 Proposed Drainage Description

The proposed development is designed to generally be consistent with the existing drainage patterns. The developed areas are designed to be captured and conveyed to connect at the existing infrastructure on the developed land to the west. It will continue to drain under the existing development on the adjacent parcel to an existing culvert ultimately draining to the West Riser Ditch. A small area at the southern corner will continue to sheet flow south into the wetland. No flow will be sent to the small western pocket draining across the neighboring aircraft apron in the proposed condition.

The project analyzes runoff at three discharge locations in the proposed condition to ensure compliance with the peak reduction factors. The breakdown consists of eight overall watersheds. These watersheds are shown on Drawing DA200 and further described below.

POA-1

Watershed A is the majority of the site and is made up of the developed area (hangars, office areas, car parking area, and aircraft apron). The watershed is broken out into 6 sub-watersheds to comply with the small-scale requirements as part of meeting stormwater quality standards. This watershed is proposed to be developed as part of the project improvements.

Watershed B wraps the majority of the perimeter of the site. It consists of a combination of the undisturbed wetland area and the undetained flow from the developed area onsite.

POA-2

Watershed C is located at the southern portion of the site and conveys runoff to the south and east. The watershed is comprised of grass at the base of the retaining wall and is proposed to be developed as part of the project improvements.

POA-3

There is no flow proposed to POA-3 in the proposed condition. The runoff from the proposed development that was previous draining here will be captured and conveyed to

POA-1 in the proposed condition in an effort to meet the peak reductions. This watershed is proposed to be developed as part of the project improvements.

Proposed flows at the analysis points are summarized in the tables below:

Table 3.2.4a: Summary of Proposed Peak Runoff Rates (Current Rainfall)

Storm Frequency (year)	POA - 1 (cfs)	POA - 2 (cfs)	POA - 3 (cfs)
2	5.60	0.08	0.0
10	10.78	0.15	0.0
100	26.86	0.31	0.0

Table 3.2.4b: Summary of Proposed Peak Runoff Rates (Projected Rainfall)

Storm Frequency (year)	POA - 1 (cfs)	POA - 2 (cfs)	POA - 3 (cfs)
2	7.446	0.11	0.0
10	14.27	0.20	0.0
100*	36.81	0.44	0.0

*This value accounts for a tailwater of 2.6 in the West Riser Ditch and the capacity of the existing downstream conveyance system

Supporting calculations for the proposed analysis can be found in Appendix D.

3.2.5 Comparison of Existing and Proposed Conditions

Peak reductions have been met at the points of analysis for both the current and projected rainfall models as shown in the tables below. The project proposes three Stormtrap underground detention systems and three areas of pervious pavement to meet the stormwater quantity requirement.

A comparison of the existing and proposed runoff rates at the analysis points are summarized in the tables below:

POA - 1							
Storm Frequency (year)	Reduction	Current Rainfall			Projected Rainfall		
		Existing Flow (cfs)	Allowable Flow (cfs)	Proposed Flow (cfs)	Existing Flow (cfs)	Allowable Flow (cfs)	Proposed Flow (cfs)
2	50%	11.58	5.79	5.60	15.96	7.98	7.45
10	25%	18.79	14.09	10.78	24.95	18.71	14.27
100*	20%	39.02	31.22	26.86	54.99	43.99	36.81

*This value accounts for tailwater = 2.60 in the West Riser Ditch and the capacity of the existing downstream conveyance system

POA - 2							
Storm Frequency (year)	Reduction	Current Rainfall			Projected Rainfall		
		Existing Flow (cfs)	Allowable Flow (cfs)	Proposed Flow (cfs)	Existing Flow (cfs)	Allowable Flow (cfs)	Proposed Flow (cfs)
2	50%	0.26	0.13	0.076	0.356	0.18	0.11
10	25%	0.54	0.40	0.151	0.699	0.52	0.20
100	20%	1.13	0.90	0.309	1.553	1.24	0.44

POA - 3							
Storm Frequency (year)	Reduction	Current Rainfall			Projected Rainfall		
		Existing Flow (cfs)	Allowable Flow (cfs)	Proposed Flow (cfs)	Existing Flow (cfs)	Allowable Flow (cfs)	Proposed Flow (cfs)
2	50%	0.49	0.25	0.0	0.59	0.29	0.0
10	25%	0.76	0.57	0.0	0.91	0.68	0.0
100	20%	1.30	1.04	0.0	1.68	1.35	0.0

The pervious pavement systems will be lined with underdrains and the Stormtrap systems have a solid base. All BMPs are small-scale, comply with the maximum allowable contributory drainage area, and do not extend more than 1-foot deep into groundwater. A table is included below summarizing the design constraints for each.

Table 3-2-5d: Proposed Stormwater Quantity BMPs – Design Summary

Basin	BMP Type	Groundwater (El)	System Invert (El)	Basin Separation from GW (ft)
PP A2	Pervious Pavement	1.5	0.5	-1.0
Stormtrap A3	Underground Detention	1.2	1.6	0.4
Stormtrap A4	Underground Detention	1.0	1.6	0.6
PP A5	Pervious Pavement	1.5	3.4	1.9
PP A6	Pervious Pavement	3.0	2.5	-0.5
Stormtrap A7	Underground Detention	1.5	3.0	1.5

Note: A negative value indicates the system is proposed in groundwater.

3.3 Groundwater Recharge

In accordance with N.J.A.C. 7:8-5.4(b)1.i, the project must demonstrate that the site and its stormwater management measures maintain 100 percent of the average annual pre-construction groundwater recharge volume for the site. The soil beneath and around the site is tidal marshland composed of silts, clays and peat and the existing annual groundwater

recharge through this material would be estimated as zero. As such, no groundwater recharge measures are required for these type D soils. There are some HSG A/D soils mapped onsite. Since the seasonal high water table is within 24 inches of the ground surface, these soils have been classified as HSG D soils per guidance provided in the NJ BMP Manual Chapter 12.

In addition, the geotechnical investigation completed in February and March of 2026 reported high groundwater levels, mottling and water seepage in all test pits indicating seasonal saturation and limited infiltration capacity. The investigation results show groundwater onsite generally ranges from elevation –0.8' to +3.0'. Data sheets can be found in Appendix H.

3.4 Proposed Green Infrastructure

In accordance with N.J.A.C. 7:8-5.3 and related Best Management Practices Manual, the following green infrastructure BMPs have been incorporated into the proposed development:

- Three (3) Pervious Pavement Systems

Table 3-2c: Proposed Stormwater Quality Analysis – Pervious Pavement

Basin	Total Inflow Area (sf)	Pervious Pavement Surface Area (sf)	Additional Inflow Area (sf)	Ratio of Additional Inflow (sf)	Drain Time (hrs)
PP A2	50,253	18,362	31,891	1.74	31.5
PP A5	35,835	9,282	26,553	2.86	15.4
PP A6	25,390	6,808	18,582	2.73	13.6

These pervious pavement systems have been designed within the car parking areas, vehicular access driveway, and taxiway clearance zones. The use of pervious paving is not proposed within the ramp/apron areas per the Federal Aviation Administration and the Department of the Air Force design guidelines due to the potential excessive loads on the pavement created by the aircraft.

4.0 STORM SEWER COLLECTION SYSTEM DESIGN

4.1 Design Criteria

The on-site subsurface storm sewer collection system is designed to convey the 25-year storm event.

4.2 Design Methodology

The storm sewer conveyance system was analyzed using the Rational Method for estimating runoff from a 25-year design storm. The site was divided into sub-areas, each contributing runoff to an individual catch basin inlet or roof drain. A value for area, time of concentration, and runoff coefficient were entered for each sub-area. Times of concentration of 6 minutes were used for the inlets and roof drains. Each sub-area was assigned a weighted average runoff coefficient based on the percentage of each type of land cover.

The following runoff coefficient values were used and are based on Table 10.3-B from the NJDOT Roadway Design Manual with an assumption of Hydrologic Soil Group D Soils to be conservative and assume the most runoff through the system:

Table 4-2: Runoff Coefficients

Land Cover	C
Grass / Landscaped	0.65
Paved/ Roof	0.99

Storm drainage pipes were sized with Manning's Equation using the Stormwater Studio program. Detailed design calculations for the on-site stormwater collection system are included in Appendix F of this report.

5.0 STORMWATER MANAGEMENT MAINTENANCE PLAN

The New Jersey Administrative Code 7:8-5.8 entitled "Maintenance Requirements" sets forth rules (and refers to the New Jersey Best Management Practices (BMP) Manual) for the maintenance of stormwater management measures at major developments.

Langan has prepared a maintenance plan for the proposed stormwater management measures in a separate report. The Stormwater Management Maintenance Plan, which includes maintenance checklists and logs, was prepared for the operator of the facility and contains preventative and corrective maintenance tasks and procedures to ensure the effective performance of the stormwater management measures.

6.0 CONCLUSION

The proposed stormwater management design for this project complies with the design and performance standards contained in N.J.A.C 7:8 for stormwater quality, quantity, and recharge requirements. The project incorporates green infrastructure BMPs to the best extent possible. However, a hardship exception from strict compliance with the green infrastructure requirements is requested from the NJDEP in accordance with NJAC 7:13. This request is further detailed in the NJDEP Green Infrastructure Hardship Exception Memo prepared by Bohler and Langan under a separate cover.

7.0 REFERENCES

1.) Urban Hydrology for Small Watersheds, Technical Release No. 55, USDA Soil Conservation Service Publication, June 1986.

2.) New Jersey Administrative Code 7:8 Stormwater Management, last amended July 17, 2023.

3.) New Jersey Stormwater Best Management Practices Manual, New Jersey Department of Environmental Protection, Division of Watershed Management, April 2004, revised July 2023.

4.) Web Soil Survey, United States Department of Agriculture; Soil Conservation Service, Soil Survey, Bergen County, New Jersey.

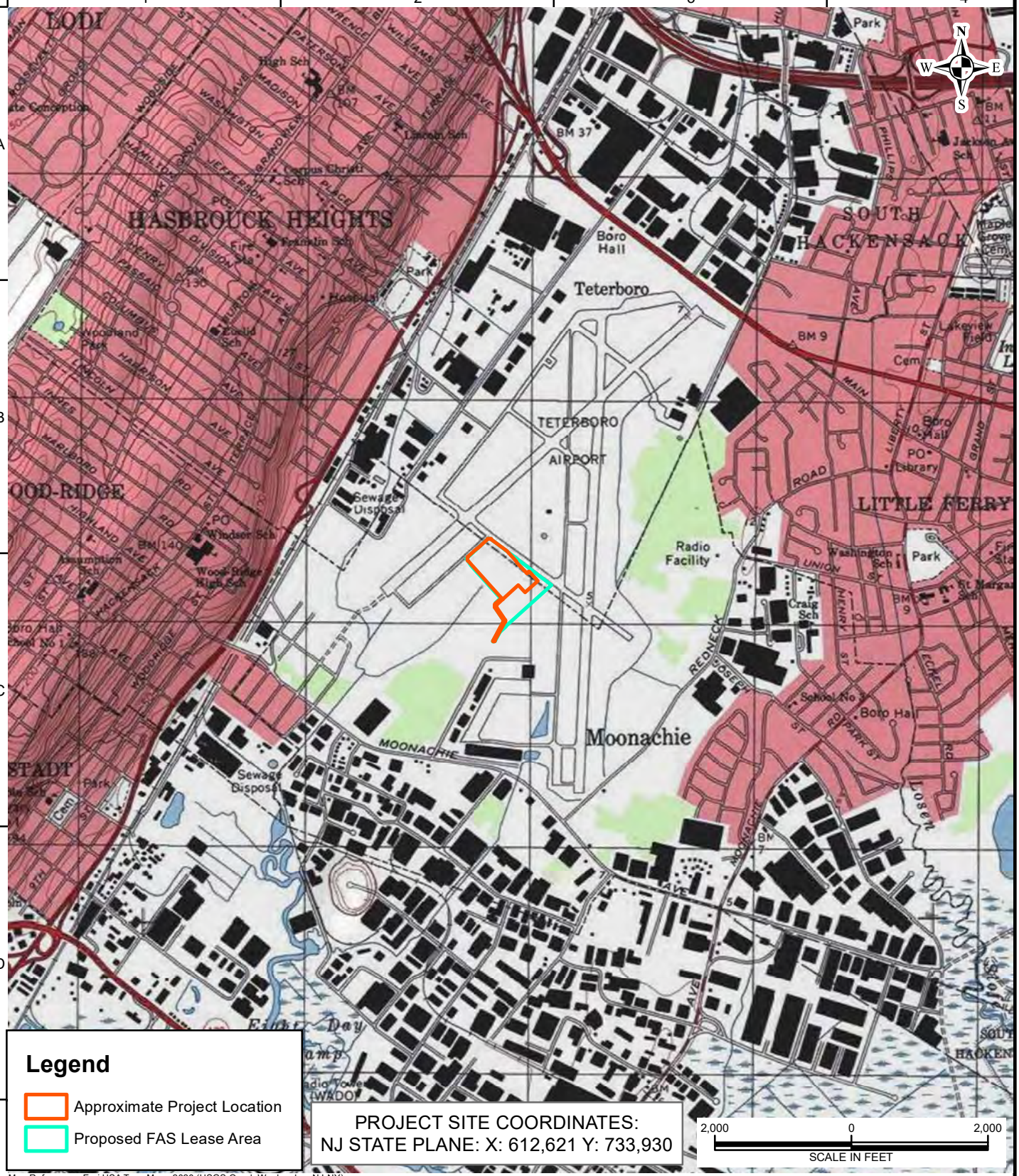
5.) The Standards for Soil Erosion and Sediment Control in New Jersey, New Jersey Department of Agriculture – State Soil Conservation Committee, January 2014.

6.) Hydrology Studio 2025, Version 3.0.0.38.

7.) Stormwater Studio 2025, Version 3.0.0.38.

8.) New Jersey Administrative Code 7:13 Flood Hazard Area Control Rules, last amended July 17, 2023.

FIGURES



Map References: Esri USA Topo Maps 2020 (USGS Quad: Weehawken NJ-NY)

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NJ CERTIFICATE OF AUTHORIZATION No. 24GA27996400

Project

SIGNATURE SOUTH EXPANSION PROJECT

BLOCK 76, LOT 1.02
BOROUGH OF MOONACHIE
& BLOCK 203, LOT 1
BOROUGH OF TETERBORO

BERGEN COUNTY NEW JERSEY

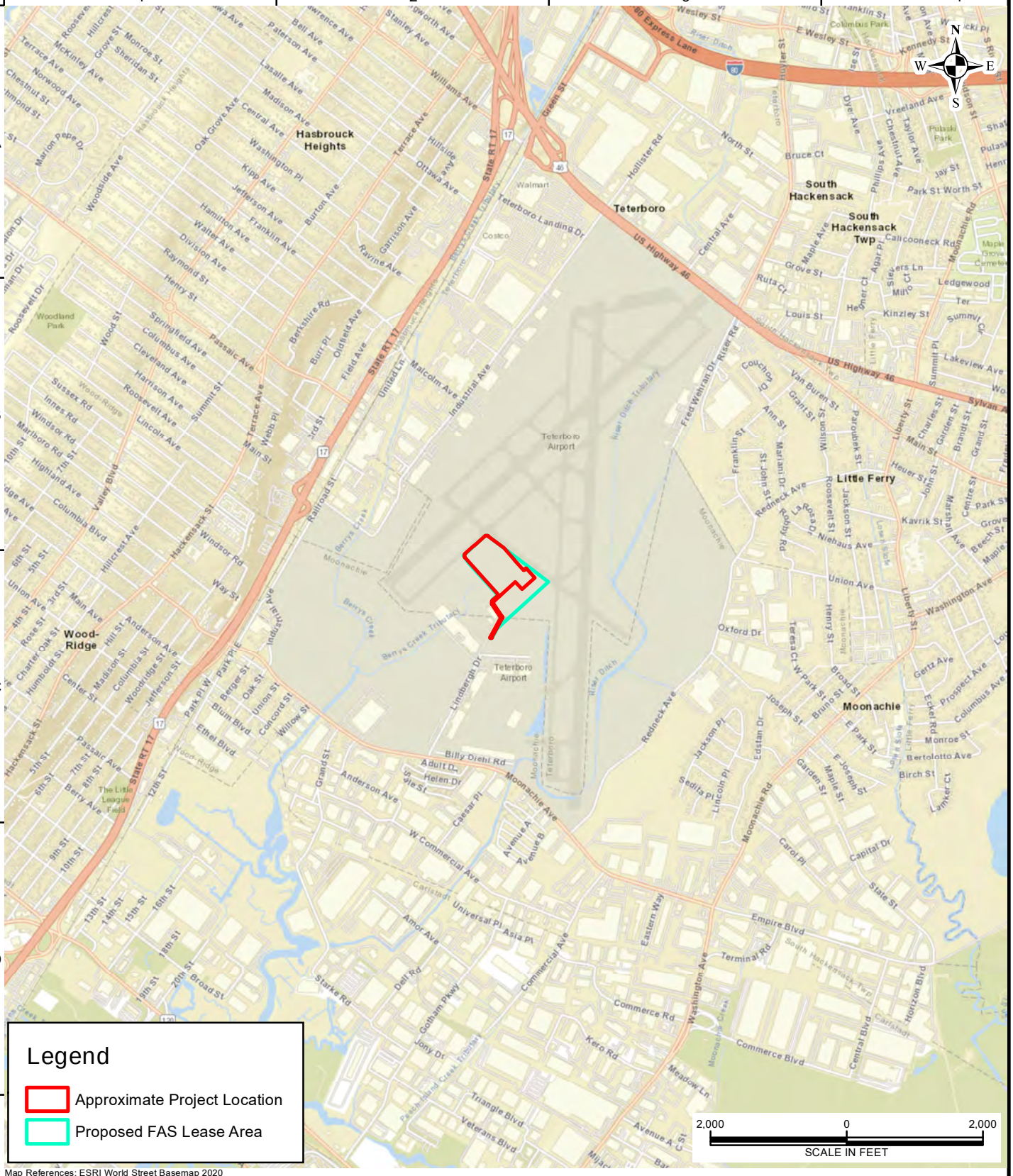
Drawing Title

USGS SITE LOCATION MAP

Project No.	001642424
Date	02/20/2025
Scale	1" = 2000'
Drawn By	GHD
Figure	1

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Path: \\langan.com\data\NY\data4\001642424\ArcGIS\ArcMap_Documents\2025\Figure 1 - USGS.mxd



Map References: ESRI World Street Basemap 2020

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NJ CERTIFICATE OF AUTHORIZATION No. 24GA27996400

Project

SIGNATURE SOUTH EXPANSION PROJECT

BLOCK 76, LOT 1.02
BOROUGH OF MOONACHIE
& BLOCK 203, LOT 1
BOROUGH OF TETERBORO

BERGEN COUNTY NEW JERSEY

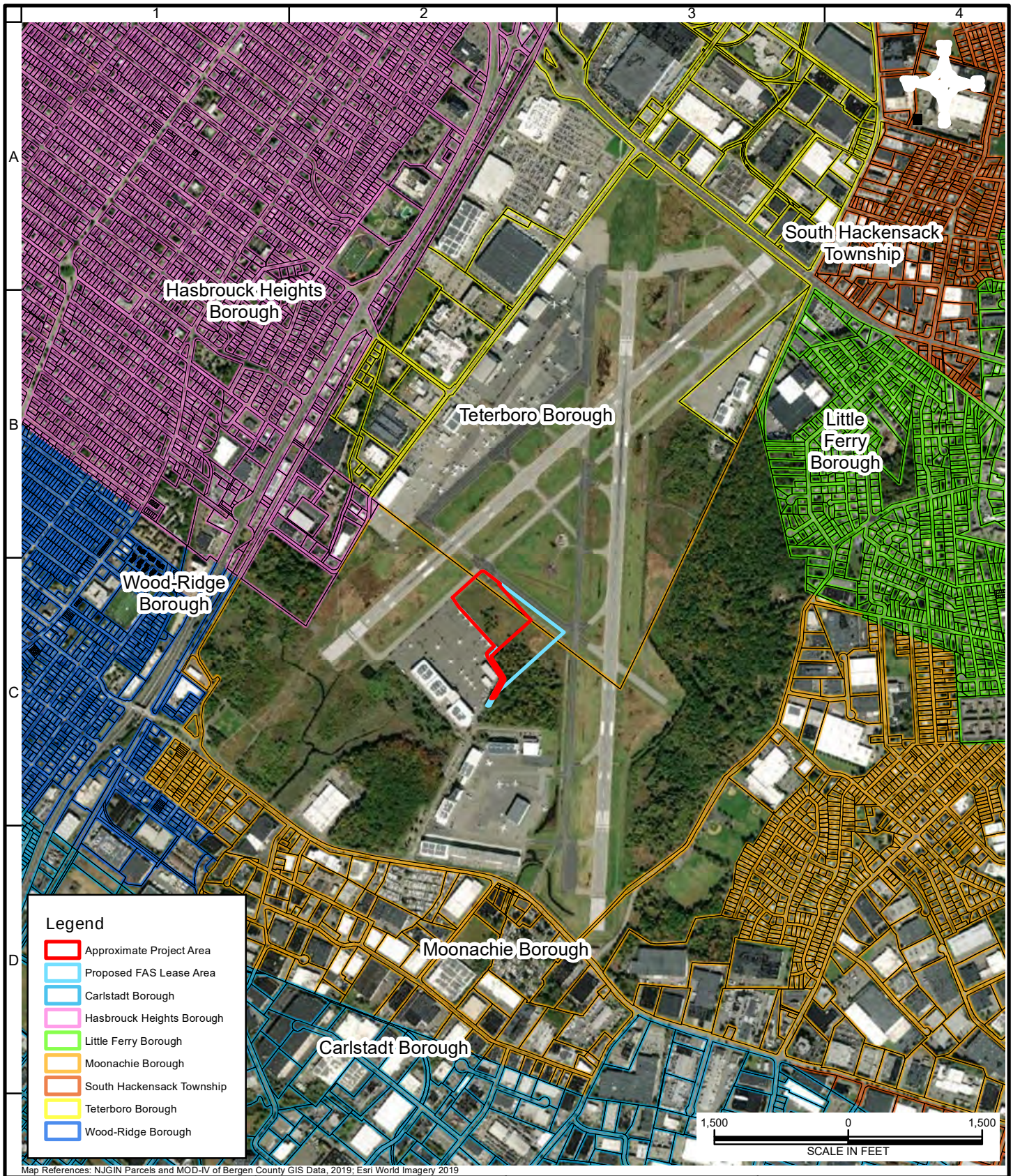
Drawing Title

VICINITY MAP

Project No.	001642424
Date	02/20/2025
Scale	1" = 2,000'
Drawn By	GHD
Figure	2

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Map References: NJGIN Parcels and MOD-IV of Bergen County GIS Data, 2019; Esri World Imagery 2019

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Drawing Title

TAX MAP

Project No. 001642424	Figure 3
Date 05/17/2021	
Scale 1"= 1,500'	
Drawn By GHD	

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Map References: Esri World Imagery 2024

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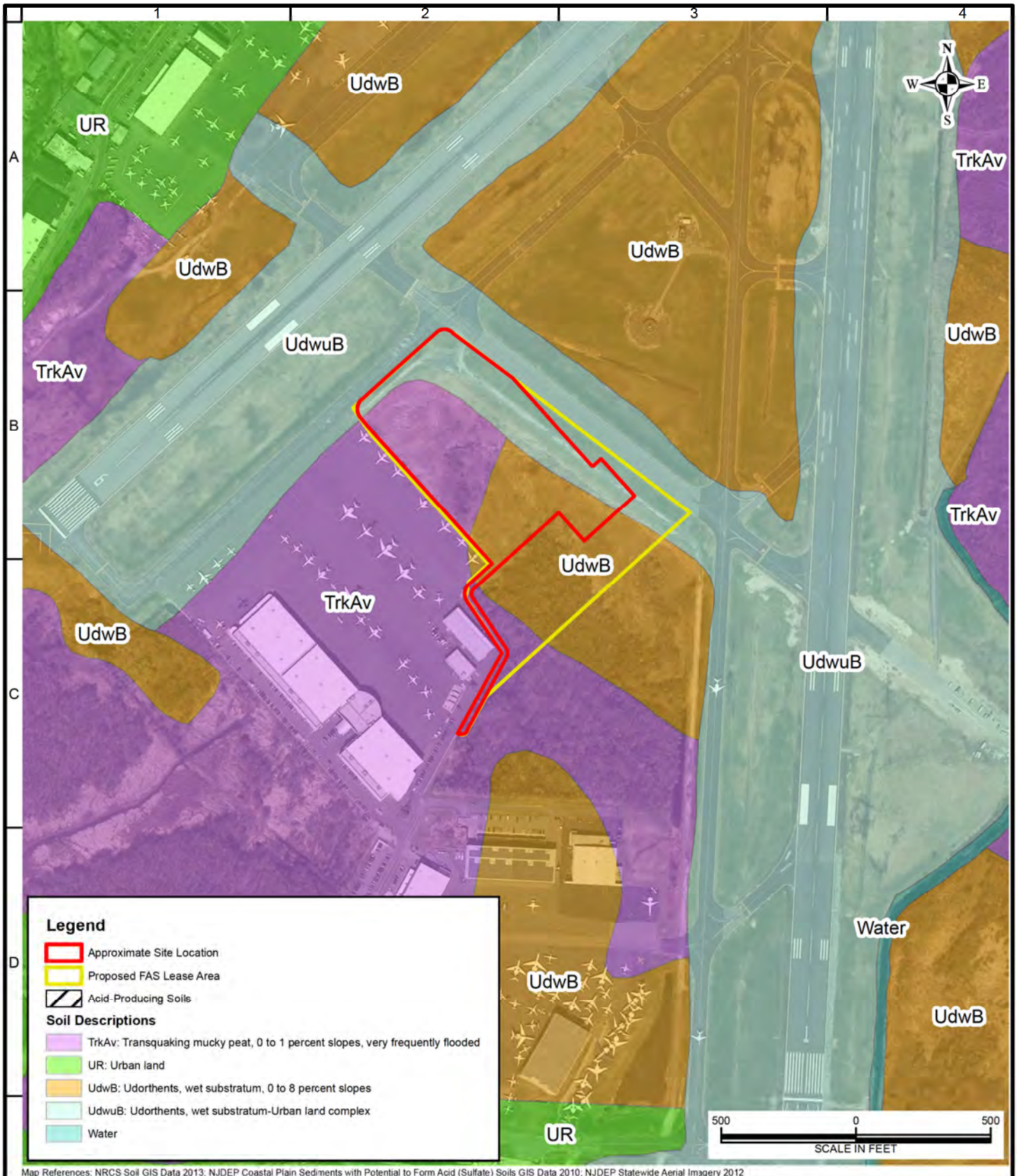
Drawing Title

SITE AERIAL PHOTOGRAPH

Project No.	001642424
Date	02/20/2025
Scale	1" = 300'
Drawn By	GHD
Figure	4

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Map References: NRCS Soil GIS Data 2013; NJDEP Coastal Plain Sediments with Potential to Form Acid (Sulfate) Soils GIS Data 2010; NJDEP Statewide Aerial Imagery 2012

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BERGEN COUNTY NEW JERSEY

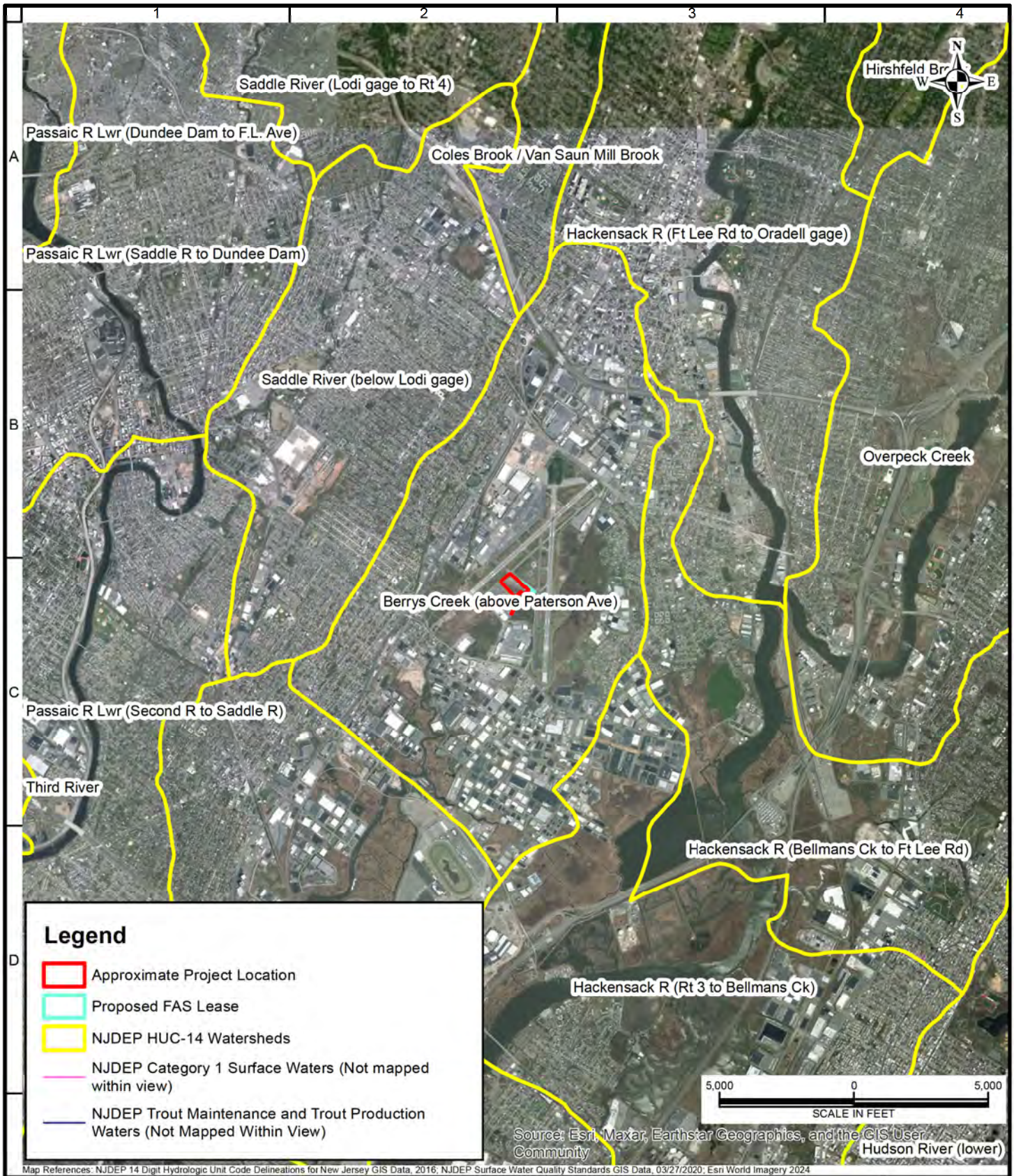
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SOILS MAP

Project No.	001642424
Date	3/4/2016
Scale	1"= 500'
Drawn By	MWen

Figure
5

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Map References: NJDEP 14 Digit Hydrologic Unit Code Delineations for New Jersey GIS Data, 2016; NJDEP Surface Water Quality Standards GIS Data, 03/27/2020; Esri World Imagery 2024

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Drawing Title

NJDEP HUC-14 WATERSHED MAP

Project No.	001642424
Date	02/20/2025
Scale	1" = 5,000'
Drawn By	GHD
Figure	6

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Path: \\langan.com\data\NY\data4\001642424\ArcGIS\ArcMap_Documents\2025\Figure 8 - HUC14 Watershed.mxd



Map References: NJDEP Surface Water Quality Standards GIS Data, 03/27/2020; Esri World Imagery 2024

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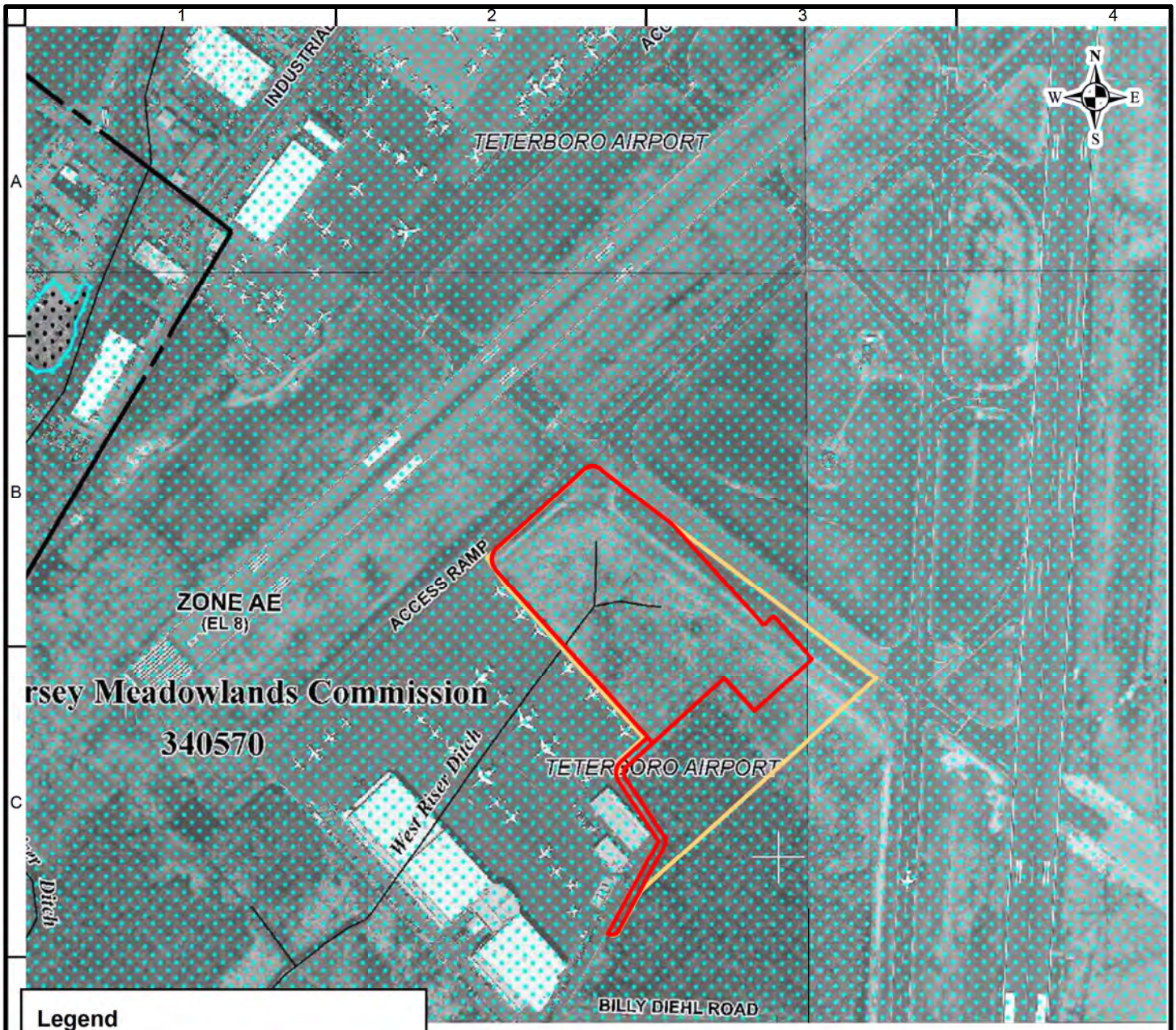
BERGEN COUNTY NEW JERSEY

Drawing Title
NJDEP SURFACE WATERS MAP

Project No.	001642424
Date	02/20/2025
Scale	1" = 1,000'
Drawn By	GHD
Figure	7

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Legend

- Approximate Site Location
- Proposed FAS Lease Area
- Special Flood Hazard Areas Subject to Inundation by the 1% Annual Chance Flood
- Other Flood Areas - Zone X: Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood
- ZONE AE Base Flood Elevations Determined

500 0 500
SCALE IN FEET

Note: This map was created in feet relative to the North American Vertical Datum of 1988. To convert between NAVD88 and the National Geodetic Vertical Datum of 1929, add 1.0 foot for locations within Bergen County.

Map References: FEMA Preliminary Flood Insurance Rate Maps 34003C0252J & 34003C0256J, created Aug. 29, 2014

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BLOCK 76, LOT 1.02
BOROUGH OF MOONACHIE
& BLOCK 203, LOT 1
BOROUGH OF TETERBORO
BERGEN COUNTY NEW JERSEY

Drawing Title
FEMA PRELIMINARY FIRM MAP

Project No.	001642424
Date	02/20/2025
Scale	1"= 500'
Drawn By	GHD

Figure 8

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APPENDIX A
Rainfall Data

NOAA Atlas 14, Volume 2, Version 3
Location name: Teterboro, New Jersey, USA*
Latitude: 40.8426°, Longitude: -74.0661°
Elevation: 4 ft**
* source: ESRI Maps
** source: USGS

POINT PRECIPITATION FREQUENCY ESTIMATES

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

NOAA, National Weather Service, Silver Spring, Maryland

PF_tabular | PF_graphical | Maps_&_aerials

PF tabular

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

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	0.335 (0.306-0.368)	0.400 (0.365-0.440)	0.477 (0.434-0.523)	0.533 (0.484-0.585)	0.603 (0.545-0.661)	0.655 (0.589-0.719)	0.705 (0.630-0.775)	0.754 (0.669-0.831)	0.817 (0.716-0.904)	0.860 (0.748-0.957)
10-min	0.532 (0.485-0.583)	0.637 (0.581-0.699)	0.756 (0.689-0.830)	0.842 (0.765-0.923)	0.948 (0.857-1.04)	1.02 (0.922-1.12)	1.10 (0.983-1.21)	1.17 (1.04-1.29)	1.26 (1.10-1.40)	1.32 (1.15-1.47)
15-min	0.660 (0.603-0.725)	0.793 (0.723-0.870)	0.948 (0.863-1.04)	1.06 (0.960-1.16)	1.19 (1.08-1.31)	1.29 (1.16-1.42)	1.38 (1.24-1.52)	1.47 (1.30-1.62)	1.58 (1.39-1.75)	1.65 (1.44-1.84)
30-min	0.896 (0.817-0.983)	1.08 (0.990-1.19)	1.33 (1.21-1.46)	1.51 (1.37-1.66)	1.74 (1.57-1.91)	1.91 (1.72-2.10)	2.08 (1.86-2.29)	2.24 (1.99-2.47)	2.46 (2.16-2.72)	2.62 (2.27-2.91)
60-min	1.11 (1.01-1.22)	1.35 (1.23-1.48)	1.70 (1.54-1.86)	1.95 (1.77-2.14)	2.30 (2.08-2.52)	2.57 (2.31-2.82)	2.84 (2.54-3.12)	3.12 (2.76-3.43)	3.49 (3.06-3.86)	3.77 (3.28-4.20)
2-hr	1.37 (1.24-1.51)	1.66 (1.51-1.83)	2.10 (1.91-2.32)	2.44 (2.21-2.69)	2.92 (2.63-3.21)	3.30 (2.96-3.63)	3.70 (3.29-4.07)	4.11 (3.62-4.54)	4.68 (4.08-5.18)	5.14 (4.42-5.71)
3-hr	1.53 (1.39-1.68)	1.85 (1.69-2.04)	2.34 (2.14-2.58)	2.73 (2.48-3.00)	3.27 (2.95-3.59)	3.70 (3.32-4.07)	4.16 (3.70-4.57)	4.64 (4.09-5.10)	5.30 (4.60-5.85)	5.83 (5.01-6.46)
6-hr	1.98 (1.81-2.17)	2.39 (2.19-2.63)	3.01 (2.75-3.30)	3.51 (3.19-3.84)	4.21 (3.81-4.60)	4.79 (4.31-5.24)	5.40 (4.81-5.91)	6.05 (5.34-6.63)	6.97 (6.06-7.67)	7.73 (6.64-8.53)
12-hr	2.43 (2.21-2.69)	2.95 (2.68-3.25)	3.72 (3.38-4.11)	4.36 (3.95-4.80)	5.29 (4.75-5.81)	6.08 (5.41-6.66)	6.91 (6.10-7.58)	7.83 (6.82-8.60)	9.15 (7.84-10.1)	10.3 (8.66-11.3)
24-hr	2.74 (2.53-2.99)	3.32 (3.06-3.62)	4.24 (3.91-4.62)	5.02 (4.61-5.46)	6.19 (5.65-6.72)	7.20 (6.52-7.81)	8.31 (7.45-9.03)	9.55 (8.47-10.4)	11.4 (9.94-12.4)	13.0 (11.2-14.2)
2-day	3.21 (2.94-3.52)	3.88 (3.56-4.27)	4.95 (4.54-5.44)	5.86 (5.35-6.43)	7.19 (6.52-7.88)	8.33 (7.50-9.13)	9.58 (8.55-10.5)	11.0 (9.68-12.1)	13.0 (11.3-14.4)	14.7 (12.6-16.4)
3-day	3.38 (3.11-3.69)	4.09 (3.76-4.47)	5.20 (4.78-5.68)	6.13 (5.62-6.69)	7.49 (6.82-8.16)	8.65 (7.82-9.43)	9.91 (8.89-10.8)	11.3 (10.0-12.4)	13.3 (11.6-14.6)	15.0 (12.9-16.6)
4-day	3.55 (3.28-3.86)	4.29 (3.97-4.67)	5.44 (5.02-5.92)	6.40 (5.89-6.95)	7.80 (7.13-8.45)	8.97 (8.15-9.73)	10.2 (9.23-11.1)	11.6 (10.4-12.6)	13.6 (12.0-14.9)	15.3 (13.3-16.8)
7-day	4.17 (3.88-4.51)	5.02 (4.66-5.42)	6.25 (5.80-6.75)	7.27 (6.72-7.84)	8.74 (8.04-9.42)	9.97 (9.12-10.8)	11.3 (10.2-12.2)	12.7 (11.4-13.7)	14.7 (13.0-16.0)	16.4 (14.3-17.9)
10-day	4.76 (4.45-5.13)	5.70 (5.32-6.13)	7.00 (6.52-7.52)	8.06 (7.49-8.66)	9.59 (8.86-10.3)	10.8 (9.97-11.7)	12.2 (11.1-13.1)	13.6 (12.3-14.7)	15.6 (13.9-16.9)	17.2 (15.2-18.8)
20-day	6.43 (6.03-6.87)	7.64 (7.16-8.15)	9.13 (8.55-9.74)	10.3 (9.63-11.0)	11.9 (11.1-12.7)	13.1 (12.2-14.0)	14.4 (13.3-15.4)	15.7 (14.4-16.8)	17.4 (15.8-18.7)	18.7 (16.9-20.2)
30-day	8.04 (7.58-8.53)	9.50 (8.94-10.1)	11.1 (10.5-11.8)	12.4 (11.6-13.1)	14.0 (13.1-14.9)	15.2 (14.2-16.2)	16.4 (15.3-17.5)	17.6 (16.3-18.8)	19.1 (17.7-20.5)	20.3 (18.6-21.8)
45-day	10.2 (9.67-10.8)	12.0 (11.4-12.7)	13.9 (13.1-14.7)	15.3 (14.5-16.2)	17.2 (16.2-18.1)	18.5 (17.4-19.6)	19.8 (18.6-21.0)	21.1 (19.7-22.4)	22.7 (21.1-24.2)	23.9 (22.1-25.5)
60-day	12.3 (11.6-12.9)	14.4 (13.6-15.2)	16.5 (15.6-17.4)	18.0 (17.0-19.0)	19.9 (18.8-21.0)	21.4 (20.1-22.5)	22.7 (21.4-24.0)	23.9 (22.5-25.3)	25.5 (23.8-27.0)	26.6 (24.7-28.2)

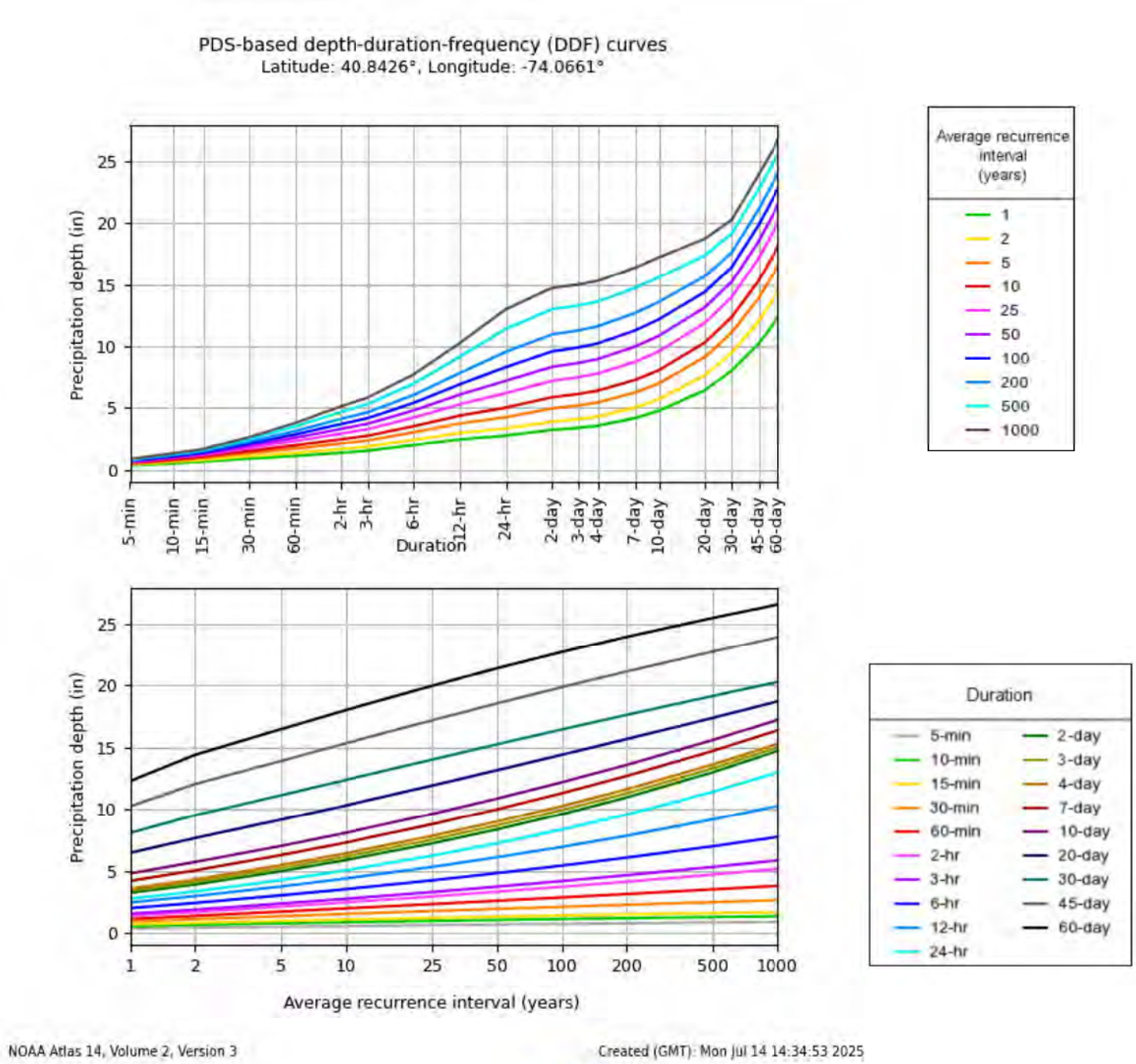
[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

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

Please refer to NOAA Atlas 14 document for more information.

Back to Top

PF graphical



Back to Top

Maps & aerials

Small scale terrain

Precipitation Adjustment Factors

Based on TABLE 5-5 and TABLE 5-6 (NJAC 7:8)

	Design Factors			Rainfall Depths Measured (in)			Analysis Rainfall Depths (in)		
Bergen County	*2-year*	*10-year*	*100-year*	*2-year*	*10-year*	*100-year*	*2-year*	*10-year*	*100-year*
Current Precipitation	1.01	1.03	1.06	3.32	5.02	8.31	**3.35**	**5.17**	**8.81**
Future Precipitation	1.20	1.23	1.37				**3.98**	**6.17**	**11.38**

Precipitation Report Cont'd **FUTURE RAINFALL**

Precipitation filename: Teterboro Future Precip.pcp

Rainfall totals in Inches

07-22-2025

	Active	1-yr	2-yr	3-yr	5-yr	10-yr	25-yr	50-yr	100-yr
Active			✔			✔			✔
NRCS Storms	**> NRCS Dimensionless Storms**								
NRCS MSE1, 24-hr		2.82	3.50	0	4.61	5.53	6.79	7.74	8.75
NRCS MSE2, 24-hr		2.82	3.50	0	4.61	5.53	6.79	7.74	8.75
NRCS MSE3, 24-hr		2.82	3.50	0	4.61	5.53	6.79	7.74	8.75
NRCS MSE4, 24-hr		2.82	3.50	0	4.61	5.53	6.79	7.74	8.75
NRCS MSE5, 24-hr		2.82	3.50	0	4.61	5.53	6.79	7.74	8.75
NRCS MSE6, 24-hr		2.82	3.50	0	4.61	5.53	6.79	7.74	8.75
NOAA-A, 24-hr		2.82	3.50	0	4.61	5.53	6.79	7.74	8.75
NOAA-B, 24-hr		2.82	3.50	0	4.61	5.53	6.79	7.74	8.75
NOAA-C, 24-hr		2.82	3.50	0	4.61	5.53	6.79	7.74	8.75
NOAA-D, 24-hr	✔	2.82	3.98	0	4.61	6.17	6.79	7.74	11.38
NRCC-A, 24-hr		2.82	3.50	0	4.61	5.53	6.79	7.74	8.75
NRCC-B, 24-hr		2.82	3.50	0	4.61	5.53	6.79	7.74	8.75
NRCC-C, 24-hr		2.82	3.50	0	4.61	5.53	6.79	7.74	8.75
NRCC-D, 24-hr		2.82	4.15	0	4.61	6.57	6.79	7.74	10.76
CA-1, 24-hr		2.82	3.50	0	4.61	5.53	6.79	7.74	8.75
CA-2, 24-hr		2.82	3.50	0	4.61	5.53	6.79	7.74	8.75
CA-3, 24-hr		2.82	3.50	0	4.61	5.53	6.79	7.74	8.75
CA-4, 24-hr		2.82	3.50	0	4.61	5.53	6.79	7.74	8.75
CA-5, 24-hr		2.82	3.50	0	4.61	5.53	6.79	7.74	8.75
CA-6, 24-hr		2.82	3.50	0	4.61	5.53	6.79	7.74	8.75
FDOT Storms	**> Florida DOT Storms**								
FDOT, 1-hr		0	2.14	2.36	2.58	2.92	3.35	3.66	3.95
FDOT, 2-hr		0	2.70	3.00	3.26	3.69	4.24	4.64	5.00
FDOT, 4-hr		0	3.28	3.76	4.00	4.80	5.50	6.20	6.80
FDOT, 8-hr		0	3.76	4.32	4.80	5.60	6.20	7.20	8.00
FDOT, 24-hr		0	4.28	4.75	5.21	6.11	7.53	8.78	10.20
FDOT, 72-hr		0	5.44	6.10	6.74	7.98	9.92	11.60	13.40
SFWMD, 72-hr		0	5.44	6.10	6.74	7.98	9.92	11.60	13.40
Austin Storms	**> Austin Frequency Storms**								
Austin Zone 1, 24-hr		0	4.14	0	5.51	6.84	8.90	10.69	12.80
Austin Zone 2, 24-hr		0	4.06	0	5.38	6.65	8.59	10.28	12.23

Precipitation Report Cont'd **CURRENT RAINFALL**

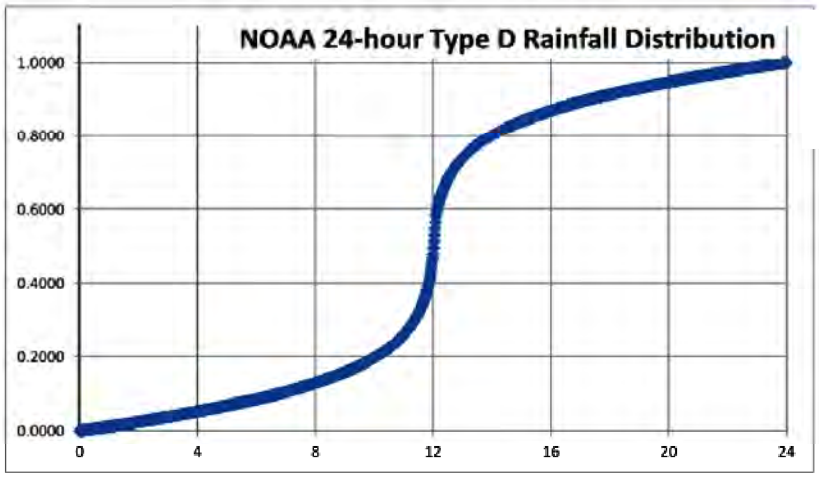
Precipitation filename: Teterboro Precip.pcp

Rainfall totals in Inches

07-22-2025

	Active	1-yr	2-yr	3-yr	5-yr	10-yr	25-yr	50-yr	100-yr
Active			✔			✔			✔
NRCS Storms	**> NRCS Dimensionless Storms**								
NRCS MSE1, 24-hr		2.82	3.50	0	4.61	5.53	6.79	7.74	8.75
NRCS MSE2, 24-hr		2.82	3.50	0	4.61	5.53	6.79	7.74	8.75
NRCS MSE3, 24-hr		2.82	3.50	0	4.61	5.53	6.79	7.74	8.75
NRCS MSE4, 24-hr		2.82	3.50	0	4.61	5.53	6.79	7.74	8.75
NRCS MSE5, 24-hr		2.82	3.50	0	4.61	5.53	6.79	7.74	8.75
NRCS MSE6, 24-hr		2.82	3.50	0	4.61	5.53	6.79	7.74	8.75
NOAA-A, 24-hr		2.82	3.50	0	4.61	5.53	6.79	7.74	8.75
NOAA-B, 24-hr		2.82	3.50	0	4.61	5.53	6.79	7.74	8.75
NOAA-C, 24-hr		2.82	3.50	0	4.61	5.53	6.79	7.74	8.75
NOAA-D, 24-hr	✔	2.82	3.35	0	4.61	5.17	6.79	7.74	8.81
NRCC-A, 24-hr		2.82	3.50	0	4.61	5.53	6.79	7.74	8.75
NRCC-B, 24-hr		2.82	3.50	0	4.61	5.53	6.79	7.74	8.75
NRCC-C, 24-hr		2.82	3.50	0	4.61	5.53	6.79	7.74	8.75
NRCC-D, 24-hr		2.82	4.15	0	4.61	6.57	6.79	7.74	10.76
CA-1, 24-hr		2.82	3.50	0	4.61	5.53	6.79	7.74	8.75
CA-2, 24-hr		2.82	3.50	0	4.61	5.53	6.79	7.74	8.75
CA-3, 24-hr		2.82	3.50	0	4.61	5.53	6.79	7.74	8.75
CA-4, 24-hr		2.82	3.50	0	4.61	5.53	6.79	7.74	8.75
CA-5, 24-hr		2.82	3.50	0	4.61	5.53	6.79	7.74	8.75
CA-6, 24-hr		2.82	3.50	0	4.61	5.53	6.79	7.74	8.75
FDOT Storms	**> Florida DOT Storms**								
FDOT, 1-hr		0	2.14	2.36	2.58	2.92	3.35	3.66	3.95
FDOT, 2-hr		0	2.70	3.00	3.26	3.69	4.24	4.64	5.00
FDOT, 4-hr		0	3.28	3.76	4.00	4.80	5.50	6.20	6.80
FDOT, 8-hr		0	3.76	4.32	4.80	5.60	6.20	7.20	8.00
FDOT, 24-hr		0	4.28	4.75	5.21	6.11	7.53	8.78	10.20
FDOT, 72-hr		0	5.44	6.10	6.74	7.98	9.92	11.60	13.40
SFWMD, 72-hr		0	5.44	6.10	6.74	7.98	9.92	11.60	13.40
Austin Storms	**> Austin Frequency Storms**								
Austin Zone 1, 24-hr		0	4.14	0	5.51	6.84	8.90	10.69	12.80
Austin Zone 2, 24-hr		0	4.06	0	5.38	6.65	8.59	10.28	12.23





Time (hrs)	Cumulative Rainfall (%)	Time (hrs)	Cumulative Rainfall (%)	Time (hrs)	Cumulative Rainfall (%)	Time (hrs)	Cumulative Rainfall (%)	Time (hrs)	Cumulative Rainfall (%)	Time (hrs)	Cumulative Rainfall (%)
0	0.0000	4	0.0489	8	0.1198	12	0.4766	16	0.8802	20	0.9511
0.1	0.0013	4.1	0.0504	8.1	0.1222	12.1	0.5933	16.1	0.8826	20.1	0.9525
0.2	0.0023	4.2	0.0518	8.2	0.1247	12.2	0.6338	16.2	0.885	20.2	0.9539
0.3	0.0033	4.3	0.0532	8.3	0.1273	12.3	0.663	16.3	0.8873	20.3	0.9553
0.4	0.0044	4.4	0.0547	8.4	0.1298	12.4	0.6843	16.4	0.8896	20.4	0.9566
0.5	0.0055	4.5	0.0562	8.5	0.1324	12.5	0.7045	16.5	0.8918	20.5	0.958
0.6	0.0065	4.6	0.0576	8.6	0.1351	12.6	0.7175	16.6	0.894	20.6	0.9594
0.7	0.0076	4.7	0.0591	8.7	0.1378	12.7	0.7298	16.7	0.8962	20.7	0.9607
0.8	0.0087	4.8	0.0606	8.8	0.1405	12.8	0.7409	16.8	0.8983	20.8	0.9621
0.9	0.0098	4.9	0.0621	8.9	0.1432	12.9	0.751	16.9	0.9004	20.9	0.9634
1	0.0109	5	0.0636	9	0.1461	13	0.76	17	0.9025	21	0.9647
1.1	0.0121	5.1	0.0651	9.1	0.149	13.1	0.7679	17.1	0.9045	21.1	0.966
1.2	0.0132	5.2	0.0667	9.2	0.1521	13.2	0.7753	17.2	0.9064	21.2	0.9673
1.3	0.0143	5.3	0.0682	9.3	0.1554	13.3	0.7821	17.3	0.9084	21.3	0.9686
1.4	0.0155	5.4	0.0697	9.4	0.1588	13.4	0.7883	17.4	0.9103	21.4	0.9699
1.5	0.0167	5.5	0.0713	9.5	0.1623	13.5	0.7939	17.5	0.9121	21.5	0.9712
1.6	0.0178	5.6	0.0729	9.6	0.166	13.6	0.799	17.6	0.9139	21.6	0.9724
1.7	0.019	5.7	0.0745	9.7	0.1699	13.7	0.8039	17.7	0.9157	21.7	0.9737
1.8	0.0202	5.8	0.076	9.8	0.1739	13.8	0.8086	17.8	0.9174	21.8	0.9749
1.9	0.0214	5.9	0.0776	9.9	0.178	13.9	0.8132	17.9	0.9191	21.9	0.9762
2	0.0226	6	0.0793	10	0.1823	14	0.8177	18	0.9208	22	0.9774
2.1	0.0238	6.1	0.0809	10.1	0.1868	14.1	0.822	18.1	0.9224	22.1	0.9786
2.2	0.0251	6.2	0.0826	10.2	0.1914	14.2	0.8261	18.2	0.924	22.2	0.9798
2.3	0.0263	6.3	0.0843	10.3	0.1961	14.3	0.8301	18.3	0.9255	22.3	0.981
2.4	0.0276	6.4	0.0861	10.4	0.201	14.4	0.834	18.4	0.9271	22.4	0.9822
2.5	0.0288	6.5	0.0879	10.5	0.2061	14.5	0.8377	18.5	0.9287	22.5	0.9833
2.6	0.0301	6.6	0.0897	10.6	0.2117	14.6	0.8412	18.6	0.9303	22.6	0.9845
2.7	0.0314	6.7	0.0916	10.7	0.2179	14.7	0.8446	18.7	0.9318	22.7	0.9857
2.8	0.0327	6.8	0.0936	10.8	0.2247	14.8	0.8479	18.8	0.9334	22.8	0.9868
2.9	0.034	6.9	0.0955	10.9	0.2321	14.9	0.851	18.9	0.9349	22.9	0.9879
3	0.0353	7	0.0975	11	0.24	15	0.854	19	0.9364	23	0.9891
3.1	0.0366	7.1	0.0996	11.1	0.249	15.1	0.8568	19.1	0.9379	23.1	0.9902
3.2	0.0379	7.2	0.1017	11.2	0.2591	15.2	0.8595	19.2	0.9394	23.2	0.9913
3.3	0.0393	7.3	0.1038	11.3	0.2702	15.3	0.8622	19.3	0.9409	23.3	0.9924
3.4	0.0406	7.4	0.106	11.4	0.2824	15.4	0.8649	19.4	0.9424	23.4	0.9935
3.5	0.042	7.5	0.1082	11.5	0.2955	15.5	0.8676	19.5	0.9438	23.5	0.9945
3.6	0.0434	7.6	0.1104	11.6	0.3157	15.6	0.8702	19.6	0.9453	23.6	0.9956
3.7	0.0447	7.7	0.1127	11.7	0.337	15.7	0.8727	19.7	0.9468	23.7	0.9966
3.8	0.0461	7.8	0.115	11.8	0.3662	15.8	0.8753	19.8	0.9482	23.8	0.9977
3.9	0.0475	7.9	0.1174	11.9	0.4067	15.9	0.8777	19.9	0.9496	23.9	0.9987
										24	1.0000

Reference: USDA Natural Resources Conservation Service New Jersey, Engineering Guidelines

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NJ Certification of Authorization No. 24GA27996400

Project
SIGNATURE SOUTH EXPANSION PROJECT
BLOCK 76, LOT 1.02
BOROUGH OF MOONACHIE
& BLOCK 203, LOT 1
BOROUGH OF TETERBORO
BERGEN COUNTY NEW JERSEY

Figure Title
24-HOUR NOAA TYPE D DISTRIBUTION

Project No. 001642424
Date 02/20/2025
Scale
Drawn By IHB
Figure No. 2

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Design Storm Report

Custom Storm filename: NJWQ.cds

Hydrology Studio v 3.0.0.34

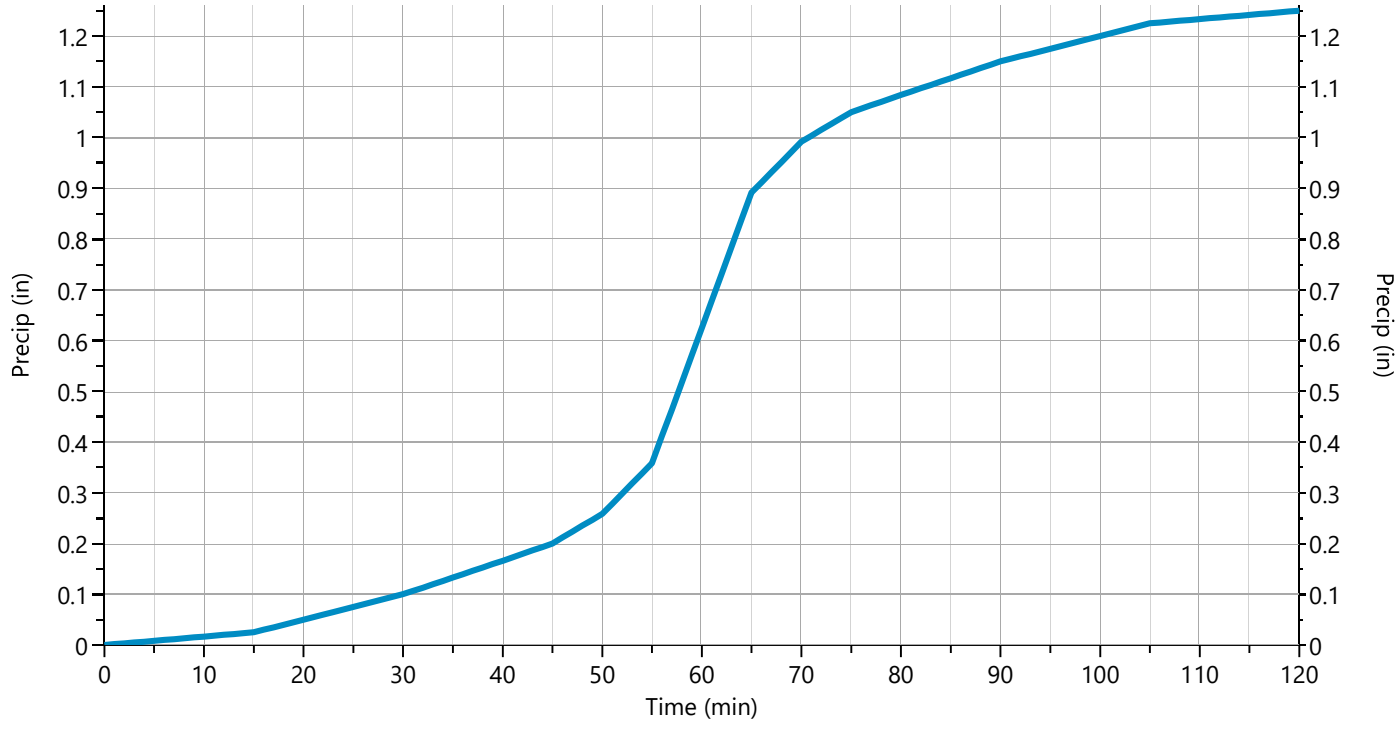
12-26-2024

Storm Distribution: NJDEP WQ Storm, 2-hr

Storm Duration	Total Rainfall Volume (in)								
	✔ 1-yr	2-yr	3-yr	5-yr	10-yr	25-yr	50-yr	100-yr	
2 hrs	1.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	

Incremental Rainfall Distribution, 1-yr

Time (min)	Precip (in)	Time (min)	Precip (in)	Time (min)	Precip (in)	Time (min)	Precip (in)	Time (min)	Precip (in)
26	0.005000	37	0.006600	48	0.011650	59	0.053350	70	0.020001
27	0.005000	38	0.006600	49	0.011650	60	0.053350	71	0.011650
28	0.005000	39	0.006600	50	0.011652	61	0.053348	72	0.011650
29	0.005000	40	0.006600	51	0.020000	62	0.053350	73	0.011650
30	0.005000	41	0.006800	52	0.020000	63	0.053350	74	0.011650
31	0.006600	42	0.006800	53	0.020000	64	0.053350	75	0.011650
32	0.006600	43	0.006800	54	0.020000	65	0.053350	76	0.006799
33	0.006600	44	0.006800	55	0.020000	66	0.019999	77	0.006800
34	0.006600	45	0.006800	**56**	**0.053350**	67	0.020000	78	0.006800
35	0.006600	46	0.011650	57	0.053350	68	0.020000	79	0.006800
36	0.006600	47	0.011650	58	0.053350	69	0.020000	80	0.006800



APPENDIX B
Hydrologic Soil Group Data

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

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

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

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

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

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

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

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

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

1 Average runoff condition, and I_a = 0.2S.

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

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

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

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

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

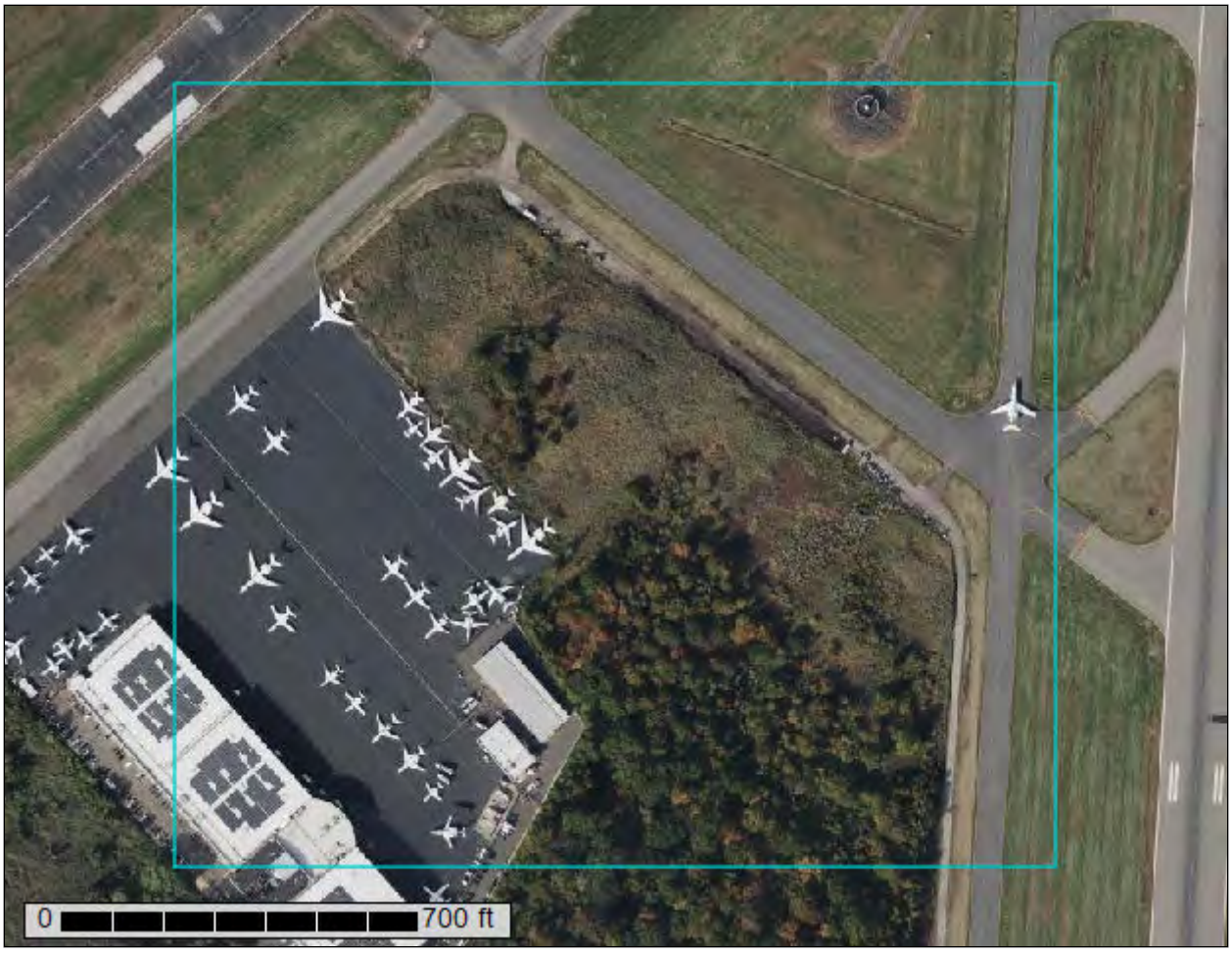
United States Department of Agriculture

NRCS

Natural Resources Conservation Service

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

Custom Soil Resource Report for Bergen County, New Jersey



April 29, 2025

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Soil Map

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



Map Scale: 1:3,960 if printed on A landscape (11" x 8.5") sheet.

N

Meters
0 50 100 200 300

Feet
0 150 300 600 900

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

MAP LEGEND

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

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

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

Water Features
- Streams and Canals

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

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Bergen County, New Jersey
Survey Area Data: Version 21, Sep 3, 2024

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

Date(s) aerial images were photographed: Oct 10, 2022—Oct 16, 2022

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
TrkAv	Westbrook, Ipswich, and Sandyhook soils, 0 to 2 percent slopes, very frequently flooded	23.5	38.4%
UdwB	Udorthents, wet substratum, 0 to 8 percent slopes	19.7	32.1%
UdwuB	Udorthents, wet substratum-Urban land complex	18.0	29.4%
Totals for Area of Interest		**61.2**	**100.0%**

Map Unit Descriptions

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

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

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

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate

pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

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

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

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

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

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

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

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

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

Bergen County, New Jersey

TrkAv—Westbrook, Ipswich, and Sandyhook soils, 0 to 2 percent slopes, very frequently flooded

Map Unit Setting

National map unit symbol: 2tyqh
Elevation: 0 to 10 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 140 to 240 days
Farmland classification: Farmland of unique importance

Map Unit Composition

Westbrook and similar soils: 35 percent
Ipswich and similar soils: 30 percent
Sandyhook and similar soils: 25 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Westbrook

Setting

Landform: Tidal marshes
Landform position (three-dimensional): Dip
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Partly-decomposed herbaceous organic material over loamy mineral material

Typical profile

Oe - 0 to 19 inches: mucky peat
Cg - 19 to 59 inches: silt loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Very poorly drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Very low to high (0.00 to 14.17 in/hr)
Depth to water table: About 0 inches
Frequency of flooding: Very frequent
Frequency of ponding: None
Calcium carbonate, maximum content: 5 percent
Maximum salinity: Nonsaline to strongly saline (0.7 to 111.6 mmhos/cm)
Sodium adsorption ratio, maximum: 33.0
Available water supply, 0 to 60 inches: High (about 9.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8w
Hydrologic Soil Group: B/D
Ecological site: R144AY001CT - Tidal Salt Low Marsh mesic very frequently flooded, R144AY002CT - Tidal Salt High Marsh mesic very frequently flooded

Hydric soil rating: Yes

Description of Ipswich

Setting

Landform: Tidal marshes
Landform position (three-dimensional): Dip
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Partially- decomposed herbaceous organic material

Typical profile

Oe - 0 to 42 inches: mucky peat
Oa - 42 to 59 inches: muck

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Very poorly drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to very high (0.14 to 99.90 in/hr)
Depth to water table: About 0 inches
Frequency of flooding: Very frequent
Frequency of ponding: None
Calcium carbonate, maximum content: 5 percent
Maximum salinity: Nonsaline to strongly saline (1.0 to 112.0 mmhos/cm)
Sodium adsorption ratio, maximum: 20.0
Available water supply, 0 to 60 inches: Very high (about 26.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8w
Hydrologic Soil Group: A/D
Ecological site: R144AY001CT - Tidal Salt Low Marsh mesic very frequently flooded, R144AY002CT - Tidal Salt High Marsh mesic very frequently flooded
Hydric soil rating: Yes

Description of Sandyhook

Setting

Landform: Back-barrier beaches, back-barrier flats
Landform position (three-dimensional): Dip
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Sandy marine deposits

Typical profile

Oe - 0 to 4 inches: mucky peat
Cg - 4 to 8 inches: sand
Ab - 8 to 11 inches: mucky coarse sand
C'g - 11 to 51 inches: sand
A'b - 51 to 59 inches: coarse sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Very poorly drained

Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to very high (0.14 to 99.90 in/hr)
Depth to water table: About 0 inches
Frequency of flooding: Very frequent
Frequency of ponding: None
Calcium carbonate, maximum content: 5 percent
Maximum salinity: Nonsaline to strongly saline (1.0 to 112.0 mmhos/cm)
Sodium adsorption ratio, maximum: 20.0
Available water supply, 0 to 60 inches: Low (about 5.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8w
Hydrologic Soil Group: A/D
Ecological site: R144AY001CT - Tidal Salt Low Marsh mesic very frequently flooded, R144AY002CT - Tidal Salt High Marsh mesic very frequently flooded
Hydric soil rating: Yes

Minor Components

Pawcatuck

Percent of map unit: 10 percent
Landform: Tidal marshes
Landform position (three-dimensional): Dip
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R144AY001CT - Tidal Salt Low Marsh mesic very frequently flooded, R144AY002CT - Tidal Salt High Marsh mesic very frequently flooded
Hydric soil rating: Yes

UdwB—Udorthents, wet substratum, 0 to 8 percent slopes

Map Unit Setting

National map unit symbol: 1kgz4
Elevation: 0 to 790 feet
Mean annual precipitation: 30 to 64 inches
Mean annual air temperature: 46 to 79 degrees F
Frost-free period: 131 to 178 days
Farmland classification: Not prime farmland

Map Unit Composition

Udorthents, wet substratum, and similar soils: 98 percent
Minor components: 2 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Udorthents, Wet Substratum

Setting

Landform: Flats
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Loamy lateral spread deposits

Typical profile

A - 0 to 36 inches: sand
2O - 36 to 60 inches: muck

Properties and qualities

Slope: 0 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: About 18 to 42 inches
Frequency of flooding: None
Frequency of ponding: None

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: D
Hydric soil rating: No

Minor Components

Pawcatuck, very frequently flooded

Percent of map unit: 1 percent
Landform: Tidal marshes
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

Transquaking, very frequently flooded

Percent of map unit: 1 percent
Landform: Tidal marshes
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

UdwuB—Udorthents, wet substratum-Urban land complex

Map Unit Setting

National map unit symbol: 1kgz3
Elevation: 0 to 570 feet
Mean annual precipitation: 30 to 64 inches
Mean annual air temperature: 46 to 79 degrees F

Frost-free period: 131 to 178 days
Farmland classification: Not prime farmland

Map Unit Composition

Udorthents, wet substratum, and similar soils: 68 percent
Urban land: 30 percent
Minor components: 2 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Udorthents, Wet Substratum

Setting

Landform: Flats
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Loamy lateral spread deposits

Typical profile

A - 0 to 36 inches: sand
2O - 36 to 60 inches: muck

Properties and qualities

Slope: 0 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: About 18 to 42 inches
Frequency of flooding: None
Frequency of ponding: None

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: D
Hydric soil rating: No

Description of Urban Land

Setting

Landform: Tidal marshes
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Surface covered by pavement, concrete, buildings, and other structures underlain by disturbed and natural soil material

Typical profile

C - 0 to 60 inches: variable

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8s
Hydric soil rating: Unranked

Minor Components

Transquaking, very frequently flooded

Percent of map unit: 1 percent

Landform: Tidal marshes
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

Pawcatuck, very frequently flooded

Percent of map unit: 1 percent
Landform: Tidal marshes
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

Soil Information for All Uses

Soil Properties and Qualities

The Soil Properties and Qualities section includes various soil properties and qualities displayed as thematic maps with a summary table for the soil map units in the selected area of interest. A single value or rating for each map unit is generated by aggregating the interpretive ratings of individual map unit components. This aggregation process is defined for each property or quality.

Soil Physical Properties

Soil Physical Properties are measured or inferred from direct observations in the field or laboratory. Examples of soil physical properties include percent clay, organic matter, saturated hydraulic conductivity, available water capacity, and bulk density.

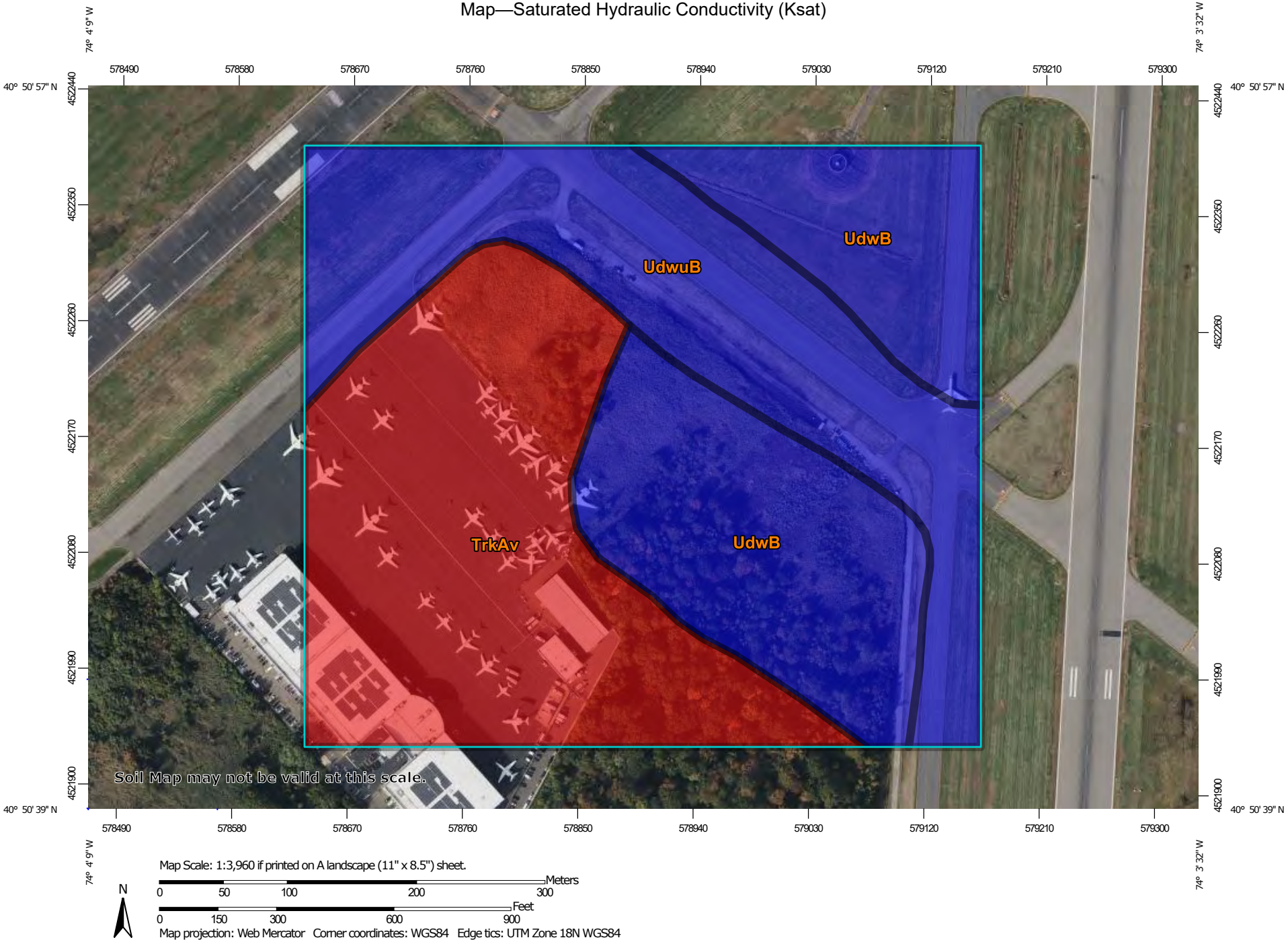
Saturated Hydraulic Conductivity (Ksat)

Saturated hydraulic conductivity (Ksat) refers to the ease with which pores in a saturated soil transmit water. The estimates are expressed in terms of micrometers per second. They are based on soil characteristics observed in the field, particularly structure, porosity, and texture. Saturated hydraulic conductivity is considered in the design of soil drainage systems and septic tank absorption fields.

For each soil layer, this attribute is actually recorded as three separate values in the database. A low value and a high value indicate the range of this attribute for the soil component. A "representative" value indicates the expected value of this attribute for the component. For this soil property, only the representative value is used.

The numeric Ksat values have been grouped according to standard Ksat class limits.

Map—Saturated Hydraulic Conductivity (Ksat)



MAP LEGEND

Area of Interest (AOI)

- Area of Interest (AOI)

Soils

Soil Rating Polygons

- <= 15.1848
- > 15.1848 and <= 63.8337
- Not rated or not available

Soil Rating Lines

- <= 15.1848
- > 15.1848 and <= 63.8337
- Not rated or not available

Soil Rating Points

- <= 15.1848
- > 15.1848 and <= 63.8337
- Not rated or not available

Water Features

- Streams and Canals

Transportation

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

Background

- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Bergen County, New Jersey
Survey Area Data: Version 21, Sep 3, 2024

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

Date(s) aerial images were photographed: Oct 10, 2022—Oct 16, 2022

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Table—Saturated Hydraulic Conductivity (Ksat)

Map unit symbol	Map unit name	Rating (micrometers per second)	Acres in AOI	Percent of AOI
TrkAv	Westbrook, Ipswich, and Sandyhook soils, 0 to 2 percent slopes, very frequently flooded	15.1848	23.5	38.4%
UdwB	Udorthents, wet substratum, 0 to 8 percent slopes	63.8337	19.7	32.1%
UdwuB	Udorthents, wet substratum-Urban land complex	63.8337	18.0	29.4%
Totals for Area of Interest			**61.2**	**100.0%**

Rating Options—Saturated Hydraulic Conductivity (Ksat)

Units of Measure: micrometers per second

Aggregation Method: Dominant Component

Component Percent Cutoff: None Specified

Tie-break Rule: Fastest

Interpret Nulls as Zero: No

Layer Options (Horizon Aggregation Method): Depth Range (Weighted Average)

Top Depth: 12

Bottom Depth: 48

Units of Measure: Inches

Soil Qualities and Features

Soil qualities are behavior and performance attributes that are not directly measured, but are inferred from observations of dynamic conditions and from soil properties. Example soil qualities include natural drainage, and frost action. Soil features are attributes that are not directly part of the soil. Example soil features include slope and depth to restrictive layer. These features can greatly impact the use and management of the soil.

Hydrologic Soil Group

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

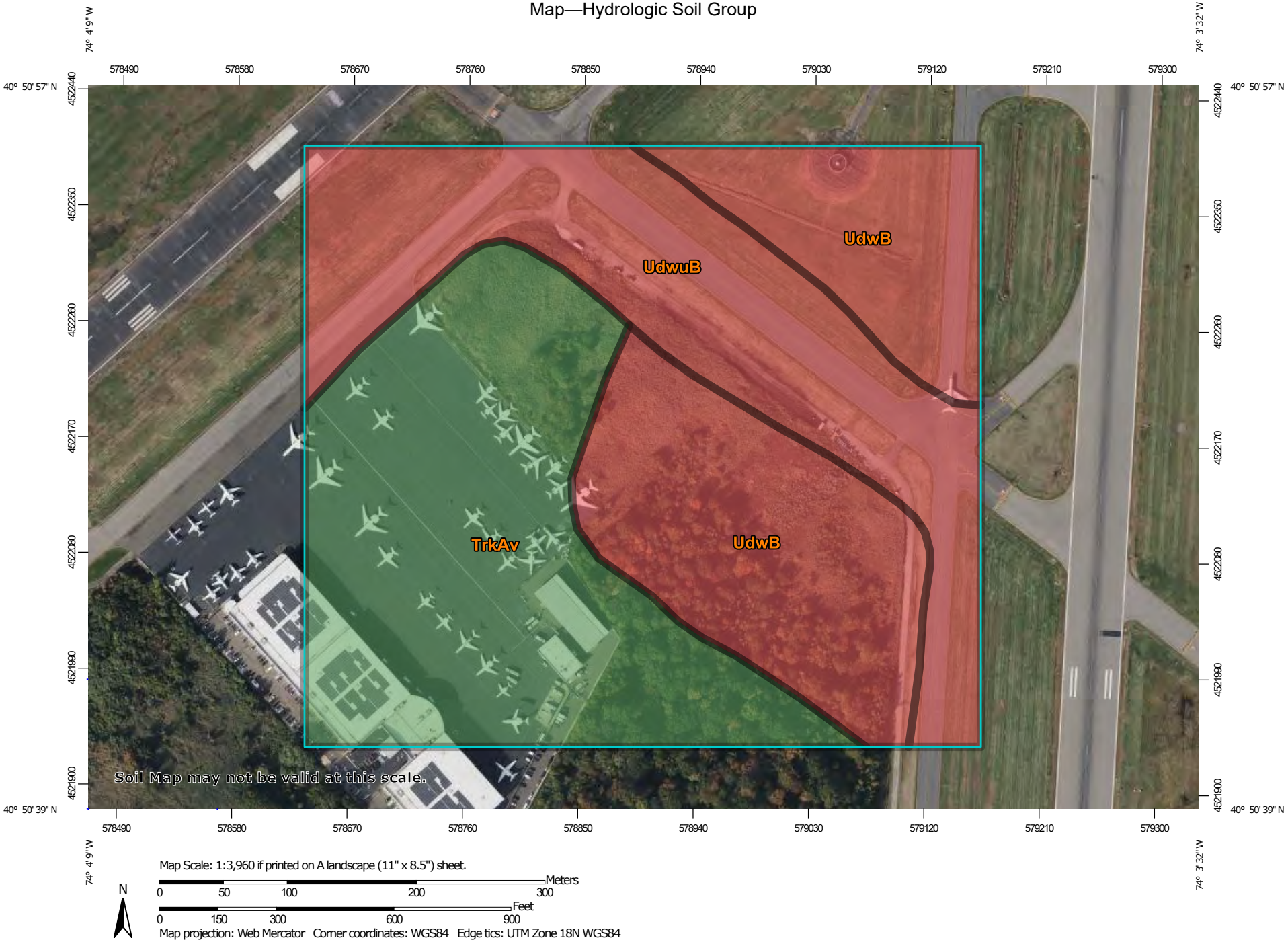
Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Map—Hydrologic Soil Group



Map Scale: 1:3,960 if printed on A landscape (11" x 8.5") sheet.

N

Meters
0 50 100 200 300

Feet
0 150 300 600 900

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

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Rating Polygons

A

A/D

B

B/D

C

C/D

D

Not rated or not available

Soil Rating Lines

A

A/D

B

B/D

C

C/D

D

Not rated or not available

Soil Rating Points

A

A/D

B

B/D

C

C/D

D

Not rated or not available

Water Features

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

Local Roads

Background

Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

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Soil Survey Area: Bergen County, New Jersey
Survey Area Data: Version 21, Sep 3, 2024

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

Date(s) aerial images were photographed: Oct 10, 2022—Oct 16, 2022

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Table—Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
TrkAv	Westbrook, Ipswich, and Sandyhook soils, 0 to 2 percent slopes, very frequently flooded	A/D	23.5	38.4%
UdwB	Udorthents, wet substratum, 0 to 8 percent slopes	D	19.7	32.1%
UdwuB	Udorthents, wet substratum-Urban land complex	D	18.0	29.4%
Totals for Area of Interest			**61.2**	**100.0%**

Rating Options—Hydrologic Soil Group

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

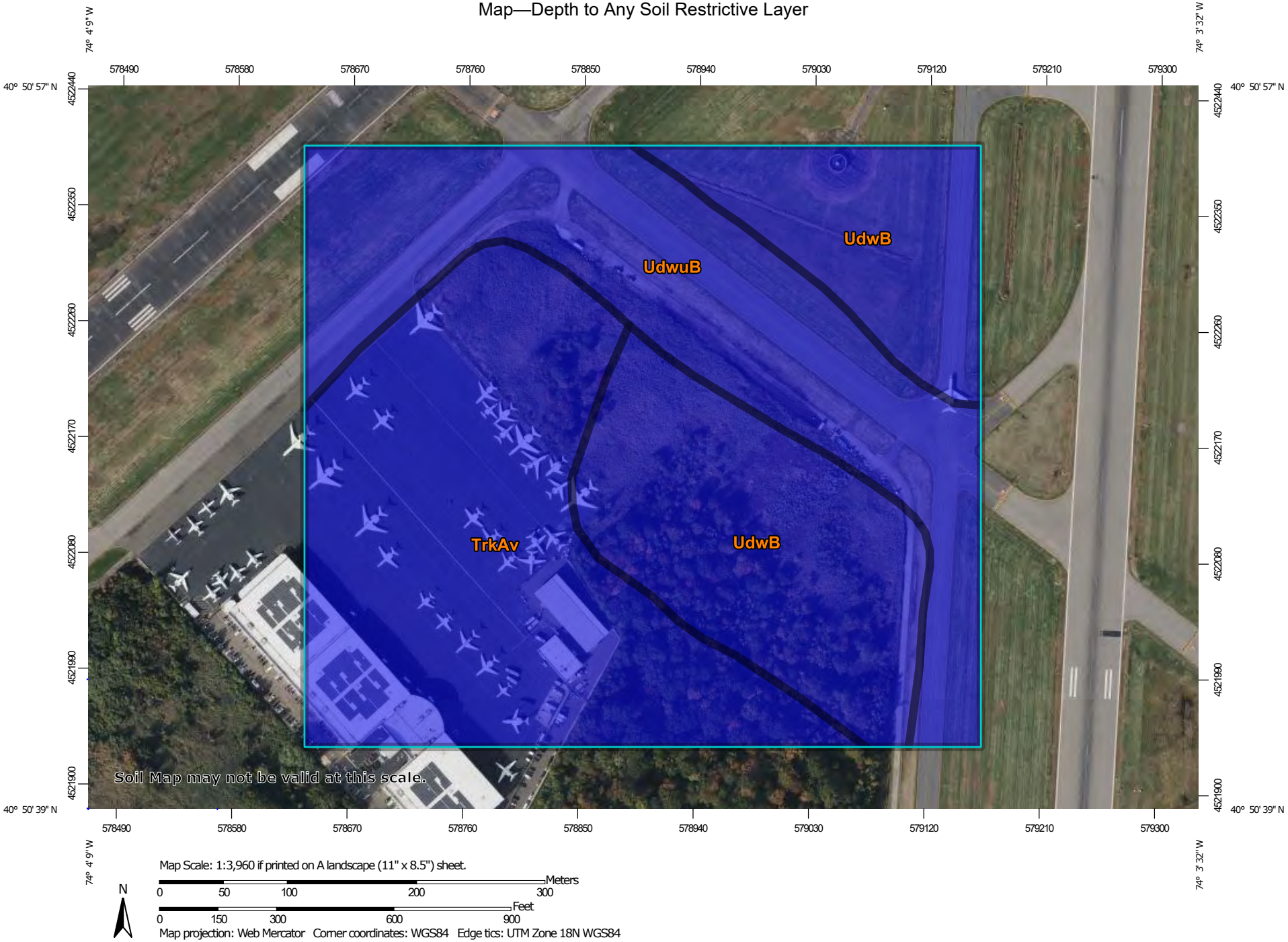
Tie-break Rule: Higher

Depth to Any Soil Restrictive Layer

A "restrictive layer" is a nearly continuous layer that has one or more physical, chemical, or thermal properties that significantly impede the movement of water and air through the soil or that restrict roots or otherwise provide an unfavorable root environment. Examples are bedrock, cemented layers, dense layers, and frozen layers.

This theme presents the depth to any type of restrictive layer that is described for each map unit. If more than one type of restrictive layer is described for an individual soil type, the depth to the shallowest one is presented. If no restrictive layer is described in a map unit, it is represented by the "greater than 200" depth class.

This attribute is actually recorded as three separate values in the database. A low value and a high value indicate the range of this attribute for the soil component. A "representative" value indicates the expected value of this attribute for the component. For this soil property, only the representative value is used.



Map Scale: 1:3,960 if printed on A landscape (11" x 8.5") sheet.

N

Meters
0 50 100 200 300

Feet
0 150 300 600 900

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

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Rating Polygons

0 - 25

25 - 50

50 - 100

100 - 150

150 - 200

> 200

Not rated or not available

Soil Rating Lines

0 - 25

25 - 50

50 - 100

100 - 150

150 - 200

> 200

Not rated or not available

Soil Rating Points

0 - 25

25 - 50

50 - 100

100 - 150

150 - 200

> 200

Not rated or not available

Water Features

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

Local Roads

Background

Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

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Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

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Table—Depth to Any Soil Restrictive Layer

Map unit symbol	Map unit name	Rating (centimeters)	Acres in AOI	Percent of AOI
TrkAv	Westbrook, Ipswich, and Sandyhook soils, 0 to 2 percent slopes, very frequently flooded	>200	23.5	38.4%
UdwB	Udorthents, wet substratum, 0 to 8 percent slopes	>200	19.7	32.1%
UdwuB	Udorthents, wet substratum-Urban land complex	>200	18.0	29.4%
Totals for Area of Interest			**61.2**	**100.0%**

Rating Options—Depth to Any Soil Restrictive Layer

Units of Measure: centimeters

Aggregation Method: Dominant Component

Component Percent Cutoff: None Specified

Tie-break Rule: Lower

Interpret Nulls as Zero: No

Water Features

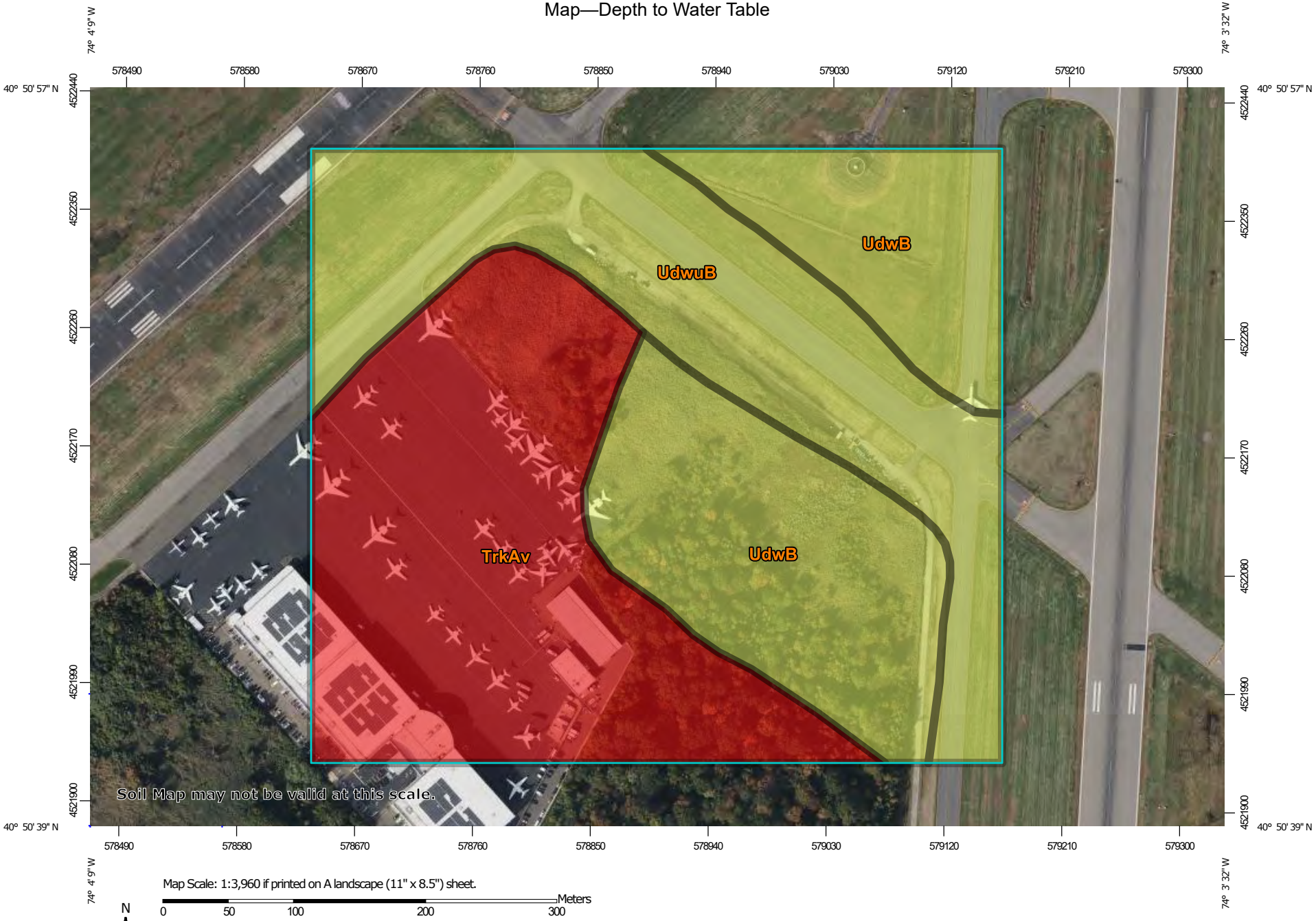
Water Features include ponding frequency, flooding frequency, and depth to water table.

Depth to Water Table

"Water table" refers to a saturated zone in the soil. It occurs during specified months. Estimates of the upper limit are based mainly on observations of the water table at selected sites and on evidence of a saturated zone, namely grayish colors (redoximorphic features) in the soil. A saturated zone that lasts for less than a month is not considered a water table.

This attribute is actually recorded as three separate values in the database. A low value and a high value indicate the range of this attribute for the soil component. A "representative" value indicates the expected value of this attribute for the component. For this soil property, only the representative value is used.

Custom Soil Resource Report
Map—Depth to Water Table



Map Scale: 1:3,960 if printed on A landscape (11" x 8.5") sheet.

N

Meters
0 50 100 200 300

Feet
0 150 300 600 900

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

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Rating Polygons

0 - 25

25 - 50

50 - 100

100 - 150

150 - 200

> 200

Not rated or not available

Soil Rating Lines

0 - 25

25 - 50

50 - 100

100 - 150

150 - 200

> 200

Not rated or not available

Soil Rating Points

0 - 25

25 - 50

50 - 100

100 - 150

150 - 200

> 200

Not rated or not available

Water Features

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

Local Roads

Background

Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

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Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

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Table—Depth to Water Table

Map unit symbol	Map unit name	Rating (centimeters)	Acres in AOI	Percent of AOI
TrkAv	Westbrook, Ipswich, and Sandyhook soils, 0 to 2 percent slopes, very frequently flooded	0	23.5	38.4%
UdwB	Udorthents, wet substratum, 0 to 8 percent slopes	76	19.7	32.1%
UdwuB	Udorthents, wet substratum-Urban land complex	76	18.0	29.4%
Totals for Area of Interest			**61.2**	**100.0%**

Rating Options—Depth to Water Table

Units of Measure: centimeters

Aggregation Method: Dominant Component

Component Percent Cutoff: None Specified

Tie-break Rule: Lower

Interpret Nulls as Zero: No

Beginning Month: January

Ending Month: April

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APPENDIX C
Pre-Development Quantity Hydrographs

Project Teterboro Airport - South Hanger **By:** AM **Date:** 7/31/2025

Location Teterboro, NJ **Checked By:** LM **Date Checked:** 7/31/2025

Circle one: (**Present**) Developed **Existing Pervious Watershed A**

Include a map, schematic, or description of coverage areas.

Runoff Curve Number (CN)

Soil Name and hydrologic group (Appendix A)	Cover description (cover type, treatment, and hydrologic condition; percent impervious; unconnected/connected impervious area ratio)	CN*2 Table 2-2	CN*2 Fig. 2-3	CN*2 Fig. 2-4	Area [x] acres [ ] mi^2 [ ] %	Product of CN x Area
D	**Open Space, Good Cond.**	**80**			**0.74**	**59.03**
D	**Brush, Good Cond.**	**73**			**6.91**	**504.76**
D	**Woods, Good Cond.**	**77**			**0.85**	**65.82**
D	**Streets, Gravel**	**91**			**0.69**	**62.94**
				Totals =	**9.20**	**692.54**

CN (weighted) = $\frac{\text{total product}}{\text{total area}} = \frac{692.54}{9.20} =$ 75.29 Use CN = **75**

Project Teterboro Airport - South Hanger **By:** AM **Date:** 7/31/2025

Location Teterboro, NJ **Checked By:** LM **Date Checked:** 7/31/2025

Circle one: (**Present**) Developed **Existing Impervious Watershed A**

Include a map, schematic, or description of coverage areas.

Runoff Curve Number (CN)

Soil Name and hydrologic group (Appendix A)	Cover description (cover type, treatment, and hydrologic condition; percent impervious; unconnected/connected impervious area ratio)	CN*2			Area	Product of CN x Area
		Table 2-2	Fig. 2-3	Fig. 2-4	x acres / mi² / %	
D	**Impervious**	**98**			**0.07**	**6.53**
				Totals =	**0.07**	**6.53**

CN (weighted) = $\frac{\text{total product}}{\text{total area}} = \frac{6.53}{0.07} =$ 98.00 Use CN = **98**

Project Teterboro Airport - South Hanger **By:** AM **Date:** 7/31/2025

Location Teterboro, NJ **Checked By:** LM **Date Checked:** 7/31/2025

Circle one: (**Present**) Developed **Existing Pervious Watershed B (Undisturbed)**

Include a map, schematic, or description of coverage areas.

Runoff Curve Number (CN)

Soil Name and hydrologic group (Appendix A)	Cover description (cover type, treatment, and hydrologic condition; percent impervious; unconnected/connected impervious area ratio)	CN*2 Table 2-2	CN*2 Fig. 2-3	CN*2 Fig. 2-4	Area [x] acres / [ ] mi^2 / [ ] %	Product of CN x Area
D	**Open Space, Good Cond.**	**80**			**1.31**	**105.16**
D	**Brush, Good Cond.**	**73**			**2.85**	**207.83**
D	**Woods, Good Cond.**	**77**			**3.98**	**306.48**
D	**Streets, Gravel**	**91**			**0.63**	**57.72**
				Totals =	**8.78**	**677.18**

CN (weighted) = $\frac{\text{total product}}{\text{total area}} = \frac{677.18}{8.78} =$ 77.16 Use CN = **77**

Project Teterboro Airport - South Hanger **By:** AM **Date:** 7/31/2025

Location Teterboro, NJ **Checked By:** LM **Date Checked:** 7/31/2025

Circle one: (**Present**) Developed **Existing Impervious Watershed B (Undisturbed)**

Include a map, schematic, or description of coverage areas.

Runoff Curve Number (CN)

Soil Name and hydrologic group (Appendix A)	Cover description (cover type, treatment, and hydrologic condition; percent impervious; unconnected/connected impervious area ratio)	CN*2			Area	Product of CN x Area
		Table 2-2	Fig. 2-3	Fig. 2-4	[x] acres [ ] mi^2 [ ] %	
D	**Impervious**	**98**			**1.40**	**137.20**
				Totals =	**1.40**	**137.20**

CN (weighted) = $\frac{\text{total product}}{\text{total area}} = \frac{137.20}{1.40} =$ 98.00 Use CN = **98**

Project Teterboro Airport - South Hanger **By:** AM **Date:** 7/31/2025

Location Teterboro, NJ **Checked By:** LM **Date Checked:** 7/31/2025

Circle one: (**Present**) Developed **Existing Pervious Watershed C**

Include a map, schematic, or description of coverage areas.

Runoff Curve Number (CN)

Soil Name and hydrologic group (Appendix A)	Cover description (cover type, treatment, and hydrologic condition; percent impervious; unconnected/connected impervious area ratio)	CN*2 Table 2-2	CN*2 Fig. 2-3	CN*2 Fig. 2-4	Area [x] acres / [ ] mi^2 / [ ] %	Product of CN x Area
D	**Open Space, Good Cond.**	**80**				
D	**Brush, Good Cond.**	**73**				
D	**Woods, Good Cond.**	**77**			**0.21**	**16.32**
D	**Streets, Gravel**	**91**				
				Totals =	**0.21**	**16.32**

CN (weighted) = $\frac{\text{total product}}{\text{total area}} = \frac{16.32}{0.21} =$ 77.00 Use CN = **77**

Project Teterboro Airport - South Hanger **By:** AM **Date:** 7/31/2025

Location Teterboro, NJ **Checked By:** LM **Date Checked:** 7/31/2025

Circle one: (**Present**) Developed **Existing Impervious Watershed C**

Include a map, schematic, or description of coverage areas.

Runoff Curve Number (CN)

Soil Name and hydrologic group (Appendix A)	Cover description (cover type, treatment, and hydrologic condition; percent impervious; unconnected/connected impervious area ratio)	CN*2			Area	Product of CN x Area
		Table 2-2	Fig. 2-3	Fig. 2-4	[x] acres [ ] mi^2 [ ] %	
D	**Impervious**	**98**			**0.02**	**1.67**
				Totals =	**0.02**	**1.67**

CN (weighted) = $\frac{\text{total product}}{\text{total area}} = \frac{1.67}{0.02} =$ 98.00 Use CN = **98**

Project Teterboro Airport - South Hanger **By:** AM **Date:** 7/31/2025

Location Teterboro, NJ **Checked By:** LM **Date Checked:** 7/31/2025

Circle one: (**Present**) Developed **Existing Impervious Watershed D**

Include a map, schematic, or description of coverage areas.

Runoff Curve Number (CN)

Soil Name and hydrologic group (Appendix A)	Cover description (cover type, treatment, and hydrologic condition; percent impervious; unconnected/connected impervious area ratio)	CN*2			Area	Product of CN x Area
		Table 2-2	Fig. 2-3	Fig. 2-4	[x] acres [ ] mi^2 [ ] %	
D	**Impervious**	**98**			**0.15**	**14.50**
				Totals =	**0.15**	**14.50**

CN (weighted) = $\frac{\text{total product}}{\text{total area}} = \frac{14.50}{0.15} =$ 98.00 Use CN = **98**

Current Rainfall

Project:	Teterboro Airport - South Hanger	**By:**	AM	**Date:**	7/31/2025
Location:	Teterboro, NJ	**Checked By:**	LM	**Date Checked:**	7/31/2025

Circle One: (Present) Developed — **Watershed A - Impervious**

Circle One: (T_c) T_t **through subarea**

Include a map, schematic, or description of flow segments.

Sheet Flow (Applicable to T_c Only)

		Segment ID	1		2		
1.	Surface Description (NEH table 15-1)		Smooth Surfaces		Dense Grasses		
2.	Manning's Roughness Coeff., n (NEH table 15-1)		0.011		0.24		
3.	Flow Length, L (total L < 100 ft)	ft	39		61		
4.	Two-year 24-hr rainfall, P_2	in	3.35		3.35		
5.	Land Slope, s	ft/ft	0.012		0.007		
6.	Compute T_t $T_t = \frac{0.007\,(nL)^{0.8}}{P_2^{0.5} s^{0.4}}$	hr	0.011	+	0.235	+	
					Sheet Flow Sub-Total		0.247 hours

Shallow Concentrated Flow

		Segment ID	3				
7.	Surface Description		Grassed Waterways				
8.	Flow Length, L	ft	854				
9.	Watercourse Slope, s	ft/ft	0.001				
10.	Average Velocity, V (NEH table 15-3)	ft/s	0.43				
11.	Compute T_t $T_t = \frac{L}{3600\,V}$	hr	0.550	+		+	
					Shallow Conc. Flow Sub-Total		0.550 hours

Channel Flow

		Segment ID					
12.	Flow Length, L	ft					
13.	Average Velocity, V	ft/s					
14.	Compute T_t $T_t = \frac{L}{3600\,V}$	hr		+		+	
					Channel Flow Sub-Total		0.000 hours

Watershed or subarea T_c or T_t (Add Sub-Total T_t from prior steps)		
	Total Tc (hours) =	0.797 hours
	Total Tc (minutes) =	48 minutes

Current Rainfall

Project:	Teterboro Airport - South Hanger	**By:**	AM	**Date:**	7/31/2025
Location:	Teterboro, NJ	**Checked By:**	LM	**Date Checked:**	7/31/2025

Circle One: (Present) Developed — **Watershed A - Pervious**

Circle One: (T_c) T_t **through subarea**

Include a map, schematic, or description of flow segments.

Sheet Flow (Applicable to T_c Only)

		Segment ID	1	2	
1.	Surface Description (NEH table 15-1)		Woods Light Underbrush	Dense Grasses	
2.	Manning's Roughness Coeff., n (NEH table 15-1)		0.40	0.24	
3.	Flow Length, L (total L < 100 ft)	ft	73	27	
4.	Two-year 24-hr rainfall, P_2	in	3.35	3.35	
5.	Land Slope, s	ft/ft	0.004	0.000	
6.	Compute T_t $T_t = \frac{0.007\,(nL)^{0.8}}{P_2^{0.5} s^{0.4}}$	hr	0.542	+ 0.402	+
				Sheet Flow Sub-Total	0.944 hours

Shallow Concentrated Flow

		Segment ID	3		
7.	Surface Description		Grassed Waterways		
8.	Flow Length, L	ft	924		
9.	Watercourse Slope, s	ft/ft	0.001		
10.	Average Velocity, V (NEH table 15-3)	ft/s	0.45		
11.	Compute T_t $T_t = \frac{L}{3600\,V}$	hr	0.574	+	+
				Shallow Conc. Flow Sub-Total	0.574 hours

Channel Flow

		Segment ID			
12.	Flow Length, L	ft			
13.	Average Velocity, V	ft/s			
14.	Compute T_t $T_t = \frac{L}{3600\,V}$	hr		+	+
				Channel Flow Sub-Total	0.000 hours

Watershed or subarea T_c or T_t
(Add Sub-Total T_t from prior steps)

Total Tc (hours) =	1.518 hours
Total Tc (minutes) =	91 minutes

Current Rainfall

Project:	Teterboro Airport - South Hanger	**By:**	AM	**Date:**	7/31/2025
Location:	Teterboro, NJ	**Checked By:**	LM	**Date Checked:**	7/31/2025

Circle One: (Present) Developed — **Watershed B (Undisturbed) - Impervious**

Circle One: (T_c) T_t **through subarea**

Include a map, schematic, or description of flow segments.

Sheet Flow (Applicable to T_c Only)

		Segment ID	1	2	
1.	Surface Description (NEH table 15-1)		Smooth Surfaces	Dense Grasses	
2.	Manning's Roughness Coeff., n (NEH table 15-1)		0.011	0.24	
3.	Flow Length, L (total L < 100 ft)	ft	35	65	
4.	Two-year 24-hr rainfall, P_2	in	3.35	3.35	
5.	Land Slope, s	ft/ft	0.014	0.013	
6.	Compute T_t $T_t = \frac{0.007\,(nL)^{0.8}}{P_2^{0.5} s^{0.4}}$	hr	0.010 +	0.197 +	
				Sheet Flow Sub-Total	0.207 hours

Shallow Concentrated Flow

		Segment ID	3	4	
7.	Surface Description		Pavement	Grassed Waterways	
8.	Flow Length, L	ft	29	1,450	
9.	Watercourse Slope, s	ft/ft	0.014	0.001	
10.	Average Velocity, V (NEH table 15-3)	ft/s	2.39	0.46	
11.	Compute T_t $T_t = \frac{L}{3600\,V}$	hr	0.003 +	0.883 +	
				Shallow Conc. Flow Sub-Total	0.886 hours

Channel Flow

		Segment ID			
12.	Flow Length, L	ft			
13.	Average Velocity, V	ft/s			
14.	Compute T_t $T_t = \frac{L}{3600\,V}$	hr	+	+	
				Channel Flow Sub-Total	0.000 hours

Watershed or subarea T_c or T_t
(Add Sub-Total T_t from prior steps)

Total Tc (hours) =	1.093 hours
Total Tc (minutes) =	66 minutes

Current Rainfall

Project:	Teterboro Airport - South Hanger	**By:**	AM	**Date:**	7/31/2025
Location:	Teterboro, NJ	**Checked By:**	LM	**Date Checked:**	7/31/2025

Circle One: (Present) Developed — **Watershed B (Undisturbed) - Pervious**

Circle One: (T_c) T_t **through subarea**

Include a map, schematic, or description of flow segments.

Sheet Flow (Applicable to T_c Only)

			Segment ID	1		
1.	Surface Description (NEH table 15-1)			Woods Light Underbrush		
2.	Manning's Roughness Coeff., n (NEH table 15-1)			0.40		
3.	Flow Length, L (total L < 100 ft)		ft	100		
4.	Two-year 24-hr rainfall, P_2		in	3.35		
5.	Land Slope, s		ft/ft	0.004		
6.	Compute T_t	$T_t = \frac{0.007\,(nL)^{0.8}}{P_2^{0.5} s^{0.4}}$	hr	0.666	+	+

Sheet Flow Sub-Total: **0.666 hours**

Shallow Concentrated Flow

			Segment ID	2	3	
7.	Surface Description			Woodlands	Grassed Waterways	
8.	Flow Length, L		ft	232	1,407	
9.	Watercourse Slope, s		ft/ft	0.005	0.000	
10.	Average Velocity, V (NEH table 15-3)		ft/s	0.35	0.28	
11.	Compute T_t	$T_t = \frac{L}{3600\,V}$	hr	0.182	+ 1.386	+

Shallow Conc. Flow Sub-Total: **1.567 hours**

Channel Flow

			Segment ID			
12.	Flow Length, L		ft			
13.	Average Velocity, V		ft/s			
14.	Compute T_t	$T_t = \frac{L}{3600\,V}$	hr		+	+

Channel Flow Sub-Total: **0.000 hours**

Watershed or subarea T_c or T_t
(Add Sub-Total T_t from prior steps)

Total Tc (hours) =	**2.233 hours**
Total Tc (minutes) =	**134 minutes**

Current Rainfall

Project:	Teterboro Airport - South Hanger	**By:**	AM	**Date:**	7/31/2025
Location:	Teterboro, NJ	**Checked By:**	LM	**Date Checked:**	7/31/2025

Circle One: (Present) Developed — **Watershed C - Impervious**

Circle One: (T_c) T_t **through subarea**

Include a map, schematic, or description of flow segments.

Sheet Flow (Applicable to T_c Only)

		Segment ID	1		2		
1.	Surface Description (NEH table 15-1)		Smooth Surfaces		Woods Light Underbrush		
2.	Manning's Roughness Coeff., n (NEH table 15-1)		0.011		0.40		
3.	Flow Length, L (total L < 100 ft)	ft	4		66		
4.	Two-year 24-hr rainfall, P_2	in	3.35		3.35		
5.	Land Slope, s	ft/ft	0.005		0.063		
6.	Compute T_t $T_t = \frac{0.007\,(nL)^{0.8}}{P_2^{0.5} s^{0.4}}$	hr	0.003	+	0.159	+	
					Sheet Flow Sub-Total		0.161 hours

Shallow Concentrated Flow

		Segment ID					
7.	Surface Description						
8.	Flow Length, L	ft					
9.	Watercourse Slope, s	ft/ft					
10.	Average Velocity, V (NEH table 15-3)	ft/s					
11.	Compute T_t $T_t = \frac{L}{3600\,V}$	hr		+		+	
					Shallow Conc. Flow Sub-Total		0.000 hours

Channel Flow

		Segment ID					
12.	Flow Length, L	ft					
13.	Average Velocity, V	ft/s					
14.	Compute T_t $T_t = \frac{L}{3600\,V}$	hr		+		+	
					Channel Flow Sub-Total		0.000 hours

Watershed or subarea T_c or T_t
(Add Sub-Total T_t from prior steps)

Total Tc (hours) =	0.161 hours
Total Tc (minutes) =	10 minutes

Current Rainfall

Project:	Teterboro Airport - South Hanger	**By:**	AM	**Date:**	7/31/2025
Location:	Teterboro, NJ	**Checked By:**	LM	**Date Checked:**	7/31/2025

Circle One: (Present) Developed — **Watershed C - Pervious**

Circle One: (T_c) T_t **through subarea**

Include a map, schematic, or description of flow segments.

Sheet Flow (Applicable to T_c Only)

		Segment ID	1					
1.	Surface Description (NEH table 15-1)		Woods Light Underbrush					
2.	Manning's Roughness Coeff., n (NEH table 15-1)		0.40					
3.	Flow Length, L (total L < 100 ft)	ft	100					
4.	Two-year 24-hr rainfall, P_2	in	3.35					
5.	Land Slope, s	ft/ft	0.042					
6.	Compute T_t $T_t = \frac{0.007\,(nL)^{0.8}}{P_2^{0.5} s^{0.4}}$	hr	0.259	+		+		

Sheet Flow Sub-Total: **0.259 hours**

Shallow Concentrated Flow

		Segment ID	2					
7.	Surface Description		Woodlands					
8.	Flow Length, L	ft	95					
9.	Watercourse Slope, s	ft/ft	0.012					
10.	Average Velocity, V (NEH table 15-3)	ft/s	0.54					
11.	Compute T_t $T_t = \frac{L}{3600\,V}$	hr	0.049	+		+		

Shallow Conc. Flow Sub-Total: **0.049 hours**

Channel Flow

		Segment ID						
12.	Flow Length, L	ft						
13.	Average Velocity, V	ft/s						
14.	Compute T_t $T_t = \frac{L}{3600\,V}$	hr		+		+		

Channel Flow Sub-Total: **0.000 hours**

Watershed or subarea T_c or T_t
(Add Sub-Total T_t from prior steps)

Total Tc (hours) =	**0.308 hours**
Total Tc (minutes) =	**18 minutes**

Current Rainfall

Project:	Teterboro Airport - South Hanger	**By:**	AM	**Date:**	7/31/2025
Location:	Teterboro, NJ	**Checked By:**	LM	**Date Checked:**	7/31/2025

Circle One: (Present) Developed — **Watershed D - Impervious**

Circle One: (T_c) T_t **through subarea**

Include a map, schematic, or description of flow segments.

Sheet Flow (Applicable to T_c Only)

		Segment ID	1					
1.	Surface Description (NEH table 15-1)		Smooth Surfaces					
2.	Manning's Roughness Coeff., n (NEH table 15-1)		0.011					
3.	Flow Length, L (total L < 100 ft)	ft	100					
4.	Two-year 24-hr rainfall, P_2	in	3.35					
5.	Land Slope, s	ft/ft	0.007					
6.	Compute T_t $T_t = \frac{0.007\,(nL)^{0.8}}{P_2^{0.5} s^{0.4}}$	hr	0.031	+		+		
					Sheet Flow Sub-Total		0.031 hours	

Shallow Concentrated Flow

		Segment ID	2					
7.	Surface Description		Pavement					
8.	Flow Length, L	ft	56					
9.	Watercourse Slope, s	ft/ft	0.002					
10.	Average Velocity, V (NEH table 15-3)	ft/s	0.98					
11.	Compute T_t $T_t = \frac{L}{3600\,V}$	hr	0.016	+		+		
					Shallow Conc. Flow Sub-Total		0.016 hours	

Channel Flow

		Segment ID						
12.	Flow Length, L	ft						
13.	Average Velocity, V	ft/s						
14.	Compute T_t $T_t = \frac{L}{3600\,V}$	hr		+		+		
					Channel Flow Sub-Total		0.000 hours	

Watershed or subarea T_c or T_t (Add Sub-Total T_t from prior steps)		
	Total Tc (hours) =	0.046 hours
	Total Tc (minutes) =	3 minutes

Projected Rainfall

Project:	Teterboro Airport - South Hanger	**By:**	AM	**Date:**	7/31/2025
Location:	Teterboro, NJ	**Checked By:**	LM	**Date Checked:**	7/31/2025

Circle One: (Present) Developed — **Watershed A - Impervious**

Circle One: (T_c) T_t **through subarea**

Include a map, schematic, or description of flow segments.

Sheet Flow (Applicable to T_c Only)

		Segment ID	1		2		
1.	Surface Description (NEH table 15-1)		Smooth Surfaces		Dense Grasses		
2.	Manning's Roughness Coeff., n (NEH table 15-1)		0.011		0.24		
3.	Flow Length, L (total L < 100 ft)	ft	39		61		
4.	Two-year 24-hr rainfall, P_2	in	3.98		3.98		
5.	Land Slope, s	ft/ft	0.012		0.007		
6.	Compute T_t $T_t = \frac{0.007\,(nL)^{0.8}}{P_2^{0.5} s^{0.4}}$	hr	0.010	+	0.216	+	
					Sheet Flow Sub-Total		0.226 hours

Shallow Concentrated Flow

		Segment ID	3				
7.	Surface Description		Grassed Waterways				
8.	Flow Length, L	ft	854				
9.	Watercourse Slope, s	ft/ft	0.001				
10.	Average Velocity, V (NEH table 15-3)	ft/s	0.43				
11.	Compute T_t $T_t = \frac{L}{3600\,V}$	hr	0.550	+		+	
					Shallow Conc. Flow Sub-Total		0.550 hours

Channel Flow

		Segment ID					
12.	Flow Length, L	ft					
13.	Average Velocity, V	ft/s					
14.	Compute T_t $T_t = \frac{L}{3600\,V}$	hr		+		+	
					Channel Flow Sub-Total		0.000 hours

Watershed or subarea T_c or T_t (Add Sub-Total T_t from prior steps)		
	Total Tc (hours) =	0.776 hours
	Total Tc (minutes) =	47 minutes

Projected Rainfall

Project:	Teterboro Airport - South Hanger	**By:**	AM	**Date:**	7/31/2025
Location:	Teterboro, NJ	**Checked By:**	LM	**Date Checked:**	7/31/2025

Circle One: (Present) Developed — **Watershed A - Pervious**

Circle One: (T_c) T_t **through subarea**

Include a map, schematic, or description of flow segments.

Sheet Flow (Applicable to T_c Only)

		Segment ID	1	2	
1.	Surface Description (NEH table 15-1)		Woods Light Underbrush	Dense Grasses	
2.	Manning's Roughness Coeff., n (NEH table 15-1)		0.40	0.24	
3.	Flow Length, L (total L < 100 ft)	ft	73	27	
4.	Two-year 24-hr rainfall, P_2	in	3.98	3.98	
5.	Land Slope, s	ft/ft	0.004	0.000	
6.	Compute T_t $T_t = \frac{0.007\,(nL)^{0.8}}{P_2^{0.5} s^{0.4}}$	hr	0.498	+ 0.369	+
				Sheet Flow Sub-Total	0.866 hours

Shallow Concentrated Flow

		Segment ID	3		
7.	Surface Description		Grassed Waterways		
8.	Flow Length, L	ft	924		
9.	Watercourse Slope, s	ft/ft	0.001		
10.	Average Velocity, V (NEH table 15-3)	ft/s	0.45		
11.	Compute T_t $T_t = \frac{L}{3600\,V}$	hr	0.574	+	+
				Shallow Conc. Flow Sub-Total	0.574 hours

Channel Flow

		Segment ID			
12.	Flow Length, L	ft			
13.	Average Velocity, V	ft/s			
14.	Compute T_t $T_t = \frac{L}{3600\,V}$	hr		+	+
				Channel Flow Sub-Total	0.000 hours

Watershed or subarea T_c or T_t
(Add Sub-Total T_t from prior steps)

Total Tc (hours) =	1.440 hours
Total Tc (minutes) =	86 minutes

Projected Rainfall

Project:	Teterboro Airport - South Hanger	**By:**	AM	**Date:**	7/31/2025
Location:	Teterboro, NJ	**Checked By:**	LM	**Date Checked:**	7/31/2025

Circle One: (Present) Developed — **Watershed B (Undisturbed) - Impervious**

Circle One: (T_c) T_t **through subarea**

Include a map, schematic, or description of flow segments.

Sheet Flow (Applicable to T_c Only)

		Segment ID	1		2		
1.	Surface Description (NEH table 15-1)		Smooth Surfaces		Dense Grasses		
2.	Manning's Roughness Coeff., n (NEH table 15-1)		0.011		0.24		
3.	Flow Length, L (total L < 100 ft)	ft	35		65		
4.	Two-year 24-hr rainfall, P_2	in	3.98		3.98		
5.	Land Slope, s	ft/ft	0.014		0.013		
6.	Compute T_t $T_t = \frac{0.007\,(nL)^{0.8}}{P_2^{0.5} s^{0.4}}$	hr	0.009	+	0.181	+	
					Sheet Flow Sub-Total		0.190 hours

Shallow Concentrated Flow

		Segment ID	3		4		
7.	Surface Description		Pavement		Grassed Waterways		
8.	Flow Length, L	ft	29		1,450		
9.	Watercourse Slope, s	ft/ft	0.014		0.001		
10.	Average Velocity, V (NEH table 15-3)	ft/s	2.39		0.46		
11.	Compute T_t $T_t = \frac{L}{3600\,V}$	hr	0.003	+	0.883	+	
					Shallow Conc. Flow Sub-Total		0.886 hours

Channel Flow

		Segment ID					
12.	Flow Length, L	ft					
13.	Average Velocity, V	ft/s					
14.	Compute T_t $T_t = \frac{L}{3600\,V}$	hr		+		+	
					Channel Flow Sub-Total		0.000 hours

Watershed or subarea T_c or T_t (Add Sub-Total T_t from prior steps)		
	Total Tc (hours) =	1.076 hours
	Total Tc (minutes) =	65 minutes

Projected Rainfall

Project:	Teterboro Airport - South Hanger	**By:**	AM	**Date:**	7/31/2025
Location:	Teterboro, NJ	**Checked By:**	LM	**Date Checked:**	7/31/2025

Circle One: (Present) Developed — **Watershed B (Undisturbed) - Pervious**

Circle One: (T_c) T_t **through subarea**

Include a map, schematic, or description of flow segments.

Sheet Flow (Applicable to T_c Only)

			Segment ID	1		
1.	Surface Description (NEH table 15-1)			Woods Light Underbrush		
2.	Manning's Roughness Coeff., n (NEH table 15-1)			0.40		
3.	Flow Length, L (total L < 100 ft)		ft	100		
4.	Two-year 24-hr rainfall, P_2		in	3.98		
5.	Land Slope, s		ft/ft	0.004		
6.	Compute T_t	$T_t = \frac{0.007\,(nL)^{0.8}}{P_2^{0.5} s^{0.4}}$	hr	0.611	+	+

Sheet Flow Sub-Total: **0.611 hours**

Shallow Concentrated Flow

			Segment ID	2	3	
7.	Surface Description			Woodlands	Grassed Waterways	
8.	Flow Length, L		ft	232	1,407	
9.	Watercourse Slope, s		ft/ft	0.005	0.000	
10.	Average Velocity, V (NEH table 15-3)		ft/s	0.35	0.28	
11.	Compute T_t	$T_t = \frac{L}{3600\,V}$	hr	0.182	+ 1.386	+

Shallow Conc. Flow Sub-Total: **1.567 hours**

Channel Flow

			Segment ID			
12.	Flow Length, L		ft			
13.	Average Velocity, V		ft/s			
14.	Compute T_t	$T_t = \frac{L}{3600\,V}$	hr		+	+

Channel Flow Sub-Total: **0.000 hours**

Watershed or subarea T_c or T_t
(Add Sub-Total T_t from prior steps)

Total Tc (hours) =	**2.178 hours**
Total Tc (minutes) =	**131 minutes**

Projected Rainfall

Project:	Teterboro Airport - South Hanger	**By:**	AM	**Date:**	7/31/2025
Location:	Teterboro, NJ	**Checked By:**	LM	**Date Checked:**	7/31/2025

Circle One: (Present) Developed — **Watershed C - Impervious**

Circle One: (T_c) T_t **through subarea**

Include a map, schematic, or description of flow segments.

Sheet Flow (Applicable to T_c Only)

		Segment ID	1		2		
1.	Surface Description (NEH table 15-1)		Smooth Surfaces		Woods Light Underbrush		
2.	Manning's Roughness Coeff., n (NEH table 15-1)		0.011		0.40		
3.	Flow Length, L (total L < 100 ft)	ft	4		66		
4.	Two-year 24-hr rainfall, P_2	in	3.98		3.98		
5.	Land Slope, s	ft/ft	0.005		0.063		
6.	Compute T_t $T_t = \frac{0.007\,(nL)^{0.8}}{P_2^{0.5} s^{0.4}}$	hr	0.002	+	0.146	+	
					Sheet Flow Sub-Total		0.148 hours

Shallow Concentrated Flow

		Segment ID					
7.	Surface Description						
8.	Flow Length, L	ft					
9.	Watercourse Slope, s	ft/ft					
10.	Average Velocity, V (NEH table 15-3)	ft/s					
11.	Compute T_t $T_t = \frac{L}{3600\,V}$	hr		+		+	
					Shallow Conc. Flow Sub-Total		0.000 hours

Channel Flow

		Segment ID					
12.	Flow Length, L	ft					
13.	Average Velocity, V	ft/s					
14.	Compute T_t $T_t = \frac{L}{3600\,V}$	hr		+		+	
					Channel Flow Sub-Total		0.000 hours

Watershed or subarea T_c or T_t
(Add Sub-Total T_t from prior steps)

Total Tc (hours) =	0.148 hours
Total Tc (minutes) =	9 minutes

Projected Rainfall

Project:	Teterboro Airport - South Hanger	**By:**	AM	**Date:**	7/31/2025
Location:	Teterboro, NJ	**Checked By:**	LM	**Date Checked:**	7/31/2025

Circle One: (Present) Developed — **Watershed C - Pervious**

Circle One: (T_c) T_t **through subarea**

Include a map, schematic, or description of flow segments.

Sheet Flow (Applicable to T_c Only)

	Segment ID		1					
1.	Surface Description (NEH table 15-1)		Woods Light Underbrush					
2.	Manning's Roughness Coeff., n (NEH table 15-1)		0.40					
3.	Flow Length, L (total L < 100 ft)	ft	100					
4.	Two-year 24-hr rainfall, P_2	in	3.98					
5.	Land Slope, s	ft/ft	0.042					
6.	Compute T_t $T_t = \frac{0.007\,(nL)^{0.8}}{P_2^{0.5} s^{0.4}}$	hr	0.238	+		+		
					Sheet Flow Sub-Total		0.238 hours	

Shallow Concentrated Flow

	Segment ID		2					
7.	Surface Description		Woodlands					
8.	Flow Length, L	ft	95					
9.	Watercourse Slope, s	ft/ft	0.012					
10.	Average Velocity, V (NEH table 15-3)	ft/s	0.54					
11.	Compute T_t $T_t = \frac{L}{3600\,V}$	hr	0.049	+		+		
					Shallow Conc. Flow Sub-Total		0.049 hours	

Channel Flow

	Segment ID							
12.	Flow Length, L	ft						
13.	Average Velocity, V	ft/s						
14.	Compute T_t $T_t = \frac{L}{3600\,V}$	hr		+		+		
					Channel Flow Sub-Total		0.000 hours	

Watershed or subarea T_c or T_t (Add Sub-Total T_t from prior steps)		
	Total Tc (hours) =	0.287 hours
	Total Tc (minutes) =	17 minutes

Projected Rainfall

Project:	Teterboro Airport - South Hanger	**By:**	AM	**Date:**	7/31/2025
Location:	Teterboro, NJ	**Checked By:**	LM	**Date Checked:**	7/31/2025

Circle One: (Present) Developed — **Watershed D - Impervious**

Circle One: (T_c) T_t **through subarea**

Include a map, schematic, or description of flow segments.

Sheet Flow (Applicable to T_c Only)

		Segment ID	1					
1.	Surface Description (NEH table 15-1)		Smooth Surfaces					
2.	Manning's Roughness Coeff., n (NEH table 15-1)		0.011					
3.	Flow Length, L (total L < 100 ft)	ft	100					
4.	Two-year 24-hr rainfall, P_2	in	3.98					
5.	Land Slope, s	ft/ft	0.007					
6.	Compute T_t $T_t = \frac{0.007\,(nL)^{0.8}}{P_2^{0.5} s^{0.4}}$	hr	0.028	+		+		

Sheet Flow Sub-Total: **0.028 hours**

Shallow Concentrated Flow

		Segment ID	2					
7.	Surface Description		Pavement					
8.	Flow Length, L	ft	56					
9.	Watercourse Slope, s	ft/ft	0.002					
10.	Average Velocity, V (NEH table 15-3)	ft/s	0.98					
11.	Compute T_t $T_t = \frac{L}{3600\,V}$	hr	0.016	+		+		

Shallow Conc. Flow Sub-Total: **0.016 hours**

Channel Flow

		Segment ID						
12.	Flow Length, L	ft						
13.	Average Velocity, V	ft/s						
14.	Compute T_t $T_t = \frac{L}{3600\,V}$	hr		+		+		

Channel Flow Sub-Total: **0.000 hours**

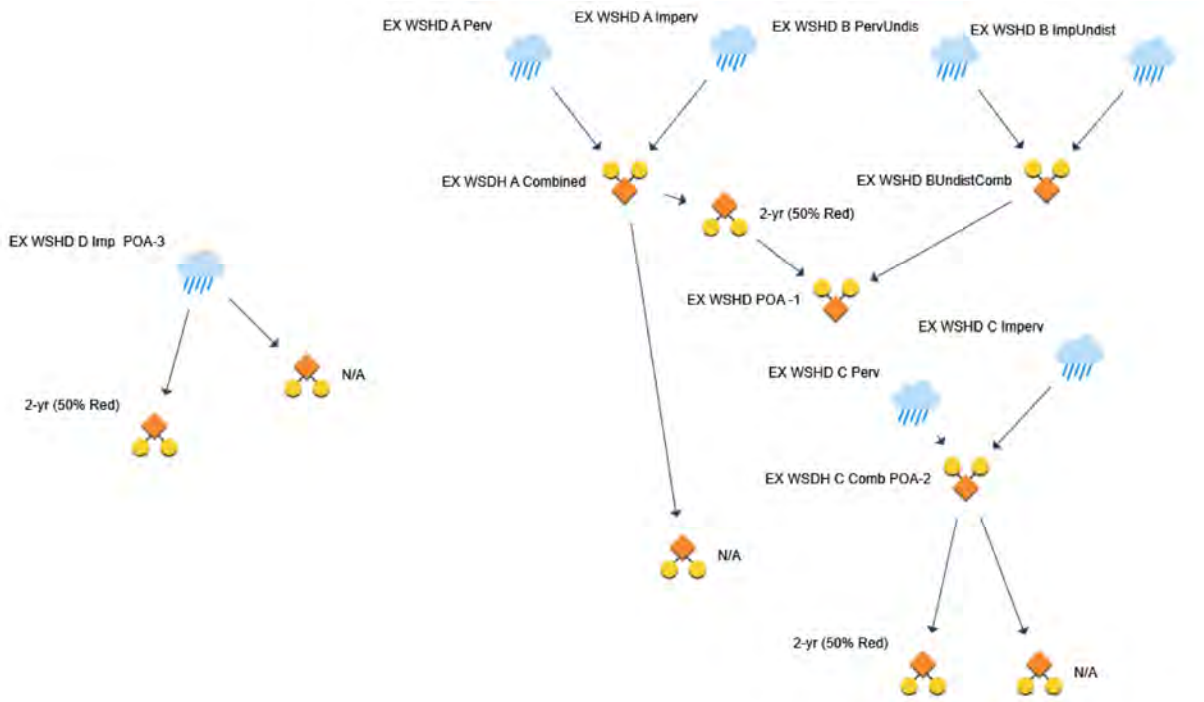
Watershed or subarea T_c or T_t
(Add Sub-Total T_t from prior steps)

Total Tc (hours) =	**0.044 hours**
Total Tc (minutes) =	**3 minutes**

Basin Model

Hydrology Studio v 3.0.0.38

File: Existing HydrologyCurrent Precipitation(2yr).hys
07-31-2025



Hydrograph by Return Period

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File: Existing HydrologyCurrent Precipitation(2yr).hys

07-31-2025

Hyd. No.	Hydrograph Type	Hydrograph Name	Peak Outflow (cfs)							
			1-yr	2-yr	3-yr	5-yr	10-yr	25-yr	50-yr	100-yr
1	NRCS Runoff	EX WSHD A Perv		3.652						
2	NRCS Runoff	EX WSHD A Imperv		0.099						
3	Junction	EX WSDH A Combined		3.705						
4	Diversion1	2-yr (50% Red)		1.853						
5	Diversion2	N/A		1.853						
7	NRCS Runoff	EX WSHD B PervUndis		3.058						
8	NRCS Runoff	EX WSHD B ImpUndist		1.690						
9	Junction	EX WSHD BUndistComb		3.995						
11	Junction	EX WSHD POA -1		5.788						
13	NRCS Runoff	EX WSHD C Perv		0.223						
14	NRCS Runoff	EX WSHD C Imperv		0.057						
15	Junction	EX WSDH C Comb POA-2		0.264						
16	Diversion1	2-yr (50% Red)		0.132						
17	Diversion2	N/A		0.132						
19	NRCS Runoff	EX WSHD D Imp POA-3		0.491						
20	Diversion1	2-yr (50% Red)		0.245						
21	Diversion2	N/A		0.245						

Hydrograph 2-yr Summary

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File: Existing HydrologyCurrent Precipitation(2yr).hys

07-31-2025

Hyd. No.	Hydrograph Type	Hydrograph Name	Peak Flow (cfs)	Time to Peak (hrs)	Hydrograph Volume (cuft)	Inflow Hyd(s)	Maximum Elevation (ft)	Maximum Storage (cuft)
1	NRCS Runoff	EX WSHD A Perv	3.652	13.08	39,966	----		
2	NRCS Runoff	EX WSHD A Imperv	0.099	12.53	789	----		
3	Junction	EX WSDH A Combined	3.705	13.07	40,754	1, 2		
4	Diversion1	2-yr (50% Red)	1.853	13.07	20,377	3		
5	Diversion2	N/A	1.853	13.07	20,377	3		
7	NRCS Runoff	EX WSHD B PervUndis	3.058	13.55	42,140	----		
8	NRCS Runoff	EX WSHD B ImpUndist	1.690	12.70	15,840	----		
9	Junction	EX WSHD BUndistComb	3.995	13.32	57,980	7, 8		
11	Junction	EX WSHD POA -1	5.788	13.23	78,357	4, 9		
13	NRCS Runoff	EX WSHD C Perv	0.223	12.23	995	----		
14	NRCS Runoff	EX WSHD C Imperv	0.057	12.13	226	----		
15	Junction	EX WSDH C Comb POA-2	0.264	12.22	1,221	13, 14		
16	Diversion1	2-yr (50% Red)	0.132	12.22	611	15		
17	Diversion2	N/A	0.132	12.22	611	15		
19	NRCS Runoff	EX WSHD D Imp POA-3	0.491	12.10	1,591	----		
20	Diversion1	2-yr (50% Red)	0.245	12.10	796	19		
21	Diversion2	N/A	0.245	12.10	796	19		

Hydrograph Report

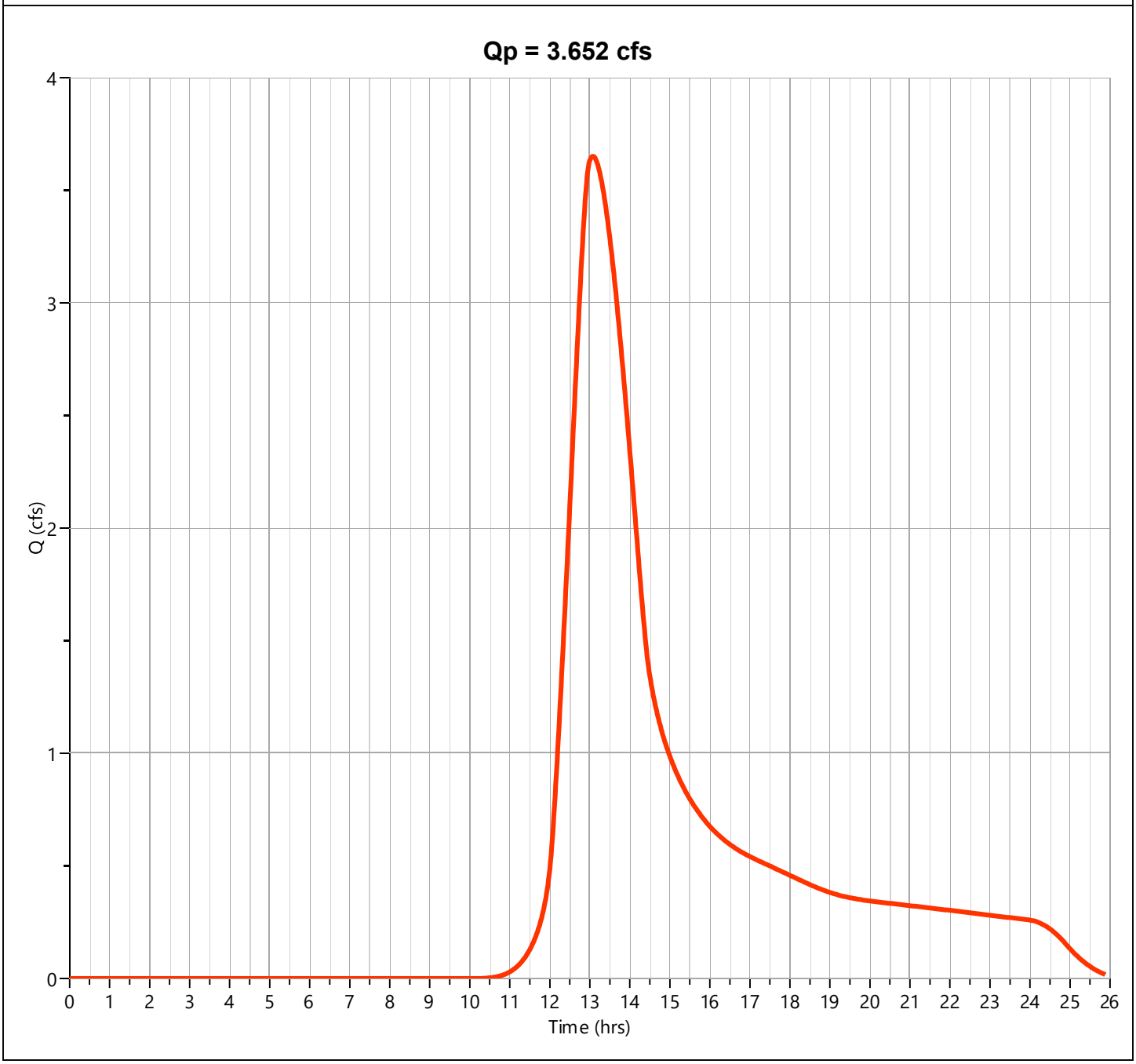
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File: Existing HydrologyCurrent Precipitation(2yr).hys
07-31-2025

EX WSHD A Perv

Hyd. No. 1

Hydrograph Type	= NRCS Runoff	Peak Flow	= 3.652 cfs
Storm Frequency	= 2-yr	Time to Peak	= 13.08 hrs
Time Interval	= 1 min	Runoff Volume	= 39,966 cuft
Drainage Area	= 9.2 ac	Curve Number	= 75.00
Tc Method	= User	Time of Conc. (Tc)	= 91.0 min
Total Rainfall	= 3.35 in	Design Storm	= NOAA-D
Storm Duration	= 24 hrs	Shape Factor	= 484



Hydrograph Report

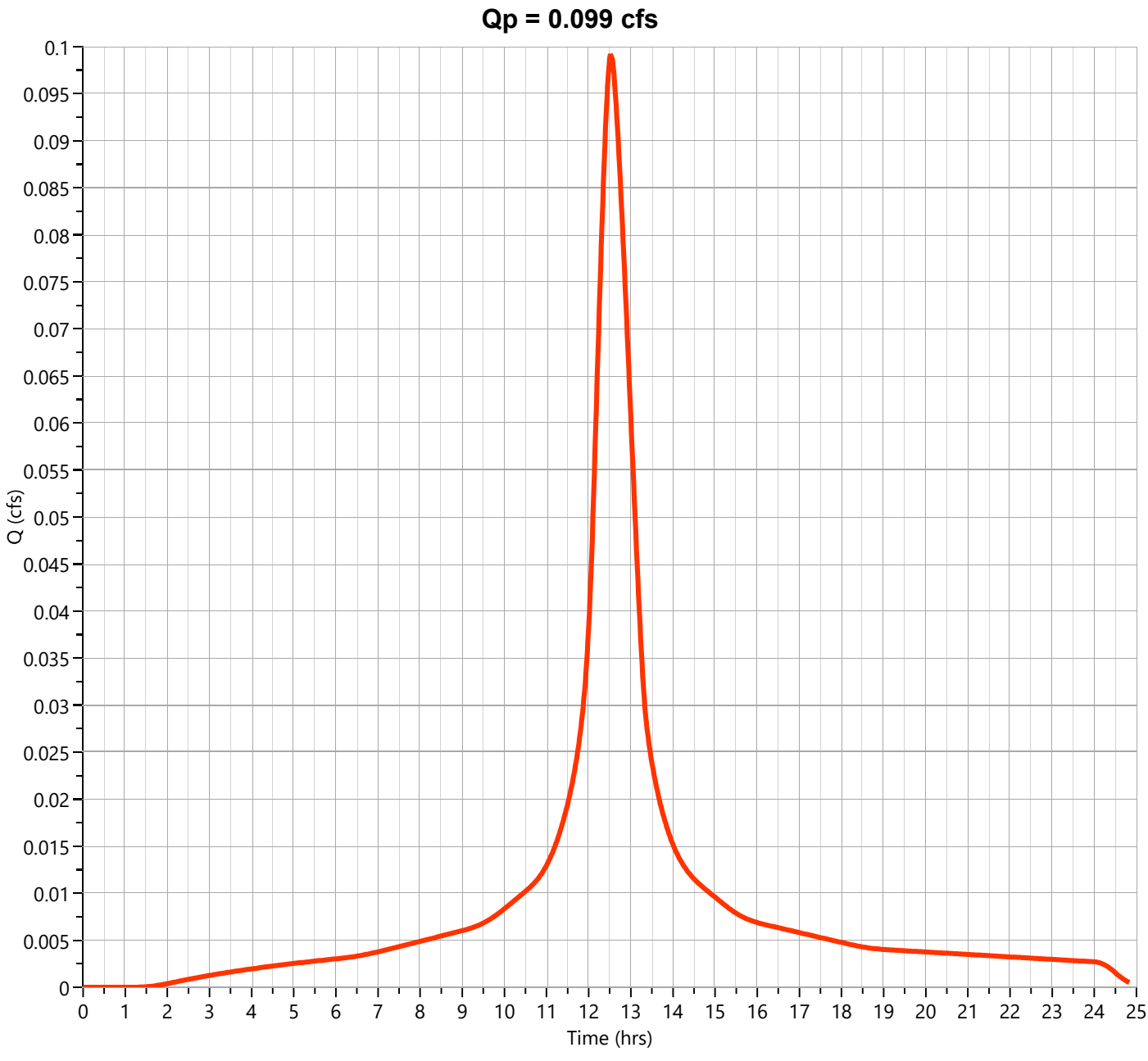
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File: Existing HydrologyCurrent Precipitation(2yr).hys
07-31-2025

EX WSHD A Imperv

Hyd. No. 2

Hydrograph Type	= NRCS Runoff	Peak Flow	= 0.099 cfs
Storm Frequency	= 2-yr	Time to Peak	= 12.53 hrs
Time Interval	= 1 min	Runoff Volume	= 789 cuft
Drainage Area	= 0.07 ac	Curve Number	= 98.00
Tc Method	= User	Time of Conc. (Tc)	= 48.0 min
Total Rainfall	= 3.35 in	Design Storm	= NOAA-D
Storm Duration	= 24 hrs	Shape Factor	= 484



Hydrograph Report

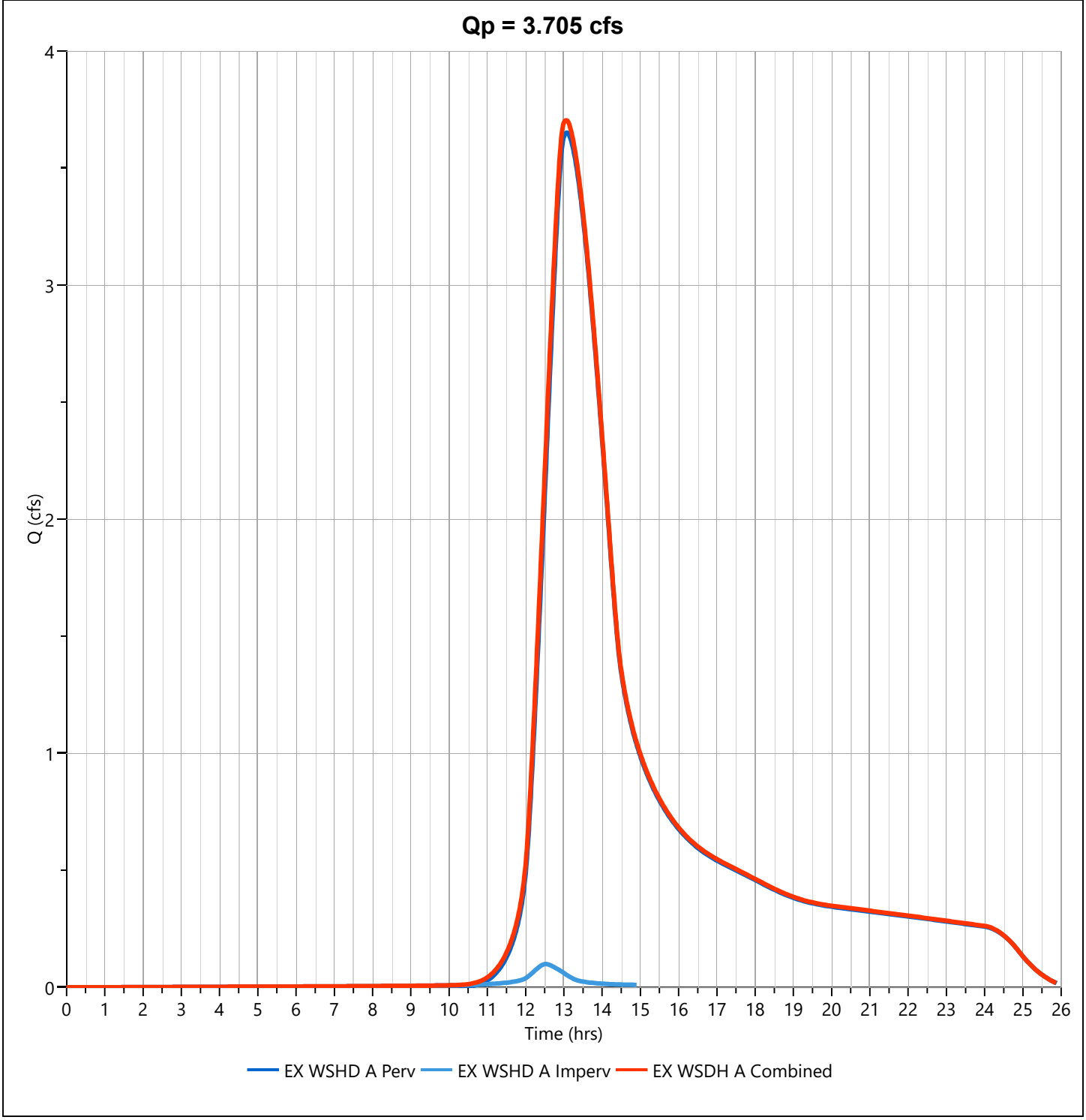
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File: Existing HydrologyCurrent Precipitation(2yr).hys
07-31-2025

EX WSDH A Combined

Hyd. No. 3

Hydrograph Type	= Junction	Peak Flow	= 3.705 cfs
Storm Frequency	= 2-yr	Time to Peak	= 13.07 hrs
Time Interval	= 1 min	Hydrograph Volume	= 40,754 cuft
Inflow Hydrographs	= 1, 2	Total Contrib. Area	= 9.27 ac



Hydrograph Report

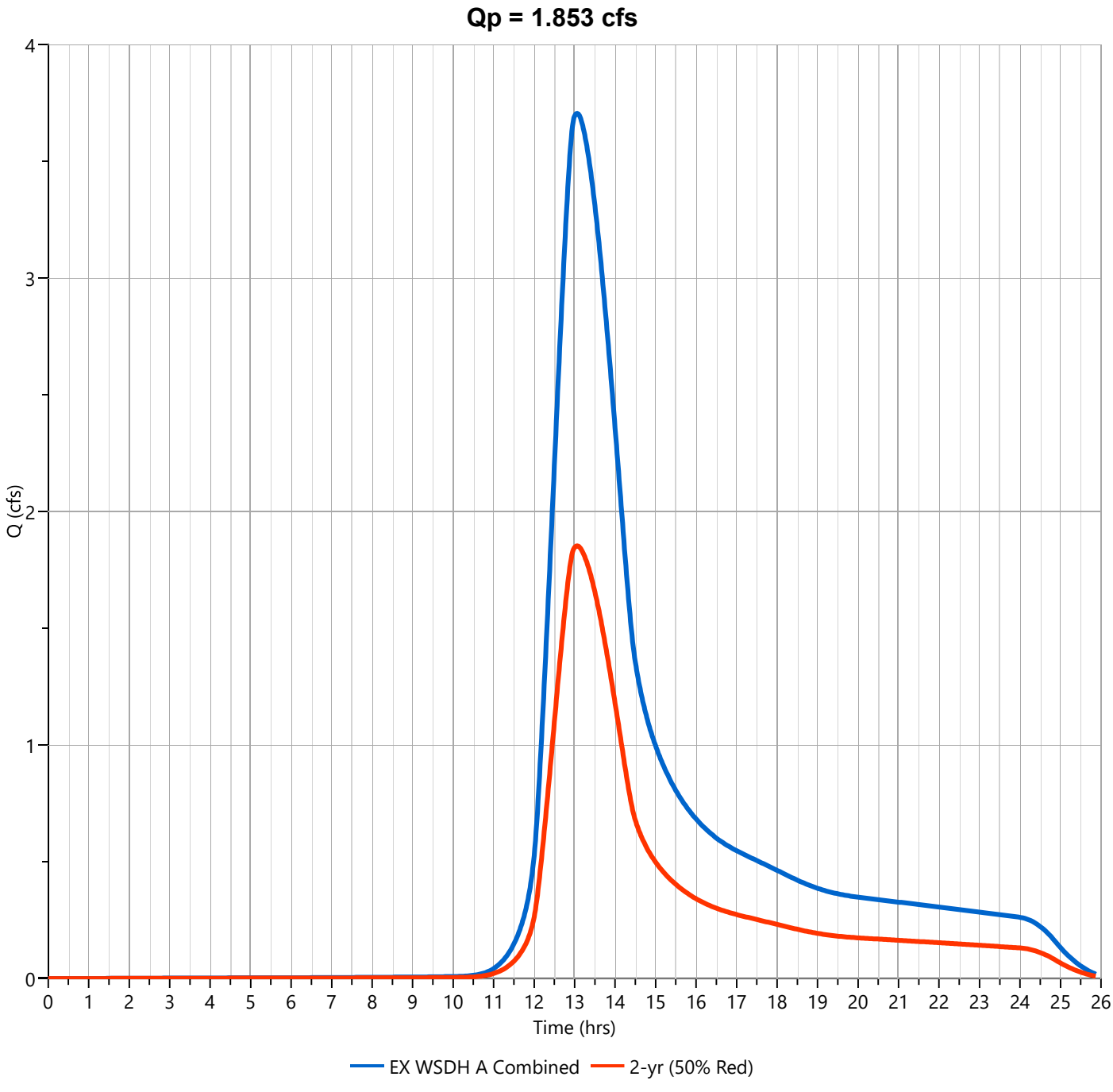
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File: Existing HydrologyCurrent Precipitation(2yr).hys
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2-yr (50% Red)

Hyd. No. 4

Hydrograph Type	= Diversion	Peak Flow	= 1.853 cfs
Storm Frequency	= 2-yr	Time to Peak	= 13.07 hrs
Time Interval	= 1 min	Hydrograph Volume	= 20,377 cuft
Inflow Hydrograph	= 3 - EX WSDH A Combined	Diversion Method	= Flow Ratio
Companion Hyd	= 5 - N/A	Flow Ratio	= 0.5



Hydrograph Report

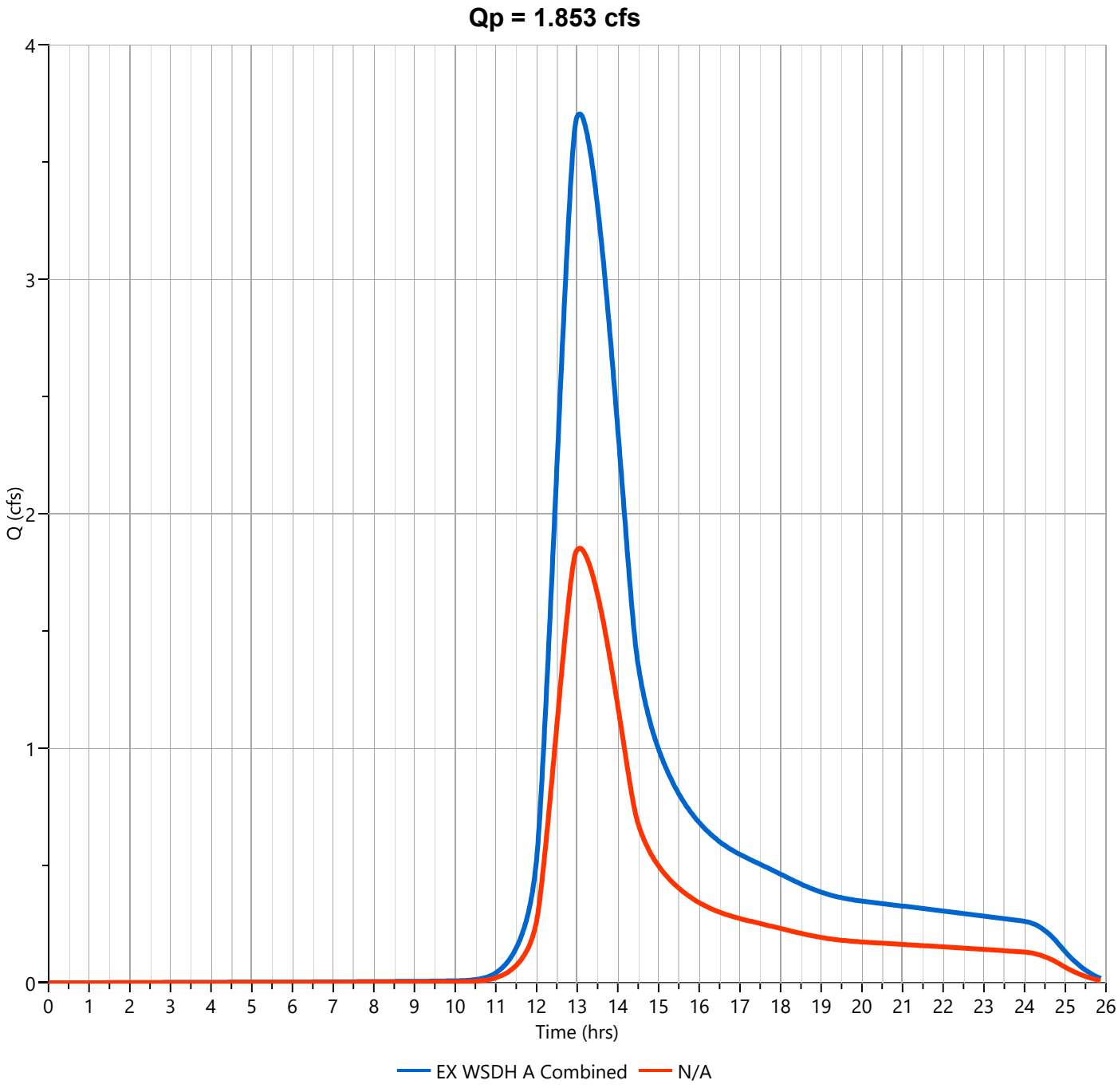
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File: Existing HydrologyCurrent Precipitation(2yr).hys
07-31-2025

N/A

Hyd. No. 5

Hydrograph Type	= Diversion	Peak Flow	= 1.853 cfs
Storm Frequency	= 2-yr	Time to Peak	= 13.07 hrs
Time Interval	= 1 min	Hydrograph Volume	= 20,377 cuft
Inflow Hydrograph	= 3 - EX WSDH A Combined	Diversion Method	= Flow Ratio
Companion Hyd	= 4 - 2-yr (50% Red)	Flow Ratio	= 0.5



Hydrograph Report

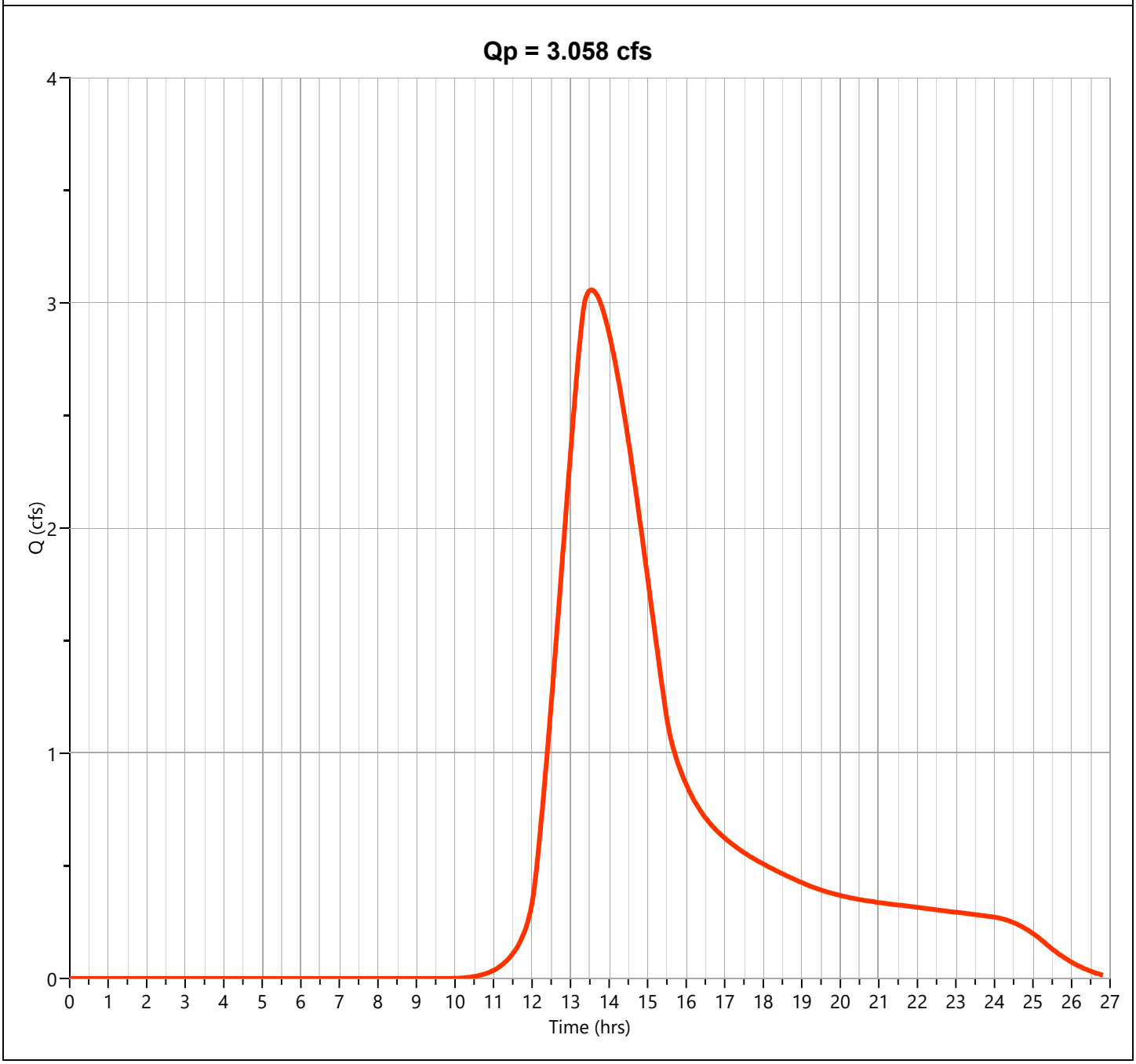
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File: Existing HydrologyCurrent Precipitation(2yr).hys
07-31-2025

EX WSHD B PervUndis

Hyd. No. 7

Hydrograph Type	= NRCS Runoff	Peak Flow	= 3.058 cfs
Storm Frequency	= 2-yr	Time to Peak	= 13.55 hrs
Time Interval	= 1 min	Runoff Volume	= 42,140 cuft
Drainage Area	= 8.78 ac	Curve Number	= 77.00
Tc Method	= User	Time of Conc. (Tc)	= 134.0 min
Total Rainfall	= 3.35 in	Design Storm	= NOAA-D
Storm Duration	= 24 hrs	Shape Factor	= 484



Hydrograph Report

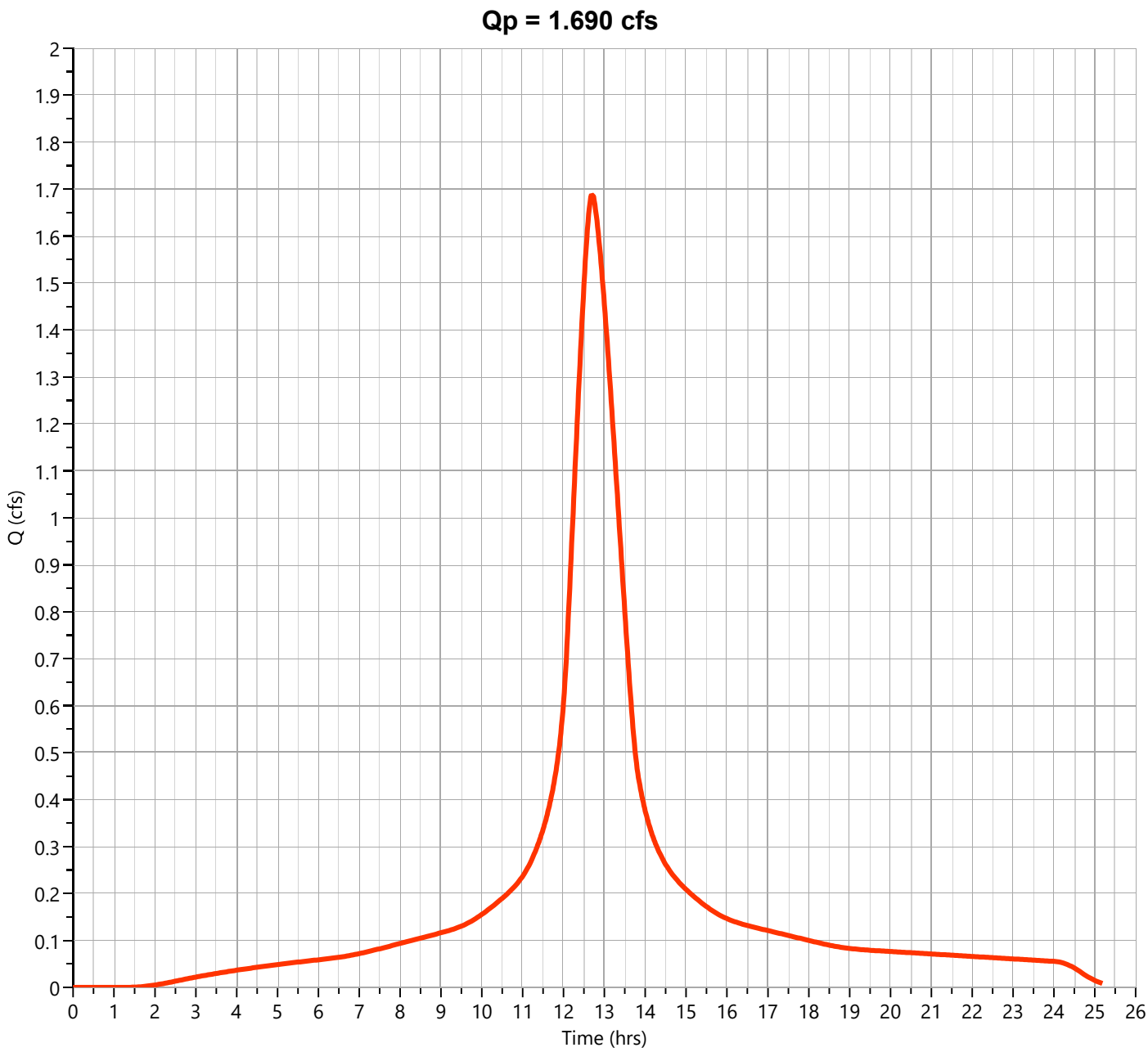
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File: Existing HydrologyCurrent Precipitation(2yr).hys
07-31-2025

EX WSHD B ImpUndist

Hyd. No. 8

Hydrograph Type	= NRCS Runoff	Peak Flow	= 1.690 cfs
Storm Frequency	= 2-yr	Time to Peak	= 12.70 hrs
Time Interval	= 1 min	Runoff Volume	= 15,840 cuft
Drainage Area	= 1.4 ac	Curve Number	= 98.00
Tc Method	= User	Time of Conc. (Tc)	= 66.0 min
Total Rainfall	= 3.35 in	Design Storm	= NOAA-D
Storm Duration	= 24 hrs	Shape Factor	= 484



Hydrograph Report

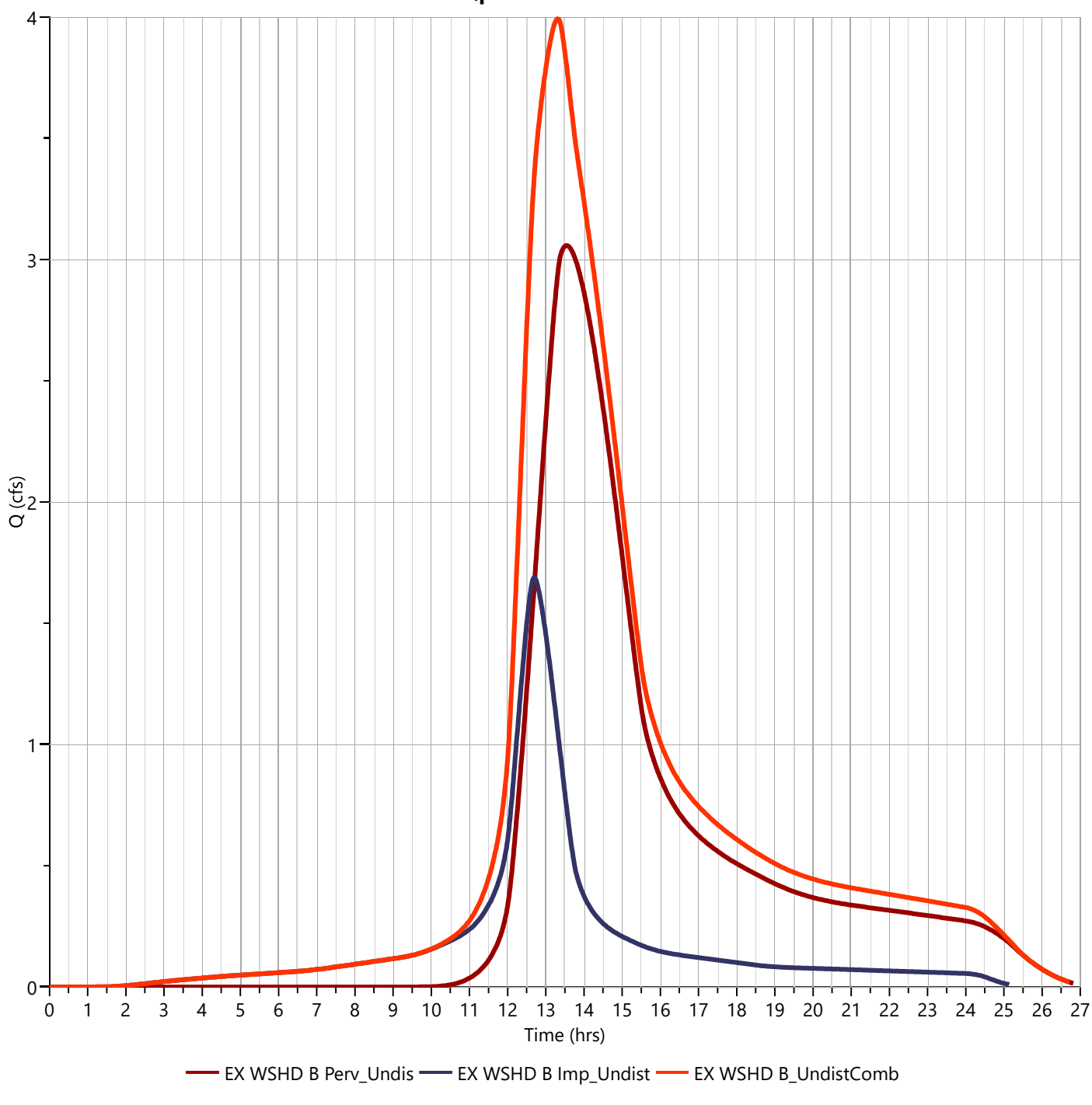
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File: Existing HydrologyCurrent Precipitation(2yr).hys
07-31-2025

EX WSHD BUndistComb

Hyd. No. 9

Hydrograph Type	= Junction	Peak Flow	= 3.995 cfs
Storm Frequency	= 2-yr	Time to Peak	= 13.32 hrs
Time Interval	= 1 min	Hydrograph Volume	= 57,980 cuft
Inflow Hydrographs	= 7, 8	Total Contrib. Area	= 10.18 ac



Hydrograph Report

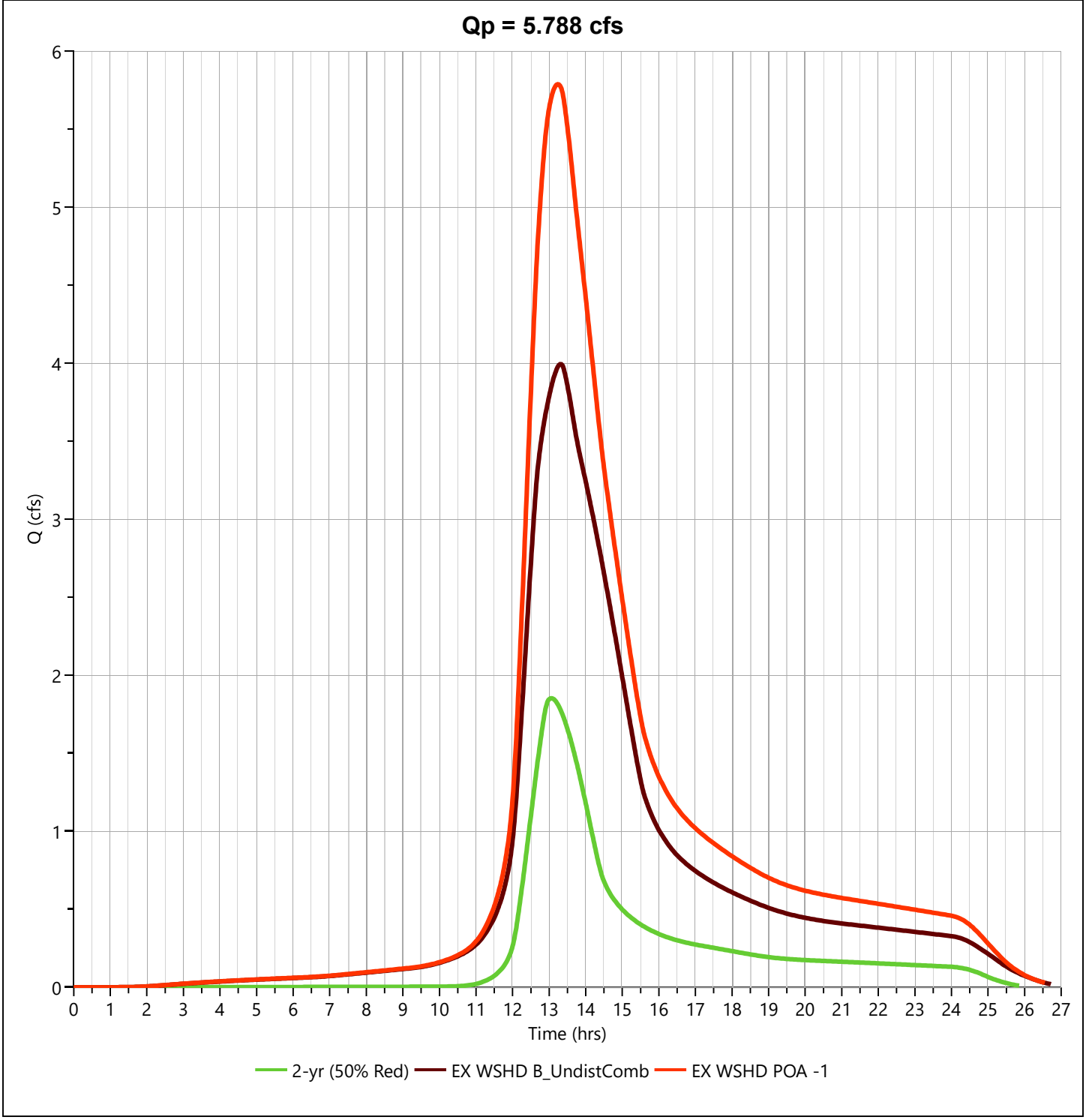
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File: Existing HydrologyCurrent Precipitation(2yr).hys
07-31-2025

EX WSHD POA -1

Hyd. No. 11

Hydrograph Type	= Junction	Peak Flow	= 5.788 cfs
Storm Frequency	= 2-yr	Time to Peak	= 13.23 hrs
Time Interval	= 1 min	Hydrograph Volume	= 78,357 cuft
Inflow Hydrographs		Total Contrib. Area	= 0.0 ac



Hydrograph Report

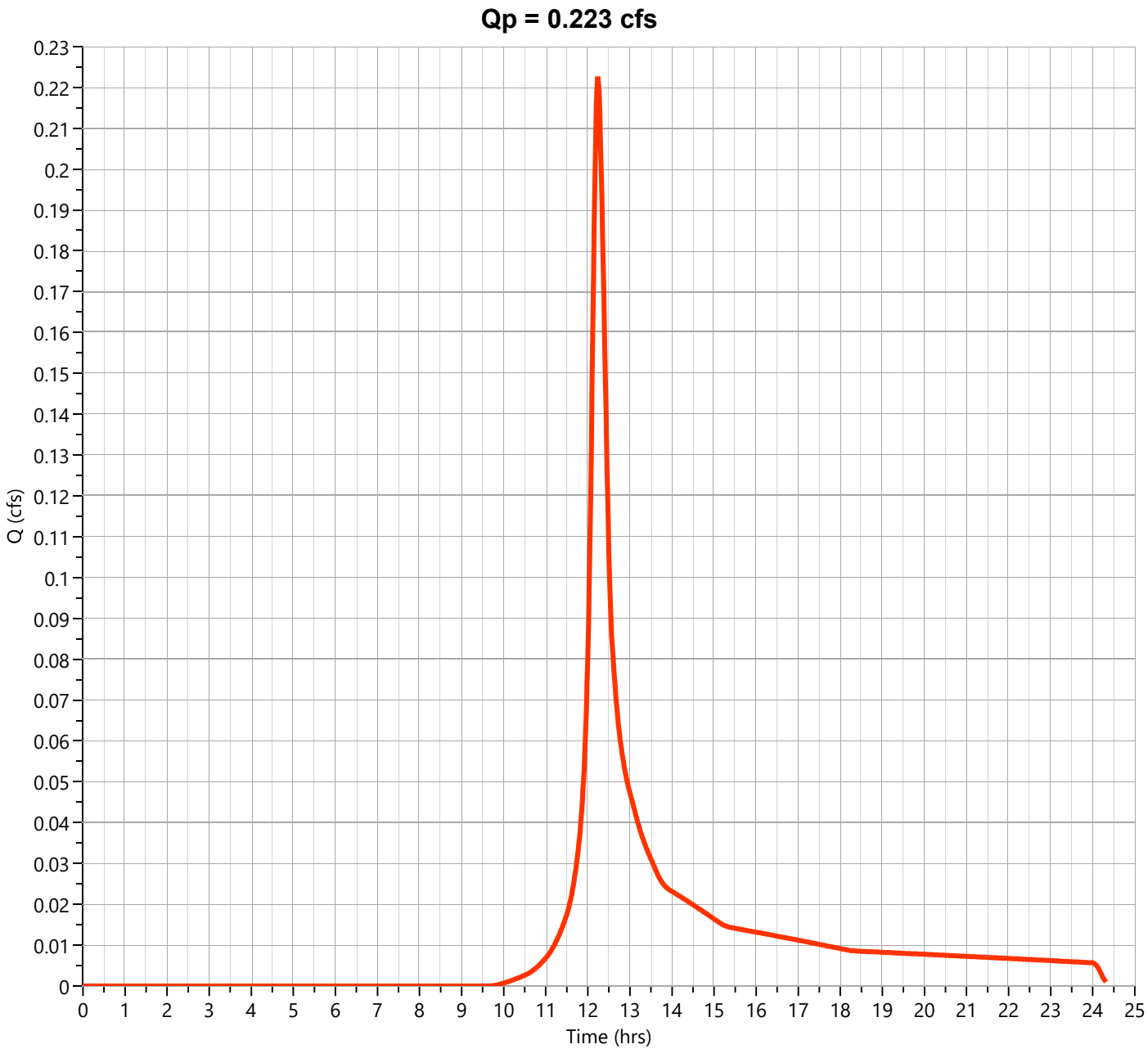
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File: Existing HydrologyCurrent Precipitation(2yr).hys
07-31-2025

EX WSHD C Perv

Hyd. No. 13

Hydrograph Type	= NRCS Runoff	Peak Flow	= 0.223 cfs
Storm Frequency	= 2-yr	Time to Peak	= 12.23 hrs
Time Interval	= 1 min	Runoff Volume	= 995 cuft
Drainage Area	= 0.21 ac	Curve Number	= 77.00
Tc Method	= User	Time of Conc. (Tc)	= 18.0 min
Total Rainfall	= 3.35 in	Design Storm	= NOAA-D
Storm Duration	= 24 hrs	Shape Factor	= 484



Hydrograph Report

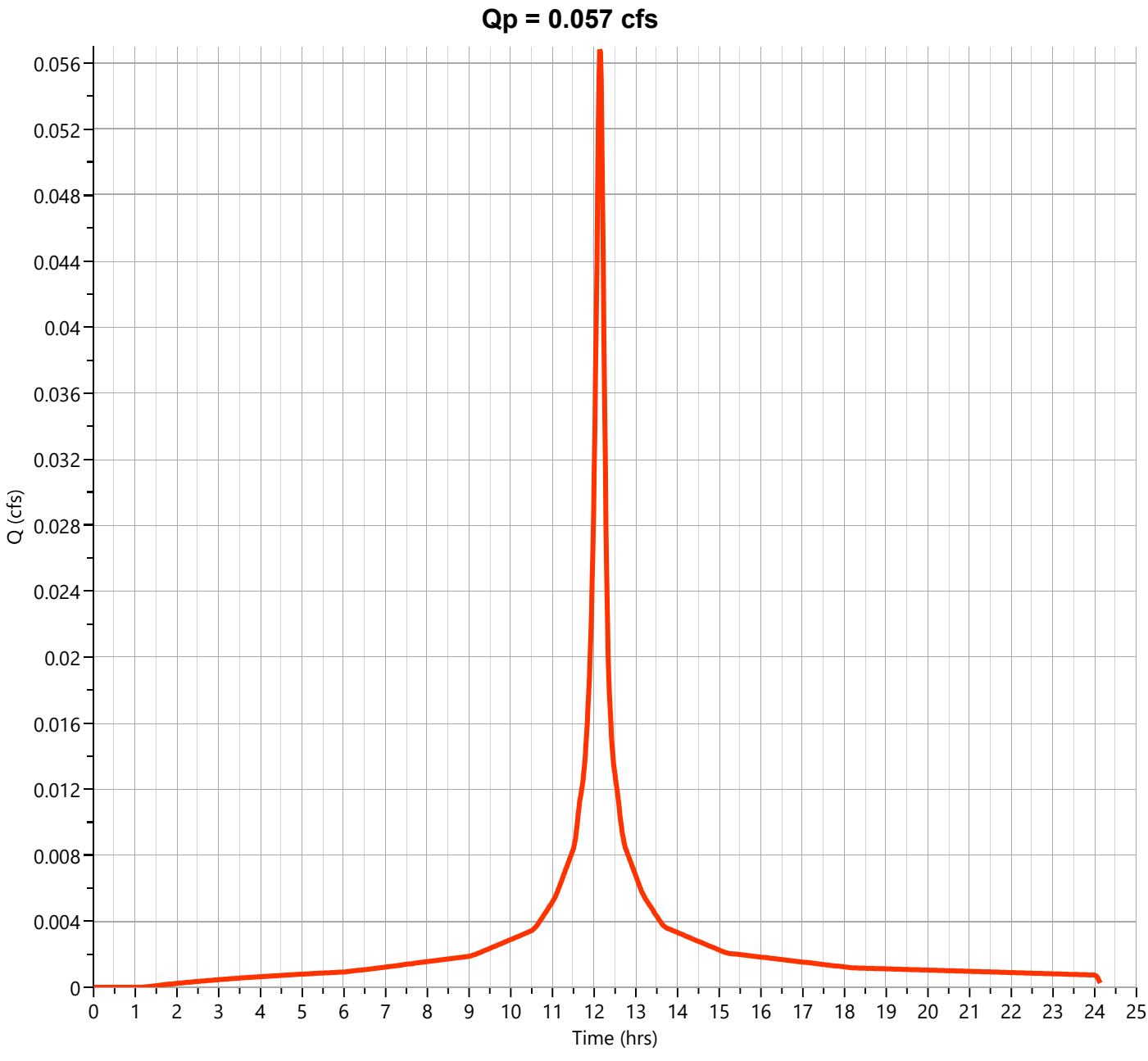
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File: Existing HydrologyCurrent Precipitation(2yr).hys
07-31-2025

EX WSHD C Imperv

Hyd. No. 14

Hydrograph Type	= NRCS Runoff	Peak Flow	= 0.057 cfs
Storm Frequency	= 2-yr	Time to Peak	= 12.13 hrs
Time Interval	= 1 min	Runoff Volume	= 226 cuft
Drainage Area	= 0.02 ac	Curve Number	= 98.00
Tc Method	= User	Time of Conc. (Tc)	= 10.0 min
Total Rainfall	= 3.35 in	Design Storm	= NOAA-D
Storm Duration	= 24 hrs	Shape Factor	= 484



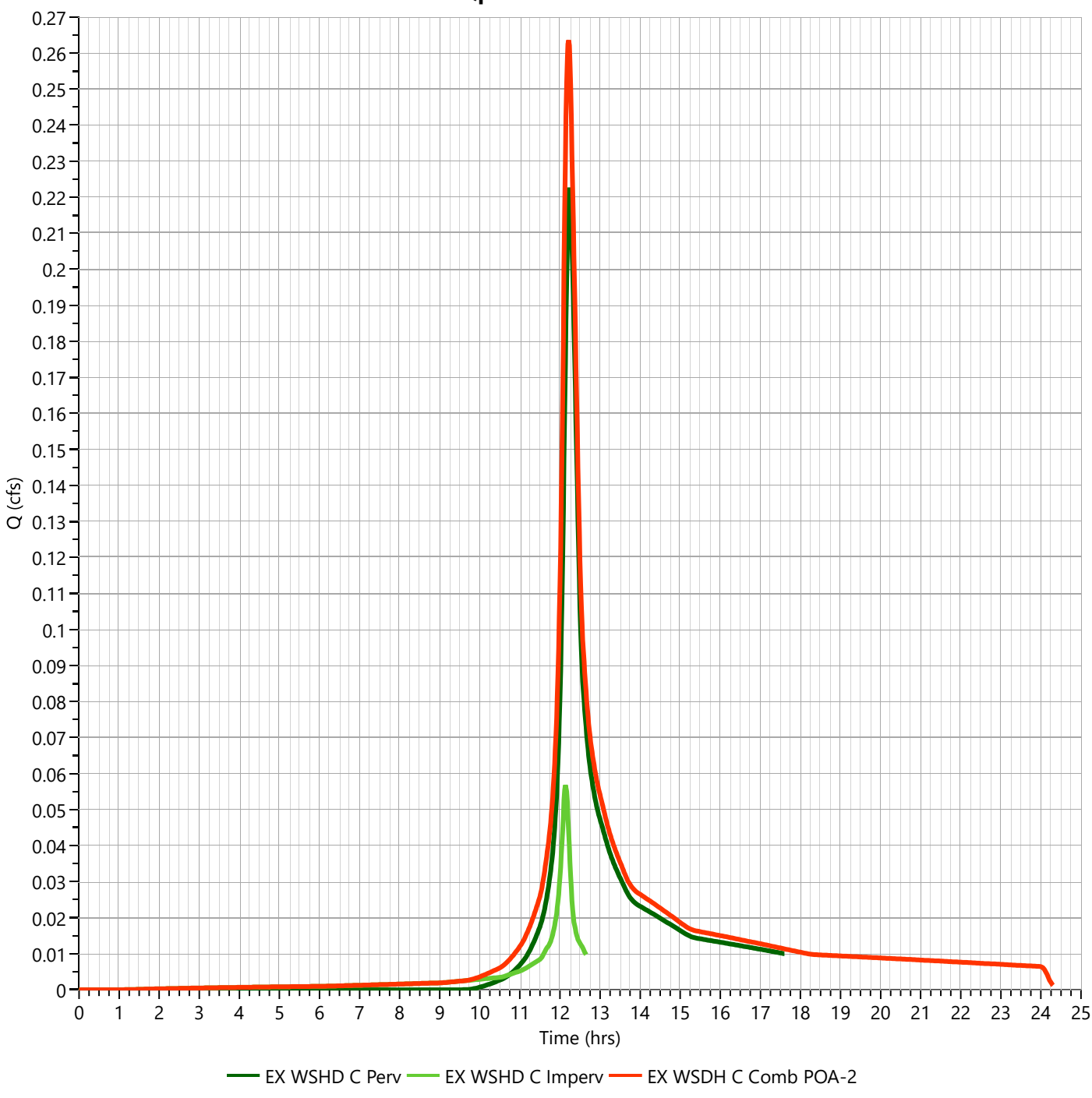
Hydrograph Report

Hydrology Studio v 3.0.0.38

File: Existing HydrologyCurrent Precipitation(2yr).hys
07-31-2025

EX WSDH C Comb POA-2 — Hyd. No. 15

Hydrograph Type	= Junction	Peak Flow	= 0.264 cfs
Storm Frequency	= 2-yr	Time to Peak	= 12.22 hrs
Time Interval	= 1 min	Hydrograph Volume	= 1,221 cuft
Inflow Hydrographs	= 13, 14	Total Contrib. Area	= 0.23 ac



Hydrograph Report

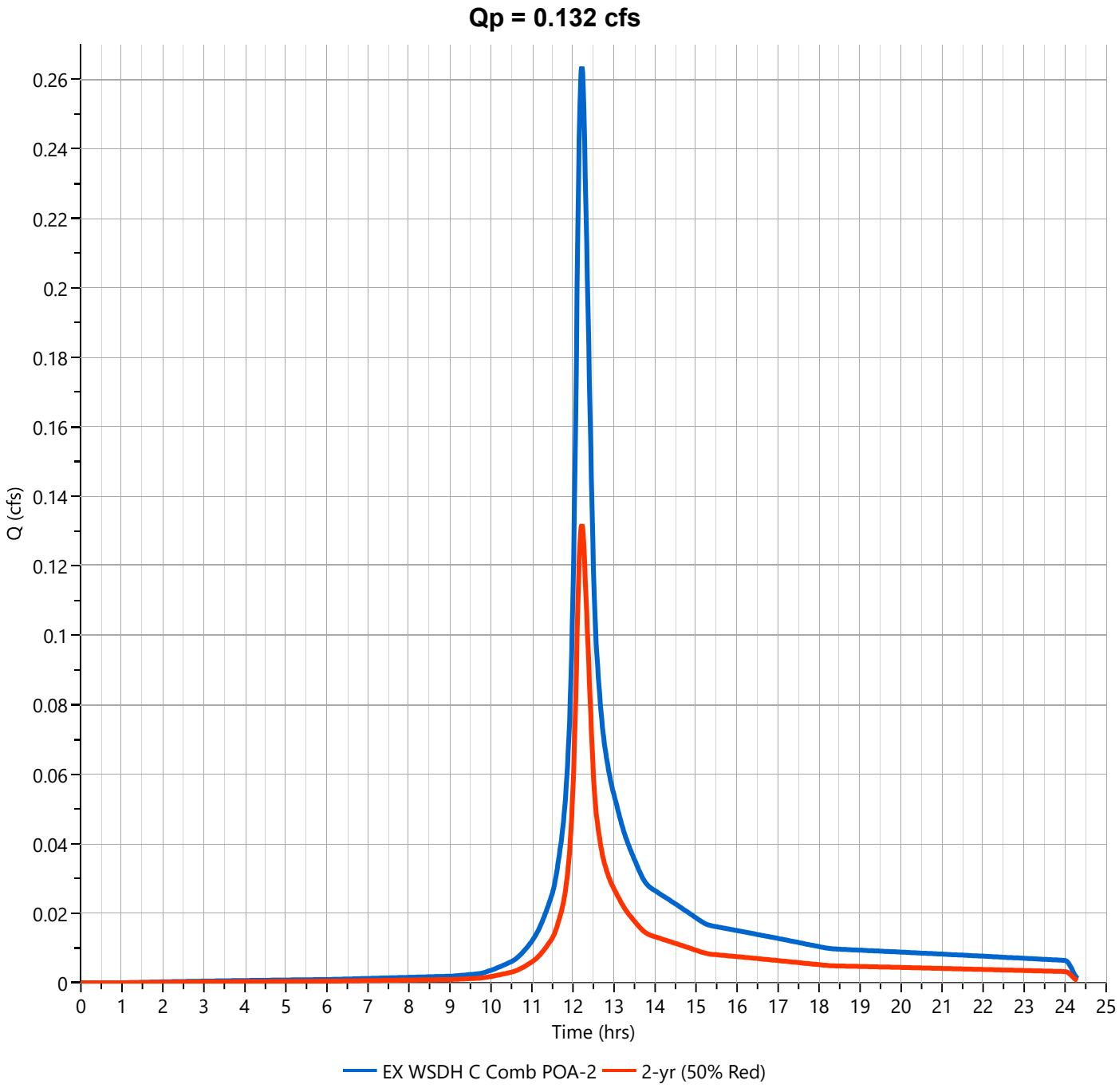
Hydrology Studio v 3.0.0.38

File: Existing HydrologyCurrent Precipitation(2yr).hys
07-31-2025

2-yr (50% Red)

Hyd. No. 16

Hydrograph Type	= Diversion	Peak Flow	= 0.132 cfs
Storm Frequency	= 2-yr	Time to Peak	= 12.22 hrs
Time Interval	= 1 min	Hydrograph Volume	= 611 cuft
Inflow Hydrograph	= 15 - EX WSDH C Comb POA-2	Diversion Method	= Flow Ratio
Companion Hyd	= 17 - N/A	Flow Ratio	= 0.5



Hydrograph Report

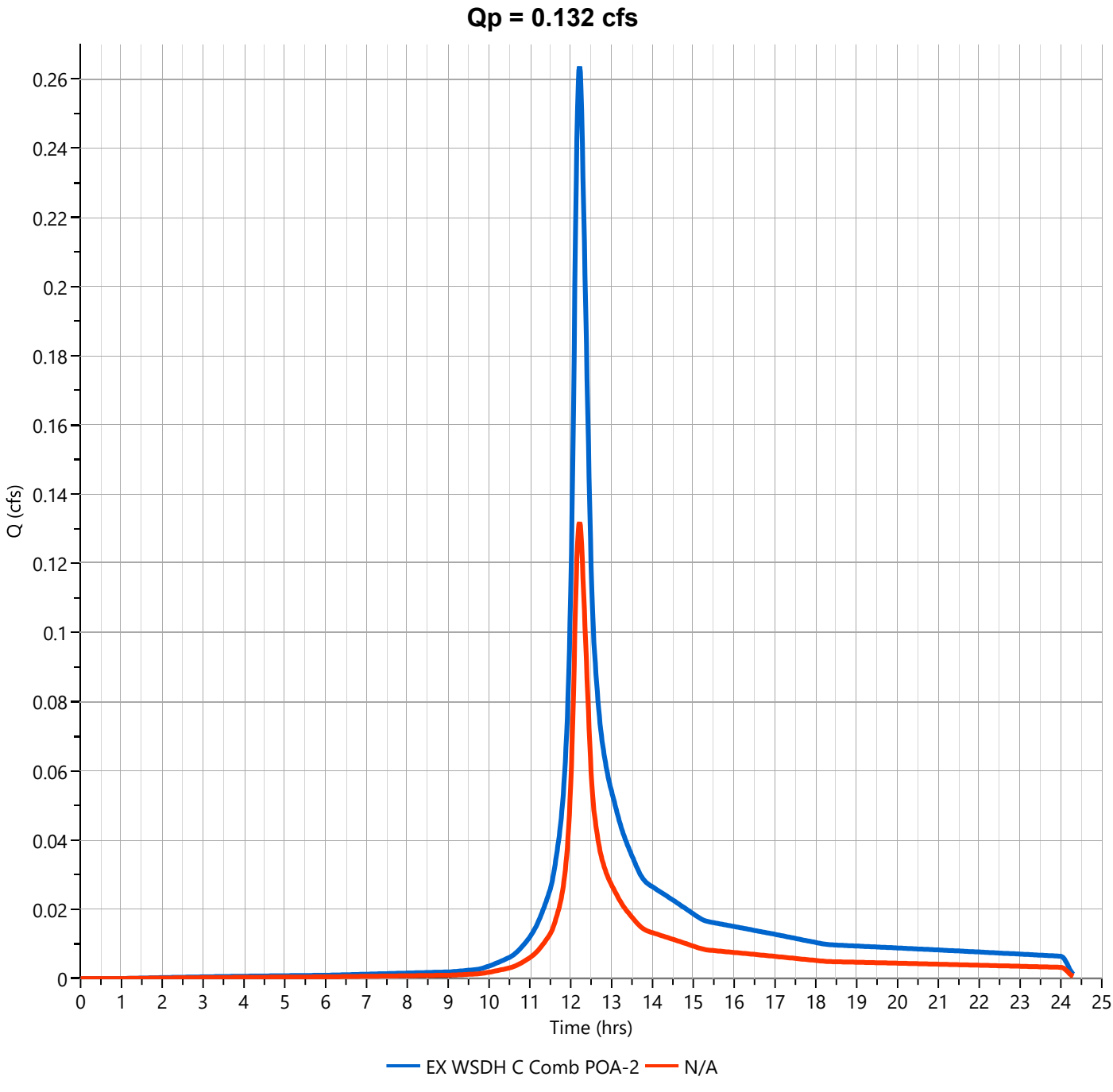
Hydrology Studio v 3.0.0.38

File: Existing HydrologyCurrent Precipitation(2yr).hys
07-31-2025

N/A

Hyd. No. 17

Hydrograph Type	= Diversion	Peak Flow	= 0.132 cfs
Storm Frequency	= 2-yr	Time to Peak	= 12.22 hrs
Time Interval	= 1 min	Hydrograph Volume	= 611 cuft
Inflow Hydrograph	= 15 - EX WSDH C Comb POA-2	Diversion Method	= Flow Ratio
Companion Hyd	= 16 - 2-yr (50% Red)	Flow Ratio	= 0.5



Hydrograph Report

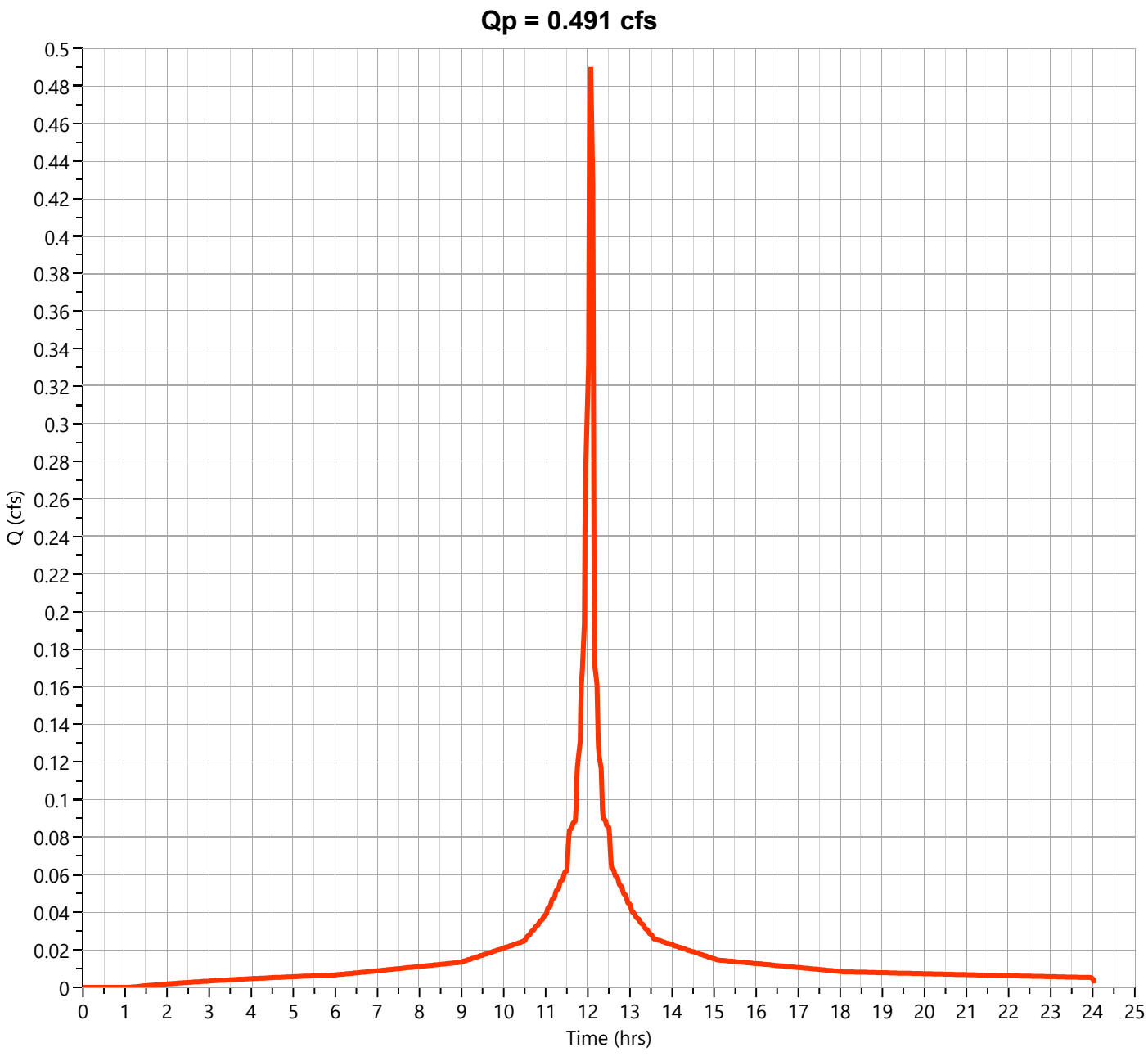
Hydrology Studio v 3.0.0.38

File: Existing HydrologyCurrent Precipitation(2yr).hys
07-31-2025

EX WSHD D Imp POA-3

Hyd. No. 19

Hydrograph Type	= NRCS Runoff	Peak Flow	= 0.491 cfs
Storm Frequency	= 2-yr	Time to Peak	= 12.10 hrs
Time Interval	= 1 min	Runoff Volume	= 1,591 cuft
Drainage Area	= 0.15 ac	Curve Number	= 98.00
Tc Method	= User	Time of Conc. (Tc)	= 3.0 min
Total Rainfall	= 3.35 in	Design Storm	= NOAA-D
Storm Duration	= 24 hrs	Shape Factor	= 484



Hydrograph Report

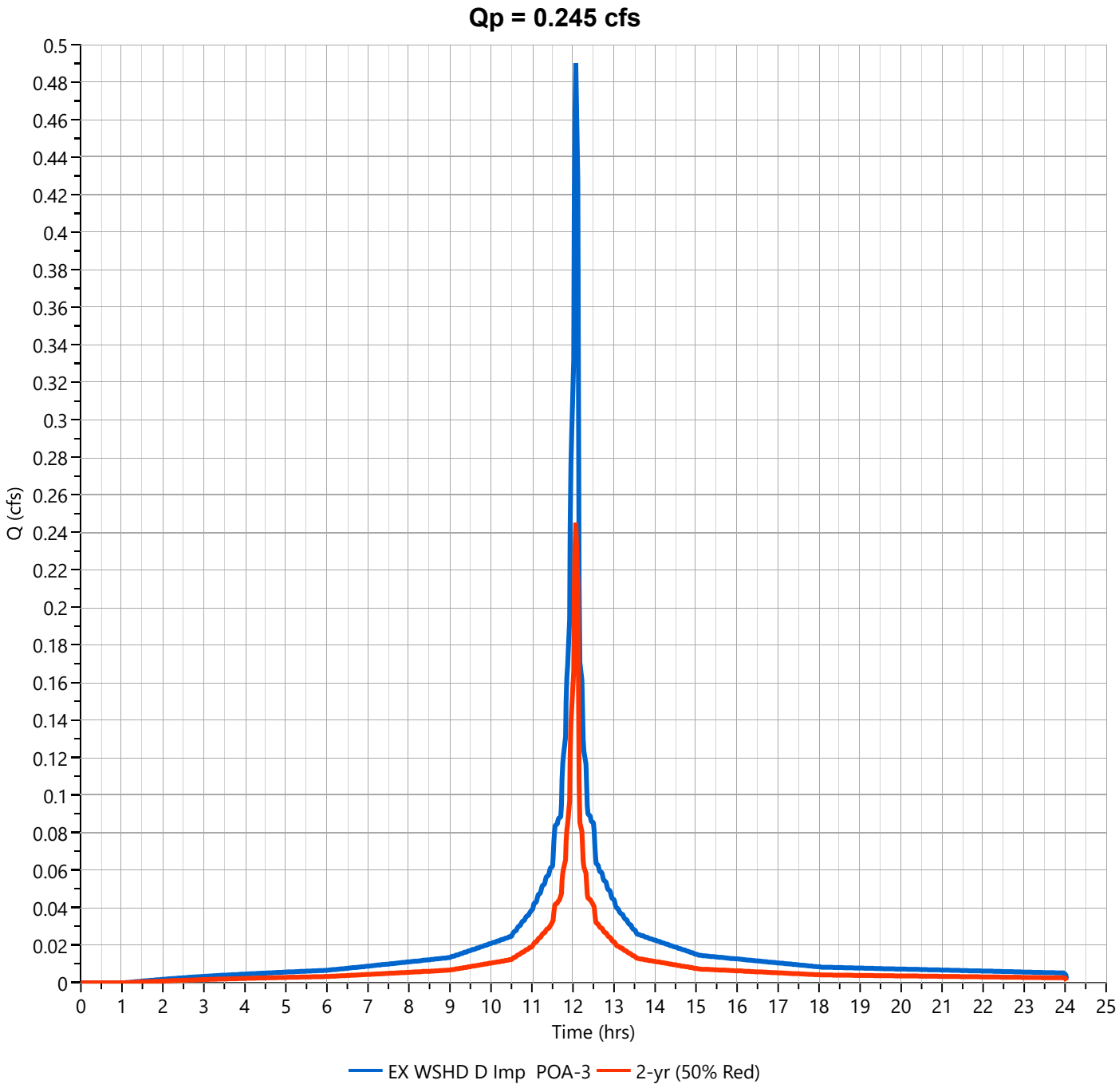
Hydrology Studio v 3.0.0.38

File: Existing HydrologyCurrent Precipitation(2yr).hys
07-31-2025

2-yr (50% Red)

Hyd. No. 20

Hydrograph Type	= Diversion	Peak Flow	= 0.245 cfs
Storm Frequency	= 2-yr	Time to Peak	= 12.10 hrs
Time Interval	= 1 min	Hydrograph Volume	= 796 cuft
Inflow Hydrograph	= 19 - EX WSHD D Imp POA-3	Diversion Method	= Flow Ratio
Companion Hyd	= 21 - N/A	Flow Ratio	= 0.5



Hydrograph Report

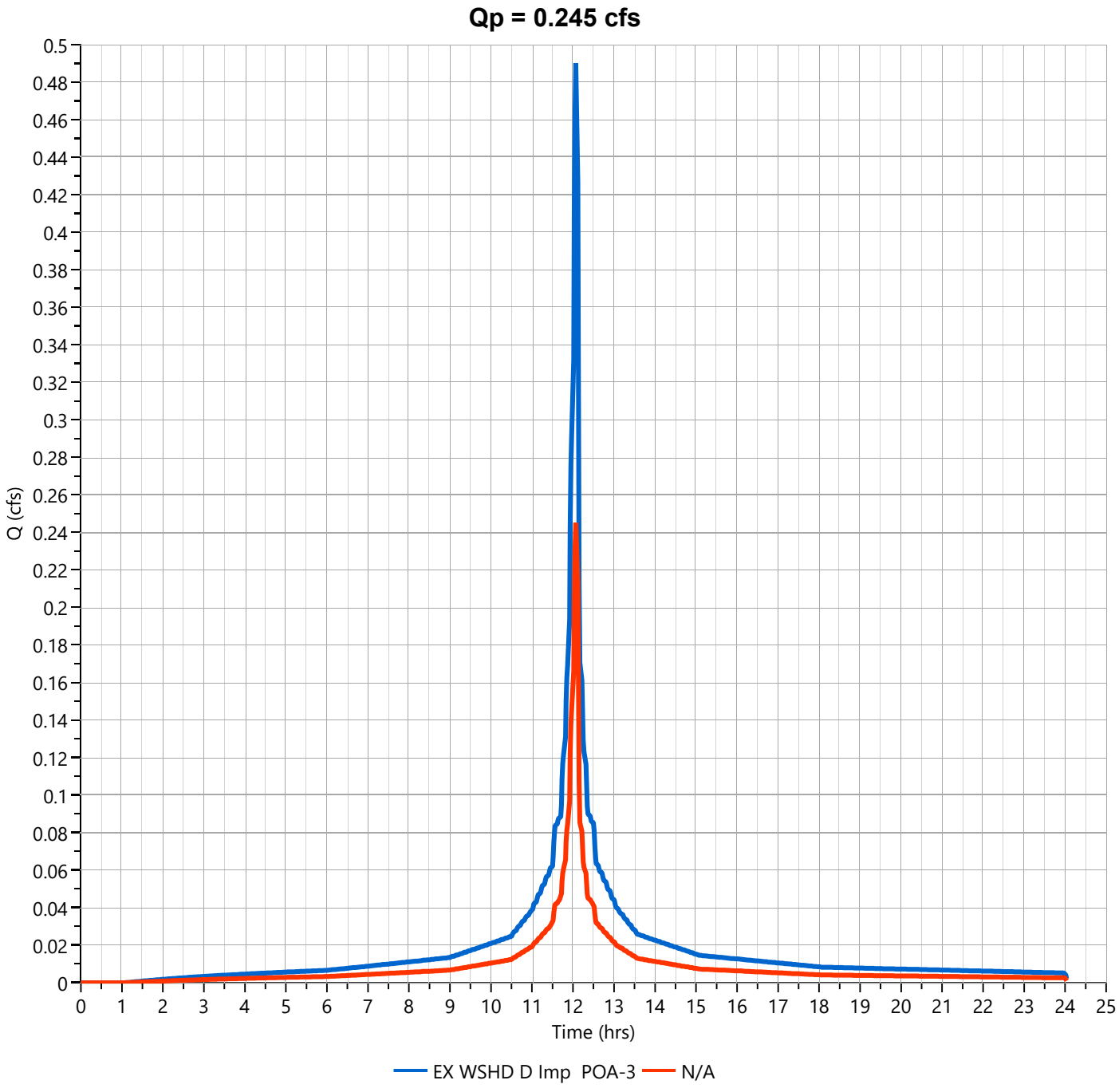
Hydrology Studio v 3.0.0.38

File: Existing HydrologyCurrent Precipitation(2yr).hys
07-31-2025

N/A

Hyd. No. 21

Hydrograph Type	= Diversion	Peak Flow	= 0.245 cfs
Storm Frequency	= 2-yr	Time to Peak	= 12.10 hrs
Time Interval	= 1 min	Hydrograph Volume	= 796 cuft
Inflow Hydrograph	= 19 - EX WSHD D Imp POA-3	Diversion Method	= Flow Ratio
Companion Hyd	= 20 - 2-yr (50% Red)	Flow Ratio	= 0.5



Hydrograph by Return Period

Hydrology Studio v 3.0.0.38

File: Existing HydrologyCurrent Precipitation(10yr).hys

07-31-2025

Hyd. No.	Hydrograph Type	Hydrograph Name	Peak Outflow (cfs)							
			1-yr	2-yr	3-yr	5-yr	10-yr	25-yr	50-yr	100-yr
1	NRCS Runoff	EX WSHD A Perv					8.258			
2	NRCS Runoff	EX WSHD A Imperv					0.154			
3	Junction	EX WSDH A Combined					8.352			
4	Diversion1	10-yr (25% Red)					6.264			
5	Diversion2	N/A					2.088			
7	NRCS Runoff	EX WSHD B PervUndis					6.634			
8	NRCS Runoff	EX WSHD B ImpUndist					2.629			
9	Junction	EX WSHD BUndistComb					8.128			
11	Junction	EX WSHD POA -1					14.09			
13	NRCS Runoff	EX WSHD C Perv					0.475			
14	NRCS Runoff	EX WSHD C Imperv					0.088			
15	Junction	EX WSDH C Comb POA-2					0.539			
16	Diversion1	10-yr (25% Red)					0.405			
17	Diversion2	N/A					0.135			
19	NRCS Runoff	EX WSHD D Imp POA-3					0.762			
20	Diversion1	10-yr (25% Red)					0.571			
21	Diversion2	N/A					0.190			

Hydrograph 10-yr Summary

Hydrology Studio v 3.0.0.38

File: Existing HydrologyCurrent Precipitation(10yr).hys

07-31-2025

Hyd. No.	Hydrograph Type	Hydrograph Name	Peak Flow (cfs)	Time to Peak (hrs)	Hydrograph Volume (cuft)	Inflow Hyd(s)	Maximum Elevation (ft)	Maximum Storage (cuft)
1	NRCS Runoff	EX WSHD A Perv	8.258	13.00	86,423	----		
2	NRCS Runoff	EX WSHD A Imperv	0.154	12.53	1,248	----		
3	Junction	EX WSDH A Combined	8.352	13.00	87,671	1, 2		
4	Diversion1	10-yr (25% Red)	6.264	13.00	65,754	3		
5	Diversion2	N/A	2.088	13.00	21,918	3		
7	NRCS Runoff	EX WSHD B PervUndis	6.634	13.47	88,290	----		
8	NRCS Runoff	EX WSHD B ImpUndist	2.629	12.70	25,069	----		
9	Junction	EX WSHD BUndistComb	8.128	13.33	113,360	7, 8		
11	Junction	EX WSHD POA -1	14.09	13.18	179,113	4, 9		
13	NRCS Runoff	EX WSHD C Perv	0.475	12.23	2,084	----		
14	NRCS Runoff	EX WSHD C Imperv	0.088	12.13	358	----		
15	Junction	EX WSDH C Comb POA-2	0.539	12.22	2,443	13, 14		
16	Diversion1	10-yr (25% Red)	0.405	12.22	1,832	15		
17	Diversion2	N/A	0.135	12.22	611	15		
19	NRCS Runoff	EX WSHD D Imp POA-3	0.762	12.10	2,518	----		
20	Diversion1	10-yr (25% Red)	0.571	12.10	1,889	19		
21	Diversion2	N/A	0.190	12.10	630	19		

Hydrograph Report

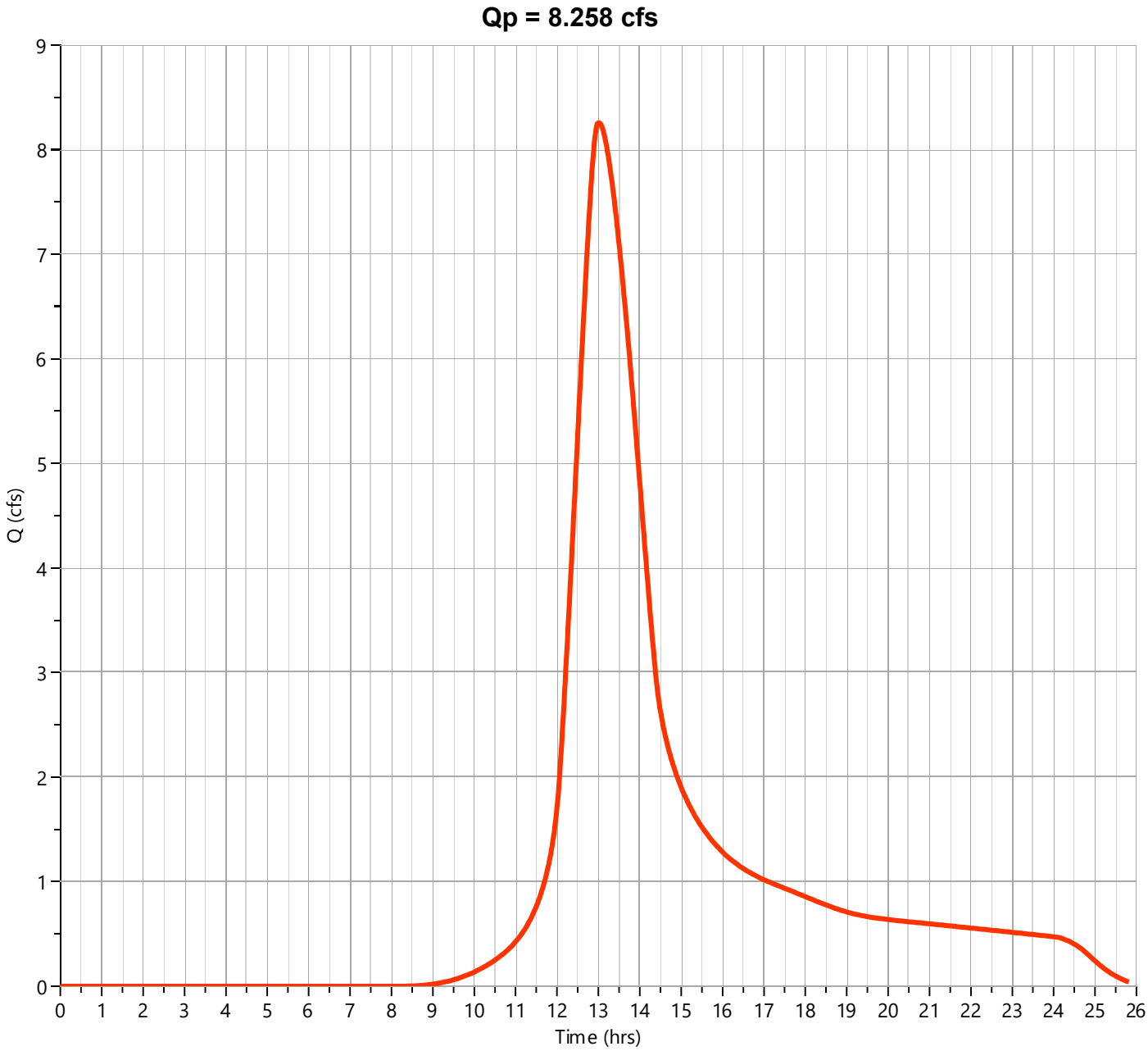
Hydrology Studio v 3.0.0.38

File: Existing HydrologyCurrent Precipitation(10yr).hys
07-31-2025

EX WSHD A Perv

Hyd. No. 1

Hydrograph Type	= NRCS Runoff	Peak Flow	= 8.258 cfs
Storm Frequency	= 10-yr	Time to Peak	= 13.00 hrs
Time Interval	= 1 min	Runoff Volume	= 86,423 cuft
Drainage Area	= 9.2 ac	Curve Number	= 75.00
Tc Method	= User	Time of Conc. (Tc)	= 91.0 min
Total Rainfall	= 5.17 in	Design Storm	= NOAA-D
Storm Duration	= 24 hrs	Shape Factor	= 484



Hydrograph Report

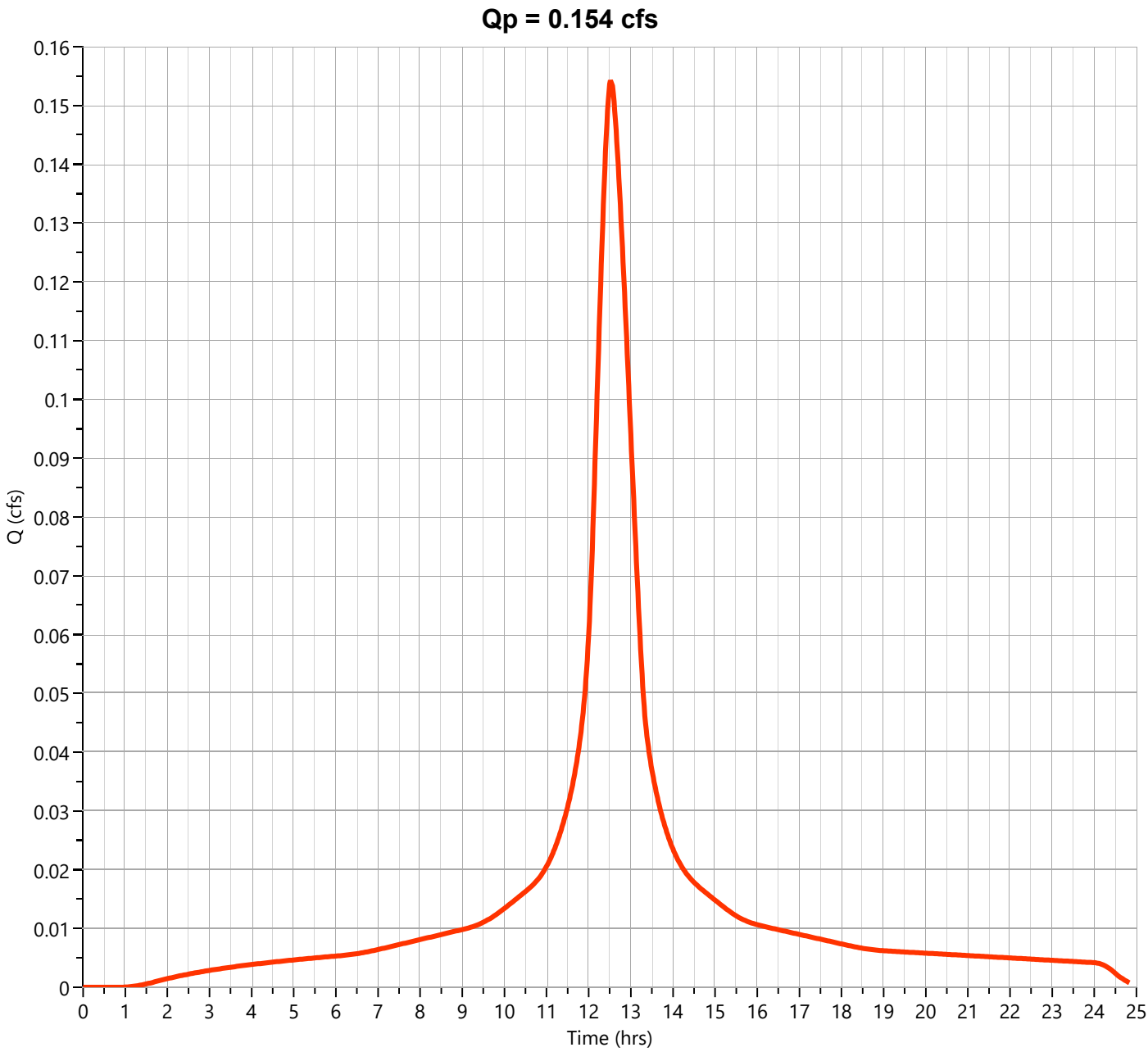
Hydrology Studio v 3.0.0.38

File: Existing HydrologyCurrent Precipitation(10yr).hys
07-31-2025

EX WSHD A Imperv

Hyd. No. 2

Hydrograph Type	= NRCS Runoff	Peak Flow	= 0.154 cfs
Storm Frequency	= 10-yr	Time to Peak	= 12.53 hrs
Time Interval	= 1 min	Runoff Volume	= 1,248 cuft
Drainage Area	= 0.07 ac	Curve Number	= 98.00
Tc Method	= User	Time of Conc. (Tc)	= 48.0 min
Total Rainfall	= 5.17 in	Design Storm	= NOAA-D
Storm Duration	= 24 hrs	Shape Factor	= 484



Hydrograph Report

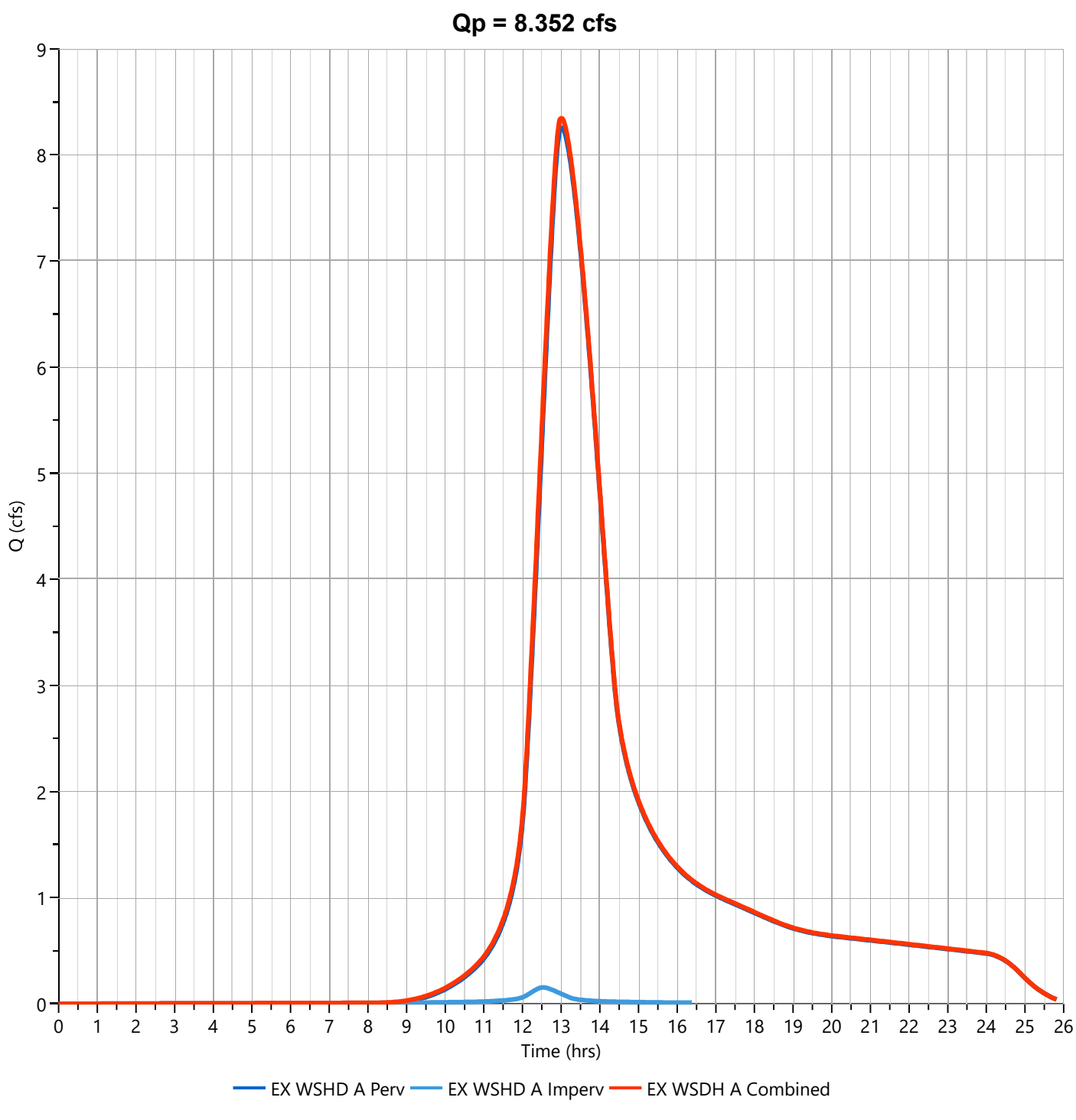
Hydrology Studio v 3.0.0.38

File: Existing HydrologyCurrent Precipitation(10yr).hys
07-31-2025

EX WSDH A Combined

Hyd. No. 3

Hydrograph Type	= Junction	Peak Flow	= 8.352 cfs
Storm Frequency	= 10-yr	Time to Peak	= 13.00 hrs
Time Interval	= 1 min	Hydrograph Volume	= 87,671 cuft
Inflow Hydrographs	= 1, 2	Total Contrib. Area	= 9.27 ac



Hydrograph Report

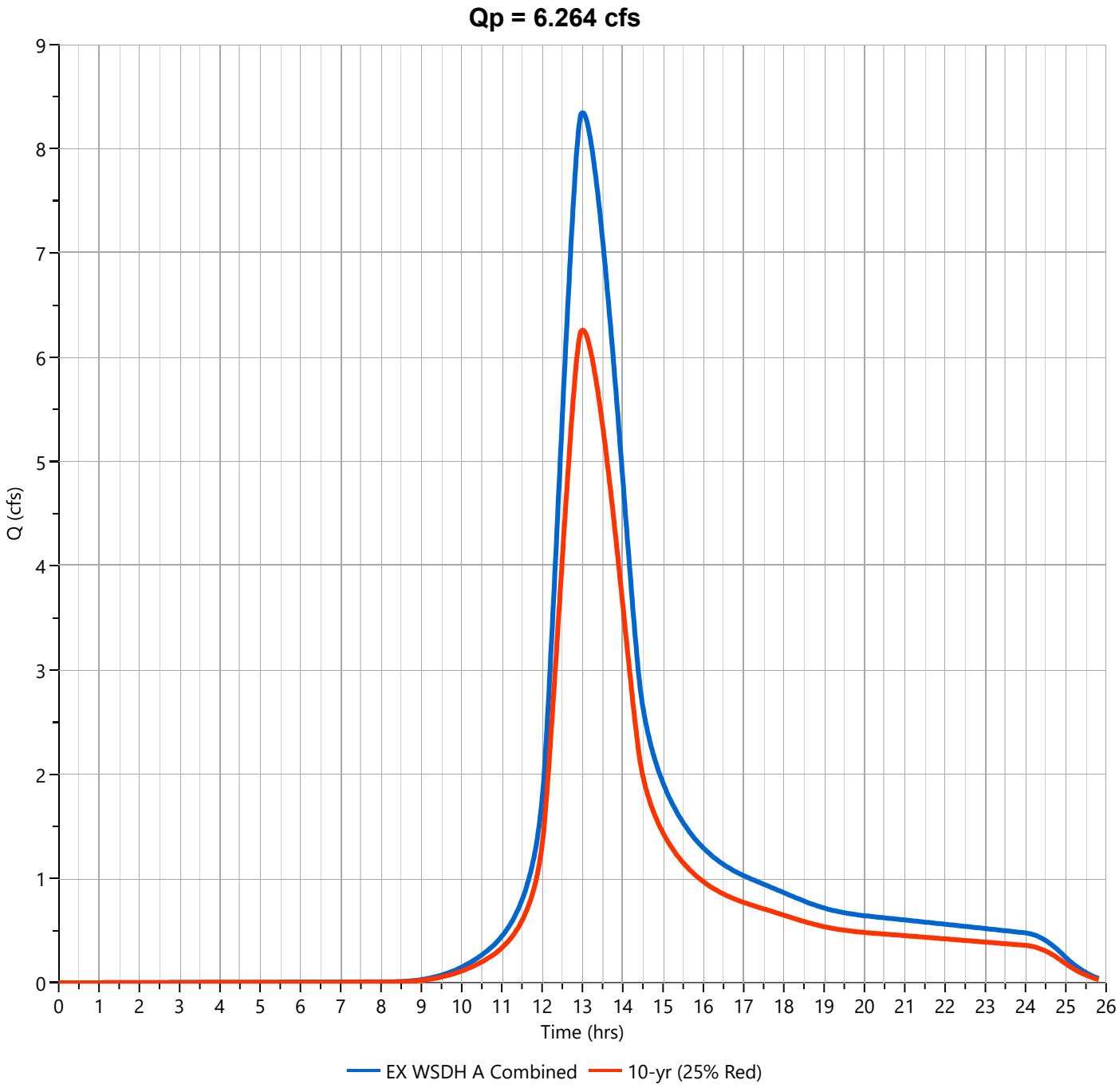
Hydrology Studio v 3.0.0.38

File: Existing HydrologyCurrent Precipitation(10yr).hys
07-31-2025

10-yr (25% Red)

Hyd. No. 4

Hydrograph Type	= Diversion	Peak Flow	= 6.264 cfs
Storm Frequency	= 10-yr	Time to Peak	= 13.00 hrs
Time Interval	= 1 min	Hydrograph Volume	= 65,754 cuft
Inflow Hydrograph	= 3 - EX WSDH A Combined	Diversion Method	= Flow Ratio
Companion Hyd	= 5 - N/A	Flow Ratio	= 0.75



Hydrograph Report

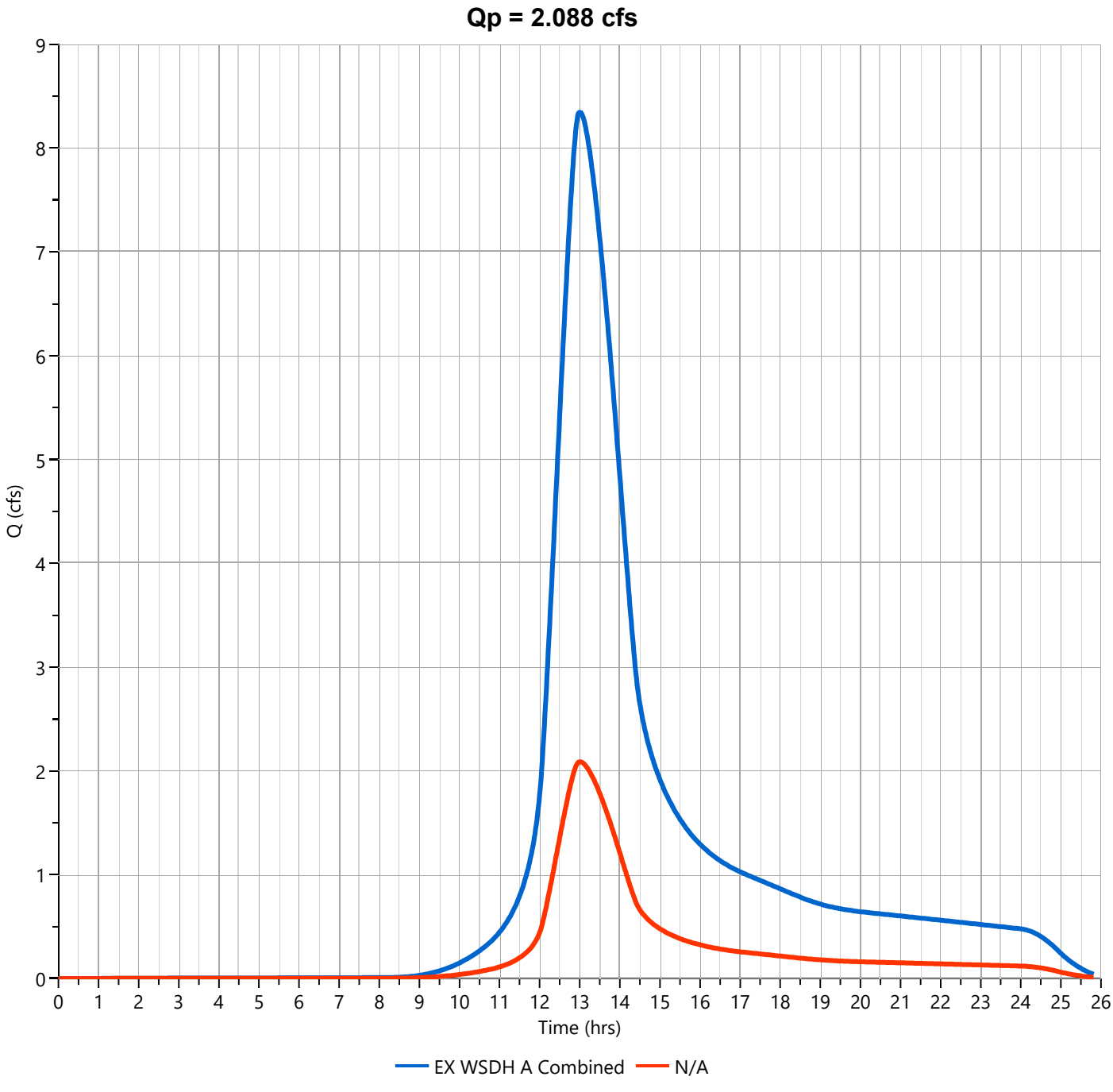
Hydrology Studio v 3.0.0.38

File: Existing HydrologyCurrent Precipitation(10yr).hys
07-31-2025

N/A

Hyd. No. 5

Hydrograph Type	= Diversion	Peak Flow	= 2.088 cfs
Storm Frequency	= 10-yr	Time to Peak	= 13.00 hrs
Time Interval	= 1 min	Hydrograph Volume	= 21,918 cuft
Inflow Hydrograph	= 3 - EX WSDH A Combined	Diversion Method	= Flow Ratio
Companion Hyd	= 4 - 10-yr (25% Red)	Flow Ratio	= 0.75



Hydrograph Report

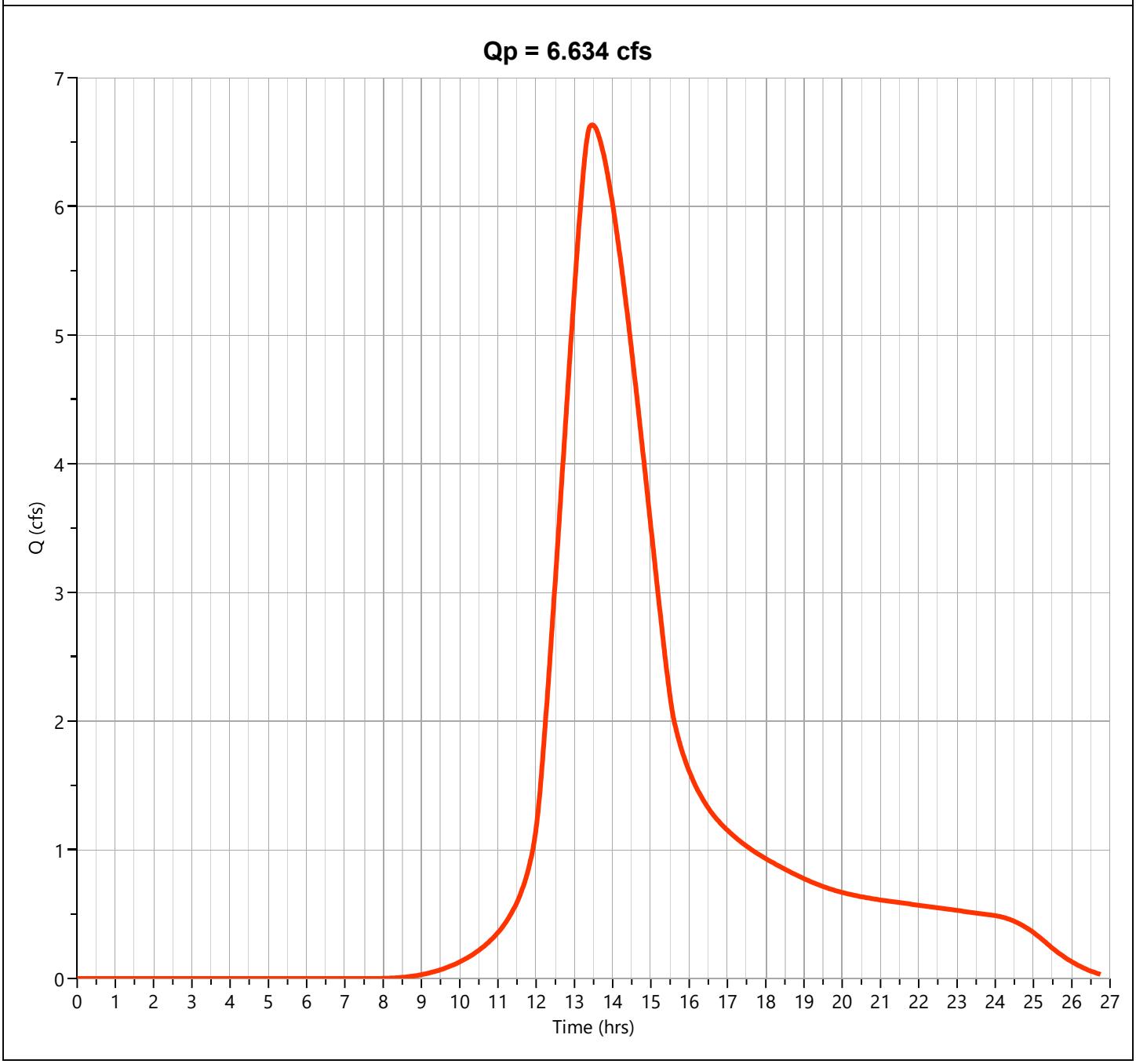
Hydrology Studio v 3.0.0.38

File: Existing HydrologyCurrent Precipitation(10yr).hys
07-31-2025

EX WSHD B PervUndis

Hyd. No. 7

Hydrograph Type	= NRCS Runoff	Peak Flow	= 6.634 cfs
Storm Frequency	= 10-yr	Time to Peak	= 13.47 hrs
Time Interval	= 1 min	Runoff Volume	= 88,290 cuft
Drainage Area	= 8.78 ac	Curve Number	= 77.00
Tc Method	= User	Time of Conc. (Tc)	= 134.0 min
Total Rainfall	= 5.17 in	Design Storm	= NOAA-D
Storm Duration	= 24 hrs	Shape Factor	= 484



Hydrograph Report

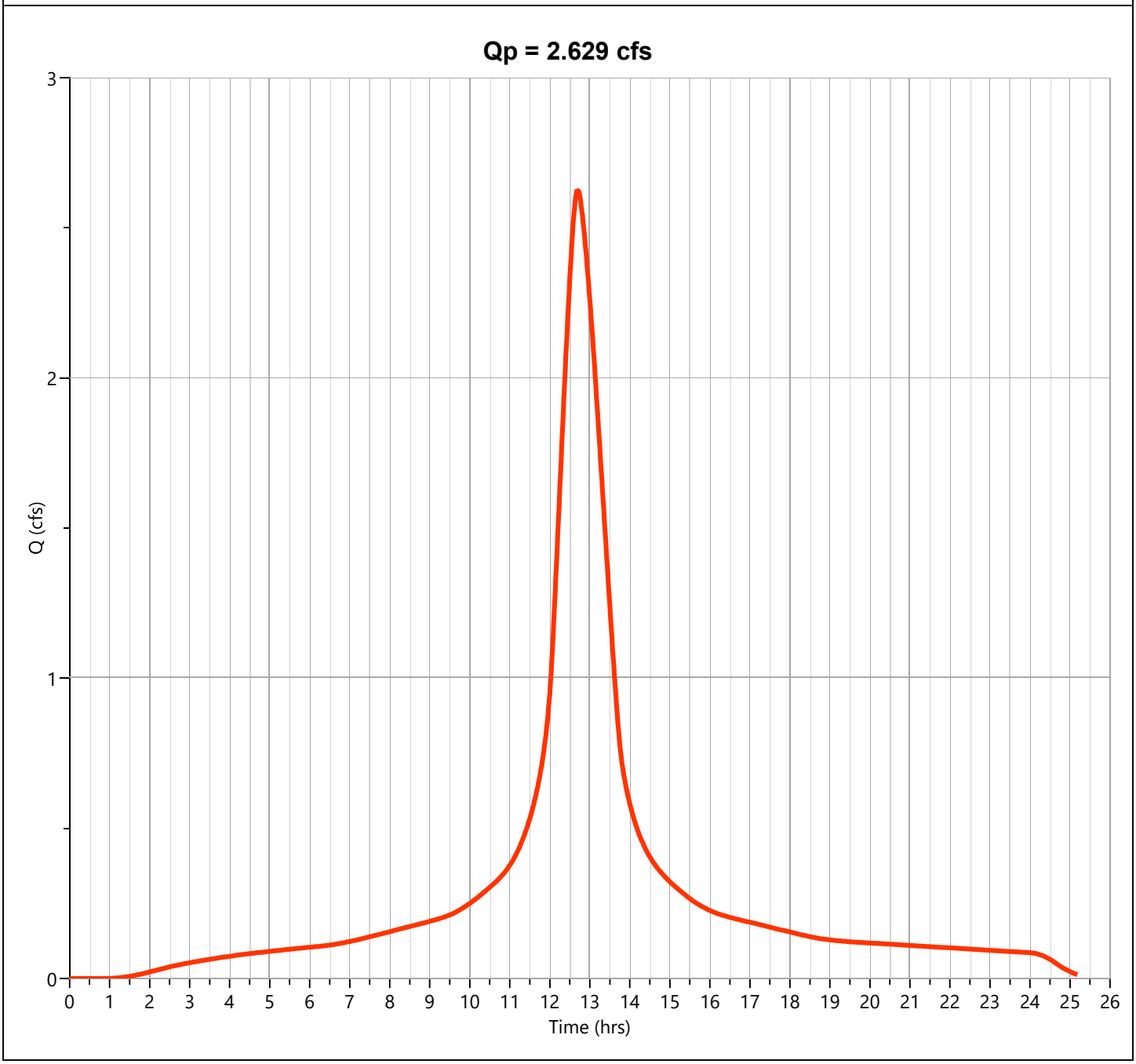
Hydrology Studio v 3.0.0.38

File: Existing HydrologyCurrent Precipitation(10yr).hys
07-31-2025

EX WSHD B ImpUndist

Hyd. No. 8

Hydrograph Type	= NRCS Runoff	Peak Flow	= 2.629 cfs
Storm Frequency	= 10-yr	Time to Peak	= 12.70 hrs
Time Interval	= 1 min	Runoff Volume	= 25,069 cuft
Drainage Area	= 1.4 ac	Curve Number	= 98.00
Tc Method	= User	Time of Conc. (Tc)	= 66.0 min
Total Rainfall	= 5.17 in	Design Storm	= NOAA-D
Storm Duration	= 24 hrs	Shape Factor	= 484



Hydrograph Report

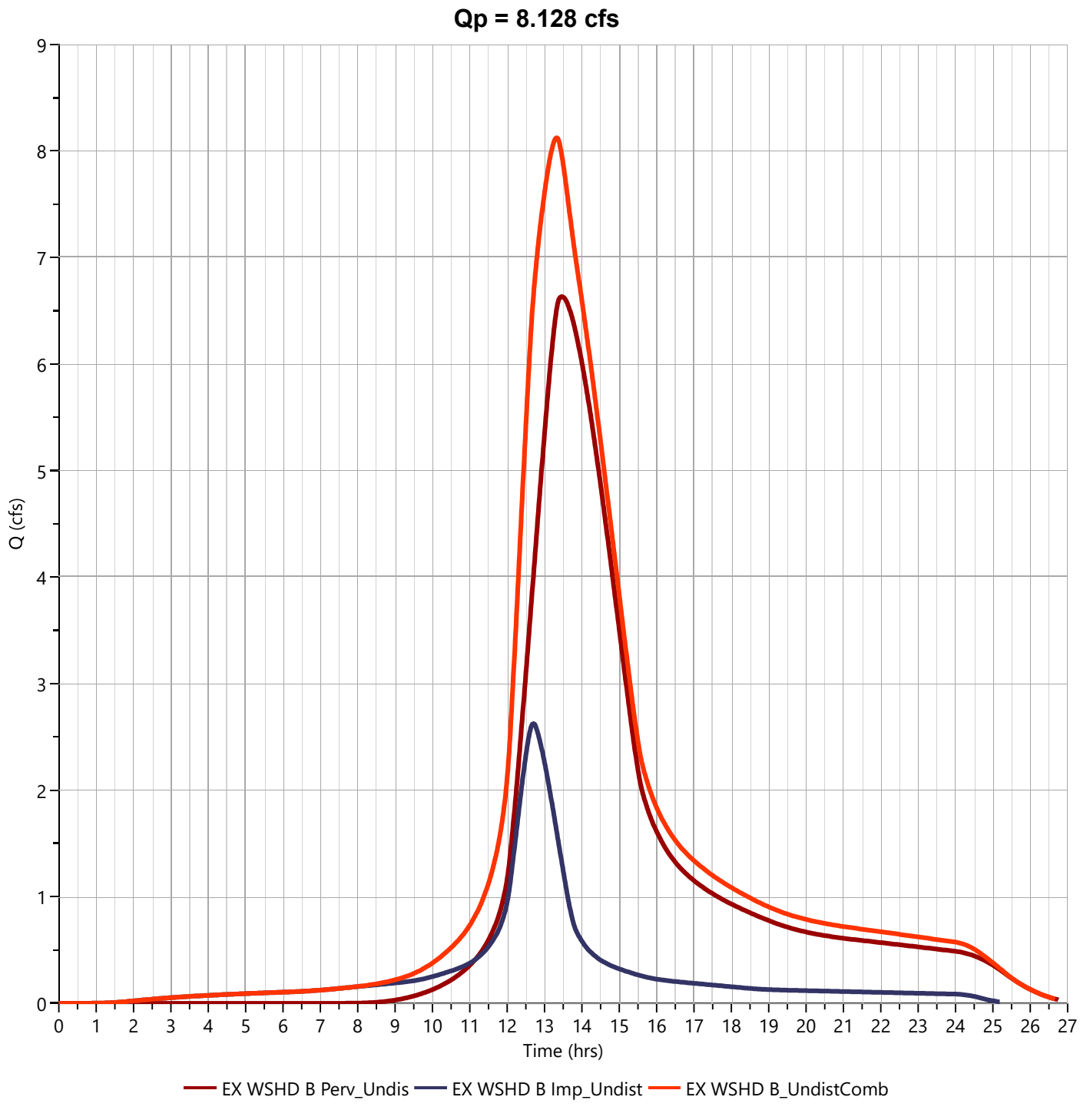
Hydrology Studio v 3.0.0.38

File: Existing HydrologyCurrent Precipitation(10yr).hys
07-31-2025

EX WSHD BUndistComb

Hyd. No. 9

Hydrograph Type	= Junction	Peak Flow	= 8.128 cfs
Storm Frequency	= 10-yr	Time to Peak	= 13.33 hrs
Time Interval	= 1 min	Hydrograph Volume	= 113,360 cuft
Inflow Hydrographs	= 7, 8	Total Contrib. Area	= 10.18 ac



Hydrograph Report

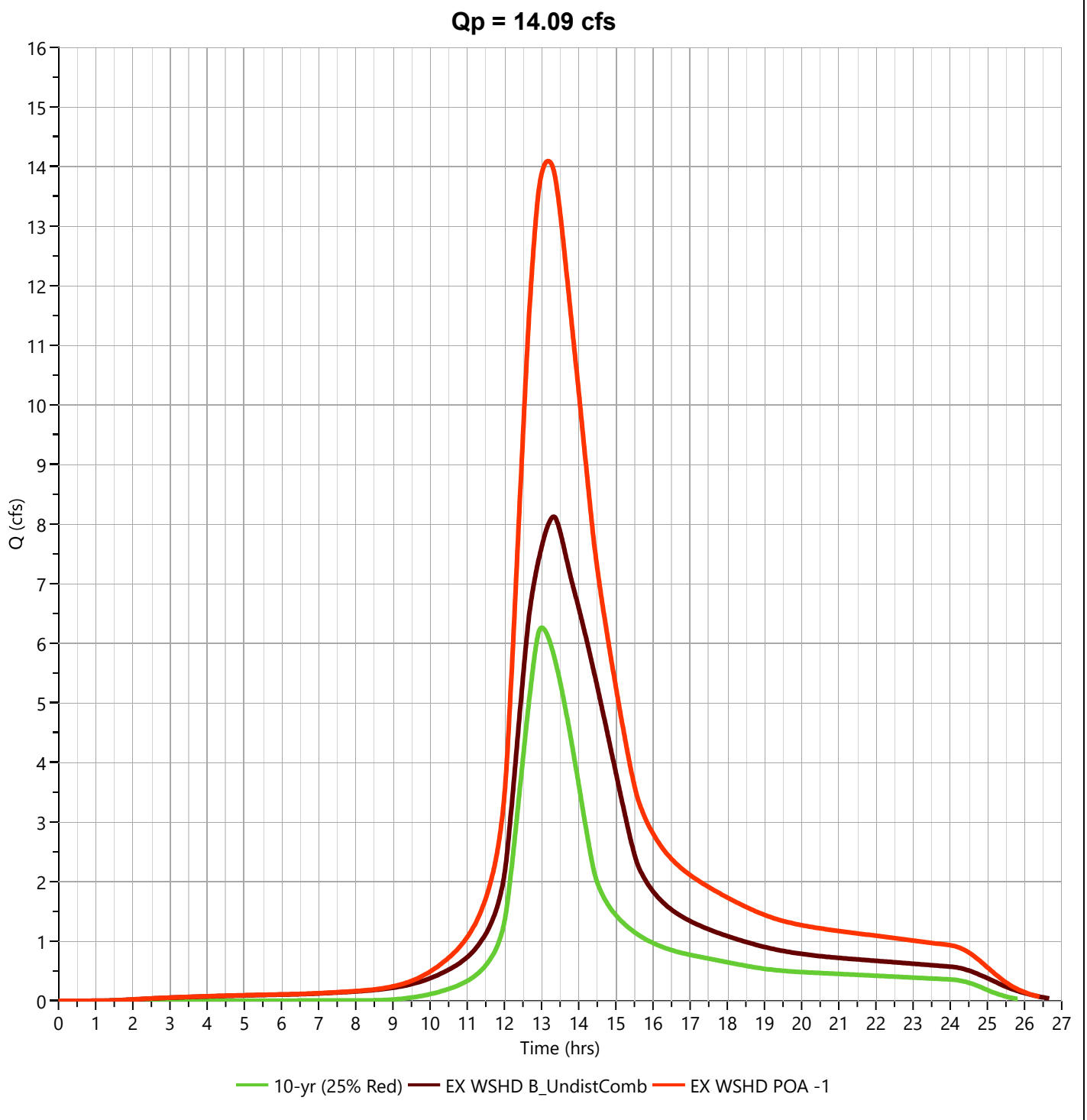
Hydrology Studio v 3.0.0.38

File: Existing HydrologyCurrent Precipitation(10yr).hys
07-31-2025

EX WSHD POA -1

Hyd. No. 11

Hydrograph Type	= Junction	Peak Flow	= 14.09 cfs
Storm Frequency	= 10-yr	Time to Peak	= 13.18 hrs
Time Interval	= 1 min	Hydrograph Volume	= 179,113 cuft
Inflow Hydrographs		Total Contrib. Area	= 0.0 ac



Hydrograph Report

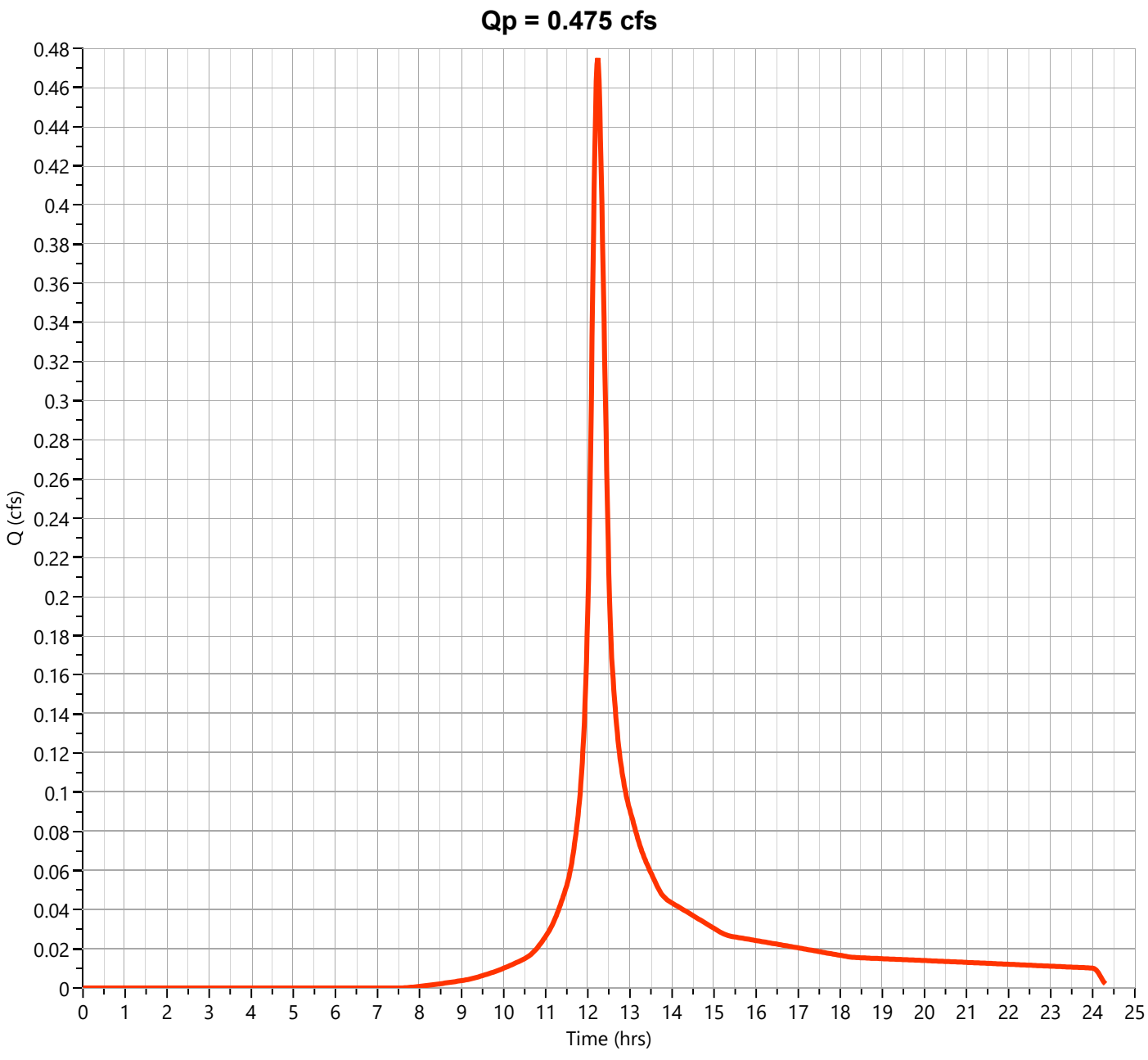
Hydrology Studio v 3.0.0.38

File: Existing HydrologyCurrent Precipitation(10yr).hys
07-31-2025

EX WSHD C Perv

Hyd. No. 13

Hydrograph Type	= NRCS Runoff	Peak Flow	= 0.475 cfs
Storm Frequency	= 10-yr	Time to Peak	= 12.23 hrs
Time Interval	= 1 min	Runoff Volume	= 2,084 cuft
Drainage Area	= 0.21 ac	Curve Number	= 77.00
Tc Method	= User	Time of Conc. (Tc)	= 18.0 min
Total Rainfall	= 5.17 in	Design Storm	= NOAA-D
Storm Duration	= 24 hrs	Shape Factor	= 484



Hydrograph Report

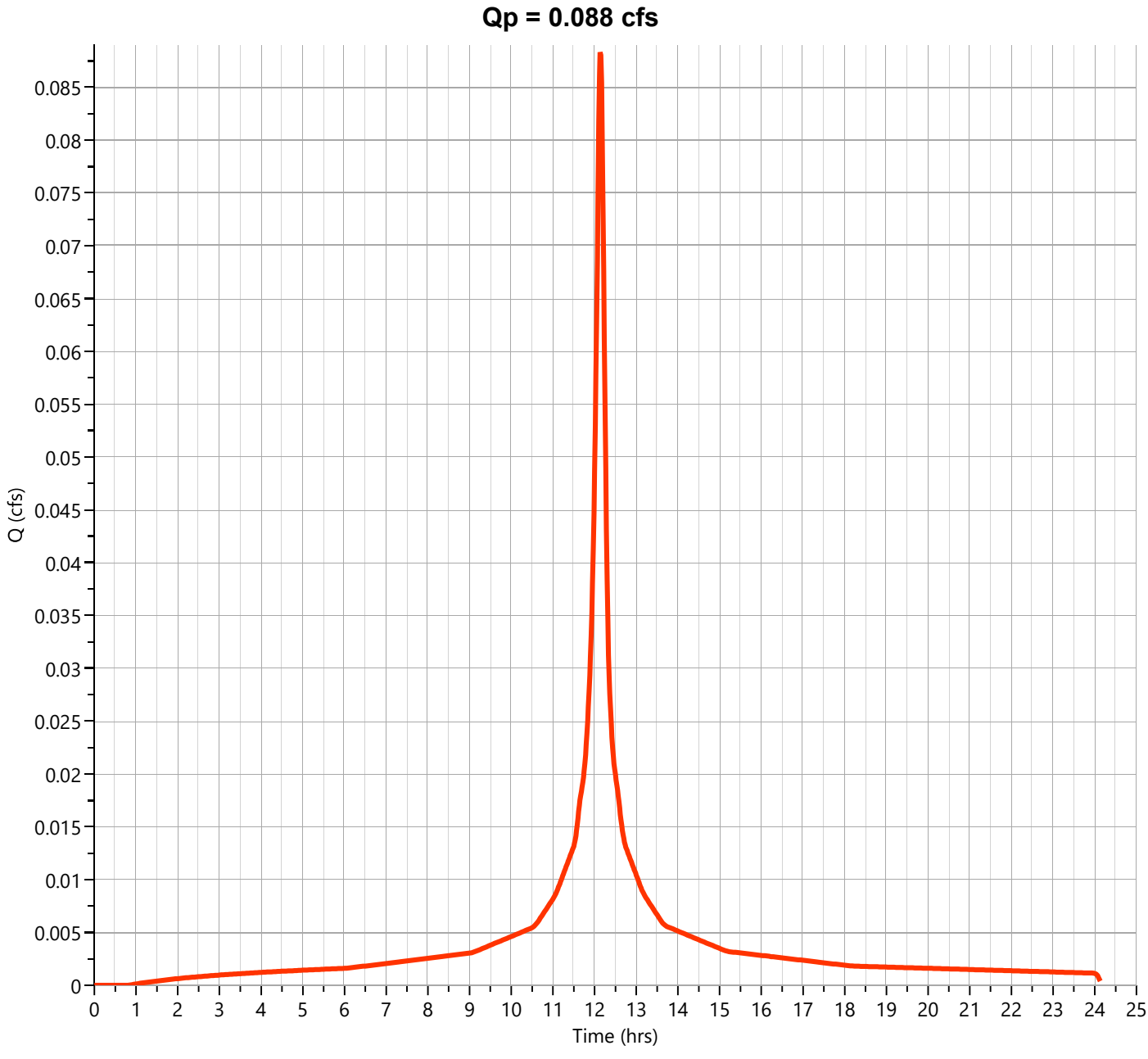
Hydrology Studio v 3.0.0.38

File: Existing HydrologyCurrent Precipitation(10yr).hys
07-31-2025

EX WSHD C Imperv

Hyd. No. 14

Hydrograph Type	= NRCS Runoff	Peak Flow	= 0.088 cfs
Storm Frequency	= 10-yr	Time to Peak	= 12.13 hrs
Time Interval	= 1 min	Runoff Volume	= 358 cuft
Drainage Area	= 0.02 ac	Curve Number	= 98.00
Tc Method	= User	Time of Conc. (Tc)	= 10.0 min
Total Rainfall	= 5.17 in	Design Storm	= NOAA-D
Storm Duration	= 24 hrs	Shape Factor	= 484



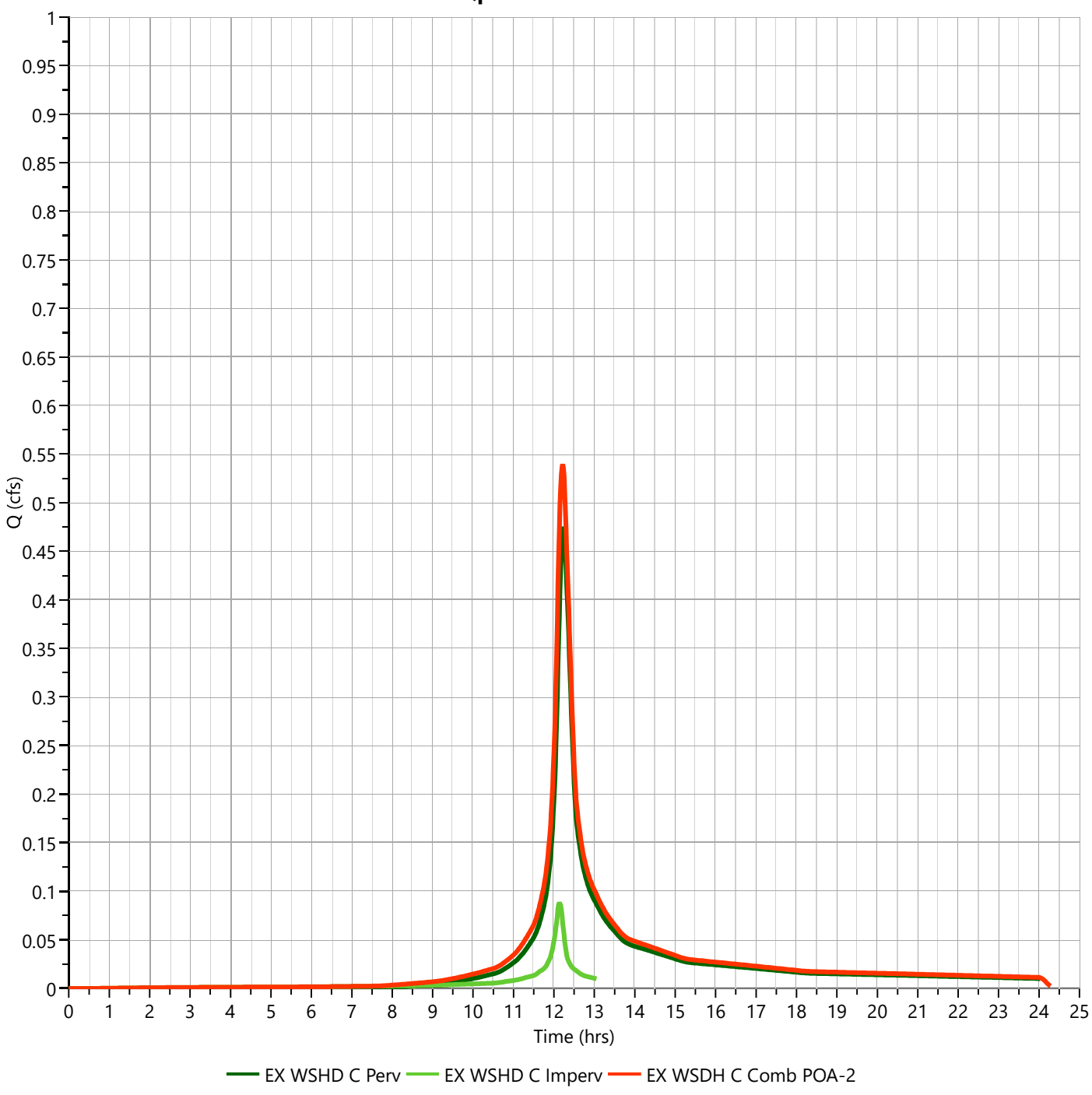
Hydrograph Report

Hydrology Studio v 3.0.0.38

File: Existing HydrologyCurrent Precipitation(10yr).hys
07-31-2025

EX WSDH C Comb POA-2 — Hyd. No. 15

Hydrograph Type	= Junction	Peak Flow	= 0.539 cfs
Storm Frequency	= 10-yr	Time to Peak	= 12.22 hrs
Time Interval	= 1 min	Hydrograph Volume	= 2,443 cuft
Inflow Hydrographs	= 13, 14	Total Contrib. Area	= 0.23 ac



Hydrograph Report

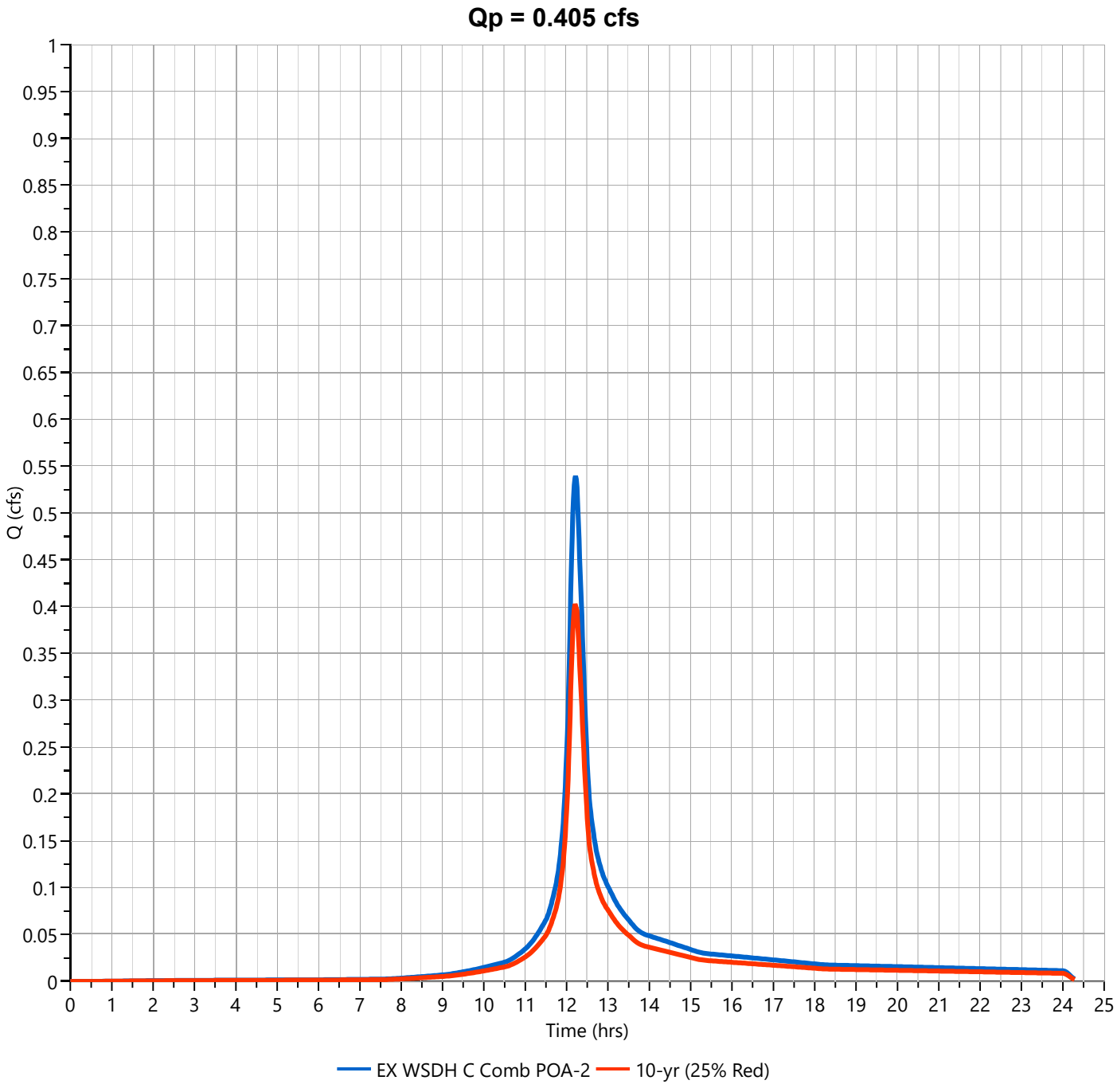
Hydrology Studio v 3.0.0.38

File: Existing HydrologyCurrent Precipitation(10yr).hys
07-31-2025

10-yr (25% Red)

Hyd. No. 16

Hydrograph Type	= Diversion	Peak Flow	= 0.405 cfs
Storm Frequency	= 10-yr	Time to Peak	= 12.22 hrs
Time Interval	= 1 min	Hydrograph Volume	= 1,832 cuft
Inflow Hydrograph	= 15 - EX WSDH C Comb POA-2	Diversion Method	= Flow Ratio
Companion Hyd	= 17 - N/A	Flow Ratio	= 0.75



Hydrograph Report

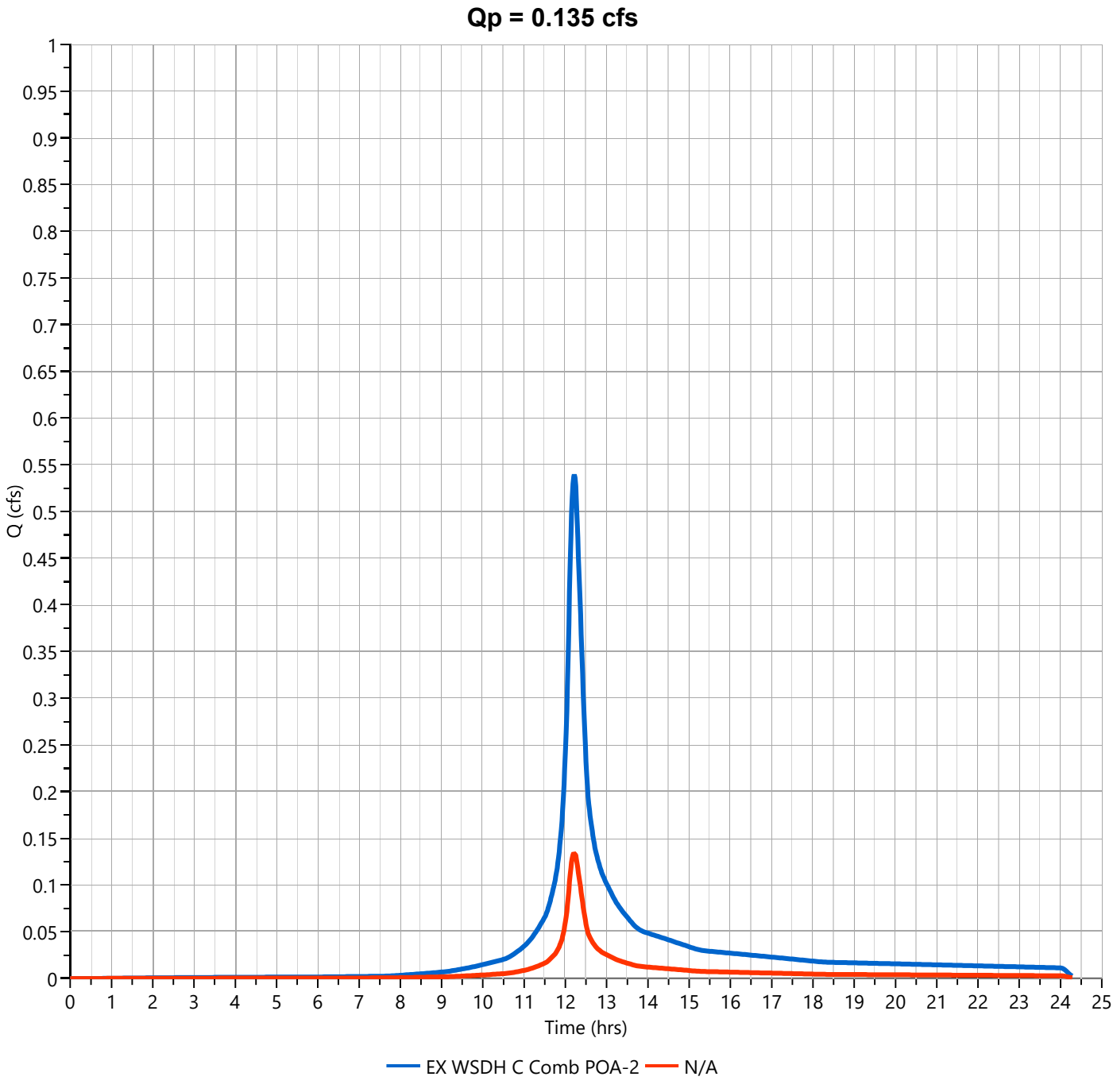
Hydrology Studio v 3.0.0.38

File: Existing HydrologyCurrent Precipitation(10yr).hys
07-31-2025

N/A

Hyd. No. 17

Hydrograph Type	= Diversion	Peak Flow	= 0.135 cfs
Storm Frequency	= 10-yr	Time to Peak	= 12.22 hrs
Time Interval	= 1 min	Hydrograph Volume	= 611 cuft
Inflow Hydrograph	= 15 - EX WSDH C Comb POA-2	Diversion Method	= Flow Ratio
Companion Hyd	= 16 - 10-yr (25% Red)	Flow Ratio	= 0.75



Hydrograph Report

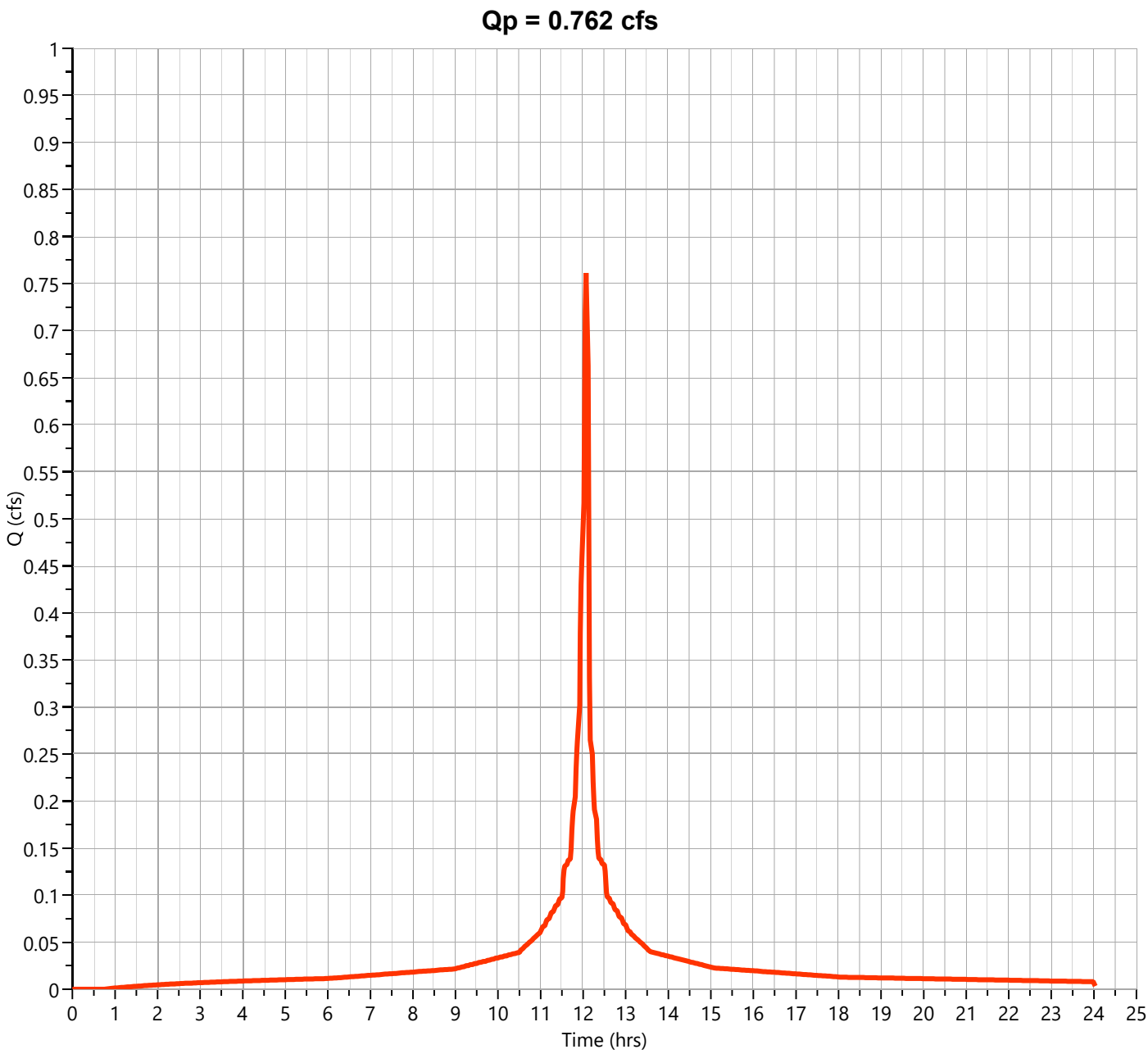
Hydrology Studio v 3.0.0.38

File: Existing HydrologyCurrent Precipitation(10yr).hys
07-31-2025

EX WSHD D Imp POA-3

Hyd. No. 19

Hydrograph Type	= NRCS Runoff	Peak Flow	= 0.762 cfs
Storm Frequency	= 10-yr	Time to Peak	= 12.10 hrs
Time Interval	= 1 min	Runoff Volume	= 2,518 cuft
Drainage Area	= 0.15 ac	Curve Number	= 98.00
Tc Method	= User	Time of Conc. (Tc)	= 3.0 min
Total Rainfall	= 5.17 in	Design Storm	= NOAA-D
Storm Duration	= 24 hrs	Shape Factor	= 484



Hydrograph Report

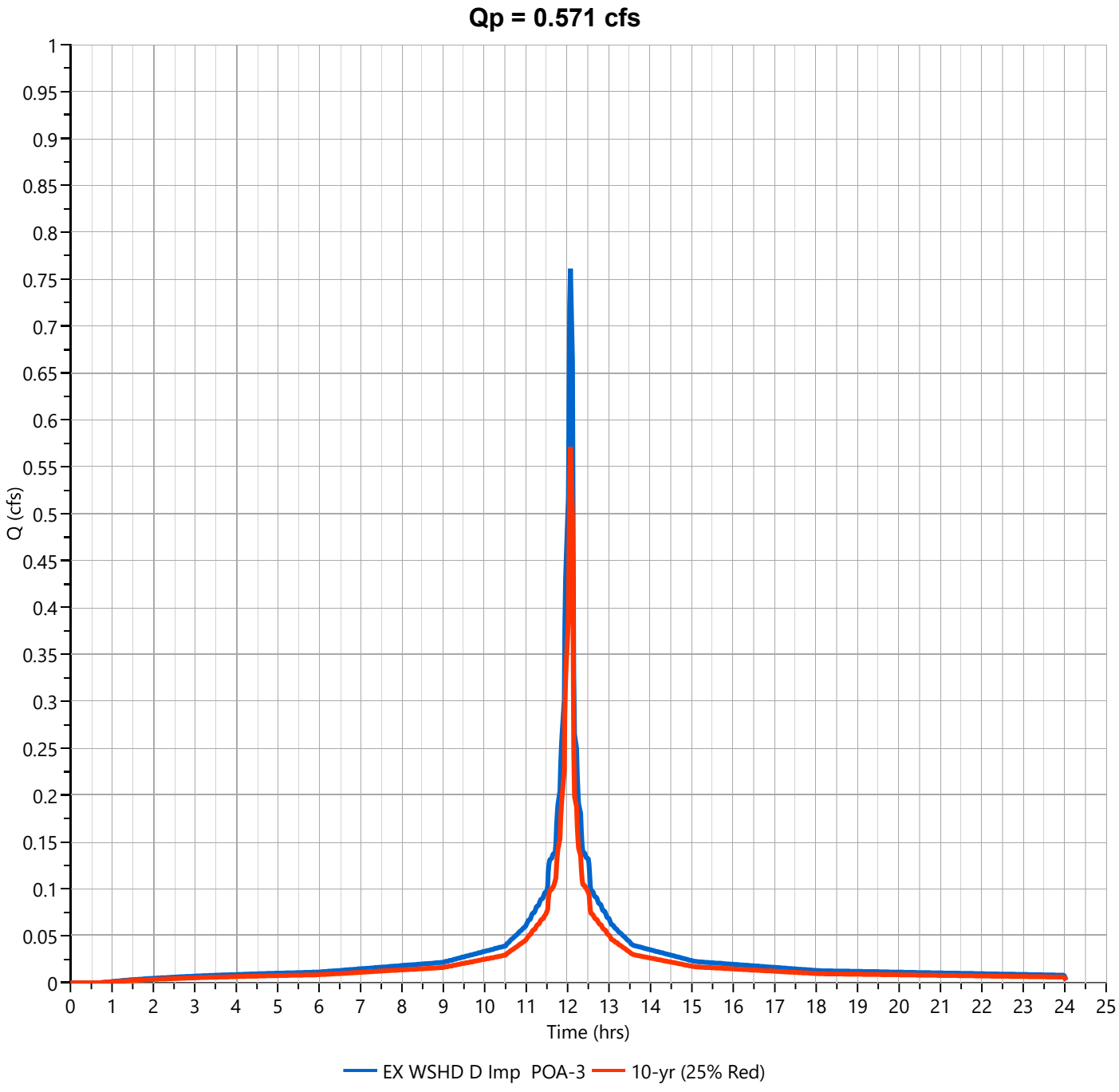
Hydrology Studio v 3.0.0.38

File: Existing HydrologyCurrent Precipitation(10yr).hys
07-31-2025

10-yr (25% Red)

Hyd. No. 20

Hydrograph Type	= Diversion	Peak Flow	= 0.571 cfs
Storm Frequency	= 10-yr	Time to Peak	= 12.10 hrs
Time Interval	= 1 min	Hydrograph Volume	= 1,889 cuft
Inflow Hydrograph	= 19 - EX WSHD D Imp POA-3	Diversion Method	= Flow Ratio
Companion Hyd	= 21 - N/A	Flow Ratio	= 0.75



Hydrograph Report

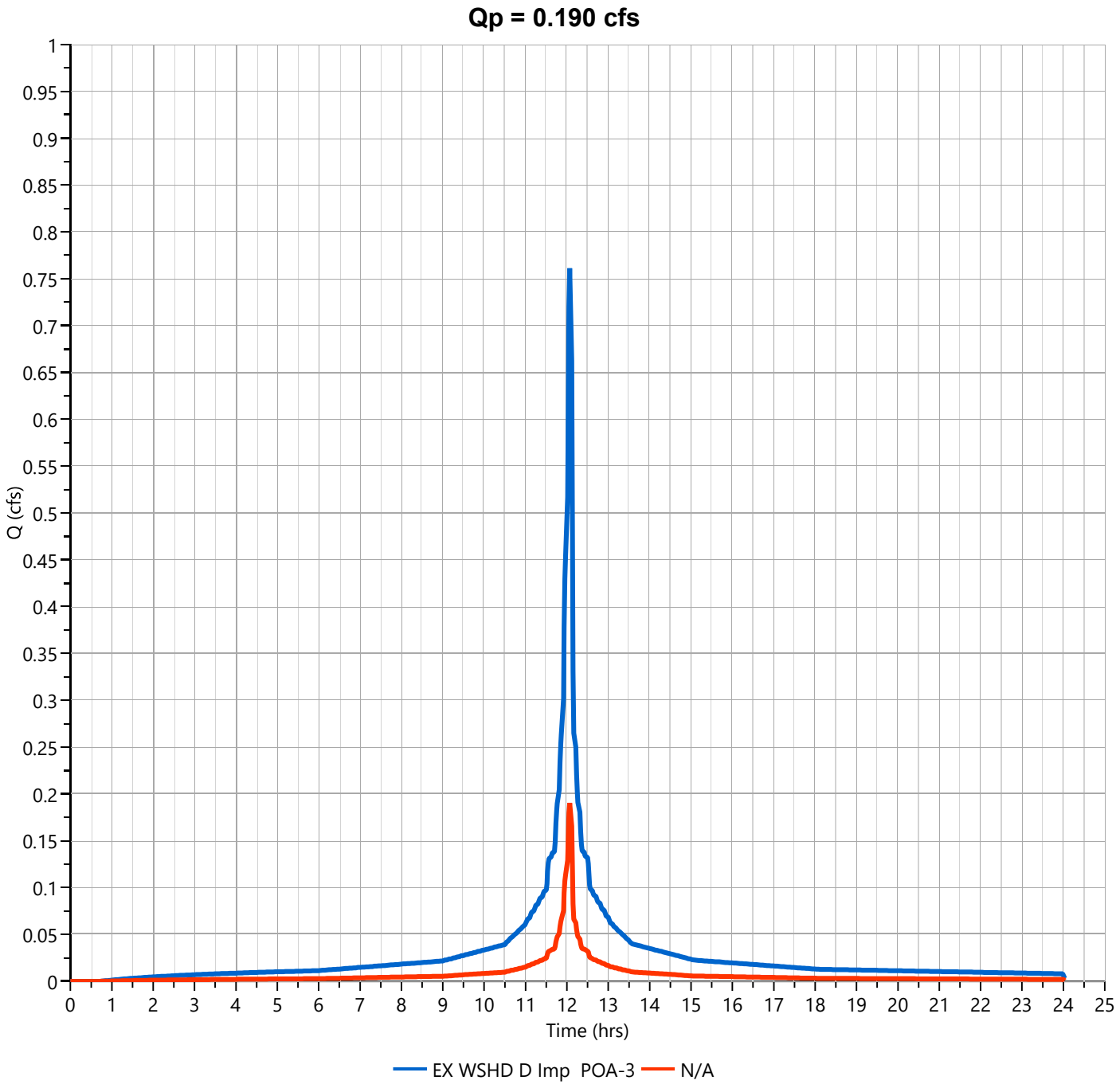
Hydrology Studio v 3.0.0.38

File: Existing HydrologyCurrent Precipitation(10yr).hys
07-31-2025

N/A

Hyd. No. 21

Hydrograph Type	= Diversion	Peak Flow	= 0.190 cfs
Storm Frequency	= 10-yr	Time to Peak	= 12.10 hrs
Time Interval	= 1 min	Hydrograph Volume	= 630 cuft
Inflow Hydrograph	= 19 - EX WSHD D Imp POA-3	Diversion Method	= Flow Ratio
Companion Hyd	= 20 - 10-yr (25% Red)	Flow Ratio	= 0.75



Hydrograph by Return Period

Hydrology Studio v 3.0.0.38

File: Existing HydrologyCurrent Precipitation(100yr).hys

07-31-2025

Hyd. No.	Hydrograph Type	Hydrograph Name	Peak Outflow (cfs)							
			1-yr	2-yr	3-yr	5-yr	10-yr	25-yr	50-yr	100-yr
1	NRCS Runoff	EX WSHD A Perv								18.57
2	NRCS Runoff	EX WSHD A Imperv								0.264
3	Junction	EX WSDH A Combined								18.74
4	Diversion1	100-yr (20% Red)								14.99
5	Diversion2	N/A								3.748
7	NRCS Runoff	EX WSHD B PervUndis								14.50
8	NRCS Runoff	EX WSHD B ImpUndist								4.499
9	Junction	EX WSHD BUndistComb								17.10
11	Junction	EX WSHD POA -1								31.22
13	NRCS Runoff	EX WSHD C Perv								1.017
14	NRCS Runoff	EX WSHD C Imperv								0.151
15	Junction	EX WSDH C Comb POA-2								1.130
16	Diversion1	100-yr (20% Red)								0.904
17	Diversion2	N/A								0.226
19	NRCS Runoff	EX WSHD D Imp POA-3								1.302
20	Diversion1	100-yr (20% Red)								1.041
21	Diversion2	N/A								0.260

Hydrograph 100-yr Summary

Hydrology Studio v 3.0.0.38

File: Existing HydrologyCurrent Precipitation(100yr).hys

07-31-2025

Hyd. No.	Hydrograph Type	Hydrograph Name	Peak Flow (cfs)	Time to Peak (hrs)	Hydrograph Volume (cuft)	Inflow Hyd(s)	Maximum Elevation (ft)	Maximum Storage (cuft)
1	NRCS Runoff	EX WSHD A Perv	18.57	12.98	192,967	----		
2	NRCS Runoff	EX WSHD A Imperv	0.264	12.53	2,168	----		
3	Junction	EX WSDH A Combined	18.74	12.98	195,135	1, 2		
4	Diversion1	100-yr (20% Red)	14.99	12.98	156,108	3		
5	Diversion2	N/A	3.748	12.98	39,027	3		
7	NRCS Runoff	EX WSHD B PervUndis	14.50	13.40	192,241	----		
8	NRCS Runoff	EX WSHD B ImpUndist	4.499	12.70	43,551	----		
9	Junction	EX WSHD BUndistComb	17.10	13.32	235,792	7, 8		
11	Junction	EX WSHD POA -1	31.22	13.13	391,901	4, 9		
13	NRCS Runoff	EX WSHD C Perv	1.017	12.23	4,539	----		
14	NRCS Runoff	EX WSHD C Imperv	0.151	12.13	622	----		
15	Junction	EX WSDH C Comb POA-2	1.130	12.22	5,161	13, 14		
16	Diversion1	100-yr (20% Red)	0.904	12.22	4,129	15		
17	Diversion2	N/A	0.226	12.22	1,032	15		
19	NRCS Runoff	EX WSHD D Imp POA-3	1.302	12.10	4,375	----		
20	Diversion1	100-yr (20% Red)	1.041	12.10	3,500	19		
21	Diversion2	N/A	0.260	12.10	875	19		

Hydrograph Report

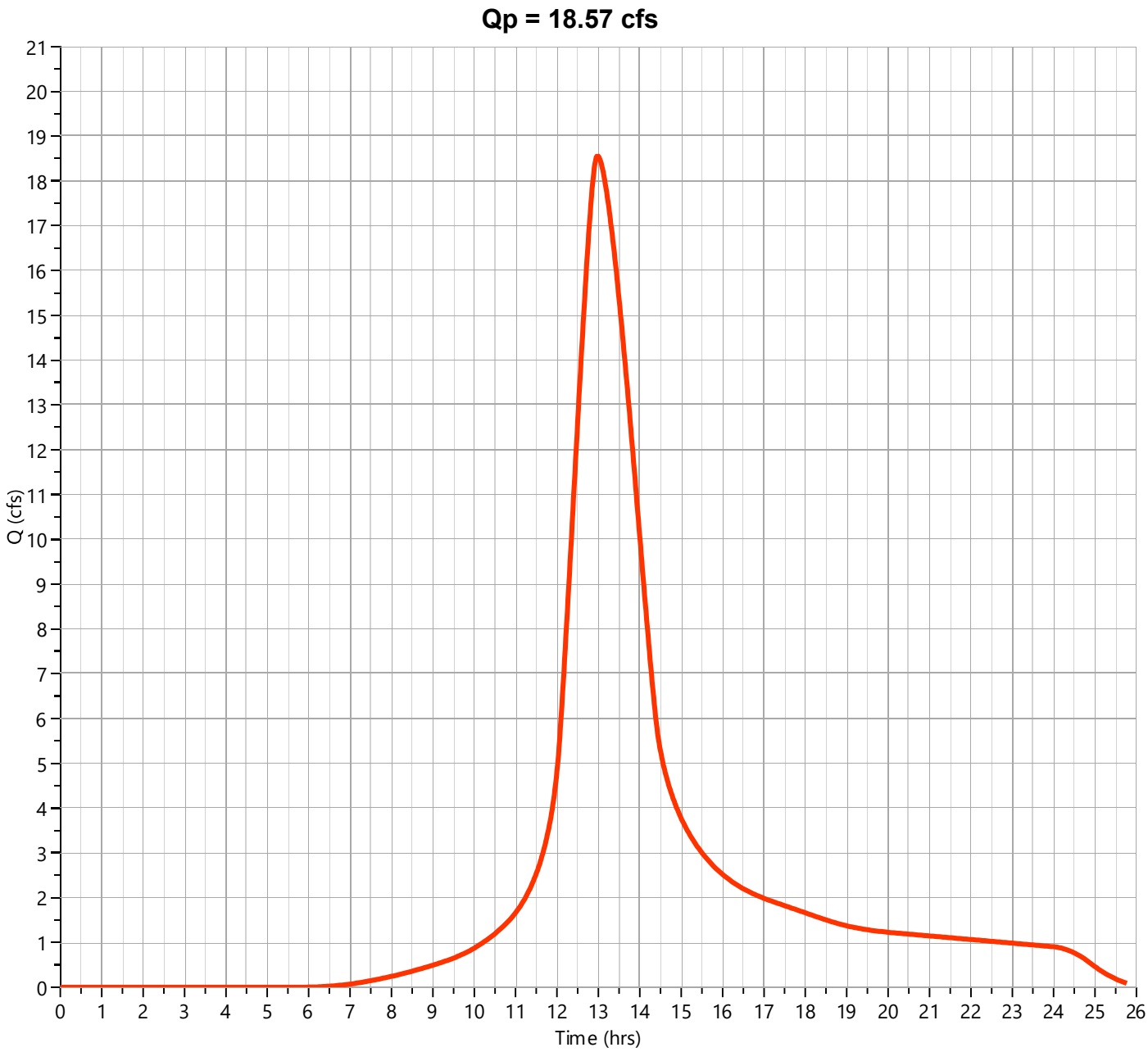
Hydrology Studio v 3.0.0.38

File: Existing HydrologyCurrent Precipitation(100yr).hys
07-31-2025

EX WSHD A Perv

Hyd. No. 1

Hydrograph Type	= NRCS Runoff	Peak Flow	= 18.57 cfs
Storm Frequency	= 100-yr	Time to Peak	= 12.98 hrs
Time Interval	= 1 min	Runoff Volume	= 192,967 cuft
Drainage Area	= 9.2 ac	Curve Number	= 75.00
Tc Method	= User	Time of Conc. (Tc)	= 91.0 min
Total Rainfall	= 8.81 in	Design Storm	= NOAA-D
Storm Duration	= 24 hrs	Shape Factor	= 484



Hydrograph Report

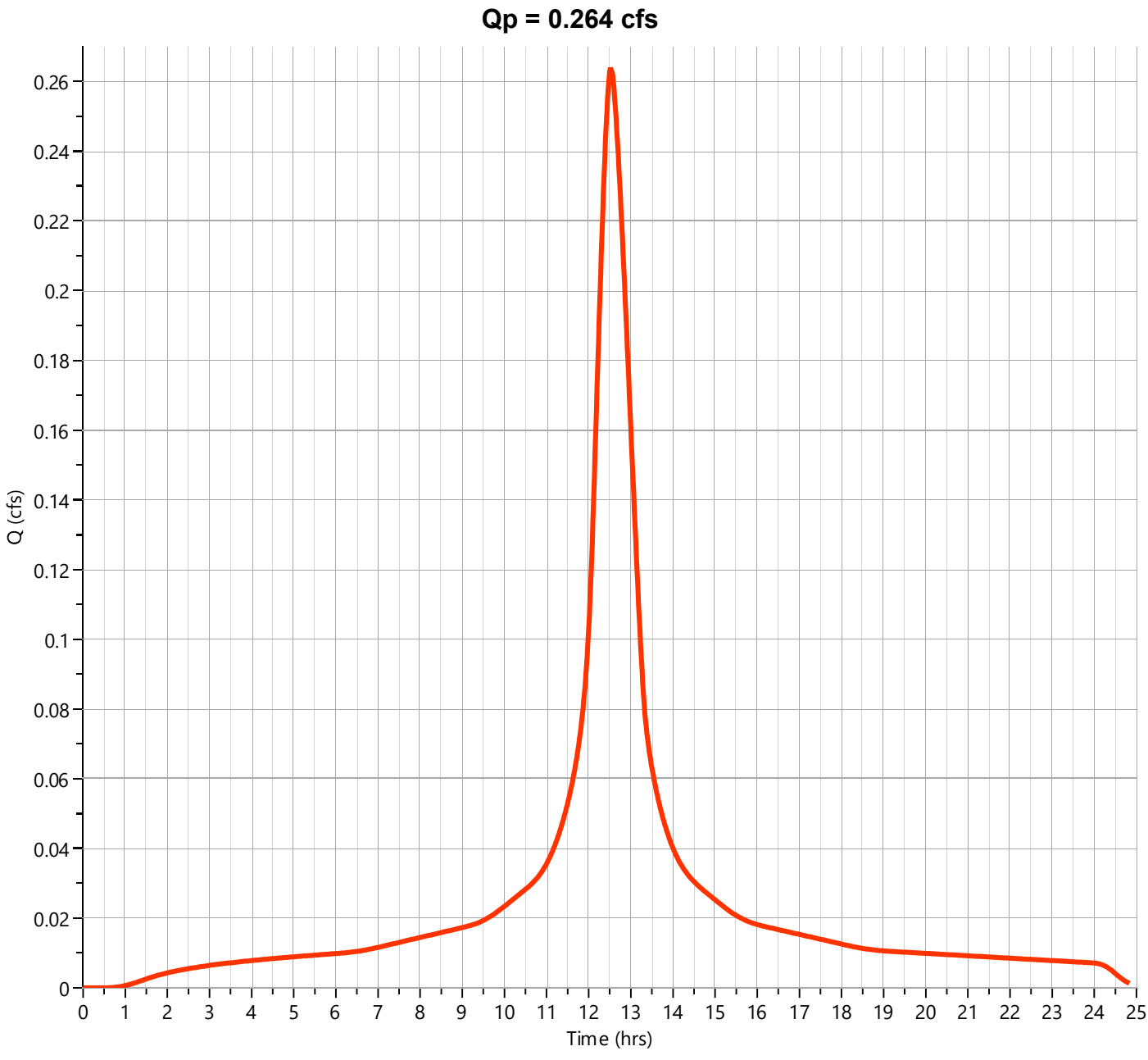
Hydrology Studio v 3.0.0.38

File: Existing HydrologyCurrent Precipitation(100yr).hys
07-31-2025

EX WSHD A Imperv

Hyd. No. 2

Hydrograph Type	= NRCS Runoff	Peak Flow	= 0.264 cfs
Storm Frequency	= 100-yr	Time to Peak	= 12.53 hrs
Time Interval	= 1 min	Runoff Volume	= 2,168 cuft
Drainage Area	= 0.07 ac	Curve Number	= 98.00
Tc Method	= User	Time of Conc. (Tc)	= 48.0 min
Total Rainfall	= 8.81 in	Design Storm	= NOAA-D
Storm Duration	= 24 hrs	Shape Factor	= 484



Hydrograph Report

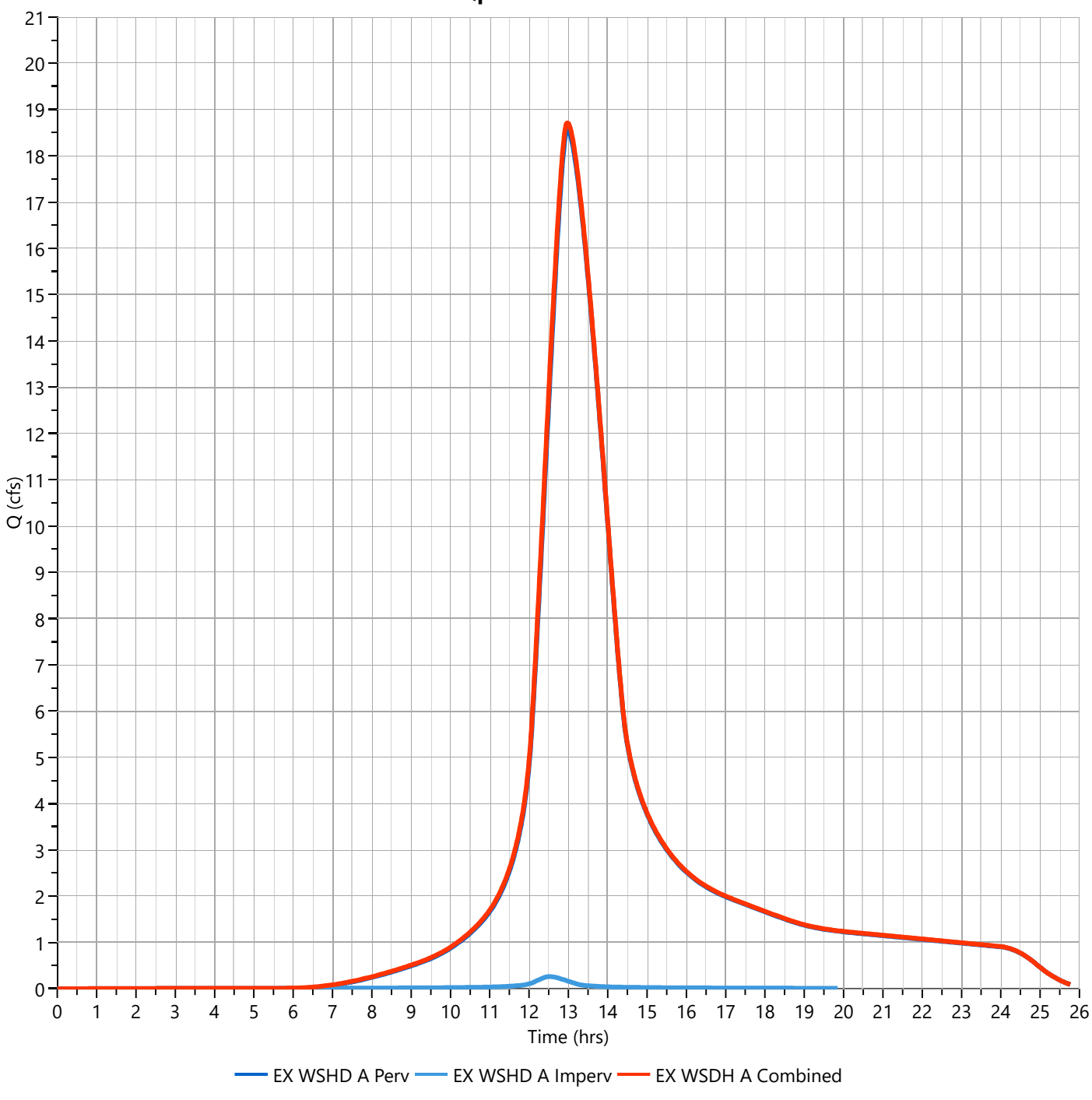
Hydrology Studio v 3.0.0.38

File: Existing HydrologyCurrent Precipitation(100yr).hys
07-31-2025

EX WSDH A Combined

Hyd. No. 3

Hydrograph Type	= Junction	Peak Flow	= 18.74 cfs
Storm Frequency	= 100-yr	Time to Peak	= 12.98 hrs
Time Interval	= 1 min	Hydrograph Volume	= 195,135 cuft
Inflow Hydrographs	= 1, 2	Total Contrib. Area	= 9.27 ac



Hydrograph Report

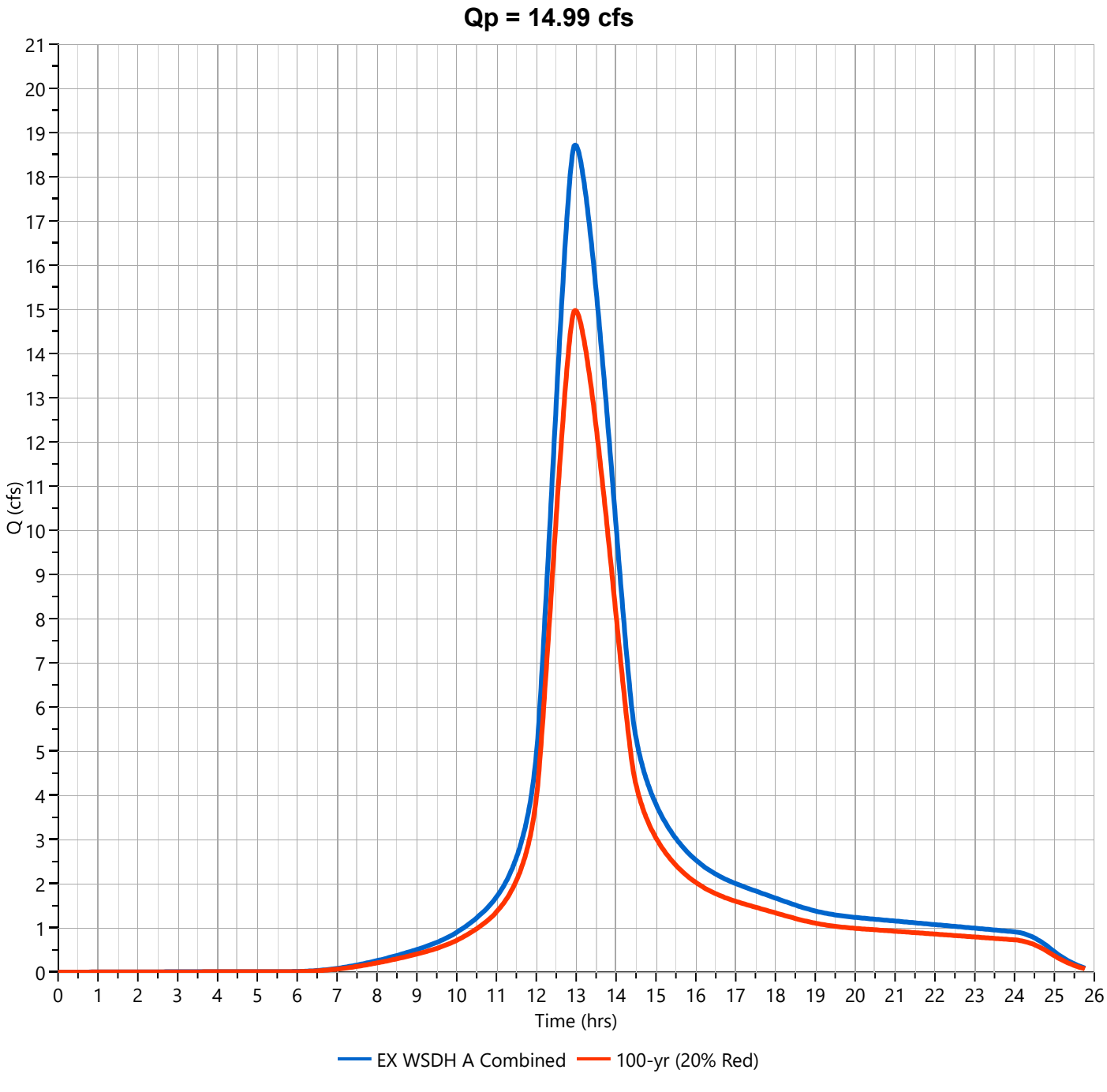
Hydrology Studio v 3.0.0.38

File: Existing HydrologyCurrent Precipitation(100yr).hys
07-31-2025

100-yr (20% Red)

Hyd. No. 4

Hydrograph Type	= Diversion	Peak Flow	= 14.99 cfs
Storm Frequency	= 100-yr	Time to Peak	= 12.98 hrs
Time Interval	= 1 min	Hydrograph Volume	= 156,108 cuft
Inflow Hydrograph	= 3 - EX WSDH A Combined	Diversion Method	= Flow Ratio
Companion Hyd	= 5 - N/A	Flow Ratio	= 0.8



Hydrograph Report

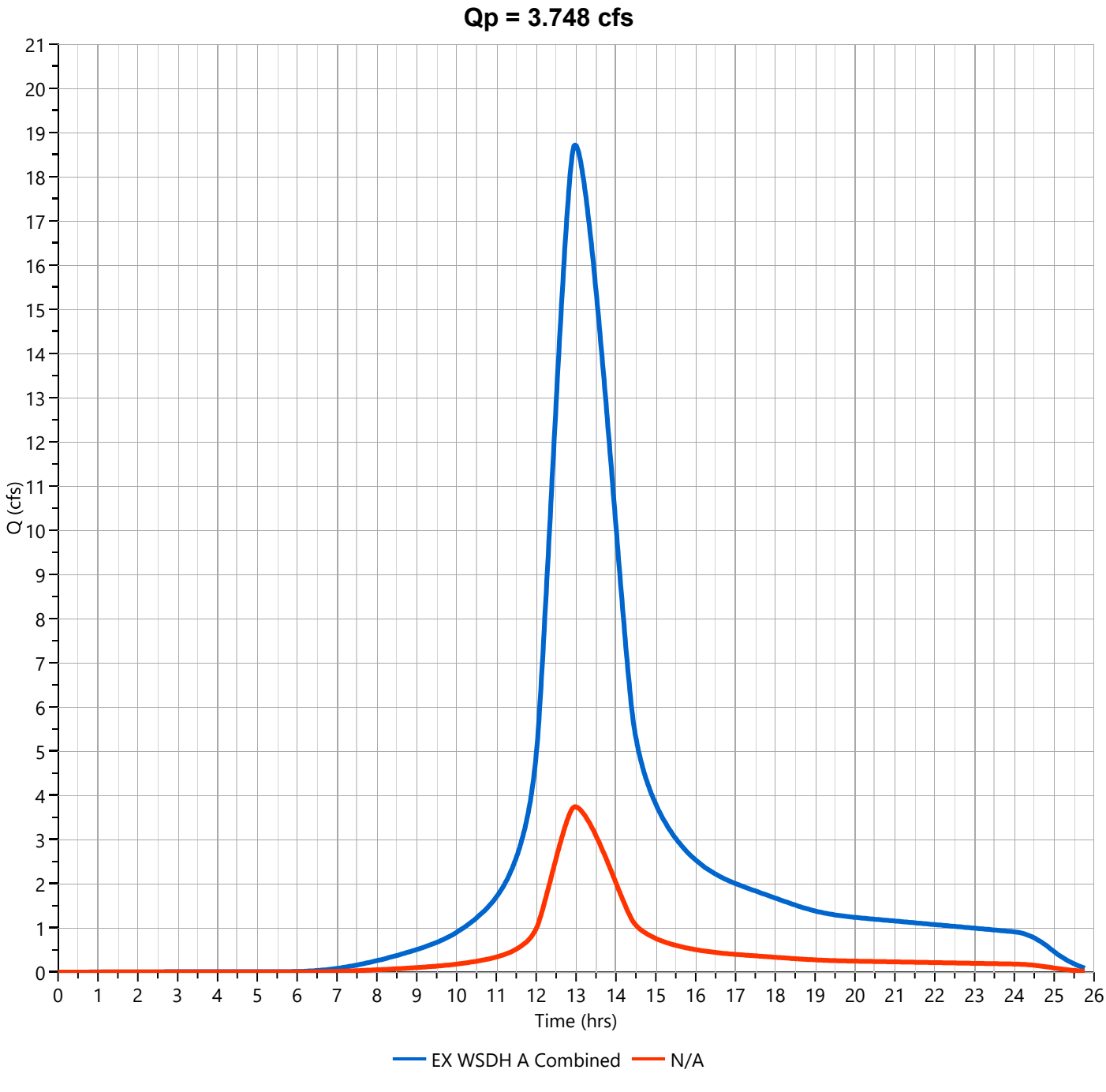
Hydrology Studio v 3.0.0.38

File: Existing HydrologyCurrent Precipitation(100yr).hys
07-31-2025

N/A

Hyd. No. 5

Hydrograph Type	= Diversion	Peak Flow	= 3.748 cfs
Storm Frequency	= 100-yr	Time to Peak	= 12.98 hrs
Time Interval	= 1 min	Hydrograph Volume	= 39,027 cuft
Inflow Hydrograph	= 3 - EX WSDH A Combined	Diversion Method	= Flow Ratio
Companion Hyd	= 4 - 100-yr (20% Red)	Flow Ratio	= 0.8



Hydrograph Report

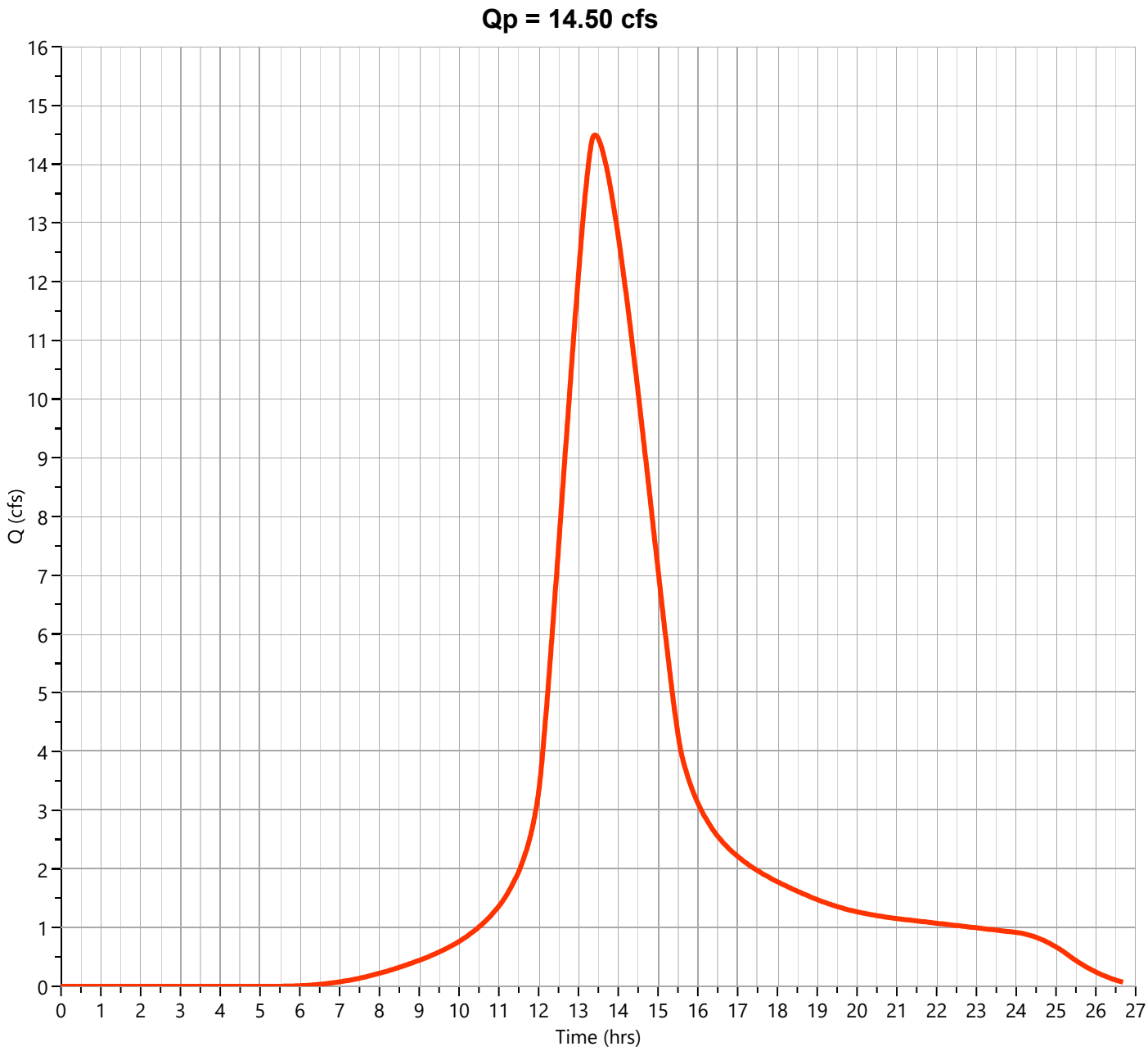
Hydrology Studio v 3.0.0.38

File: Existing HydrologyCurrent Precipitation(100yr).hys
07-31-2025

EX WSHD B PervUndis

Hyd. No. 7

Hydrograph Type	= NRCS Runoff	Peak Flow	= 14.50 cfs
Storm Frequency	= 100-yr	Time to Peak	= 13.40 hrs
Time Interval	= 1 min	Runoff Volume	= 192,241 cuft
Drainage Area	= 8.78 ac	Curve Number	= 77.00
Tc Method	= User	Time of Conc. (Tc)	= 134.0 min
Total Rainfall	= 8.81 in	Design Storm	= NOAA-D
Storm Duration	= 24 hrs	Shape Factor	= 484



Hydrograph Report

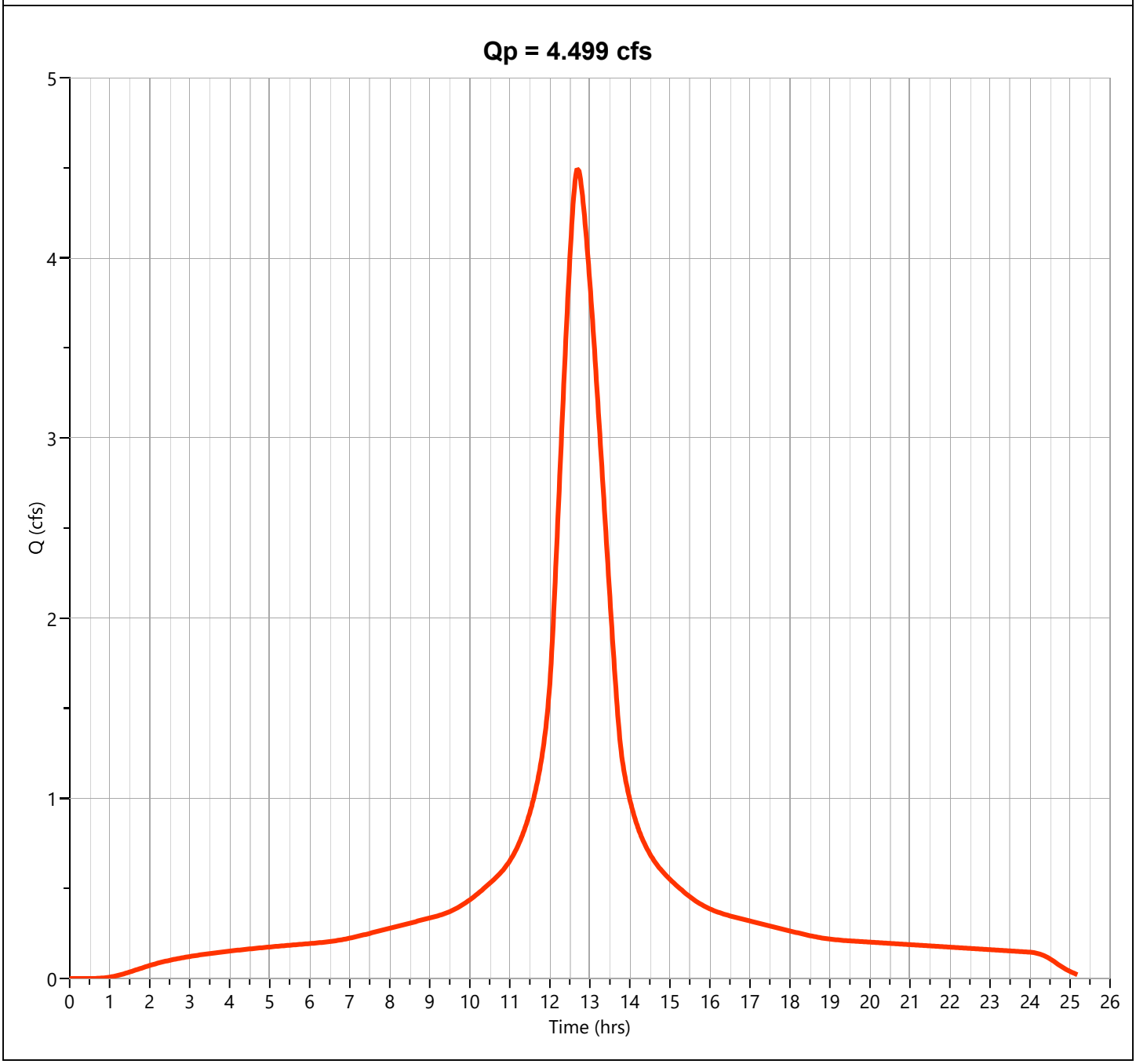
Hydrology Studio v 3.0.0.38

File: Existing HydrologyCurrent Precipitation(100yr).hys
07-31-2025

EX WSHD B ImpUndist

Hyd. No. 8

Hydrograph Type	= NRCS Runoff	Peak Flow	= 4.499 cfs
Storm Frequency	= 100-yr	Time to Peak	= 12.70 hrs
Time Interval	= 1 min	Runoff Volume	= 43,551 cuft
Drainage Area	= 1.4 ac	Curve Number	= 98.00
Tc Method	= User	Time of Conc. (Tc)	= 66.0 min
Total Rainfall	= 8.81 in	Design Storm	= NOAA-D
Storm Duration	= 24 hrs	Shape Factor	= 484



Hydrograph Report

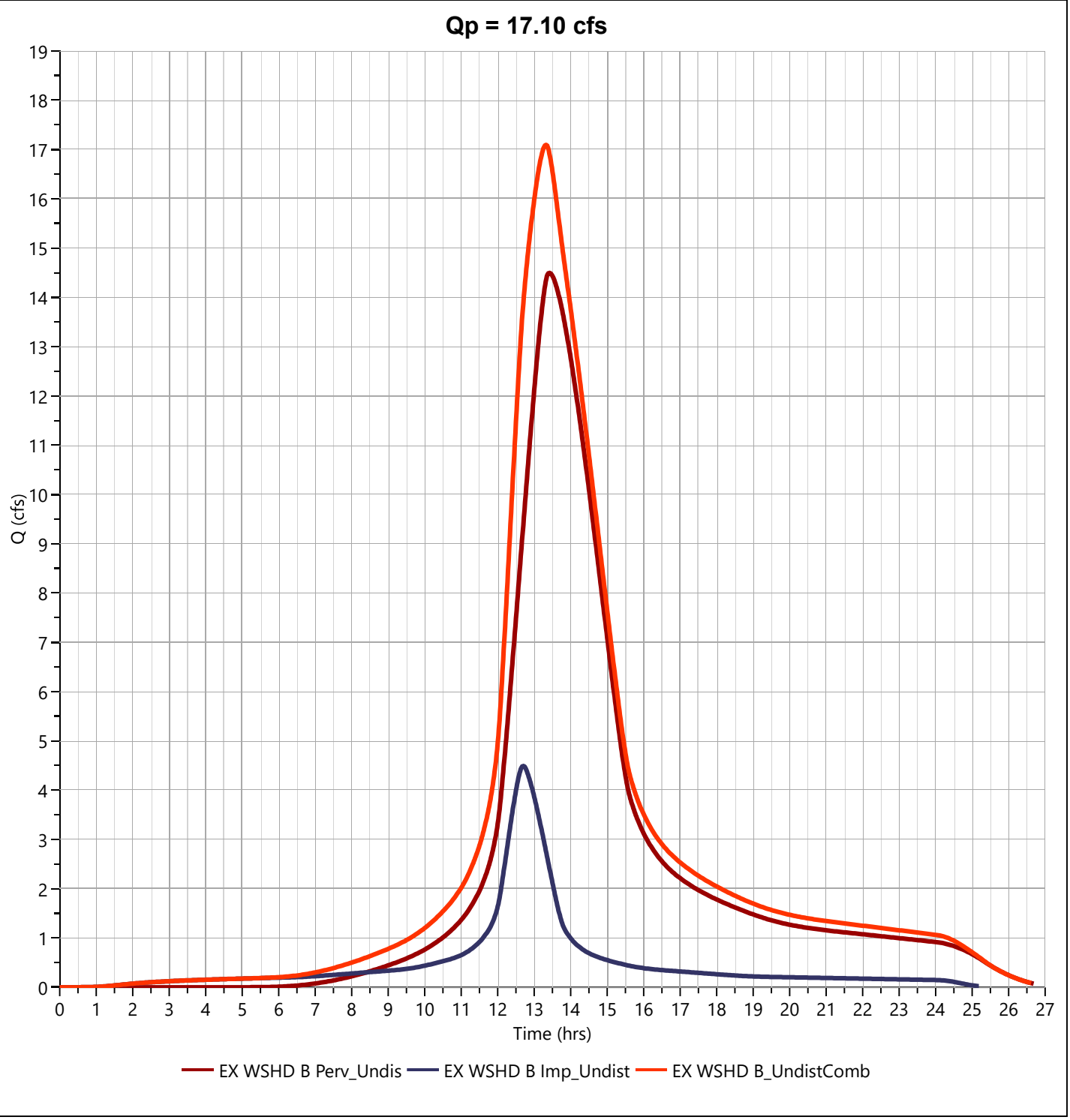
Hydrology Studio v 3.0.0.38

File: Existing HydrologyCurrent Precipitation(100yr).hys
07-31-2025

EX WSHD BUndistComb

Hyd. No. 9

Hydrograph Type	= Junction	Peak Flow	= 17.10 cfs
Storm Frequency	= 100-yr	Time to Peak	= 13.32 hrs
Time Interval	= 1 min	Hydrograph Volume	= 235,792 cuft
Inflow Hydrographs	= 7, 8	Total Contrib. Area	= 10.18 ac



Hydrograph Report

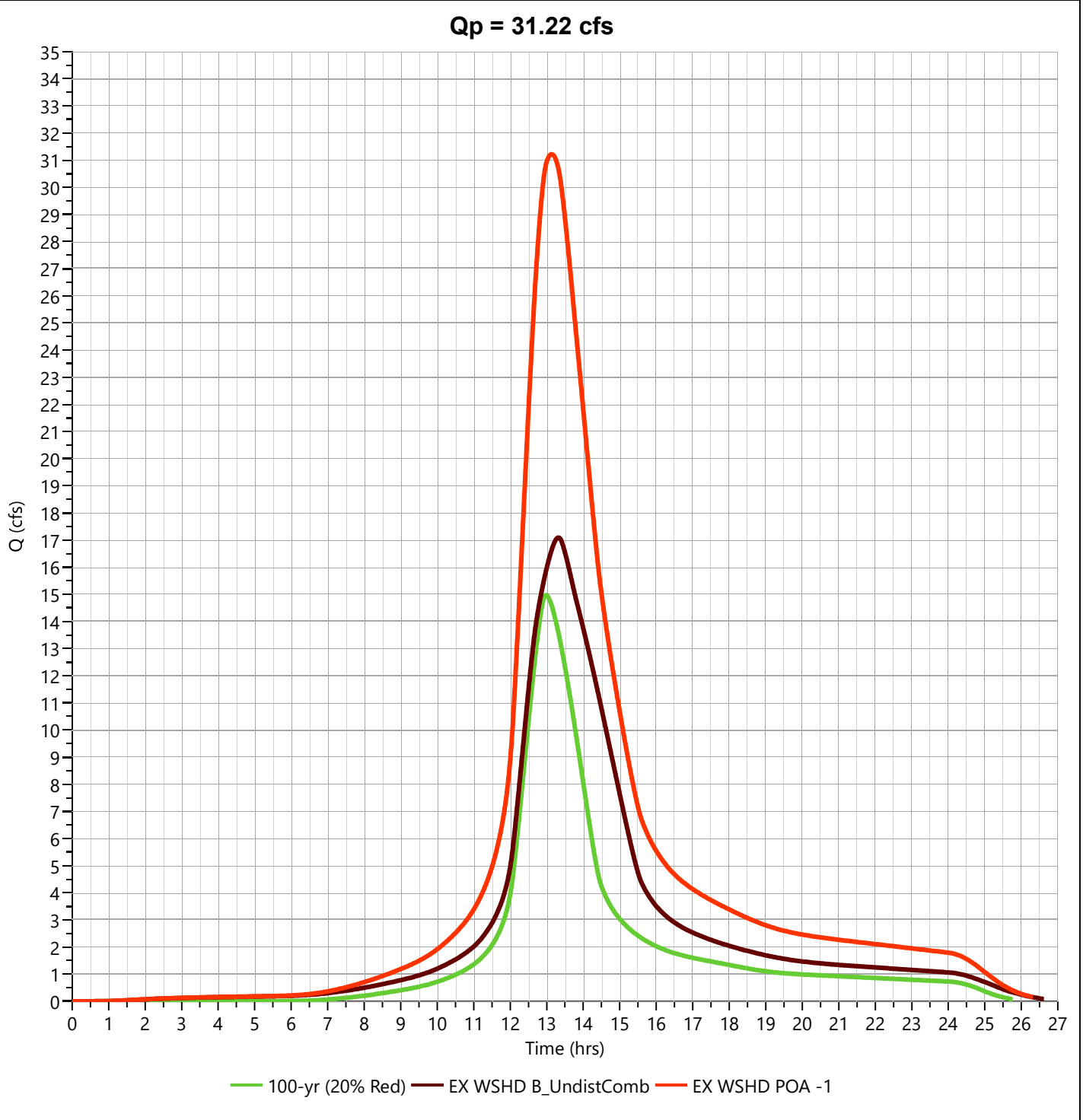
Hydrology Studio v 3.0.0.38

File: Existing HydrologyCurrent Precipitation(100yr).hys
07-31-2025

EX WSHD POA -1

Hyd. No. 11

Hydrograph Type	= Junction	Peak Flow	= 31.22 cfs
Storm Frequency	= 100-yr	Time to Peak	= 13.13 hrs
Time Interval	= 1 min	Hydrograph Volume	= 391,901 cuft
Inflow Hydrographs		Total Contrib. Area	= 0.0 ac



Hydrograph Report

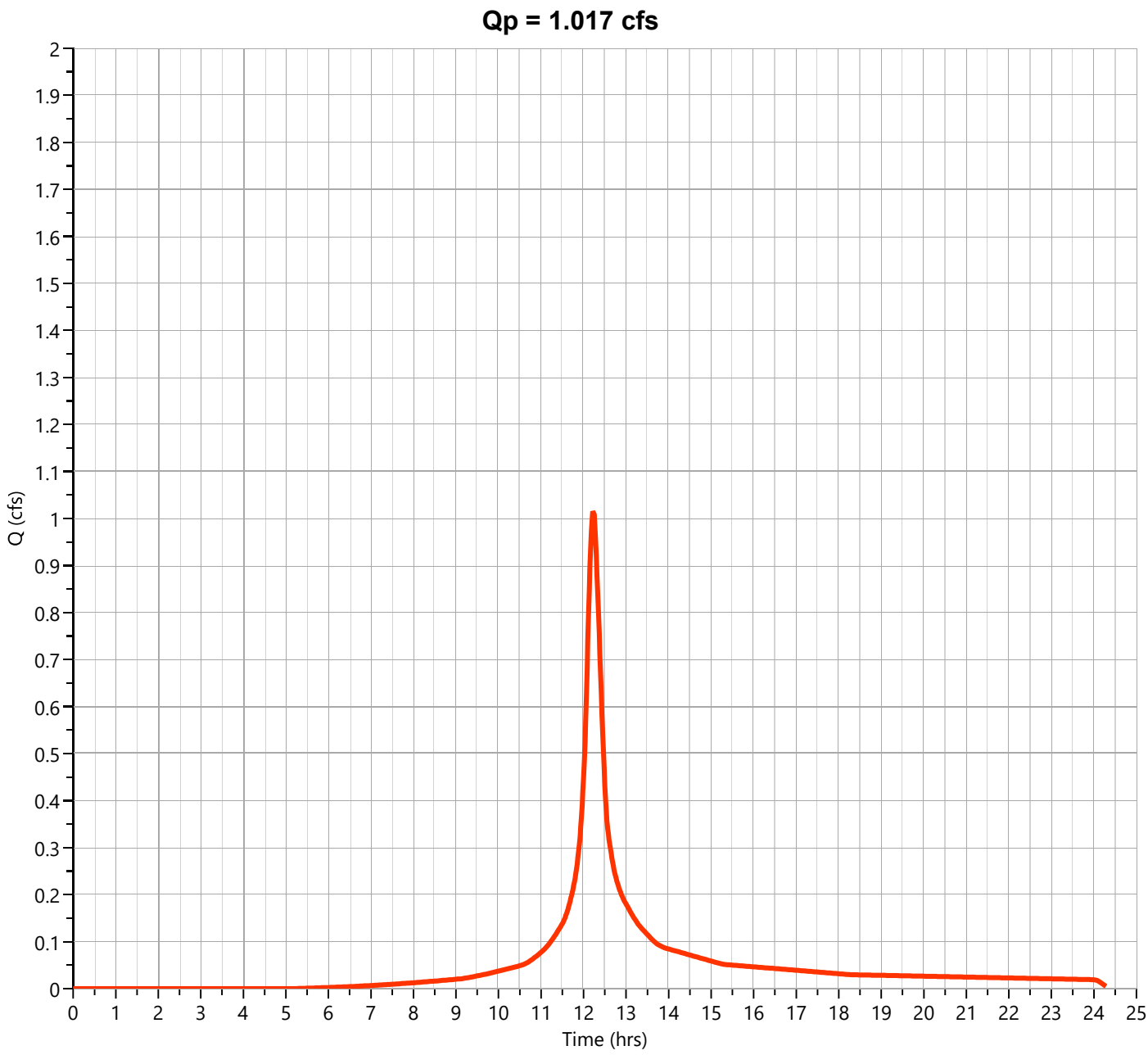
Hydrology Studio v 3.0.0.38

File: Existing HydrologyCurrent Precipitation(100yr).hys
07-31-2025

EX WSHD C Perv

Hyd. No. 13

Hydrograph Type	= NRCS Runoff	Peak Flow	= 1.017 cfs
Storm Frequency	= 100-yr	Time to Peak	= 12.23 hrs
Time Interval	= 1 min	Runoff Volume	= 4,539 cuft
Drainage Area	= 0.21 ac	Curve Number	= 77.00
Tc Method	= User	Time of Conc. (Tc)	= 18.0 min
Total Rainfall	= 8.81 in	Design Storm	= NOAA-D
Storm Duration	= 24 hrs	Shape Factor	= 484



Hydrograph Report

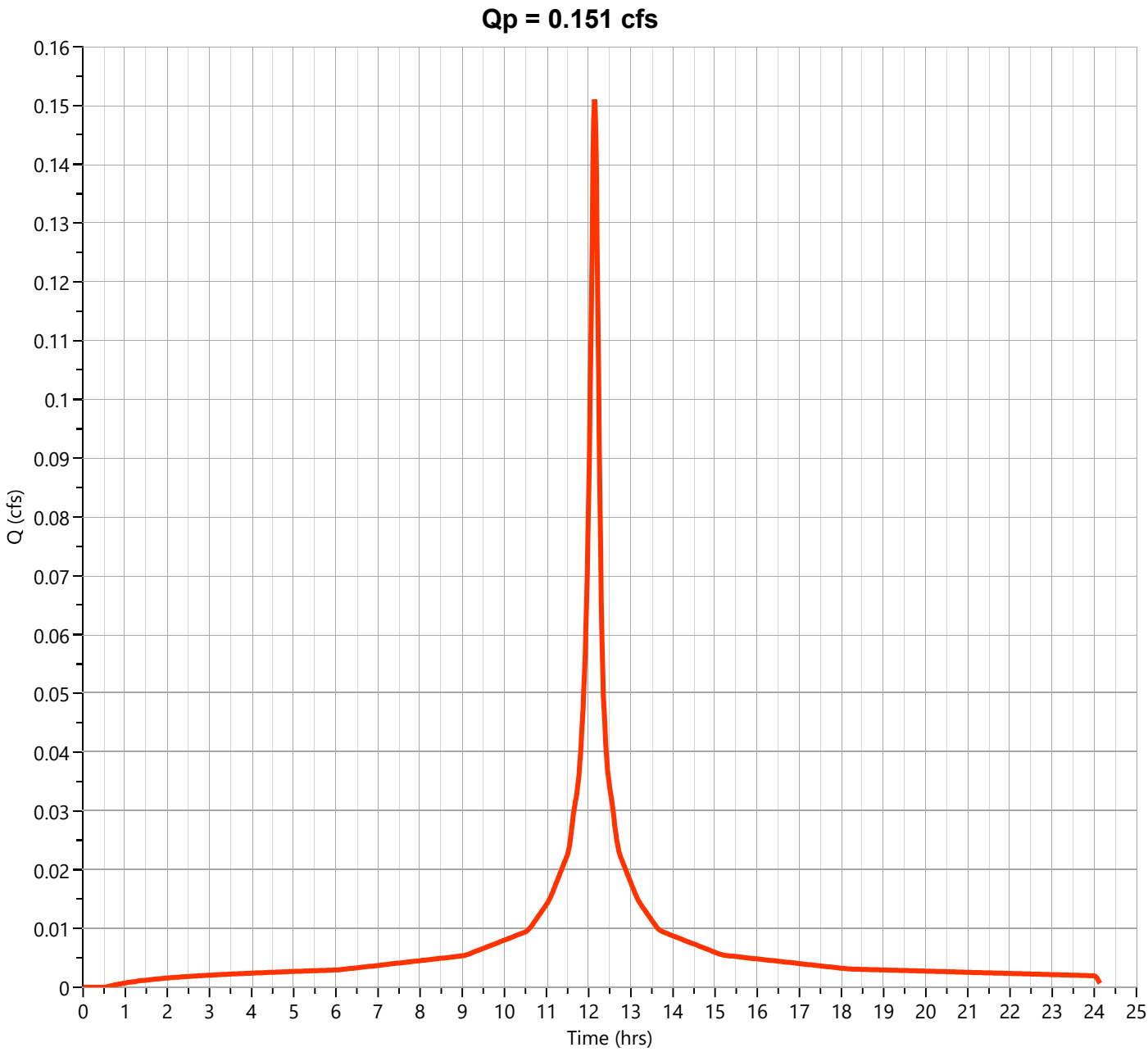
Hydrology Studio v 3.0.0.38

File: Existing HydrologyCurrent Precipitation(100yr).hys
07-31-2025

EX WSHD C Imperv

Hyd. No. 14

Hydrograph Type	= NRCS Runoff	Peak Flow	= 0.151 cfs
Storm Frequency	= 100-yr	Time to Peak	= 12.13 hrs
Time Interval	= 1 min	Runoff Volume	= 622 cuft
Drainage Area	= 0.02 ac	Curve Number	= 98.00
Tc Method	= User	Time of Conc. (Tc)	= 10.0 min
Total Rainfall	= 8.81 in	Design Storm	= NOAA-D
Storm Duration	= 24 hrs	Shape Factor	= 484



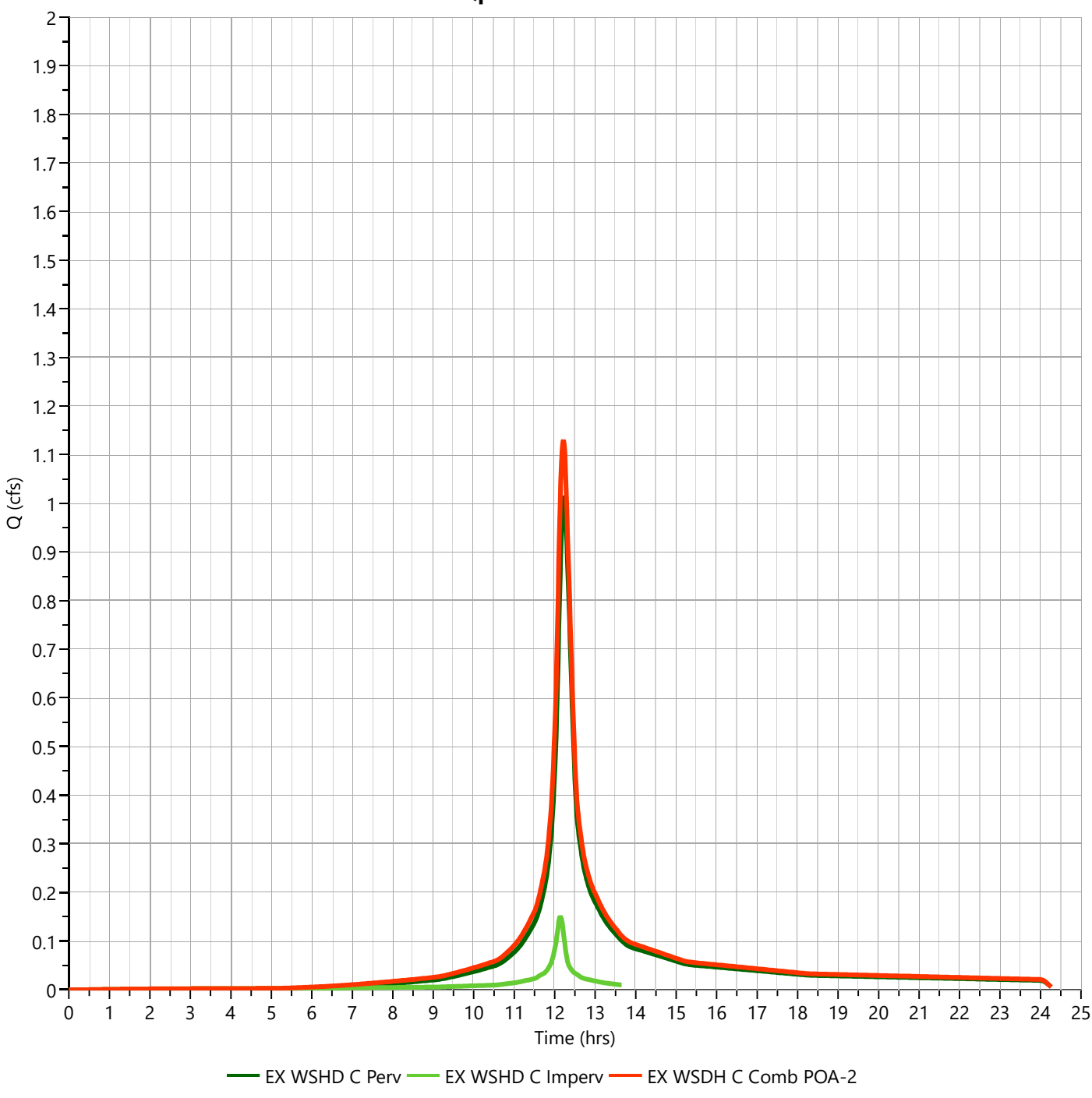
Hydrograph Report

Hydrology Studio v 3.0.0.38

File: Existing HydrologyCurrent Precipitation(100yr).hys
07-31-2025

EX WSDH C Comb POA-2 — Hyd. No. 15

Hydrograph Type	= Junction	Peak Flow	= 1.130 cfs
Storm Frequency	= 100-yr	Time to Peak	= 12.22 hrs
Time Interval	= 1 min	Hydrograph Volume	= 5,161 cuft
Inflow Hydrographs	= 13, 14	Total Contrib. Area	= 0.23 ac



Hydrograph Report

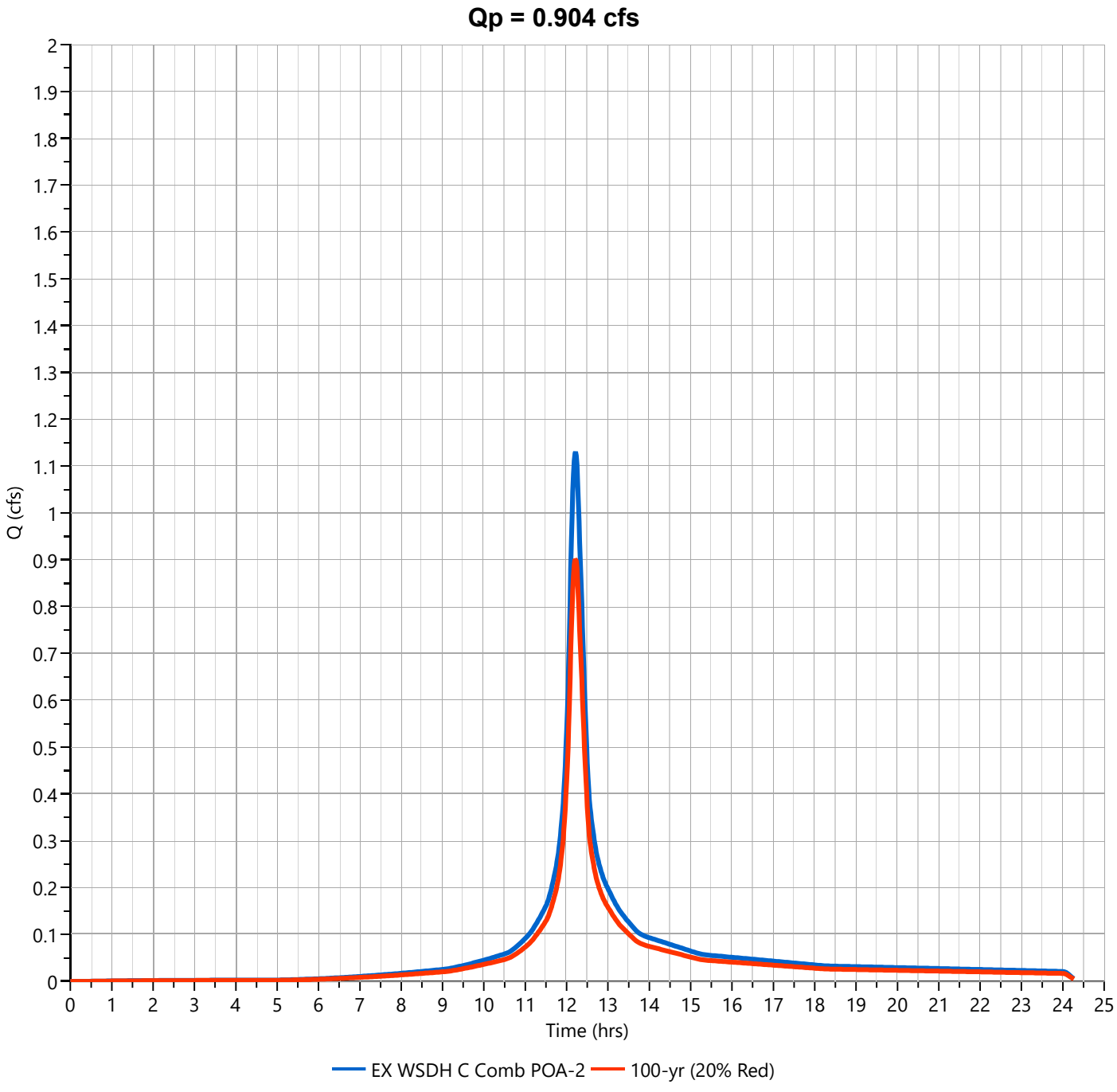
Hydrology Studio v 3.0.0.38

File: Existing HydrologyCurrent Precipitation(100yr).hys
07-31-2025

100-yr (20% Red)

Hyd. No. 16

Hydrograph Type	= Diversion	Peak Flow	= 0.904 cfs
Storm Frequency	= 100-yr	Time to Peak	= 12.22 hrs
Time Interval	= 1 min	Hydrograph Volume	= 4,129 cuft
Inflow Hydrograph	= 15 - EX WSDH C Comb POA-2	Diversion Method	= Flow Ratio
Companion Hyd	= 17 - N/A	Flow Ratio	= 0.8



Hydrograph Report

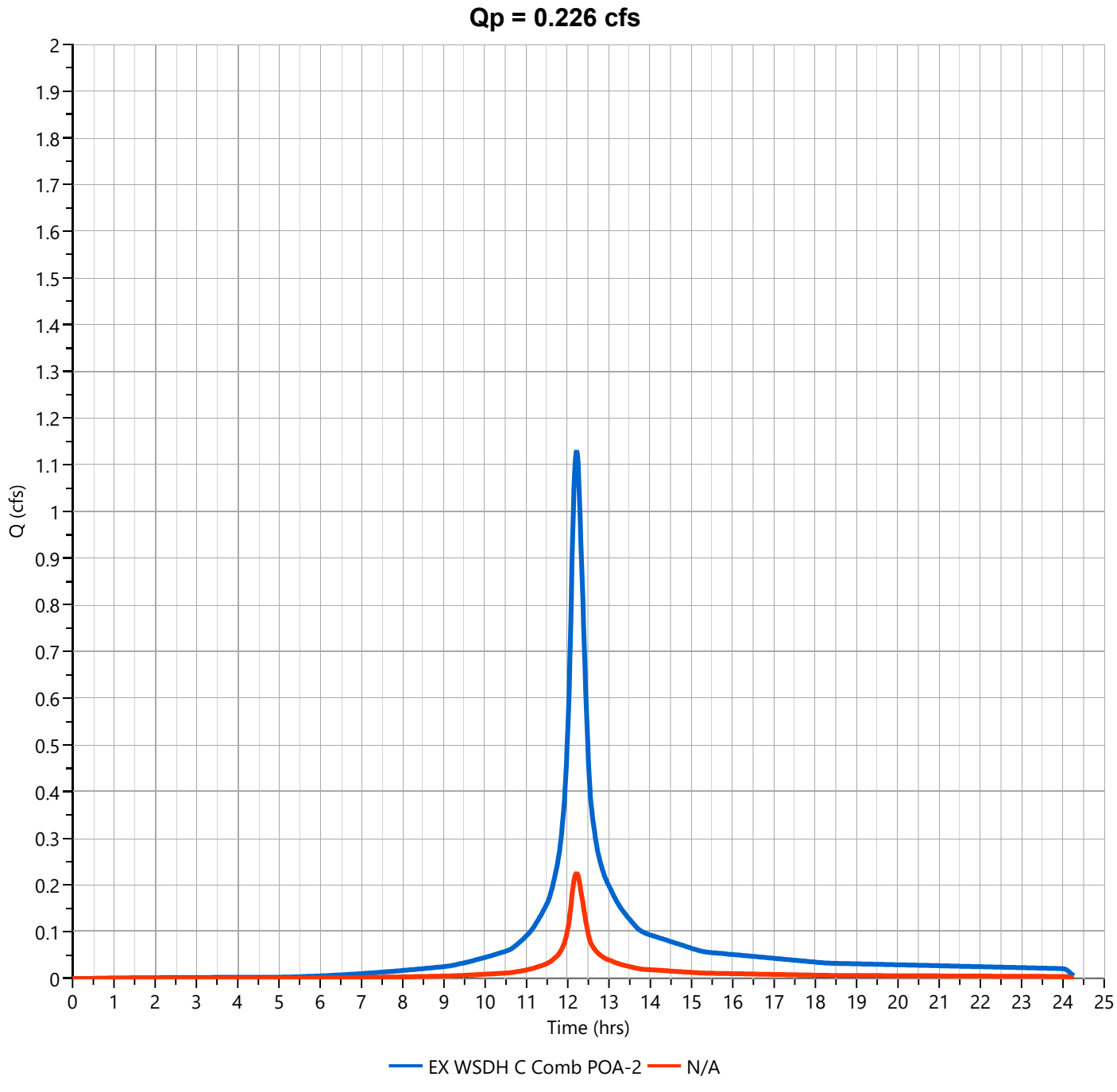
Hydrology Studio v 3.0.0.38

File: Existing HydrologyCurrent Precipitation(100yr).hys
07-31-2025

N/A

Hyd. No. 17

Hydrograph Type	= Diversion	Peak Flow	= 0.226 cfs
Storm Frequency	= 100-yr	Time to Peak	= 12.22 hrs
Time Interval	= 1 min	Hydrograph Volume	= 1,032 cuft
Inflow Hydrograph	= 15 - EX WSDH C Comb POA-2	Diversion Method	= Flow Ratio
Companion Hyd	= 16 - 100-yr (20% Red)	Flow Ratio	= 0.8



Hydrograph Report

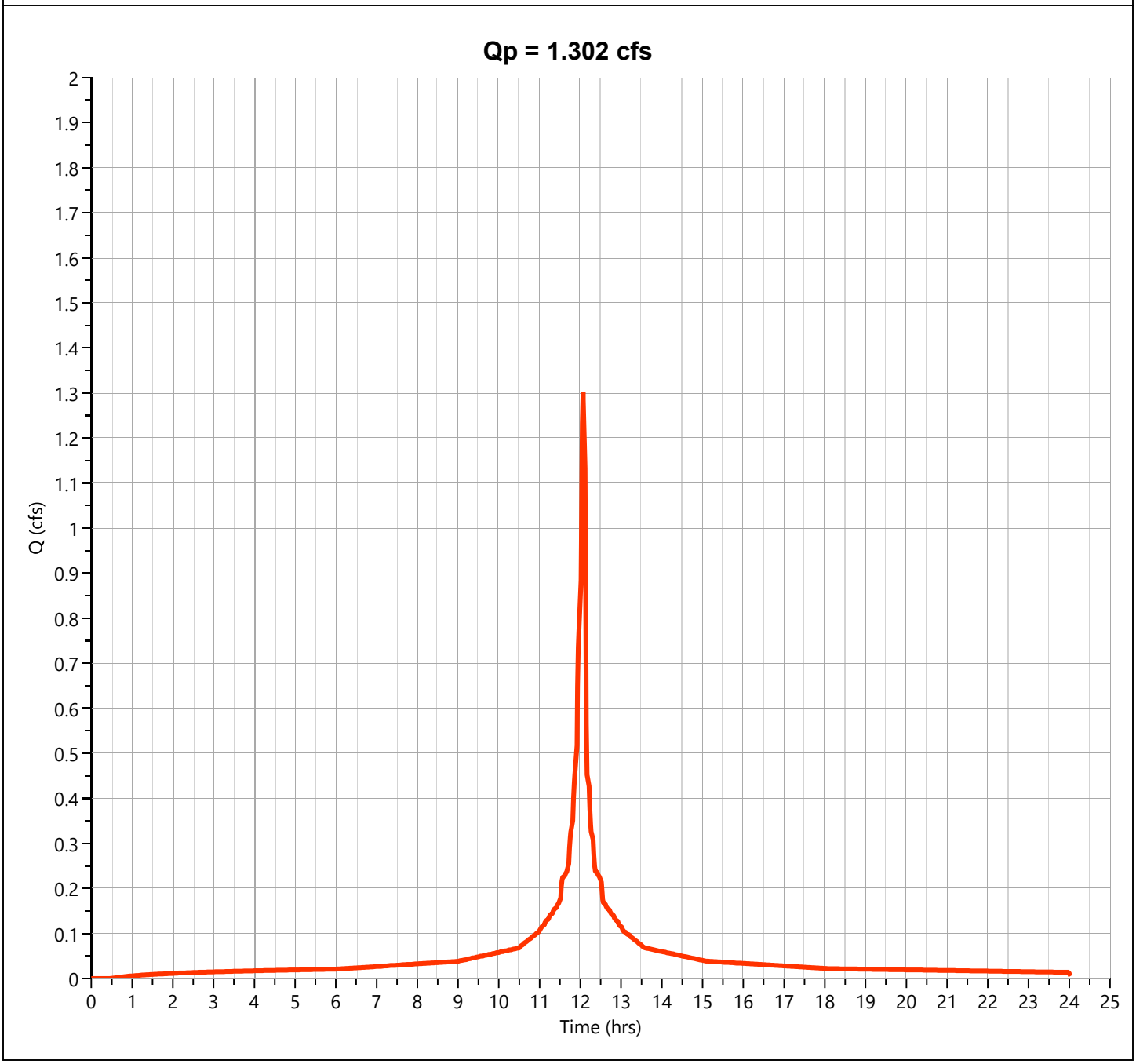
Hydrology Studio v 3.0.0.38

File: Existing HydrologyCurrent Precipitation(100yr).hys
07-31-2025

EX WSHD D Imp POA-3

Hyd. No. 19

Hydrograph Type	= NRCS Runoff	Peak Flow	= 1.302 cfs
Storm Frequency	= 100-yr	Time to Peak	= 12.10 hrs
Time Interval	= 1 min	Runoff Volume	= 4,375 cuft
Drainage Area	= 0.15 ac	Curve Number	= 98.00
Tc Method	= User	Time of Conc. (Tc)	= 3.0 min
Total Rainfall	= 8.81 in	Design Storm	= NOAA-D
Storm Duration	= 24 hrs	Shape Factor	= 484



Hydrograph Report

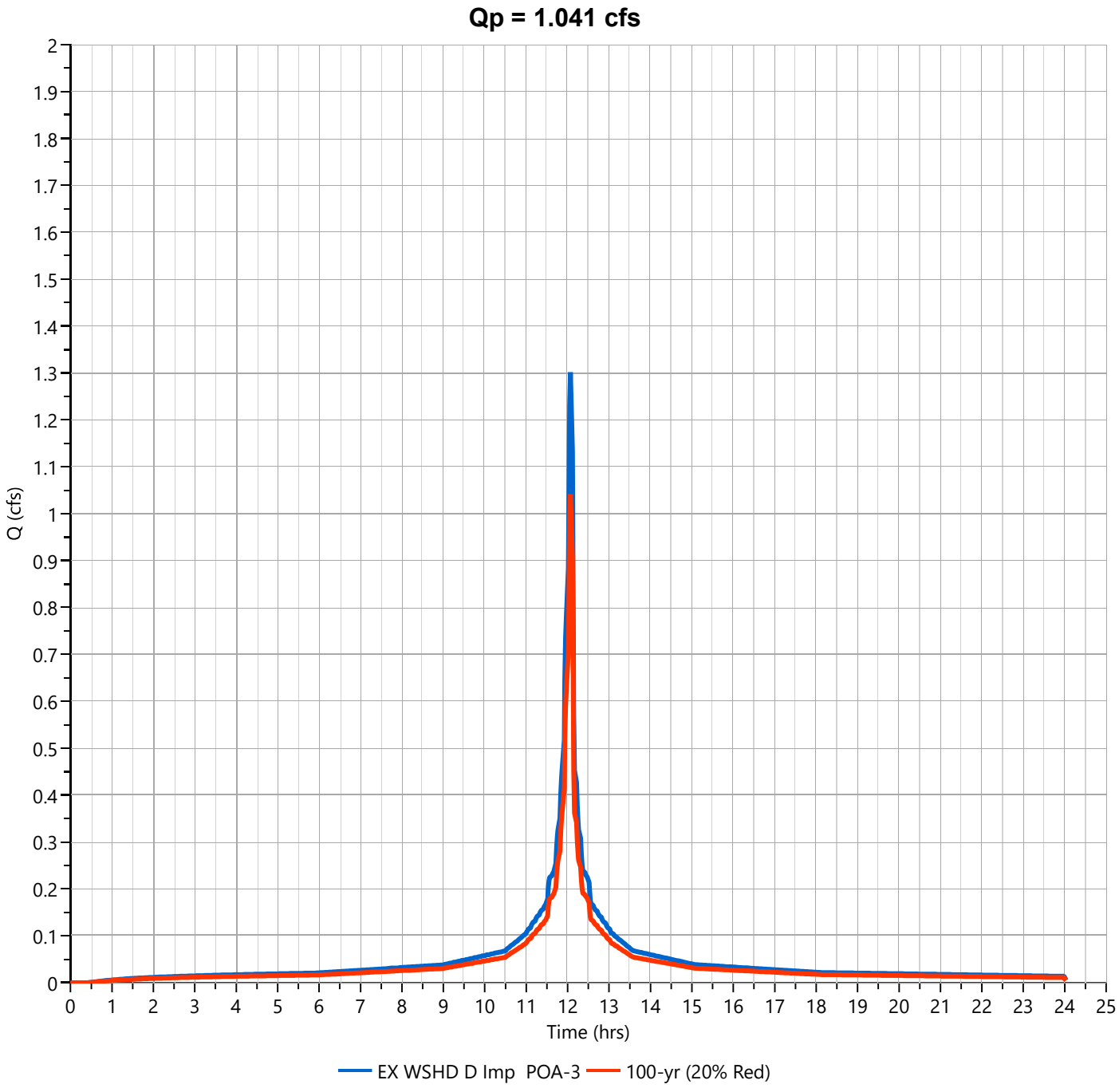
Hydrology Studio v 3.0.0.38

File: Existing HydrologyCurrent Precipitation(100yr).hys
07-31-2025

100-yr (20% Red)

Hyd. No. 20

Hydrograph Type	= Diversion	Peak Flow	= 1.041 cfs
Storm Frequency	= 100-yr	Time to Peak	= 12.10 hrs
Time Interval	= 1 min	Hydrograph Volume	= 3,500 cuft
Inflow Hydrograph	= 19 - EX WSHD D Imp POA-3	Diversion Method	= Flow Ratio
Companion Hyd	= 21 - N/A	Flow Ratio	= 0.8



Hydrograph Report

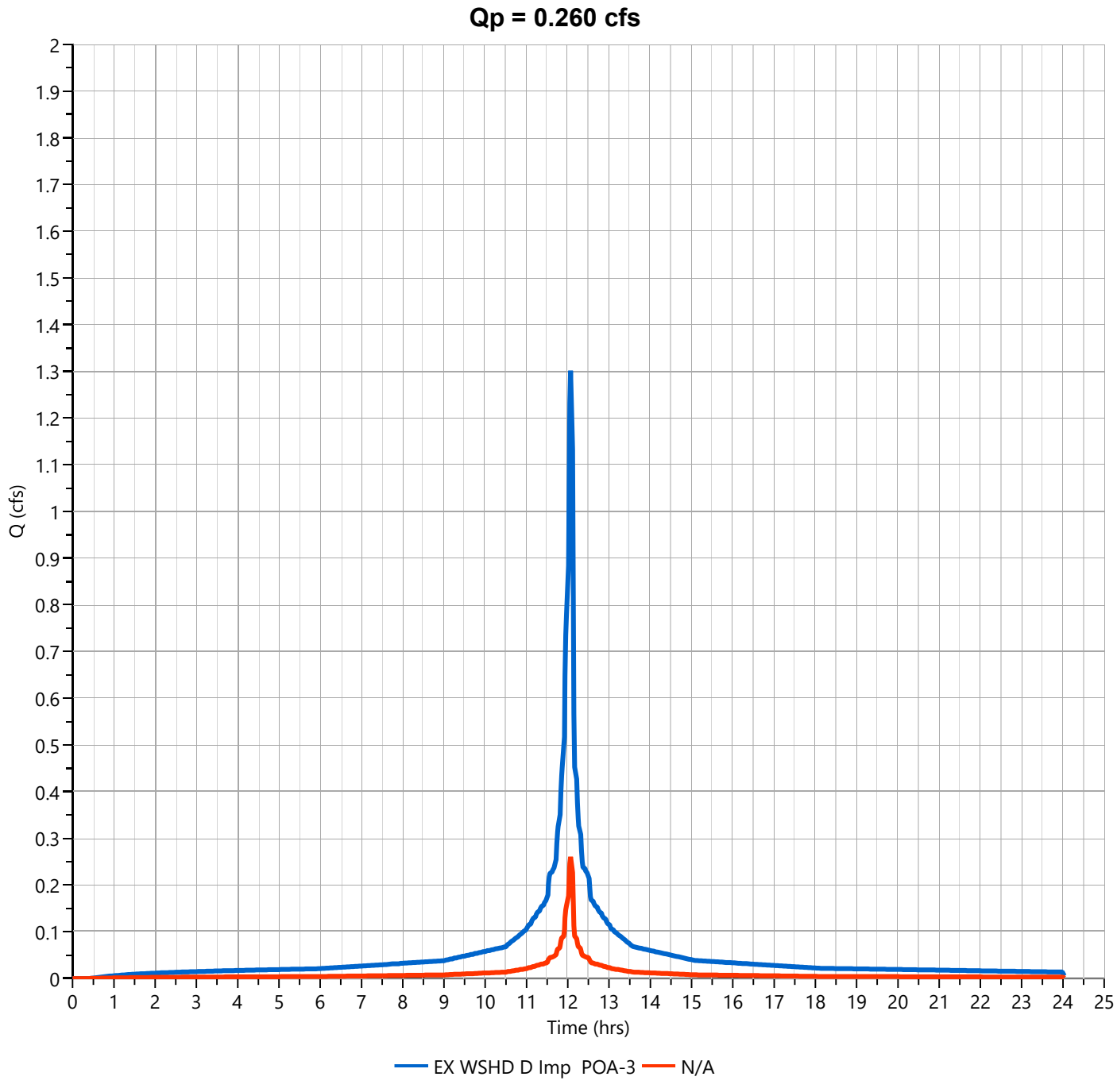
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07-31-2025

N/A

Hyd. No. 21

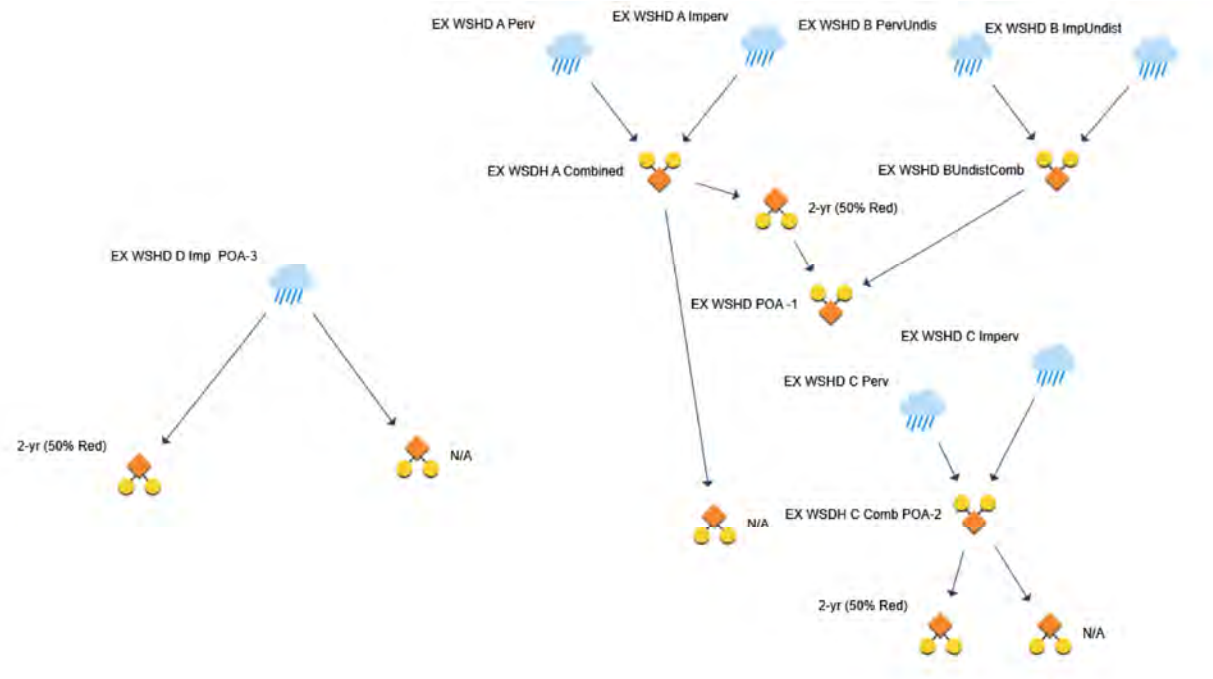
Hydrograph Type	= Diversion	Peak Flow	= 0.260 cfs
Storm Frequency	= 100-yr	Time to Peak	= 12.10 hrs
Time Interval	= 1 min	Hydrograph Volume	= 875 cuft
Inflow Hydrograph	= 19 - EX WSHD D Imp POA-3	Diversion Method	= Flow Ratio
Companion Hyd	= 20 - 100-yr (20% Red)	Flow Ratio	= 0.8



Basin Model

Hydrology Studio v 3.0.0.38

File: Existing HydrologyFuture Precipitation(2yr).hys
07-31-2025



Hydrograph by Return Period

Hydrology Studio v 3.0.0.38

File: Existing HydrologyFuture Precipitation(2yr).hys

07-31-2025

Hyd. No.	Hydrograph Type	Hydrograph Name	Peak Outflow (cfs)							
			1-yr	2-yr	3-yr	5-yr	10-yr	25-yr	50-yr	100-yr
1	NRCS Runoff	EX WSHD A Perv		5.352						
2	NRCS Runoff	EX WSHD A Imperv		0.121						
3	Junction	EX WSDH A Combined		5.424						
4	Diversion1	2-yr (50% Red)		2.712						
5	Diversion2	N/A		2.712						
7	NRCS Runoff	EX WSHD B PervUndis		4.275						
8	NRCS Runoff	EX WSHD B ImpUndist		2.016						
9	Junction	EX WSHD BUndistComb		5.432						
11	Junction	EX WSHD POA -1		7.984						
13	NRCS Runoff	EX WSHD C Perv		0.307						
14	NRCS Runoff	EX WSHD C Imperv		0.068						
15	Junction	EX WSDH C Comb POA-2		0.356						
16	Diversion1	2-yr (50% Red)		0.178						
17	Diversion2	N/A		0.178						
19	NRCS Runoff	EX WSHD D Imp POA-3		0.585						
20	Diversion1	2-yr (50% Red)		0.292						
21	Diversion2	N/A		0.292						

Hydrograph 2-yr Summary

Hydrology Studio v 3.0.0.38

File: Existing HydrologyFuture Precipitation(2yr).hys

07-31-2025

Hyd. No.	Hydrograph Type	Hydrograph Name	Peak Flow (cfs)	Time to Peak (hrs)	Hydrograph Volume (cuft)	Inflow Hyd(s)	Maximum Elevation (ft)	Maximum Storage (cuft)
1	NRCS Runoff	EX WSHD A Perv	5.352	12.98	55,159	----		
2	NRCS Runoff	EX WSHD A Imperv	0.121	12.52	956	----		
3	Junction	EX WSDH A Combined	5.424	12.97	56,115	1, 2		
4	Diversion1	2-yr (50% Red)	2.712	12.97	28,058	3		
5	Diversion2	N/A	2.712	12.97	28,058	3		
7	NRCS Runoff	EX WSHD B PervUndis	4.275	13.48	57,252	----		
8	NRCS Runoff	EX WSHD B ImpUndist	2.016	12.70	19,033	----		
9	Junction	EX WSHD BUndistComb	5.432	13.30	76,285	7, 8		
11	Junction	EX WSHD POA -1	7.984	13.20	104,343	4, 9		
13	NRCS Runoff	EX WSHD C Perv	0.307	12.23	1,354	----		
14	NRCS Runoff	EX WSHD C Imperv	0.068	12.13	272	----		
15	Junction	EX WSDH C Comb POA-2	0.356	12.22	1,626	13, 14		
16	Diversion1	2-yr (50% Red)	0.178	12.22	813	15		
17	Diversion2	N/A	0.178	12.22	813	15		
19	NRCS Runoff	EX WSHD D Imp POA-3	0.585	12.10	1,912	----		
20	Diversion1	2-yr (50% Red)	0.292	12.10	956	19		
21	Diversion2	N/A	0.292	12.10	956	19		

Hydrograph Report

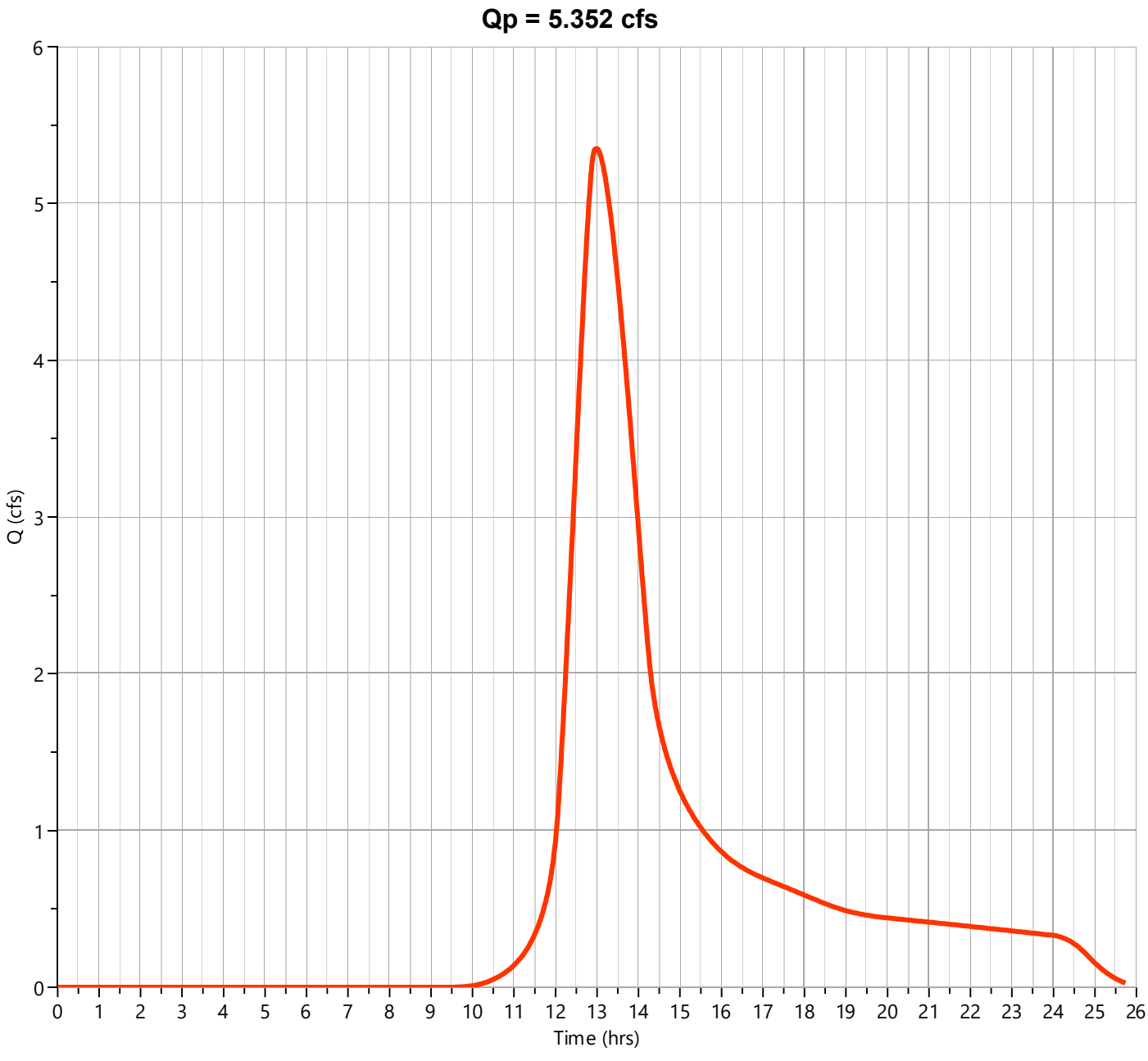
Hydrology Studio v 3.0.0.38

File: Existing HydrologyFuture Precipitation(2yr).hys
07-31-2025

EX WSHD A Perv

Hyd. No. 1

Hydrograph Type	= NRCS Runoff	Peak Flow	= 5.352 cfs
Storm Frequency	= 2-yr	Time to Peak	= 12.98 hrs
Time Interval	= 1 min	Runoff Volume	= 55,159 cuft
Drainage Area	= 9.2 ac	Curve Number	= 75.00
Tc Method	= User	Time of Conc. (Tc)	= 86.0 min
Total Rainfall	= 3.98 in	Design Storm	= NOAA-D
Storm Duration	= 24 hrs	Shape Factor	= 484



Hydrograph Report

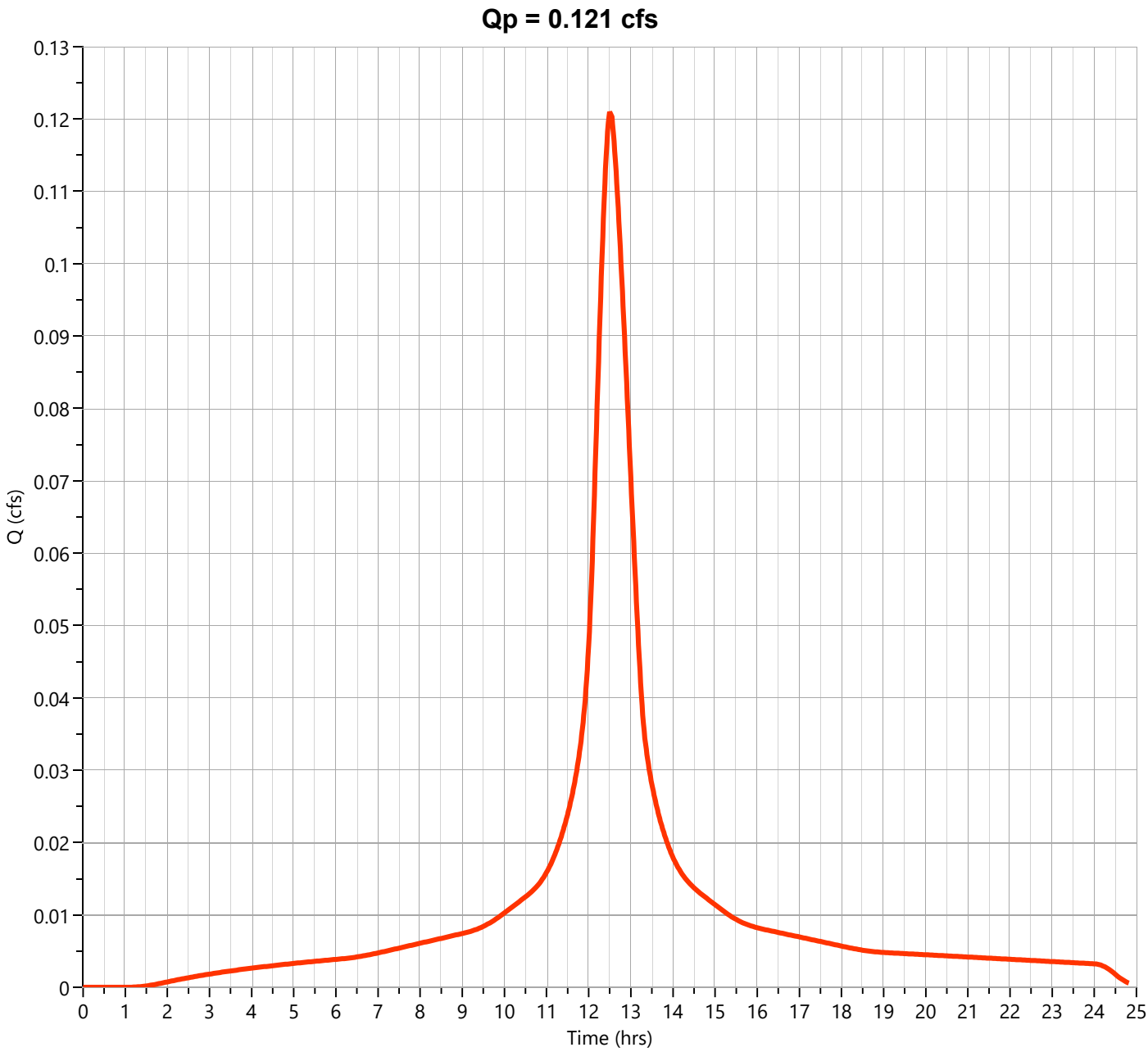
Hydrology Studio v 3.0.0.38

File: Existing HydrologyFuture Precipitation(2yr).hys
07-31-2025

EX WSHD A Imperv

Hyd. No. 2

Hydrograph Type	= NRCS Runoff	Peak Flow	= 0.121 cfs
Storm Frequency	= 2-yr	Time to Peak	= 12.52 hrs
Time Interval	= 1 min	Runoff Volume	= 956 cuft
Drainage Area	= 0.07 ac	Curve Number	= 98.00
Tc Method	= User	Time of Conc. (Tc)	= 47.0 min
Total Rainfall	= 3.98 in	Design Storm	= NOAA-D
Storm Duration	= 24 hrs	Shape Factor	= 484



Hydrograph Report

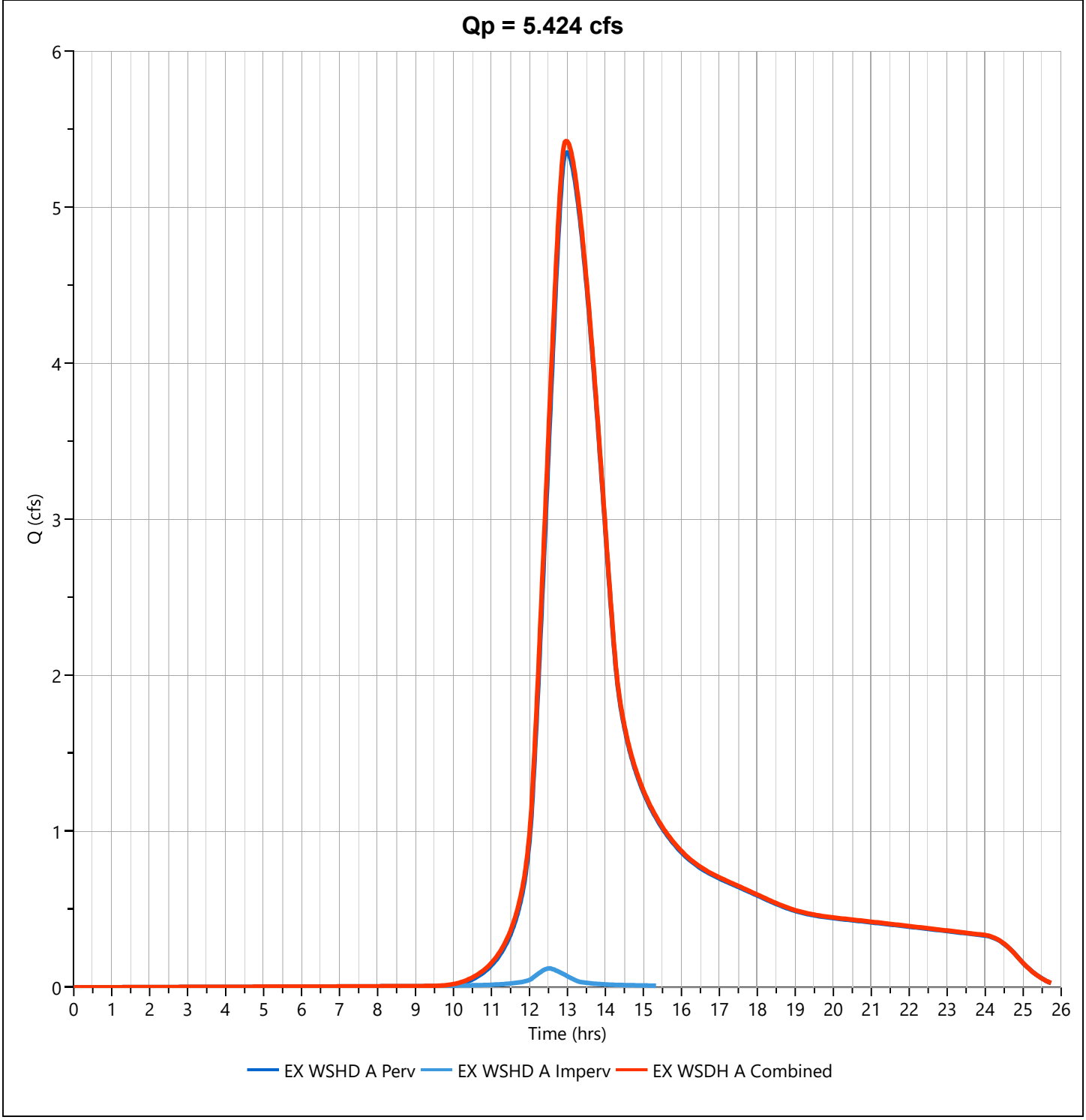
Hydrology Studio v 3.0.0.38

File: Existing HydrologyFuture Precipitation(2yr).hys
07-31-2025

EX WSDH A Combined

Hyd. No. 3

Hydrograph Type	= Junction	Peak Flow	= 5.424 cfs
Storm Frequency	= 2-yr	Time to Peak	= 12.97 hrs
Time Interval	= 1 min	Hydrograph Volume	= 56,115 cuft
Inflow Hydrographs	= 1, 2	Total Contrib. Area	= 9.27 ac



Hydrograph Report

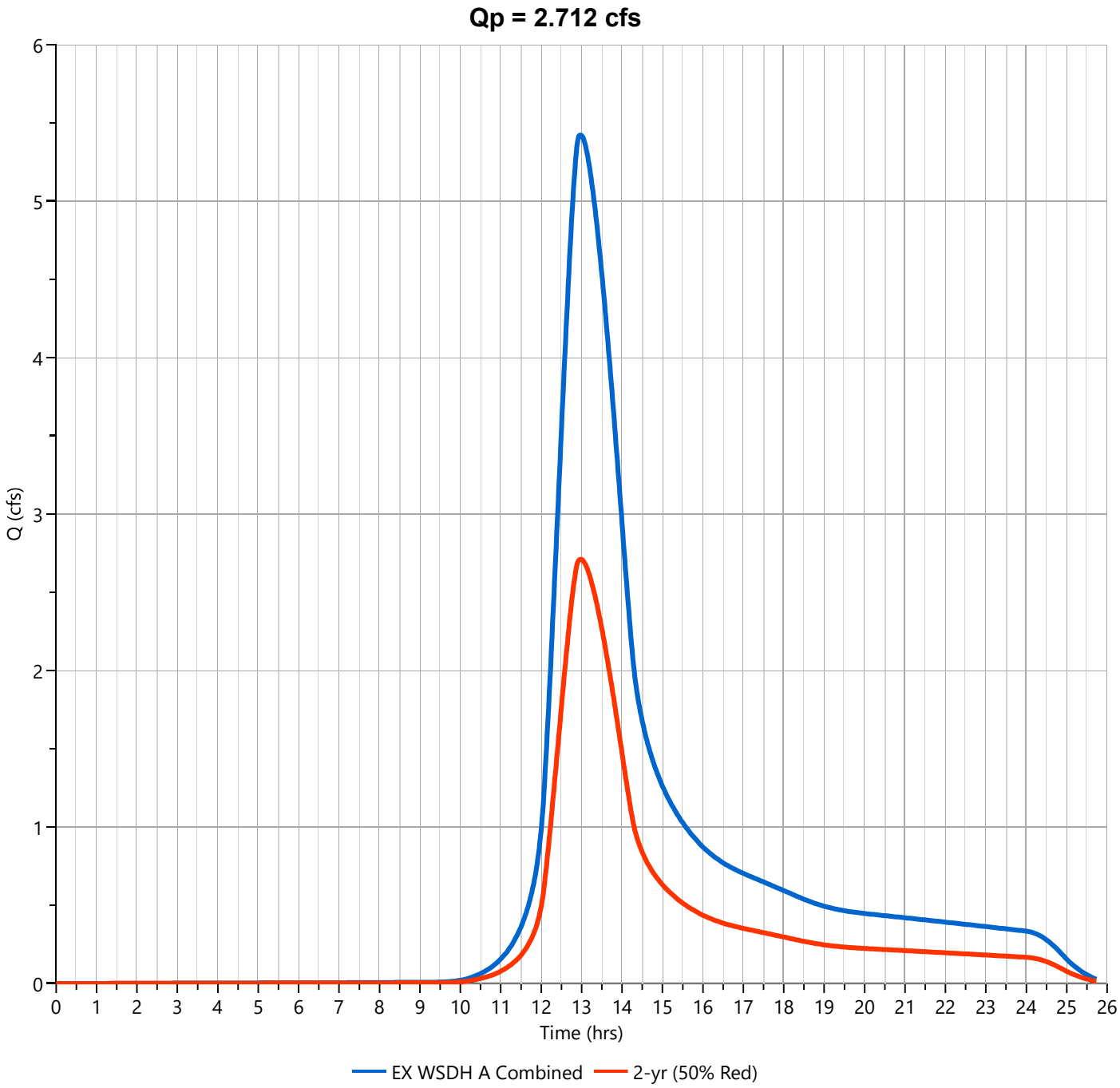
Hydrology Studio v 3.0.0.38

File: Existing HydrologyFuture Precipitation(2yr).hys
07-31-2025

2-yr (50% Red)

Hyd. No. 4

Hydrograph Type	= Diversion	Peak Flow	= 2.712 cfs
Storm Frequency	= 2-yr	Time to Peak	= 12.97 hrs
Time Interval	= 1 min	Hydrograph Volume	= 28,058 cuft
Inflow Hydrograph	= 3 - EX WSDH A Combined	Diversion Method	= Flow Ratio
Companion Hyd	= 5 - N/A	Flow Ratio	= 0.5



Hydrograph Report

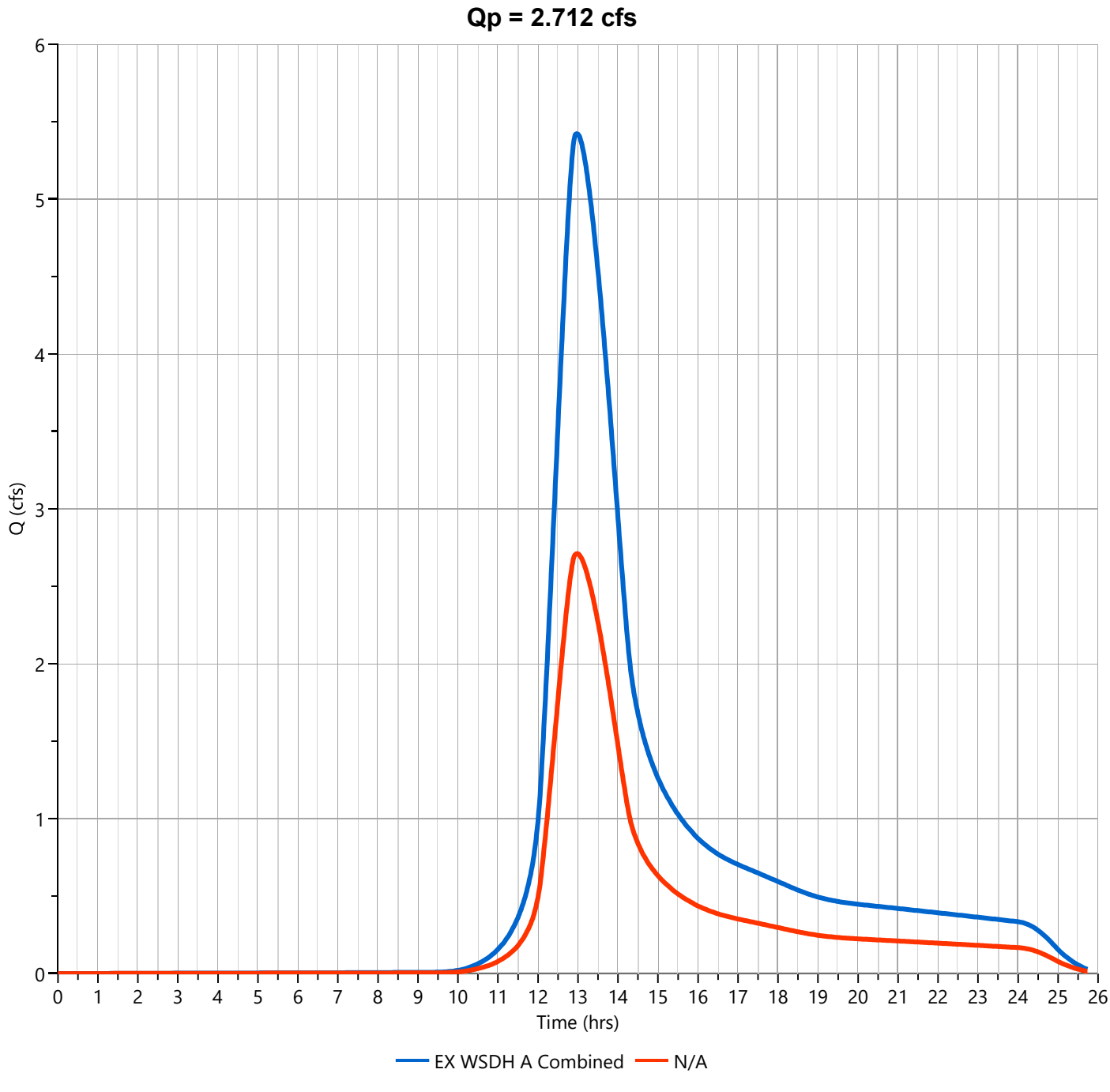
Hydrology Studio v 3.0.0.38

File: Existing HydrologyFuture Precipitation(2yr).hys
07-31-2025

N/A

Hyd. No. 5

Hydrograph Type	= Diversion	Peak Flow	= 2.712 cfs
Storm Frequency	= 2-yr	Time to Peak	= 12.97 hrs
Time Interval	= 1 min	Hydrograph Volume	= 28,058 cuft
Inflow Hydrograph	= 3 - EX WSDH A Combined	Diversion Method	= Flow Ratio
Companion Hyd	= 4 - 2-yr (50% Red)	Flow Ratio	= 0.5



Hydrograph Report

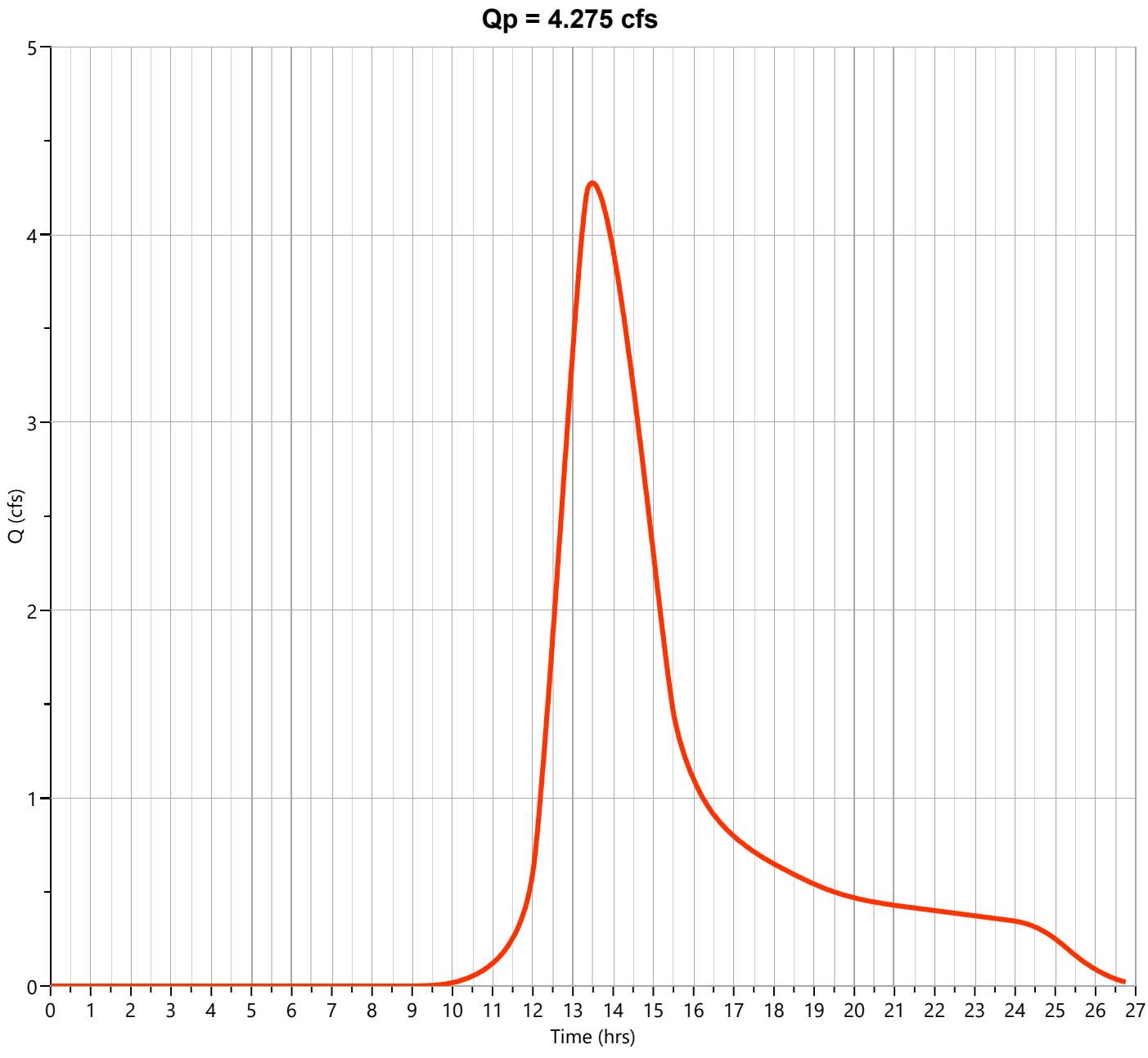
Hydrology Studio v 3.0.0.38

File: Existing HydrologyFuture Precipitation(2yr).hys
07-31-2025

EX WSHD B PervUndis

Hyd. No. 7

Hydrograph Type	= NRCS Runoff	Peak Flow	= 4.275 cfs
Storm Frequency	= 2-yr	Time to Peak	= 13.48 hrs
Time Interval	= 1 min	Runoff Volume	= 57,252 cuft
Drainage Area	= 8.78 ac	Curve Number	= 77.00
Tc Method	= User	Time of Conc. (Tc)	= 131.0 min
Total Rainfall	= 3.98 in	Design Storm	= NOAA-D
Storm Duration	= 24 hrs	Shape Factor	= 484



Hydrograph Report

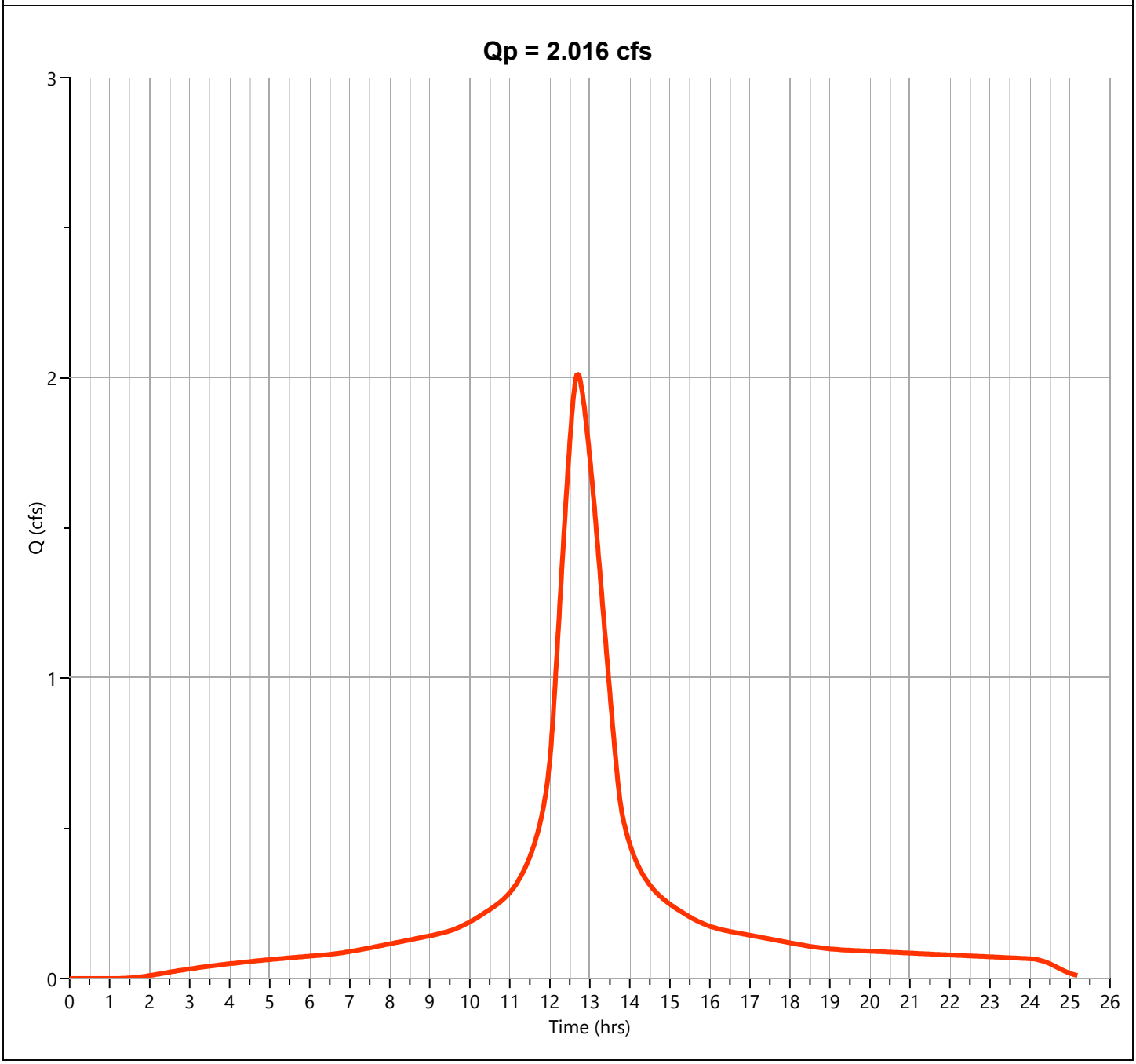
Hydrology Studio v 3.0.0.38

File: Existing HydrologyFuture Precipitation(2yr).hys
07-31-2025

EX WSHD B ImpUndist

Hyd. No. 8

Hydrograph Type	= NRCS Runoff	Peak Flow	= 2.016 cfs
Storm Frequency	= 2-yr	Time to Peak	= 12.70 hrs
Time Interval	= 1 min	Runoff Volume	= 19,033 cuft
Drainage Area	= 1.4 ac	Curve Number	= 98.00
Tc Method	= User	Time of Conc. (Tc)	= 65.0 min
Total Rainfall	= 3.98 in	Design Storm	= NOAA-D
Storm Duration	= 24 hrs	Shape Factor	= 484



Hydrograph Report

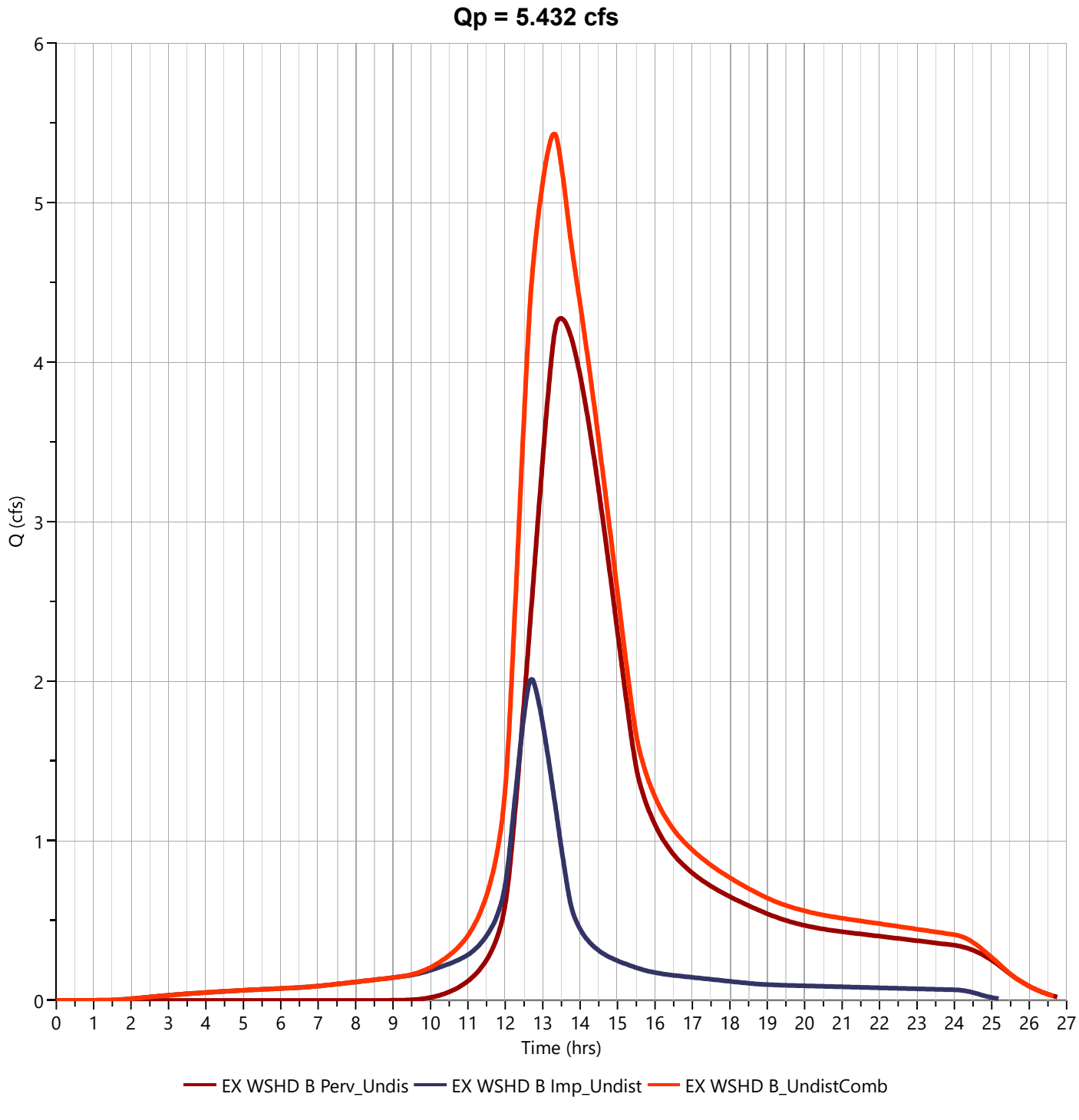
Hydrology Studio v 3.0.0.38

File: Existing HydrologyFuture Precipitation(2yr).hys
07-31-2025

EX WSHD BUndistComb

Hyd. No. 9

Hydrograph Type	= Junction	Peak Flow	= 5.432 cfs
Storm Frequency	= 2-yr	Time to Peak	= 13.30 hrs
Time Interval	= 1 min	Hydrograph Volume	= 76,285 cuft
Inflow Hydrographs	= 7, 8	Total Contrib. Area	= 10.18 ac



Hydrograph Report

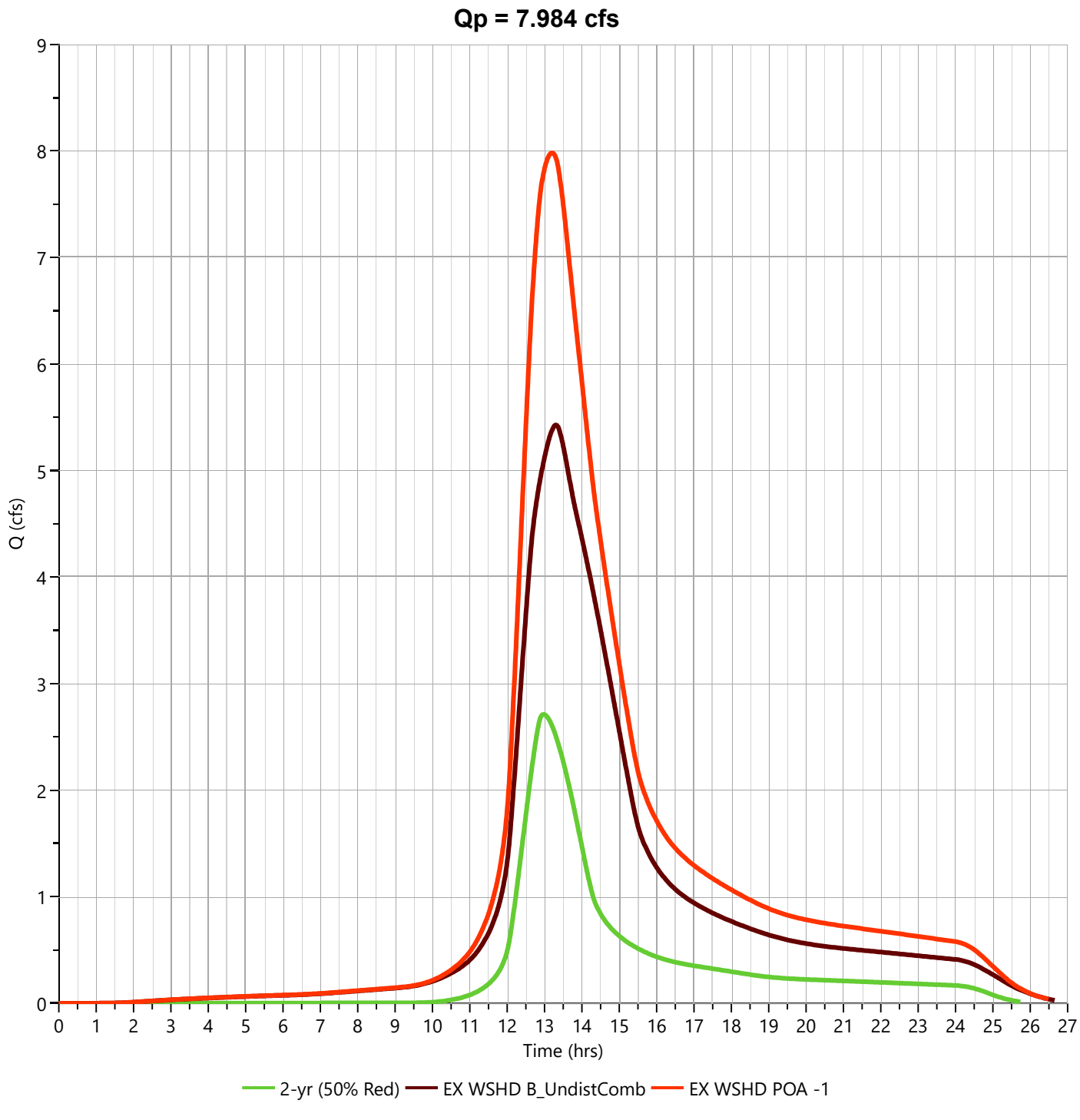
Hydrology Studio v 3.0.0.38

File: Existing HydrologyFuture Precipitation(2yr).hys
07-31-2025

EX WSHD POA -1

Hyd. No. 11

Hydrograph Type	= Junction	Peak Flow	= 7.984 cfs
Storm Frequency	= 2-yr	Time to Peak	= 13.20 hrs
Time Interval	= 1 min	Hydrograph Volume	= 104,343 cuft
Inflow Hydrographs		Total Contrib. Area	= 0.0 ac



Hydrograph Report

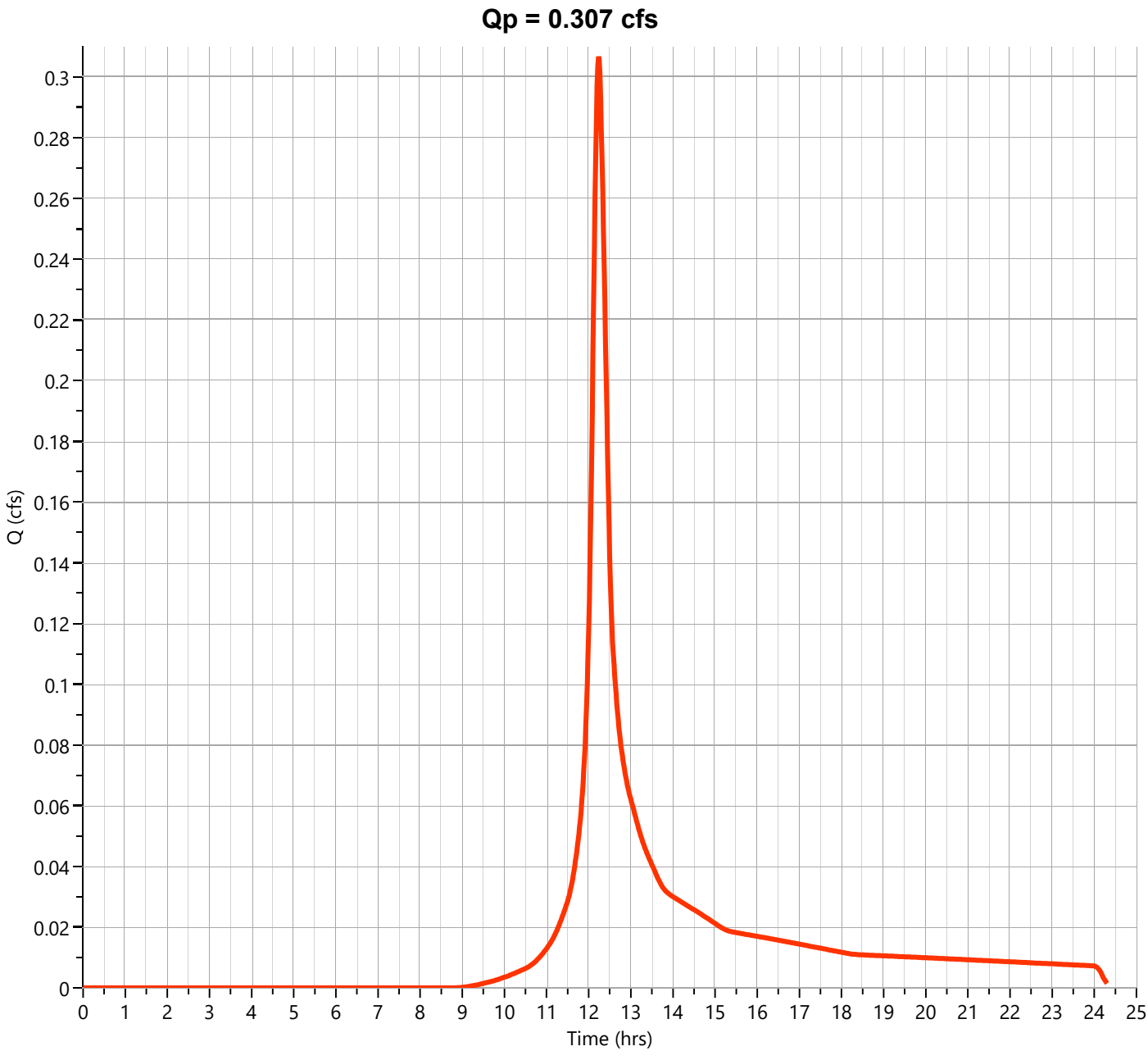
Hydrology Studio v 3.0.0.38

File: Existing HydrologyFuture Precipitation(2yr).hys
07-31-2025

EX WSHD C Perv

Hyd. No. 13

Hydrograph Type	= NRCS Runoff	Peak Flow	= 0.307 cfs
Storm Frequency	= 2-yr	Time to Peak	= 12.23 hrs
Time Interval	= 1 min	Runoff Volume	= 1,354 cuft
Drainage Area	= 0.21 ac	Curve Number	= 77.00
Tc Method	= User	Time of Conc. (Tc)	= 17.0 min
Total Rainfall	= 3.98 in	Design Storm	= NOAA-D
Storm Duration	= 24 hrs	Shape Factor	= 484



Hydrograph Report

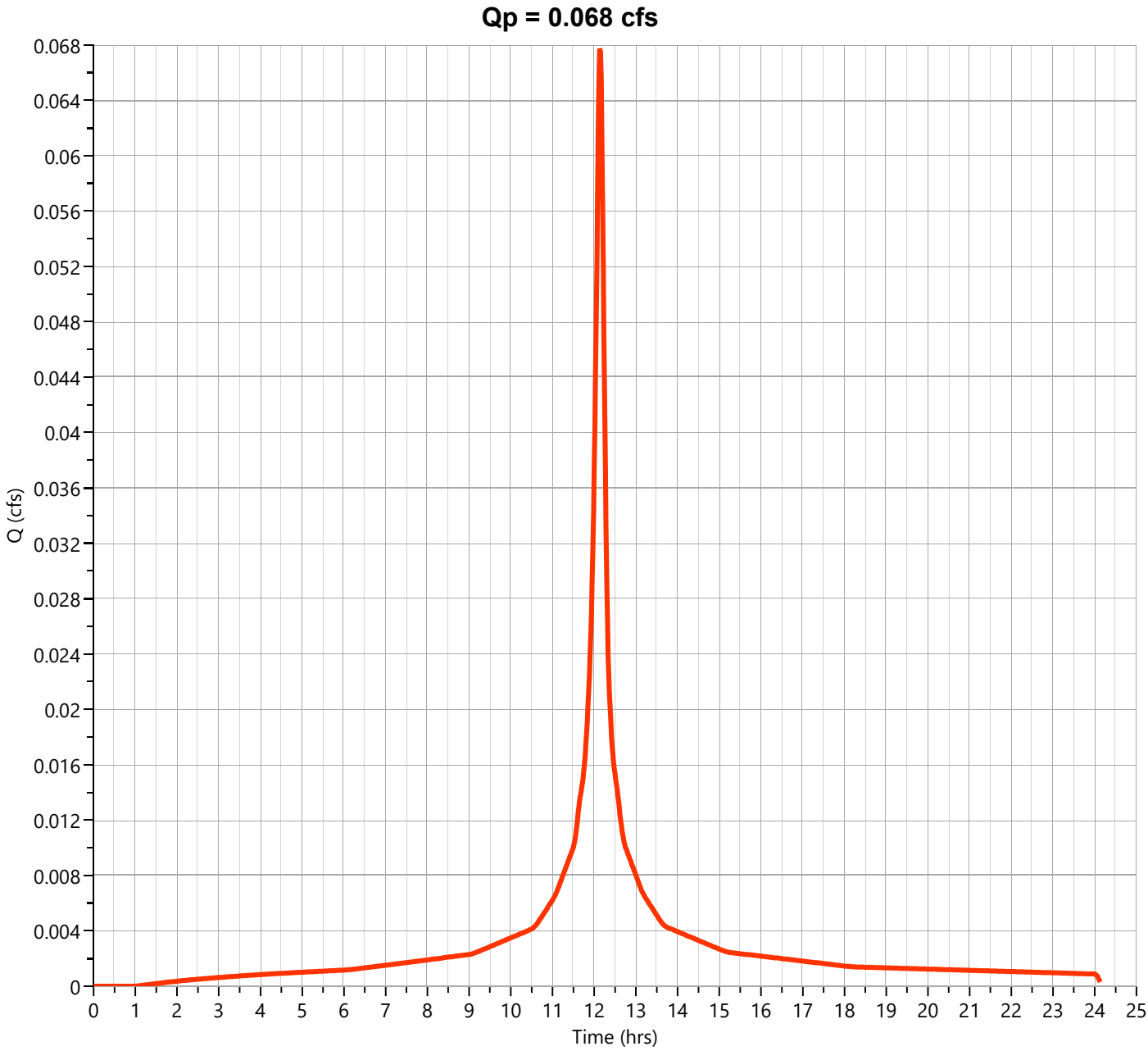
Hydrology Studio v 3.0.0.38

File: Existing HydrologyFuture Precipitation(2yr).hys
07-31-2025

EX WSHD C Imperv

Hyd. No. 14

Hydrograph Type	= NRCS Runoff	Peak Flow	= 0.068 cfs
Storm Frequency	= 2-yr	Time to Peak	= 12.13 hrs
Time Interval	= 1 min	Runoff Volume	= 272 cuft
Drainage Area	= 0.02 ac	Curve Number	= 98.00
Tc Method	= User	Time of Conc. (Tc)	= 9.0 min
Total Rainfall	= 3.98 in	Design Storm	= NOAA-D
Storm Duration	= 24 hrs	Shape Factor	= 484



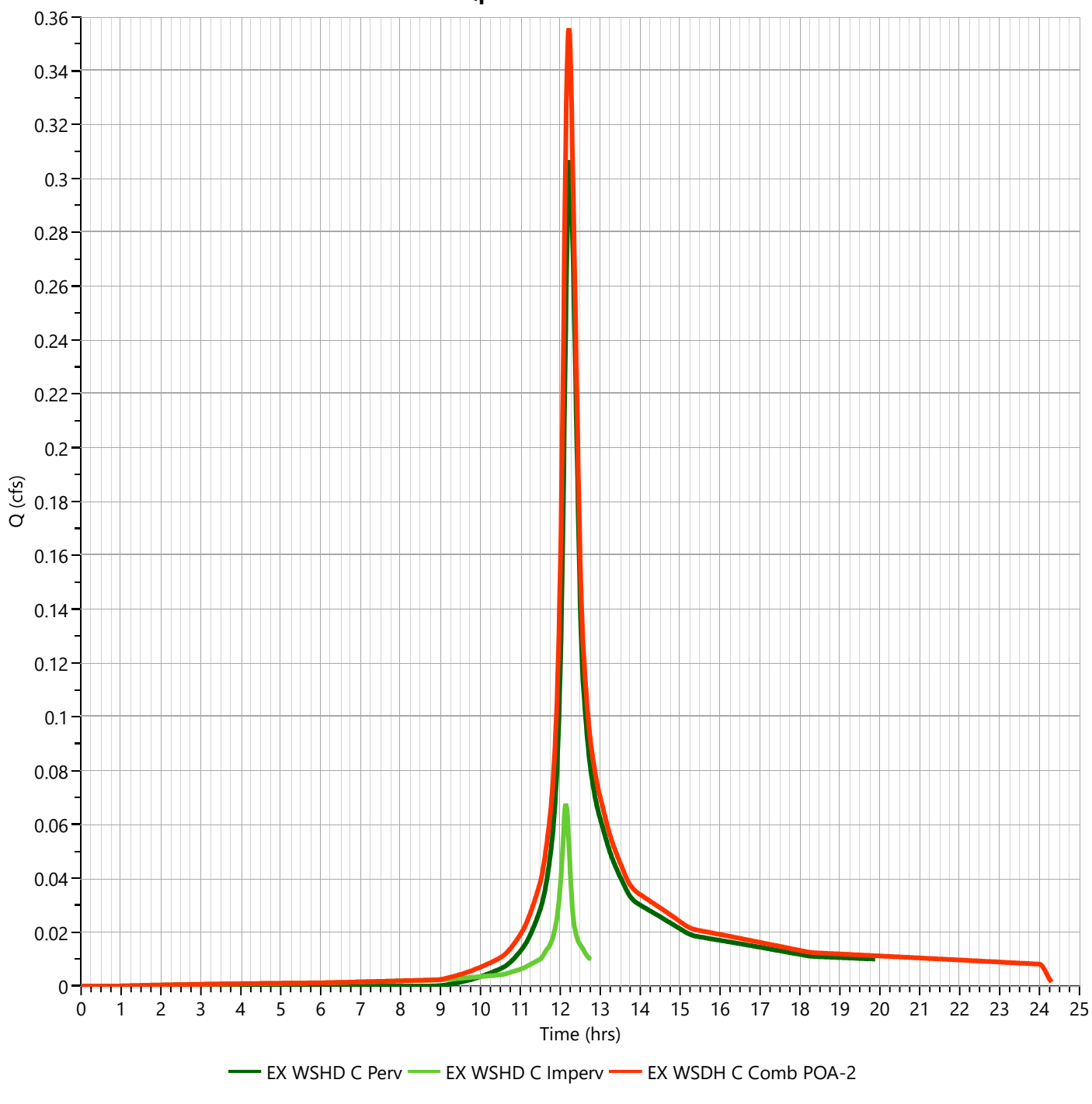
Hydrograph Report

Hydrology Studio v 3.0.0.38

File: Existing HydrologyFuture Precipitation(2yr).hys
07-31-2025

EX WSDH C Comb POA-2 — Hyd. No. 15

Hydrograph Type	= Junction	Peak Flow	= 0.356 cfs
Storm Frequency	= 2-yr	Time to Peak	= 12.22 hrs
Time Interval	= 1 min	Hydrograph Volume	= 1,626 cuft
Inflow Hydrographs	= 13, 14	Total Contrib. Area	= 0.23 ac



Hydrograph Report

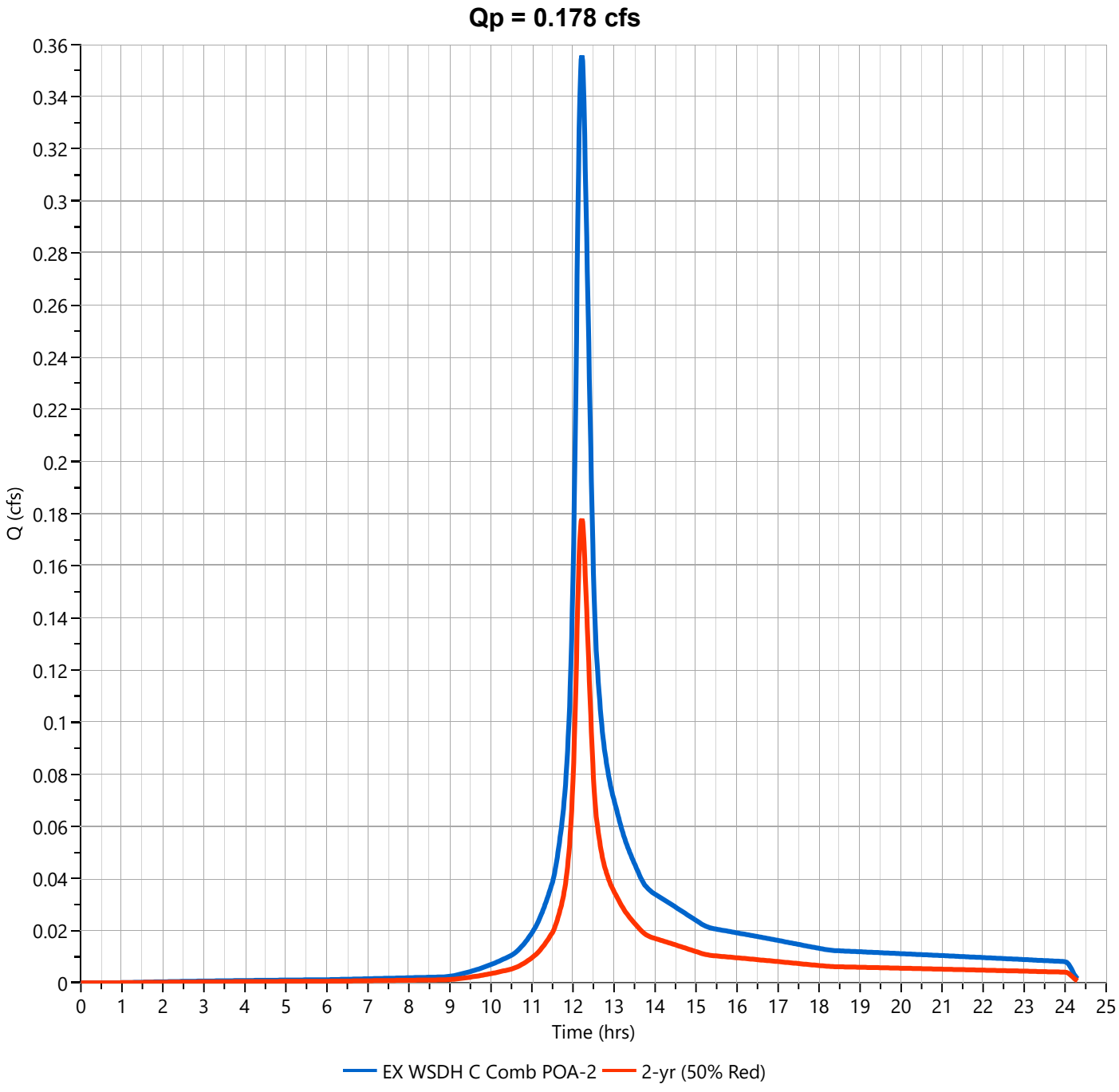
Hydrology Studio v 3.0.0.38

File: Existing HydrologyFuture Precipitation(2yr).hys
07-31-2025

2-yr (50% Red)

Hyd. No. 16

Hydrograph Type	= Diversion	Peak Flow	= 0.178 cfs
Storm Frequency	= 2-yr	Time to Peak	= 12.22 hrs
Time Interval	= 1 min	Hydrograph Volume	= 813 cuft
Inflow Hydrograph	= 15 - EX WSDH C Comb POA-2	Diversion Method	= Flow Ratio
Companion Hyd	= 17 - N/A	Flow Ratio	= 0.5



Hydrograph Report

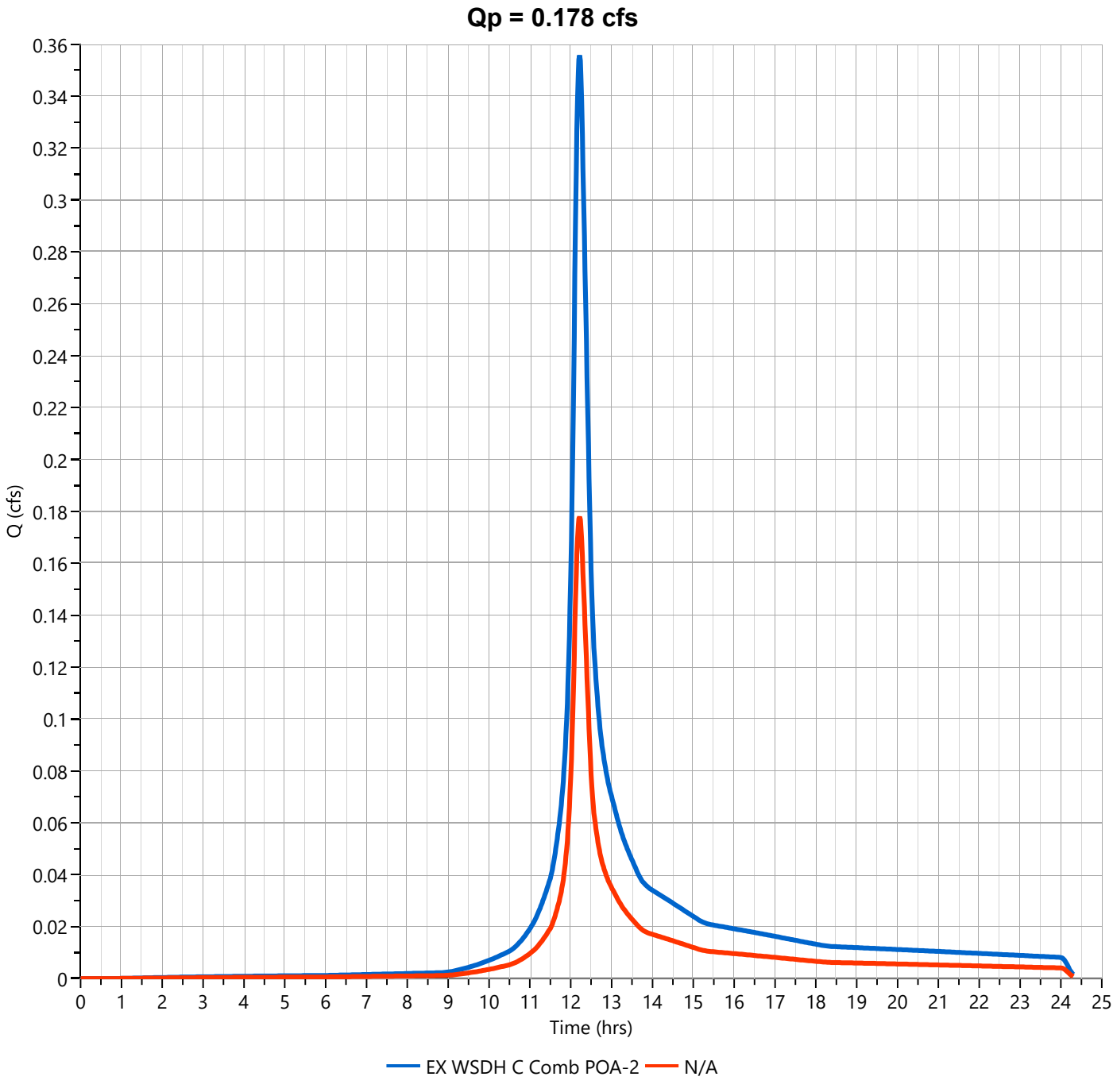
Hydrology Studio v 3.0.0.38

File: Existing HydrologyFuture Precipitation(2yr).hys
07-31-2025

N/A

Hyd. No. 17

Hydrograph Type	= Diversion	Peak Flow	= 0.178 cfs
Storm Frequency	= 2-yr	Time to Peak	= 12.22 hrs
Time Interval	= 1 min	Hydrograph Volume	= 813 cuft
Inflow Hydrograph	= 15 - EX WSDH C Comb POA-2	Diversion Method	= Flow Ratio
Companion Hyd	= 16 - 2-yr (50% Red)	Flow Ratio	= 0.5



Hydrograph Report

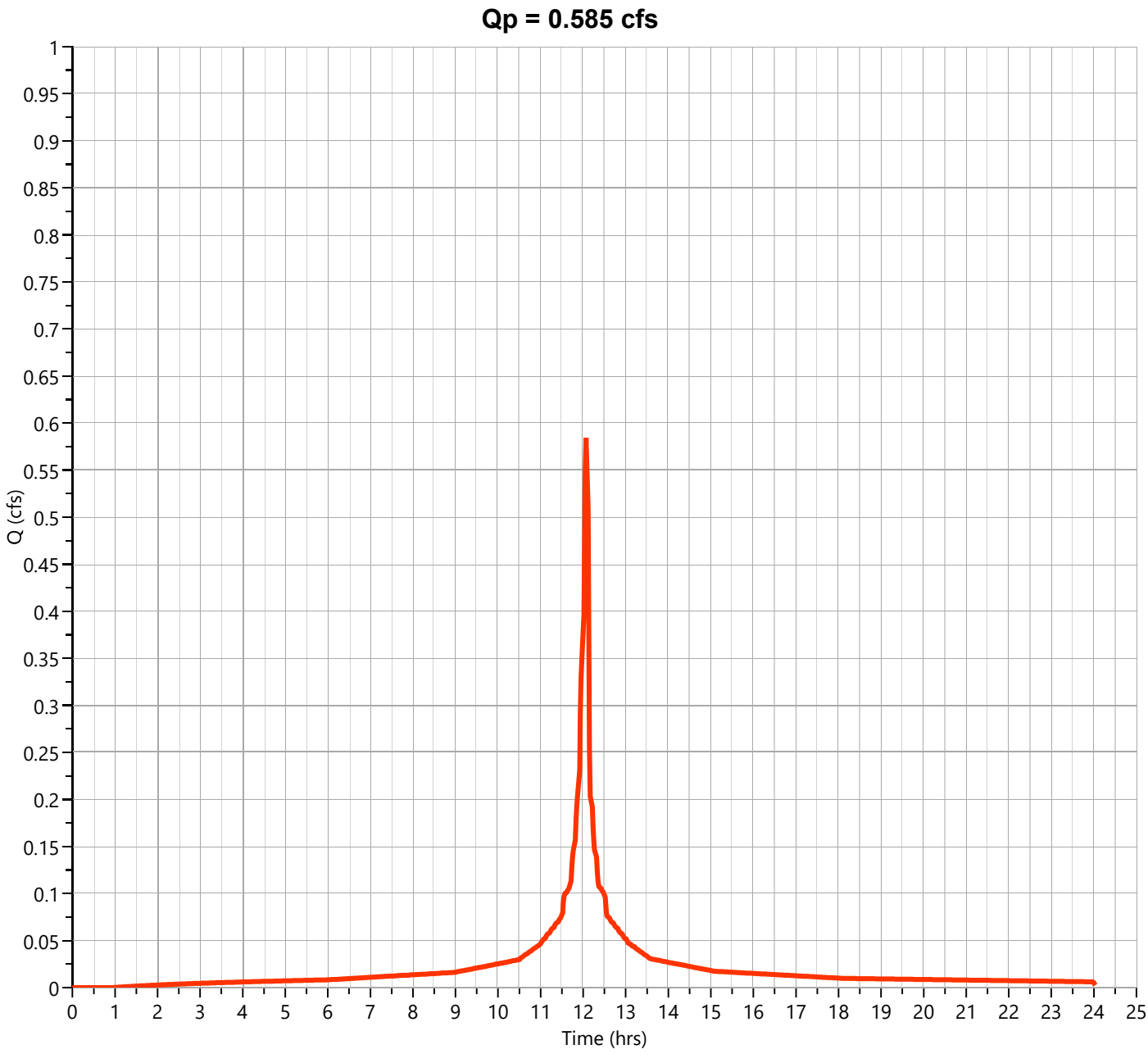
Hydrology Studio v 3.0.0.38

File: Existing HydrologyFuture Precipitation(2yr).hys
07-31-2025

EX WSHD D Imp POA-3

Hyd. No. 19

Hydrograph Type	= NRCS Runoff	Peak Flow	= 0.585 cfs
Storm Frequency	= 2-yr	Time to Peak	= 12.10 hrs
Time Interval	= 1 min	Runoff Volume	= 1,912 cuft
Drainage Area	= 0.15 ac	Curve Number	= 98.00
Tc Method	= User	Time of Conc. (Tc)	= 3.0 min
Total Rainfall	= 3.98 in	Design Storm	= NOAA-D
Storm Duration	= 24 hrs	Shape Factor	= 484



Hydrograph Report

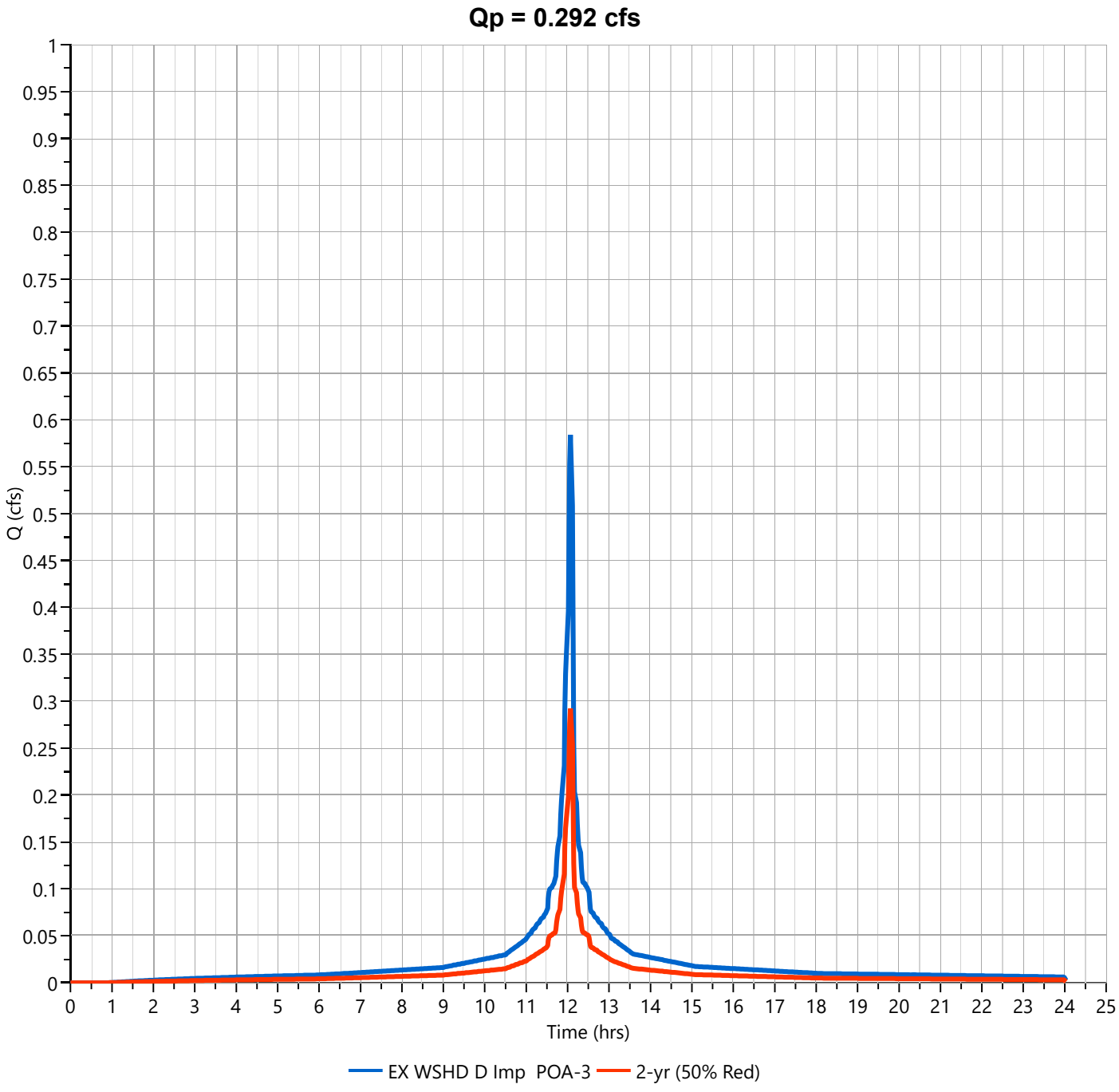
Hydrology Studio v 3.0.0.38

File: Existing HydrologyFuture Precipitation(2yr).hys
07-31-2025

2-yr (50% Red)

Hyd. No. 20

Hydrograph Type	= Diversion	Peak Flow	= 0.292 cfs
Storm Frequency	= 2-yr	Time to Peak	= 12.10 hrs
Time Interval	= 1 min	Hydrograph Volume	= 956 cuft
Inflow Hydrograph	= 19 - EX WSHD D Imp POA-3	Diversion Method	= Flow Ratio
Companion Hyd	= 21 - N/A	Flow Ratio	= 0.5



Hydrograph Report

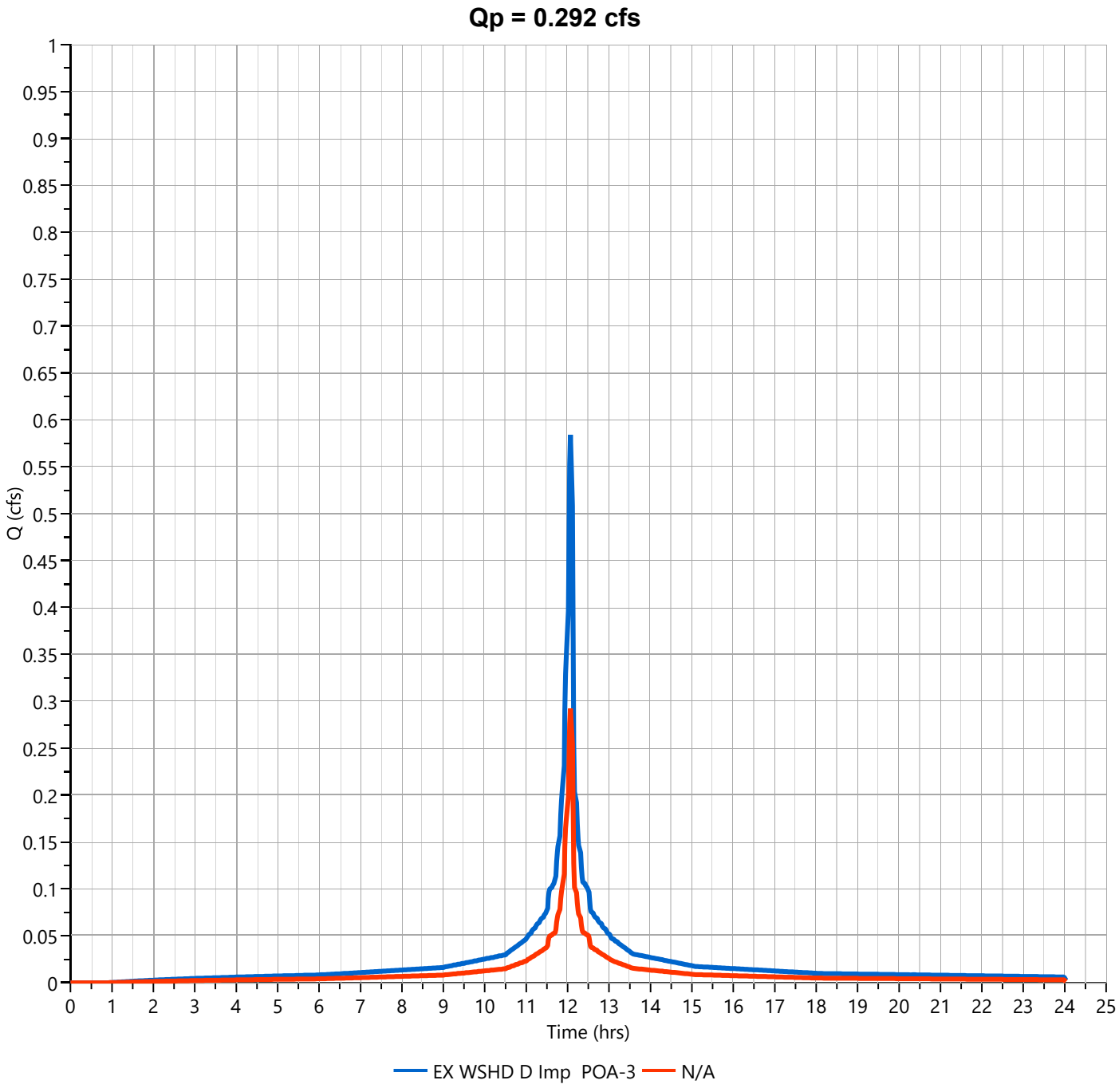
Hydrology Studio v 3.0.0.38

File: Existing HydrologyFuture Precipitation(2yr).hys
07-31-2025

N/A

Hyd. No. 21

Hydrograph Type	= Diversion	Peak Flow	= 0.292 cfs
Storm Frequency	= 2-yr	Time to Peak	= 12.10 hrs
Time Interval	= 1 min	Hydrograph Volume	= 956 cuft
Inflow Hydrograph	= 19 - EX WSHD D Imp POA-3	Diversion Method	= Flow Ratio
Companion Hyd	= 20 - 2-yr (50% Red)	Flow Ratio	= 0.5



Hydrograph by Return Period

Hydrology Studio v 3.0.0.38

File: Existing HydrologyFuture Precipitation(10YR).hys

07-31-2025

Hyd. No.	Hydrograph Type	Hydrograph Name	Peak Outflow (cfs)							
			1-yr	2-yr	3-yr	5-yr	10-yr	25-yr	50-yr	100-yr
1	NRCS Runoff	EX WSHD A Perv					11.41			
2	NRCS Runoff	EX WSHD A Imperv					0.189			
3	Junction	EX WSDH A Combined					11.53			
4	Diversion1	10-yr (25% Red)					8.648			
5	Diversion2	N/A					2.883			
7	NRCS Runoff	EX WSHD B PervUndis					8.812			
8	NRCS Runoff	EX WSHD B ImpUndist					3.144			
9	Junction	EX WSHD BUndistComb					10.65			
11	Junction	EX WSHD POA -1					18.71			
13	NRCS Runoff	EX WSHD C Perv					0.622			
14	NRCS Runoff	EX WSHD C Imperv					0.106			
15	Junction	EX WSDH C Comb POA-2					0.699			
16	Diversion1	10-yr (25% Red)					0.524			
17	Diversion2	N/A					0.175			
19	NRCS Runoff	EX WSHD D Imp POA-3					0.910			
20	Diversion1	10-yr (25% Red)					0.683			
21	Diversion2	N/A					0.228			

Hydrograph 10-yr Summary

Hydrology Studio v 3.0.0.38

File: Existing HydrologyFuture Precipitation(10YR).hys

07-31-2025

Hyd. No.	Hydrograph Type	Hydrograph Name	Peak Flow (cfs)	Time to Peak (hrs)	Hydrograph Volume (cuft)	Inflow Hyd(s)	Maximum Elevation (ft)	Maximum Storage (cuft)
1	NRCS Runoff	EX WSHD A Perv	11.41	12.93	114,461	----		
2	NRCS Runoff	EX WSHD A Imperv	0.189	12.52	1,514	----		
3	Junction	EX WSDH A Combined	11.53	12.93	115,975	1, 2		
4	Diversion1	10-yr (25% Red)	8.648	12.93	86,981	3		
5	Diversion2	N/A	2.883	12.93	28,994	3		
7	NRCS Runoff	EX WSHD B PervUndis	8.812	13.42	115,628	----		
8	NRCS Runoff	EX WSHD B ImpUndist	3.144	12.70	30,145	----		
9	Junction	EX WSHD BUndistComb	10.65	13.32	145,773	7, 8		
11	Junction	EX WSHD POA -1	18.71	13.12	232,754	4, 9		
13	NRCS Runoff	EX WSHD C Perv	0.622	12.23	2,734	----		
14	NRCS Runoff	EX WSHD C Imperv	0.106	12.13	431	----		
15	Junction	EX WSDH C Comb POA-2	0.699	12.22	3,165	13, 14		
16	Diversion1	10-yr (25% Red)	0.524	12.22	2,374	15		
17	Diversion2	N/A	0.175	12.22	791	15		
19	NRCS Runoff	EX WSHD D Imp POA-3	0.910	12.10	3,028	----		
20	Diversion1	10-yr (25% Red)	0.683	12.10	2,271	19		
21	Diversion2	N/A	0.228	12.10	757	19		

Hydrograph Report

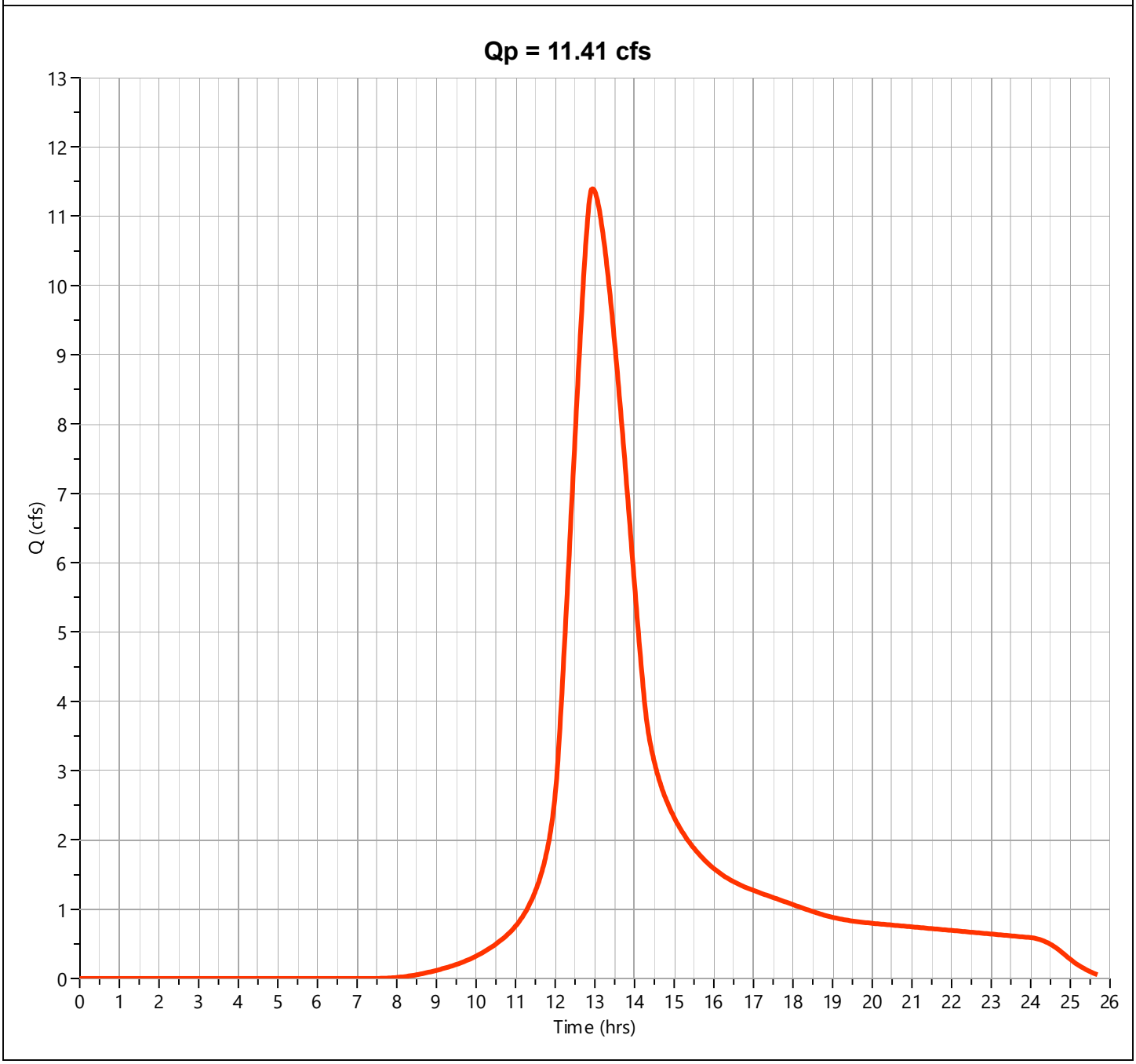
Hydrology Studio v 3.0.0.38

File: Existing HydrologyFuture Precipitation(10YR).hys
07-31-2025

EX WSHD A Perv

Hyd. No. 1

Hydrograph Type	= NRCS Runoff	Peak Flow	= 11.41 cfs
Storm Frequency	= 10-yr	Time to Peak	= 12.93 hrs
Time Interval	= 1 min	Runoff Volume	= 114,461 cuft
Drainage Area	= 9.2 ac	Curve Number	= 75.00
Tc Method	= User	Time of Conc. (Tc)	= 86.0 min
Total Rainfall	= 6.17 in	Design Storm	= NOAA-D
Storm Duration	= 24 hrs	Shape Factor	= 484



Hydrograph Report

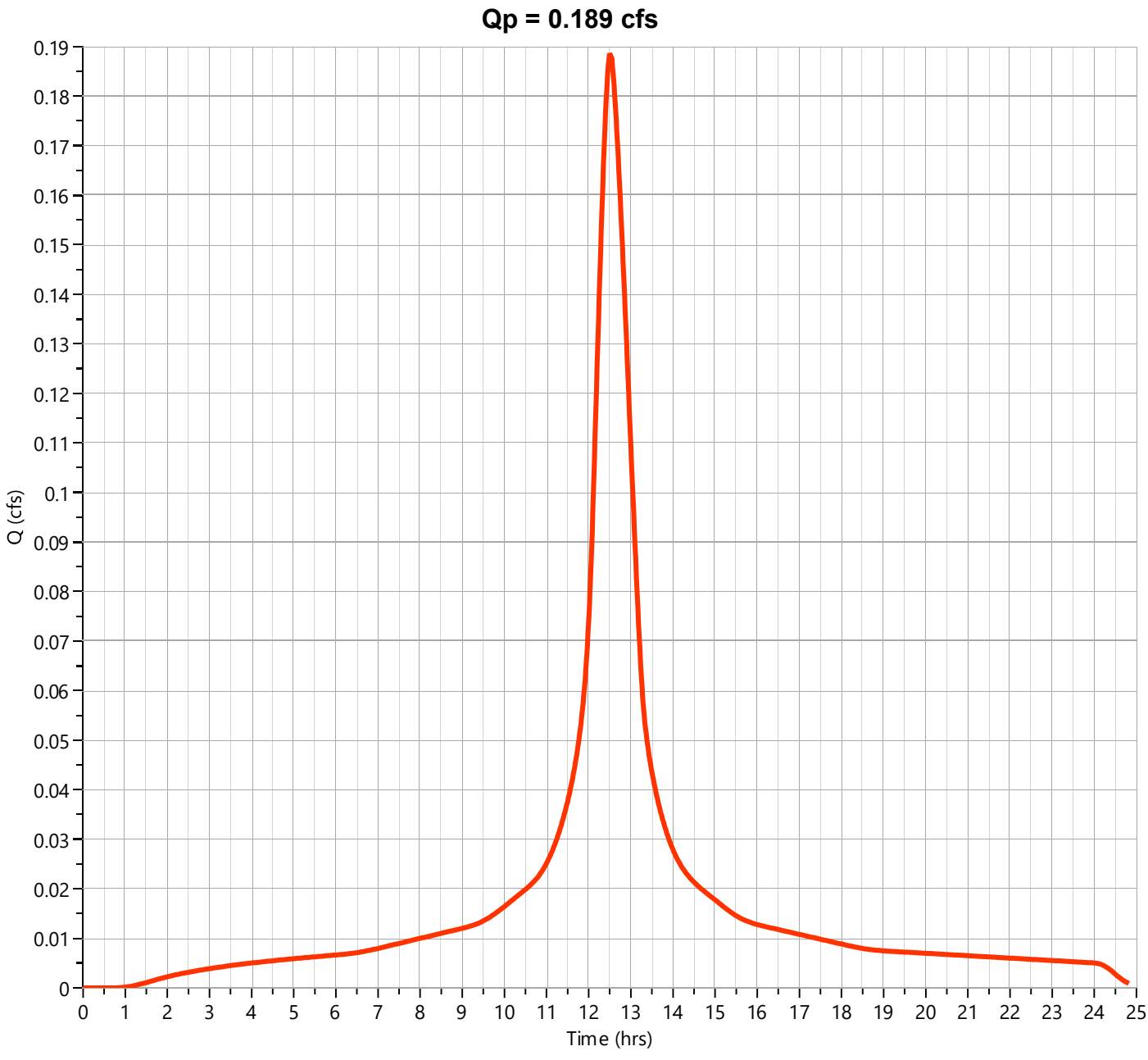
Hydrology Studio v 3.0.0.38

File: Existing HydrologyFuture Precipitation(10YR).hys
07-31-2025

EX WSHD A Imperv

Hyd. No. 2

Hydrograph Type	= NRCS Runoff	Peak Flow	= 0.189 cfs
Storm Frequency	= 10-yr	Time to Peak	= 12.52 hrs
Time Interval	= 1 min	Runoff Volume	= 1,514 cuft
Drainage Area	= 0.07 ac	Curve Number	= 98.00
Tc Method	= User	Time of Conc. (Tc)	= 47.0 min
Total Rainfall	= 6.17 in	Design Storm	= NOAA-D
Storm Duration	= 24 hrs	Shape Factor	= 484



Hydrograph Report

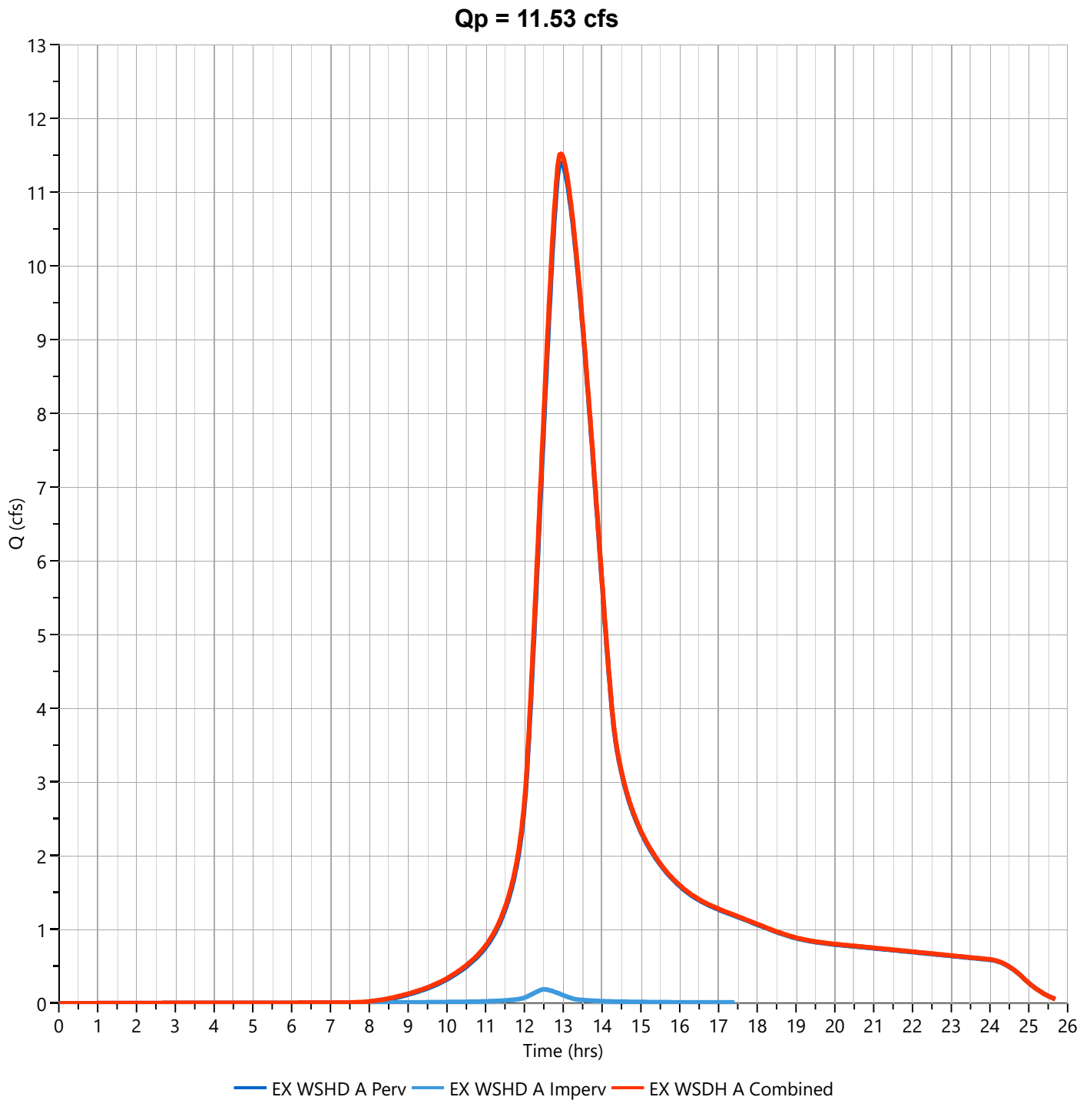
Hydrology Studio v 3.0.0.38

File: Existing HydrologyFuture Precipitation(10YR).hys
07-31-2025

EX WSDH A Combined

Hyd. No. 3

Hydrograph Type	= Junction	Peak Flow	= 11.53 cfs
Storm Frequency	= 10-yr	Time to Peak	= 12.93 hrs
Time Interval	= 1 min	Hydrograph Volume	= 115,975 cuft
Inflow Hydrographs	= 1, 2	Total Contrib. Area	= 9.27 ac



Hydrograph Report

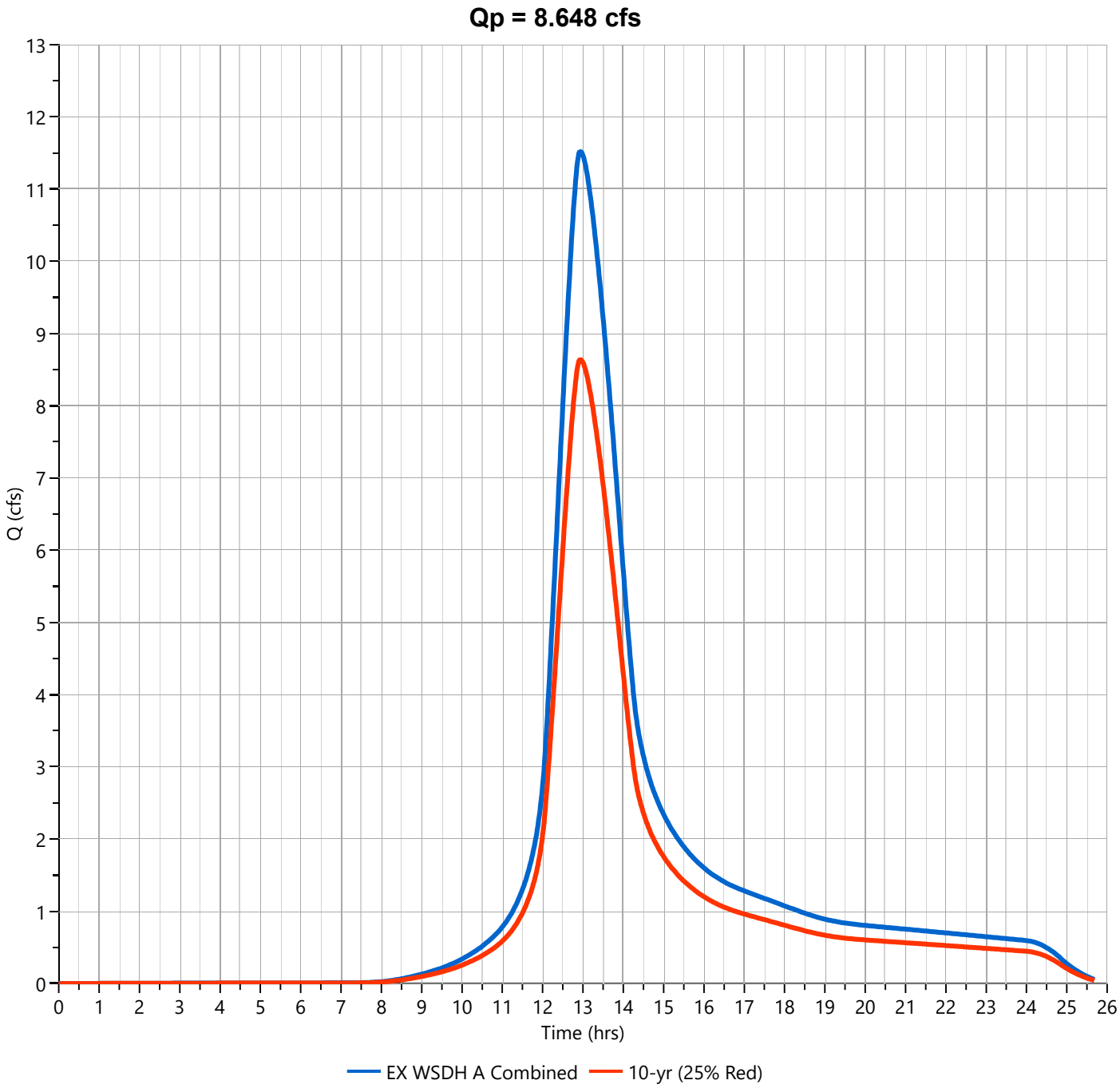
Hydrology Studio v 3.0.0.38

File: Existing HydrologyFuture Precipitation(10YR).hys
07-31-2025

10-yr (25% Red)

Hyd. No. 4

Hydrograph Type	= Diversion	Peak Flow	= 8.648 cfs
Storm Frequency	= 10-yr	Time to Peak	= 12.93 hrs
Time Interval	= 1 min	Hydrograph Volume	= 86,981 cuft
Inflow Hydrograph	= 3 - EX WSDH A Combined	Diversion Method	= Flow Ratio
Companion Hyd	= 5 - N/A	Flow Ratio	= 0.75



Hydrograph Report

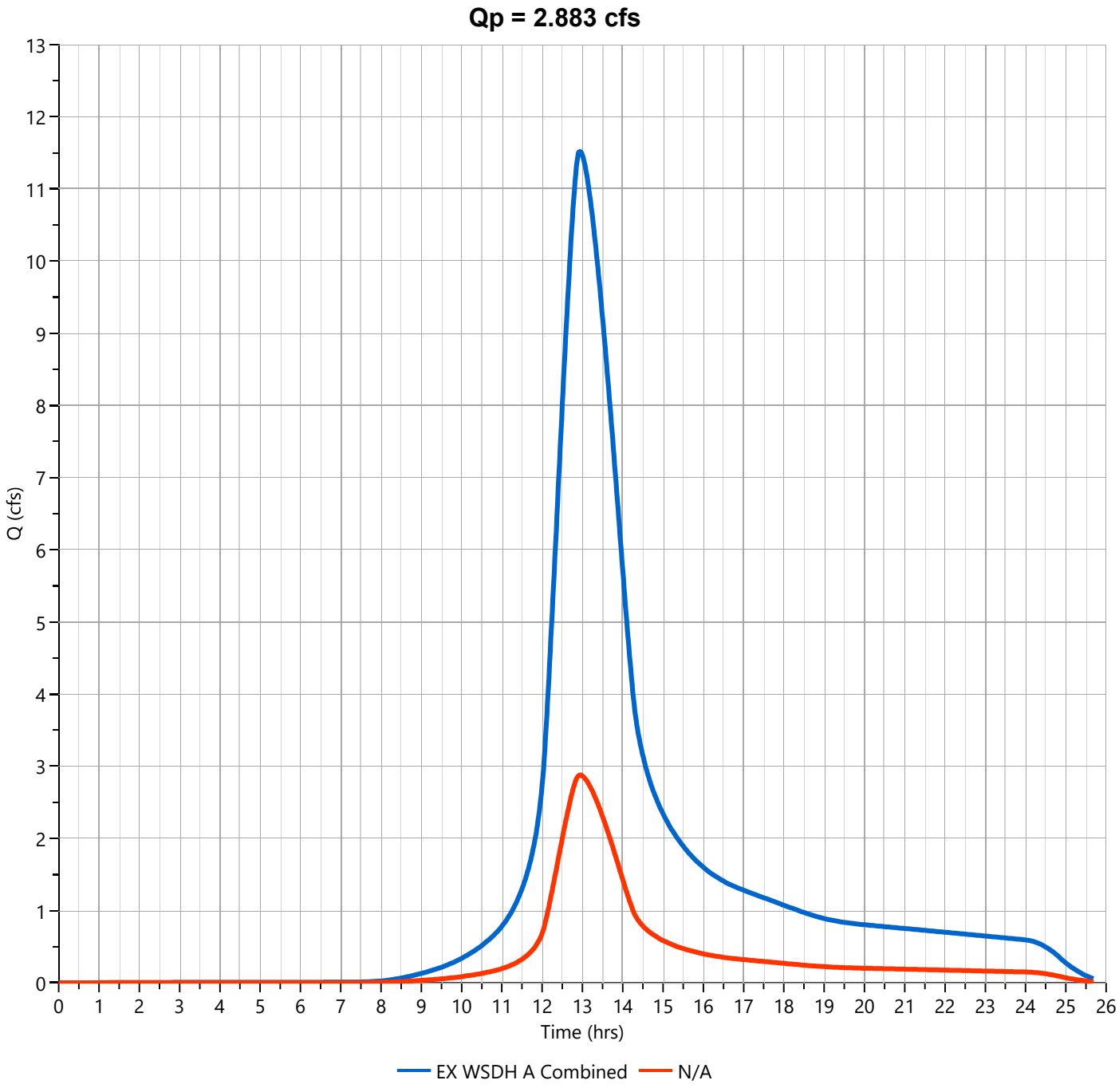
Hydrology Studio v 3.0.0.38

File: Existing HydrologyFuture Precipitation(10YR).hys
07-31-2025

N/A

Hyd. No. 5

Hydrograph Type	= Diversion	Peak Flow	= 2.883 cfs
Storm Frequency	= 10-yr	Time to Peak	= 12.93 hrs
Time Interval	= 1 min	Hydrograph Volume	= 28,994 cuft
Inflow Hydrograph	= 3 - EX WSDH A Combined	Diversion Method	= Flow Ratio
Companion Hyd	= 4 - 10-yr (25% Red)	Flow Ratio	= 0.75



Hydrograph Report

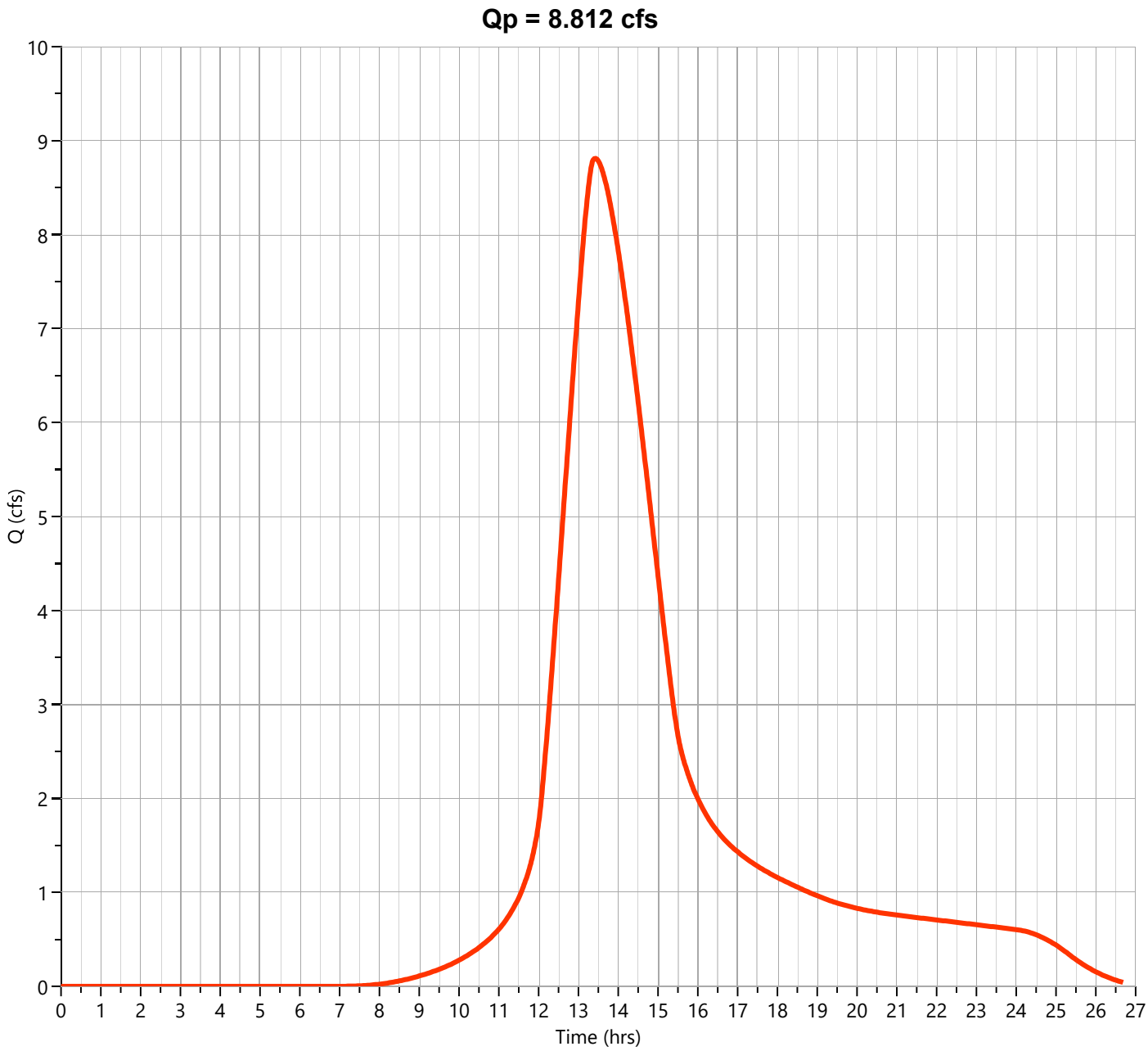
Hydrology Studio v 3.0.0.38

File: Existing HydrologyFuture Precipitation(10YR).hys
07-31-2025

EX WSHD B PervUndis

Hyd. No. 7

Hydrograph Type	= NRCS Runoff	Peak Flow	= 8.812 cfs
Storm Frequency	= 10-yr	Time to Peak	= 13.42 hrs
Time Interval	= 1 min	Runoff Volume	= 115,628 cuft
Drainage Area	= 8.78 ac	Curve Number	= 77.00
Tc Method	= User	Time of Conc. (Tc)	= 131.0 min
Total Rainfall	= 6.17 in	Design Storm	= NOAA-D
Storm Duration	= 24 hrs	Shape Factor	= 484



Hydrograph Report

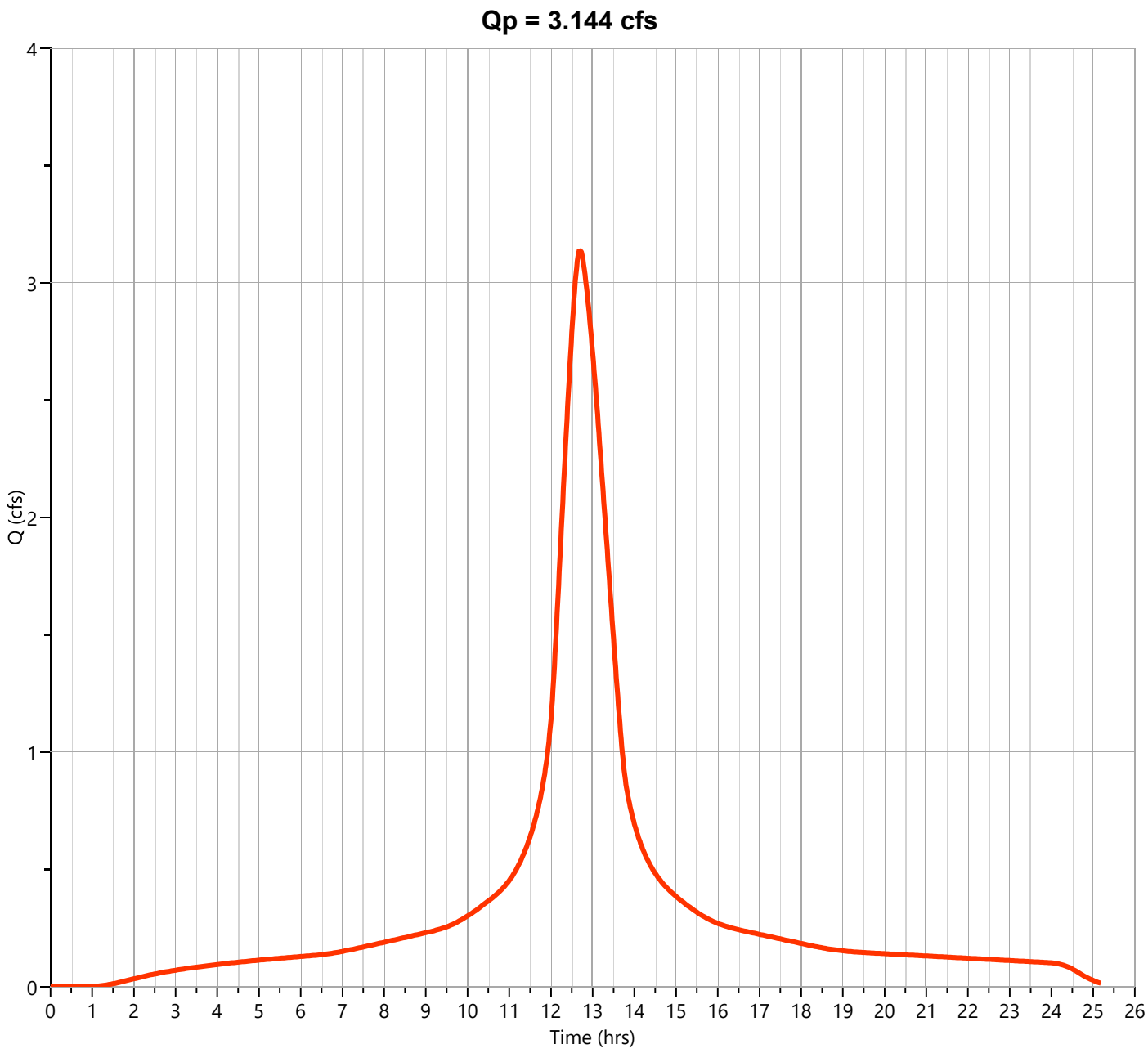
Hydrology Studio v 3.0.0.38

File: Existing HydrologyFuture Precipitation(10YR).hys
07-31-2025

EX WSHD B ImpUndist

Hyd. No. 8

Hydrograph Type	= NRCS Runoff	Peak Flow	= 3.144 cfs
Storm Frequency	= 10-yr	Time to Peak	= 12.70 hrs
Time Interval	= 1 min	Runoff Volume	= 30,145 cuft
Drainage Area	= 1.4 ac	Curve Number	= 98.00
Tc Method	= User	Time of Conc. (Tc)	= 65.0 min
Total Rainfall	= 6.17 in	Design Storm	= NOAA-D
Storm Duration	= 24 hrs	Shape Factor	= 484



Hydrograph Report

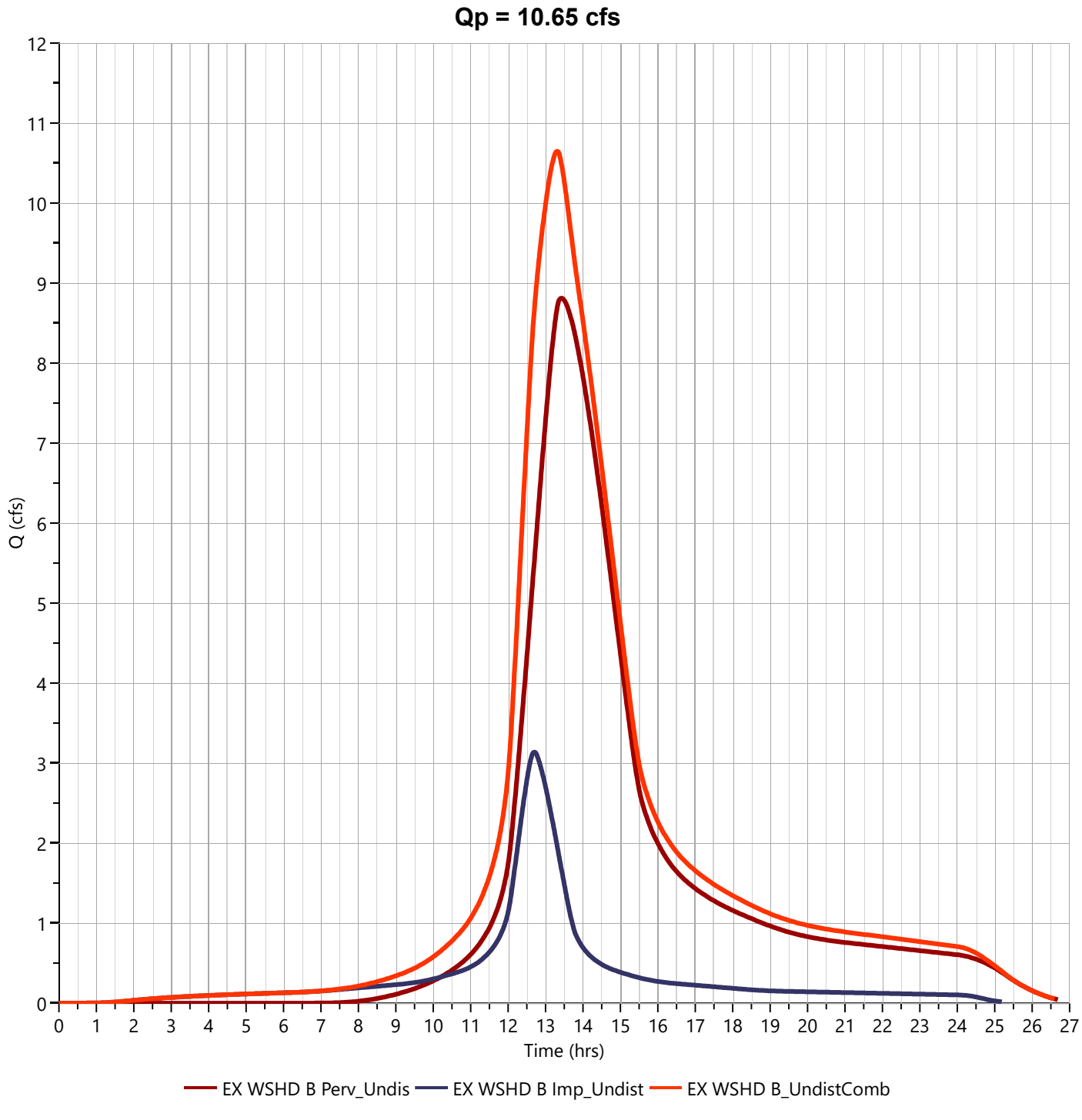
Hydrology Studio v 3.0.0.38

File: Existing HydrologyFuture Precipitation(10YR).hys
07-31-2025

EX WSHD BUndistComb

Hyd. No. 9

Hydrograph Type	= Junction	Peak Flow	= 10.65 cfs
Storm Frequency	= 10-yr	Time to Peak	= 13.32 hrs
Time Interval	= 1 min	Hydrograph Volume	= 145,773 cuft
Inflow Hydrographs	= 7, 8	Total Contrib. Area	= 10.18 ac



Hydrograph Report

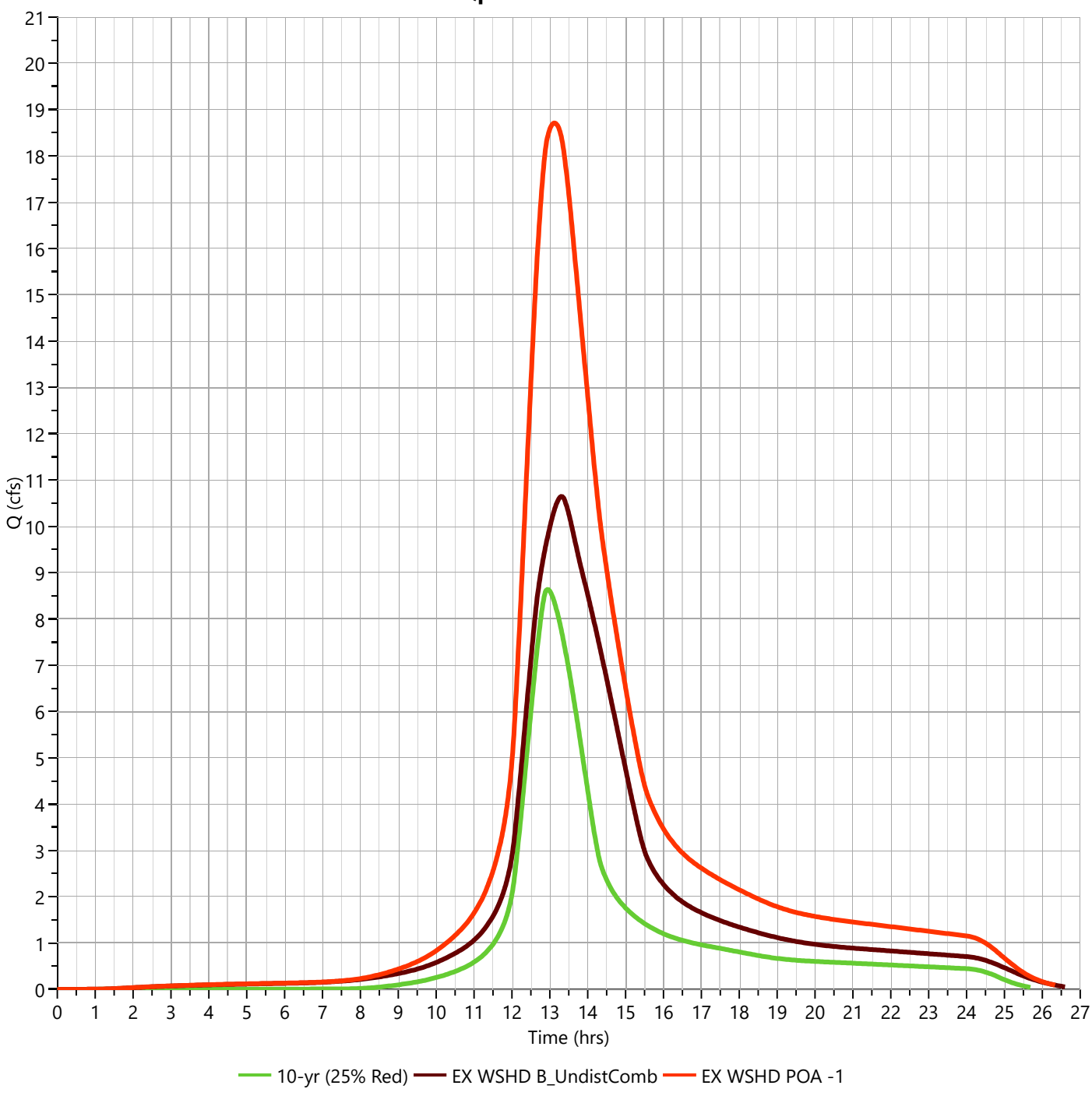
Hydrology Studio v 3.0.0.38

File: Existing HydrologyFuture Precipitation(10YR).hys
07-31-2025

EX WSHD POA -1

Hyd. No. 11

Hydrograph Type	= Junction	Peak Flow	= 18.71 cfs
Storm Frequency	= 10-yr	Time to Peak	= 13.12 hrs
Time Interval	= 1 min	Hydrograph Volume	= 232,754 cuft
Inflow Hydrographs		Total Contrib. Area	= 0.0 ac



Hydrograph Report

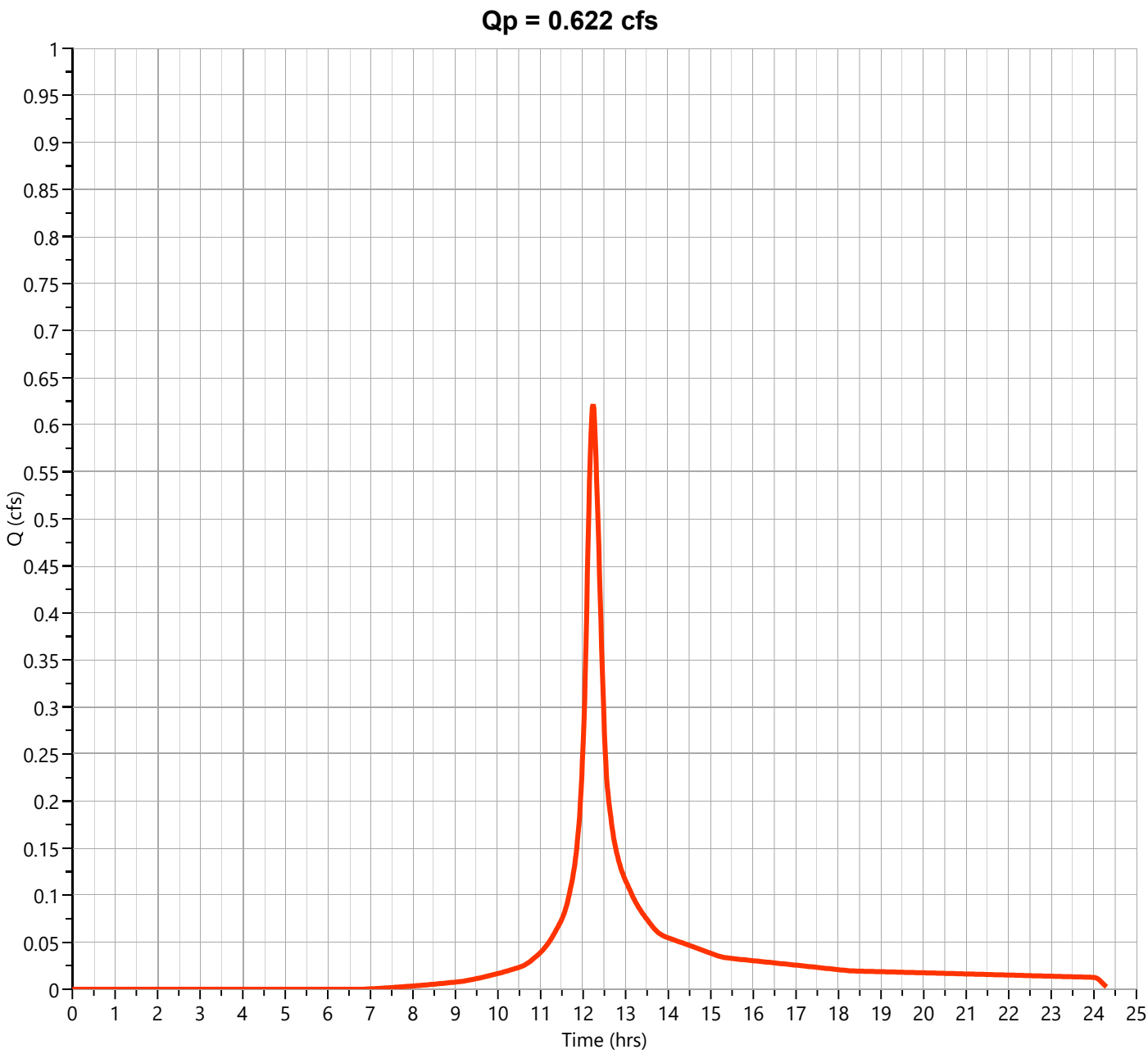
Hydrology Studio v 3.0.0.38

File: Existing HydrologyFuture Precipitation(10YR).hys
07-31-2025

EX WSHD C Perv

Hyd. No. 13

Hydrograph Type	= NRCS Runoff	Peak Flow	= 0.622 cfs
Storm Frequency	= 10-yr	Time to Peak	= 12.23 hrs
Time Interval	= 1 min	Runoff Volume	= 2,734 cuft
Drainage Area	= 0.21 ac	Curve Number	= 77.00
Tc Method	= User	Time of Conc. (Tc)	= 17.0 min
Total Rainfall	= 6.17 in	Design Storm	= NOAA-D
Storm Duration	= 24 hrs	Shape Factor	= 484



Hydrograph Report

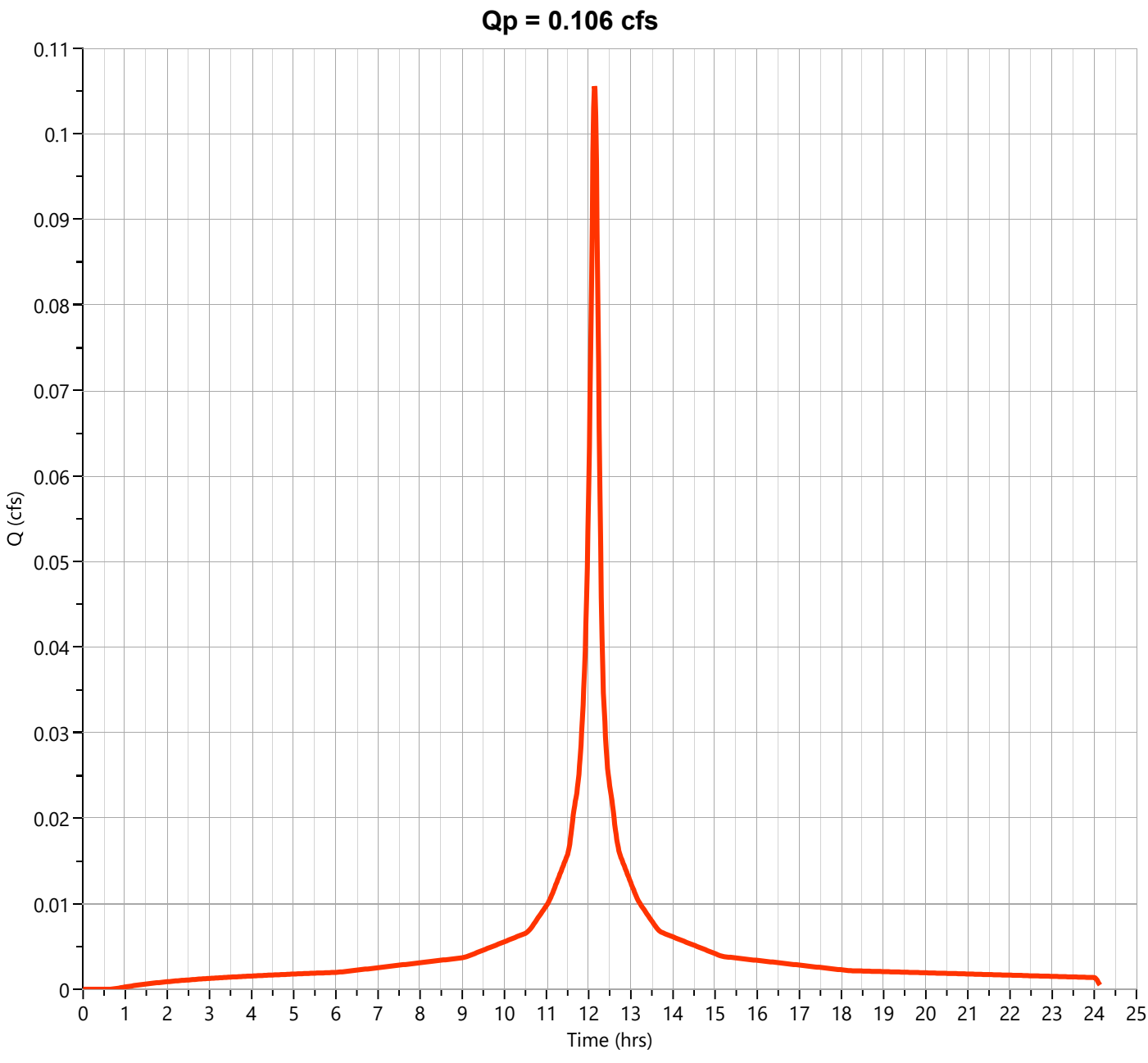
Hydrology Studio v 3.0.0.38

File: Existing HydrologyFuture Precipitation(10YR).hys
07-31-2025

EX WSHD C Imperv

Hyd. No. 14

Hydrograph Type	= NRCS Runoff	Peak Flow	= 0.106 cfs
Storm Frequency	= 10-yr	Time to Peak	= 12.13 hrs
Time Interval	= 1 min	Runoff Volume	= 431 cuft
Drainage Area	= 0.02 ac	Curve Number	= 98.00
Tc Method	= User	Time of Conc. (Tc)	= 9.0 min
Total Rainfall	= 6.17 in	Design Storm	= NOAA-D
Storm Duration	= 24 hrs	Shape Factor	= 484



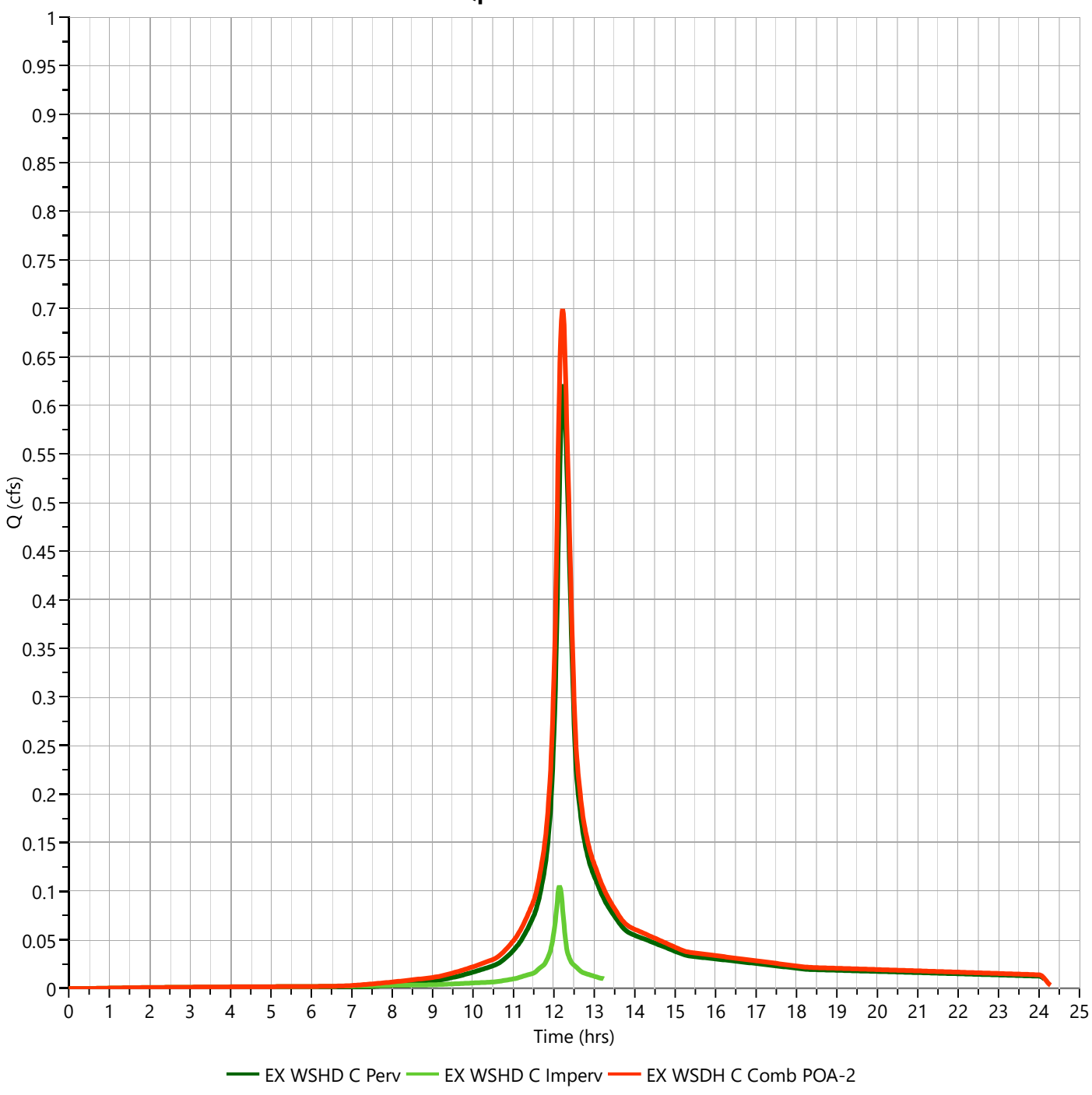
Hydrograph Report

Hydrology Studio v 3.0.0.38

File: Existing HydrologyFuture Precipitation(10YR).hys
07-31-2025

EX WSDH C Comb POA-2 — Hyd. No. 15

Hydrograph Type	= Junction	Peak Flow	= 0.699 cfs
Storm Frequency	= 10-yr	Time to Peak	= 12.22 hrs
Time Interval	= 1 min	Hydrograph Volume	= 3,165 cuft
Inflow Hydrographs	= 13, 14	Total Contrib. Area	= 0.23 ac



Hydrograph Report

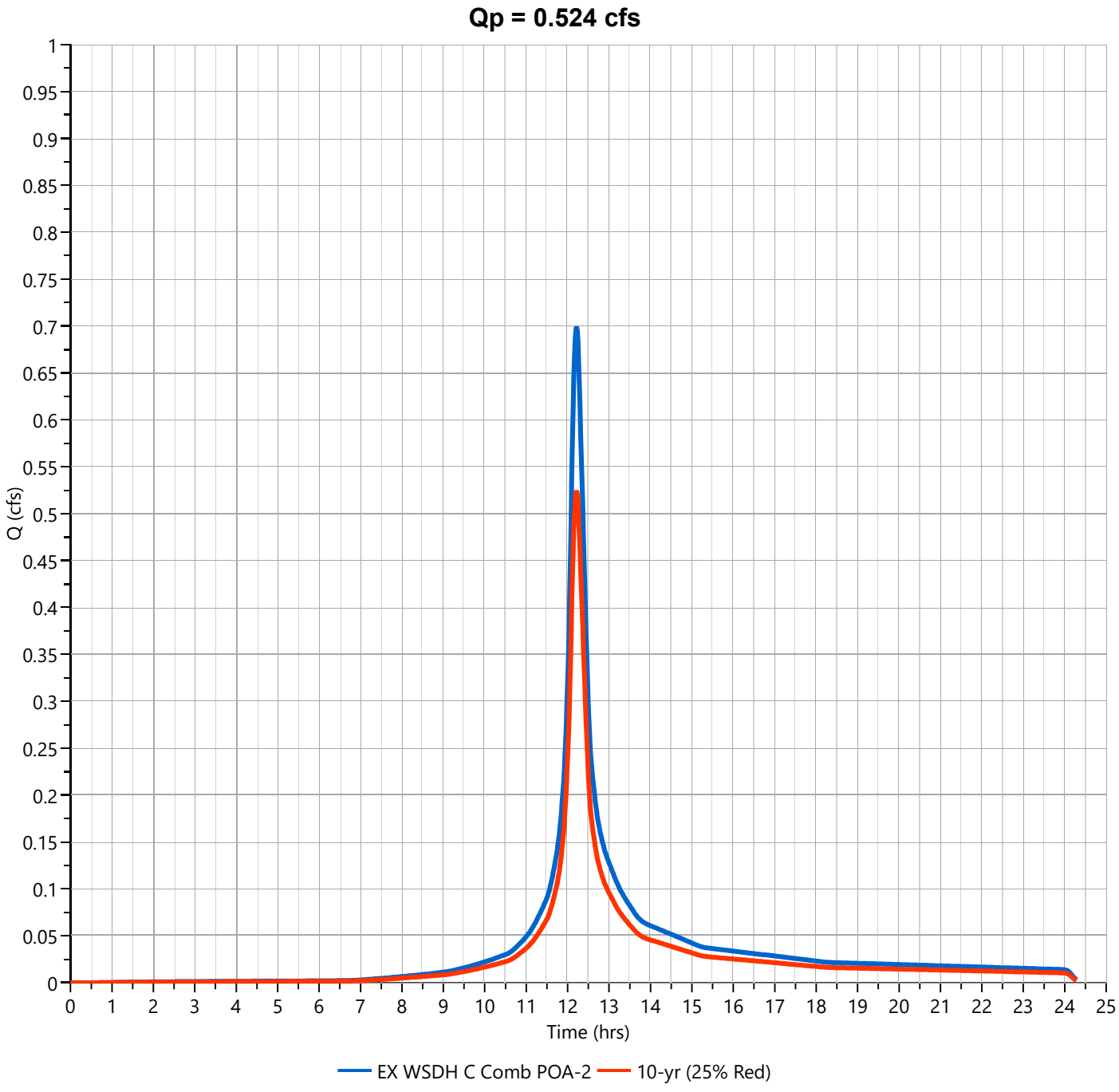
Hydrology Studio v 3.0.0.38

File: Existing HydrologyFuture Precipitation(10YR).hys
07-31-2025

10-yr (25% Red)

Hyd. No. 16

Hydrograph Type	= Diversion	Peak Flow	= 0.524 cfs
Storm Frequency	= 10-yr	Time to Peak	= 12.22 hrs
Time Interval	= 1 min	Hydrograph Volume	= 2,374 cuft
Inflow Hydrograph	= 15 - EX WSDH C Comb POA-2	Diversion Method	= Flow Ratio
Companion Hyd	= 17 - N/A	Flow Ratio	= 0.75



Hydrograph Report

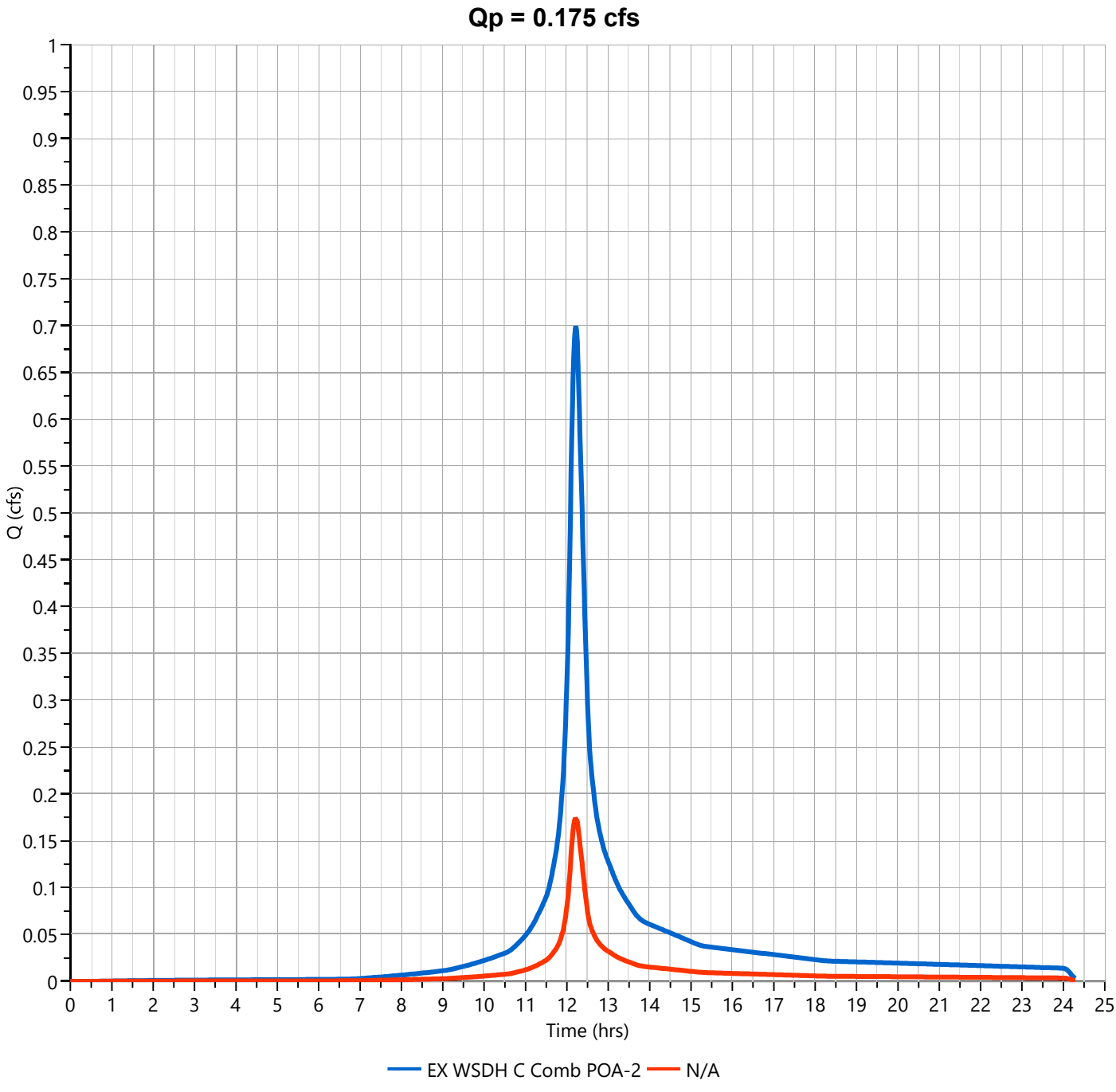
Hydrology Studio v 3.0.0.38

File: Existing HydrologyFuture Precipitation(10YR).hys
07-31-2025

N/A

Hyd. No. 17

Hydrograph Type	= Diversion	Peak Flow	= 0.175 cfs
Storm Frequency	= 10-yr	Time to Peak	= 12.22 hrs
Time Interval	= 1 min	Hydrograph Volume	= 791 cuft
Inflow Hydrograph	= 15 - EX WSDH C Comb POA-2	Diversion Method	= Flow Ratio
Companion Hyd	= 16 - 10-yr (25% Red)	Flow Ratio	= 0.75



Hydrograph Report

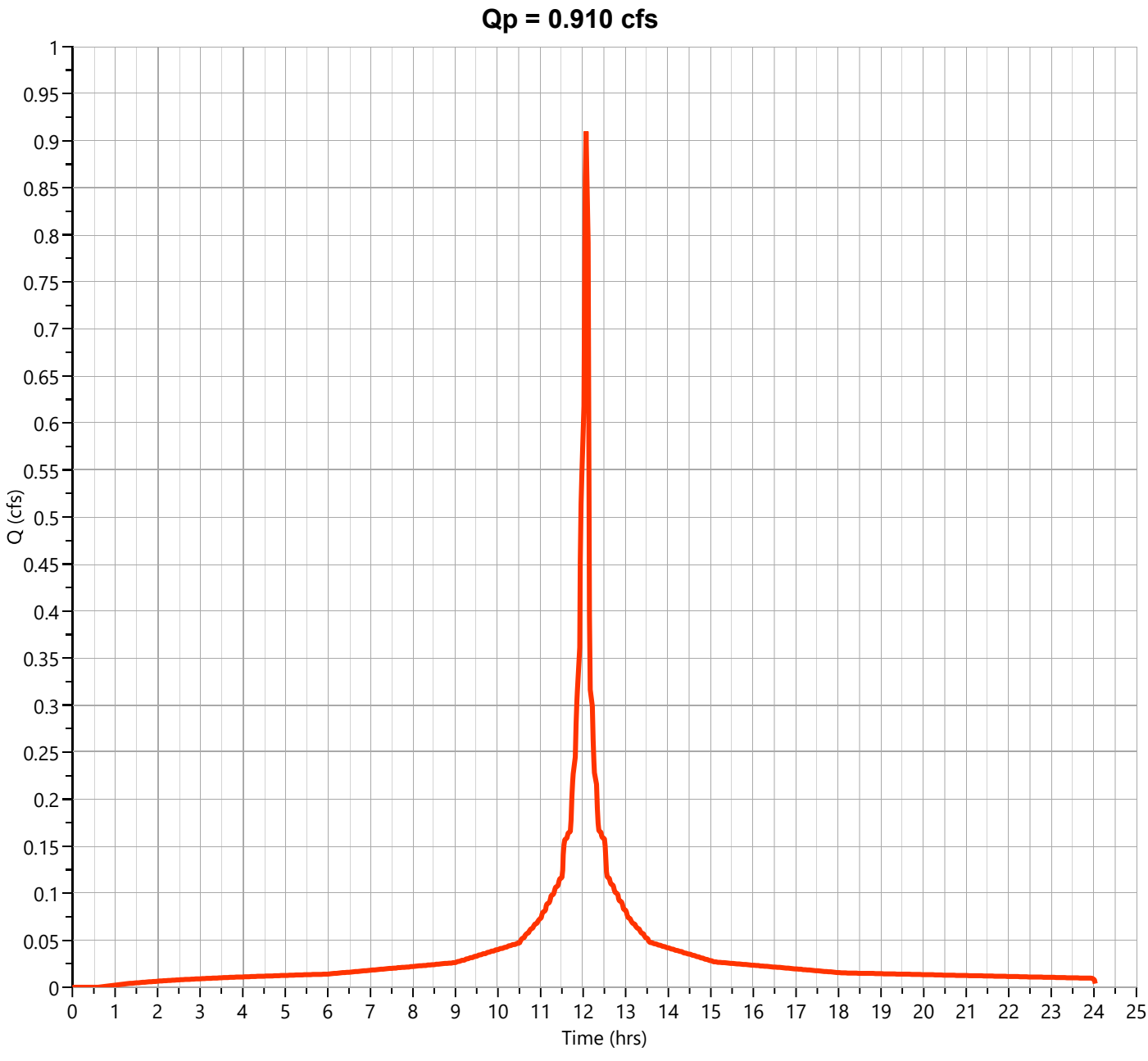
Hydrology Studio v 3.0.0.38

File: Existing HydrologyFuture Precipitation(10YR).hys
07-31-2025

EX WSHD D Imp POA-3

Hyd. No. 19

Hydrograph Type	= NRCS Runoff	Peak Flow	= 0.910 cfs
Storm Frequency	= 10-yr	Time to Peak	= 12.10 hrs
Time Interval	= 1 min	Runoff Volume	= 3,028 cuft
Drainage Area	= 0.15 ac	Curve Number	= 98.00
Tc Method	= User	Time of Conc. (Tc)	= 3.0 min
Total Rainfall	= 6.17 in	Design Storm	= NOAA-D
Storm Duration	= 24 hrs	Shape Factor	= 484



Hydrograph Report

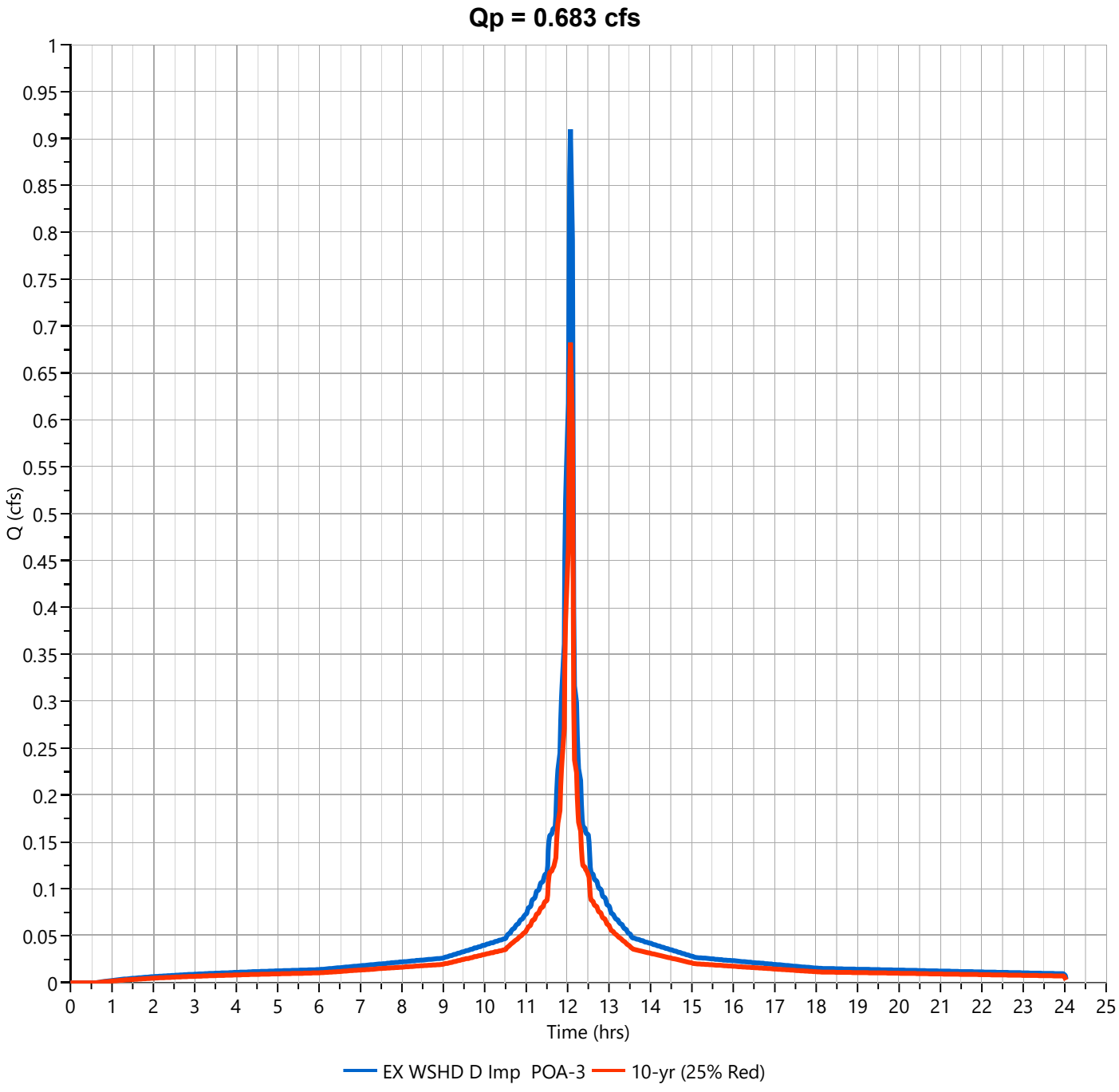
Hydrology Studio v 3.0.0.38

File: Existing HydrologyFuture Precipitation(10YR).hys
07-31-2025

10-yr (25% Red)

Hyd. No. 20

Hydrograph Type	= Diversion	Peak Flow	= 0.683 cfs
Storm Frequency	= 10-yr	Time to Peak	= 12.10 hrs
Time Interval	= 1 min	Hydrograph Volume	= 2,271 cuft
Inflow Hydrograph	= 19 - EX WSHD D Imp POA-3	Diversion Method	= Flow Ratio
Companion Hyd	= 21 - N/A	Flow Ratio	= 0.75



Hydrograph Report

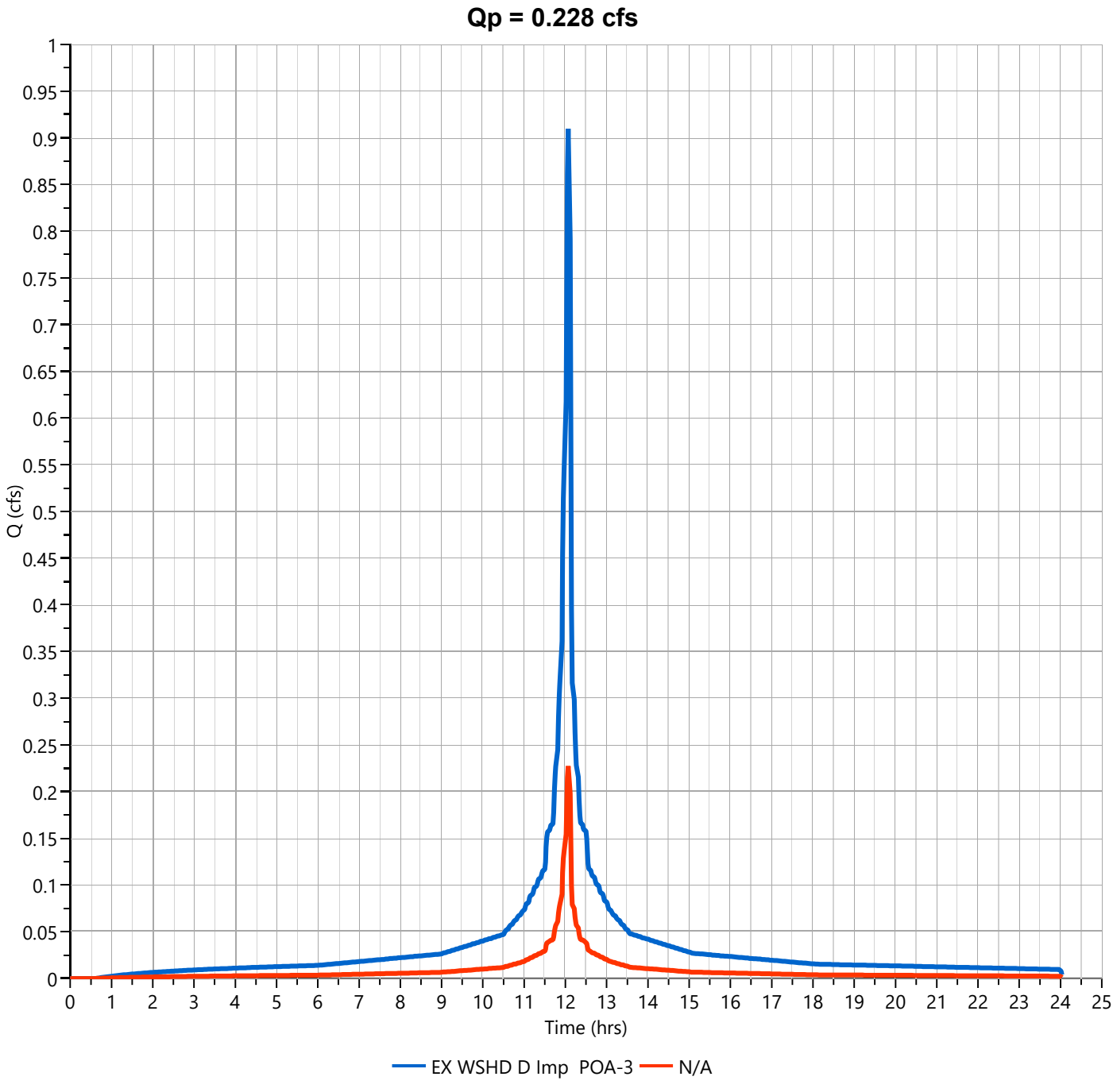
Hydrology Studio v 3.0.0.38

File: Existing HydrologyFuture Precipitation(10YR).hys
07-31-2025

N/A

Hyd. No. 21

Hydrograph Type	= Diversion	Peak Flow	= 0.228 cfs
Storm Frequency	= 10-yr	Time to Peak	= 12.10 hrs
Time Interval	= 1 min	Hydrograph Volume	= 757 cuft
Inflow Hydrograph	= 19 - EX WSHD D Imp POA-3	Diversion Method	= Flow Ratio
Companion Hyd	= 20 - 10-yr (25% Red)	Flow Ratio	= 0.75



Hydrograph by Return Period

Hydrology Studio v 3.0.0.38

File: Existing HydrologyFuture Precipitation(100YR).hys

07-31-2025

Hyd. No.	Hydrograph Type	Hydrograph Name	Peak Outflow (cfs)							
			1-yr	2-yr	3-yr	5-yr	10-yr	25-yr	50-yr	100-yr
1	NRCS Runoff	EX WSHD A Perv								27.01
2	NRCS Runoff	EX WSHD A Imperv								0.349
3	Junction	EX WSDH A Combined								27.24
4	Diversion1	100-yr (20% Red)								21.79
5	Diversion2	N/A								5.448
7	NRCS Runoff	EX WSHD B PervUndis								20.35
8	NRCS Runoff	EX WSHD B ImpUndist								5.817
9	Junction	EX WSHD BUndistComb								23.81
11	Junction	EX WSHD POA -1								43.99
13	NRCS Runoff	EX WSHD C Perv								1.405
14	NRCS Runoff	EX WSHD C Imperv								0.195
15	Junction	EX WSDH C Comb POA-2								1.553
16	Diversion1	100-yr (20% Red)								1.242
17	Diversion2	N/A								0.311
19	NRCS Runoff	EX WSHD D Imp POA-3								1.682
20	Diversion1	100-yr (20% Red)								1.346
21	Diversion2	N/A								0.336

Hydrograph 100-yr Summary

Hydrology Studio v 3.0.0.38

File: Existing HydrologyFuture Precipitation(100YR).hys

07-31-2025

Hyd. No.	Hydrograph Type	Hydrograph Name	Peak Flow (cfs)	Time to Peak (hrs)	Hydrograph Volume (cuft)	Inflow Hyd(s)	Maximum Elevation (ft)	Maximum Storage (cuft)
1	NRCS Runoff	EX WSHD A Perv	27.01	12.92	272,879	----		
2	NRCS Runoff	EX WSHD A Imperv	0.349	12.52	2,843	----		
3	Junction	EX WSDH A Combined	27.24	12.92	275,722	1, 2		
4	Diversion1	100-yr (20% Red)	21.79	12.92	220,578	3		
5	Diversion2	N/A	5.448	12.92	55,144	3		
7	NRCS Runoff	EX WSHD B PervUndis	20.35	13.38	269,108	----		
8	NRCS Runoff	EX WSHD B ImpUndist	5.817	12.70	56,607	----		
9	Junction	EX WSHD BUndistComb	23.81	13.30	325,715	7, 8		
11	Junction	EX WSHD POA -1	43.99	13.07	546,292	4, 9		
13	NRCS Runoff	EX WSHD C Perv	1.405	12.23	6,363	----		
14	NRCS Runoff	EX WSHD C Imperv	0.195	12.13	809	----		
15	Junction	EX WSDH C Comb POA-2	1.553	12.22	7,172	13, 14		
16	Diversion1	100-yr (20% Red)	1.242	12.22	5,738	15		
17	Diversion2	N/A	0.311	12.22	1,434	15		
19	NRCS Runoff	EX WSHD D Imp POA-3	1.682	12.10	5,686	----		
20	Diversion1	100-yr (20% Red)	1.346	12.10	4,549	19		
21	Diversion2	N/A	0.336	12.10	1,137	19		

Hydrograph Report

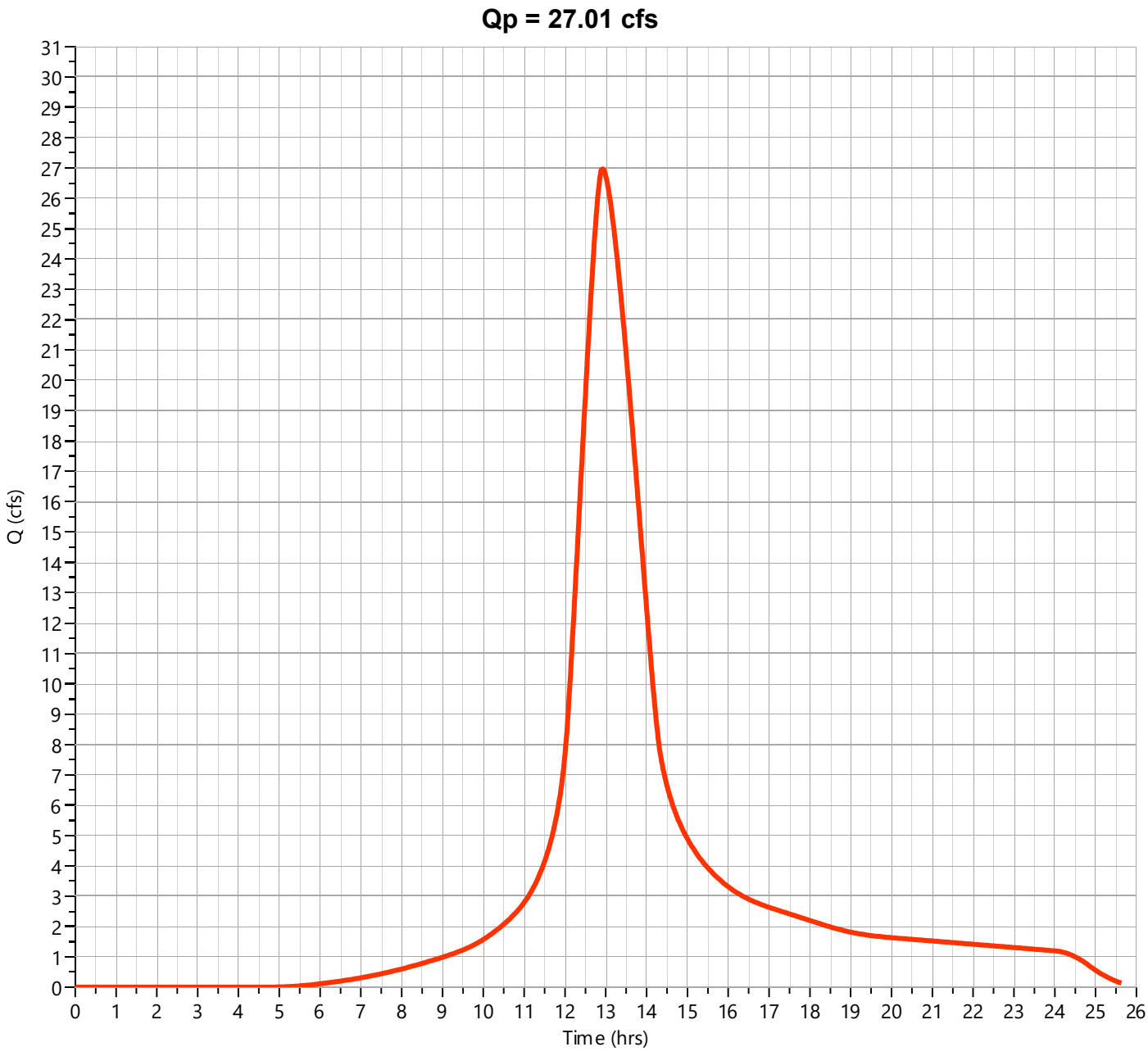
Hydrology Studio v 3.0.0.38

File: Existing HydrologyFuture Precipitation(100YR).hys
07-31-2025

EX WSHD A Perv

Hyd. No. 1

Hydrograph Type	= NRCS Runoff	Peak Flow	= 27.01 cfs
Storm Frequency	= 100-yr	Time to Peak	= 12.92 hrs
Time Interval	= 1 min	Runoff Volume	= 272,879 cuft
Drainage Area	= 9.2 ac	Curve Number	= 75.00
Tc Method	= User	Time of Conc. (Tc)	= 86.0 min
Total Rainfall	= 11.38 in	Design Storm	= NOAA-D
Storm Duration	= 24 hrs	Shape Factor	= 484



Hydrograph Report

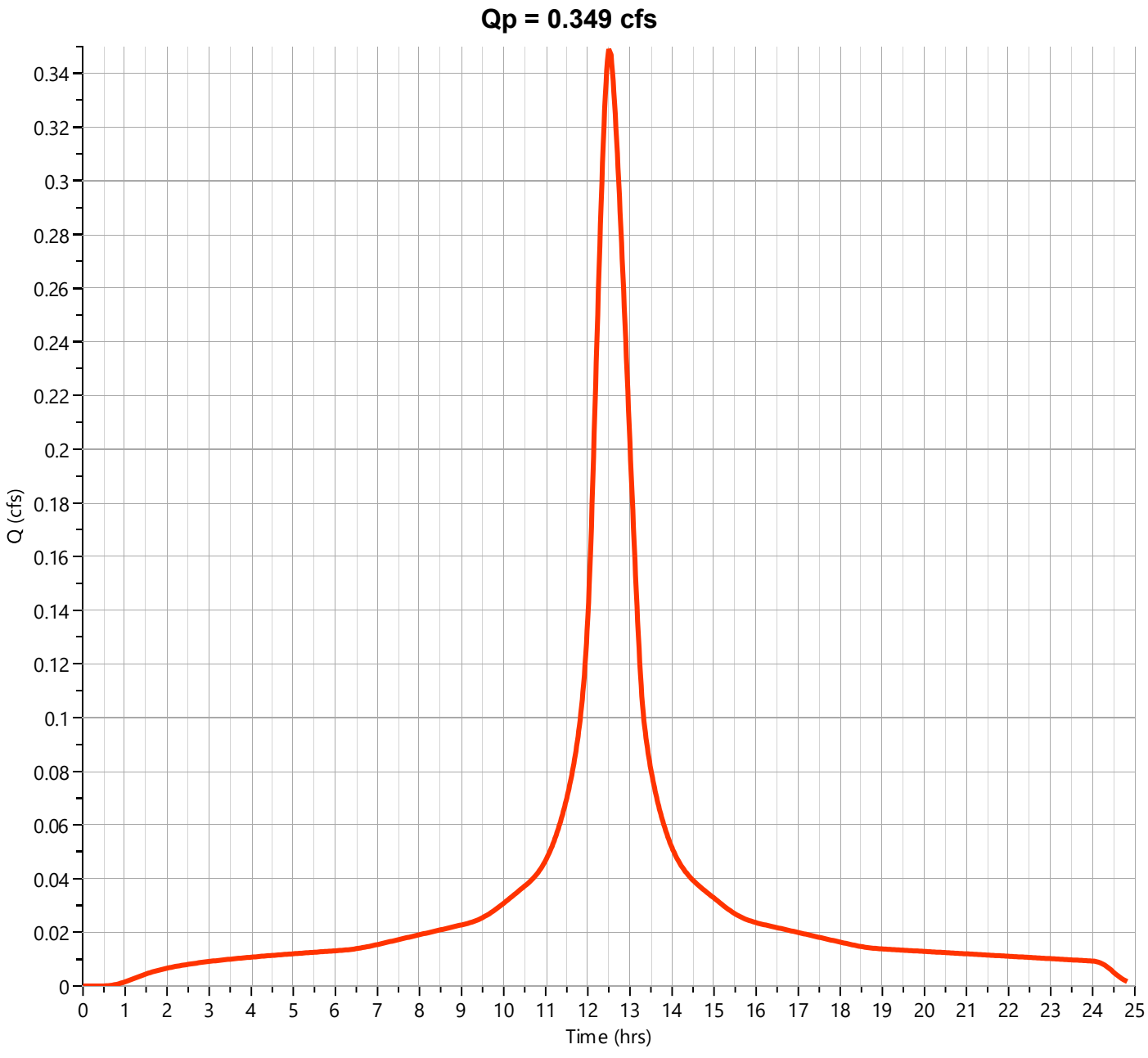
Hydrology Studio v 3.0.0.38

File: Existing HydrologyFuture Precipitation(100YR).hys
07-31-2025

EX WSHD A Imperv

Hyd. No. 2

Hydrograph Type	= NRCS Runoff	Peak Flow	= 0.349 cfs
Storm Frequency	= 100-yr	Time to Peak	= 12.52 hrs
Time Interval	= 1 min	Runoff Volume	= 2,843 cuft
Drainage Area	= 0.07 ac	Curve Number	= 98.00
Tc Method	= User	Time of Conc. (Tc)	= 47.0 min
Total Rainfall	= 11.38 in	Design Storm	= NOAA-D
Storm Duration	= 24 hrs	Shape Factor	= 484



Hydrograph Report

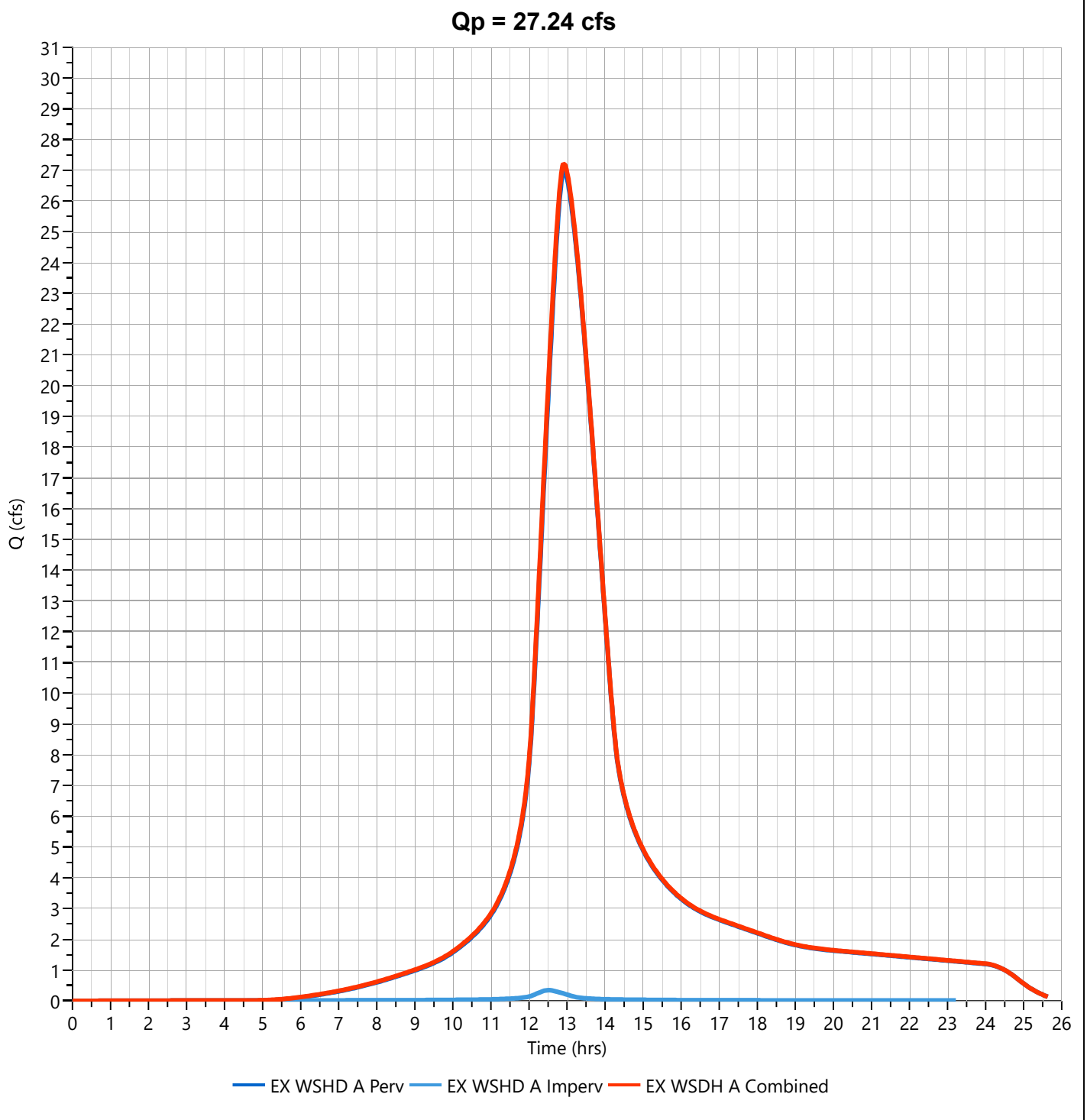
Hydrology Studio v 3.0.0.38

File: Existing HydrologyFuture Precipitation(100YR).hys
07-31-2025

EX WSDH A Combined

Hyd. No. 3

Hydrograph Type	= Junction	Peak Flow	= 27.24 cfs
Storm Frequency	= 100-yr	Time to Peak	= 12.92 hrs
Time Interval	= 1 min	Hydrograph Volume	= 275,722 cuft
Inflow Hydrographs	= 1, 2	Total Contrib. Area	= 9.27 ac



Hydrograph Report

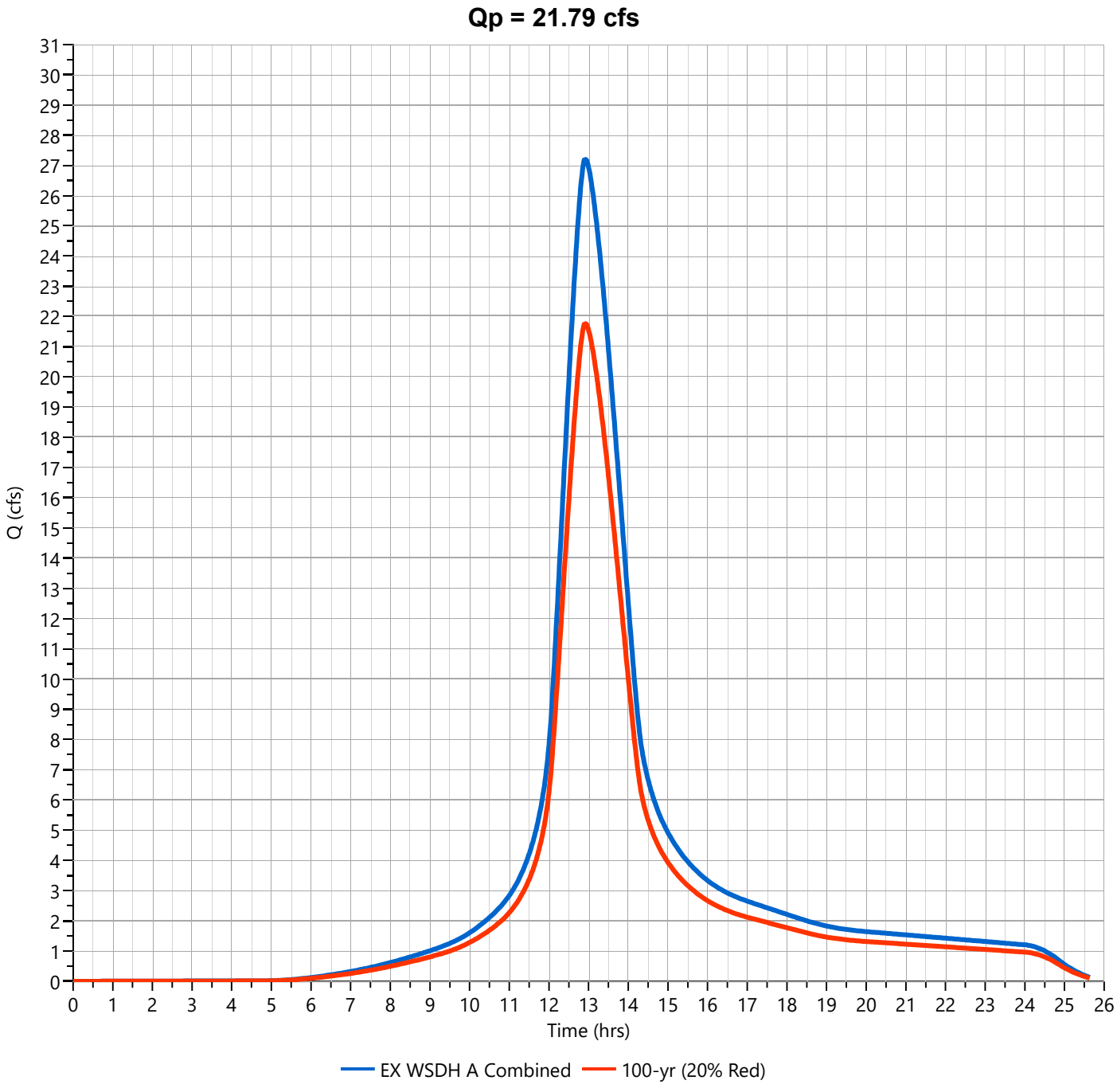
Hydrology Studio v 3.0.0.38

File: Existing HydrologyFuture Precipitation(100YR).hys
07-31-2025

100-yr (20% Red)

Hyd. No. 4

Hydrograph Type	= Diversion	Peak Flow	= 21.79 cfs
Storm Frequency	= 100-yr	Time to Peak	= 12.92 hrs
Time Interval	= 1 min	Hydrograph Volume	= 220,578 cuft
Inflow Hydrograph	= 3 - EX WSDH A Combined	Diversion Method	= Flow Ratio
Companion Hyd	= 5 - N/A	Flow Ratio	= 0.8



Hydrograph Report

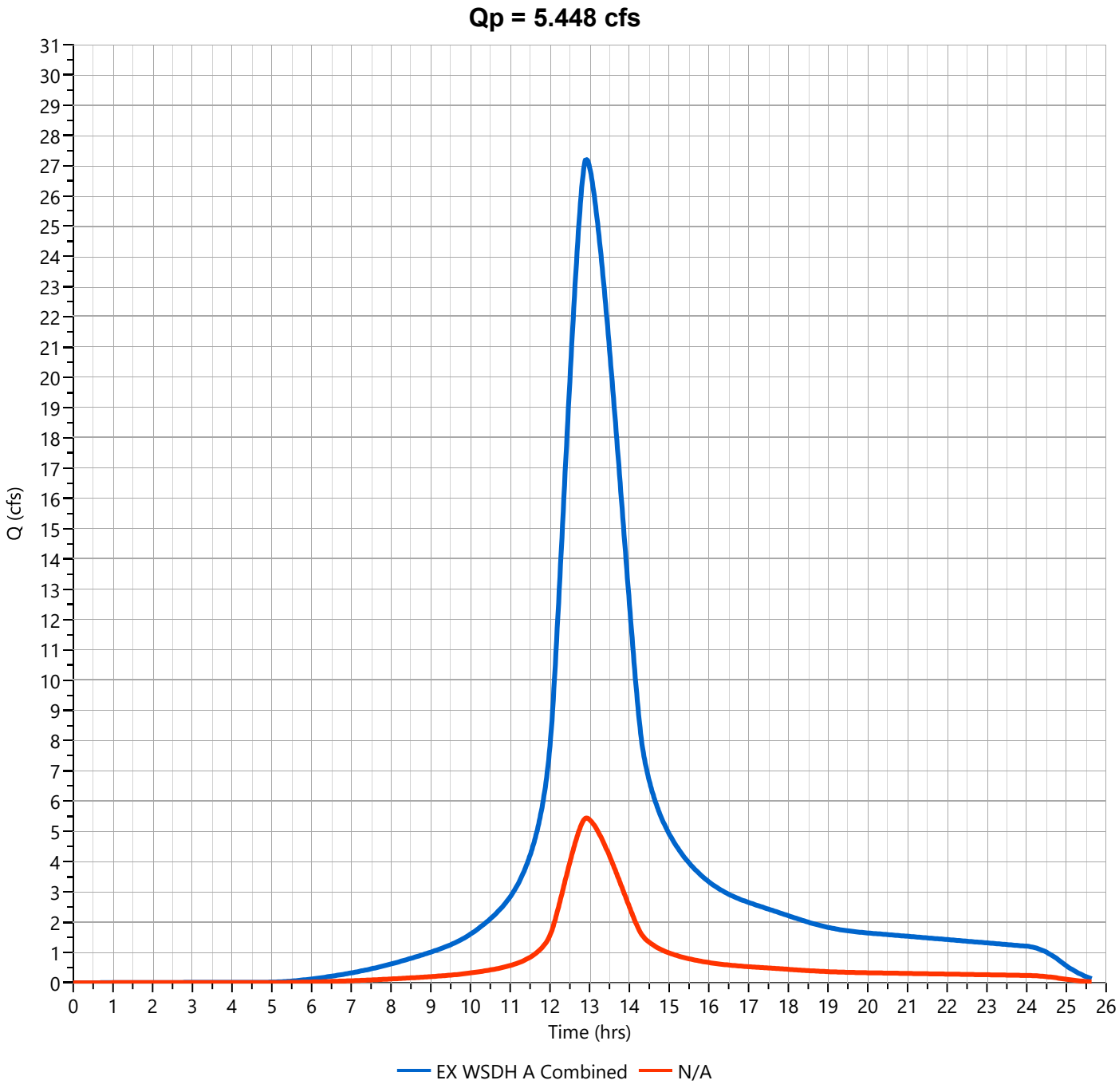
Hydrology Studio v 3.0.0.38

File: Existing HydrologyFuture Precipitation(100YR).hys
07-31-2025

N/A

Hyd. No. 5

Hydrograph Type	= Diversion	Peak Flow	= 5.448 cfs
Storm Frequency	= 100-yr	Time to Peak	= 12.92 hrs
Time Interval	= 1 min	Hydrograph Volume	= 55,144 cuft
Inflow Hydrograph	= 3 - EX WSDH A Combined	Diversion Method	= Flow Ratio
Companion Hyd	= 4 - 100-yr (20% Red)	Flow Ratio	= 0.8



Hydrograph Report

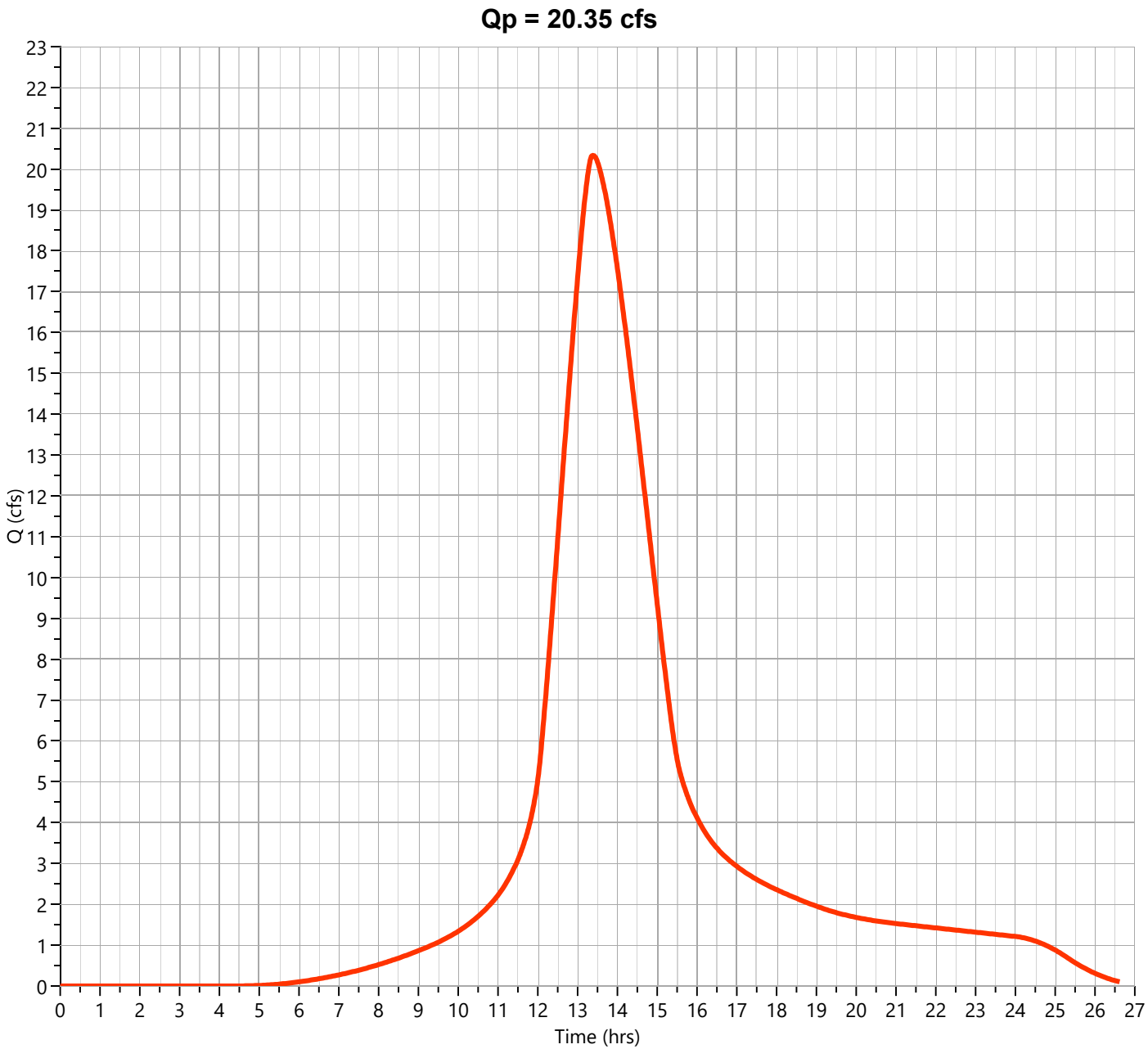
Hydrology Studio v 3.0.0.38

File: Existing HydrologyFuture Precipitation(100YR).hys
07-31-2025

EX WSHD B PervUndis

Hyd. No. 7

Hydrograph Type	= NRCS Runoff	Peak Flow	= 20.35 cfs
Storm Frequency	= 100-yr	Time to Peak	= 13.38 hrs
Time Interval	= 1 min	Runoff Volume	= 269,108 cuft
Drainage Area	= 8.78 ac	Curve Number	= 77.00
Tc Method	= User	Time of Conc. (Tc)	= 131.0 min
Total Rainfall	= 11.38 in	Design Storm	= NOAA-D
Storm Duration	= 24 hrs	Shape Factor	= 484



Hydrograph Report

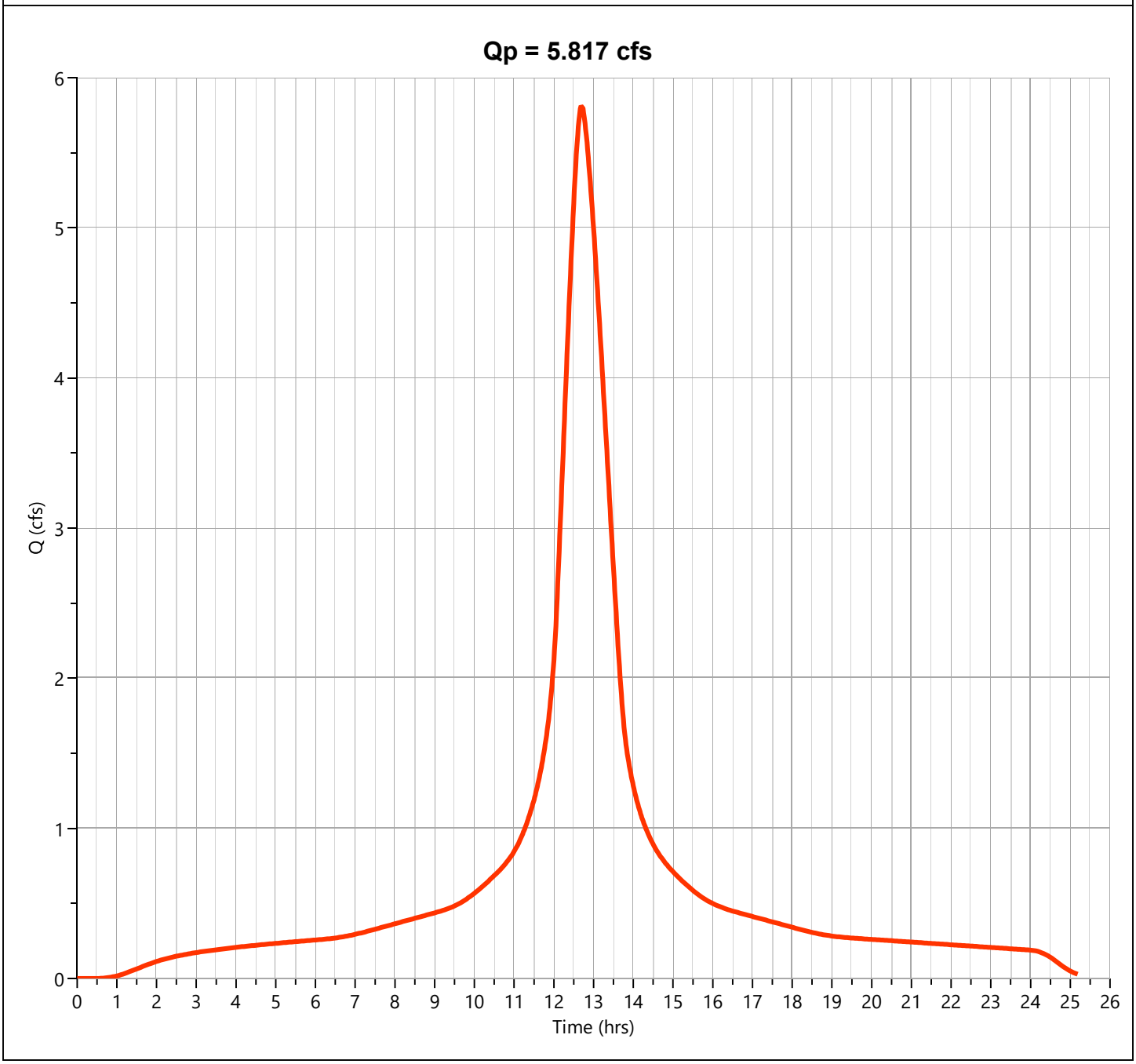
Hydrology Studio v 3.0.0.38

File: Existing HydrologyFuture Precipitation(100YR).hys
07-31-2025

EX WSHD B ImpUndist

Hyd. No. 8

Hydrograph Type	= NRCS Runoff	Peak Flow	= 5.817 cfs
Storm Frequency	= 100-yr	Time to Peak	= 12.70 hrs
Time Interval	= 1 min	Runoff Volume	= 56,607 cuft
Drainage Area	= 1.4 ac	Curve Number	= 98.00
Tc Method	= User	Time of Conc. (Tc)	= 65.0 min
Total Rainfall	= 11.38 in	Design Storm	= NOAA-D
Storm Duration	= 24 hrs	Shape Factor	= 484



Hydrograph Report

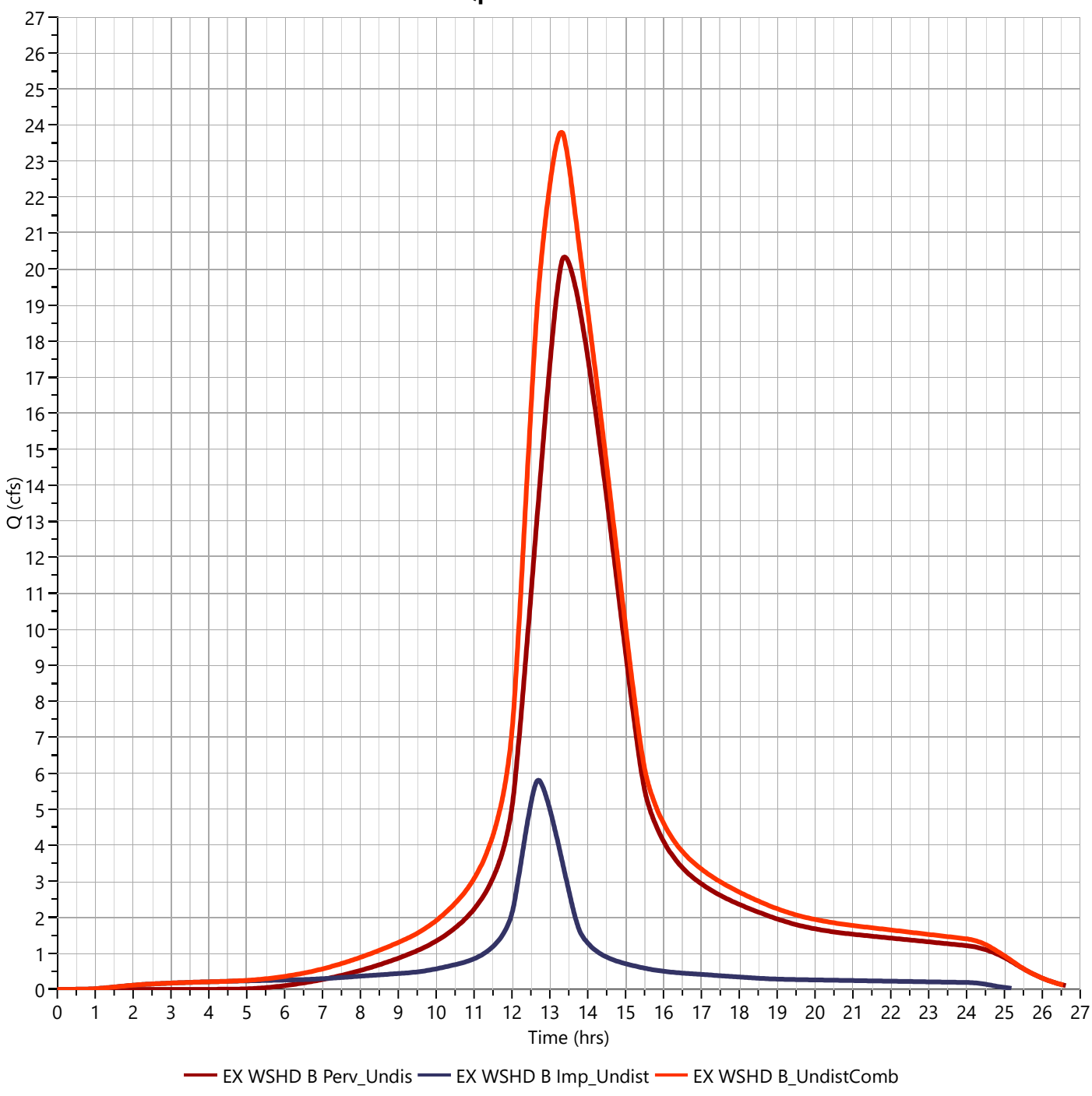
Hydrology Studio v 3.0.0.38

File: Existing HydrologyFuture Precipitation(100YR).hys
07-31-2025

EX WSHD BUndistComb

Hyd. No. 9

Hydrograph Type	= Junction	Peak Flow	= 23.81 cfs
Storm Frequency	= 100-yr	Time to Peak	= 13.30 hrs
Time Interval	= 1 min	Hydrograph Volume	= 325,715 cuft
Inflow Hydrographs	= 7, 8	Total Contrib. Area	= 10.18 ac



Hydrograph Report

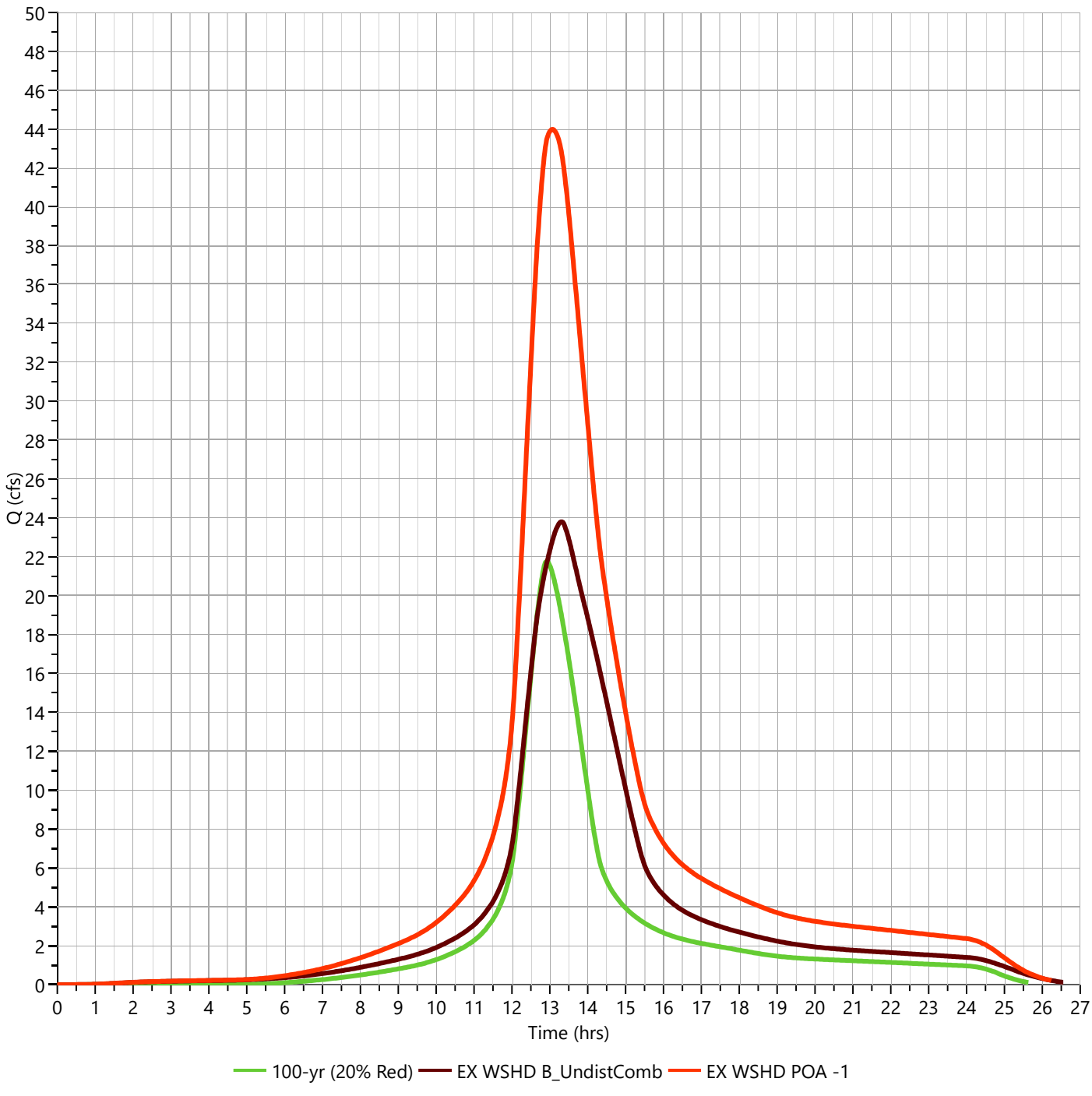
Hydrology Studio v 3.0.0.38

File: Existing HydrologyFuture Precipitation(100YR).hys
07-31-2025

EX WSHD POA -1

Hyd. No. 11

Hydrograph Type	= Junction	Peak Flow	= 43.99 cfs
Storm Frequency	= 100-yr	Time to Peak	= 13.07 hrs
Time Interval	= 1 min	Hydrograph Volume	= 546,292 cuft
Inflow Hydrographs		Total Contrib. Area	= 0.0 ac



Hydrograph Report

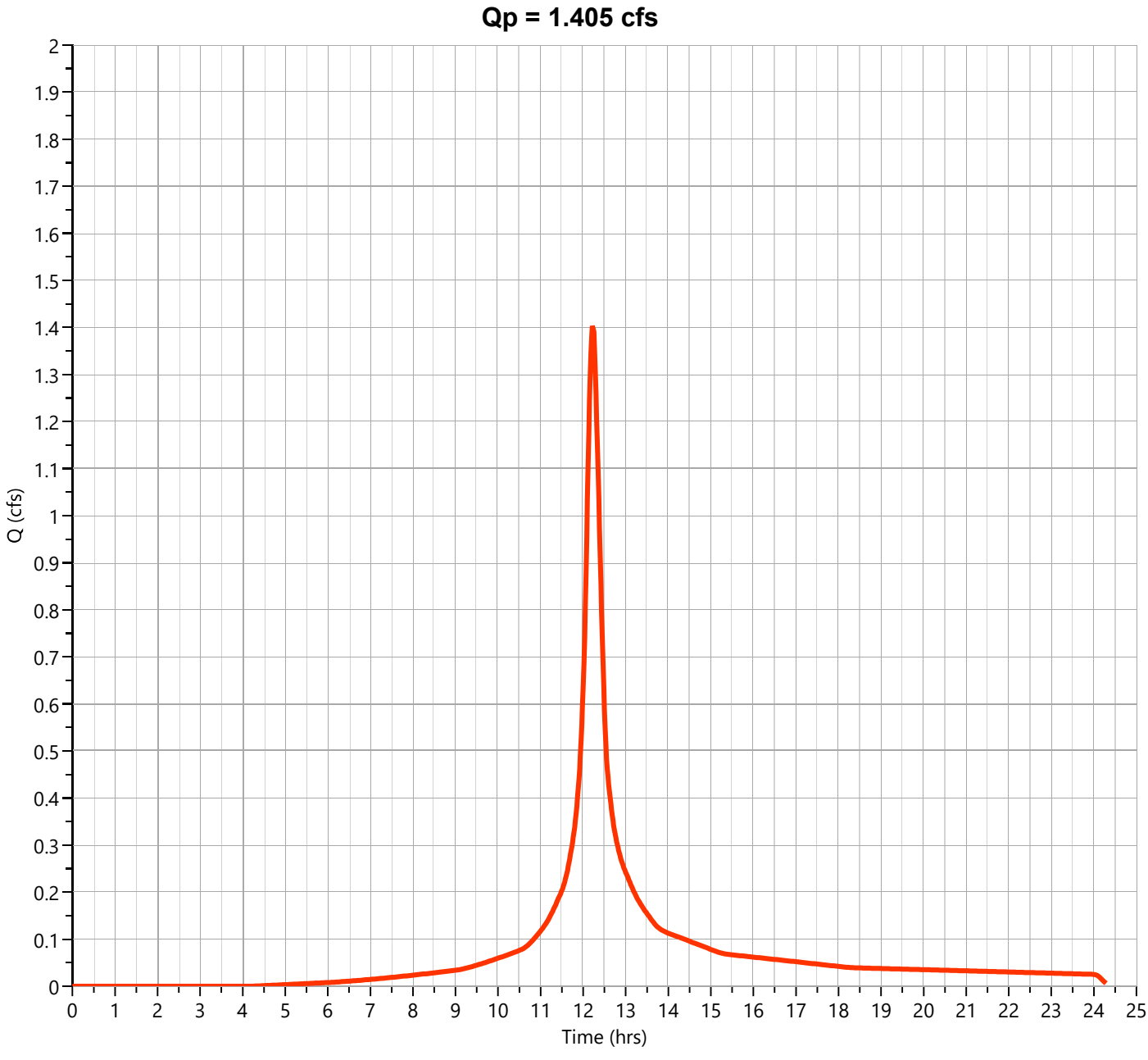
Hydrology Studio v 3.0.0.38

File: Existing HydrologyFuture Precipitation(100YR).hys
07-31-2025

EX WSHD C Perv

Hyd. No. 13

Hydrograph Type	= NRCS Runoff	Peak Flow	= 1.405 cfs
Storm Frequency	= 100-yr	Time to Peak	= 12.23 hrs
Time Interval	= 1 min	Runoff Volume	= 6,363 cuft
Drainage Area	= 0.21 ac	Curve Number	= 77.00
Tc Method	= User	Time of Conc. (Tc)	= 17.0 min
Total Rainfall	= 11.38 in	Design Storm	= NOAA-D
Storm Duration	= 24 hrs	Shape Factor	= 484



Hydrograph Report

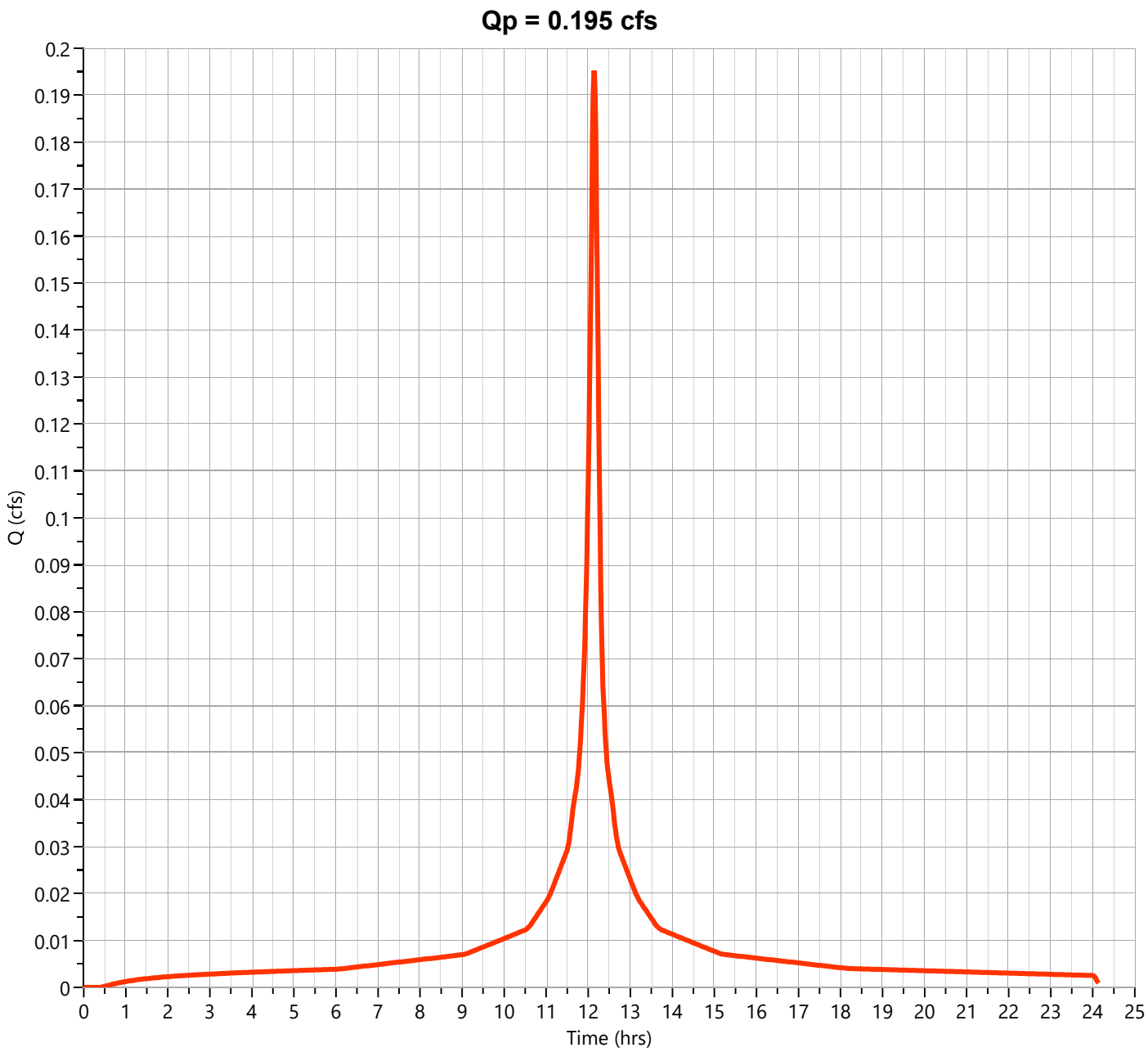
Hydrology Studio v 3.0.0.38

File: Existing HydrologyFuture Precipitation(100YR).hys
07-31-2025

EX WSHD C Imperv

Hyd. No. 14

Hydrograph Type	= NRCS Runoff	Peak Flow	= 0.195 cfs
Storm Frequency	= 100-yr	Time to Peak	= 12.13 hrs
Time Interval	= 1 min	Runoff Volume	= 809 cuft
Drainage Area	= 0.02 ac	Curve Number	= 98.00
Tc Method	= User	Time of Conc. (Tc)	= 9.0 min
Total Rainfall	= 11.38 in	Design Storm	= NOAA-D
Storm Duration	= 24 hrs	Shape Factor	= 484



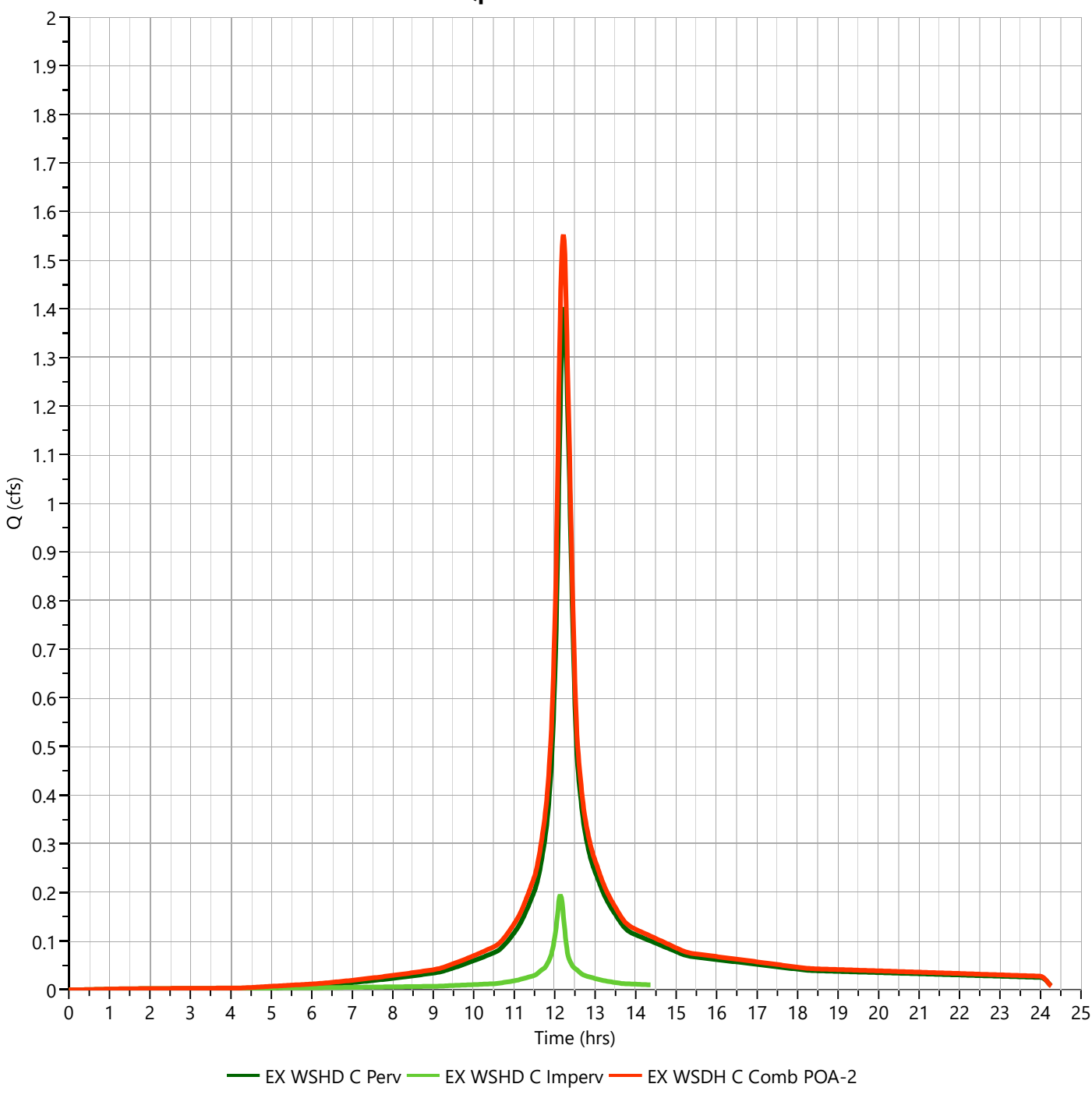
Hydrograph Report

Hydrology Studio v 3.0.0.38

File: Existing HydrologyFuture Precipitation(100YR).hys
07-31-2025

EX WSDH C Comb POA-2 — Hyd. No. 15

Hydrograph Type	= Junction	Peak Flow	= 1.553 cfs
Storm Frequency	= 100-yr	Time to Peak	= 12.22 hrs
Time Interval	= 1 min	Hydrograph Volume	= 7,172 cuft
Inflow Hydrographs	= 13, 14	Total Contrib. Area	= 0.23 ac



Hydrograph Report

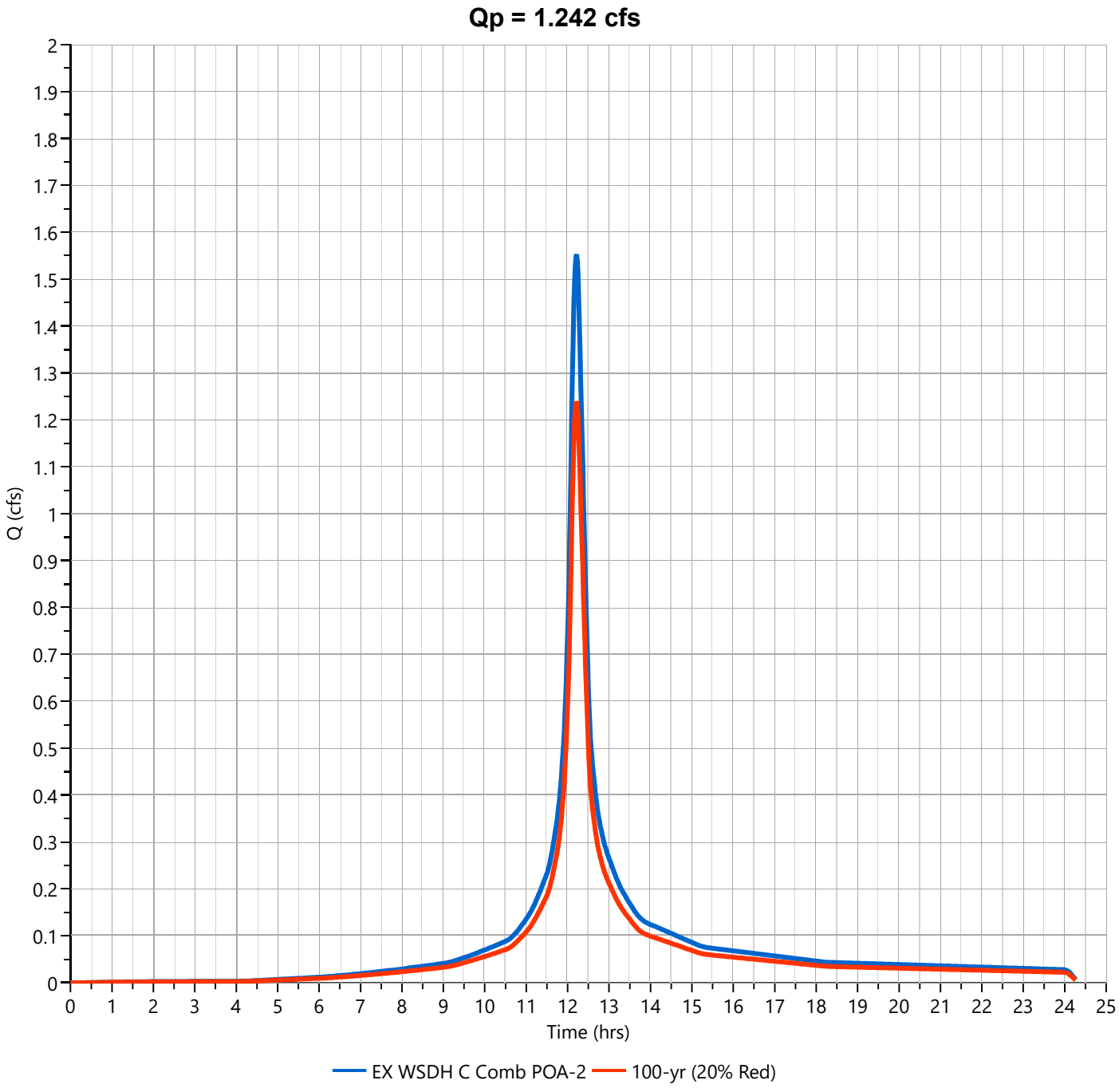
Hydrology Studio v 3.0.0.38

File: Existing HydrologyFuture Precipitation(100YR).hys
07-31-2025

100-yr (20% Red)

Hyd. No. 16

Hydrograph Type	= Diversion	Peak Flow	= 1.242 cfs
Storm Frequency	= 100-yr	Time to Peak	= 12.22 hrs
Time Interval	= 1 min	Hydrograph Volume	= 5,738 cuft
Inflow Hydrograph	= 15 - EX WSDH C Comb POA-2	Diversion Method	= Flow Ratio
Companion Hyd	= 17 - N/A	Flow Ratio	= 0.8



Hydrograph Report

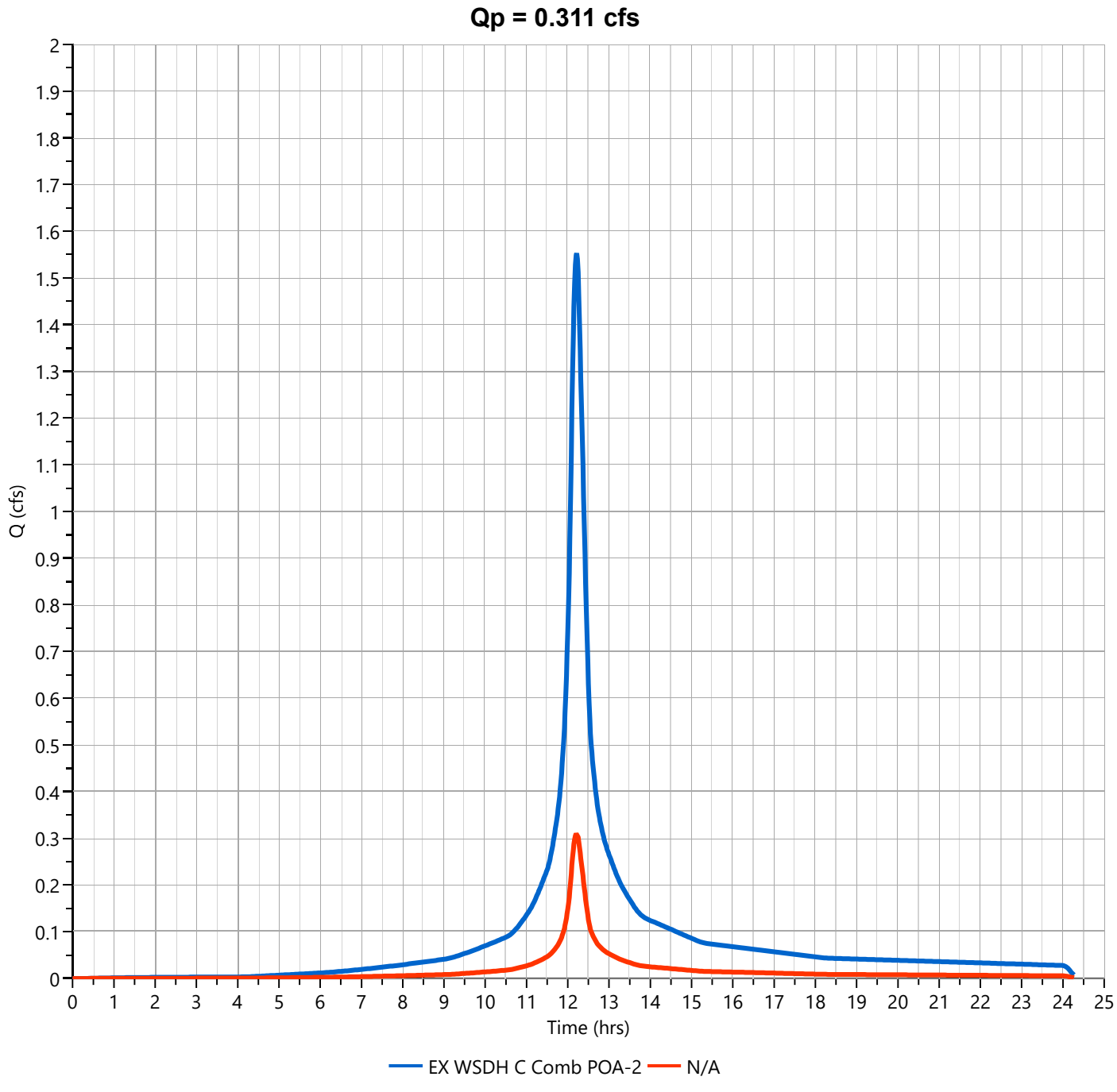
Hydrology Studio v 3.0.0.38

File: Existing HydrologyFuture Precipitation(100YR).hys
07-31-2025

N/A

Hyd. No. 17

Hydrograph Type	= Diversion	Peak Flow	= 0.311 cfs
Storm Frequency	= 100-yr	Time to Peak	= 12.22 hrs
Time Interval	= 1 min	Hydrograph Volume	= 1,434 cuft
Inflow Hydrograph	= 15 - EX WSDH C Comb POA-2	Diversion Method	= Flow Ratio
Companion Hyd	= 16 - 100-yr (20% Red)	Flow Ratio	= 0.8



Hydrograph Report

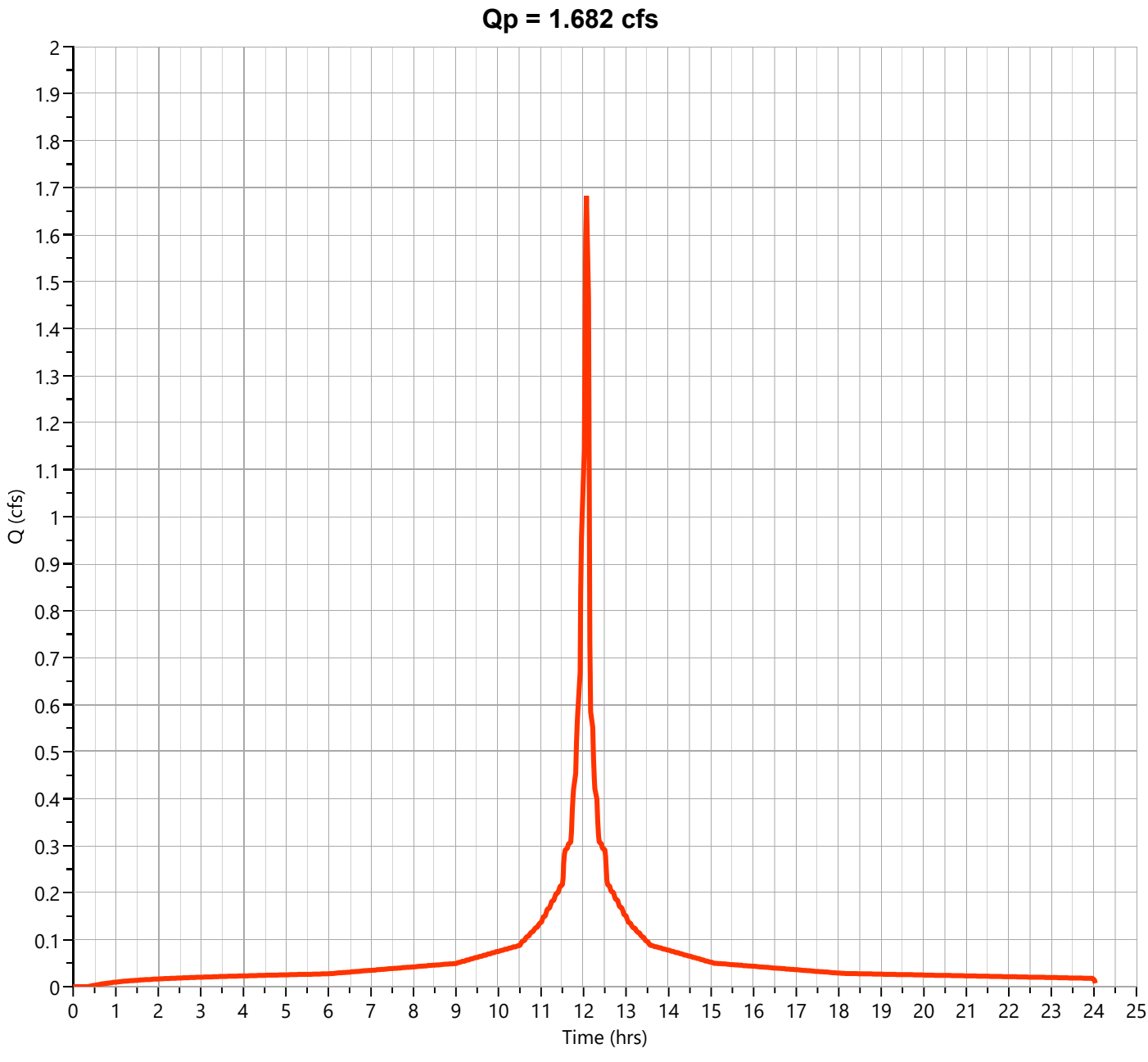
Hydrology Studio v 3.0.0.38

File: Existing HydrologyFuture Precipitation(100YR).hys
07-31-2025

EX WSHD D Imp POA-3

Hyd. No. 19

Hydrograph Type	= NRCS Runoff	Peak Flow	= 1.682 cfs
Storm Frequency	= 100-yr	Time to Peak	= 12.10 hrs
Time Interval	= 1 min	Runoff Volume	= 5,686 cuft
Drainage Area	= 0.15 ac	Curve Number	= 98.00
Tc Method	= User	Time of Conc. (Tc)	= 3.0 min
Total Rainfall	= 11.38 in	Design Storm	= NOAA-D
Storm Duration	= 24 hrs	Shape Factor	= 484



Hydrograph Report

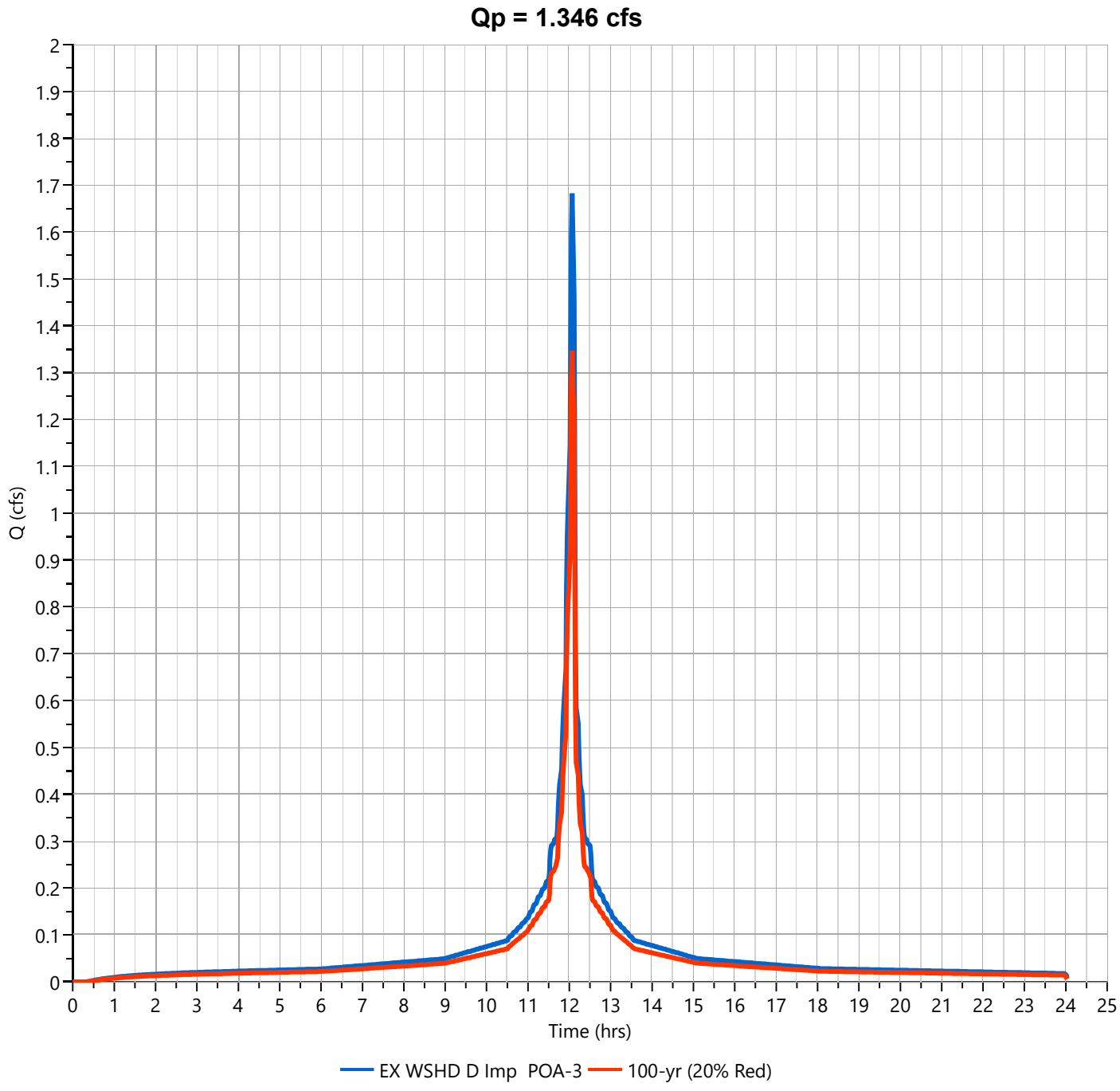
Hydrology Studio v 3.0.0.38

File: Existing HydrologyFuture Precipitation(100YR).hys
07-31-2025

100-yr (20% Red)

Hyd. No. 20

Hydrograph Type	= Diversion	Peak Flow	= 1.346 cfs
Storm Frequency	= 100-yr	Time to Peak	= 12.10 hrs
Time Interval	= 1 min	Hydrograph Volume	= 4,549 cuft
Inflow Hydrograph	= 19 - EX WSHD D Imp POA-3	Diversion Method	= Flow Ratio
Companion Hyd	= 21 - N/A	Flow Ratio	= 0.8



Hydrograph Report

Hydrology Studio v 3.0.0.38

File: Existing HydrologyFuture Precipitation(100YR).hys
07-31-2025

N/A

Hyd. No. 21

Hydrograph Type	= Diversion	Peak Flow	= 0.336 cfs
Storm Frequency	= 100-yr	Time to Peak	= 12.10 hrs
Time Interval	= 1 min	Hydrograph Volume	= 1,137 cuft
Inflow Hydrograph	= 19 - EX WSHD D Imp POA-3	Diversion Method	= Flow Ratio
Companion Hyd	= 20 - 100-yr (20% Red)	Flow Ratio	= 0.8

