



**Planning Commission Application  
PART I**

Project Data

Address of Subject Property 3732 MONTROSE ROAD

Zoning Classification RESIDENCE A

Name of Property Owner(s) THE EPISCOPAL CHURCH IN THE DIOCESE OF ALABAMA

Phone Number (205) 802-6204 Email gpelekis@saintlukes.com

Name of Representative Agent (if applicable)

G. GRAY ROSSER

Phone Number (205) 458-3217 Email g.rosser@kpsgroup.com

Property owner or representative agent must be present at hearing

Plans

See applicable Section of the Zoning Ordinance for submittal requirements pertaining to your particular application. Applicable Code Section may be found in Part II, list of application types. Contact City Planner with any specific questions as to required plans submittal.

November 2, 2016

Dana Hazen, Director of Planning and Building  
City of Mt. Brook  
56 Church Street  
Mt. Brook AL 35213

Additions and Renovations to St. Luke's Church (Planning Commission P-16-24)  
#166009-00



Dear Dana:

This letter with attachments constitutes incorporates all previous changes to the original submission and the responses to all questions posed by the Planning Commission in its meetings of September 6 and October 3.

- Attachment A consists of the original development plan documents submitted for this case that have been revised to reflect all subsequent changes made in response to PC requests. These include changes in the size and position of the proposed new parking lot to incorporate the change in gate location, the new sewer easement, changes to the landscape buffer and a reduction in the overall number of spaces from 27 to 21. It also provides for a foot path to the house and repositions the pavilion slightly further away from South Cove. The number of new parking spaces has been changed as a result of the reduced size of the new parking lot. The height of the pavilion has been changed to 35 feet.
- *Photometric study of the lighting proposed in the proposed parking lot; and for that of existing parking lot if re-lamping is proposed. Type of light fixtures and a schematic placement in the new lot.*

Response – See Attachment B consisting of a schematic plan and photometric study of the two parking lots. The new parking lot has been adjusted in size to agree with the changes requested by the PC and Jefferson County's requirements. The photometric study is based on replacing all existing poles and installing new ones which will meet the 14 foot maximum height limit. New poles include several in the existing lot to cover spots that do not currently get any light as well as two poles in the new lot and another at the end of South Cove to cover the two gates. The new pole lights will not be any closer to the north property line than the current ones. Also included as a part of Attachment B is a specification sheet on the new poles and the LED lamps. These are low cut-off type fixtures. The lighting design is in accordance with IES recommended lighting levels to minimize glare and light trespass beyond property lines.

KPS Group, Inc.  
2101 First Avenue North  
Birmingham, AL 35203  
Tel: 205 251-0125  
Fax: 205 458-1513



- *Schematic of the proposed landscape buffer – type of plants and location, especially in the sensitive areas along the east and north sides of the parking lot, as well as between the proposed pavilion and the south edge of the vacated South Cove Drive.*

Response – See Attachment C consisting of two landscape drawings showing proposed schematic buffer landscaping of the new parking lot and another showing the proposed schematic landscape of the area around the proposed outdoor pavilion. Both of these drawings have been revised to reflect a) the reconfiguration of the new parking lot and b) the repositioning of the pavilion. The proposed plant material at the parking lot is now consistent with our original proposal for Nellie Stevens Hollies.

- *Formalize the parameters of pavilion hours and uses. Detail of possible uses of the vacant house on the property. Formalize gate access hours.*

Response – See Attachment D consisting of a letter from George Pelekis, Executive Administrator to Ms. Dana Hazen outlining the Church’s response to the request for additional information from the Planning Commission.

- *Information on security cameras: placement and capabilities.*

Response – See Attachment C for placement and for camera specifications. The cameras will be stationary but designed to cover the entire parking lot area from these locations including that area of South Cove that is immediately outside the two gates. The lighting has been designed for reasonable uniformity across all parking areas and to allow for maximum performance of security cameras.

- *Analysis of drainage implications from the new parking lot.*

Response – See Attachment E consisting of a drawing and a narrative prepared by LBYD Consulting Engineers regarding the overall control of storm water on the site. The first drawing is of the new parking lot showing its location, size, preliminary grading and indicating how runoff will be handled. Essentially, storm water from this lot will be directed back on to the existing St. Luke’s parking lot and none across the property line to the north. Overall, the site will have a new detention facility located between South Cove and Montrose to insure that post development runoff is less than that predevelopment. The detention pond will have an outlet control structure to retain storm flows.

I believe that this information accurately reflects all of the changes and additional information requested by the Planning Commission and that the submittal is consistent with the requirements of the Mt. Brook Code.

Sincerely,

KPS GROUP, INC.



G.GRAY PLOSSER, FAIA  
President

Gp

Enclosure: Attachments A,B,C, D, E

cc: George Pelekis, St. Luke's  
Chris Harmon, Maynard Cooper  
Ken McBride, KPS Group





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3736 Montrose Road \* Birmingham, Alabama 35213-3800

October 20, 2016

CITY OF MOUNTAIN BROOK  
Dana O. Hazen, MPA, AICP  
Director of Planning, Building and Sustainability  
56 Church Street  
Mountain Brook, Alabama 35213

Dear Mrs. Hazen:

This letter is in response to the Planning Commission request from the October 4th meeting for further information needed from Saint Luke's Episcopal Church regarding its development plan.

- **Parking in front of Saint Luke's Gate:** Saint Luke's Episcopal Church proposes a striped Fire Lane be painted in front of the gate to prevent individuals from parking in front of the gate.
- **Pavillion Height:** Saint Luke's proposes to reduce the height of the Pavilion roof to 35 feet.
- **Gate Usage:** The intent of the church is not to have the gates open all the time. The Saint Luke's gates will remained closed to thru traffic under normal weekday operations of the Facility.
- **List Potential uses of the house located at 3825 South Cove Drive:** Saint Luke's currently intends to maintain the existing house in its present location on the lot. The property will not be leased for any commercial purpose including a residence. General Uses of the 3825 South Cove Drive church property will be:
  - Meeting and storage space for Saint Luke's Boy Scouts Troop 86
  - Office, meeting space for Vestry, Clergy and Laity Leadership
  - Housing for church staff or temporary housing for guests of the church.
- **Formalize Pavilion hours:** The church's ministry programs' hours and special services vary during the week and operate 7 days a week within reasonable hours of operation. The use of the Pavilion will be maintained during a reasonable schedule for normal ministry hours no earlier than 7:00am and no later than 9:00pm. Both morning and night time use is restricted to approved activities only. The City of Mountain Brook will be notified for Pavillion use outside these hours.

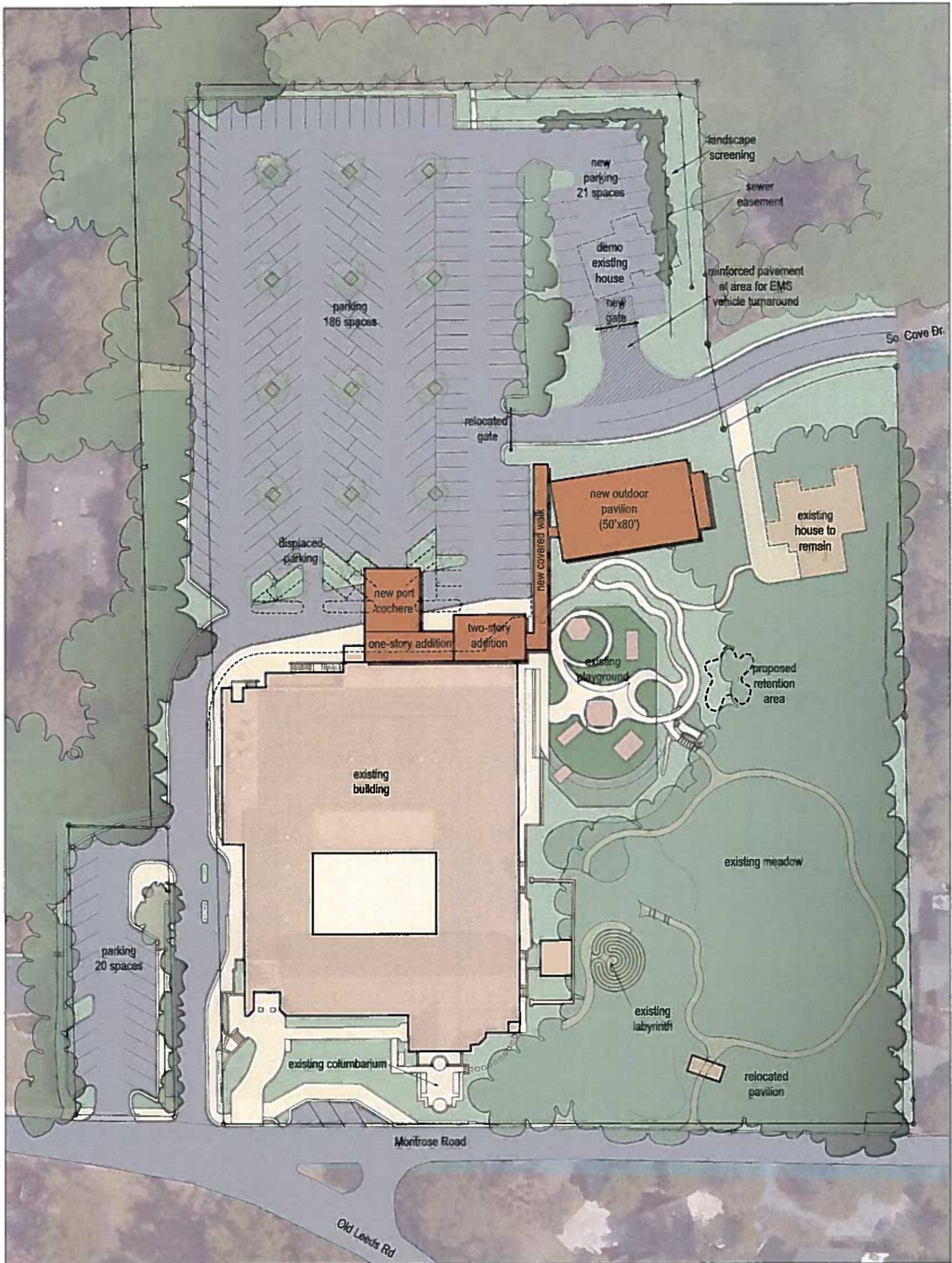
If there are other items the Planning Commission needs before the next meeting please let us know. Thank you for what you do for our community.

Sincerely,

A handwritten signature in blue ink that reads "George Pelekis". The signature is written in a cursive, flowing style.

George Pelekis  
Executive Administrator

ATTACHMENT D



# SAINT LUKE'S EPISCOPAL CHURCH

## PROPOSED SITE DEVELOPMENT PLAN

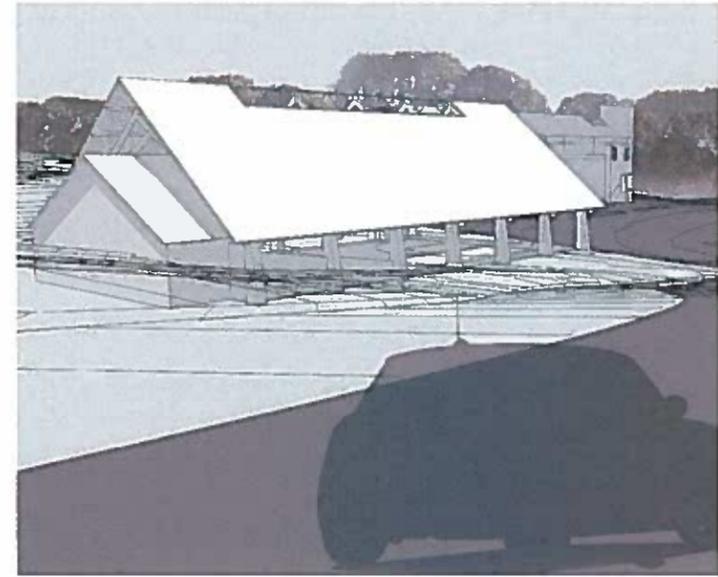
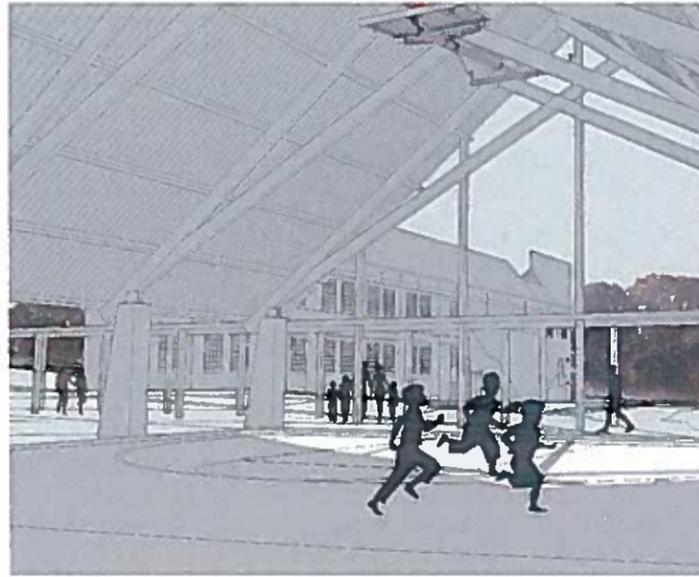
### ATTACHMENT A

PARKING (REVISED 8/23/16)

REQUIRED	210 SPACES (630 SANCTUARY SEATS) / 3
CURRENT	240 SPACES
PROPOSED	249 SPACES
TOTAL HC	10 SPACES

NOTE: DISPLACED BY NEW CONSTRUCTION - 13 SPACES





# SAINT LUKE'S EPISCOPAL CHURCH

NORTH ELEVATION

ATTACHMENT A

# VIPER S SERIES

SMALL VIPER LUMINAIRE

Cat.#

Job

Type



Approvals

## SPECIFICATIONS

### Intended Use:

The Beacon Viper luminaire is available with a wide choice of different LED Wattage configurations and optical distributions designed to replace HID lighting up to 400W MH or HPS.

### Construction:

- Manufactured with a low copper content, die cast aluminum.
- Coated with a polyester finish that meets ASTM B117 corrosion test requirements and ASTM D522 cracking and loss of adhesion test requirements.
- External hardware is corrosion resistant.
- One piece optical cartridge system consisting of an LED engine, LED lamps, optics, gasket and stainless steel bezel.
- Cartridge is held together with internal brass standoffs soldered to the board so that it can be field replaced as a one piece optical system.
- Two-piece silicone and micro-cellular polyurethane foam gasket ensures a weather-proof seal around each individual LED.

### LED/Optics:

- 100V through 277V, 50 Hz to 60 Hz (UNV), or 347V or 480V input.
- Power factor is .92 at full load.
- All electrical components are rated at 50,000 hours at full load and 25°C ambient conditions per MIL- 217F Notice 2.
- Dimming drivers are standard with connections for external dimming equipment available upon request.
- Component-to-component wiring within the luminaire may carry no more than 80% of rated load and is listed by UL for use at 600VAC at 50°C or higher.
- Plug disconnects are listed by UL for use at 600 VAC, 13A or higher. 13A rating applies to primary (AC) side only.

### Electrical:

- Fixture electrical compartment shall contain all LED driver components and shall be provided with a push-button terminal block for AC power connections.
- The housing is designed for an optional twist lock photo control receptacle.
- Ambient operating temperature -40°C to 40°C
- Surge protection - 20KA; shuts off at end of life.
- Optional 7-pin ANSI C136.41-2013 twist-lock photo control receptacle available. Compatible with ANSI C136.41 external wireless control devices.
- Lifeshield™ Circuit - protects luminaire from excessive temperature. The device shall activate at a specific, factory-preset temperature, and progressively reduce power over a finite temperature range. A luminaire equipped with the device may be reliably operated in any ambient temperature up to 55°C (131°F). Operation shall be smooth and undetectable to the eye. Thermal circuit is designed to "fail on", allowing the luminaire

to revert to full power in the event of an interruption of its power supply, or faulty wiring connection to the drivers. The device shall be able to co-exist with other 0-10V control devices (occupancy sensors, external dimmers, etc.).

### Controls/Options:

- Available with an optional passive infrared (PIR) motion sensor capable of detecting motion 360° around the luminaire. When no motion is detected for the specified time, the Motion Response system reduces the Wattage to factory preset level, reducing the light level accordingly. When motion is detected by the PIR sensor, the luminaire returns to full Wattage and full light output. Please contact Beacon Products if project requirements vary from standard configuration.
- Available with Energeni for optional set dimming, timed dimming with simple delay, or timed dimming based on hours of operation or time of night (see [www.beaconproducts.com/products/energeni](http://www.beaconproducts.com/products/energeni)).
- Also available with **Beaconnect** Wireless Control System (see [Beaconnect](http://www.beaconproducts.com/products/beaconnect) product page for more details [www.beaconproducts.com/products/beaconnect](http://www.beaconproducts.com/products/beaconnect)).

### Installation:

- Mounting options for horizontal arm, vertical tenon or traditional arm mounting available. Mounting hardware included.

### Finish:

- Beacote V polyester powder-coat electrostatically applied and thermocured.
- Beacote V finish consists of a five stage pretreatment regimen with a polymer primer sealer and top coated with a thermoset super TGIC polyester powder coat finish.
- The finish meets the AAMA 605.2 performance specification which includes passing a 3000 hour salt spray test for corrosion resistance and resists cracking or loss of adhesion per ASTM D522 and resists surface impacts of up to 160 inch-pounds.

### Listings:

- DesignLights Consortium (DLC) qualified, consult DLC website for more details: <http://www.designlights.org/QPL>
- Listed to UL1598 and CSA22.2#250.0-24 for wet locations and 40°C ambient temperatures
- 3G rated for ANSI C136.31 high vibration applications
- IDA approved

### Warranty:

Five year limited warranty (for more information visit: [www.hubbellighting.com/resources/warranty](http://www.hubbellighting.com/resources/warranty)).

## PRODUCT IMAGE(S)

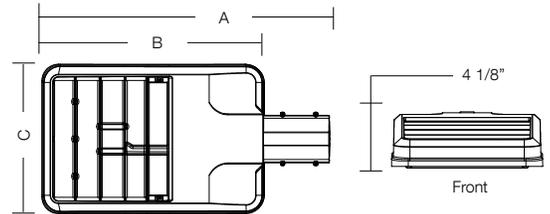


rectangular arm



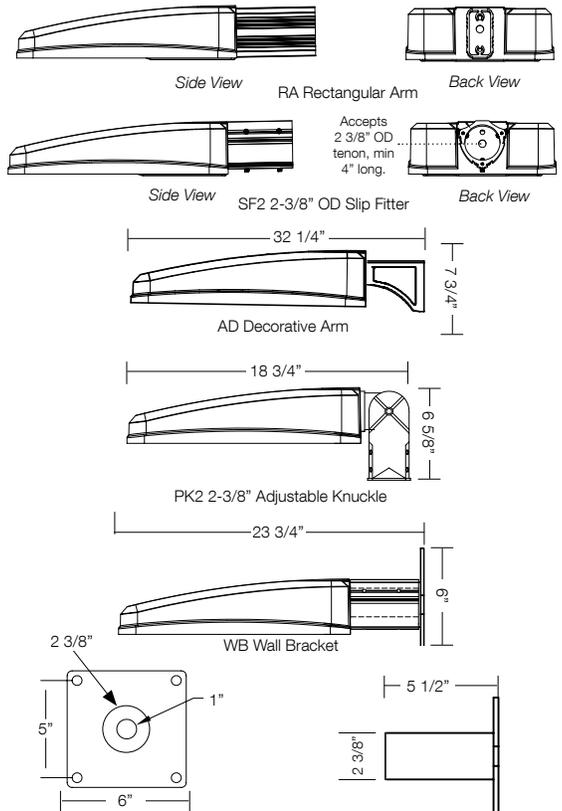
decorative arm

## DIMENSIONS



A	B	C	Weight:	EPA
22.75" (578 mm)	16.75" (425 mm)	11.25" (286 mm)	15.0 lbs (6.8 kg)	.67 ft <sup>2</sup>

## MOUNTING OPTIONS



## CERTIFICATIONS/LISTINGS



\*3000K and warmer CCTs only



Beacon Products • 2041 58th Avenue Circle East Bradenton, FL 34203 • Phone: 800-345-4928

Due to our continued efforts to improve our products, product specifications are subject to change without notice.

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**ORDERING INFORMATION** ORDERING EXAMPLE: VPS/36NB-80/5K/T4/UNV/PCR-TL/BCW/BLC/RA/BBT

SERIES	ENGINE-WATTS	LED COLOR	VOLTAGE	ELECTRICAL OPTIONS	HOUSE SIDE SHIELD OPTIONS	FINISH
VPS viper-small	24NB-55 55W, LED array 30NB-70 70W, LED array 36NB-80 80W, LED array 48NB-110 110W, LED array 60NB-136 136W, LED array	3K 3000K 4K 4000K 5K 5000K <b>OPTICS<sup>4</sup></b> T1 type I T2 type II T3 type III T4 type IV T5R type V, rectangular T5QM type V, square medium T5W type V, round wide FR front row auto optic	UNV 120-277V 347V 347V 480V 480V	PCR-TL Twist lock receptacle with photo control PCR-SC Twist lock receptacle with shorting cap PCR-U Twist lock receptacle dual power feed 2PF <sup>7</sup>	HSS-90 house side shield 90° HSS-180 house side shield 180° BLC <sup>3</sup> backlight control <b>SENSOR OPTIONS</b> BMD <sup>1,2,5</sup> motion sensor for beaconnect MDD <sup>2,5</sup> motion dimming detector <b>MOUNTING OPTIONS</b> RA rectangular arm for round or square pole mount. RPA included. SF2 2 3/8" OD slip-fitter PK2 2 3/8" adjustable knuckle AD decorative arm with universal mounting slot. RPA ordered separately. See referenced table. WB wall bracket (use with SF2 or PK2), SF2 standard	BBT basic black textured BMT black matte textured WHT white textured MBT metallic bronze textured BZT bronze textured DBT dark bronze textured GYS gray smooth DPS dark platinum smooth GNT green textured MST metallic silver textured MTT metallic titanium textured OWI old world iron RAL _____

**MDD ORDERING INFORMATION:** When ordering a fixture with the motion detection option (MDD), please specify the appropriate information. These settings are specified in the ordering as shown in the example below.

VPS / 36NB-135 / 5K / T5W / UNV / MDD - 1 to 30 min. - 33% or 50% - ?? / MT

High to Dim Delay    Low Level    Mounting Height (ft.)

**BEACONNECT ORDERING INFORMATION:** When ordering a fixture with the Beaconnect lighting control options please specify the appropriate group and sensor information. Please provide dimming schedule information in either the Beaconnect excel spreadsheet or Beaconnect software. For more detailed information please visit [www.beaconproducts.com/beaconnect](http://www.beaconproducts.com/beaconnect) or contact beacon tech support at (800) 345-4928. These settings are specified in the ordering as shown in the example below. (Family) / 24NB-55 / 5K / T3 / UNV / BCW-(Group 1-16)\_\_\_\_\_(Optional Zone 1-250)\_\_\_\_\_/BMD - \_\_\_\_Time Delay(1 to 255)\_\_\_\_ - \_\_\_\_Dimming% (1 to 100)\_\_\_\_ - \_\_\_\_mounting height(1-20ft)\_\_\_\_/ Example: TRV/24NB-55/5K/T3/UNV/BCW-G1 /BMD-30M-50%-10F/DBT for luminaires without sensors in the group omit the BMD ordering logic Example: TRV/24NB-55/5K/T3/UNV/BCW-G1 /DBT

<sup>1</sup> Must specify group and zone information at time of order. See [www.beaconproducts.com/controls/beaconnect](http://www.beaconproducts.com/controls/beaconnect) for further details.  
<sup>2</sup> Specify time delay, dimming level and mounting height.  
<sup>3</sup> T4 optic only.  
<sup>4</sup> To rotate optics Left or right 90 degrees, specify L or R after the optical distribution example T4L.  
<sup>5</sup> Not available with other control or sensor options.  
<sup>6</sup> When ordering Energeni, specify the routine setting code (example GENI-04). See Energeni brochure and instructions for setting table and options. Not available with sensor options.  
<sup>7</sup> Not available for 347V or 480V input.  
<sup>8</sup> Not available with 30NB-70.

Catalog Number	Description
VPS-AD-RPA3	3.5" - 4.125"
VPS-AD-RPA4	4.188" - 5.25"
VPS-AD-RPA5	5.5" - 6.5"

Order Separately

Catalog Number	Description
ASM-USB-BCW	Beaconnect Software loaded on USB flash drive* (Windows based only)
ASM-TABLET-BCW	Beaconnect 7" Windows Tablet*

\*Includes USB Radio



DesignLights Consortium qualified. Consult DLC website for more details: <http://www.designlights.org/QPL>



**PERFORMANCE DATA**

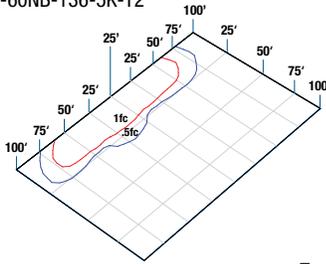
# LED'S	DRIVE CURRENT (MILLIAMPS)	SYSTEM WATTS	DISTRIBUTION TYPE	5K (5000K nominal, 70 CRI)					4K (4000K nominal, 70 CRI)					3K (3000K nominal, 70 CRI)				
				LUMENS	LPW <sup>1</sup>	B	U	G	LUMENS	LPW <sup>1</sup>	B	U	G	LUMENS	LPW <sup>1</sup>	B	U	G
24	700 mA	55 W	FR/T1	6339	114	1	0	1	6276	112	1	0	1	5389	97	1	0	1
			T2	5666	102	2	0	2	5610	101	2	0	2	4816	86	1	0	2
			T3	5610	101	1	0	2	5554	100	1	0	2	4784	86	1	0	2
			T4	6171	111	1	0	2	6110	109	1	0	2	5245	94	1	0	2
			T5R	6283	113	3	0	3	6221	111	3	0	3	5341	96	3	0	3
			T5QM	6171	111	3	0	1	6110	109	3	0	1	5245	94	2	0	1
			T5W	6087	109	3	0	1	6027	108	3	0	1	5201	93	3	0	1
30	700 mA	70 W	FR/T1	8096	113	1	0	1	8016	112	1	0	1	6882	96	1	0	1
			T2	7204	101	2	0	2	7133	100	2	0	2	6123	86	2	0	2
			T3	7743	108	2	0	2	7666	107	2	0	2	6659	93	2	0	2
			T4	7896	111	1	0	2	7817	110	1	0	2	6791	95	1	0	2
			T5R	8035	112	3	0	3	7954	111	3	0	3	6829	95	3	0	3
			T5QM	7846	110	3	0	1	7768	109	3	0	1	6669	93	3	0	1
			T5W	8305	116	3	0	2	8222	115	3	0	2	7142	100	3	0	2
36	700 mA	80 W	FR/T1	9515	114	1	0	1	9414	112	1	0	1	8083	96	1	0	1
			T2	8505	101	2	0	3	8415	100	2	0	3	7224	87	2	0	2
			T3	8415	100	2	0	2	8331	99	2	0	2	7175	86	2	0	2
			T4	9256	110	1	0	3	9164	109	1	0	3	7868	94	1	0	3
			T5R	9425	112	3	0	3	9331	111	3	0	3	8011	96	3	0	3
			T5QM	9257	110	3	0	1	9164	109	3	0	1	7868	94	3	0	1
			T5W	9131	109	3	0	2	9040	108	3	0	2	7801	93	3	0	2
48	700 mA	110 W	FR/T1	12679	114	2	0	1	15522	113	2	0	1	10777	97	1	0	1
			T2	11332	102	3	0	3	11220	101	3	0	3	9633	87	2	0	3
			T3	11220	101	2	0	3	11108	100	2	0	3	9567	86	2	0	3
			T4	12342	111	2	0	3	12219	110	2	0	3	10491	95	2	0	3
			T5R	12567	113	4	0	4	12441	112	4	0	4	10682	96	3	0	3
			T5QM	12342	111	3	0	2	12219	111	3	0	2	10491	95	3	0	2
			T5W	12175	110	4	0	2	12053	109	4	0	2	10402	94	4	0	2
60	700 mA	136 W	FR/T1	15848	116	2	0	1	15690	115	2	0	1	13471	98	2	0	1
			T2	14165	103	3	0	3	14025	102	3	0	3	12041	88	3	0	3
			T3	14025	102	3	0	3	13885	101	3	0	3	11959	87	3	0	3
			T4	15427	113	2	0	3	15274	111	2	0	3	13114	96	2	0	3
			T5R	15708	115	4	0	4	15259	111	4	0	4	13352	97	4	0	4
			T5QM	15427	113	4	0	2	15274	111	4	0	2	13314	96	3	0	2
			T5W	15218	111	4	0	2	15066	111	4	0	2	13002	95	4	0	2

<sup>1</sup>Lumen values are from photometric tests performed in accordance with IESNA LM-79-08. Data is considered to be representative of the configurations shown. Actual performance may differ as a result of end-user environment and application.

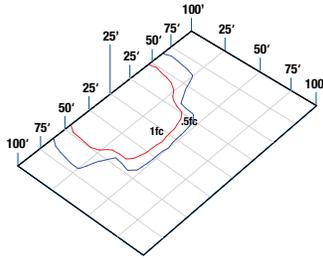


## PHOTOMETRICS

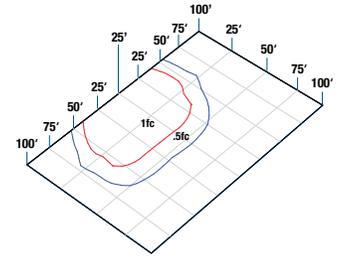
Type II  
VP-S-60NB-136-5K-T2



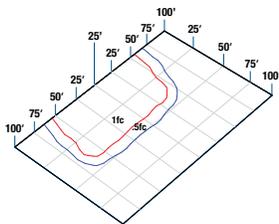
Type III  
VP-S-60NB-136-5K-T3



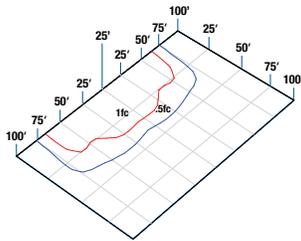
Type IV  
VP-S-60NB-136-5K-T4



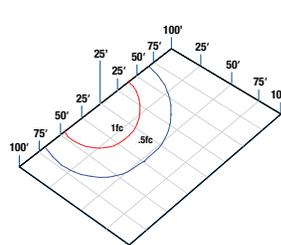
Type V Square Medium  
VP-S-60NB-136-5K-T5QM



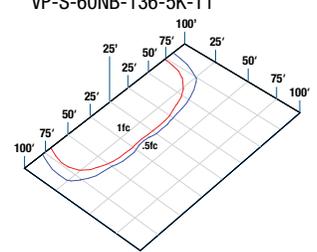
Type V Rectangular  
VP-S-60NB-136-5K-T5R



Type V Round Wide  
VP-S-60NB-136-5K-T5W



Front Row Auto Optic / Type I  
VP-S-60NB-136-5K-FR  
VP-S-60NB-136-5K-T1



## ELECTRICAL DATA

# OF LEDS	NUMBER OF DRIVERS	DRIVE CURRENT (mA)	INPUT VOLTAGE (V)	SYSTEM POWER (w)	CURRENT (Amps)
24	2	700 mA	120	55	0.5
			277		0.2
			347		0.2
			480		0.1
			120		0.6
30	2	700 mA	120	70	0.3
			277		0.2
			347		0.1
			480		0.1
			120		0.7
36	1	700 mA	120	80	0.3
			277		0.2
			347		0.2
			480		0.2
			120		0.9
48	1	700 mA	120	110	0.4
			277		0.3
			347		0.2
			480		0.2
			120		1.1
60	1	700 mA	120	136	0.5
			277		0.4
			347		0.4
			480		0.3
			120		0.3

## PROJECTED LUMEN MAINTENANCE

AMBIENT TEMP.	0	25,000	50,000	TM-21-11 60,000	100,000	Calculated L70 (HOURS)
25°C / 77°C	1.00	0.97	0.95	0.95	0.92	>470,000

<sup>1</sup> Projected per IESNA TM-21-11

Data references the extrapolated performance projections for the base model in a 40°C ambient, based on 10,000 hours of LED testing per IESNA LM-80-08.

AMBIENT TEMPERATURE		LUMEN MULTIPLIER
0°C	32°F	1.02
10°C	50°F	1.01
20°C	68°F	1.00
25°C	77°F	1.00
30°C	86°F	0.98
40°C	104°F	0.98

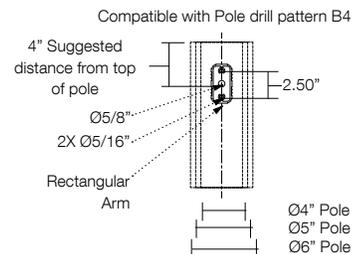
Use these factors to determine relative lumen output for average ambient temperatures from 0-40°C (32-104°F).

## EPA

Config.	EPA
1	.67
2 @ 90°	.95
2 @ 180°	1.34

Config.	EPA
3 @ 120°	1.36
3 @ 90°	1.5
4 @ 90°	1.5

## DRILL PATTERN



# Sarix® IMP Indoor and Environmental Mini Domes

## UP TO 5 MEGAPIXEL, H.264, IR, DAY/NIGHT IP DOMES

### Product Features

- Up to 5 megapixel (MPx) resolution
- Up to 30 images per second (ips) at 3 MPx
- Autofocus motorized remote zoom lens
- Integrated adaptive IR illumination (environmental IR models)
- Operating temperature up to 55°C (131°F)
- Up to 64 GB edge storage with Micro SD card
- Motion detection and camera sabotage detection
- Power over Ethernet (PoE+) Class 4, 24 VAC (environmental models)
- All models vandal resistant to IK10
- PoE, 24 VAC, 12 VDC (indoor models)
- Compatible with Pelco and third-party video systems
- ONVIF Profile S and Profile G conformant
- Full 3-year warranty and support

### Sarix Professional Range

Powerful, versatile, and affordable, the **Sarix® Professional (P)** range cameras pack the most popular features and functionality of Sarix technology into a wide range of indoor and outdoor options, including bullet cameras and mini domes. There are also indoor-only options such as a vandal resistant wedge and micro dome. Mix and match the performance options and form factor you need for almost any lighting condition, environment, and application.

### Camera

Within the **Sarix Professional** range, the **Sarix IMP Series** mini dome cameras feature a remote zoom lens for wide angle or long range surveillance needs. Autofocus capability ensures the camera can be automatically refocused when needed. Additionally, the **Sarix IMP Series** features advanced color science and a mechanical IR cut filter for increased sensitivity in low-light installations.

### Video

**Sarix Professional** range cameras support up to two simultaneous video streams and a third service stream. The two streams can be compressed with efficient H.264 High or Main profiles or MJPEG formats. The streams can be configured to a variety of frame rates and variable bit rates to optimize image quality with bandwidth and storage efficiency.



### Edge Storage

**Sarix Professional** range cameras feature onboard edge storage with a micro SD card. Video clips of varying lengths can be stored to the card upon alarm, or video can be written continuously to the SD card in the case of network outage. Video can be retrieved from the card through the FTP protocol or by using an ONVIF Profile G enabled client.

**Sarix Professional** range cameras feature a simple motion detection algorithm that allows the camera to record or send an alarm when there is motion detected in a selected zone or within the entire scene. A camera sabotage alarm is triggered if the lens is obstructed or when the camera is repositioned.

### Open and Integrated

**Sarix Professional** range cameras seamlessly connect to Pelco video management systems such as VideoXpert™, Endura® version 2.0 (or later), and Digital Sentry® version 7.3 (or later). **Sarix Professional** range cameras integrate with major third-party systems through the open Pelco API or the ONVIF Profile S and Profile G standards.

### Standard Web Interface

Pelco cameras use a standard Web browser interface for easy remote setup and administration. Controls are optimized for convenient one-step camera configuration for features including color, exposure, flicker control, and streaming.



by **Schneider Electric**



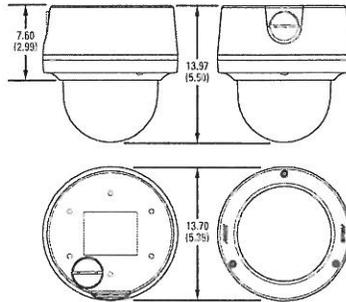
C4021 / NEW 3-29-16

# TECHNICAL SPECIFICATIONS

## BACK BOX FEATURES

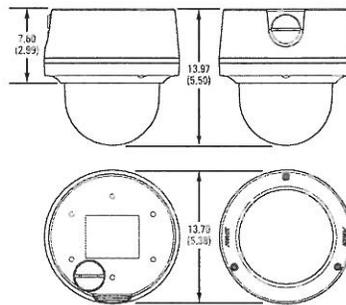


VALUES IN PARENTHESES ARE INCHES; ALL OTHERS ARE CENTIMETERS.



### Indoor Surface Mount

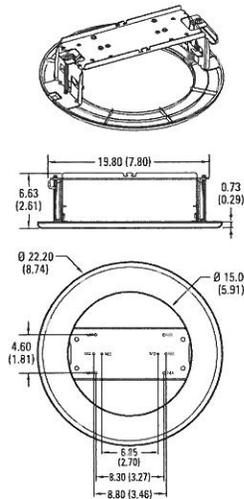
- Plastic body and trim ring; polycarbonate bubble
- White, RAL 9003
- IK10 (20J) Impact Resistance
- PoE, 24 VAC, 12 VDC



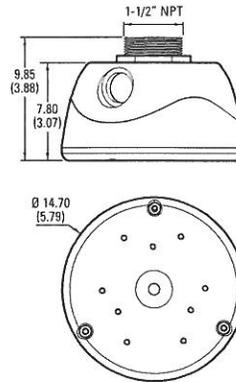
### Environmental Surface Mount

- Aluminum body and trim ring; polycarbonate bubble
- RAL 7047
- IP66 Ingress Protection
- Type 4X
- IK10 (20J) Impact Resistance
- 24 VAC and PoE+ Class 4 only

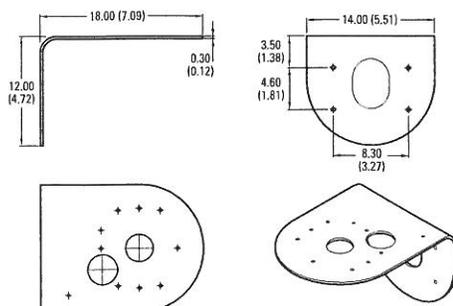
## IMPICM-1I AND IMPICM-1ER IN-CEILING MOUNT



## IMPPM-1I AND IMPPM-1ER PENDANT ADAPTER



## IMPPMB-1I WALL MOUNT BRACKET



# TECHNICAL SPECIFICATIONS

## CAMERA

Imaging Device

MPx	Sensor	Maximum Resolution
5 MPx	1/1.8-inch	2592 x 1944 (5.0 MPx)
3 MPx	1/2.8-inch	2048 x 1536 (3.1 MPx)
2 MPx	1/2.8-inch	1920 x 1080 (2.1 MPx)
1 MPx	1/3-inch	1280 x 960 (1.3 MPx)

Imager Type

CMOS

Imager Readout

Progressive scan

Electronic Shutter Range

1/5 ~ 1/30,000 sec (1 and 5 MPx),  
1/5 ~ 1/25,000 sec (2 MPx),  
1/5 ~ 1/45,000 sec (3 MPx)

Wide Dynamic Range

75 db

White Balance Range

2,000° to 10,000°K

3D Noise Reduction

Yes (ON/OFF selectable)

Minimum Illumination

MPx	Sensitivity	Color		Mono	
		33 ms	200 ms	33 ms	200 ms
5 MPx	f/1.2	0.30 lux	0.03 lux	0.10 lux	0.02 lux
3 MPx	f/1.2	0.25 lux	0.03 lux	0.10 lux	0.02 lux
2 MPx	f/1.2	0.25 lux	0.03 lux	0.10 lux	0.02 lux
1 MPx	f/1.4	0.05 lux	0.03 lux	0.10 lux	0.02 lux

Mechanical IR Cut Filter

Yes (AUTO/MANUAL selectable), with different set points on lux

IR Illumination

Adaptive IR up to 25 m; auto ON in night mode, or off

Signal to Noise Ratio

≥50 dB

## LENS

Lens Type

Built-in; varifocal

Focal Length

f/1.4, 3 ~ 10.5 mm

Focus

Autofocus, motorized

Zoom

Remote

Auto Iris Type

DC drive lens

Field of View\*

Lens	Angle of View	1 MPx	2 MPx	3 MPx	5 MPx
3 to 10.5 mm	Diagonal	110°~ 33°	116°~ 35°	115°~ 34°	110°~ 46°
	Horizontal	85°~ 27°	100°~ 31°	88°~ 30°	88°~ 37°
	Vertical	62°~ 19°	54°~ 17°	52°~ 16°	64°~ 27°

\*Field of view may vary with changes in resolution settings.

# TECHNICAL SPECIFICATIONS

## VIDEO

Video Streams

Up to 2 simultaneous streams, plus service stream; the secondary stream is variable based on the setup of the primary stream

Video Overlay

Camera name, time, date, and customizable text with multiple supported languages

Available Resolutions

MPx	Width	Height	Aspect Ratio
5.0	2592	1944	4:3
3.1	2048	1536	4:3
2.1	1920	1080	16:9
1.2	1280	960	4:3
0.9	1280	720	16:9
0.5	800	600	4:3
0.3	640	480	4:3
0.1	320	240	4:3
0.1	320	180	16:9

Frame Rates

MPx	Images per Second (ips)
5 MPx	15, 12.5, 10, 7.5, 5, 3, 2, 1
3 MPx	30, 25, 20, 16.67, 15, 12.5, 10, 7.5, 5, 3, 2, 1
2 MPx	30, 25, 20, 16.67, 15, 12.5, 10, 7.5, 5, 3, 2, 1
1 MPx	30, 25, 20, 16.67, 15, 12.5, 10, 7.5, 5, 3, 2, 1

**Note:** Available frame rates are selectable for each independent stream depending on the coding, resolution, and stream configuration.

Video Encoding

H.264 High or Main profiles; and MJPEG

Bit Rate Control

Constant bit rate (CBR), constrained variable bit rate (CVBR) with configurable maximum value

Corridor Mode

Electronic image flip and mirror: 180°, 90° and 270° (H.264 only)

Service Stream

640 x 480 or 640 x 352; 2 ips, JPEG

Window Blanking

8 configurable windows

## AUDIO

Streaming

Dual-channel

Input

Line in and out

Encoding

G.711 A-law/G.711 U-law

# TECHNICAL SPECIFICATIONS

## ELECTRICAL

Network Port	RJ-45 connector for 100Base-TX
Power Input	PoE+ Class 4 and 24 VAC (Environmental), PoE Class 2, 24 VAC nominal, 18 to 32 VAC range, 12 VDC (Indoor)
Power Consumption	
Indoor	<6 W
Outdoor	<16 W (with heater ring)
Local Storage	Up to 64 GB on Micro SDHC or SDXC card
Alarm	
Input	1
Output	1; PhotoMOS™ relay (30 V, 1 A)
Triggers	Unsupervised mode that detects switch closures (N.O. and N.C.)

## ENVIRONMENTAL

Operating Temperature	
Outdoor	-40° to 55°C (-40° to 131°F)*
Indoor	-10° to 55°C (14° to 131°F)
Storage Temperature	-40° to 60°C (-40° to 140°F)
Operating Humidity	5% to 90%, RH noncondensing

\*Thermostatically controlled heating provides ramped heating control between the initial heater on at 15° C (59°F) and full heating mode at -40°C (-40°F).

## GENERAL

Construction	Aluminum body and trim ring (environmental); plastic body and trim ring (indoor); polycarbonate bubble (indoor and environmental)
Finish	
Indoor	White, RAL 9003
Outdoor	RAL 7047
Pan/Tilt Adjustment	Manual
Pan	370°
Tilt	90°
Rotate	355°
Unit Weight	0.61 kg (1.34 lb)
Shipping Weight	0.81 kg (1.79 lb)

## NETWORK

Supported Protocols	TCP/IP, UDP/IP (unicast, multicast IGMP), ICMP, IPv4, IPv6, SNMP v2c/v3, HTTP, HTTPS, SSL, SSH, SMTP, FTP, RTSP, UPnP, DNS, NTP, RTP, RTCP, LDAP (client), QoS, GB28181
Users	
Unicast	1 administrator, up to 4 viewers
Multicast	Unlimited users H.264
Security Access	Multiple user access levels with password protection

## INTEGRATION

Video Management	VideoXpert; Endura 2.0 (or later); Digital Sentry 7.3 (or later); Third-party VMS through Pelco API, ONVIF Profile S, and ONVIF Profile G
Mobile Application	Pelco Mobile
Analytics	Simple motion detection and camera sabotage detection
Local Storage	Capture 1-, 5- or 10-second video clips on camera sabotage, motion detection, or alarm input; record video continuously in the case of network outage with option to overwrite; access video through FTP protocol and ONVIF Profile G
Camera Discovery and Firmware	Discover cameras upgrade firmware upgrade using the Pelco Device Utility 2 version 2.2 or later; or Pelco Utilities
Web Browser Support	Microsoft® Internet Explorer® 9.0, Apple® Safari® 7.0.6, Mozilla® Firefox® 31.0, Google® Chrome™ 37.0.2062.124 m and later
Multilingual User Interface	English, French, German, Italian, Portuguese, Arabic, Russian, Spanish, Turkish, Korean, Simplified Chinese

# TECHNICAL SPECIFICATIONS

## SYSTEM MODEL NUMBERS\*

Back Box	Resolution	Lens	Model Number	Description
Surface	1 MPx	3 to 10.5 mm	IMP121-1ES	Sarix Pro Environmental Dome
	1 MPx	3 to 10.5 mm	IMP121-1IS	Sarix Pro Indoor Dome
	1 MPx	3 to 10.5 mm	IMP121-1RS	Sarix Pro Environment IR Dome
	2 MPx	3 to 10.5 mm	IMP221-1ES	Sarix Pro Environmental Dome
	2 MPx	3 to 10.5 mm	IMP221-1IS	Sarix Pro Indoor Dome
	2 MPx	3 to 10.5mm	IMP221-1RS	Sarix Pro Environment IR Dome
	3 MPx	3 to 10.5 mm	IMP321-1ES	Sarix Pro Environmental Dome
	3 MPx	3 to 10.5 mm	IMP321-1IS	Sarix Pro Indoor Dome
	3 MPx	3 to 10.5 mm	IMP321-1RS	Sarix Pro Environment IR Dome
	5 MPx	3 to 10.5 mm	IMP521-1ES	Sarix Pro Environmental Dome
	5 MPx	3 to 10.5 mm	IMP521-1IS	Sarix Pro Indoor Dome
	5 MPx	3 to 10.5 mm	IMP521-1RS	Sarix Pro Environment IR Dome

\*System options contain a back box/mount, camera, and clear dome.

## CERTIFICATIONS\*

- CE - EN 55022 (Class A), EN 50130-4, EN 60950-1
- FCC (Class A) - 47 CFR Part 15
- UL and cUL Listed - UL 60950-1, CAN/CSA-C22.2 No. 60950-1-07
- UL/IEC 60950-22
- ICES-003 (Class A)
- RCM
- KC
- ONVIF Profile S and Profile G conformant

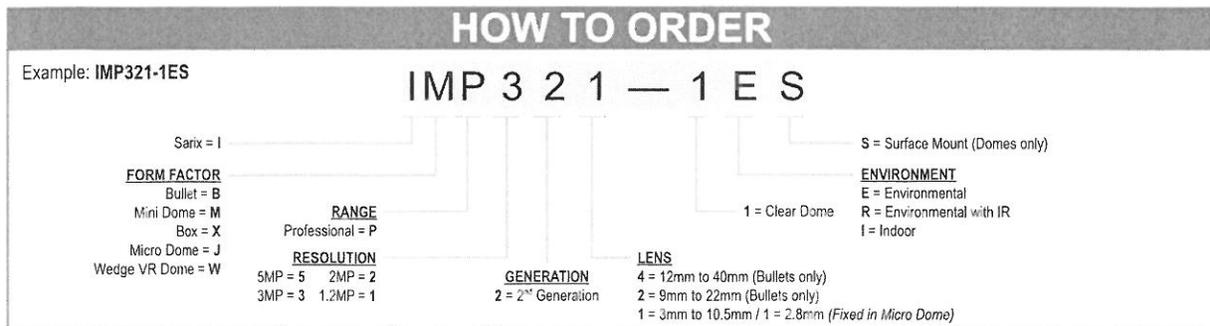
\*At the time of this publication, certifications are pending. Consult the factory or [www.pelco.com](http://www.pelco.com) for the current status of certifications.

## OPTIONAL ACCESSORIES

IMPEBAP	4S electrical box adapter
IMPLD2-0I	Smoked lower dome (indoor)
IMPLD2-0ER	Smoked lower dome (environmental)

## RECOMMENDED MOUNTS

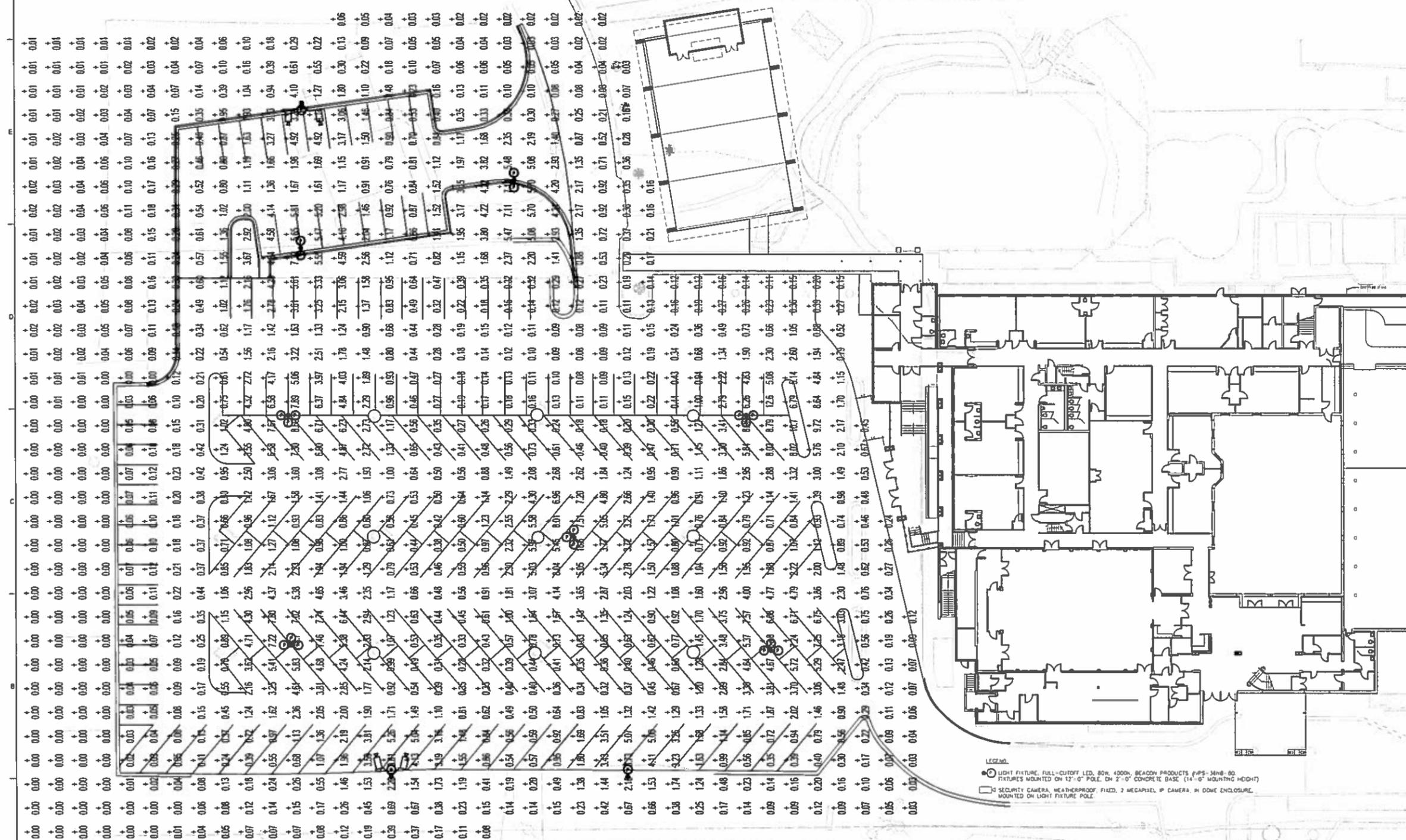
IMPICM-1I	In-ceiling mount, for use with the indoor models
IMPICM-1ER	In-ceiling mount, for use with the environmental models
IMPPM-1I	Pendant adapter, for indoor models
IMPPM-1ER	Pendant adapter, for environmental models
IMPPMB-1I	Wall mount bracket for indoor models
WMVE-SR	Wall mount arm, 1.5 in. NPT, outdoor, RAL 7047
WMVE-SW	Wall mount arm, 1.5 in. NPT, indoor, RAL 9003



## Pelco by Schneider Electric

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**USA & Canada** Tel (800) 289-9100 Fax (800) 289-9150  
**International** Tel +1 (559) 292-1981 Fax +1 (559) 348-1120  
[www.pelco.com](http://www.pelco.com) [www.pelco.com/community](http://www.pelco.com/community)

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LEGEND  
○ LIGHT FIXTURE, FULL-CUTOFF LED, 80W, 4000K, BEACON PRODUCTS (FPS-SMB-80)  
FIXTURES MOUNTED ON 12'-0" POLE, ON 2'-0" CONCRETE BASE (14'-0" MOUNTING HEIGHT)  
□ SECURITY CAMERA, WEATHERPROOF, FIXED, 2 MEGAPIXEL IP CAMERA, IN DOME ENCLOSURE,  
MOUNTED ON LIGHT FIXTURE POLE

1 PLAN  
SITE PLAN - ELECTRICAL  
E1.10

RAY ENGINEERING GROUP, LLC  
2180 ALVERGASSE CENTER, SUITE 300  
BIRMINGHAM, AL 35244  
PH 205-414-7600 FAX 205-414-7610  
WWW.RAYENGINEERING.COM

St. Luke's Episcopal Church Renovation & Addition

OWNER  
OWNER

PROJECT ADDRESS  
3735 Montrose Rd  
Mountain Brook, AL 35213

PROJECT STATUS  
ISSUED

ISSUE DATE

REVISIONS  
No. Description Date

DRAWING TITLE  
ELECTRICAL  
SITE PLAN

DRAWN BY: DIL  
CHECKED BY: DMH

PROJECT  
St. Luke's  
Episcopal  
Church  
Renovation &  
Addition

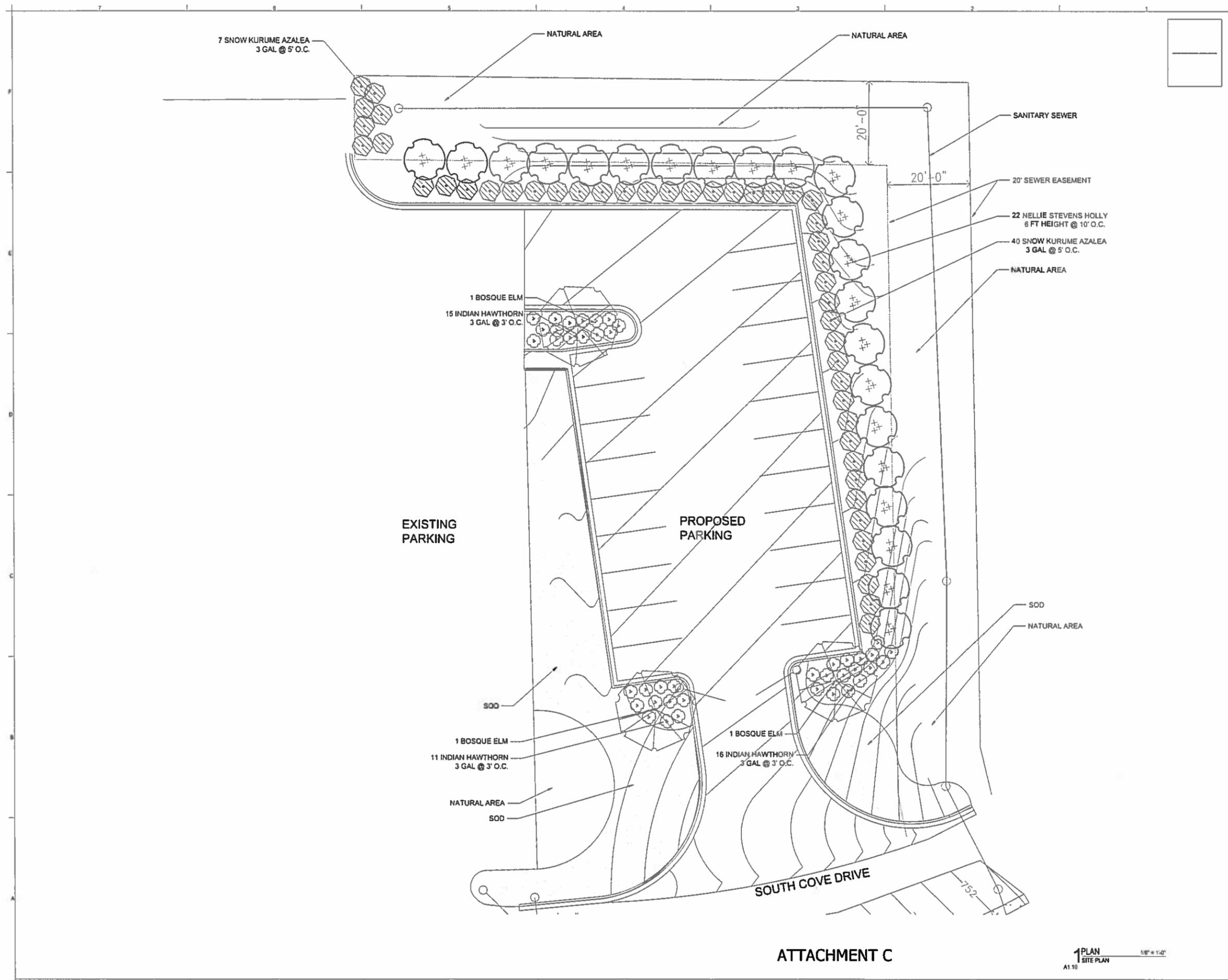
PROJECT NUMBER  
166009-00

DRAWING NO.  
E1.10

ATTACHMENT B

This Drawing is an instrument of service and is the sole property of the Architect. Any use without the written consent of the Architect is prohibited.

The Architect shall not have control or charge of and shall not be responsible for construction means and methods, sequencing, submittal sequence, or procedures, or for safety precautions and programs in connection with the work, for the acts or omissions of the contractor, subcontractors or any other persons performing any of the work, in accordance with the contract documents.



St. Luke's Episcopal Church Renovation & Addition  
 OWNER: DYNWYER  
 PROJECT ADDRESS: 3736 Montrose Rd, Mountain Brook, AL 35213

PROJECT STATUS	ISSUED	09.29.16
ISSUE DATE		
REVISIONS	No.	Description
		Date

DRAWING TITLE  
**PARKING LOT  
 PLANTING PLAN**

DRAWN BY: AGS  
 CHECKED BY: AGS

PROJECT  
**St. Luke's  
 Episcopal  
 Church  
 Renovation &  
 Addition**

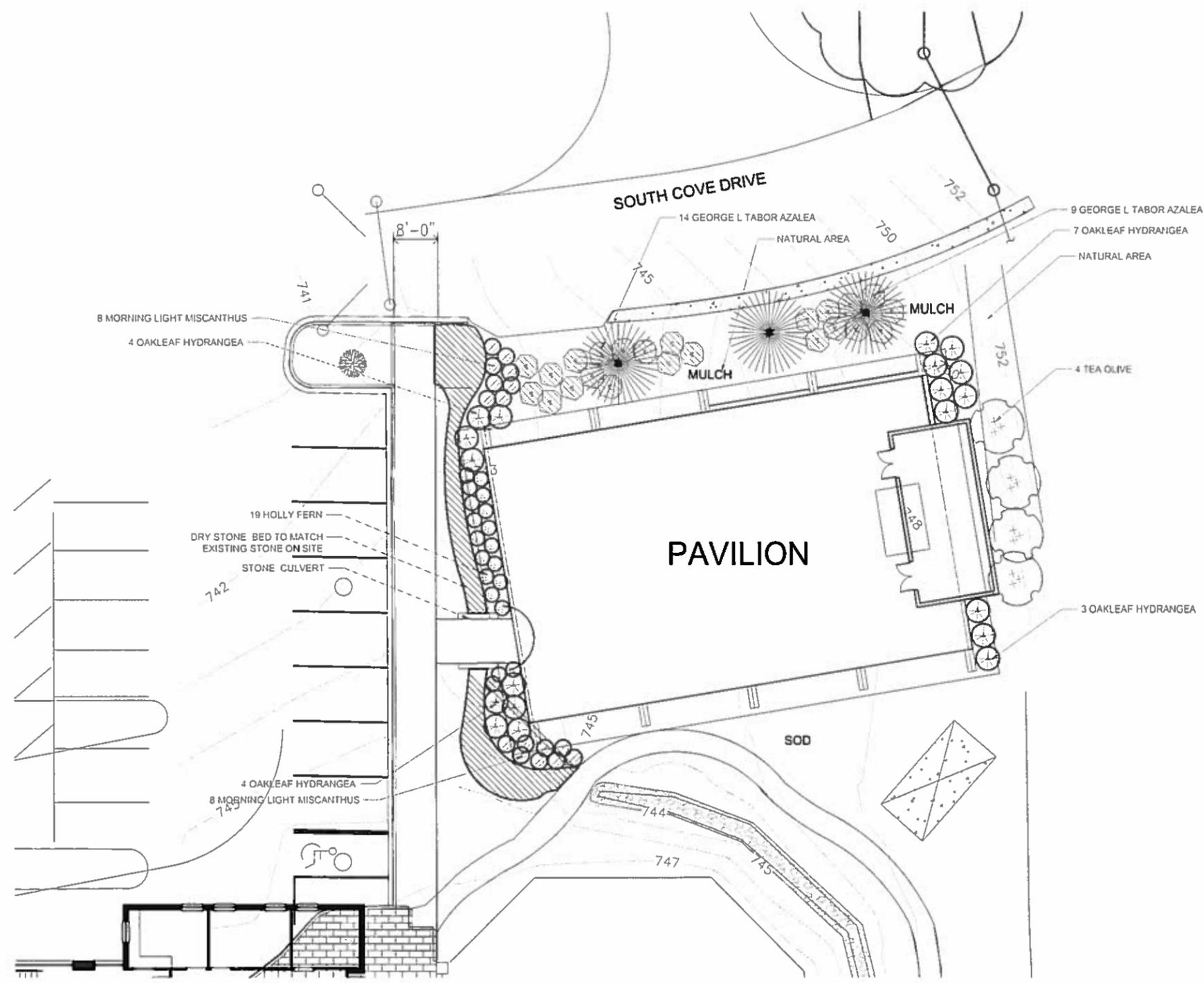
PROJECT NUMBER  
 16609-00  
 DRAWING NO.  
**L1.01**

**ATTACHMENT C**

**1 PLAN**  
 SITE PLAN  
 1/8" = 1'-0"  
 A1.10

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The Architect shall not have control or charge of and shall not be responsible for construction means and methods, sequencing, techniques, supervision, or procedures, or for safety precautions and programs in connection with the work, for the acts or omissions of the contractor, subcontractors or any other persons performing any of the work in accordance with the contract documents.



ATTACHMENT C

1 PLAN  
 1/8" = 1'-0"  
 1/4" = 1'-0" at Full Size 30"x42"

St. Luke's Episcopal Church Renovation & Addition  
 OWNER  
 PROJECT ADDRESS  
 3736 Montrose Rd  
 Mountain Brook, AL 35213

PROJECT STATUS	ISSUED -	09.21.16
ISSUE DATE		
REVISIONS	No.	Description
		Date

DRAWING TITLE  
**PAVILION**  
 PLANTING PLAN

DRAWN BY: AGS  
 CHECKED BY: AGS

PROJECT  
**St. Luke's  
 Episcopal  
 Church  
 Renovation &  
 Addition**

PROJECT NUMBER  
 16609-00  
 DRAWING NO.  
**L1.02**

# **Storm Drainage Calculations**

**For**

## **St. Luke's Episcopal Church Mountain Brook, AL**

**September 2016**



**Project Number: 102-16-036**

**ATTACHMENT E**

## Drainage Narrative

The site is located on the north side of Montrose Road and west of South Cove Drive in Mountain Brook, Alabama. The church site is approximately 6.3 acres in size and drains north to an existing drainage swale located just north of the church property. The existing church property consists of mostly impervious areas including the church facility, parking, and a few existing residential properties.

The proposed changes within the development include a church expansion, new pavilion, proposed parking addition, removal of residential homes, and a proposed detention facility.

The drainage study consists of two drainage basins (see attached drainage basin maps). There is one basin (west) that includes the majority of the church parking and building areas. The second drainage basin (east) drains through the church property and consists of mostly offsite runoff. These two drainage basins combine and discharge to an existing swale located just north of the church property. Pre developed vs. post developed storm flows were analyzed at this location.

Stormwater will be captured by the proposed detention facility located south of the proposed pavilion. This detention pond is designed to prevent increases in storm flows (see attached post developed basin map). Post development runoff is designed to be less than the pre development runoff. The detention facility has an outlet control structure to detain storm flows.

Flow summary:

Storm Event	Analysis @ Swale located along Northern Property Line	
	Pre-Developed Storm flows (cfs)	Post-Developed Storm flows (cfs) (Including detention)
2yr	26.1	26.0
5yr	33.4	33.4
10yr	40.2	40.2
25yr	50.7	50.1
50yr	59.7	58.8
100yr	69.4	67.8

\*Additional Hydrograph information is included in the following report.

## **Methodology**

The storm drainage systems were sized by using the SCS Method. Storm systems were sized with the aid of *Hydraflow Hydrographs* Extension for AutoCAD Civil 3D 2013.

The detention system was sized based on the 24-hour storm events and includes detention routing for the required 100-year event.

**Pre and Post Developed  
Storm Drainage  
Basin Maps**

## **2-100 Year Hydrographs**

# Hydrograph Return Period Recap

Hydroflow Hydrographs Extension for AutoCAD® Civil 3D® 2013 by Autodesk, Inc. v10

Hyd. No.	Hydrograph type (origin)	Inflow hyd(s)	Peak Outflow (cfs)								Hydrograph Description
			1-yr	2-yr	3-yr	5-yr	10-yr	25-yr	50-yr	100-yr	
1	SCS Runoff	-----	14.35	16.74	-----	21.14	25.22	31.48	36.81	42.55	E1 - Existing (West)
2	SCS Runoff	-----	7.761	9.320	-----	12.25	14.99	19.24	22.87	26.79	E2 - Existing (East)
4	SCS Runoff	-----	14.35	16.74	-----	21.14	25.22	31.48	36.81	42.55	B1 - Proposed (West)
5	SCS Runoff	-----	7.761	9.320	-----	12.25	14.99	19.24	22.87	26.79	B2 - Proposed (East)
6	Reservoir	5	7.761	9.313	-----	12.23	14.98	18.94	22.39	25.57	Route DP
8	Combine	1, 2,	22.11	26.06	-----	33.39	40.22	50.73	59.68	69.35	Combine Existing @ Northern Propert
9	Combine	4, 6,	22.09	26.04	-----	33.38	40.21	50.16	58.81	67.82	Combined Post @ Northern Property

# Hydrograph Summary Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2013 by Autodesk, Inc. v10

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	16.74	1	732	72,461	-----	-----	-----	E1 - Existing (West)
2	SCS Runoff	9.320	1	732	39,575	-----	-----	-----	E2 - Existing (East)
4	SCS Runoff	16.74	1	732	72,461	-----	-----	-----	B1 - Proposed (West)
5	SCS Runoff	9.320	1	732	39,575	-----	-----	-----	B2 - Proposed (East)
6	Reservoir	9.313	1	733	39,574	5	748.84	744	Route DP
8	Combine	26.06	1	732	112,036	1, 2,	-----	-----	Combine Existing @ Northern Propert
9	Combine	26.04	1	732	112,035	4, 6,	-----	-----	Combined Post @ Northern Property
H:\102-16 JOBS\102-16-036\Calculations\Drainage\102-16-036-Final.gpw								Friday, 09 / 23 / 2016	

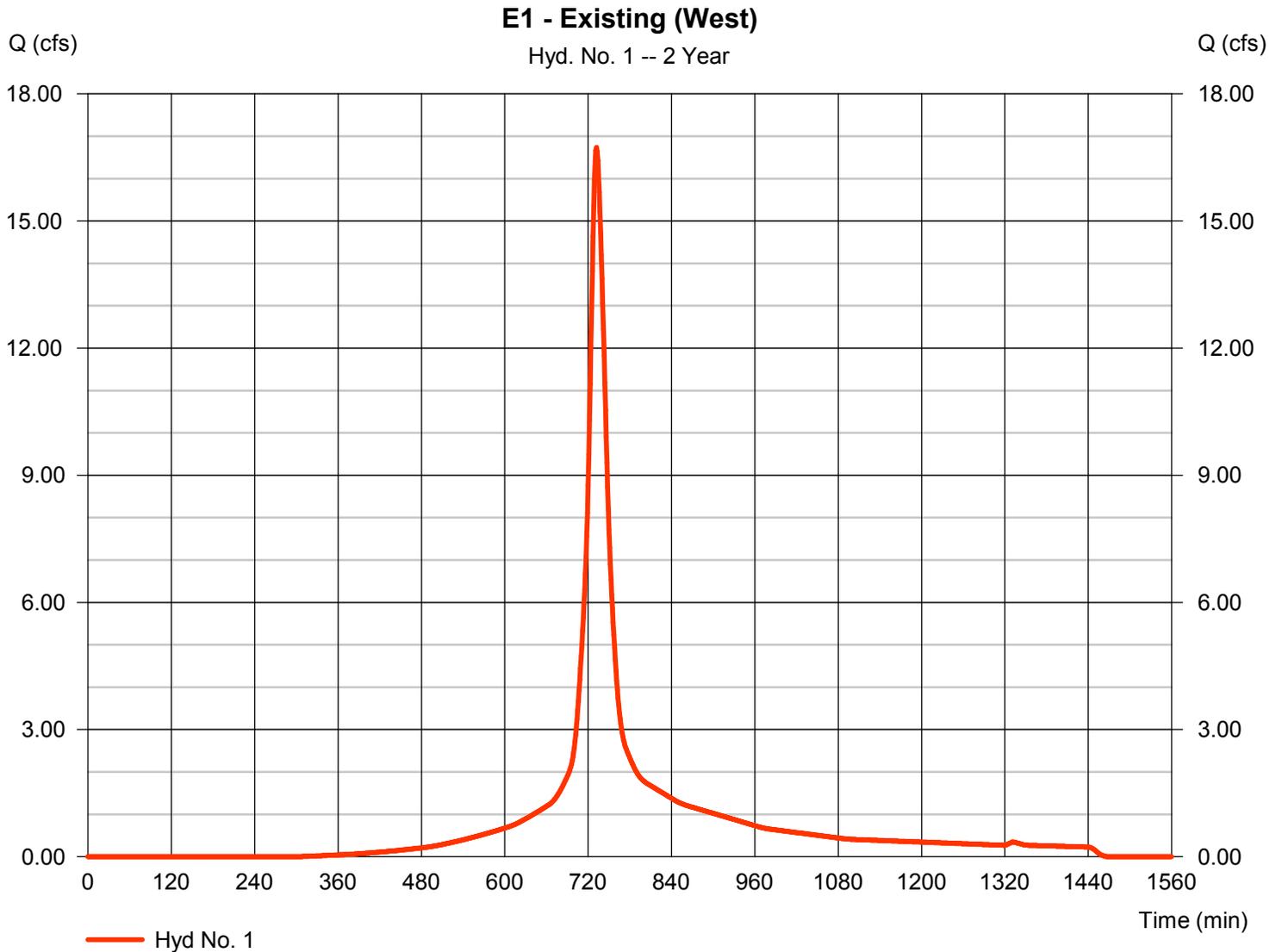
# Hydrograph Report

## Hyd. No. 1

E1 - Existing (West)

Hydrograph type	= SCS Runoff	Peak discharge	= 16.74 cfs
Storm frequency	= 2 yrs	Time to peak	= 732 min
Time interval	= 1 min	Hyd. volume	= 72,461 cuft
Drainage area	= 6.720 ac	Curve number	= 90*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 18.30 min
Total precip.	= 4.09 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

\* Composite (Area/CN) = [(3.750 x 98) + (2.970 x 79)] / 6.720



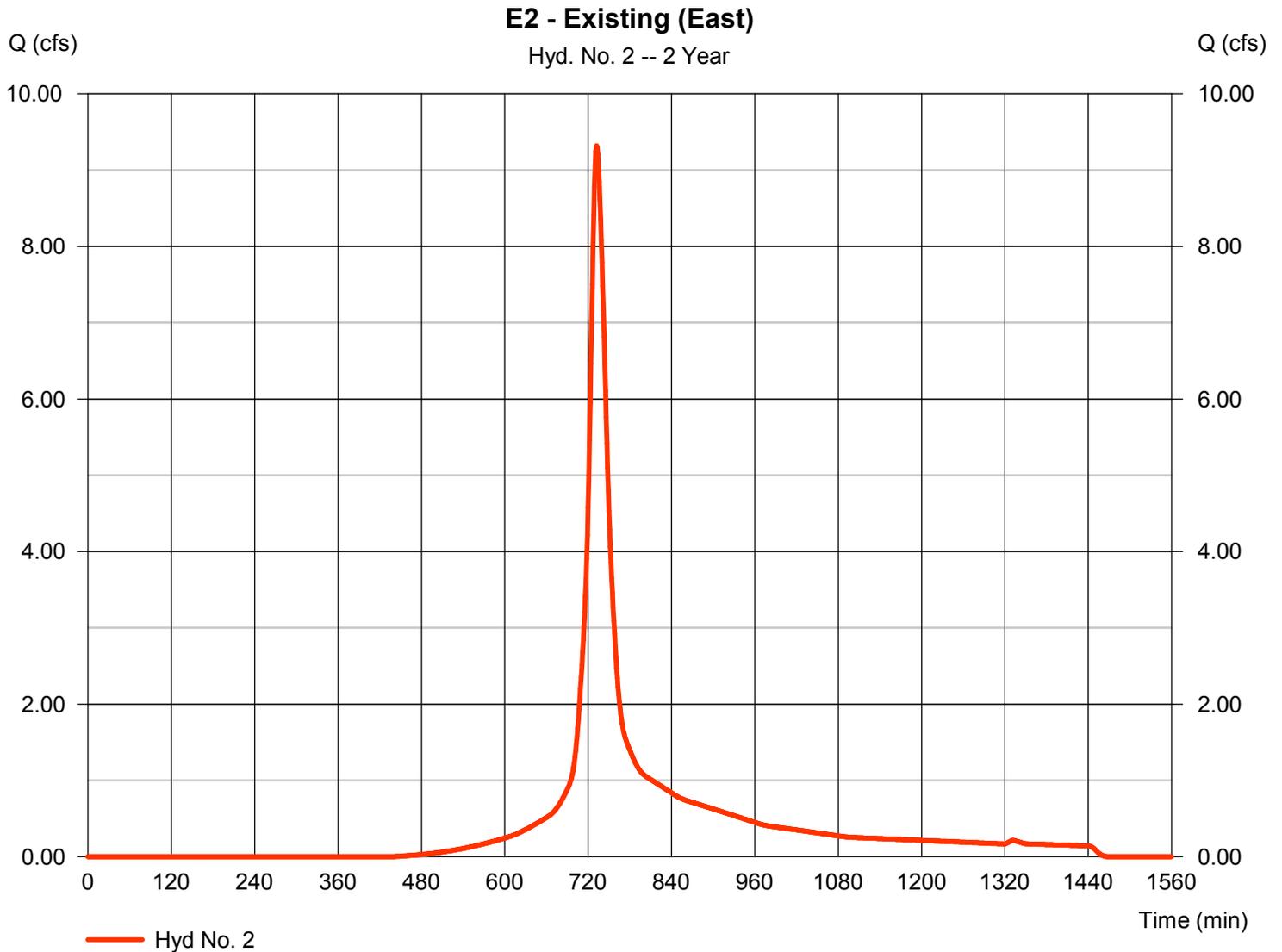
# Hydrograph Report

## Hyd. No. 2

E2 - Existing (East)

Hydrograph type	= SCS Runoff	Peak discharge	= 9.320 cfs
Storm frequency	= 2 yrs	Time to peak	= 732 min
Time interval	= 1 min	Hyd. volume	= 39,575 cuft
Drainage area	= 4.500 ac	Curve number	= 84*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 18.30 min
Total precip.	= 4.09 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

\* Composite (Area/CN) = [(1.220 x 98) + (3.280 x 79)] / 4.500



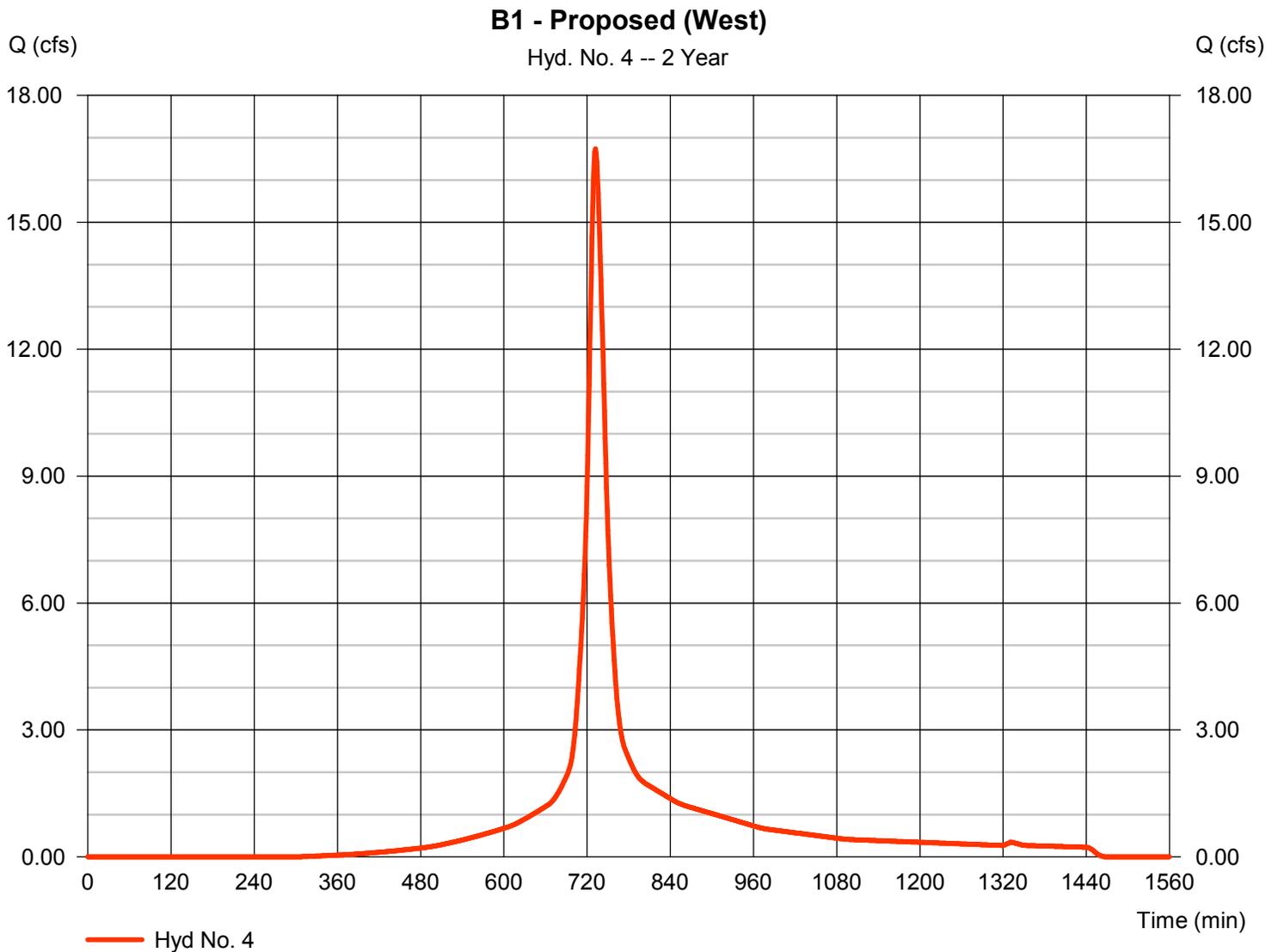
# Hydrograph Report

## Hyd. No. 4

B1 - Proposed (West)

Hydrograph type	= SCS Runoff	Peak discharge	= 16.74 cfs
Storm frequency	= 2 yrs	Time to peak	= 732 min
Time interval	= 1 min	Hyd. volume	= 72,461 cuft
Drainage area	= 6.720 ac	Curve number	= 90*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 18.30 min
Total precip.	= 4.09 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

\* Composite (Area/CN) = [(4.060 x 98) + (2.660 x 79)] / 6.720



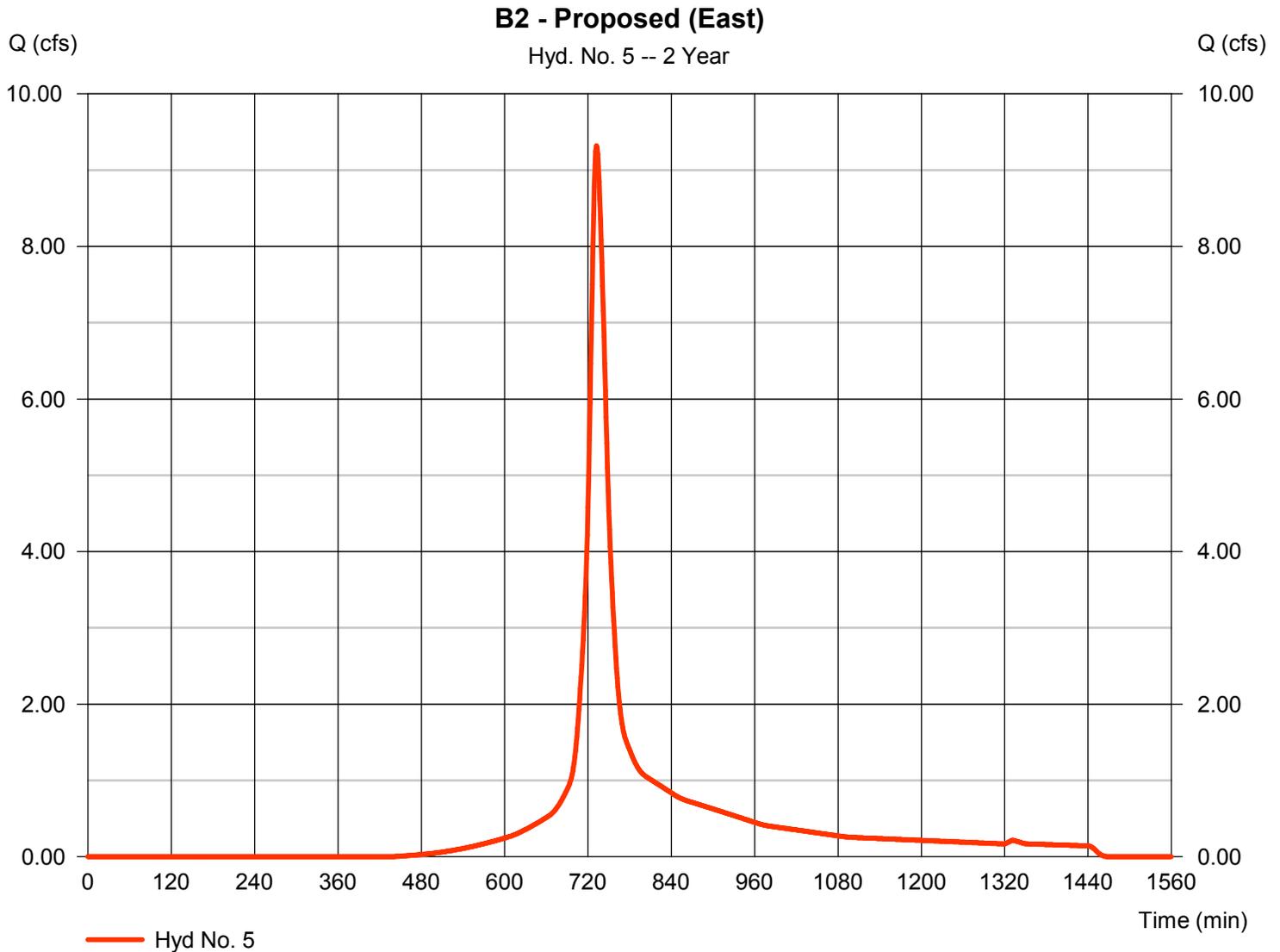
# Hydrograph Report

## Hyd. No. 5

B2 - Proposed (East)

Hydrograph type	= SCS Runoff	Peak discharge	= 9.320 cfs
Storm frequency	= 2 yrs	Time to peak	= 732 min
Time interval	= 1 min	Hyd. volume	= 39,575 cuft
Drainage area	= 4.500 ac	Curve number	= 84*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 18.30 min
Total precip.	= 4.09 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

\* Composite (Area/CN) = [(1.220 x 98) + (3.280 x 79)] / 4.500



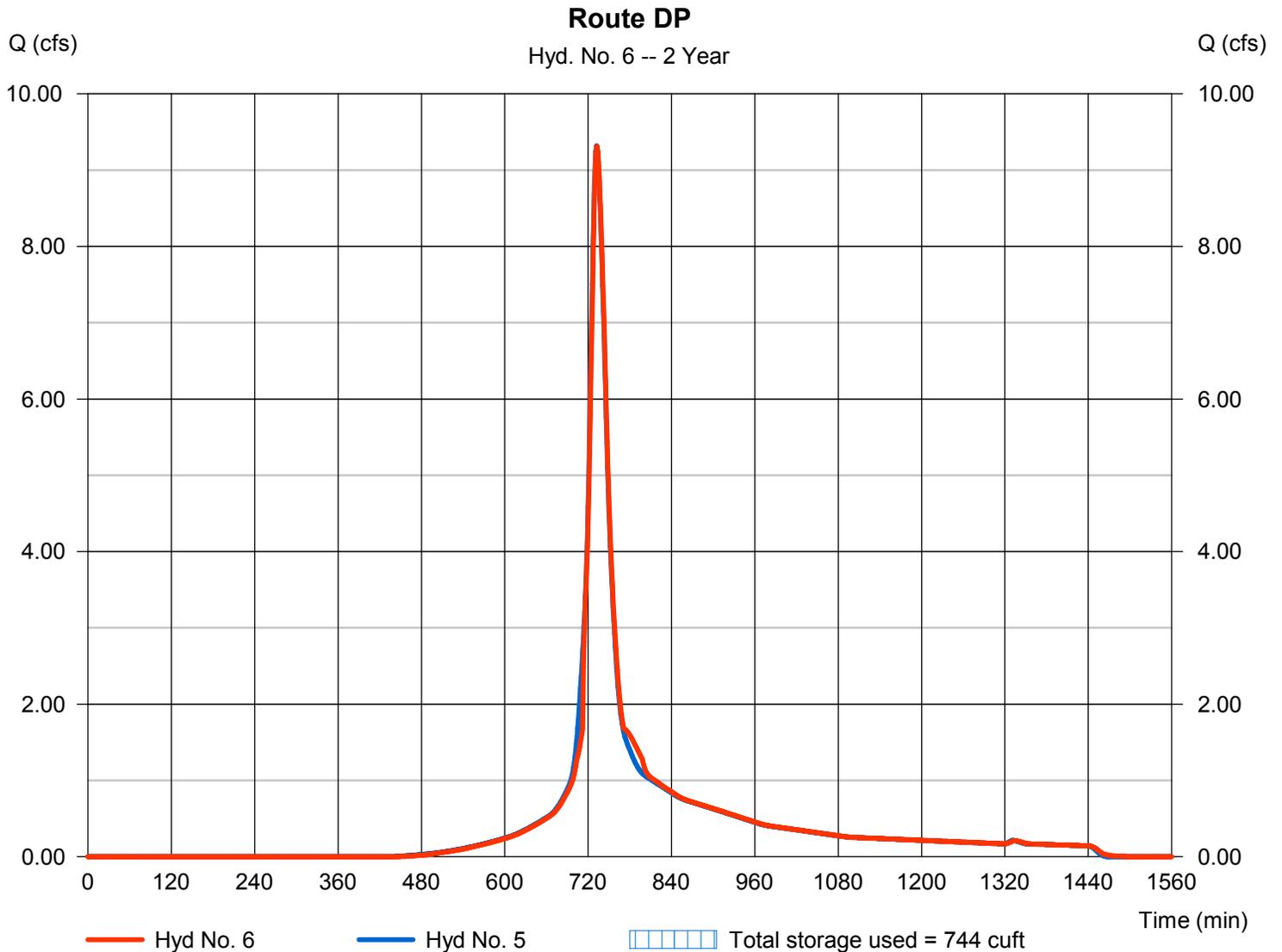
# Hydrograph Report

## Hyd. No. 6

Route DP

Hydrograph type	= Reservoir	Peak discharge	= 9.313 cfs
Storm frequency	= 2 yrs	Time to peak	= 733 min
Time interval	= 1 min	Hyd. volume	= 39,574 cuft
Inflow hyd. No.	= 5 - B2 - Proposed (East)	Max. Elevation	= 748.84 ft
Reservoir name	= Det. Pond	Max. Storage	= 744 cuft

Storage Indication method used.



# Pond Report

## Pond No. 1 - Det. Pond

### Pond Data

Contours -User-defined contour areas. Conic method used for volume calculation. Begining Elevation = 747.00 ft

### Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	747.00	64	0	0
1.00	748.00	450	228	228
2.00	749.00	800	617	844
3.00	750.00	1,500	1,132	1,976
4.00	751.00	2,475	1,967	3,943

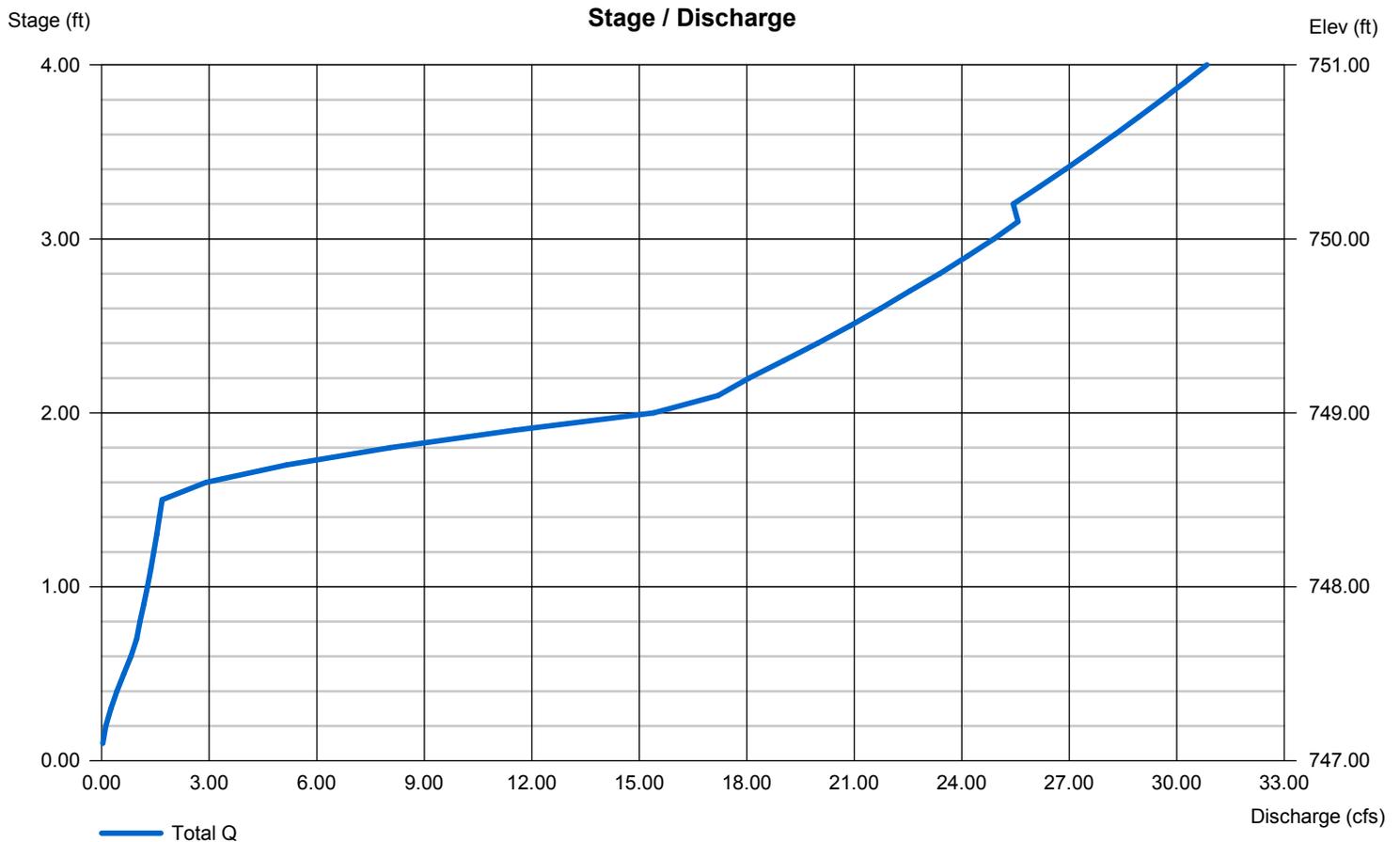
### Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 30.00	8.00	6.00	0.00
Span (in)	= 30.00	8.00	36.00	0.00
No. Barrels	= 1	1	4	0
Invert El. (ft)	= 747.00	747.00	748.50	0.00
Length (ft)	= 100.00	0.00	0.00	0.00
Slope (%)	= 1.00	0.00	0.00	n/a
N-Value	= .013	.013	.013	n/a
Orifice Coeff.	= 0.60	0.60	0.60	0.60
Multi-Stage	= n/a	Yes	Yes	No

### Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	Inactive	0.00	0.00	0.00
Crest El. (ft)	= 0.00	0.00	0.00	0.00
Weir Coeff.	= 3.33	3.33	3.33	3.33
Weir Type	= Rect	---	---	---
Multi-Stage	= Yes	No	No	No
Exfil. (in/hr)	= 0.000 (by Wet area)			
TW Elev. (ft)	= 0.00			

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



# Hydrograph Report

## Hyd. No. 8

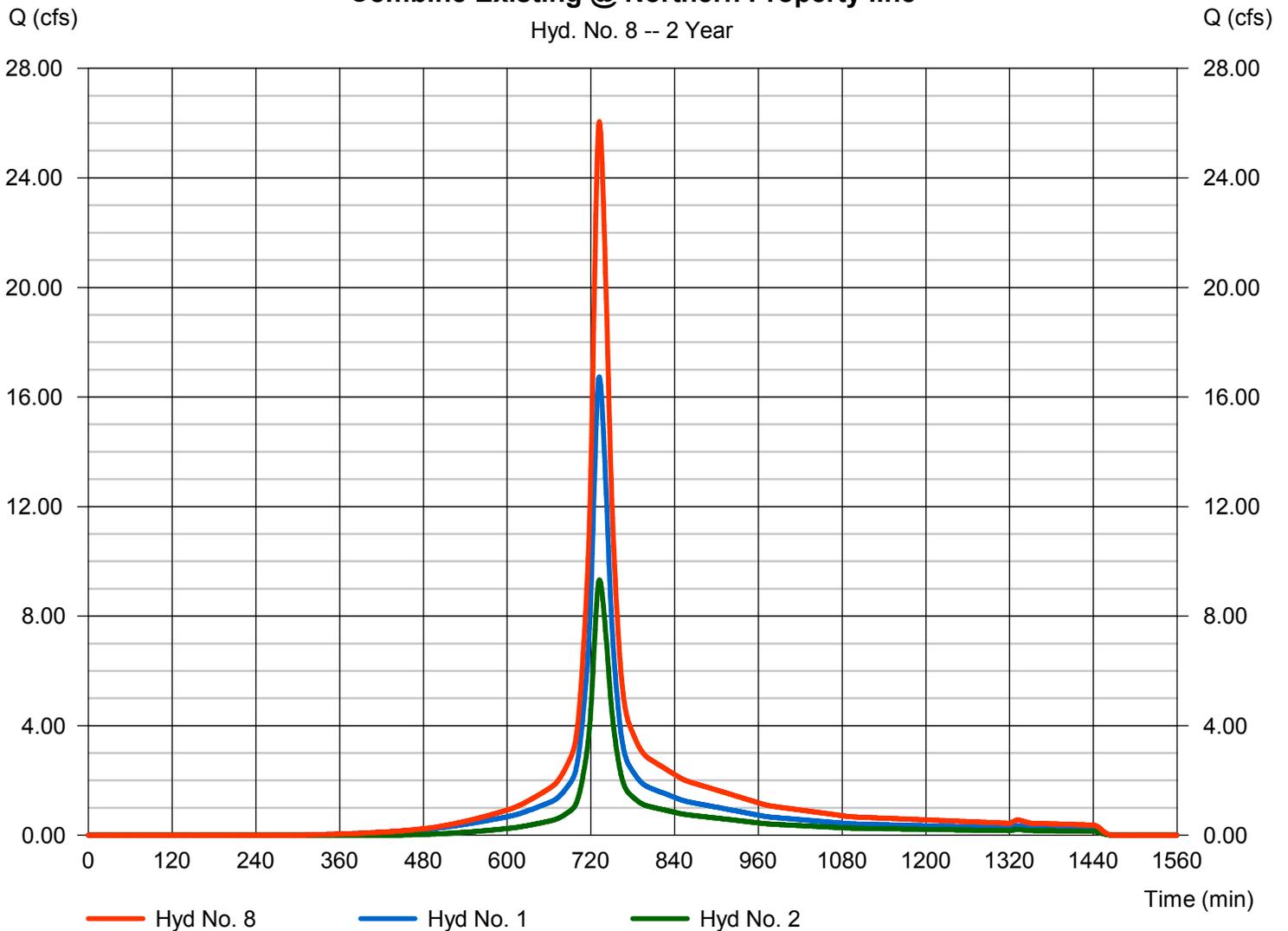
Combine Existing @ Northern Property line

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

Peak discharge = 26.06 cfs  
Time to peak = 732 min  
Hyd. volume = 112,036 cuft  
Contrib. drain. area = 11.220 ac

### Combine Existing @ Northern Property line

Hyd. No. 8 -- 2 Year



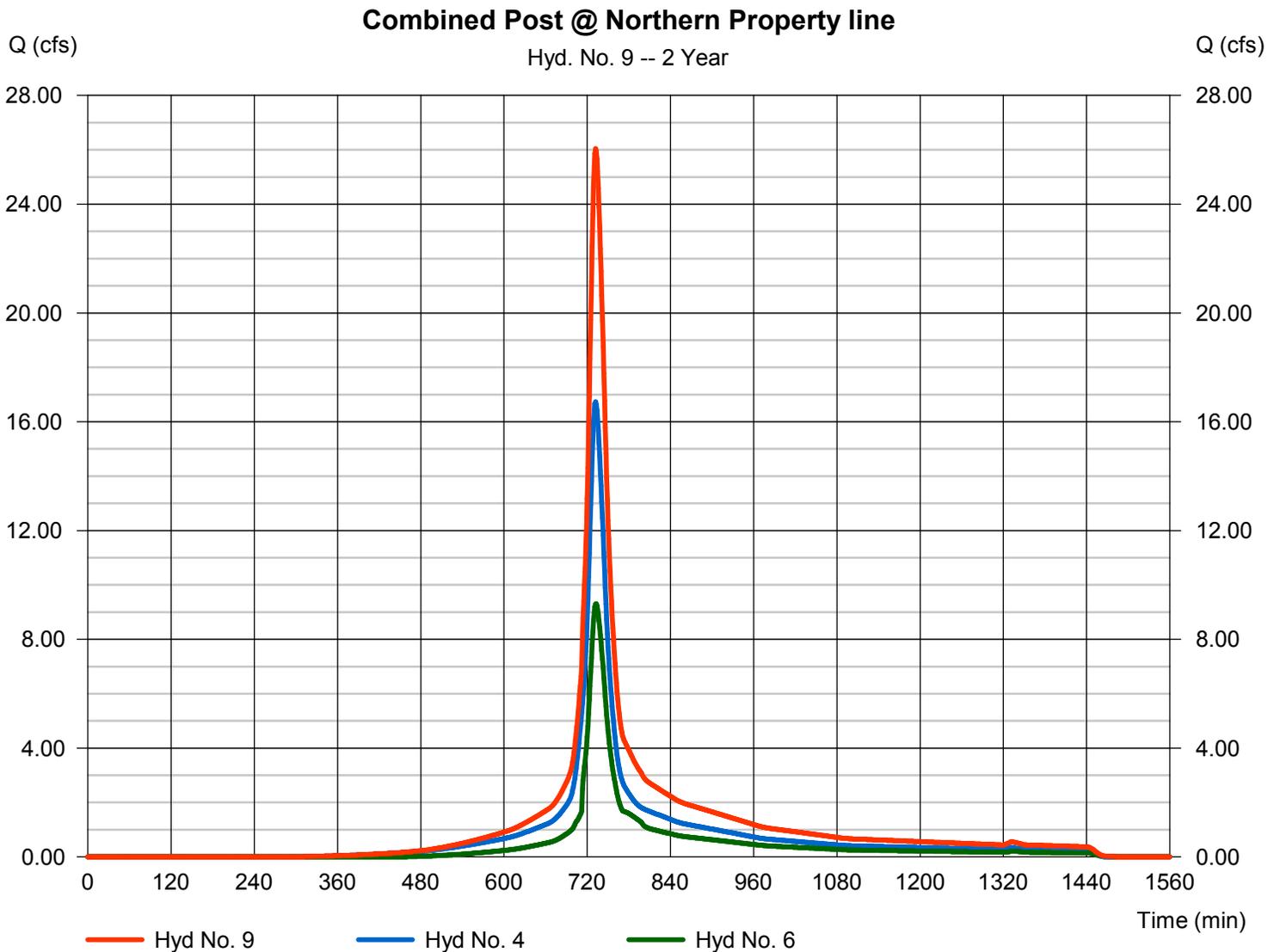
# Hydrograph Report

## Hyd. No. 9

Combined Post @ Northern Property line

Hydrograph type = Combine  
Storm frequency = 2 yrs  
Time interval = 1 min  
Inflow hyds. = 4, 6

Peak discharge = 26.04 cfs  
Time to peak = 732 min  
Hyd. volume = 112,035 cuft  
Contrib. drain. area = 6.720 ac



# Hydrograph Summary Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2013 by Autodesk, Inc. v10

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	21.14	1	732	92,553	-----	-----	-----	E1 - Existing (West)
2	SCS Runoff	12.25	1	732	52,225	-----	-----	-----	E2 - Existing (East)
4	SCS Runoff	21.14	1	732	92,553	-----	-----	-----	B1 - Proposed (West)
5	SCS Runoff	12.25	1	732	52,225	-----	-----	-----	B2 - Proposed (East)
6	Reservoir	12.23	1	732	52,224	5	748.92	794	Route DP
8	Combine	33.39	1	732	144,777	1, 2,	-----	-----	Combine Existing @ Northern Propert
9	Combine	33.38	1	732	144,777	4, 6,	-----	-----	Combined Post @ Northern Property
H:\102-16 JOBS\102-16-036\Calculations\Drainage\102-16-036-Final.gpw								Friday, 09 / 23 / 2016	

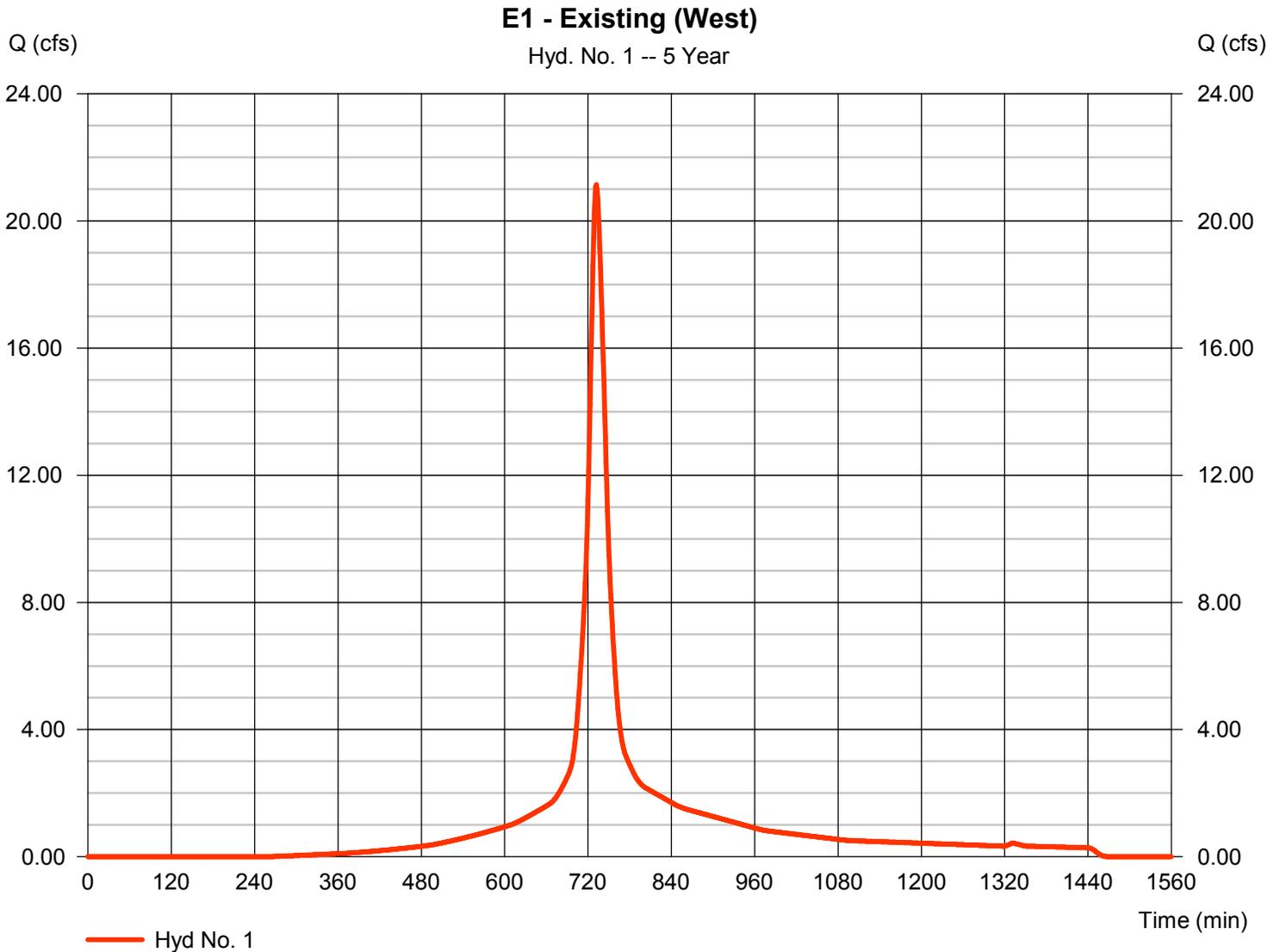
# Hydrograph Report

## Hyd. No. 1

E1 - Existing (West)

Hydrograph type	= SCS Runoff	Peak discharge	= 21.14 cfs
Storm frequency	= 5 yrs	Time to peak	= 732 min
Time interval	= 1 min	Hyd. volume	= 92,553 cuft
Drainage area	= 6.720 ac	Curve number	= 90*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 18.30 min
Total precip.	= 4.96 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

\* Composite (Area/CN) = [(3.750 x 98) + (2.970 x 79)] / 6.720



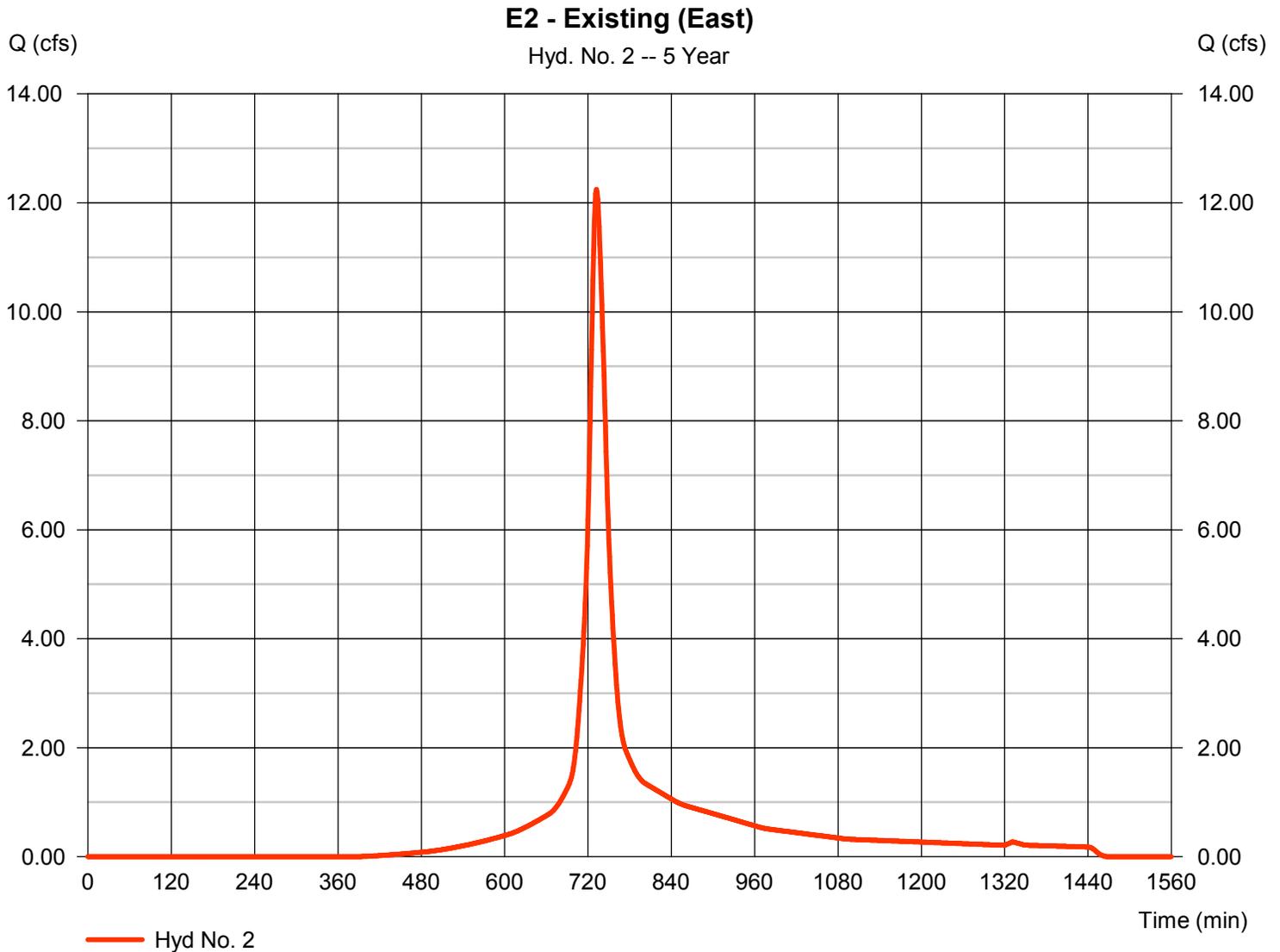
# Hydrograph Report

## Hyd. No. 2

E2 - Existing (East)

Hydrograph type	= SCS Runoff	Peak discharge	= 12.25 cfs
Storm frequency	= 5 yrs	Time to peak	= 732 min
Time interval	= 1 min	Hyd. volume	= 52,225 cuft
Drainage area	= 4.500 ac	Curve number	= 84*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 18.30 min
Total precip.	= 4.96 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

\* Composite (Area/CN) = [(1.220 x 98) + (3.280 x 79)] / 4.500



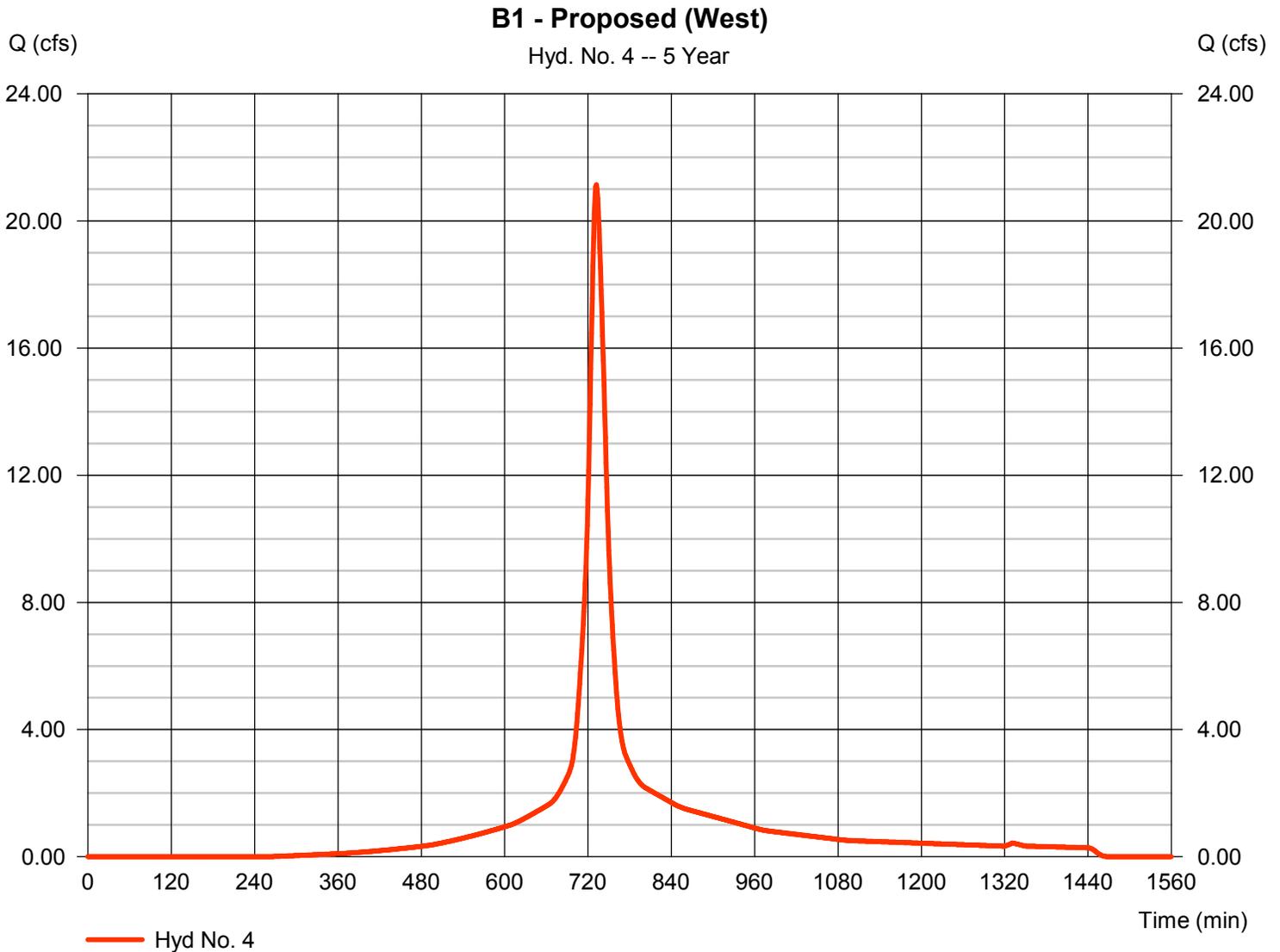
# Hydrograph Report

## Hyd. No. 4

B1 - Proposed (West)

Hydrograph type	= SCS Runoff	Peak discharge	= 21.14 cfs
Storm frequency	= 5 yrs	Time to peak	= 732 min
Time interval	= 1 min	Hyd. volume	= 92,553 cuft
Drainage area	= 6.720 ac	Curve number	= 90*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 18.30 min
Total precip.	= 4.96 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

\* Composite (Area/CN) = [(4.060 x 98) + (2.660 x 79)] / 6.720



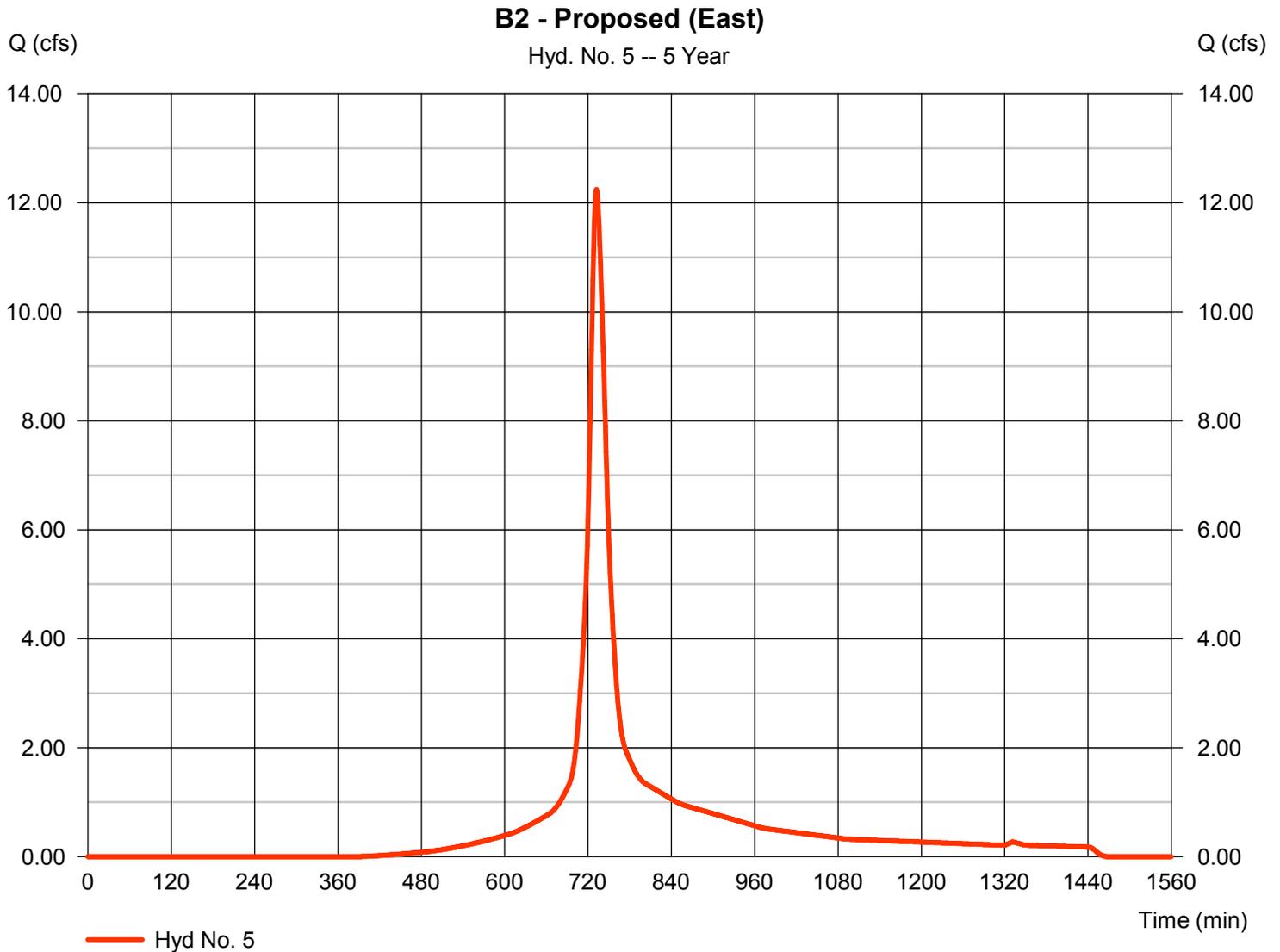
# Hydrograph Report

## Hyd. No. 5

B2 - Proposed (East)

Hydrograph type	= SCS Runoff	Peak discharge	= 12.25 cfs
Storm frequency	= 5 yrs	Time to peak	= 732 min
Time interval	= 1 min	Hyd. volume	= 52,225 cuft
Drainage area	= 4.500 ac	Curve number	= 84*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 18.30 min
Total precip.	= 4.96 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

\* Composite (Area/CN) = [(1.220 x 98) + (3.280 x 79)] / 4.500



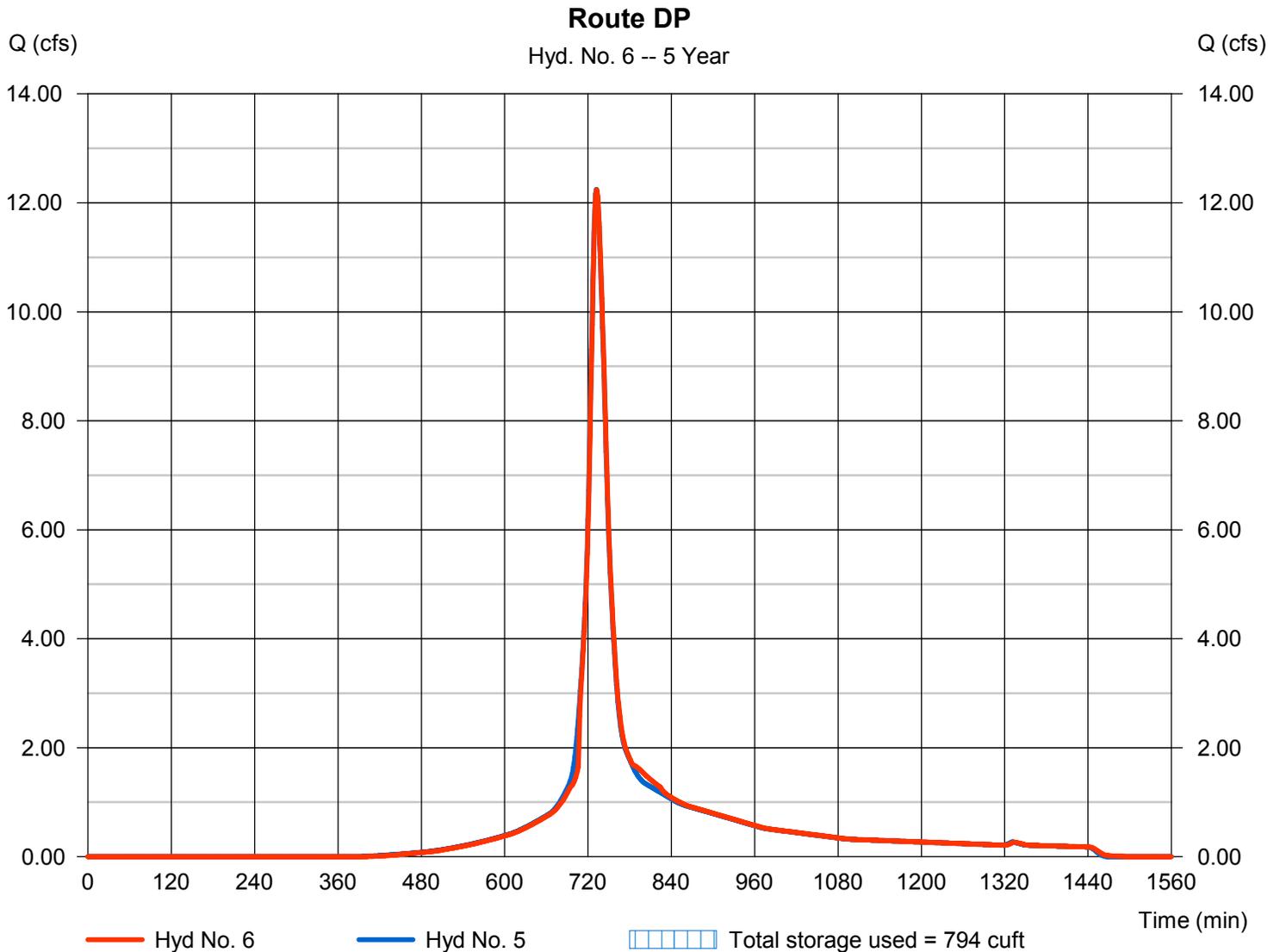
# Hydrograph Report

## Hyd. No. 6

Route DP

Hydrograph type	= Reservoir	Peak discharge	= 12.23 cfs
Storm frequency	= 5 yrs	Time to peak	= 732 min
Time interval	= 1 min	Hyd. volume	= 52,224 cuft
Inflow hyd. No.	= 5 - B2 - Proposed (East)	Max. Elevation	= 748.92 ft
Reservoir name	= Det. Pond	Max. Storage	= 794 cuft

Storage Indication method used.



# Hydrograph Report

## Hyd. No. 8

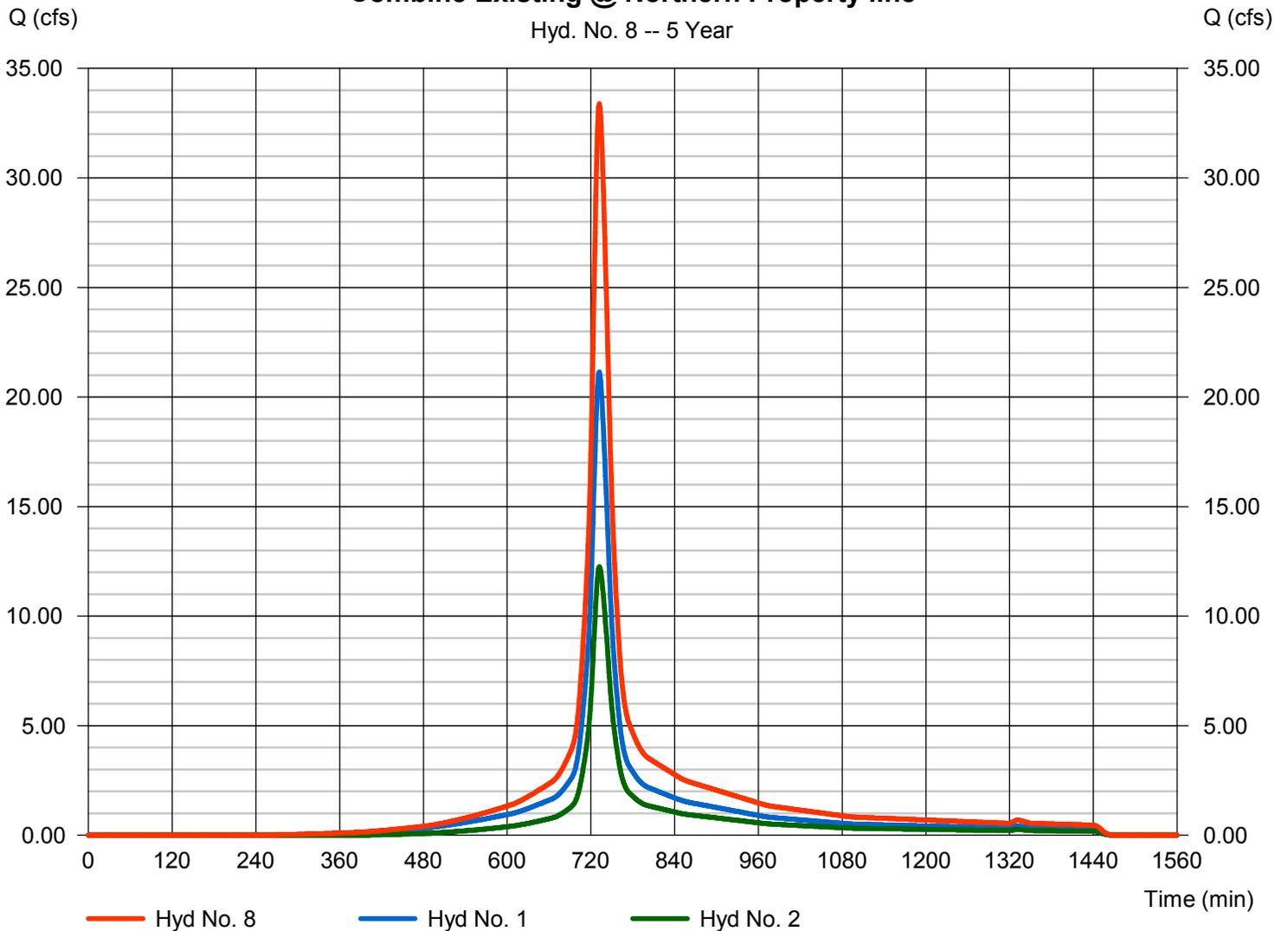
Combine Existing @ Northern Property line

Hydrograph type = Combine  
Storm frequency = 5 yrs  
Time interval = 1 min  
Inflow hyds. = 1, 2

Peak discharge = 33.39 cfs  
Time to peak = 732 min  
Hyd. volume = 144,777 cuft  
Contrib. drain. area = 11.220 ac

### Combine Existing @ Northern Property line

Hyd. No. 8 -- 5 Year



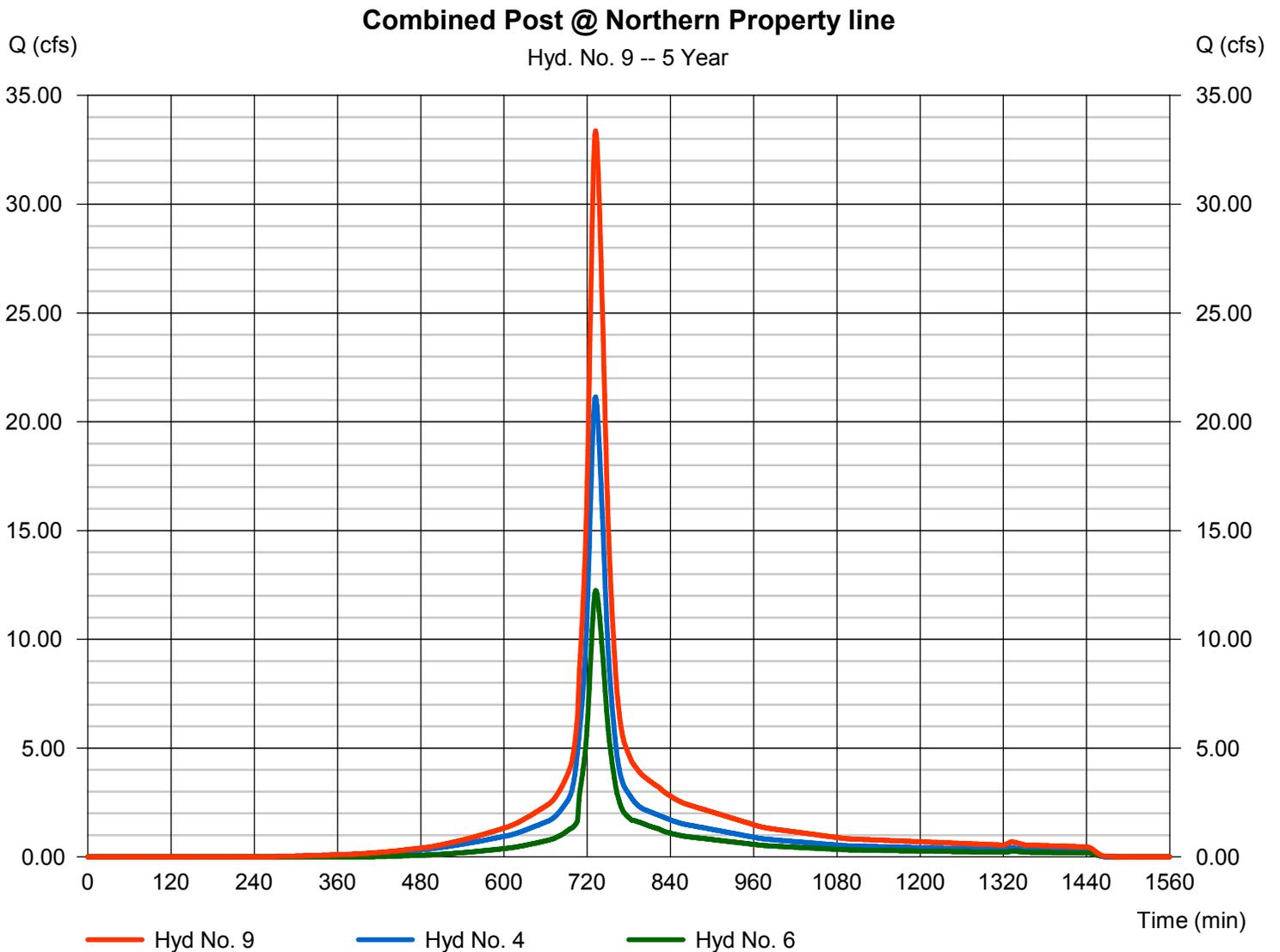
# Hydrograph Report

## Hyd. No. 9

Combined Post @ Northern Property line

Hydrograph type = Combine  
Storm frequency = 5 yrs  
Time interval = 1 min  
Inflow hyds. = 4, 6

Peak discharge = 33.38 cfs  
Time to peak = 732 min  
Hyd. volume = 144,777 cuft  
Contrib. drain. area = 6.720 ac



# Hydrograph Summary Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2013 by Autodesk, Inc. v10

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	25.22	1	732	111,468	-----	-----	-----	E1 - Existing (West)
2	SCS Runoff	14.99	1	732	64,302	-----	-----	-----	E2 - Existing (East)
4	SCS Runoff	25.22	1	732	111,468	-----	-----	-----	B1 - Proposed (West)
5	SCS Runoff	14.99	1	732	64,302	-----	-----	-----	B2 - Proposed (East)
6	Reservoir	14.98	1	732	64,301	5	748.99	838	Route DP
8	Combine	40.22	1	732	175,770	1, 2,	-----	-----	Combine Existing @ Northern Propert
9	Combine	40.21	1	732	175,769	4, 6,	-----	-----	Combined Post @ Northern Property
H:\102-16 JOBS\102-16-036\Calculations\Drainage\102-16-036 Final.gpw								Friday, 09 / 23 / 2016	

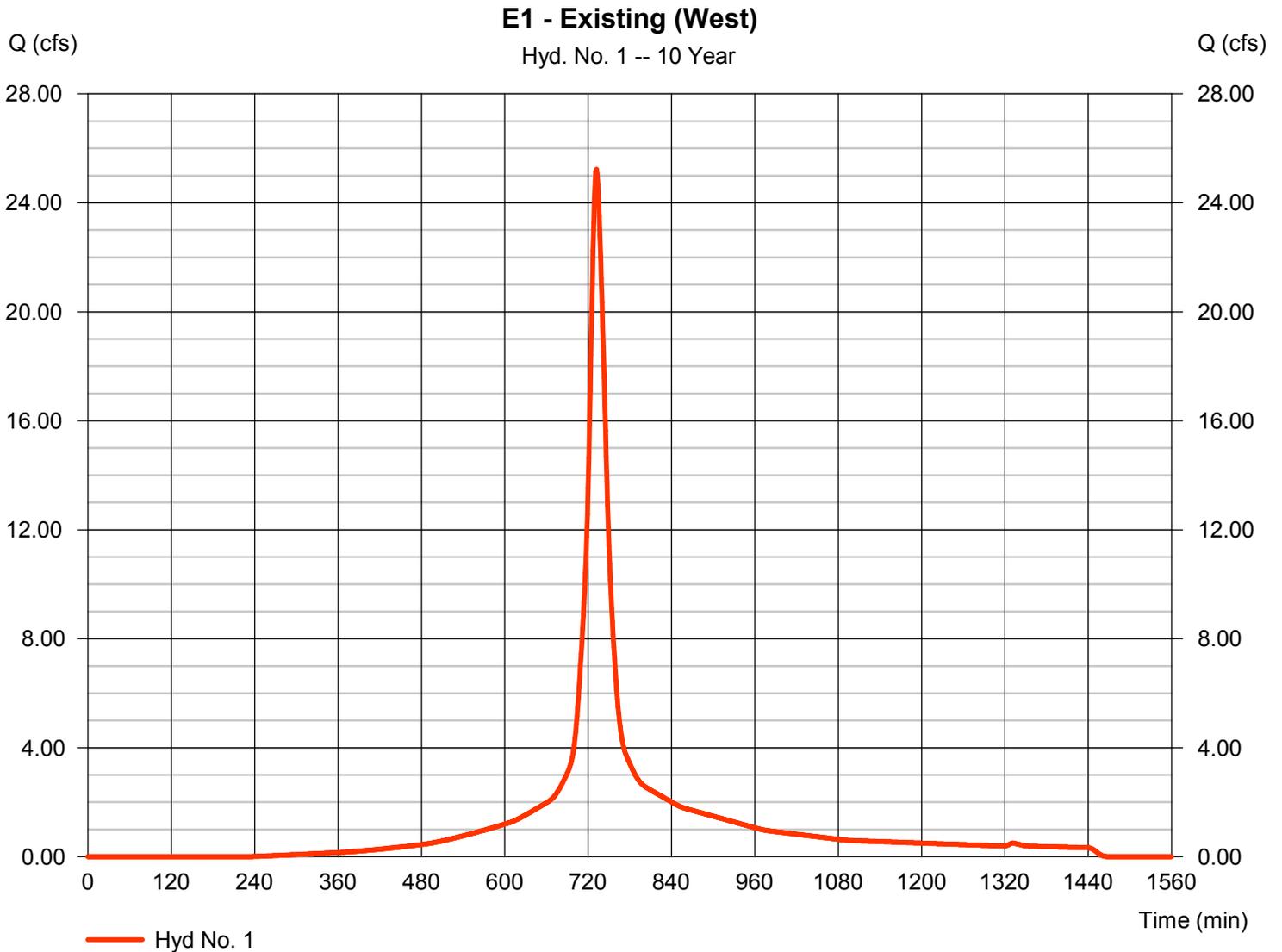
# Hydrograph Report

## Hyd. No. 1

E1 - Existing (West)

Hydrograph type	= SCS Runoff	Peak discharge	= 25.22 cfs
Storm frequency	= 10 yrs	Time to peak	= 732 min
Time interval	= 1 min	Hyd. volume	= 111,468 cuft
Drainage area	= 6.720 ac	Curve number	= 90*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 18.30 min
Total precip.	= 5.77 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

\* Composite (Area/CN) = [(3.750 x 98) + (2.970 x 79)] / 6.720



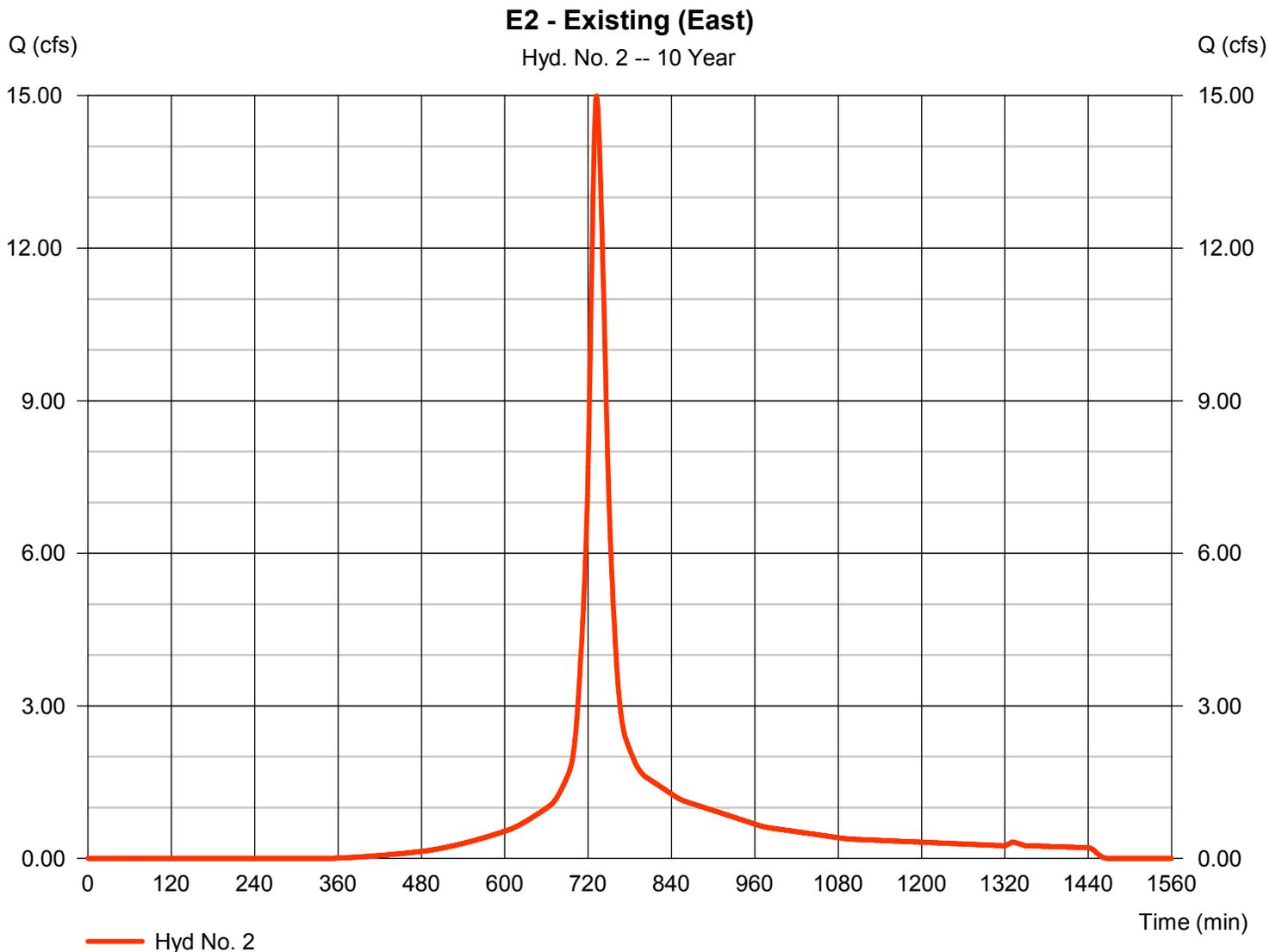
# Hydrograph Report

## Hyd. No. 2

E2 - Existing (East)

Hydrograph type	= SCS Runoff	Peak discharge	= 14.99 cfs
Storm frequency	= 10 yrs	Time to peak	= 732 min
Time interval	= 1 min	Hyd. volume	= 64,302 cuft
Drainage area	= 4.500 ac	Curve number	= 84*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 18.30 min
Total precip.	= 5.77 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

\* Composite (Area/CN) = [(1.220 x 98) + (3.280 x 79)] / 4.500



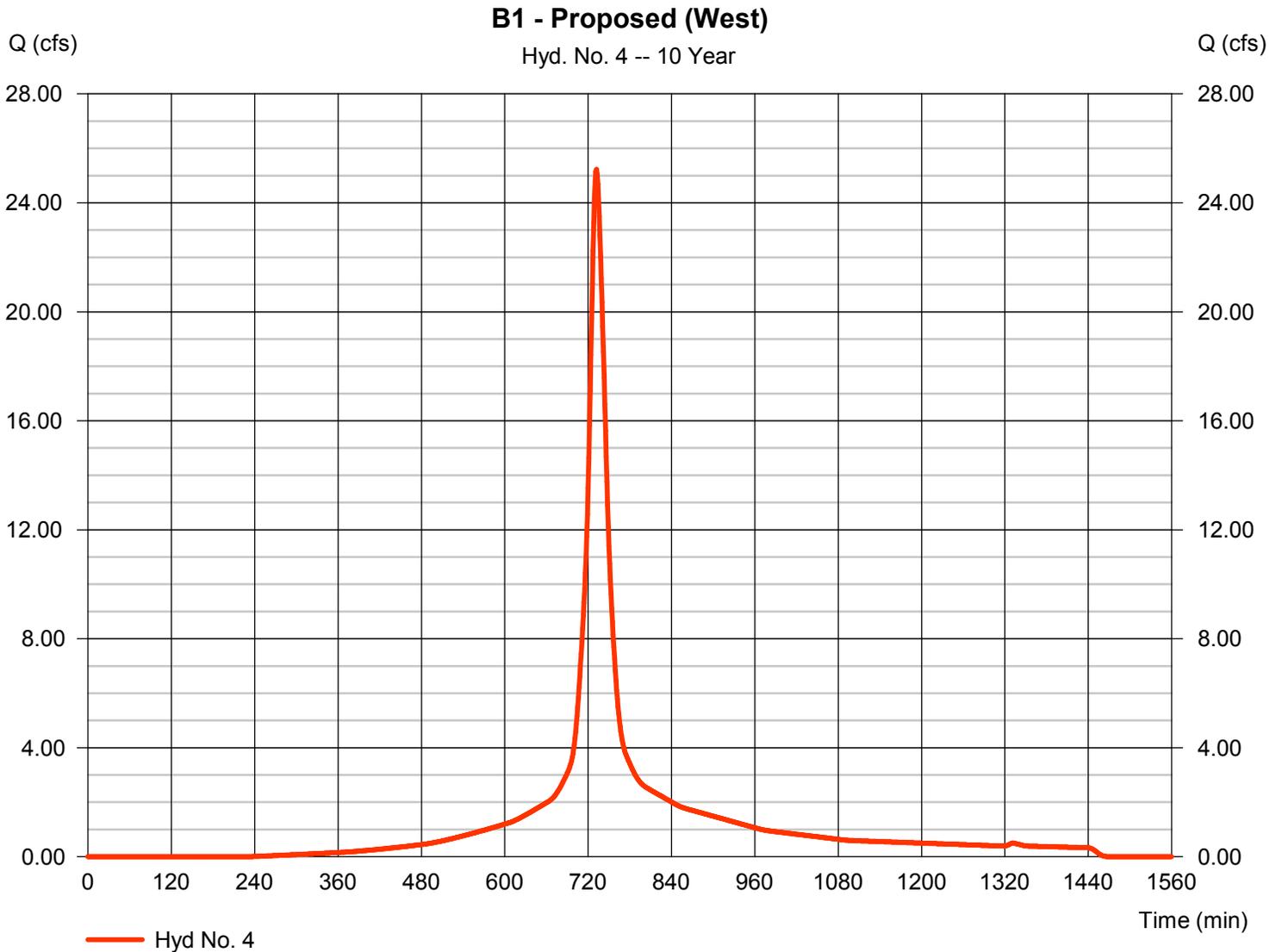
# Hydrograph Report

## Hyd. No. 4

B1 - Proposed (West)

Hydrograph type	= SCS Runoff	Peak discharge	= 25.22 cfs
Storm frequency	= 10 yrs	Time to peak	= 732 min
Time interval	= 1 min	Hyd. volume	= 111,468 cuft
Drainage area	= 6.720 ac	Curve number	= 90*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 18.30 min
Total precip.	= 5.77 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

\* Composite (Area/CN) = [(4.060 x 98) + (2.660 x 79)] / 6.720



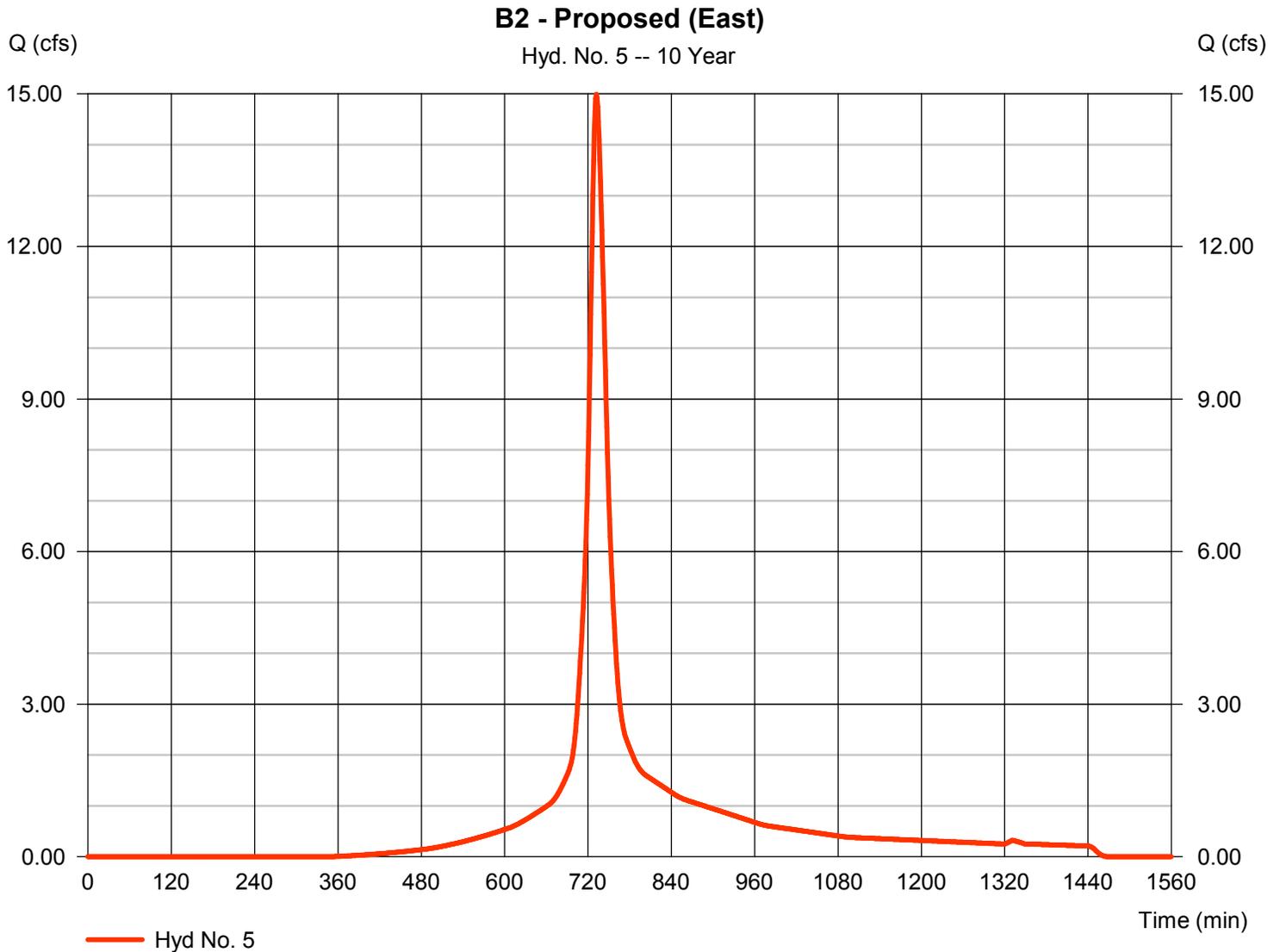
# Hydrograph Report

## Hyd. No. 5

B2 - Proposed (East)

Hydrograph type	= SCS Runoff	Peak discharge	= 14.99 cfs
Storm frequency	= 10 yrs	Time to peak	= 732 min
Time interval	= 1 min	Hyd. volume	= 64,302 cuft
Drainage area	= 4.500 ac	Curve number	= 84*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 18.30 min
Total precip.	= 5.77 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

\* Composite (Area/CN) = [(1.220 x 98) + (3.280 x 79)] / 4.500



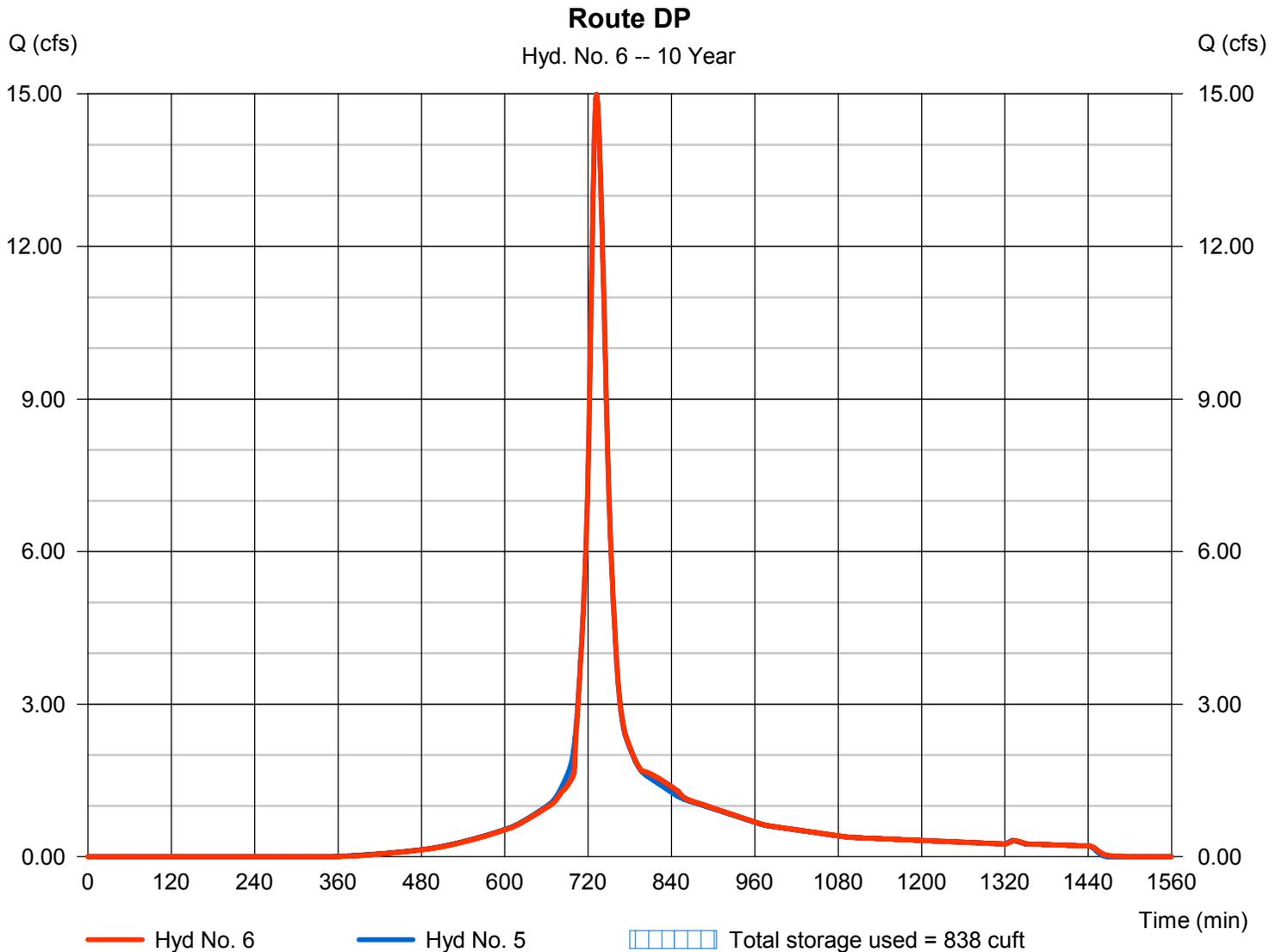
# Hydrograph Report

## Hyd. No. 6

Route DP

Hydrograph type	= Reservoir	Peak discharge	= 14.98 cfs
Storm frequency	= 10 yrs	Time to peak	= 732 min
Time interval	= 1 min	Hyd. volume	= 64,301 cuft
Inflow hyd. No.	= 5 - B2 - Proposed (East)	Max. Elevation	= 748.99 ft
Reservoir name	= Det. Pond	Max. Storage	= 838 cuft

Storage Indication method used.



# Hydrograph Report

## Hyd. No. 8

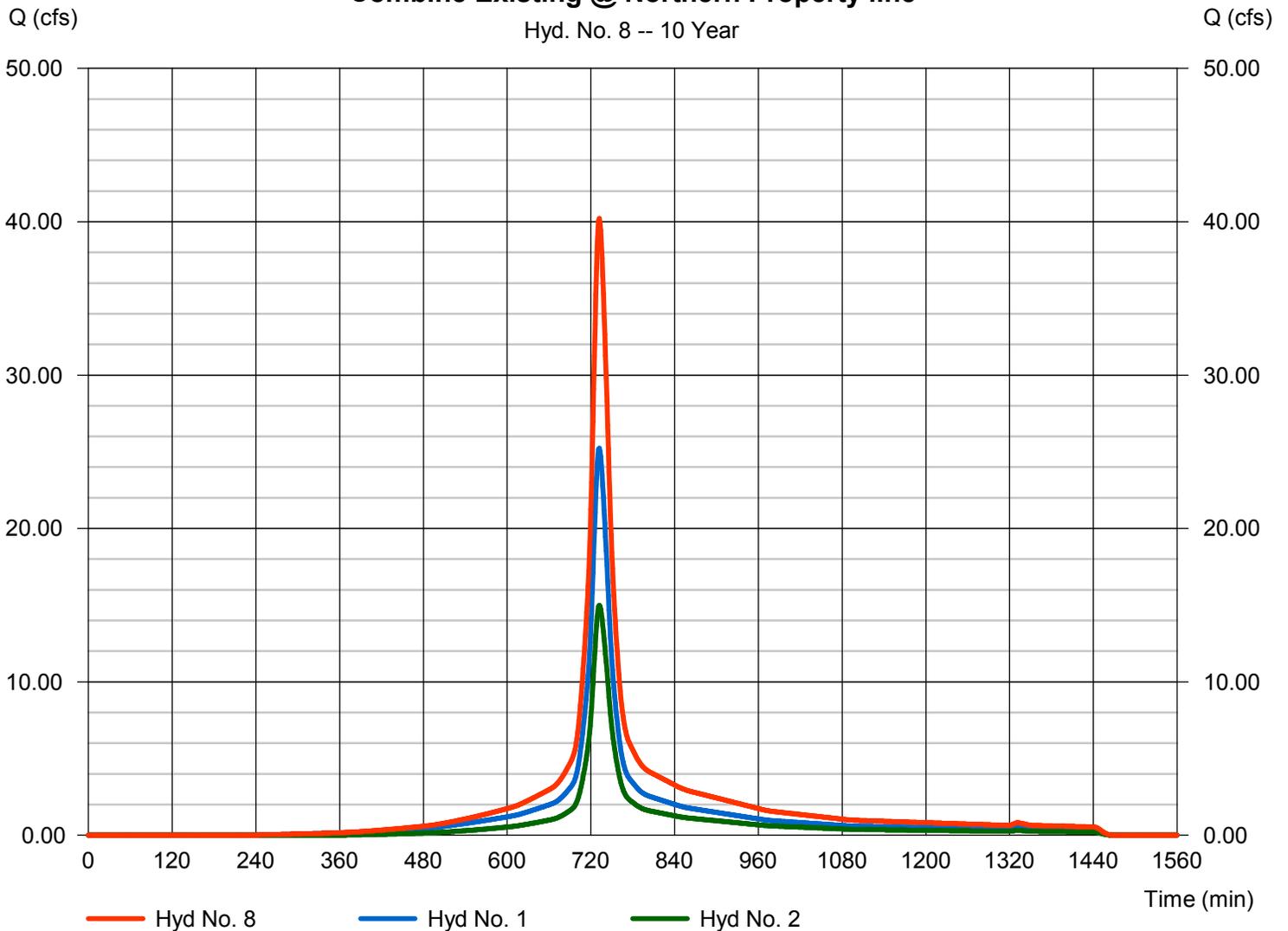
Combine Existing @ Northern Property line

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

Peak discharge = 40.22 cfs  
Time to peak = 732 min  
Hyd. volume = 175,770 cuft  
Contrib. drain. area = 11.220 ac

### Combine Existing @ Northern Property line

Hyd. No. 8 -- 10 Year



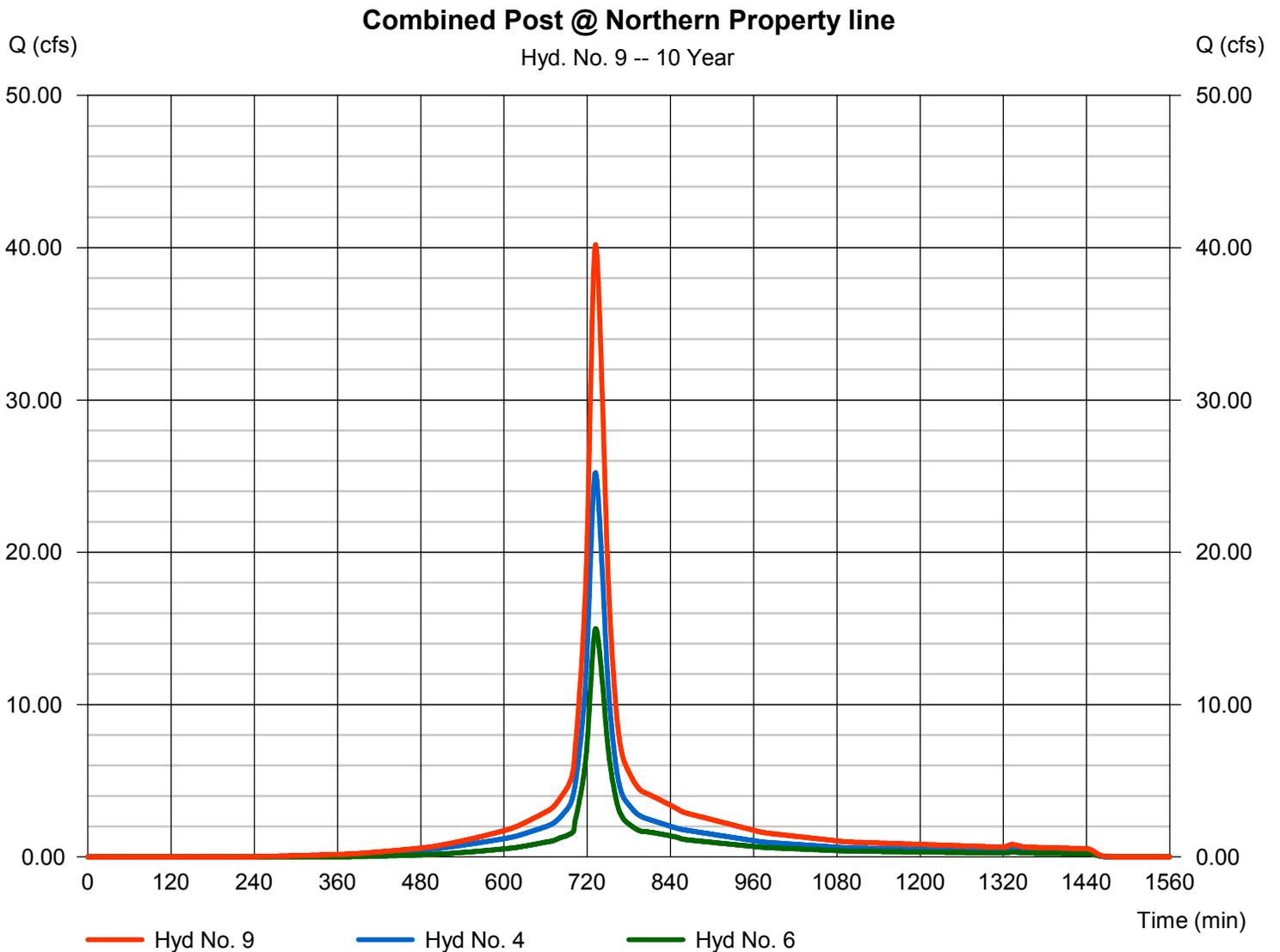
# Hydrograph Report

## Hyd. No. 9

Combined Post @ Northern Property line

Hydrograph type = Combine  
Storm frequency = 10 yrs  
Time interval = 1 min  
Inflow hyds. = 4, 6

Peak discharge = 40.21 cfs  
Time to peak = 732 min  
Hyd. volume = 175,769 cuft  
Contrib. drain. area = 6.720 ac



# Hydrograph Summary Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2013 by Autodesk, Inc. v10

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	31.48	1	732	140,906	-----	-----	-----	E1 - Existing (West)
2	SCS Runoff	19.24	1	732	83,314	-----	-----	-----	E2 - Existing (East)
4	SCS Runoff	31.48	1	732	140,906	-----	-----	-----	B1 - Proposed (West)
5	SCS Runoff	19.24	1	732	83,314	-----	-----	-----	B2 - Proposed (East)
6	Reservoir	18.94	1	734	83,313	5	749.29	1,172	Route DP
8	Combine	50.73	1	732	224,220	1, 2,	-----	-----	Combine Existing @ Northern Propert
9	Combine	50.16	1	732	224,219	4, 6,	-----	-----	Combined Post @ Northern Property
H:\102-16 JOBS\102-16-036\Calculations\Drainage\102-16-036 Final.gpw								Friday, 09 / 23 / 2016	

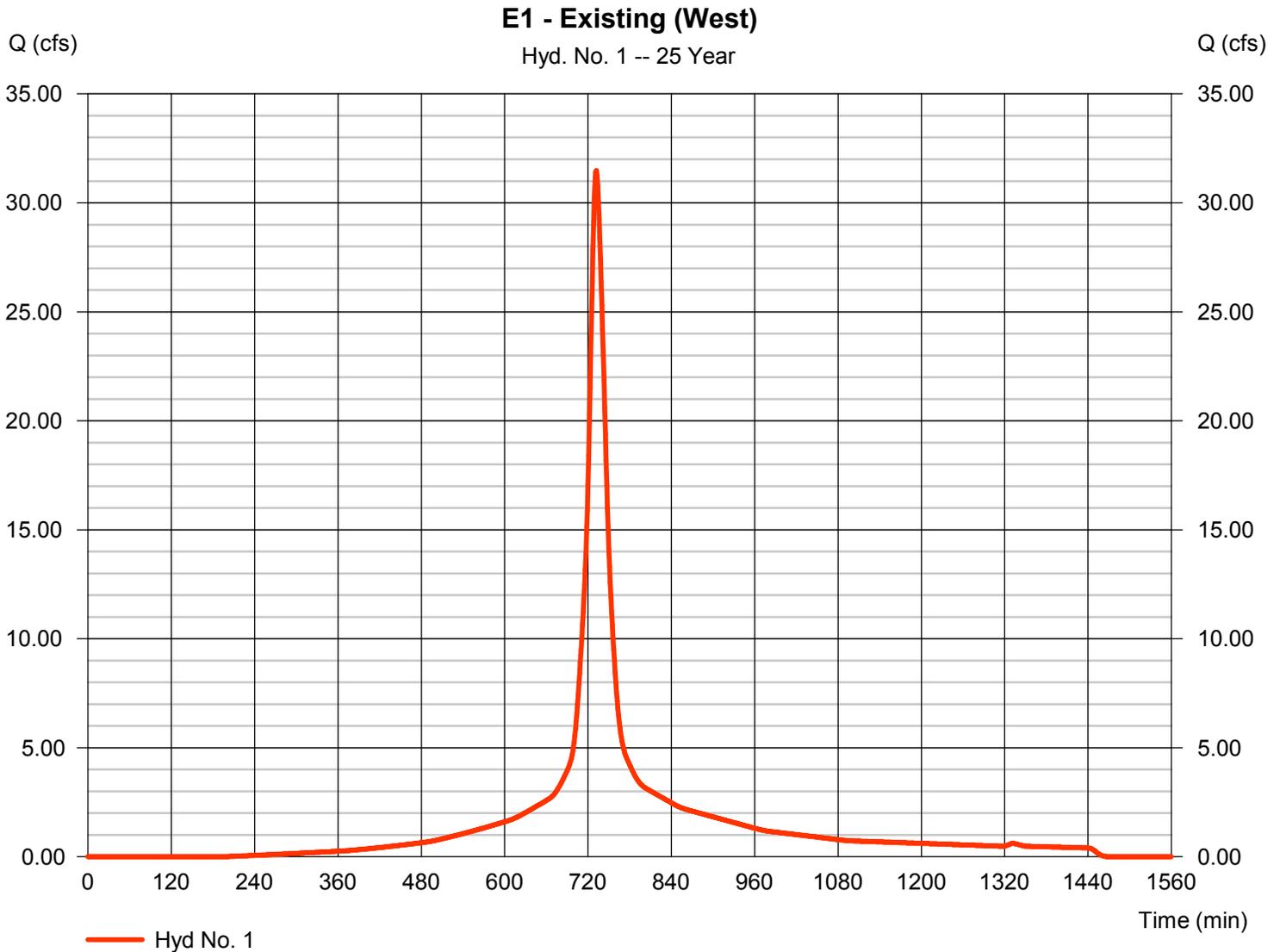
# Hydrograph Report

## Hyd. No. 1

E1 - Existing (West)

Hydrograph type	= SCS Runoff	Peak discharge	= 31.48 cfs
Storm frequency	= 25 yrs	Time to peak	= 732 min
Time interval	= 1 min	Hyd. volume	= 140,906 cuft
Drainage area	= 6.720 ac	Curve number	= 90*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 18.30 min
Total precip.	= 7.02 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

\* Composite (Area/CN) = [(3.750 x 98) + (2.970 x 79)] / 6.720



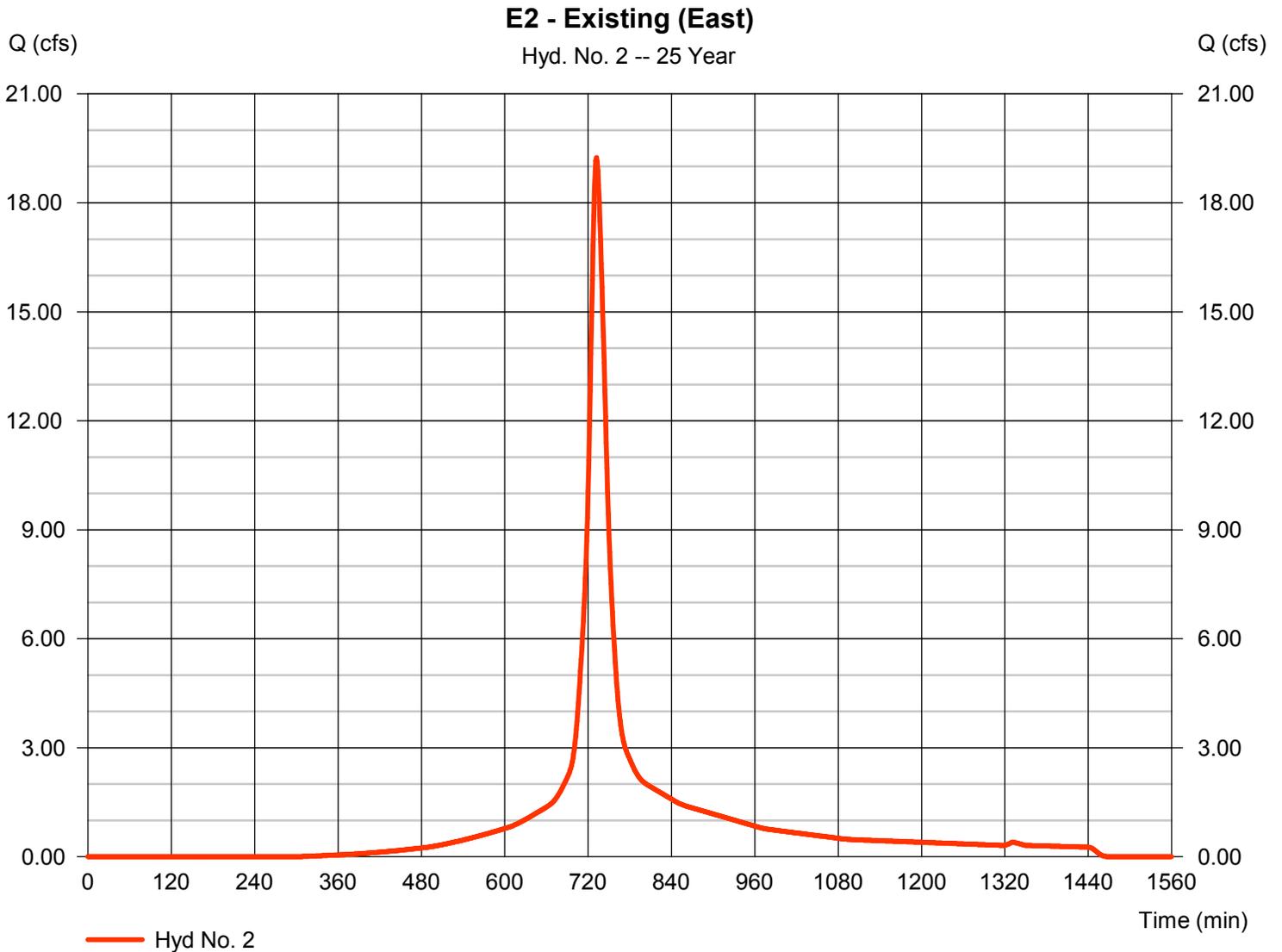
# Hydrograph Report

## Hyd. No. 2

E2 - Existing (East)

Hydrograph type	= SCS Runoff	Peak discharge	= 19.24 cfs
Storm frequency	= 25 yrs	Time to peak	= 732 min
Time interval	= 1 min	Hyd. volume	= 83,314 cuft
Drainage area	= 4.500 ac	Curve number	= 84*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 18.30 min
Total precip.	= 7.02 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

\* Composite (Area/CN) = [(1.220 x 98) + (3.280 x 79)] / 4.500



# Hydrograph Report

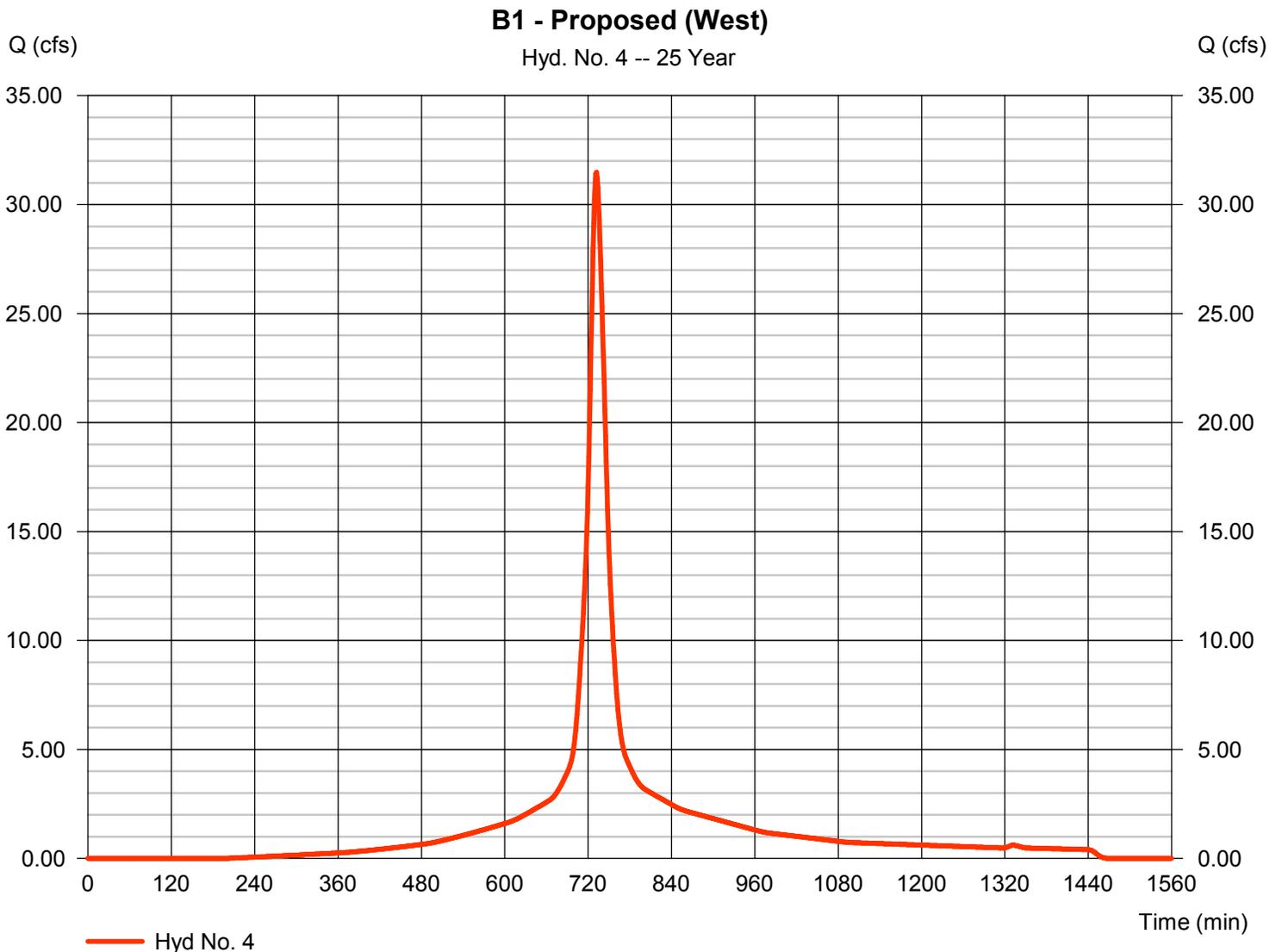
## Hyd. No. 4

B1 - Proposed (West)

Hydrograph type = SCS Runoff  
Storm frequency = 25 yrs  
Time interval = 1 min  
Drainage area = 6.720 ac  
Basin Slope = 0.0 %  
Tc method = User  
Total precip. = 7.02 in  
Storm duration = 24 hrs

Peak discharge = 31.48 cfs  
Time to peak = 732 min  
Hyd. volume = 140,906 cuft  
Curve number = 90\*  
Hydraulic length = 0 ft  
Time of conc. (Tc) = 18.30 min  
Distribution = Type III  
Shape factor = 484

\* Composite (Area/CN) = [(4.060 x 98) + (2.660 x 79)] / 6.720



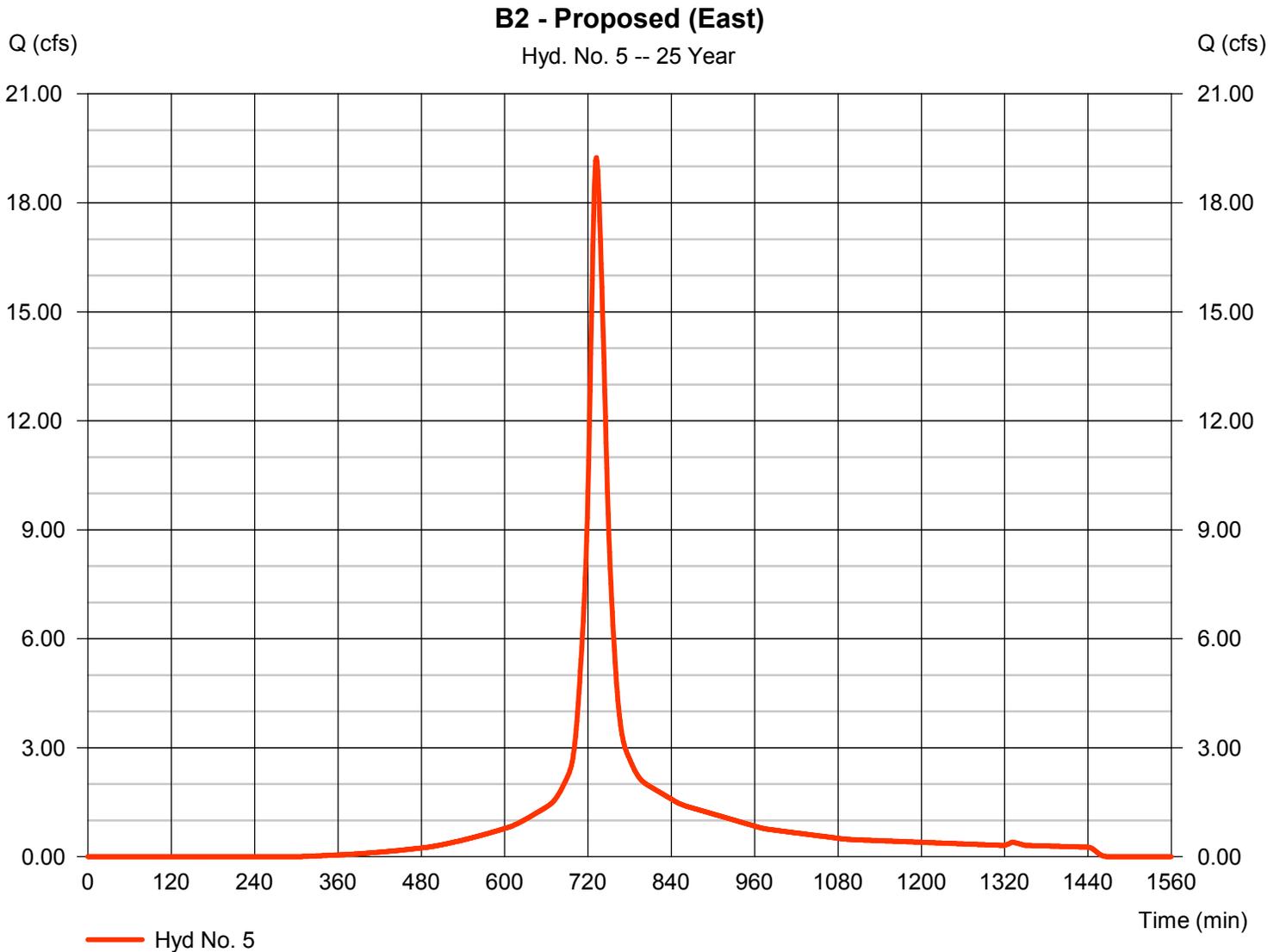
# Hydrograph Report

## Hyd. No. 5

B2 - Proposed (East)

Hydrograph type	= SCS Runoff	Peak discharge	= 19.24 cfs
Storm frequency	= 25 yrs	Time to peak	= 732 min
Time interval	= 1 min	Hyd. volume	= 83,314 cuft
Drainage area	= 4.500 ac	Curve number	= 84*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 18.30 min
Total precip.	= 7.02 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

\* Composite (Area/CN) = [(1.220 x 98) + (3.280 x 79)] / 4.500



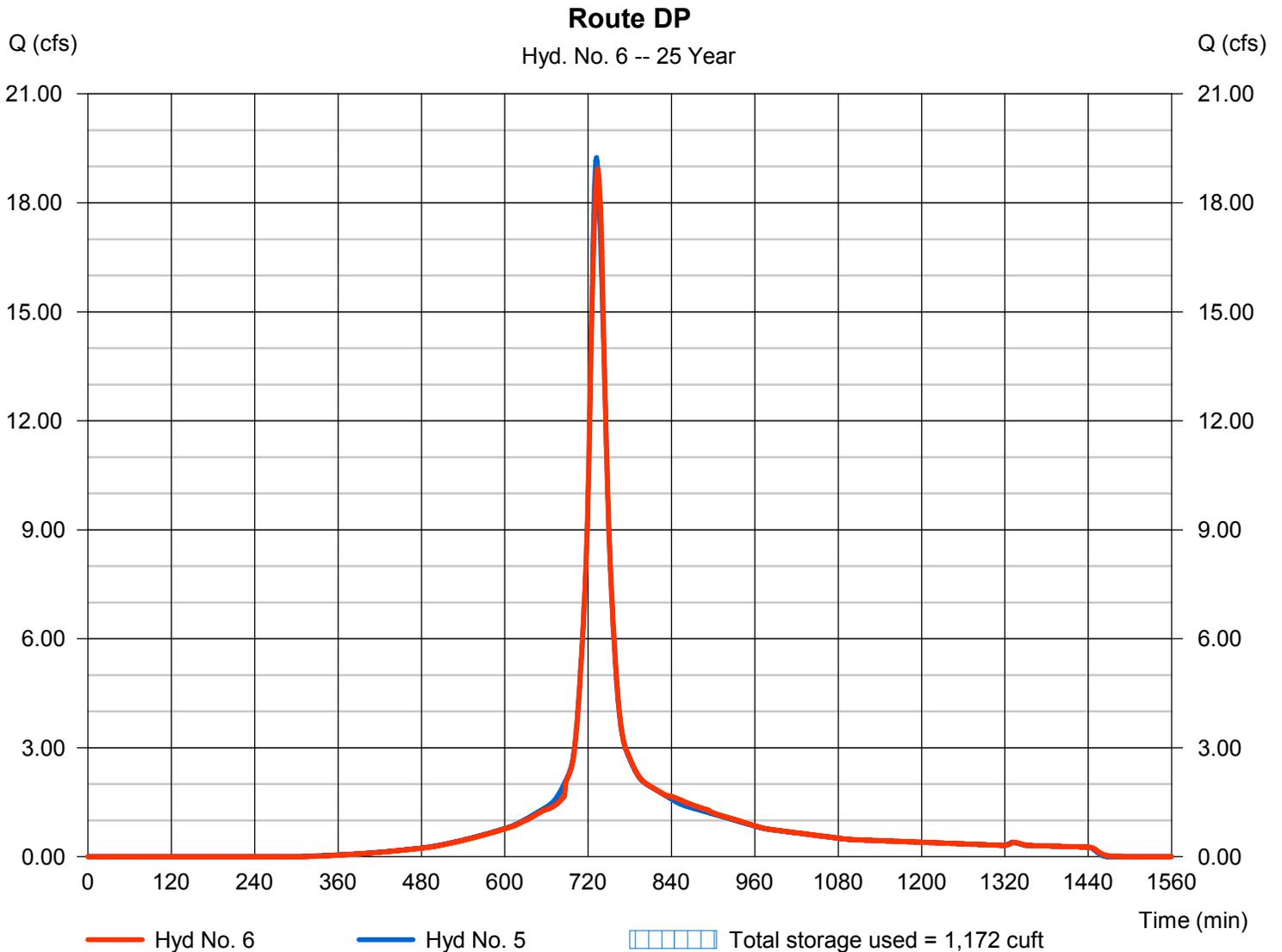
# Hydrograph Report

## Hyd. No. 6

Route DP

Hydrograph type	= Reservoir	Peak discharge	= 18.94 cfs
Storm frequency	= 25 yrs	Time to peak	= 734 min
Time interval	= 1 min	Hyd. volume	= 83,313 cuft
Inflow hyd. No.	= 5 - B2 - Proposed (East)	Max. Elevation	= 749.29 ft
Reservoir name	= Det. Pond	Max. Storage	= 1,172 cuft

Storage Indication method used.



# Hydrograph Report

## Hyd. No. 8

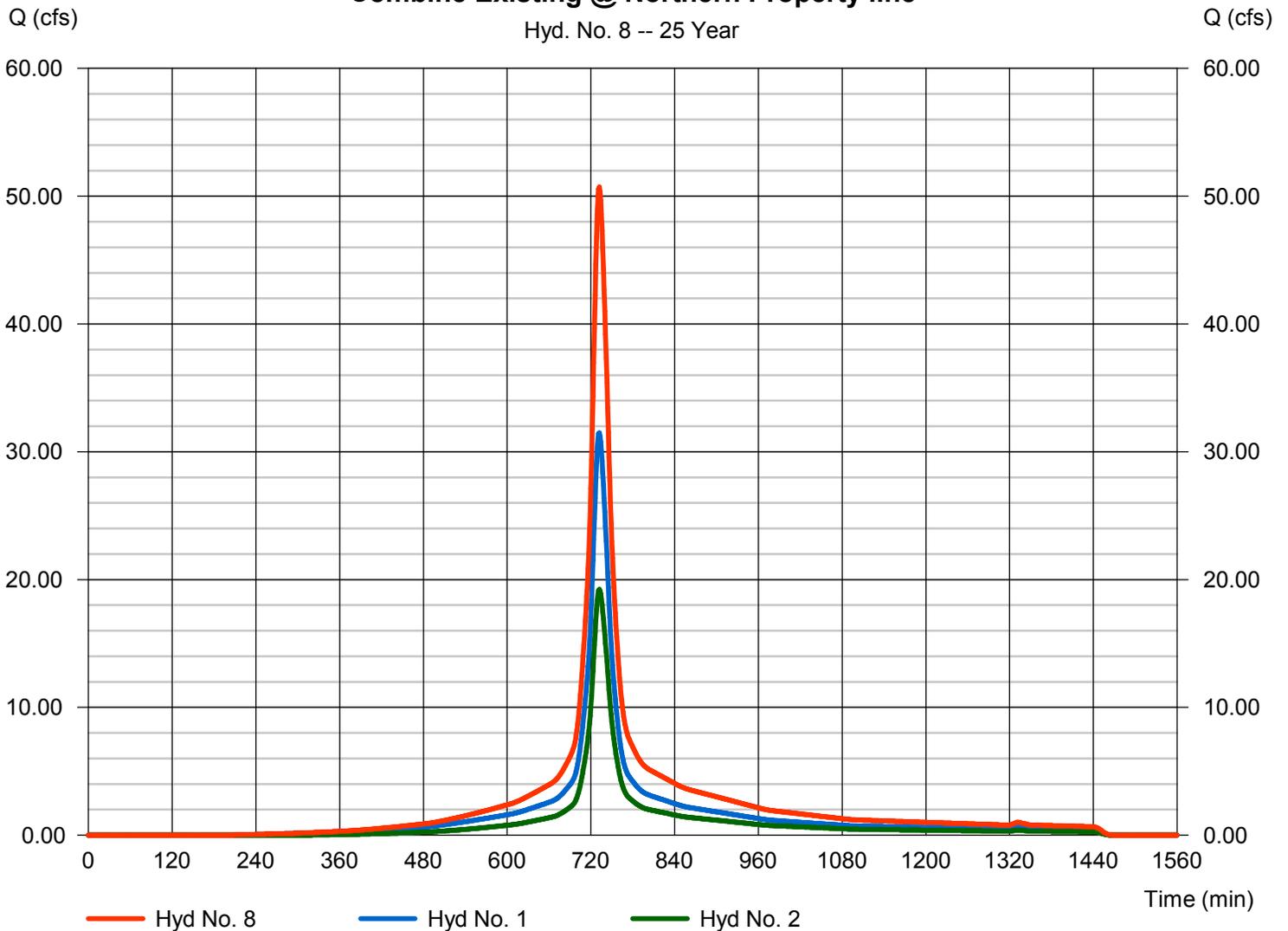
Combine Existing @ Northern Property line

Hydrograph type = Combine  
Storm frequency = 25 yrs  
Time interval = 1 min  
Inflow hyds. = 1, 2

Peak discharge = 50.73 cfs  
Time to peak = 732 min  
Hyd. volume = 224,220 cuft  
Contrib. drain. area = 11.220 ac

### Combine Existing @ Northern Property line

Hyd. No. 8 -- 25 Year



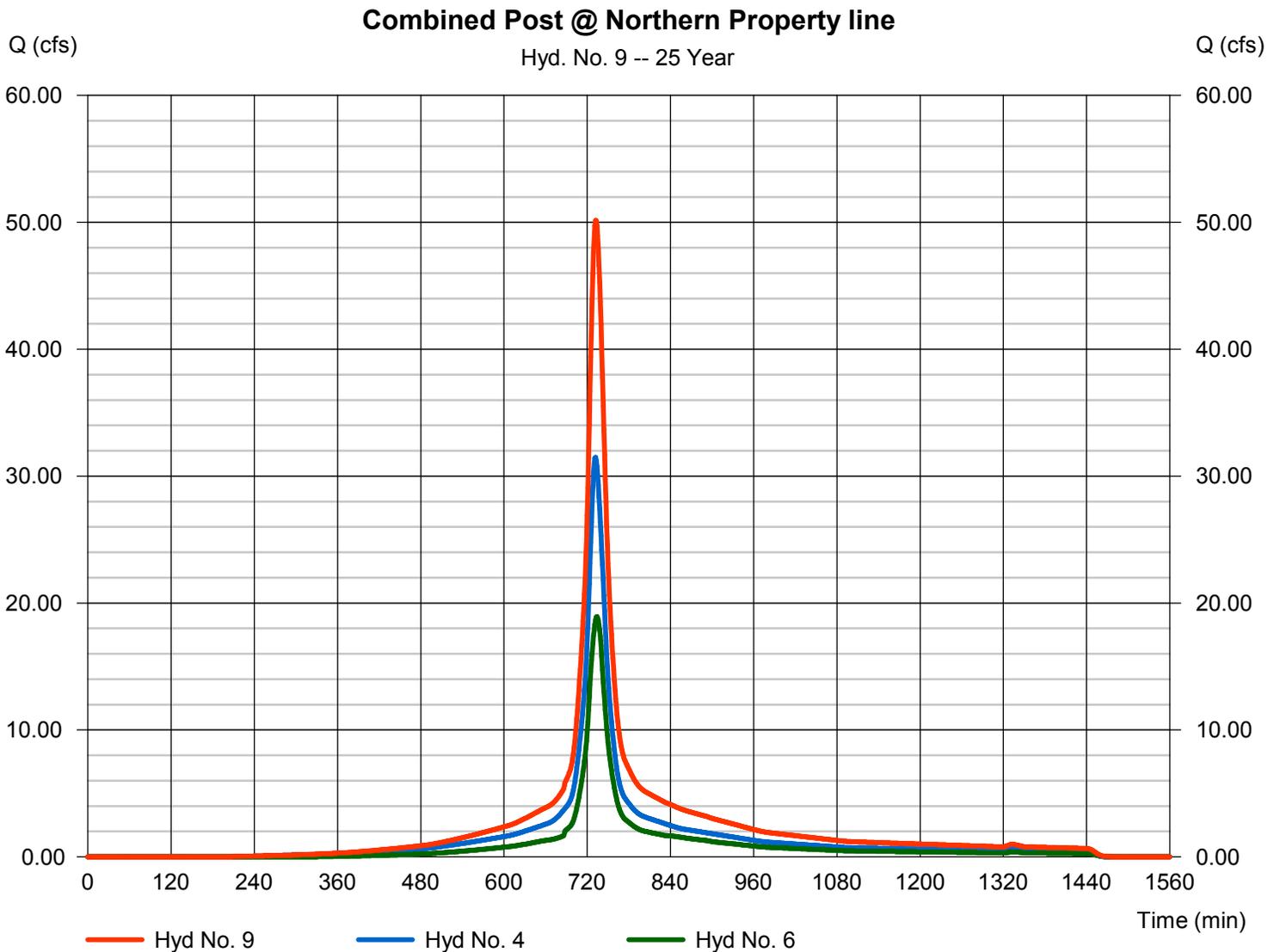
# Hydrograph Report

## Hyd. No. 9

Combined Post @ Northern Property line

Hydrograph type = Combine  
Storm frequency = 25 yrs  
Time interval = 1 min  
Inflow hyds. = 4, 6

Peak discharge = 50.16 cfs  
Time to peak = 732 min  
Hyd. volume = 224,219 cuft  
Contrib. drain. area = 6.720 ac



# Hydrograph Summary Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2013 by Autodesk, Inc. v10

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	36.81	1	732	166,263	-----	-----	-----	E1 - Existing (West)
2	SCS Runoff	22.87	1	732	99,830	-----	-----	-----	E2 - Existing (East)
4	SCS Runoff	36.81	1	732	166,263	-----	-----	-----	B1 - Proposed (West)
5	SCS Runoff	22.87	1	732	99,830	-----	-----	-----	B2 - Proposed (East)
6	Reservoir	22.39	1	734	99,829	5	749.68	1,614	Route DP
8	Combine	59.68	1	732	266,092	1, 2,	-----	-----	Combine Existing @ Northern Propert
9	Combine	58.81	1	733	266,092	4, 6,	-----	-----	Combined Post @ Northern Property
H:\102-16 JOBS\102-16-036\Calculations\Drainage\102-16-036 Final.gpw								Friday, 09 / 23 / 2016	

# Hydrograph Report

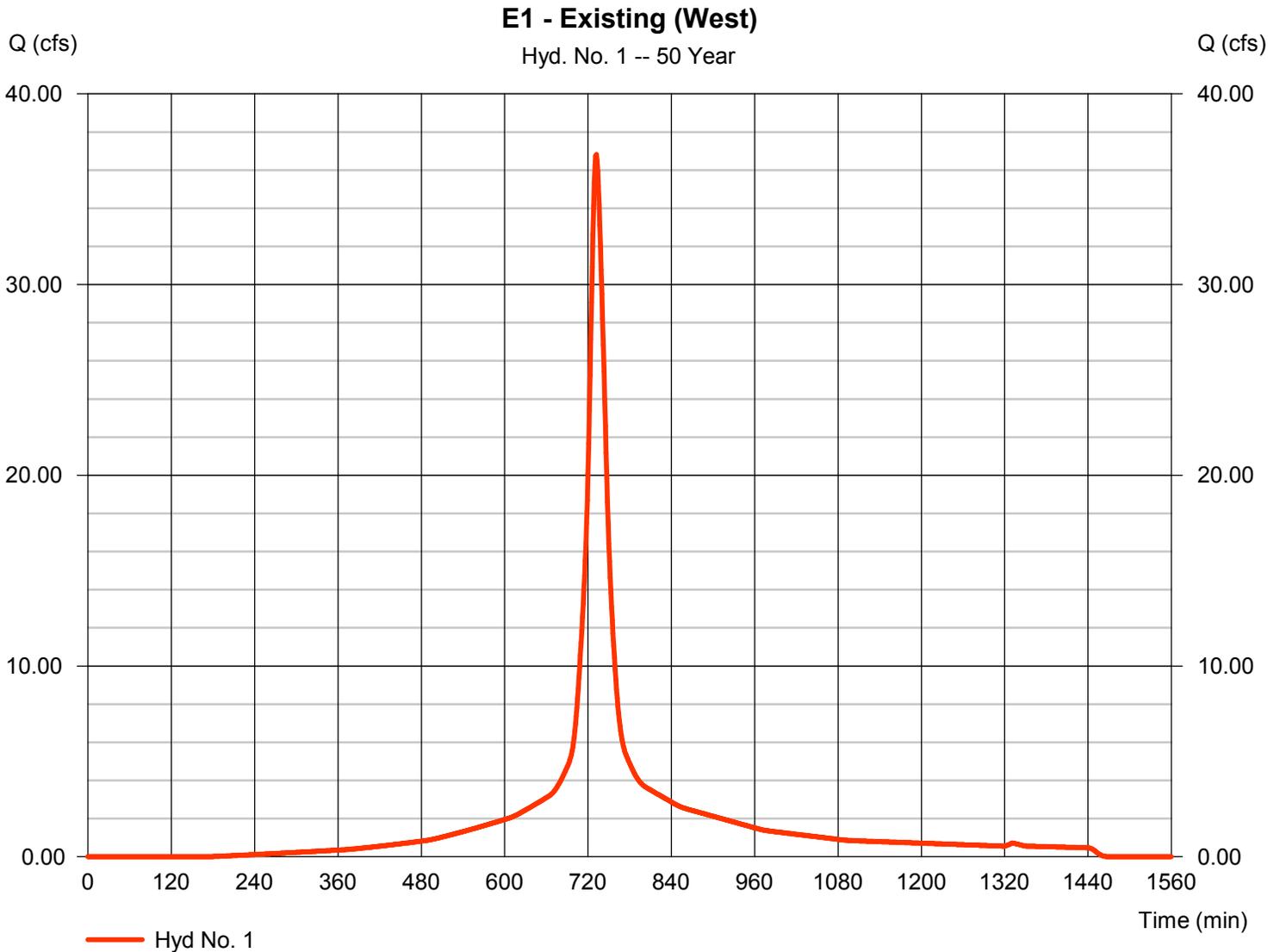
## Hyd. No. 1

E1 - Existing (West)

Hydrograph type = SCS Runoff  
Storm frequency = 50 yrs  
Time interval = 1 min  
Drainage area = 6.720 ac  
Basin Slope = 0.0 %  
Tc method = User  
Total precip. = 8.09 in  
Storm duration = 24 hrs

Peak discharge = 36.81 cfs  
Time to peak = 732 min  
Hyd. volume = 166,263 cuft  
Curve number = 90\*  
Hydraulic length = 0 ft  
Time of conc. (Tc) = 18.30 min  
Distribution = Type III  
Shape factor = 484

\* Composite (Area/CN) = [(3.750 x 98) + (2.970 x 79)] / 6.720



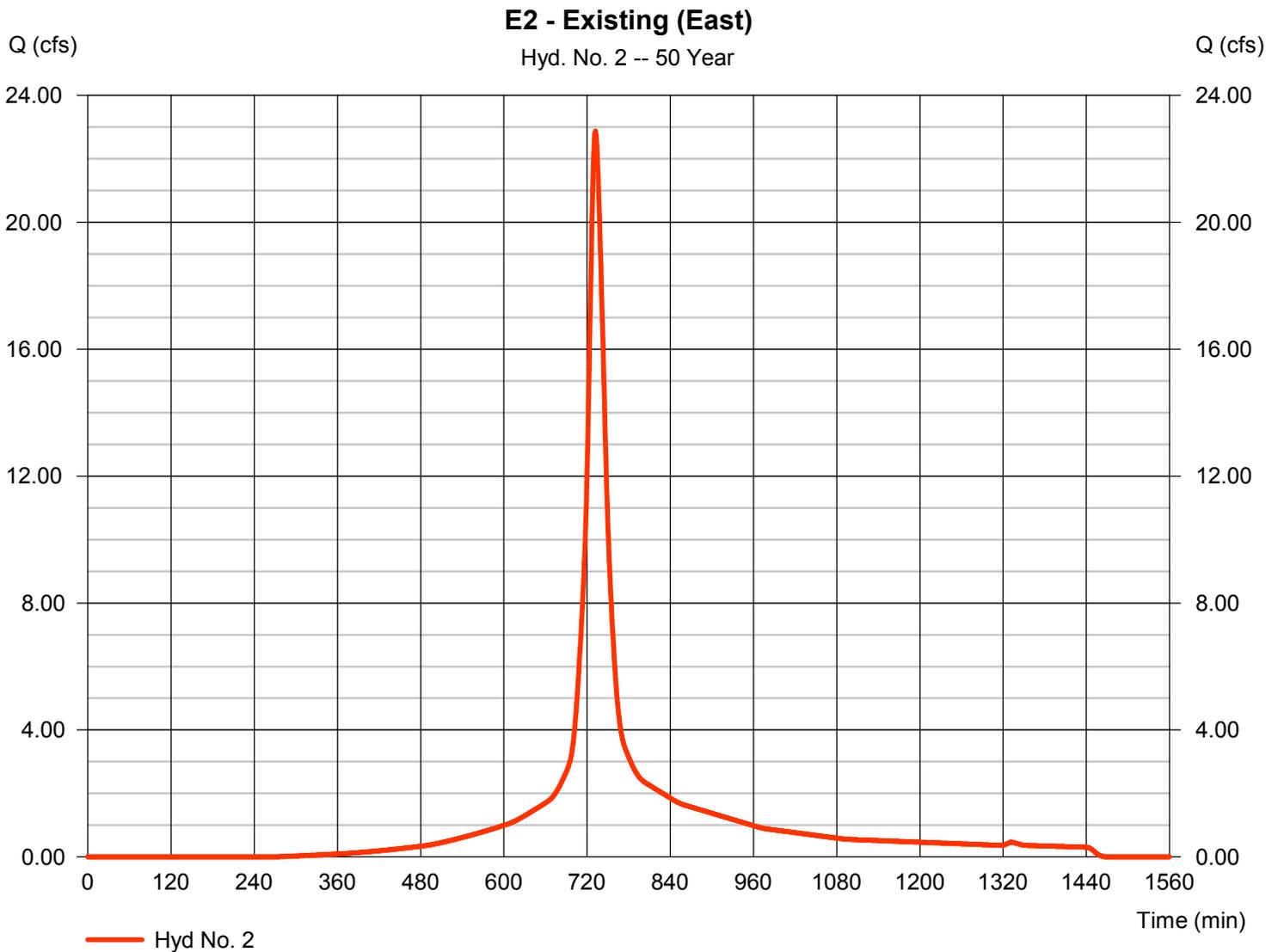
# Hydrograph Report

## Hyd. No. 2

E2 - Existing (East)

Hydrograph type	= SCS Runoff	Peak discharge	= 22.87 cfs
Storm frequency	= 50 yrs	Time to peak	= 732 min
Time interval	= 1 min	Hyd. volume	= 99,830 cuft
Drainage area	= 4.500 ac	Curve number	= 84*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 18.30 min
Total precip.	= 8.09 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

\* Composite (Area/CN) = [(1.220 x 98) + (3.280 x 79)] / 4.500



# Hydrograph Report

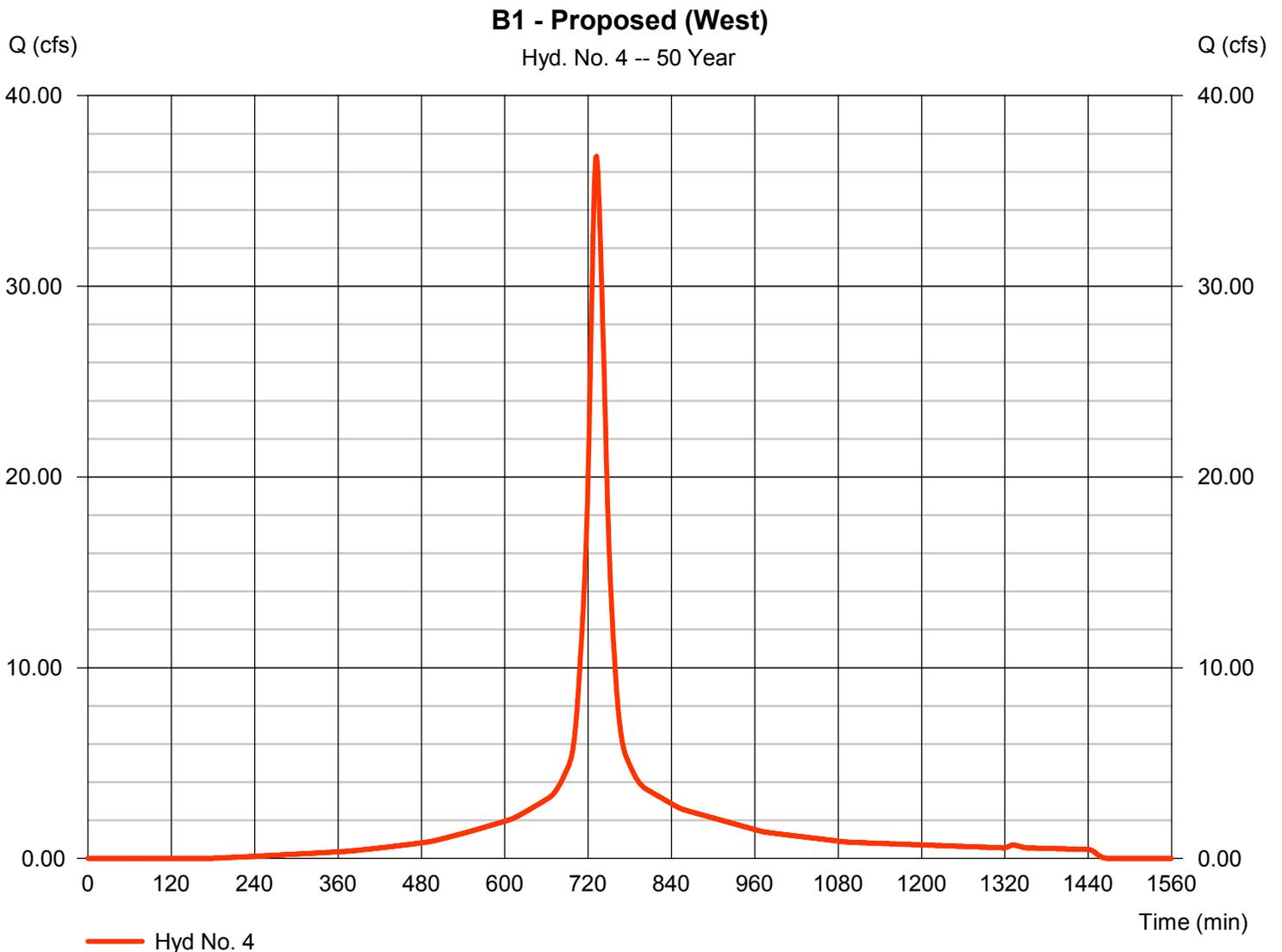
## Hyd. No. 4

B1 - Proposed (West)

Hydrograph type = SCS Runoff  
Storm frequency = 50 yrs  
Time interval = 1 min  
Drainage area = 6.720 ac  
Basin Slope = 0.0 %  
Tc method = User  
Total precip. = 8.09 in  
Storm duration = 24 hrs

Peak discharge = 36.81 cfs  
Time to peak = 732 min  
Hyd. volume = 166,263 cuft  
Curve number = 90\*  
Hydraulic length = 0 ft  
Time of conc. (Tc) = 18.30 min  
Distribution = Type III  
Shape factor = 484

\* Composite (Area/CN) = [(4.060 x 98) + (2.660 x 79)] / 6.720



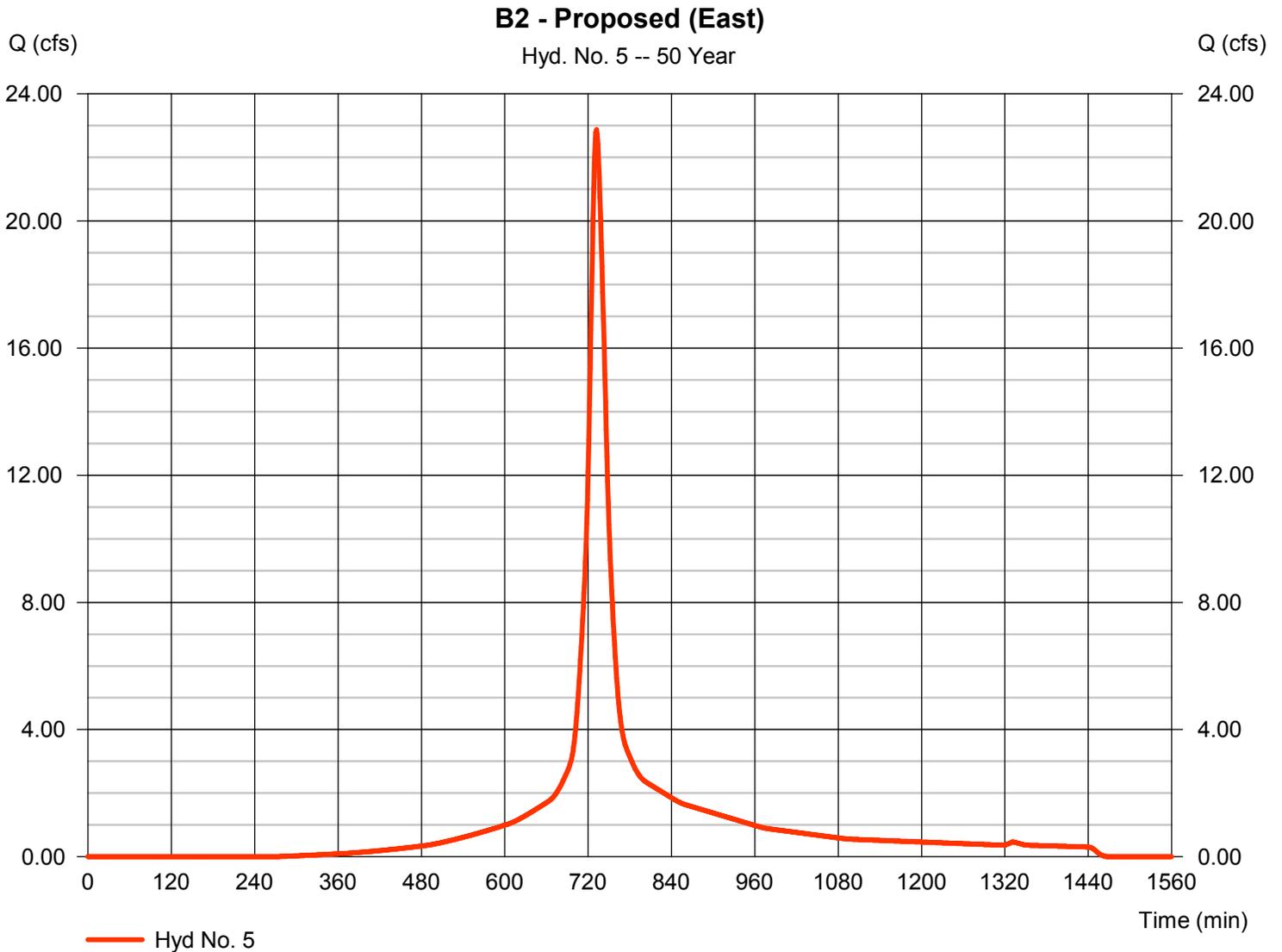
# Hydrograph Report

## Hyd. No. 5

B2 - Proposed (East)

Hydrograph type	= SCS Runoff	Peak discharge	= 22.87 cfs
Storm frequency	= 50 yrs	Time to peak	= 732 min
Time interval	= 1 min	Hyd. volume	= 99,830 cuft
Drainage area	= 4.500 ac	Curve number	= 84*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 18.30 min
Total precip.	= 8.09 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

\* Composite (Area/CN) = [(1.220 x 98) + (3.280 x 79)] / 4.500



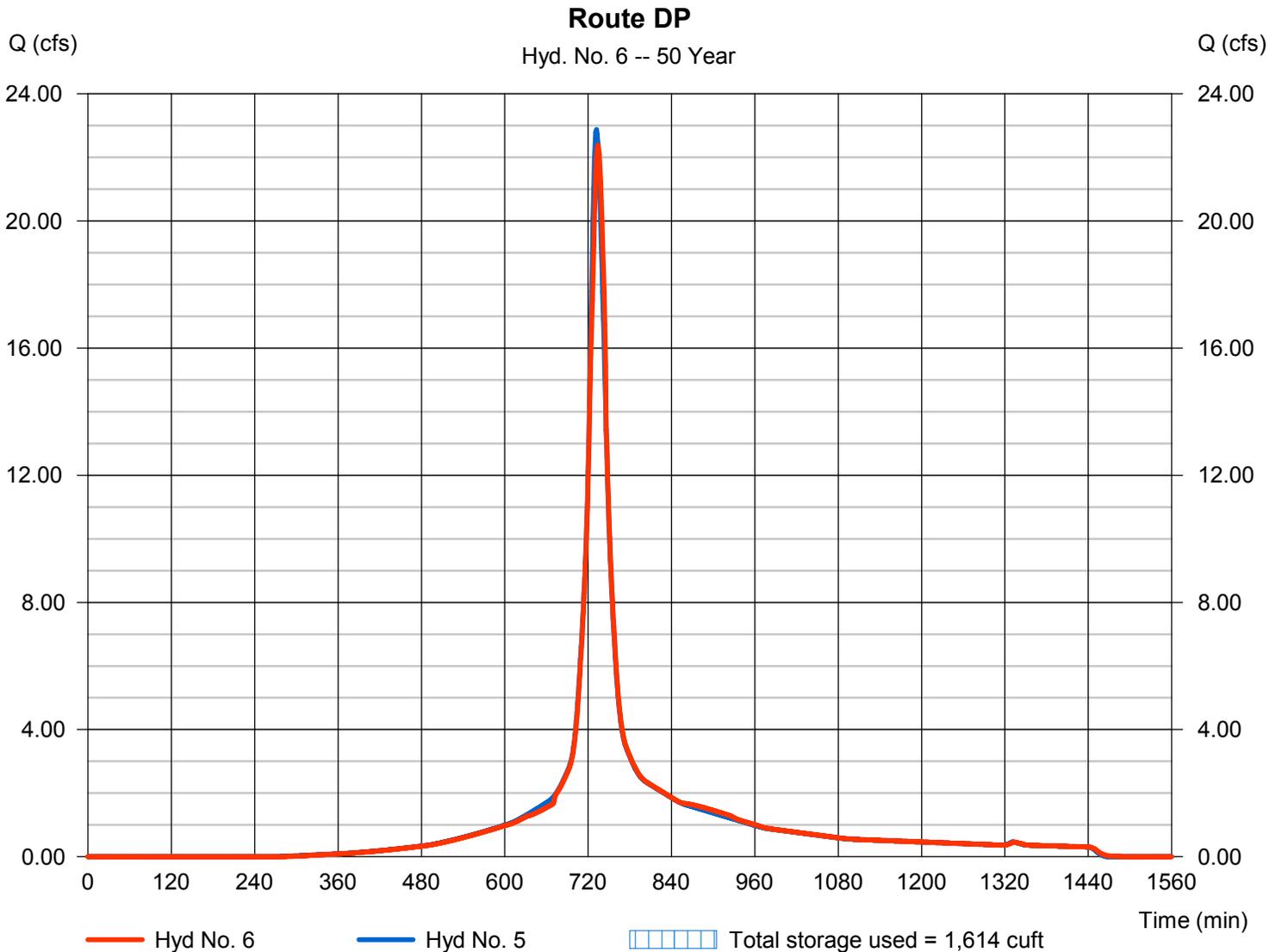
# Hydrograph Report

## Hyd. No. 6

Route DP

Hydrograph type	= Reservoir	Peak discharge	= 22.39 cfs
Storm frequency	= 50 yrs	Time to peak	= 734 min
Time interval	= 1 min	Hyd. volume	= 99,829 cuft
Inflow hyd. No.	= 5 - B2 - Proposed (East)	Max. Elevation	= 749.68 ft
Reservoir name	= Det. Pond	Max. Storage	= 1,614 cuft

Storage Indication method used.



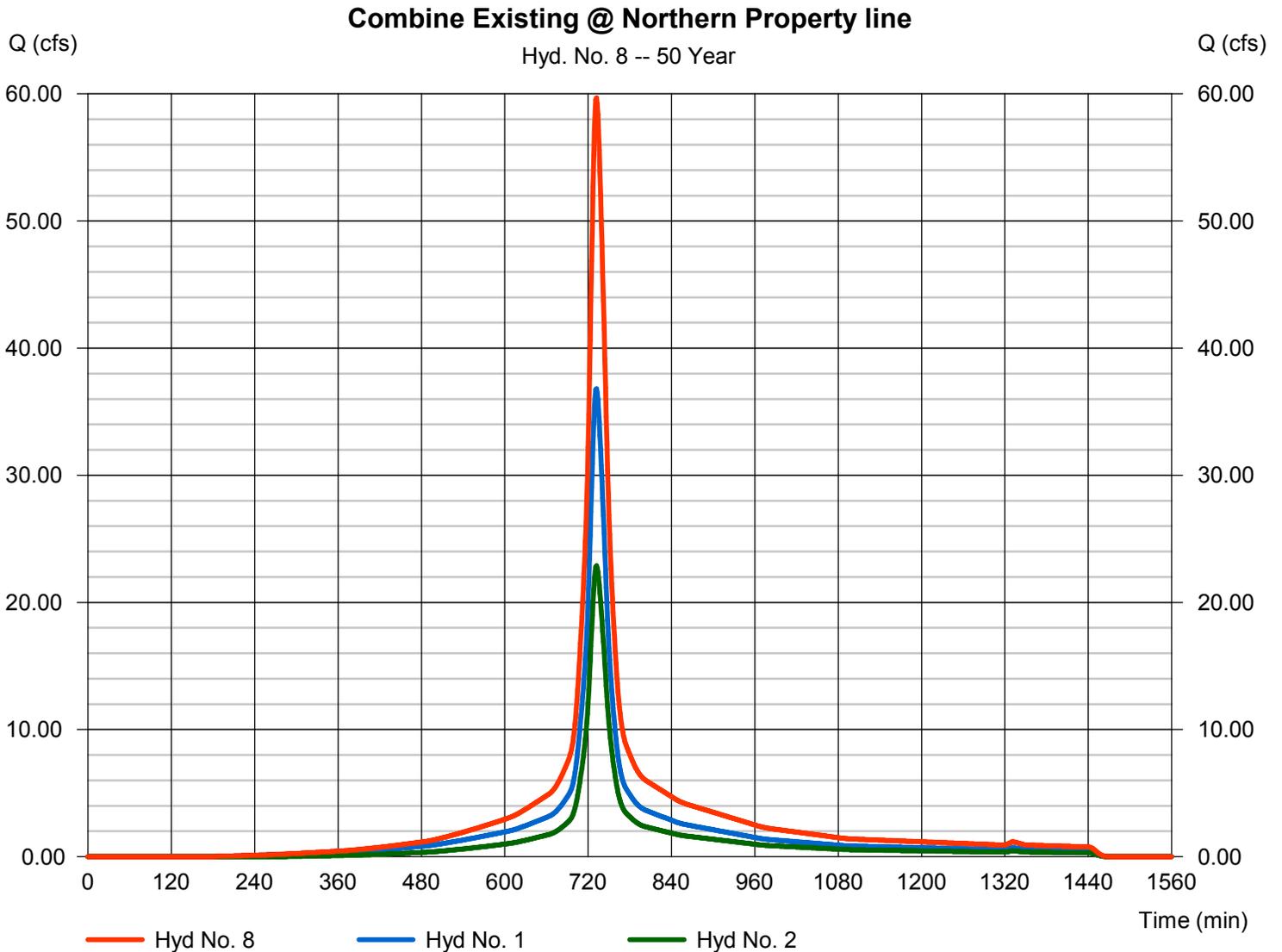
# Hydrograph Report

## Hyd. No. 8

Combine Existing @ Northern Property line

Hydrograph type = Combine  
Storm frequency = 50 yrs  
Time interval = 1 min  
Inflow hyds. = 1, 2

Peak discharge = 59.68 cfs  
Time to peak = 732 min  
Hyd. volume = 266,092 cuft  
Contrib. drain. area = 11.220 ac



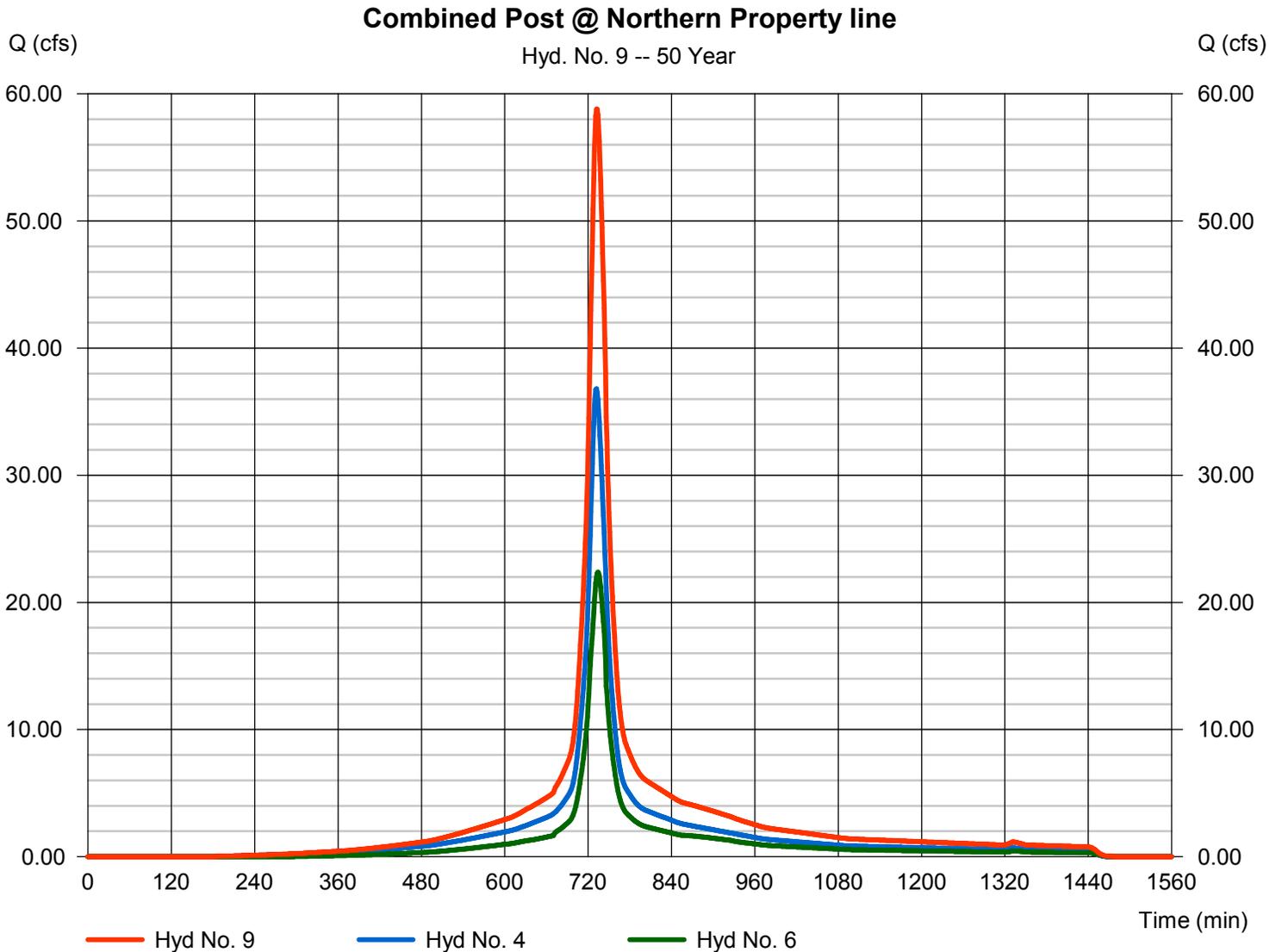
# Hydrograph Report

## Hyd. No. 9

Combined Post @ Northern Property line

Hydrograph type = Combine  
Storm frequency = 50 yrs  
Time interval = 1 min  
Inflow hyds. = 4, 6

Peak discharge = 58.81 cfs  
Time to peak = 733 min  
Hyd. volume = 266,092 cuft  
Contrib. drain. area = 6.720 ac



# Hydrograph Summary Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2013 by Autodesk, Inc. v10

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	42.55	1	732	193,858	-----	-----	-----	E1 - Existing (West)
2	SCS Runoff	26.79	1	732	117,907	-----	-----	-----	E2 - Existing (East)
4	SCS Runoff	42.55	1	732	193,858	-----	-----	-----	B1 - Proposed (West)
5	SCS Runoff	26.79	1	732	117,907	-----	-----	-----	B2 - Proposed (East)
6	Reservoir	25.57	1	737	117,906	5	750.14	2,241	Route DP
8	Combine	69.35	1	732	311,765	1, 2,	-----	-----	Combine Existing @ Northern Propert
9	Combine	67.82	1	732	311,765	4, 6,	-----	-----	Combined Post @ Northern Property
H:\102-16 JOBS\102-16-036\Calculations\Drainage\102-16-036\102-16-036-11.dwg								Friday, 09 / 23 / 2016	

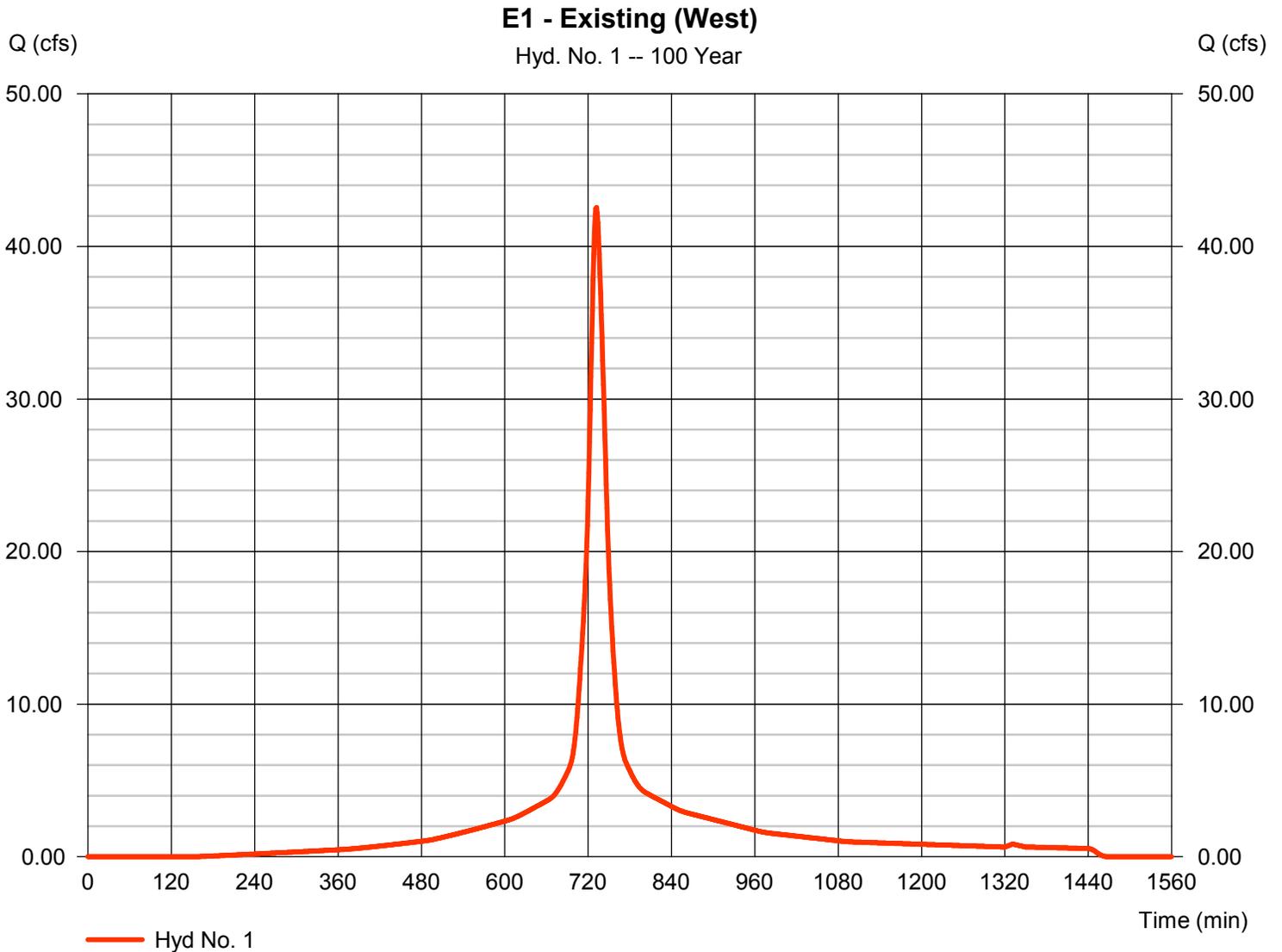
# Hydrograph Report

## Hyd. No. 1

E1 - Existing (West)

Hydrograph type	= SCS Runoff	Peak discharge	= 42.55 cfs
Storm frequency	= 100 yrs	Time to peak	= 732 min
Time interval	= 1 min	Hyd. volume	= 193,858 cuft
Drainage area	= 6.720 ac	Curve number	= 90*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 18.30 min
Total precip.	= 9.25 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

\* Composite (Area/CN) = [(3.750 x 98) + (2.970 x 79)] / 6.720



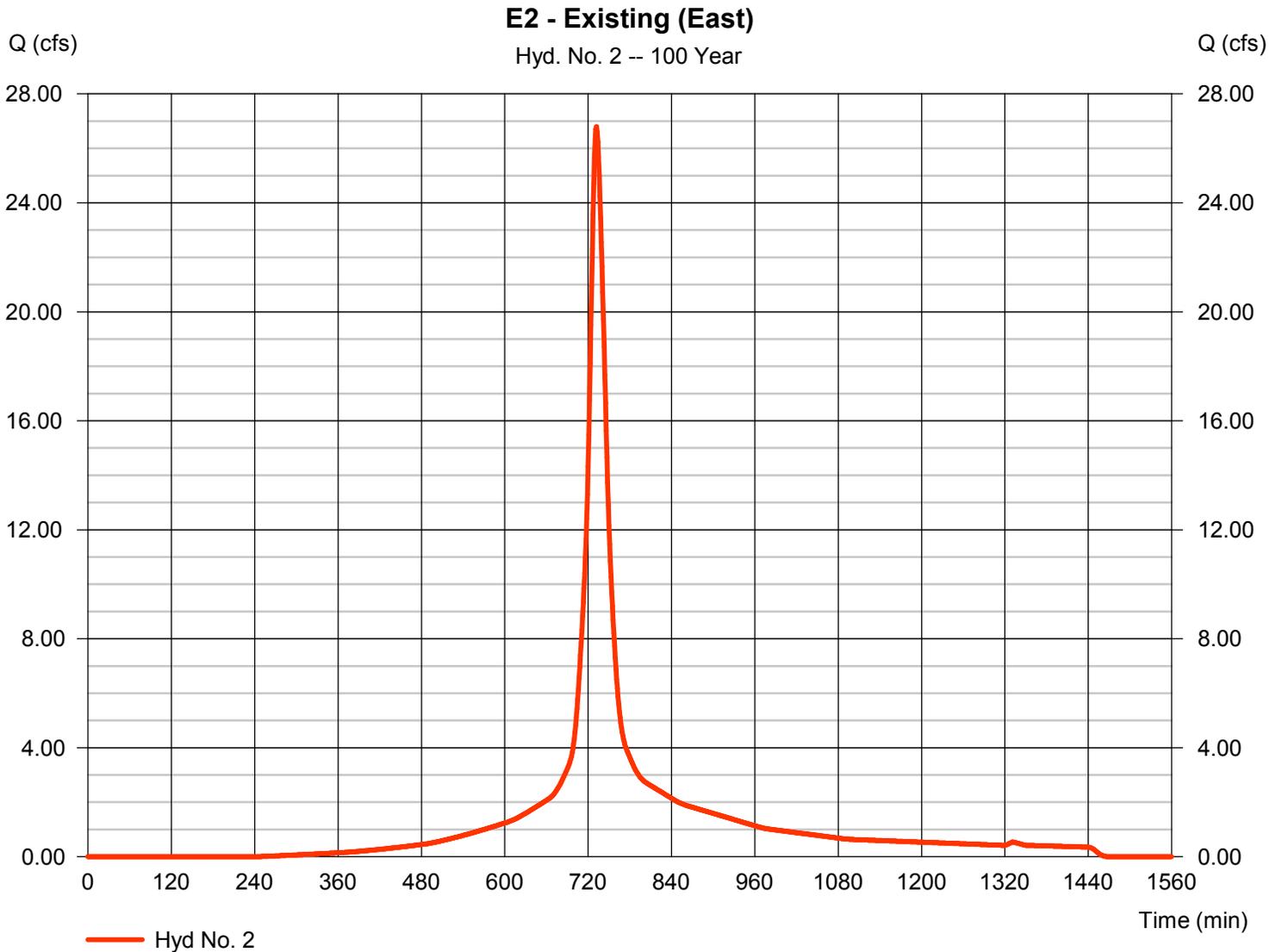
# Hydrograph Report

## Hyd. No. 2

E2 - Existing (East)

Hydrograph type	= SCS Runoff	Peak discharge	= 26.79 cfs
Storm frequency	= 100 yrs	Time to peak	= 732 min
Time interval	= 1 min	Hyd. volume	= 117,907 cuft
Drainage area	= 4.500 ac	Curve number	= 84*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 18.30 min
Total precip.	= 9.25 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

\* Composite (Area/CN) = [(1.220 x 98) + (3.280 x 79)] / 4.500



# Hydrograph Report

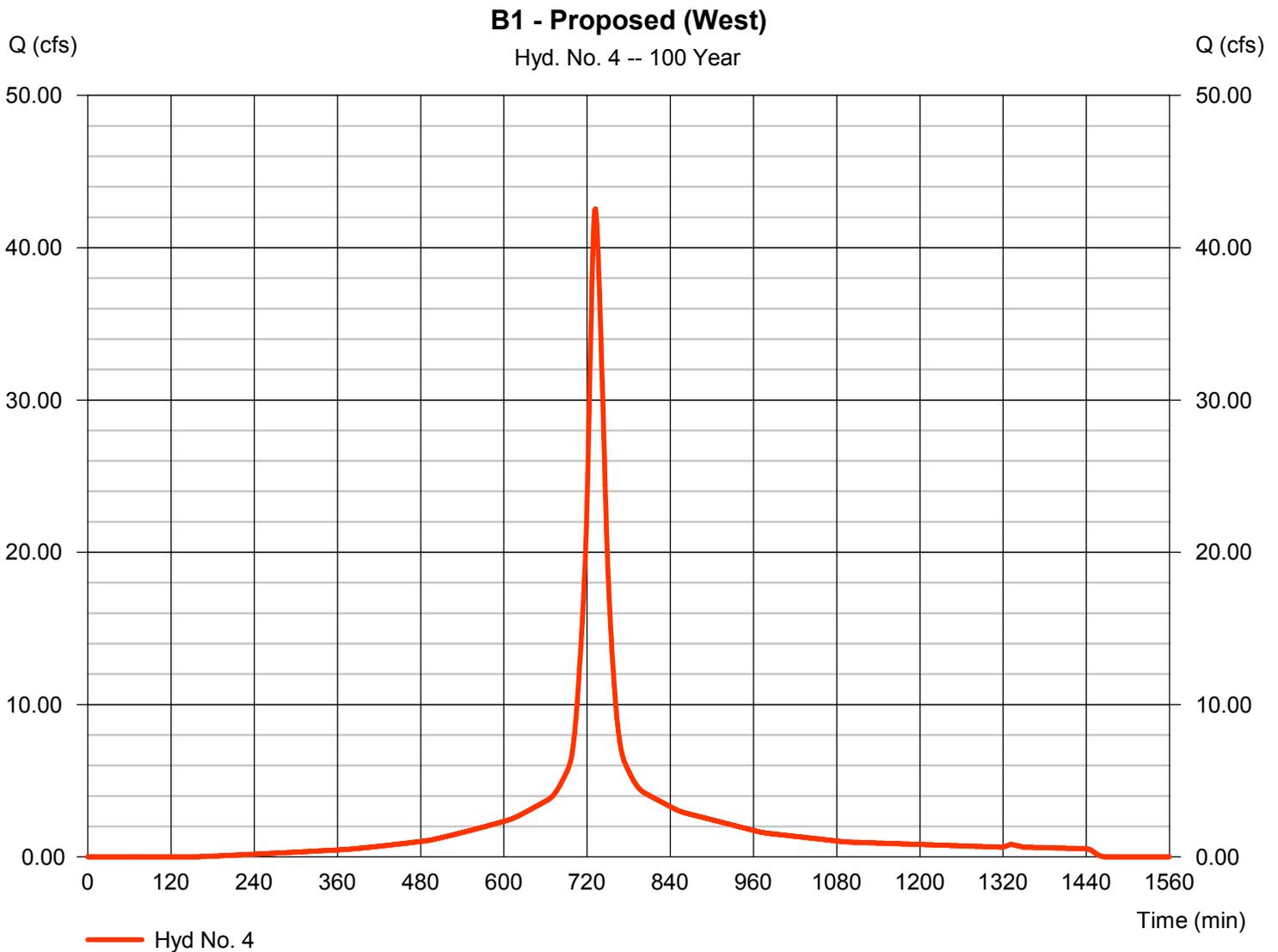
## Hyd. No. 4

B1 - Proposed (West)

Hydrograph type = SCS Runoff  
Storm frequency = 100 yrs  
Time interval = 1 min  
Drainage area = 6.720 ac  
Basin Slope = 0.0 %  
Tc method = User  
Total precip. = 9.25 in  
Storm duration = 24 hrs

Peak discharge = 42.55 cfs  
Time to peak = 732 min  
Hyd. volume = 193,858 cuft  
Curve number = 90\*  
Hydraulic length = 0 ft  
Time of conc. (Tc) = 18.30 min  
Distribution = Type III  
Shape factor = 484

\* Composite (Area/CN) = [(4.060 x 98) + (2.660 x 79)] / 6.720



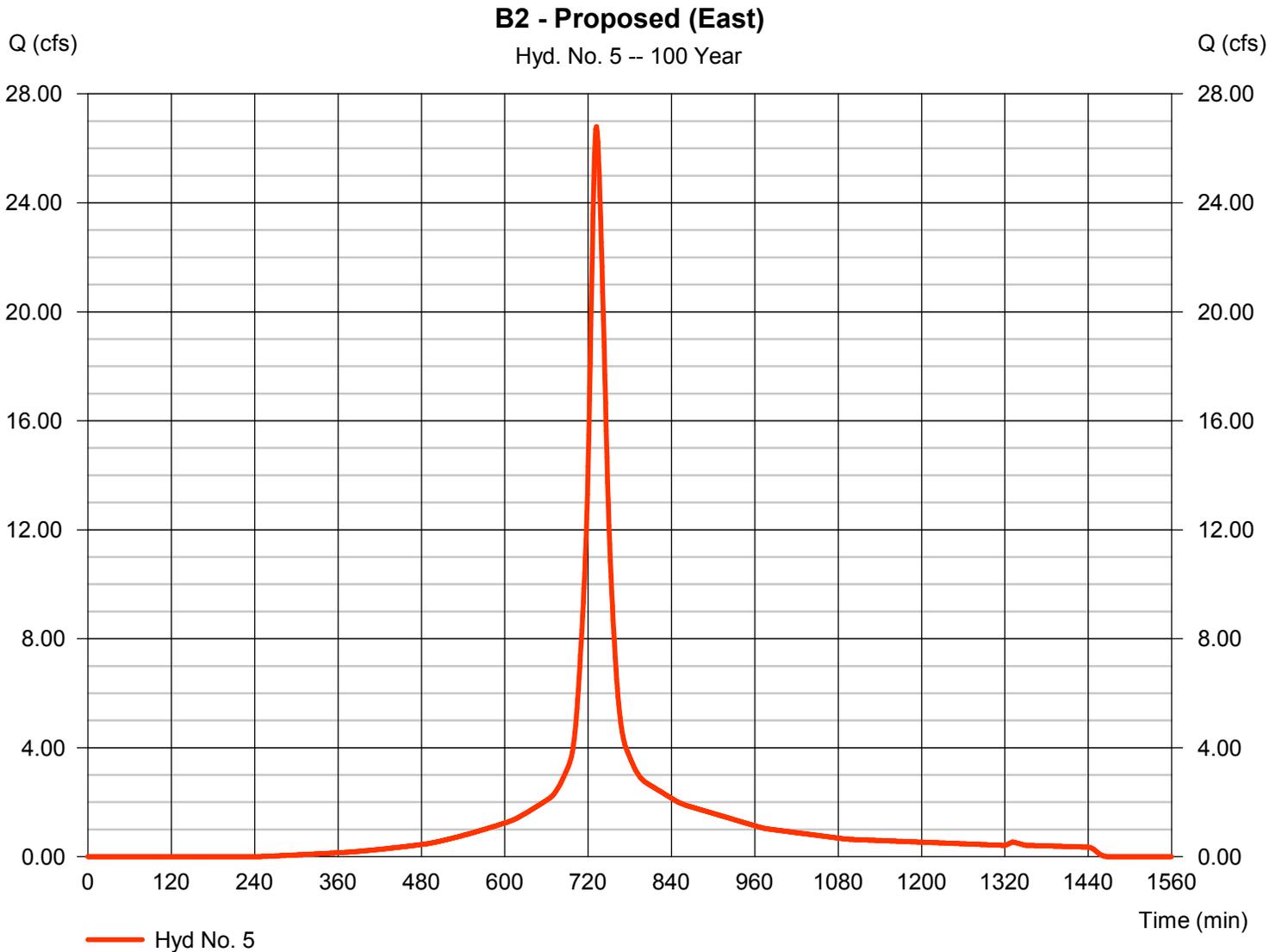
# Hydrograph Report

## Hyd. No. 5

B2 - Proposed (East)

Hydrograph type	= SCS Runoff	Peak discharge	= 26.79 cfs
Storm frequency	= 100 yrs	Time to peak	= 732 min
Time interval	= 1 min	Hyd. volume	= 117,907 cuft
Drainage area	= 4.500 ac	Curve number	= 84*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 18.30 min
Total precip.	= 9.25 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

\* Composite (Area/CN) = [(1.220 x 98) + (3.280 x 79)] / 4.500



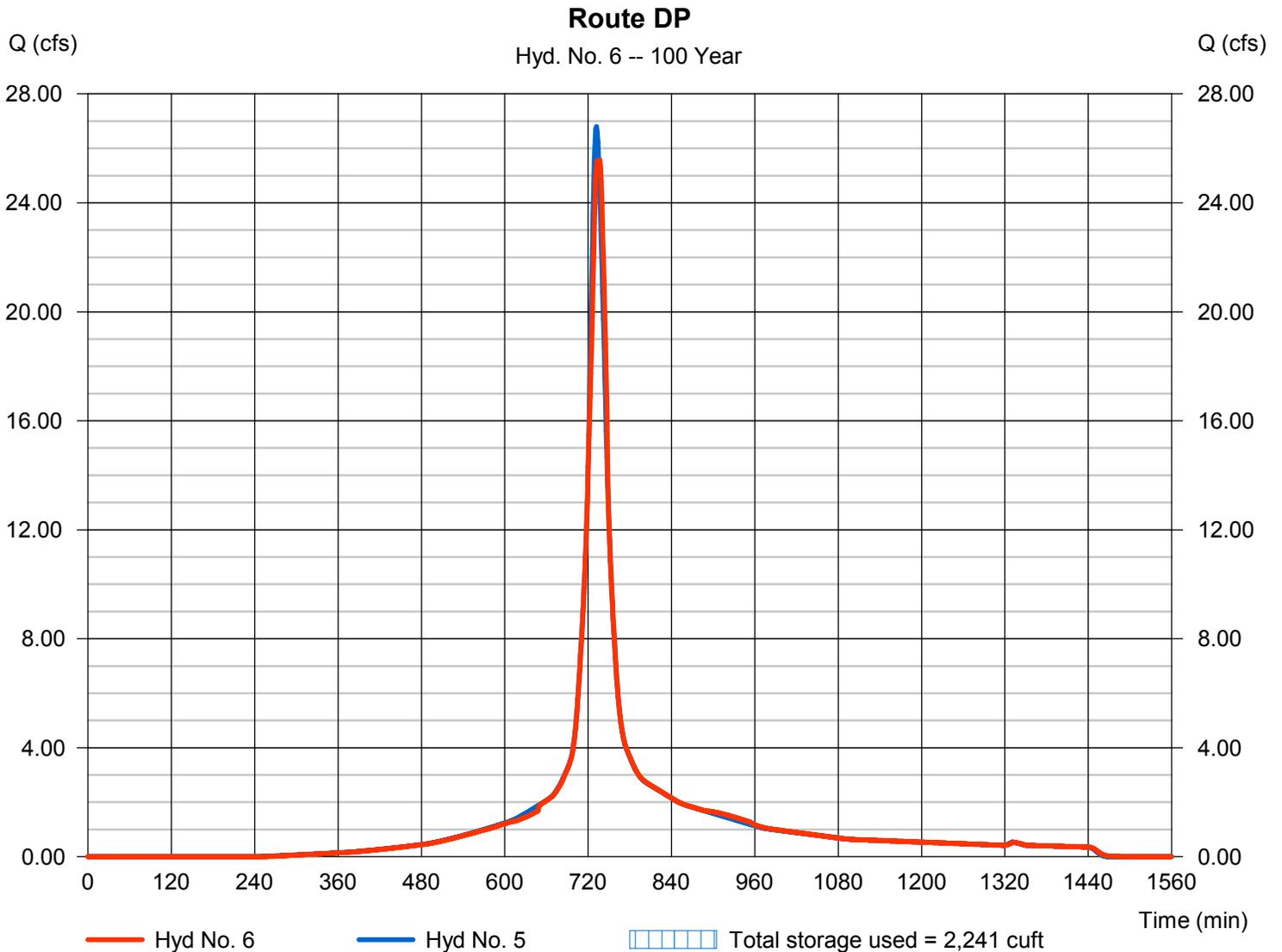
# Hydrograph Report

## Hyd. No. 6

Route DP

Hydrograph type	= Reservoir	Peak discharge	= 25.57 cfs
Storm frequency	= 100 yrs	Time to peak	= 737 min
Time interval	= 1 min	Hyd. volume	= 117,906 cuft
Inflow hyd. No.	= 5 - B2 - Proposed (East)	Max. Elevation	= 750.14 ft
Reservoir name	= Det. Pond	Max. Storage	= 2,241 cuft

Storage Indication method used.



# Hydrograph Report

## Hyd. No. 8

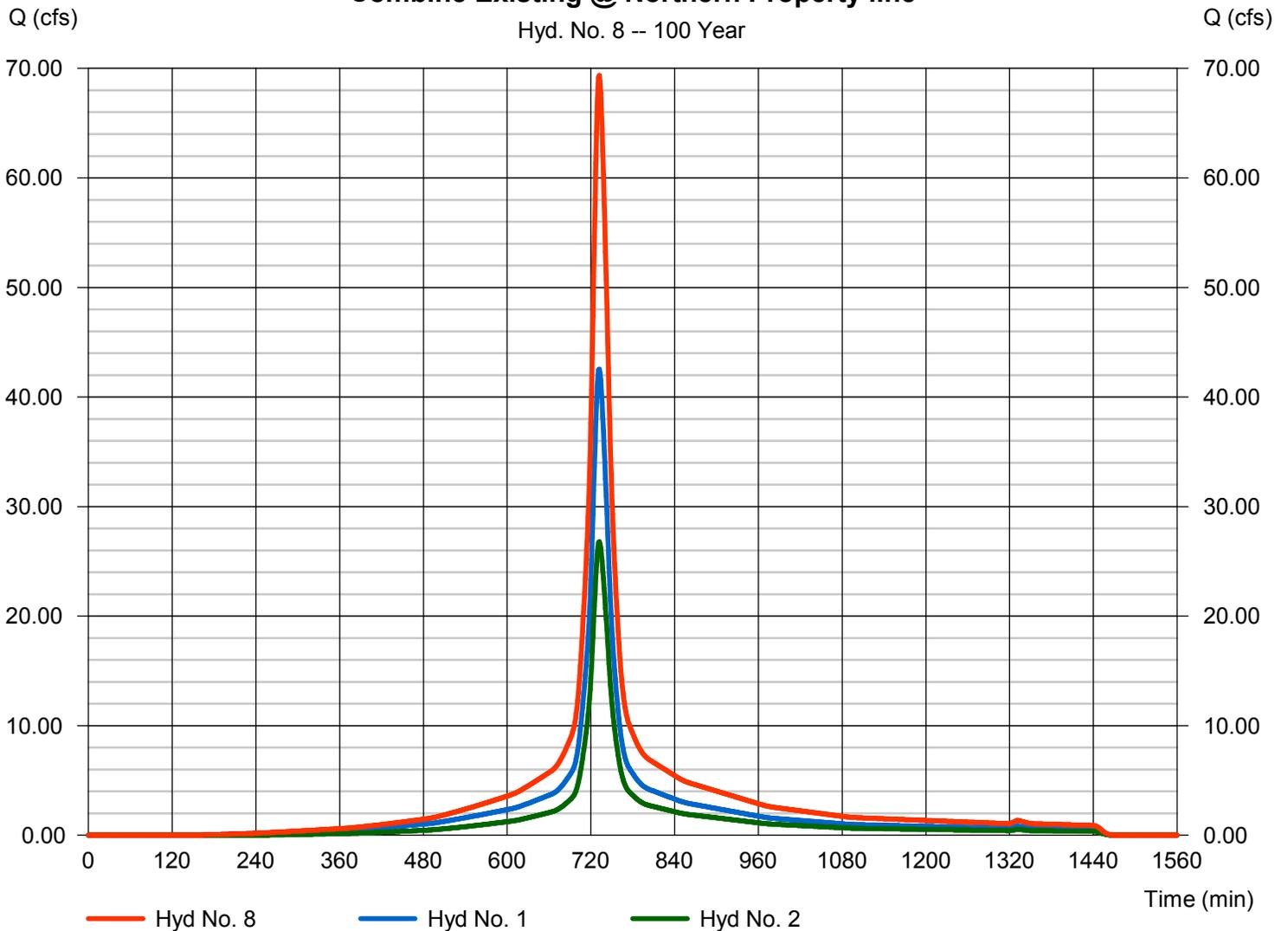
Combine Existing @ Northern Property line

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

Peak discharge = 69.35 cfs  
Time to peak = 732 min  
Hyd. volume = 311,765 cuft  
Contrib. drain. area = 11.220 ac

### Combine Existing @ Northern Property line

Hyd. No. 8 -- 100 Year



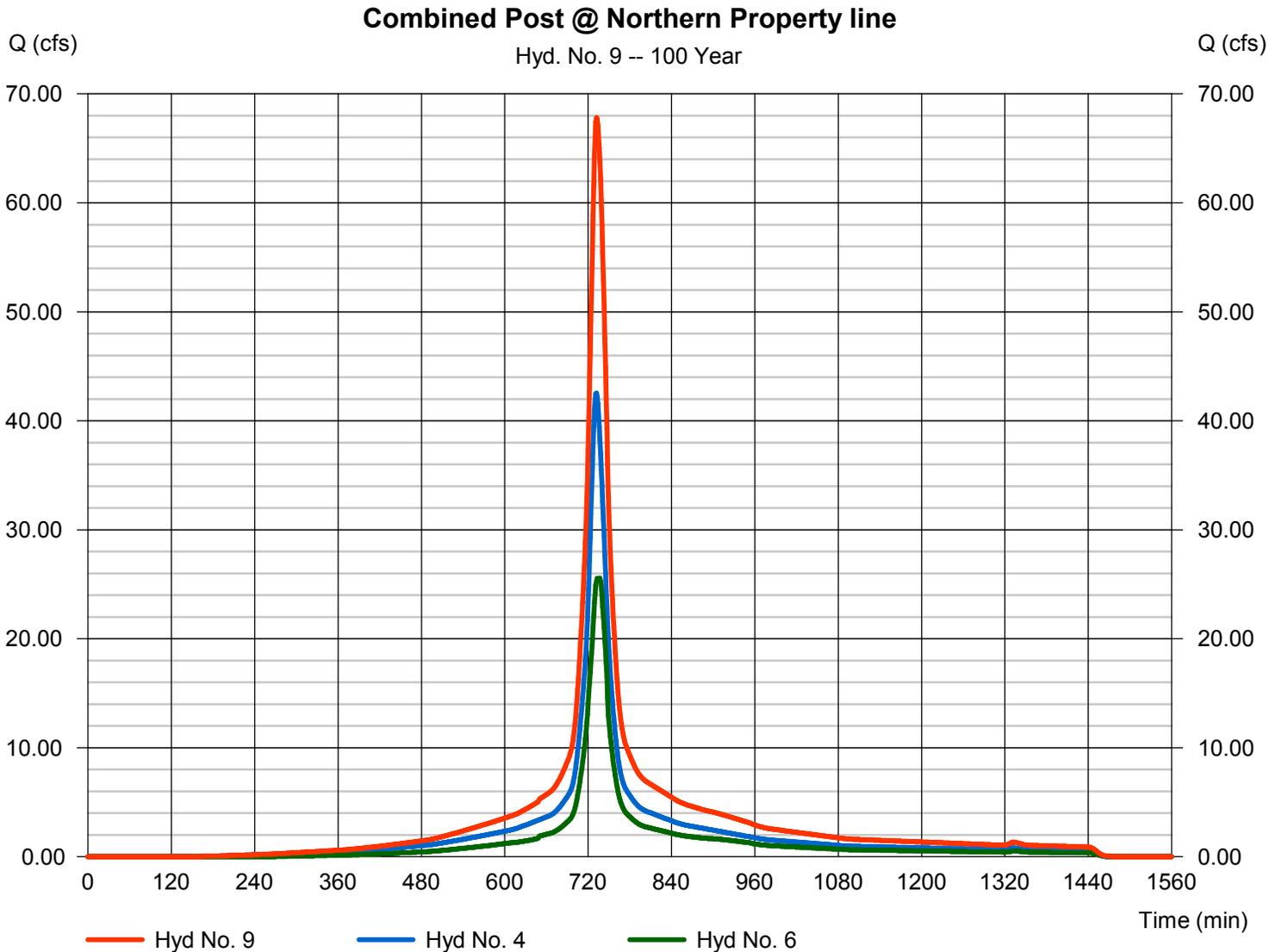
# Hydrograph Report

## Hyd. No. 9

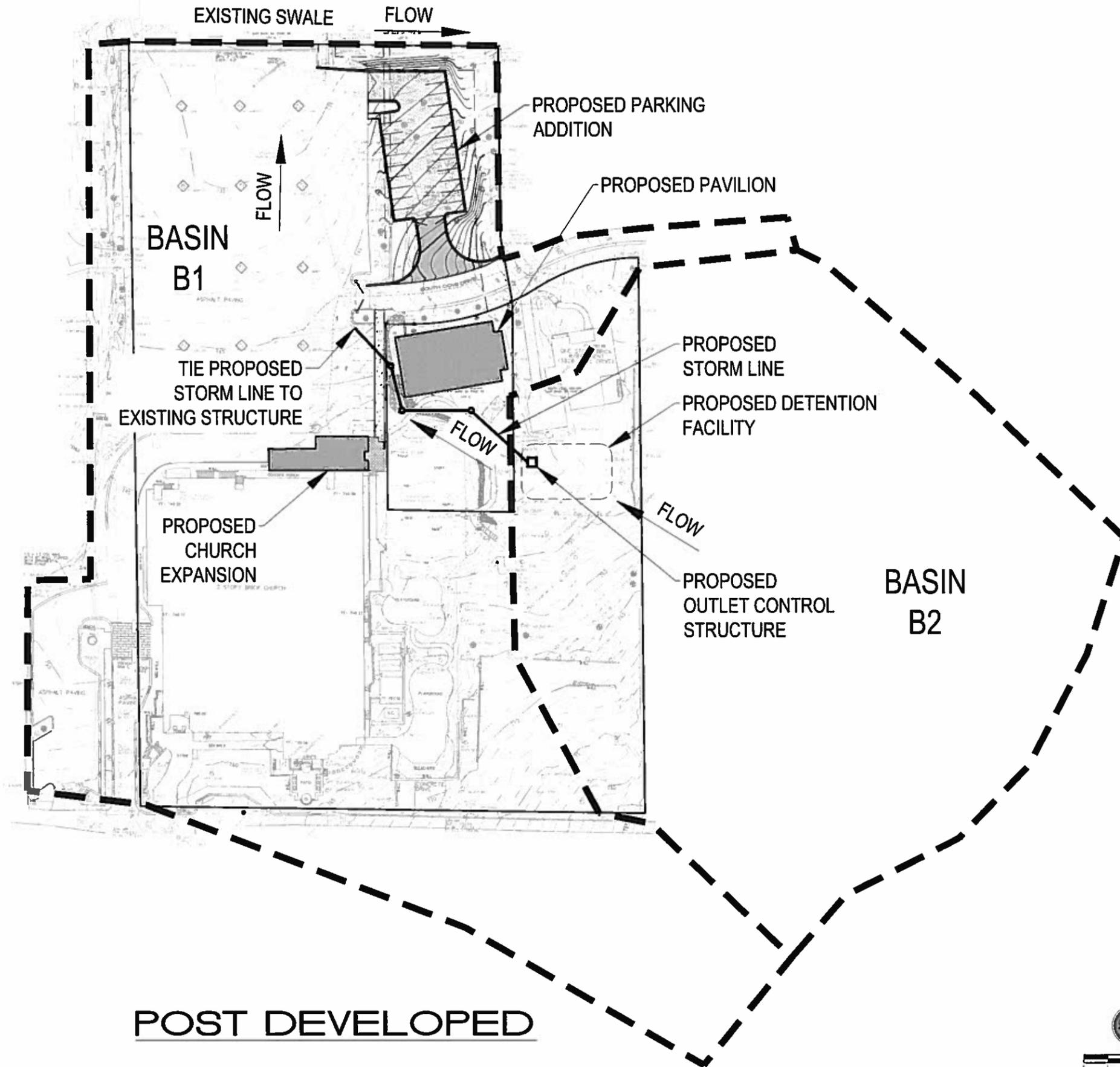
Combined Post @ Northern Property line

Hydrograph type = Combine  
Storm frequency = 100 yrs  
Time interval = 1 min  
Inflow hyds. = 4, 6

Peak discharge = 67.82 cfs  
Time to peak = 732 min  
Hyd. volume = 311,765 cuft  
Contrib. drain. area = 6.720 ac







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Project Number  
**102-16-036**

Sheet	
Sheet Date	


**ST. LUKE'S CHURCH**  
**MOUNTAIN BROOK, AL**

BASIN MAP  
POST DEVELOPMENT

Date  
**09-23-2016**

Checked By <b>GDN</b>	Drawn By <b>TSM</b>
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Sheet Number  
**C3.0**



**POST DEVELOPED**

