



AGENDA
REGULAR MEETING OF THE
WINDSOR HEIGHTS
PLANNING AND ZONING COMMISSION
Wednesday, February 26, 2025 - 5:30 PM
WINDSOR HEIGHTS COUNCIL CHAMBERS - 1133 66th ST
ZOOM: <https://us02web.zoom.us/j/7832856334>
Meeting ID: 783 285 6334

1. **Call to Order**
2. **Approval of Agenda**
3. **Approval of the Minutes:**
 - A. Consideration of the Planning and Zoning Commission Meeting Minutes on October 23rd, 2024
4. **Public Hearing to Review a Site Plan at 6500 Hickman Rd**
 - A. Staff Presentation
 - B. Site Plan & Supporting Documents
5. **Consideration of a Site Plan at 6500 Hickman Rd**
6. **Public Hearing to Review a Signage Code Amendment to Chapter 175 Regarding Projecting Signs**
 - A. Staff Presentation
 - B. Code Redline & Supporting Documents
7. **Consideration of a Signage Code Amendment to Chapter 175 Regarding Projecting Signs**
8. **Adjourn**

*It is possible that members, including a quorum of members of the City Council and other committees may be present. No City business will be discussed outside of this agenda.

City of Windsor Heights Planning and Zoning Commission Meeting Minutes
Wednesday, October 23, 2024 - 5:30 PM
WINDSOR HEIGHTS COUNCIL CHAMBERS - 1133 66th ST

1. Call to Order

Commission Chair Geoff Wood called the meeting to order at 5:30 PM. Members present: Diane Foss, Dave Ferree, Georgie Libbie, Bob Bishop, Tyler Holtorff, Donna Mueller. Staff present: City Planner Trey Rouse with Bolton & Menk, Deputy City Clerk Nate Leuthold.

2. Approval of Agenda

Motion by Diane Foss to APPROVE. Seconded by Dave Ferree. Motion passed 7-0.

3. Approval of the Minutes:

Motion by Tyler Holtorff to APPROVE. Seconded by Diane Foss. Motion passed 7-0.

A. Minutes 6.26.24

4. Public Hearing to Review a New Building Site Plan at 6301 University Ave

Trey Rouse gave the staff presentation. Shane Devick of Civil Engineering Consultants spoke on behalf of the Church and answered some questions from the Commission. Geoff Wood asked about lot tie-ins vs. combining parcels. Shane advised that they would be pursuing the lot tie-in option. Motion by Diane Foss to open the Public Hearing at 5:45 PM. Seconded by Dave Ferree. Motion passed 7-0.

Denise Derscheid of 1232 63rd St. spoke regarding lighting, buffering, and landscaping concerns.

Dan Bredbeck of 1201 64th St. spoke regarding traffic concerns.

Thomas Mc Mahon of 1227 64th St. also spoke regarding lighting, buffering, and landscaping concerns.

Trey Rouse stated that the traffic concern was outside of the Commission's purview, especially as 63rd Street is an Iowa DOT road. Trey then referenced the site plan regarding lighting concerns to show that the lighting plan exceeds requirements. Shane Devick stated he would be happy to meet with Mr. Mc Mahon and Ms. Derscheid to discuss the landscaping and buffering plan and accept their input and feedback. Nate Leuthold advised that the Board will make a recommendation to Council, which would then vote on the matter at the regular November 4th meeting at 6 PM, should anyone present wish to attend that meeting to provide input.

Motion from Donna Mueller to close the Public Hearing at 6:00 PM. Seconded by Diane Foss. Motion passed 7-0.

A. Staff Presentation

B. Site Plan & Supporting Documents

5. Consideration of a New Building Site Plan at 6301 University Ave

Diane Foss discussed additional requirements regarding meeting with neighboring property owners. Trey Rouse advised against making a requirement too broad that it becomes unenforceable, or too narrow in that it becomes unattainable. Geoff Wood spoke asked Shane Devick if he, in good faith, would have conversations with the property owners to address their concerns. Bob Bishop spoke regarding vegetation and encouraged property owners speak with the developer to provide their input.

Motion by Diane Foss to recommend for approval of the 6301 University Avenue Site Plan (Windsor Presbyterian Church Parking Lot expansion) with the conditions of approval laid out by the City Staff to the City Council. Seconded by Donna Mueller. Motion passed 7-0.

6. **Adjourn**

Motion by Bob Bishop to adjourn at 6:08 PM. Seconded by Tyler Holtorff. Motion passed 7-0.

STAFF REPORT

Date: February 26, 2025
To: Windsor Heights Planning and Zoning Commission
From: Trey Rouse
Subject: Site Plan: University Avenue and 63rd Street Corner

General Information

Applicant: Lance Burke
2323 Dixon Street
Des Moines, IA 50316
Property Owner: Windsor Court Apartments LLC (Tony and Mila Schwarz)
Proposed Use: Residential, Multi-Family
Zoning: CC (Community Commercial)
Location: 6500 Hickman Road

Summary

The applicant, Lance Burke representing the property owners Tony and Mila Schwarz, is requesting to develop The Windsor Court Apartments, a 41-Unit Multi-Family Dwelling development consisting of 6 total buildings in the CC District (Community Commercial District) for the use of the property described as 6500 Hickman Road. The CC District (Community Commercial District) allows for Residential, Multi-Family use within the CC District by Conditional Use Permit (CUP). The applicant went through the process of obtaining a CUP from the City of Windsor Heights Board of Adjustments. This development would include 1-Bedroom apartments all at market value with no restrictions such as age or income level that include on site surface parking (53 stalls). This development also includes short-term (10 parking spots) and long-term bike parking (5 parking spots) throughout the surface parking lot. This project is also a recipient of a \$1 million workforce housing tax credit. This project also provides pedestrian access to Hickman Road creating a fully connected pedestrian walkway throughout the development.

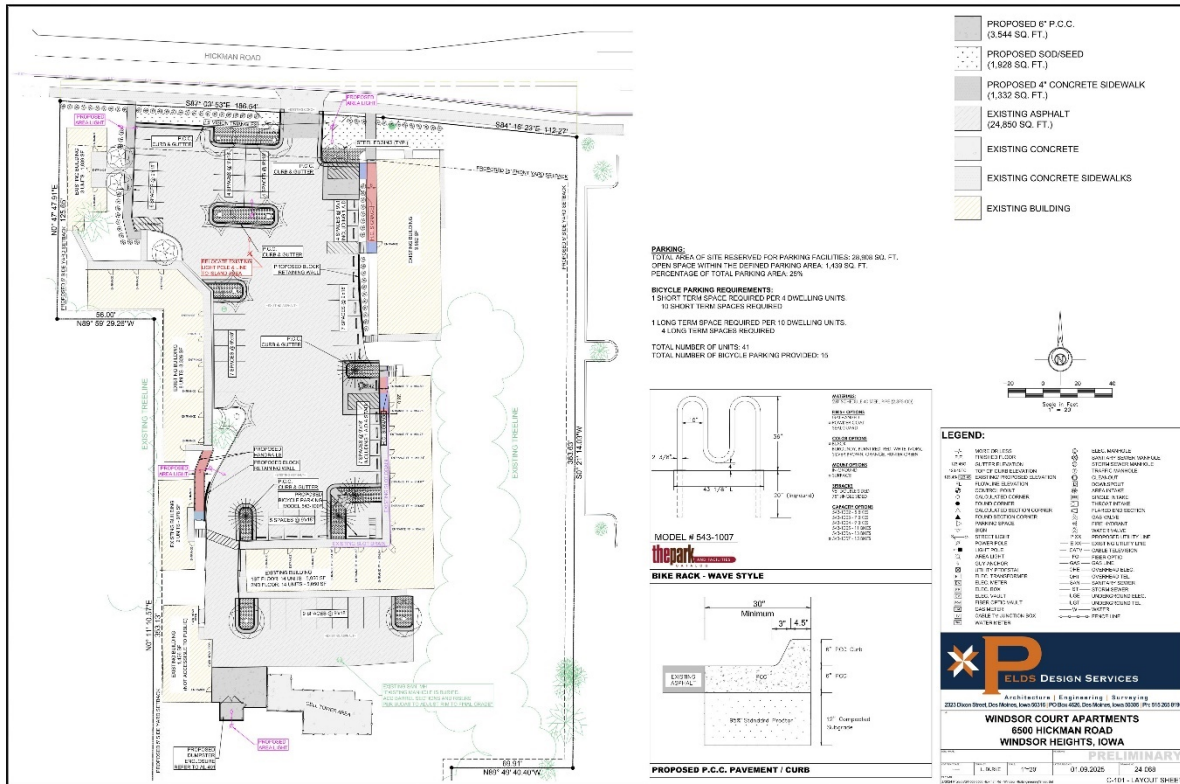
City Staff has completed a review of the documentation submitted by the applicant. The submitted application materials are attached to this report.

Existing Conditions

The 2.56-acre lot is in the CC – Community Commercial Zoning District. This Zoning District allows for up to 20 residential units/acre. The property is re-developing and re-utilizing the existing buildings to transition from hotel/motel rooms to long-term rentals. The applicant has received a CUP to allow for this property to make that transition and currently has 6 buildings on

EX N 2.5F LTS 7 & 7 1/2 & N 15.5F LT 8- & -EX
COM NE COR LT 9 THN SLY 2.5F TO POB THN ELY 298F
SLY 29.4F NWLY 112.16F NWLY 186.53F NLY 8.9F TO
POB- N 500F LOT 7 & W 70F N 395F LOT 6 & ALL LOTS
7 1/2 & 8 SUBURBAN FARMS

Site Plan for Development



Hickman Road is on the top of the above Site Plan

Background of Parcel/Lot

This parcel was previously two parcels owned by Windsor Court Apartments LLC (Tony and Mila Schwarz) that had the original 6 buildings and hotel/motel use on one and the other was vacant/undeveloped parcel. These two parcels have since been combined through Polk County.

Adjacent Land Use

Direction	Zoning	Use
North	N/A (Outside City Limits)	Commercial
South	Urban Family Residential (R-2)	Residential, Single Family
East	Community Commercial (CC)	Healthcare (Small-Scale) and Residential Multi-Family
West	Community Commercial (CC)	Convenience Storage

Zoning Bulk Regulations

Category	CC
Lot Area	10,000 sq.ft.
Lot Width	50 ft
Front Yard Setback	15 ft
Side Yard Setback	10 ft
Rear Yard Setback	20 ft

Traffic Study/Traffic Information

City Staff did not request a Traffic Study to be complete as access to Hickman Road was not being altered and the proposed use is comparable to the existing use in vehicular trips/activity.

Parkland Dedication

With the development or redevelopment of a parcel or lot into residential (with the exception of Single-Family residential) there is a required Parkland Dedication attached to the development based upon the type or residential development and units developed.

As part of the site plan review process City staff and the developer discussed parkland dedication. It was agreed to provide for City Council consideration for an exchange of monetary value that would normally be required as a physical parkland dedication.

City Staff calculated the required parkland dedication and have provided the applicant the proposed monetary value to be exchanged for the required parkland dedication.

Equation for Parkland Dedication:

$(\text{number of units}) \times (1.5 \text{ individuals/unit}) \times (.005 \text{ acres/individual})$

The Windsor Courts Apartments Parkland Dedication Requirement:

$41 \text{ Units} \times 1.5 \text{ (Individuals/Unit)} \times .005 \text{ (Acres/Individual)} = 0.3075 \text{ Acres}$

Equation for Parkland Dedication Monetary Value Equivalent:

Average Land Value Per Acre in Polk County, IA = \$12,678.00.

$\$12,678.00 \times 0.3075 = \underline{\$3,898.49}$

The applicant has agreed to pay the proposed monetary value to meet this requirement as stated by the City. This can be accepted by the City Council, or another form of compensation can be decided upon.

Landscaping and Plantings

The applicant has provided a landscaping plan within the site plan (sheet 9) to illustrate the planting locations and types of plantings that will be on the development. The plantings provided and shown does not meet the requirements of the landscaping requirements by numbers but does utilize plants on the approved Windsor Heights Tree/Plant list. The required number of trees and shrubs based upon the size of development are 25 trees (1/2000 sq. ft. of pervious area) and 127 shrubs (5/2000 sq. ft. of pervious area).

This requirement has been met as the applicant shows in the site plan to provide 25 trees in total and 127 shrubs.

Building Façade

Within the Community Commercial District, there is a building façade material requirement based upon the quality of the materials and the percentage of the primary street facing façade that the material covers. The Community Commercial District requires 50% of the street facing façade be made up of Grade A Materials according to the Zoning Code (not including windows and doorways) with the remainder of the façade being any grade A, B, or C materials with a maximum of 10% of the façade being Grade C materials.

This has been shown through Building Elevation drawings sent by the applicant and attached to this Staff Report.

Stormwater/Drainage

The proposed changes at the development site did not increase the impervious surface and combination of the vacant lot to the east increased pervious surface. This development did not meet the minimum requirement to initiate a Stormwater Report. City Staff did not request any form of stormwater or drainage report.

Parking Requirements

Based upon the proposed site and development, minimum parking requirements have been established by the City of Windsor Heights.

Automotive Vehicle parking for a Multi-Family Dwelling use is 1 Parking Stall/Unit. This would require 41 parking stalls based upon the size of the development. The applicant meets this parking requirement by providing 53 surface parking lot stalls.

Bike parking is required at developments as well. Short-term and Long-term bike parking are considered to be separate and are required in different capacities. 1 Short-term bike parking stall is required for every 4 units. 1 Long-term bike parking stall is required for every 10 units. This creates the requirements of 11 short-term bike parking stalls and 5 long-term bike parking stalls. The applicant does meet this requirement by providing 11 short-term bike parking stalls and 5 long-term bike parking stalls on the surface parking area.

Screenings and Buffers

Screening and buffers are required to protect less intensive uses found in the R-1, R-2, and R-3 Districts from more intense uses that are commonly found in the UC, CC, and LI Districts. The Windsor Court Apartment project is located within the CC District and considered a more intensive district compared to surrounding Zoning Districts. The Windsor Courts project abuts the R-2 District on its southern site boundary, so it is required to have a minimum of a 10 ft. fully opaque buffer according to Table 173.05-03-Screened Buffer Yard Requirements.

Table 173.05-03 – Screened Buffer Yard Requirements

		Less Intensive Adjacent District
		R-1*, R-2*, & R-3
More Intensive District	UC, CC	10 Feet
	LI	20 Feet
*Applies to residential uses only.		

The following requirements need to be met for the opaque buffer between the Zoning Districts:

2. Opaque Barrier. An opaque barrier shall be provided which visually screens the conditions listed in subsection 1 from less intensive uses by employing one or more of the following in any combination to obtain a solid barrier of at least 6' in height:

- a. A solid wood and/or masonry fence or wall at least six feet in height.
- b. A landscaped screen, using a minimum of 50% evergreen plant material, capable of providing a substantially opaque, hedge-like barrier and attaining a minimum height of six feet within three years of planting. (Note: All planting materials shall conform to the minimum caliper/size requirements set in Table 173-02)
- c. A landscaped earth berm with a maximum slope of three to one, rising no less than six feet above the existing grade of the lot line separating the zoning districts.
- d. Any combination of these methods that achieves a cumulative height of six feet.

The applicant is meeting this requirement with the existing fence and vegetation that exists there to create the required opaque residential buffer with approved planting materials as listed in Table 173-02.

Comprehensive Plan Review

The Windsor Heights Comprehensive Plan has been reviewed by City Staff to make sure that this project aligns with the goals and ideals of the Comprehensive Plan. The proposed Windsor Apartment development project meets several of the goals identified and outlined within the Comprehensive Plan and addresses the following goals as determined by the City Staff. The Comprehensive Plan supports the proposed project as it is presented.

Neighborhood Enhancement:

1. Broaden the mix of housing to appeal to a wide range of people of all stages of life.
 - a. This project assists in achieving this goal by introducing more available housing for current or future residents of Windsor Heights. It also provides a diversity in housing as much of the surrounding area is Single-Family Dwelling Unit housing with this providing Multi-Family Dwelling Units.

Future Land Use Map

The future land use map should be used as guidance for areas throughout the City. The map identifies this location as commercial, which is defined on page 40 of the 2017 Comprehensive Plan. “Commercial. Commercial and office uses that are typically more auto-oriented.”

The proposed project, although it does not conform with the updated Future Land Use Map, does correspond with the vision that has been laid out by the Comprehensive Plan with integrating more forms of housing within the community and diversifying key corridors such as Hickman Road. There is already a precedent set with existing housing within the nearby vicinity that is considered to be Commercial on the Future Land Use Map.

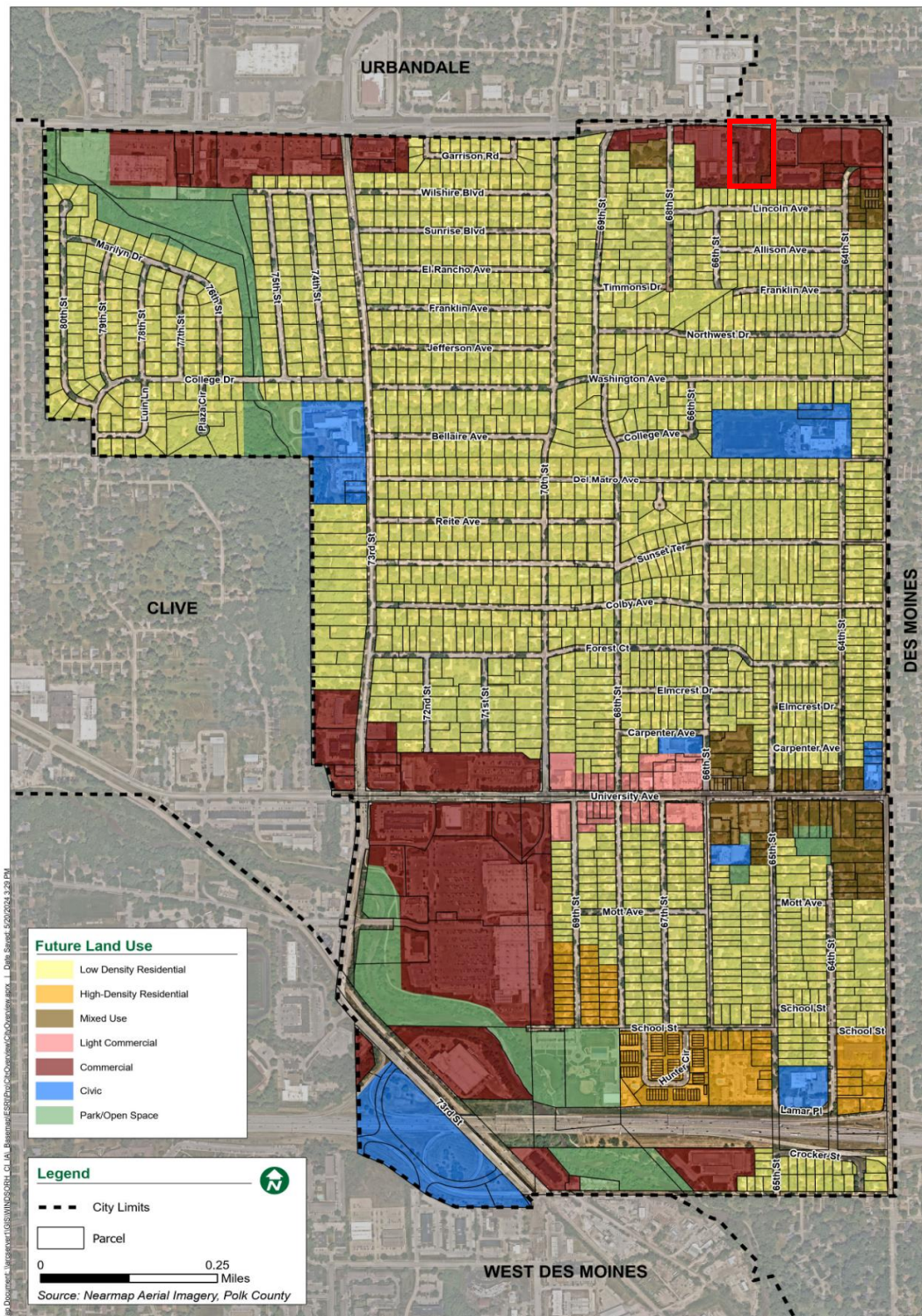


Figure 1: Current Future Land Use Map

Zoning Map

The parcels are currently zoned for Community Commercial District which is defined in [Table 168-1 Purposes of Zoning Districts](#) as “This district is intended for commercial facilities which serve the needs of markets ranging from several neighborhoods to the overall region. CC Districts are appropriate at major intersections, at the junction of several neighborhoods, or at substantial commercial sub-centers.”

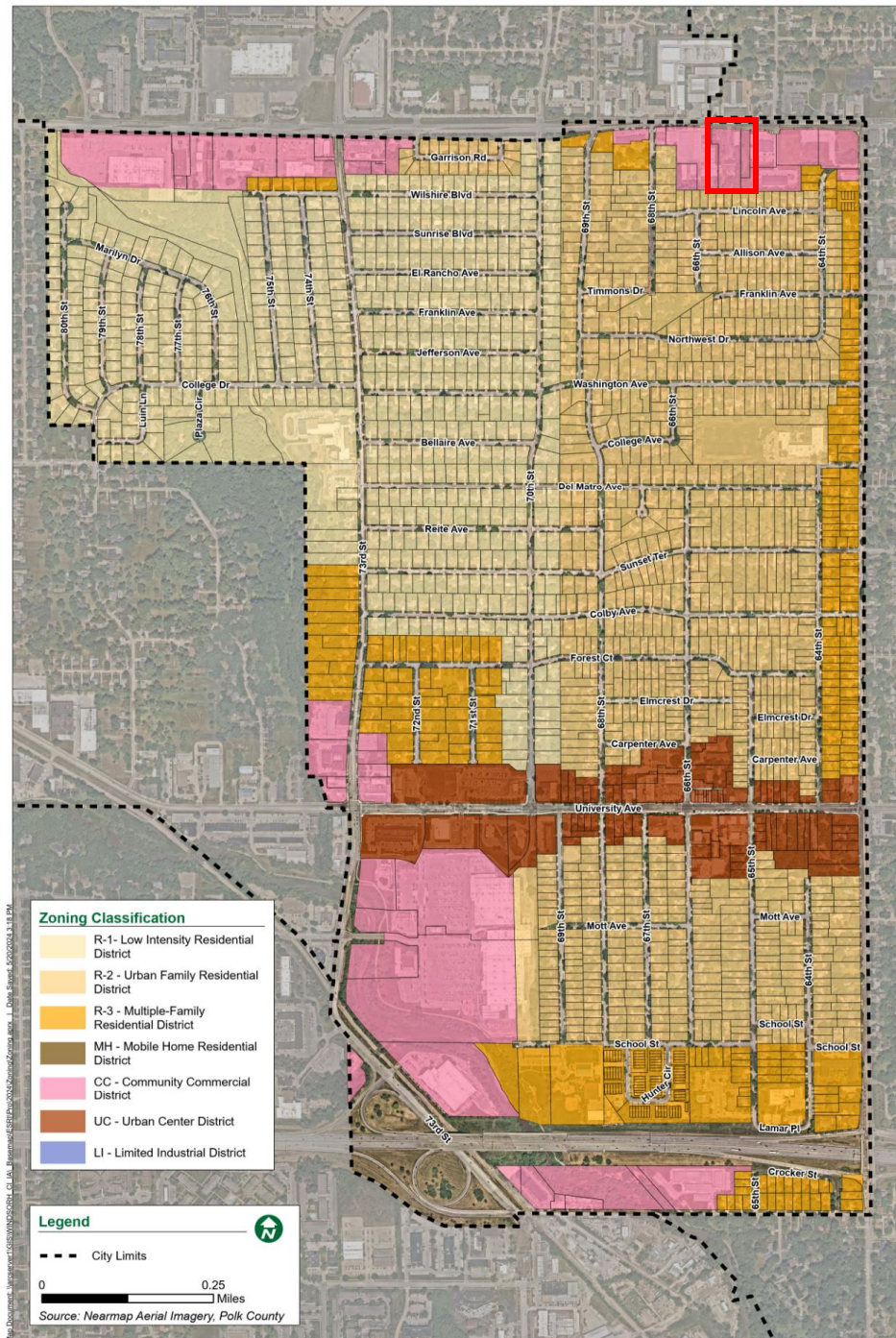


Figure 3: Current Zoning Map

Public Comments Received

The City of Windsor Heights City Staff, at the time of the creation of this Staff Report, has not received public comment on the proposed project of The Windsor Apartment Development at this property.

Current Work Done at Site

The applicant has worked to address outstanding nuisance issues along with renovating the insides of each of the units. These renovations have been basic renovations that don't require permitting to begin.

Conclusion and Recommendation

After reviewing all of the documentation submitted by the applicant by City Staff and all City Departments, Staff compared the project to the goals and vision of the Comprehensive Plan and other City plans. After review and comparison, Staff came to their recommendation.

The staff recommends to the Planning and Zoning Commission that they recommend approval of the site plan with the following conditions to the City Council.

Recommended Motion

Motion to recommend for approval of the 6500 Hickman Road Site Plan (The Windsor Courts Apartments) with the conditions of approval laid out by City Staff to the City Council.

Conditions:

All of the following conditions will be met, reviewed by the city department assigned, and deemed complete before approval of the site plan and before any development can take place.

General Comments

1. All permits related to the project will be held and released concurrently at the approval of the following:
 - a. Approval of signs and utility from Safe Building.
 - b. Revision of site plan application in accordance with the comment letter and all corresponding comments from each City Department.
 - c. Professional Signatures on Final Site Plan including Licensed Surveyor (Chapter 170.10)
 - d. City Council approval of site plan.

Planning Comments

1. Removal of all dead trees and debris from Property.
2. Remove all code violations and nuisance buildings from the property and get verification from the Code Enforcement Officer with the city that all nuisances are eliminated.
 - a. Fallen gutters: these were removed; Mila mentioned all gutters would be replaced in the remodel.

- b. Siding: the damaged siding will be replaced in the spring. The City is fine with this timeline.
 - c. Downed pillar: this was removed; this seemed to be decorative, and not load-bearing from what I could see.
 - d. Retaining wall: the damaged pieces were removed from the parking lot and cleaned up. The retaining wall will be replaced by Mila, as they will be tearing out the retaining wall as well as the stairs to make the building ADA compliant.
 - e. Signs: the one atop the building was removed as requested. There is still a derelict sign (see attached photo) on the north side of the building. Mila advised that they were not sure if there is siding behind it, and would be removing the sign when they replaced the siding (so as not to expose what's underneath to the elements). They do not intend to replace the sign when it is removed. The City is fine with this plan.
3. Parkland Dedication compensation to be agreed upon and paid to City of Windsor Heights
- a. This will be a condition of approval and will need to be paid to the City of Windsor Heights before full approval of the Site Plan is given. The below monetary value replacement for Parkland Dedication is recommended by Staff:
 - i. Staff monetary recommendation based upon Parkland Dedication required and the average land value per acre within Polk County is \$3,898.49.
 - 1. Parkland Dedication Required
 - a. $41 \text{ Units} \times 1.5 \text{ Average Persons Per Unit} \times .005 \text{ (Parkland needed per person)} = 0.3075 \text{ Acres of Parkland}$
 - 2. Average Land Value Per Acre in Polk County, IA = \$12,678.00.
 - 3. $\$12,678.00 \times 0.3075 = \$3,898.49$

Attachments

- 1. Application Materials (as submitted)
- 2. Nuisance Abatement Staff Report
- 3. Building Elevation Rendering of Northern Façade and Materials

1/29/2025

Bolton & Menk
Attn: Trey Rouse
430 E. Grand Avenue
Des Moines, IA 50309

RE: Site Plan: 6500 Hickman Road – Windsor Court Apartments | Review Comments

Dear Trey:

We are pleased to submit revised plans for The Windsor Court Apartments project. Below are the responses to the comments provided on 1/21/2025:

General Comments

1. All permits related to the project will be held and released concurrently at the approval of the following: **Noted**

- a. Approval of signs and utility from Safe Building.
- b. Revision of site plan application in accordance with the comment letter and all corresponding comments from each City Department.
- c. Professional Signatures on Final Site Plan including Licensed Surveyor (Chapter 170.10)
- d. City Council approval of site plan.

2. Clarify what the use of the strip of pavement on the NE side of the site is. It does not meet the width requirement for a drive aisle or setback requirement for a parking lot. **The strip of concrete in question has been removed.**

Storm Water Comments

1. No further comments.

Police Comments

1. No further comments.



Fire Comments

1. No further comments.

Des Moines Water Works Comments

1. No further comments.

Urbandale Windsor Heights Sanitary District Comments

1. No further comments.

Des Moines Metropolitan Wastewater Reclamation Authority Comments

1. No comments received.

Building Comments

1. No further comments.

a. Note: The Site Plan doesn't provide the location and size of water mains serving the buildings to verify fire suppression systems can be supported, with that said the applicant acknowledges they will need to address it on the building review. This will be done during the Building Review. **Acknowledged.**

Engineering Comments

1. No further comments.



Planning Comments

1. Removal of all dead trees and debris from Property. **Will comply**
2. Remove all code violations and nuisance buildings from the property and get verification from the Code Enforcement Officer with the city that all nuisances are eliminated. **Will comply.**
 - a. Fallen gutters: these were removed; Mila mentioned all gutters would be replaced in the remodel.
 - b. Siding: the damaged siding will be replaced in the spring. The City is fine with this timeline.
 - c. Downed pillar: this was removed; this seemed to be decorative, and not load bearing from what I could see.
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3. Parkland Dedication compensation to be agreed upon and paid to City of Windsor Heights. **Will comply**
 - a. This will be a condition of approval and will need to be paid to the City of Windsor Heights before full approval of the Site Plan is given. The below monetary value replacement for Parkland Dedication is recommended by Staff:
 - i. Staff monetary recommendation based upon Parkland Dedication required and the average land value per acre within Polk County is \$3,898.49.
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 2. Average Land Value Per Acre in Polk County, IA = \$12,678.00.
 3. $\$12,678.00 \times 0.3075 = \$3,898.49$



4. Bike Parking a. Short-term bike parking provided is 10 when the requirement is 1 Short-term bike parking spot per 4 dwelling units rounded up. This requirement needs to be met with 11 Short-term bike parking spots. 11 short-term bike parking spots have now been provided.

Landscaping/Pavement/Parking/Lighting Comments

1. Code 170.07 – Buildings must have accessible routes of entry. Accessible routes are shown, but the city is concerned with the ramp design for the 978 SF building not meeting ADA. The handrail must extend 12” past the ramp and have 5’ x 5’ landings at top and bottom. With an 8% maximum slope for ramps, we recommend steepening and shortening the proposed ramp to provide space for the ADA required handrail and landings. Ramps, landings & handrails have been revised to meet ADA requirements.

2. Code 170.07 – Pedestrian corridors should be indicated from any public street to all proposed principal buildings. While there are pedestrian corridors connecting to all buildings now, the city noticed the existing stairs on the 978 SF building are not meeting IBC 1009.8 Stairway landings: “There shall be a floor or landing at the top and bottom of each stairway”. The current design has the stairs spilling out onto the parking lot. Stairway has been revised to include a ADA landing at bottom as well as handrails. Handrail detail has been added to Layout Sheet C-101.

3. Planting Numbers

a. 1 Tree/2,000 sq. ft. of pervious surface is required. This requirement is 25 total trees and the proposed site only provides 16. Please address and add 9 more trees to the site. A total of 25 trees are now being shown.

b. 5 Shrubs/2,000 sq. ft. of pervious surface is required. This requirement is 127 total shrubs and the proposed site only provides 73. Please address and add 54 more shrubs to the site. A total of 127 shrubs are now being shown.

Traffic General Comments

1. No further comments.

Public Works Comments

1. No further comments.

If you have any questions, please e-mail or call.

Sincerely,
Pelds Design Services


Lance Burke



6500 HICKMAN ROAD
WINDSOR HEIGHTS, IOWA 50324

2.65 ACRES (115,703 SQ.FT.)

CC - COMMUNITY COMMERCIAL
ADJACENT ZONING:
NORTH: RX1 - MIXED USE
EAST: CC - COMMUNITY COMMERCIAL
SOUTH: R2 - SINGLE-FAMILY RESIDENTIAL
WEST: CC - COMMUNITY COMMERCIAL

FRONT YARD: 25'
SIDE YARD: 5'
REAR YARD: 15'

EXISTING: 6 TOTAL
OWNERS:
-WINDSOR COURT APARTMENTS LLC
-BBT RENTALS LLC
-US WEST NEW VECTOR

HOTEL MOTEL

RESIDENTIAL - MULTI-FAMILY

MAX BUILDING HEIGHT: 2 STORY

MAXIMUM BUILDING COVERAGE: 50%
BUILDING COVERAGE PROVIDED: 14% (15,684 SQ. FT.)

MAXIMUM RESIDENTIAL UNITS PER ACRE: 20
TOTAL ACRES: 2.65
TOTAL NUMBER OF RESIDENTIAL UNITS: 41
TOTAL NUMBER OF RESIDENTIAL UNITS PER ACRE: .06

EXISTING: 56% (64,908 SQ.FT.)
PROPOSED: 56% (65,031 SQ.FT.)

MAXIMUM IMPERVIOUS COVERAGE: 65%
EXISTING: 44% (50,795 SQ.FT.)
PROPOSED: 44% (50,672 SQ.FT.)

REQUIRED: 1 PARKING STALL PER UNIT ALONG WITH 1 H.C. STALL PER 25 REQUIRED PARKING STALLS.
TOTAL NUMBER OF UNITS: 41
TOTAL NUMBER OF PARKING STALLS REQUIRED: 41 PARKING STALLS PLUS 2 H.C. PARKING STALLS.
TOTAL NUMBER OF PARKING STALLS PROVIDED: 53 PARKING STALLS INCLUDING 2 H.C. PARKING STALLS.

ALL DISTURBED AREAS SHALL BE SEEDED OR SODDED.
THE DISTURBED AREA FOR THIS SITE IS LESS THAN 1 ACRE, THEREFORE A NPDES PERMIT IS NOT REQUIRED.

PER FEMA MAP #19153C0327F, THE SITE IS LOCATED IN ZONE X, AREA OF MINIMAL FLOOD HAZARD

PER FAA NOTICE CRITERIA TOOL, SITE DOES NOT EXCEED NOTICE CRITERIA UP TO 100 FT HEIGHT (FOR POSSIBLE CRANE HEIGHT) AND THEREFORE FILING WITH THE FAA IS NOT REQUIRED.

VICINITY MAP
N.T.S.



- 1) NEW TKG-STORAGE/DAUGHTER PARTNERS PORTFOLIO I LLC
215 N STADIUM BLVD. STE 207
COLUMBIA, MO. 65203-1160
- 2) KNAPP PROPERTIES
5000 WESTOWN PKWY STE 400
WEST DES MOINES, IA. 50266-5921
- 3) WINDSOR CROSSING SENIOR APARTMENTS LLC
3512 INGERSOLL AVE.
DES MOINES, IA. 50312-3407
- 4) COLIN J THURSTON
6509 LINCOLN AVE.
WINDSOR HEIGHTS, IA. 50324-5923
- 5) PAMELA M QUINLAN
6513 LINCOLN AVE.
WINDSOR HEIGHTS, IA. 50324-5923
- 6) MARCELA LITUMA
6517 LINCOLN AVE.
WINDSOR HEIGHTS, IA. 50324-5923

MILA SCHWARZ, TEN13 PROPERTIES
PO BOX 65653
WEST DES MOINES, IA 50265
PHONE: 515-988-6452
EMAIL: MILA@TEN13PROPERTIES.COM

BOLTON & MENK, INC.
430 E GRAND AVE, STE 101
DES MOINES, IOWA 50309
PROJECT CONTACT: TREY ROUSE
PHONE: 515-259-9190 EXT. 3535
EMAIL: TREY.ROUSE@BOLTON-MENK.COM

ENGINEER, LAND SURVEYOR
PELDS DESIGN SERVICES
2323 DIXON ST
DES MOINES, IOWA 50316
PROJECT CONTACT: ELARA JONDLE
PHONE: (515) 265-8196
EMAIL: ELARA@PELDS.COM

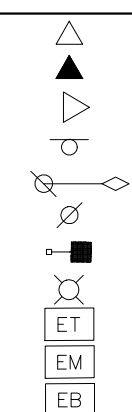
K.P. INTERIOR IMPRESSIONS
201 W. 4TH STREET, PO BOX 66
BOUTON, IOWA 50039
PROJECT CONTACT: KENDRA PEDICINI
PHONE: (515) 601-0926
EMAIL: KENDRA@KPINTERIORIMPRESSIONS.COM

SHEET INDEX

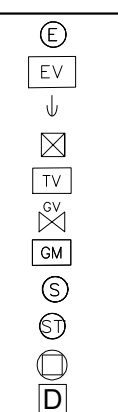
C-001 - COVER SHEET
C-002 - NOTE SHEET
C-003 - TOPO SHEET
C-100 - DEMO SHEET
C-101 - LAYOUT SHEET
C-103 - DIMENSION SHEET

C-201 - GRADING SHEET
C-301 - UTILITY SHEET
C-701 - LANDSCAPING SHEET
AL-401 - TRASH ENCLOSURE
E-101 - SITE LIGHTING PLAN

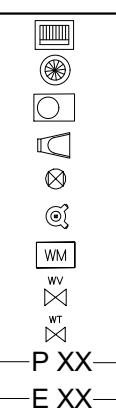
F.F.	FINISHED FLOOR
+/+	MORE OR LESS
123.45G	GUTTER ELEVATION
123.45TC	TOP OF CURB ELEVATION
123.45 / 123.45	EXISTING/ PROPOSED ELEVATION
FL	FLOWLINE ELEVATION
⊙	CONTROL POINT
○	CALCULATED CORNER
●	FOUND CORNER



CALCULATED SECTION CORNER
FOUND SECTION CORNER
PARKING SPACE
SIGN
STREET LIGHT
POWER POLE
LIGHT POLE
AREA LIGHT
ELEC. TRANSFORMER
ELEC. METER
ELEC. BOX

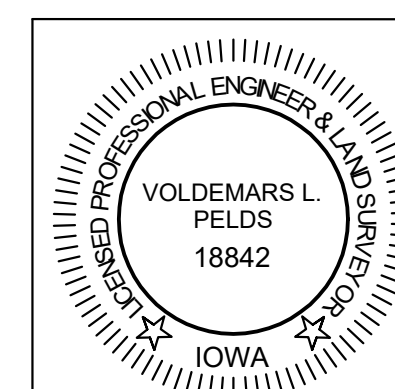


ELEC. MANHOLE
ELEC. VAULT
GUY ANCHOR
UTILITY PEDESTAL
CABLE TV JUNCTION BOX
GAS VALVE
GAS METER
SANITARY SEWER MANHOLE
STORM SEWER MANHOLE
CLEANOUT
DOWNSPOUT



SINGLE INTAKE
 AREA INTAKE
 THROAT INTAKE
 FLARED END SECTION
 VALVE
 FIRE HYDRANT
 WATER METER
 WATER VALVE
 WATER TEE
 PROPOSED UTILITY LINE
 EXISTING UTILITY LINE

— CATV —	CABLE TELEVISION
— FO —	FIBER OPTIC
— G —	GAS LINE
— OHE —	OVERHEAD ELEC.
— OHT —	OVERHEAD TEL.
— SAN —	SANITARY SEWER
— ST —	STORM SEWER
— UGE —	UNDERGROUND ELEC.
— UGT —	UNDERGROUND TEL.
— W —	WATER
□ — □ — □ — □	FENCE LINE



I HEREBY CERTIFY THAT THIS ENGINEERING DOCUMENT WAS PREPARED BY ME OR UNDER MY DIRECT PERSONAL SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF IOWA.

VOLDMARS L. PELDS, P.E. IA. LIC. NO. 18842 DATE
MY LICENSE RENEWAL DATE IS DECEMBER 31, 2025
ADDITIONAL PAGES OR SHEETS COVERED BY THIS SEAL (NONE
UNLESS INDICATED HERE): C-001 - C-701



GENERAL NOTES

- THE LOCAL JURISDICTION MUST BE NOTIFIED BY ALL CONTRACTORS 48 HOURS PRIOR TO COMMENCING WORK. THE LOCAL JURISDICTION IS THE CITY OF WINDSOR HEIGHTS.
- ALL PROPOSED MATERIALS AND STRUCTURES SHALL BE APPROVED BY THE LOCAL JURISDICTION AND BE INSTALLED PER MANUFACTURER'S SPECIFICATIONS
- ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE LATEST SUDAS STANDARDS. ALL PROVIDED SUDAS DETAILS ARE FOR REFERENCE ONLY AND THE LATEST VERSIONS SHALL BE IMPLEMENTED.
- ALL WORK SHALL BE DONE IN ACCORDANCE WITH THE CURRENT O.S.H.A. CODES AND STANDARDS. NOTHING INDICATED ON THESE PLANS SHALL RELIEVE THE CONTRACTOR FROM COMPLYING WITH THE APPROPRIATE SAFETY REGULATIONS.
- ALL NECESSARY CONSTRUCTION SIGNS, BARRICADES AND OTHER TRAFFIC CONTROL DEVICES REQUIRED DURING CONSTRUCTION WILL BE FURNISHED BY THE CONTRACTOR. SIGNS, BARRICADES, AND OTHER TRAFFIC CONTROL DEVICES MUST BE IN CONFORMANCE WITH THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS."
- PELDS DESIGN SERVICES SHALL NOT BE LIABLE FOR ANY INJURIES THAT HAPPEN ON SITE. THIS SHALL INCLUDE BUT NOT BE LIMITED TO TRENCH COLLAPSES FROM VARYING SOIL CONDITIONS OR INJURIES CAUSED BY UNDERGROUND UTILITIES INCLUDING UTILITIES THAT ARE NOT SHOWN ON PLAN.
- THE CONTRACTOR IS LIABLE FOR ALL DAMAGES TO PUBLIC OR PRIVATE PROPERTY CAUSED BY THEIR ACTION OR INACTION IN PROVIDING FOR STORM WATER FLOW DURING CONSTRUCTION. DO NOT RESTRICT FLOWS IN EXISTING DRAINAGE CHANNELS, STORM SEWER, OR FACILITIES.
- IF A PRE-CONSTRUCTION MEETING IS REQUIRED PRIOR TO THE START OF CONSTRUCTION, THE CONTRACTOR SHALL BE RESPONSIBLE TO COORDINATE THIS MEETING.
- LABORATORY TESTS SHALL BE PERFORMED BY THE OWNER UNLESS OTHERWISE NOTED. THE CONTRACTOR SHALL PROVIDE SAMPLES OF MATERIAL REQUIRED FOR LABORATORY TESTS AND TESTING IN ACCORDANCE WITH THE URBAN STANDARD SPECIFICATIONS FOR PUBLIC IMPROVEMENTS.
- THE CONTRACTOR SHALL PROTECT ALL STRUCTURES NOT SHOWN AS REMOVALS ON THE PLANS.
- THE CONTRACTOR SHALL OBTAIN ANY AND ALL NECESSARY PERMITS PRIOR TO ANY CONSTRUCTION. CONTRACTOR SHALL WORK WITH OWNER OR OWNER'S REPRESENTATIVE ON ALL REQUIRED STORM WATER DISCHARGE PERMITS FROM THE IOWA DEPARTMENT OF NATURAL RESOURCES AND THE LOCAL JURISDICTION.
- THE CONTRACTOR SHALL PICK UP ANY DEBRIS SPILLED ONTO THE ADJACENT RIGHT OF WAY OR ABUTTING PROPERTIES AS THE RESULT OF CONSTRUCTION, AT THE END OF EACH WORK DAY.
- THE CONTRACTOR IS RESPONSIBLE FOR THE PROMPT REMOVAL OF ALL MUD THAT HAS BEEN TRACKED OR WASHED UNTO ADJACENT PROPERTY OR RIGHT OF WAY UNTIL SUCH TIME THAT PERMANENT VEGETATION HAS BEEN ESTABLISHED.
- DISPOSE OF ALL EXCESS MATERIALS AND TRASH IN ACCORDANCE WITH FEDERAL, STATE, AND LOCAL REQUIREMENTS. PROVIDE WASTE AREAS OR DISPOSAL SITES OR EXCESS MATERIALS NOT DESIRABLE FOR INCORPORATION INTO THE PROJECT.
- ALL CONSTRUCTION WITHIN THE PUBLIC R.O.W/EASEMENTS, AND/OR ANY CONNECTION TO PUBLIC SEWERS AND STREETS SHALL COMPLY WITH THE LOCAL JURISDICTION.
- THE CONTRACTOR SHALL CONTACT THE LOCAL JURISDICTION TO SCHEDULE ANY REQUIRED INSPECTIONS AT LEAST ONE WEEK PRIOR TO ANY CONSTRUCTION WITHIN PUBLIC R.O.W/EASEMENTS, AND/OR ANY CONNECTION TO PUBLIC SEWERS AND STREETS
- IN THE EVENT OF ANY CONFLICTING NOTES BETWEEN THE COVER SHEET AND ALL OTHER SHEETS, THE NOTES ON THE COVER SHEET SHALL SUPERCEDE ALL OTHERS
- IN THE EVENT OF ANY CONFLICTING INFORMATION BETWEEN THE LABEL, ELECTRONIC CAD FILE, AND THE ELECTRONIC SURFACE, THE DESIGN ENGINEER SHALL BE CONTACTED FOR CLARIFICATION

SURVEY NOTES

- SURVEY WORK WAS COMPLETED BY PELDS DESIGN SERVICES IN JUNE 2024. SEE SITE SURVEY PROVIDED AS PART OF THIS SET OF PLANS FOR EXISTING SITE CONDITIONS AND BOUNDARY INFORMATION.

STAKING NOTES

- IT IS RECOMMENDED FOR THE CONTRACTOR TO HAVE ALL STAKING DONE UNDER THE SUPERVISION OF A LICENSED LAND SURVEYOR AND IN COORDINATION WITH THE PROJECT ENGINEER.
- IT IS RECOMMENDED FOR THE CONTRACTOR TO HAVE ALL STAKING DONE DIRECTLY UNDER THE GENERAL CONTRACTOR BY A SINGLE COMPANY.
- STAKING DOES NOT RELIEVE CONTRACTOR OF ULTIMATE RESPONSIBILITY TO CONSTRUCT THE PROJECT PER PLAN.

DEMO NOTES

- SAWCUT & REMOVE ALL PAVEMENT TO FULL DEPTH OF SLAB.
- PROTECT ALL TREES NOT CALLED OUT FOR REMOVAL WITH ORANGE CONSTRUCTION FENCE AT THE DRIP LINE.
- PAVEMENT STRIPING CALLED OUT FOR REMOVAL SHALL BE SANDBLASTED. NO GRINDING WILL BE ALLOWED.
- PROPERLY DISCONNECT ALL PUBLIC AND PRIVATE UTILITIES, AS NECESSARY.
- COMPLY WITH LOCAL, STATE, AND FEDERAL REGULATIONS TO REMOVE AND PROPERLY DISPOSE OF SIDEWALKS, STEPS, DRIVEWAYS, AND STRUCTURES (INCLUDING BOTH ABOVE GROUND AND BELOW GROUND ELEMENTS).
- COMPLY WITH LOCAL, STATE, AND FEDERAL REGULATIONS TO REMOVE FUEL TANKS, SEPTIC TANKS, CISTERNS, AND ANY OTHER UNDERGROUND FACILITIES; AND TO PROPERLY DISPOSE OF ANY LIQUIDS OR PRODUCTS CONTAINED WITHIN THESE ITEMS.
- PLACE BACKFILL MATERIAL IN HOLES AND DEPRESSIONS, GRADE THE SITE, AND ESTABLISH GROUND COVER.
- PROTECT EXISTING FIRE HYDRANTS, STREET LIGHTS, TRAFFIC SIGNALS, UTILITY POLES, FIRE ALARM BOXES, WIRE CABLES, UNDERGROUND UTILITIES, AND OTHER APPURTENANCES IN THE VICINITY OF THE DEMOLITION SITE
- COMPLY WITH NOISE POLLUTION REQUIREMENTS AND ANY WORKING HOUR RESTRICTIONS OF THE JURISDICTION.
- MAINTAIN OR RE-ESTABLISH ALL TILES, ROADWAY SUBDRAINS, CULVERTS, OR OTHER DRAINAGE FACILITIES NOT IDENTIFIED IN THE CONTRACT DOCUMENTS FOR REMOVAL.
- IMPLEMENT THE APPROVED EROSION AND SEDIMENT CONTROL PLAN FOR EACH SITE PRIOR TO INITIATING DEMOLITION BY PLACING ALL REQUIRED DEVICES; INCLUDE MEASURES TO PREVENT TRACKING OF MUD ONTO ADJACENT STREETS OR ALLEYS.
- COMPLY WITH ALL APPLICABLE AIR POLLUTION REQUIREMENTS OF THE JURISDICTION. USE WATER OR APPROPRIATE CHEMICALS FOR CONTROL OF DUST IN THE DEMOLITION AREA, ON HAULING EQUIPMENT, ON ADJACENT ROADWAYS, AND WHEN GRADING THE SITE.
- TAKE STEPS TO PREVENT THE GENERATION OF LITTER DURING DEMOLITION AND COLLECT ALL LITTER FROM THE DEMOLITION AREA AT THE END OF EACH WORKING DAY. LOAD TRUCKS TO PREVENT LEAKAGE OR BLOWING OF DEBRIS.
- REMOVE ALL CONCRETE, ASPHALT, OR MASONRY SLABS AND APPURTENANCES.
- REMOVE AND DISPOSE OF ALL BRUSH, SHRUBS, TREES, LOGS, DOWNED TIMBER, AND OTHER YARD WASTE ON THE SITE UNLESS OTHERWISE SPECIFIED IN THE CONTRACT DOCUMENTS. DO NOT MIX WITH DEMOLITION MATERIAL. REMOVE STUMPS TO A MINIMUM OF 2 FEET BELOW FINISH GRADE. PROTECT ANY TREES OR OTHER VEGETATION NOT DESIGNATED FOR REMOVAL BY PLACING A FENCE AT THE DRIP LINE ENCOMPASSING THE ENTIRE TREE AND KEEPING ALL OPERATIONS OUTSIDE OF THE FENCED IN AREA, INCLUDING STORAGE OF EQUIPMENT OR MATERIALS. AT NO ADDITIONAL COST TO THE CONTRACTING AUTHORITY, REPLACE ANY TREES THAT ARE DESIGNATED FOR PROTECTION BUT ARE DAMAGED BEYOND TREATMENT. THE ENGINEER WILL DETERMINE SIZE AND SPECIES OF THE REPLACEMENT TREE.
- SAW-CUT ALL HARD SURFACING AT LOCATION OF REMOVAL LIMITS.
- WHERE SELECTIVE DEMOLITION IS SHOWN AT PAVED AREAS, DEMOLISH THE EXISTING PAVING BACK TO AN EXISTING CONTROL JOINT NEAR THE LOCATION SHOWN.

WETLAND NOTES

- PELDS DESIGN SERVICES DOES NOT PERFORM WETLAND STUDIES OR WETLAND MITIGATION. IT IS THE OWNER'S RESPONSIBILITY TO DETERMINE IF ANY WETLANDS ARE LOCATED ON THE PROJECT SITE AND PERFORM ANY NECESSARY MITIGATION PRIOR TO THE COMMENCEMENT OF CONSTRUCTION ACTIVITIES.

DISCLAIMER

- THIS DRAWING IS BEING MADE AVAILABLE BY PELDS DESIGN SERVICES (P.D.S.) FOR USE ON THIS PROJECT IN ACCORDANCE WITH P.D.S.'S AGREEMENT FOR PROFESSIONAL SERVICES. P.D.S. ASSUMES NO RESPONSIBILITY OR LIABILITY (CONSEQUENTIAL OR OTHERWISE) FOR ANY USE OF THESE DRAWINGS (OR ANY PART THEREOF) EXCEPT IN ACCORDANCE WITH THE TERMS OF SAID AGREEMENT.
- P.D.S DISCLAIMS ANY AND ALL LIABILITY OR RESPONSIBILITY FOR INFORMATION THAT DOES NOT BEAR THE ORIGINAL SEAL AND SIGNATURE OF THE PROFESSIONAL IN CHARGE.

CIVIL ENGINEERING NOTES
FOR
WINDSOR COURT APARTMENTS
6500 HICKMAN ROAD
WINDSOR HEIGHTS, IOWA

UTILITY NOTES

- QUANTITY CALLOUTS ON PIPE LENGTHS ARE APPROXIMATE AND SHOULD BE USED FOR REFERENCE ONLY.
- PIPE LENGTHS CALLED OUT ON PLANS DO NOT INCLUDE FLARED END SECTION, WHERE APPLICABLE.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE LOCATION OF ALL UTILITIES. ANY DAMAGE TO SAID UTILITIES SHALL BE REPAIRED TO THE SATISFACTION OF THE OWNER AT THE CONTRACTOR'S EXPENSE.
- THE CONTRACTOR SHALL RELOCATE EXISTING UTILITIES AS NECESSARY, SHOWN OR NOT SHOWN.
- THE CONTRACTOR SHALL COORDINATE WITH THE CITY ON ALL SIZE, DEPTHS, AND MATERIALS OF ALL PROPOSED UTILITIES.
- THE CONTRACTOR MUST PROVIDE AS-BUILTS OF ALL UTILITIES, INCLUDING DEPTH AND LOCATION OF ALL SERVICES IF REQUIRED BY CITY.
- IT IS THE CONTRACTOR'S RESPONSIBILITY TO CONTACT THE APPROPRIATE UTILITY COMPANIES PRIOR TO CONNECTION OR DISCONNECTION OF A SERVICE LINE.
- CONTRACTOR IS TO COMPLY WITH THE LATEST SUDAS SPECIFICATIONS FOR MAINTENANCE, INSTALLATION, AND TESTING FOR CONSTRUCTION.
- THE CONTRACTOR SHALL COORDINATE THE ADJUSTMENT OF ANY AND ALL EXISTING AND PROPOSED UTILITIES TO PROPOSED GRADES. EXISTING UTILITIES SHALL BE RAISED OR LOWERED IN ACCORDANCE WITH THE UTILITY OWNER REQUIREMENTS. ANY NECESSARY ADJUSTMENTS SHALL BE CONSIDERED INCIDENTAL TO CONSTRUCTION.
- ACTIVE EXISTING FIELD TILES ENCOUNTERED DURING CONSTRUCTION SHALL BE REPAIRED, REROUTED, OR CONNECTED TO PUBLIC OR PRIVATE STORM SEWER TO REMAIN IN SERVICE. THE TILE SHOULD BE DIRECTED TO PUBLIC STORM SEWER IF POSSIBLE. THE CONTRACTOR SHALL RECORD THE ELEVATION AND LOCATION OF ALL TILES.
- ALL RIP RAP CALLED OUT ON PLANS SHALL BE UNDERLAIN WITH ENGINEERING FABRIC.
- ALL STRUCTURE SIZES CALLED OUT ON PLANS ARE MINIMUM INSIDE WALL DIMENSIONS.
- ALL PROPOSED UTILITIES SHALL BE PRIVATE, UNLESS NOTED OTHERWISE.
- ALL STRUCTURES CALLED OUT AS "MODIFIED" OR "SPECIAL" SHALL BE ENGINEERED BY THE PRECASTER TO ENSURE STRUCTURE STABILITY. MODIFICATIONS INCLUDE ADDITIONAL WALL LENGTH TO ACCOUNT FOR LARGE PIPE DIAMETERS AND ADDITIONAL WALL WIDTH & BASE DEPTH TO ACCOUNT FOR DEEPER STRUCTURES. ANY AND ALL MODIFICATIONS TO STANDARD STRUCTURES SHALL BE CONSIDERED INCIDENTAL TO BID

ELECTRICAL SERVICE NOTES

- ALL SITE LIGHTING SHALL NOT SPILL ONTO ADJACENT PROPERTIES OR RIGHT-OF-WAYS
- TRANSFORMER PAD IS SHOWN FOR REFERENCE ONLY AND MAY NOT BE DRAWN TO ACTUAL SIZE. PAD SHALL CONFORM TO ALL UTILITY COMPANY DESIGN STANDARDS AND SPECIFICATIONS.
- SANITARY SERVICE NOTES
- SANITARY SEWER SERVICE CONNECTIONS SHALL BE PLACED AT A SLOPE OF NO LESS THAN 2% FOR A 4" PIPE AND 1% FOR A 6" PIPE. SERVICES SHALL MAINTAIN 18" OF VERTICAL SEPARATION FROM THE WATER MAIN WITH 18" OF COMPACTED LOW PERMEABILITY SOIL BETWEEN THE UTILITIES WITHIN 10' OF THE CROSSING.

STORM WATER SERVICE NOTES

- ALL STORM SEWER IN THE ROW SHALL BE RCP (CLASS III RCP), UNLESS OTHERWISE SPECIFIED.
- ALL PROPOSED RCP STORM SEWER PIPE JOINTS SHALL BE FABRIC WRAPPED AND THE LAST 3 PIPE SECTIONS ON THE APRON SHALL BE TIED WITH RF-14 TYPE II CONNECTORS. ALL APRONS SHALL HAVE A STANDARD FOOTING AND TRASH GUARD.
- ALL SUMP SERVICE LINES SHALL HAVE TRACE WIRE
- WATER SERVICE NOTES
- WATER SERVICE SHALL BE TYPE K COPPER, DIP OR HDPE, DEPENDING ON SIZE AND JURISDICTIONAL REQUIREMENTS. IF CONTAMINATED OR "HOT" SOILS, ENSURE APPROPRIATE PIPE IS BEING UTILIZED. SIZE OF WATER MAIN AS SHOWN ON PLANS.
- TRACER WIRE SHALL BE ADDED TO ALL WATER MAIN, AND BROUGHT TO THE SURFACE AT EVERY HYDRANT.
- THRUST BLOCKS SHALL BE INSTALLED AS REQUIRED AND SHALL BE CONSIDERED INCIDENTAL TO WATER MAIN CONSTRUCTION.
- ANY AND ALL HYDRANT AND VALVE EXTENSIONS, TOGETHER WITH VERTICAL BENDS, SHALL BE CONSIDERED INCIDENTAL TO WATER MAIN CONSTRUCTION. NO ADDITIONAL PAYMENT WILL BE PROVIDED FOR INCIDENTAL ITEMS.
- ALL WATER LINES SHALL HAVE A MINIMUM OF 5.5 FEET OF COVER UNLESS NOTED OTHERWISE.

EXISTING UTILITIES NOTE

- THE LOCATIONS OF THE EXISTING UTILITIES SHOWN HEREON ARE APPROXIMATE. THEY HAVE BEEN PLOTTED FROM AVAILABLE SURVEYS AND/OR RECORDS. THE CONTRACTOR IS RESPONSIBLE TO ENSURE THAT ANY EXISTING UTILITIES (SHOWN OR NOT SHOWN) ARE NOT DAMAGED DURING CONSTRUCTION: IOWA ONE-CALL (1-800-292-8989).

UTILITY CONFLICT NOTES

- UTILITY CONFLICTS MAY EXIST ACROSS THE SITE WITH NEW UTILITIES, GRADING, PAVING ETC. MOST UTILITY CONFLICTS HAVE BEEN CALLED OUT FOR CONTRACTOR CONVENIENCE.
- CONTRACTOR IS RESPONSIBLE FOR ALL UTILITY CONFLICTS BETWEEN AN EXISTING UTILITY AND PROPOSED CONSTRUCTION THAT ARE EITHER CALLED OUT ON THE PLANS OR NOT CALLED OUT.
- CONTRACTOR SHALL COMPLY WITH ALL DNR REQUIREMENTS FOR PIPE MATERIAL, PIPE JOINTS, AND ANY OTHER APPLICABLE REQUIREMENTS ANY TIME A STORM SEWER OR SANITARY SEWER CROSSES OVER OR LESS THAN 18" BELOW A WATER MAIN.
- FOR ALL CRITICAL CROSSINGS WITH EXISTING UTILITIES, THE ELEVATION OF THE EXISTING UTILITY SHALL BE FIELD VERIFIED PRIOR TO CONSTRUCTION. NOTIFY PELDS DESIGN SERVICES PRIOR TO CONSTRUCTION IF A CONFLICT EXISTS.

SPECIFICATIONS NOTES

- ALL WORK SHALL BE DONE IN ACCORDANCE WITH THE LATEST VERSION OF THE URBAN STANDARDS SPECIFICATIONS FOR PUBLIC IMPROVEMENTS ON THE DATE OF APPROVAL AND THE LOCAL JURISDICTION SUPPLEMENTAL SPECIFICATIONS.
- IN THE EVENT OF A DISCREPANCY BETWEEN THE PROJECT SPECIFICATIONS AND THE LOCAL JURISDICTION REQUIREMENTS AND SPECIFICATIONS, PLUMBING CODE, AND URBAN STANDARD SPECIFICATIONS FOR PUBLIC IMPROVEMENT, THE LOCAL JURISDICTION STANDARD SPECIFICATIONS SHALL GOVERN.
- FOR ALL SPECIFICATION DISCREPANCIES, THE PROJECT ENGINEER SHALL BE CONTACTED PRIOR TO PROCEEDING WITH CONSTRUCTION. IF THE ENGINEER IS NOT CONTACTED, CONTRACTOR SHALL BE RESPONSIBLE FOR ANY PROBLEMS THAT RESULT FROM SAID DISCREPANCIES.

REQUIRED AS-BUILT NOTES

- THE CONTRACTOR SHALL BE RESPONSIBLE FOR COST OF AS-BUILT TOPO, IF REQUIRED BY CITY.
- CONTRACTOR SHALL CONTACT PELDS DESIGN SERVICES TO PERFORM SAID AS-BUILT SURVEYS.
- IF ANYTHING HAS BEEN CONSTRUCTED INCORRECTLY, CONTRACTOR SHALL BE RESPONSIBLE FOR ALL SUBSEQUENT AS-BUILT SURVEYS UNTIL ISSUES HAVE BEEN RECTIFIED.

PAVING NOTES

- THE PAVING/ GRADING CONTRACTOR SHALL BACKFILL THE PAVING SLAB AND FINE GRADE THE RIGHT OF WAY AS SOON AFTER THE PAVING AS POSSIBLE. ALL ROW AREAS SHALL BE SODDED IN ACCORDANCE WITH THE LOCAL JURISDICTION SPECIFICATIONS AND THE LATEST VERSION OF SUDAS.
- SEE DETAILS FOR ALL PAVEMENT THICKNESS.
- DETECTABLE WARNING PANEL(S) CALLED OUT ON PLANS SHALL BE PER A.D.A. REGULATIONS. PANEL TYPE & COLOR SHALL BE PER CITY STANDARD.
- SIDEWALKS SHALL HAVE EXPANSION JOINTS AT 100 FOOT INTERVALS AS REQUIRED BY CITY CODE
- ALL WALKS, PARKING LOTS, HANDICAP PARKING, RAMPS, ETC. SHALL COMPLY WITH ALL A.D.A. AND CITY CODES. HANDICAP PARKING SIGNAGE IS REQUIRED FOR ALL HANDICAP STALLS AND SHALL BE CONSIDERED INCIDENTAL. IN EVENT OF A DISCREPANCY BETWEEN THE PLANS AND THE A.D.A./CITY CODES THE A.D.A./CITY CODES SHALL GOVERN. CONTRACTOR SHALL BE RESPONSIBLE FOR ENSURING A.D.A. CODES ARE MET.

PAVEMENT SAWCUT NOTES

- CONTRACTOR TO PROVIDE SAWCUT JOINTING PLAN PRIOR TO ANY CONCRETE PAVEMENT INSTALLATION.
- PAVEMENT MAY BE REQUIRED TO BE REMOVED AND REPLACED IF PLACED WITHOUT AN APPROVED PLAN.
- LONGITUDINAL JOINTS IN DRIVE LANES & THE OUTER MOST JOINT OF ALL PARKING AREAS SHALL BE SUDAS TYPE 'L-1' OR 'L-2' JOINTS AND HAVE STEEL. INTERIOR PARKING LOT JOINTS, OTHER THAN THE OUTER MOST JOINT, DO NOT NEED STEEL AND SHALL BE SUDAS TYPE 'B' OR TYPE 'K' JOINTS. ALL TRANSVERSE JOINTS SHALL BE SUDAS TYPE 'C' OR TYPE 'DW' JOINTS WITH STEEL IN THE CASE OF A DAY'S WORK JOINT.

SOIL NOTES

- STRIP AND STOCKPILE THE TOP 8 INCHES OF SOIL ON ALL DISTURBED AREAS. GRADING CONTRACTOR SHALL STOCKPILE TOPSOIL FOR SHOULDERING.
- SOD REQUIREMENT PER SUDAS: IN AREAS WHERE TOPSOIL HAS BEEN STRIPPED, A SODBED SHOULD BE CONSTRUCTED BY SPREADING A MINIMUM OF 6 INCHES OF TOPSOIL PRIOR TO SODDING. DEEPER TOPSOIL DEPTHS (8 TO 12 INCHES OR GREATER) ARE DESIRABLE AS THEY INCREASE THE ORGANIC MATTER AVAILABLE FOR USE BY THE PLANTS, ALLOW FOR DEEPER ROOT PENETRATION AND INCREASE THE MOISTURE HOLDING ABILITY OF THE SOIL.
- PERMANENT SEED REQUIREMENT PER SUDAS: IN ORDER TO PROVIDE AN ADEQUATE GROWING MEDIUM, A MINIMUM OF 8 INCHES OF TOPSOIL SHOULD BE PLACED OVER THE DISTURBED AREA PRIOR TO SEEDING. DEEPER TOPSOIL DEPTHS (8-12 INCHES OR GREATER) ARE DESIRABLE AS THEY INCREASE THE ORGANIC MATTER AVAILABLE FOR USE BY THE PLANTS, ALLOW FOR DEEPER ROOT PENETRATION AND INCREASE THE MOISTURE HOLDING ABILITY OF THE SOIL.
- TOPSOIL SHALL BE FREE OF ALL ROCK AND DEBRIS LARGER THAN 3/4" IN SIZE.
- TOPSOIL IS DEFINED AS: FERTILE, FRIABLE LOAM, CAPABLE OF SUSTAINING VIGOROUS PLANT GROWTH, FROM WELL DRAINED SITE FREE FROM FLOODING, NOT IN FROZEN OR MUDDY CONDITIONS; REASONABLE FREE FROM SUBSOIL, CLAY LUMPS, ROOTS, GRASS, WEEDS, STONES LARGER THAN 3/4 INCH IN DIAMETER, AND FOREIGN MATTER; ACIDITY RANGE (PH) OF 5.5 TO 7.5; CONTAINING MINIMUM 4 PERCENT AND MAXIMUM 20 PERCENT ORGANIC MATTER.
- CONTRACTOR SHALL BE RESPONSIBLE FOR ENSURING ALL TOPSOIL REQUIREMENTS OF NPDES GENERAL PERMIT NO. 2 ARE MET.
- REFERENCE GEOTECHNICAL REPORT FOR ADDITIONAL SOILS INFORMATION INCLUDING BUT NOT LIMITED TO SUBGRADE INFORMATION, FOOTING DESIGN, AND ANY POSSIBLE OVER EXCAVATION DUE TO POOR SOILS. PAVEMENT SECTIONS ON THE PLANS GOVERN OVER PAVEMENT THICKNESS IN THE SOILS REPORT.

GRADING NOTES

- AREAS TO RECEIVE STRUCTURAL FILL SHALL BE BENCHED. STRUCTURAL FILL SHALL BE COMPACTED TO A DENSITY THAT IS NOT LESS THAN 95% STANDARD PROCTOR.
- PREPARE BOTTOM OF BENCH FOR FILL BY DISKING TO A DEPTH OF 12 INCHES AND COMPACT. ANY LOCALIZED AREAS WHICH CANNOT BE SATISFACTORILY COMPACTED OR WHICH SHOW EVIDENCE OF PUMPING ACTION SHALL BE UNDERCUT AND RE-COMPACTED WITH ON-SITE FILL MATERIALS.
- ALL AREAS WHICH ARE TO RECEIVE PAVING SHALL HAVE THE TOP 12 INCHES DISKED AND COMPACTED TO 95% STANDARD PROCTOR DENSITY.
- MAINTAIN ALL CUT AND FILL AREAS TO ACCOMMODATE SURFACE DRAINAGE.
- FINISH GRADE ON ALL NON-PAVED AREAS SHALL BE WITHIN 0.20 FT, AND PAVED AREAS SHALL BE WITHIN 0.10 FT OF THE PROPOSED GRADES SHOWN ON THE PLAN
- MAXIMUM ALLOWABLE GRADE ON ALL PROPOSED SLOPES IS 3:1.
- THE MOISTURE CONTENT SHALL NOT DEVIATE FROM THE OPTIMUM BY MORE THAN 2% IN STRUCTURAL FILL.
- MAXIMUM 2% CROSS-SLOPE ON ALL SIDEWALKS.
- GRADING AND EROSION CONTROL SHALL BE DONE IN ACCORDANCE WITH THE APPROVED GRADING PLAN, SWPPP, NPDES DOCUMENTS, AND IOWA DEPARTMENT OF NATURAL RESOURCES REQUIREMENTS.

LANDSCAPING NOTES

- ALL SODDING & LANDSCAPE PLANTINGS SHALL BE INSTALLED IN ACCORDANCE WITH THE URBAN STANDARD SPECIFICATIONS, UNLESS SPECIFIED OTHERWISE.
- SEED OR SOD ALL DISTURBED AREAS WITHIN THE CONTRACT LIMITS, UNLESS NOTED OTHERWISE. SOD LIMITS SHOWN ON PLAN ARE FOR REFERENCE ONLY. FINAL LIMITS MAY CHANGE BASED ON CONSTRUCTION ACTIVITIES. SEED ALL DISTURBED AREAS OFF-SITE
- STAKE SOD ON ALL SLOPES 4:1 OR GREATER.
- PLANT QUANTITIES ARE FOR CONTRACTORS CONVENIENCE, THE DRAWING SHALL PREVAIL IF A CONFLICT OCCURS.
- ALL PLANT MATERIAL SHALL CONFORM TO THE LATEST EDITION OF THE AMERICAN STANDARD FOR NURSERY STOCK (ANSI Z60.1).
- CONTRACTOR SHALL GUARANTEE ALL PLANT MATERIAL FOR A PERIOD OF ONE YEAR FROM THE DATE OF ACCEPTANCE.
- CONTRACTOR SHALL PLACE SHREDDED HARDWOOD MULCH OR BRICK CHIPS OR WASHED STONE AROUND ALL TREES, SHRUBS AND GROUND COVER BEDS TO A DEPTH OF 4 INCHES, UNLESS NOTED.
- PROVIDE 6MIL MINIMUM PLASTIC BELOW ROCK/BRICK.
- THE LANDSCAPING CONTRACTOR SHALL HAVE ALL UTILITIES LOCATED BEFORE STARTING ANY SITE WORK OR PLANTING. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF ALL EXISTING UTILITIES.
- CONTRACTOR SHALL BE RESPONSIBLE MAINTAINING APPROPRIATE LEVEL OF WATERING FOR ALL NEW PLANTS FOR A PERIOD OF 30 DAYS.
- ALL BEDS TO RECEIVE GRANULAR PRE-EMERGENT WEED CONTROL BEFORE AND AFTER MULCH IS INSTALLED.



PELDS Design Services

Architecture | Engineering | Surveying
2323 Dixon Street, Des Moines, Iowa 50316 | PO Box 4626, Des Moines, Iowa 50305 | Ph: 515 265 8196

TITLE:

WINDSOR COURT APARTMENTS
6500 HICKMAN ROAD
WINDSOR HEIGHTS, IOWA

BENCHMARK:

COPYRIGHT DATE:

DRAWN BY:

L. BURKE

SCALE:

REVISION:

LATEST REVISION:

01.29.2025

DRAWING NO:

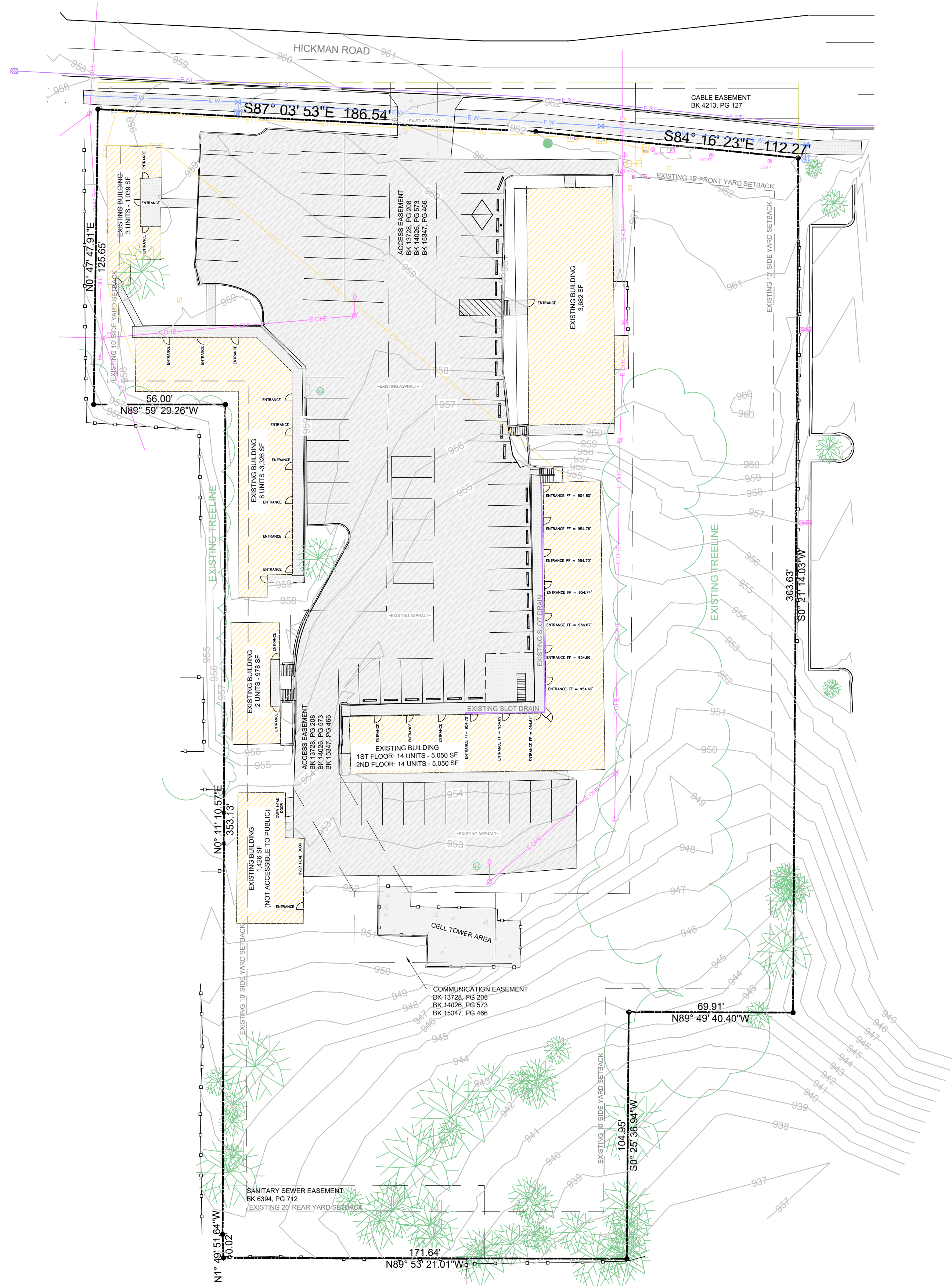
24-068

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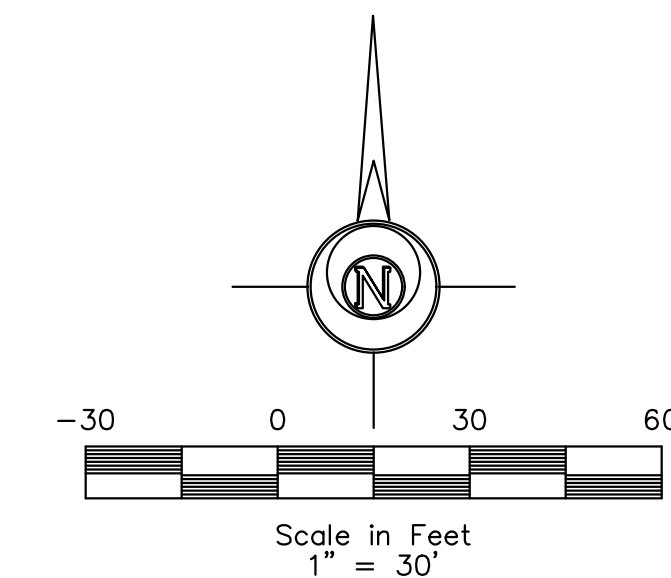
\\2024 Projects\24-068 6500 Hickman Rd - Windsor Hts\Engineering\Sheet Set

PRELIMINARY

C-002 - NOTE SHEET



- EXISTING ASPHALT (24,850 SQ. FT.)
- EXISTING CONCRETE
- EXISTING CONCRETE SIDEWALKS
- EXISTING BUILDING



LEGEND:

- | | | | |
|---------------|-----------------------------|---|------------------------------|
| +/- | MORE OR LESS | ⊙ | ELEC. MANHOLE |
| F.F. | FINISHED FLOOR | ⊙ | SANITARY SEWER MANHOLE |
| 123.45G | GUTTER ELEVATION | ⊙ | STORM SEWER MANHOLE |
| 123.45TC | TOP OF CURB ELEVATION | ⊙ | TRAFFIC MANHOLE |
| 123.45/123.45 | EXISTING/PROPOSED ELEVATION | ⊙ | CLEANOUT |
| FL | FLOWLINE ELEVATION | ⊙ | DOWNSPOUT |
| ⊙ | CONTROL POINT | ⊙ | AREA INTAKE |
| ⊙ | CALCULATED CORNER | ⊙ | SINGLE INTAKE |
| ● | FOUND CORNER | ⊙ | THROAT INTAKE |
| △ | CALCULATED SECTION CORNER | ⊙ | FLARED END SECTION |
| ▲ | FOUND SECTION CORNER | ⊙ | GAS VALVE |
| ▲ | PARKING SPACE | ⊙ | FIRE HYDRANT |
| ▲ | SIGN | ⊙ | WATER VALVE |
| ⊙ | STREET LIGHT | ⊙ | P XX — PROPOSED UTILITY LINE |
| ⊙ | POWER POLE | ⊙ | E XX — EXISTING UTILITY LINE |
| ⊙ | LIGHT POLE | ⊙ | CATV — CABLE TELEVISION |
| ⊙ | AREA LIGHT | ⊙ | FO — FIBER OPTIC |
| ⊙ | GUY ANCHOR | ⊙ | GAS — GAS LINE |
| ⊙ | UTILITY PEDESTAL | ⊙ | OHE — OVERHEAD ELEC. |
| ⊙ | ELEC. TRANSFORMER | ⊙ | OHT — OVERHEAD TEL. |
| ⊙ | ELEC. METER | ⊙ | SS — SANITARY SEWER |
| ⊙ | ELEC. BOX | ⊙ | ST — STORM SEWER |
| ⊙ | ELEC. VAULT | ⊙ | UGE — UNDERGROUND ELEC. |
| ⊙ | FIBER OPTIC VAULT | ⊙ | UGT — UNDERGROUND TEL. |
| ⊙ | GAS METER | ⊙ | W — WATER |
| ⊙ | CABLE TV JUNCTION BOX | ⊙ | — — — — — FENCE LINE |
| ⊙ | WATER METER | | |

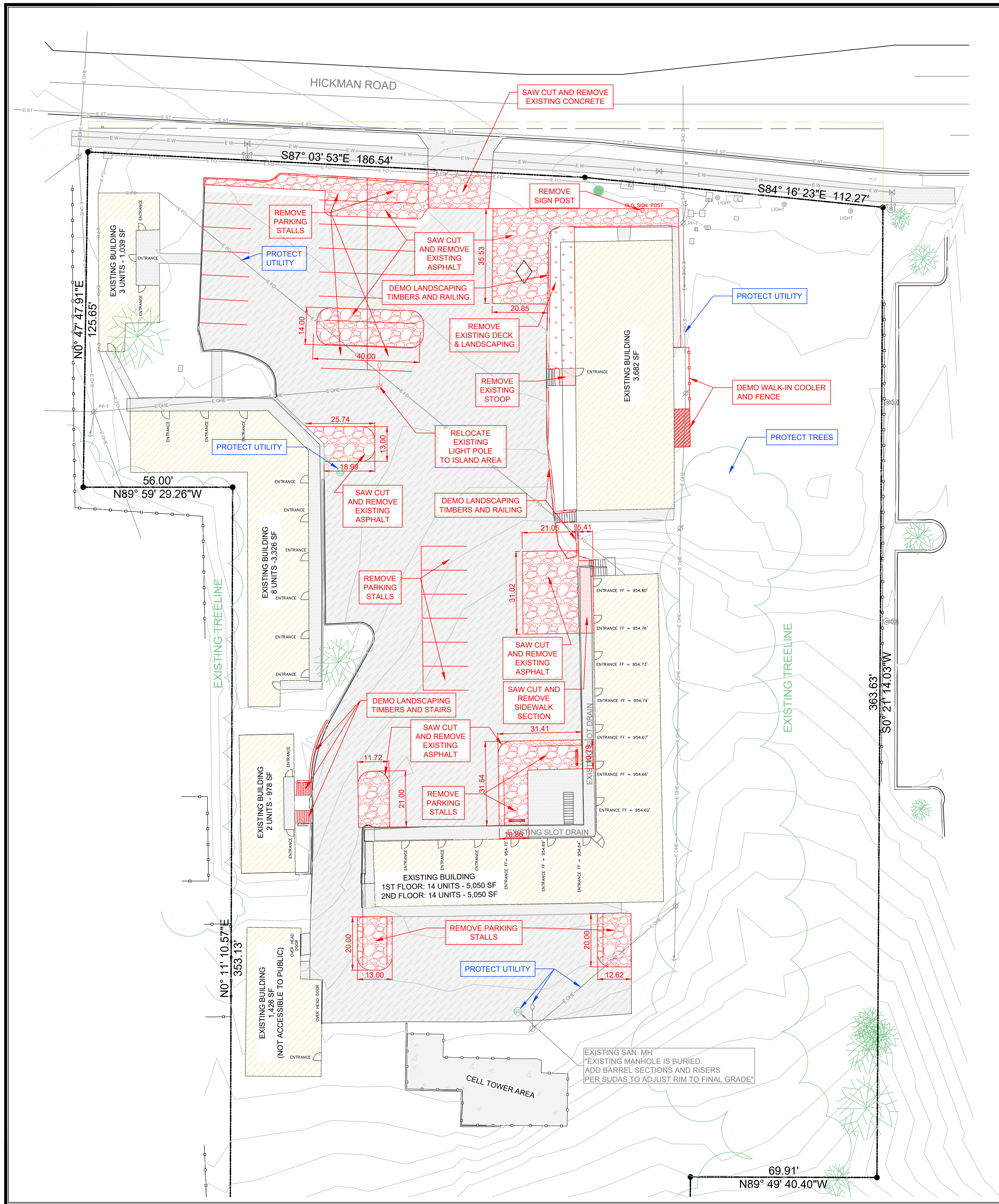
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WINDSOR COURT APARTMENTS
6500 HICKMAN ROAD
WINDSOR HEIGHTS, IOWA

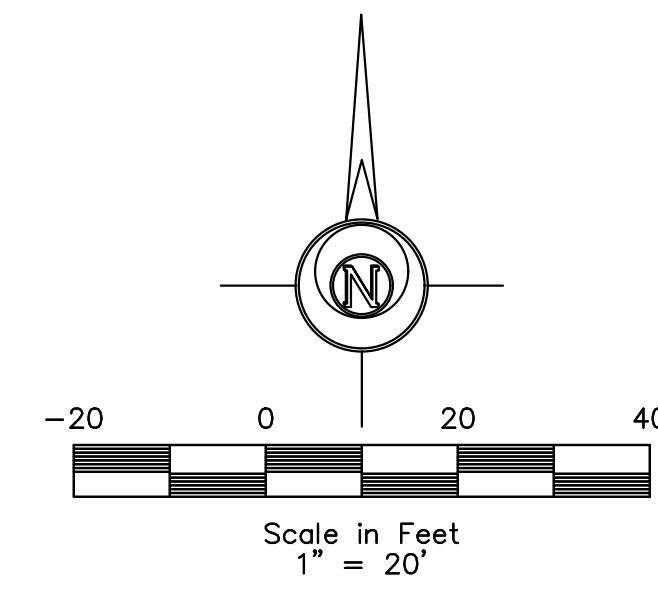
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DATE: 01.29.2025
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C-003 - TOPO SHEET



- EXISTING ASPHALT (24,850 SQ. FT.)
- EXISTING CONCRETE
- EXISTING CONCRETE SIDEWALKS
- EXISTING BUILDING
- BUILDING DEMO
- ASPHALT DEMO (4,874 SQ. FT.)
- LANDSCAPE DEMO (494 SQ. FT.)
- SIDEWALK DEMO (247 SQ. FT.)



LEGEND:

+/-	MORE OR LESS	⊙	ELEC. MANHOLE
F.F.	FINISHED FLOOR	⊙	SANITARY SEWER MANHOLE
123.45G	GUTTER ELEVATION	⊙	STORM SEWER MANHOLE
123.45TC	TOP OF CURB ELEVATION	⊙	TRAFFIC MANHOLE
123.45/123.45	EXISTING/PROPOSED ELEVATION	⊙	CLEANOUT
FL	FLOWLINE ELEVATION	⊙	DOWNSPOUT
⊙	CONTROL POINT	⊙	AREA INTAKE
⊙	CALCULATED CORNER	⊙	SINGLE INTAKE
●	FOUND CORNER	⊙	THROAT INTAKE
⊙	CALCULATED SECTION CORNER	⊙	FLARED END SECTION
⊙	FOUND SECTION CORNER	⊙	GAS VALVE
⊙	PARKING SPACE	⊙	FIRE HYDRANT
⊙	SIGN	⊙	WATER VALVE
⊙	STREET LIGHT	⊙	P XX — PROPOSED UTILITY LINE
⊙	POWER POLE	⊙	E XX — EXISTING UTILITY LINE
⊙	LIGHT POLE	⊙	CATV — CABLE TELEVISION
⊙	AREA LIGHT	⊙	FO — FIBER OPTIC
⊙	GUY ANCHOR	⊙	GAS — GAS LINE
⊙	UTILITY PEDESTAL	⊙	OHE — OVERHEAD ELEC.
⊙	ELEC. TRANSFORMER	⊙	OHT — OVERHEAD TEL.
⊙	ELEC. METER	⊙	SAN — SANITARY SEWER
⊙	ELEC. BOX	⊙	ST — STORM SEWER
⊙	ELEC. VAULT	⊙	UGE — UNDERGROUND ELEC.
⊙	FIBER OPTIC VAULT	⊙	UGT — UNDERGROUND TEL.
⊙	GAS METER	⊙	W — WATER
⊙	CABLE TV JUNCTION BOX	⊙	— — — — — FENCE LINE
⊙	WATER METER		

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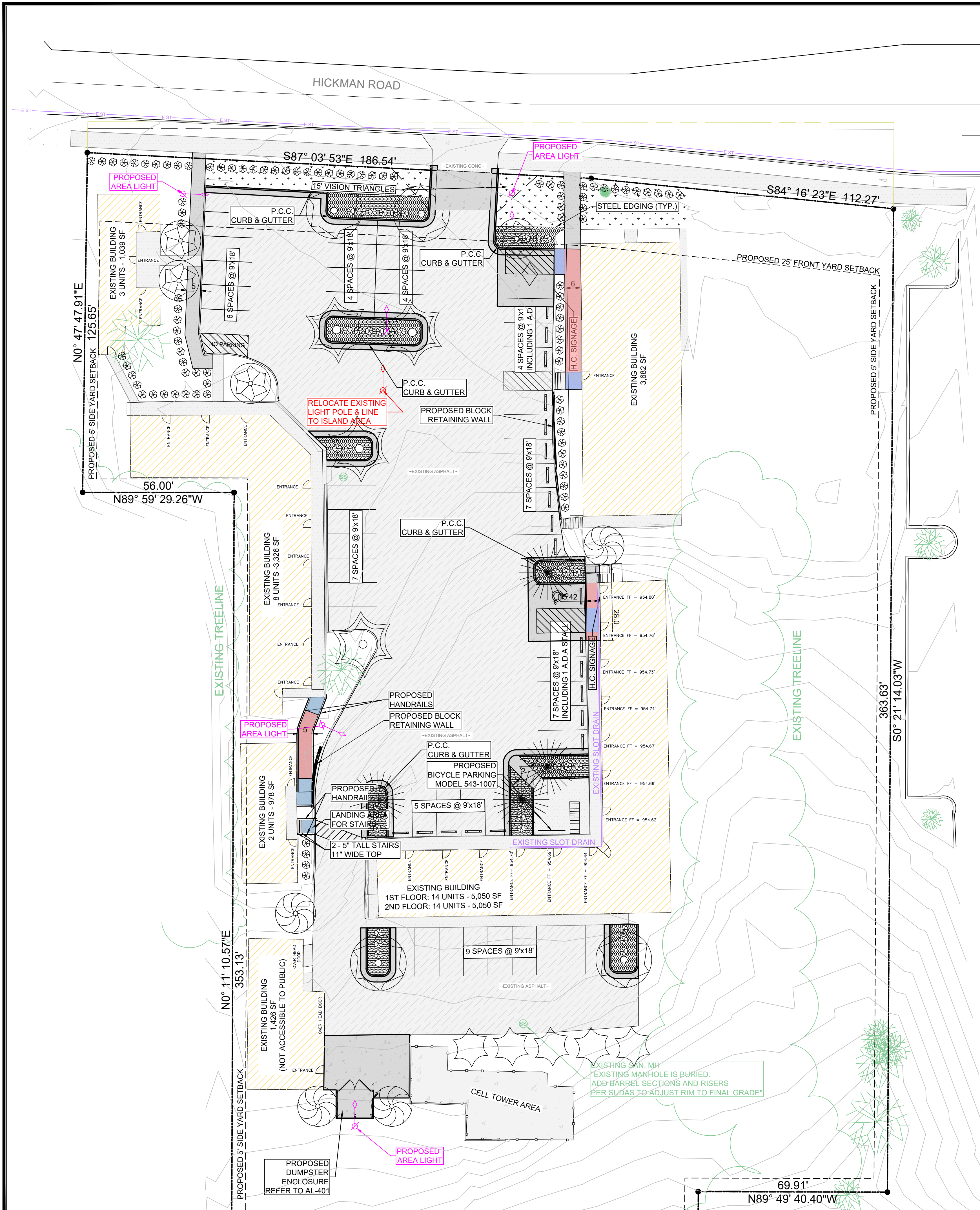
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LATEST REVISION:
01.29.2025

DRAWING NO.:
24-068

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C-100 - DEMO SHEET

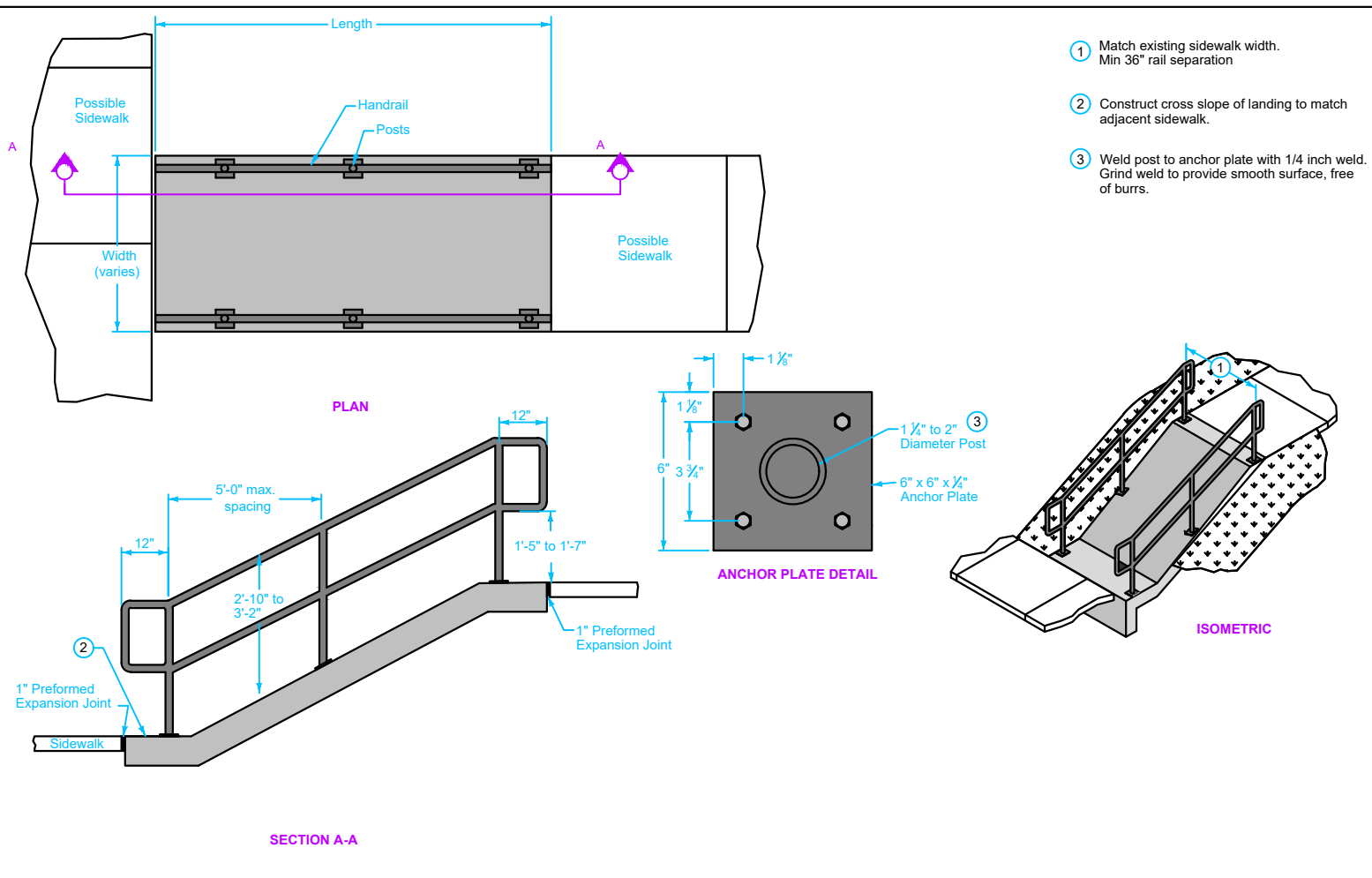


PARKING:
TOTAL AREA OF SITE RESERVED FOR PARKING FACILITIES: 28,908 SQ. FT.
OPEN SPACE WITHIN THE DEFINED PARKING AREA: 1,439 SQ. FT.
PERCENTAGE OF TOTAL PARKING AREA: 25%

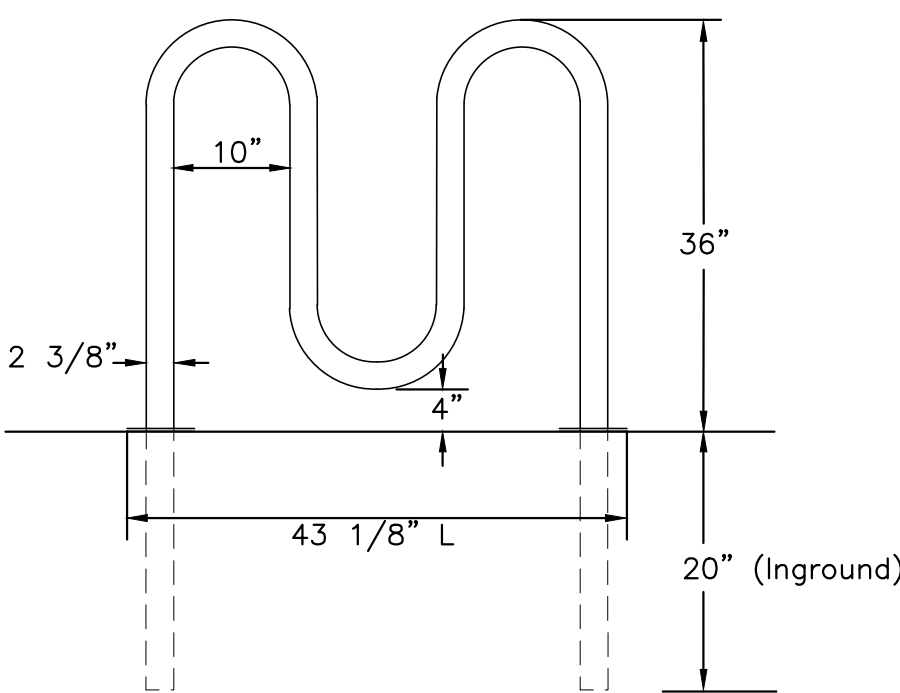
BICYCLE PARKING REQUIREMENTS:
1 SHORT TERM SPACE REQUIRED PER 4 DWELLING UNITS.
11 SHORT TERM SPACES REQUIRED

1 LONG TERM SPACE REQUIRED PER 10 DWELLING UNITS.
4 LONG TERM SPACES REQUIRED

TOTAL NUMBER OF UNITS: 41
TOTAL NUMBER OF BICYCLE PARKING PROVIDED: 11



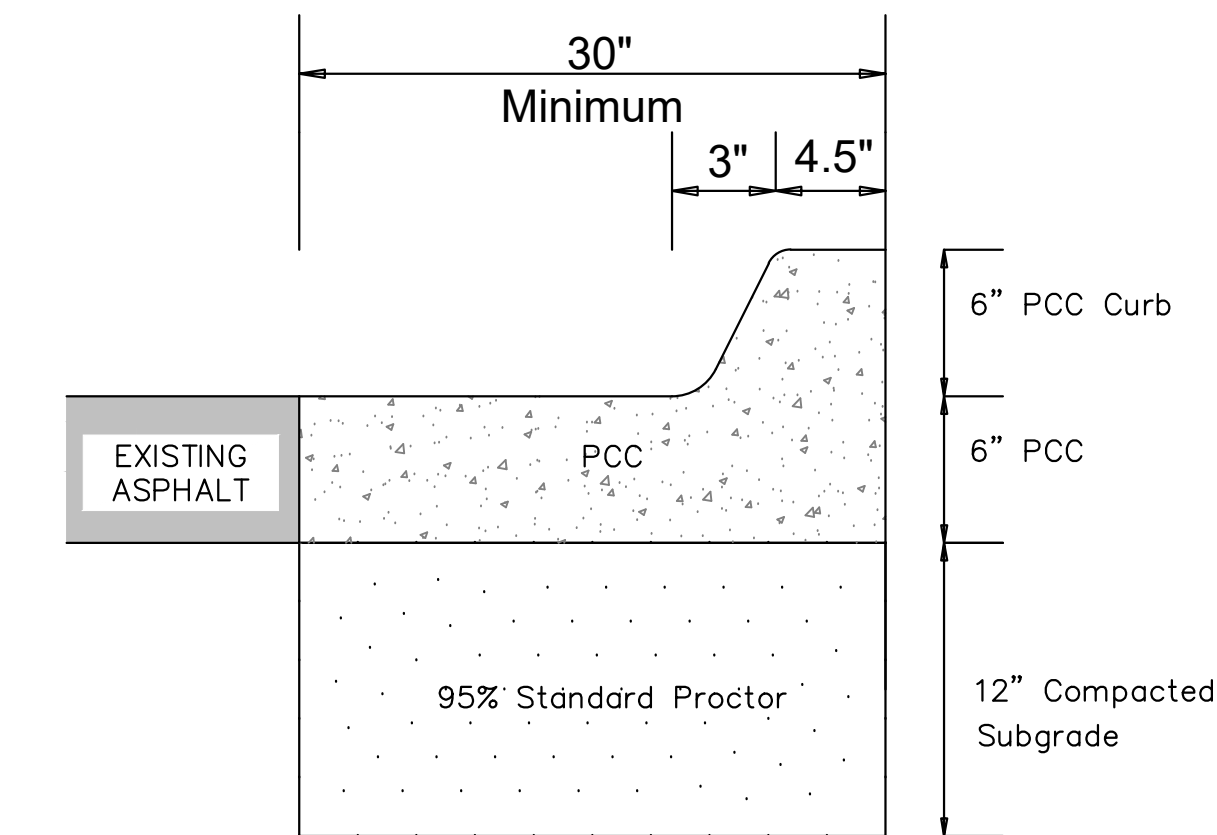
4. CONCRETE RAMP WITH HANDRAIL



MODEL # 543-1005

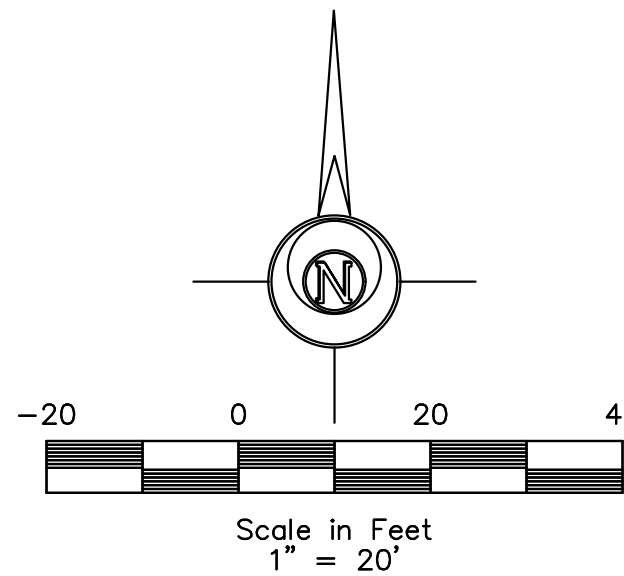
thepark AND FACILITIES
C A T A L O G

BIKE RACK - WAVE STYLE



PROPOSED P.C.C. PAVEMENT / CURB

- PROPOSED 6" P.C.C. (3,544 SQ. FT.)
- PROPOSED SOD/SEED (1,928 SQ. FT.)
- PROPOSED 4" CONCRETE SIDEWALK (1,362 SQ. FT.)
- EXISTING ASPHALT (24,850 SQ. FT.)
- EXISTING CONCRETE
- EXISTING CONCRETE SIDEWALKS
- EXISTING BUILDING
- SIDEWALK LANDING
- SIDEWALK RAMP



LEGEND:

- | | | | |
|---------------|-----------------------------|---|----------------------------|
| +/- | MORE OR LESS | ⊙ | ELEC. MANHOLE |
| F.F. | FINISHED FLOOR | ⊙ | SANITARY SEWER MANHOLE |
| 123.45G | GUTTER ELEVATION | ⊙ | STORM SEWER MANHOLE |
| 123.45TC | TOP OF CURB ELEVATION | ⊙ | TRAFFIC MANHOLE |
| 123.45/123.45 | EXISTING/PROPOSED ELEVATION | ⊙ | CLEANOUT |
| FL | FLOWLINE ELEVATION | ⊙ | DOWNSPOUT |
| ⊙ | CONTROL POINT | ⊙ | AREA INTAKE |
| ⊙ | CALCULATED CORNER | ⊙ | SINGLE INTAKE |
| ⊙ | FOUND CORNER | ⊙ | THROAT INTAKE |
| ⊙ | CALCULATED SECTION CORNER | ⊙ | FLARED END SECTION |
| ⊙ | FOUND SECTION CORNER | ⊙ | GAS VALVE |
| ⊙ | PARKING SPACE | ⊙ | FIRE HYDRANT |
| ⊙ | SIGN | ⊙ | WATER VALVE |
| ⊙ | STREET LIGHT | ⊙ | P XX—PROPOSED UTILITY LINE |
| ⊙ | POWER POLE | ⊙ | E XX—EXISTING UTILITY LINE |
| ⊙ | LIGHT POLE | ⊙ | CATV—CABLE TELEVISION |
| ⊙ | AREA LIGHT | ⊙ | FO—FIBER OPTIC |
| ⊙ | GUY ANCHOR | ⊙ | GAS—GAS LINE |
| ⊙ | UTILITY PEDESTAL | ⊙ | OHE—OVERHEAD ELEC. |
| ⊙ | ELEC. TRANSFORMER | ⊙ | OHT—OVERHEAD TEL. |
| ⊙ | ELEC. METER | ⊙ | SAN—SANITARY SEWER |
| ⊙ | ELEC. BOX | ⊙ | ST—STORM SEWER |
| ⊙ | ELEC. VAULT | ⊙ | UGE—UNDERGROUND ELEC. |
| ⊙ | FIBER OPTIC VAULT | ⊙ | UGT—UNDERGROUND TEL. |
| ⊙ | GAS METER | ⊙ | W—WATER |
| ⊙ | CABLE TV JUNCTION BOX | ⊙ | —FENCE LINE |
| ⊙ | WATER METER | | |

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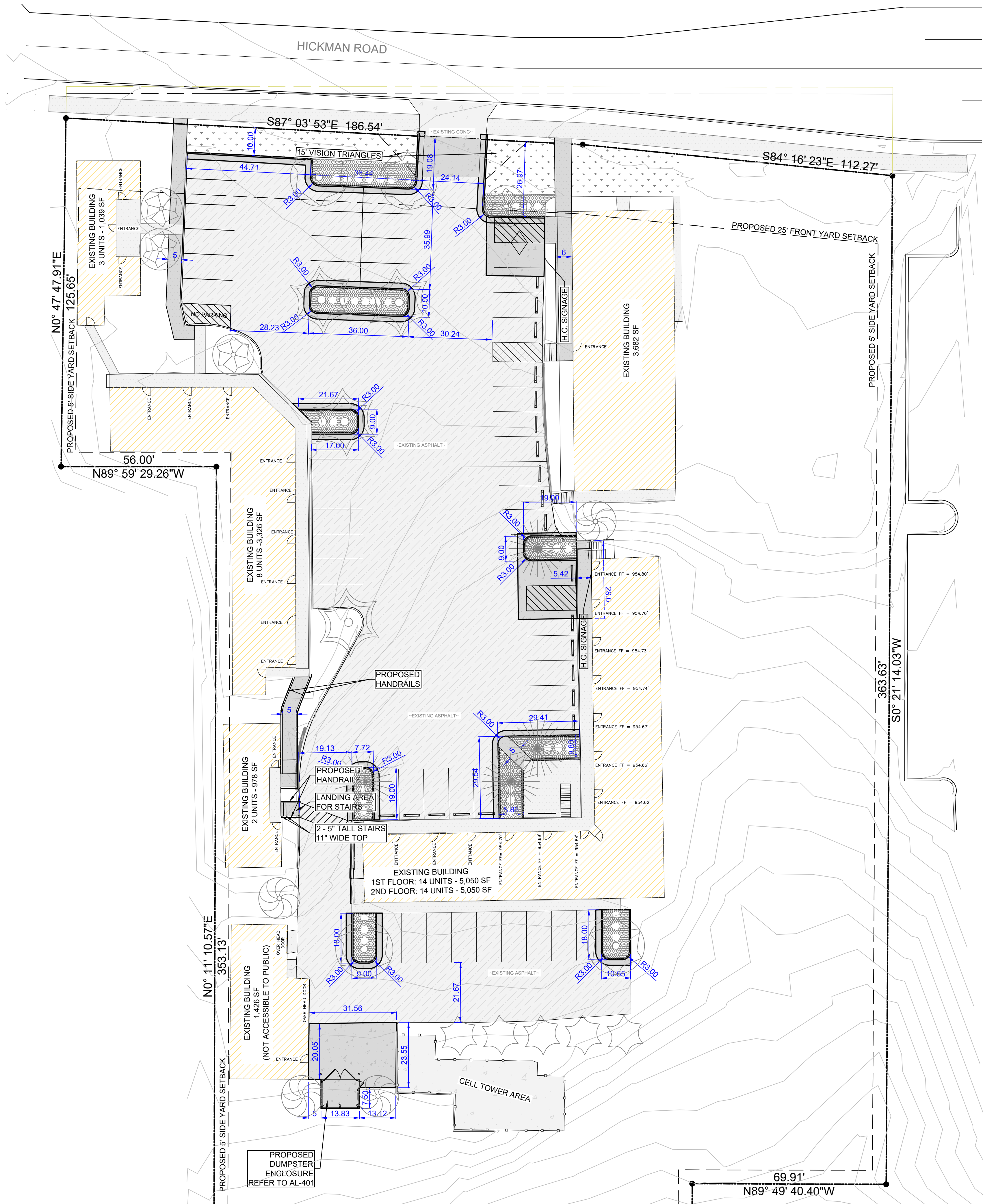
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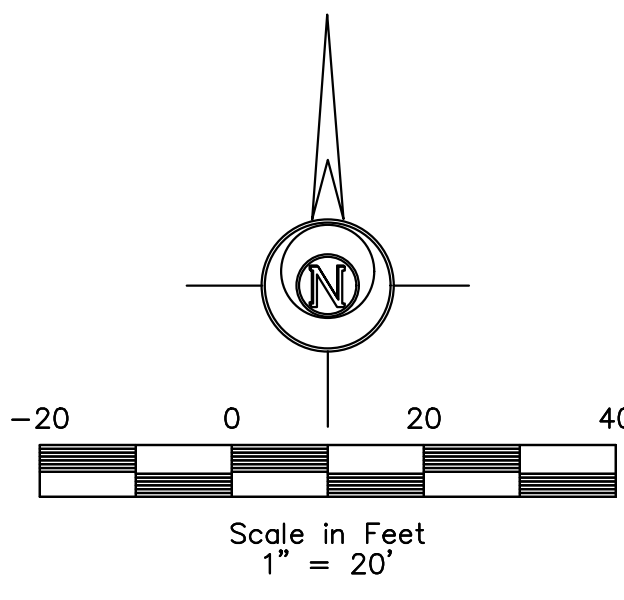
REVISIONS: 1. 01.29.2025 24-068

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C-101 - LAYOUT SHEET



- PROPOSED 6" P.C.C. (3,544 SQ. FT.)
- PROPOSED SOD/SEED (1,928 SQ. FT.)
- PROPOSED 4" CONCRETE SIDEWALK (1,362 SQ. FT.)
- EXISTING ASPHALT (24,850 SQ. FT.)
- EXISTING CONCRETE
- EXISTING CONCRETE SIDEWALKS
- EXISTING BUILDING



LEGEND:

+/-

F.F.

123.45G

123.45TC

123.45/123.45

FL

MORE OR LESS FINISHED FLOOR

GUTTER ELEVATION

TOP OF CURB ELEVATION

EXISTING/ PROPOSED ELEVATION

FLOWLINE ELEVATION

CONTROL POINT

CALCULATED CORNER

FOUND CORNER

CALCULATED SECTION CORNER

FOUND SECTION CORNER

PARKING SPACE

SIGN

STREET LIGHT

POWER POLE

LIGHT POLE

AREA LIGHT

GUY ANCHOR

TEL. JUNCTION BOX

ELEC. TRANSFORMER

ELEC. METER

ELEC. BOX

ELEC. VAULT

FIBER OPTIC VAULT

GAS METER

CABLE TV JUNCTION BOX

WATER METER

ELEC. MANHOLE

SANITARY SEWER MANHOLE

STORM SEWER MANHOLE

TRAFFIC MANHOLE

CLEANOUT

DOWNSPOUT

AREA INTAKE

SINGLE INTAKE

THROAT INTAKE

FLARED END SECTION

GAS VALVE

FIRE HYDRANT

WATER VALVE

PROPOSED UTILITY LINE

EXISTING UTILITY LINE

CABLE TELEVISION

FIBER OPTIC

GAS LINE

OVERHEAD ELEC.

OVERHEAD TEL.

SANITARY SEWER

STORM SEWER

UNDERGROUND ELEC.

UNDERGROUND TEL.

WATER

FENCE LINE

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TITLE:

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6500 HICKMAN ROAD
WINDSOR HEIGHTS, IOWA

BENCHMARK:

DATE:

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SCALE:

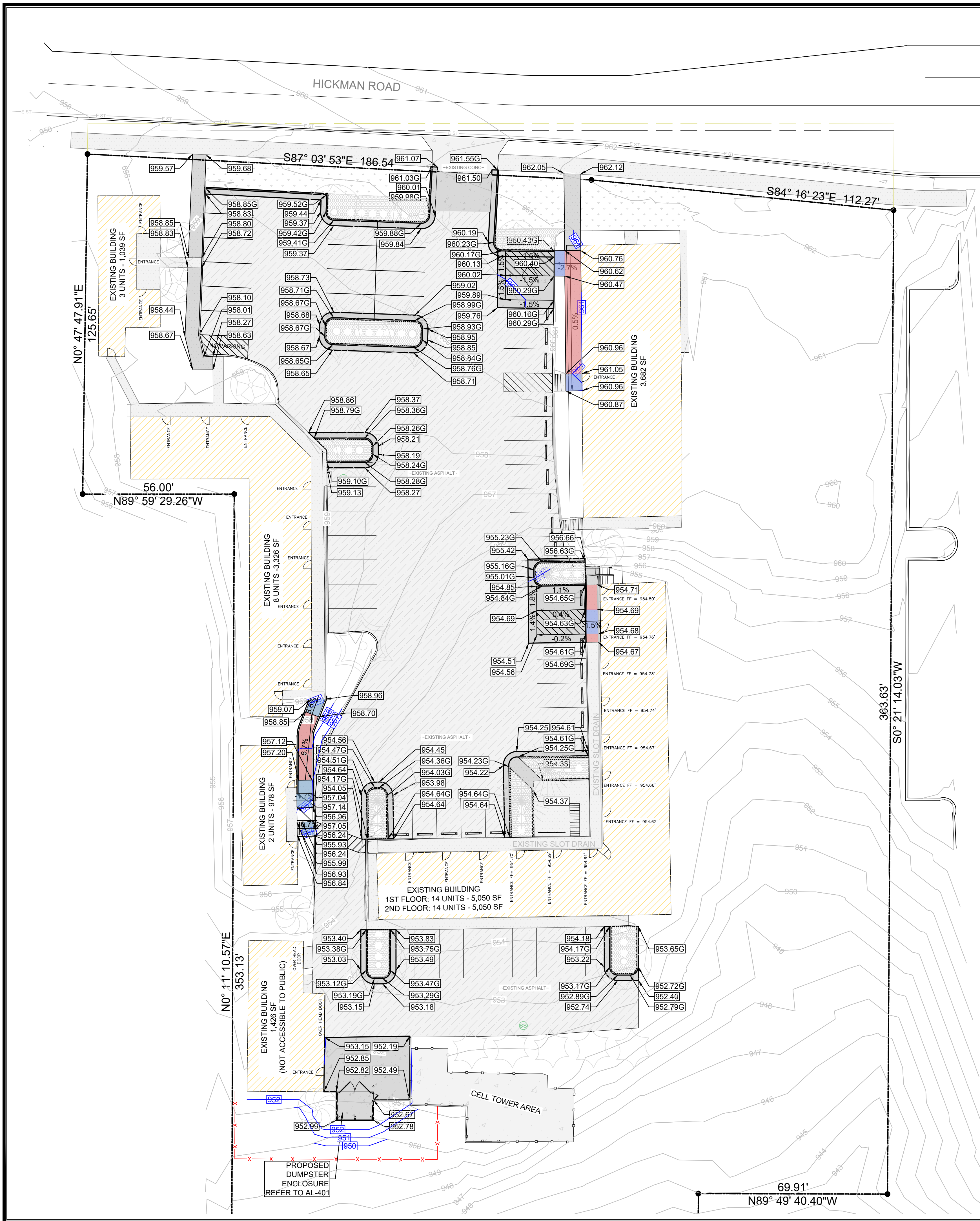
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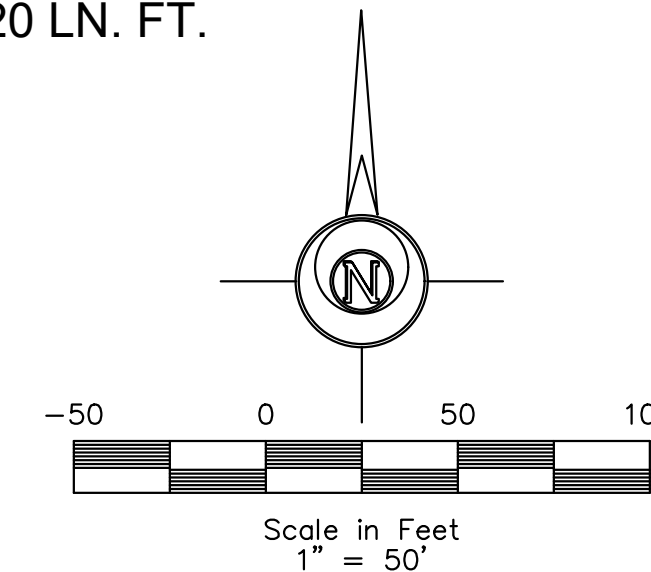
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24-068

C-103 - DIMENSION SHEET



- PROPOSED 6" P.C.C. (3,544 SQ. FT.)
- PROPOSED SOD/SEED (1,928 SQ. FT.)
- PROPOSED 4" CONCRETE SIDEWALK (1,362 SQ. FT.)
- EXISTING ASPHALT (24,850 SQ. FT.)
- EXISTING CONCRETE
- EXISTING CONCRETE SIDEWALKS
- EXISTING BUILDING
- SIDEWALK LANDING
- SIDEWALK RAMP
- FILTER SOCK 120 LN. FT.



LEGEND:

- | | | | |
|---------------|-----------------------------|---|----------------------------|
| +/- | MORE OR LESS | ⊙ | ELEC. MANHOLE |
| F.F. | FINISHED FLOOR | ⊙ | SANITARY SEWER MANHOLE |
| 123.45G | GUTTER ELEVATION | ⊙ | STORM SEWER MANHOLE |
| 123.45TC | TOP OF CURB ELEVATION | ⊙ | TRAFFIC MANHOLE |
| 123.45/123.45 | EXISTING/PROPOSED ELEVATION | ⊙ | CLEANOUT |
| FL | FLOWLINE ELEVATION | ⊙ | DOWNSPOUT |
| ⊙ | CONTROL POINT | ⊙ | AREA INTAKE |
| ⊙ | CALCULATED CORNER | ⊙ | SINGLE INTAKE |
| ● | FOUND CORNER | ⊙ | THROAT INTAKE |
| ⊙ | CALCULATED SECTION CORNER | ⊙ | FLARED END SECTION |
| ⊙ | FOUND SECTION CORNER | ⊙ | GAS VALVE |
| ⊙ | PARKING SPACE | ⊙ | FIRE HYDRANT |
| ⊙ | SIGN | ⊙ | WATER VALVE |
| ⊙ | STREET LIGHT | ⊙ | P XX—PROPOSED UTILITY LINE |
| ⊙ | POWER POLE | ⊙ | E XX—EXISTING UTILITY LINE |
| ⊙ | LIGHT POLE | ⊙ | CATV—CABLE TELEVISION |
| ⊙ | AREA LIGHT | ⊙ | FO—FIBER OPTIC |
| ⊙ | GUY ANCHOR | ⊙ | GAS—GAS LINE |
| ⊙ | UTILITY PEDESTAL | ⊙ | OHE—OVERHEAD ELEC. |
| ⊙ | ELEC. TRANSFORMER | ⊙ | OHT—OVERHEAD TEL. |
| ⊙ | ELEC. METER | ⊙ | SAN—SANITARY SEWER |
| ⊙ | ELEC. BOX | ⊙ | ST—STORM SEWER |
| ⊙ | ELEC. VAULT | ⊙ | UGE—UNDERGROUND ELEC. |
| ⊙ | FIBER OPTIC VAULT | ⊙ | UGT—UNDERGROUND TEL. |
| ⊙ | GAS METER | ⊙ | W—WATER |
| ⊙ | CABLE TV JUNCTION BOX | ⊙ | — FENCE LINE |
| ⊙ | WATER METER | | |



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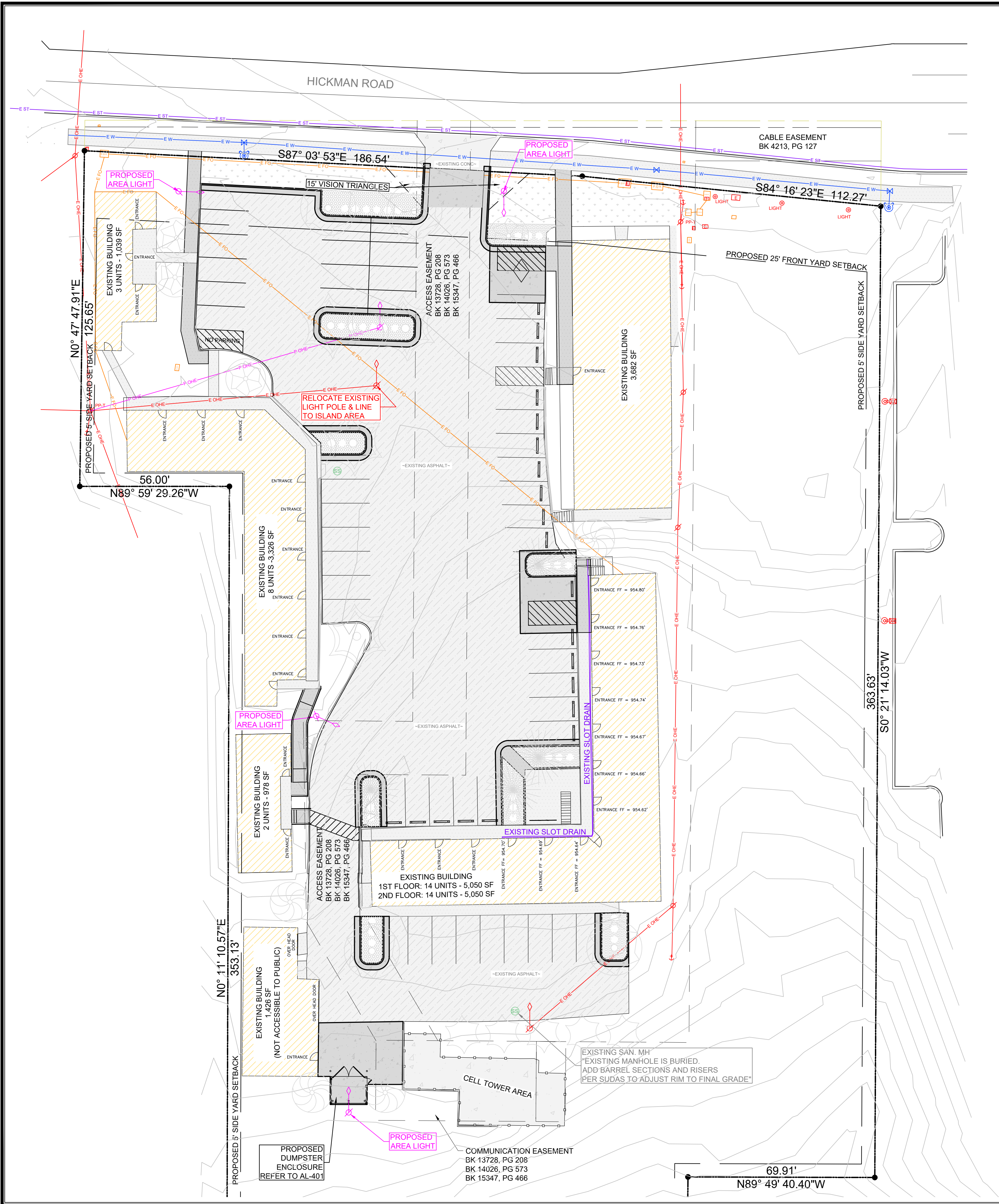
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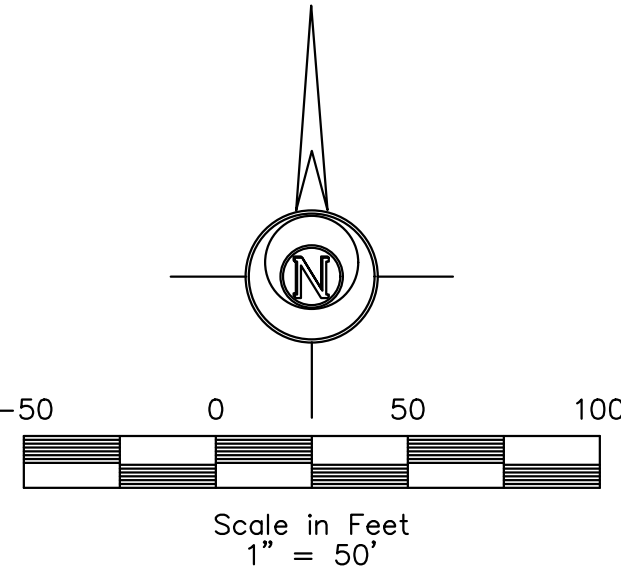
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C-201 - GRADING SHEET



UTILITY NOTES:
NOT ALL UTILITIES COULD BE LOCATED AT THE TIME OF SURVEY.
CONTRACTORS TO LOCATE ALL UTILITIES PRIOR TO ANY WORK BEING DONE.

- PROPOSED 6" P.C.C. (3,544 SQ. FT.)
- PROPOSED SOD/SEED (1,928 SQ. FT.)
- PROPOSED 4" CONCRETE SIDEWALK (1,362 SQ. FT.)
- EXISTING ASPHALT (24,850 SQ. FT.)
- EXISTING CONCRETE
- EXISTING CONCRETE SIDEWALKS
- EXISTING BUILDING



LEGEND:

- | | | | |
|---------------|-----------------------------|---|------------------------------|
| +/- | MORE OR LESS | ⊙ | ELEC. MANHOLE |
| F.F. | FINISHED FLOOR | ⊙ | SANITARY SEWER MANHOLE |
| 123.45G | GUTTER ELEVATION | ⊙ | STORM SEWER MANHOLE |
| 123.45TC | TOP OF CURB ELEVATION | ⊙ | TRAFFIC MANHOLE |
| 123.45/123.45 | EXISTING/PROPOSED ELEVATION | ⊙ | CLEANOUT |
| FL | FLOWLINE ELEVATION | ⊙ | DOWNSPOUT |
| ⊙ | CONTROL POINT | ⊙ | AREA INTAKE |
| ⊙ | CALCULATED CORNER | ⊙ | SINGLE INTAKE |
| ● | FOUND CORNER | ⊙ | THROAT INTAKE |
| ⊙ | CALCULATED SECTION CORNER | ⊙ | FLARED END SECTION |
| ⊙ | FOUND SECTION CORNER | ⊙ | GAS VALVE |
| ⊙ | PARKING SPACE | ⊙ | FIRE HYDRANT |
| ⊙ | SIGN | ⊙ | WATER VALVE |
| ⊙ | STREET LIGHT | ⊙ | P XX — PROPOSED UTILITY LINE |
| ⊙ | POWER POLE | ⊙ | E XX — EXISTING UTILITY LINE |
| ⊙ | LIGHT POLE | ⊙ | CATV — CABLE TELEVISION |
| ⊙ | AREA LIGHT | ⊙ | FO — FIBER OPTIC |
| ⊙ | GUY ANCHOR | ⊙ | GAS — GAS LINE |
| ⊙ | UTILITY PEDESTAL | ⊙ | OHE — OVERHEAD ELEC. |
| ⊙ | ELEC. TRANSFORMER | ⊙ | OHT — OVERHEAD TEL. |
| ⊙ | ELEC. METER | ⊙ | SAN — SANITARY SEWER |
| ⊙ | ELEC. BOX | ⊙ | ST — STORM SEWER |
| ⊙ | ELEC. VAULT | ⊙ | UGE — UNDERGROUND ELEC. |
| ⊙ | FIBER OPTIC VAULT | ⊙ | UGT — UNDERGROUND TEL. |
| ⊙ | GAS METER | ⊙ | W — WATER |
| ⊙ | CABLE TV JUNCTION BOX | ⊙ | — — — — — FENCE LINE |
| ⊙ | WATER METER | | |

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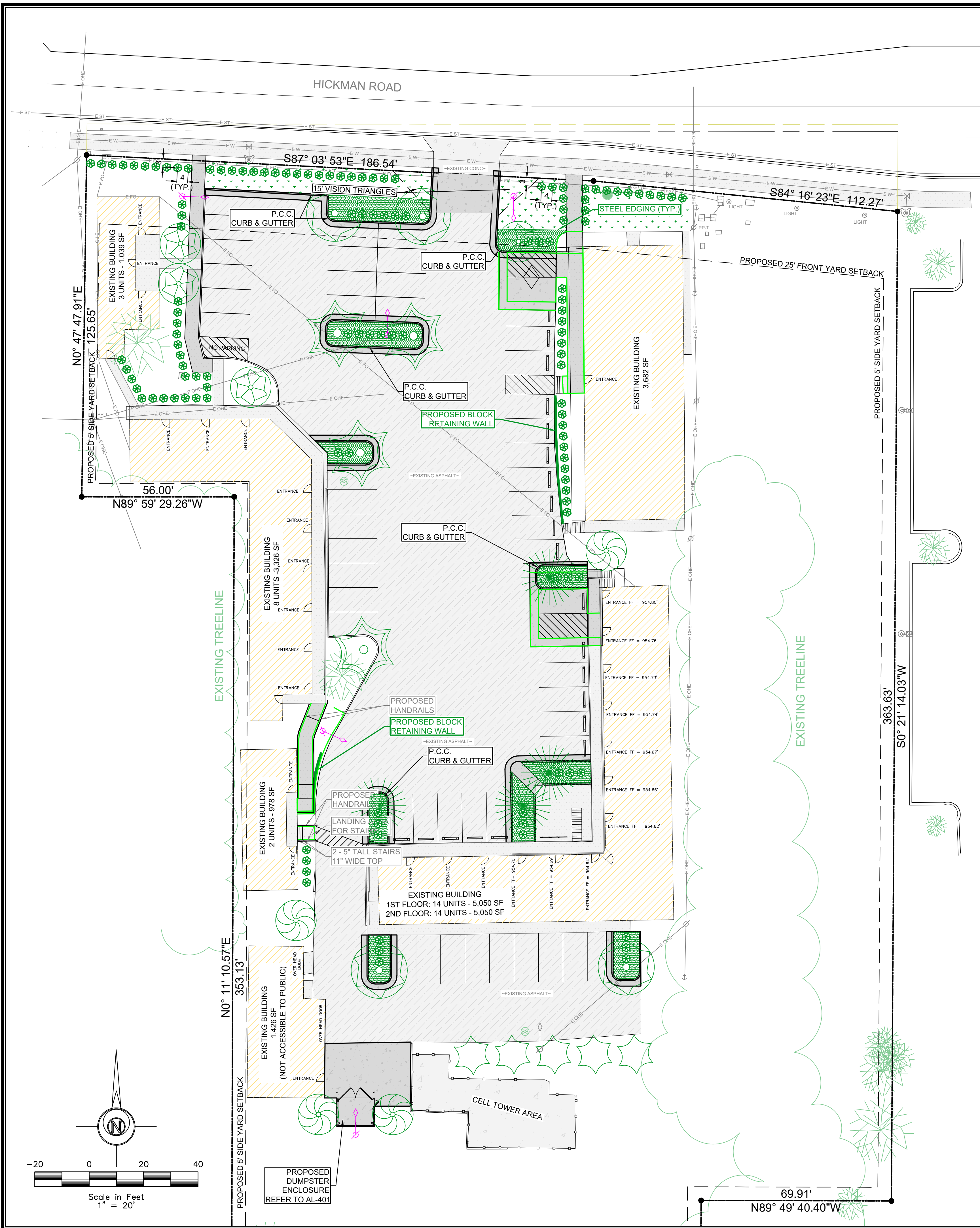
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C-301 - UTILITY SHEET



LANDSCAPING REQUIREMENTS:

LANDSCAPING SHALL BE REQUIRED ADJACENT TO EACH STREET PROPERTY LINE AND WITHIN STREET YARDS AS FOLLOWS:

REQUIRED: 1 TREE PER 2,000 SQ. FT. OF PERVIOUS AREA = 25 TREES
PROVIDED: 16 TREES

REQUIRED: 5 SHRUBS PER 2,000 SQ. FT. OF PERVIOUS AREA = 127 SHRUBS
PROVIDED: 73 SHRUBS

ALL AREAS WITHOUT BUILDINGS, PAVING, OR HARD SURFACES SHALL BE LANDSCAPED WITH GRASS OR CONTINUOUS PLANT BEDS CONTAINING SHRUBS AND FLOWERING PERENNIALS.

SCREENING STANDARDS OF DUMPSTER AND RECYCLING AREAS:

SCREENING IS REQUIRED TO REDUCE THE VISIBILITY OF DUMPSTER ENCLOSURES AND RECYCLING AREAS IN R-3 ZONING.

A SIX-FOOT OPAQUE BARRIER SHALL BE PROVIDED WHICH VISUALLY SCREENS THE AREA.

- A. A SOLID WOOD AND/OR MASONRY FENCE OR WALL AT LEAST 6 FEET IN HEIGHT.
- B. MUST ENCLOSE THE AREA AROUND AT LEAST THREE SIDES.
- C. CONTAIN A PEDESTRIAN ENTRANCE
- D. HAVE AN ACCESS GATE THAT MEETS METRO WASTE AUTHORITY STANDARDS.

IF THE AREA IS LOCATED WITHIN A LARGER PAVED AREA, SUCH AS A PARKING LOT, THE FOLLOWING APPLIES:

- A. A LANDSCAPE BUFFER OF AT LEAST 5 FEET SHALL BE LOCATED ALONG ALL SIDES OF THE NON-GATED SIDES.
- B. ONE TREE SHALL BE PROVIDED IN THE LANDSCAPE BUFFER.
- C. ORNAMENTAL GRASSES, SHRUBS, OR SIMILAR LANDSCAPE MATERIALS SHALL COVER A MINIMUM OF 50% OF THE BUFFER AREA.

OFF-STREET PARKING DESIGN STANDARDS:

ALL OFF-STREET PARKING AREAS SHALL INCLUDE AT LEAST 1 REQUIRED LANDSCAPE ISLAND FOR EVERY 12 REQUIRED PARKING SPACES.

- A. EACH REQUIRED LANDSCAPE ISLAND SHALL MEASURE A MINIMUM OF 190 SQUARE FEET IN AREA.
- B. EACH REQUIRED ISLAND SHALL CONTAIN A MINIMUM OF 1 DECIDUOUS SHADE TREE OR 1 DECIDUOUS ORNAMENTAL TREE.

BICYCLE PARKING REQUIREMENTS:

1 SHORT TERM SPACE REQUIRED PER 4 DWELLING UNITS.
10 SHORT TERM SPACES REQUIRED

1 LONG TERM SPACE REQUIRED PER 10 DWELLING UNITS.
4 LONG TERM SPACES REQUIRED

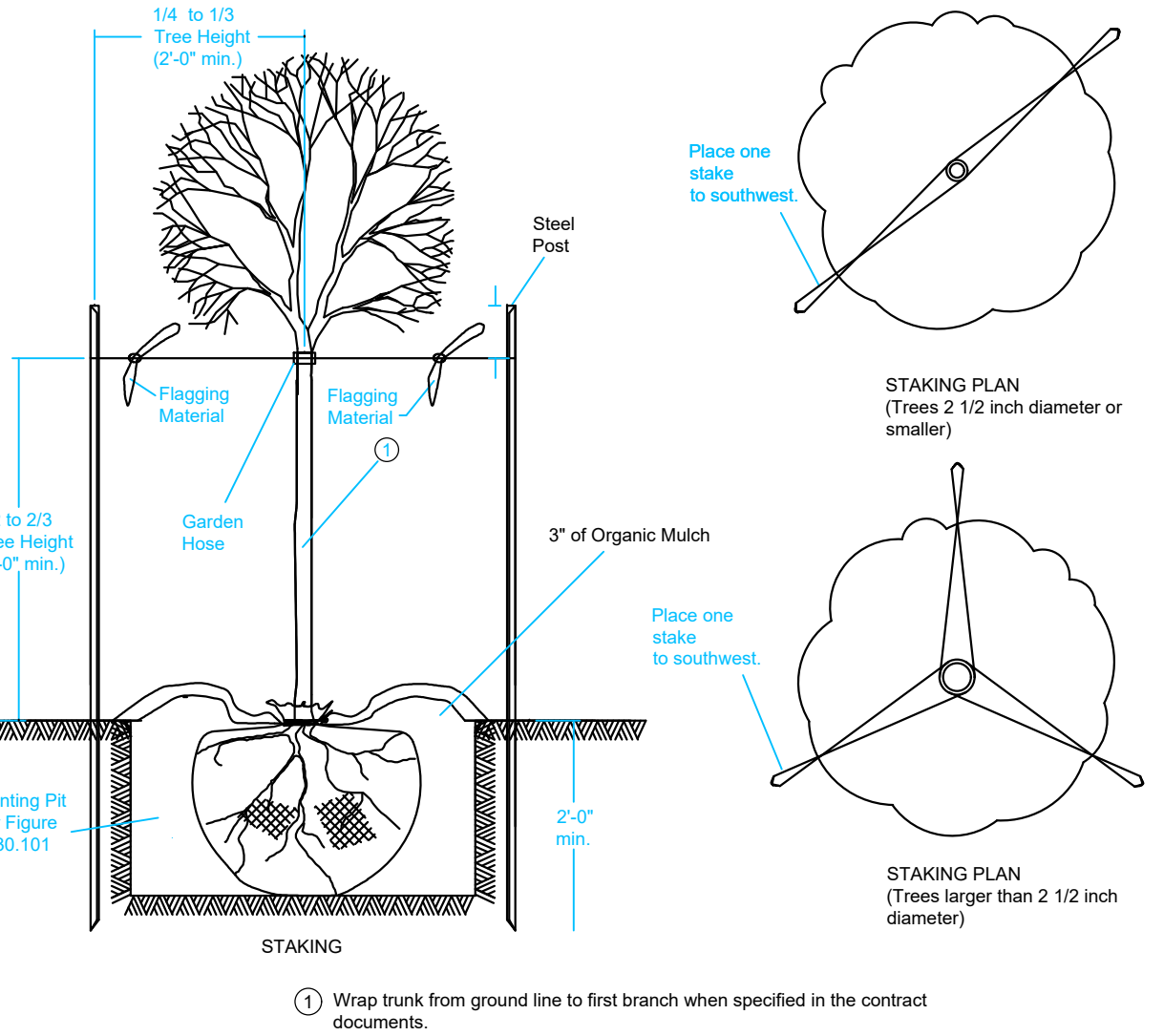
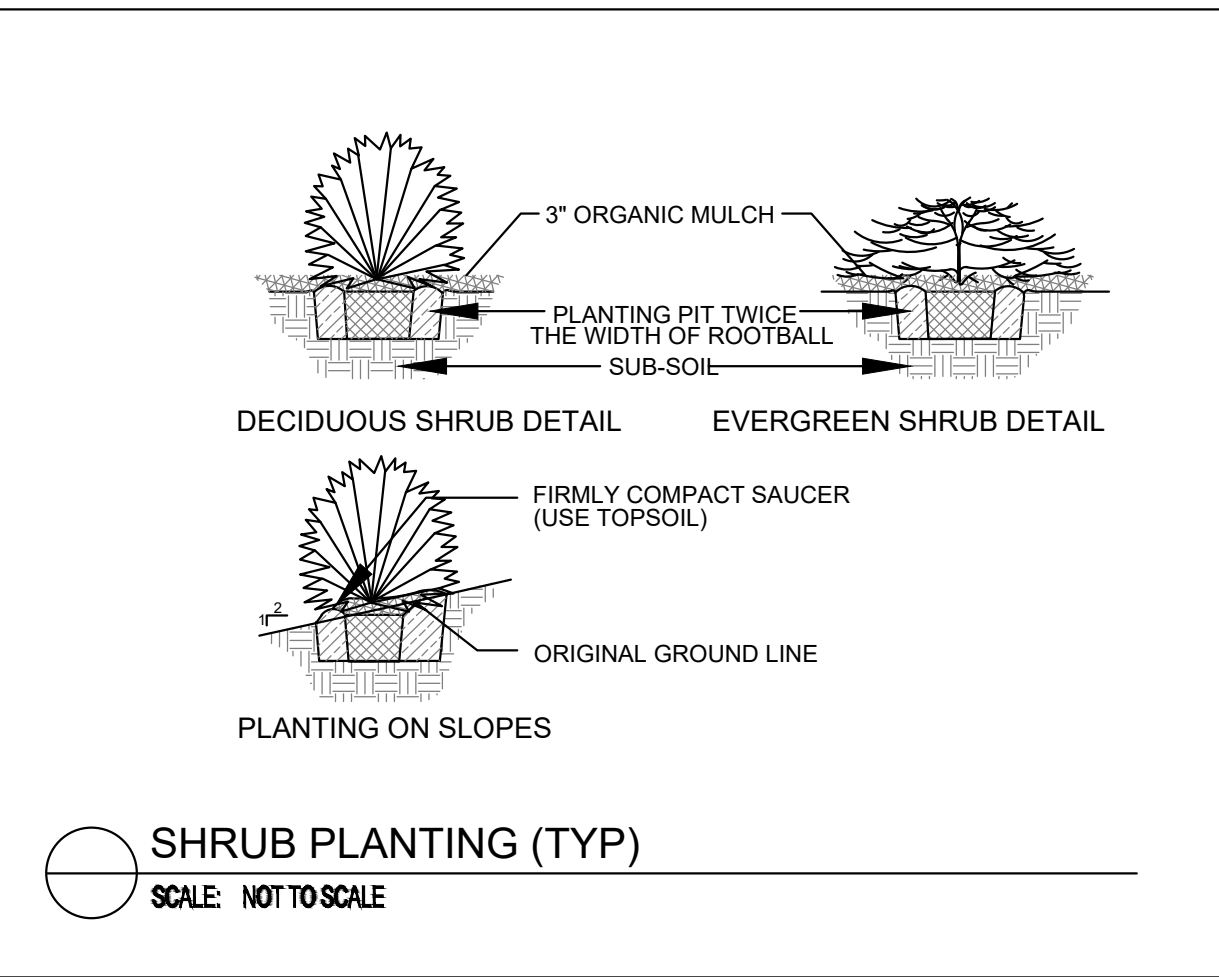
TOTAL NUMBER OF UNITS: 41

TOTAL NUMBER OF BICYCLE PARKING PROVIDED: 15

PROPOSED LANDSCAPING:

SYMBOL	#	COMMON NAME (BOTANICAL NAME)	MINIMUM PLANTING SIZE	MATURE SIZE (HEIGHT & SPREAD)
	4	KENTUCKY COFFEE TREE (1/16 OF TOTAL OVERSTORY TREE COUNT)	2" CALIPER	20' & 15'
	4	IVORY SILK JAPANESE LILAC (1/16 OF TOTAL OVERSTORY TREE COUNT)	2" CALIPER	20' & 15'
	4	ADIRONDACK FLOWERING CRABAPPLE (1/16 OF TOTAL OVERSTORY TREE COUNT)	2" CALIPER	20' & 10'
	4	BLACKGUM (1/16 OF TOTAL OVERSTORY TREE COUNT)	2" CALIPER	20' & 15'
	4	RED MAPLE (1/16 OF TOTAL OVERSTORY TREE COUNT)	1.5-2.5" CALIPER	40' & 30'
	5	HONEYLOCUST (THORNLESS) (1/16 OF TOTAL OVERSTORY TREE COUNT)	1.5-2.5" CALIPER	30' & 30'
	127	GRO-LOW SUMAC (RHUS AROMATICA GRO-LOW)	3 GALLON	3'-5' & 3'-5'
		ENGLISH IVY GROUND COVER (HEDERA HELIX)		
		EXISTING TREE		

- PROPOSED 6" P.C.C.
(3,544 SQ. FT.)
- PROPOSED SOD/SEED
(1,928 SQ. FT.)
- PROPOSED 4" CONCRETE SIDEWALK
(1,362 SQ. FT.)
- EXISTING ASPHALT
(24,850 SQ. FT.)
- EXISTING CONCRETE
- EXISTING CONCRETE SIDEWALKS
- EXISTING BUILDING



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WINDSOR COURT APARTMENTS

6500 HICKMAN ROAD

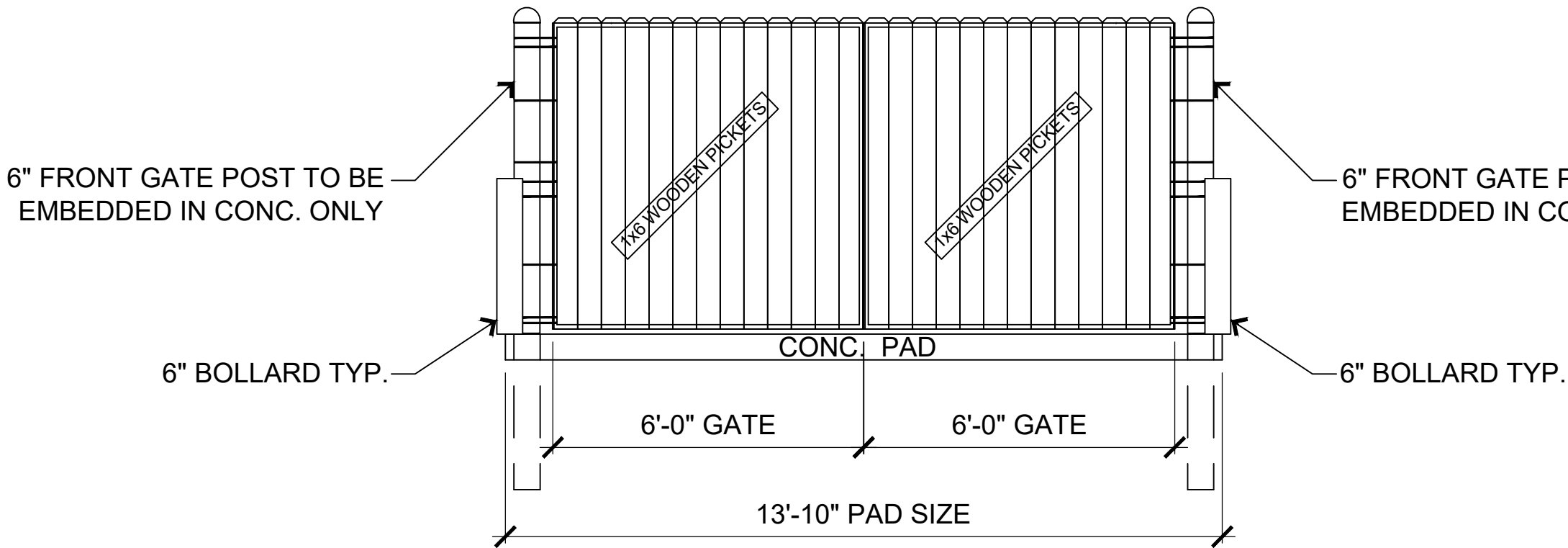
WINDSOR HEIGHTS, IOWA

PRELIMINARY

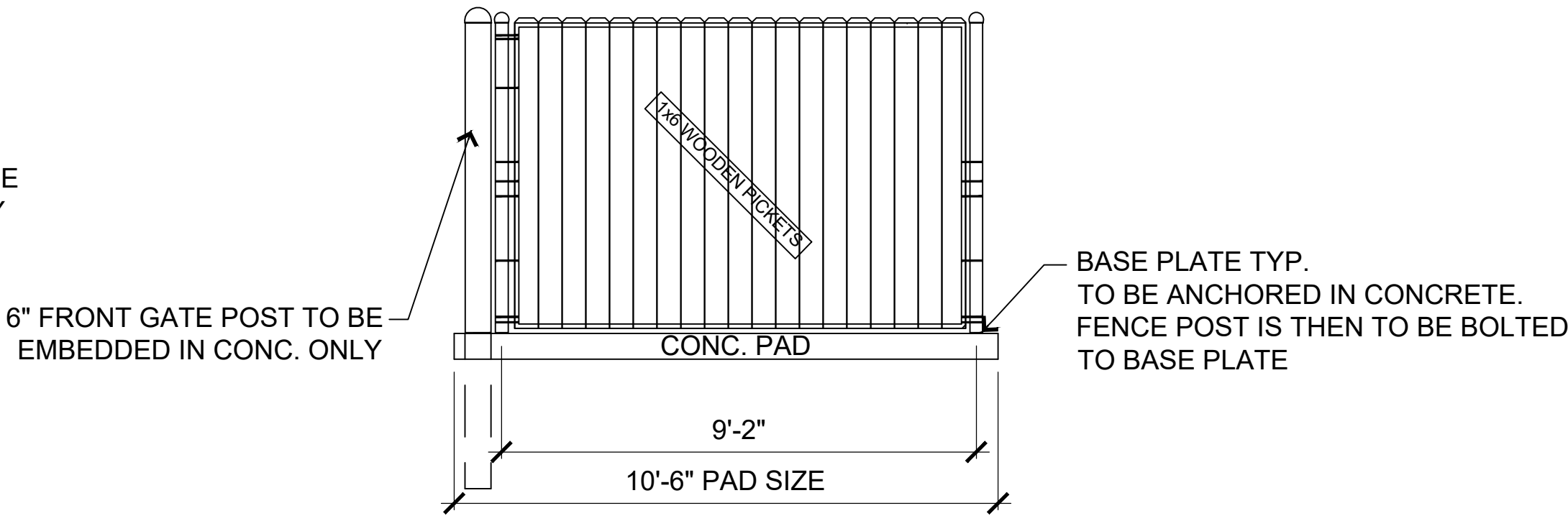
C-701 - LANDSCAPING SHEET

Construction Notes

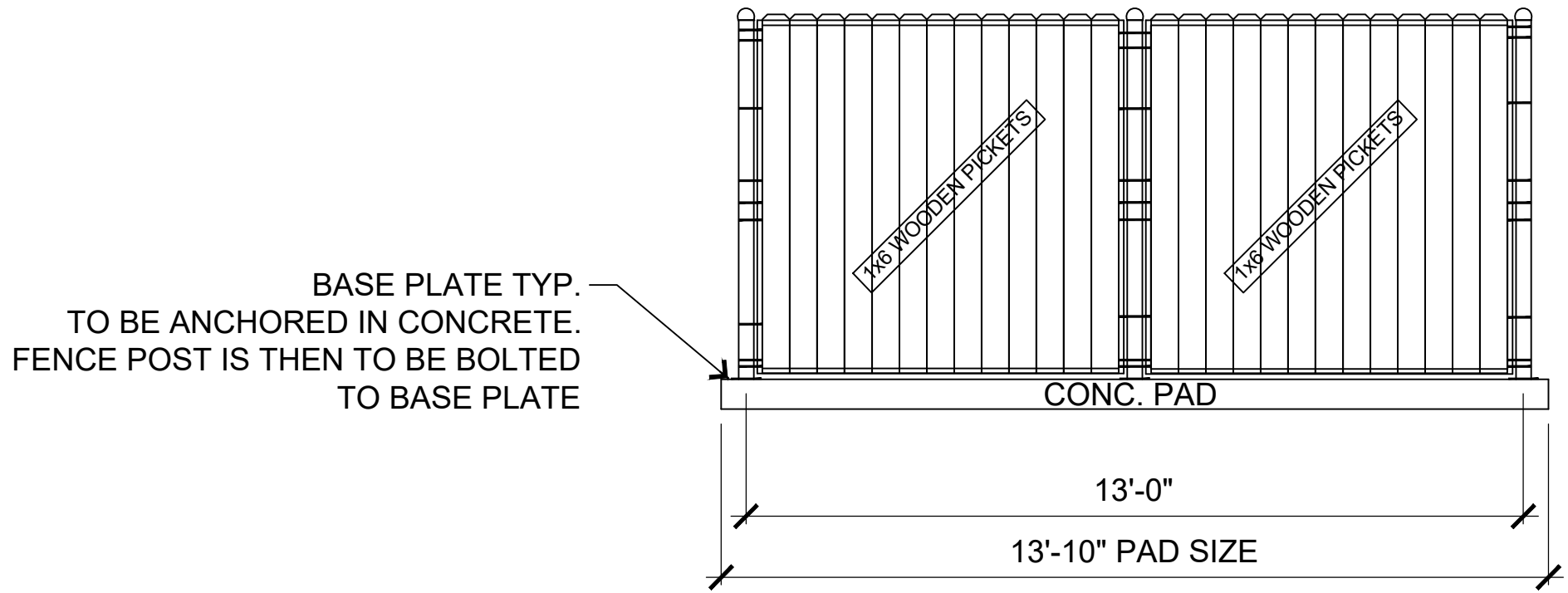
- 1) ALL DOMES ON FENCE POSTS ARE TO BE FASTENED SO THAT THEY CAN NOT BE REMOVED.
- 2) VERIFY SCREENING WITH LOCAL AUTHORITY.



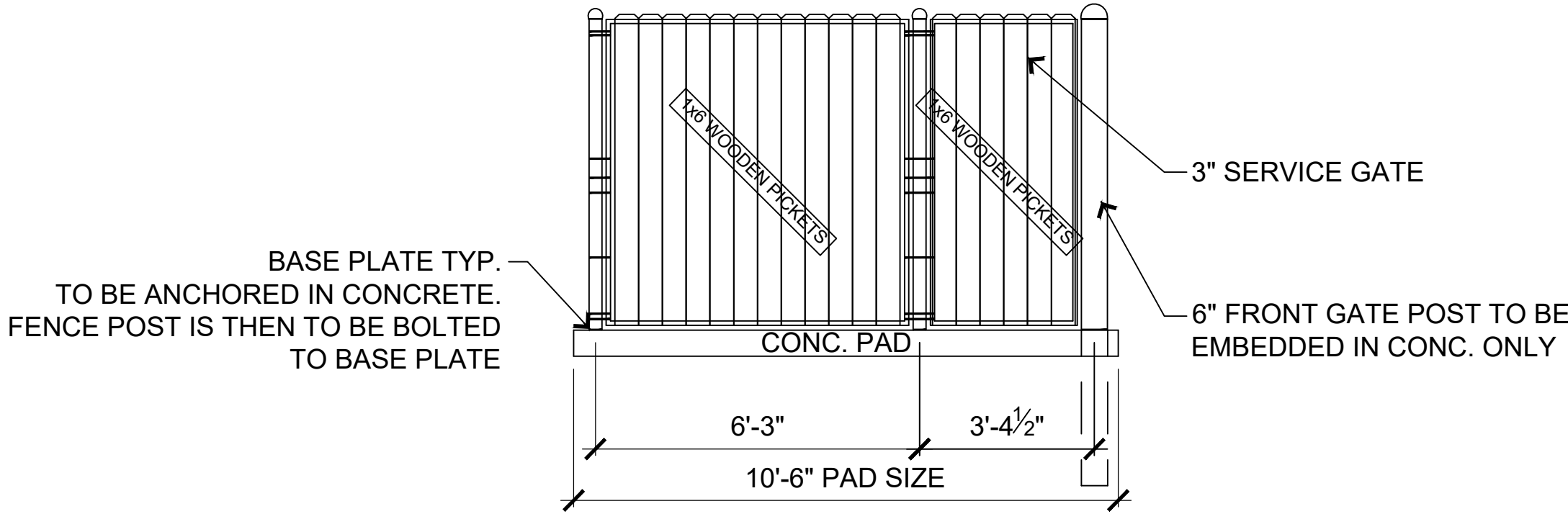
4 Dumpster Enclosure - Elevation
3/8" = 1'-0"



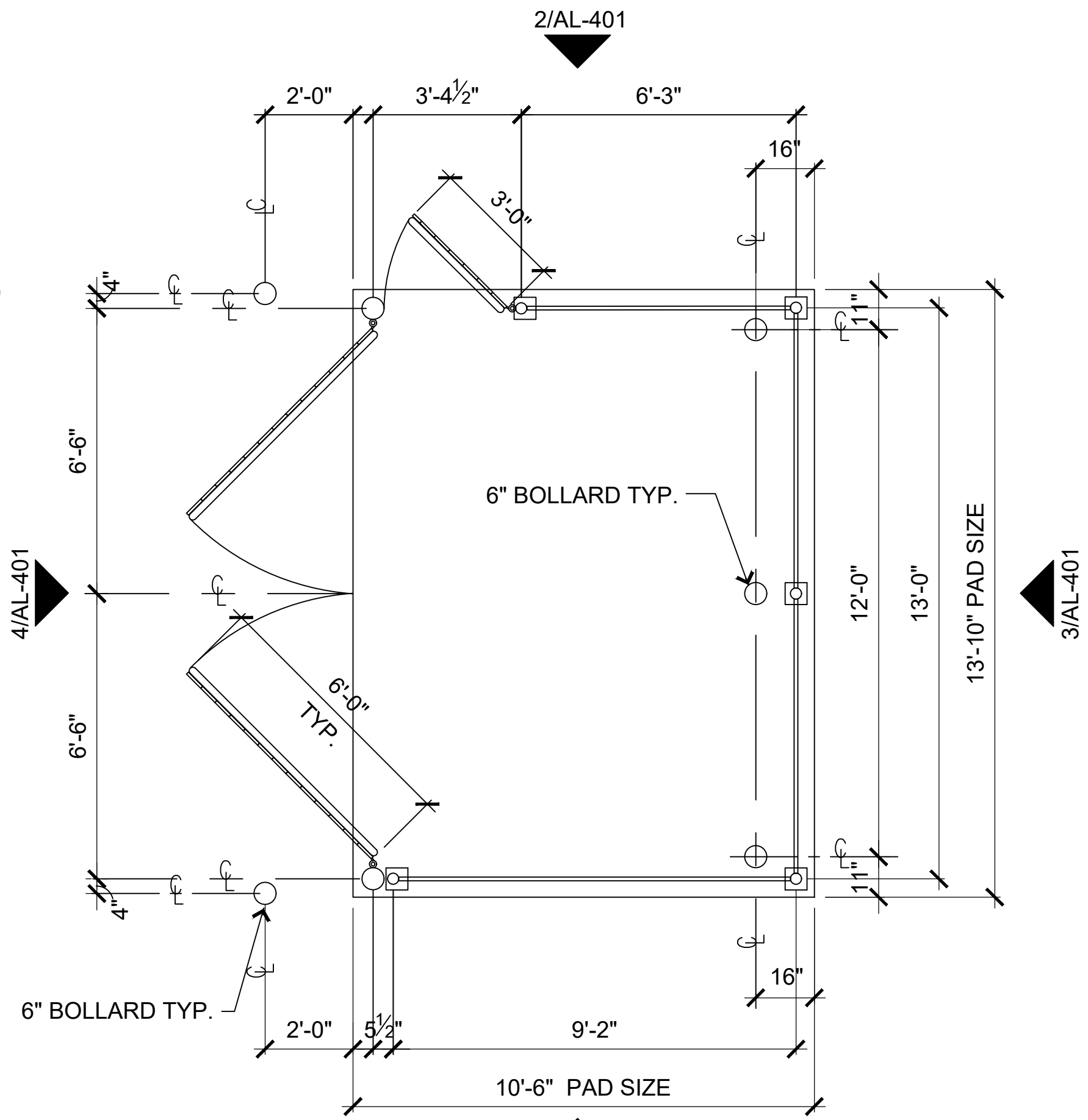
5 Dumpster Enclosure - Elevation
3/8" = 1'-0"



3 Dumpster Enclosure - Elevation
3/8" = 1'-0"



2 Dumpster Enclosure - Elevation
3/8" = 1'-0"



1 Dumpster Plan
3/8" = 1'-0"



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2323 Dixon Street, Des Moines, Iowa 50316 | PO Box 4626, Des Moines, Iowa 50305 | Ph: 515 265 8196

TITLE:

WINDSOR COURT APARTMENTS
6500 HICKMAN ROAD
WINDSOR HEIGHTS, IOWA

BENCHMARK:

REVISIONS:

COPYRIGHT DATE:

DRAWN BY:

SCALE:

LATEST REVISION:

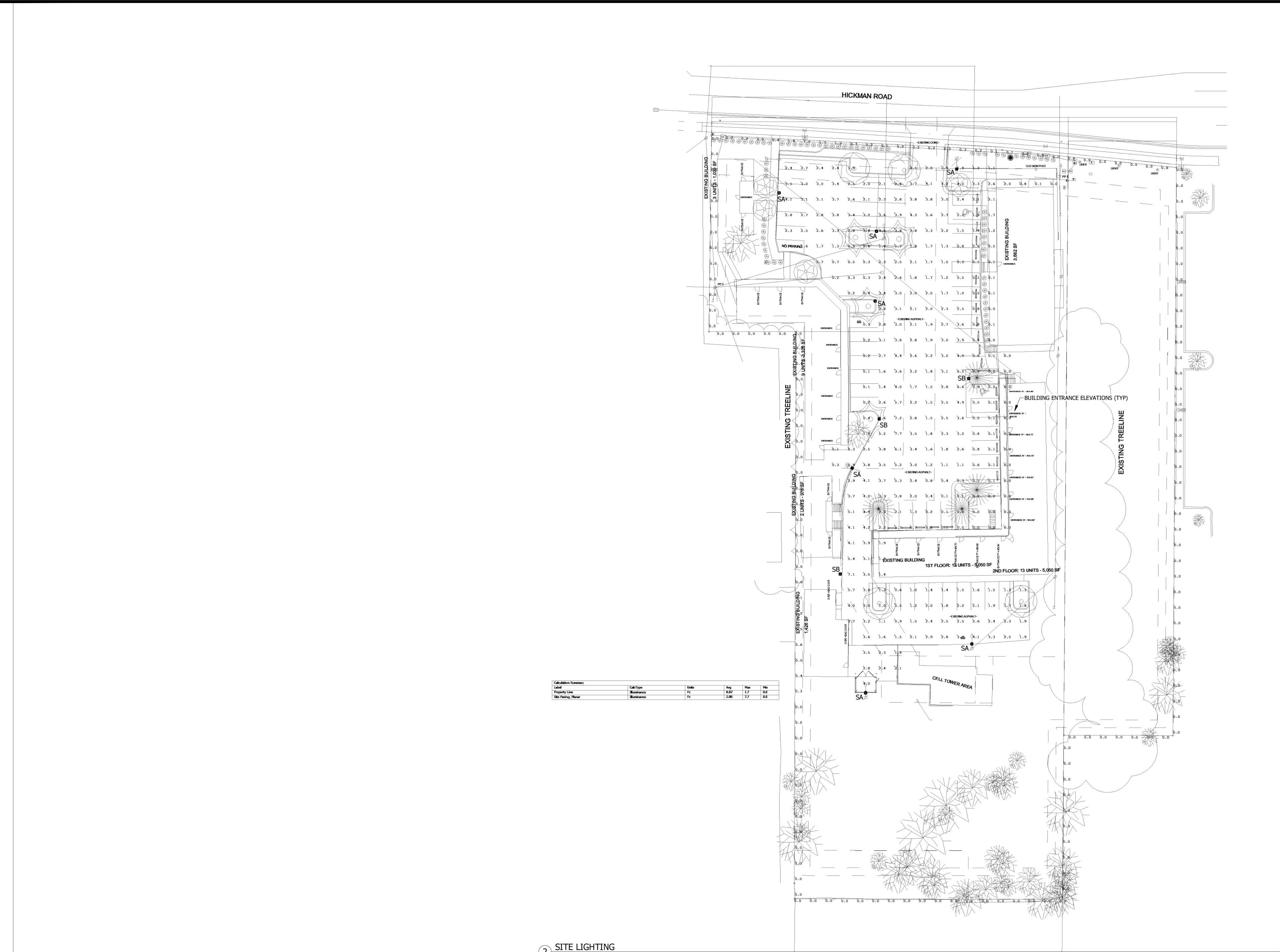
DRAWING NO:

FILE PATH:

AL-401 - DUMPSTER ENCLOSURE

12/16/2024 09:50:00 AM

34-134-6500-HICKMAN-SITE LIGHTING CALCULATIONS



2 SITE LIGHTING
No Scale

NOTE:
VERIFY BUILDING DIMENSIONS FOR ROUGH-IN
WORK WITH ARCHITECT'S DRAWINGS.

GENERAL NOTES:

1. FIXTURES USED FOR LIGHTING CALCULATIONS: NLS LIGHTING SA-NV-1-T4-32L-1-40K7-UNV-HSS, SB: NV-1-T2-32L-1-40K7-UNV-HSS. BOTH FIXTURE TYPE WERE ON A 20FT. POLE. DESIGN TEAM SHALL CONFIRM EXACT MOUNTING STYLE, FINISH COLOR, CONTROLS, AND ANY ADDITIONAL OPTIONS.
2. CIRCUITING AND ELECTRICAL DESIGN BY OTHERS.



HICKMAN SITE LIGHTING CALCULATIONS

6500 HICKMAN RD WINDSOR HEIGHTS, IA 50324

DATE	12/16/2024	VERSION	
SHEET NAME:		SITE LIGHTING CALCULATION PLAN	
SHEET:		E101	

STORM WATER MEMO

FOR

Windsor Court Apartments
6500 Hickman Road
Windsor Heights, Iowa

By:

Pelds Design Services
Tyson Prentice, EIT
2323 Dixon Street
Des Moines, IA 50316

Submitted to:

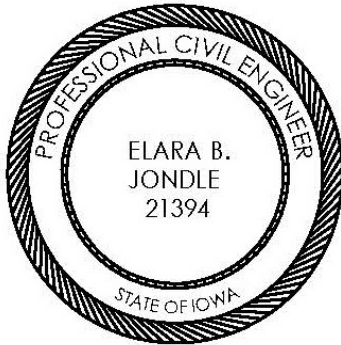
City of Des Moines
602 Robert D. Ray Dr.
Des Moines, IA 50309

August 13, 2024

Pelds Project No. 24-068



Certification Page



I HEREBY CERTIFY THAT THIS ENGINEERING DOCUMENT WAS PREPARED BY ME OR UNDER MY DIRECT PERSONAL SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF IOWA.

ELARA B JONDLE, P.E. IA. LIC. NO. 21394 DATE

MY LICENSE RENEWAL DATE IS DECEMBER 31, 2025

ADDITIONAL PAGES OR SHEETS COVERED BY THIS SEAL (NONE UNLESS INDICATED HERE): Report

I. Project Description

The purpose of this memo is to preliminarily show the feasibility of providing stormwater management for this development.

II. Summary of Project Impacts

The proposed grading and development of the site will have little to no impact on runoff volumes and peak flows as well as no change in drainage patterns for the site.

III. Pre-Project Conditions

A. Existing Conditions:

The site consists of the existing Windsor Court Iowa Hotel where the land generally slopes to the south. There are five drainage areas within this property. DA 1 includes most of the impervious area of the site. Runoff is directed south through the parking lot offsite and contains most of the grass space south of the site. DA 2 is the grass area east of the existing hotel. Runoff flows south offsite. DA 3 is the area west of the existing hotel. Runoff flows west offsite. DA 4 is the grass area at the southwest corner of the site. Runoff flows southwest offsite. DA 5 is the area of grass at the northeast corner of the site. Runoff flows southeast offsite.

Soil group data was retrieved from Web Soil Survey (WSS). Soils on the site are variously classified as HSG B soil. The allowable release rates are based on existing conditions.

Table 1. Existing Site Conditions

Parameter	Drainage Area #1	Drainage Area #2	Drainage Area #3	Drainage Area #4	Drainage Area #5
Total Site Area	1.71 acres	0.68 acres	0.16 acres	0.01 acres	0.09 acres
Open Space	0.71 acres	0.60 acres	0.08 acres	0.01 acres	0.09 acres
Impervious	1.00 acres	0.08 acres	0.08 acres	0.00 acres	0.00 acres
Weighted Curve Number*	83	65	80	61	61
Time of Concentration	5 min	5 min	5 min	5 min.	5 min.

IV. Proposed Conditions

We are proposing that a cumulative of 861 sq.ft. of landscape islands be placed at the terminus ends of parking rows. We are also planning on adding a 825 sq.ft concrete pad for a trash enclosure at the south end of the parking lot. The slope directly south of the trash enclosure has been increased to a 3:1 so, a 120 ln.ft. filter sock has been added to mitigate flow. The proposed site will have a 1% increase in open space. Runoff in DA 1 will continue to flow south offsite. DA 1 will be the only drainage area that will have any change in flow as it gains .02 acres of grass area. DA 2, DA 3, DA 4, and DA 5 will keep the same flow patterns and site conditions.

Table 2. Proposed Site Conditions

Parameter	Drainage Area #1	Drainage Area #2	Drainage Area #3	Drainage Area #4	Drainage Area #5
Total Site Area	1.71 acres	0.68 acres	0.16 acres	0.013 acres	0.09 acres
Open Space	0.73 acres	0.60 acres	0.08 acres	0.013 acres	0.09 acres
Impervious	0.98 acres	0.08 acres	0.08 acres	0.00 acres	0.00 acres
Weighted Curve Number	82	65	80	61	61
Time of Concentration	5 min.	5 min.	5 min.	5 min.	5 min.

V. Stormwater Modeling Information

Hydrology Studio was used to model runoff and route detention practices. An assumed 5-minute Time of Concentration was used.

A 24-hour Type II rainfall distribution was used for the analysis. The project is in Climatic Section 5 with rainfall depths shown in **Table 3** below. Curve numbers for the existing and proposed conditions are shown in **Table 4**. This information was found in SUDAS Tables 2B-4.03 and 2B-4.04. Curve numbers are calculated for the drainage areas in **Appendix B**.

Table 3. Design Rainfall Values

Storm Event	Rainfall
1-year	2.67
2-year	3.08
5-year	3.81
10-year	4.46
25-year	5.44
50-year	6.26
100-year	7.12

Table 4. NRCS Curve Numbers

Surface Cover	CN
Open Space	61
Paved	98

Table 5. Stormwater Compliance Review

Storm Event	Existing Release Rate (cfs)	Proposed Outflow (cfs)
1-year	4.299	4.236
2-year	5.619	5.552
5-year	8.186	8.109
10-year	10.81	10.73
25-year	15.00	14.92
50-year	18.69	18.61
100-year	22.72	22.65

Appendix A – Drainage Area Maps

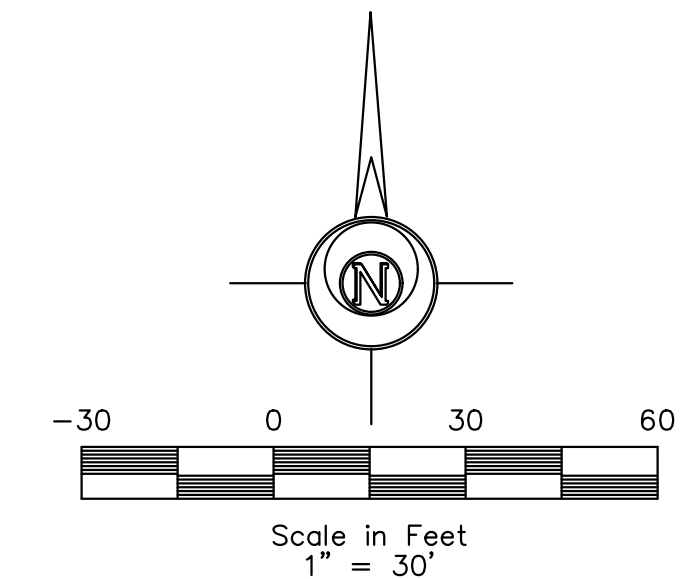
DA 3

DA 1

DA 5

DA 2

DA 4



LEGEND:

+/-	MORE OR LESS	⊙	ELEC. MANHOLE
F.F.	FINISHED FLOOR	⊙	SANITARY SEWER MANHOLE
123.45G	GUTTER ELEVATION	⊙	STORM SEWER MANHOLE
123.45TC	TOP OF CURB ELEVATION	⊙	TRAFFIC MANHOLE
123.45/123.45	EXISTING/ PROPOSED ELEVATION	⊙	CLEANOUT
FL	FLOWLINE ELEVATION	⊙	DOWNSPOUT
⊙	CONTROL POINT	⊙	AREA INTAKE
○	CALCULATED CORNER	⊙	SINGLE INTAKE
●	FOUND CORNER	⊙	THROAT INTAKE
△	CALCULATED SECTION CORNER	⊙	FLARED END SECTION
▲	FOUND SECTION CORNER	⊙	GAS VALVE
▲	PARKING SPACE	⊙	FIRE HYDRANT
⊙	SIGN	⊙	WATER VALVE
⊙	STREET LIGHT	⊙	P XX— PROPOSED UTILITY LINE
⊙	POWER POLE	⊙	E XX— EXISTING UTILITY LINE
⊙	LIGHT POLE	⊙	CATV — CABLE TELEVISION
⊙	AREA LIGHT	⊙	FO — FIBER OPTIC
⊙	GUY ANCHOR	⊙	GAS — GAS LINE
⊙	UTILITY PEDESTAL	⊙	OHE — OVERHEAD ELEC.
ET	ELEC. TRANSFORMER	⊙	OHT — OVERHEAD TEL.
EM	ELEC. METER	⊙	SS — SANITARY SEWER
EB	ELEC. BOX	⊙	ST — STORM SEWER
EV	ELEC. VAULT	⊙	UGE — UNDERGROUND ELEC.
FV	FIBER OPTIC VAULT	⊙	UGT — UNDERGROUND TEL.
GM	GAS METER	⊙	W — WATER
TV	CABLE TV JUNCTION BOX	⊙	— FENCE LINE
WM	WATER METER		

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----	T. PRENTICE	1"=30'	8.13.2024	24-068

FILE PATH: J:\2024 Projects\24-068 6500 Hickman Rd - Windsor Hts\Engineering\Storm
EXISTING DRAINAGE MAP

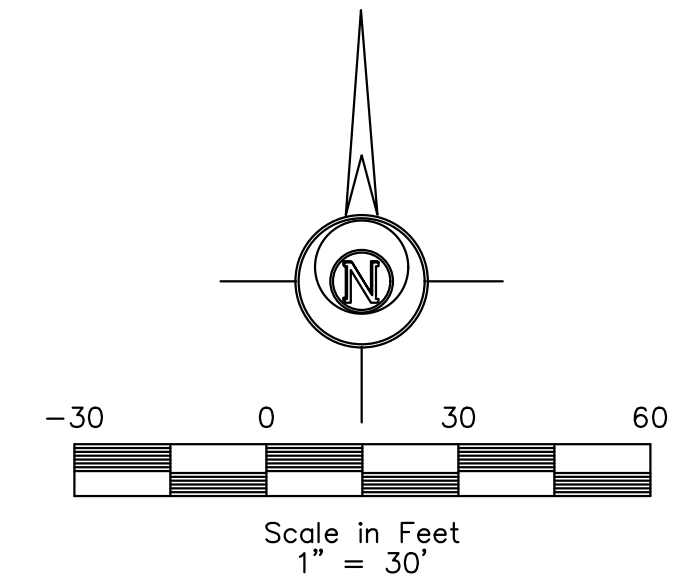
DA 3

DA 1

DA 5

DA 2

DA 4



LEGEND:

+/-	MORE OR LESS	⊙	ELEC. MANHOLE
F.F.	FINISHED FLOOR	⊙	SANITARY SEWER MANHOLE
123.45G	GUTTER ELEVATION	⊙	STORM SEWER MANHOLE
123.45TC	TOP OF CURB ELEVATION	⊙	TRAFFIC MANHOLE
123.45/123.45	EXISTING/ PROPOSED ELEVATION	⊙	CLEANOUT
FL	FLOWLINE ELEVATION	⊙	DOWNSPOUT
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⊙	GUY ANCHOR	⊙	GAS — GAS LINE
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EB	ELEC. BOX	⊙	ST — STORM SEWER
EV	ELEC. VAULT	⊙	UGE — UNDERGROUND ELEC.
FV	FIBER OPTIC VAULT	⊙	UGT — UNDERGROUND TEL.
GM	GAS METER	⊙	W — WATER
TV	CABLE TV JUNCTION BOX	⊙	— — — — — FENCE LINE
WM	WATER METER		



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PROPOSED DRAINAGE MAP

Appendix B – Hydrograph Modeling Input and Output

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Hydrology Studio v 3.0.0.31

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Hydrograph Reports

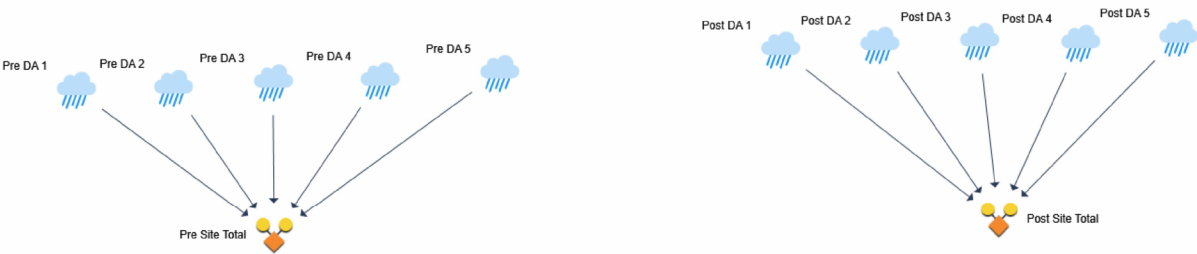
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Hydrology Studio v 3.0.0.31

08-13-2024

2

Hydrology Studio v 3.0.0.31

08-13-2024

3

Hydrograph Report

Project Name:

Hydrology Studio v 3.0.0.31

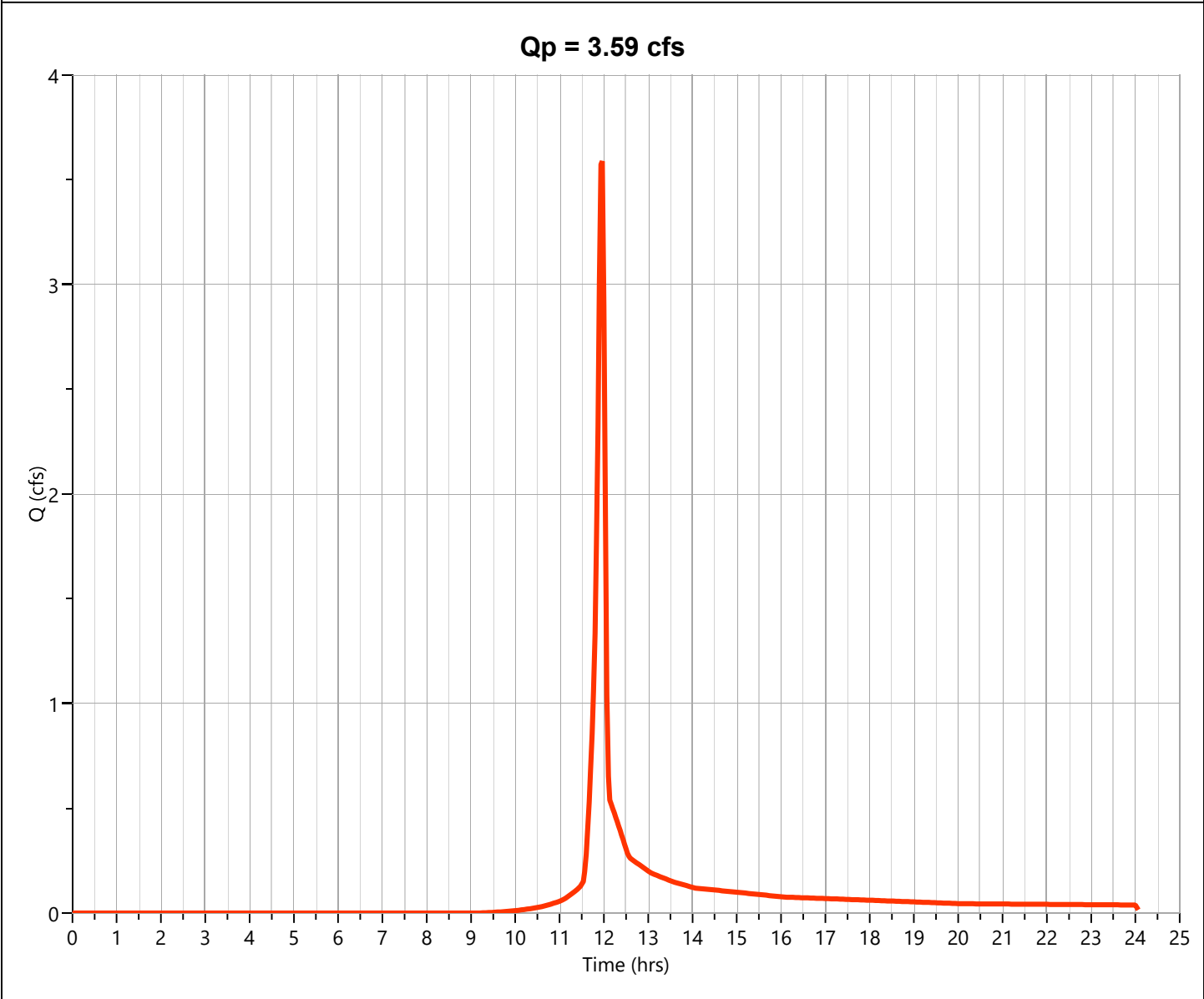
08-13-2024

Pre DA 1

Hyd. No. 1

Hydrograph Type	= NRCS Runoff	Peak Flow	= 3.588 cfs
Storm Frequency	= 1-yr	Time to Peak	= 11.97 hrs
Time Interval	= 2 min	Runoff Volume	= 7,220 cuft
Drainage Area	= 1.71 ac	Curve Number	= 82.64*
Tc Method	= User	Time of Conc. (Tc)	= 5.0 min
Total Rainfall	= 2.77 in	Design Storm	= Type II
Storm Duration	= 24 hrs	Shape Factor	= 484

* Composite CN Worksheet		
AREA (ac)	CN	DESCRIPTION
0.71	61	GRASS
1.0	98	IMP
1.71	83	Weighted CN Method Employed



Hydrograph Report

Project Name:

Hydrology Studio v 3.0.0.31

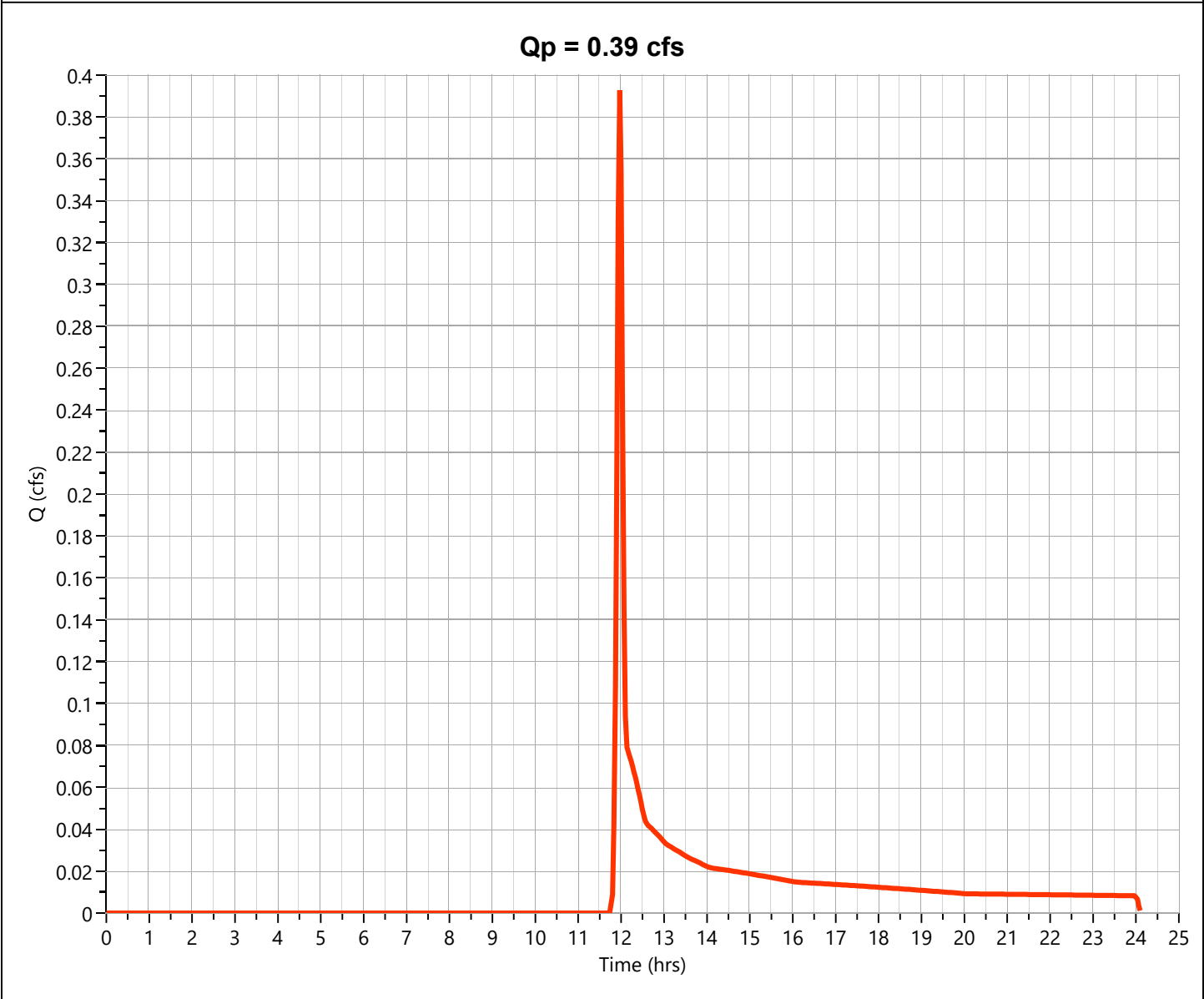
08-13-2024

Pre DA 2

Hyd. No. 2

Hydrograph Type	= NRCS Runoff	Peak Flow	= 0.393 cfs
Storm Frequency	= 1-yr	Time to Peak	= 11.97 hrs
Time Interval	= 2 min	Runoff Volume	= 931 cuft
Drainage Area	= 0.676 ac	Curve Number	= 65*
Tc Method	= User	Time of Conc. (Tc)	= 5.0 min
Total Rainfall	= 2.77 in	Design Storm	= Type II
Storm Duration	= 24 hrs	Shape Factor	= 484

* Composite CN Worksheet		
AREA (ac)	CN	DESCRIPTION
0.598	61	GRASS
0.078	98	IMP
0.676	65	Weighted CN Method Employed



Hydrograph Report

Project Name:

Hydrology Studio v 3.0.0.31

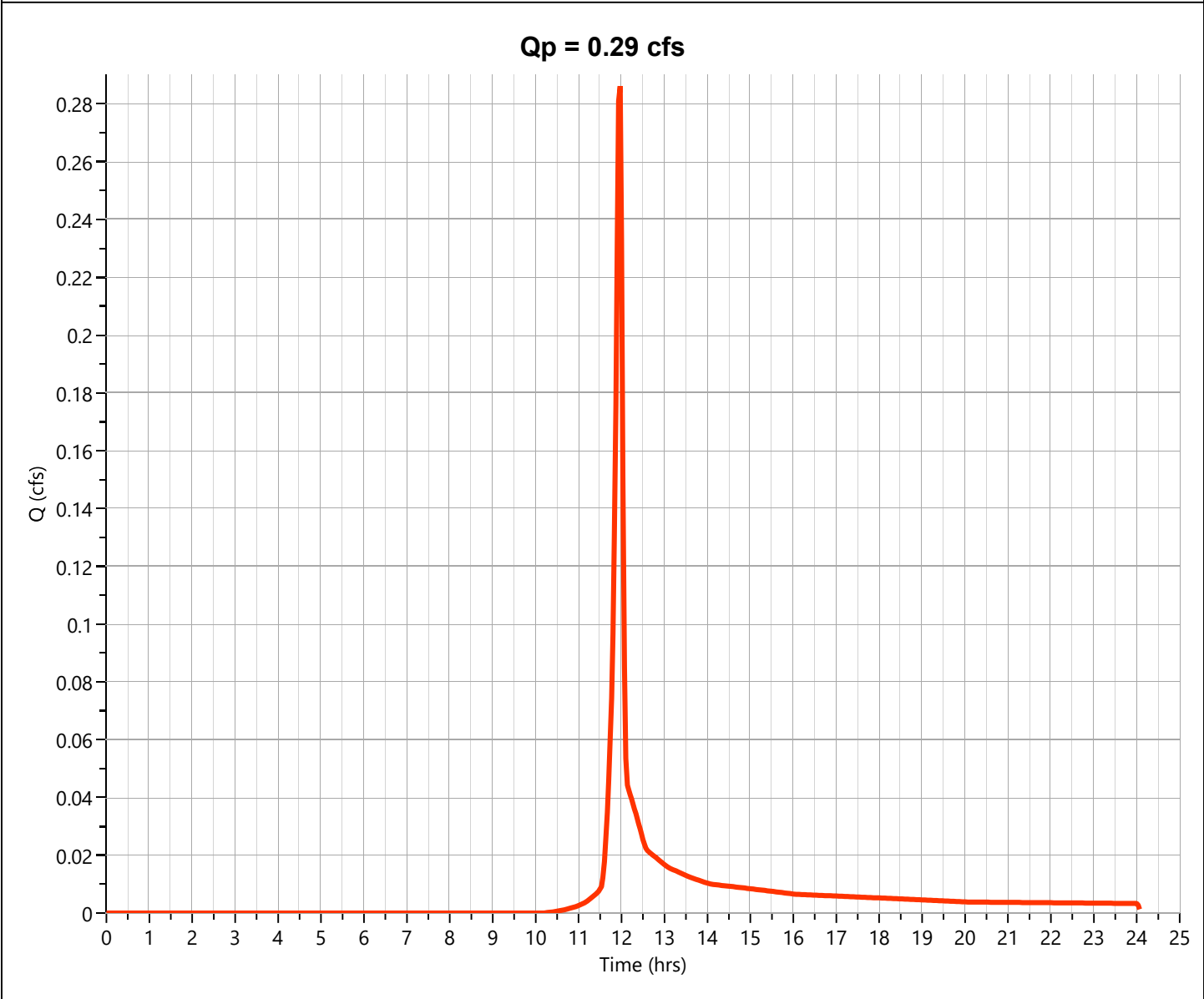
08-13-2024

Pre DA 3

Hyd. No. 3

Hydrograph Type	= NRCS Runoff	Peak Flow	= 0.286 cfs
Storm Frequency	= 1-yr	Time to Peak	= 11.97 hrs
Time Interval	= 2 min	Runoff Volume	= 573 cuft
Drainage Area	= 0.16 ac	Curve Number	= 79.5*
Tc Method	= User	Time of Conc. (Tc)	= 5.0 min
Total Rainfall	= 2.77 in	Design Storm	= Type II
Storm Duration	= 24 hrs	Shape Factor	= 484

* Composite CN Worksheet		
AREA (ac)	CN	DESCRIPTION
0.08	61	GRASS
0.08	98	IMP
0.16	80	Weighted CN Method Employed



Hydrograph Report

Project Name:

Hydrology Studio v 3.0.0.31

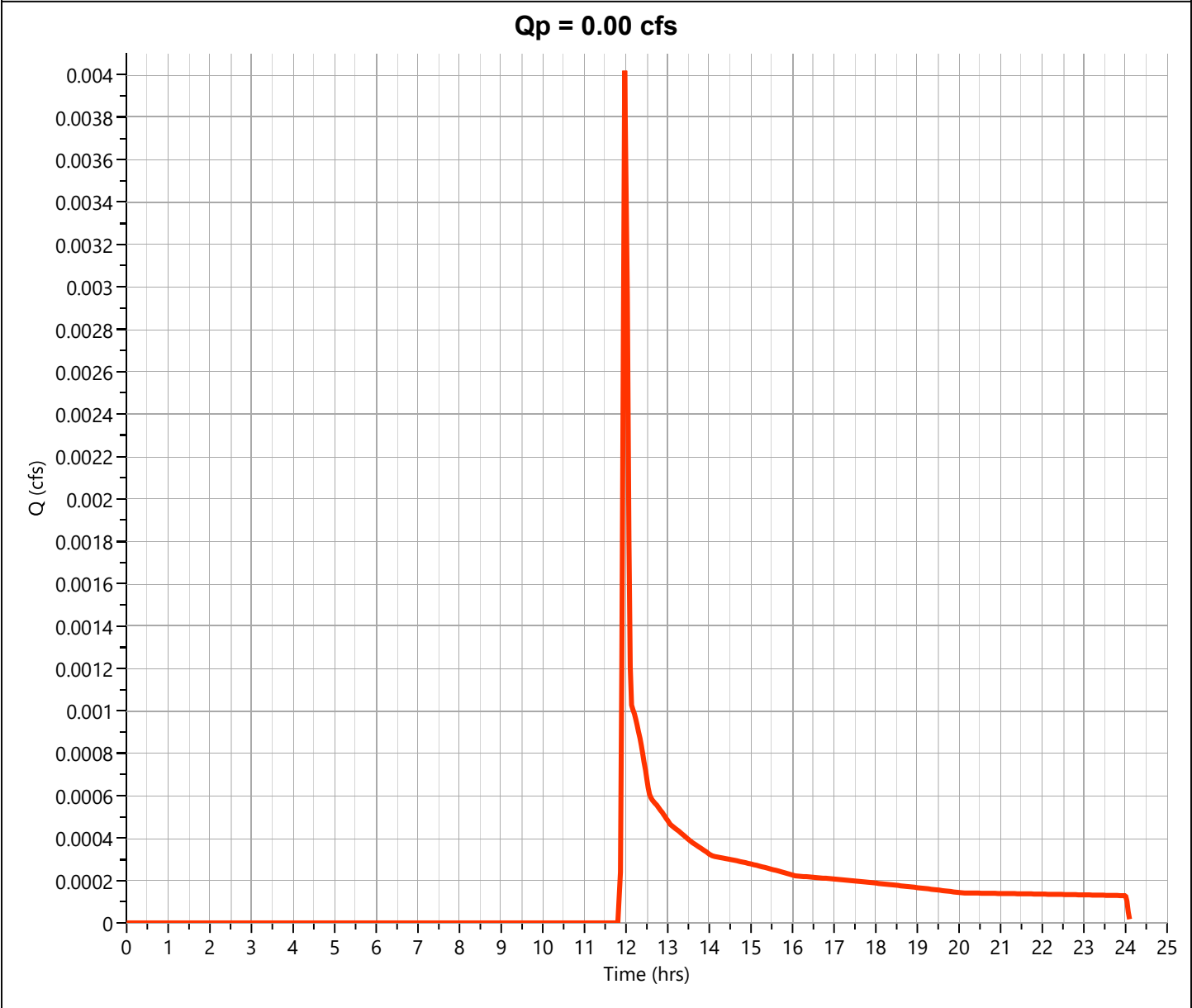
08-13-2024

Pre DA 4

Hyd. No. 4

Hydrograph Type	= NRCS Runoff	Peak Flow	= 0.004 cfs
Storm Frequency	= 1-yr	Time to Peak	= 11.97 hrs
Time Interval	= 2 min	Runoff Volume	= 12.5 cuft
Drainage Area	= 0.013 ac	Curve Number	= 61*
Tc Method	= User	Time of Conc. (Tc)	= 5.0 min
Total Rainfall	= 2.77 in	Design Storm	= Type II
Storm Duration	= 24 hrs	Shape Factor	= 484

* Composite CN Worksheet		
AREA (ac)	CN	DESCRIPTION
0.013	61	GRASS
0.013	61	Weighted CN Method Employed



Hydrograph Report

Project Name:

Hydrology Studio v 3.0.0.31

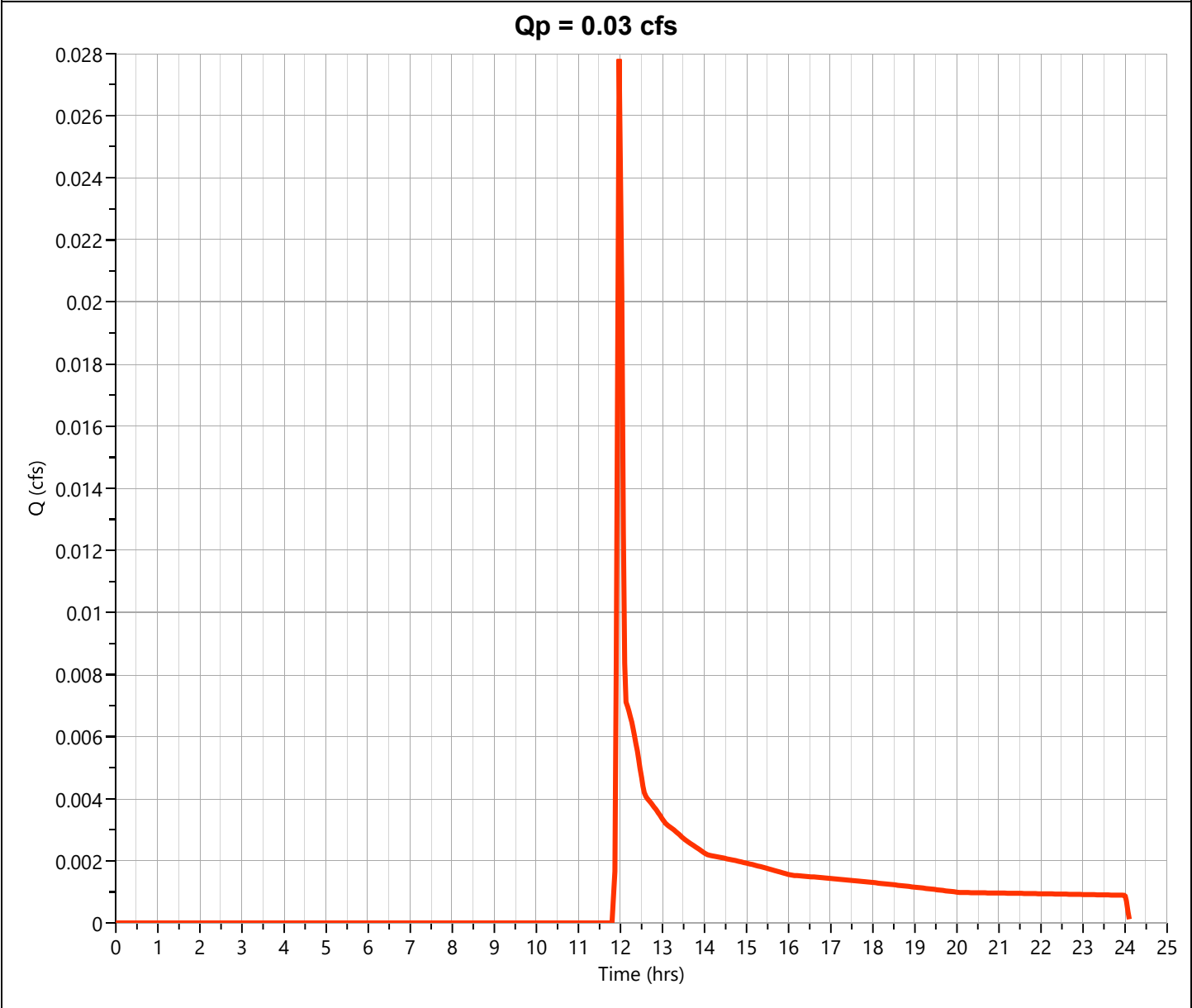
08-13-2024

Pre DA 5

Hyd. No. 5

Hydrograph Type	= NRCS Runoff	Peak Flow	= 0.028 cfs
Storm Frequency	= 1-yr	Time to Peak	= 11.97 hrs
Time Interval	= 2 min	Runoff Volume	= 86.4 cuft
Drainage Area	= 0.09 ac	Curve Number	= 61*
Tc Method	= User	Time of Conc. (Tc)	= 5.0 min
Total Rainfall	= 2.77 in	Design Storm	= Type II
Storm Duration	= 24 hrs	Shape Factor	= 484

* Composite CN Worksheet		
AREA (ac)	CN	DESCRIPTION
0.09	61	GRASS
0.09	61	Weighted CN Method Employed



Hydrograph Report

Project Name:

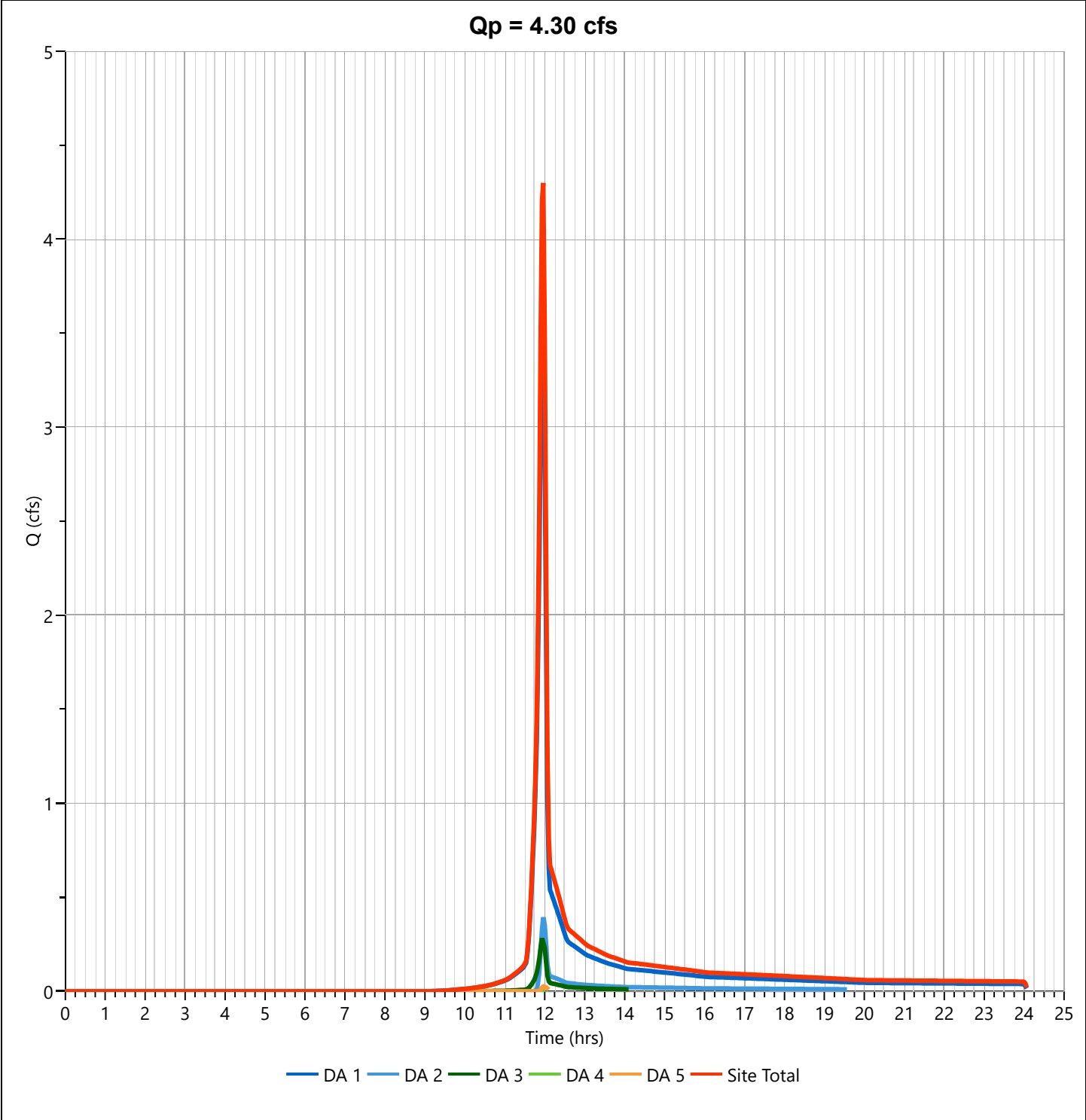
Hydrology Studio v 3.0.0.31

08-13-2024

Pre Site Total

Hyd. No. 6

Hydrograph Type	= Junction	Peak Flow	= 4.299 cfs
Storm Frequency	= 1-yr	Time to Peak	= 11.97 hrs
Time Interval	= 2 min	Hydrograph Volume	= 8,823 cuft
Inflow Hydrographs	= 1, 2, 3, 4, 5	Total Contrib. Area	= 2.649 ac



Hydrograph Report

Project Name:

Hydrology Studio v 3.0.0.31

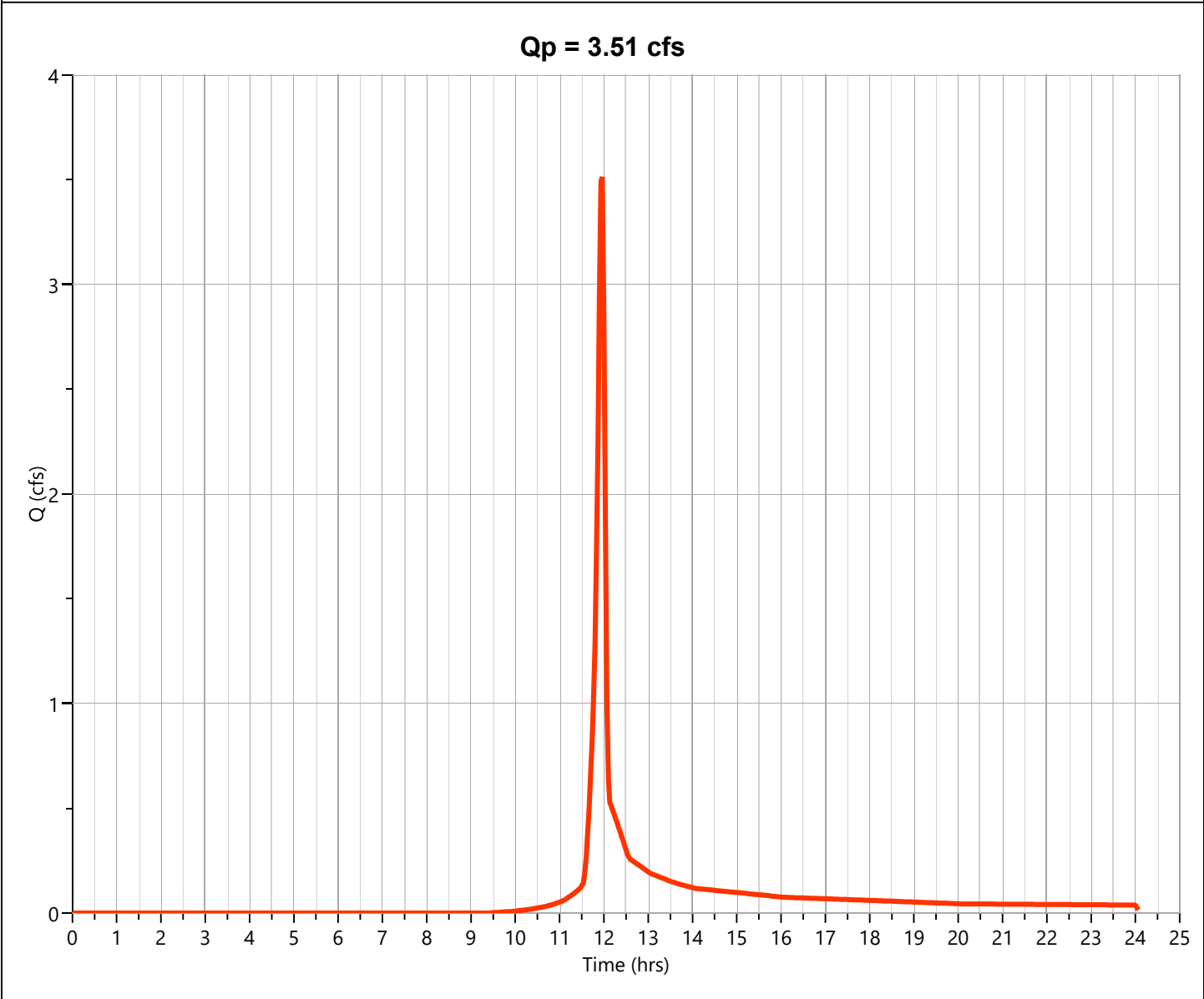
08-13-2024

Post DA 1

Hyd. No. 7

Hydrograph Type	= NRCS Runoff	Peak Flow	= 3.512 cfs
Storm Frequency	= 1-yr	Time to Peak	= 11.97 hrs
Time Interval	= 2 min	Runoff Volume	= 7,059 cuft
Drainage Area	= 1.71 ac	Curve Number	= 82.2*
Tc Method	= User	Time of Conc. (Tc)	= 5.0 min
Total Rainfall	= 2.77 in	Design Storm	= Type II
Storm Duration	= 24 hrs	Shape Factor	= 484

* Composite CN Worksheet		
AREA (ac)	CN	DESCRIPTION
0.73	61	GRASS
0.98	98	IMP
1.71	82	Weighted CN Method Employed



Hydrograph Report

Project Name:

Hydrology Studio v 3.0.0.31

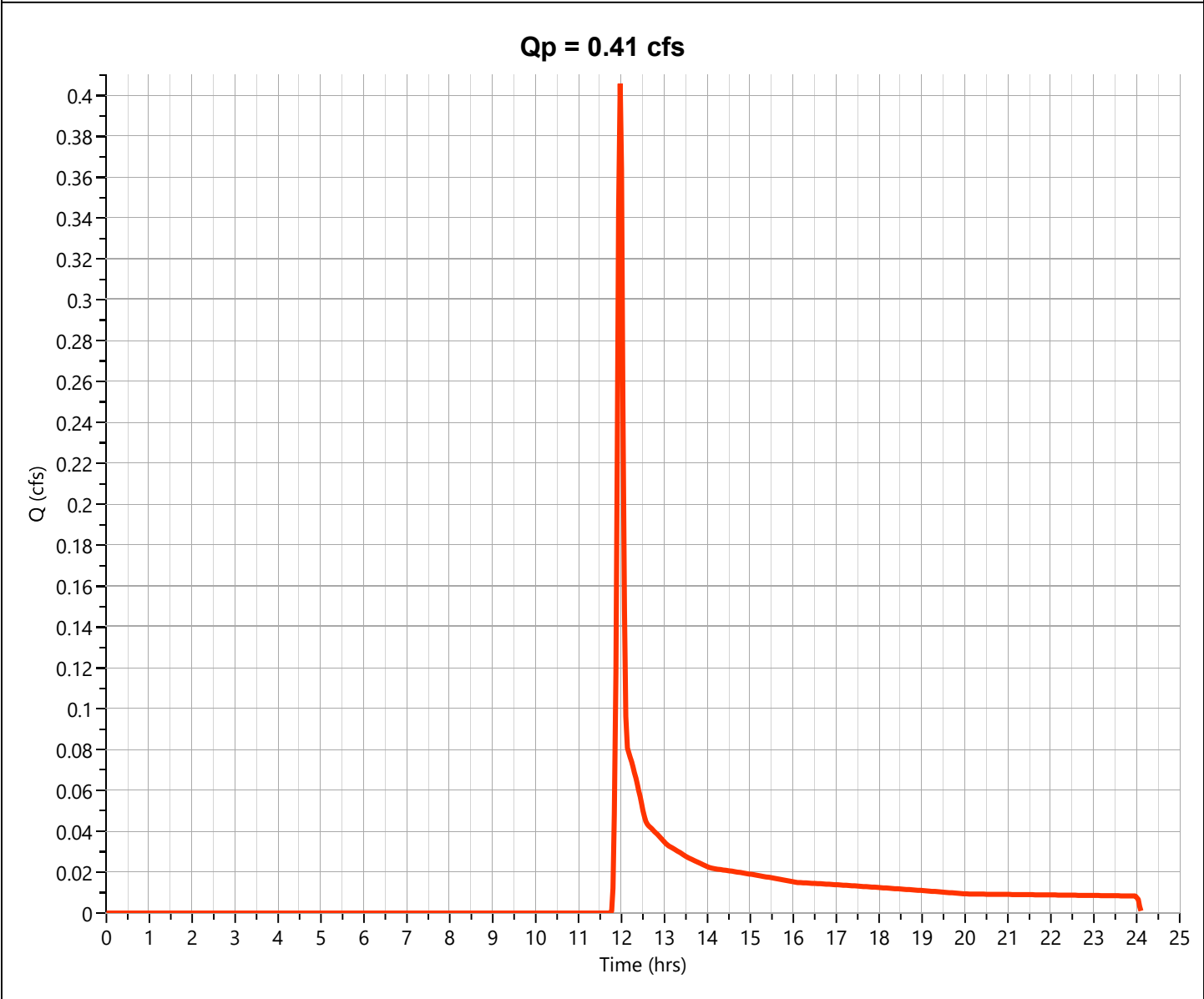
08-13-2024

Post DA 2

Hyd. No. 8

Hydrograph Type	= NRCS Runoff	Peak Flow	= 0.406 cfs
Storm Frequency	= 1-yr	Time to Peak	= 11.97 hrs
Time Interval	= 2 min	Runoff Volume	= 952 cuft
Drainage Area	= 0.676 ac	Curve Number	= 65.27*
Tc Method	= User	Time of Conc. (Tc)	= 5.0 min
Total Rainfall	= 2.77 in	Design Storm	= Type II
Storm Duration	= 24 hrs	Shape Factor	= 484

* Composite CN Worksheet		
AREA (ac)	CN	DESCRIPTION
0.598	61	GRASS
0.078	98	IMP
0.676	65	Weighted CN Method Employed



Hydrograph Report

Project Name:

Hydrology Studio v 3.0.0.31

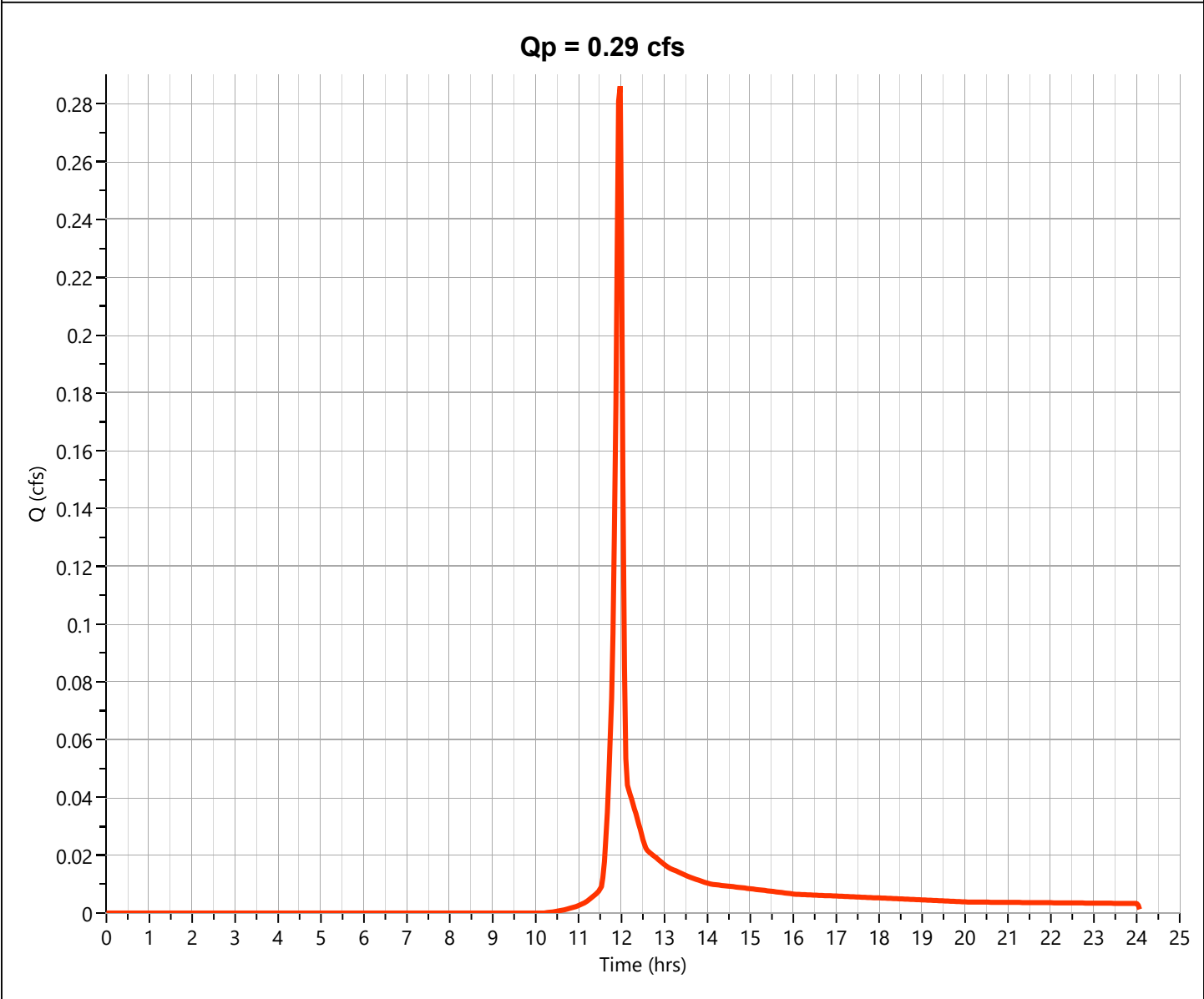
08-13-2024

Post DA 3

Hyd. No. 9

Hydrograph Type	= NRCS Runoff	Peak Flow	= 0.286 cfs
Storm Frequency	= 1-yr	Time to Peak	= 11.97 hrs
Time Interval	= 2 min	Runoff Volume	= 573 cuft
Drainage Area	= 0.16 ac	Curve Number	= 79.5*
Tc Method	= User	Time of Conc. (Tc)	= 5.0 min
Total Rainfall	= 2.77 in	Design Storm	= Type II
Storm Duration	= 24 hrs	Shape Factor	= 484

* Composite CN Worksheet		
AREA (ac)	CN	DESCRIPTION
0.08	61	GRASS
0.08	98	IMP
0.16	80	Weighted CN Method Employed



Hydrograph Report

Project Name:

Hydrology Studio v 3.0.0.31

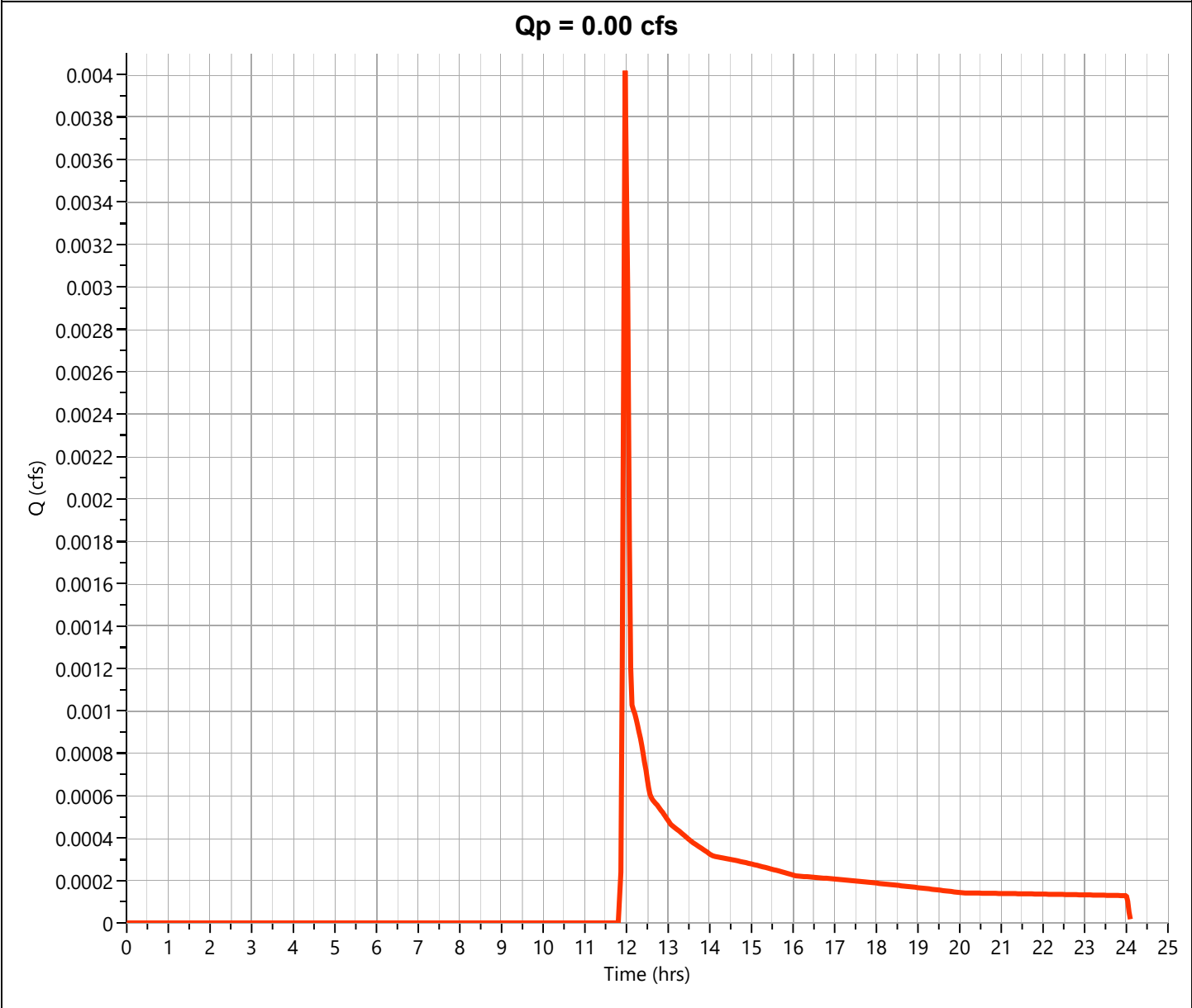
08-13-2024

Post DA 4

Hyd. No. 10

Hydrograph Type	= NRCS Runoff	Peak Flow	= 0.004 cfs
Storm Frequency	= 1-yr	Time to Peak	= 11.97 hrs
Time Interval	= 2 min	Runoff Volume	= 12.5 cuft
Drainage Area	= 0.013 ac	Curve Number	= 61*
Tc Method	= User	Time of Conc. (Tc)	= 5.0 min
Total Rainfall	= 2.77 in	Design Storm	= Type II
Storm Duration	= 24 hrs	Shape Factor	= 484

* Composite CN Worksheet		
AREA (ac)	CN	DESCRIPTION
0.013	61	GRASS
0.013	61	Weighted CN Method Employed



Hydrograph Report

Project Name:

Hydrology Studio v 3.0.0.31

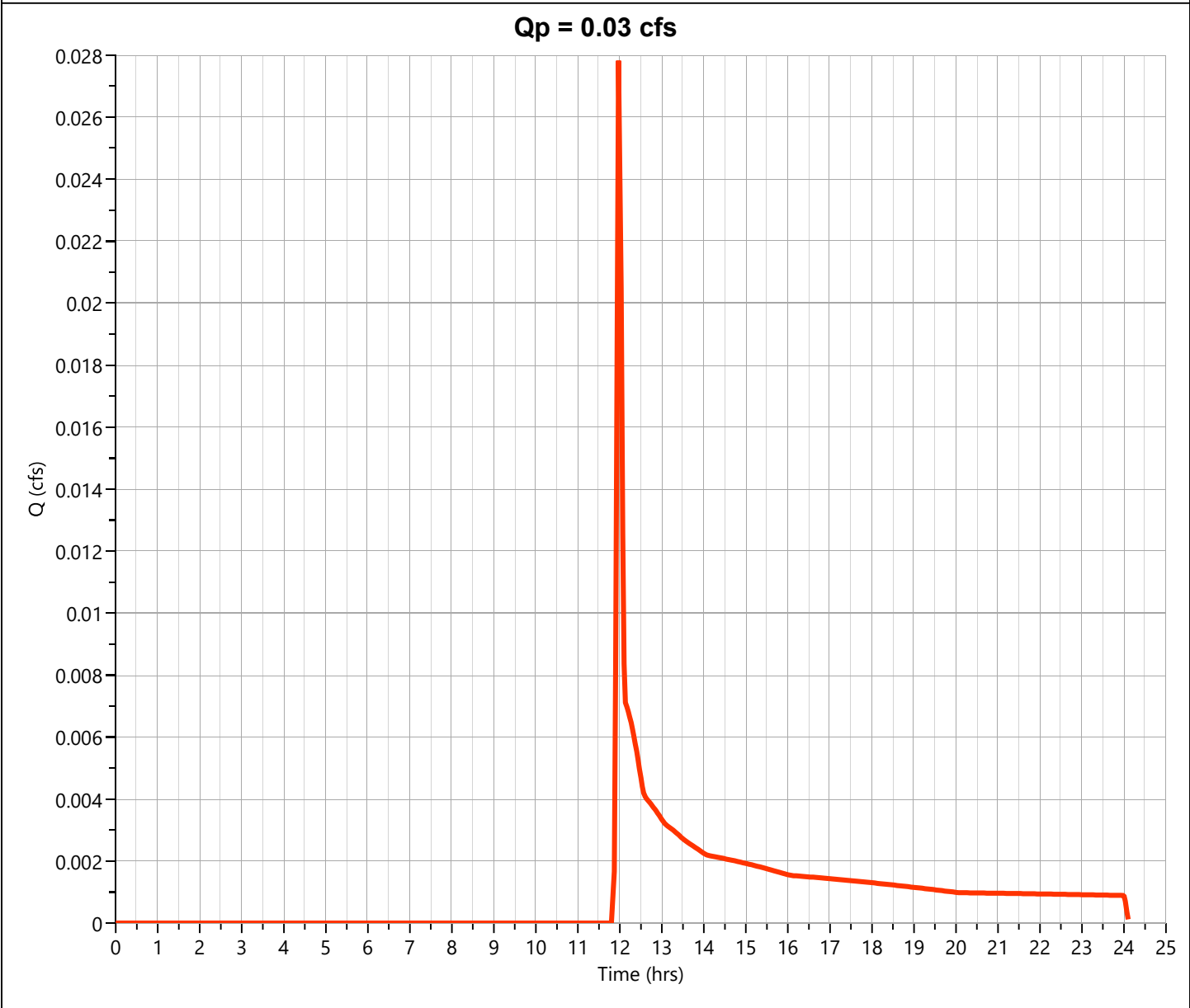
08-13-2024

Post DA 5

Hyd. No. 11

Hydrograph Type	= NRCS Runoff	Peak Flow	= 0.028 cfs
Storm Frequency	= 1-yr	Time to Peak	= 11.97 hrs
Time Interval	= 2 min	Runoff Volume	= 86.4 cuft
Drainage Area	= 0.09 ac	Curve Number	= 61*
Tc Method	= User	Time of Conc. (Tc)	= 5.0 min
Total Rainfall	= 2.77 in	Design Storm	= Type II
Storm Duration	= 24 hrs	Shape Factor	= 484

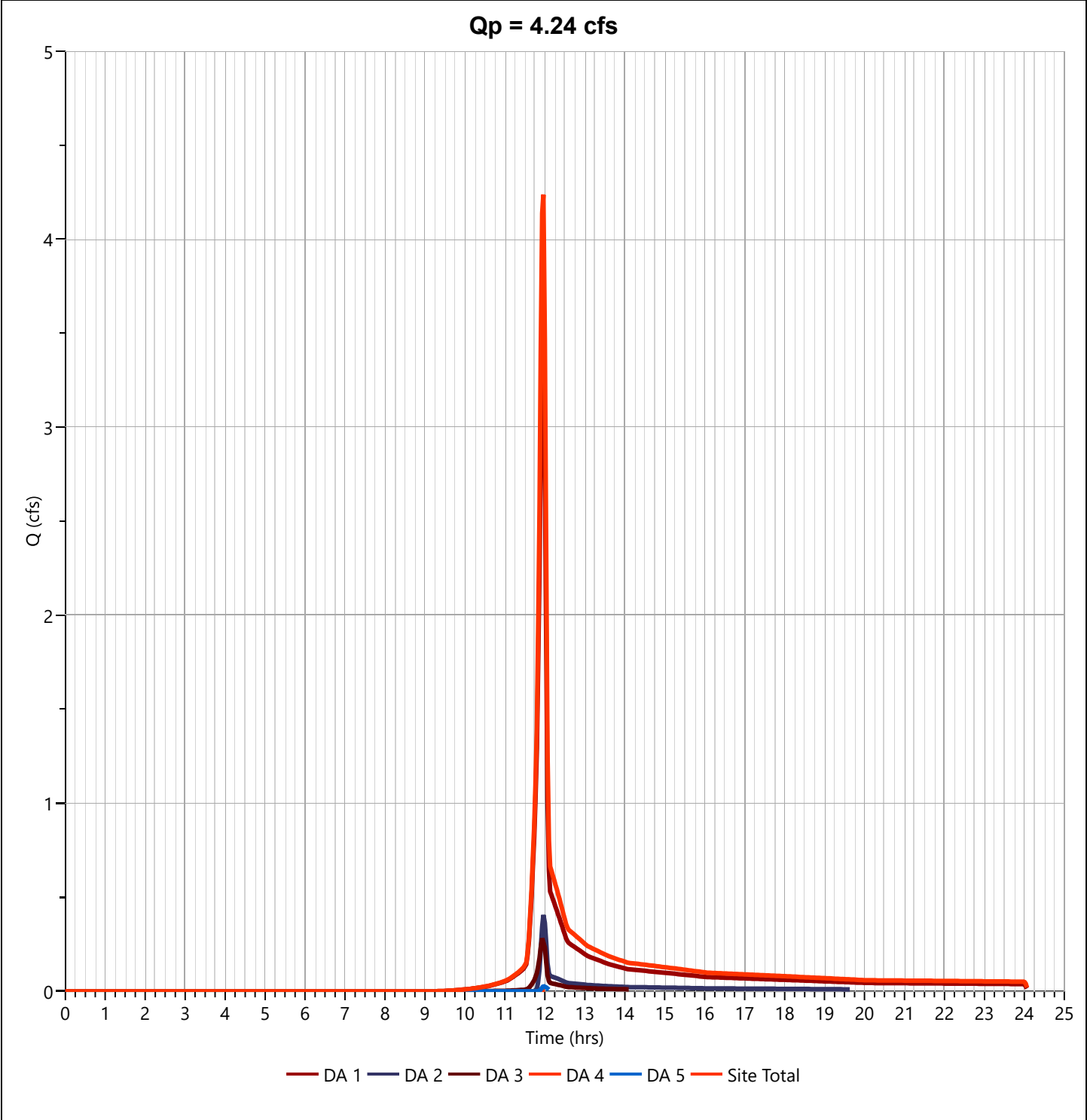
* Composite CN Worksheet		
AREA (ac)	CN	DESCRIPTION
0.09	61	GRASS
0.09	61	Weighted CN Method Employed



Post Site Total

Hyd. No. 12

Hydrograph Type	= Junction	Peak Flow	= 4.236 cfs
Storm Frequency	= 1-yr	Time to Peak	= 11.97 hrs
Time Interval	= 2 min	Hydrograph Volume	= 8,682 cuft
Inflow Hydrographs	= 7, 8, 9, 10, 11	Total Contrib. Area	= 2.649 ac



Hydrology Studio v 3.0.0.31

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Hydrograph Report

Project Name:

Hydrology Studio v 3.0.0.31

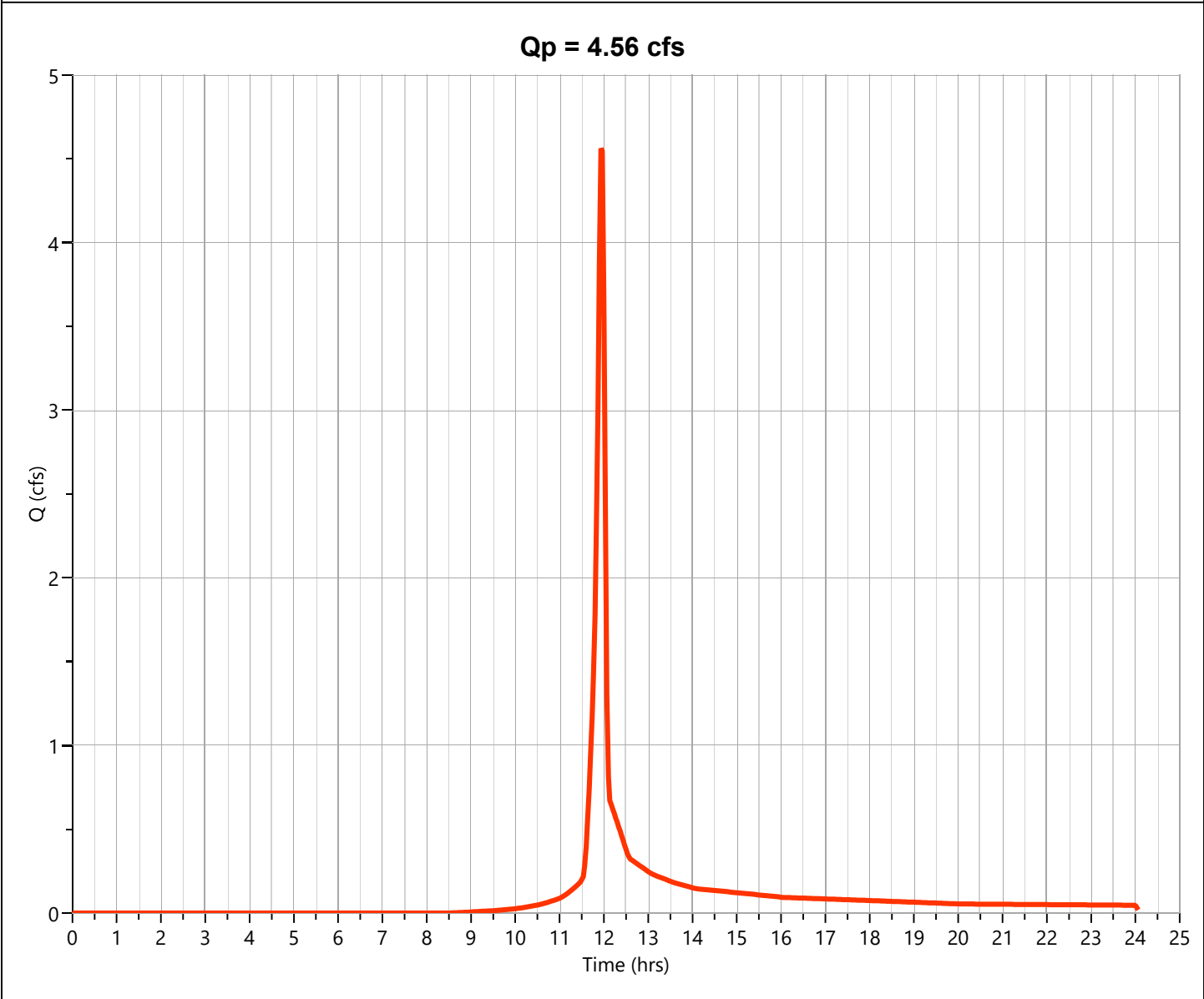
08-13-2024

Pre DA 1

Hyd. No. 1

Hydrograph Type	= NRCS Runoff	Peak Flow	= 4.562 cfs
Storm Frequency	= 2-yr	Time to Peak	= 11.93 hrs
Time Interval	= 2 min	Runoff Volume	= 9,214 cuft
Drainage Area	= 1.71 ac	Curve Number	= 82.64*
Tc Method	= User	Time of Conc. (Tc)	= 5.0 min
Total Rainfall	= 3.20 in	Design Storm	= Type II
Storm Duration	= 24 hrs	Shape Factor	= 484

* Composite CN Worksheet		
AREA (ac)	CN	DESCRIPTION
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1.0	98	IMP
1.71	83	Weighted CN Method Employed



Hydrograph Report

Project Name:

Hydrology Studio v 3.0.0.31

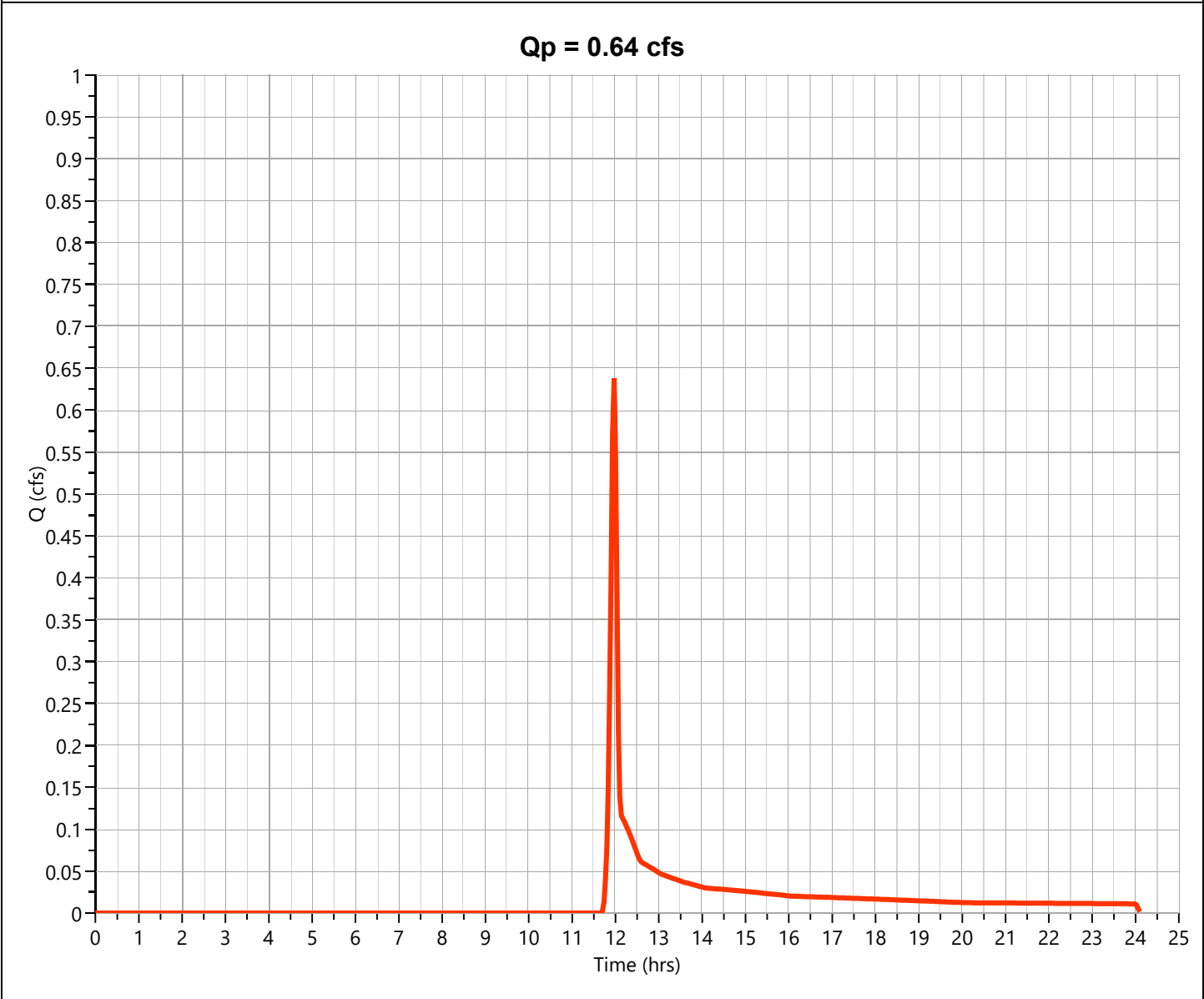
08-13-2024

Pre DA 2

Hyd. No. 2

Hydrograph Type	= NRCS Runoff	Peak Flow	= 0.638 cfs
Storm Frequency	= 2-yr	Time to Peak	= 11.97 hrs
Time Interval	= 2 min	Runoff Volume	= 1,381 cuft
Drainage Area	= 0.676 ac	Curve Number	= 65*
Tc Method	= User	Time of Conc. (Tc)	= 5.0 min
Total Rainfall	= 3.20 in	Design Storm	= Type II
Storm Duration	= 24 hrs	Shape Factor	= 484

* Composite CN Worksheet		
AREA (ac)	CN	DESCRIPTION
0.598	61	GRASS
0.078	98	IMP
0.676	65	Weighted CN Method Employed



Hydrograph Report

Project Name:

Hydrology Studio v 3.0.0.31

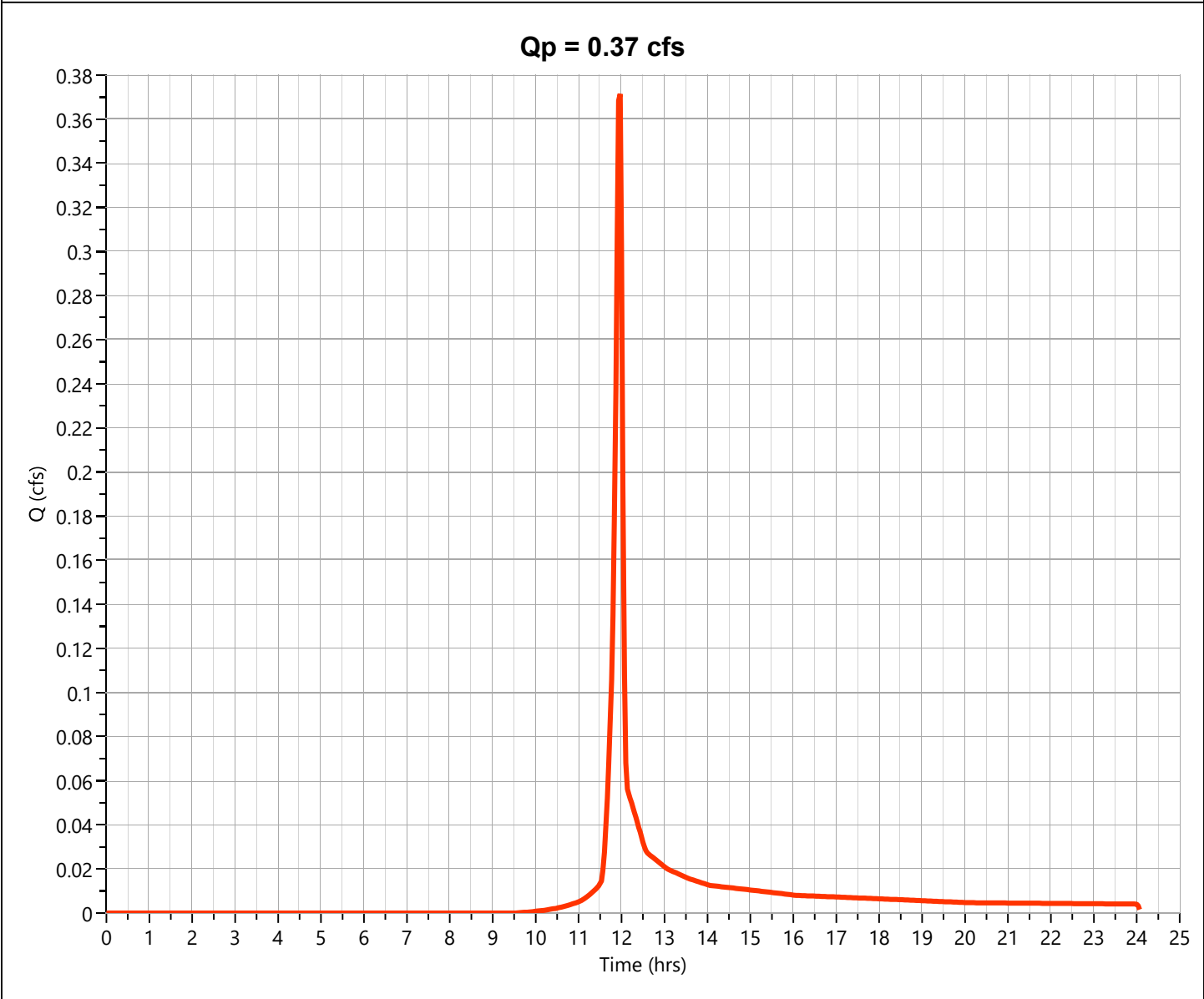
08-13-2024

Pre DA 3

Hyd. No. 3

Hydrograph Type	= NRCS Runoff	Peak Flow	= 0.371 cfs
Storm Frequency	= 2-yr	Time to Peak	= 11.97 hrs
Time Interval	= 2 min	Runoff Volume	= 745 cuft
Drainage Area	= 0.16 ac	Curve Number	= 79.5*
Tc Method	= User	Time of Conc. (Tc)	= 5.0 min
Total Rainfall	= 3.20 in	Design Storm	= Type II
Storm Duration	= 24 hrs	Shape Factor	= 484

* Composite CN Worksheet		
AREA (ac)	CN	DESCRIPTION
0.08	61	GRASS
0.08	98	IMP
0.16	80	Weighted CN Method Employed



Hydrograph Report

Project Name:

Hydrology Studio v 3.0.0.31

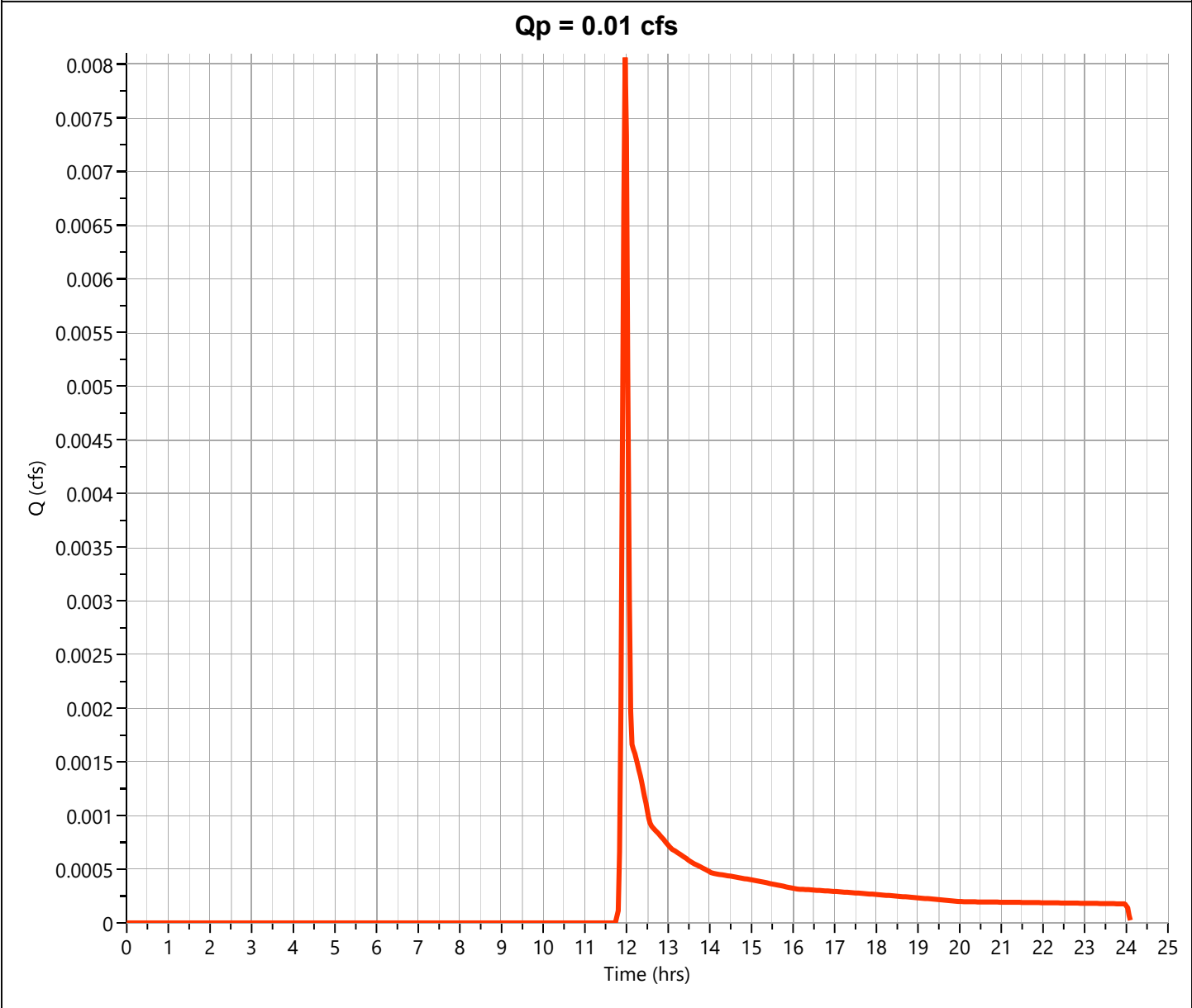
08-13-2024

Pre DA 4

Hyd. No. 4

Hydrograph Type	= NRCS Runoff	Peak Flow	= 0.008 cfs
Storm Frequency	= 2-yr	Time to Peak	= 11.97 hrs
Time Interval	= 2 min	Runoff Volume	= 19.6 cuft
Drainage Area	= 0.013 ac	Curve Number	= 61*
Tc Method	= User	Time of Conc. (Tc)	= 5.0 min
Total Rainfall	= 3.20 in	Design Storm	= Type II
Storm Duration	= 24 hrs	Shape Factor	= 484

* Composite CN Worksheet		
AREA (ac)	CN	DESCRIPTION
0.013	61	GRASS
0.013	61	Weighted CN Method Employed



Hydrograph Report

Project Name:

Hydrology Studio v 3.0.0.31

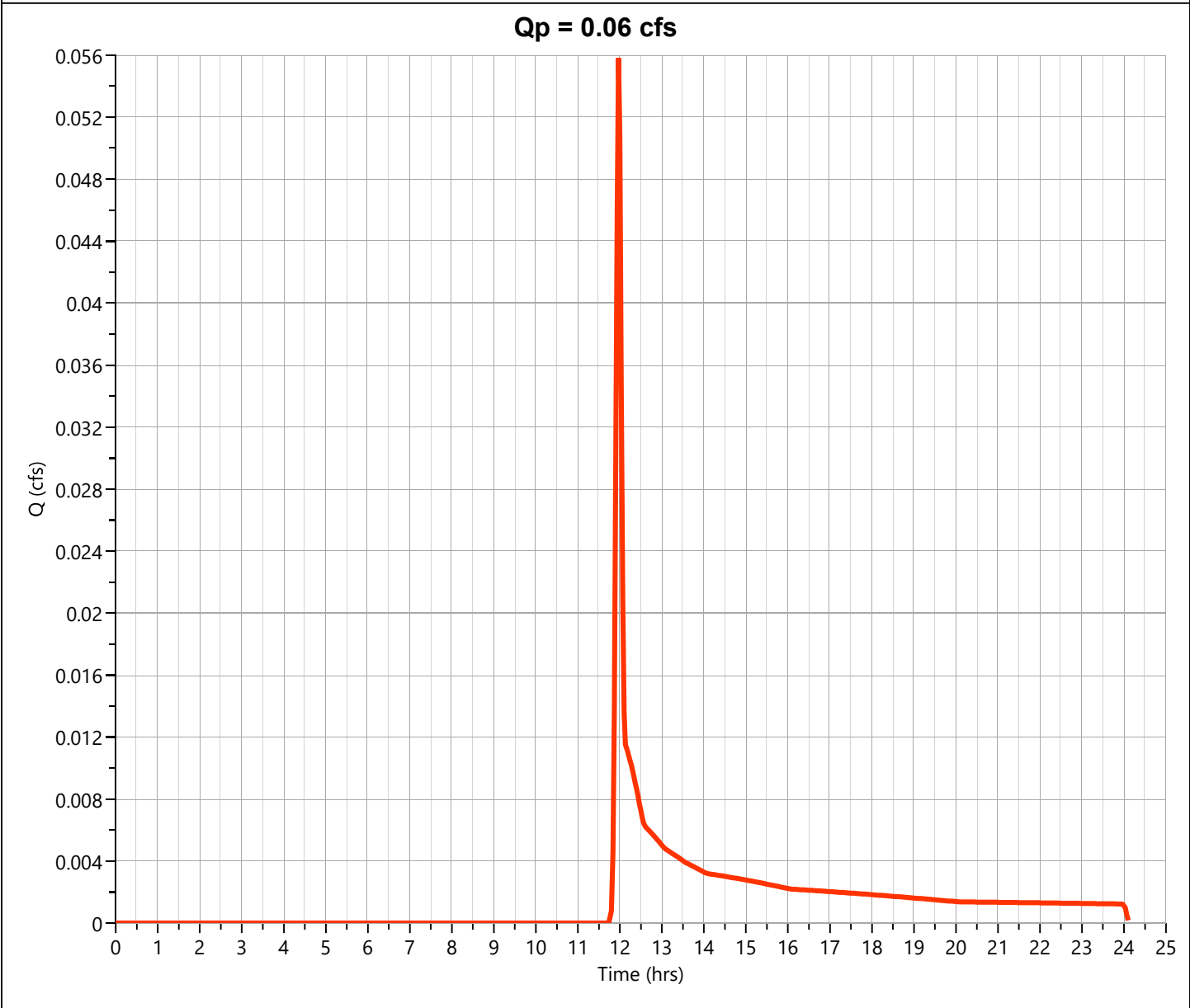
08-13-2024

Pre DA 5

Hyd. No. 5

Hydrograph Type	= NRCS Runoff	Peak Flow	= 0.056 cfs
Storm Frequency	= 2-yr	Time to Peak	= 11.97 hrs
Time Interval	= 2 min	Runoff Volume	= 136 cuft
Drainage Area	= 0.09 ac	Curve Number	= 61*
Tc Method	= User	Time of Conc. (Tc)	= 5.0 min
Total Rainfall	= 3.20 in	Design Storm	= Type II
Storm Duration	= 24 hrs	Shape Factor	= 484

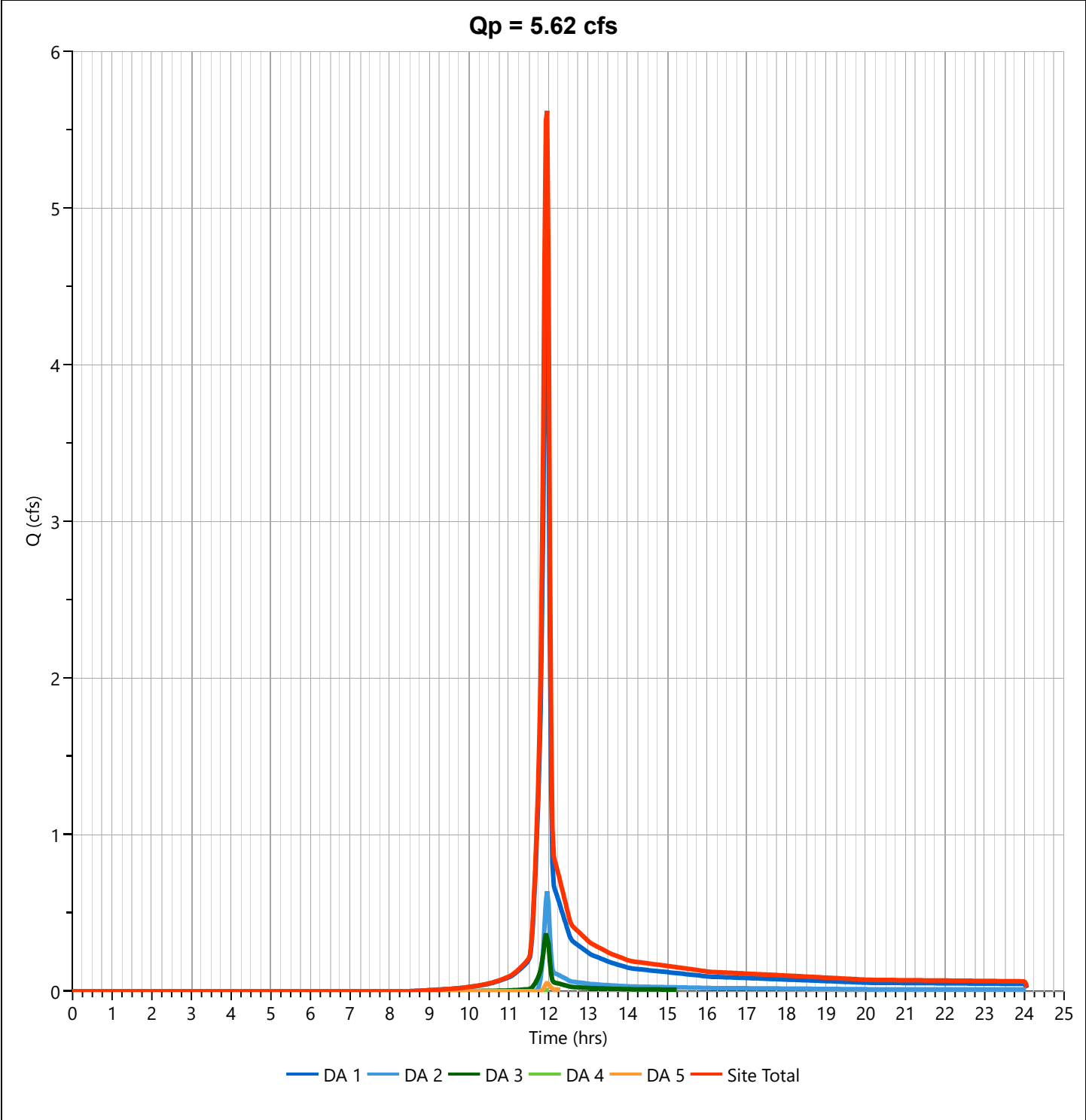
* Composite CN Worksheet		
AREA (ac)	CN	DESCRIPTION
0.09	61	GRASS
0.09	61	Weighted CN Method Employed



Pre Site Total

Hyd. No. 6

Hydrograph Type	= Junction	Peak Flow	= 5.619 cfs
Storm Frequency	= 2-yr	Time to Peak	= 11.97 hrs
Time Interval	= 2 min	Hydrograph Volume	= 11,496 cuft
Inflow Hydrographs	= 1, 2, 3, 4, 5	Total Contrib. Area	= 2.649 ac



Hydrograph Report

Project Name:

Hydrology Studio v 3.0.0.31

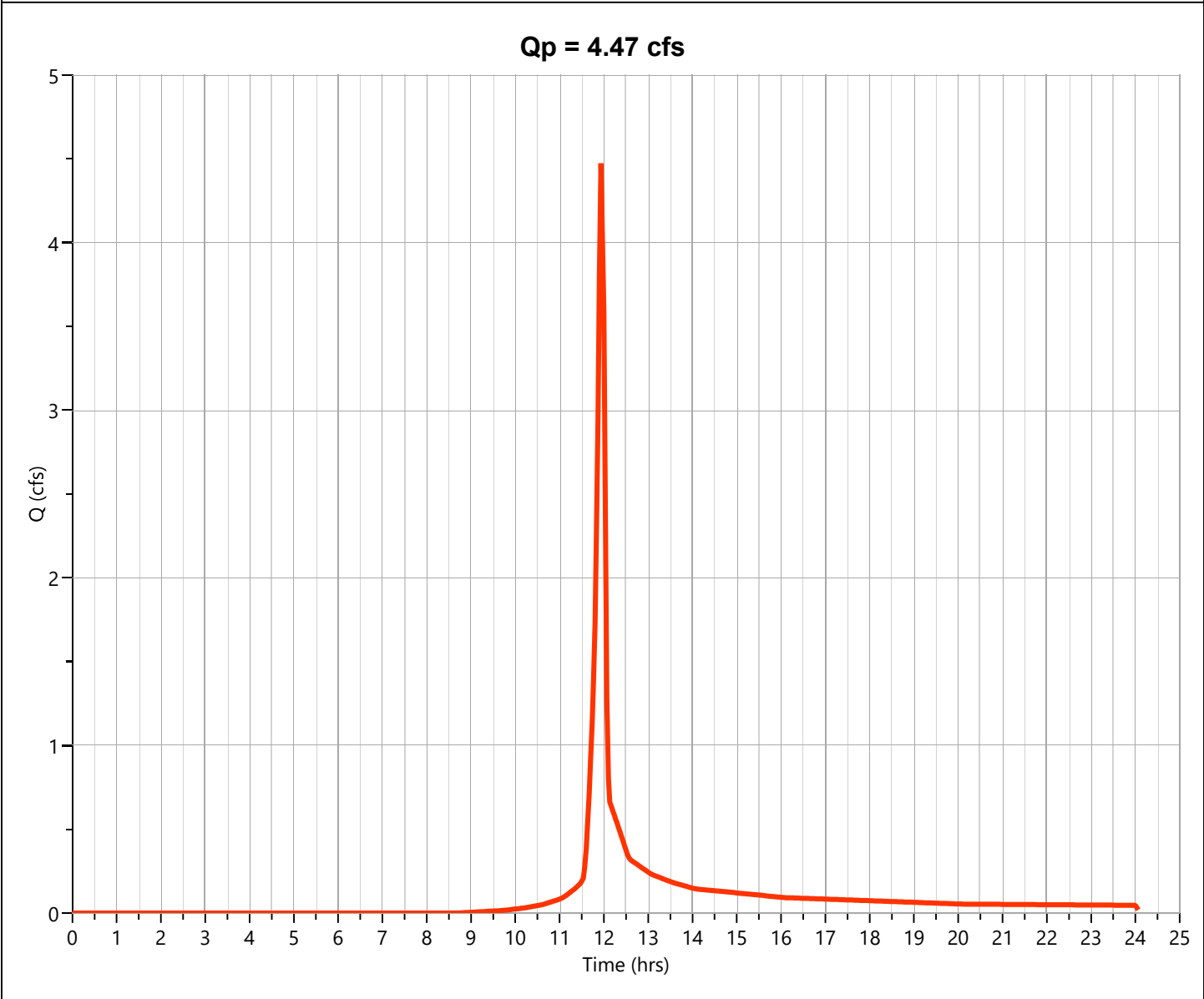
08-13-2024

Post DA 1

Hyd. No. 7

Hydrograph Type	= NRCS Runoff	Peak Flow	= 4.473 cfs
Storm Frequency	= 2-yr	Time to Peak	= 11.93 hrs
Time Interval	= 2 min	Runoff Volume	= 9,033 cuft
Drainage Area	= 1.71 ac	Curve Number	= 82.2*
Tc Method	= User	Time of Conc. (Tc)	= 5.0 min
Total Rainfall	= 3.20 in	Design Storm	= Type II
Storm Duration	= 24 hrs	Shape Factor	= 484

* Composite CN Worksheet		
AREA (ac)	CN	DESCRIPTION
0.73	61	GRASS
0.98	98	IMP
1.71	82	Weighted CN Method Employed



Hydrograph Report

Project Name:

Hydrology Studio v 3.0.0.31

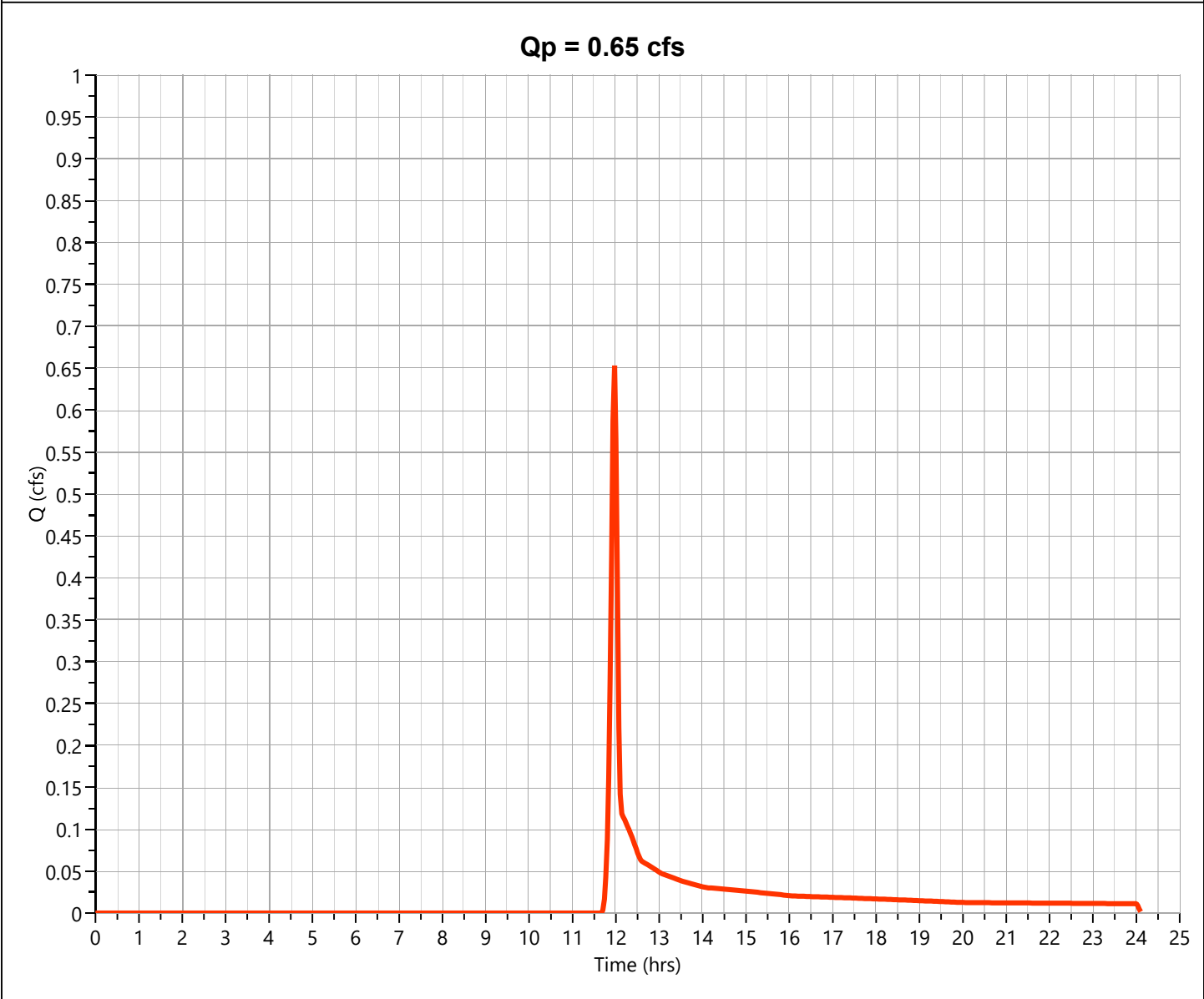
08-13-2024

Post DA 2

Hyd. No. 8

Hydrograph Type	= NRCS Runoff	Peak Flow	= 0.653 cfs
Storm Frequency	= 2-yr	Time to Peak	= 11.97 hrs
Time Interval	= 2 min	Runoff Volume	= 1,407 cuft
Drainage Area	= 0.676 ac	Curve Number	= 65.27*
Tc Method	= User	Time of Conc. (Tc)	= 5.0 min
Total Rainfall	= 3.20 in	Design Storm	= Type II
Storm Duration	= 24 hrs	Shape Factor	= 484

* Composite CN Worksheet		
AREA (ac)	CN	DESCRIPTION
0.598	61	GRASS
0.078	98	IMP
0.676	65	Weighted CN Method Employed



Hydrograph Report

Project Name:

Hydrology Studio v 3.0.0.31

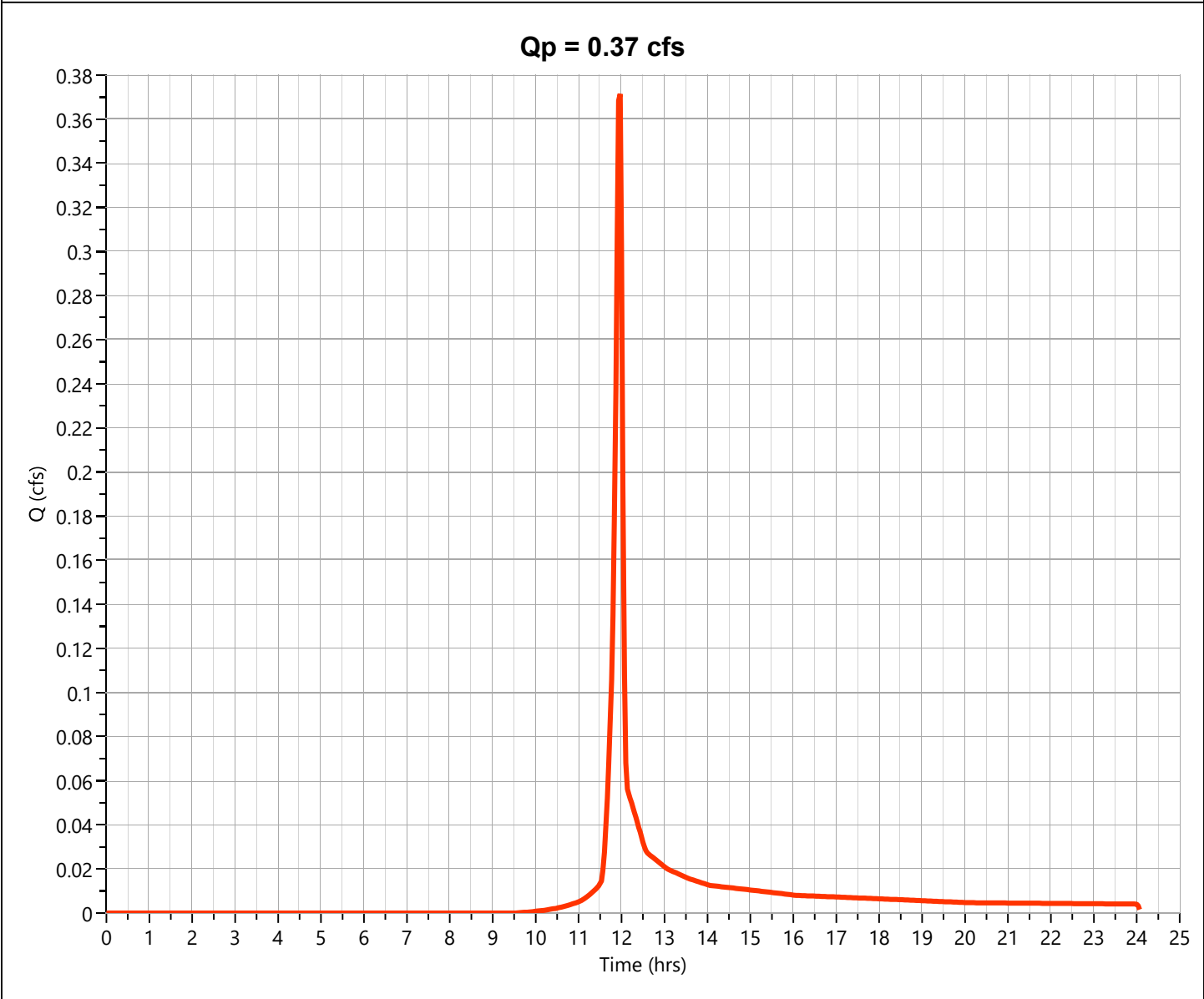
08-13-2024

Post DA 3

Hyd. No. 9

Hydrograph Type	= NRCS Runoff	Peak Flow	= 0.371 cfs
Storm Frequency	= 2-yr	Time to Peak	= 11.97 hrs
Time Interval	= 2 min	Runoff Volume	= 745 cuft
Drainage Area	= 0.16 ac	Curve Number	= 79.5*
Tc Method	= User	Time of Conc. (Tc)	= 5.0 min
Total Rainfall	= 3.20 in	Design Storm	= Type II
Storm Duration	= 24 hrs	Shape Factor	= 484

* Composite CN Worksheet		
AREA (ac)	CN	DESCRIPTION
0.08	61	GRASS
0.08	98	IMP
0.16	80	Weighted CN Method Employed



Hydrograph Report

Project Name:

Hydrology Studio v 3.0.0.31

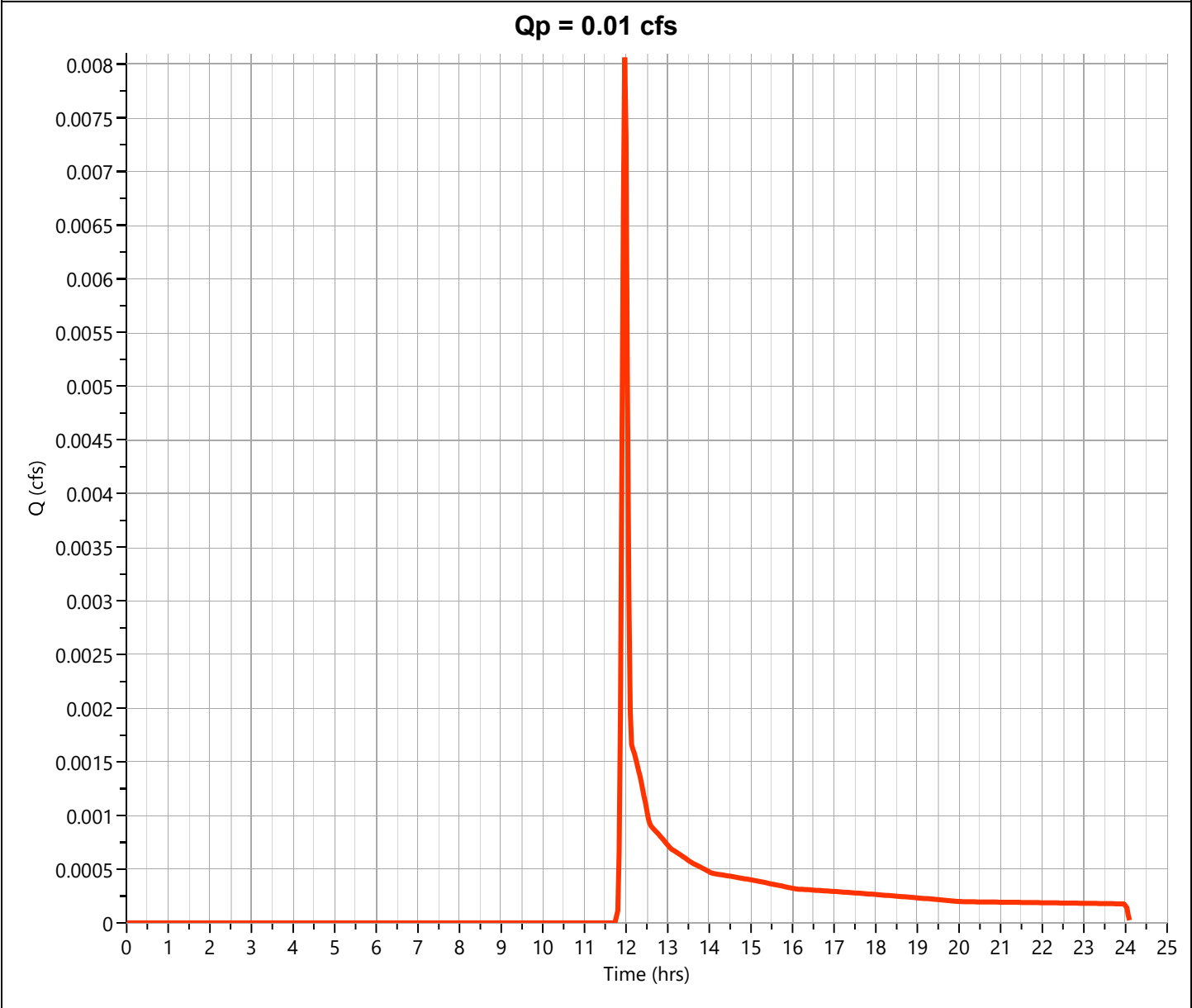
08-13-2024

Post DA 4

Hyd. No. 10

Hydrograph Type	= NRCS Runoff	Peak Flow	= 0.008 cfs
Storm Frequency	= 2-yr	Time to Peak	= 11.97 hrs
Time Interval	= 2 min	Runoff Volume	= 19.6 cuft
Drainage Area	= 0.013 ac	Curve Number	= 61*
Tc Method	= User	Time of Conc. (Tc)	= 5.0 min
Total Rainfall	= 3.20 in	Design Storm	= Type II
Storm Duration	= 24 hrs	Shape Factor	= 484

* Composite CN Worksheet		
AREA (ac)	CN	DESCRIPTION
0.013	61	GRASS
0.013	61	Weighted CN Method Employed



Hydrograph Report

Project Name:

Hydrology Studio v 3.0.0.31

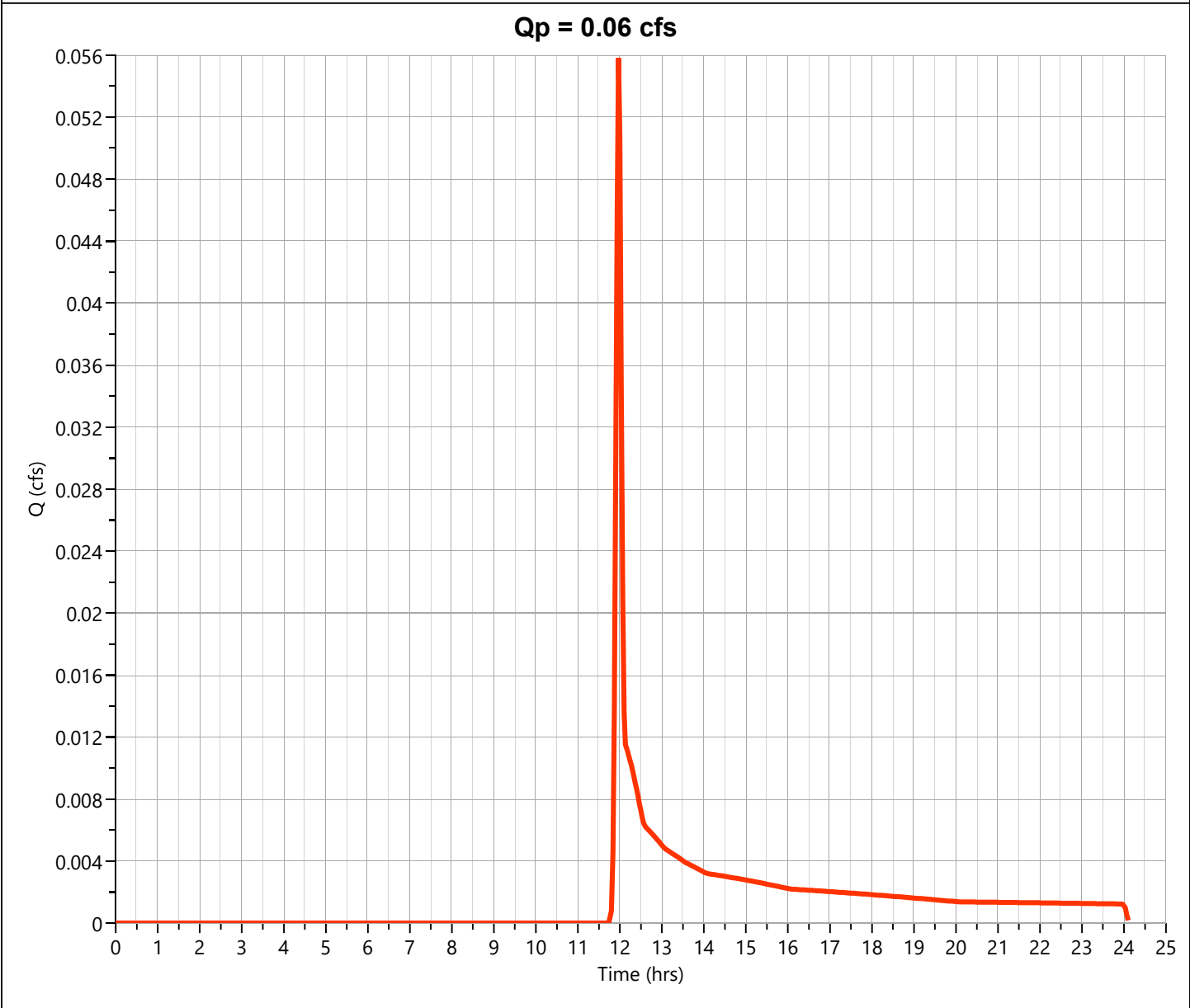
08-13-2024

Post DA 5

Hyd. No. 11

Hydrograph Type	= NRCS Runoff	Peak Flow	= 0.056 cfs
Storm Frequency	= 2-yr	Time to Peak	= 11.97 hrs
Time Interval	= 2 min	Runoff Volume	= 136 cuft
Drainage Area	= 0.09 ac	Curve Number	= 61*
Tc Method	= User	Time of Conc. (Tc)	= 5.0 min
Total Rainfall	= 3.20 in	Design Storm	= Type II
Storm Duration	= 24 hrs	Shape Factor	= 484

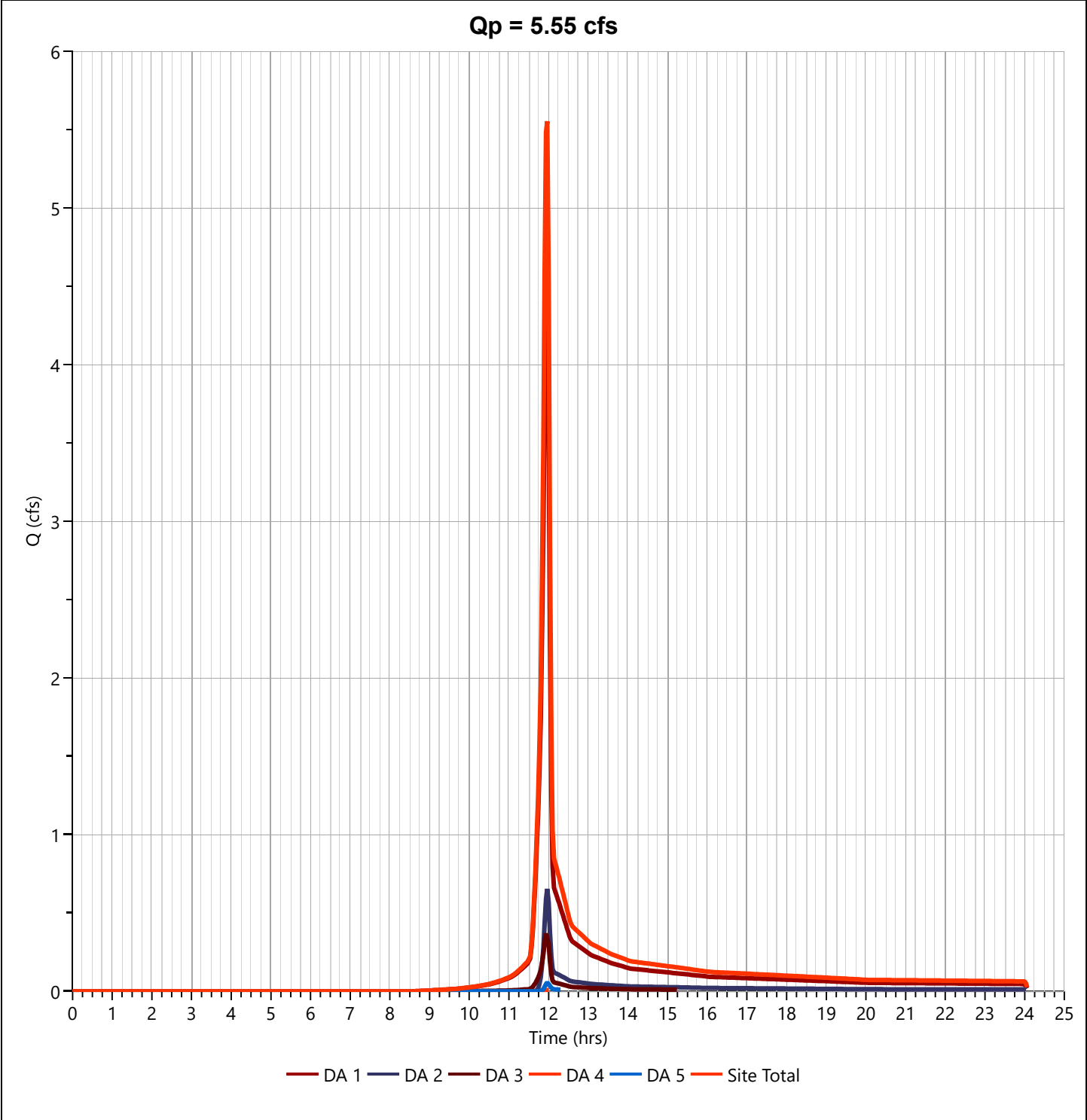
* Composite CN Worksheet		
AREA (ac)	CN	DESCRIPTION
0.09	61	GRASS
0.09	61	Weighted CN Method Employed



Post Site Total

Hyd. No. 12

Hydrograph Type	= Junction	Peak Flow	= 5.552 cfs
Storm Frequency	= 2-yr	Time to Peak	= 11.97 hrs
Time Interval	= 2 min	Hydrograph Volume	= 11,341 cuft
Inflow Hydrographs	= 7, 8, 9, 10, 11	Total Contrib. Area	= 2.649 ac



Hydrology Studio v 3.0.0.31

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Hydrograph Report

Project Name:

Hydrology Studio v 3.0.0.31

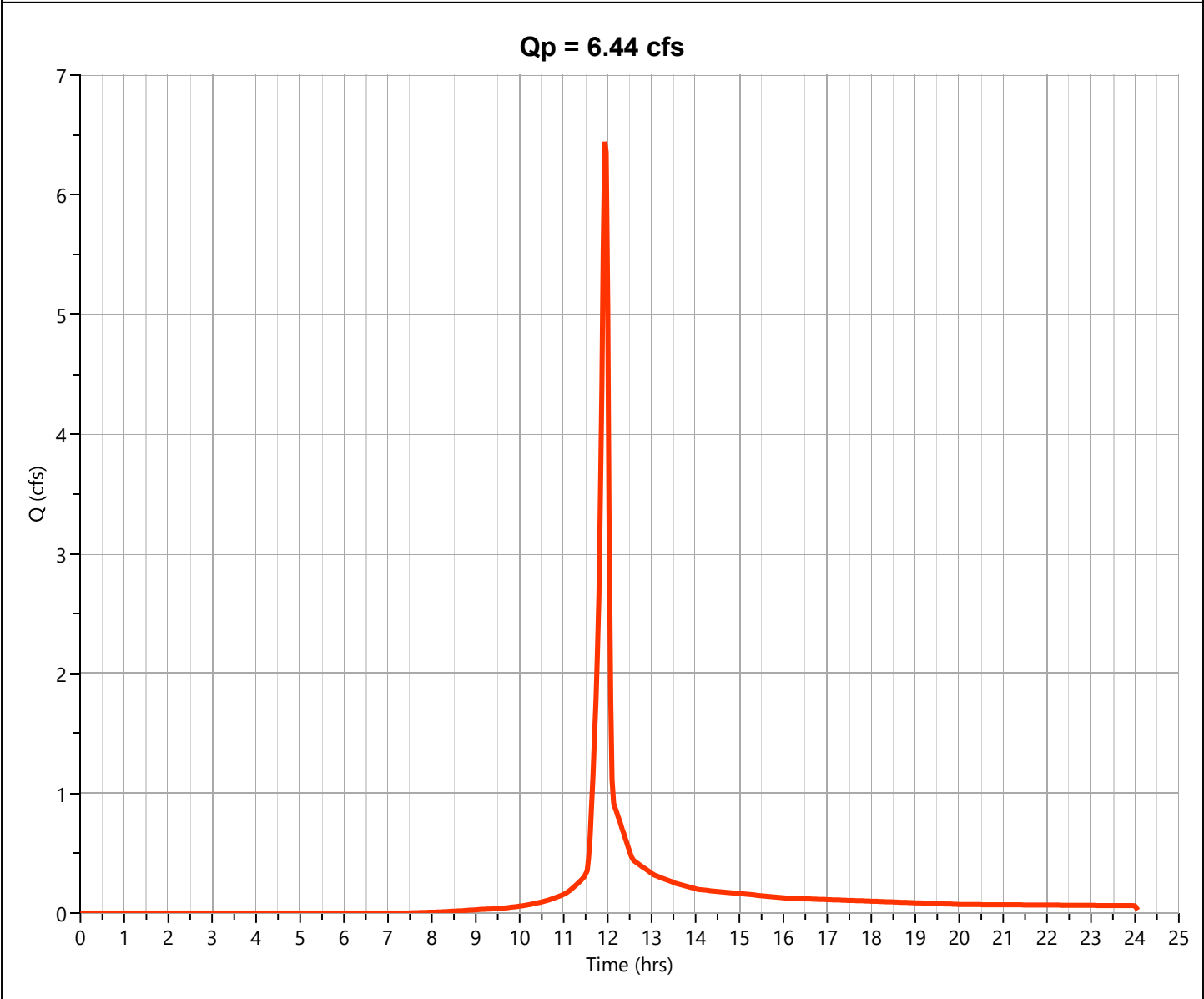
08-13-2024

Pre DA 1

Hyd. No. 1

Hydrograph Type	= NRCS Runoff	Peak Flow	= 6.442 cfs
Storm Frequency	= 5-yr	Time to Peak	= 11.93 hrs
Time Interval	= 2 min	Runoff Volume	= 13,078 cuft
Drainage Area	= 1.71 ac	Curve Number	= 82.64*
Tc Method	= User	Time of Conc. (Tc)	= 5.0 min
Total Rainfall	= 3.99 in	Design Storm	= Type II
Storm Duration	= 24 hrs	Shape Factor	= 484

* Composite CN Worksheet		
AREA (ac)	CN	DESCRIPTION
0.71	61	GRASS
1.0	98	IMP
1.71	83	Weighted CN Method Employed



Hydrograph Report

Project Name:

Hydrology Studio v 3.0.0.31

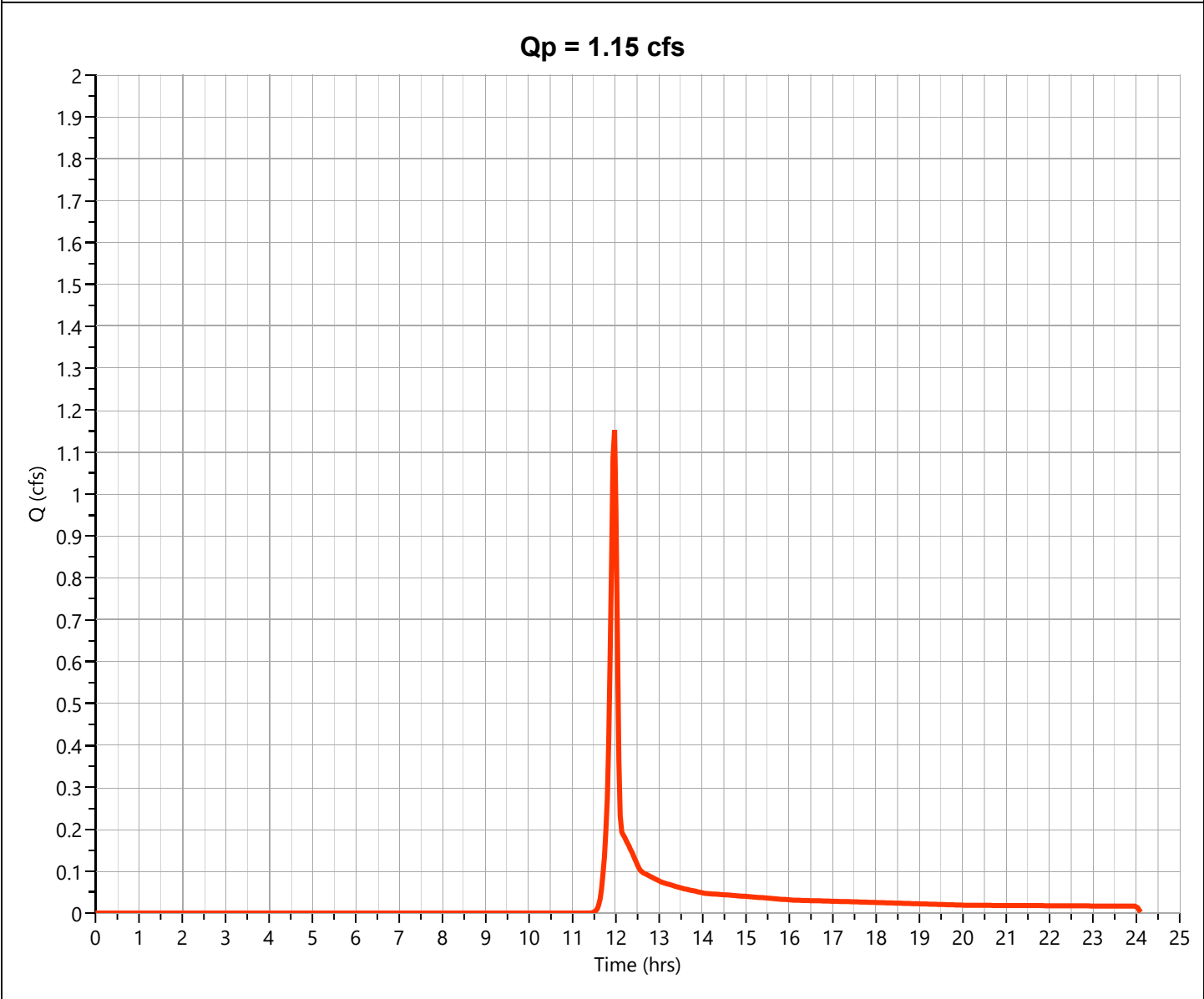
08-13-2024

Pre DA 2

Hyd. No. 2

Hydrograph Type	= NRCS Runoff	Peak Flow	= 1.152 cfs
Storm Frequency	= 5-yr	Time to Peak	= 11.97 hrs
Time Interval	= 2 min	Runoff Volume	= 2,353 cuft
Drainage Area	= 0.676 ac	Curve Number	= 65*
Tc Method	= User	Time of Conc. (Tc)	= 5.0 min
Total Rainfall	= 3.99 in	Design Storm	= Type II
Storm Duration	= 24 hrs	Shape Factor	= 484

* Composite CN Worksheet		
AREA (ac)	CN	DESCRIPTION
0.598	61	GRASS
0.078	98	IMP
0.676	65	Weighted CN Method Employed



Hydrograph Report

Project Name:

Hydrology Studio v 3.0.0.31

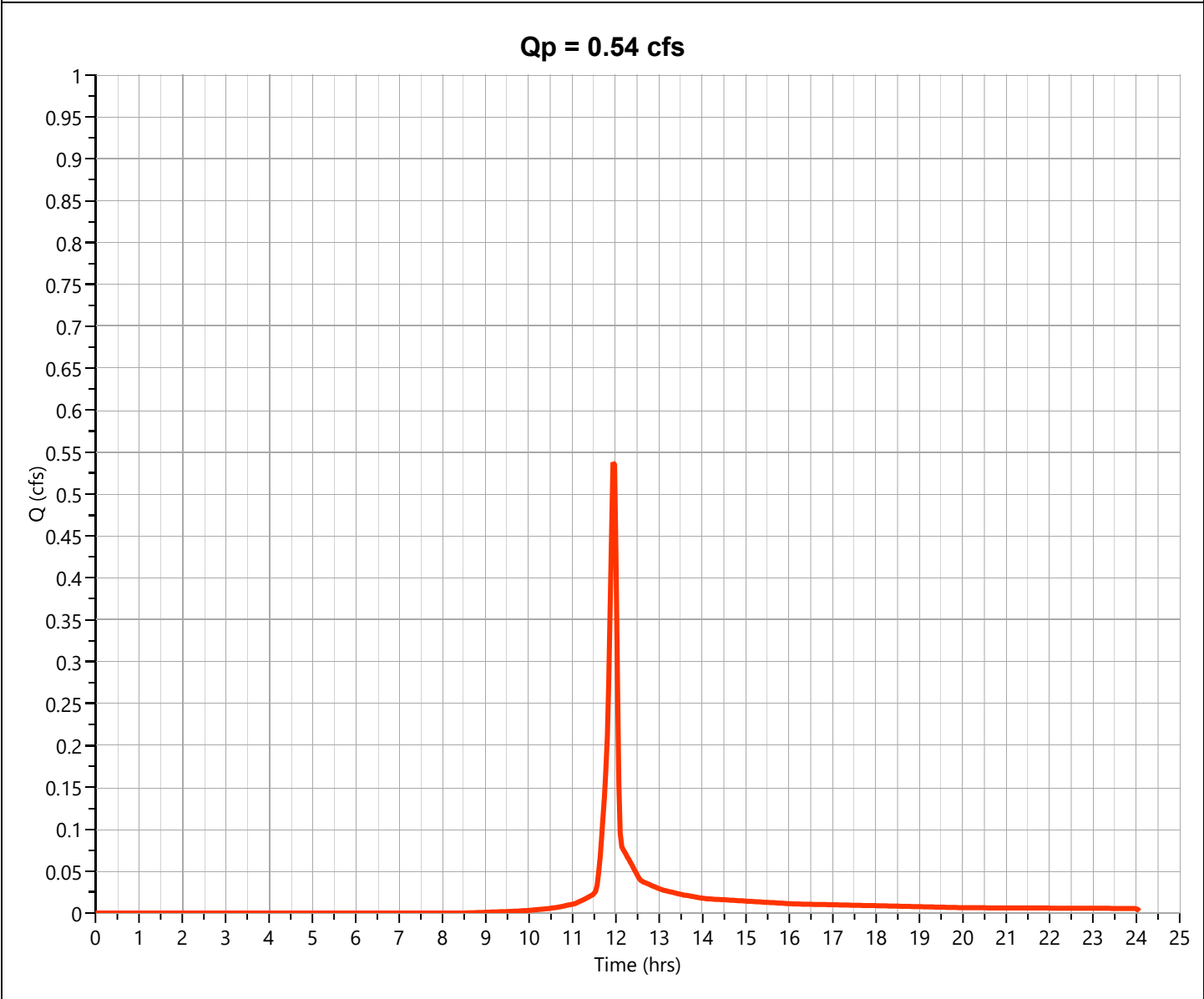
08-13-2024

Pre DA 3

Hyd. No. 3

Hydrograph Type	= NRCS Runoff	Peak Flow	= 0.538 cfs
Storm Frequency	= 5-yr	Time to Peak	= 11.93 hrs
Time Interval	= 2 min	Runoff Volume	= 1,086 cuft
Drainage Area	= 0.16 ac	Curve Number	= 79.5*
Tc Method	= User	Time of Conc. (Tc)	= 5.0 min
Total Rainfall	= 3.99 in	Design Storm	= Type II
Storm Duration	= 24 hrs	Shape Factor	= 484

* Composite CN Worksheet		
AREA (ac)	CN	DESCRIPTION
0.08	61	GRASS
0.08	98	IMP
0.16	80	Weighted CN Method Employed



Hydrograph Report

Project Name:

Hydrology Studio v 3.0.0.31

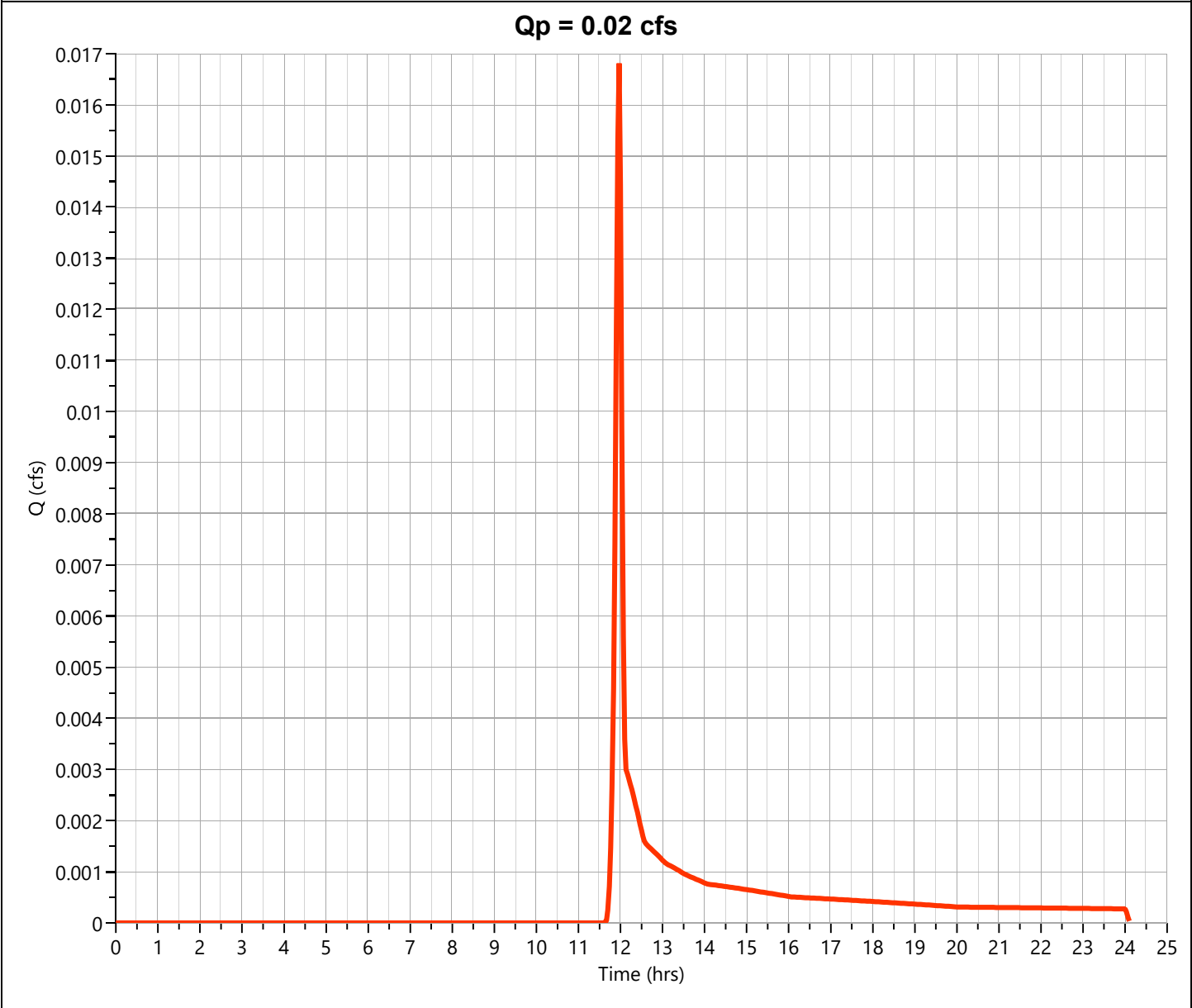
08-13-2024

Pre DA 4

Hyd. No. 4

Hydrograph Type	= NRCS Runoff	Peak Flow	= 0.017 cfs
Storm Frequency	= 5-yr	Time to Peak	= 11.97 hrs
Time Interval	= 2 min	Runoff Volume	= 35.7 cuft
Drainage Area	= 0.013 ac	Curve Number	= 61*
Tc Method	= User	Time of Conc. (Tc)	= 5.0 min
Total Rainfall	= 3.99 in	Design Storm	= Type II
Storm Duration	= 24 hrs	Shape Factor	= 484

* Composite CN Worksheet		
AREA (ac)	CN	DESCRIPTION
0.013	61	GRASS
0.013	61	Weighted CN Method Employed



Hydrograph Report

Project Name:

Hydrology Studio v 3.0.0.31

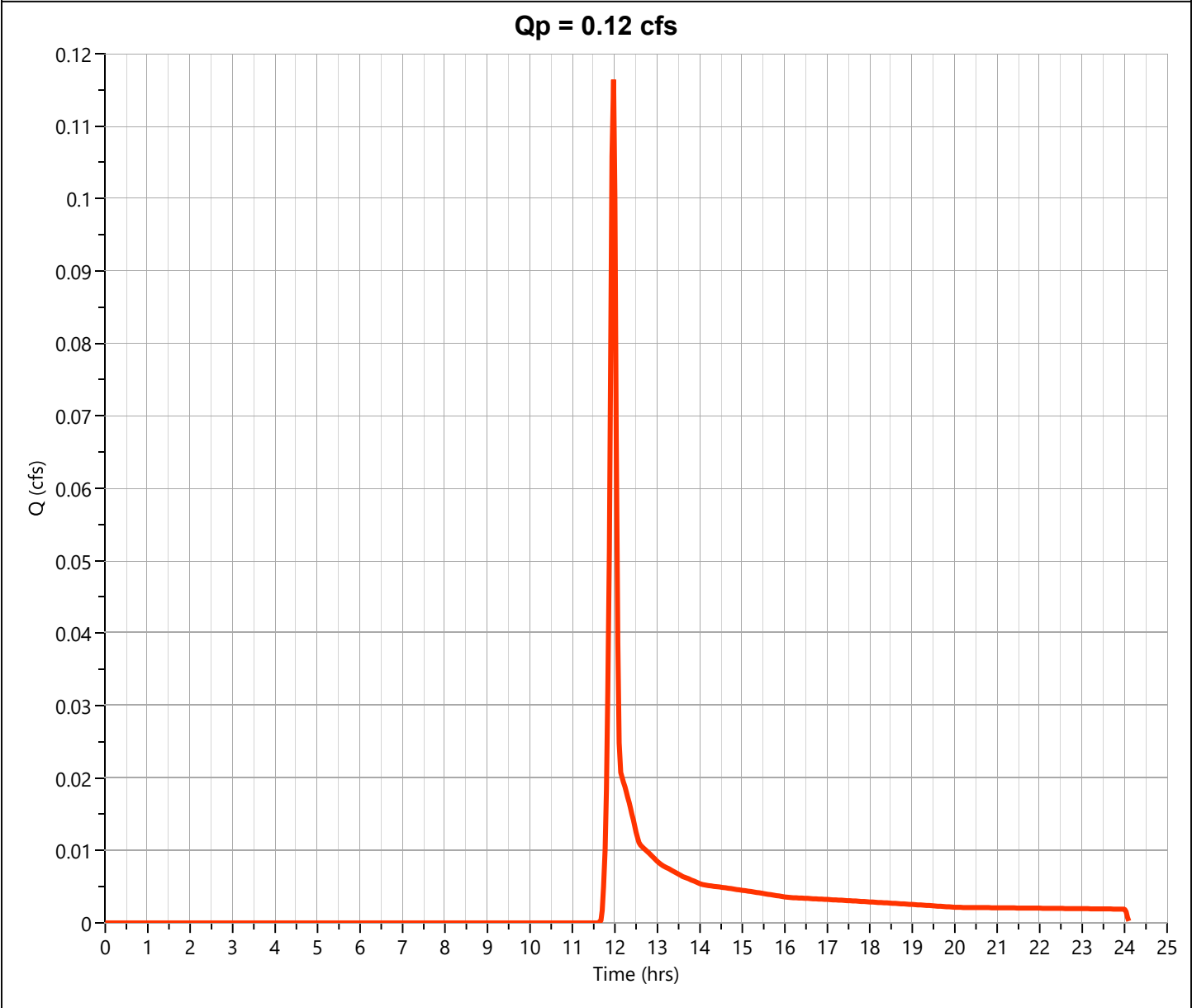
08-13-2024

Pre DA 5

Hyd. No. 5

Hydrograph Type	= NRCS Runoff	Peak Flow	= 0.116 cfs
Storm Frequency	= 5-yr	Time to Peak	= 11.97 hrs
Time Interval	= 2 min	Runoff Volume	= 247 cuft
Drainage Area	= 0.09 ac	Curve Number	= 61*
Tc Method	= User	Time of Conc. (Tc)	= 5.0 min
Total Rainfall	= 3.99 in	Design Storm	= Type II
Storm Duration	= 24 hrs	Shape Factor	= 484

* Composite CN Worksheet		
AREA (ac)	CN	DESCRIPTION
0.09	61	GRASS
0.09	61	Weighted CN Method Employed



Hydrograph Report

Project Name:

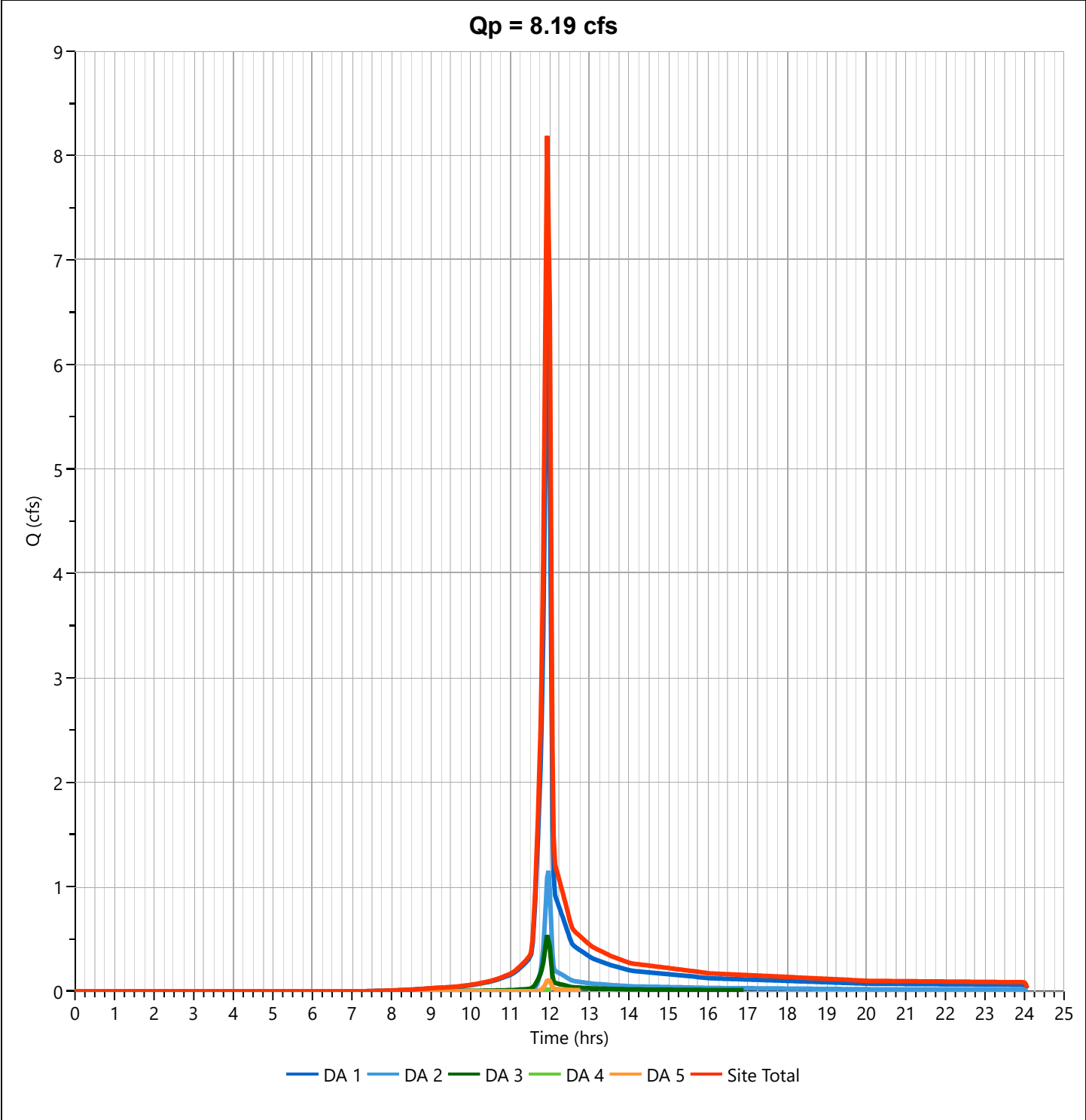
Hydrology Studio v 3.0.0.31

08-13-2024

Pre Site Total

Hyd. No. 6

Hydrograph Type	= Junction	Peak Flow	= 8.186 cfs
Storm Frequency	= 5-yr	Time to Peak	= 11.93 hrs
Time Interval	= 2 min	Hydrograph Volume	= 16,800 cuft
Inflow Hydrographs	= 1, 2, 3, 4, 5	Total Contrib. Area	= 2.649 ac



Hydrograph Report

Project Name:

Hydrology Studio v 3.0.0.31

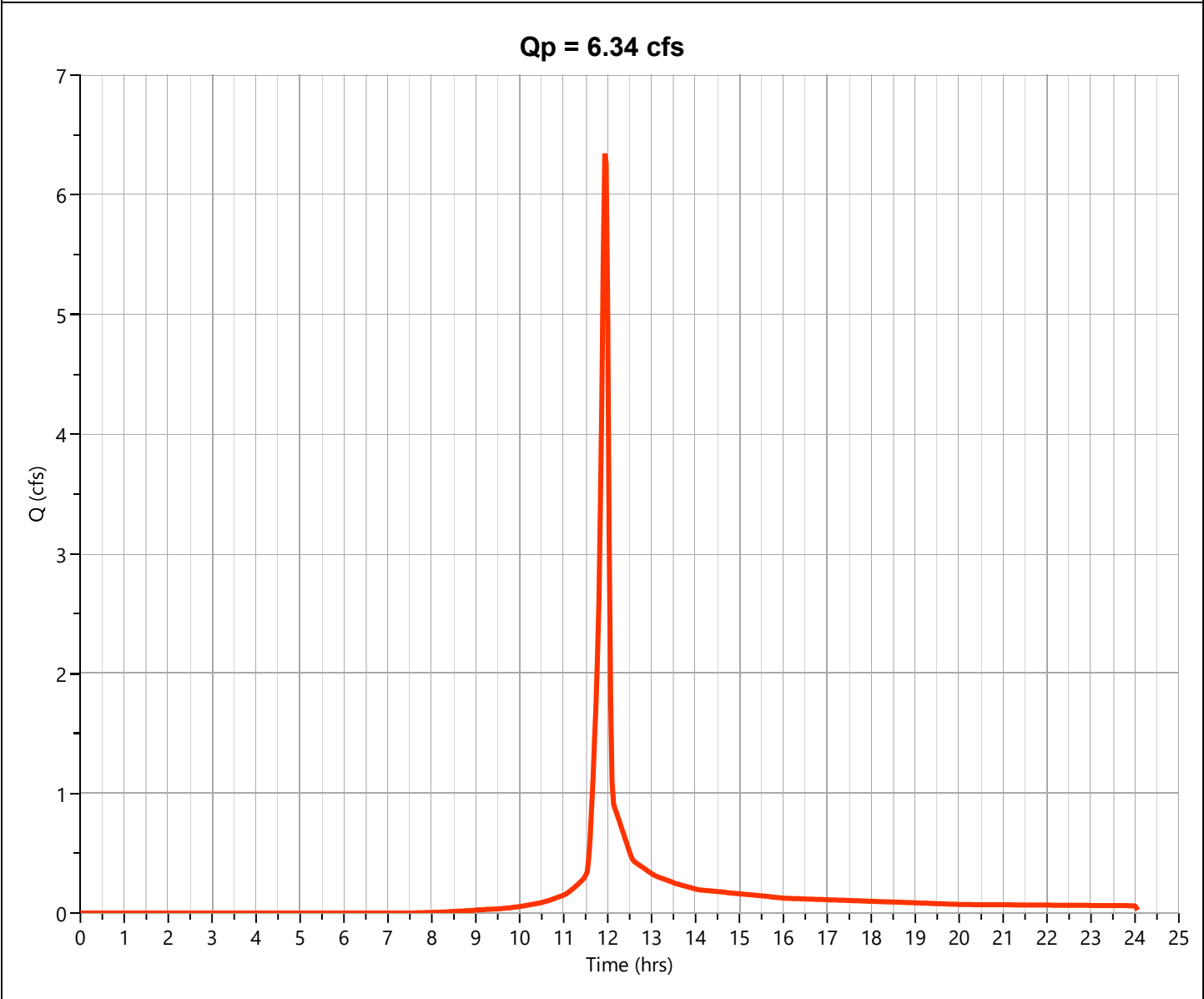
08-13-2024

Post DA 1

Hyd. No. 7

Hydrograph Type	= NRCS Runoff	Peak Flow	= 6.344 cfs
Storm Frequency	= 5-yr	Time to Peak	= 11.93 hrs
Time Interval	= 2 min	Runoff Volume	= 12,866 cuft
Drainage Area	= 1.71 ac	Curve Number	= 82.2*
Tc Method	= User	Time of Conc. (Tc)	= 5.0 min
Total Rainfall	= 3.99 in	Design Storm	= Type II
Storm Duration	= 24 hrs	Shape Factor	= 484

* Composite CN Worksheet		
AREA (ac)	CN	DESCRIPTION
0.73	61	GRASS
0.98	98	IMP
1.71	82	Weighted CN Method Employed



Hydrograph Report

Project Name:

Hydrology Studio v 3.0.0.31

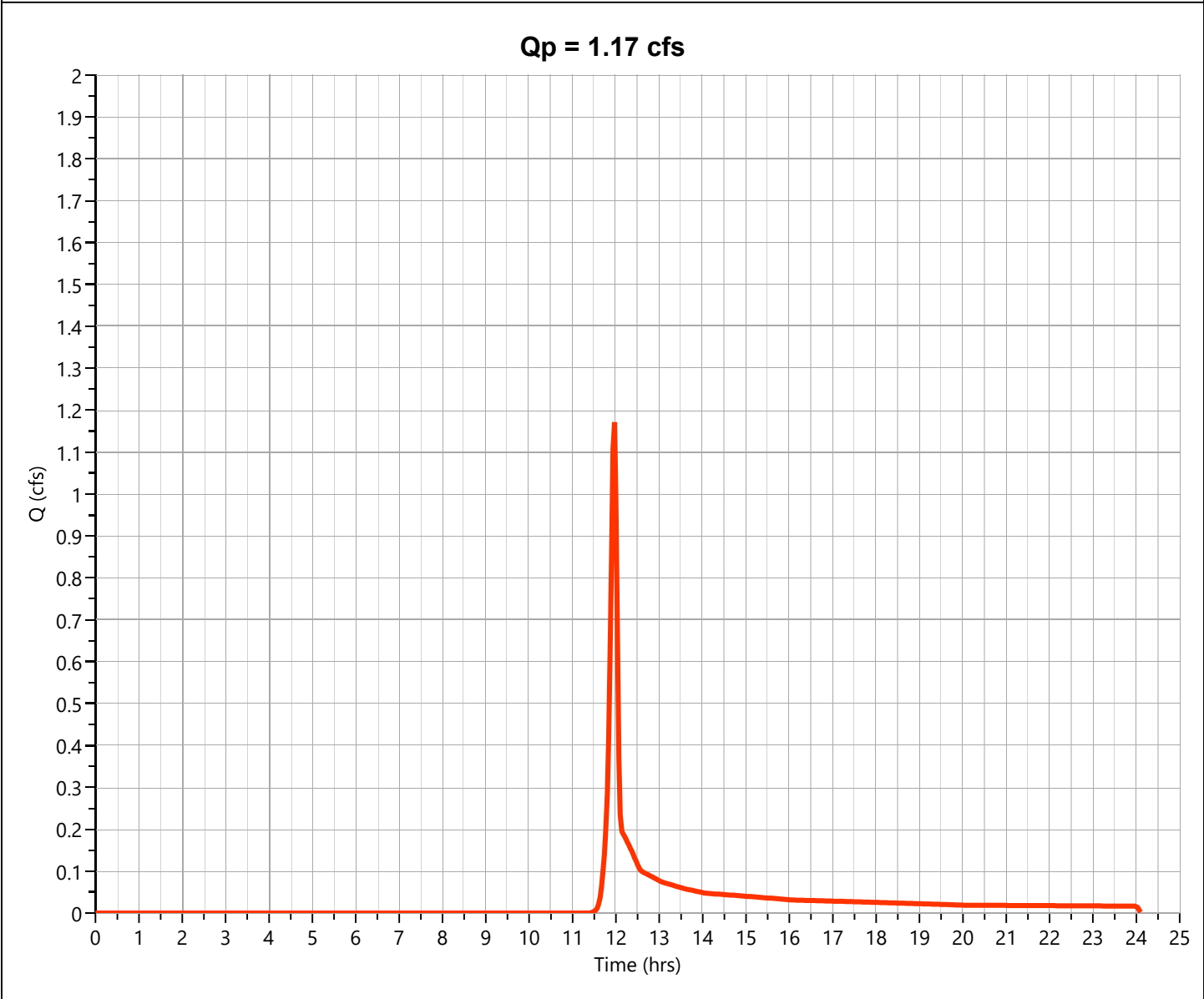
08-13-2024

Post DA 2

Hyd. No. 8

Hydrograph Type	= NRCS Runoff	Peak Flow	= 1.172 cfs
Storm Frequency	= 5-yr	Time to Peak	= 11.97 hrs
Time Interval	= 2 min	Runoff Volume	= 2,388 cuft
Drainage Area	= 0.676 ac	Curve Number	= 65.27*
Tc Method	= User	Time of Conc. (Tc)	= 5.0 min
Total Rainfall	= 3.99 in	Design Storm	= Type II
Storm Duration	= 24 hrs	Shape Factor	= 484

* Composite CN Worksheet		
AREA (ac)	CN	DESCRIPTION
0.598	61	GRASS
0.078	98	IMP
0.676	65	Weighted CN Method Employed



Hydrograph Report

Project Name:

Hydrology Studio v 3.0.0.31

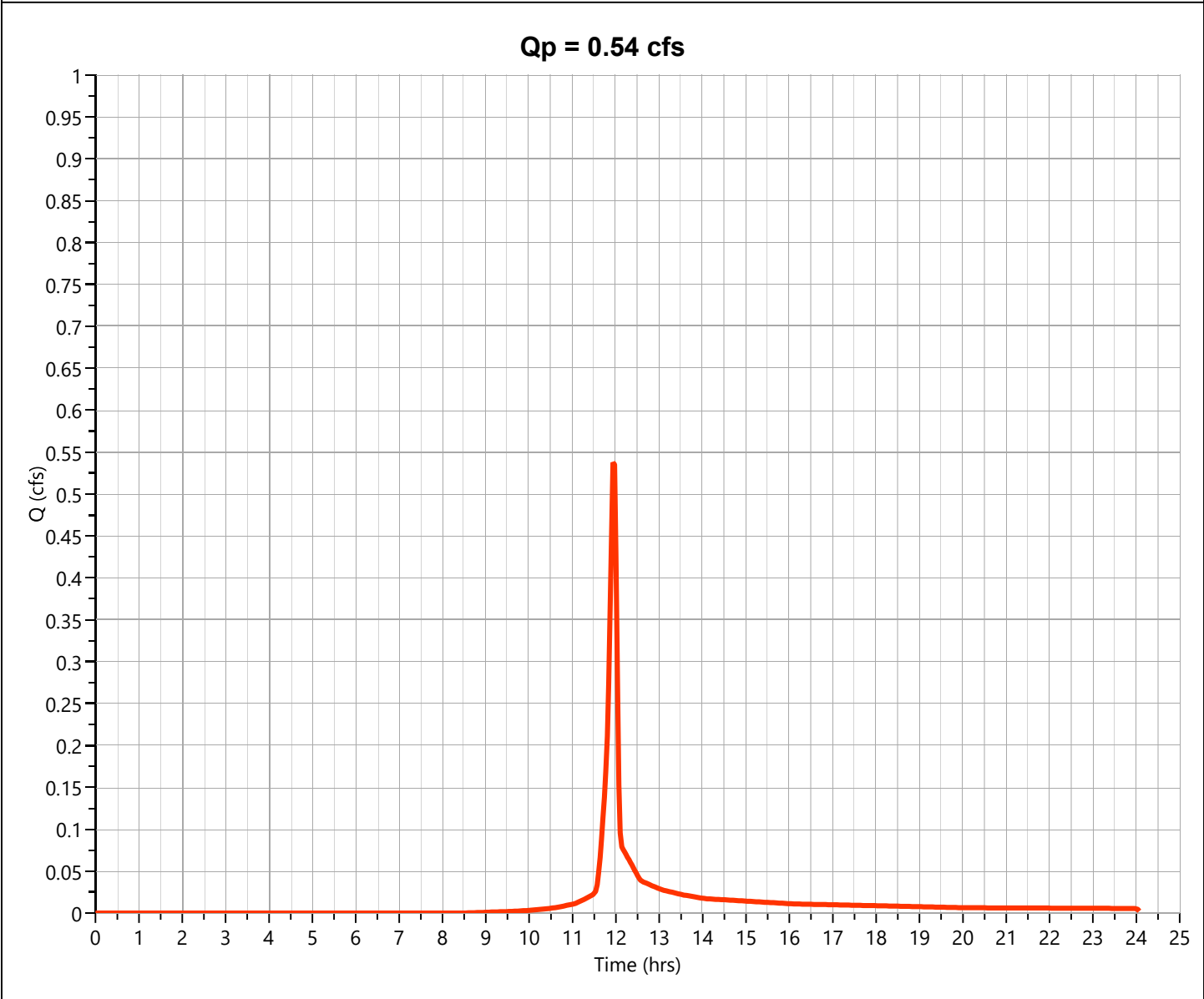
08-13-2024

Post DA 3

Hyd. No. 9

Hydrograph Type	= NRCS Runoff	Peak Flow	= 0.538 cfs
Storm Frequency	= 5-yr	Time to Peak	= 11.93 hrs
Time Interval	= 2 min	Runoff Volume	= 1,086 cuft
Drainage Area	= 0.16 ac	Curve Number	= 79.5*
Tc Method	= User	Time of Conc. (Tc)	= 5.0 min
Total Rainfall	= 3.99 in	Design Storm	= Type II
Storm Duration	= 24 hrs	Shape Factor	= 484

* Composite CN Worksheet		
AREA (ac)	CN	DESCRIPTION
0.08	61	GRASS
0.08	98	IMP
0.16	80	Weighted CN Method Employed



Hydrograph Report

Project Name:

Hydrology Studio v 3.0.0.31

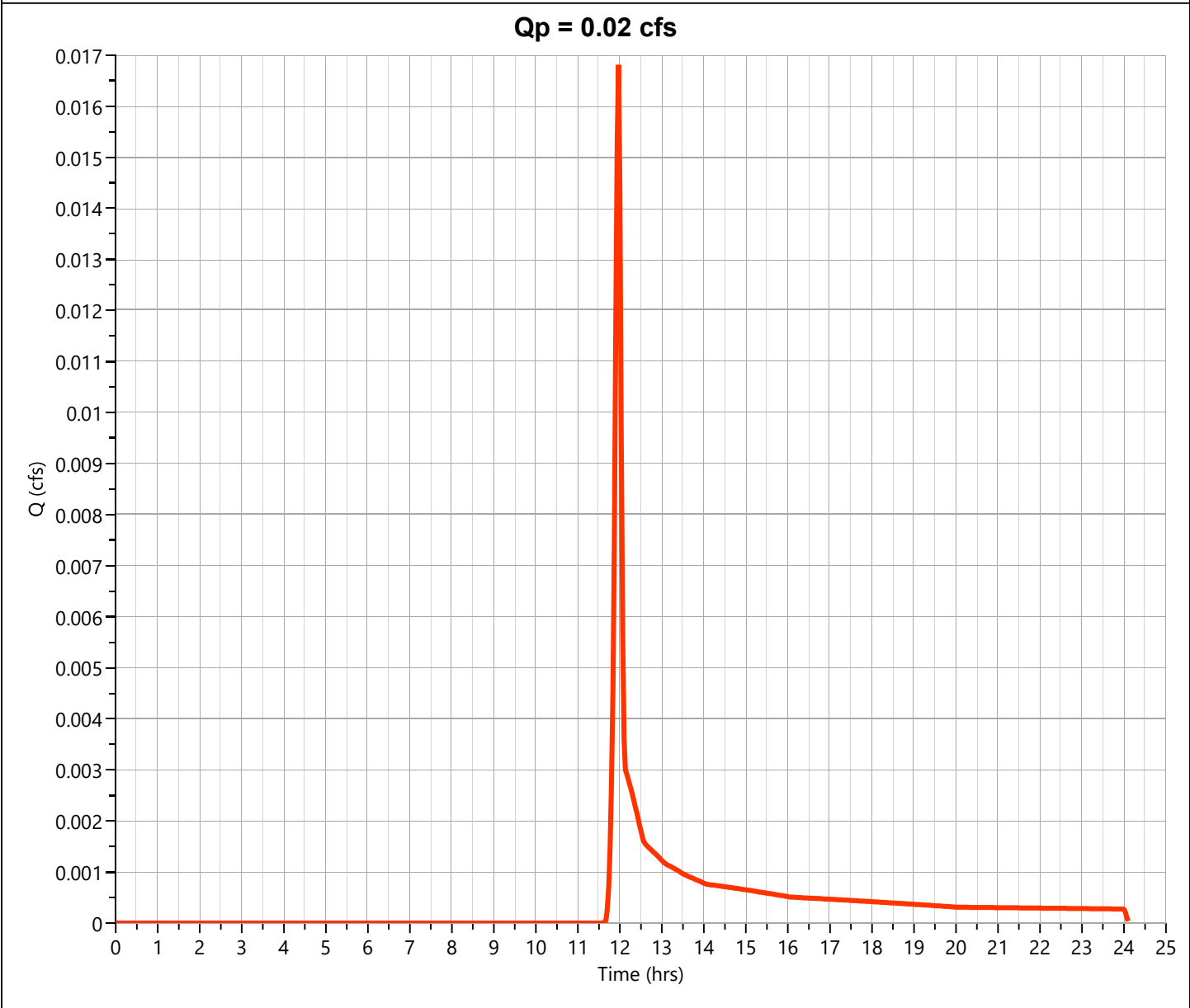
08-13-2024

Post DA 4

Hyd. No. 10

Hydrograph Type	= NRCS Runoff	Peak Flow	= 0.017 cfs
Storm Frequency	= 5-yr	Time to Peak	= 11.97 hrs
Time Interval	= 2 min	Runoff Volume	= 35.7 cuft
Drainage Area	= 0.013 ac	Curve Number	= 61*
Tc Method	= User	Time of Conc. (Tc)	= 5.0 min
Total Rainfall	= 3.99 in	Design Storm	= Type II
Storm Duration	= 24 hrs	Shape Factor	= 484

* Composite CN Worksheet		
AREA (ac)	CN	DESCRIPTION
0.013	61	GRASS
0.013	61	Weighted CN Method Employed



Hydrograph Report

Project Name:

Hydrology Studio v 3.0.0.31

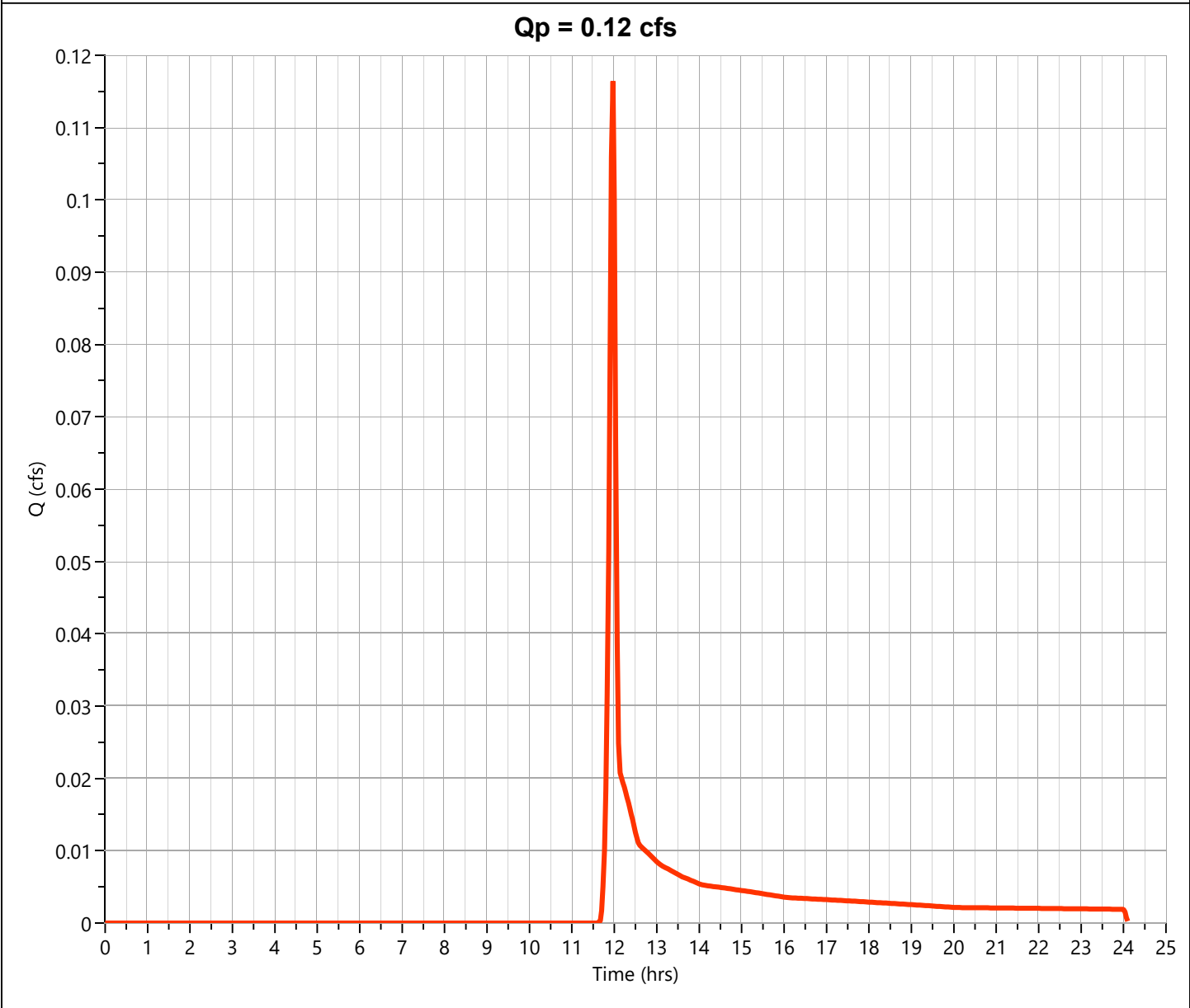
08-13-2024

Post DA 5

Hyd. No. 11

Hydrograph Type	= NRCS Runoff	Peak Flow	= 0.116 cfs
Storm Frequency	= 5-yr	Time to Peak	= 11.97 hrs
Time Interval	= 2 min	Runoff Volume	= 247 cuft
Drainage Area	= 0.09 ac	Curve Number	= 61*
Tc Method	= User	Time of Conc. (Tc)	= 5.0 min
Total Rainfall	= 3.99 in	Design Storm	= Type II
Storm Duration	= 24 hrs	Shape Factor	= 484

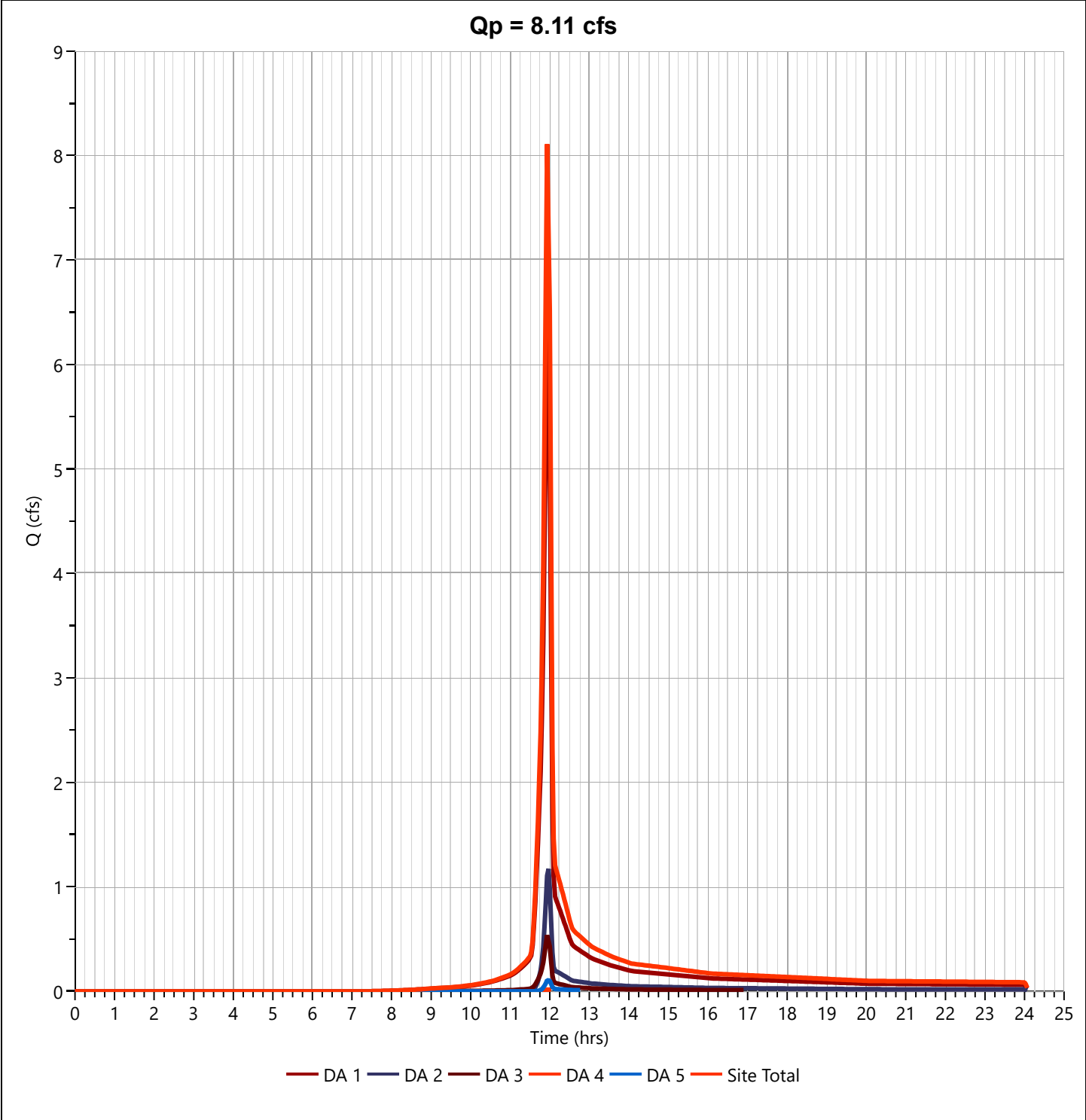
* Composite CN Worksheet		
AREA (ac)	CN	DESCRIPTION
0.09	61	GRASS
0.09	61	Weighted CN Method Employed



Post Site Total

Hyd. No. 12

Hydrograph Type	= Junction	Peak Flow	= 8.109 cfs
Storm Frequency	= 5-yr	Time to Peak	= 11.93 hrs
Time Interval	= 2 min	Hydrograph Volume	= 16,623 cuft
Inflow Hydrographs	= 7, 8, 9, 10, 11	Total Contrib. Area	= 2.649 ac



Hydrology Studio v 3.0.0.31

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Hydrograph Report

Project Name:

Hydrology Studio v 3.0.0.31

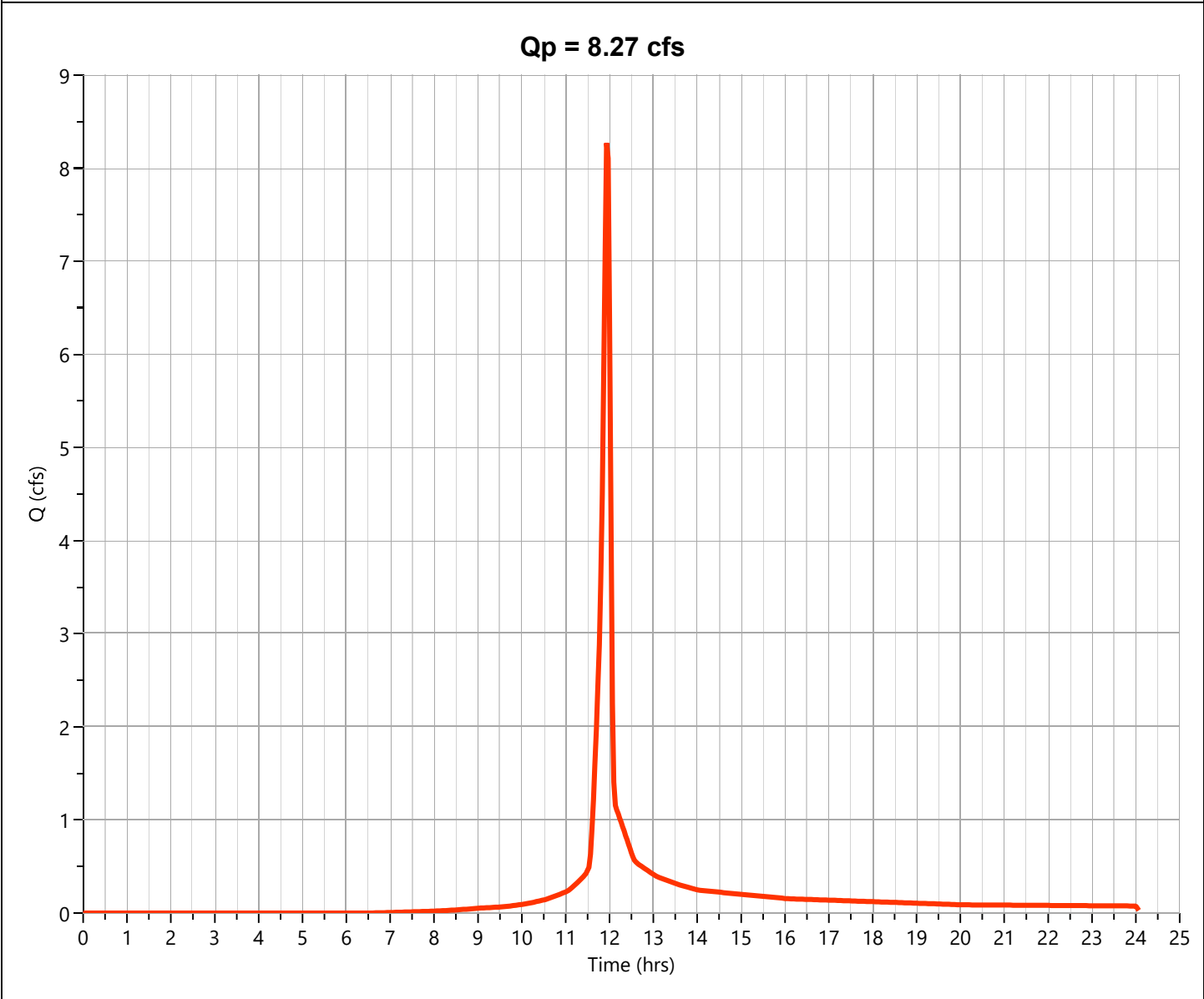
08-13-2024

Pre DA 1

Hyd. No. 1

Hydrograph Type	= NRCS Runoff	Peak Flow	= 8.267 cfs
Storm Frequency	= 10-yr	Time to Peak	= 11.93 hrs
Time Interval	= 2 min	Runoff Volume	= 16,914 cuft
Drainage Area	= 1.71 ac	Curve Number	= 82.64*
Tc Method	= User	Time of Conc. (Tc)	= 5.0 min
Total Rainfall	= 4.74 in	Design Storm	= Type II
Storm Duration	= 24 hrs	Shape Factor	= 484

* Composite CN Worksheet		
AREA (ac)	CN	DESCRIPTION
0.71	61	GRASS
1.0	98	IMP
1.71	83	Weighted CN Method Employed



Hydrograph Report

Project Name:

Hydrology Studio v 3.0.0.31

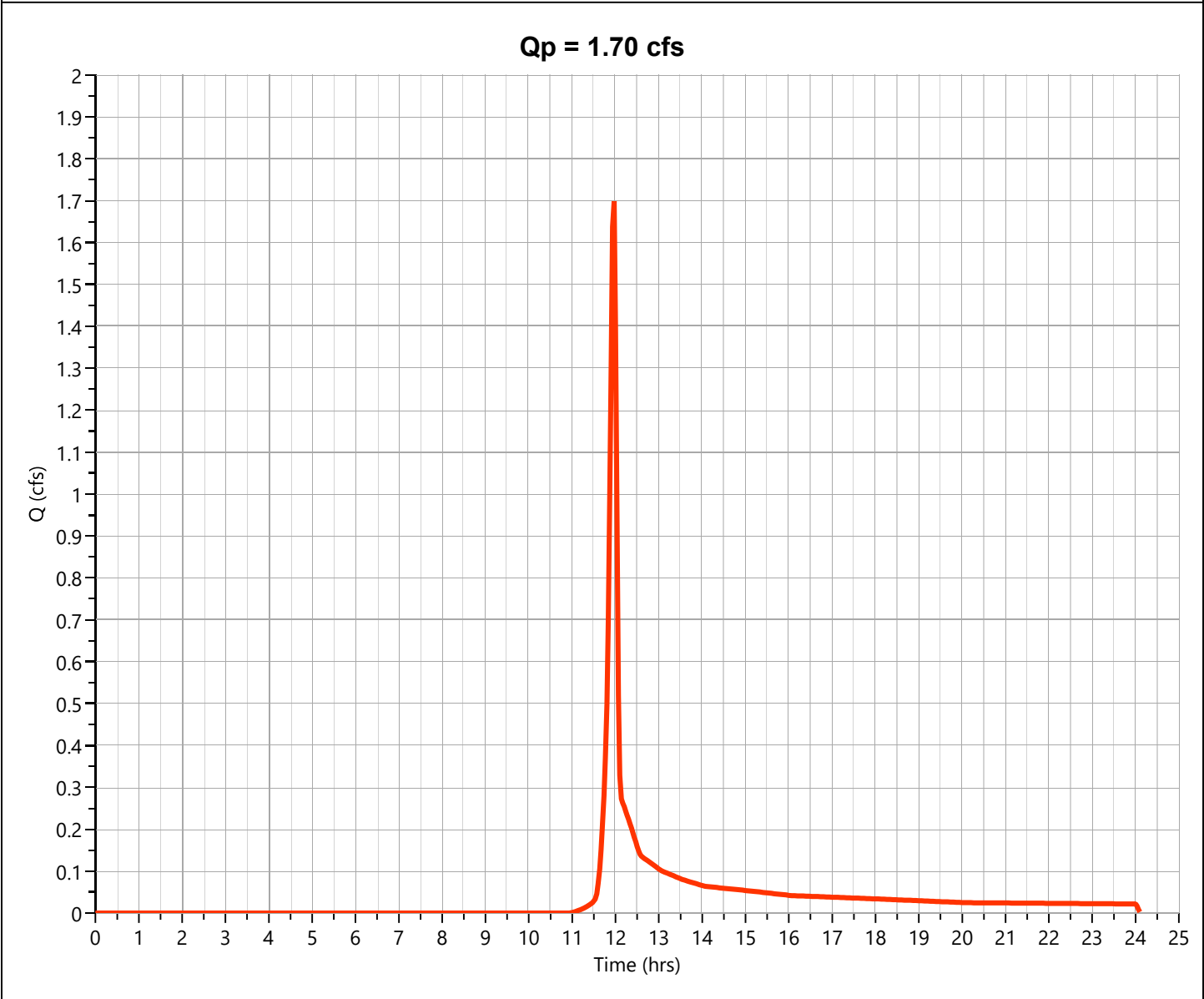
08-13-2024

Pre DA 2

Hyd. No. 2

Hydrograph Type	= NRCS Runoff	Peak Flow	= 1.699 cfs
Storm Frequency	= 10-yr	Time to Peak	= 11.97 hrs
Time Interval	= 2 min	Runoff Volume	= 3,412 cuft
Drainage Area	= 0.676 ac	Curve Number	= 65*
Tc Method	= User	Time of Conc. (Tc)	= 5.0 min
Total Rainfall	= 4.74 in	Design Storm	= Type II
Storm Duration	= 24 hrs	Shape Factor	= 484

* Composite CN Worksheet		
AREA (ac)	CN	DESCRIPTION
0.598	61	GRASS
0.078	98	IMP
0.676	65	Weighted CN Method Employed



Hydrograph Report

Project Name:

Hydrology Studio v 3.0.0.31

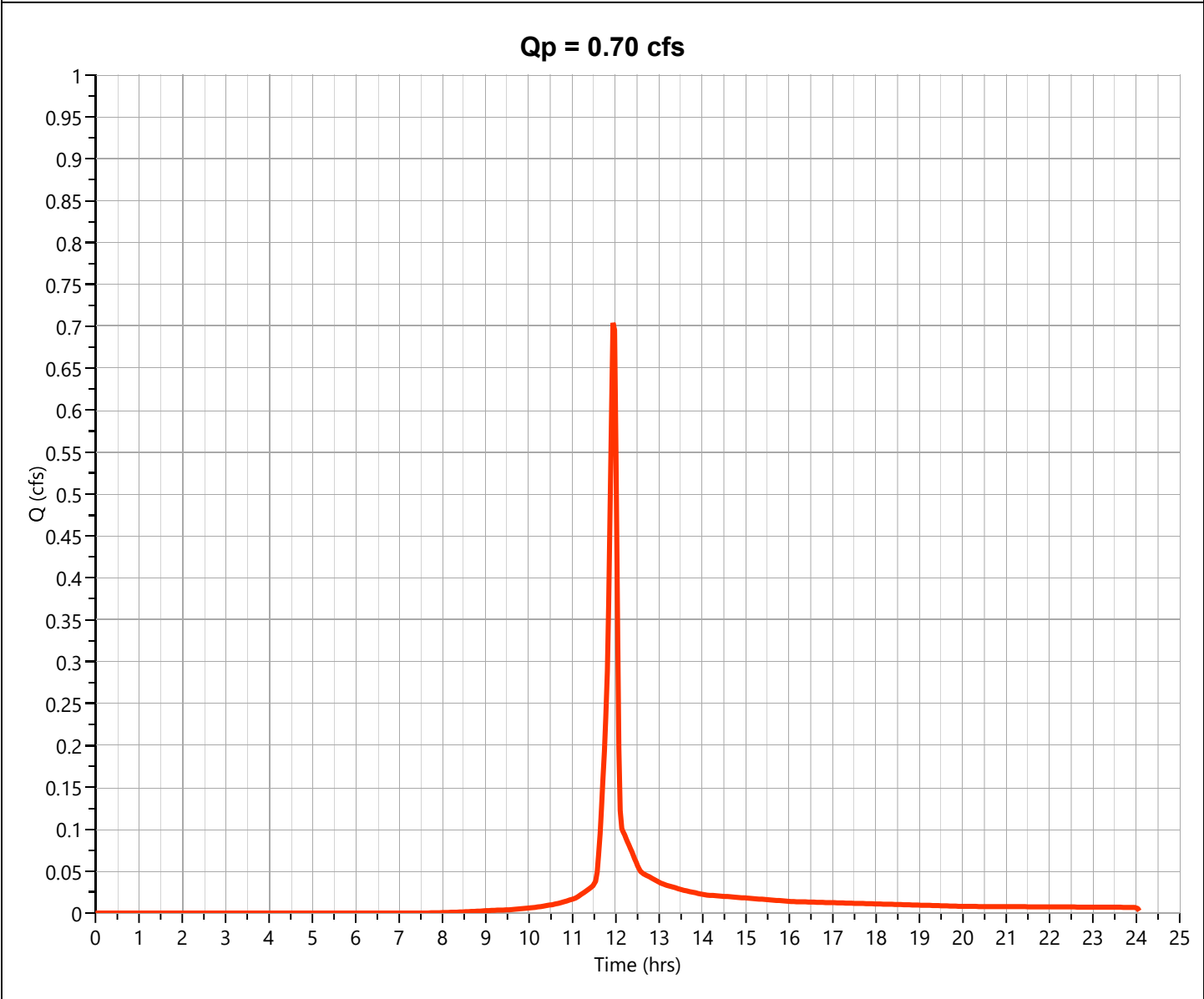
08-13-2024

Pre DA 3

Hyd. No. 3

Hydrograph Type	= NRCS Runoff	Peak Flow	= 0.704 cfs
Storm Frequency	= 10-yr	Time to Peak	= 11.93 hrs
Time Interval	= 2 min	Runoff Volume	= 1,428 cuft
Drainage Area	= 0.16 ac	Curve Number	= 79.5*
Tc Method	= User	Time of Conc. (Tc)	= 5.0 min
Total Rainfall	= 4.74 in	Design Storm	= Type II
Storm Duration	= 24 hrs	Shape Factor	= 484

* Composite CN Worksheet		
AREA (ac)	CN	DESCRIPTION
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0.08	98	IMP
0.16	80	Weighted CN Method Employed



Hydrograph Report

Project Name:

Hydrology Studio v 3.0.0.31

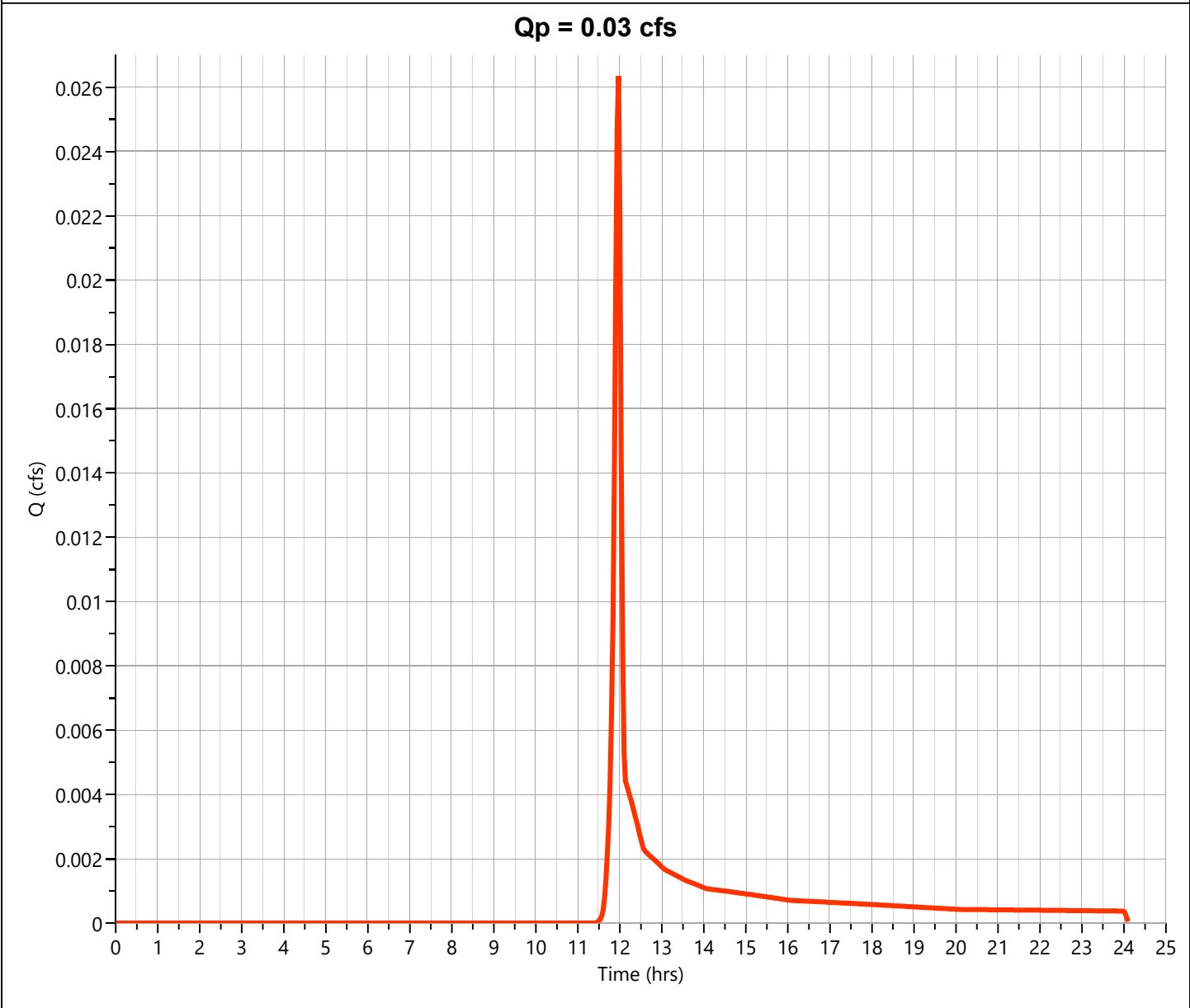
08-13-2024

Pre DA 4

Hyd. No. 4

Hydrograph Type	= NRCS Runoff	Peak Flow	= 0.026 cfs
Storm Frequency	= 10-yr	Time to Peak	= 11.97 hrs
Time Interval	= 2 min	Runoff Volume	= 53.8 cuft
Drainage Area	= 0.013 ac	Curve Number	= 61*
Tc Method	= User	Time of Conc. (Tc)	= 5.0 min
Total Rainfall	= 4.74 in	Design Storm	= Type II
Storm Duration	= 24 hrs	Shape Factor	= 484

* Composite CN Worksheet		
AREA (ac)	CN	DESCRIPTION
0.013	61	GRASS
0.013	61	Weighted CN Method Employed



Hydrograph Report

Project Name:

Hydrology Studio v 3.0.0.31

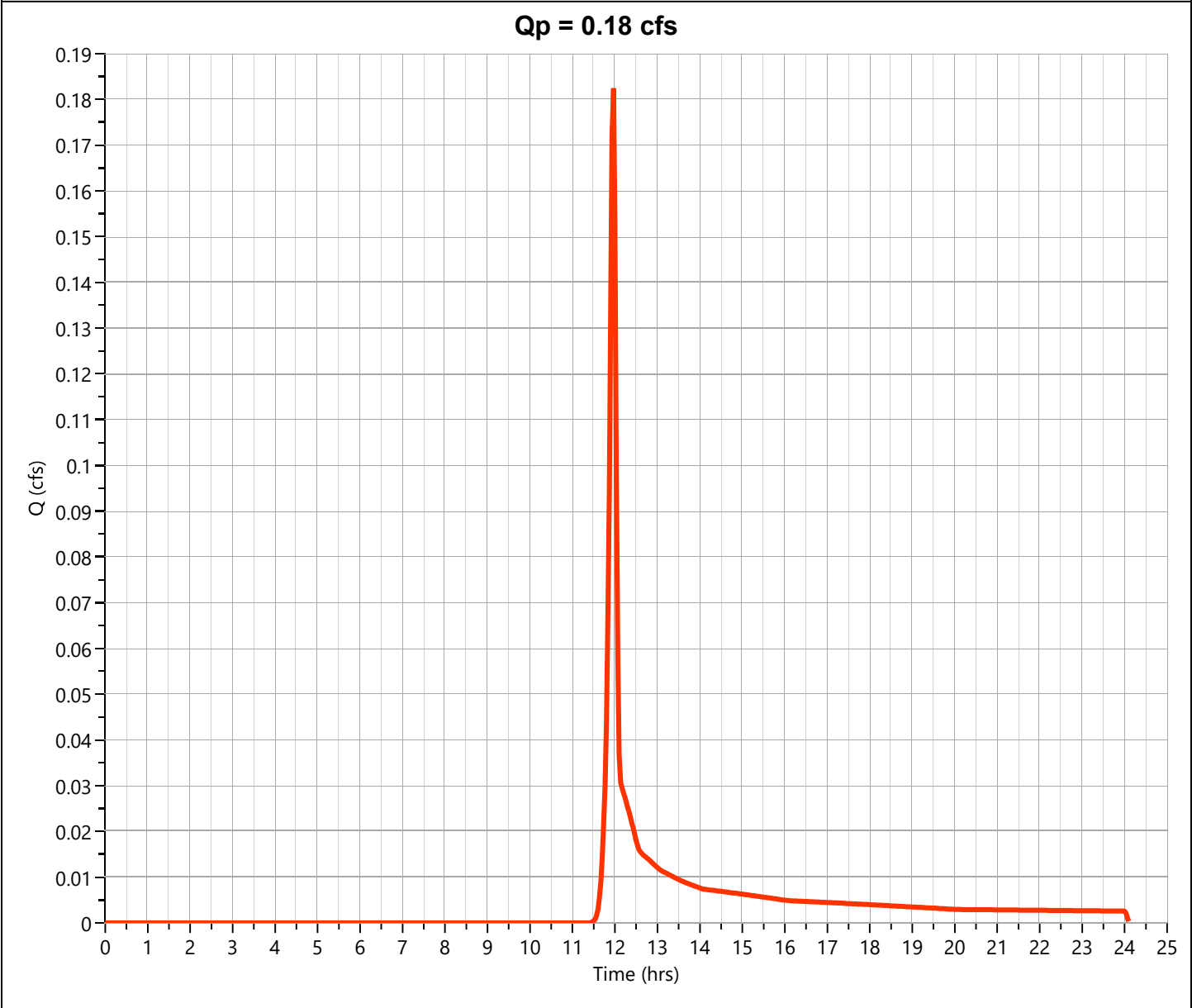
08-13-2024

Pre DA 5

Hyd. No. 5

Hydrograph Type	= NRCS Runoff	Peak Flow	= 0.182 cfs
Storm Frequency	= 10-yr	Time to Peak	= 11.97 hrs
Time Interval	= 2 min	Runoff Volume	= 372 cuft
Drainage Area	= 0.09 ac	Curve Number	= 61*
Tc Method	= User	Time of Conc. (Tc)	= 5.0 min
Total Rainfall	= 4.74 in	Design Storm	= Type II
Storm Duration	= 24 hrs	Shape Factor	= 484

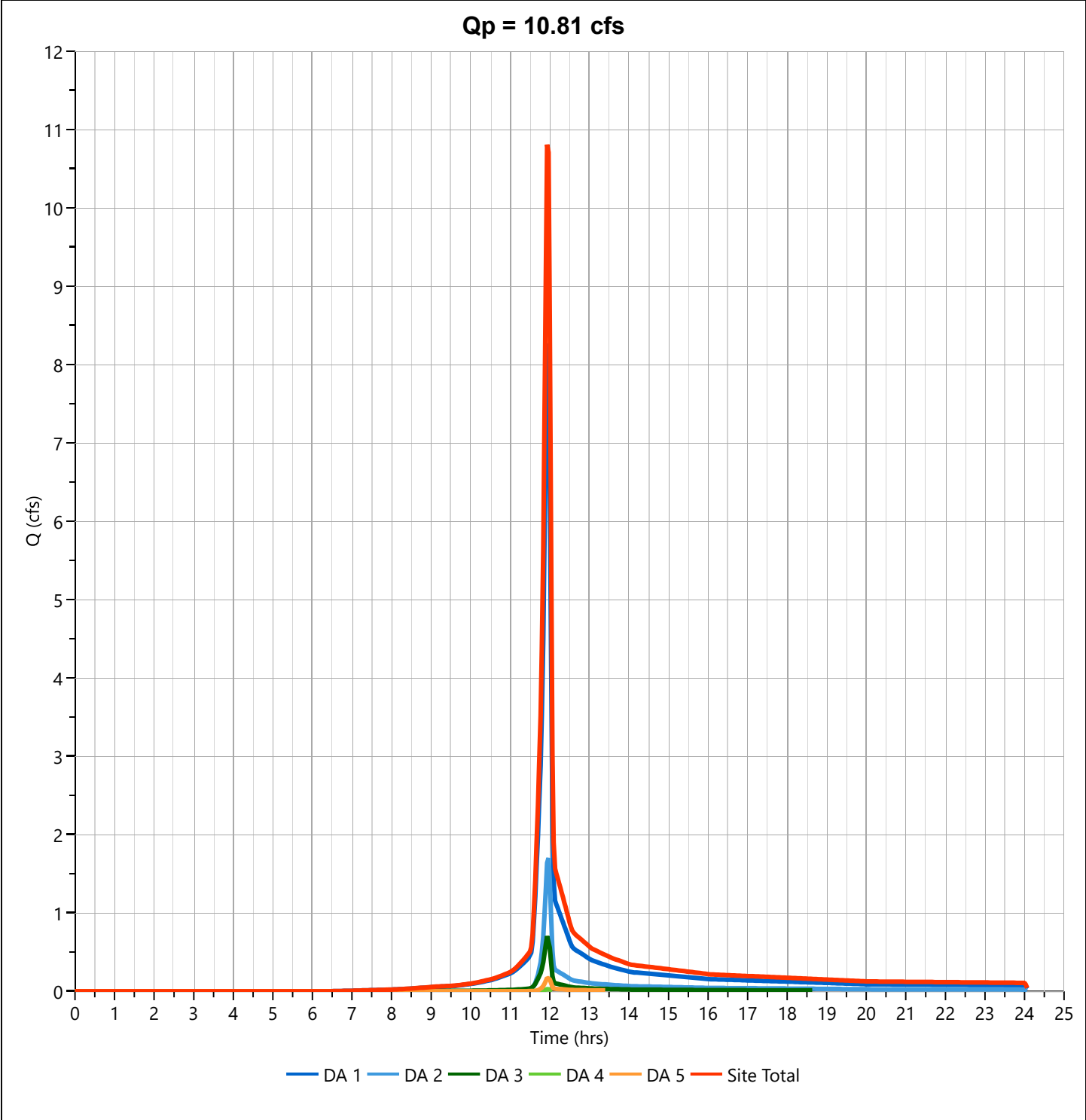
* Composite CN Worksheet		
AREA (ac)	CN	DESCRIPTION
0.09	61	GRASS
0.09	61	Weighted CN Method Employed



Pre Site Total

Hyd. No. 6

Hydrograph Type	= Junction	Peak Flow	= 10.81 cfs
Storm Frequency	= 10-yr	Time to Peak	= 11.93 hrs
Time Interval	= 2 min	Hydrograph Volume	= 22,180 cuft
Inflow Hydrographs	= 1, 2, 3, 4, 5	Total Contrib. Area	= 2.649 ac



Hydrograph Report

Project Name:

Hydrology Studio v 3.0.0.31

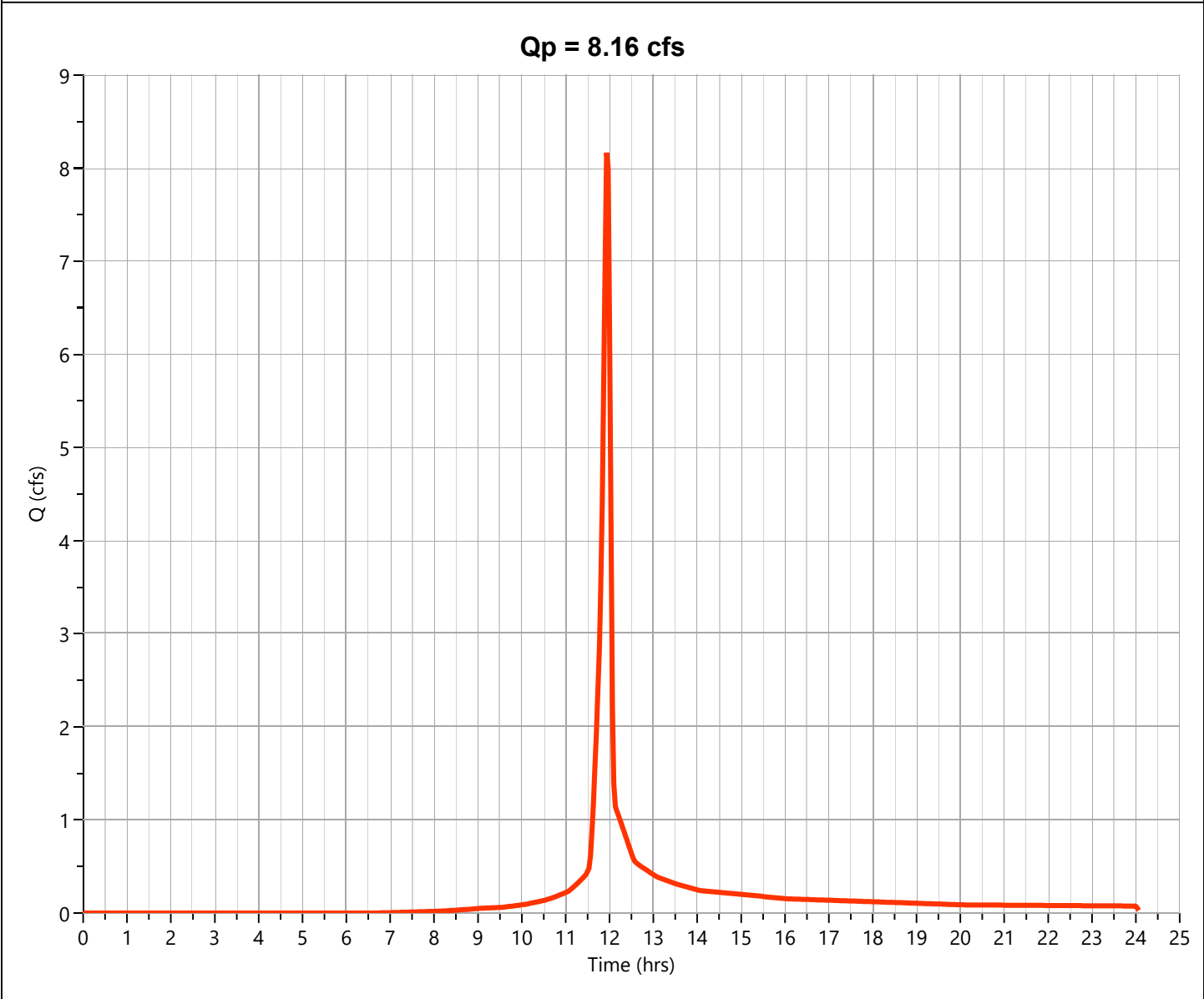
08-13-2024

Post DA 1

Hyd. No. 7

Hydrograph Type	= NRCS Runoff	Peak Flow	= 8.164 cfs
Storm Frequency	= 10-yr	Time to Peak	= 11.93 hrs
Time Interval	= 2 min	Runoff Volume	= 16,678 cuft
Drainage Area	= 1.71 ac	Curve Number	= 82.2*
Tc Method	= User	Time of Conc. (Tc)	= 5.0 min
Total Rainfall	= 4.74 in	Design Storm	= Type II
Storm Duration	= 24 hrs	Shape Factor	= 484

* Composite CN Worksheet		
AREA (ac)	CN	DESCRIPTION
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0.98	98	IMP
1.71	82	Weighted CN Method Employed



Hydrograph Report

Project Name:

Hydrology Studio v 3.0.0.31

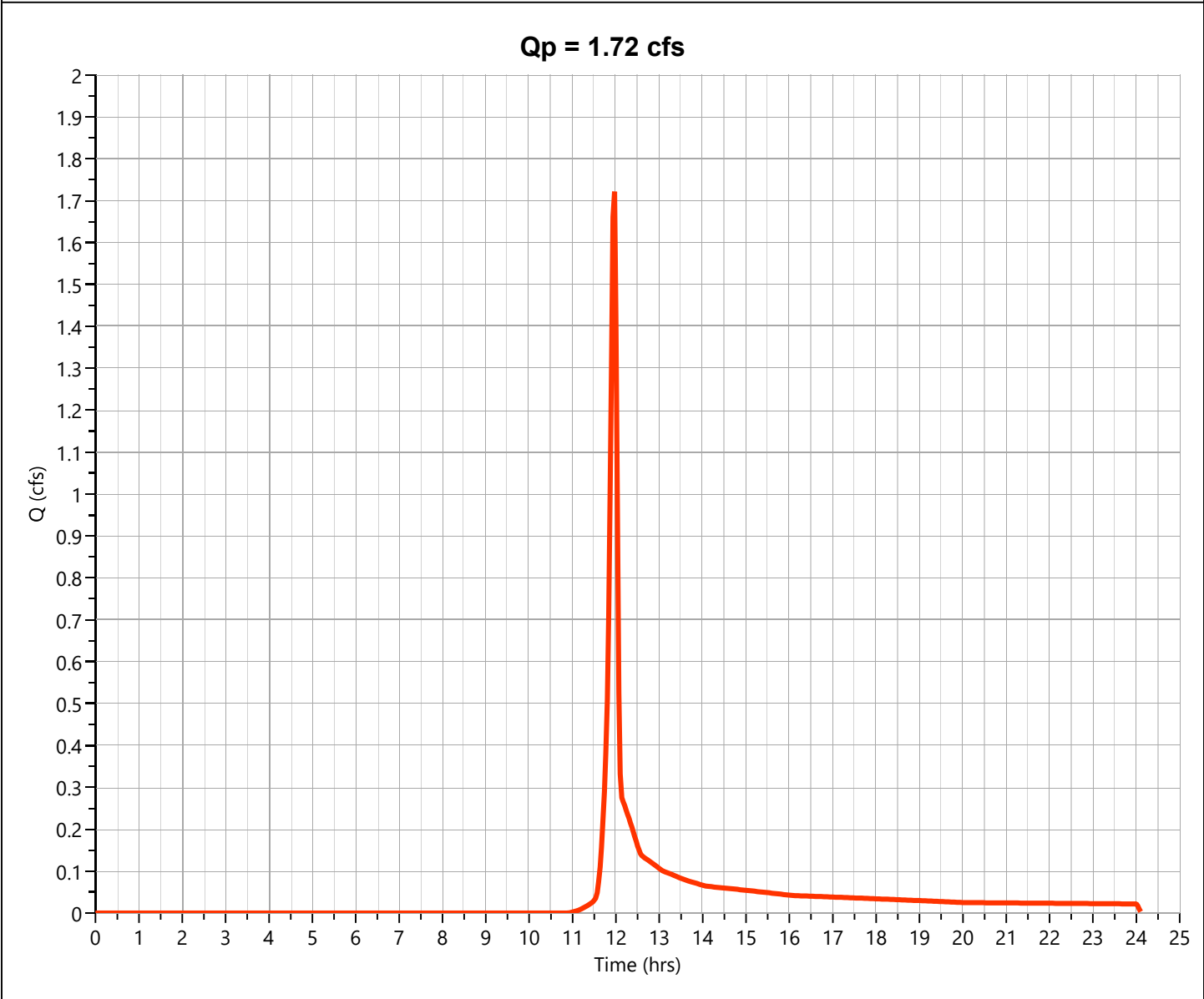
08-13-2024

Post DA 2

Hyd. No. 8

Hydrograph Type	= NRCS Runoff	Peak Flow	= 1.721 cfs
Storm Frequency	= 10-yr	Time to Peak	= 11.97 hrs
Time Interval	= 2 min	Runoff Volume	= 3,455 cuft
Drainage Area	= 0.676 ac	Curve Number	= 65.27*
Tc Method	= User	Time of Conc. (Tc)	= 5.0 min
Total Rainfall	= 4.74 in	Design Storm	= Type II
Storm Duration	= 24 hrs	Shape Factor	= 484

* Composite CN Worksheet		
AREA (ac)	CN	DESCRIPTION
0.598	61	GRASS
0.078	98	IMP
0.676	65	Weighted CN Method Employed



Hydrograph Report

Project Name:

Hydrology Studio v 3.0.0.31

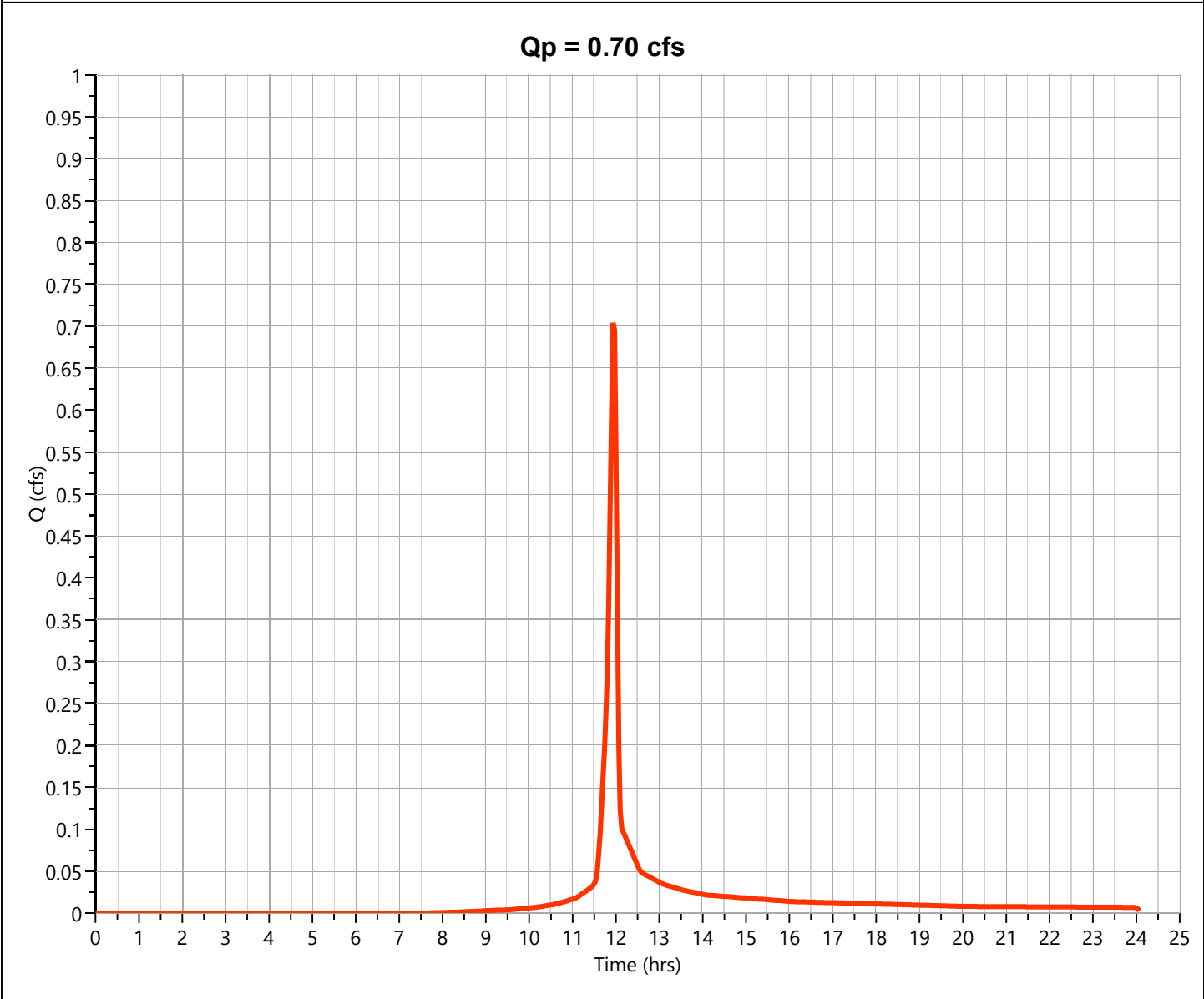
08-13-2024

Post DA 3

Hyd. No. 9

Hydrograph Type	= NRCS Runoff	Peak Flow	= 0.704 cfs
Storm Frequency	= 10-yr	Time to Peak	= 11.93 hrs
Time Interval	= 2 min	Runoff Volume	= 1,428 cuft
Drainage Area	= 0.16 ac	Curve Number	= 79.5*
Tc Method	= User	Time of Conc. (Tc)	= 5.0 min
Total Rainfall	= 4.74 in	Design Storm	= Type II
Storm Duration	= 24 hrs	Shape Factor	= 484

* Composite CN Worksheet		
AREA (ac)	CN	DESCRIPTION
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0.08	98	IMP
0.16	80	Weighted CN Method Employed



Hydrograph Report

Project Name:

Hydrology Studio v 3.0.0.31

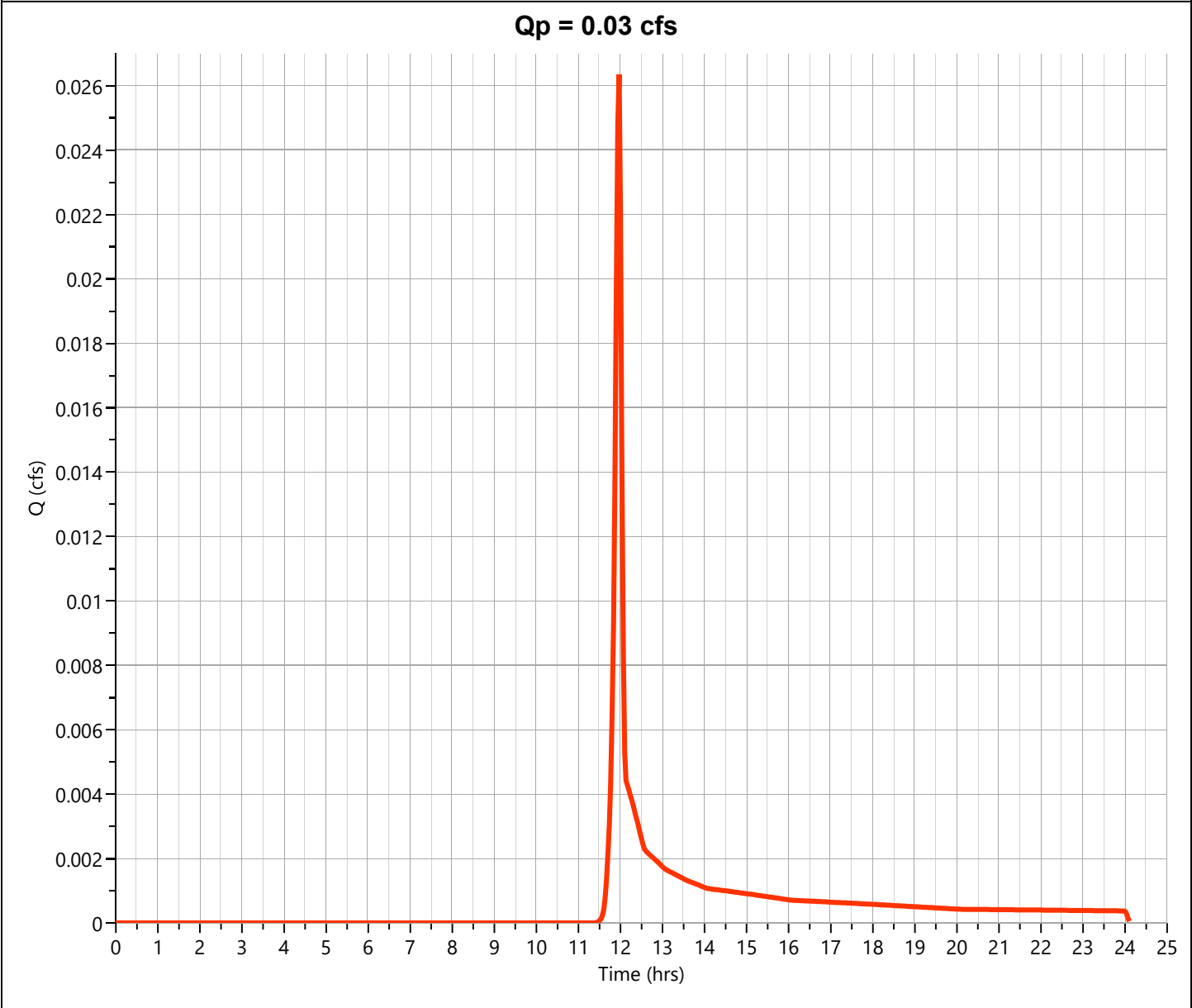
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Post DA 4

Hyd. No. 10

Hydrograph Type	= NRCS Runoff	Peak Flow	= 0.026 cfs
Storm Frequency	= 10-yr	Time to Peak	= 11.97 hrs
Time Interval	= 2 min	Runoff Volume	= 53.8 cuft
Drainage Area	= 0.013 ac	Curve Number	= 61*
Tc Method	= User	Time of Conc. (Tc)	= 5.0 min
Total Rainfall	= 4.74 in	Design Storm	= Type II
Storm Duration	= 24 hrs	Shape Factor	= 484

* Composite CN Worksheet		
AREA (ac)	CN	DESCRIPTION
0.013	61	GRASS
0.013	61	Weighted CN Method Employed



Hydrograph Report

Project Name:

Hydrology Studio v 3.0.0.31

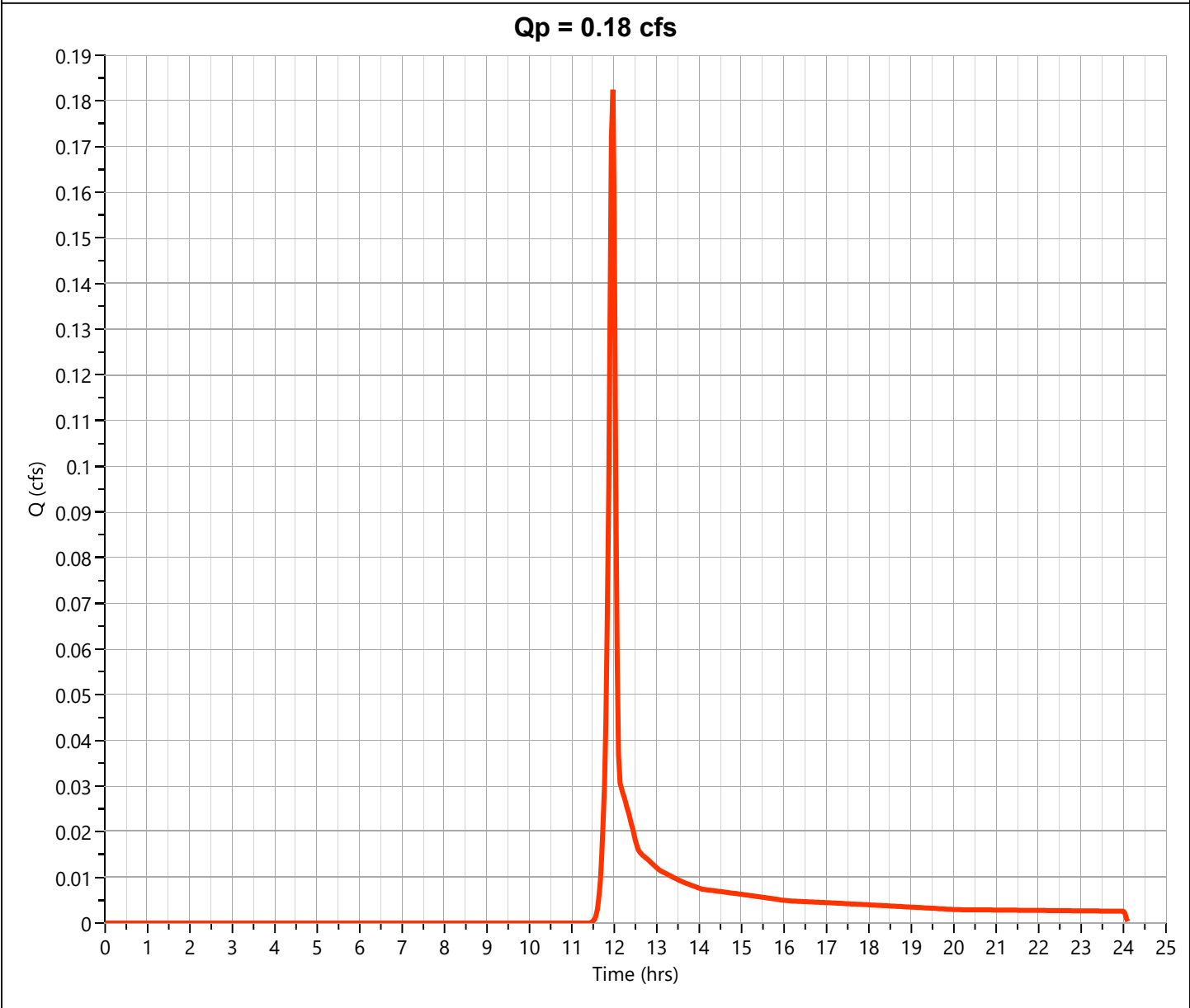
08-13-2024

Post DA 5

Hyd. No. 11

Hydrograph Type	= NRCS Runoff	Peak Flow	= 0.182 cfs
Storm Frequency	= 10-yr	Time to Peak	= 11.97 hrs
Time Interval	= 2 min	Runoff Volume	= 372 cuft
Drainage Area	= 0.09 ac	Curve Number	= 61*
Tc Method	= User	Time of Conc. (Tc)	= 5.0 min
Total Rainfall	= 4.74 in	Design Storm	= Type II
Storm Duration	= 24 hrs	Shape Factor	= 484

* Composite CN Worksheet		
AREA (ac)	CN	DESCRIPTION
0.09	61	GRASS
0.09	61	Weighted CN Method Employed



Hydrograph Report

Project Name:

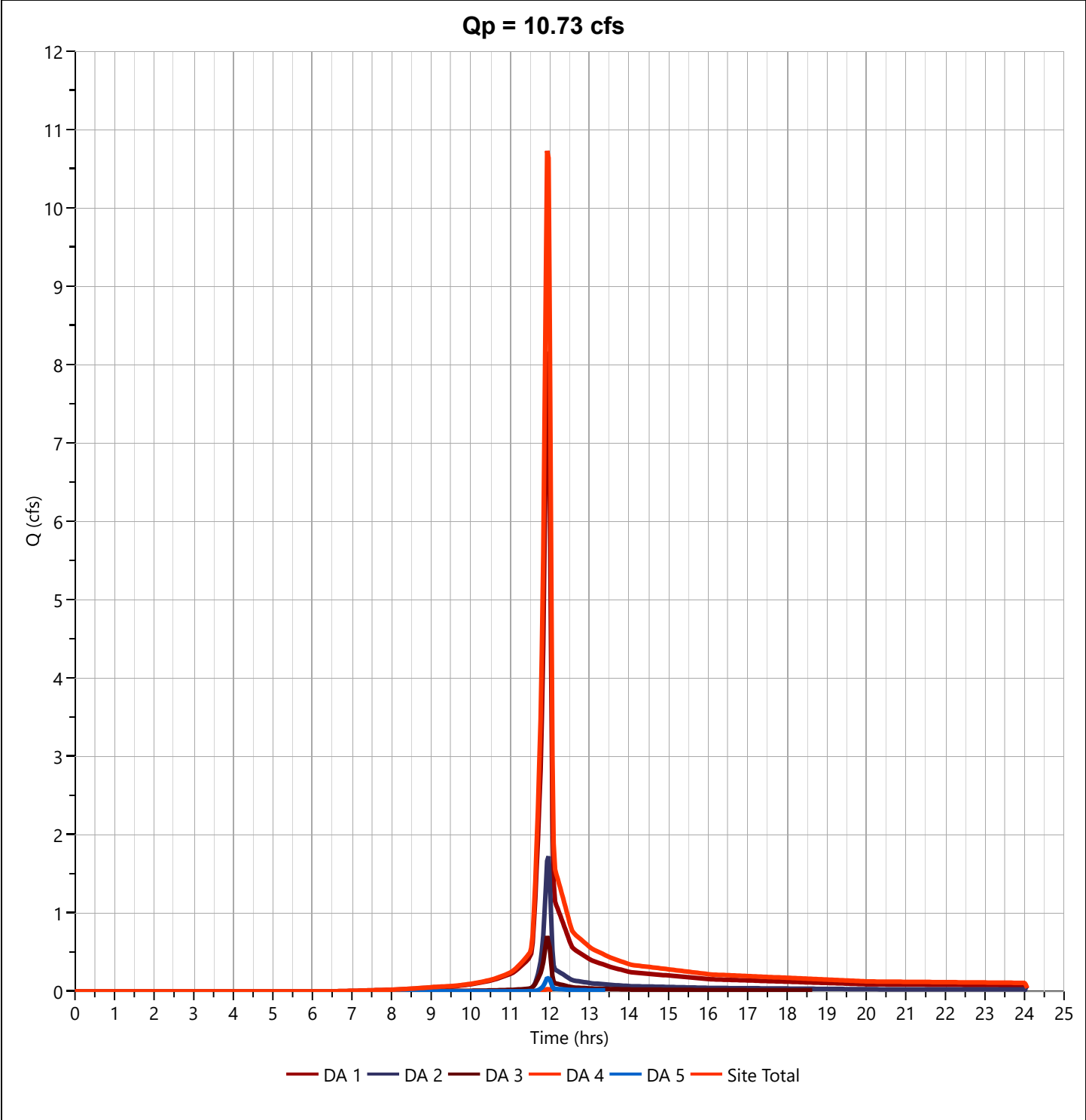
Hydrology Studio v 3.0.0.31

08-13-2024

Post Site Total

Hyd. No. 12

Hydrograph Type	= Junction	Peak Flow	= 10.73 cfs
Storm Frequency	= 10-yr	Time to Peak	= 11.93 hrs
Time Interval	= 2 min	Hydrograph Volume	= 21,987 cuft
Inflow Hydrographs	= 7, 8, 9, 10, 11	Total Contrib. Area	= 2.649 ac



Hydrology Studio v 3.0.0.31

08-13-2024

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Hydrograph Report

Project Name:

Hydrology Studio v 3.0.0.31

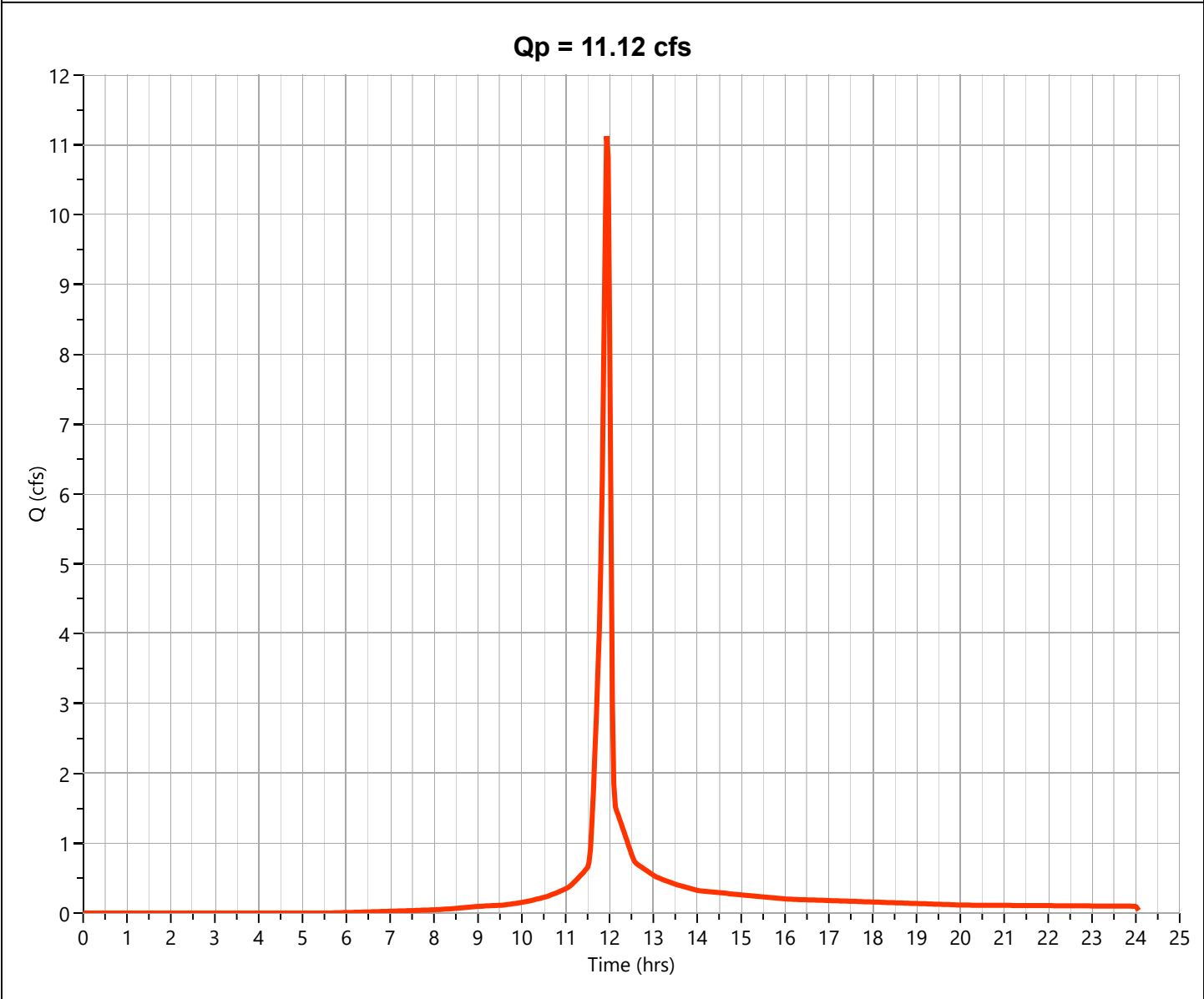
08-13-2024

Pre DA 1

Hyd. No. 1

Hydrograph Type	= NRCS Runoff	Peak Flow	= 11.12 cfs
Storm Frequency	= 25-yr	Time to Peak	= 11.93 hrs
Time Interval	= 2 min	Runoff Volume	= 23,052 cuft
Drainage Area	= 1.71 ac	Curve Number	= 82.64*
Tc Method	= User	Time of Conc. (Tc)	= 5.0 min
Total Rainfall	= 5.90 in	Design Storm	= Type II
Storm Duration	= 24 hrs	Shape Factor	= 484

* Composite CN Worksheet		
AREA (ac)	CN	DESCRIPTION
0.71	61	GRASS
1.0	98	IMP
1.71	83	Weighted CN Method Employed



Hydrograph Report

Project Name:

Hydrology Studio v 3.0.0.31

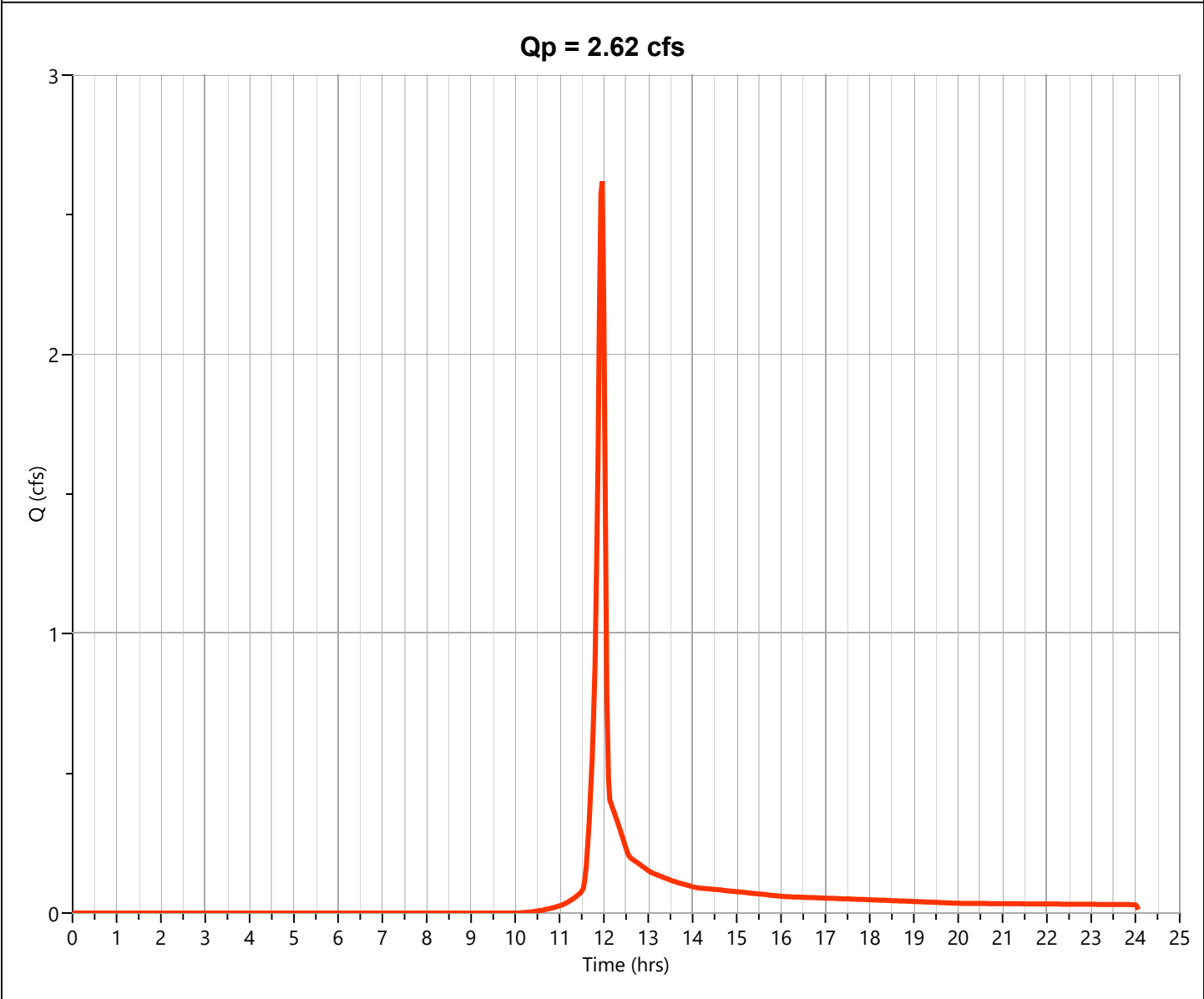
08-13-2024

Pre DA 2

Hyd. No. 2

Hydrograph Type	= NRCS Runoff	Peak Flow	= 2.620 cfs
Storm Frequency	= 25-yr	Time to Peak	= 11.97 hrs
Time Interval	= 2 min	Runoff Volume	= 5,243 cuft
Drainage Area	= 0.676 ac	Curve Number	= 65*
Tc Method	= User	Time of Conc. (Tc)	= 5.0 min
Total Rainfall	= 5.90 in	Design Storm	= Type II
Storm Duration	= 24 hrs	Shape Factor	= 484

* Composite CN Worksheet		
AREA (ac)	CN	DESCRIPTION
0.598	61	GRASS
0.078	98	IMP
0.676	65	Weighted CN Method Employed



Hydrograph Report

Project Name:

Hydrology Studio v 3.0.0.31

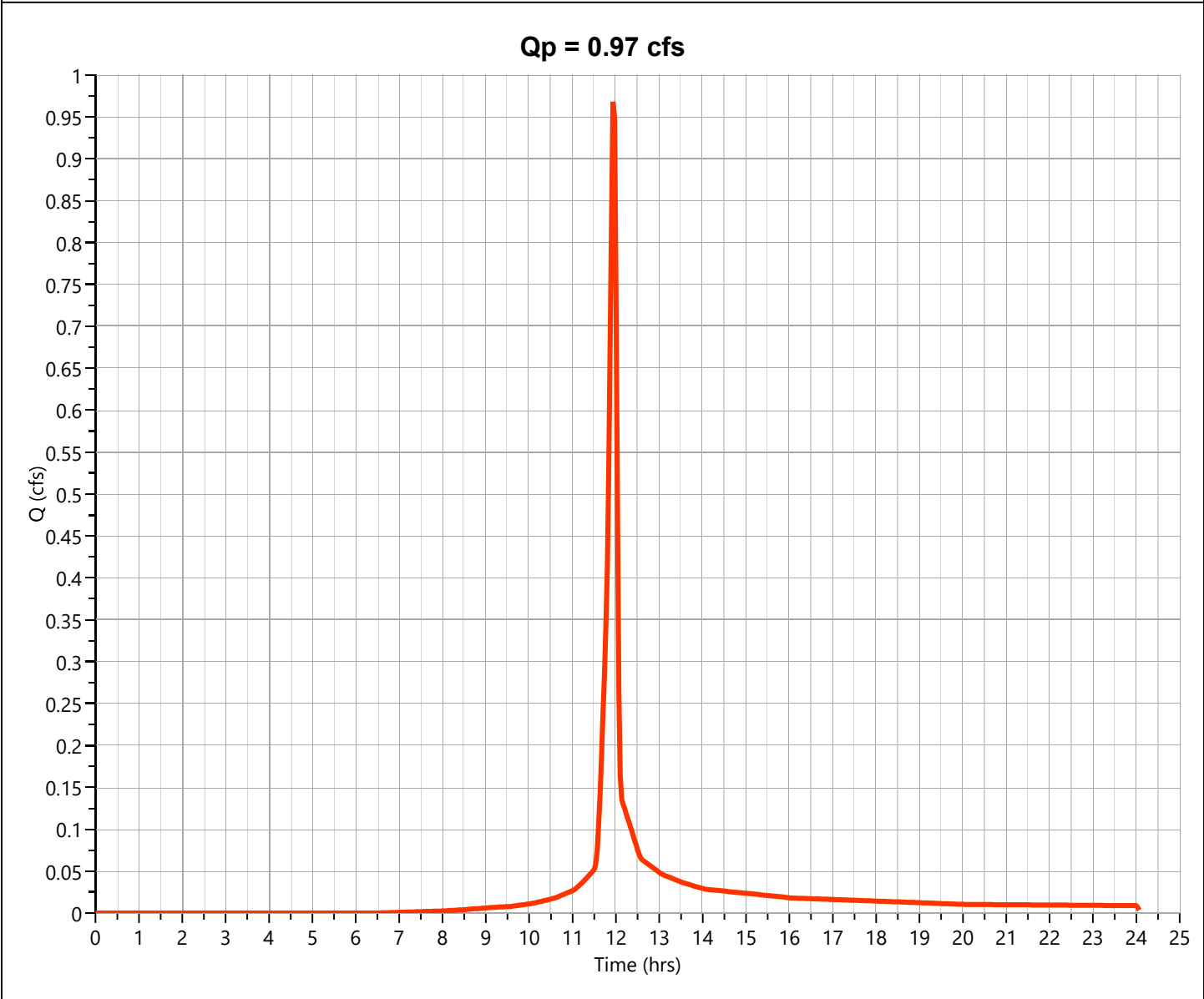
08-13-2024

Pre DA 3

Hyd. No. 3

Hydrograph Type	= NRCS Runoff	Peak Flow	= 0.968 cfs
Storm Frequency	= 25-yr	Time to Peak	= 11.93 hrs
Time Interval	= 2 min	Runoff Volume	= 1,982 cuft
Drainage Area	= 0.16 ac	Curve Number	= 79.5*
Tc Method	= User	Time of Conc. (Tc)	= 5.0 min
Total Rainfall	= 5.90 in	Design Storm	= Type II
Storm Duration	= 24 hrs	Shape Factor	= 484

* Composite CN Worksheet		
AREA (ac)	CN	DESCRIPTION
0.08	61	GRASS
0.08	98	IMP
0.16	80	Weighted CN Method Employed



Hydrograph Report

Project Name:

Hydrology Studio v 3.0.0.31

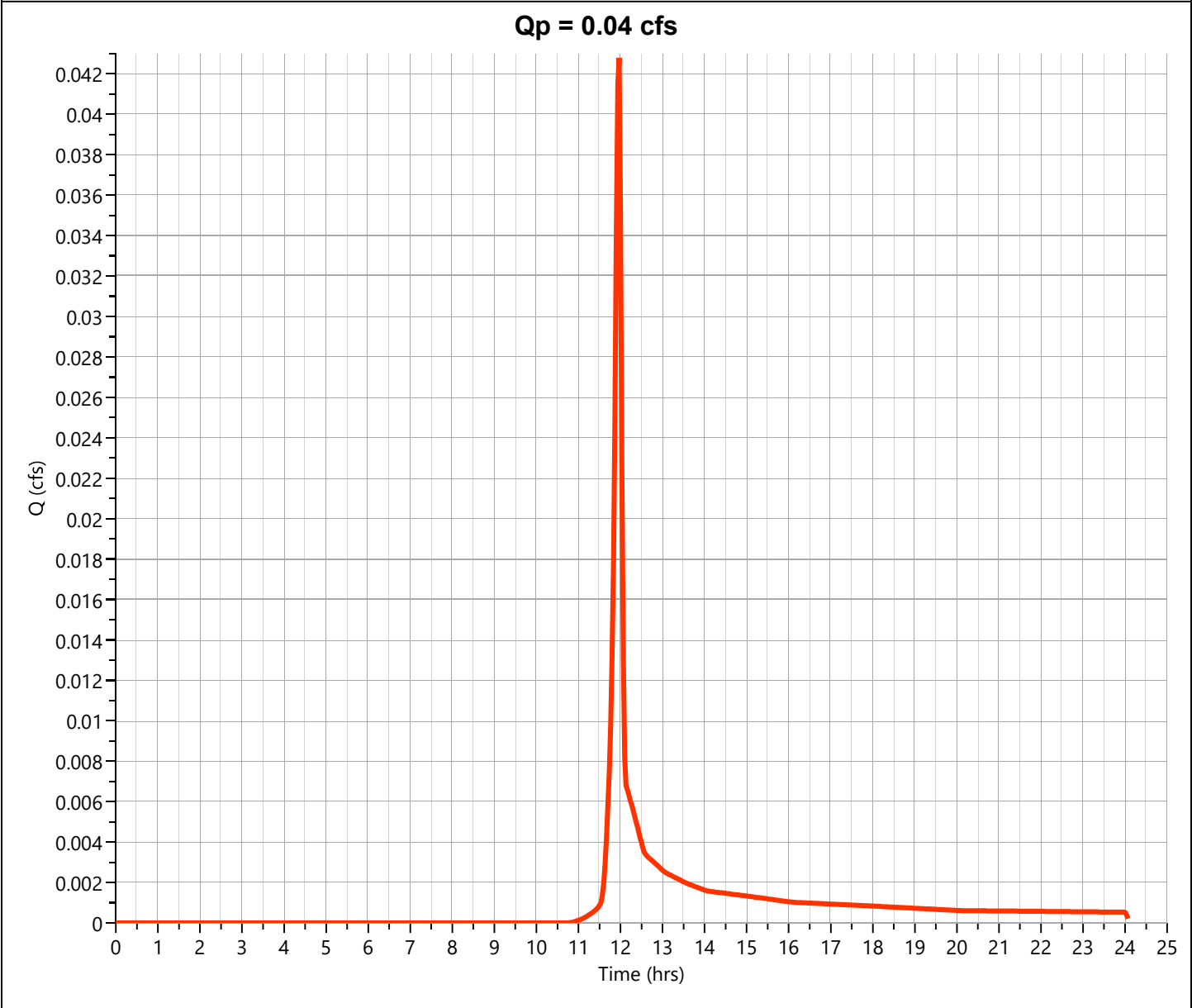
08-13-2024

Pre DA 4

Hyd. No. 4

Hydrograph Type	= NRCS Runoff	Peak Flow	= 0.043 cfs
Storm Frequency	= 25-yr	Time to Peak	= 11.97 hrs
Time Interval	= 2 min	Runoff Volume	= 85.8 cuft
Drainage Area	= 0.013 ac	Curve Number	= 61*
Tc Method	= User	Time of Conc. (Tc)	= 5.0 min
Total Rainfall	= 5.90 in	Design Storm	= Type II
Storm Duration	= 24 hrs	Shape Factor	= 484

* Composite CN Worksheet		
AREA (ac)	CN	DESCRIPTION
0.013	61	GRASS
0.013	61	Weighted CN Method Employed



Hydrograph Report

Project Name:

Hydrology Studio v 3.0.0.31

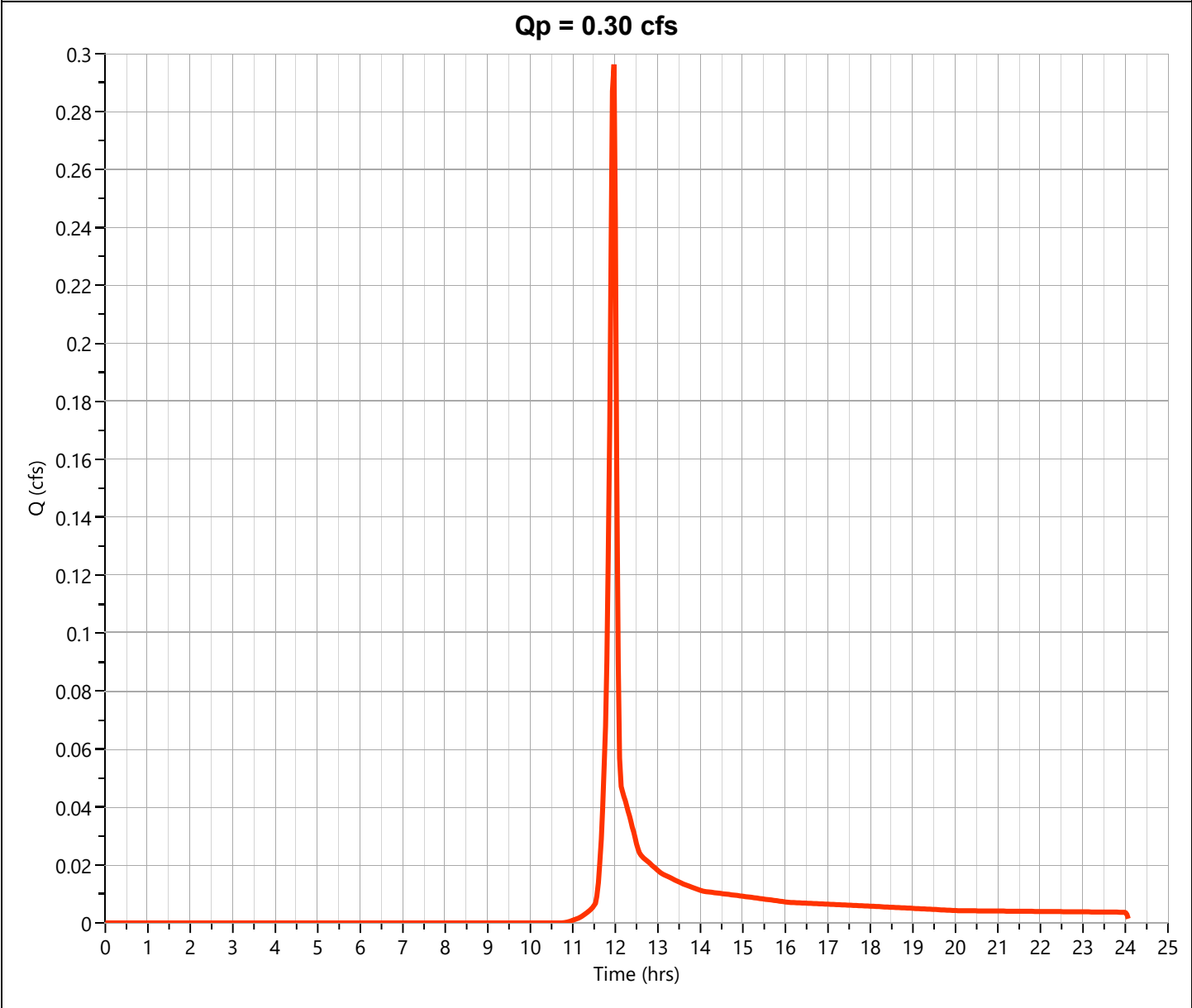
08-13-2024

Pre DA 5

Hyd. No. 5

Hydrograph Type	= NRCS Runoff	Peak Flow	= 0.296 cfs
Storm Frequency	= 25-yr	Time to Peak	= 11.97 hrs
Time Interval	= 2 min	Runoff Volume	= 594 cuft
Drainage Area	= 0.09 ac	Curve Number	= 61*
Tc Method	= User	Time of Conc. (Tc)	= 5.0 min
Total Rainfall	= 5.90 in	Design Storm	= Type II
Storm Duration	= 24 hrs	Shape Factor	= 484

* Composite CN Worksheet		
AREA (ac)	CN	DESCRIPTION
0.09	61	GRASS
0.09	61	Weighted CN Method Employed



Hydrograph Report

Project Name:

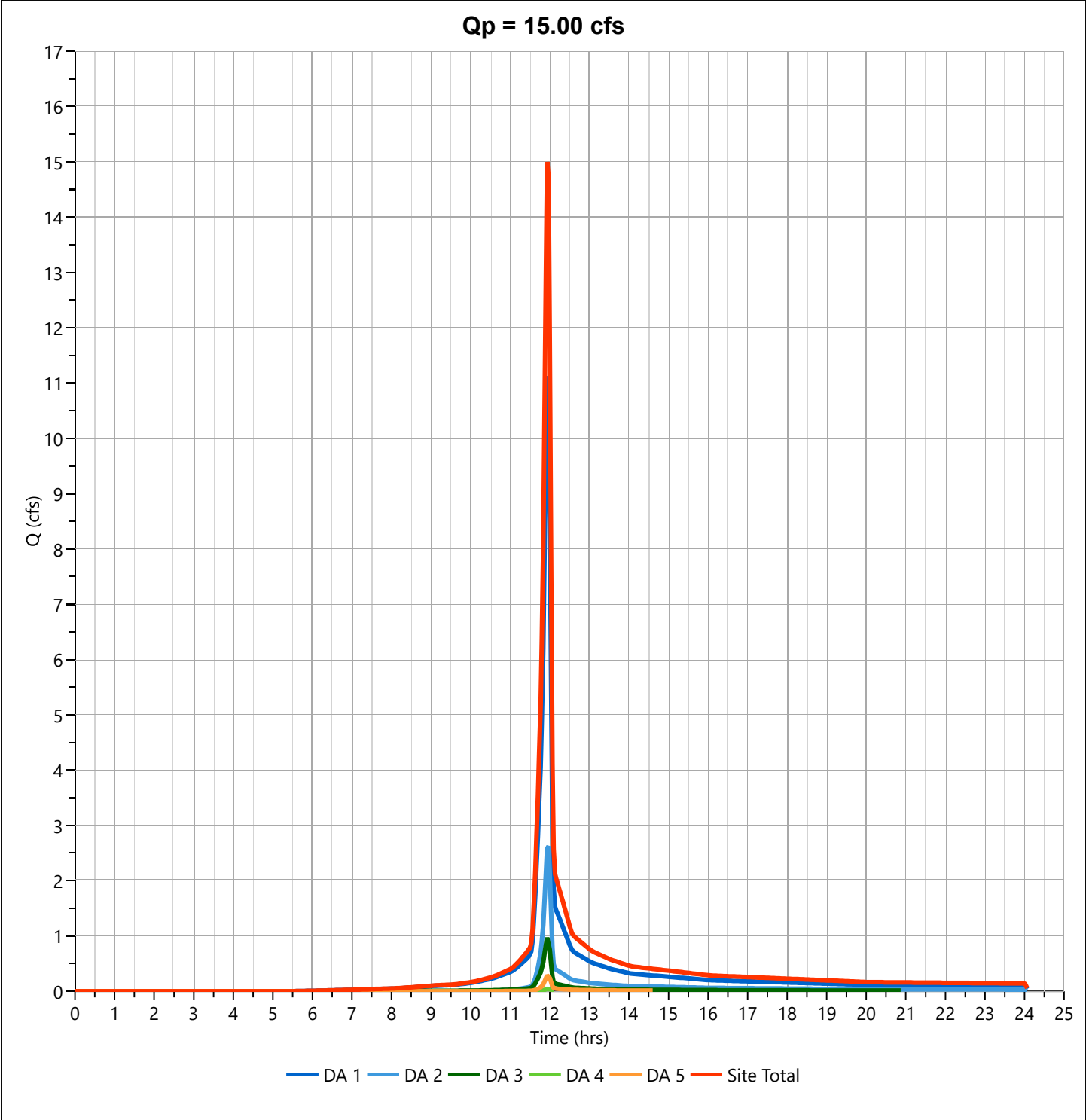
Hydrology Studio v 3.0.0.31

08-13-2024

Pre Site Total

Hyd. No. 6

Hydrograph Type	= Junction	Peak Flow	= 15.00 cfs
Storm Frequency	= 25-yr	Time to Peak	= 11.93 hrs
Time Interval	= 2 min	Hydrograph Volume	= 30,957 cuft
Inflow Hydrographs	= 1, 2, 3, 4, 5	Total Contrib. Area	= 2.649 ac



Hydrograph Report

Project Name:

Hydrology Studio v 3.0.0.31

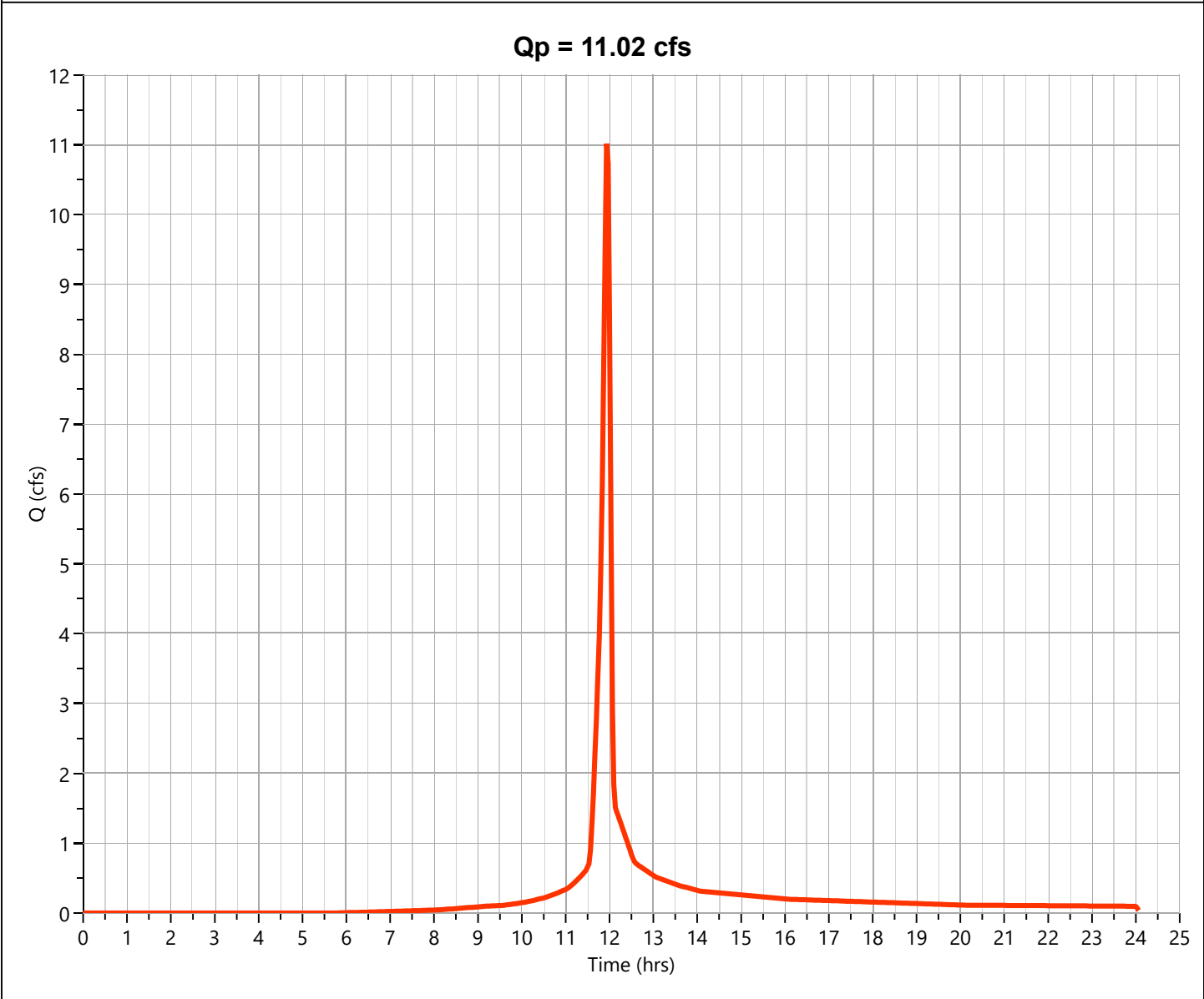
08-13-2024

Post DA 1

Hyd. No. 7

Hydrograph Type	= NRCS Runoff	Peak Flow	= 11.02 cfs
Storm Frequency	= 25-yr	Time to Peak	= 11.93 hrs
Time Interval	= 2 min	Runoff Volume	= 22,788 cuft
Drainage Area	= 1.71 ac	Curve Number	= 82.2*
Tc Method	= User	Time of Conc. (Tc)	= 5.0 min
Total Rainfall	= 5.90 in	Design Storm	= Type II
Storm Duration	= 24 hrs	Shape Factor	= 484

* Composite CN Worksheet		
AREA (ac)	CN	DESCRIPTION
0.73	61	GRASS
0.98	98	IMP
1.71	82	Weighted CN Method Employed



Hydrograph Report

Project Name:

Hydrology Studio v 3.0.0.31

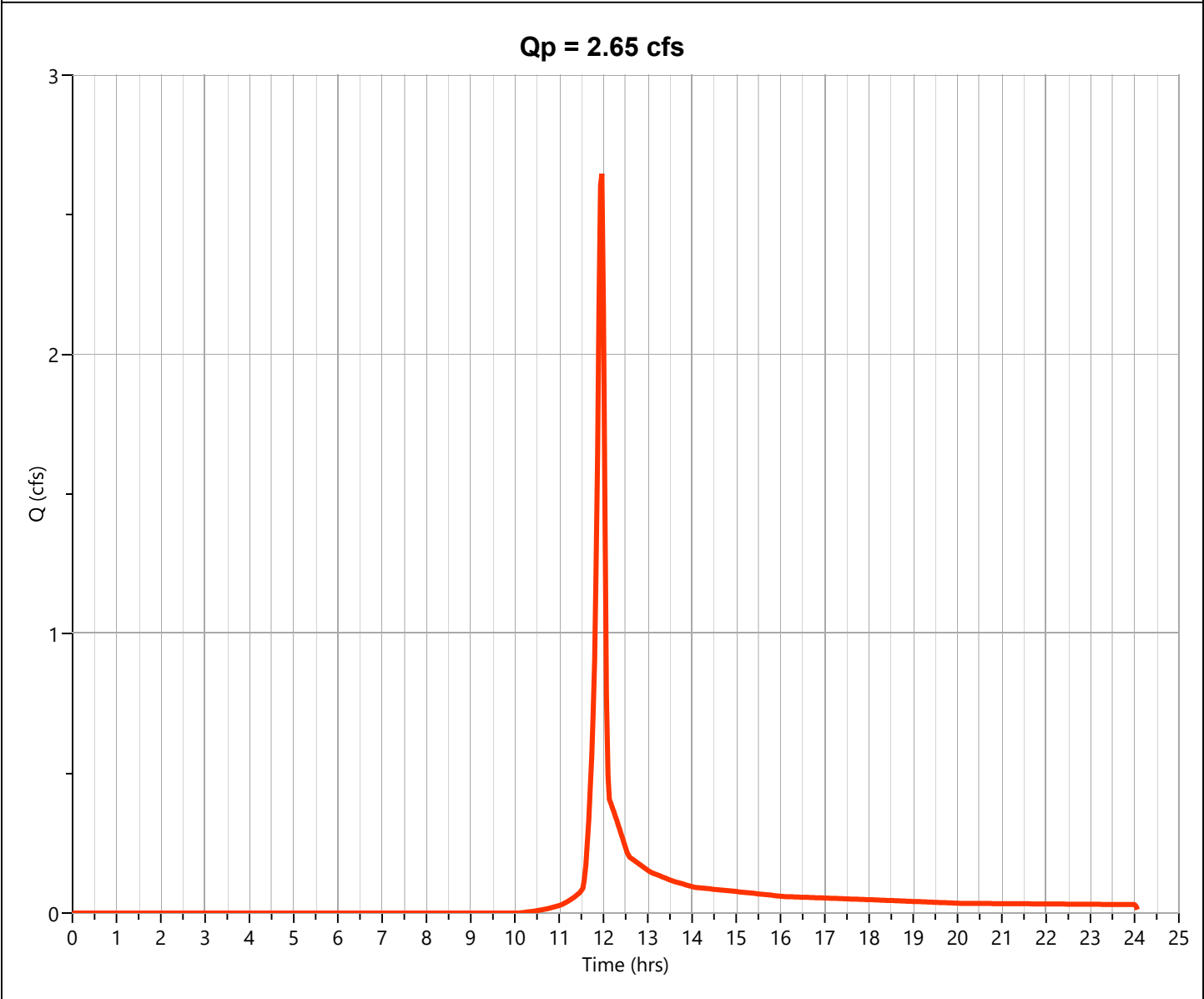
08-13-2024

Post DA 2

Hyd. No. 8

Hydrograph Type	= NRCS Runoff	Peak Flow	= 2.646 cfs
Storm Frequency	= 25-yr	Time to Peak	= 11.97 hrs
Time Interval	= 2 min	Runoff Volume	= 5,297 cuft
Drainage Area	= 0.676 ac	Curve Number	= 65.27*
Tc Method	= User	Time of Conc. (Tc)	= 5.0 min
Total Rainfall	= 5.90 in	Design Storm	= Type II
Storm Duration	= 24 hrs	Shape Factor	= 484

* Composite CN Worksheet		
AREA (ac)	CN	DESCRIPTION
0.598	61	GRASS
0.078	98	IMP
0.676	65	Weighted CN Method Employed



Hydrograph Report

Project Name:

Hydrology Studio v 3.0.0.31

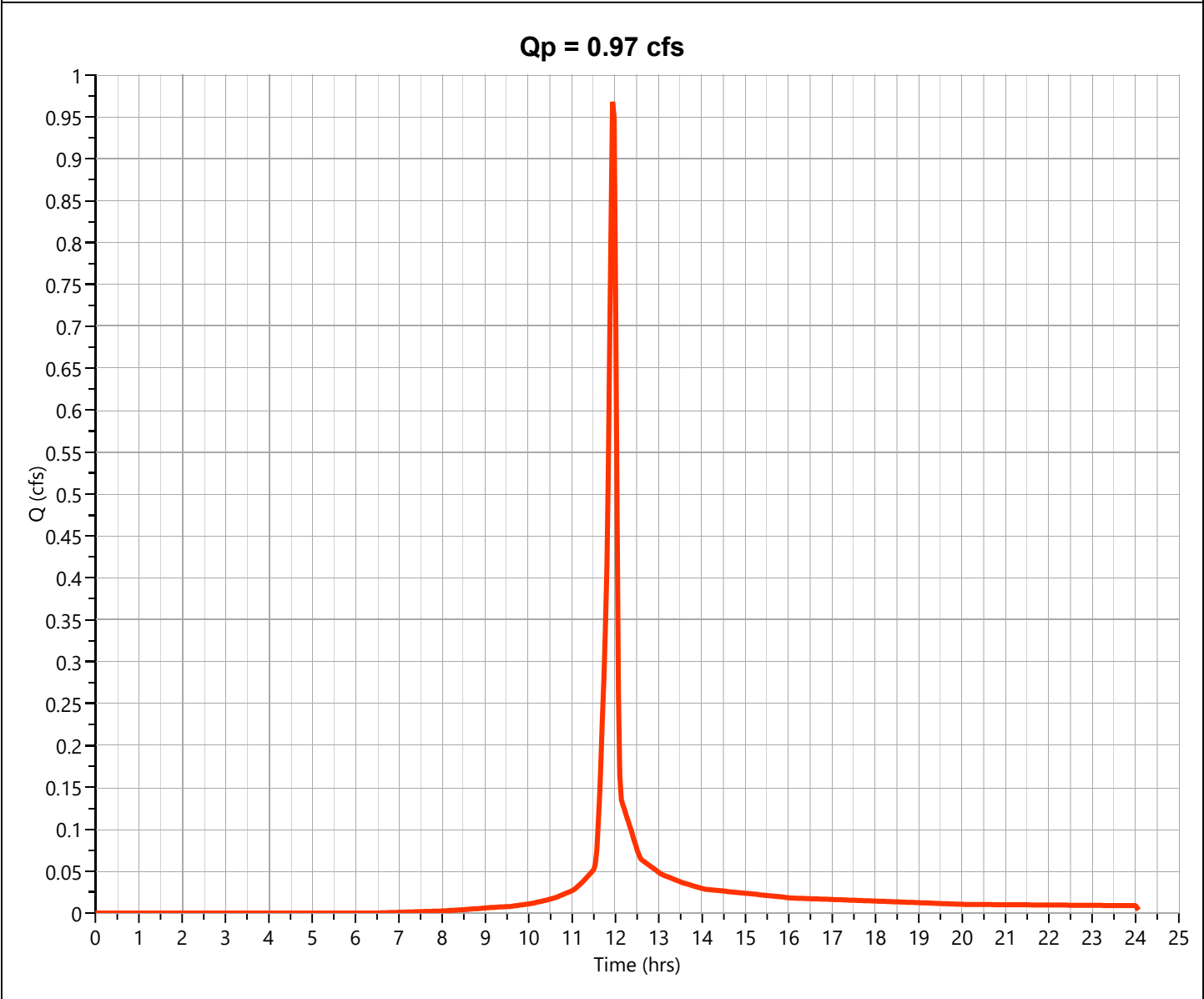
08-13-2024

Post DA 3

Hyd. No. 9

Hydrograph Type	= NRCS Runoff	Peak Flow	= 0.968 cfs
Storm Frequency	= 25-yr	Time to Peak	= 11.93 hrs
Time Interval	= 2 min	Runoff Volume	= 1,982 cuft
Drainage Area	= 0.16 ac	Curve Number	= 79.5*
Tc Method	= User	Time of Conc. (Tc)	= 5.0 min
Total Rainfall	= 5.90 in	Design Storm	= Type II
Storm Duration	= 24 hrs	Shape Factor	= 484

* Composite CN Worksheet		
AREA (ac)	CN	DESCRIPTION
0.08	61	GRASS
0.08	98	IMP
0.16	80	Weighted CN Method Employed



Hydrograph Report

Project Name:

Hydrology Studio v 3.0.0.31

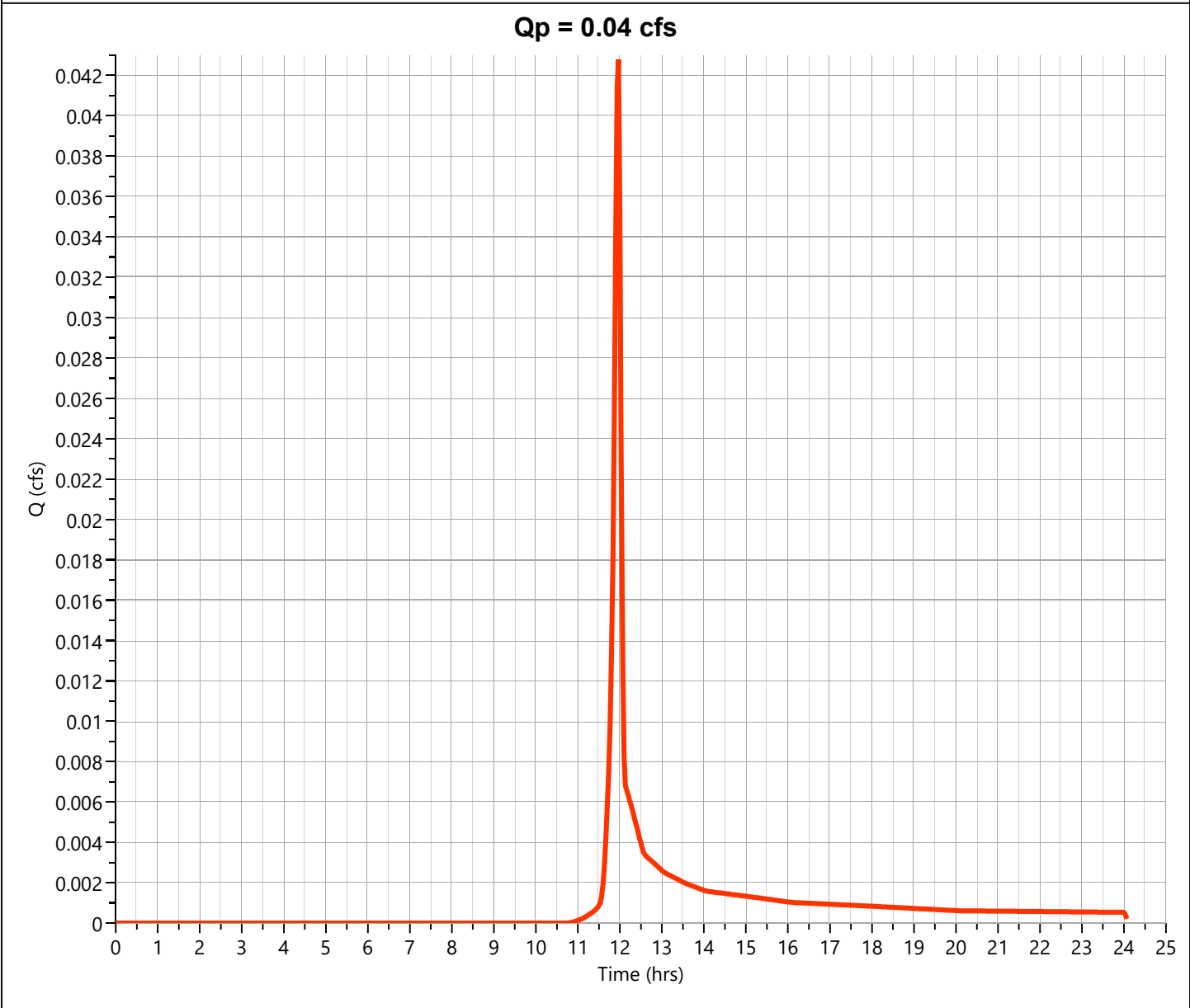
08-13-2024

Post DA 4

Hyd. No. 10

Hydrograph Type	= NRCS Runoff	Peak Flow	= 0.043 cfs
Storm Frequency	= 25-yr	Time to Peak	= 11.97 hrs
Time Interval	= 2 min	Runoff Volume	= 85.8 cuft
Drainage Area	= 0.013 ac	Curve Number	= 61*
Tc Method	= User	Time of Conc. (Tc)	= 5.0 min
Total Rainfall	= 5.90 in	Design Storm	= Type II
Storm Duration	= 24 hrs	Shape Factor	= 484

* Composite CN Worksheet		
AREA (ac)	CN	DESCRIPTION
0.013	61	GRASS
0.013	61	Weighted CN Method Employed



Hydrograph Report

Project Name:

Hydrology Studio v 3.0.0.31

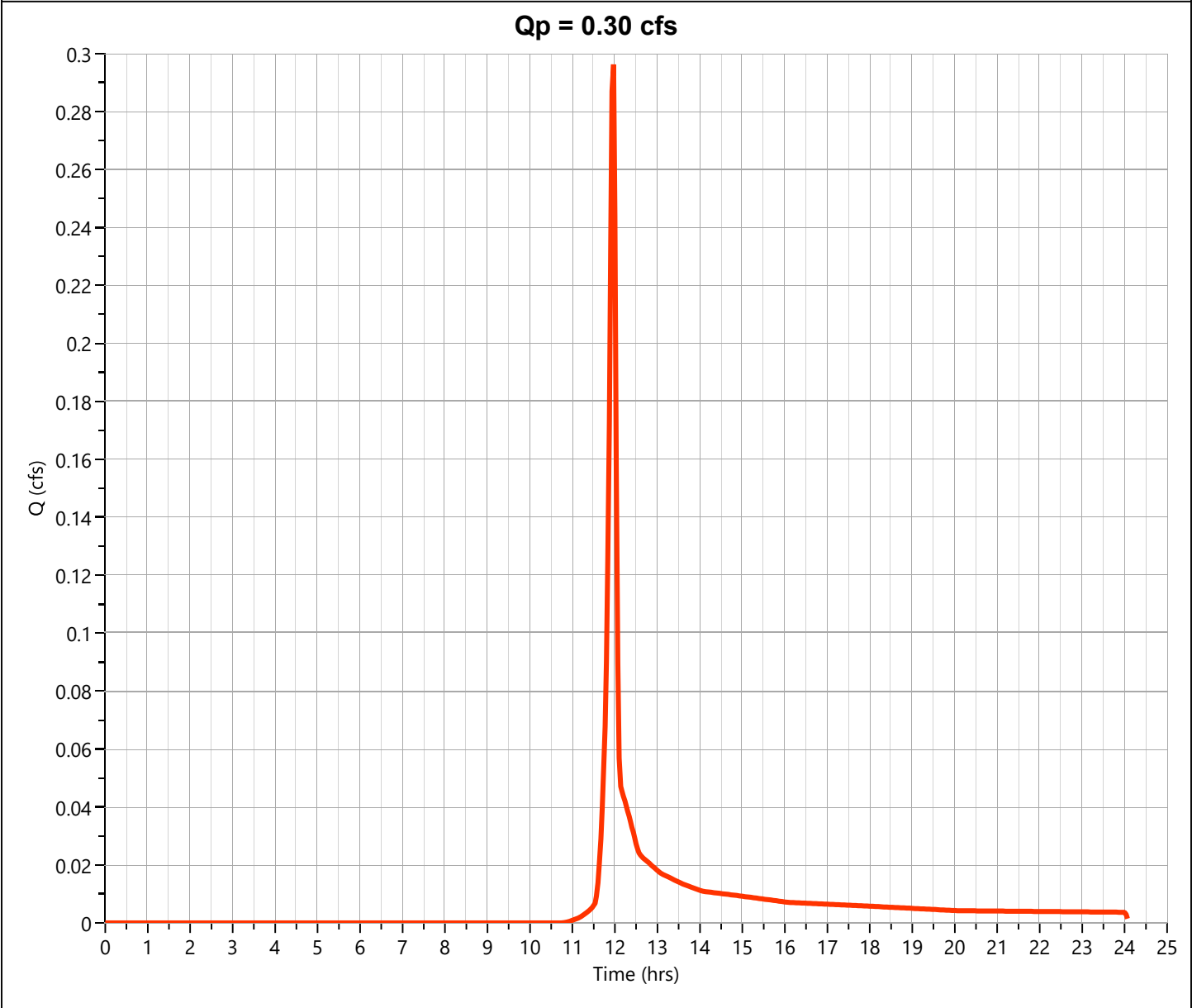
08-13-2024

Post DA 5

Hyd. No. 11

Hydrograph Type	= NRCS Runoff	Peak Flow	= 0.296 cfs
Storm Frequency	= 25-yr	Time to Peak	= 11.97 hrs
Time Interval	= 2 min	Runoff Volume	= 594 cuft
Drainage Area	= 0.09 ac	Curve Number	= 61*
Tc Method	= User	Time of Conc. (Tc)	= 5.0 min
Total Rainfall	= 5.90 in	Design Storm	= Type II
Storm Duration	= 24 hrs	Shape Factor	= 484

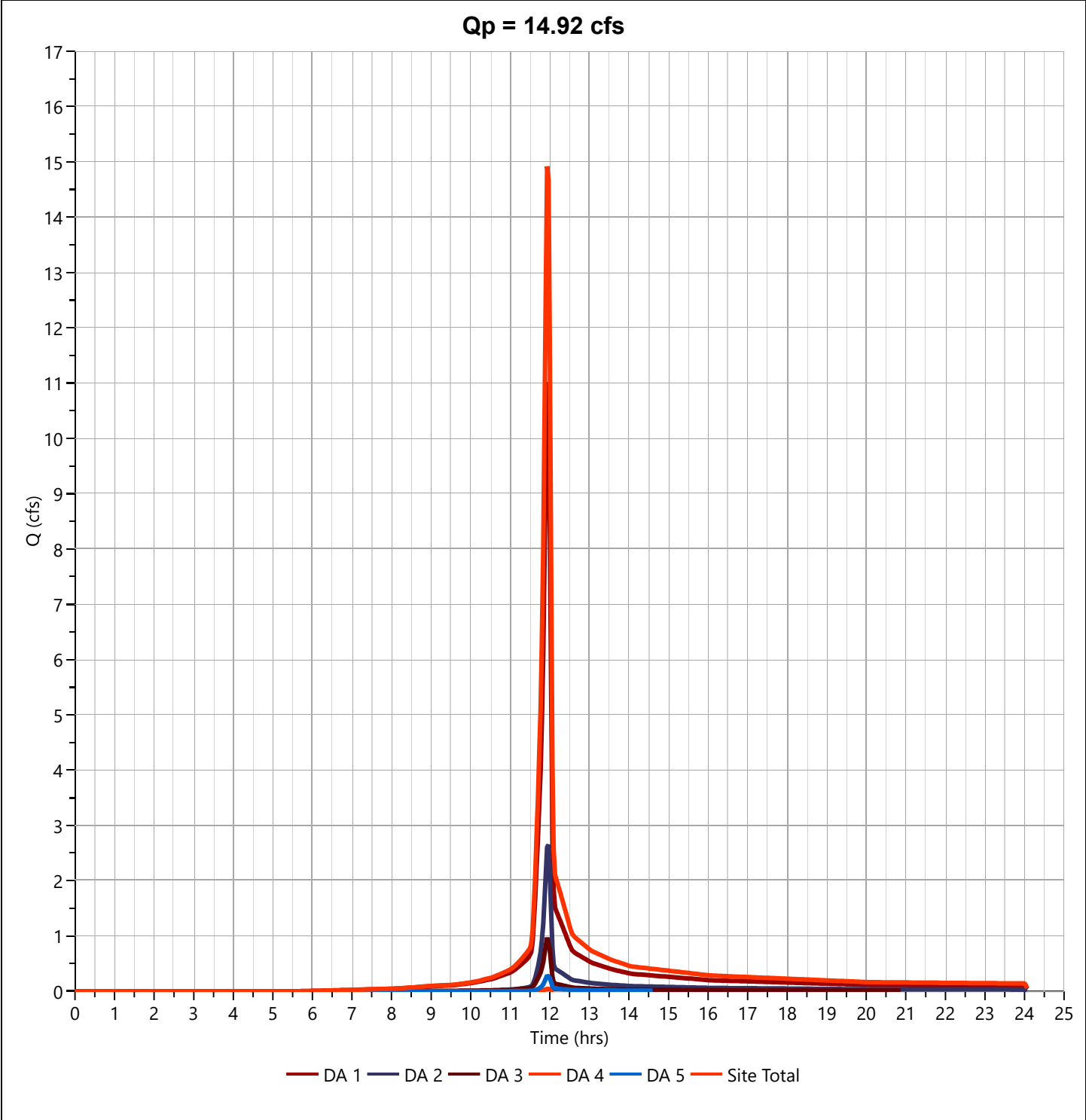
* Composite CN Worksheet		
AREA (ac)	CN	DESCRIPTION
0.09	61	GRASS
0.09	61	Weighted CN Method Employed



Post Site Total

Hyd. No. 12

Hydrograph Type	= Junction	Peak Flow	= 14.92 cfs
Storm Frequency	= 25-yr	Time to Peak	= 11.93 hrs
Time Interval	= 2 min	Hydrograph Volume	= 30,746 cuft
Inflow Hydrographs	= 7, 8, 9, 10, 11	Total Contrib. Area	= 2.649 ac



Hydrology Studio v 3.0.0.31

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Hydrograph Report

Project Name:

Hydrology Studio v 3.0.0.31

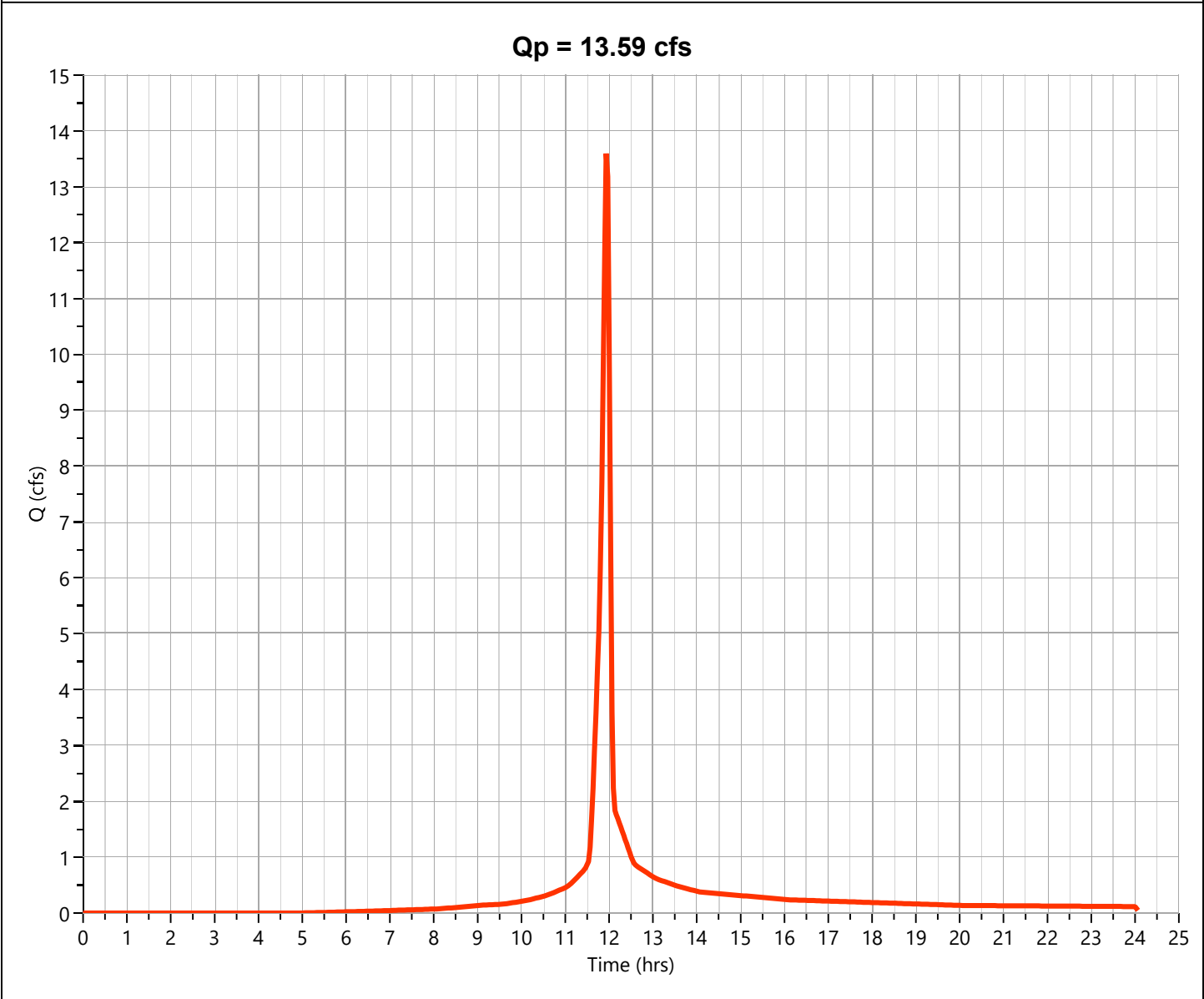
08-13-2024

Pre DA 1

Hyd. No. 1

Hydrograph Type	= NRCS Runoff	Peak Flow	= 13.59 cfs
Storm Frequency	= 50-yr	Time to Peak	= 11.93 hrs
Time Interval	= 2 min	Runoff Volume	= 28,477 cuft
Drainage Area	= 1.71 ac	Curve Number	= 82.64*
Tc Method	= User	Time of Conc. (Tc)	= 5.0 min
Total Rainfall	= 6.90 in	Design Storm	= Type II
Storm Duration	= 24 hrs	Shape Factor	= 484

* Composite CN Worksheet		
AREA (ac)	CN	DESCRIPTION
0.71	61	GRASS
1.0	98	IMP
1.71	83	Weighted CN Method Employed



Hydrograph Report

Project Name:

Hydrology Studio v 3.0.0.31

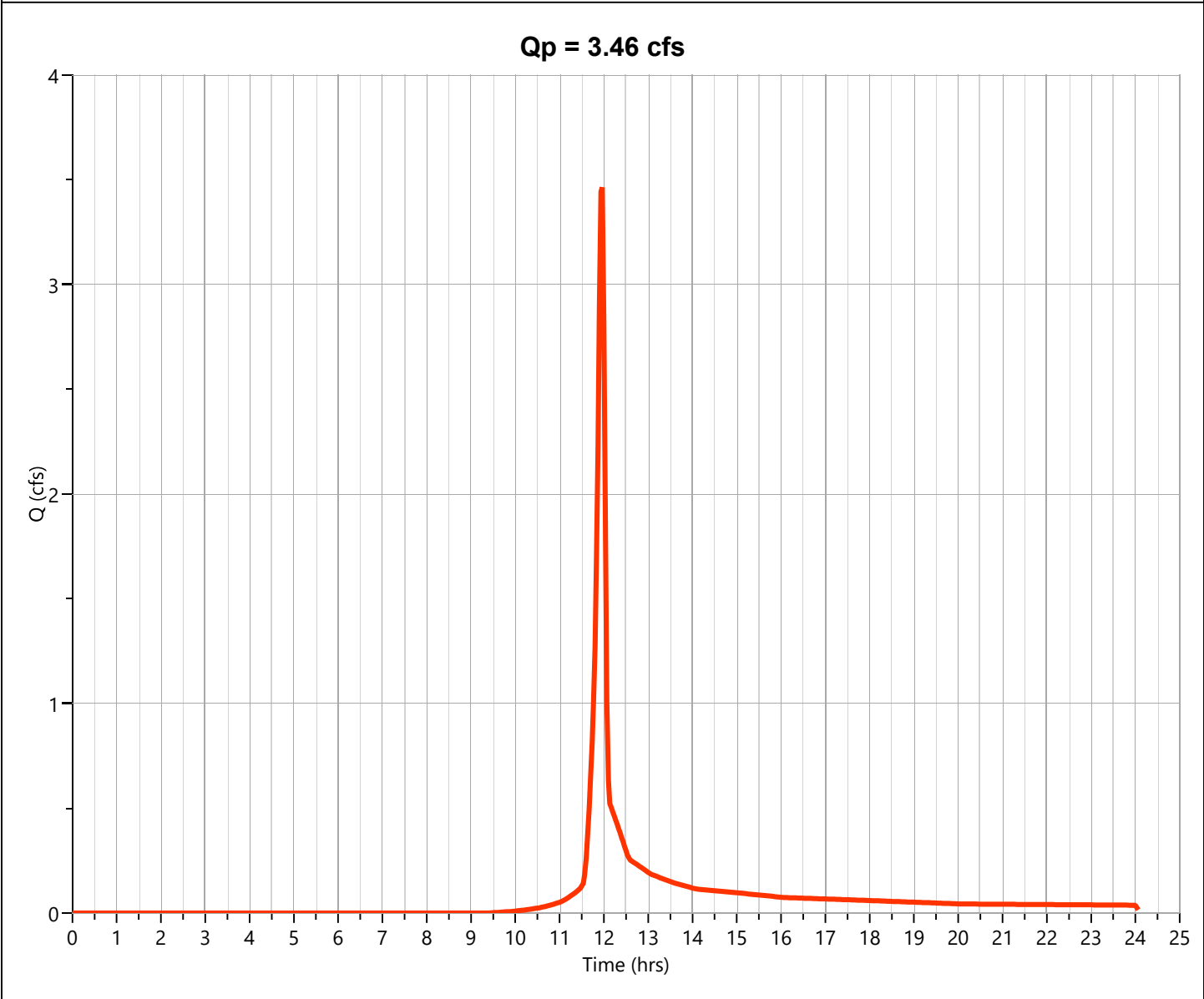
08-13-2024

Pre DA 2

Hyd. No. 2

Hydrograph Type	= NRCS Runoff	Peak Flow	= 3.463 cfs
Storm Frequency	= 50-yr	Time to Peak	= 11.97 hrs
Time Interval	= 2 min	Runoff Volume	= 6,960 cuft
Drainage Area	= 0.676 ac	Curve Number	= 65*
Tc Method	= User	Time of Conc. (Tc)	= 5.0 min
Total Rainfall	= 6.90 in	Design Storm	= Type II
Storm Duration	= 24 hrs	Shape Factor	= 484

* Composite CN Worksheet		
AREA (ac)	CN	DESCRIPTION
0.598	61	GRASS
0.078	98	IMP
0.676	65	Weighted CN Method Employed



Hydrograph Report

Project Name:

Hydrology Studio v 3.0.0.31

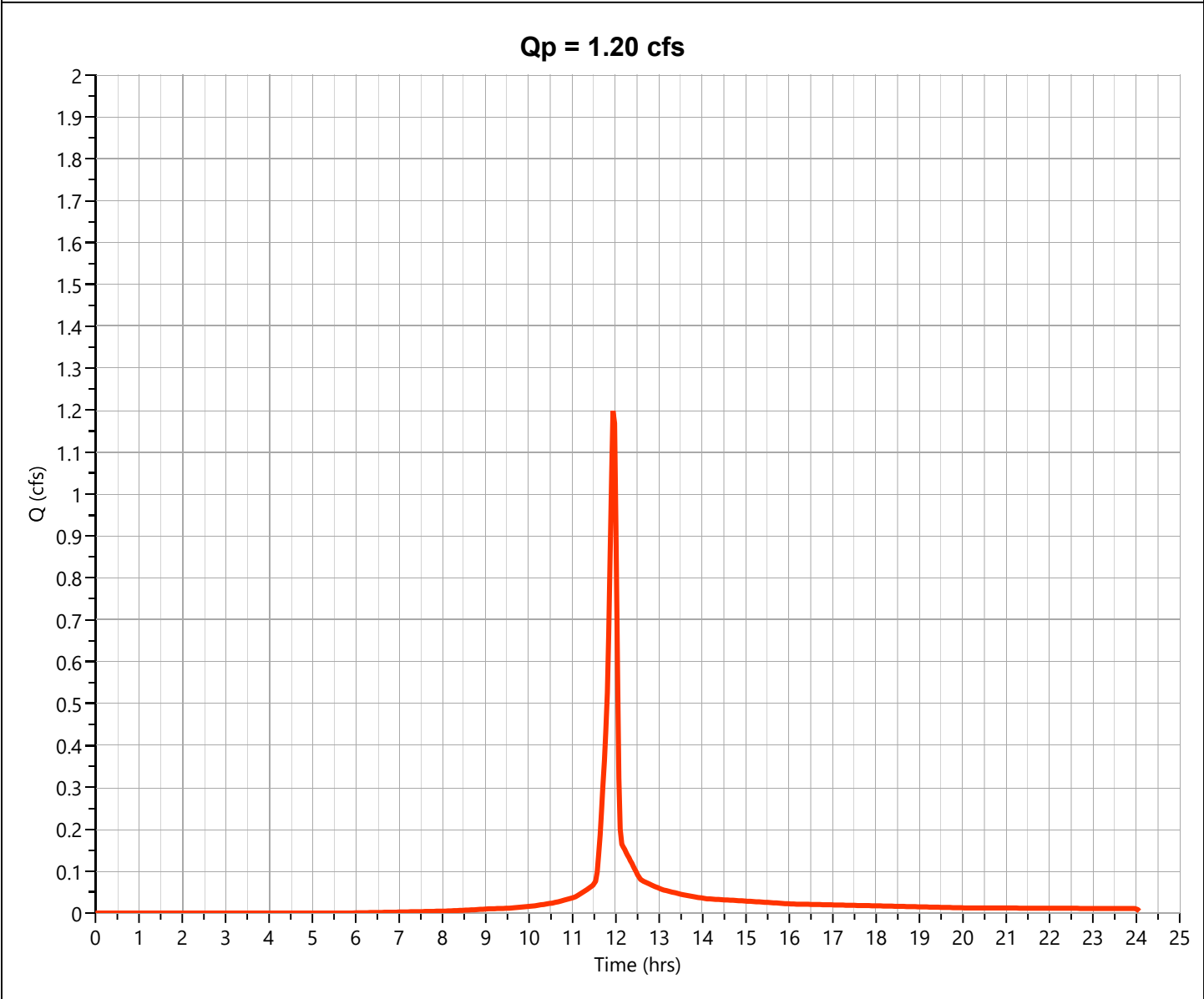
08-13-2024

Pre DA 3

Hyd. No. 3

Hydrograph Type	= NRCS Runoff	Peak Flow	= 1.198 cfs
Storm Frequency	= 50-yr	Time to Peak	= 11.93 hrs
Time Interval	= 2 min	Runoff Volume	= 2,476 cuft
Drainage Area	= 0.16 ac	Curve Number	= 79.5*
Tc Method	= User	Time of Conc. (Tc)	= 5.0 min
Total Rainfall	= 6.90 in	Design Storm	= Type II
Storm Duration	= 24 hrs	Shape Factor	= 484

* Composite CN Worksheet		
AREA (ac)	CN	DESCRIPTION
0.08	61	GRASS
0.08	98	IMP
0.16	80	Weighted CN Method Employed



Hydrograph Report

Project Name:

Hydrology Studio v 3.0.0.31

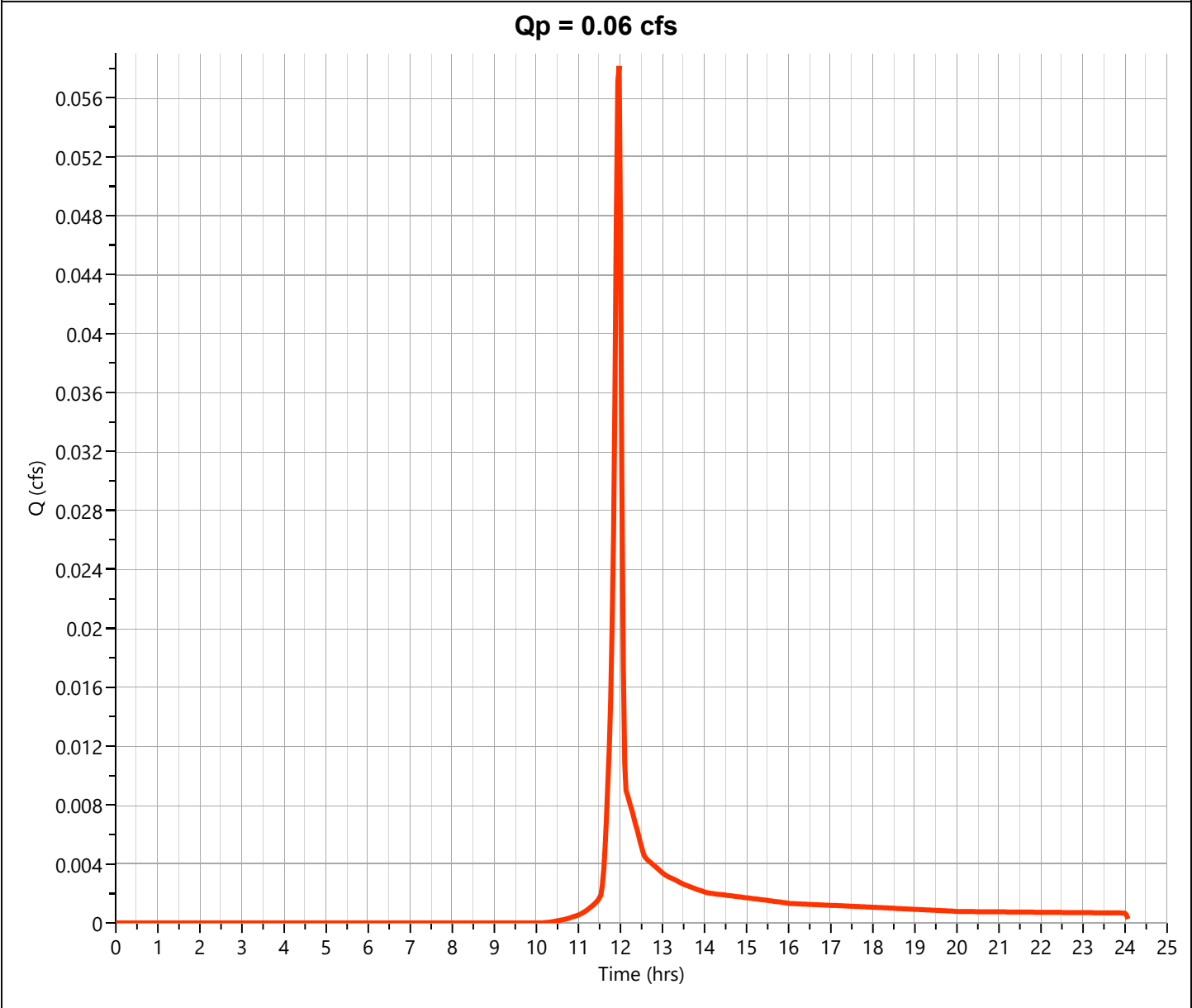
08-13-2024

Pre DA 4

Hyd. No. 4

Hydrograph Type	= NRCS Runoff	Peak Flow	= 0.058 cfs
Storm Frequency	= 50-yr	Time to Peak	= 11.97 hrs
Time Interval	= 2 min	Runoff Volume	= 116 cuft
Drainage Area	= 0.013 ac	Curve Number	= 61*
Tc Method	= User	Time of Conc. (Tc)	= 5.0 min
Total Rainfall	= 6.90 in	Design Storm	= Type II
Storm Duration	= 24 hrs	Shape Factor	= 484

* Composite CN Worksheet		
AREA (ac)	CN	DESCRIPTION
0.013	61	GRASS
0.013	61	Weighted CN Method Employed



Hydrograph Report

Project Name:

Hydrology Studio v 3.0.0.31

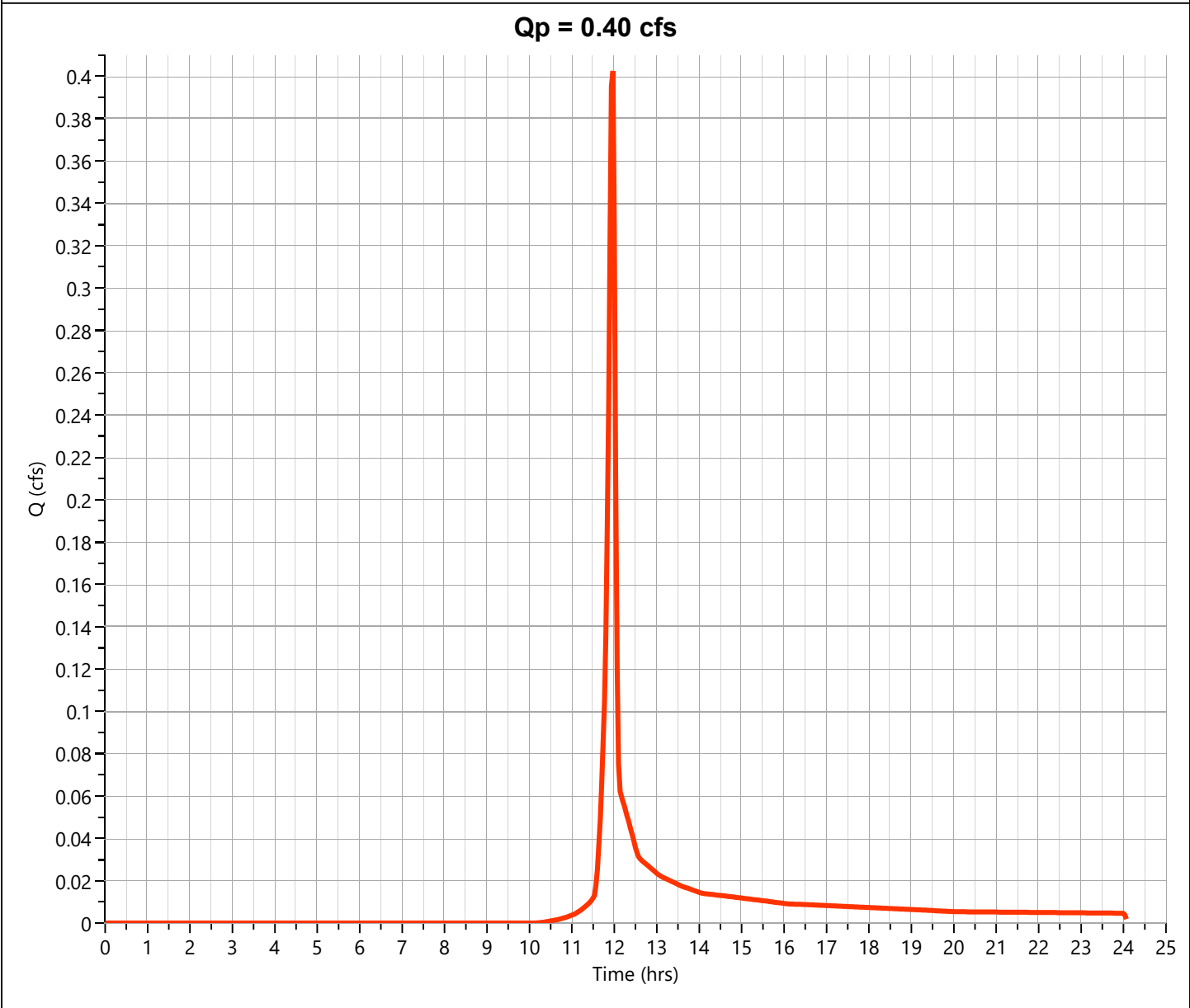
08-13-2024

Pre DA 5

Hyd. No. 5

Hydrograph Type	= NRCS Runoff	Peak Flow	= 0.403 cfs
Storm Frequency	= 50-yr	Time to Peak	= 11.97 hrs
Time Interval	= 2 min	Runoff Volume	= 806 cuft
Drainage Area	= 0.09 ac	Curve Number	= 61*
Tc Method	= User	Time of Conc. (Tc)	= 5.0 min
Total Rainfall	= 6.90 in	Design Storm	= Type II
Storm Duration	= 24 hrs	Shape Factor	= 484

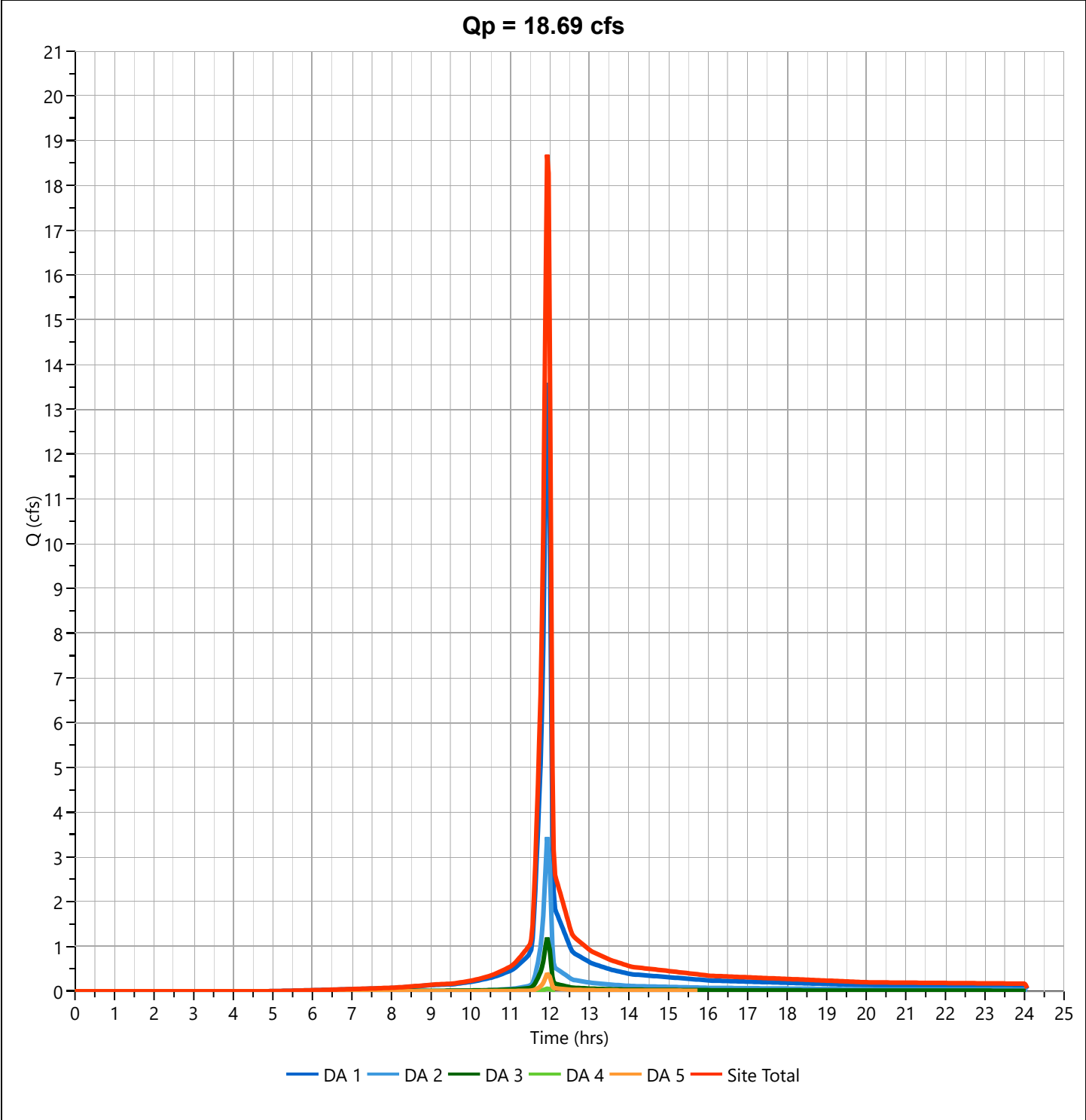
* Composite CN Worksheet		
AREA (ac)	CN	DESCRIPTION
0.09	61	GRASS
0.09	61	Weighted CN Method Employed



Pre Site Total

Hyd. No. 6

Hydrograph Type	= Junction	Peak Flow	= 18.69 cfs
Storm Frequency	= 50-yr	Time to Peak	= 11.93 hrs
Time Interval	= 2 min	Hydrograph Volume	= 38,835 cuft
Inflow Hydrographs	= 1, 2, 3, 4, 5	Total Contrib. Area	= 2.649 ac



Hydrograph Report

Project Name:

Hydrology Studio v 3.0.0.31

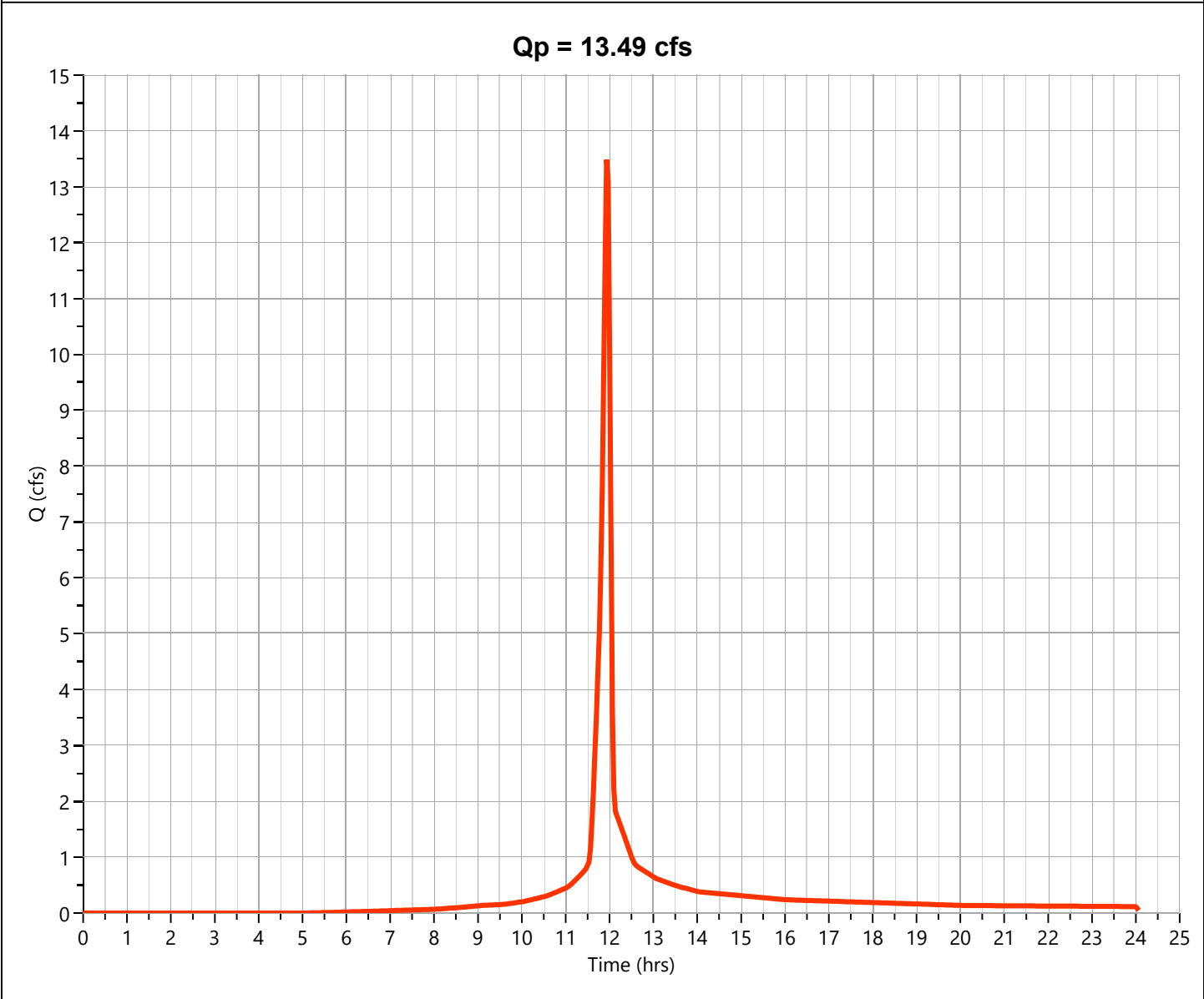
08-13-2024

Post DA 1

Hyd. No. 7

Hydrograph Type	= NRCS Runoff	Peak Flow	= 13.49 cfs
Storm Frequency	= 50-yr	Time to Peak	= 11.93 hrs
Time Interval	= 2 min	Runoff Volume	= 28,193 cuft
Drainage Area	= 1.71 ac	Curve Number	= 82.2*
Tc Method	= User	Time of Conc. (Tc)	= 5.0 min
Total Rainfall	= 6.90 in	Design Storm	= Type II
Storm Duration	= 24 hrs	Shape Factor	= 484

* Composite CN Worksheet		
AREA (ac)	CN	DESCRIPTION
0.73	61	GRASS
0.98	98	IMP
1.71	82	Weighted CN Method Employed



Hydrograph Report

Project Name:

Hydrology Studio v 3.0.0.31

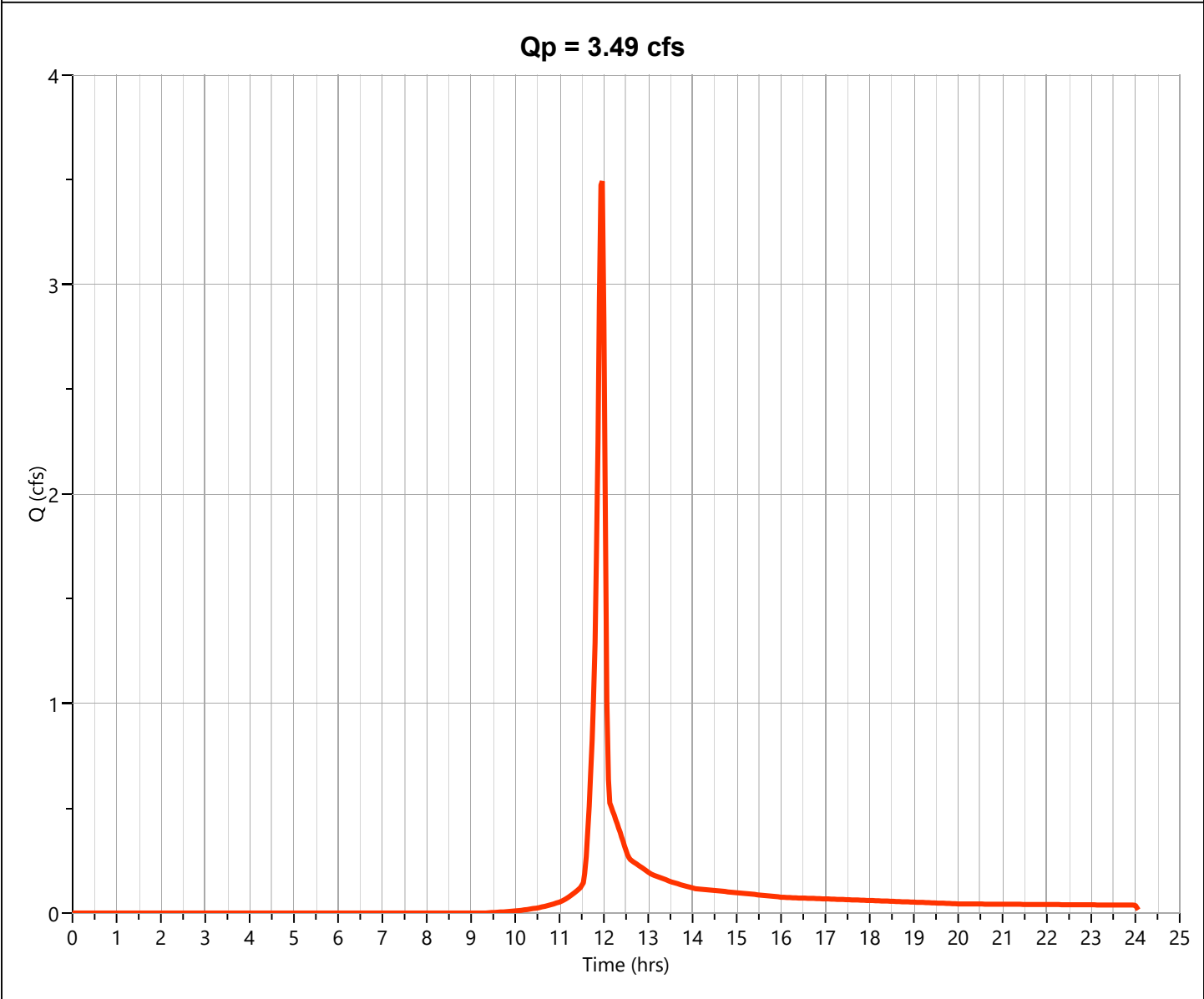
08-13-2024

Post DA 2

Hyd. No. 8

Hydrograph Type	= NRCS Runoff	Peak Flow	= 3.493 cfs
Storm Frequency	= 50-yr	Time to Peak	= 11.97 hrs
Time Interval	= 2 min	Runoff Volume	= 7,022 cuft
Drainage Area	= 0.676 ac	Curve Number	= 65.27*
Tc Method	= User	Time of Conc. (Tc)	= 5.0 min
Total Rainfall	= 6.90 in	Design Storm	= Type II
Storm Duration	= 24 hrs	Shape Factor	= 484

* Composite CN Worksheet		
AREA (ac)	CN	DESCRIPTION
0.598	61	GRASS
0.078	98	IMP
0.676	65	Weighted CN Method Employed



Hydrograph Report

Project Name:

Hydrology Studio v 3.0.0.31

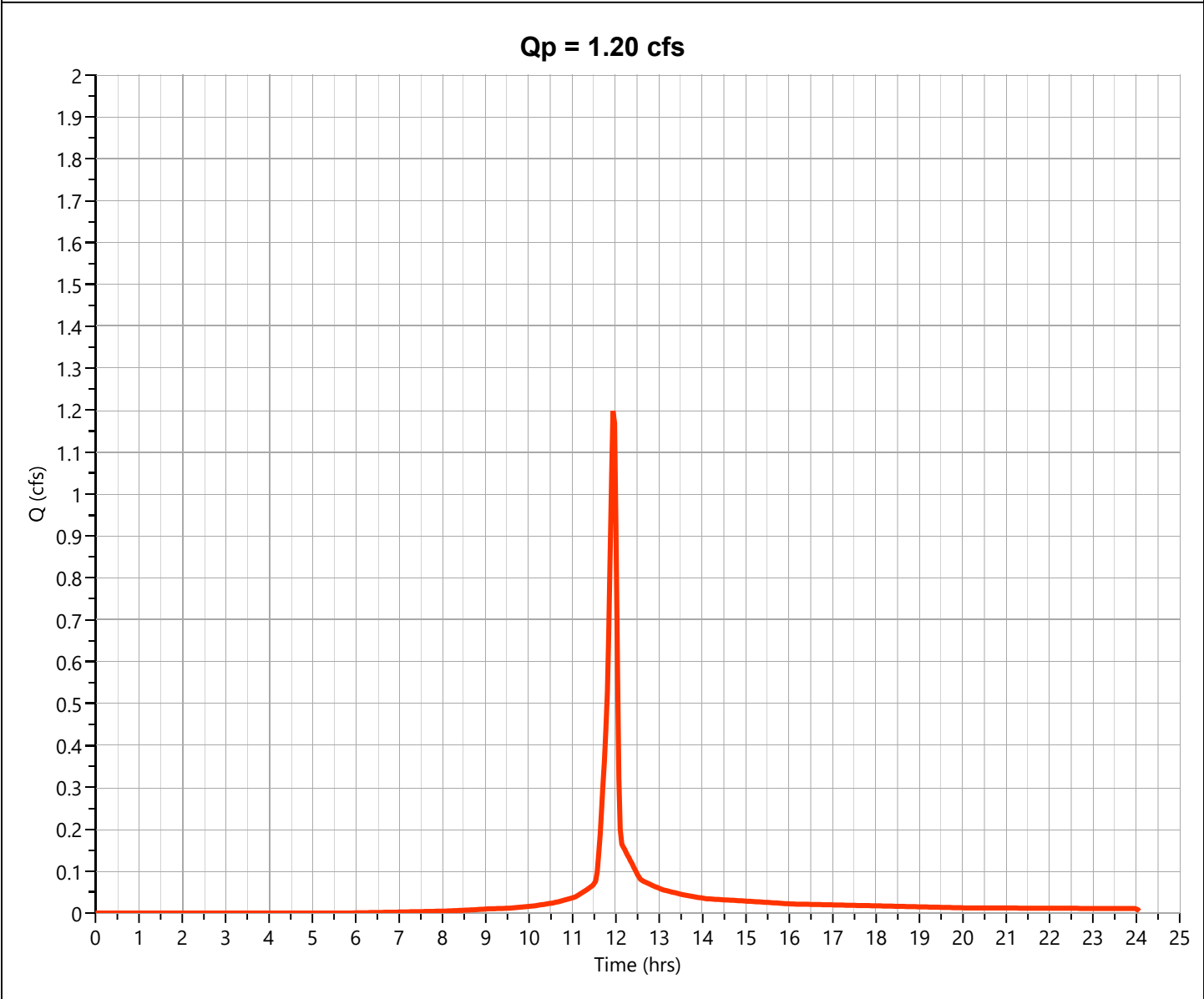
08-13-2024

Post DA 3

Hyd. No. 9

Hydrograph Type	= NRCS Runoff	Peak Flow	= 1.198 cfs
Storm Frequency	= 50-yr	Time to Peak	= 11.93 hrs
Time Interval	= 2 min	Runoff Volume	= 2,476 cuft
Drainage Area	= 0.16 ac	Curve Number	= 79.5*
Tc Method	= User	Time of Conc. (Tc)	= 5.0 min
Total Rainfall	= 6.90 in	Design Storm	= Type II
Storm Duration	= 24 hrs	Shape Factor	= 484

* Composite CN Worksheet		
AREA (ac)	CN	DESCRIPTION
0.08	61	GRASS
0.08	98	IMP
0.16	80	Weighted CN Method Employed



Hydrograph Report

Project Name:

Hydrology Studio v 3.0.0.31

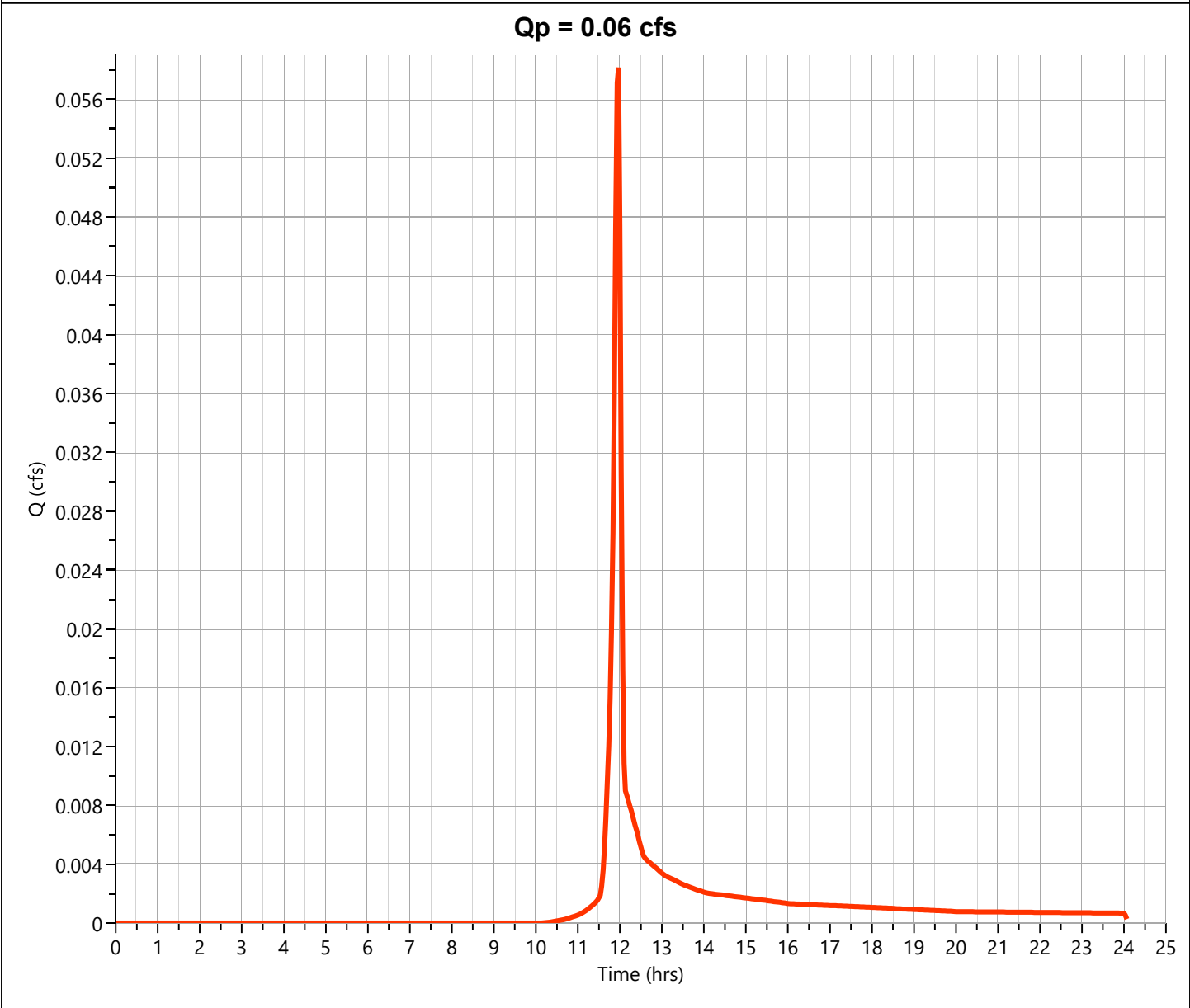
08-13-2024

Post DA 4

Hyd. No. 10

Hydrograph Type	= NRCS Runoff	Peak Flow	= 0.058 cfs
Storm Frequency	= 50-yr	Time to Peak	= 11.97 hrs
Time Interval	= 2 min	Runoff Volume	= 116 cuft
Drainage Area	= 0.013 ac	Curve Number	= 61*
Tc Method	= User	Time of Conc. (Tc)	= 5.0 min
Total Rainfall	= 6.90 in	Design Storm	= Type II
Storm Duration	= 24 hrs	Shape Factor	= 484

* Composite CN Worksheet		
AREA (ac)	CN	DESCRIPTION
0.013	61	GRASS
0.013	61	Weighted CN Method Employed



Hydrograph Report

Project Name:

Hydrology Studio v 3.0.0.31

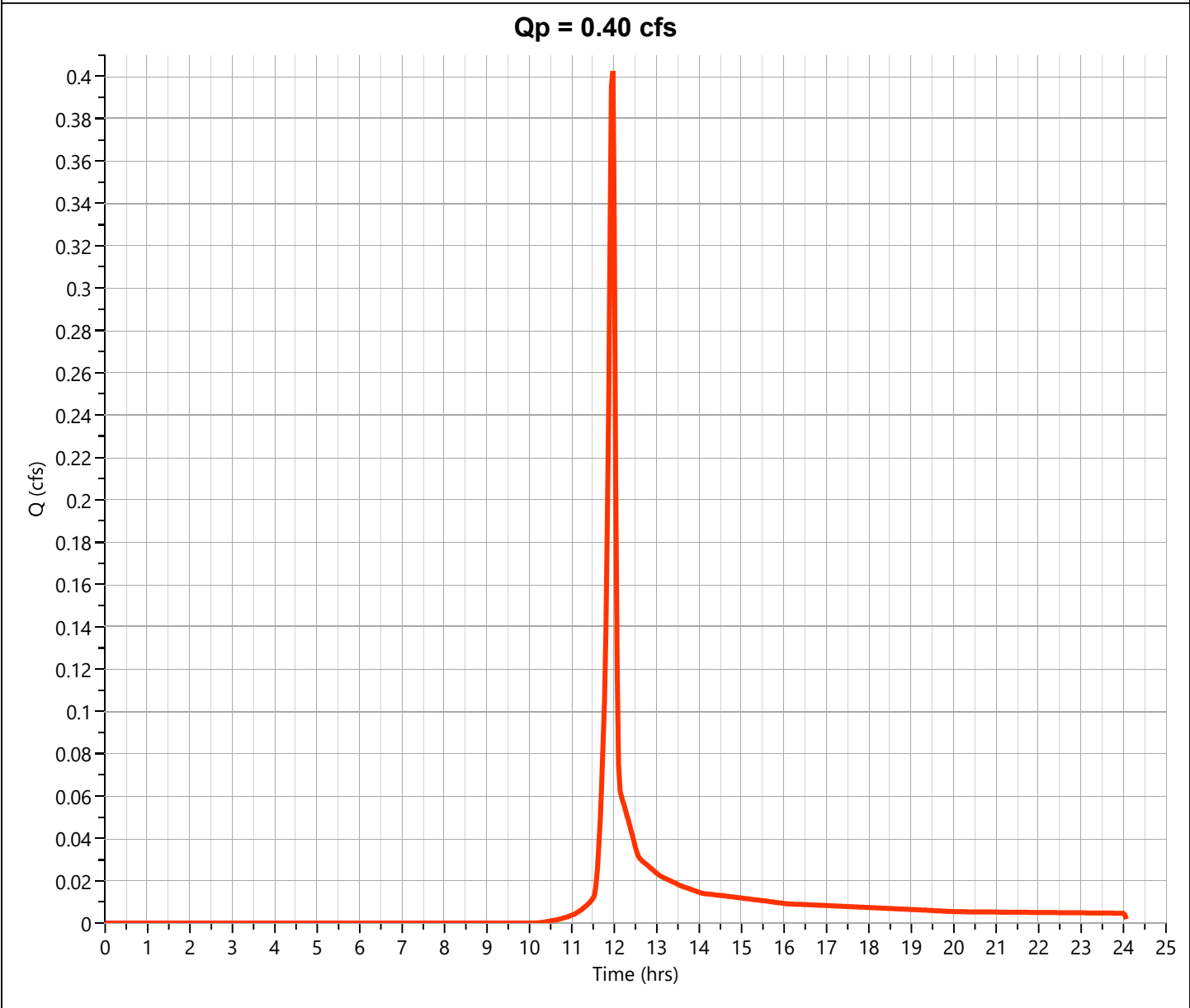
08-13-2024

Post DA 5

Hyd. No. 11

Hydrograph Type	= NRCS Runoff	Peak Flow	= 0.403 cfs
Storm Frequency	= 50-yr	Time to Peak	= 11.97 hrs
Time Interval	= 2 min	Runoff Volume	= 806 cuft
Drainage Area	= 0.09 ac	Curve Number	= 61*
Tc Method	= User	Time of Conc. (Tc)	= 5.0 min
Total Rainfall	= 6.90 in	Design Storm	= Type II
Storm Duration	= 24 hrs	Shape Factor	= 484

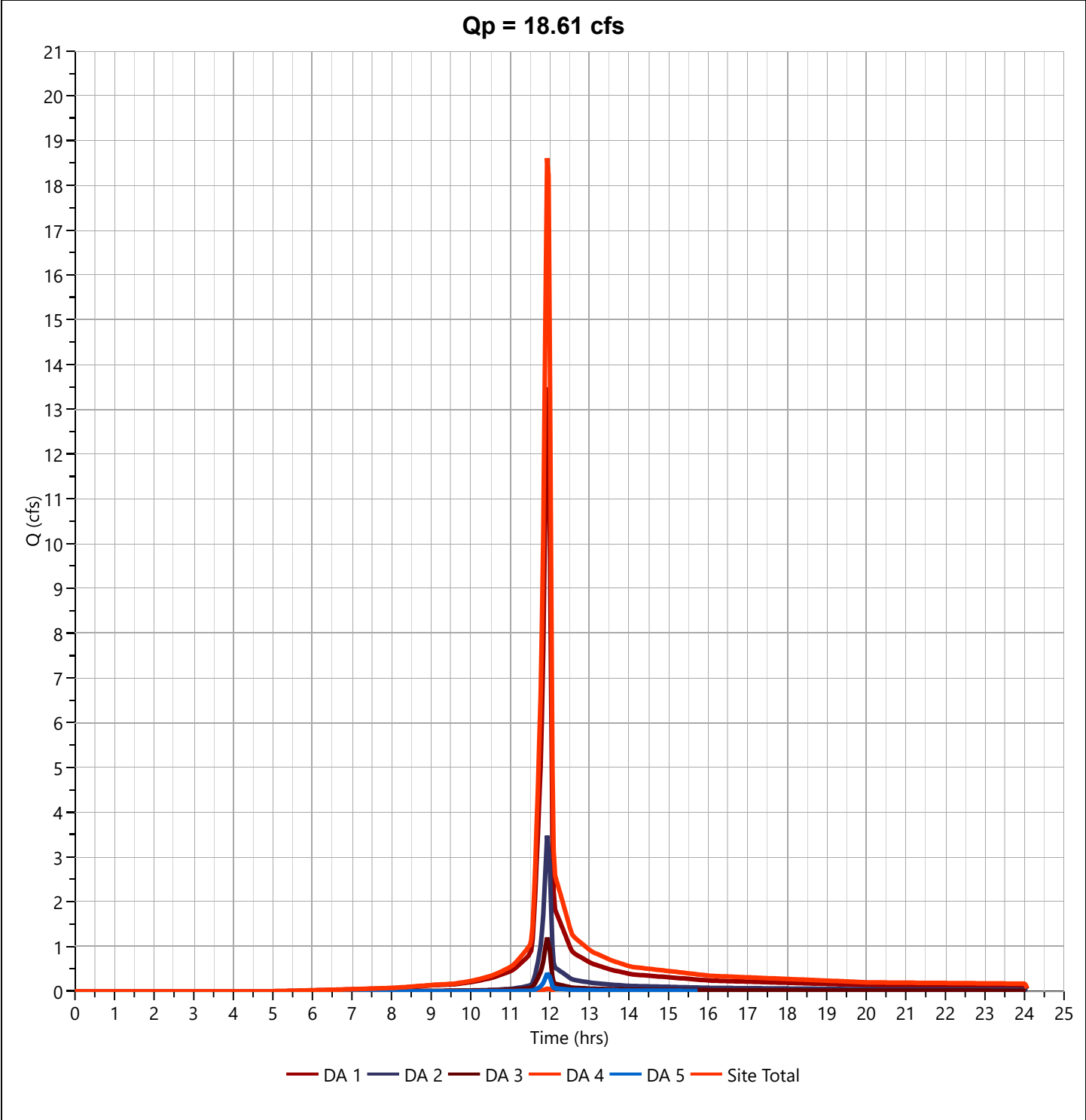
* Composite CN Worksheet		
AREA (ac)	CN	DESCRIPTION
0.09	61	GRASS
0.09	61	Weighted CN Method Employed



Post Site Total

Hyd. No. 12

Hydrograph Type	= Junction	Peak Flow	= 18.61 cfs
Storm Frequency	= 50-yr	Time to Peak	= 11.93 hrs
Time Interval	= 2 min	Hydrograph Volume	= 38,613 cuft
Inflow Hydrographs	= 7, 8, 9, 10, 11	Total Contrib. Area	= 2.649 ac



Hydrology Studio v 3.0.0.31

08-13-2024

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Hydrograph Report

Project Name:

Hydrology Studio v 3.0.0.31

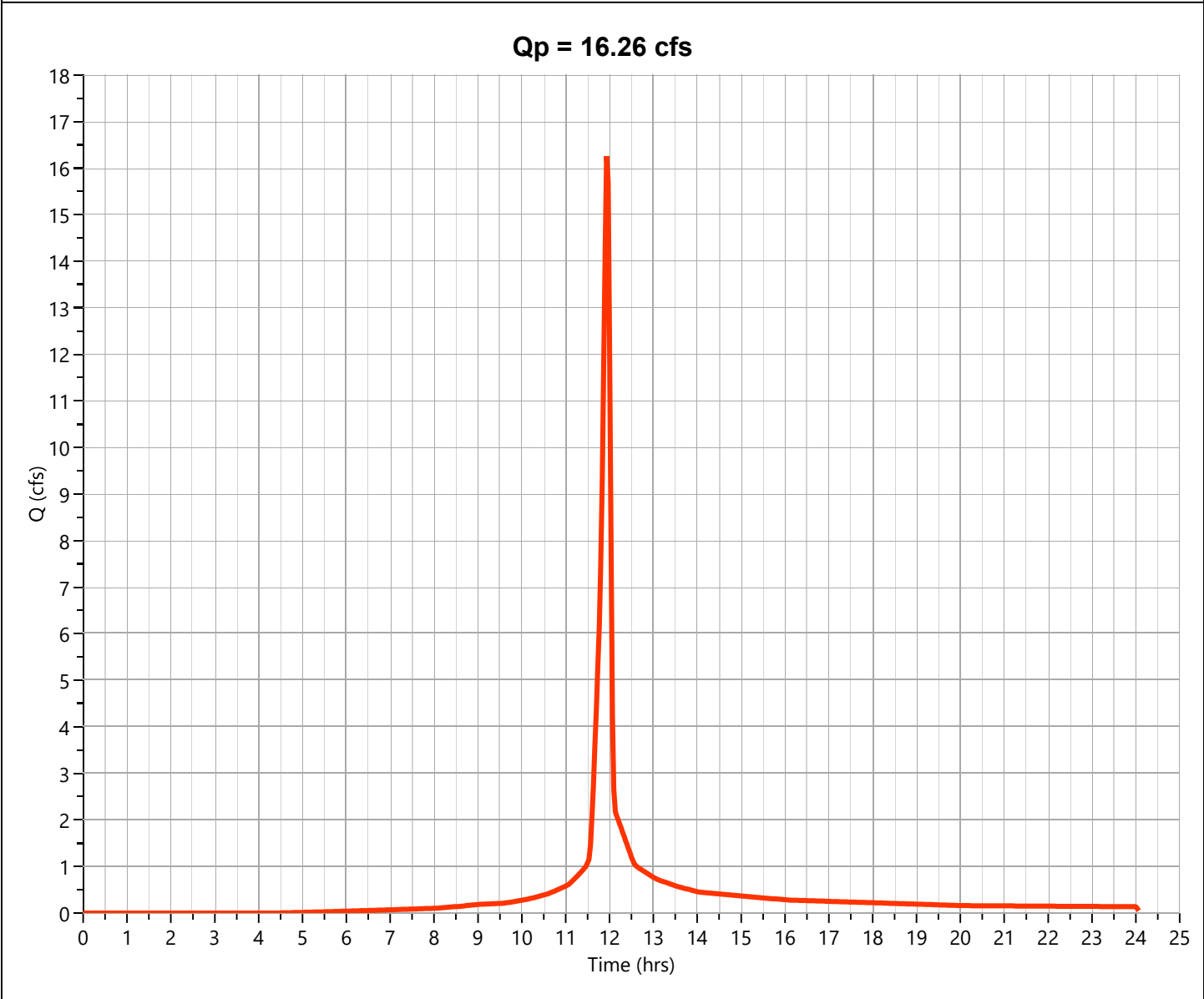
08-13-2024

Pre DA 1

Hyd. No. 1

Hydrograph Type	= NRCS Runoff	Peak Flow	= 16.26 cfs
Storm Frequency	= 100-yr	Time to Peak	= 11.93 hrs
Time Interval	= 2 min	Runoff Volume	= 34,427 cuft
Drainage Area	= 1.71 ac	Curve Number	= 82.64*
Tc Method	= User	Time of Conc. (Tc)	= 5.0 min
Total Rainfall	= 7.98 in	Design Storm	= Type II
Storm Duration	= 24 hrs	Shape Factor	= 484

* Composite CN Worksheet		
AREA (ac)	CN	DESCRIPTION
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1.0	98	IMP
1.71	83	Weighted CN Method Employed



Hydrograph Report

Project Name:

Hydrology Studio v 3.0.0.31

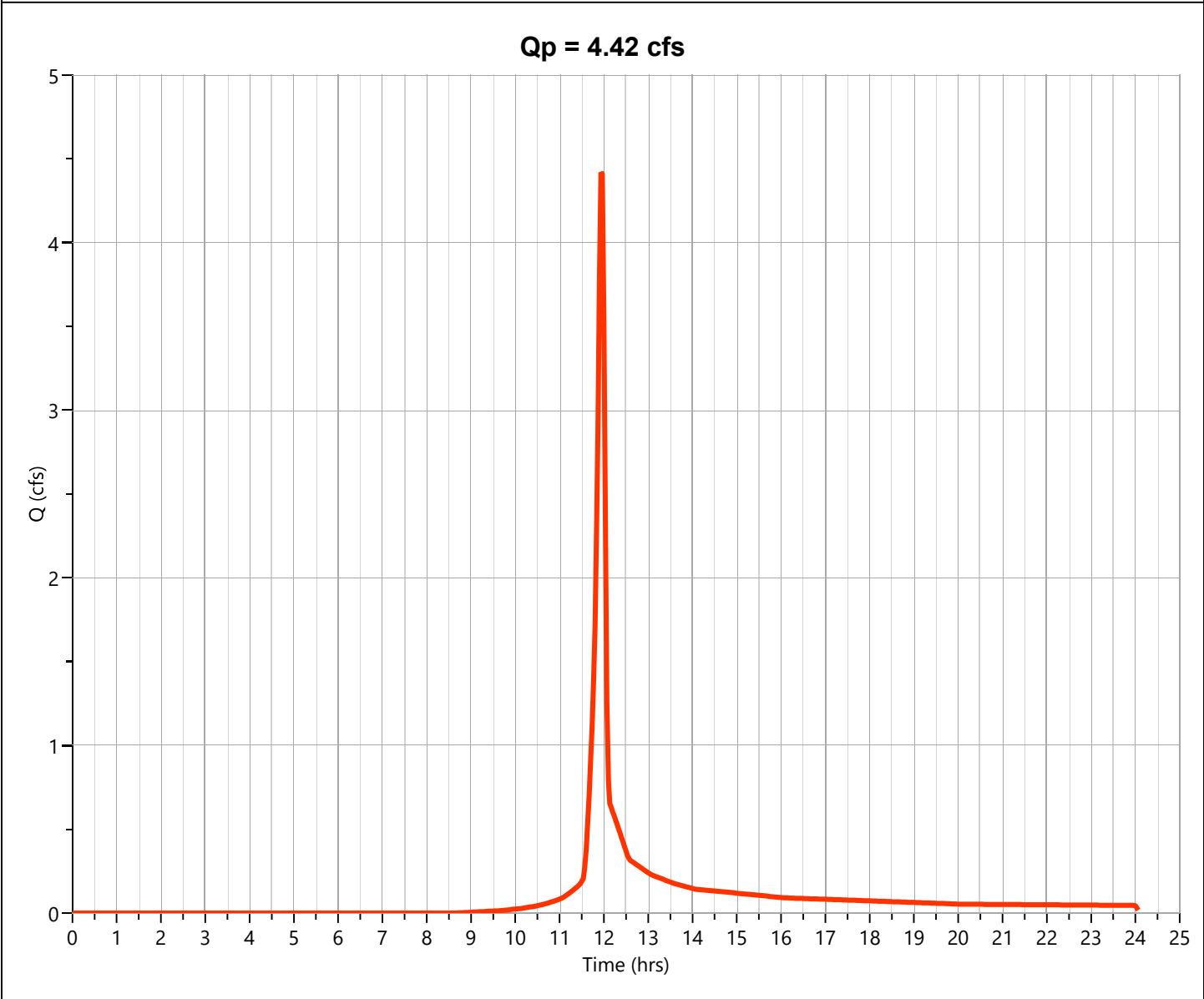
08-13-2024

Pre DA 2

Hyd. No. 2

Hydrograph Type	= NRCS Runoff	Peak Flow	= 4.418 cfs
Storm Frequency	= 100-yr	Time to Peak	= 11.93 hrs
Time Interval	= 2 min	Runoff Volume	= 8,922 cuft
Drainage Area	= 0.676 ac	Curve Number	= 65*
Tc Method	= User	Time of Conc. (Tc)	= 5.0 min
Total Rainfall	= 7.98 in	Design Storm	= Type II
Storm Duration	= 24 hrs	Shape Factor	= 484

* Composite CN Worksheet		
AREA (ac)	CN	DESCRIPTION
0.598	61	GRASS
0.078	98	IMP
0.676	65	Weighted CN Method Employed



Hydrograph Report

Project Name:

Hydrology Studio v 3.0.0.31

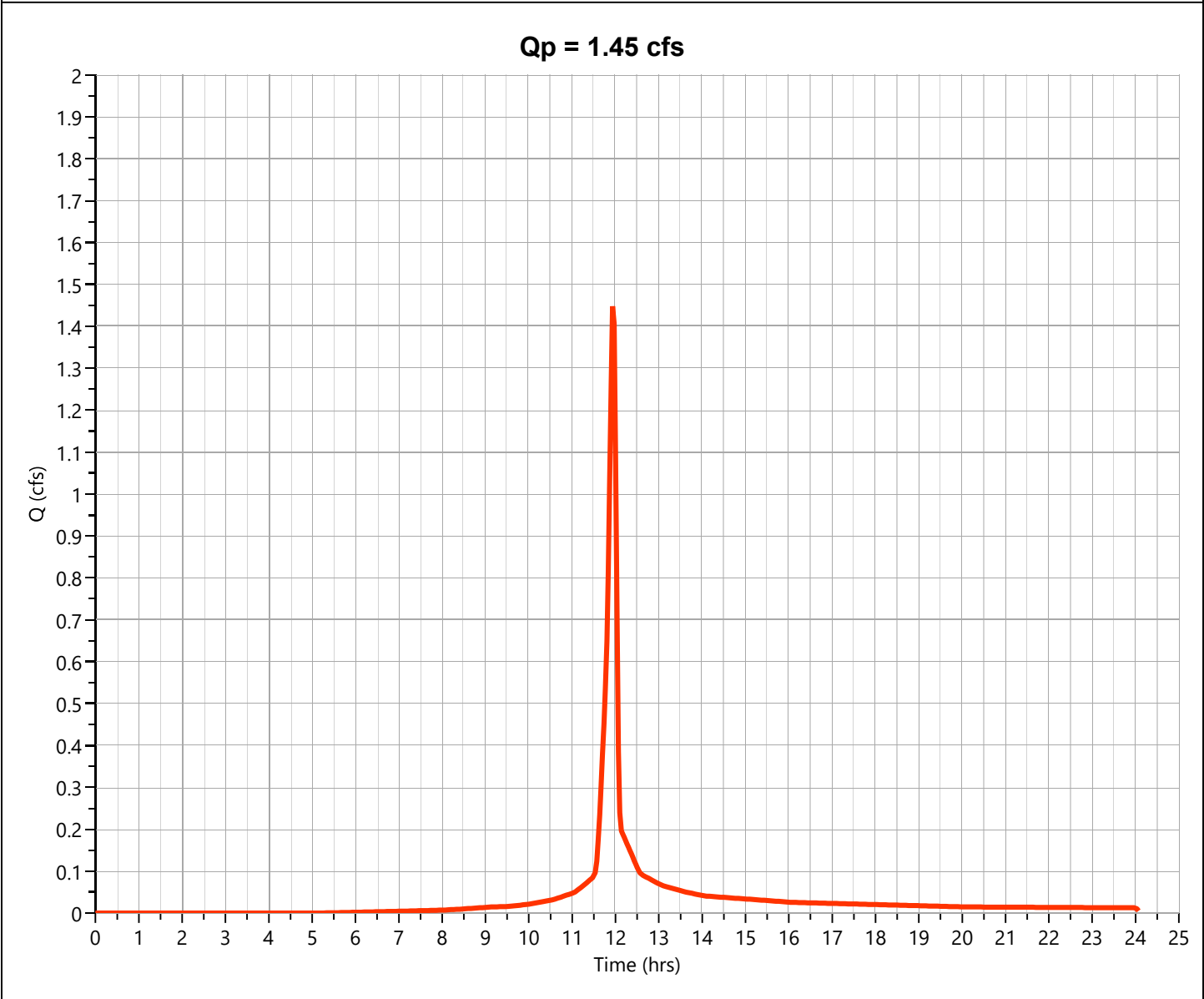
08-13-2024

Pre DA 3

Hyd. No. 3

Hydrograph Type	= NRCS Runoff	Peak Flow	= 1.448 cfs
Storm Frequency	= 100-yr	Time to Peak	= 11.93 hrs
Time Interval	= 2 min	Runoff Volume	= 3,021 cuft
Drainage Area	= 0.16 ac	Curve Number	= 79.5*
Tc Method	= User	Time of Conc. (Tc)	= 5.0 min
Total Rainfall	= 7.98 in	Design Storm	= Type II
Storm Duration	= 24 hrs	Shape Factor	= 484

* Composite CN Worksheet		
AREA (ac)	CN	DESCRIPTION
0.08	61	GRASS
0.08	98	IMP
0.16	80	Weighted CN Method Employed



Hydrograph Report

Project Name:

Hydrology Studio v 3.0.0.31

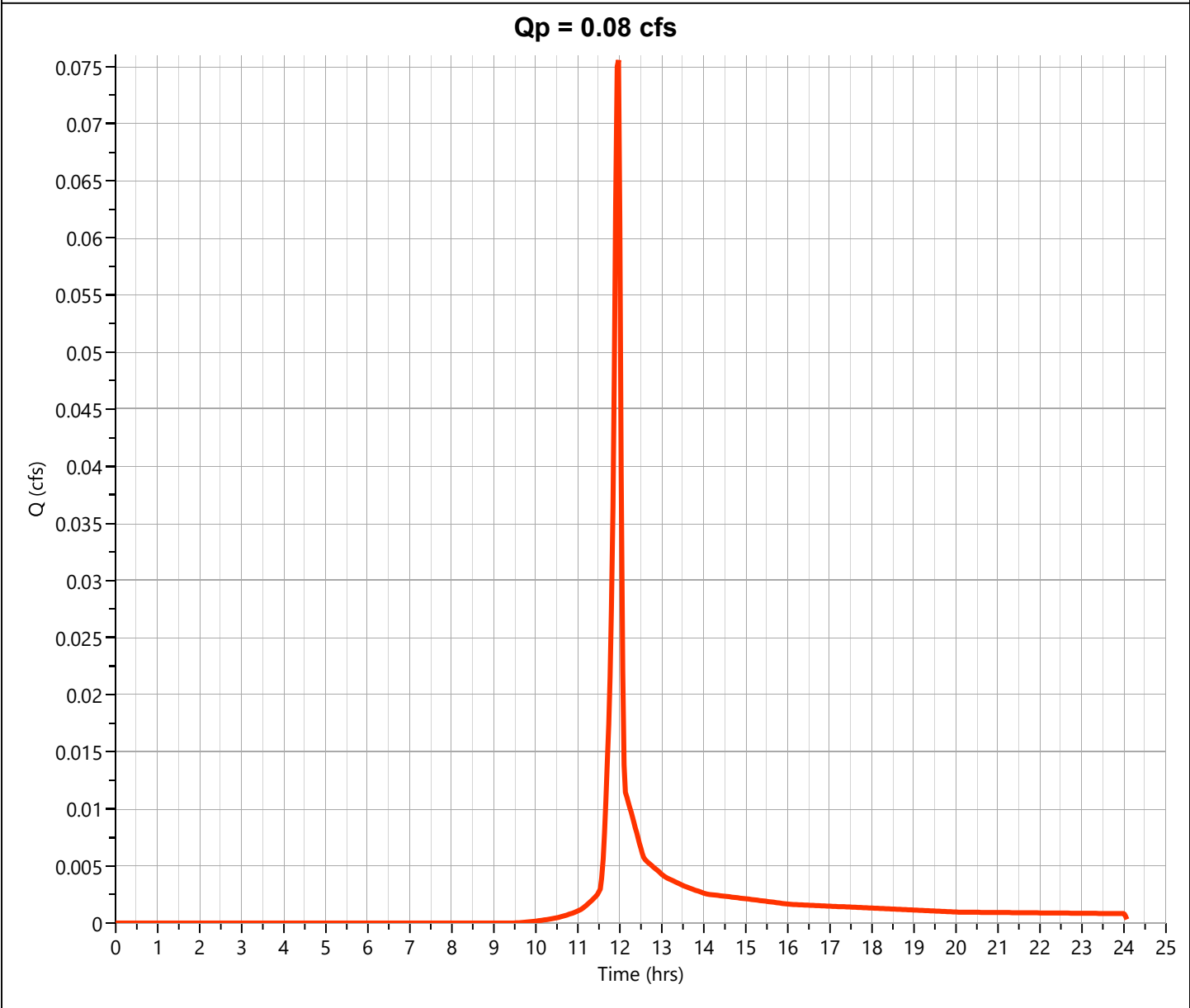
08-13-2024

Pre DA 4

Hyd. No. 4

Hydrograph Type	= NRCS Runoff	Peak Flow	= 0.076 cfs
Storm Frequency	= 100-yr	Time to Peak	= 11.97 hrs
Time Interval	= 2 min	Runoff Volume	= 152 cuft
Drainage Area	= 0.013 ac	Curve Number	= 61*
Tc Method	= User	Time of Conc. (Tc)	= 5.0 min
Total Rainfall	= 7.98 in	Design Storm	= Type II
Storm Duration	= 24 hrs	Shape Factor	= 484

* Composite CN Worksheet		
AREA (ac)	CN	DESCRIPTION
0.013	61	GRASS
0.013	61	Weighted CN Method Employed



Hydrograph Report

Project Name:

Hydrology Studio v 3.0.0.31

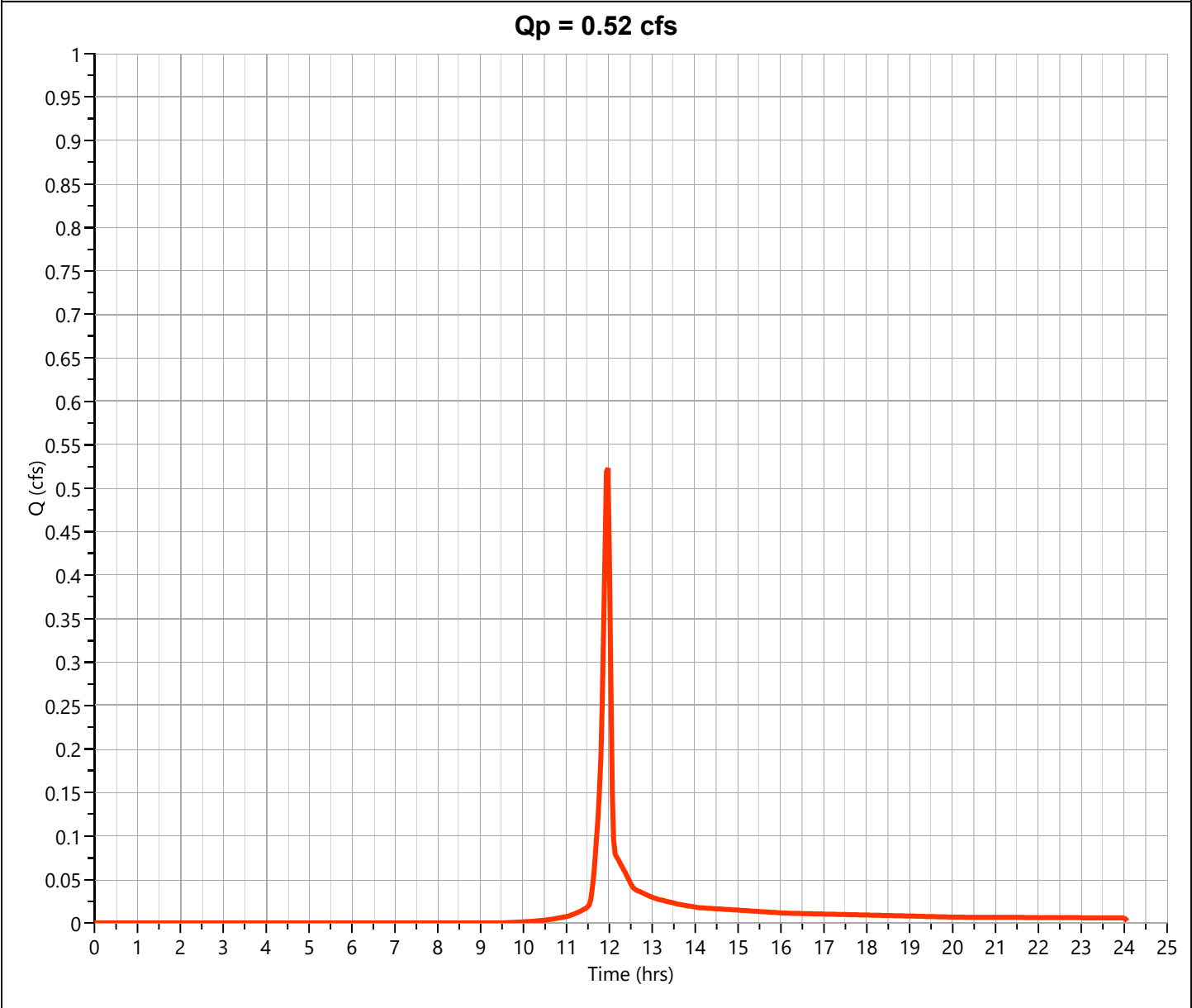
08-13-2024

Pre DA 5

Hyd. No. 5

Hydrograph Type	= NRCS Runoff	Peak Flow	= 0.523 cfs
Storm Frequency	= 100-yr	Time to Peak	= 11.97 hrs
Time Interval	= 2 min	Runoff Volume	= 1,050 cuft
Drainage Area	= 0.09 ac	Curve Number	= 61*
Tc Method	= User	Time of Conc. (Tc)	= 5.0 min
Total Rainfall	= 7.98 in	Design Storm	= Type II
Storm Duration	= 24 hrs	Shape Factor	= 484

* Composite CN Worksheet		
AREA (ac)	CN	DESCRIPTION
0.09	61	GRASS
0.09	61	Weighted CN Method Employed



Hydrograph Report

Project Name:

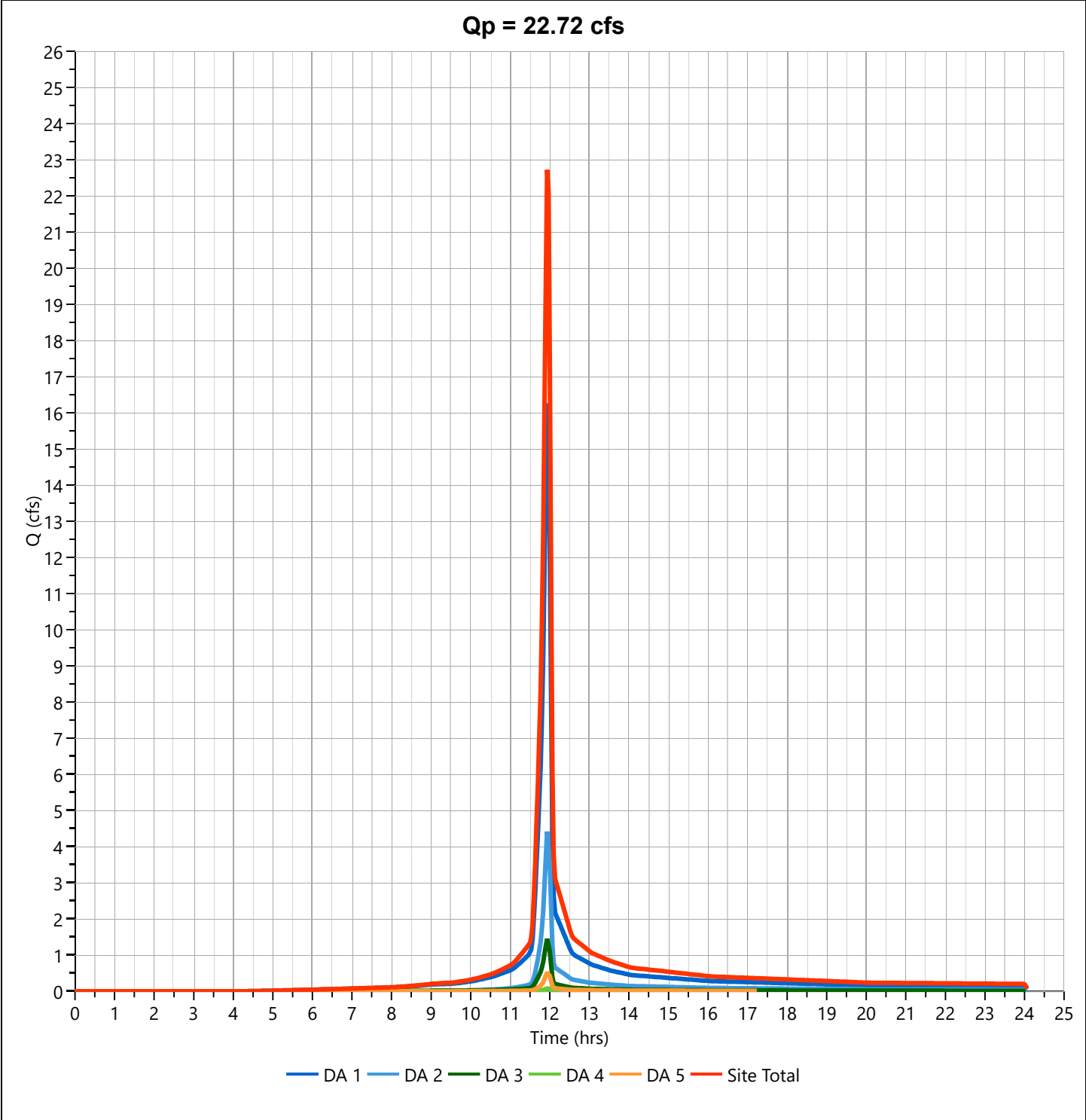
Hydrology Studio v 3.0.0.31

08-13-2024

Pre Site Total

Hyd. No. 6

Hydrograph Type	= Junction	Peak Flow	= 22.72 cfs
Storm Frequency	= 100-yr	Time to Peak	= 11.93 hrs
Time Interval	= 2 min	Hydrograph Volume	= 47,571 cuft
Inflow Hydrographs	= 1, 2, 3, 4, 5	Total Contrib. Area	= 2.649 ac



Hydrograph Report

Project Name:

Hydrology Studio v 3.0.0.31

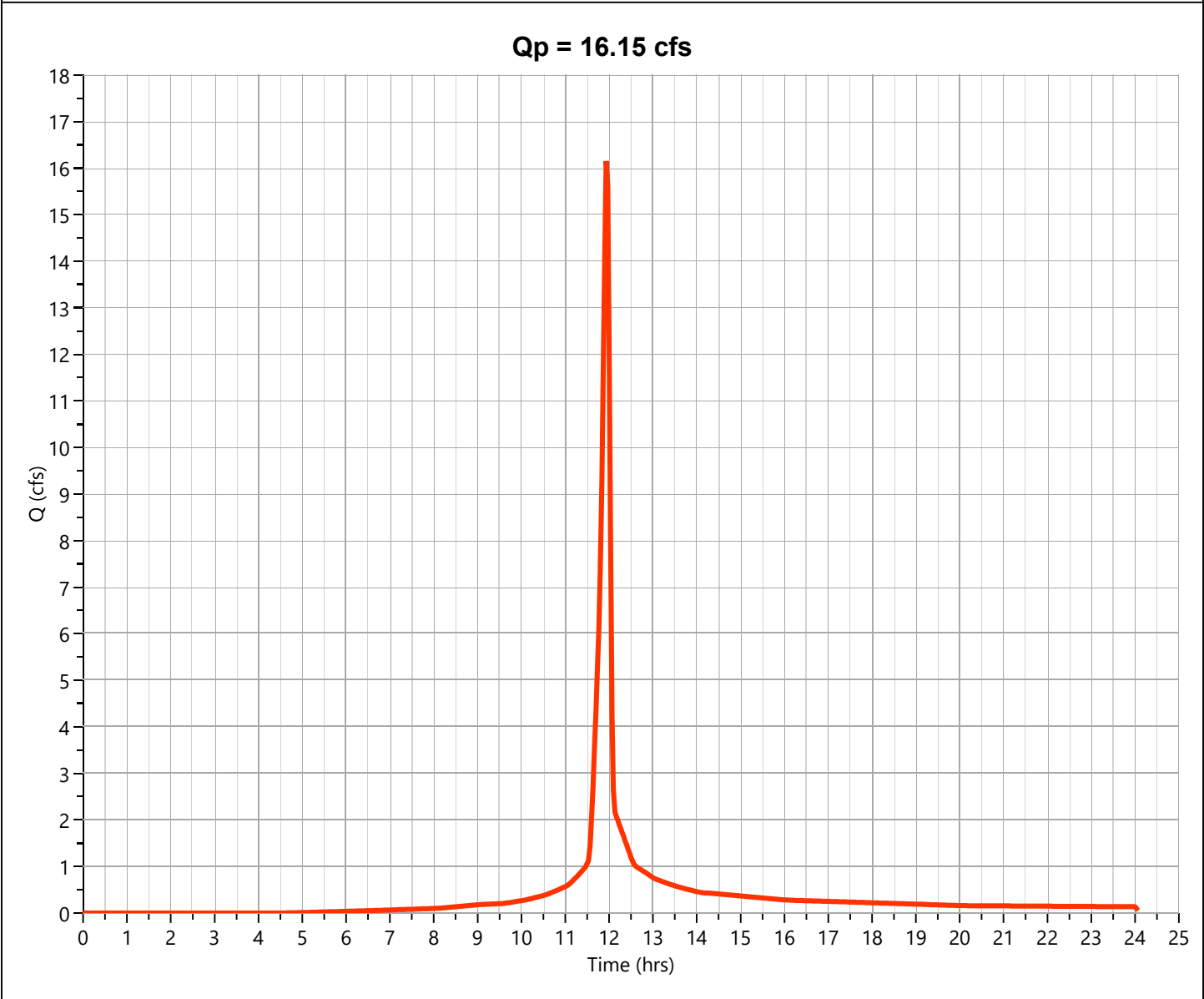
08-13-2024

Post DA 1

Hyd. No. 7

Hydrograph Type	= NRCS Runoff	Peak Flow	= 16.15 cfs
Storm Frequency	= 100-yr	Time to Peak	= 11.93 hrs
Time Interval	= 2 min	Runoff Volume	= 34,126 cuft
Drainage Area	= 1.71 ac	Curve Number	= 82.2*
Tc Method	= User	Time of Conc. (Tc)	= 5.0 min
Total Rainfall	= 7.98 in	Design Storm	= Type II
Storm Duration	= 24 hrs	Shape Factor	= 484

* Composite CN Worksheet		
AREA (ac)	CN	DESCRIPTION
0.73	61	GRASS
0.98	98	IMP
1.71	82	Weighted CN Method Employed



Hydrograph Report

Project Name:

Hydrology Studio v 3.0.0.31

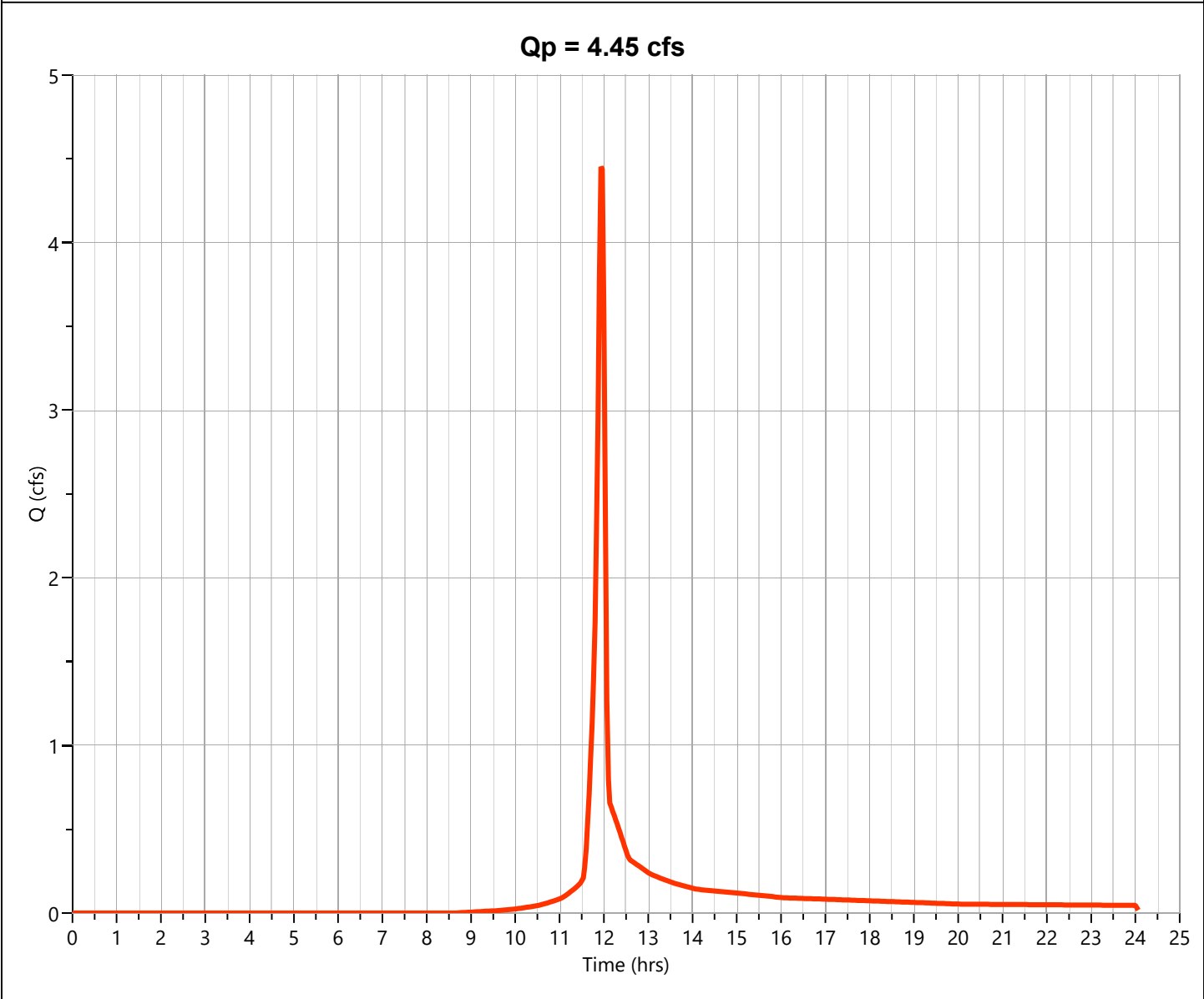
08-13-2024

Post DA 2

Hyd. No. 8

Hydrograph Type	= NRCS Runoff	Peak Flow	= 4.453 cfs
Storm Frequency	= 100-yr	Time to Peak	= 11.93 hrs
Time Interval	= 2 min	Runoff Volume	= 8,992 cuft
Drainage Area	= 0.676 ac	Curve Number	= 65.27*
Tc Method	= User	Time of Conc. (Tc)	= 5.0 min
Total Rainfall	= 7.98 in	Design Storm	= Type II
Storm Duration	= 24 hrs	Shape Factor	= 484

* Composite CN Worksheet		
AREA (ac)	CN	DESCRIPTION
0.598	61	GRASS
0.078	98	IMP
0.676	65	Weighted CN Method Employed



Hydrograph Report

Project Name:

Hydrology Studio v 3.0.0.31

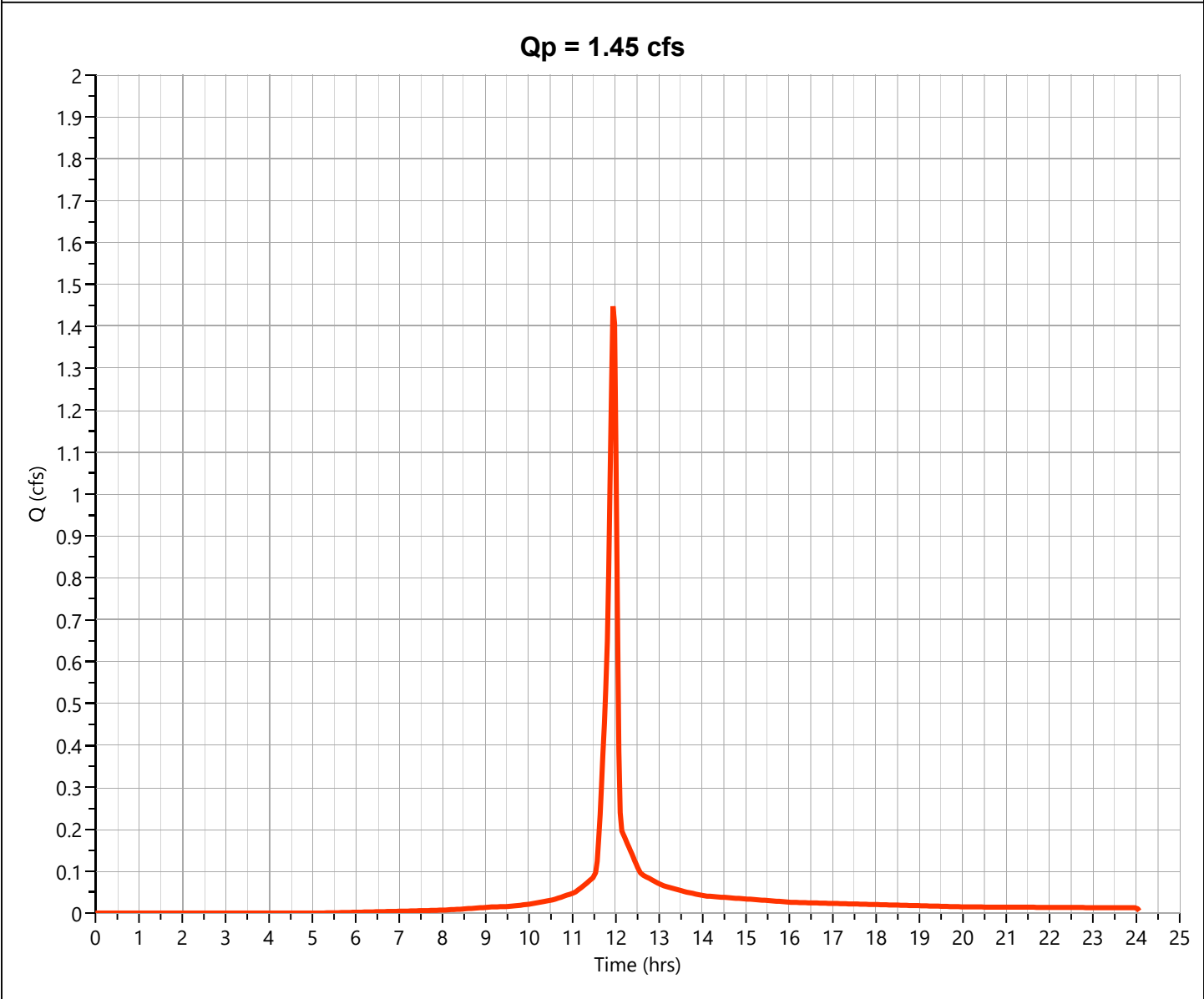
08-13-2024

Post DA 3

Hyd. No. 9

Hydrograph Type	= NRCS Runoff	Peak Flow	= 1.448 cfs
Storm Frequency	= 100-yr	Time to Peak	= 11.93 hrs
Time Interval	= 2 min	Runoff Volume	= 3,021 cuft
Drainage Area	= 0.16 ac	Curve Number	= 79.5*
Tc Method	= User	Time of Conc. (Tc)	= 5.0 min
Total Rainfall	= 7.98 in	Design Storm	= Type II
Storm Duration	= 24 hrs	Shape Factor	= 484

* Composite CN Worksheet		
AREA (ac)	CN	DESCRIPTION
0.08	61	GRASS
0.08	98	IMP
0.16	80	Weighted CN Method Employed



Hydrograph Report

Project Name:

Hydrology Studio v 3.0.0.31

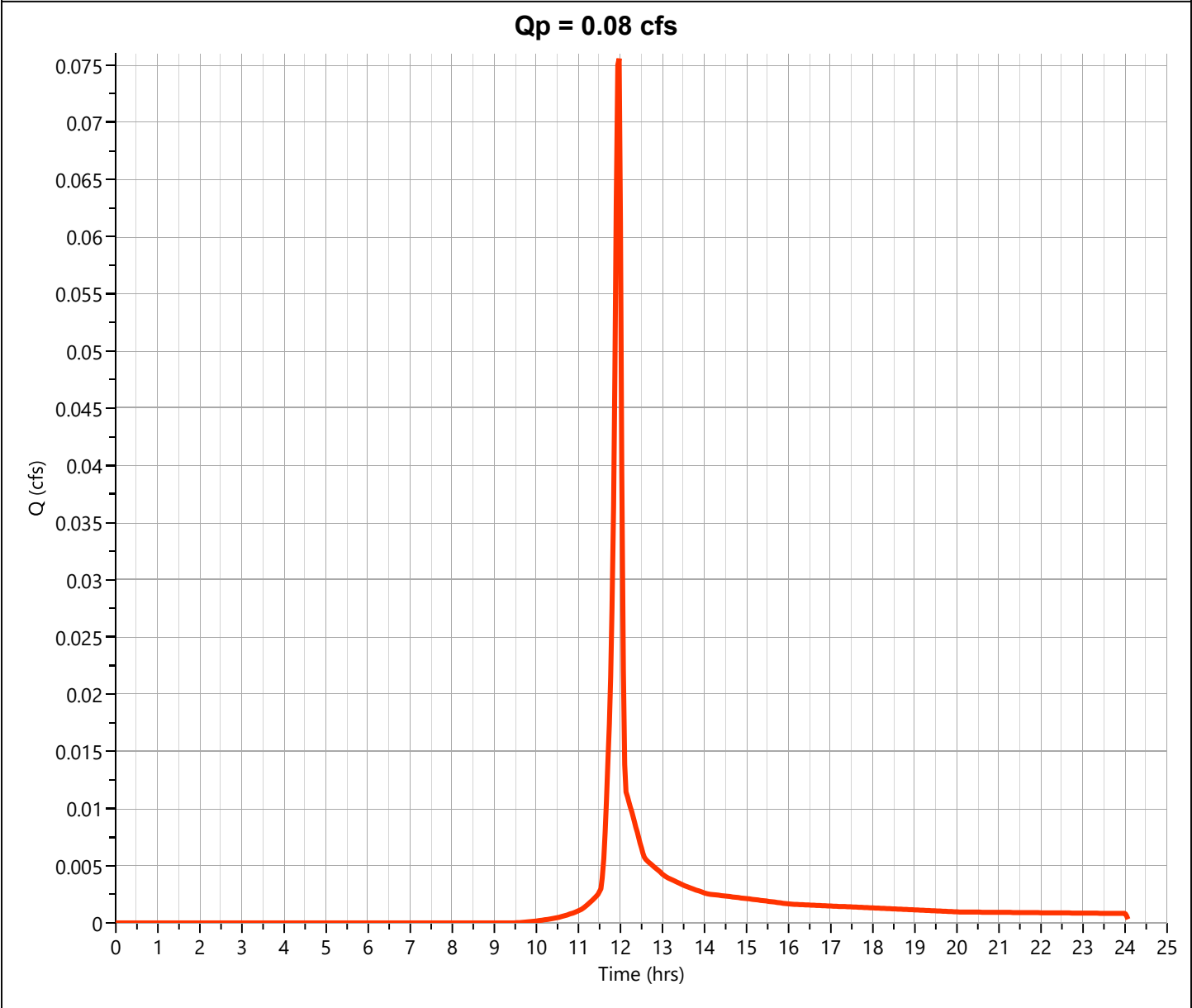
08-13-2024

Post DA 4

Hyd. No. 10

Hydrograph Type	= NRCS Runoff	Peak Flow	= 0.076 cfs
Storm Frequency	= 100-yr	Time to Peak	= 11.97 hrs
Time Interval	= 2 min	Runoff Volume	= 152 cuft
Drainage Area	= 0.013 ac	Curve Number	= 61*
Tc Method	= User	Time of Conc. (Tc)	= 5.0 min
Total Rainfall	= 7.98 in	Design Storm	= Type II
Storm Duration	= 24 hrs	Shape Factor	= 484

* Composite CN Worksheet		
AREA (ac)	CN	DESCRIPTION
0.013	61	GRASS
0.013	61	Weighted CN Method Employed



Hydrograph Report

Project Name:

Hydrology Studio v 3.0.0.31

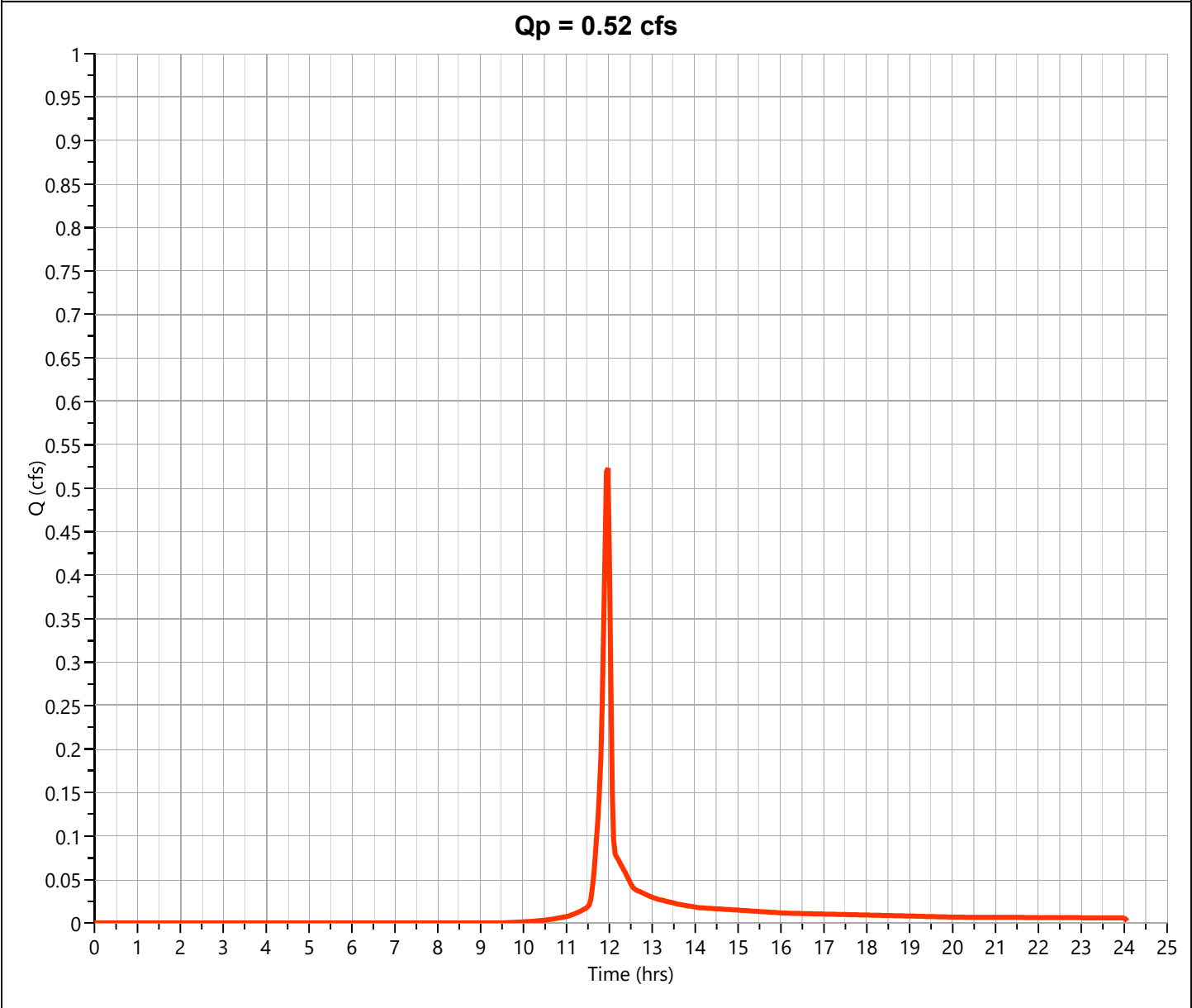
08-13-2024

Post DA 5

Hyd. No. 11

Hydrograph Type	= NRCS Runoff	Peak Flow	= 0.523 cfs
Storm Frequency	= 100-yr	Time to Peak	= 11.97 hrs
Time Interval	= 2 min	Runoff Volume	= 1,050 cuft
Drainage Area	= 0.09 ac	Curve Number	= 61*
Tc Method	= User	Time of Conc. (Tc)	= 5.0 min
Total Rainfall	= 7.98 in	Design Storm	= Type II
Storm Duration	= 24 hrs	Shape Factor	= 484

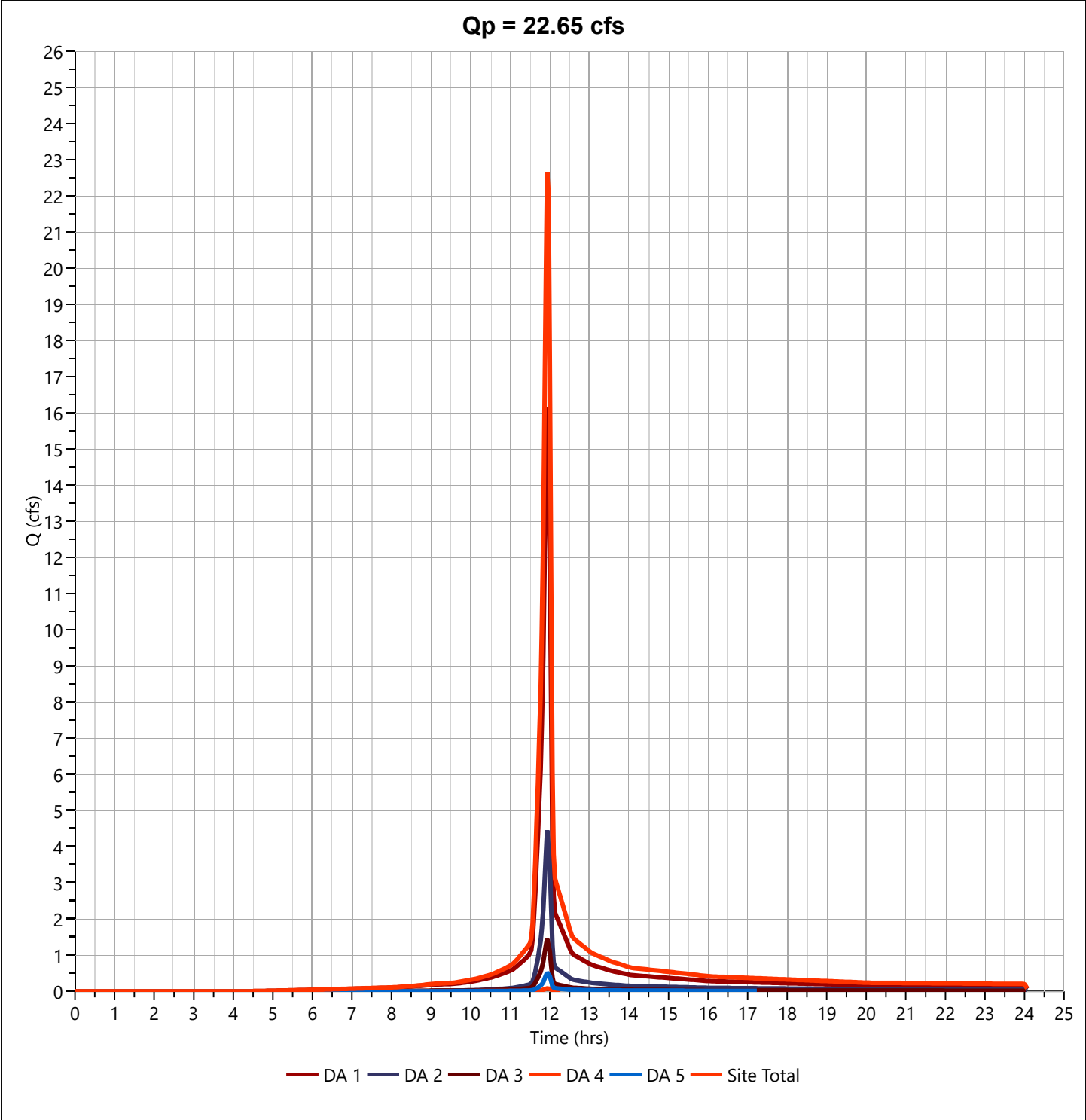
* Composite CN Worksheet		
AREA (ac)	CN	DESCRIPTION
0.09	61	GRASS
0.09	61	Weighted CN Method Employed



Post Site Total

Hyd. No. 12

Hydrograph Type	= Junction	Peak Flow	= 22.65 cfs
Storm Frequency	= 100-yr	Time to Peak	= 11.93 hrs
Time Interval	= 2 min	Hydrograph Volume	= 47,341 cuft
Inflow Hydrographs	= 7, 8, 9, 10, 11	Total Contrib. Area	= 2.649 ac



Appendix C – Web Soil Survey Report



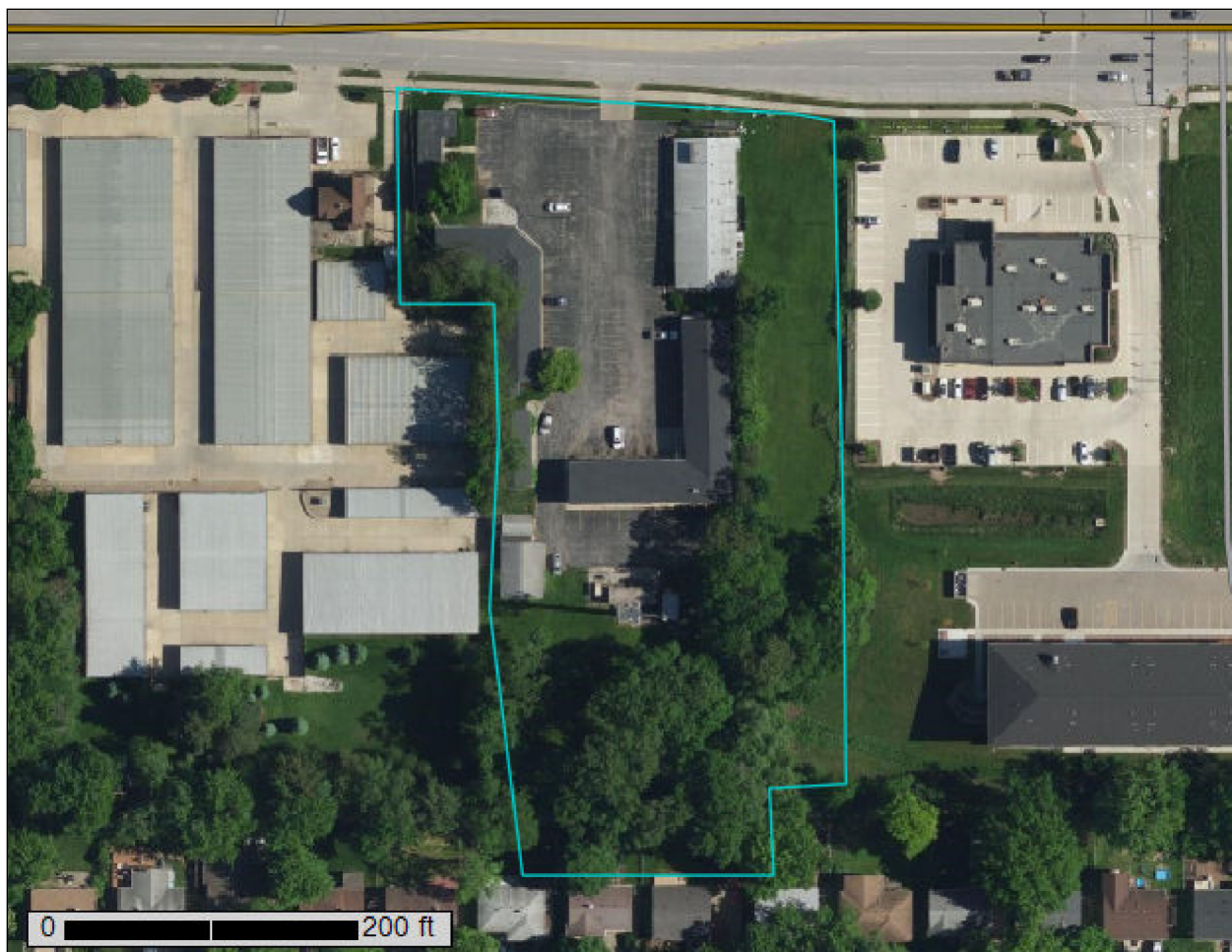
United States
Department of
Agriculture

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 Polk County, Iowa



Preface

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

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

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

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

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

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

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How Soil Surveys Are Made

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

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

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

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

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

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

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

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

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

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

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

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

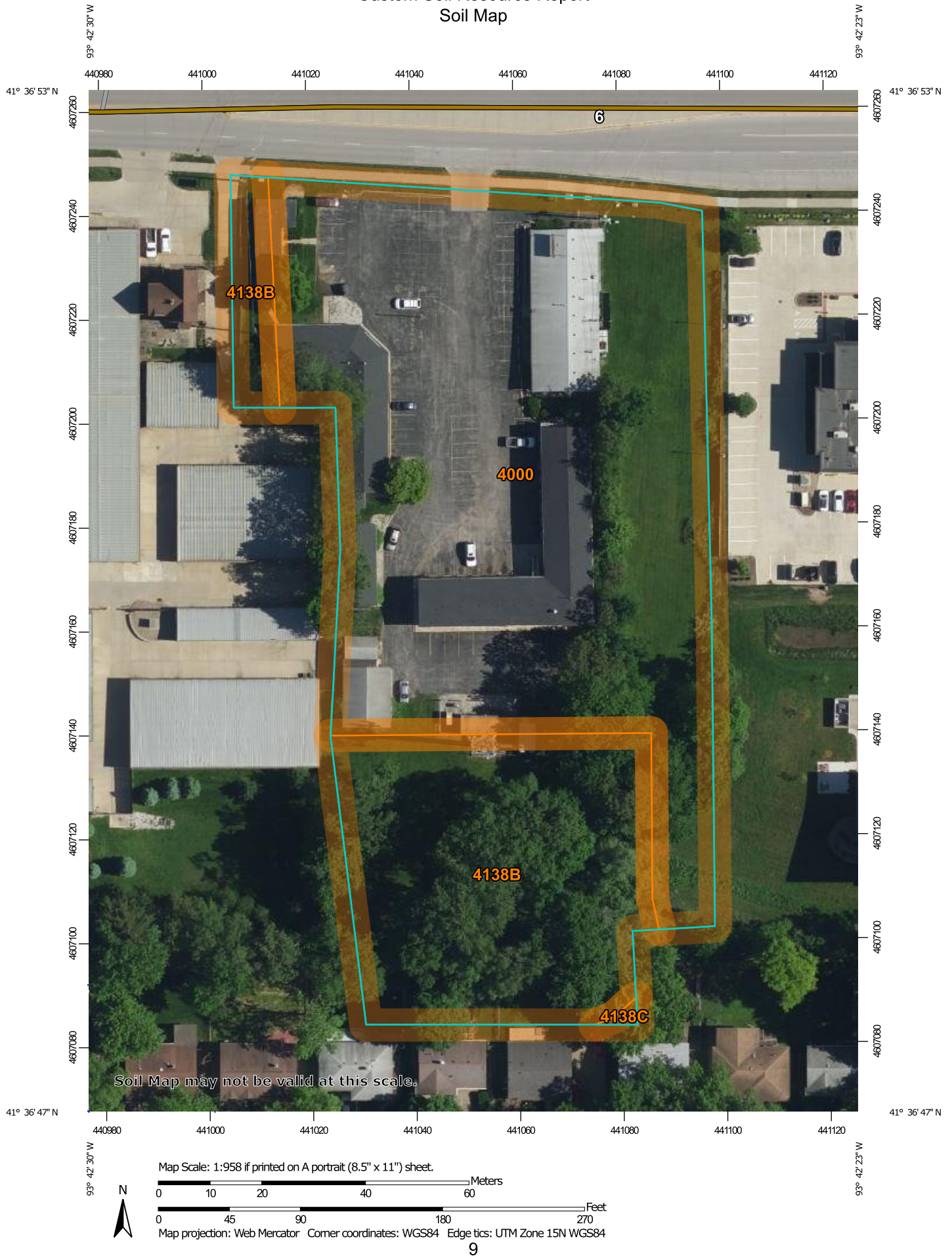
Custom Soil Resource Report

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

Soil Map

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

Custom Soil Resource Report Soil Map



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 1:12,000.

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: Polk County, Iowa
Survey Area Data: Version 26, Sep 12, 2023

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

Date(s) aerial images were photographed: May 29, 2020—Jun 12, 2020

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
4000	Urban land	2.1	70.2%
4138B	Clarion-Urban land complex, 2 to 5 percent slopes	0.9	29.6%
4138C	Clarion-Urban land complex, 5 to 9 percent slopes	0.0	0.1%
Totals for Area of Interest		3.0	100.0%

Map Unit Descriptions

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

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

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

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The

delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

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

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

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

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

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

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

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

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

Polk County, Iowa

4000—Urban land

Map Unit Setting

National map unit symbol: fvn6
Elevation: 690 to 1,020 feet
Mean annual precipitation: 29 to 37 inches
Mean annual air temperature: 45 to 52 degrees F
Frost-free period: 160 to 195 days
Farmland classification: Not prime farmland

Map Unit Composition

Urban land: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

4138B—Clarion-Urban land complex, 2 to 5 percent slopes

Map Unit Setting

National map unit symbol: fvnm
Elevation: 950 to 1,500 feet
Mean annual precipitation: 23 to 35 inches
Mean annual air temperature: 43 to 50 degrees F
Frost-free period: 165 to 200 days
Farmland classification: Not prime farmland

Map Unit Composition

Clarion and similar soils: 60 percent
Urban land: 40 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Clarion

Setting

Landform: Ground moraines
Landform position (two-dimensional): Shoulder, backslope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy supraglacial till

Typical profile

Ap - 0 to 7 inches: loam
A1,A2 - 7 to 18 inches: loam
Bw1,Bw2 - 18 to 36 inches: loam
C1,C2 - 36 to 60 inches: loam

Properties and qualities

Slope: 2 to 5 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Low

Custom Soil Resource Report

Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.14 to 1.42 in/hr)

Depth to water table: About 48 to 72 inches

Frequency of flooding: None

Frequency of ponding: None

Calcium carbonate, maximum content: 30 percent

Available water supply, 0 to 60 inches: High (about 11.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 2e

Hydrologic Soil Group: B

Ecological site: R103XY004MN - Loamy Upland Prairies

Hydric soil rating: No

4138C—Clarion-Urban land complex, 5 to 9 percent slopes

Map Unit Setting

National map unit symbol: fvnn

Elevation: 950 to 1,500 feet

Mean annual precipitation: 23 to 35 inches

Mean annual air temperature: 43 to 50 degrees F

Frost-free period: 165 to 200 days

Farmland classification: Not prime farmland

Map Unit Composition

Clarion and similar soils: 60 percent

Urban land: 40 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Clarion

Setting

Landform: Ground moraines

Landform position (two-dimensional): Shoulder, backslope

Down-slope shape: Convex

Across-slope shape: Convex

Parent material: Loamy supraglacial till

Typical profile

Ap - 0 to 7 inches: loam

A1,A2 - 7 to 18 inches: loam

Bw1,Bw2 - 18 to 36 inches: loam

C1,C2 - 36 to 60 inches: loam

Properties and qualities

Slope: 5 to 9 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Well drained

Runoff class: Medium

Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.14 to 1.42 in/hr)

Custom Soil Resource Report

Depth to water table: About 48 to 72 inches

Frequency of flooding: None

Frequency of ponding: None

Calcium carbonate, maximum content: 30 percent

Available water supply, 0 to 60 inches: High (about 11.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 3e

Hydrologic Soil Group: B

Ecological site: R103XY004MN - Loamy Upland Prairies

Hydric soil rating: No

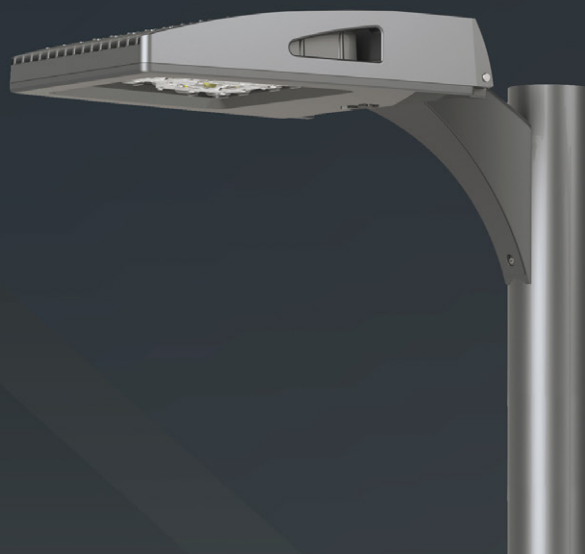
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LED WATTAGE CHART

	16L	32L	48L	64L
400 milliamps	21w	-	-	-
530 milliamps	28w	-	-	-
700 milliamps	36w	71w	104w	136w
1050 milliamps	56w	106w	156w	205w

FORM AND FUNCTION

- Sleek, low profile housing
- Spec grade performance
- Engineered for optimum thermal management
- Low depreciation rate
- Reduces energy consumption and costs up to 65%
- Exceeds IES foot candle levels utilizing the least number of poles and fixtures per project
- Optical system designed for:
 - Parking Lots
 - Auto Dealerships
 - General Area Lighting

CONSTRUCTION

- Die Cast Aluminum
- External cooling fins
- Corrosion resistant external hardware
- One-piece silicone gasket ensures IP65 seal for electronics compartment
- One-piece Optics Plate™ mounting silicone Micro Optics
- Two-piece silicone Micro Optic system ensures IP67 level seal around each PCB
- Grade 2 Clear Anodized Optics Plate™ standard

FINISH

- 3-5 mils electrostatic powder coat.
- NLS' standard high-quality finishes prevent corrosion, protects against extreme environmental conditions

WARRANTY

Five-year limited warranty for drivers and LEDs.

BUY AMERICAN

To ensure the latest BAA/TAA/BABA Standards are being met, please select BAA, TAA, or BABA in the options section. Please contact the factory before placing an order for any NLS products requesting BAA (Buy American Act), TAA (Trade American Act), or BABA (Build America, Buy America).



Project Name:

Type:

NV-1 ORDERING GUIDE

Cat#	Light Dist.	# of LEDs	Miliamps	Kelvin	Volts
NV-1 (NV-1)	Type 2 (T2)	16 (16L)	400 (40)	Amber 586-600nM (AMBER) ^{10, 12, 13}	120-277 (UNV)
	Type 3 (T3)	32 (32L) ¹⁵	530 (53)	2700K, 70 CRI (27K7) ⁶	347-480 (HV)
	Type 4 (T4)	48 (48L) ¹⁵	700 (7)	2700K, 80 CRI (27K8) ^{1, 6}	
	Type 5 (T5)	64 (64L) ¹⁵	1050 (1)	3000K, 70 CRI (30K7) ⁶	
	Nema 3 30o Narrow Beam (N3)			3000K, 80 CRI (30K8) ^{1, 6}	
	Corner Distribution Left (CDL)			3500K, 80 CRI (35K8) ¹	
	Corner Distribution Right (CDR)			4000K, 70 CRI (40K7)	
				4000K, 80 CRI (40K8) ¹	
				5000K, 70 CRI (50K7)	
				5000K, 80 CRI (50K8) ¹	
Mounting	Color	Controls Options	Options	Lens Options	
Architectural Sweep Arm (ASA)	Bronze Textured (BRZ)	Nema 7-Pin Receptacle (PE7)	Bird Spikes (BS)	Glass Lens (GL) ^{7, 14}	
Direct Pole 3" Arm Single D180 (DPS3) ²	White Textured (WHT)	Photocell + Receptacle (PCR)	Marine Grade Finish (MGF)	HAL Lens (HAL) ^{8, 14}	
Direct Pole 7" Arm D180, D90, T90, T120, Quad (DPS7) ²	Smooth White Gloss (SWT)	Receptacle + Shorting Cap (PER)	Optic Plate Painted to Match Fixture (OPP)		
Knuckle Mount (KM)	Silver Metallic (SVR)	FSP-211 with Motion Sensor 9'-20' Heights (FSP-20) ⁴	Quick Mount Bracket (QMB)		
Wall Mount (WM)	Black Textured (BLK)	21'-40' Heights (FSP-40) ⁴	Retrofit Mount Bracket (RQMB)		
Trunnion Mount (TM) ³	Smooth Black Gloss (SBK)	Custom Controls Integration (CCI) ⁹	Round Pole Adaptor 3"-4" Pole (RPA4)		
Tennis Arm Mount (TA)	Graphite Textured (GPH)	Button Type Photocell (PC) ⁴	Round Pole Adaptor 5"-6" Pole (RPA5)		
Mast Arm Mount (MA)	Grey Textured (GRY)		Rotated Optic Left (ROL)		
	Green Textured (GRN)		Rotated Optic Right (ROR)		
	Hunter Green Textured (HGN)		House Side Shield (HSS) ⁵		
	Custom (CS)		Black Hardware (BH)		
			Black Optic Frame (BOF)		
			Buy American Act (BAA) ¹¹		
			Trade Agreement Act (TAA) ¹¹		
			Build America Buy American (BABA) ¹¹		

NOTES:

1. Consult Factory for Lead Time. Consult Factory for 90 CRI Requests.
2. For Round Pole Specify RPA4 or RPA5
3. Standard finish is stainless steel. Can be painted to match fixture.
4. Universal Voltage 120-277
5. HSS not applicable with Nema 2.
6. 3000K or lower, with fixed mounting options only, must be selected to meet International Dark-Sky Association certification.
7. Glass Lens: Low iron glass, fully tempered per ANSI C1047 (QCH-2201-37)
8. HAL Lens: Yellow Polycarbonate Lens – less than 2% Blue Light Content
9. Please contact Factory for Custom Control Integration requests (nLight, NX, WaveLinx, Crestron, DMX/RDM, Synapse, Casambi, Dali II, Avi-On, or other control systems)
10. Turtle Safe
11. Consult factory for all BAA/TAA/BABA requests
12. Consult Factory for Lead Time
13. Not Available above 1000mA
14. Contact Factory
15. Available only in 700mA and 1050mA



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nlsighting.com

PRODUCT SPECIFICATIONS

ELECTRICAL

- 120-277 Volts (UNV) or 347-480 Volts (HV)
- 0-10V dimming driver
- Driver power factor at maximum load is $\geq .95$, THD maximum load is 15%
- LED Drivers Ambient Temp. Min is -40°C and Ambient Temp. Max ranges from 50°C to 55°C and, in some cases, even higher. Consult the factory for revalidation by providing the fixture catalog string before quoting and specifying it
- All internal wiring UL certified for 600 VAC and 105°C
- All drivers, controls, and sensors housed in enclosed IP65 compartment
- CRI 70, 80 or 90 (Contact factory for 90 CRI)
- Color temperatures: Amber, 2700K, 3000K, 3500K, 4000K, 5000K
- Surge Protection: 20KVA supplied as standard

CONSTRUCTION

- Die Cast Aluminum
- External cooling fins
- Corrosion resistant external hardware
- One-piece silicone gasket ensures IP65 seal for electronics compartment
- One-piece Optics Plate™ mounting silicone Micro Optics
- Two-piece silicone Micro Optic system ensures IP67 level seal around each PCB
- Grade 2 Clear Anodized Optics Plate™ standard

OPTIONS

- BIRD SPIKES (BS) - Offers a practical and humane deterrent for larger bird species and provides a cost-effective long-term solution to nuisance bird infestations and protects your property
- MARINE GRADE FINISH (MGF) - A multi-step process creating protective finishing coat against harsh environments. Chemically washed in a 5 stage cleaning system. Pre-baked, Powder coated 3-5 mils of Zinc Rich Super Durable Polyester Primer. Oven Baked. Finished Powder Coating of Super Durable Polyester Powder Coat 3-5 mil thickness
- OPTIC PLATE PAINTED TO MATCH FIXTURE (OPP) - Optic plate is clear anodized as standard. The optic plate can be powder coated to match the finish of the fixture.
- QUICK MOUNT BRACKET (QMB) - Optional Cast Aluminum Bracket designed for quick mounting on Direct Square or Round Poles. Cleat mounts directly to pole for easily hung fixtures. Has a 2"x4" Drill Pattern
- RETROFIT MOUNT BRACKET - Optional Cast Aluminum Bracket designed for quick mounting on Direct Square or Round Poles. Cleat mounts directly to pole for easily hung fixtures. Drill Pattern is adjustable from 2"x4" to 2"x6"
- ROUND POLE ADAPTER (RPA) - When using round poles, specify Round Pole Adapter (RPA). Specify RPA4 when installing on 3"-4" round poles, and RPA5 when installing on 5"-6" round poles
- ROTATED OPTICS (ROL) (ROR) - Rotated optics are designed for perimeter lighting for auto dealerships
- HOUSE SIDE SHIELD (HSS) Designed for full property line cut-off
- BLACK HARDWARE (BH) - Optional black, zinc coated steel hardware
- BLACK OPTIC FRAME (BOF) - Optional black optic frame. Standard is white
- GLASS LENS (GL) - Low Iron Glass, fully tempered
- High performance amber lens (hal)

CONTROL OPTIONS

- FSP-211 (FSP-X) - Passive infrared (PIR) sensor providing multi-level control based on motion/daylight contribution
- All control parameters adjustable via wireless configuration remote storing and transmitting sensor profiles
- FSP-20 mounting heights 9-20 feet
- FSP-40 mounting heights 21-40 feet
- Includes 5 dimming event cycles, 0-10V dimming with motion sensing, re-programmable in the field
- FSIR-100 commissioning remote is required to change sensor settings. Please contact factory for ordering
- NEMA 7-PIN RECEPTACLE (PE7)—An ANSI C136.41-2013 receptacle provides electrical and mechanical interconnection between photo control cell and luminaire. Dimming receptacle available two or four dimming contacts supports 0-10 VDC dimming methods or Digital Addressable Lighting Interface (DALI), providing reliable power interconnect
- PHOTOCCELL + RECEPTACLE (PCR)—7-Pin Receptacle and Electronic Twist Lock Photocell for dusk to dawn operation
- RECEPTACLE + SHORTING CAP (PER)—7-Pin Receptacle and Shorting Cap
- Controls Agnostic: Please contact factory for your preferred controls option. (nLight, NX, WaveLinx, Crestron, DMX/RDM, Synapse, Casambi, DALI II, Avi-On, or other control systems)

FINISH

- 3-5 mils electrostatic powder coat
- NLS Light's standard high-quality finishes prevent corrosion protects against and extreme environmental conditions

WARRANTY

Five-year limited warranty for drivers and LEDs.

OPTICS

Silicone optics high thermal stability and light output provide higher powered LEDs with minimized lumen depreciation. UV stability with scratch resistance increases exterior application durability. Silicone optics do not yellow, crack or brittle over time

LISTINGS

- Certified to UL 1598
- UL 8750
- CSA C22.2 No. 250.0
- DesignLights Consortium® (DLC)
- DesignLights Consortium Premium® (DLCP)
- IP65/ IP67 Rated
- 3G Vibration Rated per ANSI C136.31-2010
- IDA Dark Sky Approved
- IK10 Rated

BUY AMERICAN OPTION

While all of the NLS Lighting products listed in this document qualify for the Buy America(n) Act of 1933, we reserve the right to change our listings without notice.

The information provided above is for general informational purposes only. We encourage you to consult legal professionals for advice particular to your projects concerning BAA, TAA, BABA or Buy America.

Additional NLS Products that meet BAA, TAA standards can be found at the following link:

<https://nlsighting.com/buy-american/>



The information and specifications on this document are subject to change without any notification. All values are design, nominal, typical or prorated values when measured under internal and external laboratory conditions.



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PRODUCT SPECIFICATIONS

LUMENS CHART 16L, 32L, & 48L

CAT#	N3	LM/W	T2	LM/W	T3	LM/W	T4	LM/W	T5	LM/W	W
NV-1-16L-40-27K7	1,749	83	2,324	111	2,342	112	2,307	110	2,360	112	21
NV-1-16L-40-30K7	2,037	97	2,333	111	2,532	121	2,316	110	2,552	122	21
NV-1-16L-40-40K7	2,436	116	2,715	129	2,736	130	2,695	128	2,757	131	21
NV-1-16L-40-50K7	2,520	120	2,715	129	2,736	130	2,695	128	2,757	131	21
NV-1-16L-53-27K7	2,543	91	2,588	92	3,015	108	2,920	104	3,041	109	28
NV-1-16L-53-30K7	3,136	112	3,192	114	3,220	115	3,119	111	3,248	116	28
NV-1-16L-53-40K7	3,248	116	3,472	124	3,472	124	3,444	123	3,500	125	28
NV-1-16L-53-50K7	3,360	120	3,612	129	3,640	130	3,584	128	3,668	131	28
NV-1-16L-7-27K7	3,269	91	3,327	92	3,876	108	3,755	104	3,910	109	36
NV-1-16L-7-30K7	4,032	112	3,960	110	3,960	110	3,973	110	3,996	111	36
NV-1-16L-7-40K7	4,176	116	4,428	123	4,284	119	4,212	117	4,320	120	36
NV-1-16L-7-50K7	4,320	120	4,644	129	4,500	125	4,428	123	4,500	125	36
NV-1-16L-1-27K7	5,085	91	5,176	92	6,030	108	5,841	104	6,082	109	56
NV-1-16L-1-30K7	6,272	112	6,160	110	6,384	114	6,232	111	6,440	115	56
NV-1-16L-1-40K7	6,496	116	6,832	122	6,888	123	6,776	121	6,944	124	56
NV-1-16L-1-50K7	6,720	120	7,168	128	7,224	129	7,112	127	7,280	130	56
NV-1-32L-7-27K7	6,447	91	7,313	103	7,313	103	7,246	102	7,379	104	71
NV-1-32L-7-30K7	7,952	112	7,810	110	7,810	110	7,739	109	7,881	111	71
NV-1-32L-7-40K7	8,236	116	9,017	127	8,449	119	8,307	117	8,520	120	71
NV-1-32L-7-50K7	8,520	120	9,159	129	8,875	125	8,733	123	8,946	126	71
NV-1-32L-1-27K7	11,116	105	10,917	103	11,314	107	11,067	104	11,414	108	106
NV-1-32L-1-30K7	11,872	112	11,660	110	12,084	114	11,820	112	12,190	115	106
NV-1-32L-1-40K7	12,296	116	12,932	122	13,038	123	12,826	121	13,144	124	106
NV-1-32L-1-50K7	12,720	120	13,568	128	13,674	129	13,462	127	13,780	130	106
NV-1-48L-7-27K7	10,906	105	10,711	103	10,711	103	10,614	102	10,809	104	104
NV-1-48L-7-30K7	11,648	112	11,440	110	11,440	110	11,336	109	11,544	111	104
NV-1-48L-7-40K7	12,064	116	13,208	127	12,376	119	12,168	117	12,480	120	104
NV-1-48L-7-50K7	12,480	120	13,520	130	13,000	125	12,792	123	13,104	126	104
NV-1-48L-1-27K7	16,359	105	16,067	103	16,651	107	16,359	105	16,798	108	156
NV-1-48L-1-30K7	17,472	112	17,160	110	17,784	114	17,472	112	17,940	115	156
NV-1-48L-1-40K7	18,096	116	19,032	122	19,188	123	18,876	121	19,344	124	156
NV-1-48L-1-50K7	18,720	120	19,968	128	20,124	129	19,812	127	20,280	130	156

3000K or lower, with fixed mounting options only, must be selected to meet International Dark-Sky Association certification.

LUMENS CHART 64L ONLY

CAT#	N3	LM/W	T2	LM/W	T3	LM/W	T4	LM/W	T5	LM/W	CDL*	LM/W	CDR*	LM/W	W
NV-1-64L-7-27K7	14,262	105	14,007	103	14,007	103	13,880	102	14,135	104	5,797	43	5,725	42	136
NV-1-64L-7-30K7	15,232	112	14,960	110	14,960	110	14,824	109	15,096	111	6,191	46	6,190	46	136
NV-1-64L-7-40K7	15,776	116	17,272	127	16,184	119	15,912	117	16,320	120	6,689	49	6,689	49	136
NV-1-64L-7-50K7	16,320	120	17,680	130	17,000	125	16,728	123	17,136	126	7,013	52	6,689	49	136
NV-1-64L-1-27K7	21,252	106	21,114	106	21,882	109	21,498	107	22,074	110	8,695	43	8,588	43	200
NV-1-64L-1-30K7	22,960	115	22,550	113	23,370	117	22,960	115	23,575	118	9,286	46	9,286	46	200
NV-1-64L-1-40K7	23,780	119	25,010	125	25,215	126	24,805	124	25,420	127	10,034	50	10,033	50	200
NV-1-64L-1-50K7	24,600	123	26,240	131	26,445	132	26,035	130	26,650	133	10,519	53	10,033	50	200

3000K or lower, with fixed mounting options only, must be selected to meet International Dark-Sky Association certification.

LUMEN MAINTENANCE DATA

Ambient Temperature	Drive Current	L90 Hours*	L70 Hours**	30,000 Hours*	50,000 Hours*	60,000 Hours*	100,000 Hours**
25°C	Up to 700mA	58,000	173,000	95.7%	91.6%	89.6%	82.1%
	1050mA	48,000	143,000	94.3%	89.5%	87.2%	78.5%

*Reported extrapolations per IESNA TM-21

**Projected extrapolations per IESNA TM-21

MULTIPLIERS FOR 70/80 CRI (Scaling Factor of 5000K 70 CRI)

CRI	70 CRI	80 CRI
2700K	0.8560	0.8015
3000K	-	0.8594
3500K	-	0.8594
4000K	-	0.9255
5000K	-	0.9255



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PRODUCT SPECIFICATIONS

BUG RATINGS 16L, 32L, & 48L

CAT#	T2	T3	T4	T5
NV-1-16L-40-27K7	B1-U0-G1	B1-U0-G1	B1-U0-G1	B2-U0-G0
NV-1-16L-40-30K7	B1-U0-G1	B1-U0-G1	B1-U0-G1	B2-U0-G0
NV-1-16L-40-40K7	B1-U0-G1	B1-U0-G1	B1-U0-G1	B2-U0-G1
NV-1-16L-40-50K7	B1-U0-G1	B1-U0-G1	B1-U0-G1	B2-U0-G1
NV-1-16L-53-27K7	B1-U0-G1	B1-U0-G1	B1-U0-G1	B2-U0-G1
NV-1-16L-53-30K7	B1-U0-G1	B1-U0-G1	B1-U0-G1	B2-U0-G1
NV-1-16L-53-40K7	B1-U0-G1	B1-U0-G1	B1-U0-G1	B2-U0-G1
NV-1-16L-53-50K7	B1-U0-G1	B1-U0-G1	B1-U0-G1	B2-U0-G1
NV-1-16L-7-27K7	B1-U0-G1	B1-U0-G1	B1-U0-G1	B3-U0-G1
NV-1-16L-7-30K7	B1-U0-G1	B1-U0-G1	B1-U0-G1	B3-U0-G1
NV-1-16L-7-40K7	B1-U0-G1	B1-U0-G1	B1-U0-G1	B3-U0-G1
NV-1-16L-7-50K7	B1-U0-G1	B1-U0-G1	B1-U0-G1	B3-U0-G1
NV-1-16L-1-27K7	B1-U0-G1	B1-U0-G1	B1-U0-G1	B3-U0-G1
NV-1-16L-1-30K7	B1-U0-G1	B1-U0-G1	B1-U0-G1	B3-U0-G1
NV-1-16L-1-40K7	B1-U0-G1	B2-U0-G2	B2-U0-G2	B3-U0-G2
NV-1-16L-1-50K7	B1-U0-G2	B2-U0-G2	B2-U0-G2	B3-U0-G2
NV-1-32L-7-27K7	B1-U0-G2	B2-U0-G2	B2-U0-G2	B3-U0-G2
NV-1-32L-7-30K7	B1-U0-G2	B2-U0-G2	B2-U0-G2	B3-U0-G2
NV-1-32L-7-40K7	B1-U0-G2	B2-U0-G2	B2-U0-G2	B3-U0-G2
NV-1-32L-7-50K7	B2-U0-G2	B2-U0-G2	B2-U0-G2	B3-U0-G2
NV-1-32L-1-27K7	B2-U0-G2	B2-U0-G2	B2-U0-G2	B4-U0-G2
NV-1-32L-1-30K7	B2-U0-G2	B2-U0-G2	B2-U0-G2	B4-U0-G2
NV-1-32L-1-40K7	B2-U0-G2	B2-U0-G2	B3-U0-G2	B4-U0-G2
NV-1-32L-1-50K7	B2-U0-G2	B3-U0-G3	B3-U0-G3	B4-U0-G2
NV-1-48L-7-27K7	B2-U0-G2	B2-U0-G2	B2-U0-G2	B4-U0-G2
NV-1-48L-7-30K7	B2-U0-G2	B2-U0-G2	B2-U0-G2	B4-U0-G2
NV-1-48L-7-40K7	B2-U0-G2	B2-U0-G2	B2-U0-G2	B4-U0-G2
NV-1-48L-7-50K7	B2-U0-G2	B3-U0-G3	B3-U0-G3	B4-U0-G2
NV-1-48L-1-27K7	B3-U0-G3	B3-U0-G3	B3-U0-G3	B4-U0-G2
NV-1-48L-1-30K7	B3-U0-G3	B3-U0-G3	B3-U0-G3	B4-U0-G2
NV-1-48L-1-40K7	B3-U0-G3	B3-U0-G3	B3-U0-G3	B5-U0-G3
NV-1-48L-1-50K7	B3-U0-G3	B3-U0-G3	B3-U0-G3	B5-U0-G3

3000K or lower, with fixed mounting options only, must be selected to meet International Dark-Sky Association certification.

BUG RATINGS 64L

CAT#	T2	T3	T4	T5	CDL*	CDR*
NV-1-64L-7-27K7	B2-U0-G2	B3-U0-G3	B3-U0-G3	B4-U0-G2	B1-U0-G2	B1-U0-G2
NV-1-64L-7-30K7	B2-U0-G2	B3-U0-G3	B3-U0-G3	B4-U0-G2	B1-U0-G2	B1-U0-G2
NV-1-64L-7-40K7	B3-U0-G3	B3-U0-G3	B3-U0-G3	B4-U0-G2	B1-U0-G2	B1-U0-G2
NV-1-64L-7-50K7	B3-U0-G3	B3-U0-G3	B3-U0-G3	B4-U0-G2	B1-U0-G2	B1-U0-G2
NV-1-64L-1-27K7	B3-U0-G3	B3-U0-G3	B3-U0-G3	B5-U0-G3	B1-U0-G2	B1-U0-G2
NV-1-64L-1-30K7	B3-U0-G3	B3-U0-G3	B3-U0-G3	B5-U0-G3	B1-U0-G2	B1-U0-G2
NV-1-64L-1-40K7	B3-U0-G3	B3-U0-G3	B3-U0-G4	B5-U0-G3	B1-U0-G2	B1-U0-G2
NV-1-64L-1-50K7	B3-U0-G3	B3-U0-G3	B3-U0-G4	B5-U0-G3	B1-U0-G2	B1-U0-G2

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*64L Only



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PRODUCT SPECIFICATIONS

LUMEN HSS

PART NUMBER	T2 HSS	LM/W	BUG	T3 HSS	LM/W	BUG	T4 HSS	LM/W	BUG	W
NV-1-16L-40-27K7	1386	66	B0-U0-G0	1336	64	B0-U0-G0	1343	64	B0-U0-G0	21
NV-1-16L-40-30K7	1499	71	B0-U0-G0	1445	69	B0-U0-G0	1452	69	B0-U0-G0	21
NV-1-16L-40-40K7	1620	77	B0-U0-G0	1561	74	B0-U0-G0	1569	75	B0-U0-G0	21
NV-1-16L-40-50K7	1620	77	B0-U0-G0	1561	74	B0-U0-G0	1569	75	B0-U0-G0	21
NV-1-16L-530-27K7	1837	66	B0-U0-G0	1771	63	B0-U0-G0	1780	64	B0-U0-G1	28
NV-1-16L-530-30K7	1986	71	B0-U0-G0	1914	68	B0-U0-G1	1924	69	B0-U0-G1	28
NV-1-16L-530-40K7	2146	77	B0-U0-G0	2068	74	B0-U0-G1	2079	74	B0-U0-G1	28
NV-1-16L-530-50K7	2146	77	B0-U0-G0	2068	74	B0-U0-G1	2079	74	B0-U0-G1	28
NV-1-16L-700-27K7	2426	67	B0-U0-G1	2338	65	B0-U0-G1	2350	65	B0-U0-G1	36
NV-1-16L-700-30K7	2623	73	B0-U0-G1	2528	70	B0-U0-G1	2541	71	B0-U0-G1	36
NV-1-16L-700-40K7	2835	79	B0-U0-G1	2732	76	B0-U0-G1	2746	76	B0-U0-G1	36
NV-1-16L-700-50K7	2835	79	B0-U0-G1	2732	76	B0-U0-G1	2746	76	B0-U0-G1	36
NV-1-16L-1050-27K7	3639	65	B0-U0-G1	3508	63	B0-U0-G1	3526	63	B0-U0-G1	56
NV-1-16L-1050-30K7	3935	70	B1-U0-G1	3792	68	B0-U0-G1	3812	68	B0-U0-G1	56
NV-1-16L-1050-40K7	4252	76	B1-U0-G1	4098	73	B0-U0-G1	4119	74	B0-U0-G1	56
NV-1-16L-1050-50K7	4252	76	B1-U0-G1	4098	73	B0-U0-G1	4119	74	B0-U0-G1	56
NV-1-32L-700-27K7	4853	68	B1-U0-G1	4677	66	B0-U0-G1	4701	66	B0-U0-G1	71
NV-1-32L-700-30K7	5247	74	B1-U0-G1	5057	71	B0-U0-G1	5083	72	B1-U0-G2	71
NV-1-32L-700-40K7	5669	80	B1-U0-G1	5464	77	B0-U0-G2	5492	77	B1-U0-G2	71
NV-1-32L-700-50K7	5669	80	B1-U0-G1	5464	77	B0-U0-G2	5492	77	B1-U0-G2	71
NV-1-32L-1050-27K7	7279	69	B1-U0-G2	7015	66	B1-U0-G2	7051	67	B1-U0-G2	106
NV-1-32L-1050-30K7	7870	74	B1-U0-G2	7585	72	B1-U0-G2	7624	72	B1-U0-G2	106
NV-1-32L-1050-40K7	8504	80	B1-U0-G2	8196	77	B1-U0-G2	8238	78	B1-U0-G2	106
NV-1-32L-1050-50K7	8504	80	B1-U0-G2	8196	77	B1-U0-G2	8238	78	B1-U0-G2	106
NV-1-48L-700-27K7	7279	70	B1-U0-G2	7015	67	B1-U0-G2	7051	68	B1-U0-G2	104
NV-1-48L-700-30K7	7870	76	B1-U0-G2	7585	73	B1-U0-G2	7624	73	B1-U0-G2	104
NV-1-48L-700-40K7	8504	82	B1-U0-G2	8196	79	B1-U0-G2	8238	79	B1-U0-G2	104
NV-1-48L-700-50K7	8504	82	B1-U0-G2	8196	79	B1-U0-G2	8238	79	B1-U0-G2	104
NV-1-48L-1050-27K7	10918	70	B1-U0-G2	10523	67	B1-U0-G2	10577	68	B1-U0-G2	156
NV-1-48L-1050-30K7	11805	76	B1-U0-G2	11377	73	B1-U0-G2	11436	73	B1-U0-G2	156
NV-1-48L-1050-40K7	12755	82	B1-U0-G2	12293	79	B1-U0-G2	12356	79	B1-U0-G2	156
NV-1-48L-1050-50K7	12755	82	B1-U0-G2	12293	79	B1-U0-G2	12356	79	B1-U0-G2	156
NV-1-64L-700-27K7	9705	71	B1-U0-G2	9354	69	B1-U0-G2	9402	69	B1-U0-G2	136
NV-1-64L-700-30K7	10493	77	B1-U0-G2	10113	74	B1-U0-G2	10165	75	B1-U0-G2	136
NV-1-64L-700-40K7	11338	83	B1-U0-G2	10927	80	B1-U0-G2	10983	81	B1-U0-G2	136
NV-1-64L-700-50K7	11338	83	B1-U0-G2	10927	80	B1-U0-G2	10983	81	B1-U0-G2	136
NV-1-64L-1050-27K7	14558	71	B1-U0-G2	14031	68	B1-U0-G2	14103	69	B1-U0-G3	205
NV-1-64L-1050-30K7	15740	77	B1-U0-G2	15170	74	B1-U0-G3	15248	74	B1-U0-G3	205
NV-1-64L-1050-40K7	17007	83	B2-U0-G2	16391	80	B1-U0-G3	16475	80	B1-U0-G3	205
NV-1-64L-1050-50K7	17007	83	B2-U0-G2	16391	80	B1-U0-G3	16475	80	B1-U0-G3	205

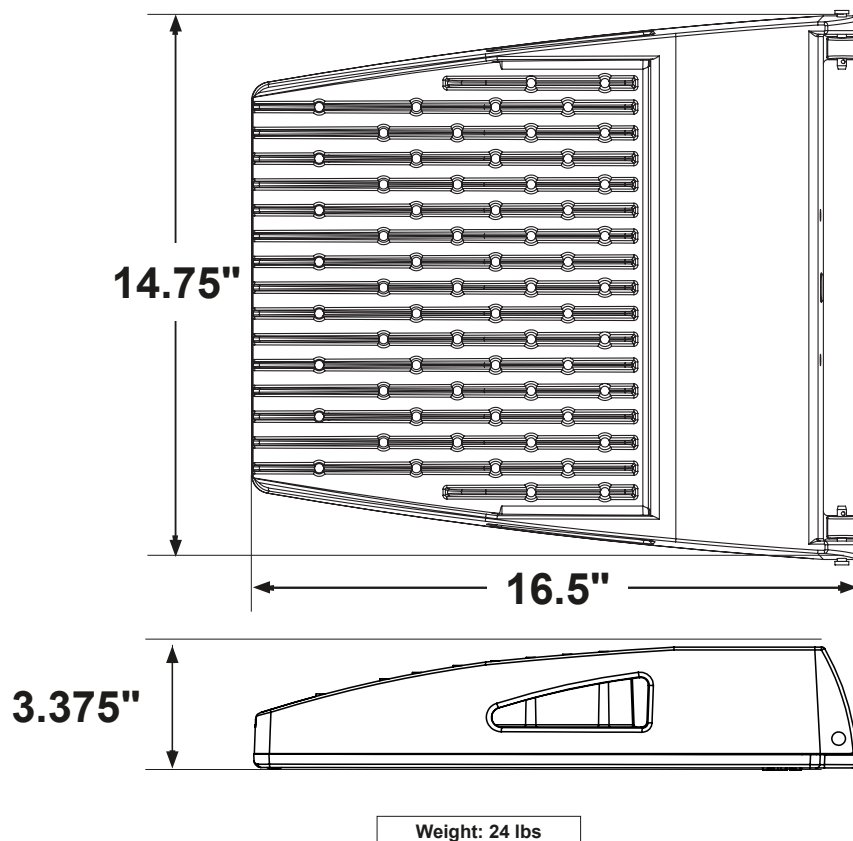
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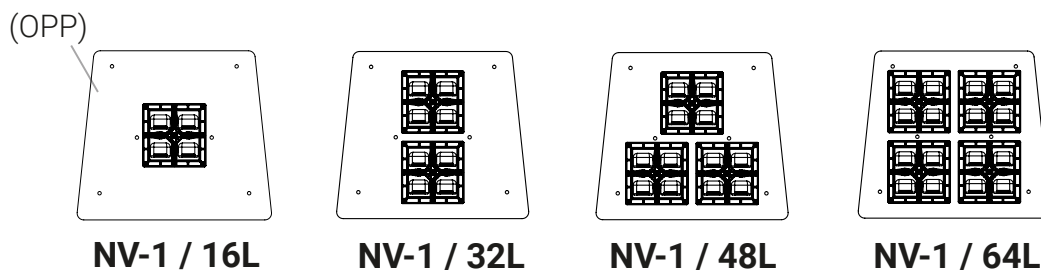
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PRODUCT SPECIFICATIONS



OPTICAL CONFIGURATIONS

Rotatable Optics (ROR) Rotated Right, (ROL) Rotated Left options available. Optics field and factory rotatable.

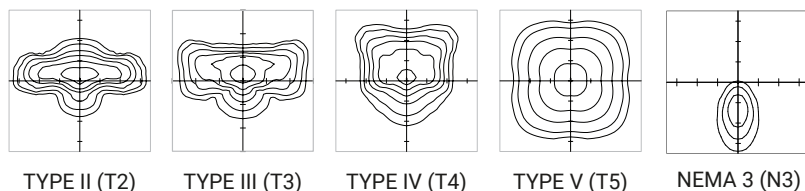


* OPTIC PLATE PAINTED TO MATCH FIXTURE FINISH (OPP)– Optic Plate standard clear anodized, Grade 2. When (OPP) specified, Optic Plate finish will match fixture finish.

OPTICS

Silicone optics high photothermal stability and light output provides higher powered LEDs with minimized lumen depreciation LED life. UV and thermal stability with scratch resistance increases exterior application durability.

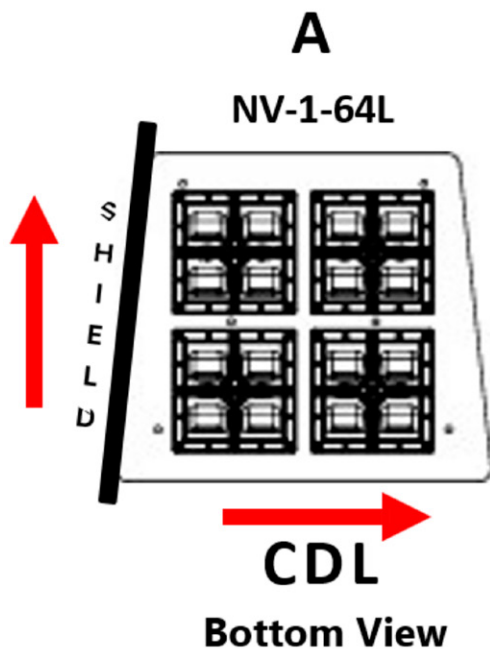
IES Types



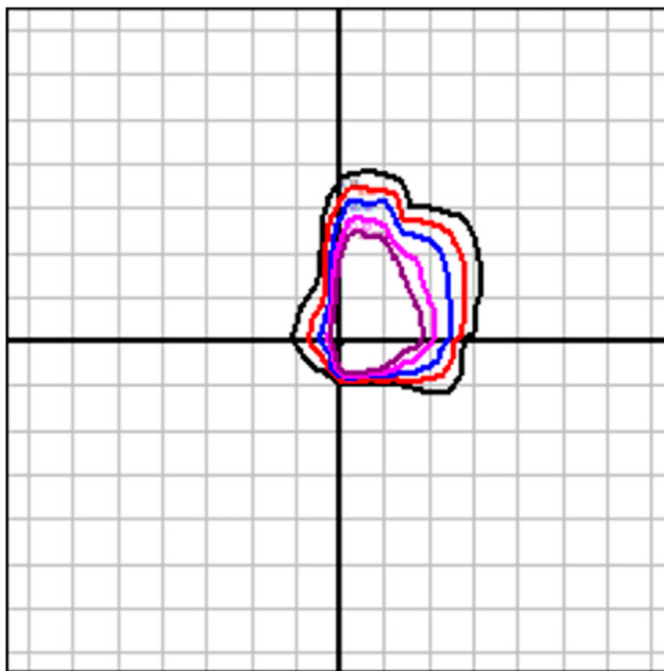
PRODUCT SPECIFICATIONS

OPTICAL CONFIGURATIONS (CONTINUED) - Corner Optics (CDL/CDR)

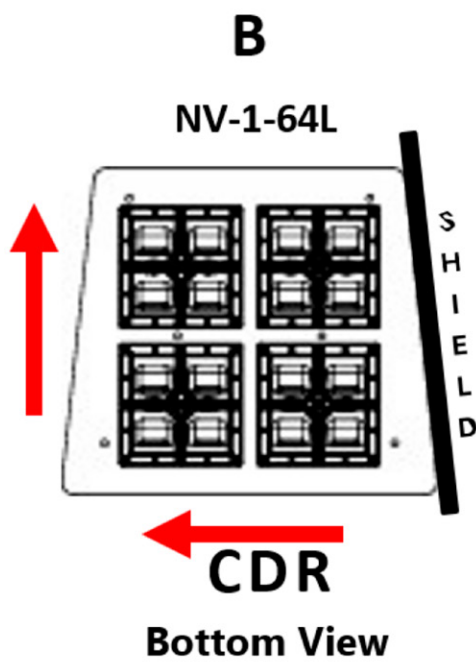
Blended optical distributions include a HSS over the optic and are aimed forward.
Fixtures also feature an external side mounted shield.



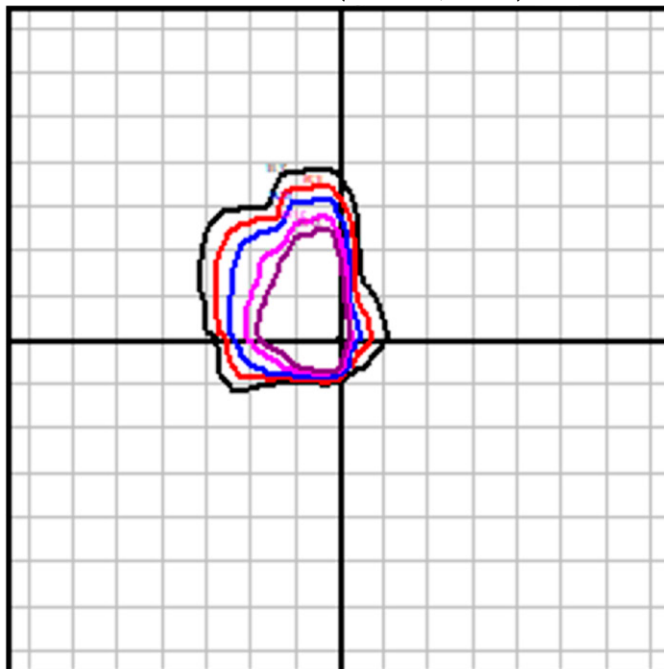
NV-64L-1-40K-CDL (205 Watts, 49LPW)



Mounting Height is 15ft, each sq equals 1 mounting height.



NV-64L-1-40K-CDR (205 Watts, 49LPW)



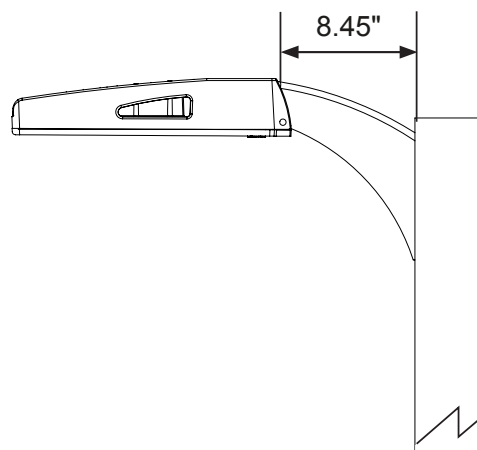
Mounting Height is 15ft, each sq equals 1 mounting height.

PRODUCT SPECIFICATIONS

MOUNTING OPTIONS

ARCHITECTURAL SWEEP ARM (ASA)

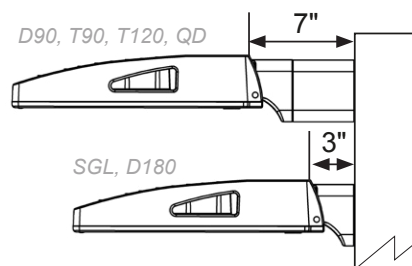
Cast Sweep Arm includes (as standard)
Internal Quick Mount Bracket.



DIRECT POLE (DP)

Standard mounting arm is extruded
aluminum in lengths of 3" and 7".

**Arm lengths may vary depending on configuration*

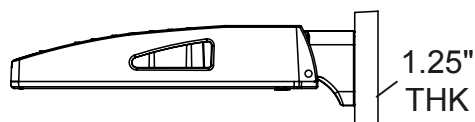


DPX ARM LENGTH

DPX ARM LENGTH	SGL	D90	D180	D180	T90	T120	QD
NV-1	3"	7"	3"	7"	7"	7"	7"

WALL MOUNT (WM)

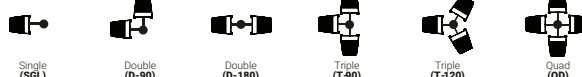
Cast Aluminum Plate for direct wall mount.
3" extruded aluminum arm mounts directly
to a cast wall mount box.



EPA

EPA	SGL	D90	D180	T90	T120	QD
NV-1-DP3	0.46	-	0.92	-	-	-
NV-1-DP7	-	1.14	1.05	1.34	1.37	1.34
NV-1-KM	0.54	N/A	1.08	N/A	N/A	N/A
NV-1-ASA	0.75	1.29	1.50	1.99	2.05	1.99

MOUNTING CONFIGURATION



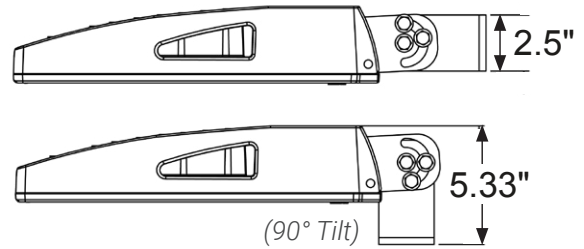
PRODUCT SPECIFICATIONS

MOUNTING OPTIONS

TRUNNION MOUNT (TM)

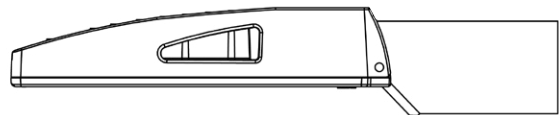
Steel, bolt-on-mounting for adjustable installation with a maximum uplift of 90 degrees.

**Unpainted stainless steel is standard*



TENNIS ARM (TA)

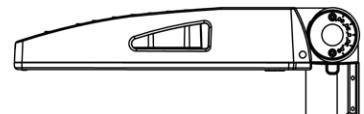
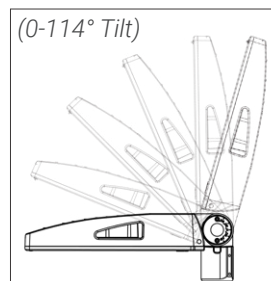
Steel fitter slips over 3.5" x 1.5" rectangular arm. *See Tennis Arm Spec Sheet for details



KNUCKLE MOUNT (KM)

Die Cast Knuckle great for adjustable installation on 2-3/8" OD vertical or horizontal tenon.

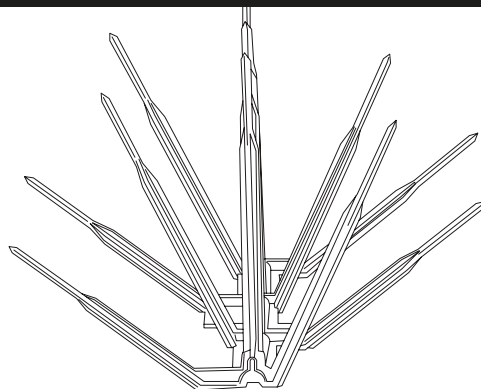
- Max Up-tilt of 90 degrees
- Adjustable in 6 degree increments
- 1.5G Vibration Rated per ANSI C136.31-2010



PRODUCT SPECIFICATIONS

BIRD SPIKES (BS)

Bird Spikes offers effective and humane deterrent for larger bird species and provides cost-effective long-term solution to nuisance bird infestations and protect your property.



MARINE GRADE FINISH (MGF)

The **(MGF)** is a multi step process. Chemically washed in a 5 stage cleaning system. Pre-baked. Powder coated 3-5 mils of Zinc Rich Super Durable Polyester Primer. Oven Baked. Finished Powder Coating of Super Durable Polyester Powder Coat 3-5 mil thickness.



Powder Coat Finish

3-5 mil Powder Coat

Primer Layer

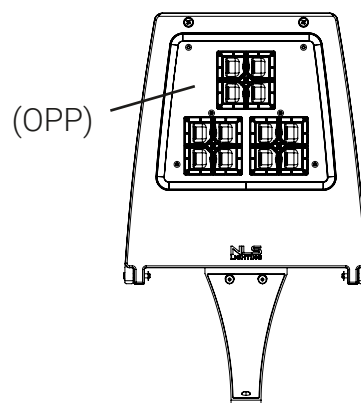
3-5 mil Zinc Rich Super Durable Polyester Primer

Prepared Casting

Chemically washed in multi Step 5 stage cleaning process

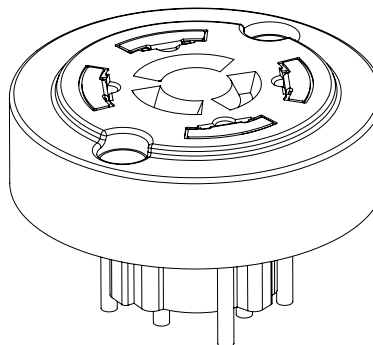
OPTIC PLATE PAINTED TO MATCH (OPP)

Optic plate is clear anodized as standard. The optic plate can be powder coated to match the finish of the fixture.



NEMA 7-PIN RECEPTACLE (PE7)

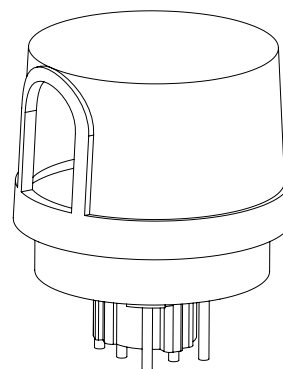
An ANSI C136.41-2013 receptacle provides electrical and mechanical interconnection between photo control cell and luminaire. Dimming receptacle available two or four dimming contacts supports 0-10 VDC dimming methods or Digital Addressable Lighting Interface (DALI), providing reliable power interconnect.



PRODUCT SPECIFICATIONS

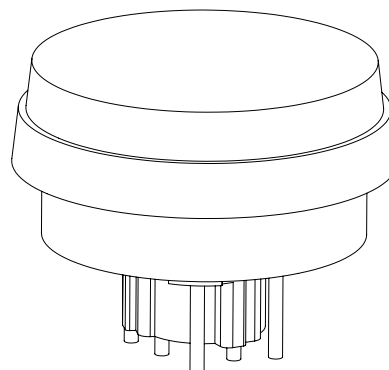
PHOTOCELL + RECEPTACLE (PCR)

7-Pin Receptacle and Electronic Twist Lock Photocell for dusk to dawn operation.



RECEPTACLE + SHORTING CAP (PER)

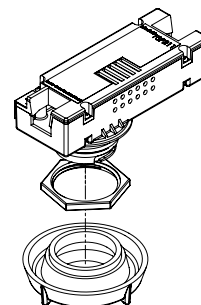
7-Pin Receptacle and Shorting Cap.



FSP-211 WITH MOTION SENSOR (FSP-XX)

- FSP-211 (FSP-X)—Passive infrared (PIR) sensor providing multi-level control based on motion/daylight contribution
- All control parameters adjustable via wireless configuration remote storing and transmitting sensor profiles
- FSP-20 mounting heights 9-20 feet
- FSP-40 mounting heights 21-40 feet
- Includes 5 dimming event cycles, 0-10V dimming with motion sensing, re-programmable in the field

FSP-211



QUICK MOUNT BRACKET (QMB)

Optional Cast Aluminum Bracket designed for quick mounting on Direct Square or Round Poles. Cleat mounts directly to pole for easily hung fixtures. Has a 2"x4" Drill Pattern.



PRODUCT SPECIFICATIONS

RETROFIT MOUNT BRACKET (RQMB)

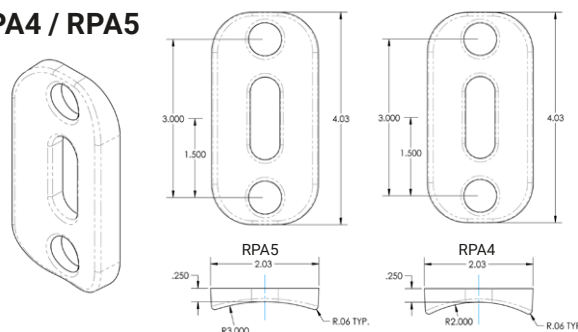
Optional Cast Aluminum Bracket designed for quick mounting on Direct Square or Round Poles. Cleat mounts directly to pole for easily hung fixtures. Drill Pattern is adjustable from 2"x4" to 2"x6".



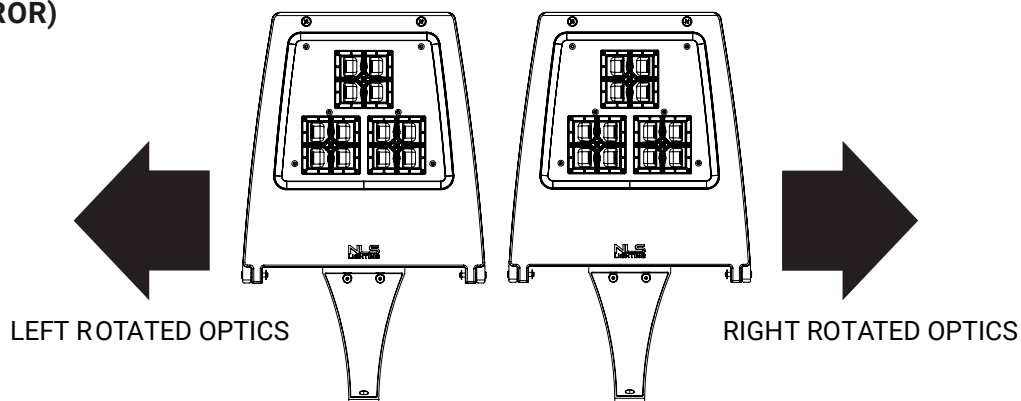
ROUND POLE ADAPTER OPTIONS (RPA4) (RPA5)

When using round poles, specify Round Pole Adapter (RPA). Specify RPA4 when installing on 3"-4" round poles, and RPA5 when installing on 5"-6" round poles.

RPA4 / RPA5



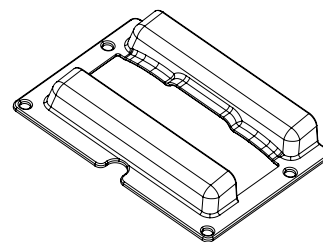
ROTATED OPTICS (ROL) (ROR)



SHIELDING OPTIONS (AHS) (HSS)

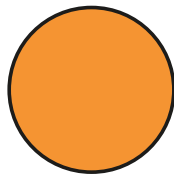
SHIELDS (HSS, AHS)—House Side Shield (HSS) is designed for full property line cut-off.

HOUSE SIDE SHIELD

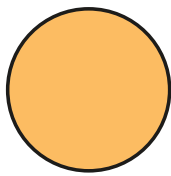


PRODUCT SPECIFICATIONS

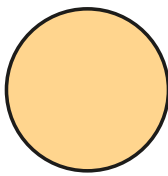
LED KELVIN RANGE



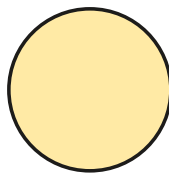
AMBER
585-600 nm



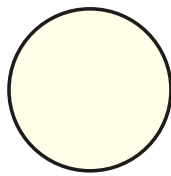
2700K 70 CRI



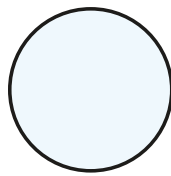
3000K 70 CRI



3500K 80 CRI



4000K 70 CRI



5000K 70 CRI

Color	Dominant or Peak Wavelength Range (nm)	
	Minimum	Maximum
Amber	585	600

BLACK HARDWARE

Optional black, zinc coated steel hardware.



BLACK OPTIC FRAME

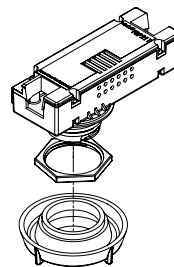
Optional Black Optic Frame.
Standard is white.



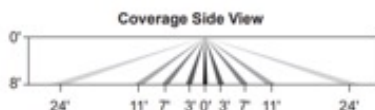
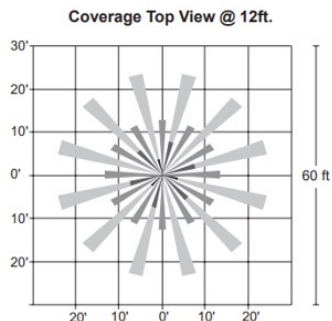
PRODUCT SPECIFICATIONS

CONTROLS

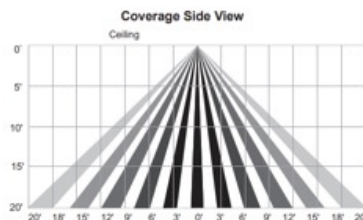
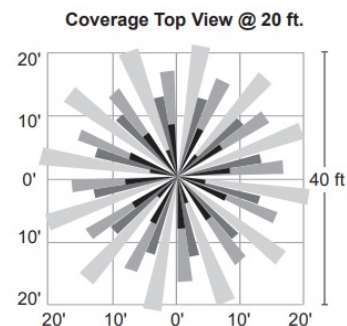
- DIMMING CONTROL (FSP)—Passive infrared (PIR) sensor providing multi-level control based on motion/daylight contribution
- All control parameters adjustable via wireless configuration remote storing and transmitting sensor profiles
- FSP-8 mounting heights 8 feet and below
- FSP-20 mounting heights 9-20 feet
- FSP-40 mounting heights 21-40 feet
- Includes 5 dimming event cycles, 0-10V dimming with motion sensing, re-programmable in the field



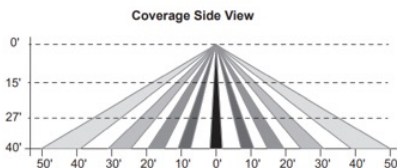
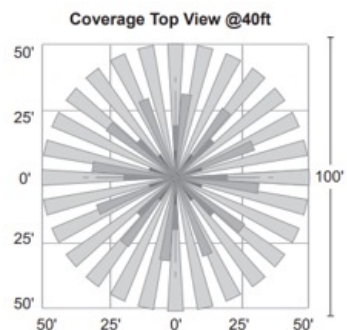
FSP-8



FSP-20



FSP-40



STAFF REPORT

Date: February 26th, 2025
To: Windsor Heights Planning and Zoning Commission
From: Trey Rouse
Subject: Projecting Sign Signage Code Update

Summary

The Signage Code of the City of Windsor Heights has been updated at various times to accommodate new situations, developments, and issues that arise in the community. When these situations arise, a review is done to make sure that the Signage Code doesn't restrict residents and business owners to an extreme degree, that the code meets state and federal laws, and supports the vision created by the Comprehensive Plan. The updates to the Signage Code within this Staff Report have been determined to benefit the residents and business owners of the community, our review staff, and allow for flexibility where needed.

The two changes that will be seen and listed within this Staff Report were brought to the attention of City Staff through a request for a Projecting sign within the UC Zoning District. The UC District does not permit Projecting signs and did not in the previous signage code. Projecting signs are utilized within downtown areas to showcase businesses or catch the attention of pedestrians and motorists passing by. As the UC District has expanded to encompass the entirety of the University Avenue corridor and having the main purpose of serving as the community's walkable downtown, reviewing the code for the Projecting sign signage type became necessary.

Review/Consideration

City Staff reviewed the current code and researched and compared the current standards to other downtowns in the surrounding Des Moines metropolitan area for projecting signage guidelines. The required standards for Projecting signs were very similar in all requirements laid out throughout the Des Moines metropolitan area and many of the communities allowed for projecting signs within their downtown area. Reviewing the previous signage code, the UC District did not allow Projecting signs but also did not encompass the downtown area. The previous signage code was based upon the UC District along the longer/larger edge corridor of University Avenue. After review, it was determined that Projecting signs, based upon their definition, use, and the character of the UC District, should be allowed along University Avenue.

Changes Proposed for Signage Code

Changes proposed to be made to the Signage Code by section were as follows:

1. 175.05(3)(c) added the following narrative to the general regulation, "Each projecting sign must maintain at least the following vertical clearances **measured from the average ground level below the sign to the lowest point of the sign:**"

- a. Meaning: This defines the measurement parameters and clarifies the clearance height that needs to be met for Projecting signs over all forms of pedestrian and motorist transit ways/parking areas in all permitted zoning districts.
2. Edit Table 175.09-01 to change the “N” for Not Permitted to a “P” for Permitted in the case of Projecting signs within the UC Zoning District.
 - a. Meaning: To allow for Projecting signs to be permitted by right within the UC Zoning District.

3. Table 175.09-01 – Permitted Signs by Type and Zoning Districts

Sign Types	R-1	R-2	R-3	MH	CC	UC	LI
Detached Signs							
Monument	P	P	P	P	P	P	P
Ground	P	P	P	P	P	P	P
Pole	N	N	N	N	N	N	N
Attached Signs							
Awning	N	N	N	P	P	P	P
Banner	N	N	N	N	P	P	P
Building Marker	P	P	P	P	P	P	P
Canopy	N	N	N	N	P	P	P
Marquee	N	N	N	N	P	P	P
Projecting	N	N	N	N	P	P	P
Roof, Integral	N	N	N	N	P	N	P
Wall	P	P	P	P	P	P	P
Window	N	N	N	N	P	P	P
Miscellaneous							
Portable	N	N	N	N	P	P	N

These outlined changes are to allow for an appropriate use of signage to advertise businesses and organizations in a unique and approachable way for both pedestrians and motorists. These changes are seen as effective and the minimal need to allow for more flexibility within the Sign Code for the City of Windsor Heights.

Conclusion and Recommendation

After reviewing all of the documentation available and discussing, City Staff compared the changes proposed to the current Projecting sign Signage Code to how the code exists today. After review and comparison, Staff came to their recommendation.

The staff recommends that the Planning and Zoning Commission recommend approval and adoption of the updates to the Signage Code narrative for the City of Windsor Heights to the City Council.

Recommended Motion

Motion to recommend approval and adoption of the updated Signage Code narrative for the City of Windsor Heights to the City Council.

Attachments:

1. Windsor Heights Signage Code (Current)
2. Windsor Heights Signage Code (Proposed)

CHAPTER 175

ZONING CODE – SIGN REGULATIONS

175.01 Purpose	175.07 Use of Compatible Materials
175.02 General Permit Procedures	175.08 Sign Area
175.03 Exempt Signs	175.09 Permitted Signs
175.04 General Sign and Street Graphics Regulations	175.10 Nonconforming Signs
175.05 Basic Design Elements for On-Premises Signs	
175.06 Other Design Elements	

175.01 PURPOSE.

The Sign Regulations provide standards for communicating information in the environment of the City and its jurisdiction. The regulations recognize the need to protect public health, safety, and welfare; to maintain the City's attractive appearance; to provide for adequate business identification, advertising, and communication of information; all while protecting and promoting the free speech and expression rights of citizens within Windsor Heights. Any complaint received regarding a sign that comports with these regulations does not constitute a violation of this code section.

175.02 GENERAL PERMIT PROCEDURES.

Any installation, modification, or expansion of any sign which is not exempt from the provisions of this chapter shall be subject to the following permit procedure.

1. Maintenance of Valid Sign Permit. The owner of a property containing signs requiring a permit under this Zoning Code shall at all times maintain in force a sign permit for such property. Sign permits may be issued for individual zoned lots, tenants, or sign owners. A sign permit may be revoked if the sign is not maintained in good condition.
2. Any person who displays a sign in compliance with this code may substitute the message on that sign without first securing any additional approval, permitting, or notice, provided that any such substitution would not result in the sign becoming noncompliant.
3. Nothing in this code is intended or shall be construed so as to prevent the strengthening or restoration to a safe condition of a nonconforming sign for purposes of public health and safety.
4. Sign Permit Applications. All applications for sign permits shall be submitted to the Zoning Administrator in accordance with application specifications established by the ordinance.
5. Application Fees. Each application for a sign permit shall be accompanied by any applicable fees, which shall be established by the Council from time to time by resolution.
6. Permit Expiration. If a permanent sign is not constructed in accordance with an approved permit within six months of the date of approval, such permit shall lapse. Permits on non-permanent signs lapse in accordance with the timeline identified on the permit. After 60 days, permits are required to maintain temporary signs or more than a single temporary sign with a maximum of two renewals.

7. Assignment of Sign Permits. A current and valid sign permit shall be freely assignable to a successor as owner of the property or holder of a business license for the same premises.

175.03 EXEMPT SIGNS

The following signs are permitted in any zoning district and are exempt from other provisions of this chapter.

1. Up to three non-temporary signs on R-1, R-2, or R-3 that are smaller than 4 square feet in area.
2. Official signs authorized by a government or governmental subdivision, which give traffic, directional, or warning information, or other official information.
3. Temporary signs less than 8 square feet.
4. Neighborhood or subdivision identification signs under 50 square feet.
5. Street numbers or address signs that identify the address of a lot, structure, or establishment.
6. Signs which are not visible from a public right-of-way, private way, or court or from a property other than that on which the sign is installed, such as window signs.
7. Sidewalk signs which include two sided portable signs that are placed on the sidewalk outside of an establishment. 1 sign maximum per business and they must not interfere with a minimum of 5 feet of sidewalk clearance at all times.

175.04 GENERAL SIGN AND STREET GRAPHICS REGULATIONS.

1. Compliance. Each sign or part of a sign erected within the zoning jurisdiction of the City must comply with the provisions of this chapter and of other relevant provisions of this Code of Ordinances.

2. Resolution of Conflicting Regulations. This chapter is not meant to repeal or interfere with the enforcement of other sections of this Code of Ordinances. In cases of conflicts between Code sections, or State or Federal regulations, the more restrictive regulations shall apply, except where State law or the State Constitution preempts municipal law, in which case State law or the State Constitution will govern, or where Federal law of the U.S. Constitution preempts State and municipal law, in which case Federal law or the U.S. Constitution will govern.

3. Prohibited Signs. The following signs are prohibited in all zoning districts.

- a. Any sign which is structurally unsafe, unsafely installed, or otherwise hazardous to physical safety.
- b. Any sign that obstructs free ingress to or egress from a fire escape, door, window, or other required access way to or from a building or site.
- c. Any sign not maintained in good condition.
- d. Any sign that blocks the vision clearance areas or would obstruct a driver's clear line of sight of traffic or pedestrians, or which obscures official signs or signals.
- e. Any sign that interferes with the view of, or is confused with, any traffic control sign or device, and any sign that misleads or confuses traffic flow. A sign's position, size, shape, color, and illumination, but not its content, shall be considered when making such a determination.

- f. Abandoned signs, which must be removed within six months of the date of abandonment.
 - g. Electronic changeable copy signs which incorporate in any manner any rolling, flashing, pulsating, rotating, beacons, or moving lights.
 - h. Any sign nailed, fastened, or affixed to any tree.
 - i. Any sign that otherwise violates this sign code.
 - j. Any sign displaying any obscene matter, as that term is defined by Iowa Code Chapter 728.
4. Buffer Yards. No sign other than on-premises directional signs shall be placed within any buffer yard required by Chapter 173, Landscaping and Screening Standards, except buffer yards adjacent to intervening major streets.
5. Vision-Clearance Triangle. No sign may project into or be placed within a vision-clearance area.
6. Removal of Signs. If a sign owner's business, profession, commodity, service, or other activity or use formerly occupying the site is discontinued, the sign must be removed within fifteen (15) days of closure. If the owner does not remove the sign, the City will remove it at the owner's expense.

175.05 BASIC DESIGN ELEMENTS FOR ON-PREMISES SIGNS.

1. Professional Design and Construction. All signs must be designed and constructed by an individual or company pre-approved by the City and familiar with the City's sign ordinance. The proposed individual or company shall be designated on the applicant's sign permit and approved by the City in advance of sign construction.
2. Wall Signs and Graphics. Wall signs and graphics are subject to the following general regulations.
 - a. A wall sign shall not extend more than 12 inches from the wall to which it is attached.
 - b. A wall sign must be parallel to the wall to which it is attached.
 - c. A wall sign may not extend beyond the corner of the wall to which it is attached, except where attached to another wall sign, it may extend to provide for the attachment.
 - d. A wall sign may not extend beyond its building's roofline.
 - e. A wall sign attached to a building on its front property line may encroach upon public right-of-way by no more than 12 inches. Such a wall sign shall provide a minimum clearance of eight feet, six inches.
 - f. For the purpose of calculating permitted sign areas pursuant to this chapter, signs painted on the walls of buildings shall be considered wall signs.
 - g. Where permitted, canopy signs are counted as wall signs when calculating the total permitted sign area.
3. Projecting Signs and Graphics. Projecting signs and graphics are subject to the following general regulations.
 - a. The maximum projection of any projecting sign shall be three feet.
 - b. A projecting sign may be no closer than two feet from the vertical plane of the inside curb line.
 - c. Each projecting sign must maintain at least the following vertical clearances:

- A. 8 feet, 6 inches over sidewalks, except that a canopy may reduce its vertical clearance to 7 feet, 6 inches;
- B. 14 feet over parking lots;
- C. 18 feet over alleys or driveways;
- D. Unless noted above, no projecting sign shall be placed over a roadway.
- d. No projecting sign extending three feet from a property line may be located within 22 feet of any other projecting sign extending three feet from a property line.
- e. The support structure for projecting signs cannot be visible.
- 4. Roof Signs. Roof signs are subject to the following regulations:
 - a. Where permitted, integral roof signs may be used interchangeably with wall signs.
 - b. Above peak roof signs are prohibited.

175.06 OTHER DESIGN ELEMENTS.

- 1. Illumination. Lighting, when installed, must be positioned in such a manner that light is not directed onto an adjoining property or onto a public street or highway.
- 2. Marquees and Marquee Signs. Signs placed on, attached to, or constructed on a marquee are subject to the maximum projection and clearance regulations of projecting signs.
- 3. Banners.
 - a. A banner sign projecting from a building may not exceed the wall height of the building.
 - b. Maximum projection for any banner is three feet with a minimum vertical clearance of 8 feet, 6 inches.

175.07 USE OF COMPATIBLE MATERIALS.

All signs, excluding temporary signs, shall be constructed of materials that are similar to those used on the principal building. Such signage shall be dominated with materials of permanency and strength and shall be compatible with other structures and signs in the development.

175.08 SIGN AREA.

- 1. Maximum Permitted Sign Area. Maximum permitted sign area for a premises is set forth as a numerical limit and is the combined total of all signs on the premise.
- 2. Sign Area.
 - a. Sign area includes the entire area within the perimeter enclosing the extreme limits of the sign, excluding any structure essential for support or service of the sign, or architectural elements of the building.
 - b. The area of double-faced signs is calculated on the largest face only.
 - c. The sign area for ground signs, monument signs, and architectural sign bands is calculated as the area enclosing the extreme limits of the copy only.
 - d. In the case of individual letters mounted to a wall, the total area in a simple shape such as a rectangle around the letters will be calculated.

3. Height. The height of a sign is measured from the average grade level below the sign to the topmost point of the sign or sign structure.

4. Setback. The setback of a sign is measured from the property line to the supporting frame, mast, pole, or base of the sign.

175.09 PERMITTED SIGNS

Table 175.09-01 – Permitted Signs by Type and Zoning Districts

Sign Types	R-1	R-2	R-3	MH	CC	UC	LI
Detached Signs							
Monument	P	P	P	P	P	P	P
Ground	P	P	P	P	P	P	P
Pole	N	N	N	N	N	N	N
Attached Signs							
Awning	N	N	N	P	P	P	P
Banner	N	N	N	N	P	P	P
Building Marker	P	P	P	P	P	P	P
Canopy	N	N	N	N	P	P	P
Marquee	N	N	N	N	P	P	P
Projecting	N	N	N	N	P	N	P
Roof, Integral	N	N	N	N	P	N	P
Wall	P	P	P	P	P	P	P
Window	N	N	N	N	P	P	P
Miscellaneous							
Portable	N	N	N	N	P	P	N

P = Permitted for All Uses; N = Not Permitted

Table 175.09-02 – Auxiliary Design Elements by Zoning District

Sign Types	R-1	R-2	R-3	MH	CC	UC	LI
Illumination							
Indirect	P	P	P	P	P	P	P
Direct	N	N	N	N	N	N	N
Internal	P	P	P	P	P	P	P
Neon	N	N	N	N	P	P	P
Flashing	N	N	N	N	N	N	N
Flame	N	N	N	N	N	N	N

Other									
Electronic Changeable Copy	N	N	N	N		P		P	P
Moving	N	N	N	N		N		N	N
Rotating	N	N	N	N		N		N	N

P = Permitted for All Uses; N = Not Permitted

Table 175.09-03 - Permitted Signs by Maximum Permitted Area and District

The Maximum Permitted Area for all signs on a premises, excluding exempt signs:

Zoning district	Maximum total square feet
R-1, R-2	8
R-3	32
MH	48
CC, UC	150
LI	200

Table 175.09-04 – Permitted Signs by Numbers, Dimensions, and Locations

Each individual sign shall comply with the regulations for maximum quantity, maximum size, minimum setbacks, and height limits shown in this table:

Zoning District:	R-1 R-2	R-3 MH	CC UC	LI
Detached Signs				
Number Permitted Per Premises	1	1	NA	NA
Maximum Size* (square feet)	8	32	90	90
Maximum Height (feet) of Structure Above Ground	10	10	10	10
Front Yard Setback (feet)	5	5	10	0
Side Yard Setback (feet)	10	10	5	0
Attached Signs				
Maximum Size* (square feet)	8	32	150	200
* For those uses only permitted a sufficient maximum sign area in Table 175-3				

(Ch. 175 – Ord. 18-14 – Nov. 18 Supp.)

175.10 NONCONFORMING SIGNS.

1. Any permanent sign that was in place and lawfully established on December 21, 1998, shall be considered as a legal nonconforming sign to the extent that such a sign does not comply with the provisions of this chapter. The cover of such sign may be changed from time to time, provided that the sign area shall not be enlarged or reduced beyond the sign area in existence on December 21, 1998.

2. Any nonconforming sign which presently is or becomes structurally damaged or deteriorated or is altered by more than 50% of its replacement cost, shall be either removed or altered so as to comply with this chapter.

CHAPTER 175

ZONING CODE – SIGN REGULATIONS

175.01 Purpose	175.07 Use of Compatible Materials
175.02 General Permit Procedures	175.08 Sign Area
175.03 Exempt Signs	175.09 Permitted Signs
175.04 General Sign and Street Graphics Regulations	175.10 Nonconforming Signs
175.05 Basic Design Elements for On-Premises Signs	
175.06 Other Design Elements	

175.01 PURPOSE.

The Sign Regulations provide standards for communicating information in the environment of the City and its jurisdiction. The regulations recognize the need to protect public health, safety, and welfare; to maintain the City's attractive appearance; to provide for adequate business identification, advertising, and communication of information; all while protecting and promoting the free speech and expression rights of citizens within Windsor Heights. Any complaint received regarding a sign that comports with these regulations does not constitute a violation of this code section.

175.02 GENERAL PERMIT PROCEDURES.

Any installation, modification, or expansion of any sign which is not exempt from the provisions of this chapter shall be subject to the following permit procedure.

1. Maintenance of Valid Sign Permit. The owner of a property containing signs requiring a permit under this Zoning Code shall at all times maintain in force a sign permit for such property. Sign permits may be issued for individual zoned lots, tenants, or sign owners. A sign permit may be revoked if the sign is not maintained in good condition.
2. Any person who displays a sign in compliance with this code may substitute the message on that sign without first securing any additional approval, permitting, or notice, provided that any such substitution would not result in the sign becoming noncompliant.
3. Nothing in this code is intended or shall be construed so as to prevent the strengthening or restoration to a safe condition of a nonconforming sign for purposes of public health and safety.
4. Sign Permit Applications. All applications for sign permits shall be submitted to the Zoning Administrator in accordance with application specifications established by the ordinance.
5. Application Fees. Each application for a sign permit shall be accompanied by any applicable fees, which shall be established by the Council from time to time by resolution.
6. Permit Expiration. If a permanent sign is not constructed in accordance with an approved permit within six months of the date of approval, such permit shall lapse. Permits on non-permanent signs lapse in accordance with the timeline identified on the permit. After 60 days, permits are required to maintain temporary signs or more than a single temporary sign with a maximum of two renewals.

7. Assignment of Sign Permits. A current and valid sign permit shall be freely assignable to a successor as owner of the property or holder of a business license for the same premises.

175.03 EXEMPT SIGNS

The following signs are permitted in any zoning district and are exempt from other provisions of this chapter.

1. Up to three non-temporary signs on R-1, R-2, or R-3 that are smaller than 4 square feet in area.
2. Official signs authorized by a government or governmental subdivision, which give traffic, directional, or warning information, or other official information.
3. Temporary signs less than 8 square feet.
4. Neighborhood or subdivision identification signs under 50 square feet.
5. Street numbers or address signs that identify the address of a lot, structure, or establishment.
6. Signs which are not visible from a public right-of-way, private way, or court or from a property other than that on which the sign is installed, such as window signs.
7. Sidewalk signs which include two sided portable signs that are placed on the sidewalk outside of an establishment. 1 sign maximum per business and they must not interfere with a minimum of 5 feet of sidewalk clearance at all times.

175.04 GENERAL SIGN AND STREET GRAPHICS REGULATIONS.

1. Compliance. Each sign or part of a sign erected within the zoning jurisdiction of the City must comply with the provisions of this chapter and of other relevant provisions of this Code of Ordinances.

2. Resolution of Conflicting Regulations. This chapter is not meant to repeal or interfere with the enforcement of other sections of this Code of Ordinances. In cases of conflicts between Code sections, or State or Federal regulations, the more restrictive regulations shall apply, except where State law or the State Constitution preempts municipal law, in which case State law or the State Constitution will govern, or where Federal law of the U.S. Constitution preempts State and municipal law, in which case Federal law or the U.S. Constitution will govern.

3. Prohibited Signs. The following signs are prohibited in all zoning districts.

- a. Any sign which is structurally unsafe, unsafely installed, or otherwise hazardous to physical safety.
- b. Any sign that obstructs free ingress to or egress from a fire escape, door, window, or other required access way to or from a building or site.
- c. Any sign not maintained in good condition.
- d. Any sign that blocks the vision clearance areas or would obstruct a driver's clear line of sight of traffic or pedestrians, or which obscures official signs or signals.
- e. Any sign that interferes with the view of, or is confused with, any traffic control sign or device, and any sign that misleads or confuses traffic flow. A sign's position, size, shape, color, and illumination, but not its content, shall be considered when making such a determination.

- f. Abandoned signs, which must be removed within six months of the date of abandonment.
 - g. Electronic changeable copy signs which incorporate in any manner any rolling, flashing, pulsating, rotating, beacons, or moving lights.
 - h. Any sign nailed, fastened, or affixed to any tree.
 - i. Any sign that otherwise violates this sign code.
 - j. Any sign displaying any obscene matter, as that term is defined by Iowa Code Chapter 728.
4. Buffer Yards. No sign other than on-premises directional signs shall be placed within any buffer yard required by Chapter 173, Landscaping and Screening Standards, except buffer yards adjacent to intervening major streets.
5. Vision-Clearance Triangle. No sign may project into or be placed within a vision-clearance area.
6. Removal of Signs. If a sign owner's business, profession, commodity, service, or other activity or use formerly occupying the site is discontinued, the sign must be removed within fifteen (15) days of closure. If the owner does not remove the sign, the City will remove it at the owner's expense.

175.05 BASIC DESIGN ELEMENTS FOR ON-PREMISES SIGNS.

1. Professional Design and Construction. All signs must be designed and constructed by an individual or company pre-approved by the City and familiar with the City's sign ordinance. The proposed individual or company shall be designated on the applicant's sign permit and approved by the City in advance of sign construction.
2. Wall Signs and Graphics. Wall signs and graphics are subject to the following general regulations.
 - a. A wall sign shall not extend more than 12 inches from the wall to which it is attached.
 - b. A wall sign must be parallel to the wall to which it is attached.
 - c. A wall sign may not extend beyond the corner of the wall to which it is attached, except where attached to another wall sign, it may extend to provide for the attachment.
 - d. A wall sign may not extend beyond its building's roofline.
 - e. A wall sign attached to a building on its front property line may encroach upon public right-of-way by no more than 12 inches. Such a wall sign shall provide a minimum clearance of eight feet, six inches.
 - f. For the purpose of calculating permitted sign areas pursuant to this chapter, signs painted on the walls of buildings shall be considered wall signs.
 - g. Where permitted, canopy signs are counted as wall signs when calculating the total permitted sign area.
3. Projecting Signs and Graphics. Projecting signs and graphics are subject to the following general regulations.
 - a. The maximum projection of any projecting sign shall be three feet.
 - b. A projecting sign may be no closer than two feet from the vertical plane of the inside curb line.

- c. Each projecting sign must maintain at least the following vertical clearances measured from the average ground level below the sign to the lowest point of the sign:
 - A. 8 feet, 6 inches over sidewalks, except that a canopy may reduce its vertical clearance to 7 feet, 6 inches;
 - B. 14 feet over parking lots;
 - C. 18 feet over alleys or driveways;
 - D. Unless noted above, no projecting sign shall be placed over a roadway.
- d. No projecting sign extending three feet from a property line may be located within 22 feet of any other projecting sign extending three feet from a property line.
- e. The support structure for projecting signs cannot be visible.
- 4. Roof Signs. Roof signs are subject to the following regulations:
 - a. Where permitted, integral roof signs may be used interchangeably with wall signs.
 - b. Above peak roof signs are prohibited.

175.06 OTHER DESIGN ELEMENTS.

- 1. Illumination. Lighting, when installed, must be positioned in such a manner that light is not directed onto an adjoining property or onto a public street or highway.
- 2. Marquees and Marquee Signs. Signs placed on, attached to, or constructed on a marquee are subject to the maximum projection and clearance regulations of projecting signs.
- 3. Banners.
 - a. A banner sign projecting from a building may not exceed the wall height of the building.
 - b. Maximum projection for any banner is three feet with a minimum vertical clearance of 8 feet, 6 inches.

175.07 USE OF COMPATIBLE MATERIALS.

All signs, excluding temporary signs, shall be constructed of materials that are similar to those used on the principal building. Such signage shall be dominated with materials of permanency and strength and shall be compatible with other structures and signs in the development.

175.08 SIGN AREA.

- 1. Maximum Permitted Sign Area. Maximum permitted sign area for a premises is set forth as a numerical limit and is the combined total of all signs on the premise.
- 2. Sign Area.
 - a. Sign area includes the entire area within the perimeter enclosing the extreme limits of the sign, excluding any structure essential for support or service of the sign, or architectural elements of the building.
 - b. The area of double-faced signs is calculated on the largest face only.
 - c. The sign area for ground signs, monument signs, and architectural sign bands is calculated as the area enclosing the extreme limits of the copy only.

- d. In the case of individual letters mounted to a wall, the total area in a simple shape such as a rectangle around the letters will be calculated.
3. Height. The height of a sign is measured from the average grade level below the sign to the topmost point of the sign or sign structure.
4. Setback. The setback of a sign is measured from the property line to the supporting frame, mast, pole, or base of the sign.

175.09 PERMITTED SIGNS

Table 175.09-01 – Permitted Signs by Type and Zoning Districts

Sign Types	R-1	R-2	R-3	MH	CC	UC	LI
Detached Signs							
Monument	P	P	P	P	P	P	P
Ground	P	P	P	P	P	P	P
Pole	N	N	N	N	N	N	N
Attached Signs							
Awning	N	N	N	P	P	P	P
Banner	N	N	N	N	P	P	P
Building Marker	P	P	P	P	P	P	P
Canopy	N	N	N	N	P	P	P
Marquee	N	N	N	N	P	P	P
Projecting	N	N	N	N	P	NP	P
Roof, Integral	N	N	N	N	P	N	P
Wall	P	P	P	P	P	P	P
Window	N	N	N	N	P	P	P
Miscellaneous							
Portable	N	N	N	N	P	P	N

P = Permitted for All Uses; N = Not Permitted

Table 175.09-02 – Auxiliary Design Elements by Zoning District

Sign Types	R-1	R-2	R-3	MH	CC	UC	LI
Illumination							
Indirect	P	P	P	P	P	P	P
Direct	N	N	N	N	N	N	N
Internal	P	P	P	P	P	P	P
Neon	N	N	N	N	P	P	P

Flashing		N	N	N	N		N		N		N
Flame		N	N	N	N		N		N		N
Other											
Electronic Changeable Copy		N	N	N	N		P		P		P
Moving		N	N	N	N		N		N		N
Rotating		N	N	N	N		N		N		N

P = Permitted for All Uses; N = Not Permitted

Table 175.09-03 - Permitted Signs by Maximum Permitted Area and District

The Maximum Permitted Area for all signs on a premises, excluding exempt signs:

Zoning district	Maximum total square feet
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CC, UC	150
LI	200

Table 175.09-04 – Permitted Signs by Numbers, Dimensions, and Locations

Each individual sign shall comply with the regulations for maximum quantity, maximum size, minimum setbacks, and height limits shown in this table:

Zoning District:		R-1 R-2	R-3 MH	CC UC	LI
	Detached Signs				
Number Permitted Per Premises		1	1	NA	NA
Maximum Size* (square feet)		8	32	90	90
Maximum Height (feet) of Structure Above Ground		10	10	10	10
Front Yard Setback (feet)		5	5	10	0
Side Yard Setback (feet)		10	10	5	0
	Attached Signs				

Maximum Size* (square feet)	8	32	150	200
	* For those uses only permitted a sufficient maximum sign area in Table 175-3			

(Ch. 175 – Ord. 18-14 – Nov. 18 Supp.)

175.10 NONCONFORMING SIGNS.

1. Any permanent sign that was in place and lawfully established on December 21, 1998, shall be considered as a legal nonconforming sign to the extent that such a sign does not comply with the provisions of this chapter. The cover of such sign may be changed from time to time, provided that the sign area shall not be enlarged or reduced beyond the sign area in existence on December 21, 1998.
2. Any nonconforming sign which presently is or becomes structurally damaged or deteriorated or is altered by more than 50% of its replacement cost, shall be either removed or altered so as to comply with this chapter.