



SEC-7364-2016
7/15/16

PLANNING AND CODE ADMINISTRATION

City of Gaithersburg · 31 South Summit Avenue · Gaithersburg, Maryland 20877 · Telephone: (301) 258-6330 · Fax: (301) 258-6336
plancode@gaitersburgmd.gov · www.gaitersburgmd.gov

SEDIMENT AND EROSION CONTROL PLAN APPLICATION

***ALL APPLICATIONS, PLANS AND FEES SHOULD BE MAILED OR DELIVERED TO
CITY OF GAITHERSBURG, CITY HALL, 31 S. SUMMIT AVENUE, GAITHERSBURG MD 20877**

SUBJECT PROPERTY

Street Address or Location 913 / 917 Quince Orchard Road, Gaithersburg, Maryland

PROJECT NAME Kentlands Apartments

APPLICANT/BILLING CONTACT

Business Name Maser Consulting, P.A.

Primary Contact Eduardo Intriago, P.E.

Street Address 22375 Broderick Drive Suite No. 110

City Sterling State Virginia Zip Code 20166

Telephone Numbers: Work 703-430-4330 Cell 571-383-6545 E-mail Address eintriago@maserconsulting.com

OWNER

Business Name S & T Kentlands, LLC

Primary Contact Mr. Preet Takhar

Street Address 11100 South Glen Road Suite No. _____

City Potomac State Maryland Zip Code 20854

Telephone Numbers: Work 301-428-1070 Ext. 290 Cell 240-463-1737 E-mail Address preet424@gmail.com

DEVELOPER

Business Name S & T Kentlands, LLC

Primary Contact Mr. Preet Takhar

Street Address 11100 South Glen Road Suite No. _____

City Potomac State Maryland Zip Code 20854

Telephone Numbers: Work 301-428-1070 Ext. 290 Cell 240-463-1737 E-mail Address preet424@gmail.com

ENGINEER

Business Name Maser Consulting, P.A. MD Registration No. 46513

Primary Contact Eduardo Intriago, P.E.

Street Address 22375 Broderick Drive Suite No. 110

City Sterling State Virginia Zip Code 20166

Telephone Numbers: Work 703-430-4330 Cell 571-383-6545 E-mail Address eintriago@maserconsulting.com

Joint Hearing - MCC & PC
SDP-7362-2016
Exhibit #26

LOCATION DESCRIPTION

South of the intersection of Quince Orchard Road and Great Seneca Highway

PROJECT DESCRIPTION

Proposed 296 apartment complex with its associated infrastructure.

PLAN TYPE (check all that apply)

Concept Preliminary Final

WATERSHED:

Great Seneca Lower Great Seneca Creek Middle Great Seneca Creek
 Muddy Branch Upper Rock Creek Watts Branch

TRIBUTARY:

Multiple Muddy Branch Whetstone Run
 Long Draught Branch

PROJECT AREA

Total Sediment & Erosion Control Area (Acres) 3.2

Total Disturbed Area (Acres) 3.2

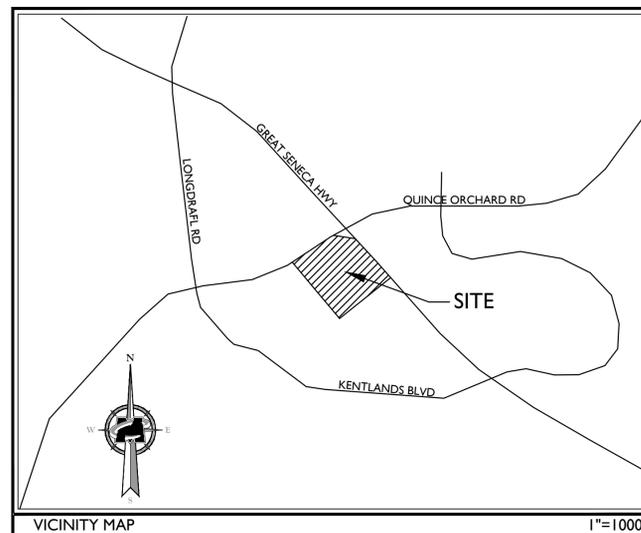
See Sediment and Erosion Control Checklist for Submittal Requirements

OWNER/APPLICANT/DEVELOPER INFORMATION	
S&T KENTLANDS LLC 11100 SOUTH GLEN ROAD, POTOMAC, MD 20854 ATTENTION: PREET TAKHAR PHONE: (301) 428-1070 X290	
CIVIL ENGINEER	
MASER CONSULTING P.A. 22375 BRODERICK DRIVE, SUITE 110 STERLING, VA 20166 ATTENTION: EDUARDO INTRIAGO PHONE: (703)430-4330	
ARCHITECT	
DUNNING GROUP ARCHITECTS, LLC 5900 FORT DRIVE, SUITE 450 CENTREVILLE, VA 20121 ATTENTION: ROBERT DUNNING PHONE: (703) 378-7991	
GEOTECHNICAL ENGINEER	
MASER CONSULTING P.A. 22375 BRODERICK DRIVE, SUITE 110 STERLING, VA 20166 ATTENTION: JOHN WALTON PHONE: (703) 430-4330	
LAND SURVEYOR	
MASER CONSULTING P.A. 22375 BRODERICK DRIVE, SUITE 110 STERLING, VA 20166 ATTENTION: IVAN MOODY PHONE: (703) 430-4330	
PROJECT DATA	
SITE DATA: SITE AREA: 135,087 SF (3.10 AC) LIMITS OF DISTURBANCE: 140,090 SF (3.22 AC)	
BUILDING: TOTAL AREA: 462,886 SF DWELLING AREA: 319,229 SF PARKING GARAGE AREA: 137,857 SF AMENITY AREA: 5,800 SF	
BULK ZONING INFORMATION: TAX MAP: #03069330 & #03069341 ZONE: MXD (MIXED USE DEVELOPMENT)	
BUILDING SETBACKS: PROVIDED: FRONT (GREAT SENECA HIGHWAY): 62.85 FEET FRONT (QUINCE ORCHARD ROAD): 13.39 FEET REAR: 13.06 FEET SIDE: 30.37 FEET	
FAR: PROVIDED: 0.53	
DWELLING UNITS: STUDIO: 59 ONE BEDROOM: 132 TWO BEDROOM: 95 THREE BEDROOM: 9 TOTAL NUMBER OF DWELLING UNITS: 295 NUMBER OF DWELLING UNITS PER ACRE: 95.2	
AFFORDABLE UNITS: UNITS REQUIRED: 15% (45 UNITS) UNITS PROVIDED: 15.3% (45 UNITS)	
BUILDING HEIGHT: MAXIMUM: 75 FEET PROVIDED: 75 FEET	
GREEN SPACE: SITE GREEN SPACE: TOTAL AREA: 135,087 SF (3.10 AC) PROVIDED: 29,118 SF (21.6%) KENTLANDS GREEN SPACE: TOTAL AREA: 353.0 ACRES REQUIRED: 141.2 ACRES (40.0%) PROVIDED: 161.6 ACRES (45.8%)	
PARKING DATA:	
REQUIRED PARKING SPACES	
STUDIO @ 1/UNIT	59 SPACES
ONE BEDROOM @ 1.25/UNIT	165 SPACES
TWO BEDROOM @ 1.5/UNIT	143 SPACES
THREE BEDROOM @ 2/UNIT	18 SPACES
ASSEMBLY AREA @ 1/400 SF	15 SPACES
TOTAL SPACES REQUIRED	400 SPACES
TOTAL LOADING REQUIRED	1 SPACE
PROVIDED PARKING SPACES	
GARAGE PARKING	
STANDARD	409 SPACES
VAN ACCESSIBLE	1 SPACE
STANDARD ACCESSIBLE	9 SPACES
SURFACE PARKING	
STANDARD	2 SPACES
VAN ACCESSIBLE	2 SPACE
STANDARD ACCESSIBLE	0 SPACES
TOTAL PARKING PROVIDED	423 SPACES
TOTAL LOADING PROVIDED	2 SPACES

*AMENITY AREA TOTAL = 5,800 SF
BASEMENT LEVEL
 CRAFT ROOM = 500 SF
 PET CARE ROOM = 400 SF
FIRST LEVEL
 MAIN LOBBY = 1,060 SF
 GAME ROOM = 850 SF
 PARTY ROOM = 1,040 SF
 FITNESS CENTER = 1,350 SF
BALCONY LOUNGE
 BALCONY LOUNGE = 600 SF

CONCEPT/ PRELIMINARY STORMWATER MANAGEMENT & SEDIMENT CONTROL PLAN

FOR S & T KENTLANDS, LLC BLOCK "Q" PARCEL I DEED BOOK 20204 PAGE 59 PARCEL J DEED BOOK 27103 PAGE 189 CITY OF GAITHERSBURG MARYLAND



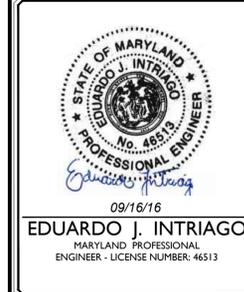
INDEX OF SHEETS	
SHEET NO.	SHEET NAME
C1	COVER SHEET
C2	GENERAL NOTES
C3	DEMOLITION AND E&S CONTROL PLAN
C4	PROPOSED LAYOUT
C5	PROPOSED GRADING AND UTILITIES
C6	EXISTING DRAINAGE DIVIDES
C7	PROPOSED DRAINAGE DIVIDES
C8	PROPOSED SWM COMPUTATIONS
C9	PROPOSED SWM NOTES AND DETAILS
C10	NOTES & DETAILS
C11-C13	LANDSCAPE PLAN
C14	CONSTRUCTION ENTRANCE TRUCK TURN
C15	DELIVERY TRUCK TURN
C16	FIRE TRUCK TURN
EX1	GREENSPACE EXHIBIT



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REV	DATE	BY	DESCRIPTION
1	09/16/16	PAF	SECOND SUBMISSION - PLANS REVISED PER COMMENTS RECEIVED FROM COUNTY.



**CONCEPT/
PRELIMINARY SWM &
SEDIMENT CONTROL PLAN**
FOR
**S & T
KENTLANDS, LLC**

BLOCK "Q"
PARCEL 1 DEED BOOK
24204 AT PAGE 59
PARCEL J
DEED BOOK 27103
AT PAGE 189

CITY OF GAITHERSBURG
MARYLAND

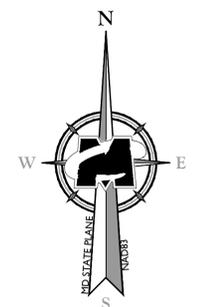
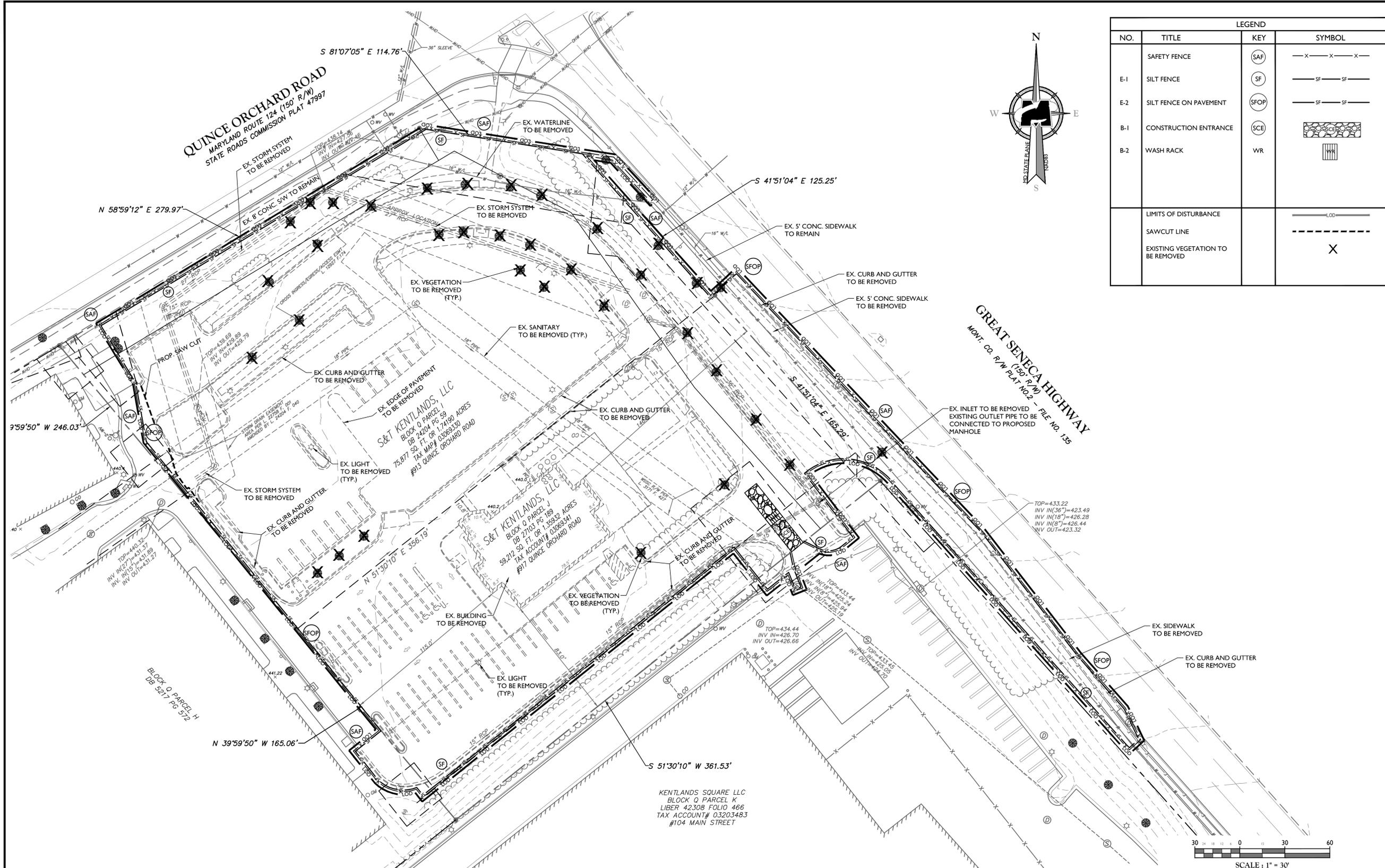


SCALE:	DATE:	DRAWN BY:	CHECKED BY:
	11/16/15	CHE	EI
PROJECT NUMBER:	DRAWING NAME:		
15000352A	C-COVER		
SHEET TITLE:			
COVER SHEET			
SHEET NUMBER:			
C1			

PROFESSIONAL CERTIFICATION,
I HEREBY CERTIFY THAT THESE
DOCUMENTS WERE PREPARED
OR APPROVED BY ME, AND
THAT I AM A DULY LICENSED
PROFESSIONAL ENGINEER
UNDER THE LAWS OF THE
STATE OF MARYLAND

LICENSE NO. _____
EXP. DATE _____

**Joint Hearing - MCC & PC
SDP-7362-2016
Exhibit #27**



LEGEND			
NO.	TITLE	KEY	SYMBOL
	SAFETY FENCE	(SAF)	— X — X — X —
E-1	SILT FENCE	(SF)	— SF — SF —
E-2	SILT FENCE ON PAVEMENT	(SFOP)	— SF — SF —
B-1	CONSTRUCTION ENTRANCE	(SCE)	[Symbol: Stone wall with opening]
B-2	WASH RACK	WR	[Symbol: Rectangular structure with vertical bars]
	LIMITS OF DISTURBANCE		— LOD —
	SAWCUT LINE		- - - - -
	EXISTING VEGETATION TO BE REMOVED		X

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1	09/16/16	PJP	SECOND SUBMISSION - PLANS REVISED PER COMMENTS RECEIVED FROM COUNTY.

STATE OF MARYLAND
 EDUARDO J. INTRIAGO
 No. 46513
 PROFESSIONAL ENGINEER
 09/16/16
 EDUARDO J. INTRIAGO
 MARYLAND PROFESSIONAL
 ENGINEER - LICENSE NUMBER: 46513

CONCEPT/
 PRELIMINARY SWM &
 SEDIMENT CONTROL PLAN
 FOR
 S & T
 KENTLANDS, LLC
 BLOCK "Q"
 PARCEL 1 DEED BOOK
 24204 AT PAGE 59
 PARCEL J
 DEED BOOK 27103
 AT PAGE 189
 CITY OF GAITHERSBURG
 MARYLAND

STERLING OFFICE
 22375 Broderick Drive
 Suite 110
 Sterling, VA 20166
 Phone: 703.430.4330
 Fax: 703.430.4339

SCALE: 1" = 30'
 DATE: 11/16/15
 DRAWN BY: CHE
 CHECKED BY: EI
 PROJECT NUMBER: 15000552A
 DRAWING NAME: C-DEMO
 SHEET TITLE: DEMOLITION AND E&S CONTROL PLAN
 SHEET NUMBER: C3

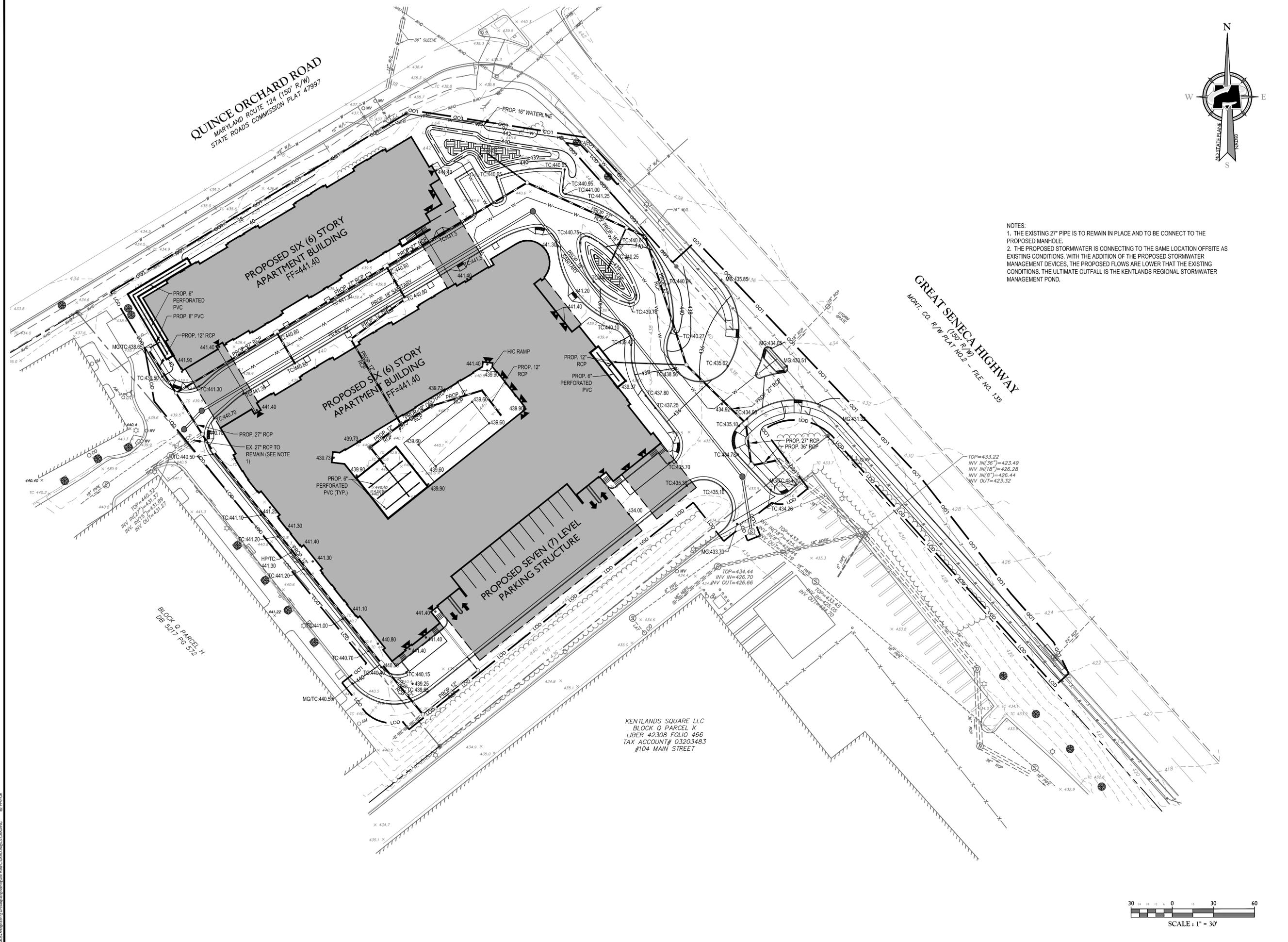
PHASE 1 EROSION AND SILTATION CONTROL NARRATIVE
 THE TOTAL SITE AREA FOR BOTH PARCELS "I" AND "J" IS APPROXIMATELY 3.10 ACRES. THE TOTAL AREA OF DISTURBANCE IS APPROXIMATELY 3.21 ACRES DUE TO ADDITIONAL DISTURBANCE REQUIRED FOR UTILITY RELOCATIONS, ETC.
 CONTRACTOR TO NOTIFY THE DEPARTMENT OF INSPECTIONS AND PERMITS AT LEAST 48 HOURS BEFORE COMMENCING WORK. WORK MAY NOT COMMENCE UNTIL THE PERMITTEE OR THE RESPONSIBLE PERSONNEL HAVE MET ON SITE WITH THE SEDIMENT AND EROSION CONTROL INSPECTOR TO REVIEW THE APPROVED PLANS. ONCE THE APPROVED PLANS HAVE BEEN REVIEWED ON SITE, AND AFTER HAVING RECEIVED PERMISSION TO PROCEED, THE CONTRACTOR SHALL INSTALL THE PERIMETER CONTROLS AND CONSTRUCTION ENTRANCE AS INDICATED ON THE PHASE 1 EROSION AND SILTATION CONTROL PLANS.
 INSTALLATION OF THE CONSTRUCTION ENTRANCES WILL REQUIRE THE REMOVAL OF THE PAVEMENT BELOW THE CONSTRUCTION ENTRANCE LOCATION(S). CLEAR THE MINIMUM AREA(S) AS NECESSARY FOR THE INSTALLATION OF THE PERIMETER CONTROLS. ONCE THE PERIMETER SEDIMENT CONTROLS HAVE BEEN INSTALLED, INSTALL ALL INLET CONTROLS, AS INDICATED. NOTIFY THE INSPECTOR FOR APPROVAL OF SEDIMENT CONTROL INSTALLATION PRIOR TO COMMENCING WORK.
 CONTRACTOR IS TO PERFORM CLEARING AND GRUBBING ACTIVITIES WITHIN THE LIMITS OF DISTURBANCE, AS INDICATED ON PLAN. STORM DRAIN INLET PROTECTION REQUIRES

FREQUENT MAINTENANCE. TO MAINTAIN FUNCTION AND AVOID PREMATURE CLOGGING, ACCUMULATED SEDIMENT MUST BE REMOVED AFTER EACH RAIN EVENT. IF THE INLET PROTECTION DOES NOT COMPLETELY DRAIN WITHIN 24 HOURS AFTER A STORM EVENT, IT IS CLOGGED. WHEN THIS OCCURS, REMOVE ACCUMULATED SEDIMENT AND CLEAN, OR REPLACE, THE GEOTEXTILE AND STONE.
 ALL SPOIL MATERIALS ARE TO BE DISPOSED OF AT AN APPROVED SITE WITH AN ACTIVE PERMIT IN ACCORDANCE WITH ALL APPLICABLE LOCAL, STATE, AND FEDERAL REGULATIONS.
 THE CONSTRUCTION ENTRANCE MUST BE MAINTAINED IN A CONDITION THAT MINIMIZES THE TRACKING OF SEDIMENT. THIS MAY REQUIRE ADDING STONE OR MAKING OTHER REPAIRS AS CONDITIONS DEMAND TO MAINTAIN A CLEAN SURFACE, THE MOUNTABLE BERM, AND THE SPECIFIED DIMENSIONS. ALL SILT OR SEDIMENT SPILLED, DROPPED, OR TRACKED ONTO THE ADJACENT ROADWAY MUST BE REMOVED IMMEDIATELY BY VACUUMING, SCRAPING, AND/OR SWEEPING. WASHING THE ROADWAY TO REMOVE MUD TRACKED ONTO PAVEMENT IS NOT ACCEPTABLE UNLESS THE WASH WATER IS DIRECTED TO AN APPROVED SEDIMENT CONTROL PRACTICE.
 THE AREA UNDER THE WASH RACK(S) MUST BE MAINTAINED FREE OF ACCUMULATED SEDIMENT. IF DAMAGED, THE WASH RACK MUST BE REPAIRED OR REPLACED.
 ACCUMULATED SEDIMENT AND DEBRIS MUST BE REMOVED WHEN BULGES DEVELOP IN THE SILT

FENCE OR WHEN SEDIMENT REACHES 25 PERCENT OF THE FENCE HEIGHT. THE GEOTEXTILE MUST BE REPLACED IF TORN. IF UNDER MINING OCCURS, RE-INSTALL FENCE.
 CONTRACTOR IS TO BEGIN DEMOLITION PROCEDURES FOR ALL IMPROVEMENTS LOCATED WITHIN THE PERIMETER CONTROLS. REMOVE CURB AND GUTTER AND PAVEMENT, AS INDICATED ON PLAN.
 UPON COMPLETION OF SURFACE DEMOLITION, THE CONTRACTOR SHALL BEGIN INSTALLATION OF THE ULTIMATE ALIGNMENTS OF THE PROPOSED SEWER, WATER, AND STORM DRAINS, AS INDICATED ON PLANS. MULTIPLE DE-WATERING DEVICES ARE TO BE ON-SITE, BASED UPON THE ANTICIPATED NUMBER OF ACTIVE TRENCHES BEING EXCAVATED. CONSTRUCTION OF THE RELOCATED LINES IS A CRITICAL ASPECT OF THE PROJECT SCOPE, WITH THE PRIMARY GOAL TO MINIMIZE DISRUPTION OF ANY OF THE SERVICES.
 THE STABILIZED CONSTRUCTION ENTRANCE MUST BE MAINTAINED IN A CONDITION THAT MINIMIZES TRACKING OF SEDIMENT. THIS MAY REQUIRE ADDING STONE OR MAKING OTHER REPAIRS AS CONDITIONS DEMAND TO MAINTAIN A CLEAN SURFACE, THE MOUNTABLE BERM, AND THE SPECIFIED DIMENSIONS. ALL STONE OR SEDIMENT SPILLED, DROPPED, OR TRACKED ONTO THE ADJACENT TRAVEL-WAY MUST BE REMOVED IMMEDIATELY BY VACUUMING, SCRAPING, AND/OR SWEEPING. WASHING THE ADJACENT TRAVEL-WAY TO REMOVE MUD TRACKED ONTO THE PAVED AREA IS NOT ACCEPTABLE UNLESS THE WASH WATER IS DIRECTED

TO AN APPROVED SEDIMENT CONTROL PRACTICE. THE AREA UNDER THE WASH RACK MUST BE MAINTAINED FREE OF ACCUMULATED SEDIMENT. IF DAMAGED, THE WASH RACK MUST BE REPAIRED OR REPLACED.
 STORM DRAIN INLET PROTECTION REQUIRES FREQUENT MAINTENANCE TO MAINTAIN FUNCTION AND AVOID PREMATURE CLOGGING. ACCUMULATED SEDIMENT MUST BE REMOVED BY HAND AFTER EACH RAIN EVENT. IF THE INLET PROTECTION DOES NOT COMPLETELY DRAIN WITHIN 24 HOURS AFTER A STORM EVENT, IT IS CLOGGED. WHEN THIS OCCURS, REMOVE ACCUMULATED SEDIMENT AND CLEAN, OR REPLACE, THE GEOTEXTILE AND STONE.
 ACCUMULATED SEDIMENT AND DEBRIS MUST BE REMOVED WHEN BULGES DEVELOP IN THE SILT FENCE OR WHEN SEDIMENT REACHES 25 PERCENT OF THE FENCE HEIGHT. THE GEOTEXTILE MUST BE REPLACED IF TORN. IF UNDERMINING OCCURS, REINSTALL FENCE.
 AREAS THAT ARE TO REMAIN PERVIOUS SHALL BE PREPARED IN ACCORDANCE WITH THE STANDARDS AND SPECIFICATIONS, INCLUDING SOIL PREPARATION, APPLICATION OF TOPSOIL, AND SOIL AMENDMENTS AS SOIL CONDITIONS DICTATE. THESE MEASURES INCLUDE LOOSENING SOIL AND APPLICATION OF FERTILIZER AND LIME.
 PERVIOUS AREAS THAT MAY REMAIN DENUDE FOR UP TO 7 DAYS ARE TO RECEIVE TEMPORARY STABILIZATION IN ACCORDANCE WITH APPLICABLE STANDARDS AND SPECIFICATIONS (SEE NOTES ON SHEET 2).

PHASE 2 EROSION AND SILTATION CONTROL NARRATIVE
 CONTRACTOR TO FINE GRADE ALL DISTURBED AREAS THAT ARE TO REMAIN PERVIOUS AREAS. ONCE FINE GRADING IS COMPLETE, PERMANENT SEEDING SHALL BE INSTALLED IN CONFORMANCE WITH APPLICABLE STANDARDS AND SPECIFICATIONS. VEGETATION MUST BE ESTABLISHED AND MAINTAINED SO THAT THE REQUIREMENTS FOR ADEQUATE VEGETATIVE ESTABLISHMENT ARE CONTINUOUSLY MET IN ACCORDANCE WITH SECTION B.4 OF THE "2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL" (VEGETATIVE STABILIZATION).
 CONTRACTOR SHALL NOT REMOVE EROSION AND SILTATION CONTROLS UNTIL AFTER APPROVAL HAS BEEN RECEIVED FROM THE APPROPRIATE ENFORCEMENT AUTHORITY.



QUINCE ORCHARD ROAD
 MARYLAND ROUTE 124 (150' R/W)
 STATE ROADS COMMISSION PLAT 47997

GREAT SENECA HIGHWAY
 MONT. CO. R/W PLAT NO. 2 - FILE NO. 135

NOTES:
 1. THE EXISTING 27" PIPE IS TO REMAIN IN PLACE AND TO BE CONNECT TO THE PROPOSED MANHOLE.
 2. THE PROPOSED STORMWATER IS CONNECTING TO THE SAME LOCATION OFFSITE AS EXISTING CONDITIONS. WITH THE ADDITION OF THE PROPOSED STORMWATER MANAGEMENT DEVICES, THE PROPOSED FLOWS ARE LOWER THAN THE EXISTING CONDITIONS. THE ULTIMATE OUTFALL IS THE KENTLANDS REGIONAL STORMWATER MANAGEMENT POND.

KENTLANDS SQUARE LLC
 BLOCK Q PARCEL K
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 TAX ACCOUNT# 03203483
 #104 MAIN STREET

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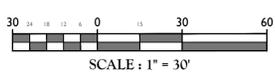
STATE OF MARYLAND
 EDUARDO J. INTRIAGO
 No. 46519
 PROFESSIONAL ENGINEER
 Eduardo J. Intriago
 09/16/16
EDUARDO J. INTRIAGO
 MARYLAND PROFESSIONAL ENGINEER - LICENSE NUMBER: 46513

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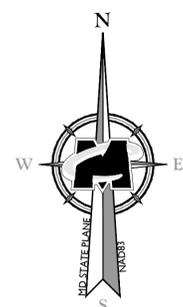
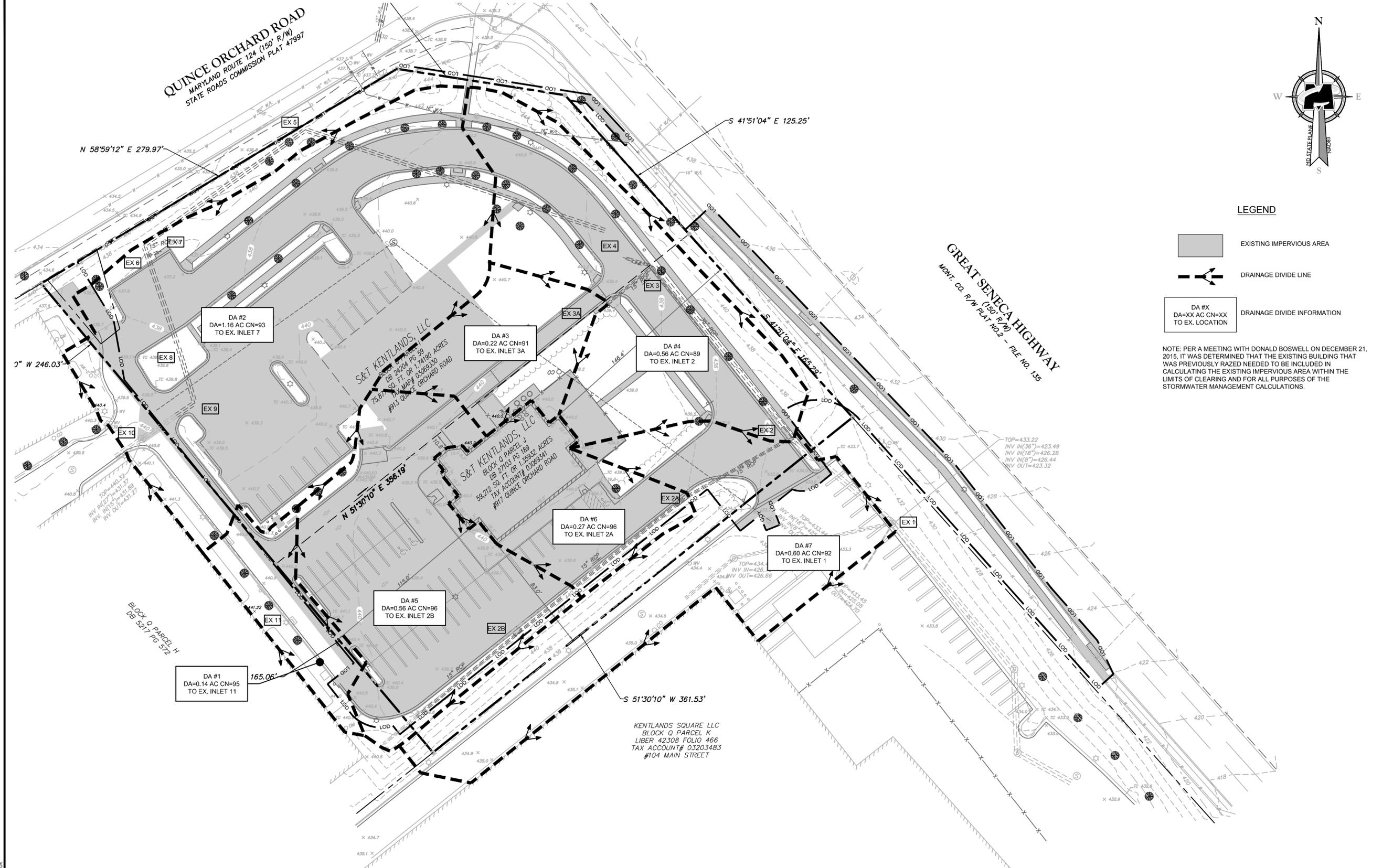
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 Phone: 703.430.4330
 Fax: 703.430.4339

SCALE:	DATE:	DRAWN BY:	CHECKED BY:
PROJECT NUMBER:	11/16/15	CHE	EI
15000352A			
DRAWING NAME:	C-GRAD		

SHEET TITLE
PROPOSED GRADING PLAN
 SHEET NUMBER:
C5



15000352A/Grading/Drawings/Engineering/04_Parcels/01-C-GRAD.dwg/09/16/16/09/16/16



LEGEND

- EXISTING IMPERVIOUS AREA
- DRAINAGE DIVIDE LINE
- DA #X
DA=XX AC CN=XX
TO EX. LOCATION

NOTE: PER A MEETING WITH DONALD BOSWELL ON DECEMBER 21, 2015, IT WAS DETERMINED THAT THE EXISTING BUILDING THAT WAS PREVIOUSLY RAZED NEEDED TO BE INCLUDED IN CALCULATING THE EXISTING IMPERVIOUS AREA WITHIN THE LIMITS OF CLEARING AND FOR ALL PURPOSES OF THE STORMWATER MANAGEMENT CALCULATIONS.

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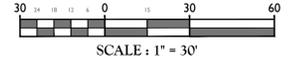
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EDUARDO J. INTRIAGO
Professional Engineer
No. 46513
09/16/16
EDUARDO J. INTRIAGO
MARYLAND PROFESSIONAL ENGINEER - LICENSE NUMBER: 46513

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MARYLAND

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Fax: 703.430.4339

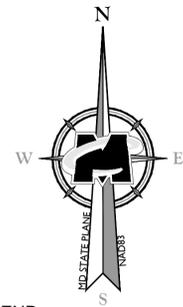
SCALE:	DATE:	DRAWN BY:	CHECKED BY:
PROJECT NUMBER:	11/16/15	CHE	EI
SHEET NUMBER:	1500052A	DRAWING NAME:	C-DM

SHEET TITLE
EXISTING DRAINAGE DIVIDES
SHEET NUMBER:
C6



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QUINCE ORCHARD ROAD
 MARYLAND ROUTE 124 (150' R/W)
 STATE ROADS COMMISSION PLAT 47997



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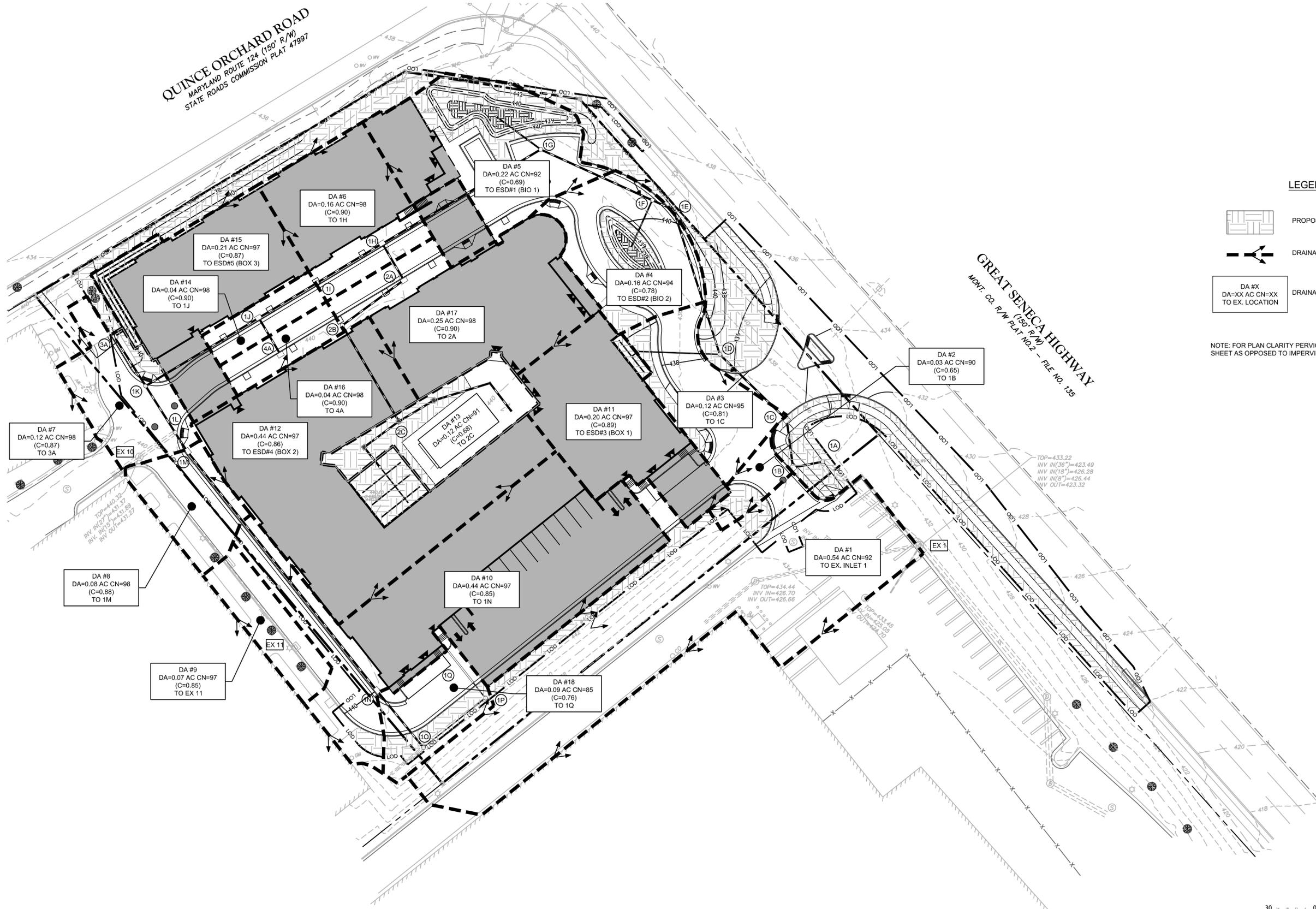
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LEGEND

- PROPOSED PERVIOUS AREA
- DRAINAGE DIVIDE LINE
- DRAINAGE DIVIDE INFORMATION
 DA #X
 DA=XX AC CN=XX
 TO EX. LOCATION

NOTE: FOR PLAN CLARITY PERVIOUS AREA WAS SHOWN ON THIS SHEET AS OPPOSED TO IMPERVIOUS AREA.



REV.	DATE	DRAWN BY	DESCRIPTION
1	09/16/16	PAP	SECOND SUBMISSION - PLANS REVISED PER COMMENTS RECEIVED FROM COUNTY.

STATE OF MARYLAND
 EDUARDO J. INTRIAGO
 No. 46513
 PROFESSIONAL ENGINEER
 09/16/16
EDUARDO J. INTRIAGO
 MARYLAND PROFESSIONAL
 ENGINEER - LICENSE NUMBER: 46513

CONCEPT/
 PRELIMINARY SWM &
 SEDIMENT CONTROL PLAN
 FOR
 S & T
 KENTLANDS, LLC
 BLOCK "Q"
 PARCEL 1 DEED BOOK
 24204 AT PAGE 59
 PARCEL J
 DEED BOOK 27103
 AT PAGE 189
 CITY OF GAITHERSBURG
 MARYLAND

MASER STERLING OFFICE
 22375 Broderick Drive
 Suite 110
 Sterling, VA 20166
 Phone: 703.430.4330
 Fax: 703.430.4339

SCALE:	DATE:	DRAWN BY:	CHECKED BY:
PROJECT NUMBER:	11/16/15	CHE	EI
SHEET NUMBER:	DRAWING NAME:		
	C-DAH		

PROPOSED
 DRAINAGE DIVIDES

SHEET TITLE:
 C7



I:\2015\Management\Drawings\Engineering\04_Park_C-DAH.ctb

REDEVELOPMENT COMPUTATIONS

Site Area=	135,087	SF
Existing Site Impervious Area=	86,170	SF
% Impervious (Existing)=	63.8%	
Proposed Site Impervious Area=	105,969	SF
% Impervious (Proposed)=	78.4%	

LOD=	140,090	SF
Existing Impervious=	92,359	SF
% Impervious (Existing)=	65.9%	
Proposed Impervious=	113,812	SF
% Impervious (Proposed)=	81.2%	

REDEVELOPMENT REQUIREMENTS

Required Pe =	1	inch
Rv=	0.95	
A=	(0.50*Existing Impervious)	
A=	(0.50*92,359)	SF
A=	46,180	SF
ESDv=	((Pe)(Rv)(A))/12	
ESDv=	3,656	FT ³

ADDITIONAL IMPERVIOUS REQUIREMENTS

Required Pe =	1.8	inch
Additional Impervious Area=	113,812-92,359	SF
Additional Impervious Area=	21,453	SF
% Impervious (Additional Impervious)=	15.3%	
Rv=	0.05+0.009(%)	
Rv=	0.19	
A=	140,090	SF
ESDv=	((Pe)(Rv)(A))/12	
ESDv=	3,947	FT ³

NOTE:
PER REDEVELOPMENT STANDARDS, REQUIRED
PE = 1, RV=0.95 FOR EXISTING IMPERVIOUS.

NOTE:
REQUIRED PE=1.8 BASED ON CHART 5.3 OF
THE 2000 MARYLAND SWM MANUAL (D SOILS
AT 80% IMPERVIOUS)

Total ESDv Required= 7,603

INDIVIDUAL PRACTICE COMPUTATIONS

ESD #1 (MICRO-BIORETENTION #1)

Basin Area (A)=	475	SF
Basin Depth (df)=	4	FT
Dry Storage (hf)=	0.50	FT
% Voids (V)=	40%	
k=	1	FT/DAY
tf=	2	DAYS

Drainage Area=	9,543	SF
Impervious Area=	6,185	SF
I%=	64.8%	

Basin Area (A)=	165	SF
Basin Depth (df)=	4	FT
Dry Storage (hf)=	0.50	FT
% Voids (V)=	40%	
k=	1	FT/DAY
tf=	2	DAYS

Drainage Area=	6,784	SF
Impervious Area=	5,425	SF
I%=	80.0%	

Planter Area (A)=	220	SF
Basin Depth (df)=	4	FT
Dry Storage (hf)=	0.83	FT
% Voids (V)=	40%	
k=	1	FT/DAY
tf=	2	DAYS

Drainage Area=	8,918	SF
Impervious Area=	8,698	SF
I%=	97.5%	

Volume Provided (VP) =	(A) x ((hf)+(df)x(V))	
Volume Provided (VP) =	998	FT ³

Rv=	0.05+0.009(%)	
Rv=	0.63	

Volume Provided (VP) =	(A) x ((hf)+(df)x(V))	
Volume Provided (VP) =	347	FT ³

Rv=	0.05+0.009(%)	
Rv=	0.77	

Volume Provided (VP) =	(A) x ((hf)+(df)x(V))	
Volume Provided (VP) =	535	FT ³

Rv=	0.05+0.009(%)	
Rv=	0.93	

WQv		
WQv=	VP/0.75	FT ³
WQv=	1,330	FT ³

Pe=	(WQv x 12) / (Rv x DA)	
Pe=	2.6	inches

WQv		
WQv=	VP/0.75	FT ³
WQv=	462	FT ³

Pe=	(WQv x 12) / (Rv x DA)	
Pe=	1.1	inches

WQv		
WQv=	VP/0.75	FT ³
WQv=	713	FT ³

Pe=	(WQv x 12) / (Rv x DA)	
Pe=	1.0	inches

ESD #4 (PLANTER BOX #2)

Planter Area (A)=	1,340	SF
Basin Depth (df)=	4	FT
Dry Storage (hf)=	0.50	FT
% Voids (V)=	40%	
k=	1	FT/DAY
tf=	2	DAYS

Drainage Area=	19,307	SF
Impervious Area=	17,967	SF
I%=	93.1%	

Planter Area (A)=	500	SF
Basin Depth (df)=	4	FT
Dry Storage (hf)=	0.50	FT
% Voids (V)=	40%	
k=	1	FT/DAY
tf=	2	DAYS

Drainage Area=	9,030	SF
Impervious Area=	8,530	SF
I%=	94.5%	

Volume Provided (VP) =	(A) x ((hf)+(df)x(V))	
Volume Provided (VP) =	2,814	FT ³

Rv=	0.05+0.009(%)	
Rv=	0.89	

Volume Provided (VP) =	(A) x ((hf)+(df)x(V))	
Volume Provided (VP) =	1,050	FT ³

Rv=	0.05+0.009(%)	
Rv=	0.90	

WQv		
WQv=	VP/0.75	FT ³
WQv=	3,752	FT ³

Pe=	(WQv x 12) / (Rv x DA)	
Pe=	2.6	inches

WQv		
WQv=	VP/0.75	FT ³
WQv=	1,400	FT ³

Pe=	(WQv x 12) / (Rv x DA)	
Pe=	2.1	inches

- CALCULATION NOTES:**
1. FILTER MEDIA TO BE MONTGOMERY COUNTY DPS MIX
 2. IF RECOMMENDED 2 DAYS FOR BIORETENTION PER 2000 MARYLAND SWM MANUAL.
 3. PER 2000 MARYLAND SWM MANUAL, MICRO-BIORETENTION PRACTICES SHALL CAPTURE AND STORE AT LEAST 75% OF THE ESDV.

FULL SITE COMPLIANCE COMPUTATIONS

WQv

WQv Required =	7,603	FT ³
WQv Provided =	7,657	FT ³

Pe

Pe Required =	1.8	inches
Pe Provided =	1.8	inches

NOTE:
PER CODE, WITH THE ESD MEASURES PROVIDED,
THIS SITE MEETS ALL REQUIREMENTS FOR BOTH
WATER QUALITY AND QUANTITY.



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REV.	DATE	DRAWN BY	DESCRIPTION	PAP	SCALE	DATE	DESCRIPTION
1	09/16/16						



09/16/16
EDUARDO J. INTRIAGO
MARYLAND PROFESSIONAL
ENGINEER - LICENSE NUMBER: 46513

ESD #1 (MICRO-BIORETENTION #1)

CONSTRUCTION INSPECTION CHECK-OFF LIST FOR BIORETENTION FACILITY	COUNTY INSPECTOR	OWNER/DEVELOPER
STAGE	INITIALS/DATE	INITIALS/DATE
MANDATORY NOTIFICATION: Inspection and approval of each practice is required at these points prior to proceeding with construction. The permittee is required to give the MCDCPS Inspector twenty-four (24) hours notice (DPS telephone 240-777-0311). The DPS Inspector may waive an inspection, and allow the owner/developer to make the required inspection per a prior scheduled arrangement which has been confirmed with the DPS Inspector in writing. Work completed without MCDCPS approval may result in the permittee having to remove and reconstruct the unapproved work. Upon completion of the project, a formal Stormwater Management As-Built must be submitted to MCDCPS unless a Record Drawing Certification has been allowed instead. Each of the steps listed below must be verified by either the MCDCPS Inspector OR the Owner/Developer.		
1. Excavation for Micro Bio-retention facility conforms to approved plans		
2. Placement of stone backfill and underdrain system conforms to approved plans		
3. Placement of filter media conforms to approved plans		
4. Connecting pipes and/or grading conveyance to the facility constructed per the approved plans		
5. Final grading and permanent stabilization conforms to approved plans		

ESD #2 (MICRO-BIORETENTION #2)

CONSTRUCTION INSPECTION CHECK-OFF LIST FOR BIORETENTION FACILITY	COUNTY INSPECTOR	OWNER/DEVELOPER
STAGE	INITIALS/DATE	INITIALS/DATE
MANDATORY NOTIFICATION: Inspection and approval of each practice is required at these points prior to proceeding with construction. The permittee is required to give the MCDCPS Inspector twenty-four (24) hours notice (DPS telephone 240-777-0311). The DPS Inspector may waive an inspection, and allow the owner/developer to make the required inspection per a prior scheduled arrangement which has been confirmed with the DPS Inspector in writing. Work completed without MCDCPS approval may result in the permittee having to remove and reconstruct the unapproved work. Upon completion of the project, a formal Stormwater Management As-Built must be submitted to MCDCPS unless a Record Drawing Certification has been allowed instead. Each of the steps listed below must be verified by either the MCDCPS Inspector OR the Owner/Developer.		
1. Excavation for Micro Bio-retention facility conforms to approved plans		
2. Placement of stone backfill and underdrain system conforms to approved plans		
3. Placement of filter media conforms to approved plans		
4. Connecting pipes and/or grading conveyance to the facility constructed per the approved plans		
5. Final grading and permanent stabilization conforms to approved plans		

ESD #3 (PLANTER BOX #1)

CONSTRUCTION INSPECTION CHECK-OFF LIST FOR BIORETENTION FACILITY	COUNTY INSPECTOR	OWNER/DEVELOPER
STAGE	INITIALS/DATE	INITIALS/DATE
MANDATORY NOTIFICATION: Inspection and approval of each practice is required at these points prior to proceeding with construction. The permittee is required to give the MCDCPS Inspector twenty-four (24) hours notice (DPS telephone 240-777-0311). The DPS Inspector may waive an inspection, and allow the owner/developer to make the required inspection per a prior scheduled arrangement which has been confirmed with the DPS Inspector in writing. Work completed without MCDCPS approval may result in the permittee having to remove and reconstruct the unapproved work. Upon completion of the project, a formal Stormwater Management As-Built must be submitted to MCDCPS unless a Record Drawing Certification has been allowed instead. Each of the steps listed below must be verified by either the MCDCPS Inspector OR the Owner/Developer.		
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2. Placement of stone backfill and underdrain system conforms to approved plans		
3. Placement of filter media conforms to approved plans		
4. Connecting pipes and/or grading conveyance to the facility constructed per the approved plans		
5. Final grading and permanent stabilization conforms to approved plans		

ESD #4 (PLANTER BOX #2)

CONSTRUCTION INSPECTION CHECK-OFF LIST FOR BIORETENTION FACILITY	COUNTY INSPECTOR	OWNER/DEVELOPER
STAGE	INITIALS/DATE	INITIALS/DATE
MANDATORY NOTIFICATION: Inspection and approval of each practice is required at these points prior to proceeding with construction. The permittee is required to give the MCDCPS Inspector twenty-four (24) hours notice (DPS telephone 240-777-0311). The DPS Inspector may waive an inspection, and allow the owner/developer to make the required inspection per a prior scheduled arrangement which has been confirmed with the DPS Inspector in writing. Work completed without MCDCPS approval may result in the permittee having to remove and reconstruct the unapproved work. Upon completion of the project, a formal Stormwater Management As-Built must be submitted to MCDCPS unless a Record Drawing Certification has been allowed instead. Each of the steps listed below must be verified by either the MCDCPS Inspector OR the Owner/Developer.		
1. Excavation for Micro Bio-retention facility conforms to approved plans		
2. Placement of stone backfill and underdrain system conforms to approved plans		
3. Placement of filter media conforms to approved plans		
4. Connecting pipes and/or grading conveyance to the facility constructed per the approved plans		
5. Final grading and permanent stabilization conforms to approved plans		

ESD #5 (PLANTER BOX #3)

CONSTRUCTION INSPECTION CHECK-OFF LIST FOR BIORETENTION FACILITY	COUNTY INSPECTOR	OWNER/DEVELOPER
STAGE	INITIALS/DATE	INITIALS/DATE
MANDATORY NOTIFICATION: Inspection and approval of each practice is required at these points prior to proceeding with construction. The permittee is required to give the MCDCPS Inspector twenty-four (24) hours notice (DPS telephone 240-777-0311). The DPS Inspector may waive an inspection, and allow the owner/developer to make the required inspection per a prior scheduled arrangement which has been confirmed with the DPS Inspector in writing. Work completed without MCDCPS approval may result in the permittee having to remove and reconstruct the unapproved work. Upon completion of the project, a formal Stormwater Management As-Built must be submitted to MCDCPS unless a Record Drawing Certification has been allowed instead. Each of the steps listed below must be verified by either the MCDCPS Inspector OR the Owner/Developer.		
1. Excavation for Micro Bio-retention facility conforms to approved plans		
2. Placement of stone backfill and underdrain system conforms to approved plans		
3. Placement of filter media conforms to approved plans		
4. Connecting pipes and/or grading conveyance to the facility constructed per the approved plans		
5. Final grading and permanent stabilization conforms to approved plans		

CONCEPT/
PRELIMINARY SWM &
SEDIMENT CONTROL PLAN

FOR
S & T
KENTLANDS, LLC

BLOCK "Q"
PARCEL 1 DEED BOOK
24204 AT PAGE 59
PARCEL J
DEED BOOK 27103
AT PAGE 189

CITY OF GAITHERSBURG
MARYLAND



STERLING OFFICE
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	11/16/15	CHE	EI
PROJECT NUMBER:	DRAWING NAME:		
15000252A	C-SWM		

SHEET TITLE
**PROPOSED SWM
COMPUTATIONS**

SHEET NUMBER:
C8

STORMWATER MANAGEMENT NARRATIVE

EXISTING CONDITIONS

THE EXISTING CONDITIONS, AS DESCRIBED HEREIN, ARE BASED LARGELY ON A FIELD SURVEY BY MASER CONSULTING, P.A. ENTITLED "BOUNDARY AND TOPOGRAPHIC SURVEY FOR S & T KENTLANDS, LLC", DATED SEPTEMBER 15, 2015 (PROJECT NUMBER 15000252A) AS WELL AS SITE VISITS CONDUCTED ON VARIOUS DATES.

PARCEL I IS ADJACENT TO THE SOUTHWESTERLY QUADRANT OF THE INTERSECTION OF QUINCE ORCHARD ROAD AND GREAT SENECA HIGHWAY AND IS COMPRISED OF APPROXIMATELY 1.74 ACRES. THIS PARCEL WAS THE FORMER SITE OF A FORMER RESTAURANT AND ASSOCIATED SITE AMENITIES WHICH PROVIDED VEHICULAR AND PEDESTRIAN ACCESS TO THE SITE AS WELL AS IMPROVEMENTS WHICH ALLOWED PROVISION OF TRASH AND DELIVERY SERVICES. AS OF THE DATE OF THE FIELD SURVEY, THE BUILDING, BUILDING PERIMETER SIDEWALK, AND DUMPSTER ENCLOSURE HAVE BEEN REMOVED. THE VEHICULAR TRAVEL-WAY REMAINS IN PLACE, WHICH PROVIDES ACCESS TO PARCELS LOCATED TO THE WEST AND SOUTH. ADJACENT TO THIS MAIN TRAVEL-WAY ARE SEVERAL PARKING BAYS AND ADDITIONAL TRAVEL-WAYS WHICH PROVIDE APPROXIMATELY 51 PARKING SPACES.

PARCEL J LIES TO THE SOUTHEAST OF THE AFOREMENTIONED PARCEL I WITH FRONTAGE ON GREAT SENECA HIGHWAY AND IS COMPRISED OF APPROXIMATELY 1.36 ACRES. AS OF THE DATE OF THE FIELD SURVEY THERE WAS AN EXISTING ONE STORY BUILDING WHICH HAS A FOOTPRINT OF APPROXIMATELY 5,000 SQUARE FEET. AS WITH PARCEL I, THIS PORTION OF THE SUBJECT SITE ALSO HAS VARIOUS VEHICULAR, PEDESTRIAN AND SERVICE ACCESS AMENITIES (VEHICULAR TRAVEL-WAYS, SIDEWALKS, PARKING BAYS FOR APPROXIMATELY 46 VEHICLES, AND DESIGNATED DUMPSTER AND DELIVERY AREAS).

THE TOTAL AREA OF BOTH PARCELS IS APPROXIMATELY 3.10 ACRES. THE ANTICIPATED LIMIT OF DISTURBANCE (LOD) REQUIRED TO PROVIDE THE PROPOSED IMPROVEMENTS IS ESTIMATED AT 3.21 ACRES WITH AN IMPERVIOUS COVERAGE OF APPROXIMATELY 2.14 ACRES WITHIN THE LOD.

PROPOSED SITE CONDITIONS

THE PROPOSED SCOPE OF WORK ASSOCIATED WITH THIS PLAN IS TO DEMOLISH ALL EXISTING IMPERVIOUS AREAS LOCATED ON THE SITE WITH THE EXCEPTION OF THE EXISTING DUMPSTER PAD AREA LOCATED ON THE NORTHWESTERLY CORNER OF THE SITE, ADJACENT TO PARCEL H TO THE WEST. THIS PAD SERVES THE EXISTING USES LOCATED ON PARCEL H, AND SHALL REMAIN IN PLACE.

THE "WET" UTILITIES (SANITARY SEWER, PUBLIC WATERLINE, AND STORM DRAIN) LOCATED WITHIN THE PROPERTY WILL REQUIRE REMOVAL AND/OR RE-ROUTING TO ACCOMMODATE THE GEOMETRY OF THE PROPOSED IMPROVEMENTS.

ULTIMATELY, IMPROVEMENTS WILL CONSIST OF TWO BUILDINGS, CONNECTED BY TWO OVERHEAD WALKWAYS WHICH WILL TRAVERSE OVER THE PROPOSED VEHICULAR TRAVEL-WAY. THESE TWO BUILDINGS WILL BE SIX STORIES HIGH AND WILL BE USED FOR ELDERLY HOUSING. THERE WILL ALSO BE A MULTI-LEVEL PARKING STRUCTURE TO PROVIDE PARKING FOR RESIDENTS AND THEIR GUESTS. THE PROPOSED VEHICULAR TRAVEL-WAY WILL CONNECT PARCEL I WITH THE K-MART TO THE SOUTHEAST, IN A SIMILAR PATH AS CURRENTLY EXISTS. THERE WILL ALSO BE A NEW VEHICULAR ENTRANCE FROM GREAT SENECA HIGHWAY.

THE PROPOSED IMPERVIOUS AREA COVERED BY THE BUILDINGS, PARKING STRUCTURE, VEHICULAR TRAVEL-WAY, AND SIDEWALKS IS ANTICIPATED TO BE APPROXIMATELY 2.63 ACRES. THIS REPRESENTS AN INCREASE OF APPROXIMATELY 0.49 ACRES OVER THE EXISTING IMPERVIOUS COVERAGE.

STORMWATER DESIGN

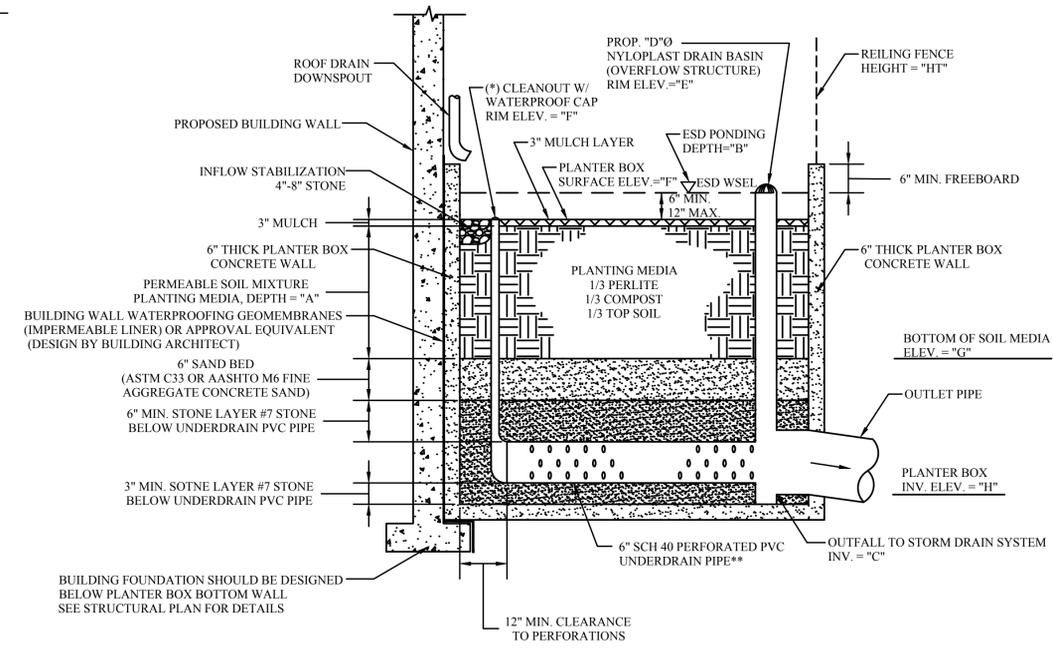
WITH AN EXISTING IMPERVIOUS COVERAGE OF 1.98 ACRES, OR 63.8% OF THE LOD, THIS PROJECT QUALIFIES AS REDEVELOPMENT.

ESD VOLUME REQUIREMENTS

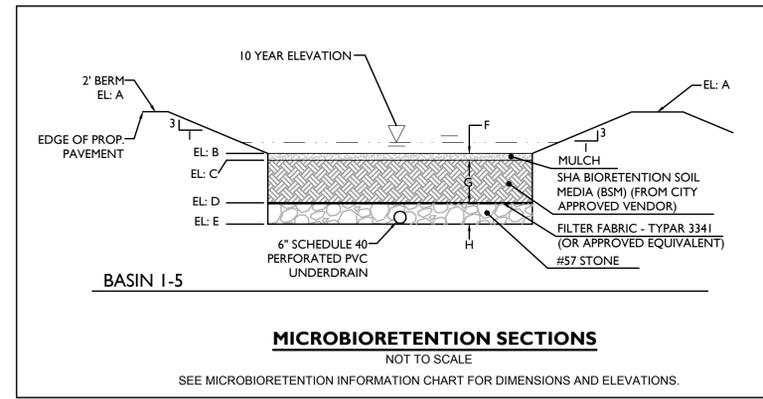
PER THE "2000 MARYLAND STORMWATER DESIGN MANUAL," BECAUSE THE EXISTING SITE IS AT LEAST 40% IMPERVIOUS AREA, THE SITE QUALIFIES FOR REDEVELOPMENT. AS A SITE THAT QUALIFIES FOR REDEVELOPMENT, THIS SITE WILL BE REQUIRED TO TREAT 50% OF THE EXISTING IMPERVIOUS AREA, AS WELL AS 100% OF ALL ADDITIONAL IMPERVIOUS AREA. PER THE CALCULATIONS PROVIDED ON SHEET C8 THE PLANTER BOX ESD MEASURES PROPOSED PROVIDE THE ESD REQUIREMENTS FOR THE SITE. PLEASE SEE SHEET C8 FOR ALL CALCULATIONS.

CONCLUSION

CHECKING THE TOTAL ESDV REQUIRED AGAINST THE TOTAL VOLUME PROVIDED WITH THE TWO MICRO-BIORETENTION AREAS AND THE THREE (3) MICRO-BIORETENTION PLANTER BOXES, THE PROPOSED SWM DESIGN CONFORMS TO THE STANDARDS SET FORTH IN THE "2000 MARYLAND STORMWATER DESIGN MANUAL".



PLANTER BOX DETAIL



BASIN	A	B	C	D	E	F	G	H	10 YEAR ELEV.
1	440.00	438.50	438.25	435.50	434.50	3"	2.75'	1'	439.21
2	439.00	437.50	437.25	434.50	433.50	3"	2.75'	1'	438.22

LOCATION	DIMENSION SCHEDULE								SURFACE AREA (SQ.FT.)	RAILING FENCE HEIGHT	REMARK/NOTE
	"A"	"B"	"C"	"D"	"E"	"F"	"G"	"H"			
ESD #3	2.5'	10"	434.90	24"	439.73	438.90	436.40	434.90	220	N/A	OVERFLOW STRUCTURE-NYOLOPLAST BASIN W/ DOME GRATE
AS-BUILT											
ESD #4	2.5'	6"	434.90	48"	439.40	438.90	436.40	434.90	1,340	36"	OVERFLOW STRUCTURE-NYOLOPLAST BASIN W/ DOME GRATE
AS-BUILT											
ESD #5	2.5'	6"	434.90	12"	439.40	438.90	436.40	434.90	500	N/A	OVERFLOW STRUCTURE-NYOLOPLAST BASIN W/ DOME GRATE
AS-BUILT											

PROPOSED STORM DRAIN CONVEYANCE FLOW CALCULATIONS AND PIPE SIZES

LOCATION	FROM	TO	ACRES TOTAL	COEFF. "C"	C x A INCR.	C x A ACCUM.	TIME OF CONCENTRATION			INTEN. 10 YR in/hr	Q cfs	Q ACCUM. cfs	INVERT UP	INVERT LOW	PIPE			FLOW TIME min.	FLOW RATIO Qp/Qf	RIM			
							INLET	DRAIN	TOTAL						SIZE inches	SLOPE ft./ft.	LENGTH ft.				VELOCITY ft./sec.	CAPACITY cfs	
	EX.10	1L	3.21	0.90	2.89	2.89	6.00		6.00	5.10	14.73	14.73	431.27	431.04	27	0.0082	28.08	RCP	9.19	36.54	0.05	0.40	440.32
		1K	0.00	0.00	0.00	3.54	6.00	0.05	6.05	5.10	0.00	18.04	430.94	430.65	27	0.0081	35.60	RCP	9.16	36.44	0.06	0.50	440.50
		1J	0.00	0.00	0.00	3.84	6.00	0.06	6.12	5.10	0.00	18.57	430.55	429.86	27	0.0081	85.39	RCP	9.13	36.29	0.16	0.51	440.02
		1H	0.04	0.90	0.04	3.88	6.00	0.16	6.27	5.10	0.18	18.75	429.76	429.01	27	0.0080	93.28	RCP	9.10	36.20	0.17	0.52	439.63
		1G	0.16	0.90	0.14	4.13	6.00	0.17	6.44	5.10	0.73	21.05	428.91	427.95	27	0.0080	119.43	RCP	9.10	36.19	0.22	0.58	439.60
		1F	0.00	0.00	0.00	4.13	6.00	0.22	6.66	5.10	0.00	21.05	427.85	427.21	27	0.0081	79.39	RCP	9.12	36.25	0.15	0.58	439.90
		1E	0.00	0.00	0.00	4.13	6.00	0.15	6.81	5.10	0.00	21.05	427.11	426.98	27	0.0086	15.14	RCP	9.41	37.41	0.03	0.56	439.50
		1D	0.00	0.00	0.00	4.13	6.00	0.03	6.83	5.10	0.00	21.05	426.88	425.84	27	0.0106	97.93	RCP	10.46	41.60	0.16	0.51	437.80
		1C	0.00	0.00	0.00	4.13	6.00	0.16	6.99	5.10	0.00	21.05	425.74	425.13	27	0.0101	60.60	RCP	10.19	40.50	0.10	0.52	437.80
		1B	0.12	0.81	0.10	4.23	6.00	0.10	7.09	5.10	0.50	21.55	425.03	424.72	27	0.0100	30.98	RCP	10.16	40.38	0.05	0.53	434.10
		1A	0.03	0.65	0.02	4.24	6.00	0.05	7.14	5.10	0.10	21.65	424.62	424.42	27	0.0102	19.61	RCP	10.25	40.77	0.03	0.53	435.10
		EX 1	0.00	0.00	0.00	4.24	6.00	0.03	7.17	5.10	0.00	21.65	424.32	423.49	36	0.0100	82.91	RCP	12.31	86.99	0.11	0.25	436.10
		3A	0.12	0.87	0.10	0.10	6.00		6.00	5.10	0.53	0.53	431.00	430.65	12	0.0093	37.82	RCP	5.69	4.47	0.11	0.12	43.00
		1Q	0.09	0.76	0.07	0.07	6.00		6.00	5.10	0.35	0.35	438.50	434.53	8	0.3181	12.56	PVC	25.37	8.86	0.01	0.04	439.35
		1P	0.00	0.00	0.00	0.07	6.00	0.01	6.01	5.10	0.00	0.35	434.43	433.92	12	0.0099	51.35	RCP	5.89	4.63	0.15	0.08	440.35
		1O	0.00	0.00	0.00	0.20	6.00	0.15	6.15	5.10	0.00	1.04	433.82	433.35	12	0.0099	47.62	RCP	5.87	4.61	0.14	0.22	440.00
		1N	0.44	0.85	0.37	0.58	6.00	0.14	6.29	5.10	1.91	2.94	433.25	431.28	13	0.0100	197.07	RCP	6.24	5.75	0.53	0.51	441.00
		1M	0.08	0.88	0.07	0.65	6.00	0.53	6.82	5.10	0.36	3.30	431.18	431.04	14	0.0096	14.59	RCP	6.42	6.86	0.04	0.48	442.00
	EX (ROOF 10)	1O	0.15	0.90	0.14	0.14	6.00		6.00	5.10	0.69	0.69	427.58	425.93	12	0.0583	28.32	RCP	14.27	11.21	0.03	0.06	441.50
		2C	0.12	0.88	0.08	0.08	6.00		6.00	5.10	0.42	0.42	433.25	432.50	12	0.0104	71.97	RCP	6.04	4.74	0.20	0.09	443.50
		2B	0.00	0.00	0.00	0.08	6.00	0.20	6.20	5.10	0.00	0.42	432.40	431.90	12	0.0101	49.48	RCP	5.94	4.67	0.14	0.09	444.50
		2A	0.25	0.90	0.23	0.31	6.00	0.14	6.34	5.10	1.15	1.56	431.80	429.01	12	0.0109	27.39	RCP	18.87	14.82	0.02	0.11	445.50
		4A	0.04	0.90	0.04	0.04	6.00		6.00	5.10	0.18	0.18	430.14	429.86	12	0.0102	27.39	RCP	5.98	4.70	0.08	0.04	447.50

NOTE: PER THE MICRO-BIORETENTION PLANTER BOX CALCULATIONS, THE FLOWS COMING FROM THE PLANTER BOXES WILL BE MINUSCULE AND IGNORED DUE TO THE LAG TIME FOR INFILTRATION. THE PEAK FLOWS ARE DELAYED TO HOUR 12 OF THE 10 YEAR EVENT.

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REV.	DATE	DESCRIPTION
1	09/16/16	SECOND SUBMISSION - PLANS REVISED PER COMMENTS RECEIVED FROM COUNTY.

STATE OF MARYLAND
 EDUARDO J. INTRIAGO
 No. 46513
 PROFESSIONAL ENGINEER
 09/16/16
 EDUARDO J. INTRIAGO
 MARYLAND PROFESSIONAL ENGINEER - LICENSE NUMBER: 46513

CONCEPT/
 PRELIMINARY SWM &
 SEDIMENT CONTROL PLAN
 FOR
 S & T
 KENTLANDS, LLC
 BLOCK "Q"
 PARCEL 1 DEED BOOK
 24204 AT PAGE 59
 PARCEL J
 DEED BOOK 27103
 AT PAGE 189
 CITY OF GAITHERSBURG
 MARYLAND

STERLING OFFICE
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 Fax: 703.430.4339

SCALE:	DATE: 11/16/15	DRAWN BY: CME	CHECKED BY: EI
PROJECT NUMBER: 15000252A	DRAWING NAME: C-SWM		

SHEET TITLE:
PROPOSED SWM NOTES AND DETAILS

I:\2015\20150923\20150923\Drawings\Engineering\04_Parc_C\04_Parc_C.dwg - 10/16/15

B-1 STANDARDS AND SPECIFICATIONS

FOR

STABILIZED CONSTRUCTION ENTRANCE

Definition

A layer of aggregate that is underlain with nonwoven geotextile at points of ingress and egress of the construction site.

Purpose

To reduce tracking of sediment onto roadways and provide a stable area for entrance to or exit from the construction site.

Conditions Where Practice Applies

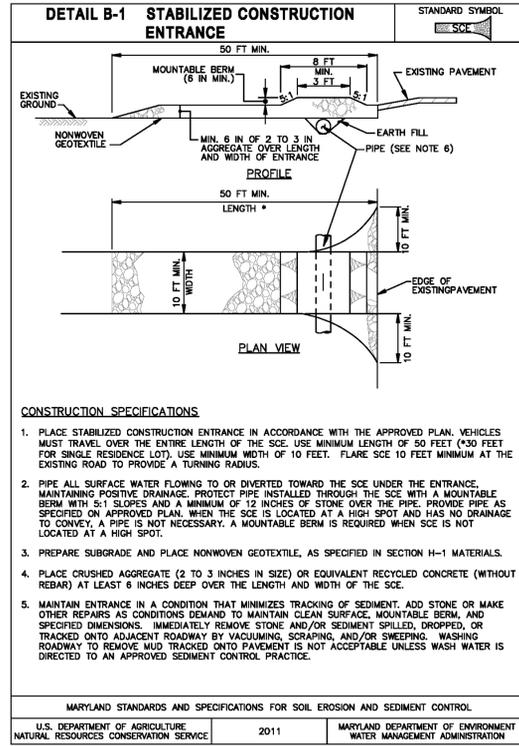
Stabilized construction entrances must be located at all points of construction ingress and egress.

Design Criteria

- Where possible, locate the stabilized construction entrances at the high side of the project area.
- For single family residential lots, locate the entrance at the permanent driveway.
- Stabilized construction entrances cannot be installed over pavement.
- Minimum length is 50 feet (30 feet for single family residential lots).
- Minimum width is 10 feet. Flare entrance 10 feet minimum at the existing road to provide a turning radius.
- The orientation of the stabilized construction entrance may vary from a straight line to a curve or "T" shape depending on the topography and right-of-way.
- All surface water flowing to or diverted toward the stabilized construction entrance (SCE) must be piped under the entrance. Size the pipe to convey the runoff generated by the 2-year, 24-hour frequency storm at minimum. The minimum permissible pipe size is 6 inches. When the entrance is located at a high spot and has no drainage to convey, a pipe is not necessary.

Maintenance

The SCE must be maintained in a condition that minimizes tracking of sediment. This may require adding stone or making other repairs as conditions demand to maintain a clean surface, the mountable berm, and the specified dimensions. All stone or sediment spilled, dropped, or tracked onto the adjacent roadway must be removed immediately by vacuuming, scraping, and/or sweeping. Washing the roadway to remove mud tracked onto pavement is not acceptable unless the wash water is directed to an approved sediment control practice.



MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION
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B-2 STANDARDS AND SPECIFICATIONS

FOR

WASH RACK OPTION

Definition

A system used in conjunction with a stabilized construction entrance (SCE) for washing mud off construction vehicle wheels.

Purpose

To reduce tracking wherever conditions require washing the construction vehicle wheels prior to exiting the site.

Conditions Where Practice Applies

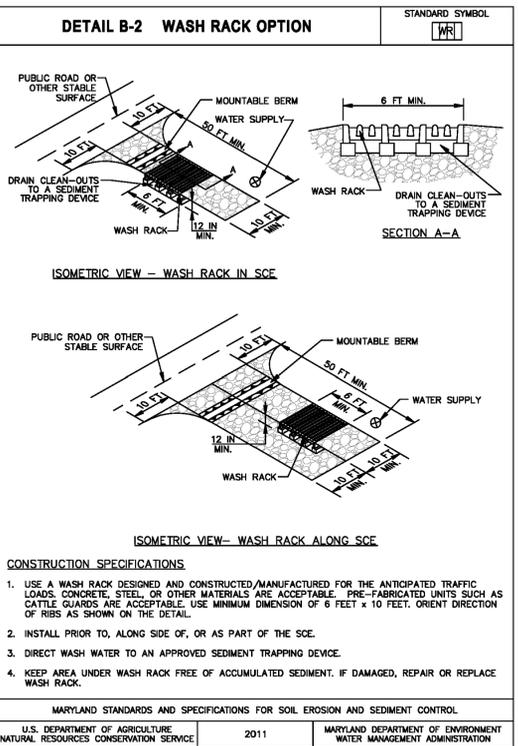
SCE with wash racks are located at points of ingress and egress where tracking of mud and sediment cannot be removed through the use of conventional maintenance practices (e.g., sweeping, vacuuming, etc.)

Design Criteria

- SCE with wash rack must drain to an approved sediment trapping device.
- SCE with wash rack cannot be installed over existing pavement.
- Wash rack must be designed of material that is constructed and manufactured to withstand the anticipated traffic loads. Wash racks may be of concrete, steel, or other materials.

Maintenance

The area under the wash rack must be maintained free of accumulated sediment. If damaged, the wash rack must be repaired or replaced.



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B-4.8 STANDARDS AND SPECIFICATIONS

FOR

STOCKPILE AREA

Definition

A mound or pile of soil protected by appropriately designed erosion and sediment control measures.

Purpose

To provide a designated location for the temporary storage of soil that controls the potential for erosion, sedimentation, and changes to drainage patterns.

Conditions Where Practice Applies

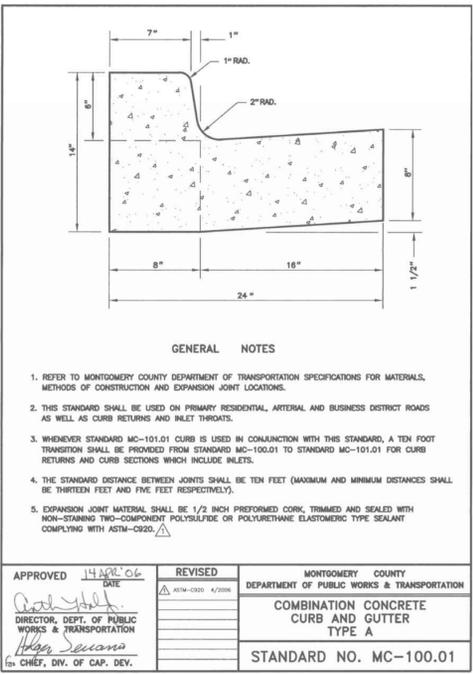
Stockpile areas are utilized when it is necessary to salvage and store soil for later use.

Criteria

- The stockpile location and all related sediment control practices must be clearly indicated on the erosion and sediment control plan.
- The footprint of the stockpile must be sized to accommodate the anticipated volume of material and based on a side slope ratio no steeper than 2:1. Benching must be provided in accordance with Section B-3 Land Grading.
- Runoff from the stockpile area must drain to a suitable sediment control practice.
- Access the stockpile area from the upgrade side.
- Clear water runoff into the stockpile areas must be minimized by use of a diversion device such as an earth dike, temporary swale or diversion fence. Provisions must be made for discharging concentrated flow in a non-erosive manner.
- Where runoff concentrates along the toe of the stockpile fill, an appropriate erosion/sediment control practice must be used to intercept the discharge.
- Stockpiles must be stabilized in accordance with the 3/7 day stabilization requirement as well as Standard B-4-1 Incremental Stabilization and Standard B-4-4 Temporary Stabilization.
- If the stockpile is located on an impervious surface, a liner should be provided below the stockpile to facilitate cleanup. Stockpiles containing contaminated material must be covered with impermeable sheeting.

Maintenance

The stockpile area must continuously meet the requirements for Adequate Vegetative Establishment in accordance with Section B-4 Vegetative Stabilization. Side slopes must be maintained at no steeper than a 2:1 ratio. The stockpile area must be kept free of erosion. If the vertical height of a stockpile exceeds 20 feet for 2:1 slopes, 30 feet for 3:1 slopes, or 40 feet for 4:1 slopes, benching must be provided in accordance with Section B-3 Land Grading.



APPROVED 14 APR 06 DATE: [Signature] DIRECTOR, DEPT. OF PUBLIC WORKS & TRANSPORTATION

REVISOR: [Signature] CHIEF, DIV. OF CAP. DEV.

REVISIONS: [Table with 2 columns: DATE, DESCRIPTION]

DEPARTMENT OF PUBLIC WORKS & TRANSPORTATION
COMBINATION CONCRETE CURB AND GUTTER TYPE A
STANDARD NO. MC-100.01

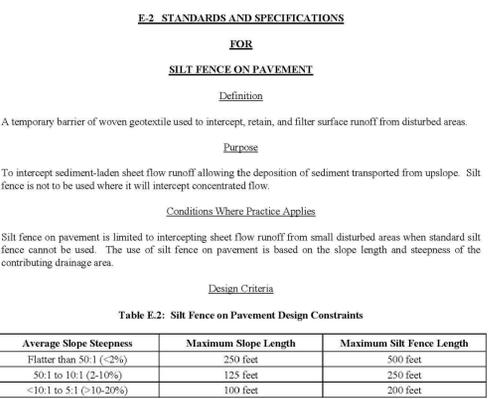


Table E.2: Silt Fence on Pavement Design Constraints

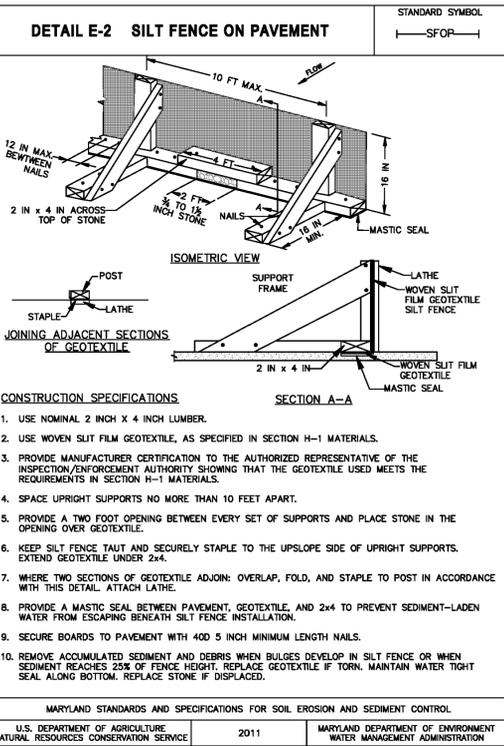
Average Slope Steepness	Maximum Slope Length	Maximum Silt Fence Length
Flatter than 50:1 (<2%)	250 feet	500 feet
50:1 to 10:1 (2-10%)	125 feet	250 feet
<10:1 to 5:1 (>10-20%)	100 feet	200 feet

- Silt fence on pavement must be placed on the contour.
- The use of silt fence on pavement must conform to the design constraints listed in Table E.2 above.

Accumulated sediment and debris must be removed when bulges develop in the silt fence or when sediment reaches 25 percent of the fence height. The geotextile must be replaced if torn. The water tight seal along the bottom must be maintained and the stone replaced if displaced.

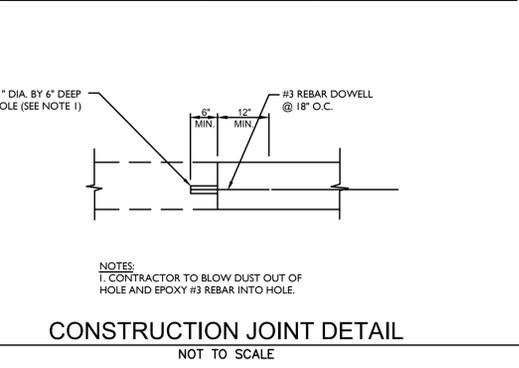
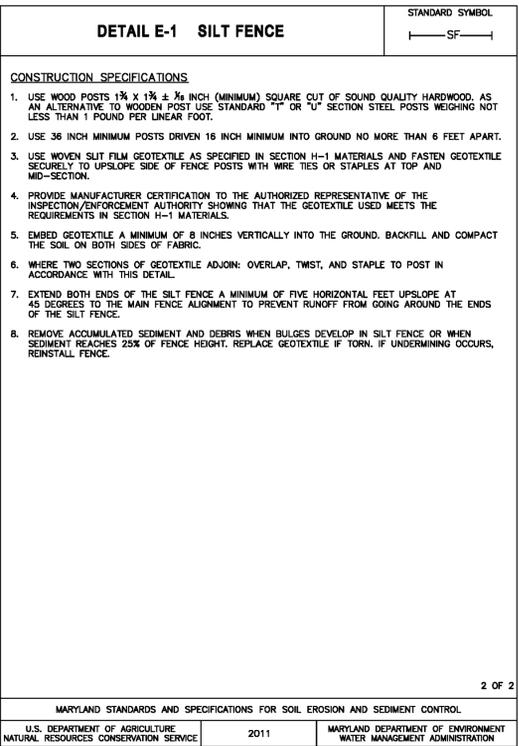
MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

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EDUARDO J. INTRIAGO
No. 46519
PROFESSIONAL ENGINEER
09/16/16
EDUARDO J. INTRIAGO
MARYLAND PROFESSIONAL ENGINEER - LICENSE NUMBER: 46513

CONCEPT/
PRELIMINARY SWM &
SEDIMENT CONTROL PLAN
FOR
S & T
KENTLANDS, LLC
BLOCK "Q"
PARCEL 1 DEED BOOK
24204 AT PAGE 59
PARCEL J
DEED BOOK 27103
AT PAGE 189
CITY OF GAITHERSBURG
MARYLAND

STERLING OFFICE
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Phone: 703.430.4330
Fax: 703.430.4339

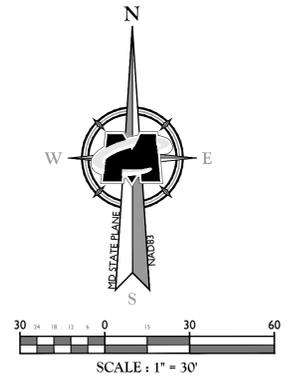
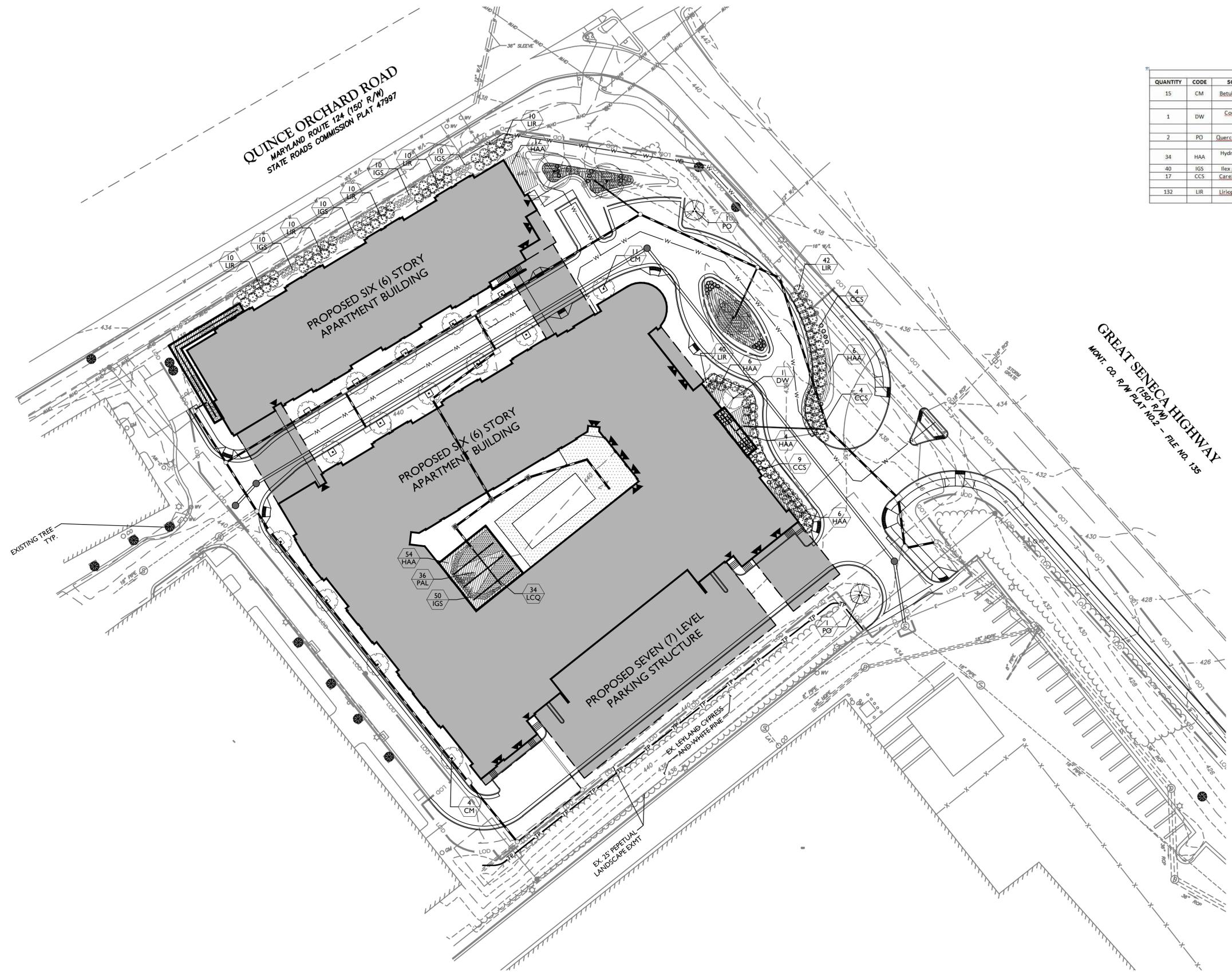
SCALE: [] DATE: 11/16/15 DRAWN BY: CME CHECKED BY: EI
PROJECT NUMBER: 15000252A DRAWING NAME: C-COVER
SHEET TITLE: NOTES & DETAILS
SHEET NUMBER: C10

NOTES:
 1. SEE SHEET C12 FOR PLANTER BOX PLANTING DETAIL.
 2. SEE SHEET C13 FOR BIORETENTION PLANTING DETAIL.

SITE LANDSCAPE TABLE							
QUANTITY	CODE	SCIENTIFIC NAME	COMMON NAME	SIZE	B & B/CONT.	REMARKS	
15	CM	Betula "Crimson Forest"	Crape Myrtle	2 - 2 1/2" Cal	B & B	Multi Stem (3 Min.)	
1	DW	Cornus Kousa/Kousa Dogwood	Dogwood	2" Cal	B & B	Single Trunk	
2	PO	Quercus Palustris/Pin Oak	Pin Oak	3 1/2" Cal	B & B		
34	HAA	Hydrangea Arborescens "Annabelle"	Smooth Hydrangea	24 - 30" HT.	3 gal	Full	
40	IGS	Ilex glabra "Shamrock"	Inkberry	24 - 30" HT.	3 gal	Full	
17	CCS	Carex conica "Snowline"	Sedge		#1 Cont	24" O.C.	
132	LIR	Liriope Muscari/Lily Turf	Liriope		1 GAL	12" O.C.	

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 JONATHAN M. JOLLEY
 LANDSCAPE ARCHITECT
 NO. 345
 9/16/16

JONATHAN JOLLEY
 MARYLAND LICENSED
 LANDSCAPE ARCHITECT - LICENSE NUMBER: 3497

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 24204 AT PAGE 59
 PARCEL J
 DEED BOOK 27103
 AT PAGE 189

CITY OF GAITHERSBURG
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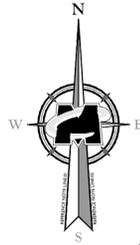
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PROJECT NUMBER:	1500032A	DRAWING NAME:	C-LAND

SHEET TITLE:
LANDSCAPE PLAN

SHEET NUMBER:
C11



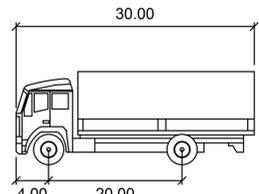
QUINCE ORCHARD ROAD
 MARYLAND ROUTE 124 (150' R/W)
 STATE ROADS COMMISSION PLAT 47997

PROPOSED SIX (6) STORY
 APARTMENT BUILDING

PROPOSED SIX (6) STORY
 APARTMENT BUILDING

PROPOSED SEVEN (7) LEVEL
 PARKING STRUCTURE

GREAT SENECA HIGHWAY
 MONT. CO. R/W PLAT NO.2 - FILE NO. 135



CONST - US - MEDIUM TRUCK
 feet
 Width : 8.00
 Track : 8.00
 Lock to Lock Time : 6.0
 Steering Angle : 31.8

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 MARYLAND PROFESSIONAL ENGINEER - LICENSE NUMBER: 46513
 09/16/16

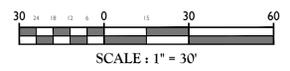
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	11/16/15	CHE	EI
PROJECT NUMBER:	DRAWING NAME:		
1500032A	C-LAYT		

SHEET TITLE:
DELIVERY TRUCK TURN

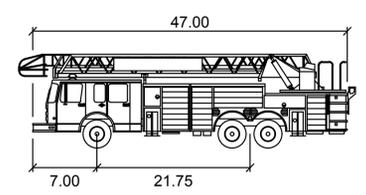
SHEET NUMBER:
C15



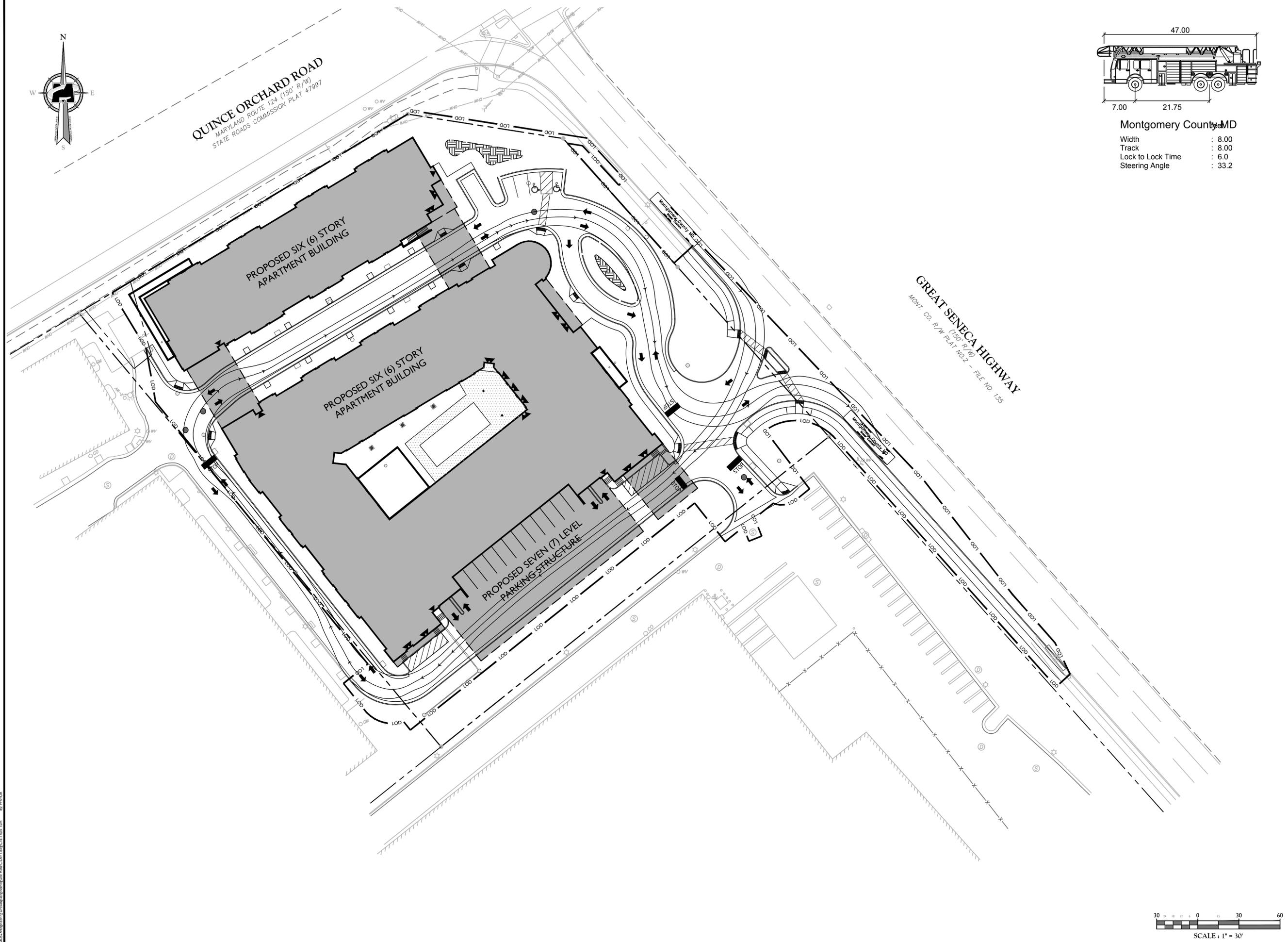
1500032A/segment/Drawings/segment/04_Plan_C-LAYT.dwg/CL15 Truck Turn - 09/16/2016



QUINCE ORCHARD ROAD
 MARYLAND ROUTE 124 (150' R/W)
 STATE ROADS COMMISSION PLAT 47997



Montgomery County, MD
 Width : 8.00
 Track : 8.00
 Lock to Lock Time : 6.0
 Steering Angle : 33.2



GREAT SENECA HIGHWAY
 MONT. CO. R/W PLAT NO. 2 - FILE NO. 135

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REV.	DATE	DRAWN BY	DESCRIPTION
1	09/16/16	PAP	SECOND SUBMISSION - PLANS REVISED PER COMMENTS RECEIVED FROM COUNTY.

STATE OF MARYLAND
 EDUARDO J. INTRIAGO
 No. 46513
 PROFESSIONAL ENGINEER
 Eduardo J. Intriago
 09/16/16
EDUARDO J. INTRIAGO
 MARYLAND PROFESSIONAL
 ENGINEER - LICENSE NUMBER: 46513

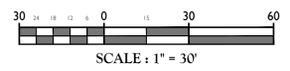
CONCEPT/
 PRELIMINARY SWM &
 SEDIMENT CONTROL PLAN
 FOR
 S & T
 KENTLANDS, LLC
 BLOCK "Q"
 PARCEL 1 DEED BOOK
 24204 AT PAGE 59
 PARCEL J
 DEED BOOK 27103
 AT PAGE 189
 CITY OF GAITHERSBURG
 MARYLAND

MASER STERLING OFFICE
 22375 Broderick Drive
 Suite 110
 Sterling, VA 20166
 Phone: 703.430.4330
 Fax: 703.430.4339

SCALE:	DATE:	DRAWN BY:	CHECKED BY:
	11/16/15	CHE	EI
PROJECT NUMBER:	DRAWING NAME:		
1500032A	C-LAYT		

SHEET TITLE
FIRE TRUCK TURN

SHEET NUMBER
C16



1500032A/segment/Drawings/Engineering/04_Plan/C-LAYT.dwg/CLAYT.dwg/TUM By: PPK/DCA

Stormwater Management Report

For

Kentlands Block Q, Parcels I and J

City of Gaithersburg, MD

Project No. 15000252A

July 15, 2016

By:



22375 Broderick Drive

Suite 110

Sterling, Virginia, 20166



Eduardo J. Intriago
Eduardo J. Intriago, P.E.
MD. P.E. LICENSE No.46513

JUL 15 2016

Joint Hearing - MCC & PC
SDP-7362-2016
Exhibit #28

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EXISTING CONDITIONS

The existing conditions, as described herein, are based largely on a field survey by Maser Consulting, P.A. entitled “Boundary and Topographic Survey for S & T KENTLANDS, LLC”, dated September 15, 2015 (Project Number 15000252A) as well as site visits conducted on various dates.

Parcel I is adjacent to the southwesterly quadrant of the intersection of Quince Orchard Road and Great Seneca Highway and is comprised of approximately 1.74 acres. This parcel was the former site of a former restaurant and associated site amenities which provided vehicular and pedestrian access to the site as well as improvements which allowed provision of trash and delivery services. As of the date of the field survey, the building, building perimeter sidewalk, and dumpster enclosure have been removed. The vehicular travel-way remains in place, which provides access to parcels located to the west and south. Adjacent to this main travel-way are several parking bays and additional travel-ways which provide approximately 51 parking spaces.

Parcel J lies to the southeast of the aforementioned Parcel I with frontage on Great Seneca Highway and is comprised of approximately 1.36 acres. As of the date of the field survey there was an existing one story building which has a footprint of approximately 5,000 square feet. As with Parcel I, this portion of the subject site also has various vehicular, pedestrian and service access amenities (vehicular travel-ways, sidewalks, parking bays for approximately 46 vehicles, and designated dumpster and delivery areas.

The total area of both Parcels is approximately 3.10 acres. The anticipated Limit of Disturbance (LOD) required to provide the proposed improvements is estimated at 3.21 acres with an impervious coverage of approximately 2.14 acres within the LOD.

PROPOSED SITE CONDITIONS

The proposed scope of work associated with this plan is to demolish all existing impervious areas located on the site with the exception of the existing dumpster pad area located on the northwesterly corner of the site, adjacent to Parcel H to the west. This pad serves the existing uses located on parcel H, and shall remain in place.

The “wet” utilities (sanitary sewer, public waterline, and storm drain) located within the property will require removal and/or re-routing to accommodate the geometry of the proposed improvements.

Ultimately, improvements will consist of two buildings, connected by two overhead walkways which will traverse over the proposed vehicular travel-way. These two building will be six

stories high and will be used for elderly housing. There will also be a multi-level parking structure to provide parking for residents and their guests. The proposed vehicular travel-way will connect Parcel H with the K-Mart to the southeast, in a similar path as currently exists. There will also be a new vehicular entrance from Great Seneca Highway.

The proposed impervious area covered by the buildings, parking structure, vehicular travel-way, and sidewalks is anticipated to be approximately 2.63 acres. This represents an increase of approximately 0.49 acres over the existing impervious coverage.

STORMWATER DESIGN

With an existing impervious coverage of 2.14 acres, or 66.7% of the LOD, this project qualifies as redevelopment.

ESD VOLUME REQUIREMENTS

As a site that qualifies for redevelopment, this site will be required to treat 50% of the existing impervious area.

Given the following existing conditions:

$$\begin{aligned} \text{LOD} &= 140,046 \text{ SF} \\ \text{Existing Imp} &= 93,390 \text{ SF} \\ \% \text{ Imp} &= 66.7\% \end{aligned}$$

$$\begin{aligned} \text{Proposed Imp} &= 114,419 \text{ SF} \\ \% \text{ Imp} &= 81.7\% \end{aligned}$$

Per redevelopment standards, the required $P_e = 1''$ and $R_v = 0.95$ for the exiting impervious coverage

$$\begin{aligned} R_v &= 0.95 \\ A &= 0.50 \times \text{Exist. Imp.} \\ &= 0.50 \times 93,390 = 46,695 \text{ SF} \end{aligned}$$

$$\begin{aligned} \text{ESD}_v &= (P_e)(R_v)(A)/12 \\ &= (1)(0.95)(46,695)/12 \\ &= 3,697 \text{ FT}^3 \text{ storage required for existing impervious coverage} \end{aligned}$$

The additional impervious area of 21,029 square feet (15.0% of the LOD) shall be treated as new development.

Per Chart 5.3 of the “2000 Maryland Stormwater Design Manual”, the required P_e for an impervious coverage of 15.0% in Hydrologic Soil Group D is 1 inch.

Hydrologic Soil Group D										
%I	RCN*	$P_E = 1"$	1.2"	1.4"	1.6"	1.8"	2.0"	2.2"	2.4"	2.6"
0%	80									
5%	81									
10%	82									
15%	83									
20%	84	77								
25%	85	78								
30%	85	78	77	77						
35%	86	79	78	78						
40%	87	82	81	79	77					
45%	88	82	81	79	78					
50%	89	83	82	80	78					
55%	90	84	82	80	78					
60%	91	85	83	81	78					
65%	92	85	83	81	78					
70%	93	86	84	81	78					
75%	94	86	84	81	78					
80%	94	86	84	82	79					
85%	95	86	84	82	79					
90%	96	87	84	82	79	77				
95%	97	88	85	82	80	78				
100%	98	89	86	83	80	78	77			

The ESD_v for the proposed impervious area is computed as follows:

$$\begin{aligned}
 R_v &= 0.05 + .009(I\%) \\
 R_v &= 0.19 \\
 A &= 140,046 \text{ SF} \\
 ESD_v &= (P_e)(R_v)(A)/12 \\
 &= (1)(0.19)(140,046)/12 \\
 &= 2,161 \text{ FT}^3 \text{ storage required for proposed impervious coverage}
 \end{aligned}$$

$$\text{Total } ESD_v \text{ required} = 5,857 \text{ FT}^3$$

ESD VOLUME PROVIDED

The following computations are based on provision of the proposed eight planter boxes (See plan view for locations, etc).

PLANTER BOX 1

Planter Box #1 is located along the west side of the southerly building. This facility will be charged with runoff from the west side of the roof. Flow from the roof will be conveyed to the planter via roof drains. The total flow area to this planter is 9,432 SF, with an impervious area of 9,053 SF. This represents an overall imperviousness of 96.0%.

$$R_v = 0.05 + 0.009 (I\%)$$

$$R_v = 0.91$$

$$P_e = (WQ_v \times 12) / (R_v \times DA) \\ = 2.30 \text{ inches}$$

$$\text{Planter 1 Area (A)} = 730 \text{ SF}$$

$$\text{Basin Depth (df)} = 3 \text{ FT}$$

$$\text{Dry Storage (hf)} = 0.50 \text{ FT}$$

$$\% \text{ Voids (V)} = 40\%$$

$$\text{Storage Volume Provided (V}_p) = (A) \times [(hf) + (df) \times (V)] \\ = 730 \times [0.50 + 3 \times .40] \\ = 1,241 \text{ FT}^3$$

$$WQ_v = V_p / 0.75 \\ = 1,655 \text{ FT}^3$$

Checking for the required surface area within the Planter yields:

$$A_f = (V_f \times df) / [k \times (0.5 \times hf + df) \times tf] \\ = 573 \text{ SF Required (730 SF Provided)}$$

PLANTER BOX 2

Planter Box #2 is located along the west, north, and east sides of the northerly building. This facility will be charged with runoff from the north side of the roof. Flow from the roof will be conveyed to the planter via roof drains. The total flow area to this planter is 14,203 SF, with an impervious area of 13,630 SF. This represents an overall imperviousness of 96.0%.

$$R_v = 0.05 + 0.009 (I\%)$$

$$R_v = 0.91$$

$$P_e = (WQ_v \times 12) / (R_v \times DA) \\ = 2.21 \text{ inches}$$

$$\text{Planter 2 Area (A)} = 1,054 \text{ SF}$$

$$\text{Basin Depth (df)} = 3 \text{ FT}$$

$$\text{Dry Storage (hf)} = 0.50 \text{ FT}$$

$$\% \text{ Voids (V)} = 40\%$$

$$\text{Storage Volume Provided (V}_p) = (A) \times [(hf) + (df) \times (V)] \\ = 1,054 \times [0.50 + 3 \times .40] \\ = 1,792 \text{ FT}^3$$

$$WQ_v = V_p / 0.75 \\ = 2,389 \text{ FT}^3$$

Checking for the required surface area within the Planter yields:

$$A_f = (V_f \times df) / [k \times (0.5 \times hf + df) \times t_f] \\ = 827 \text{ SF Required (1,054 SF Provided)}$$

PLANTER BOX 3

Planter Box #3 is located along the south side of the northerly building. This facility will be charged with runoff from the south side of the roof. Flow from the roof will be conveyed to the planter via roof drains. The total flow area to this planter is 3,683 SF, with an impervious area of 3,406 SF. This represents an overall imperviousness of 92.5%.

$$R_v = 0.05 + 0.009 (I\%)$$

$$R_v = 0.88$$

$$P_e = (WQ_v \times 12) / (R_v \times DA) \\ = 4.01 \text{ inches}$$

$$\text{Planter 3 Area (A)} = 479 \text{ SF}$$

$$\text{Basin Depth (df)} = 3 \text{ FT}$$

$$\text{Dry Storage (hf)} = 0.50 \text{ FT}$$

$$\% \text{ Voids (V)} = 40\%$$

$$\text{Storage Volume Provided (V}_p) = (A) \times [(hf) + (df) \times (V)] \\ = 479 \times [0.50 + 3 \times .40] \\ = 814 \text{ FT}^3$$

$$WQ_v = VP / 0.75 \\ = 1,086 \text{ FT}^3$$

Checking for the required surface area within the Planter yields:

$$A_f = (VF \times df) / [k \times (0.5 \times hf + df) \times tf] \\ = 479 \text{ SF Required (376 SF Provided)}$$

PLANTER BOX 4

Planter Box #4 is located along the north side of the southerly building. This facility will be charged with runoff from the south side of the roof. Flow from the roof will be conveyed to the planter via roof drains. The total flow area to this planter is 7,910 SF, with an impervious area of 7,629 SF. This represents an overall imperviousness of 96.4%.

$$R_v = 0.05 + 0.009 (I\%)$$

$$R_v = 0.92$$

$$P_e = (WQ_v \times 12) / (R_v \times DA) \\ = 1.79 \text{ inches}$$

$$\text{Planter 4 Area (A)} = 479 \text{ SF}$$

$$\text{Basin Depth (df)} = 3 \text{ FT}$$

$$\text{Dry Storage (hf)} = 0.50 \text{ FT}$$

$$\% \text{ Voids (V)} = 40\%$$

$$\text{Storage Volume Provided (V}_p\text{)} = (A) \times [(hf) + (df) \times (V)] \\ = 479 \times [0.50 + 3 \times .40] \\ = 814 \text{ FT}^3$$

$$WQ_v = VP / 0.75 \\ = 1,086 \text{ FT}^3$$

Checking for the required surface area within the Planter yields:

$$A_f = (VF \times df) / [k \times (0.5 \times hf + df) \times tf] \\ = 376 \text{ SF Required (479 SF Provided)}$$

PLANTER BOX 5

Planter Box #5 is located along the north and east side of the southerly building. This facility will be charged with runoff from the south side of the roof. Flow from the roof will be conveyed to the planter via roof drains. The total flow area to this planter is 4,234 SF, with an impervious area of 4,113 SF. This represents an overall imperviousness of 97.1%.

$$R_v = 0.05 + 0.009 (I\%)$$

$$R_v = 0.92$$

$$P_e = (WQ_v \times 12) / (R_v \times DA) \\ = 2.00 \text{ inches}$$

$$\text{Planter 5 Area (A)} = 288 \text{ SF}$$

$$\text{Basin Depth (df)} = 3 \text{ FT}$$

$$\text{Dry Storage (hf)} = 0.50 \text{ FT}$$

$$\% \text{ Voids (V)} = 40\%$$

$$\text{Storage Volume Provided (V}_p) = (A) \times [(hf) + (df) \times (V)] \\ = 288 \times [0.50 + 3 \times .40] \\ = 490 \text{ FT}^3$$

$$WQ_v = VP/0.75 \\ = 653 \text{ FT}^3$$

Checking for the required surface area within the Planter yields:

$$A_f = (VF \times df) / [k \times (0.5 \times hf + df) \times tf] \\ = 226 \text{ SF Required (288 SF Provided)}$$

PLANTER BOX 6

Planter Box #6 is located along the east side of the southerly building. This facility will be charged with runoff from the south side of the roof. Flow from the roof will be conveyed to the planter via roof drains. The total flow area to this planter is 5,390 SF, with an impervious area of 5,162 SF. This represents an overall imperviousness of 95.8%.

$$R_v = 0.05 + 0.009 (I\%)$$

$$R_v = 0.91$$

$$P_e = (WQ_v \times 12) / (R_v \times DA) \\ = 2.16 \text{ inches}$$

$$\text{Planter 6 Area (A)} = 391 \text{ SF}$$

$$\text{Basin Depth (df)} = 3 \text{ FT}$$

$$\text{Dry Storage (hf)} = 0.50 \text{ FT}$$

$$\% \text{ Voids (V)} = 40\%$$

$$\text{Storage Volume Provided (V}_p) = (A) \times [(hf) + (df) \times (V)] \\ = 391 \times [0.50 + 3 \times .40] \\ = 665 \text{ FT}^3$$

$$WQ_v = VP / 0.75 \\ = 886 \text{ FT}^3$$

Checking for the required surface area within the Planter yields:

$$A_f = (VF \times df) / [k \times (0.5 \times hf + df) \times tf] \\ = 307 \text{ SF Required (391 SF Provided)}$$

PLANTER BOX 7

Planter Box #7 is located on the northwest area of the open area located north of the parking garage. This facility will be charged with runoff from the east side of the west wing and the south side of the central wing of the roof of the southerly building. Flow from the roof will be conveyed to the planter via roof drains. The total flow area to this planter is 15,188 SF, with an impervious area of 14,338 SF. This represents an overall imperviousness of 94.4%.

$$R_v = 0.05 + 0.009 (I\%)$$

$$R_v = 0.90$$

$$P_e = (WQ_v \times 12) / (R_v \times DA) \\ = 1.92 \text{ inches}$$

$$\text{Planter 7 Area (A)} = 965 \text{ SF}$$

$$\text{Basin Depth (df)} = 3 \text{ FT}$$

$$\text{Dry Storage (hf)} = 0.50 \text{ FT}$$

$$\% \text{ Voids (V)} = 40\%$$

$$\text{Storage Volume Provided (V}_p) = (A) \times [(hf) + (df) \times (V)] \\ = 965 \times [0.50 + 3 \times .40] \\ = 1,641 \text{ FT}^3$$

$$WQ_v = V_p / 0.75 \\ = 2,187 \text{ FT}^3$$

Checking for the required surface area within the Planter yields:

$$A_f = (V_f \times df) / [k \times (0.5 \times hf + df) \times t_f] \\ = 757 \text{ SF Required (965 SF Provided)}$$

PLANTER BOX 8

Planter Box #8 is located on the northwest area of the open area located north of the parking garage. This facility will be charged with runoff from the south side of the southerly building. Flow from the roof will be conveyed to the planter via roof drains. The total flow area to this planter is 13,562 SF, with an impervious area of 12,873 SF. This represents an overall imperviousness of 94.9%.

$$R_v = 0.05 + 0.009 (I\%)$$

$$R_v = 0.90$$

$$P_e = (WQ_v \times 12) / (R_v \times DA) \\ = 2.22 \text{ inches}$$

$$\text{Planter 8 Area (A)} = 1,002 \text{ SF}$$

$$\text{Basin Depth (df)} = 3 \text{ FT}$$

$$\text{Dry Storage (hf)} = 0.50 \text{ FT}$$

$$\% \text{ Voids (V)} = 40\%$$

$$\text{Storage Volume Provided (V}_p) = (A) \times [(hf) + (df) \times (V)] \\ = 1,002 \times [0.50 + 3 \times .40] \\ = 1,703 \text{ FT}^3$$

$$WQ_v = V_p / 0.75 \\ = 2,271 \text{ FT}^3$$

Checking for the required surface area within the Planter yields:

$$A_f = (V_f \times df) / [k \times (0.5 \times hf + df) \times t_f] \\ = 756 \text{ SF Required (1,002 SF Provided)}$$

CONCLUSION

Checking the total ESD_v required against the total volume provided with the eight planters yields the following:

$$WQ_v \text{ Required} = 5,857 \text{ FT}^3$$

$$WQ_v \text{ Provided} = 12,213 \text{ FT}^3$$

$$\text{Additional ESD}_v (V) = WQ_v \text{ Provided} - \text{Exist. Impervious } WQ_v \text{ Required}$$

$$\text{Additional ESD}_v (V) = 12,213 \text{ FT}^3 - 3,697 \text{ FT}^3$$

$$\text{Additional ESD}_v (V) = 8,516 \text{ FT}^3$$

$$A (\text{Site}) = 140,146 \text{ SF}$$

$$R_v (\text{Site}) = 0.19$$

$$P_e \text{ Required} = 1.0 \text{ inches}$$

$$P_e \text{ Provided} = (V \times 12) / (R_v \times A)$$

$$P_e \text{ Provided} = 3.9 \text{ inches}$$

SWM design conforms to the standards set forth in the “2000 Maryland Stormwater Design Manual”.

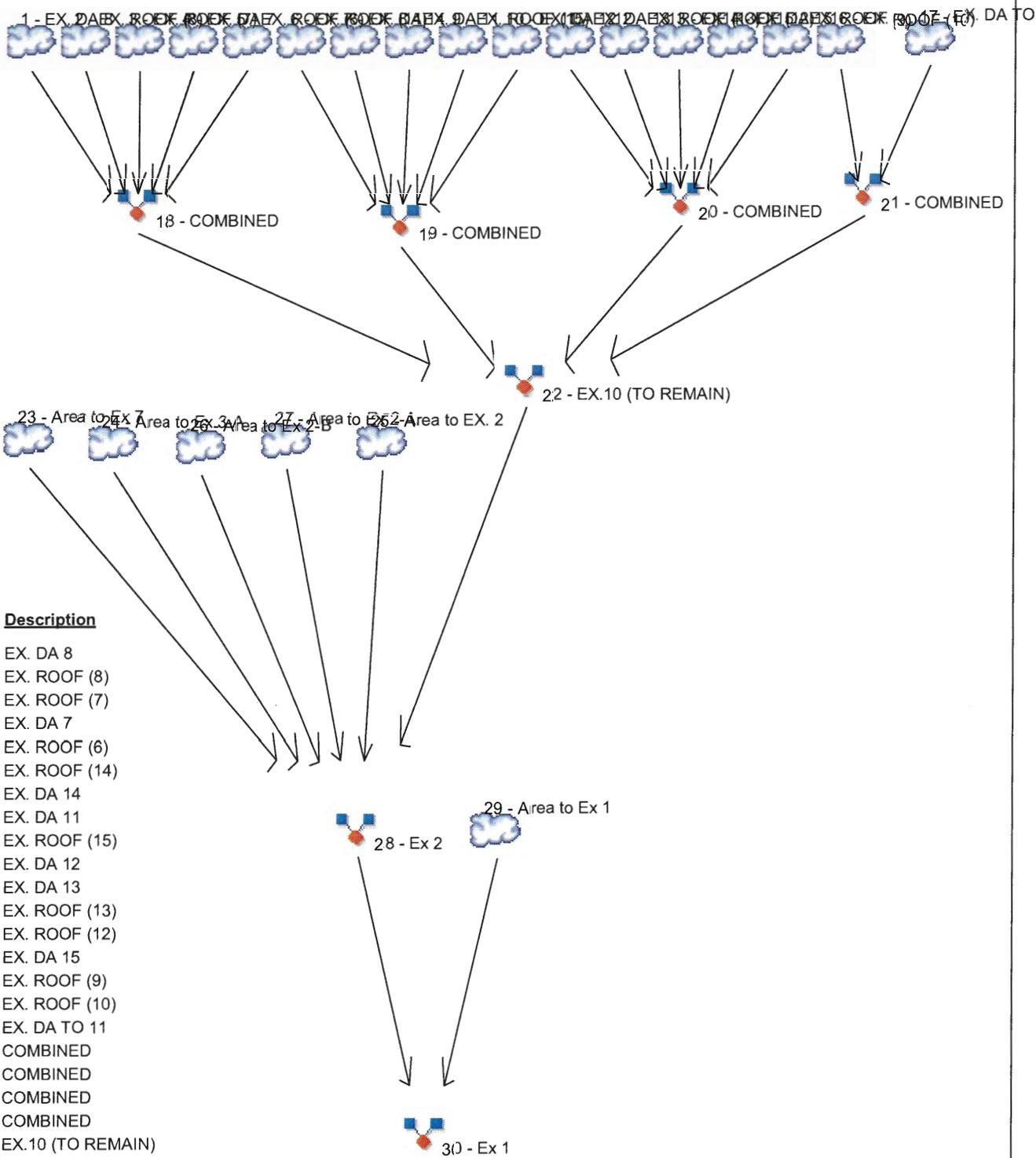
II. APPENDIX

A. WATERSHED MODEL SCHEMATIC

1. EXISTING

Watershed Model Schematic

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2016 by Autodesk, Inc. v10.5



Legend

Hyd.	Origin	Description
1	SCS Runoff	EX. DA 8
2	SCS Runoff	EX. ROOF (8)
3	SCS Runoff	EX. ROOF (7)
4	SCS Runoff	EX. DA 7
5	SCS Runoff	EX. ROOF (6)
6	SCS Runoff	EX. ROOF (14)
7	SCS Runoff	EX. DA 14
8	SCS Runoff	EX. DA 11
9	SCS Runoff	EX. ROOF (15)
10	SCS Runoff	EX. DA 12
11	SCS Runoff	EX. DA 13
12	SCS Runoff	EX. ROOF (13)
13	SCS Runoff	EX. ROOF (12)
14	SCS Runoff	EX. DA 15
15	SCS Runoff	EX. ROOF (9)
16	SCS Runoff	EX. ROOF (10)
17	SCS Runoff	EX. DA TO 11
18	Combine	COMBINED
19	Combine	COMBINED
20	Combine	COMBINED
21	Combine	COMBINED
22	Combine	EX.10 (TO REMAIN)
23	SCS Runoff	Area to Ex 7
24	SCS Runoff	Area to Ex 3-A
25	SCS Runoff	Area to EX. 2
26	SCS Runoff	Area to Ex 2-B
27	SCS Runoff	Area to Ex 2-A
28	Combine	Ex 2
29	SCS Runoff	Area to Ex 1
30	Combine	Ex 1

II. APPENDIX

A. WATERSHED MODEL SCHEMATIC

2. PROPOSED

Watershed Model Schematic

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2016 by Autodesk, Inc. v10.5

Legend

Hyd. Origin **Description**

1	SCS Runoff	EX. DA 8
2	SCS Runoff	EX. ROOF (8)
3	SCS Runoff	EX. EX. PROP. DA 16
4	SCS Runoff	EX. DA 7
5	SCS Runoff	EX. ROOF (6)
6	SCS Runoff	Area to Planter 1
7	SCS Runoff	EX. DA 14
8	SCS Runoff	EX. DA 11
9	SCS Runoff	EX. ROOF (15)
10	SCS Runoff	EX. DA 12
11	SCS Runoff	EX. DA 13
12	SCS Runoff	EX. ROOF (Prop 1-I)
13	SCS Runoff	EX. ROOF (12)
14	SCS Runoff	EX. DA 15
15	SCS Runoff	EX. ROOF (9)
16	SCS Runoff	EX. ROOF (10)
17	SCS Runoff	PROP. DA 16
18	Combine	COMBINED
19	Combine	COMBINED
20	Combine	COMBINED
21	Combine	COMBINED
22	Combine	EX. 10
23	SCS Runoff	Area to 1-J
24	SCS Runoff	Area to 1-I
25	SCS Runoff	Area to Planter 1
26	Reservoir	Planter 1
27	SCS Runoff	Area to 2-A
28	SCS Runoff	Area to Planter 2
29	SCS Runoff	Area to Planter 3
30	SCS Runoff	Area to Planter 4
31	SCS Runoff	Area to Planter 5
32	SCS Runoff	Area to Planter 6
33	SCS Runoff	Area to Planter 7
34	SCS Runoff	Area to Planter 8
35	Reservoir	Planter 2
36	Reservoir	Planter 3
37	Reservoir	Planter 4
38	Reservoir	Planter 5
39	Reservoir	Planter 6
40	Reservoir	Planter 7
41	Reservoir	Planter 8
42	Combine	Prop 1-I
43	Combine	Prop 2-A
44	SCS Runoff	Area to 1-G
45	Combine	Prop 1-H
46	Combine	Prop 1-G
47	Combine	Prop 1-F
48	SCS Runoff	Area to 1-E
49	Combine	Prop 1-E
50	SCS Runoff	Area to 1-D
51	SCS Runoff	Area to Yard Inlets
52	Combine	Prop C/O
53	Combine	Prop 1-D
54	SCS Runoff	Area to 1-C
55	Combine	Prop 1-C
56	SCS Runoff	Area to 1-B
57	Combine	Prop 1-B
58	SCS Runoff	Area to Ex 1
59	Combine	Ex 1

II. APPENDIX

B. HYDROGRAPH RETURN PERIOD RECAP

1. EXISTING

Hydrograph Return Period Recap

HydraFlow Hydrographs Extension for AutoCAD® Civil 3D® 2016 by Autodesk, Inc. v10.5

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	-----	0.538	0.711	-----	-----	1.258	-----	-----	1.856	EX. DA 8
2	SCS Runoff	-----	1.298	1.639	-----	-----	2.707	-----	-----	3.873	EX. ROOF (8)
3	SCS Runoff	-----	0.487	0.615	-----	-----	1.015	-----	-----	1.452	EX. ROOF (7)
4	SCS Runoff	-----	1.076	1.422	-----	-----	2.517	-----	-----	3.712	EX. DA 7
5	SCS Runoff	-----	0.807	1.067	-----	-----	1.888	-----	-----	2.784	EX. ROOF (6)
6	SCS Runoff	-----	0.324	0.410	-----	-----	0.677	-----	-----	0.968	EX. ROOF (14)
7	SCS Runoff	-----	0.269	0.356	-----	-----	0.629	-----	-----	0.928	EX. DA 14
8	SCS Runoff	-----	0.135	0.178	-----	-----	0.315	-----	-----	0.464	EX. DA 11
9	SCS Runoff	-----	0.324	0.410	-----	-----	0.677	-----	-----	0.968	EX. ROOF (15)
10	SCS Runoff	-----	1.076	1.422	-----	-----	2.517	-----	-----	3.712	EX. DA 12
11	SCS Runoff	-----	0.135	0.178	-----	-----	0.315	-----	-----	0.464	EX. DA 13
12	SCS Runoff	-----	0.973	1.229	-----	-----	2.030	-----	-----	2.905	EX. ROOF (13)
13	SCS Runoff	-----	0.649	0.820	-----	-----	1.353	-----	-----	1.937	EX. ROOF (12)
14	SCS Runoff	-----	0.404	0.533	-----	-----	0.944	-----	-----	1.392	EX. DA 15
15	SCS Runoff	-----	0.404	0.533	-----	-----	0.944	-----	-----	1.392	EX. ROOF (9)
16	SCS Runoff	-----	0.404	0.533	-----	-----	0.944	-----	-----	1.392	EX. ROOF (10)
17	SCS Runoff	-----	0.454	0.574	-----	-----	0.947	-----	-----	1.356	EX. DA TO 11
18	Combine	1, 2, 3, 4, 5,	4.206	5.453	-----	-----	9.385	-----	-----	13.68	COMBINED
19	Combine	6, 7, 8, 9, 10,	1.321	1.708	-----	-----	2.926	-----	-----	4.257	COMBINED
20	Combine	11, 12, 13, 14, 15,	2.564	3.293	-----	-----	5.586	-----	-----	8.090	COMBINED
21	Combine	16, 17,	0.858	1.107	-----	-----	1.891	-----	-----	2.748	COMBINED
22	Combine	18, 19, 20, 21	8.949	11.56	-----	-----	19.79	-----	-----	28.77	EX.10 (TO REMAIN)
23	SCS Runoff	-----	0.485	0.623	-----	-----	1.056	-----	-----	1.528	Area to Ex 7
24	SCS Runoff	-----	0.617	0.808	-----	-----	1.408	-----	-----	2.063	Area to Ex 3-A
25	SCS Runoff	-----	1.442	1.924	-----	-----	3.459	-----	-----	5.139	Area to EX. 2
26	SCS Runoff	-----	1.870	2.343	-----	-----	3.827	-----	-----	5.453	Area to Ex 2-B
27	SCS Runoff	-----	0.901	1.130	-----	-----	1.845	-----	-----	2.629	Area to Ex 2-A
28	Combine	22, 23, 24, 25, 26, 27	14.26	18.39	-----	-----	31.38	-----	-----	45.58	Ex 2
29	SCS Runoff	-----	1.752	2.272	-----	-----	3.903	-----	-----	5.679	Area to Ex 1
30	Combine	28, 29	16.02	20.66	-----	-----	35.29	-----	-----	51.26	Ex 1

II. APPENDIX

B. HYDROGRAPH RETURN PERIOD RECAP

2. PROPOSED

Hydrograph Return Period Recap

HydraFlow Hydrographs Extension for AutoCAD® Civil 3D® 2016 by Autodesk, Inc. v10.5

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	----	0.538	0.711	----	----	1.258	----	----	1.856	EX. DA 8
2	SCS Runoff	----	1.298	1.639	----	----	2.707	----	----	3.873	EX. ROOF (8)
3	SCS Runoff	----	0.487	0.615	----	----	1.015	----	----	1.452	EX. ROOF (7)
4	SCS Runoff	----	1.076	1.422	----	----	2.517	----	----	3.712	EX. DA 7
5	SCS Runoff	----	0.807	1.067	----	----	1.888	----	----	2.784	EX. ROOF (6)
6	SCS Runoff	----	0.324	0.410	----	----	0.677	----	----	0.968	EX. ROOF (14)
7	SCS Runoff	----	0.269	0.356	----	----	0.629	----	----	0.928	EX. DA 14
8	SCS Runoff	----	0.135	0.178	----	----	0.315	----	----	0.464	EX. DA 11
9	SCS Runoff	----	0.324	0.410	----	----	0.677	----	----	0.968	EX. ROOF (15)
10	SCS Runoff	----	1.076	1.422	----	----	2.517	----	----	3.712	EX. DA 12
11	SCS Runoff	----	0.135	0.178	----	----	0.315	----	----	0.464	EX. DA 13
12	SCS Runoff	----	0.973	1.229	----	----	2.030	----	----	2.905	EX. ROOF (13)
13	SCS Runoff	----	0.649	0.820	----	----	1.353	----	----	1.937	EX. ROOF (12)
14	SCS Runoff	----	0.404	0.533	----	----	0.944	----	----	1.392	EX. DA 15
15	SCS Runoff	----	0.404	0.533	----	----	0.944	----	----	1.392	EX. ROOF (9)
16	SCS Runoff	----	0.404	0.533	----	----	0.944	----	----	1.392	EX. ROOF (10)
17	SCS Runoff	----	0.519	0.656	----	----	1.083	----	----	1.549	PROP. DA 16
18	Combine	1, 2, 3, 4, 5,	4.206	5.453	----	----	9.385	----	----	13.68	COMBINED
19	Combine	6, 7, 8, 9, 10,	1.321	1.708	----	----	2.926	----	----	4.257	COMBINED
20	Combine	11, 12, 13, 14, 15,	2.564	3.293	----	----	5.586	----	----	8.090	COMBINED
21	Combine	16, 17,	0.923	1.189	----	----	2.026	----	----	2.941	COMBINED
22	Combine	18, 19, 20, 21	9.013	11.64	----	----	19.92	----	----	28.97	EX. 10
23	SCS Runoff	----	0.146	0.189	----	----	0.325	----	----	0.473	Area to 1-J
24	SCS Runoff	----	0.209	0.259	----	----	0.416	----	----	0.589	Area to 1-I
25	SCS Runoff	----	0.753	0.937	----	----	1.516	----	----	2.152	Area to Planter 1
26	Reservoir	25	0.031	0.251	----	----	1.456	----	----	1.876	Planter 1
27	SCS Runoff	----	0.479	0.596	----	----	0.965	----	----	1.369	Area to 2-A
28	SCS Runoff	----	1.129	1.406	----	----	2.274	----	----	3.227	Area to Planter 2
29	SCS Runoff	----	0.279	0.345	----	----	0.555	----	----	0.785	Area to Planter 3
30	SCS Runoff	----	0.616	0.767	----	----	1.240	----	----	1.760	Area to Planter 4
31	SCS Runoff	----	0.334	0.418	----	----	0.683	----	----	0.974	Area to Planter 5
32	SCS Runoff	----	0.419	0.518	----	----	0.832	----	----	1.177	Area to Planter 6
33	SCS Runoff	----	1.198	1.491	----	----	2.412	----	----	3.423	Area to Planter 7
34	SCS Runoff	----	1.061	1.320	----	----	2.136	----	----	3.032	Area to Planter 8

Hydrograph Return Period Recap

Hydrflow Hydrographs Extension for AutoCAD® Civil 3D® 2016 by Autodesk, Inc. v10.5

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	
35	Reservoir	28	0.056	0.438	-----	-----	1.874	-----	-----	2.006	Planter 2
36	Reservoir	29	0.000	0.000	-----	-----	0.147	-----	-----	0.754	Planter 3
37	Reservoir	30	0.157	0.638	-----	-----	1.212	-----	-----	1.719	Planter 4
38	Reservoir	31	0.026	0.250	-----	-----	0.670	-----	-----	0.955	Planter 5
39	Reservoir	32	0.033	0.293	-----	-----	0.812	-----	-----	1.152	Planter 6
40	Reservoir	33	0.144	0.926	-----	-----	1.916	-----	-----	2.036	Planter 7
41	Reservoir	34	0.050	0.383	-----	-----	1.816	-----	-----	1.988	Planter 8
42	Combine	23, 24, 26,	0.326	0.411	-----	-----	2.102	-----	-----	2.800	Prop 1-I
43	Combine	27, 35,	0.479	0.643	-----	-----	2.783	-----	-----	3.320	Prop 2-A
44	SCS Runoff	-----	0.523	0.648	-----	-----	1.040	-----	-----	1.472	Area to 1-G
45	Combine	22, 42, 43,	9.819	12.65	-----	-----	24.71	-----	-----	35.05	Prop 1-H
46	Combine	36, 37, 44, 45	10.34	13.40	-----	-----	26.92	-----	-----	38.87	Prop 1-G
47	Combine	38, 46	10.34	13.40	-----	-----	27.58	-----	-----	39.80	Prop 1F
48	SCS Runoff	-----	0.940	1.208	-----	-----	2.046	-----	-----	2.960	Area to 1-E
49	Combine	47, 48	11.28	14.61	-----	-----	29.62	-----	-----	42.76	Prop 1-E
50	SCS Runoff	-----	0.084	0.110	-----	-----	0.192	-----	-----	0.281	Area to 1-D
51	SCS Runoff	-----	0.295	0.398	-----	-----	0.727	-----	-----	1.088	Area to Yard Inlets
52	Combine	39, 40, 51	0.295	1.489	-----	-----	3.424	-----	-----	4.212	Prop C/O
53	Combine	49, 50, 52	11.66	15.57	-----	-----	33.18	-----	-----	47.23	Prop 1-D
54	SCS Runoff	-----	0.100	0.126	-----	-----	0.205	-----	-----	0.292	Area to 1-C
55	Combine	53, 54	11.76	15.69	-----	-----	33.38	-----	-----	47.53	Prop 1-C
56	SCS Runoff	-----	0.121	0.156	-----	-----	0.264	-----	-----	0.382	Area to 1-B
57	Combine	41, 55, 56	11.88	15.84	-----	-----	35.40	-----	-----	49.85	Prop 1-B
58	SCS Runoff	-----	1.543	2.020	-----	-----	3.521	-----	-----	5.157	Area to Ex 1
59	Combine	57, 58	13.43	17.80	-----	-----	38.92	-----	-----	55.00	Ex 1

II. APPENDIX

C. HYDROGRAPH SUMMARY REPORT

1. EXISTING

II. APPENDIX

C. HYDROGRAPH SUMMARY REPORT

i. 2 YEAR 24 HOUR STORM EVENT

Hydrograph Summary Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2016 by Autodesk, Inc. v10.5

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	0.711	2	716	1,476	----	----	----	EX. DA 8
2	SCS Runoff	1.639	2	716	3,600	----	----	----	EX. ROOF (8)
3	SCS Runoff	0.615	2	716	1,350	----	----	----	EX. ROOF (7)
4	SCS Runoff	1.422	2	716	2,952	----	----	----	EX. DA 7
5	SCS Runoff	1.067	2	716	2,214	----	----	----	EX. ROOF (6)
6	SCS Runoff	0.410	2	716	900	----	----	----	EX. ROOF (14)
7	SCS Runoff	0.356	2	716	738	----	----	----	EX. DA 14
8	SCS Runoff	0.178	2	716	369	----	----	----	EX. DA 11
9	SCS Runoff	0.410	2	716	900	----	----	----	EX. ROOF (15)
10	SCS Runoff	1.422	2	716	2,952	----	----	----	EX. DA 12
11	SCS Runoff	0.178	2	716	369	----	----	----	EX. DA 13
12	SCS Runoff	1.229	2	716	2,700	----	----	----	EX. ROOF (13)
13	SCS Runoff	0.820	2	716	1,800	----	----	----	EX. ROOF (12)
14	SCS Runoff	0.533	2	716	1,107	----	----	----	EX. DA 15
15	SCS Runoff	0.533	2	716	1,107	----	----	----	EX. ROOF (9)
16	SCS Runoff	0.533	2	716	1,107	----	----	----	EX. ROOF (10)
17	SCS Runoff	0.574	2	716	1,260	----	----	----	EX. DA TO 11
18	Combine	5.453	2	716	11,593	1, 2, 3, 4, 5,	----	----	COMBINED
19	Combine	1.708	2	716	3,645	6, 7, 8, 9, 10,	----	----	COMBINED
20	Combine	3.293	2	716	7,084	11, 12, 13, 14, 15,	----	----	COMBINED
21	Combine	1.107	2	716	2,367	16, 17,	----	----	COMBINED
22	Combine	11.56	2	716	24,688	18, 19, 20, 21	----	----	EX.10 (TO REMAIN)
23	SCS Runoff	0.623	2	716	1,332	----	----	----	Area to Ex 7
24	SCS Runoff	0.808	2	716	1,691	----	----	----	Area to Ex 3-A
25	SCS Runoff	1.924	2	716	3,967	----	----	----	Area to EX. 2
26	SCS Runoff	2.343	2	716	5,239	----	----	----	Area to Ex 2-B
27	SCS Runoff	1.130	2	716	2,526	----	----	----	Area to Ex 2-A
28	Combine	18.39	2	716	39,443	22, 23, 24, 25, 26, 27	----	----	Ex 2
29	SCS Runoff	2.272	2	716	4,800	----	----	----	Area to Ex 1
30	Combine	20.66	2	716	44,243	28, 29	----	----	Ex 1

II. APPENDIX

C. HYDROGRAPH SUMMARY REPORT

ii. 10 YEAR 24 HOUR STORM EVENT

Hydrograph Summary Report

Hydroflow Hydrographs Extension for AutoCAD® Civil 3D® 2016 by Autodesk, Inc. v10.5

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	1.258	2	716	2,704	----	----	----	EX. DA 8
2	SCS Runoff	2.707	2	716	6,151	----	----	----	EX. ROOF (8)
3	SCS Runoff	1.015	2	716	2,307	----	----	----	EX. ROOF (7)
4	SCS Runoff	2.517	2	716	5,408	----	----	----	EX. DA 7
5	SCS Runoff	1.888	2	716	4,056	----	----	----	EX. ROOF (6)
6	SCS Runoff	0.677	2	716	1,538	----	----	----	EX. ROOF (14)
7	SCS Runoff	0.629	2	716	1,352	----	----	----	EX. DA 14
8	SCS Runoff	0.315	2	716	676	----	----	----	EX. DA 11
9	SCS Runoff	0.677	2	716	1,538	----	----	----	EX. ROOF (15)
10	SCS Runoff	2.517	2	716	5,408	----	----	----	EX. DA 12
11	SCS Runoff	0.315	2	716	676	----	----	----	EX. DA 13
12	SCS Runoff	2.030	2	716	4,613	----	----	----	EX. ROOF (13)
13	SCS Runoff	1.353	2	716	3,075	----	----	----	EX. ROOF (12)
14	SCS Runoff	0.944	2	716	2,028	----	----	----	EX. DA 15
15	SCS Runoff	0.944	2	716	2,028	----	----	----	EX. ROOF (9)
16	SCS Runoff	0.944	2	716	2,028	----	----	----	EX. ROOF (10)
17	SCS Runoff	0.947	2	716	2,153	----	----	----	EX. DA TO 11
18	Combine	9.385	2	716	20,626	1, 2, 3, 4, 5,	----	----	COMBINED
19	Combine	2.926	2	716	6,455	6, 7, 8, 9, 10,	----	----	COMBINED
20	Combine	5.586	2	716	12,421	11, 12, 13, 14, 15,	----	----	COMBINED
21	Combine	1.891	2	716	4,181	16, 17,	----	----	COMBINED
22	Combine	19.79	2	716	43,682	18, 19, 20, 21	----	----	EX.10 (TO REMAIN)
23	SCS Runoff	1.056	2	716	2,339	----	----	----	Area to Ex 7
24	SCS Runoff	1.408	2	716	3,054	----	----	----	Area to Ex 3-A
25	SCS Runoff	3.459	2	716	7,371	----	----	----	Area to EX. 2
26	SCS Runoff	3.827	2	716	8,827	----	----	----	Area to Ex 2-B
27	SCS Runoff	1.845	2	716	4,256	----	----	----	Area to Ex 2-A
28	Combine	31.38	2	716	69,530	22, 23, 24, 25, 26, 27	----	----	Ex 2
29	SCS Runoff	3.903	2	716	8,549	----	----	----	Area to Ex 1
30	Combine	35.29	2	716	78,079	28, 29	----	----	Ex 1

II. APPENDIX

C. HYDROGRAPH SUMMARY REPORT

2. PROPOSPED

II. APPENDIX

C. HYDROGRAPH SUMMARY REPORT

i. 2 YEAR 24 HOUR STORM EVENT

Hydrograph Summary Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2016 by Autodesk, Inc. v10.5

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	0.711	2	716	1,476	----	----	----	EX. DA 8
2	SCS Runoff	1.639	2	716	3,600	----	----	----	EX. ROOF (8)
3	SCS Runoff	0.615	2	716	1,350	----	----	----	EX. ROOF (7)
4	SCS Runoff	1.422	2	716	2,952	----	----	----	EX. DA 7
5	SCS Runoff	1.067	2	716	2,214	----	----	----	EX. ROOF (6)
6	SCS Runoff	0.410	2	716	900	----	----	----	EX. ROOF (14)
7	SCS Runoff	0.356	2	716	738	----	----	----	EX. DA 14
8	SCS Runoff	0.178	2	716	369	----	----	----	EX. DA 11
9	SCS Runoff	0.410	2	716	900	----	----	----	EX. ROOF (15)
10	SCS Runoff	1.422	2	716	2,952	----	----	----	EX. DA 12
11	SCS Runoff	0.178	2	716	369	----	----	----	EX. DA 13
12	SCS Runoff	1.229	2	716	2,700	----	----	----	EX. ROOF (13)
13	SCS Runoff	0.820	2	716	1,800	----	----	----	EX. ROOF (12)
14	SCS Runoff	0.533	2	716	1,107	----	----	----	EX. DA 15
15	SCS Runoff	0.533	2	716	1,107	----	----	----	EX. ROOF (9)
16	SCS Runoff	0.533	2	716	1,107	----	----	----	EX. ROOF (10)
17	SCS Runoff	0.656	2	716	1,440	----	----	----	PROP. DA 16
18	Combine	5.453	2	716	11,593	1, 2, 3, 4, 5,	----	----	COMBINED
19	Combine	1.708	2	716	3,645	6, 7, 8, 9, 10,	----	----	COMBINED
20	Combine	3.293	2	716	7,084	11, 12, 13, 14, 15,	----	----	COMBINED
21	Combine	1.189	2	716	2,547	16, 17,	----	----	COMBINED
22	Combine	11.64	2	716	24,868	18, 19, 20, 21	----	----	EX. 10
23	SCS Runoff	0.189	2	716	400	----	----	----	Area to 1-J
24	SCS Runoff	0.259	2	716	606	----	----	----	Area to 1-I
25	SCS Runoff	0.937	2	716	2,139	----	----	----	Area to Planter 1
26	Reservoir	0.251	2	724	897	25	442.58	1,296	Planter 1
27	SCS Runoff	0.596	2	716	1,361	----	----	----	Area to 2-A
28	SCS Runoff	1.406	2	716	3,208	----	----	----	Area to Planter 2
29	SCS Runoff	0.345	2	716	808	----	----	----	Area to Planter 3
30	SCS Runoff	0.767	2	716	1,750	----	----	----	Area to Planter 4
31	SCS Runoff	0.418	2	716	936	----	----	----	Area to Planter 5
32	SCS Runoff	0.518	2	716	1,212	----	----	----	Area to Planter 6
33	SCS Runoff	1.491	2	716	3,402	----	----	----	Area to Planter 7
34	SCS Runoff	1.320	2	716	3,014	----	----	----	Area to Planter 8

Hydrograph Summary Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2016 by Autodesk, Inc. v10.5

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
35	Reservoir	0.438	2	724	1,416	28	442.62	1,916	Planter 2
36	Reservoir	0.000	2	n/a	0	29	442.49	808	Planter 3
37	Reservoir	0.638	2	720	936	30	442.66	886	Planter 4
38	Reservoir	0.250	2	722	446	31	442.59	512	Planter 5
39	Reservoir	0.293	2	722	547	32	442.60	700	Planter 6
40	Reservoir	0.926	2	720	1,761	33	442.71	1,832	Planter 7
41	Reservoir	0.383	2	724	1,310	34	442.61	1,812	Planter 8
42	Combine	0.411	2	716	1,823	23, 24, 26,	-----	-----	Prop 1-I
43	Combine	0.643	2	722	2,777	27, 35,	-----	-----	Prop 2-A
44	SCS Runoff	0.648	2	716	1,515	-----	-----	-----	Area to 1-G
45	Combine	12.65	2	716	29,469	22, 42, 43,	-----	-----	Prop 1-H
46	Combine	13.40	2	716	31,919	36, 37, 44, 45	-----	-----	Prop 1-G
47	Combine	13.40	2	716	32,365	38, 46	-----	-----	Prop 1F
48	SCS Runoff	1.208	2	716	2,580	-----	-----	-----	Area to 1-E
49	Combine	14.61	2	716	34,945	47, 48	-----	-----	Prop 1-E
50	SCS Runoff	0.110	2	716	231	-----	-----	-----	Area to 1-D
51	SCS Runoff	0.398	2	716	816	-----	-----	-----	Area to Yard Inlets
52	Combine	1.489	2	720	3,123	39, 40, 51	-----	-----	Prop C/O
53	Combine	15.57	2	718	38,299	49, 50, 52	-----	-----	Prop 1-D
54	SCS Runoff	0.126	2	716	281	-----	-----	-----	Area to 1-C
55	Combine	15.69	2	718	38,579	53, 54	-----	-----	Prop 1-C
56	SCS Runoff	0.156	2	716	333	-----	-----	-----	Area to 1-B
57	Combine	15.84	2	718	40,223	41, 55, 56	-----	-----	Prop 1-B
58	SCS Runoff	2.020	2	716	4,227	-----	-----	-----	Area to Ex 1
59	Combine	17.80	2	718	44,449	57, 58	-----	-----	Ex 1

II. APPENDIX

C. HYDROGRAPH SUMMARY REPORT

ii. 10 YEAR 24 HOUR STORM EVENT

Hydrograph Summary Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2016 by Autodesk, Inc. v10.5

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	1.258	2	716	2,704	----	----	----	EX. DA 8
2	SCS Runoff	2.707	2	716	6,151	----	----	----	EX. ROOF (8)
3	SCS Runoff	1.015	2	716	2,307	----	----	----	EX. ROOF (7)
4	SCS Runoff	2.517	2	716	5,408	----	----	----	EX. DA 7
5	SCS Runoff	1.888	2	716	4,056	----	----	----	EX. ROOF (6)
6	SCS Runoff	0.677	2	716	1,538	----	----	----	EX. ROOF (14)
7	SCS Runoff	0.629	2	716	1,352	----	----	----	EX. DA 14
8	SCS Runoff	0.315	2	716	676	----	----	----	EX. DA 11
9	SCS Runoff	0.677	2	716	1,538	----	----	----	EX. ROOF (15)
10	SCS Runoff	2.517	2	716	5,408	----	----	----	EX. DA 12
11	SCS Runoff	0.315	2	716	676	----	----	----	EX. DA 13
12	SCS Runoff	2.030	2	716	4,613	----	----	----	EX. ROOF (13)
13	SCS Runoff	1.353	2	716	3,075	----	----	----	EX. ROOF (12)
14	SCS Runoff	0.944	2	716	2,028	----	----	----	EX. DA 15
15	SCS Runoff	0.944	2	716	2,028	----	----	----	EX. ROOF (9)
16	SCS Runoff	0.944	2	716	2,028	----	----	----	EX. ROOF (10)
17	SCS Runoff	1.083	2	716	2,460	----	----	----	PROP. DA 16
18	Combine	9.385	2	716	20,626	1, 2, 3, 4, 5,	----	----	COMBINED
19	Combine	2.926	2	716	6,455	6, 7, 8, 9, 10,	----	----	COMBINED
20	Combine	5.586	2	716	12,421	11, 12, 13, 14, 15,	----	----	COMBINED
21	Combine	2.026	2	716	4,488	16, 17,	----	----	COMBINED
22	Combine	19.92	2	716	43,990	18, 19, 20, 21	----	----	EX. 10
23	SCS Runoff	0.325	2	716	712	----	----	----	Area to 1-J
24	SCS Runoff	0.416	2	716	993	----	----	----	Area to 1-I
25	SCS Runoff	1.516	2	716	3,554	----	----	----	Area to Planter 1
26	Reservoir	1.456	2	718	2,313	25	442.77	1,436	Planter 1
27	SCS Runoff	0.965	2	716	2,262	----	----	----	Area to 2-A
28	SCS Runoff	2.274	2	716	5,331	----	----	----	Area to Planter 2
29	SCS Runoff	0.555	2	716	1,324	----	----	----	Area to Planter 3
30	SCS Runoff	1.240	2	716	2,908	----	----	----	Area to Planter 4
31	SCS Runoff	0.683	2	716	1,576	----	----	----	Area to Planter 5
32	SCS Runoff	0.832	2	716	1,986	----	----	----	Area to Planter 6
33	SCS Runoff	2.412	2	716	5,654	----	----	----	Area to Planter 7
34	SCS Runoff	2.136	2	716	5,008	----	----	----	Area to Planter 8

Hydrograph Summary Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2016 by Autodesk, Inc. v10.5

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
35	Reservoir	1.874	2	720	3,538	28	442.90	2,200	Planter 2
36	Reservoir	0.147	2	724	510	29	442.55	835	Planter 3
37	Reservoir	1.212	2	718	2,093	30	442.74	927	Planter 4
38	Reservoir	0.670	2	718	1,086	31	442.66	535	Planter 5
39	Reservoir	0.812	2	718	1,321	32	442.68	735	Planter 6
40	Reservoir	1.916	2	720	4,013	33	442.96	2,075	Planter 7
41	Reservoir	1.816	2	718	3,304	34	442.87	2,058	Planter 8
42	Combine	2.102	2	718	3,876	23, 24, 26,	-----	-----	Prop 1-I
43	Combine	2.783	2	718	5,800	27, 35,	-----	-----	Prop 2-A
44	SCS Runoff	1.040	2	716	2,482	-----	-----	-----	Area to 1-G
45	Combine	24.71	2	716	53,665	22, 42, 43,	-----	-----	Prop 1-H
46	Combine	26.92	2	716	58,751	36, 37, 44, 45	-----	-----	Prop 1-G
47	Combine	27.58	2	716	59,837	38, 46	-----	-----	Prop 1F
48	SCS Runoff	2.046	2	716	4,532	-----	-----	-----	Area to 1-E
49	Combine	29.62	2	716	64,370	47, 48	-----	-----	Prop 1-E
50	SCS Runoff	0.192	2	716	416	-----	-----	-----	Area to 1-D
51	SCS Runoff	0.727	2	716	1,537	-----	-----	-----	Area to Yard Inlets
52	Combine	3.424	2	718	6,871	39, 40, 51	-----	-----	Prop C/O
53	Combine	33.18	2	716	71,657	49, 50, 52	-----	-----	Prop 1-D
54	SCS Runoff	0.205	2	716	473	-----	-----	-----	Area to 1-C
55	Combine	33.38	2	716	72,130	53, 54	-----	-----	Prop 1-C
56	SCS Runoff	0.264	2	716	585	-----	-----	-----	Area to 1-B
57	Combine	35.40	2	716	76,019	41, 55, 56	-----	-----	Prop 1-B
58	SCS Runoff	3.521	2	716	7,635	-----	-----	-----	Area to Ex 1
59	Combine	38.92	2	716	83,654	57, 58	-----	-----	Ex 1

II. APPENDIX

D. STORMWATER MANAGEMENT ROUTING

1. EXISTING

II. APPENDIX

D. STORMWATER MANAGEMENT ROUTING

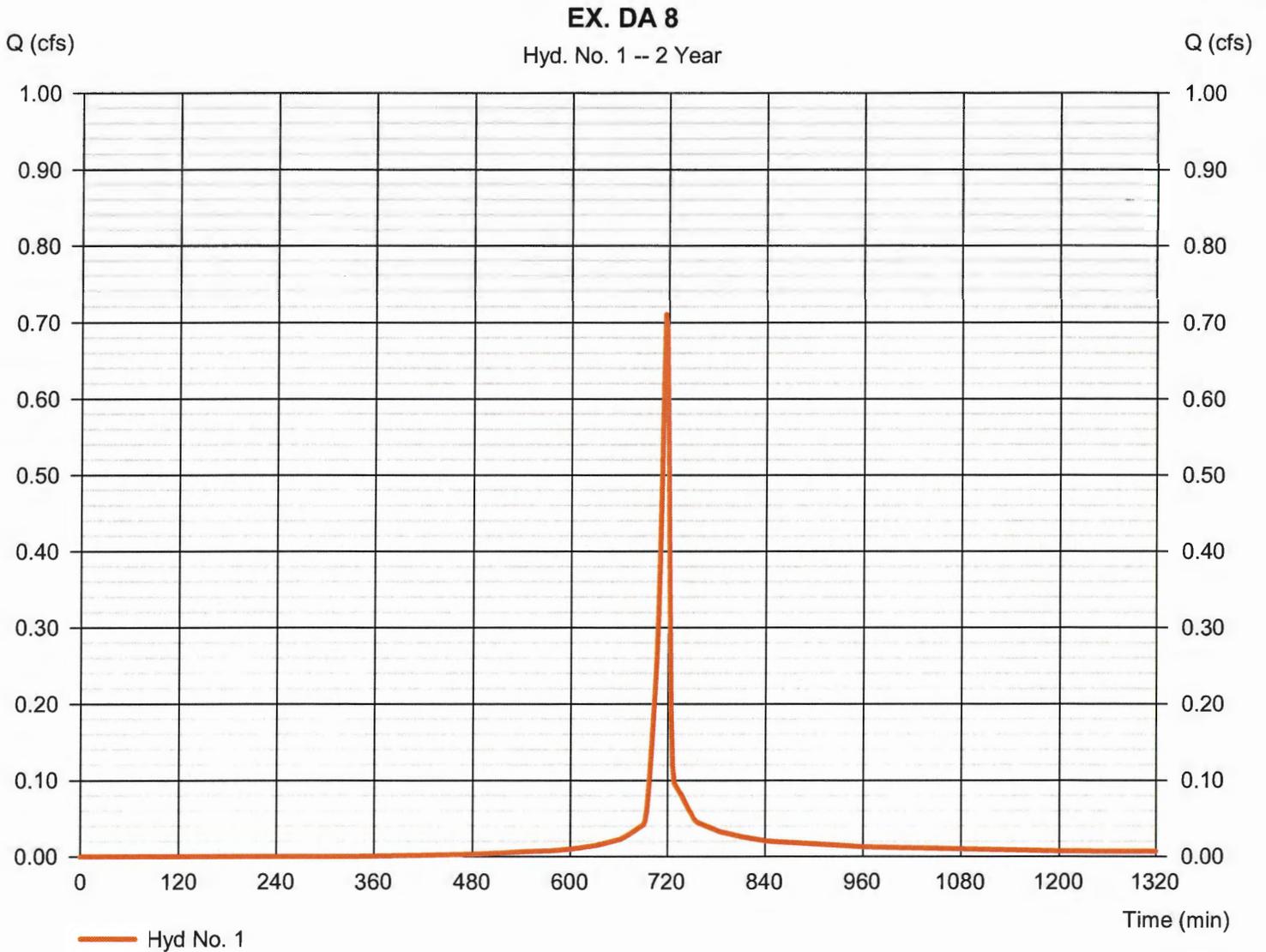
i. 2 YEAR 24 HOUR STORM EVENT

Hydrograph Report

Hyd. No. 1

EX. DA 8

Hydrograph type	= SCS Runoff	Peak discharge	= 0.711 cfs
Storm frequency	= 2 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 1,476 cuft
Drainage area	= 0.200 ac	Curve number	= 90
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.20 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

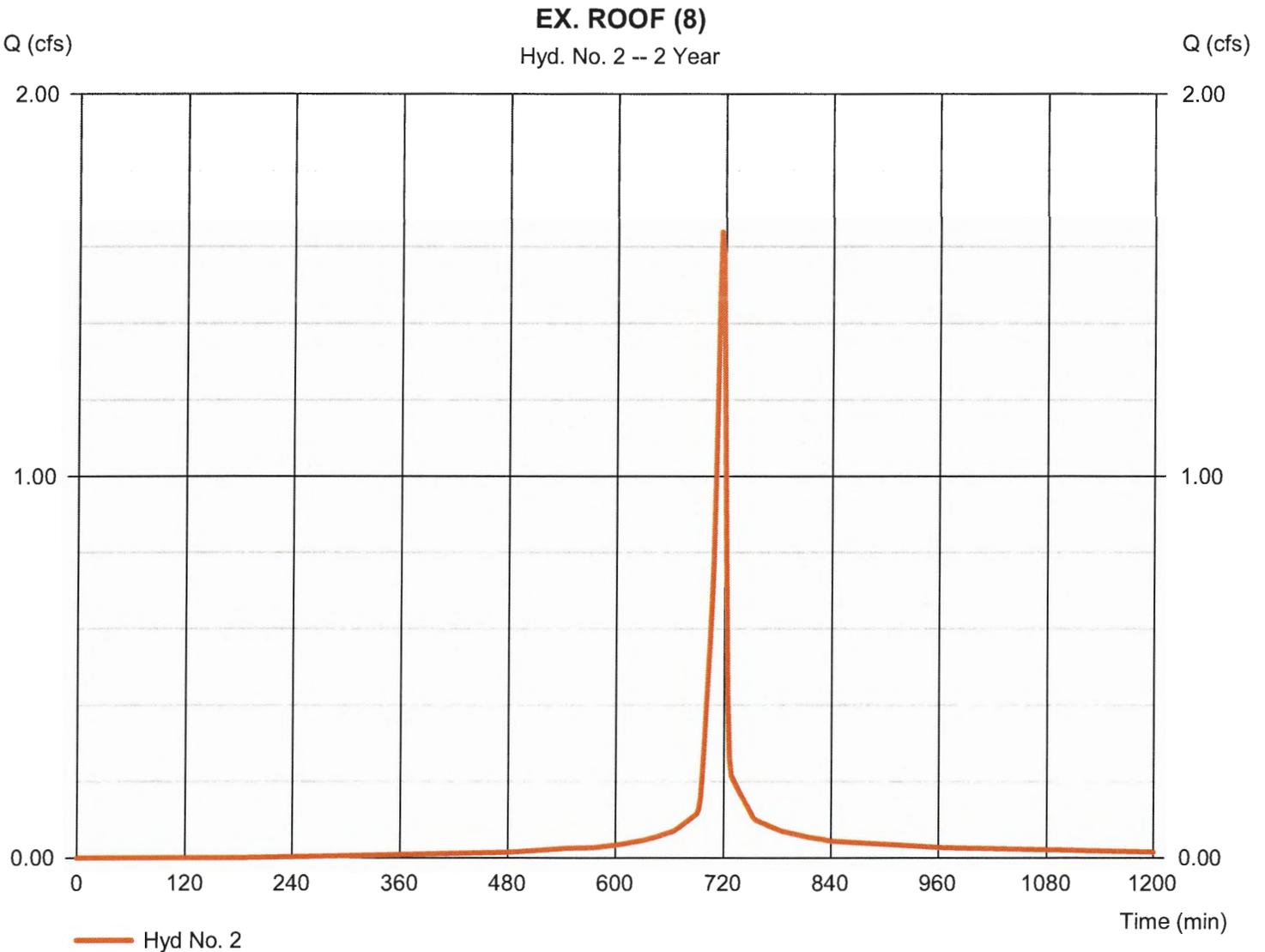


Hydrograph Report

Hyd. No. 2

EX. ROOF (8)

Hydrograph type	= SCS Runoff	Peak discharge	= 1.639 cfs
Storm frequency	= 2 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 3,600 cuft
Drainage area	= 0.400 ac	Curve number	= 95
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.20 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

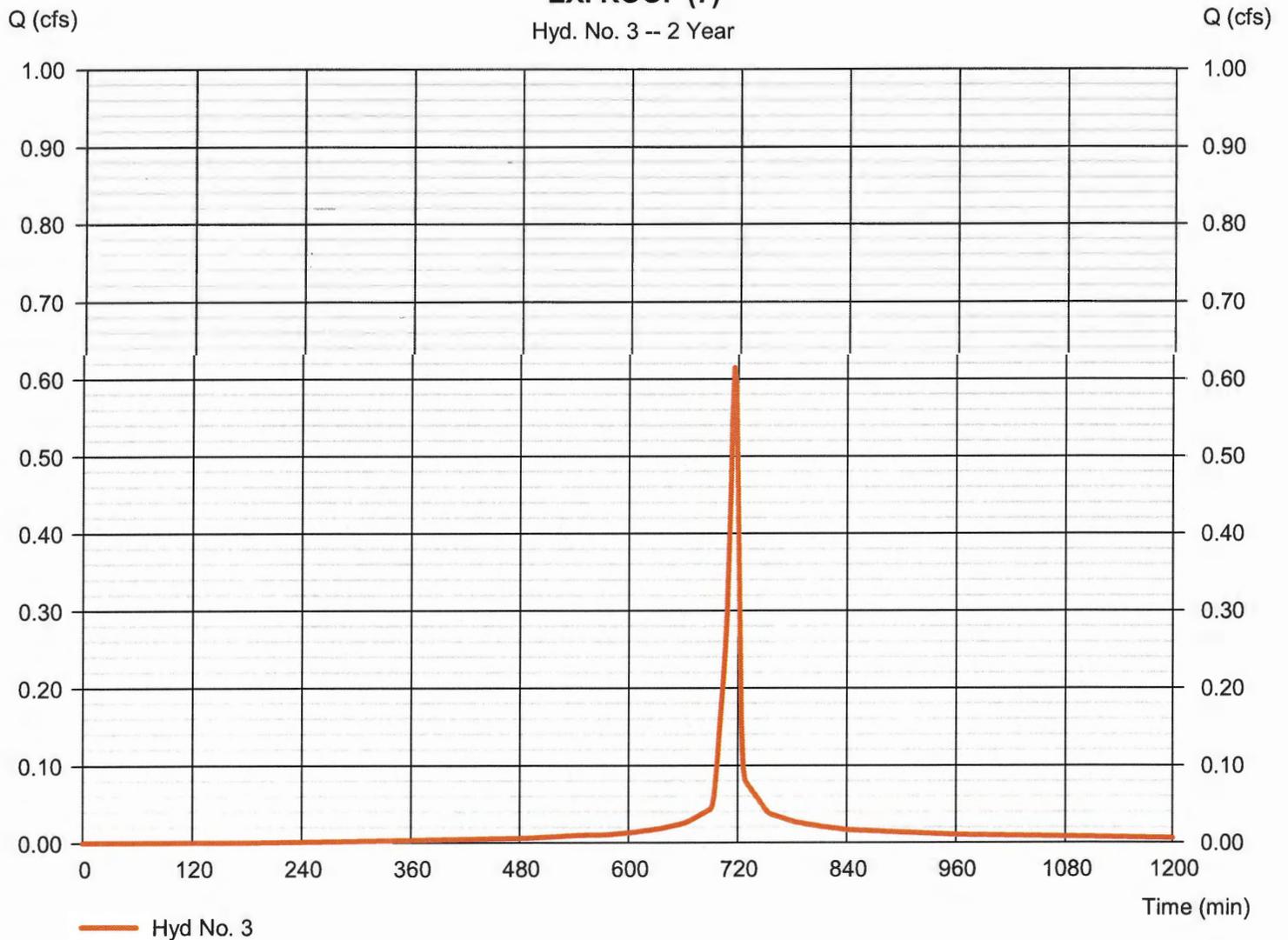
Hyd. No. 3

EX. ROOF (7)

Hydrograph type	= SCS Runoff	Peak discharge	= 0.615 cfs
Storm frequency	= 2 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 1,350 cuft
Drainage area	= 0.150 ac	Curve number	= 95
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.20 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

EX. ROOF (7)

Hyd. No. 3 -- 2 Year

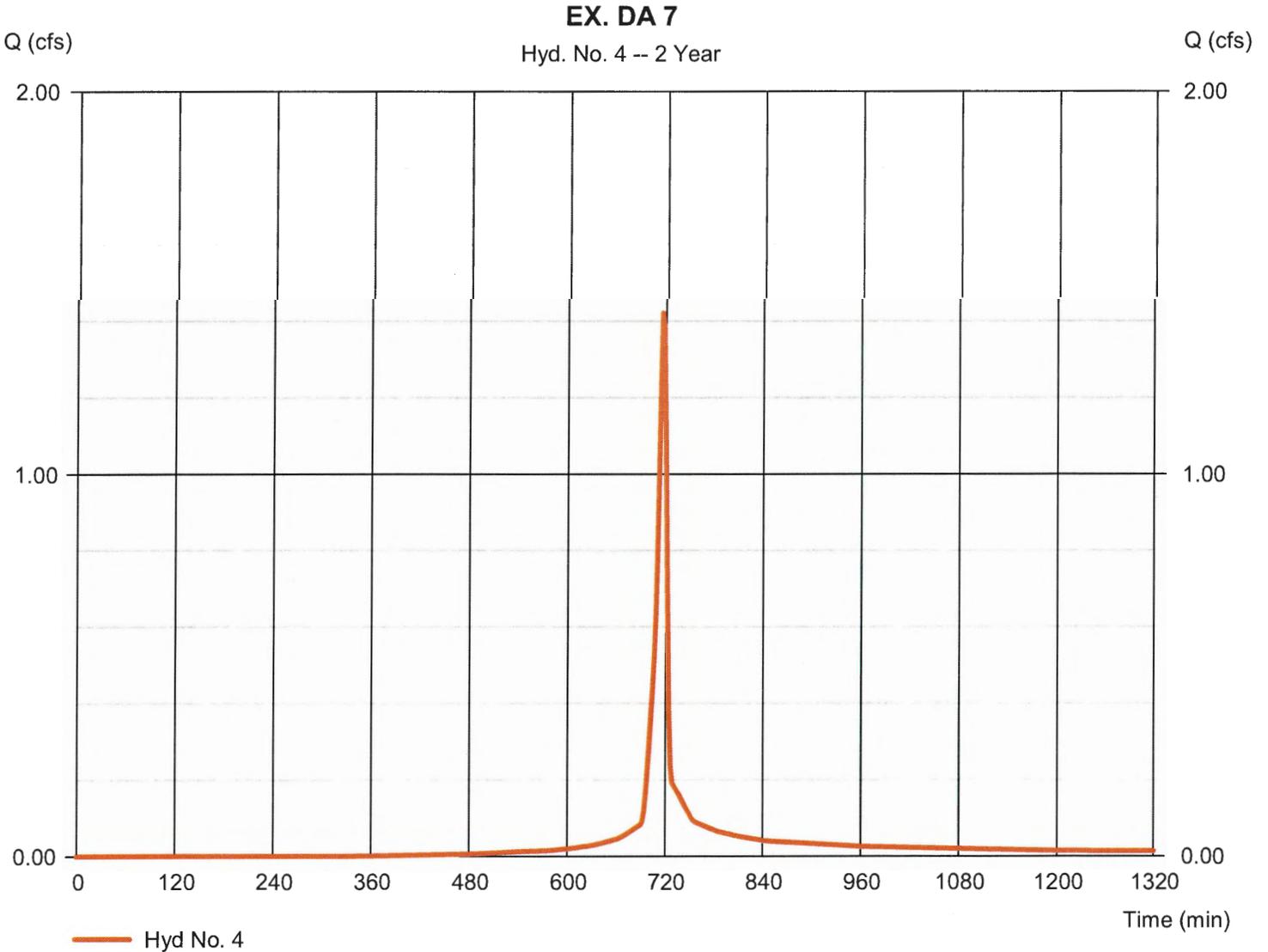


Hydrograph Report

Hyd. No. 4

EX. DA 7

Hydrograph type	= SCS Runoff	Peak discharge	= 1.422 cfs
Storm frequency	= 2 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 2,952 cuft
Drainage area	= 0.400 ac	Curve number	= 90
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.20 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

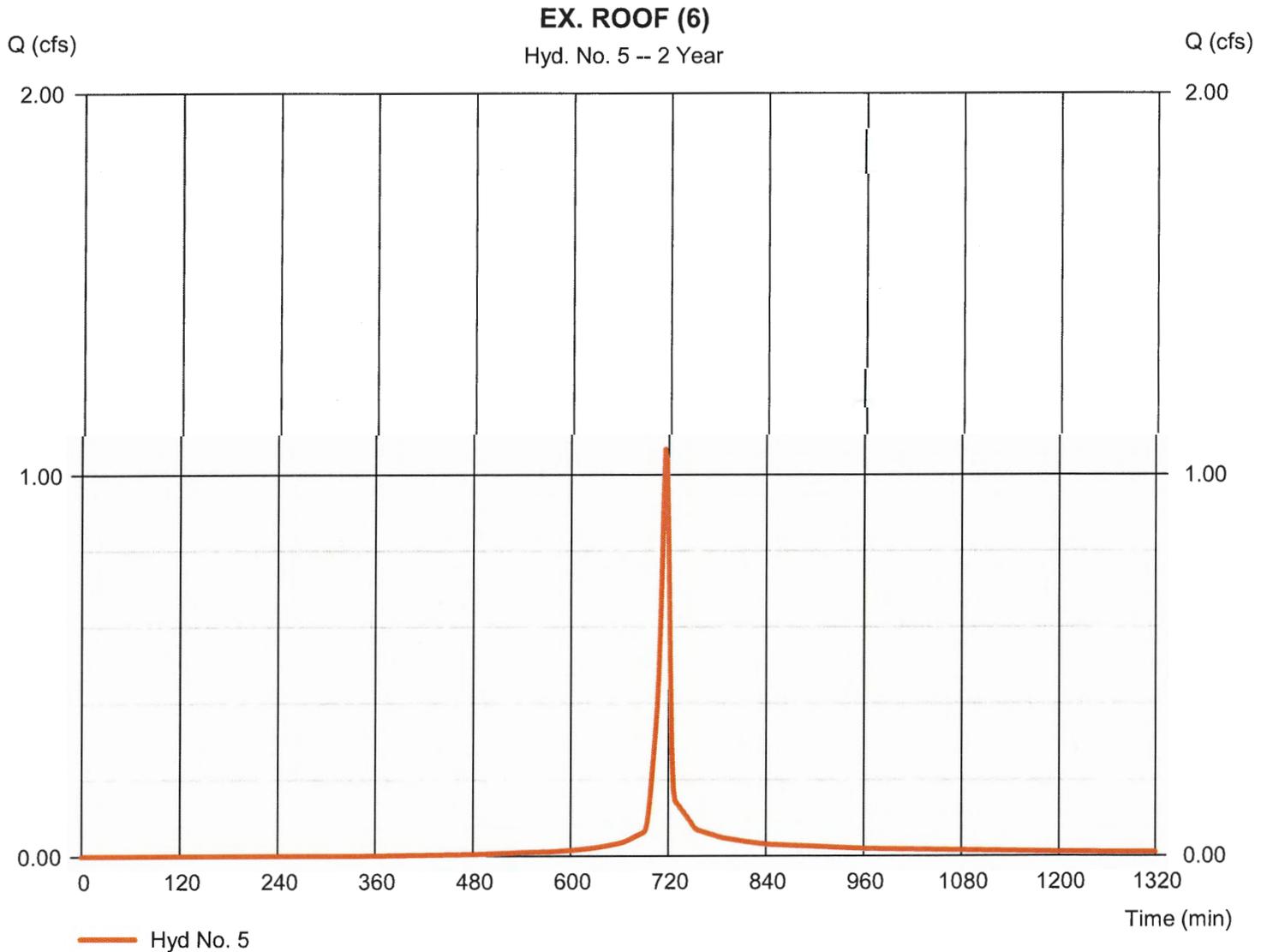


Hydrograph Report

Hyd. No. 5

EX. ROOF (6)

Hydrograph type	= SCS Runoff	Peak discharge	= 1.067 cfs
Storm frequency	= 2 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 2,214 cuft
Drainage area	= 0.300 ac	Curve number	= 90
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.20 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

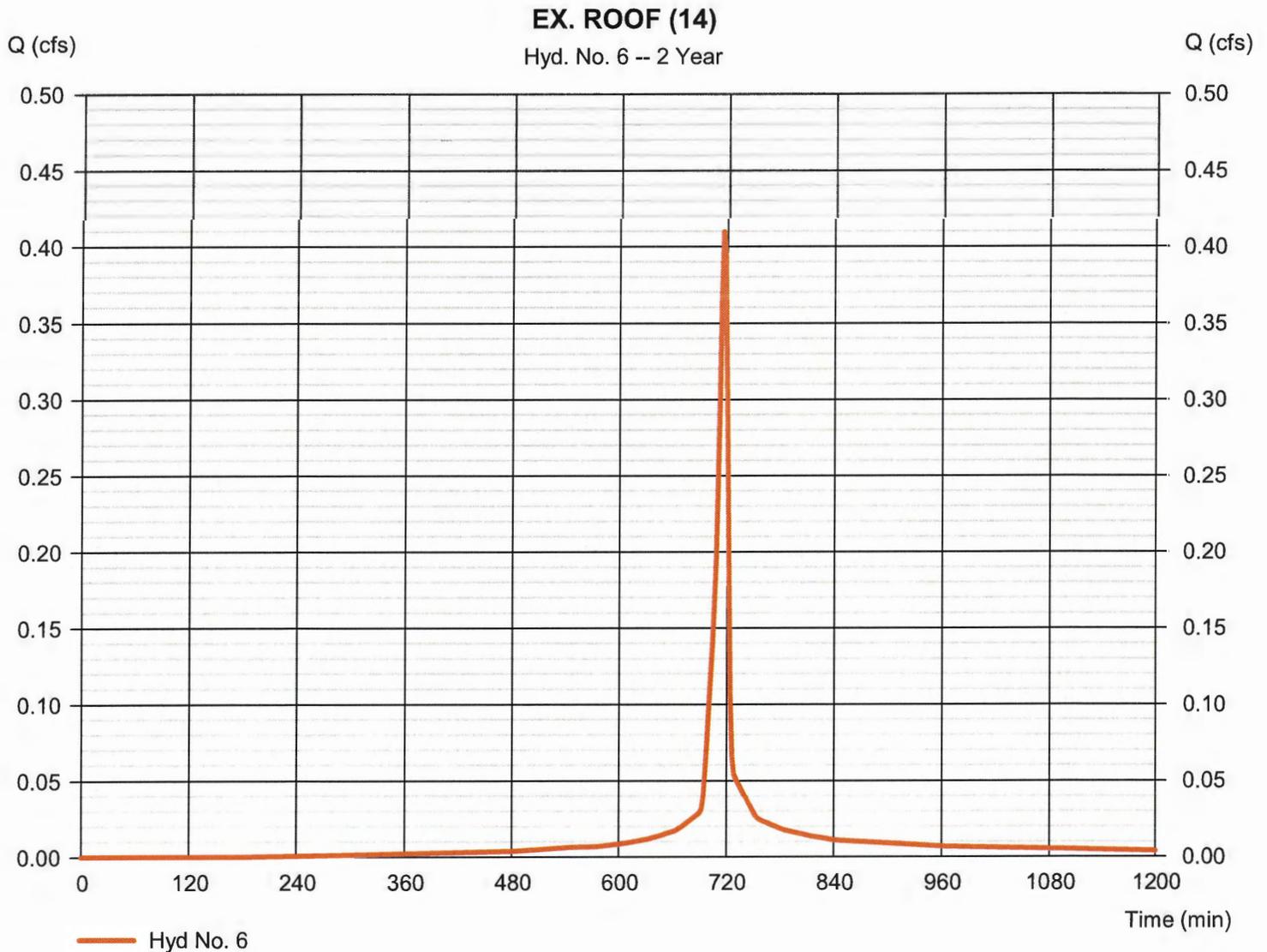
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Friday, 07 / 8 / 2016

Hyd. No. 6

EX. ROOF (14)

Hydrograph type	= SCS Runoff	Peak discharge	= 0.410 cfs
Storm frequency	= 2 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 900 cuft
Drainage area	= 0.100 ac	Curve number	= 95
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.20 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

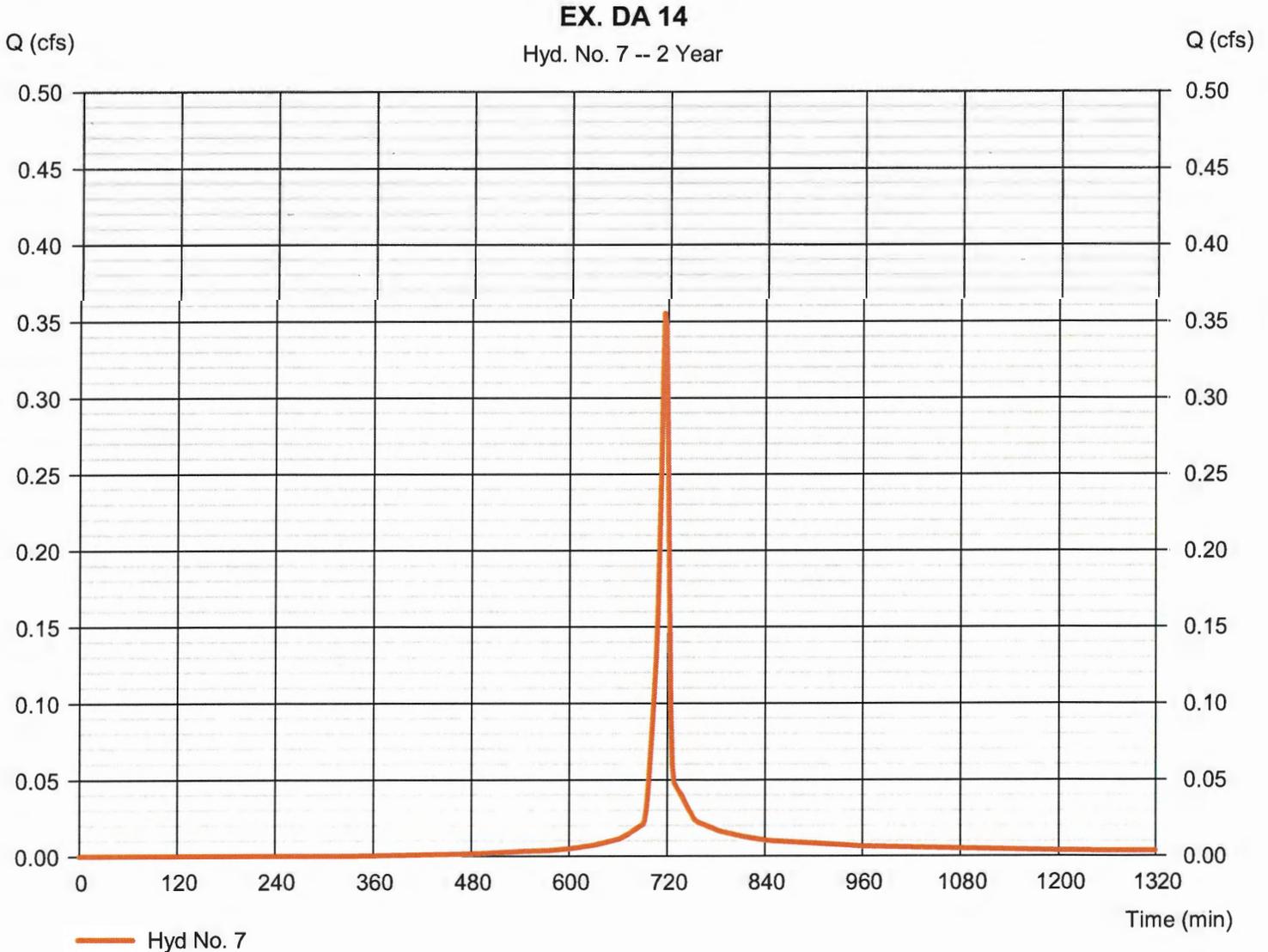


Hydrograph Report

Hyd. No. 7

EX. DA 14

Hydrograph type	= SCS Runoff	Peak discharge	= 0.356 cfs
Storm frequency	= 2 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 738 cuft
Drainage area	= 0.100 ac	Curve number	= 90
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.20 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

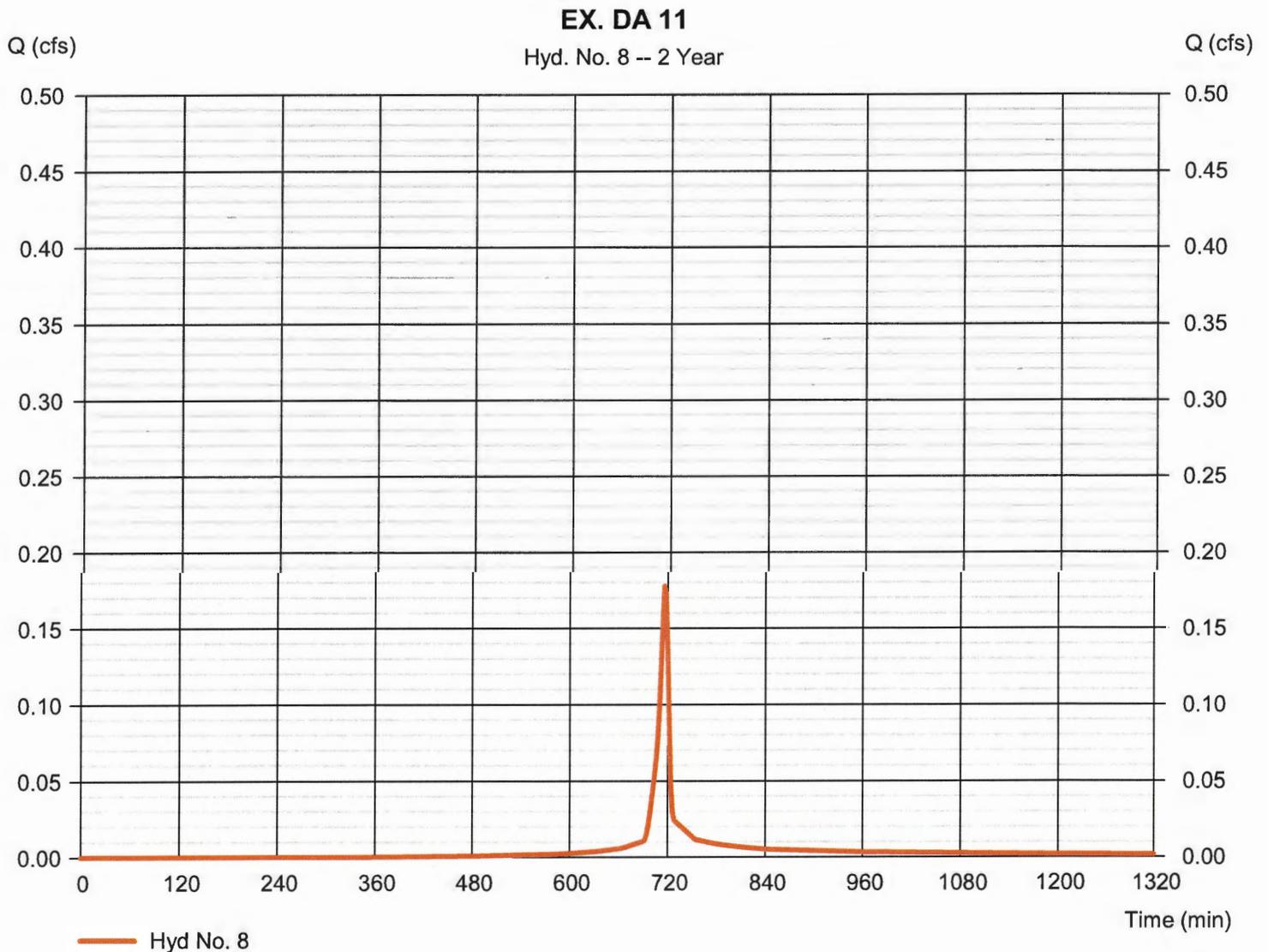
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Friday, 07 / 8 / 2016

Hyd. No. 8

EX. DA 11

Hydrograph type	= SCS Runoff	Peak discharge	= 0.178 cfs
Storm frequency	= 2 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 369 cuft
Drainage area	= 0.050 ac	Curve number	= 90
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.20 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

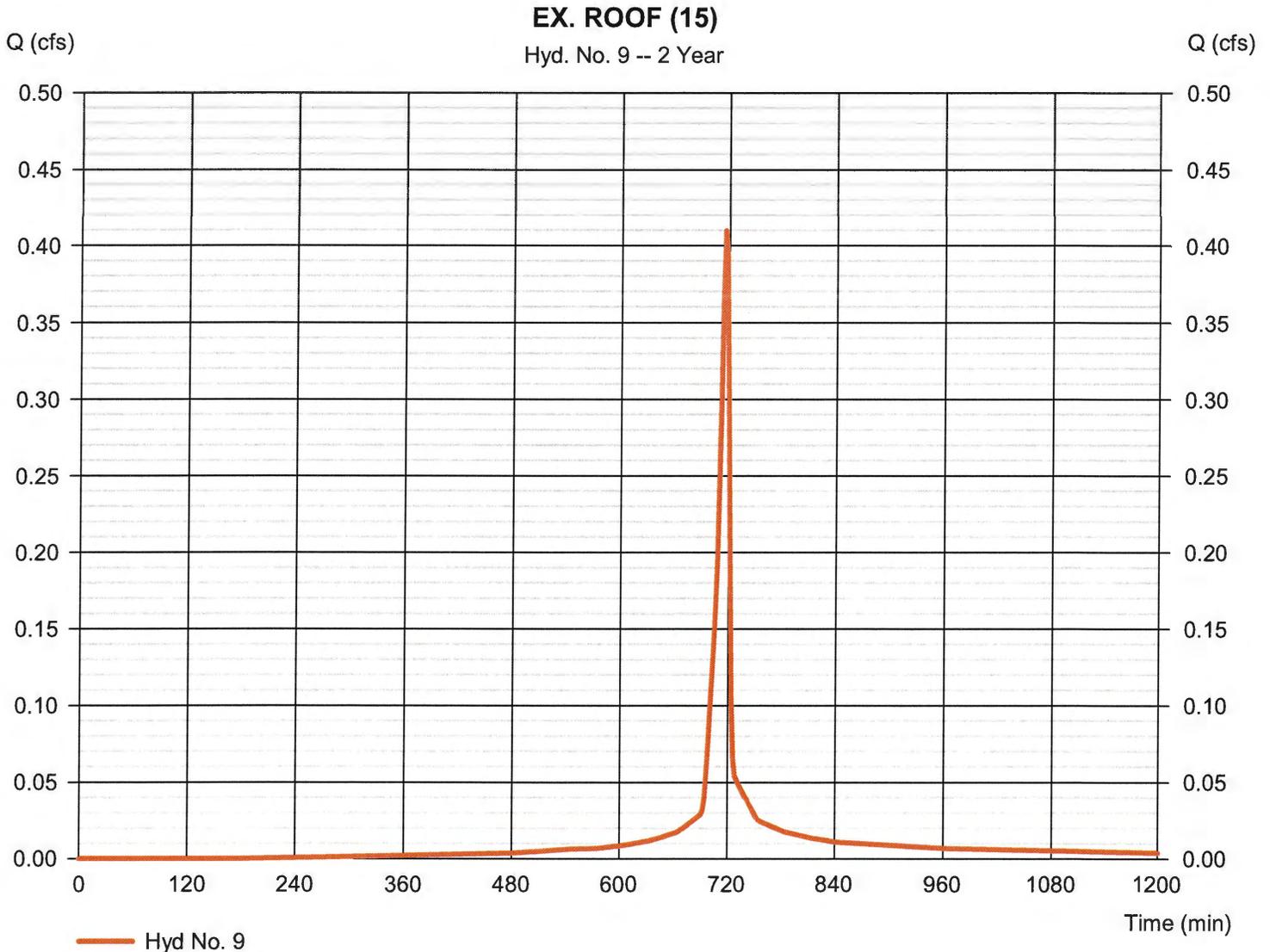


Hydrograph Report

Hyd. No. 9

EX. ROOF (15)

Hydrograph type	= SCS Runoff	Peak discharge	= 0.410 cfs
Storm frequency	= 2 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 900 cuft
Drainage area	= 0.100 ac	Curve number	= 95
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.20 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

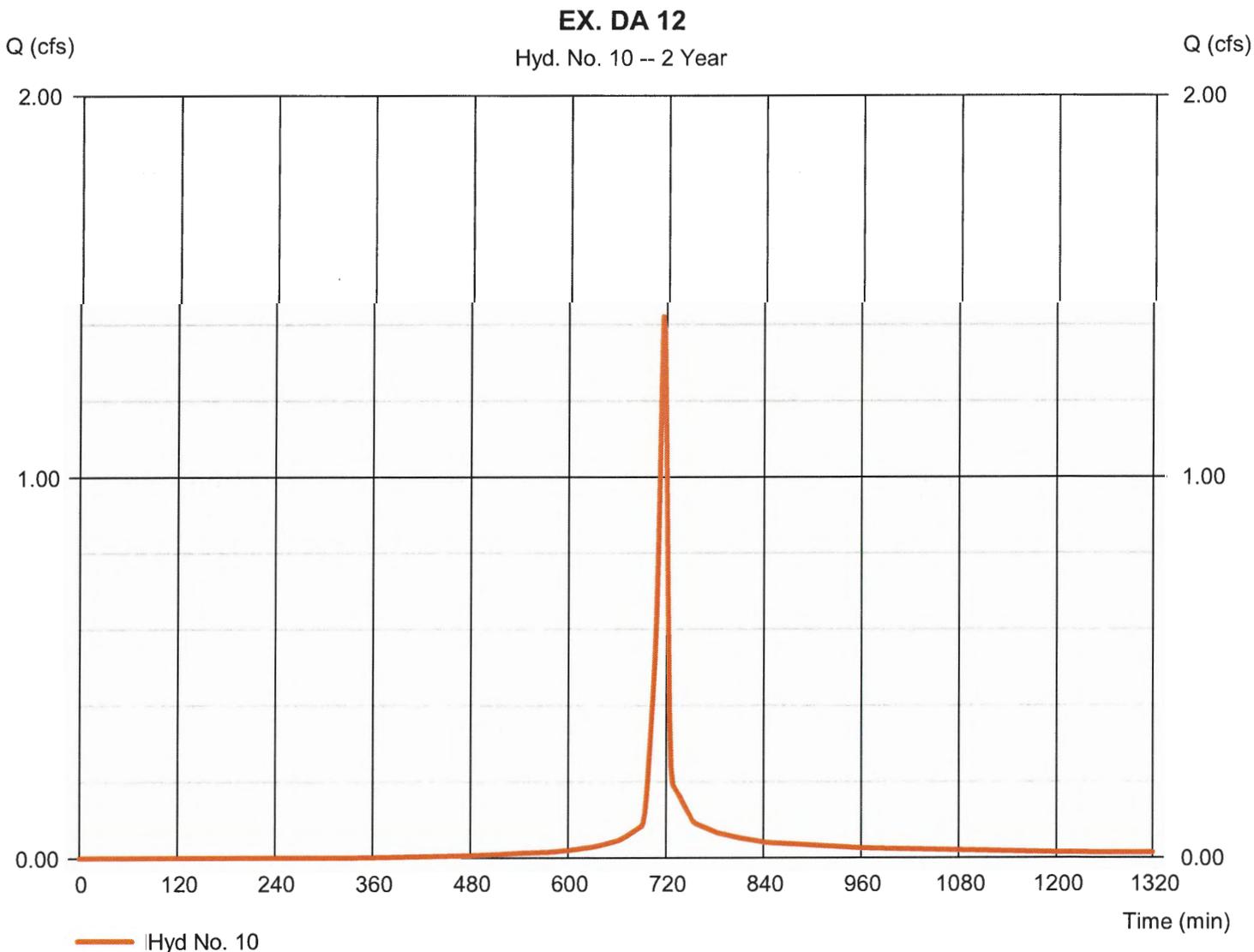


Hydrograph Report

Hyd. No. 10

EX. DA 12

Hydrograph type	= SCS Runoff	Peak discharge	= 1.422 cfs
Storm frequency	= 2 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 2,952 cuft
Drainage area	= 0.400 ac	Curve number	= 90
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.20 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

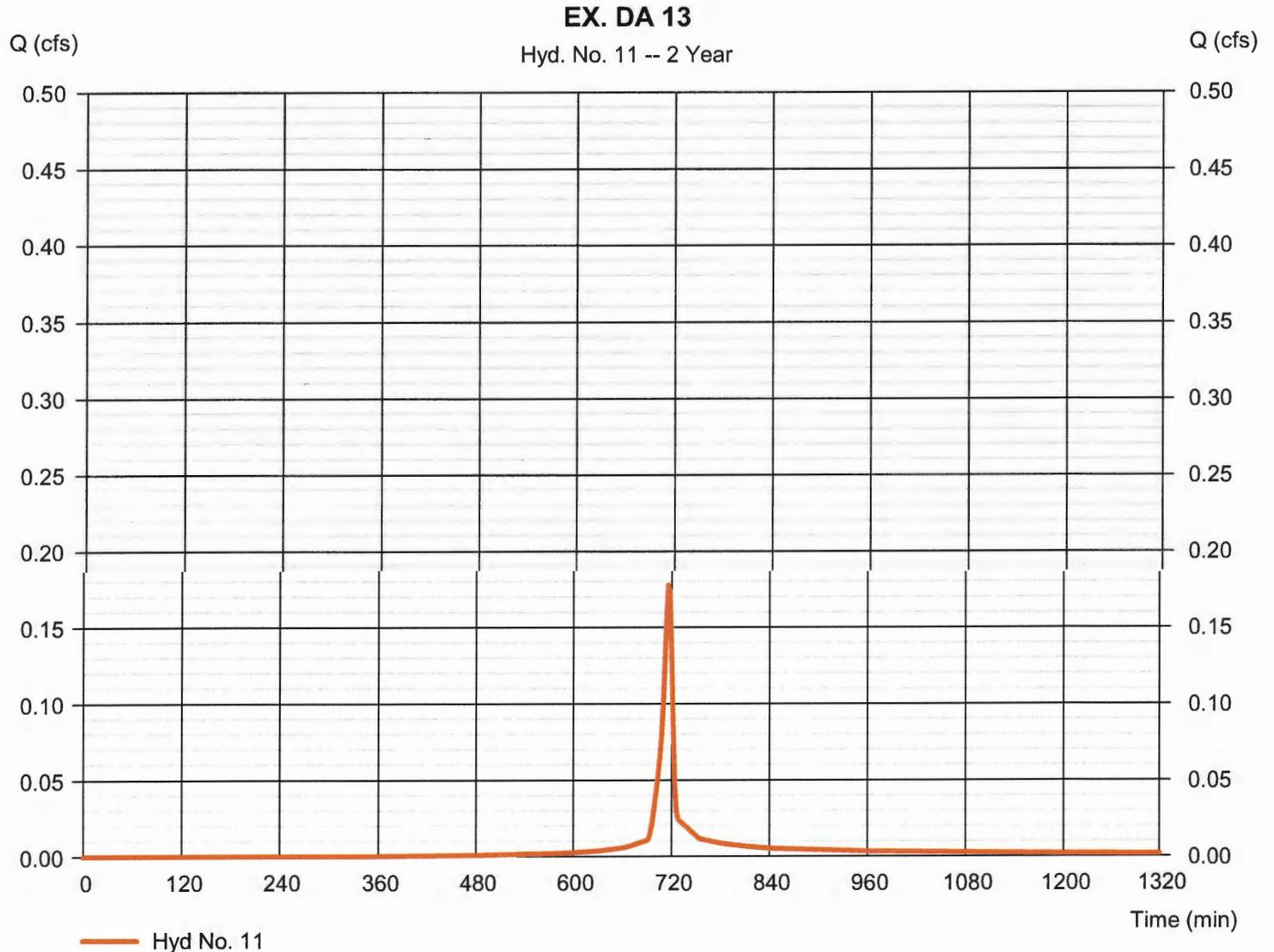


Hydrograph Report

Hyd. No. 11

EX. DA 13

Hydrograph type	= SCS Runoff	Peak discharge	= 0.178 cfs
Storm frequency	= 2 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 369 cuft
Drainage area	= 0.050 ac	Curve number	= 90
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.20 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

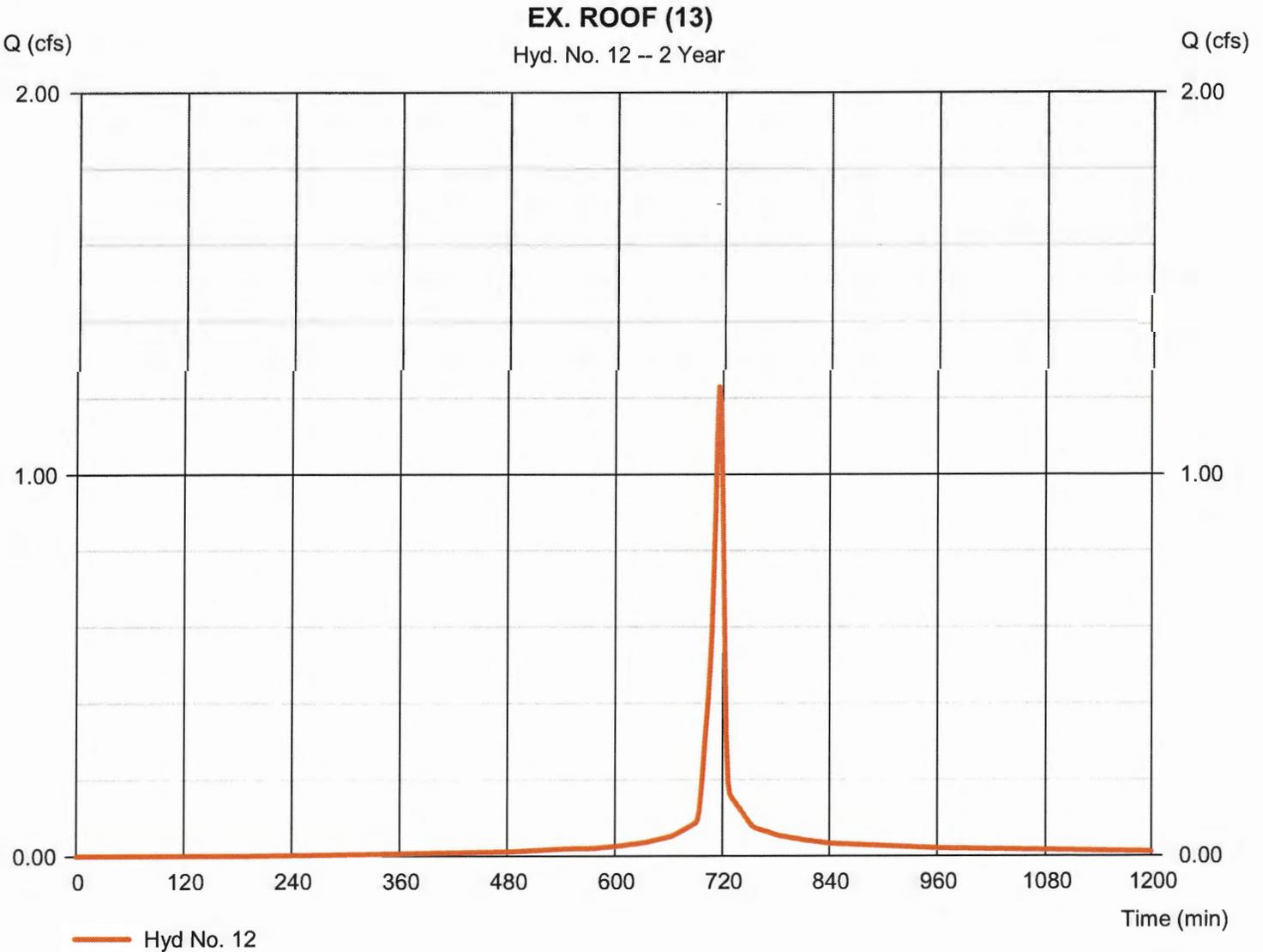


Hydrograph Report

Hyd. No. 12

EX. ROOF (13)

Hydrograph type	= SCS Runoff	Peak discharge	= 1.229 cfs
Storm frequency	= 2 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 2,700 cuft
Drainage area	= 0.300 ac	Curve number	= 95
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.20 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

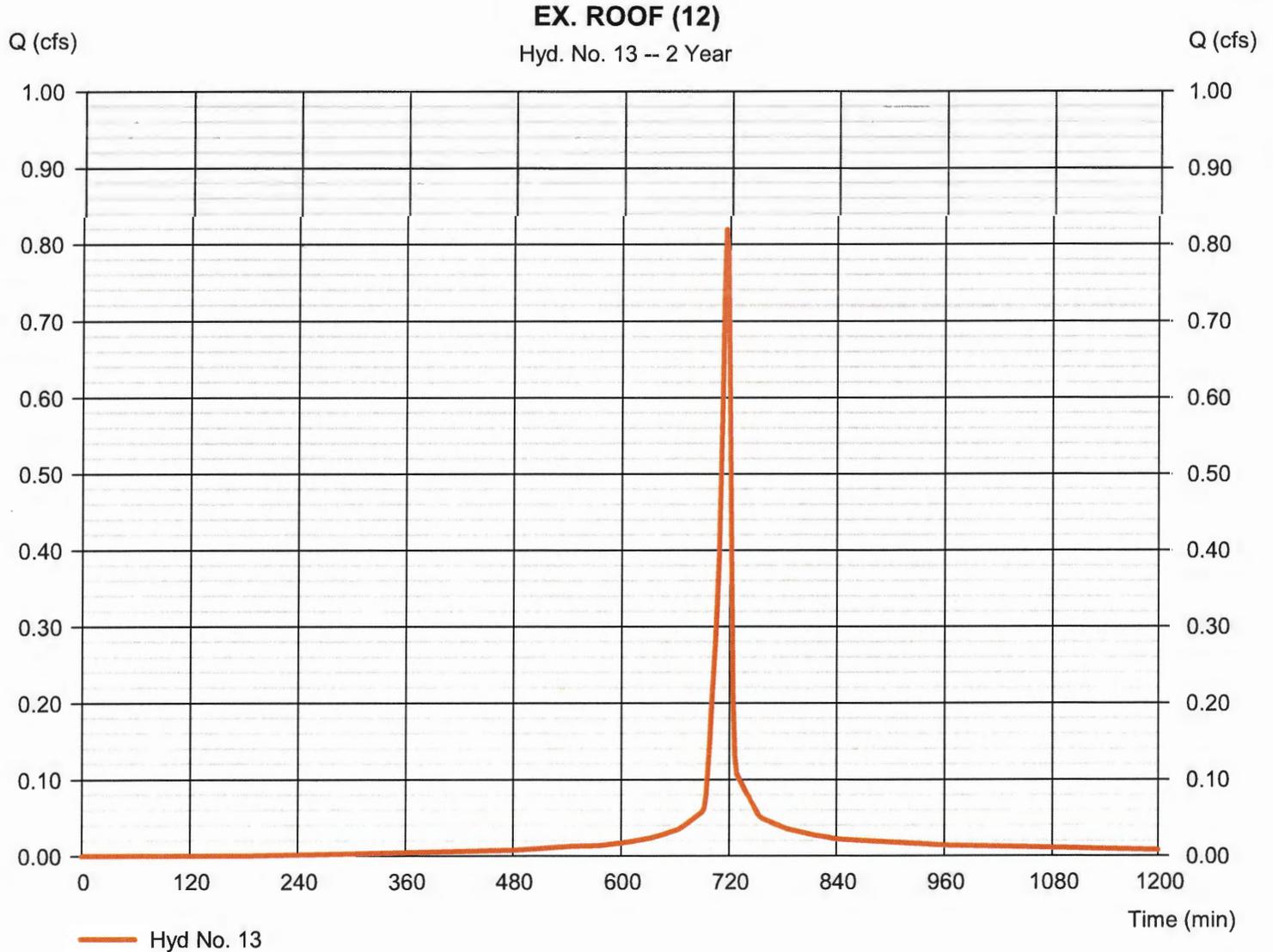


Hydrograph Report

Hyd. No. 13

EX. ROOF (12)

Hydrograph type	= SCS Runoff	Peak discharge	= 0.820 cfs
Storm frequency	= 2 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 1,800 cuft
Drainage area	= 0.200 ac	Curve number	= 95
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.20 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

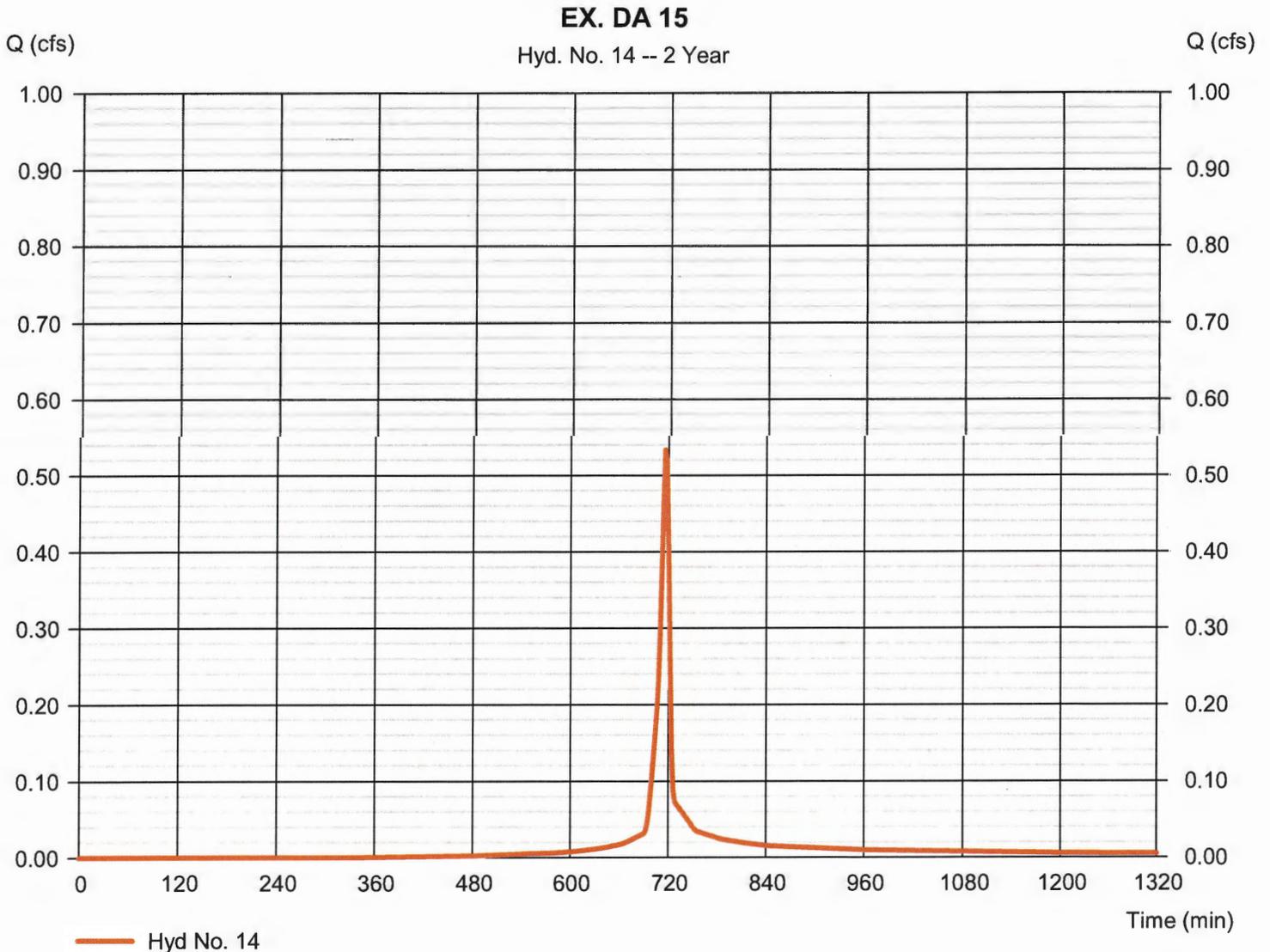


Hydrograph Report

Hyd. No. 14

EX. DA 15

Hydrograph type	= SCS Runoff	Peak discharge	= 0.533 cfs
Storm frequency	= 2 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 1,107 cuft
Drainage area	= 0.150 ac	Curve number	= 90
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.20 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

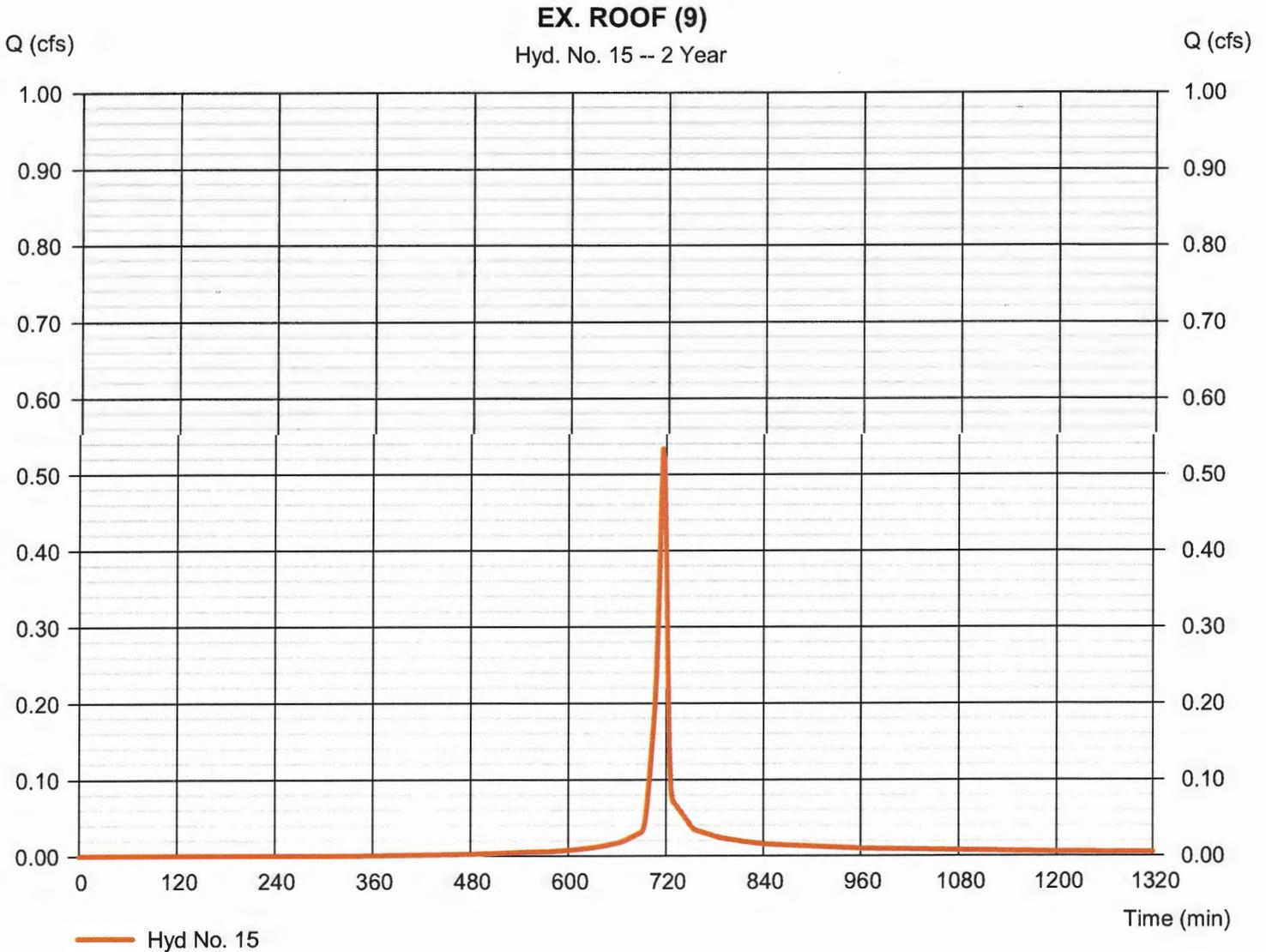


Hydrograph Report

Hyd. No. 15

EX. ROOF (9)

Hydrograph type	= SCS Runoff	Peak discharge	= 0.533 cfs
Storm frequency	= 2 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 1,107 cuft
Drainage area	= 0.150 ac	Curve number	= 90
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.20 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

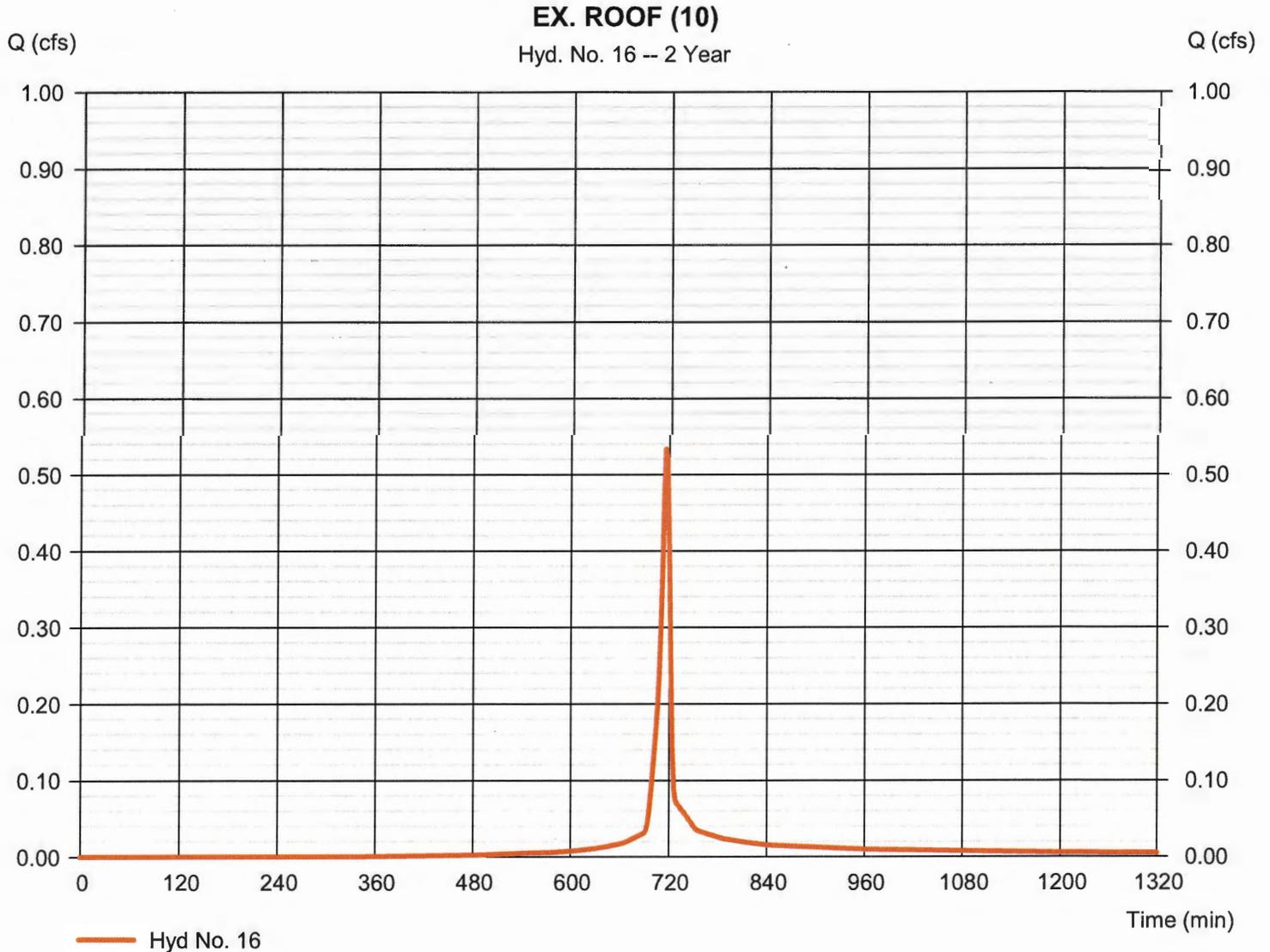


Hydrograph Report

Hyd. No. 16

EX. ROOF (10)

Hydrograph type	= SCS Runoff	Peak discharge	= 0.533 cfs
Storm frequency	= 2 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 1,107 cuft
Drainage area	= 0.150 ac	Curve number	= 90
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.20 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

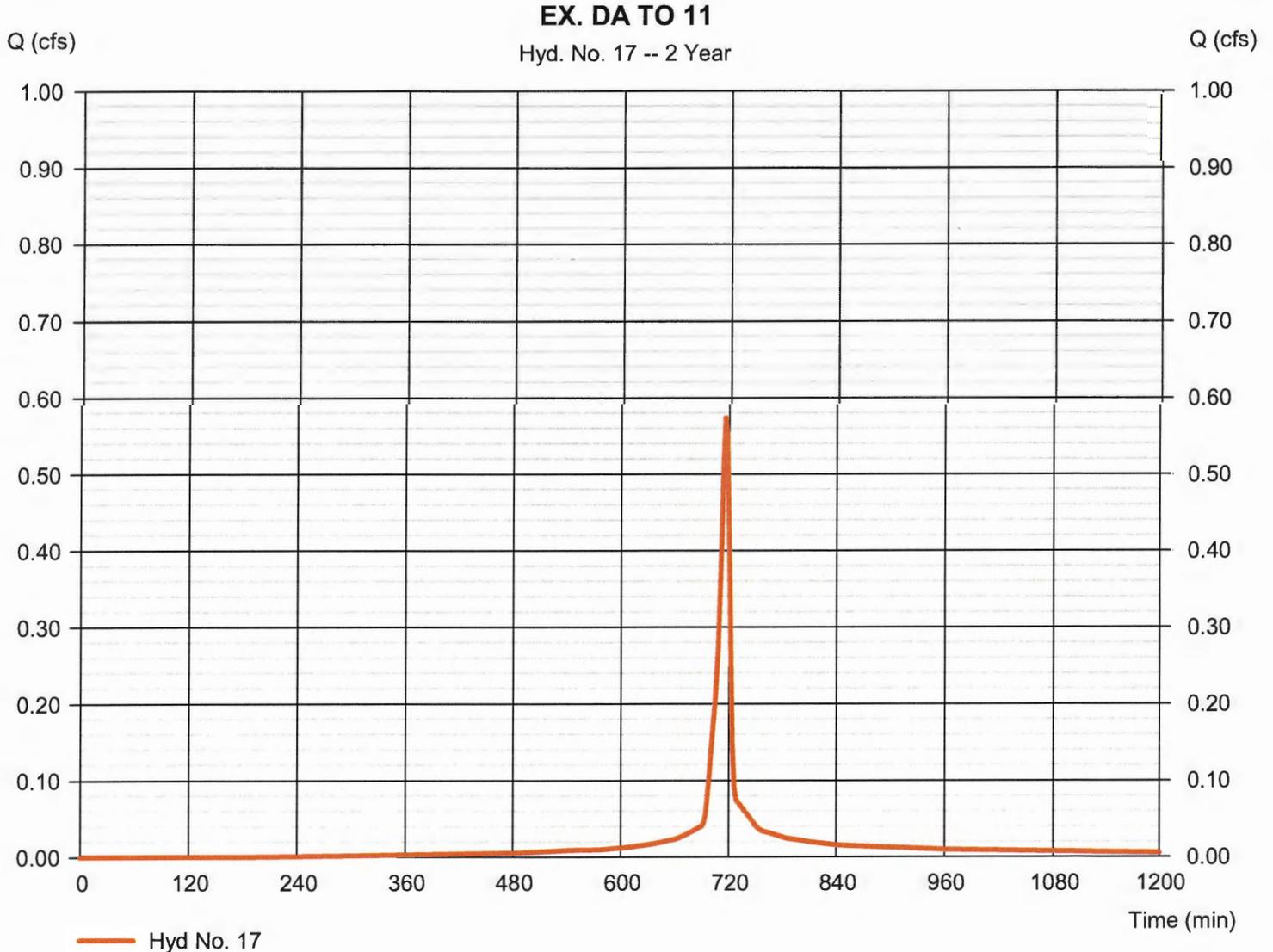


Hydrograph Report

Hyd. No. 17

EX. DA TO 11

Hydrograph type	= SCS Runoff	Peak discharge	= 0.574 cfs
Storm frequency	= 2 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 1,260 cuft
Drainage area	= 0.140 ac	Curve number	= 95
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.20 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



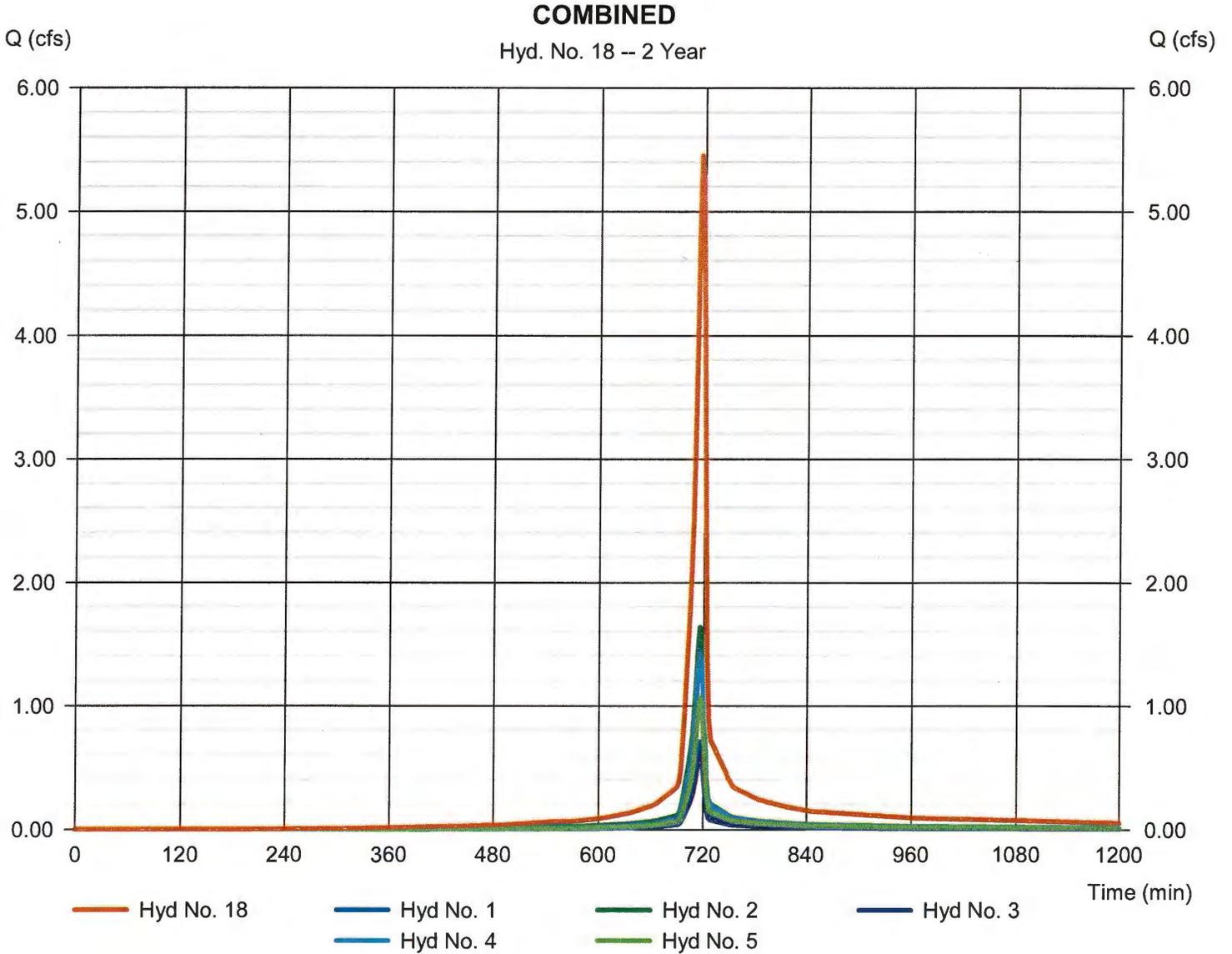
Hydrograph Report

Hyd. No. 18

COMBINED

Hydrograph type = Combine
Storm frequency = 2 yrs
Time interval = 2 min
Inflow hyds. = 1, 2, 3, 4, 5

Peak discharge = 5.453 cfs
Time to peak = 716 min
Hyd. volume = 11,593 cuft
Contrib. drain. area = 1.450 ac



Hydrograph Report

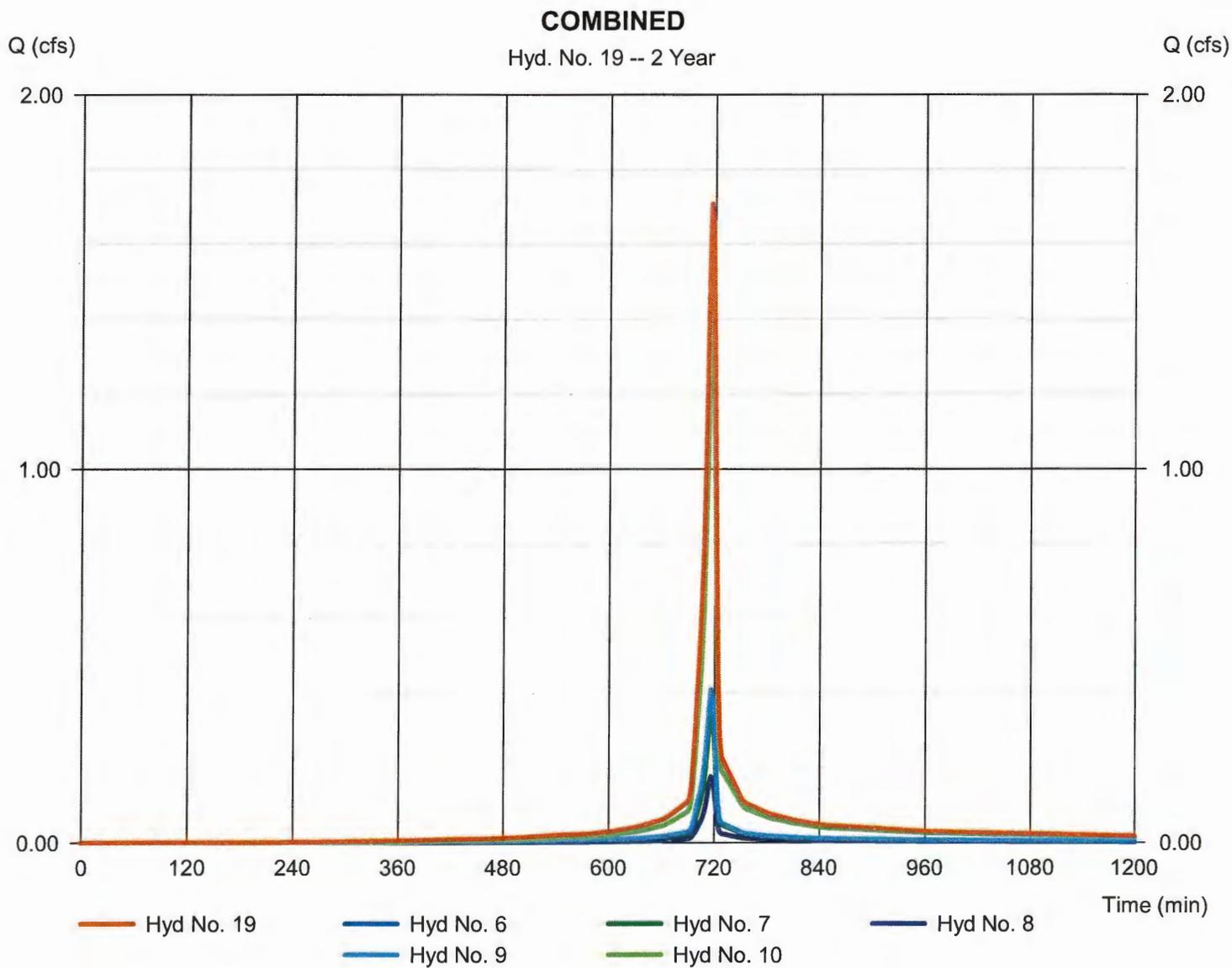
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Friday, 07 / 8 / 2016

Hyd. No. 19

COMBINED

Hydrograph type	= Combine	Peak discharge	= 1.708 cfs
Storm frequency	= 2 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 3,645 cuft
Inflow hyds.	= 6, 7, 8, 9, 10	Contrib. drain. area	= 0.750 ac



Hydrograph Report

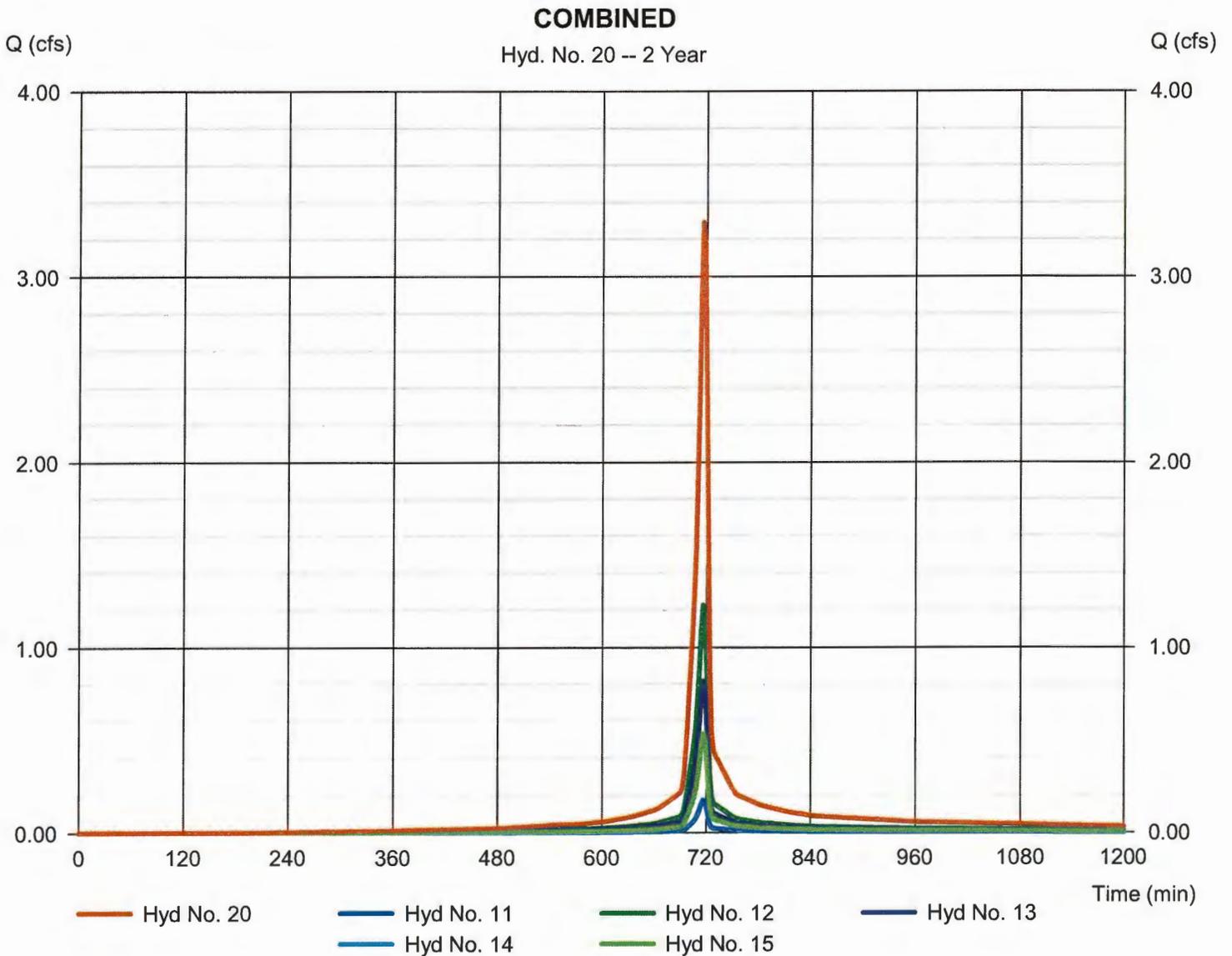
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Friday, 07 / 8 / 2016

Hyd. No. 20

COMBINED

Hydrograph type	= Combine	Peak discharge	= 3.293 cfs
Storm frequency	= 2 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 7,084 cuft
Inflow hyds.	= 11, 12, 13, 14, 15	Contrib. drain. area	= 0.850 ac



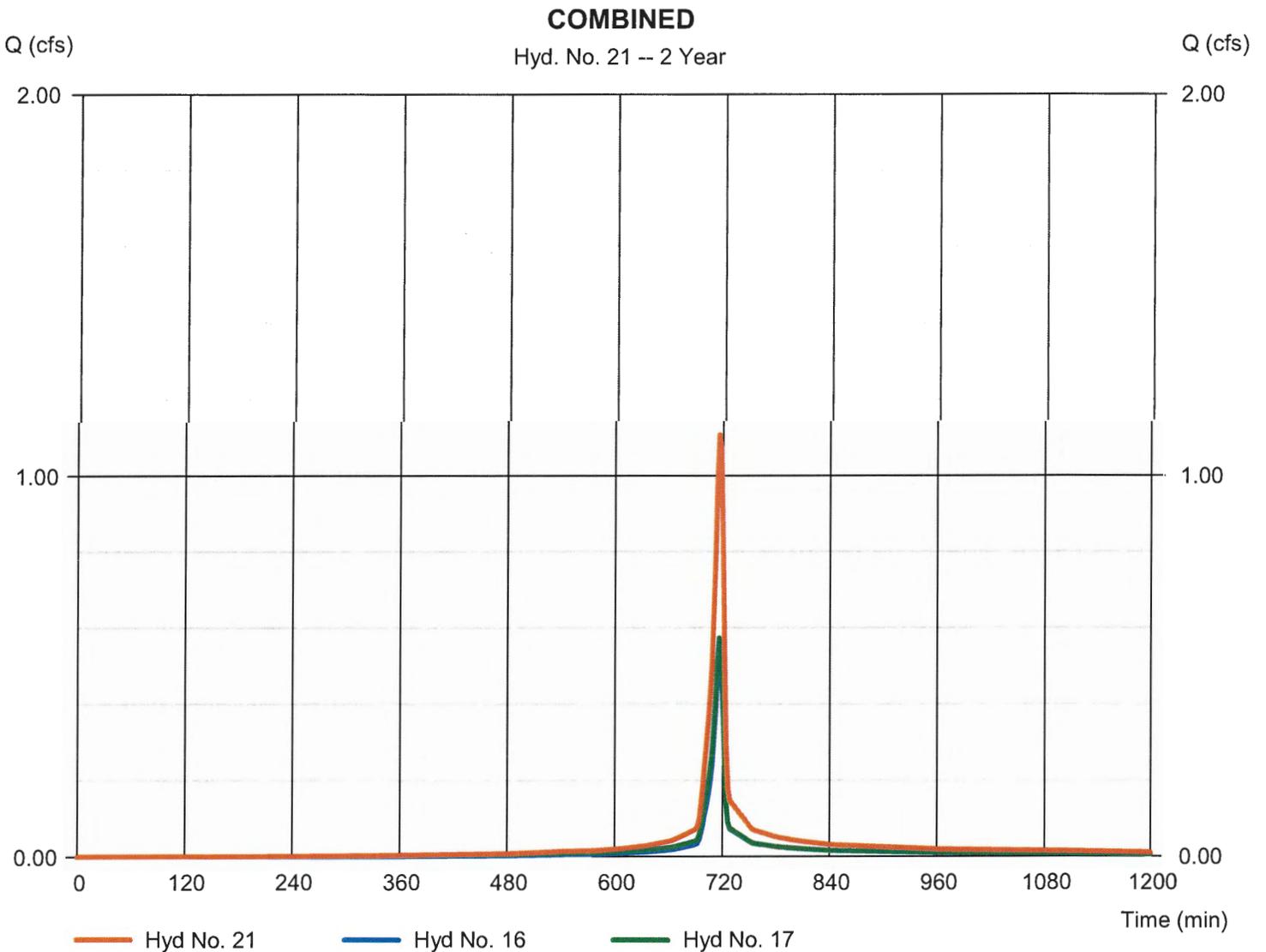
Hydrograph Report

Hyd. No. 21

COMBINED

Hydrograph type = Combine
Storm frequency = 2 yrs
Time interval = 2 min
Inflow hyds. = 16, 17

Peak discharge = 1.107 cfs
Time to peak = 716 min
Hyd. volume = 2,367 cuft
Contrib. drain. area = 0.290 ac



Hydrograph Report

Hyd. No. 22

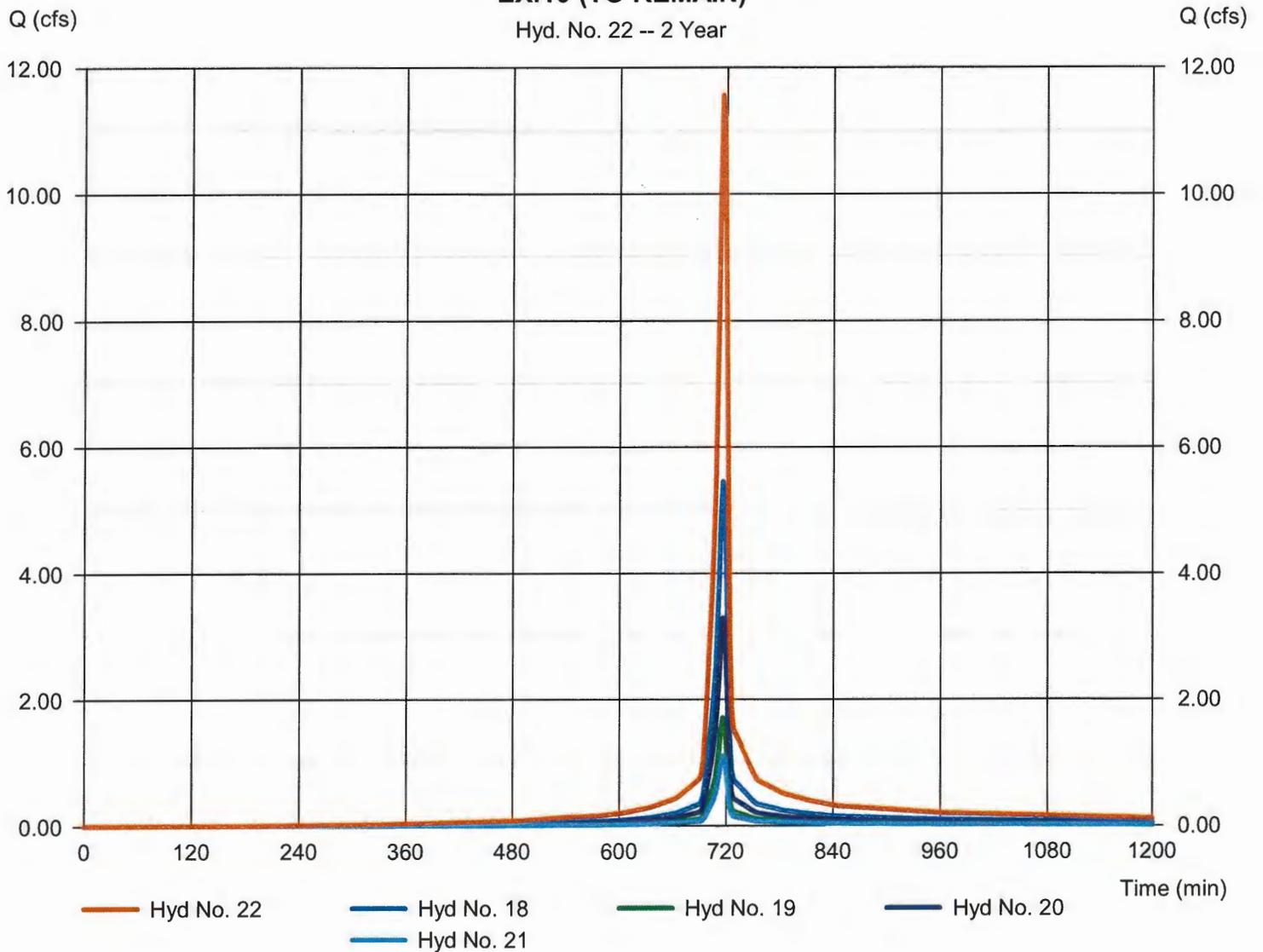
EX.10 (TO REMAIN)

Hydrograph type = Combine
Storm frequency = 2 yrs
Time interval = 2 min
Inflow hyds. = 18, 19, 20, 21

Peak discharge = 11.56 cfs
Time to peak = 716 min
Hyd. volume = 24,688 cuft
Contrib. drain. area = 0.000 ac

EX.10 (TO REMAIN)

Hyd. No. 22 -- 2 Year



Hydrograph Report

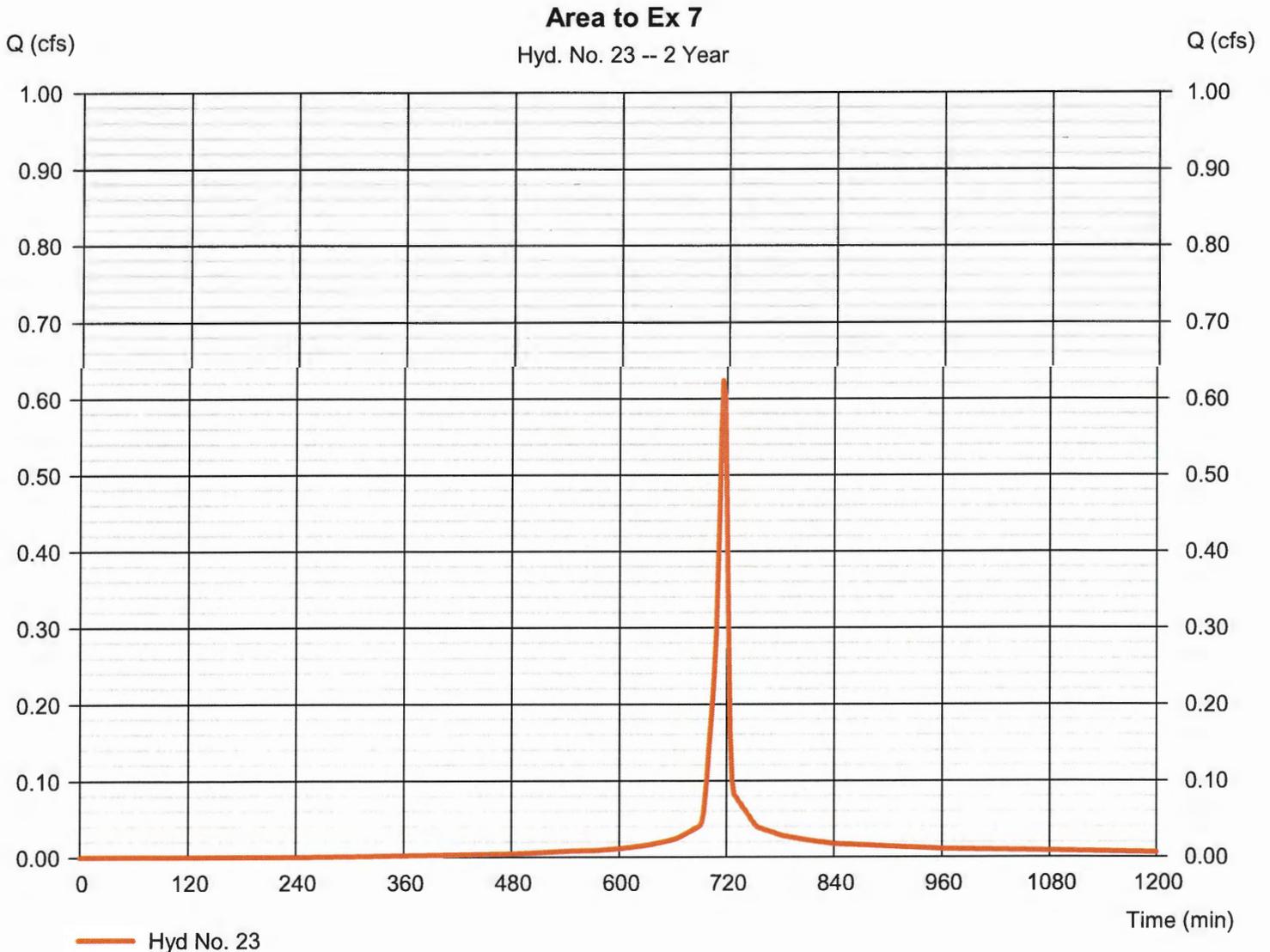
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Friday, 07 / 8 / 2016

Hyd. No. 23

Area to Ex 7

Hydrograph type	= SCS Runoff	Peak discharge	= 0.623 cfs
Storm frequency	= 2 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 1,332 cuft
Drainage area	= 0.160 ac	Curve number	= 93
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.20 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

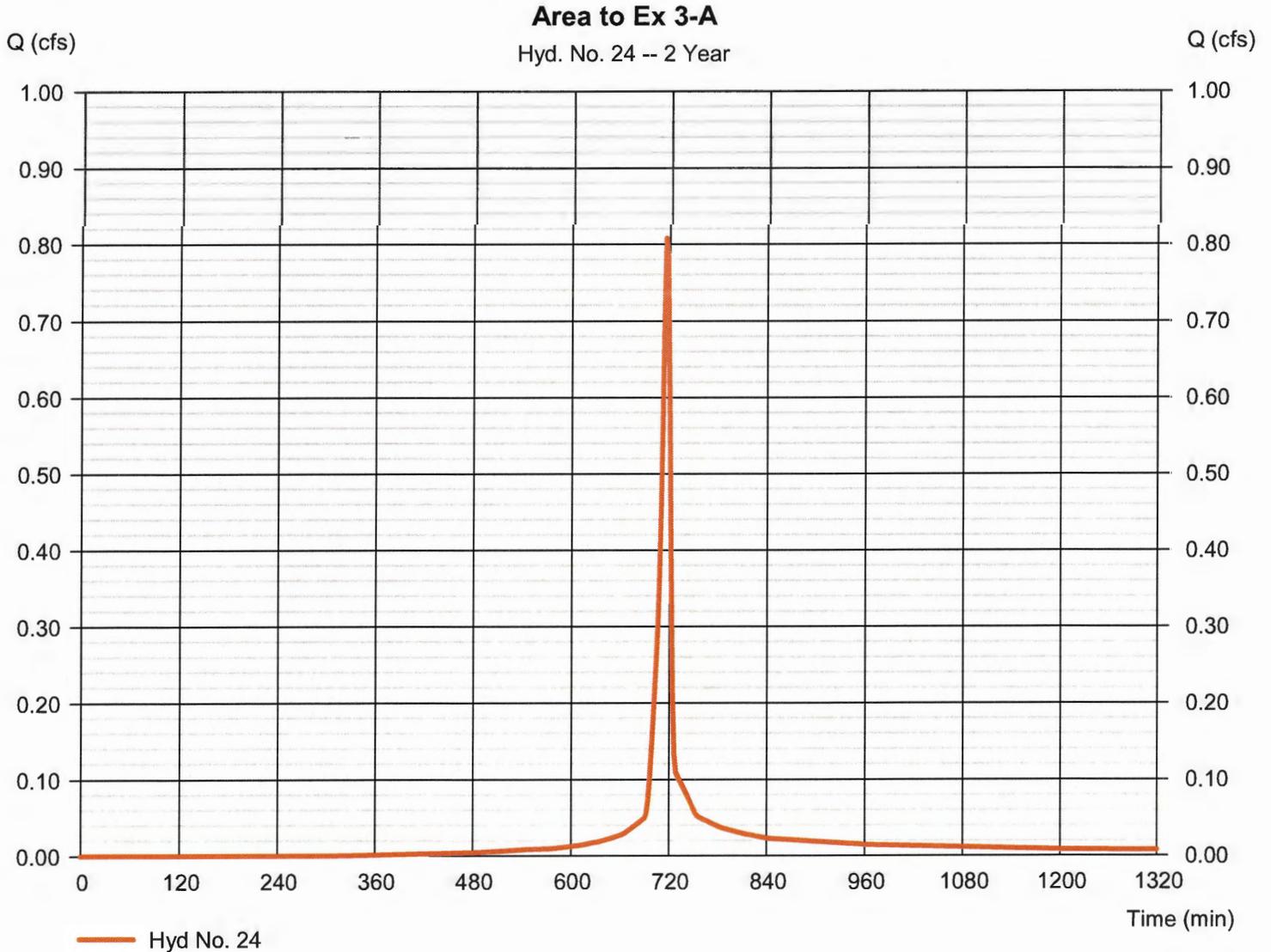


Hydrograph Report

Hyd. No. 24

Area to Ex 3-A

Hydrograph type	= SCS Runoff	Peak discharge	= 0.808 cfs
Storm frequency	= 2 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 1,691 cuft
Drainage area	= 0.220 ac	Curve number	= 91
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.20 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

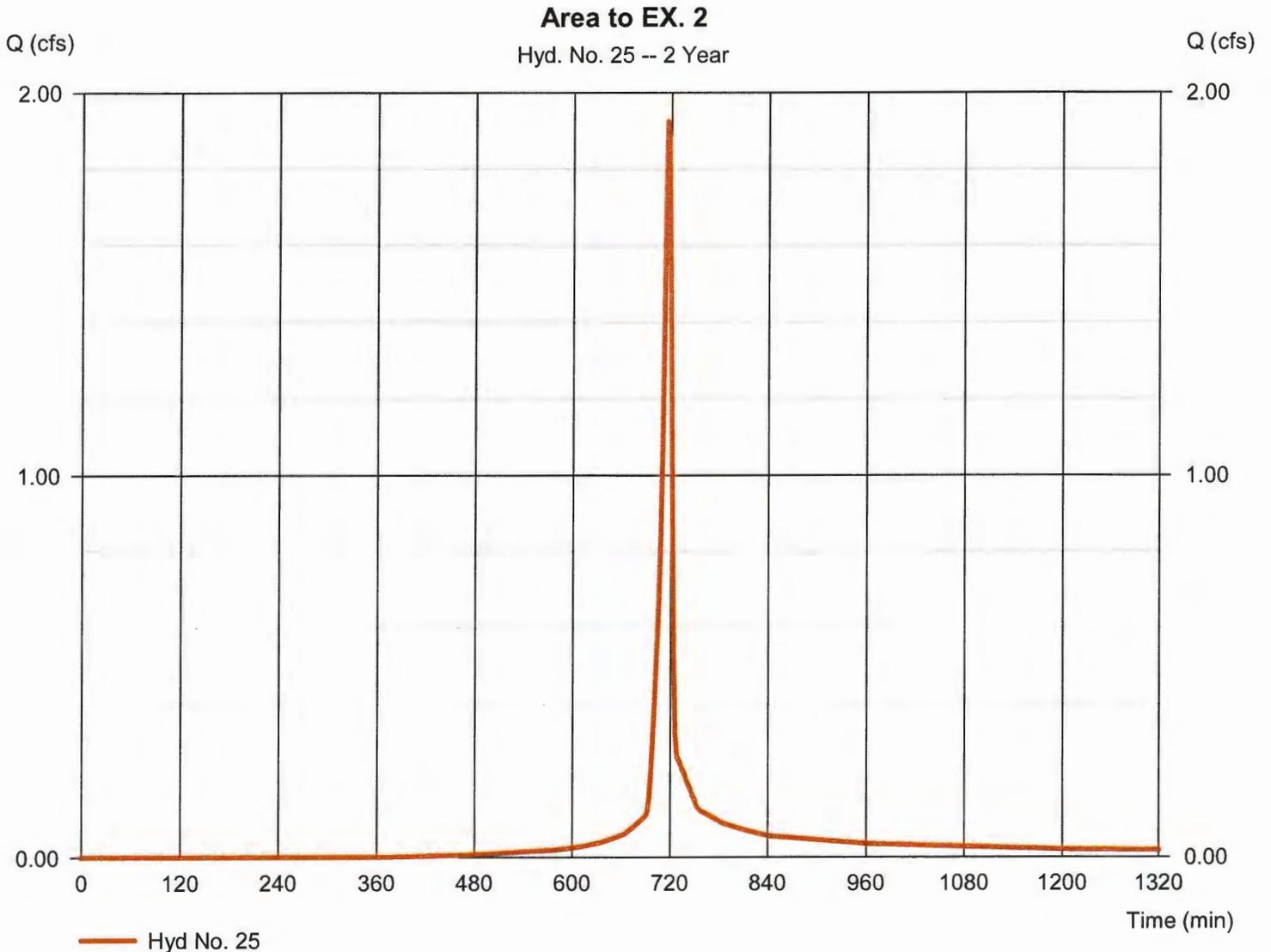


Hydrograph Report

Hyd. No. 25

Area to EX. 2

Hydrograph type	= SCS Runoff	Peak discharge	= 1.924 cfs
Storm frequency	= 2 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 3,967 cuft
Drainage area	= 0.560 ac	Curve number	= 89
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.20 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

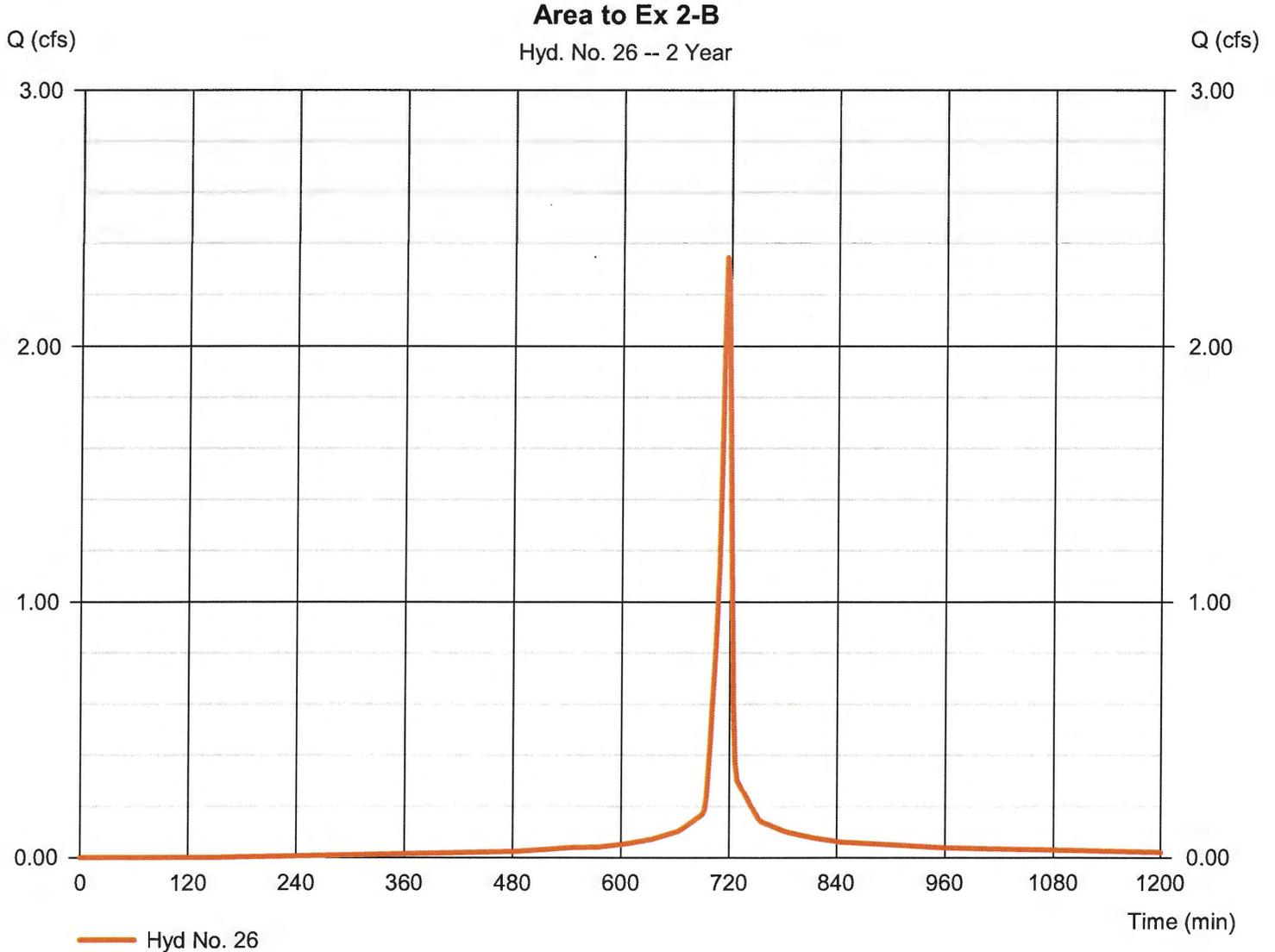


Hydrograph Report

Hyd. No. 26

Area to Ex 2-B

Hydrograph type	= SCS Runoff	Peak discharge	= 2.343 cfs
Storm frequency	= 2 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 5,239 cuft
Drainage area	= 0.560 ac	Curve number	= 96
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.20 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

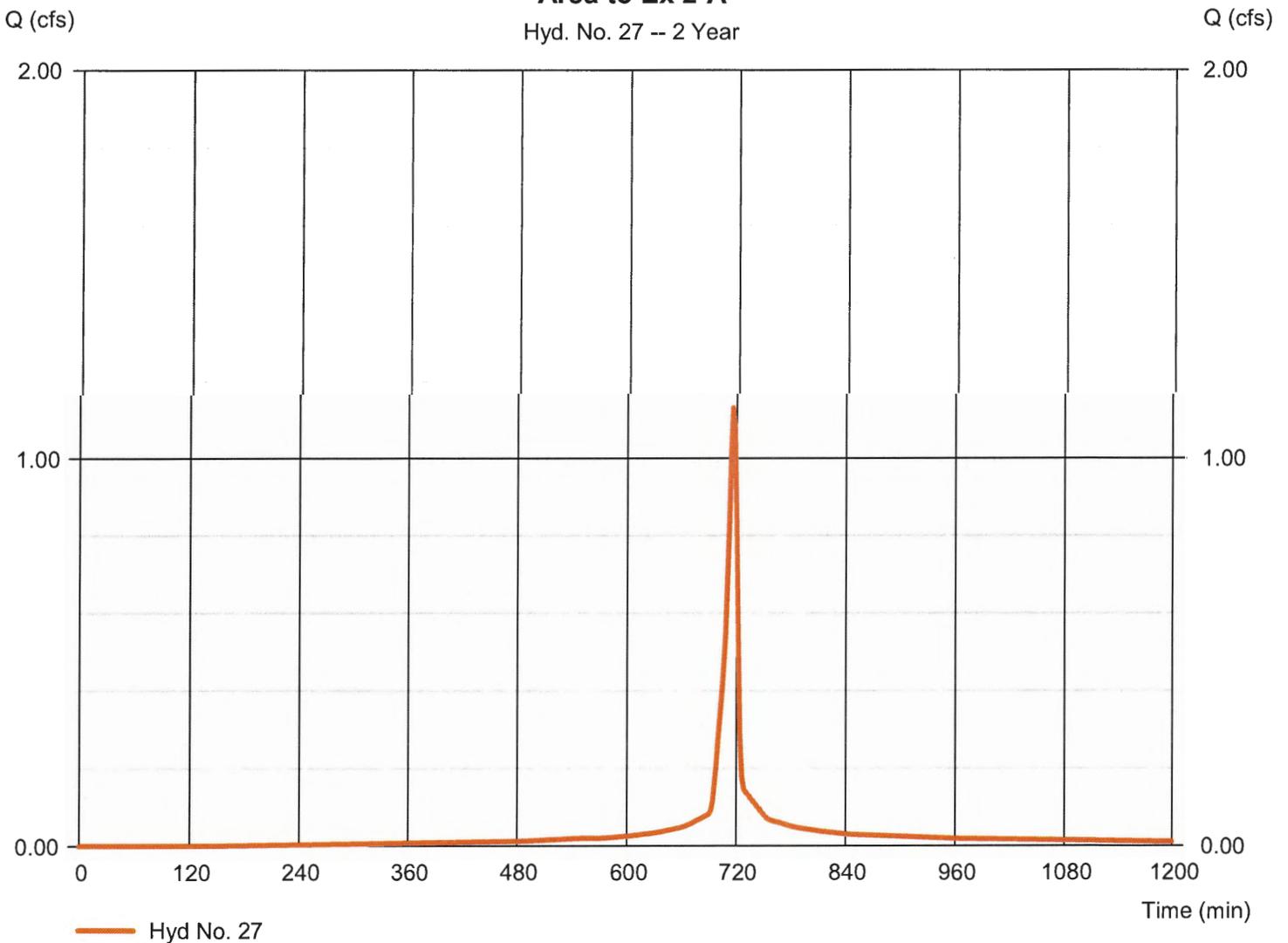
Hyd. No. 27

Area to Ex 2-A

Hydrograph type	= SCS Runoff	Peak discharge	= 1.130 cfs
Storm frequency	= 2 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 2,526 cuft
Drainage area	= 0.270 ac	Curve number	= 96
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.20 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

Area to Ex 2-A

Hyd. No. 27 -- 2 Year

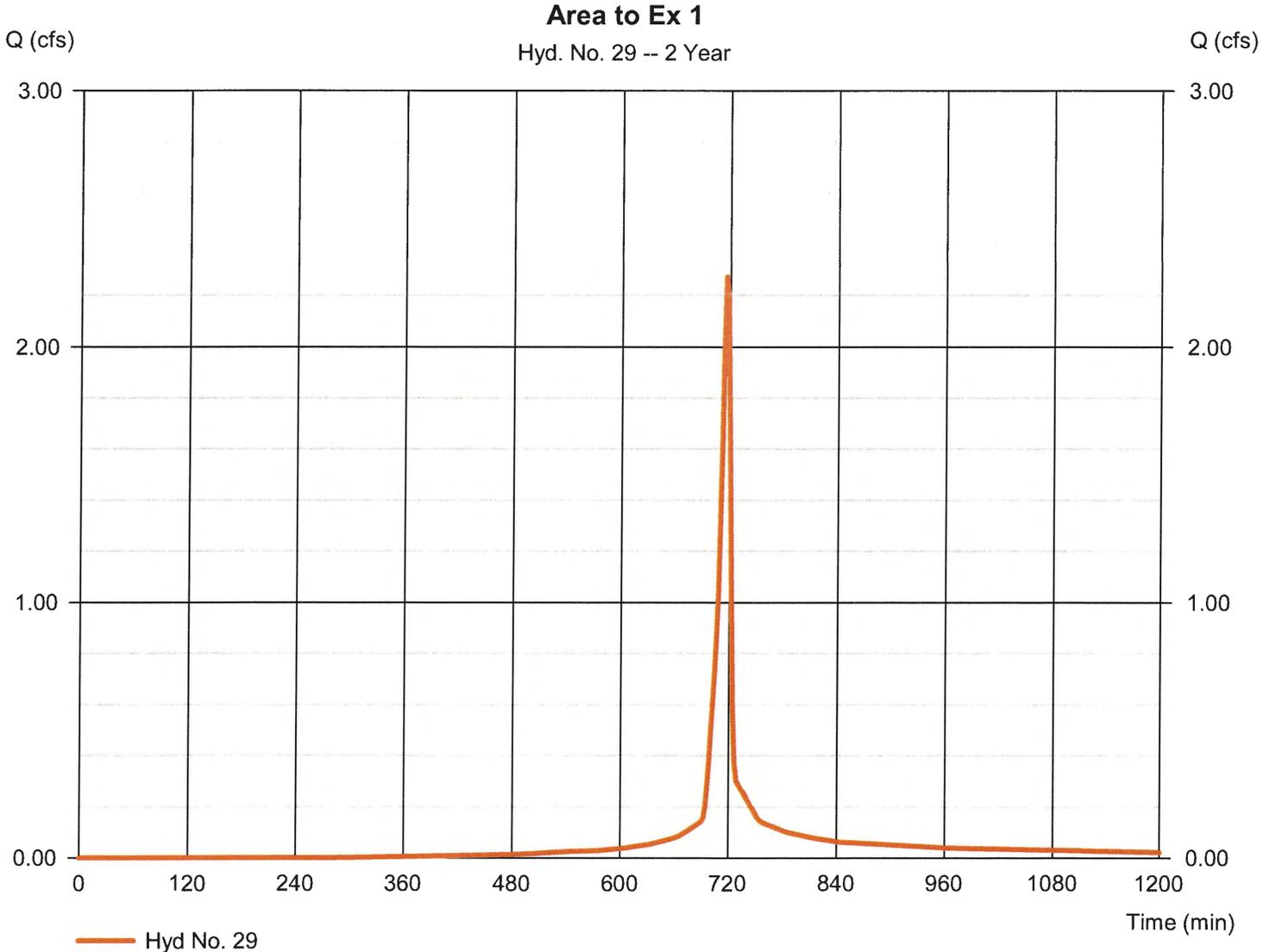


Hydrograph Report

Hyd. No. 29

Area to Ex 1

Hydrograph type	= SCS Runoff	Peak discharge	= 2.272 cfs
Storm frequency	= 2 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 4,800 cuft
Drainage area	= 0.600 ac	Curve number	= 92
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.20 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2016 by Autodesk, Inc. v10.5

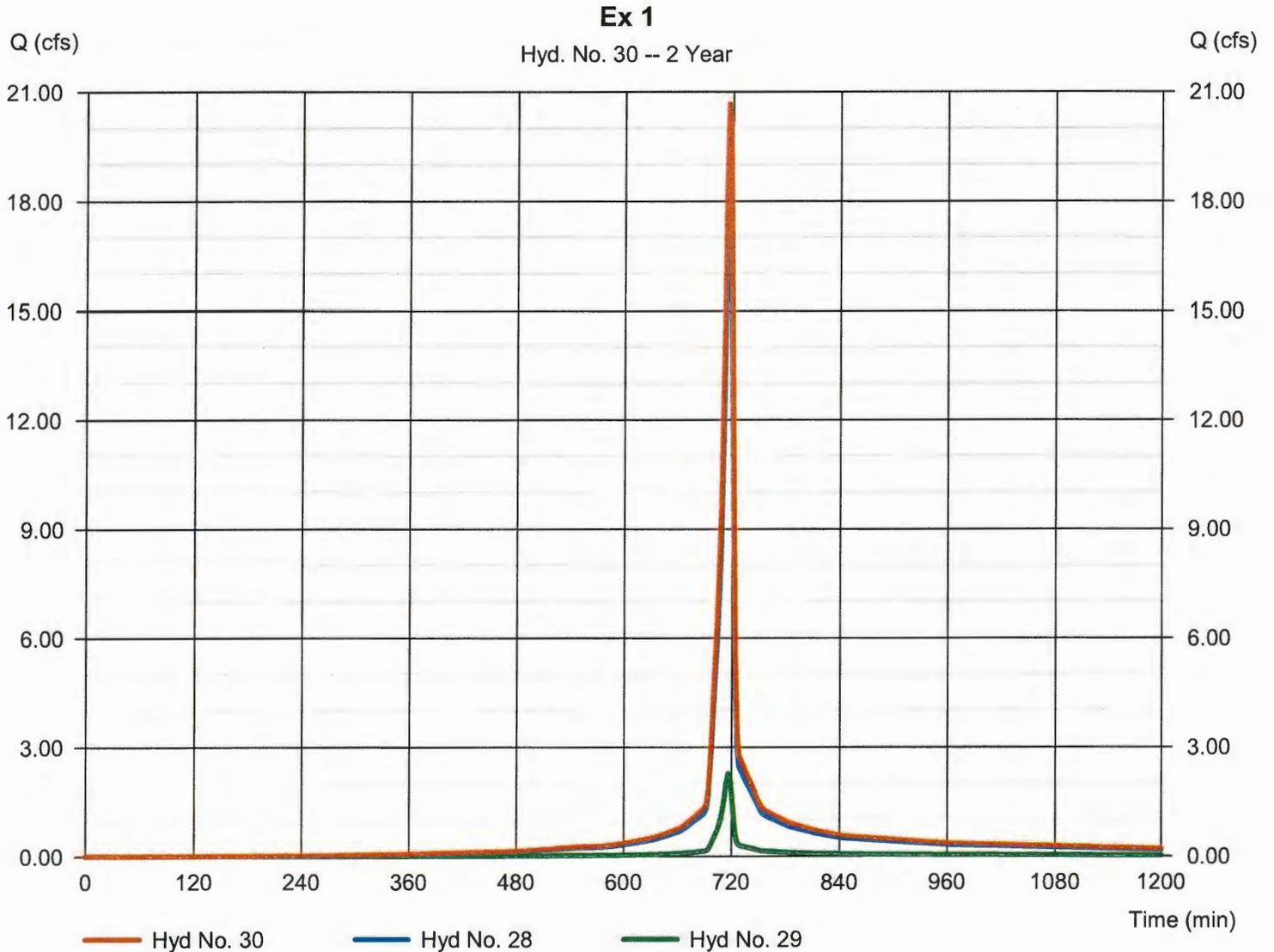
Friday, 07 / 8 / 2016

Hyd. No. 30

Ex 1

Hydrograph type = Combine
Storm frequency = 2 yrs
Time interval = 2 min
Inflow hyds. = 28, 29

Peak discharge = 20.66 cfs
Time to peak = 716 min
Hyd. volume = 44,243 cuft
Contrib. drain. area = 0.600 ac



II. APPENDIX

D. STORMWATER MANAGEMENT ROUTING

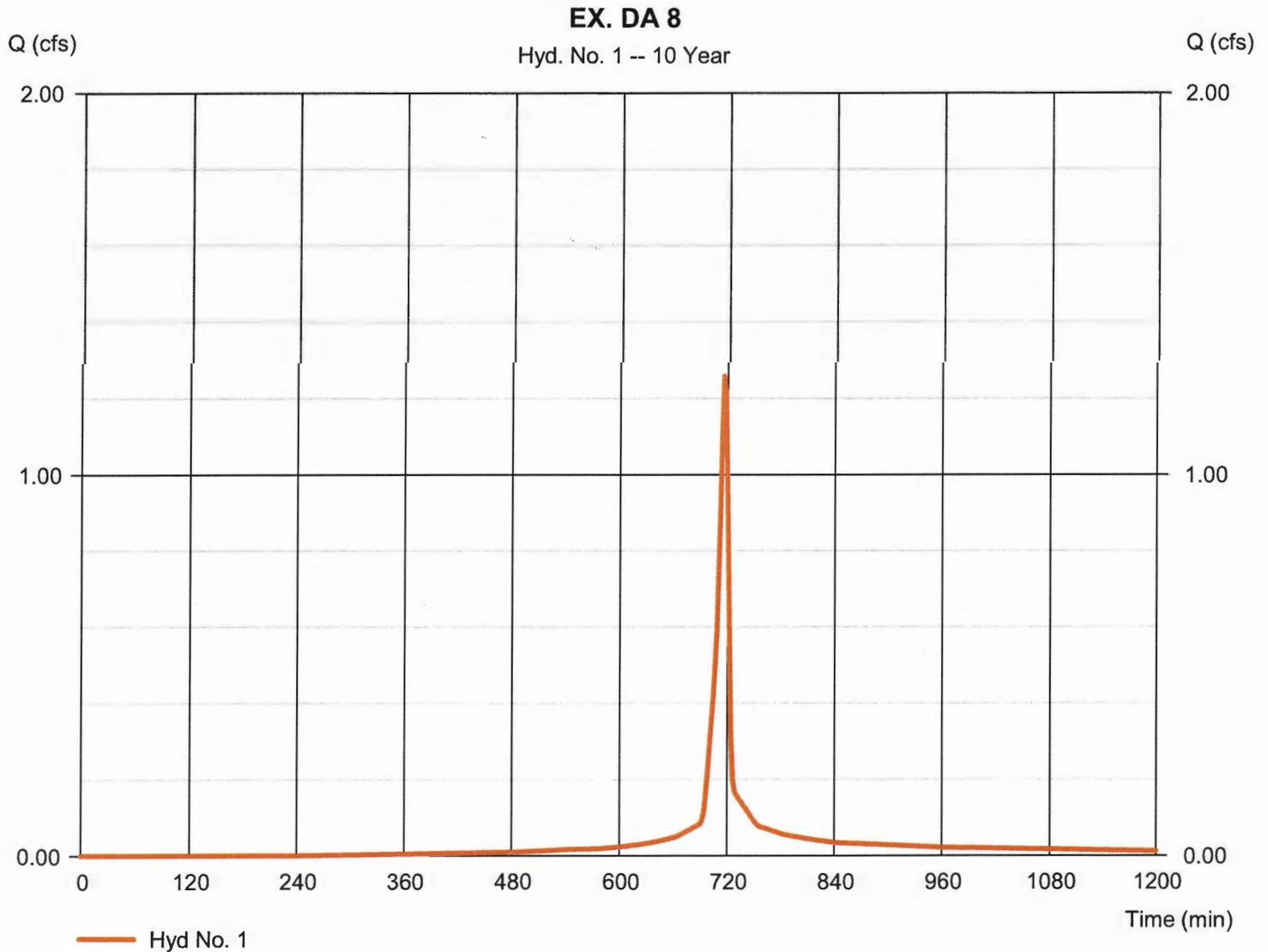
ii. 10 YEAR 24 HOUR STORM EVENT

Hydrograph Report

Hyd. No. 1

EX. DA 8

Hydrograph type	= SCS Runoff	Peak discharge	= 1.258 cfs
Storm frequency	= 10 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 2,704 cuft
Drainage area	= 0.200 ac	Curve number	= 90
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 5.10 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

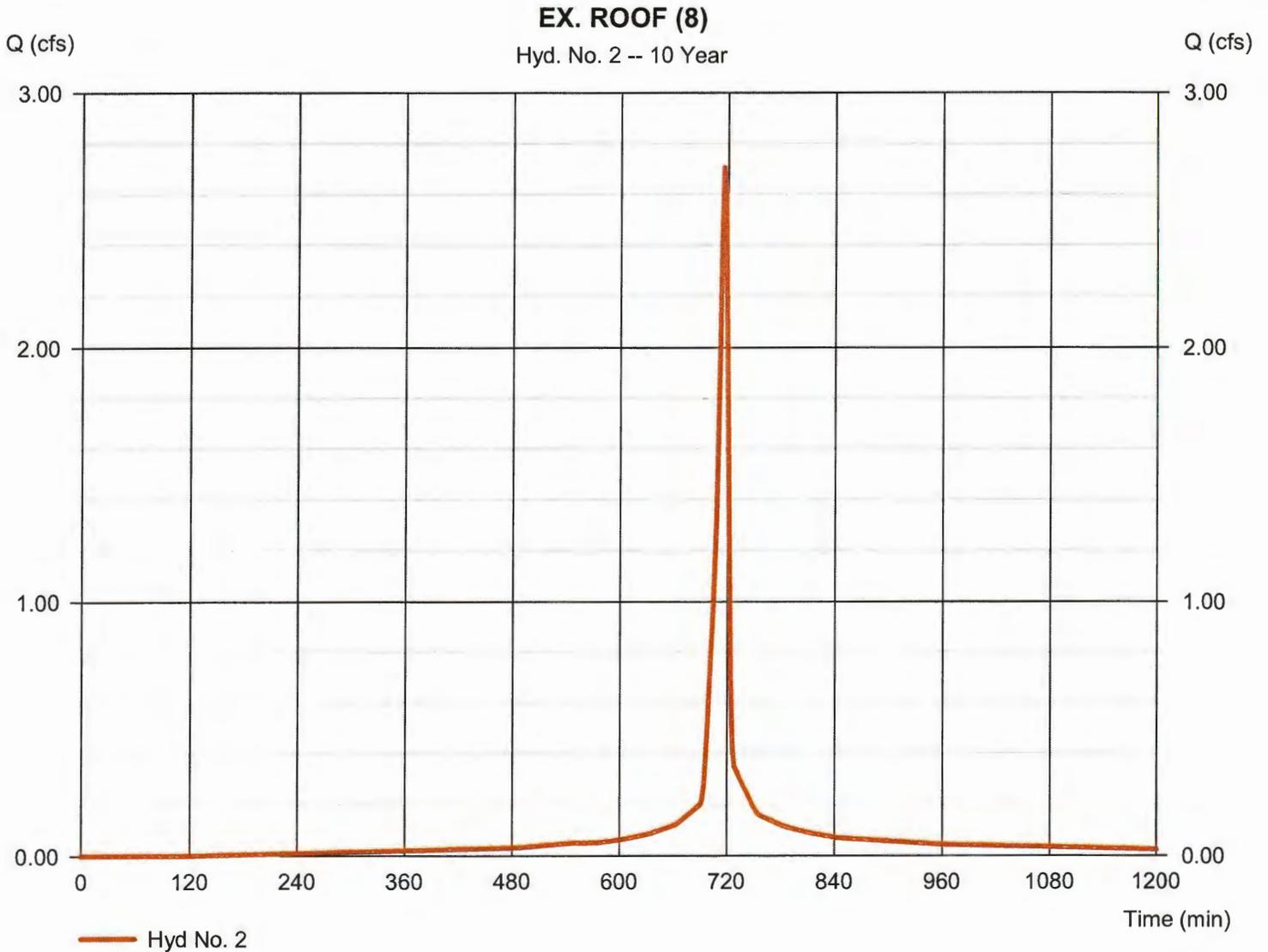


Hydrograph Report

Hyd. No. 2

EX. ROOF (8)

Hydrograph type	= SCS Runoff	Peak discharge	= 2.707 cfs
Storm frequency	= 10 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 6,151 cuft
Drainage area	= 0.400 ac	Curve number	= 95
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 5.10 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

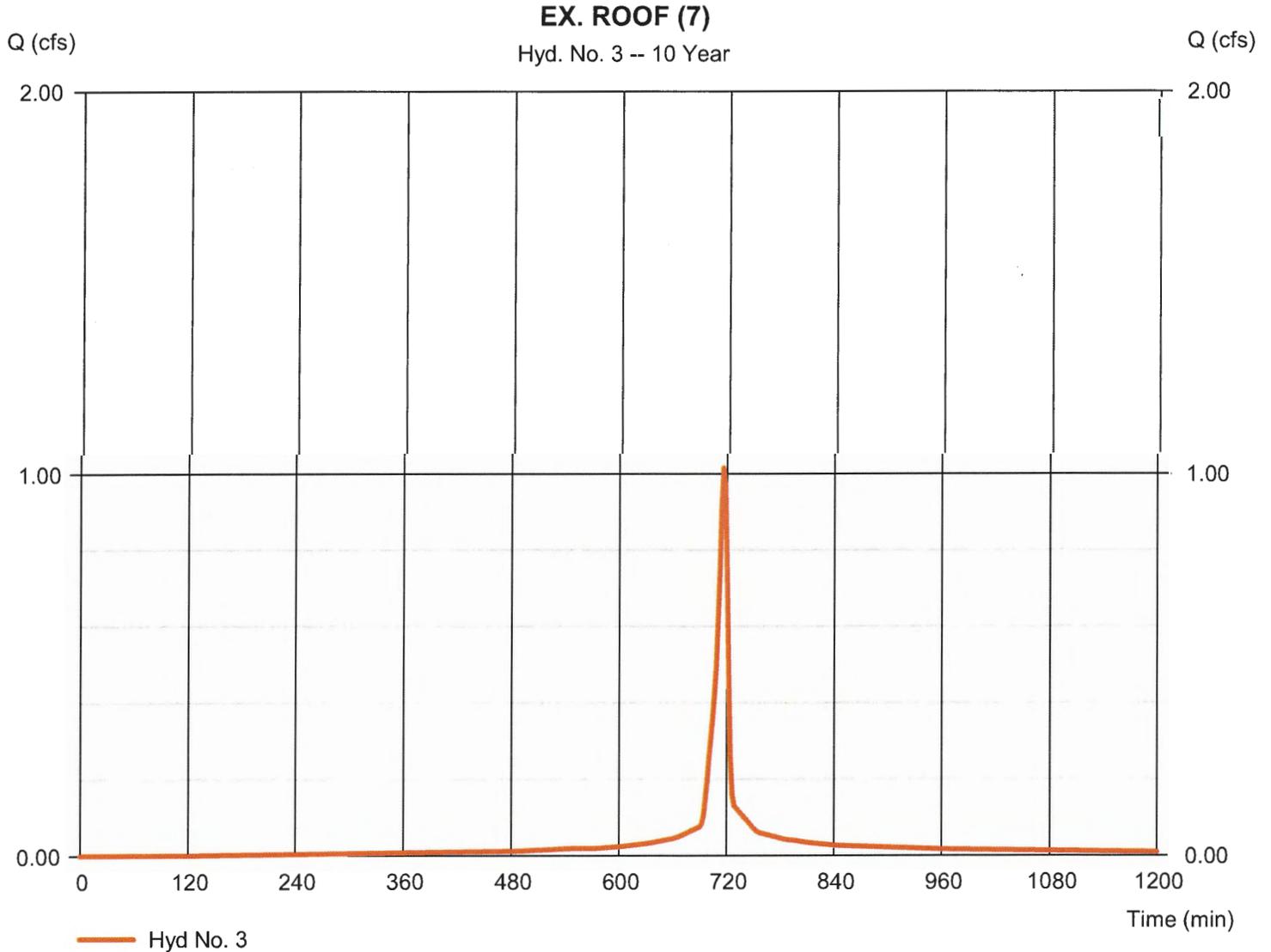


Hydrograph Report

Hyd. No. 3

EX. ROOF (7)

Hydrograph type	= SCS Runoff	Peak discharge	= 1.015 cfs
Storm frequency	= 10 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 2,307 cuft
Drainage area	= 0.150 ac	Curve number	= 95
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 5.10 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

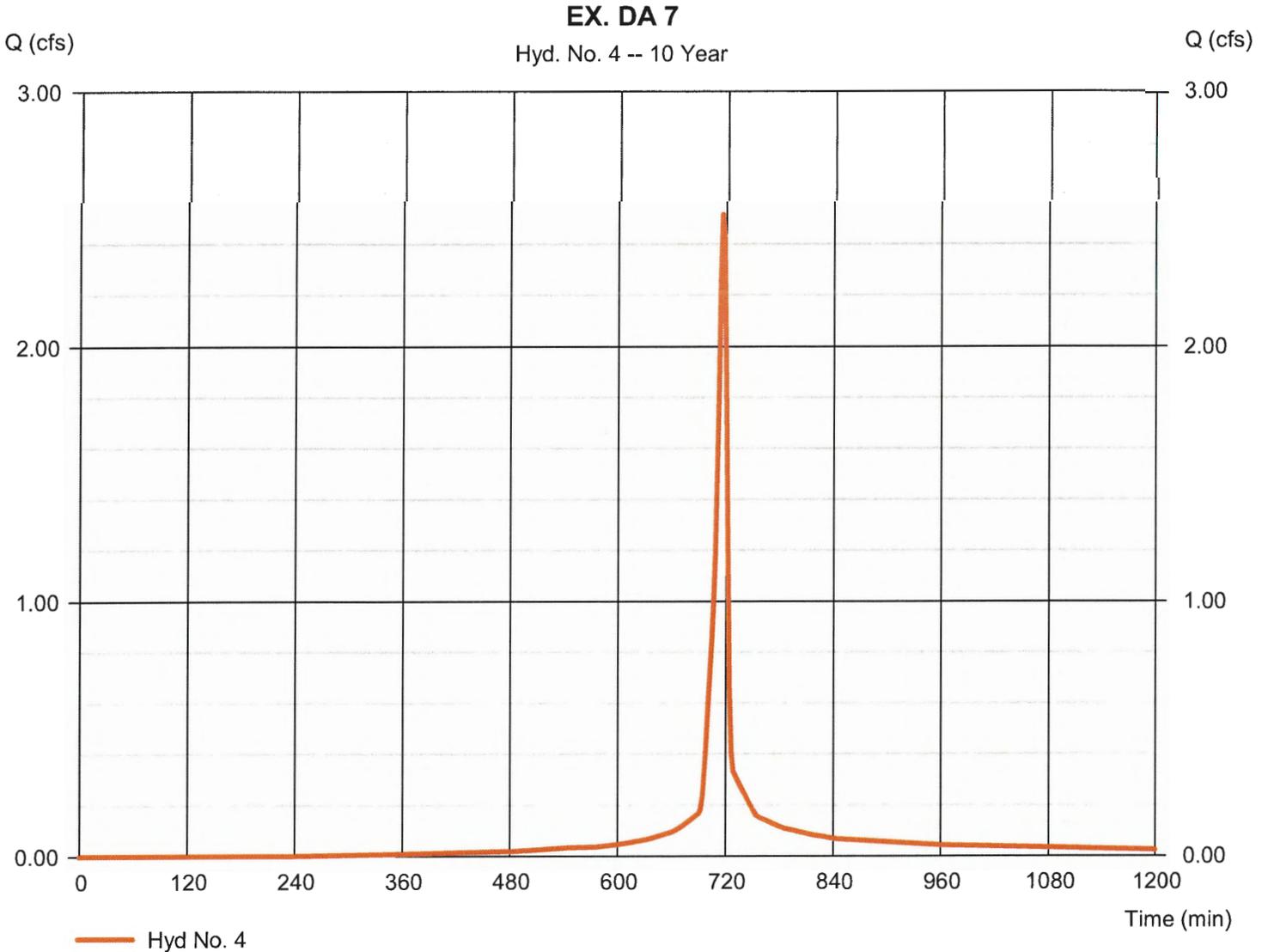


Hydrograph Report

Hyd. No. 4

EX. DA 7

Hydrograph type	= SCS Runoff	Peak discharge	= 2.517 cfs
Storm frequency	= 10 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 5,408 cuft
Drainage area	= 0.400 ac	Curve number	= 90
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 5.10 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

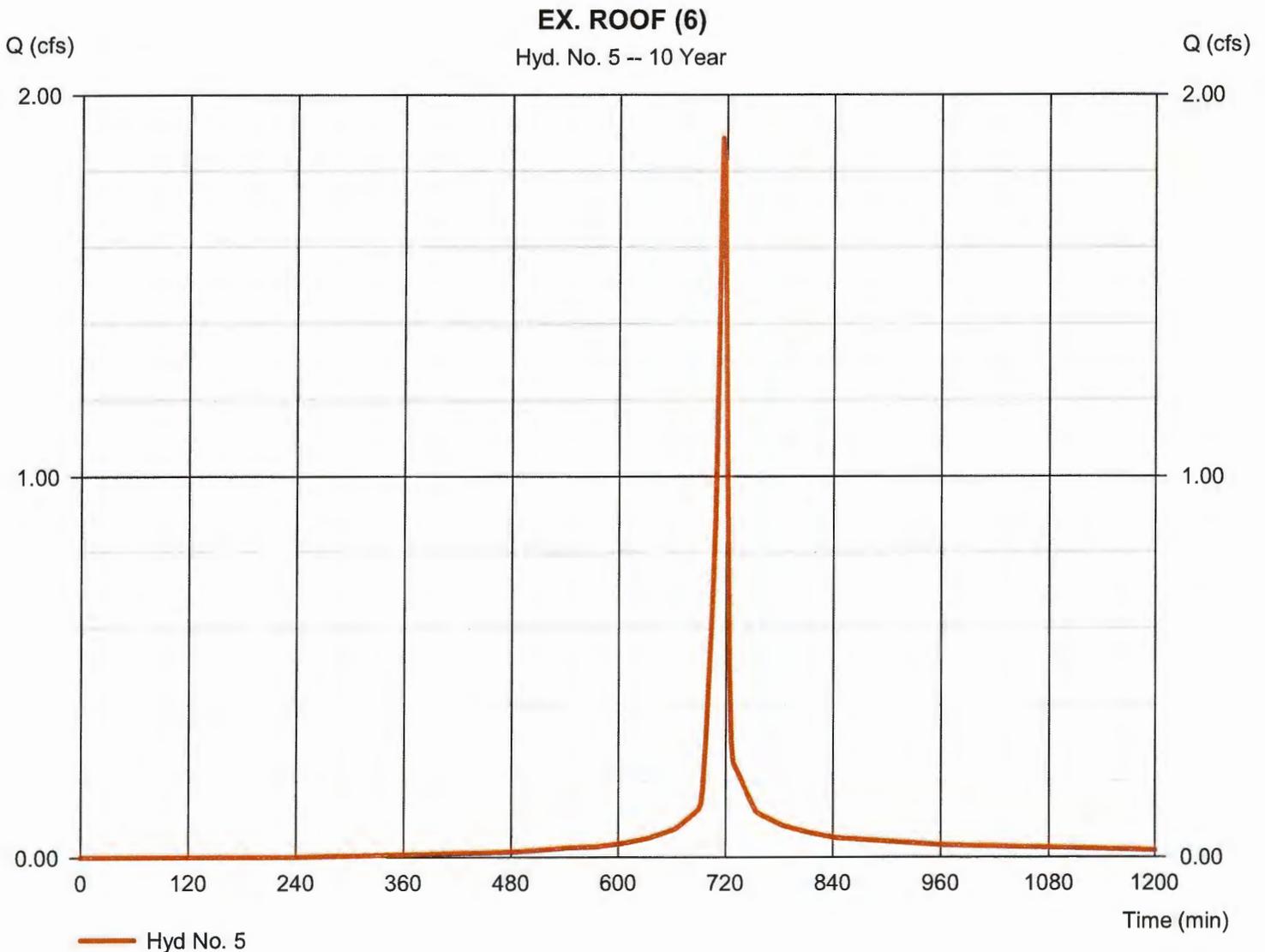


Hydrograph Report

Hyd. No. 5

EX. ROOF (6)

Hydrograph type	= SCS Runoff	Peak discharge	= 1.888 cfs
Storm frequency	= 10 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 4,056 cuft
Drainage area	= 0.300 ac	Curve number	= 90
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 5.10 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

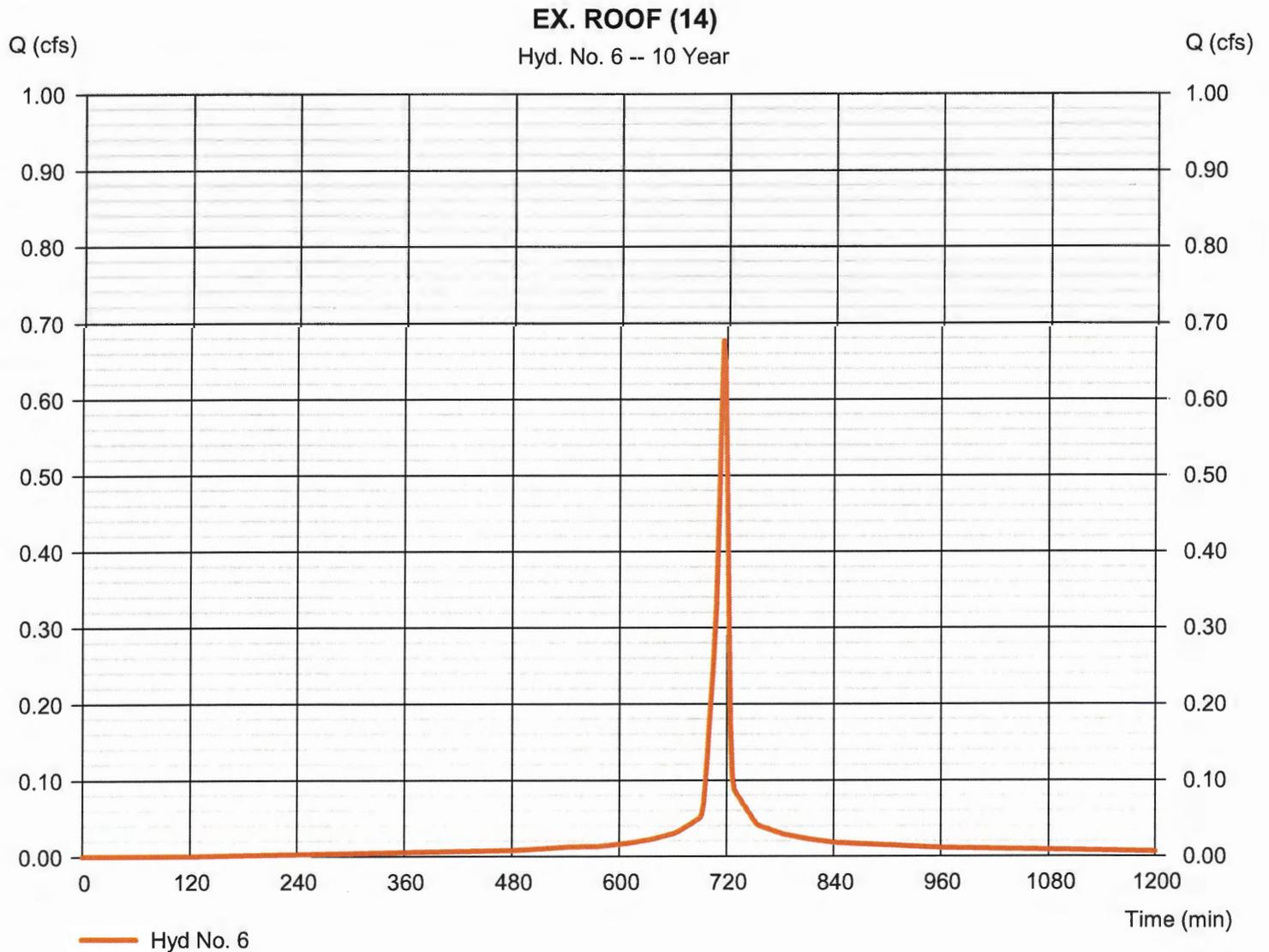


Hydrograph Report

Hyd. No. 6

EX. ROOF (14)

Hydrograph type	= SCS Runoff	Peak discharge	= 0.677 cfs
Storm frequency	= 10 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 1,538 cuft
Drainage area	= 0.100 ac	Curve number	= 95
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 5.10 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

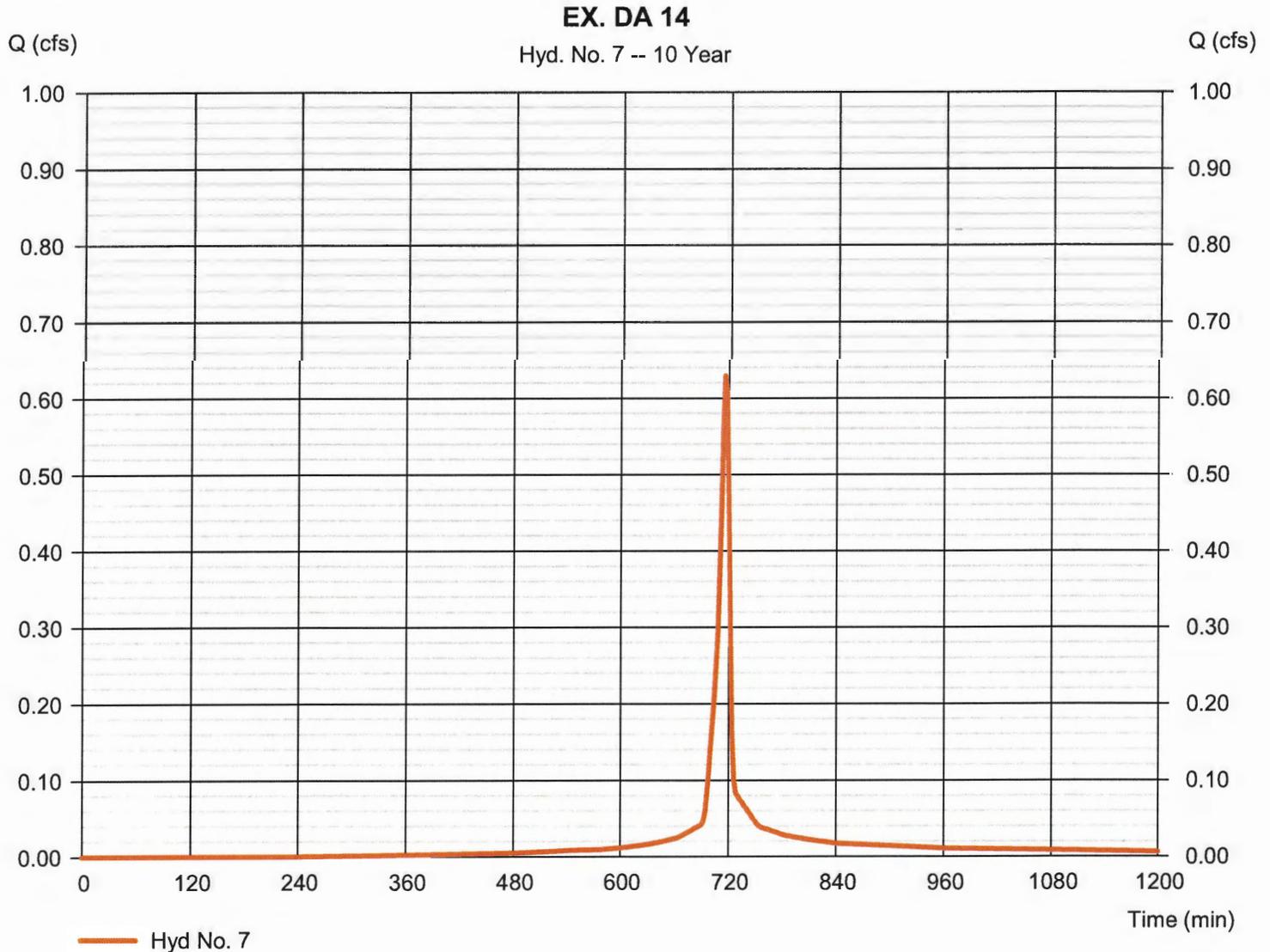


Hydrograph Report

Hyd. No. 7

EX. DA 14

Hydrograph type	= SCS Runoff	Peak discharge	= 0.629 cfs
Storm frequency	= 10 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 1,352 cuft
Drainage area	= 0.100 ac	Curve number	= 90
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 5.10 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

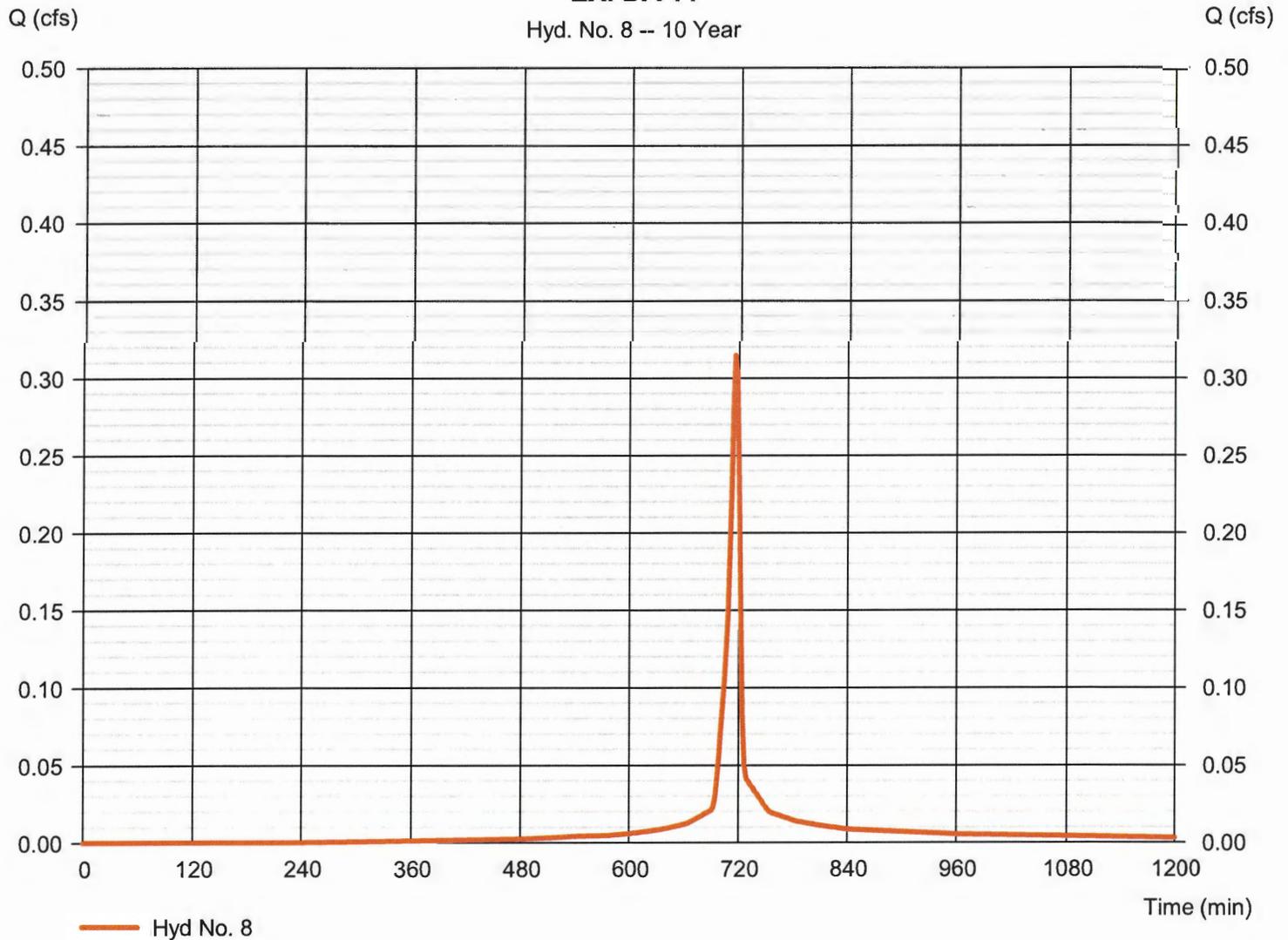
Hyd. No. 8

EX. DA 11

Hydrograph type	= SCS Runoff	Peak discharge	= 0.315 cfs
Storm frequency	= 10 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 676 cuft
Drainage area	= 0.050 ac	Curve number	= 90
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 5.10 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

EX. DA 11

Hyd. No. 8 -- 10 Year



Hydrograph Report

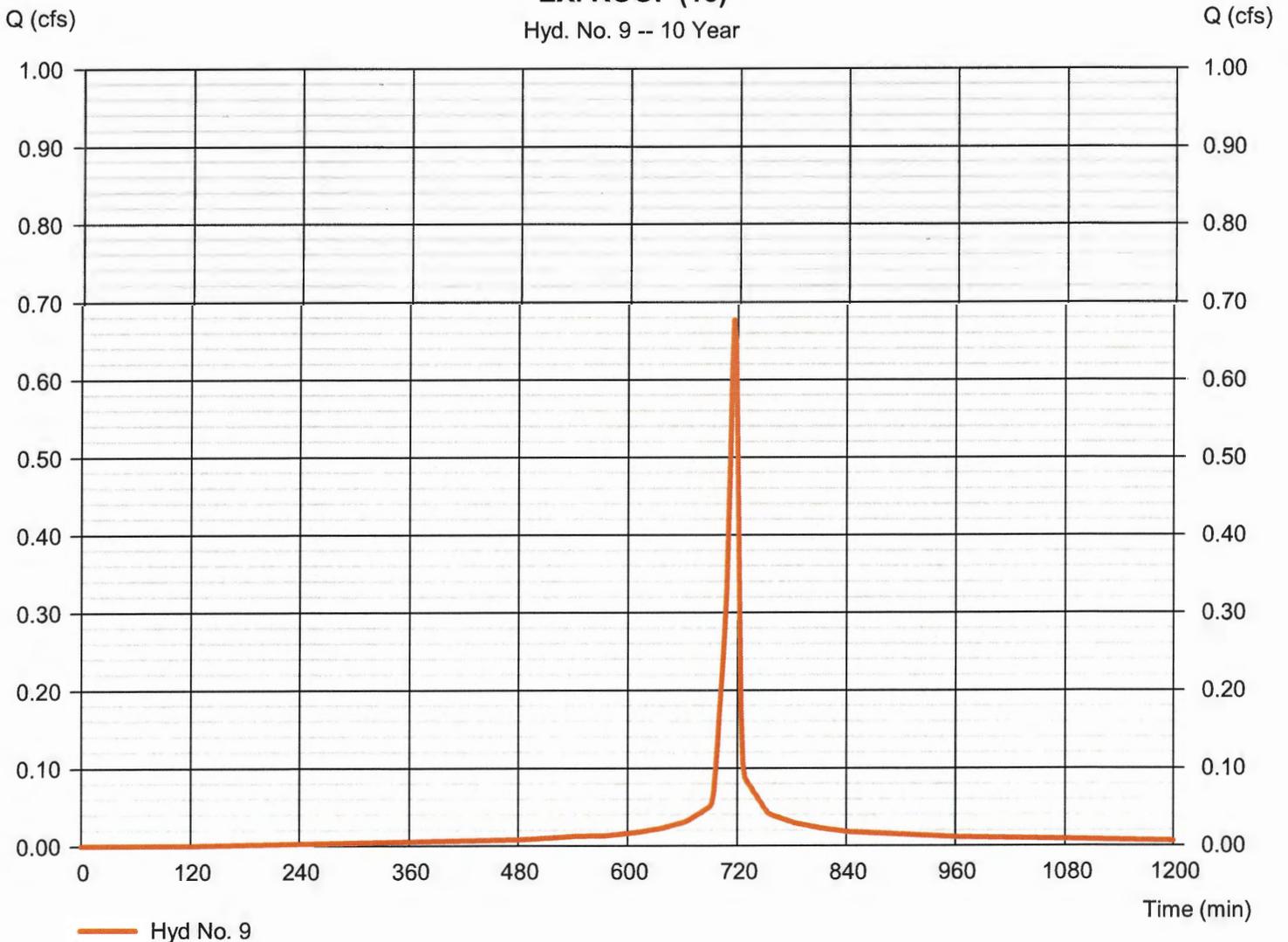
Hyd. No. 9

EX. ROOF (15)

Hydrograph type	= SCS Runoff	Peak discharge	= 0.677 cfs
Storm frequency	= 10 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 1,538 cuft
Drainage area	= 0.100 ac	Curve number	= 95
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 5.10 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

EX. ROOF (15)

Hyd. No. 9 -- 10 Year

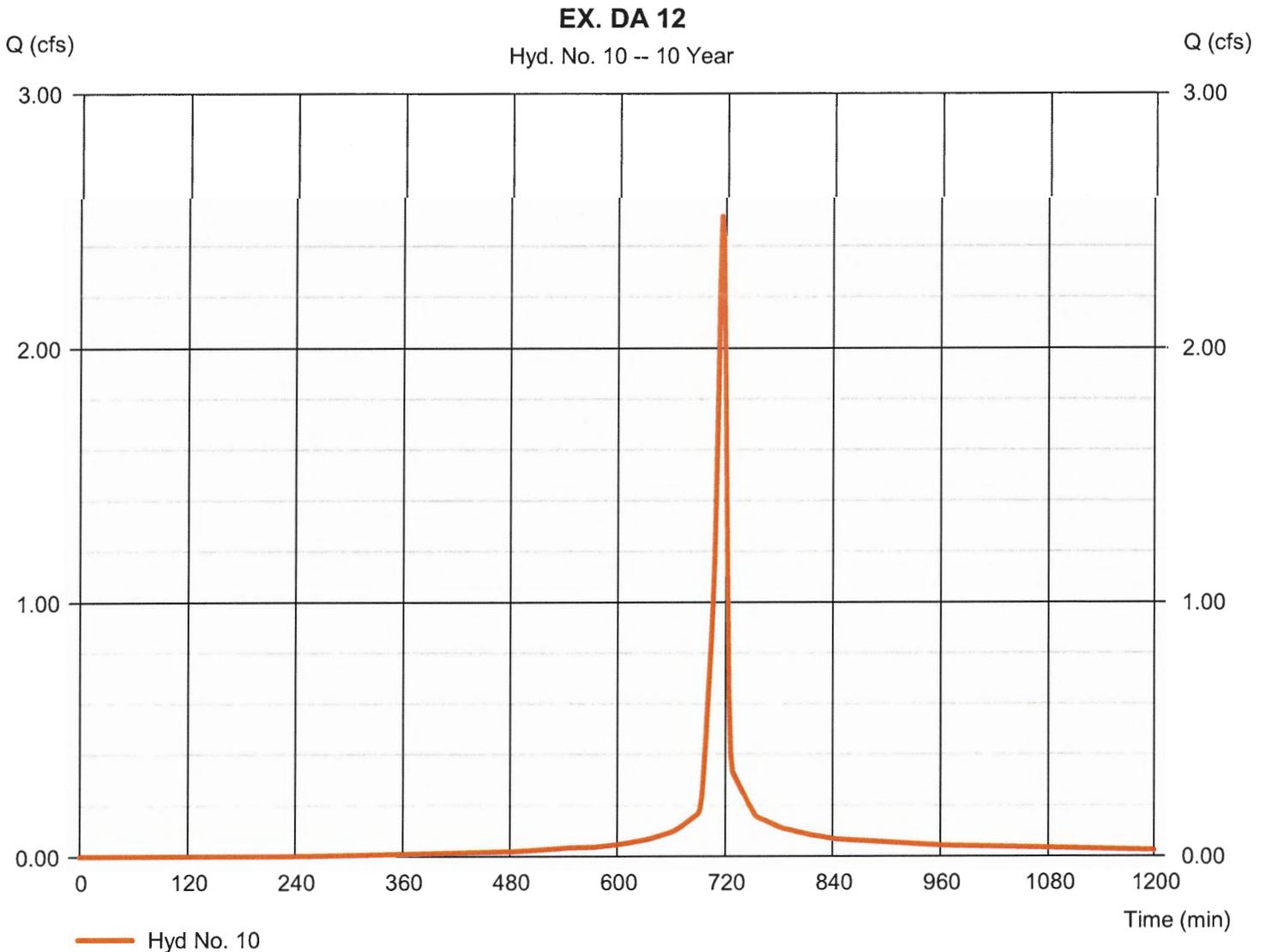


Hydrograph Report

Hyd. No. 10

EX. DA 12

Hydrograph type	= SCS Runoff	Peak discharge	= 2.517 cfs
Storm frequency	= 10 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 5,408 cuft
Drainage area	= 0.400 ac	Curve number	= 90
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 5.10 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

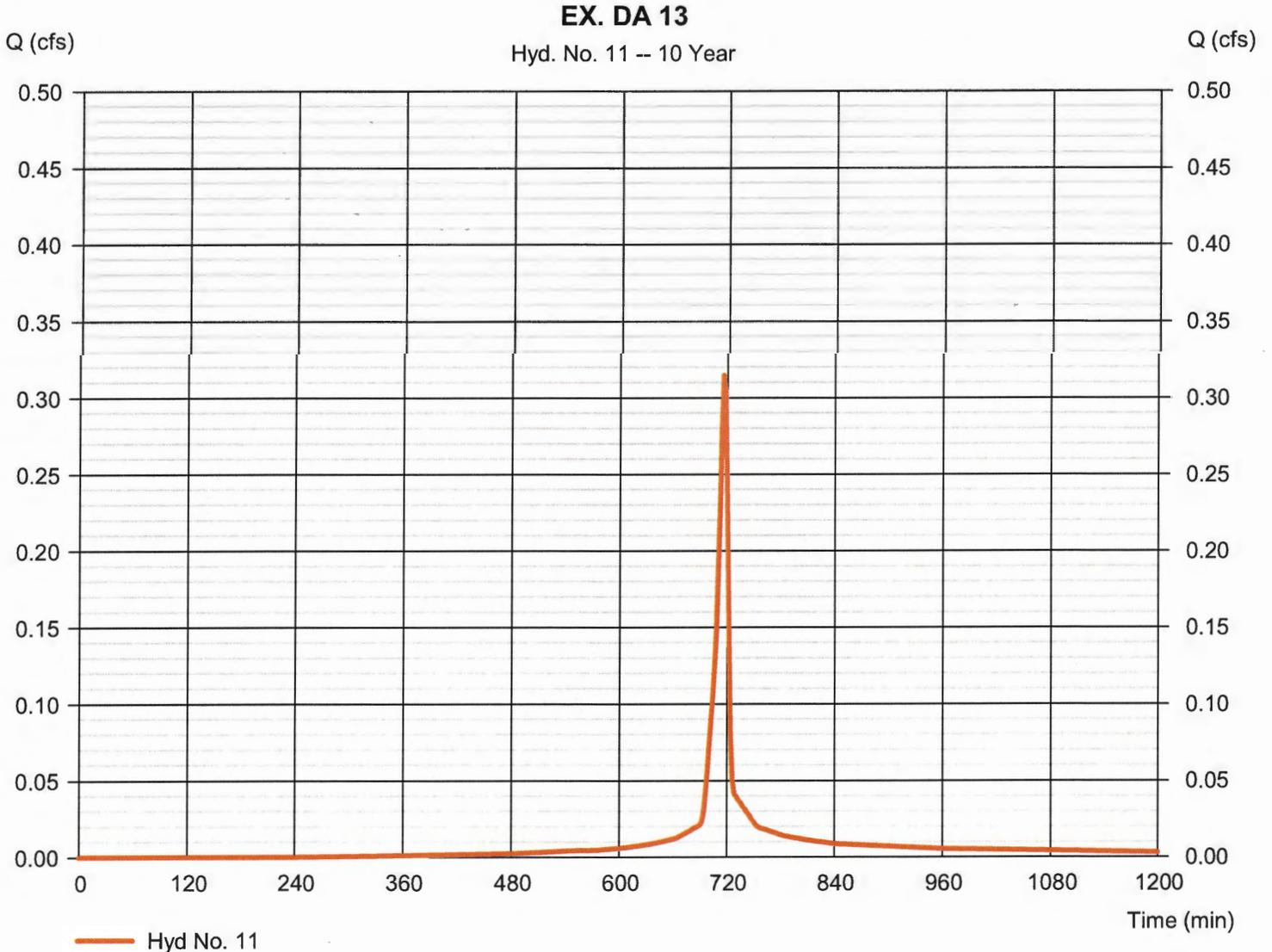


Hydrograph Report

Hyd. No. 11

EX. DA 13

Hydrograph type	= SCS Runoff	Peak discharge	= 0.315 cfs
Storm frequency	= 10 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 676 cuft
Drainage area	= 0.050 ac	Curve number	= 90
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 5.10 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

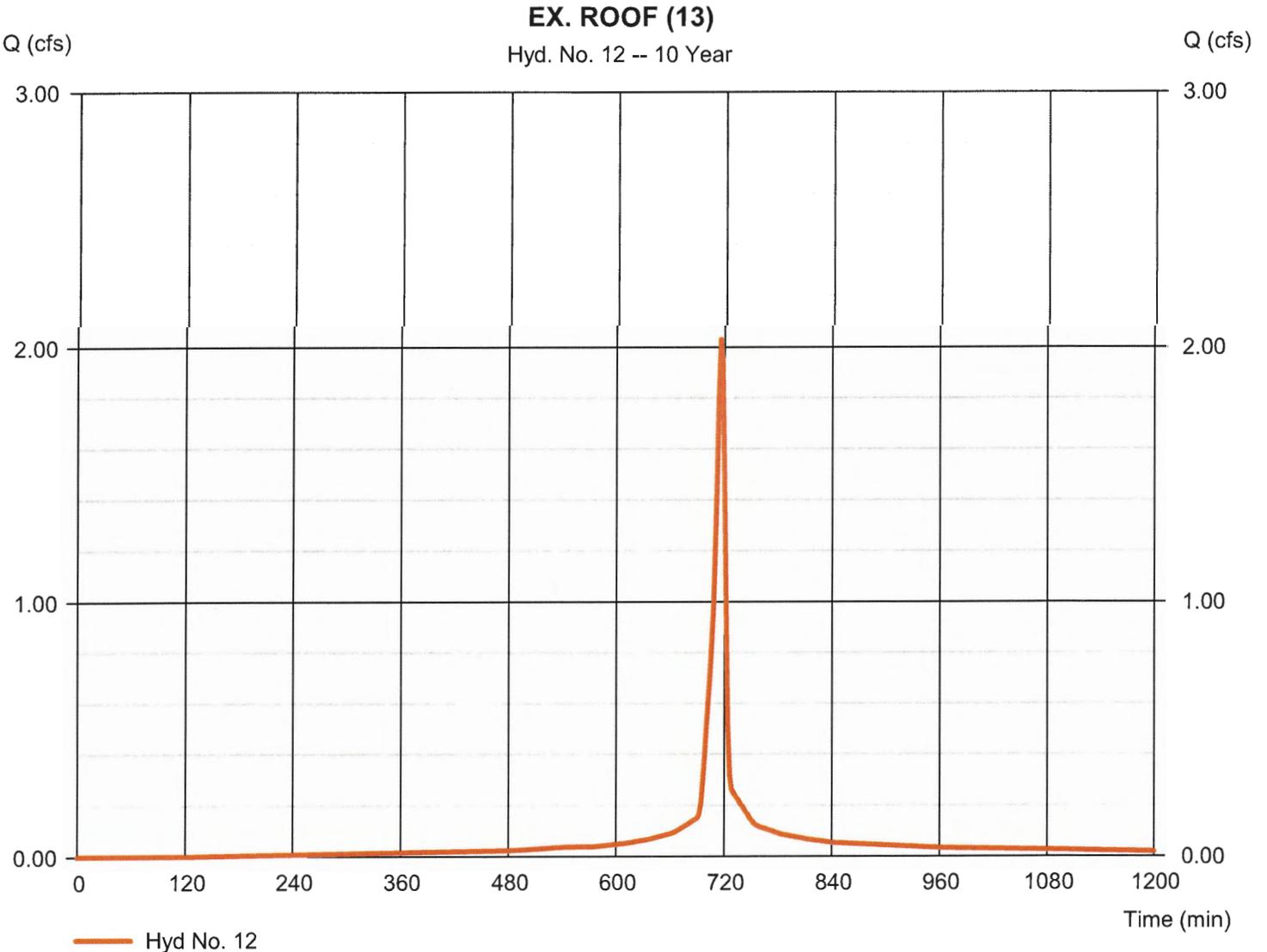


Hydrograph Report

Hyd. No. 12

EX. ROOF (13)

Hydrograph type	= SCS Runoff	Peak discharge	= 2.030 cfs
Storm frequency	= 10 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 4,613 cuft
Drainage area	= 0.300 ac	Curve number	= 95
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 5.10 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

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Friday, 07 / 8 / 2016

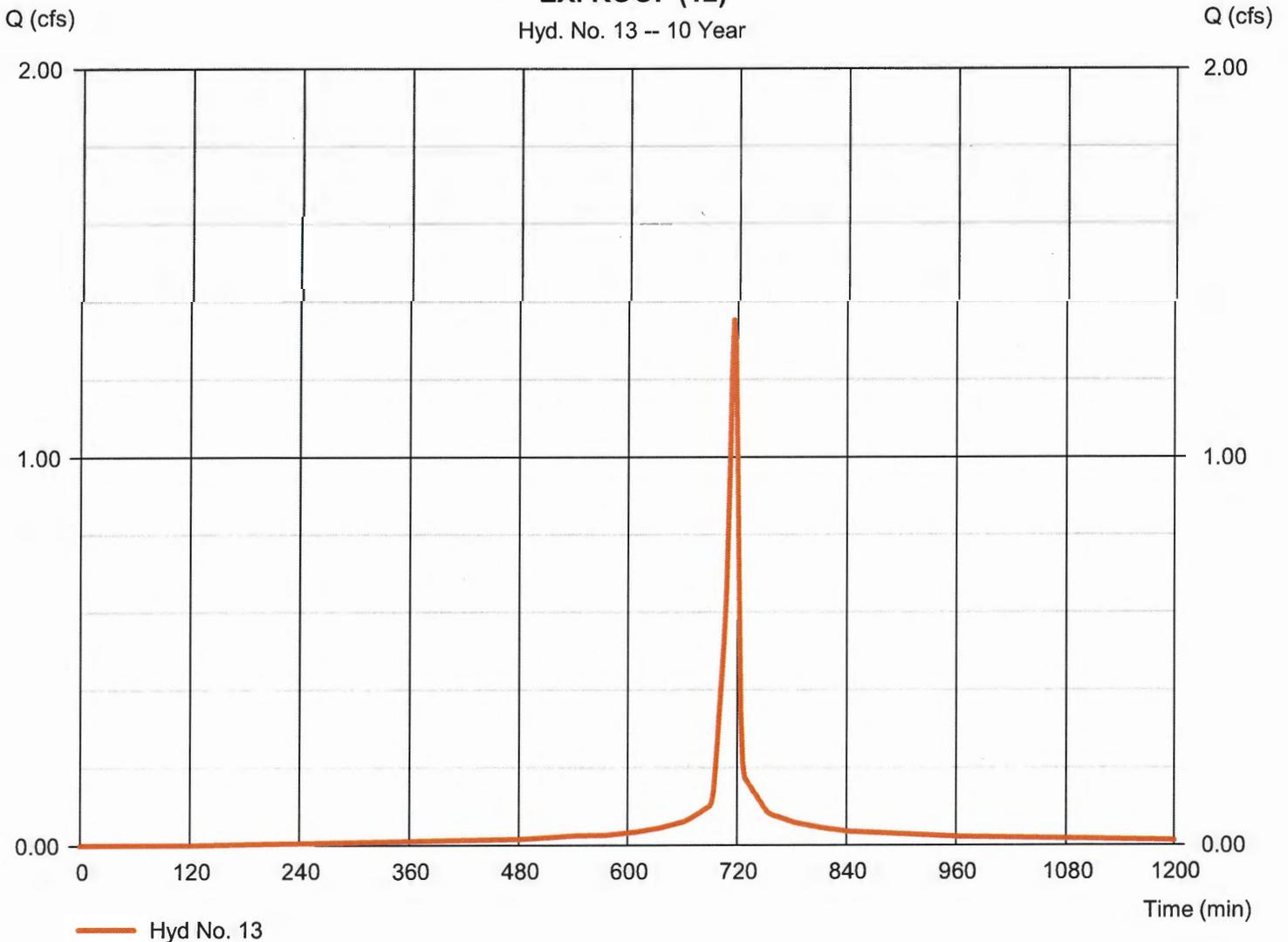
Hyd. No. 13

EX. ROOF (12)

Hydrograph type	= SCS Runoff	Peak discharge	= 1.353 cfs
Storm frequency	= 10 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 3,075 cuft
Drainage area	= 0.200 ac	Curve number	= 95
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 5.10 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

EX. ROOF (12)

Hyd. No. 13 -- 10 Year



Hydrograph Report

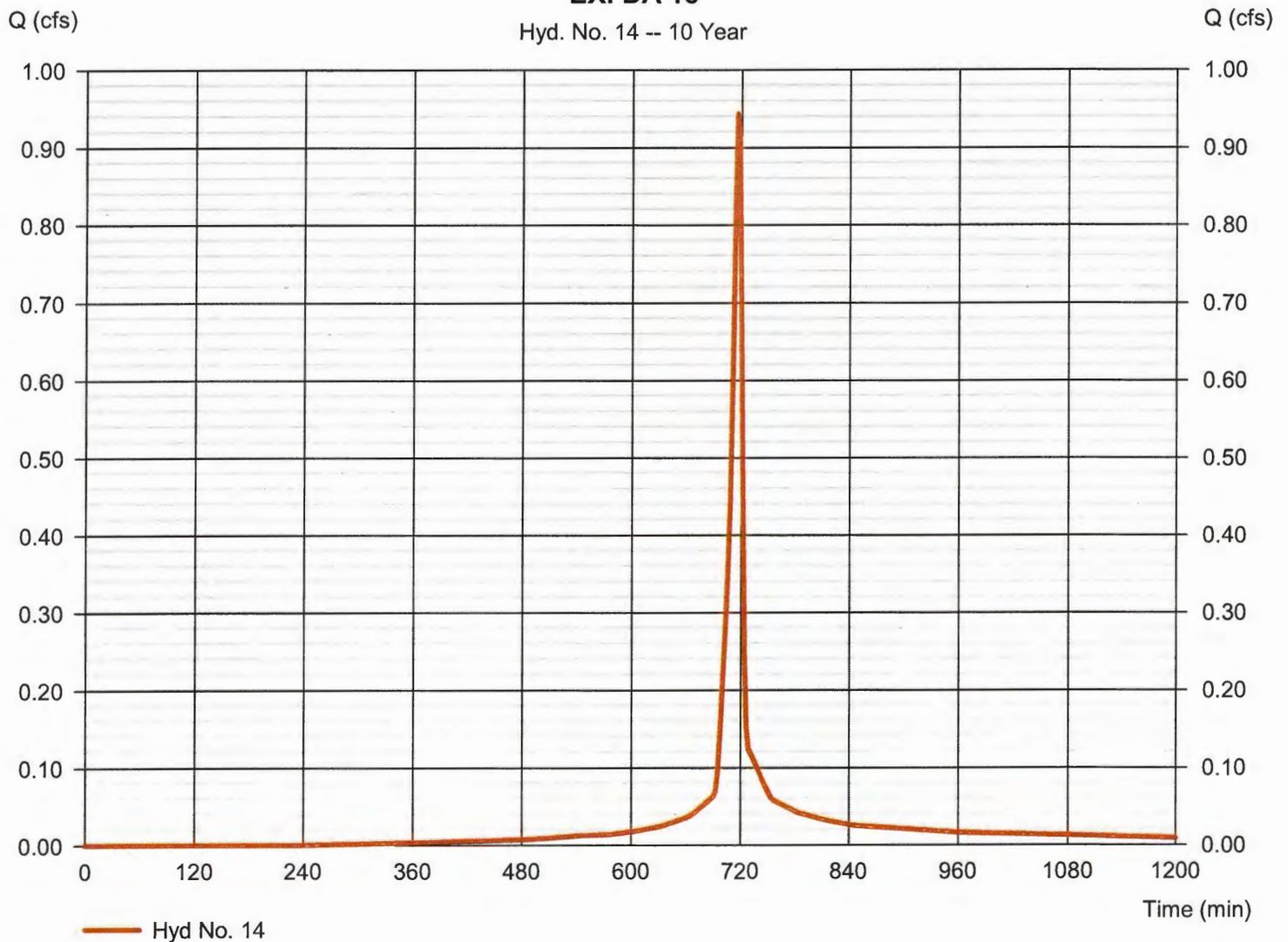
Hyd. No. 14

EX. DA 15

Hydrograph type	= SCS Runoff	Peak discharge	= 0.944 cfs
Storm frequency	= 10 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 2,028 cuft
Drainage area	= 0.150 ac	Curve number	= 90
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 5.10 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

EX. DA 15

Hyd. No. 14 -- 10 Year



Hydrograph Report

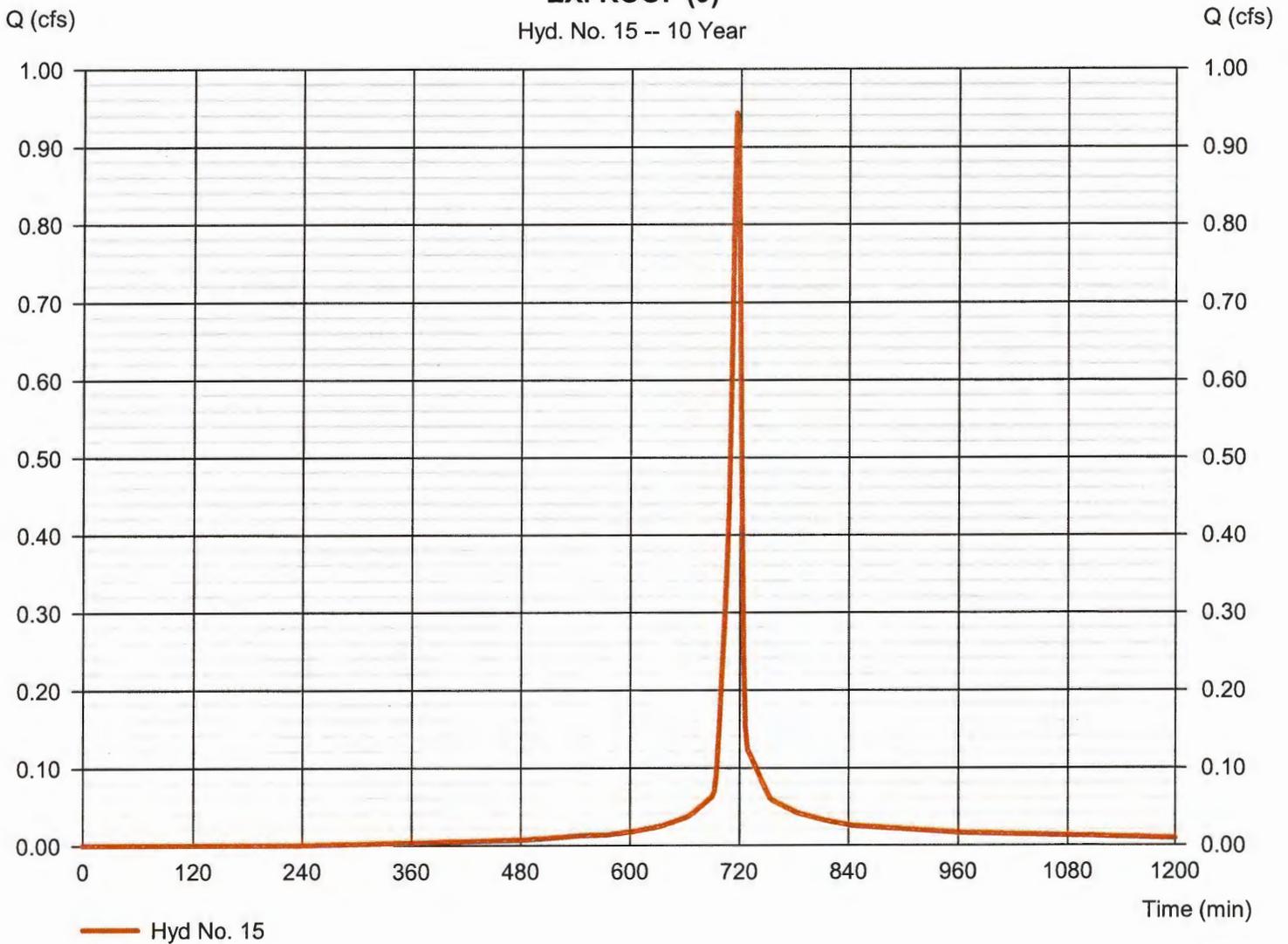
Hyd. No. 15

EX. ROOF (9)

Hydrograph type	= SCS Runoff	Peak discharge	= 0.944 cfs
Storm frequency	= 10 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 2,028 cuft
Drainage area	= 0.150 ac	Curve number	= 90
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 5.10 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

EX. ROOF (9)

Hyd. No. 15 -- 10 Year

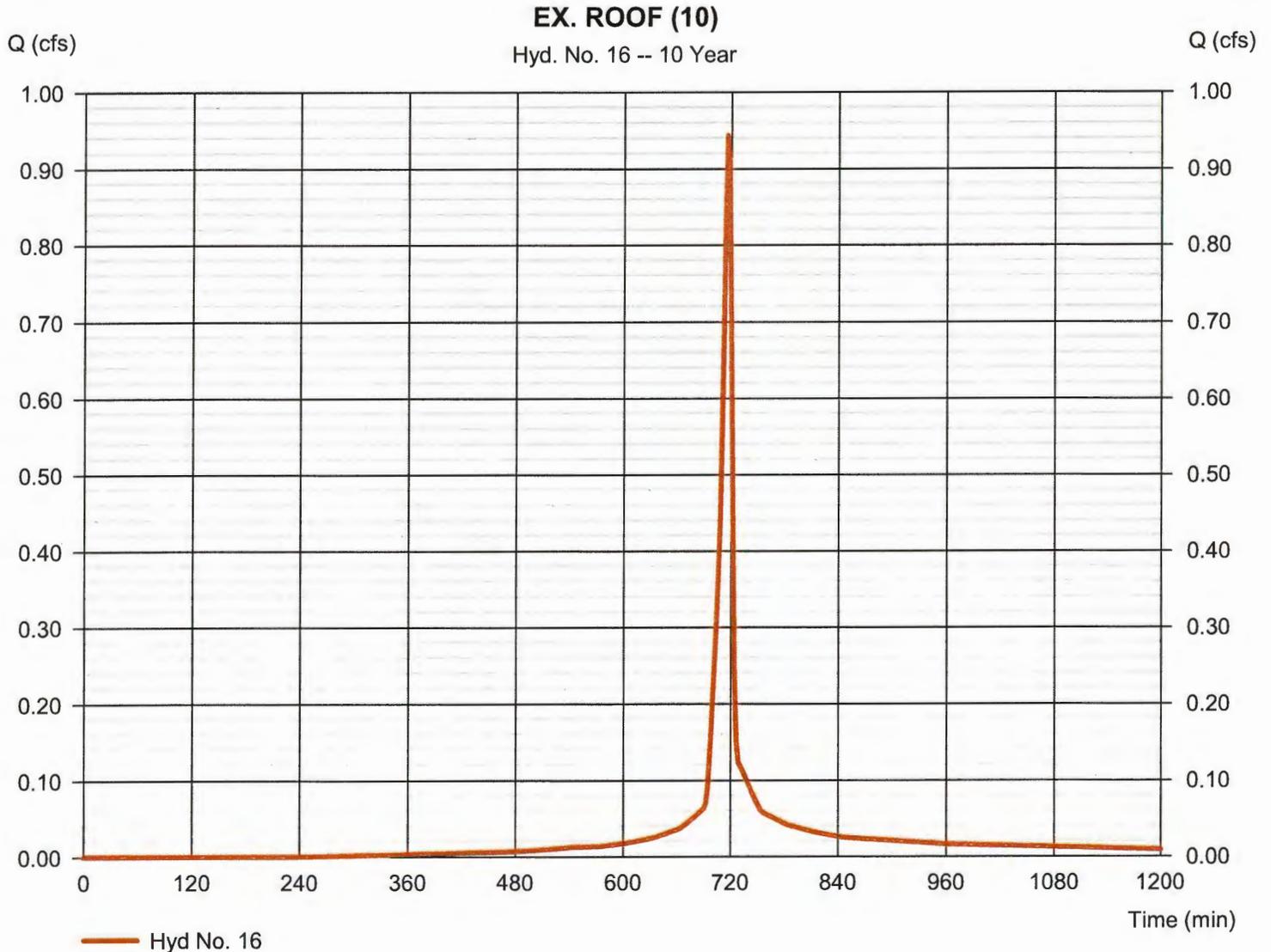


Hydrograph Report

Hyd. No. 16

EX. ROOF (10)

Hydrograph type	= SCS Runoff	Peak discharge	= 0.944 cfs
Storm frequency	= 10 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 2,028 cuft
Drainage area	= 0.150 ac	Curve number	= 90
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 5.10 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

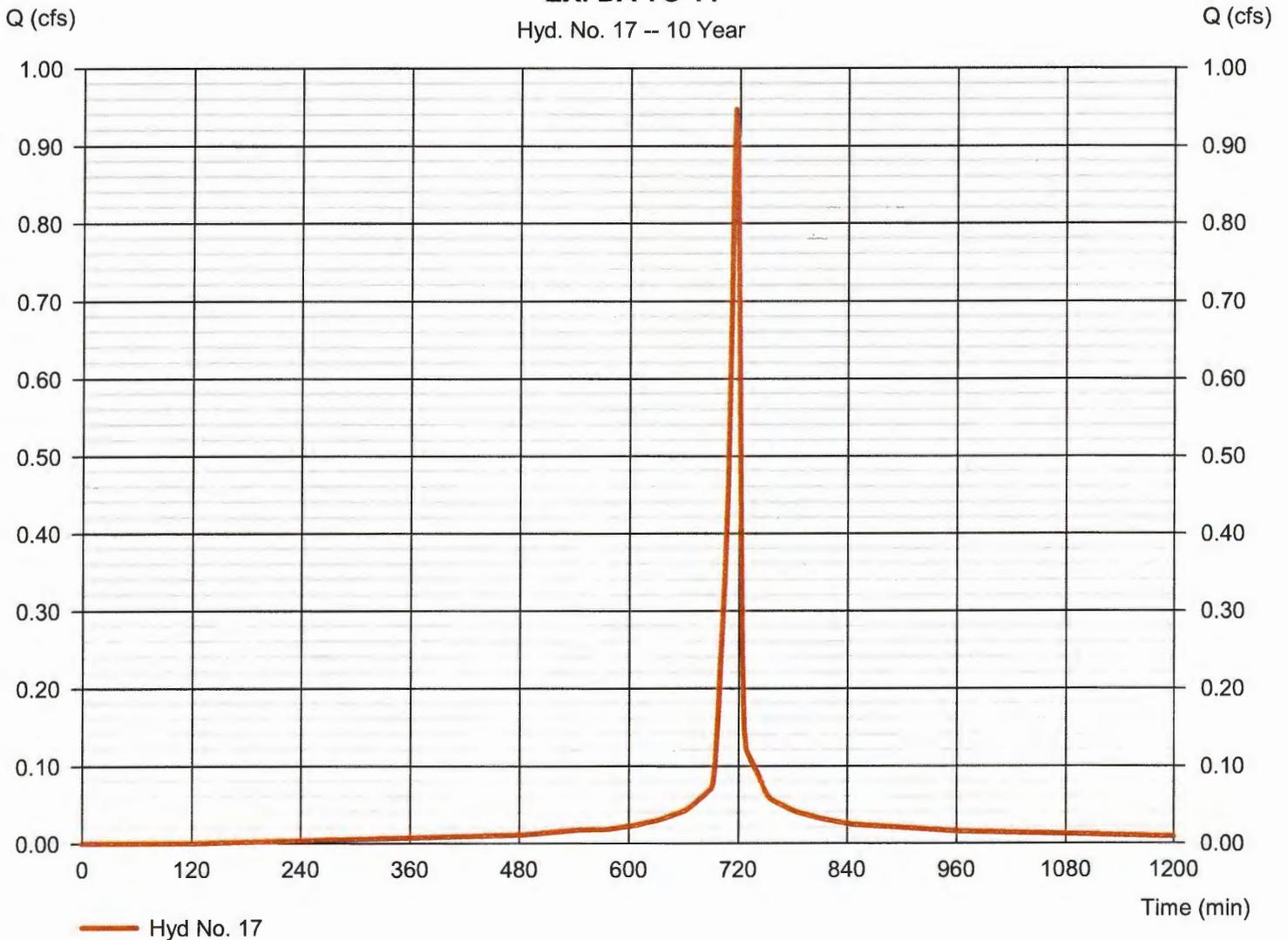
Hyd. No. 17

EX. DA TO 11

Hydrograph type	= SCS Runoff	Peak discharge	= 0.947 cfs
Storm frequency	= 10 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 2,153 cuft
Drainage area	= 0.140 ac	Curve number	= 95
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 5.10 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

EX. DA TO 11

Hyd. No. 17 -- 10 Year



Hydrograph Report

Hyd. No. 18

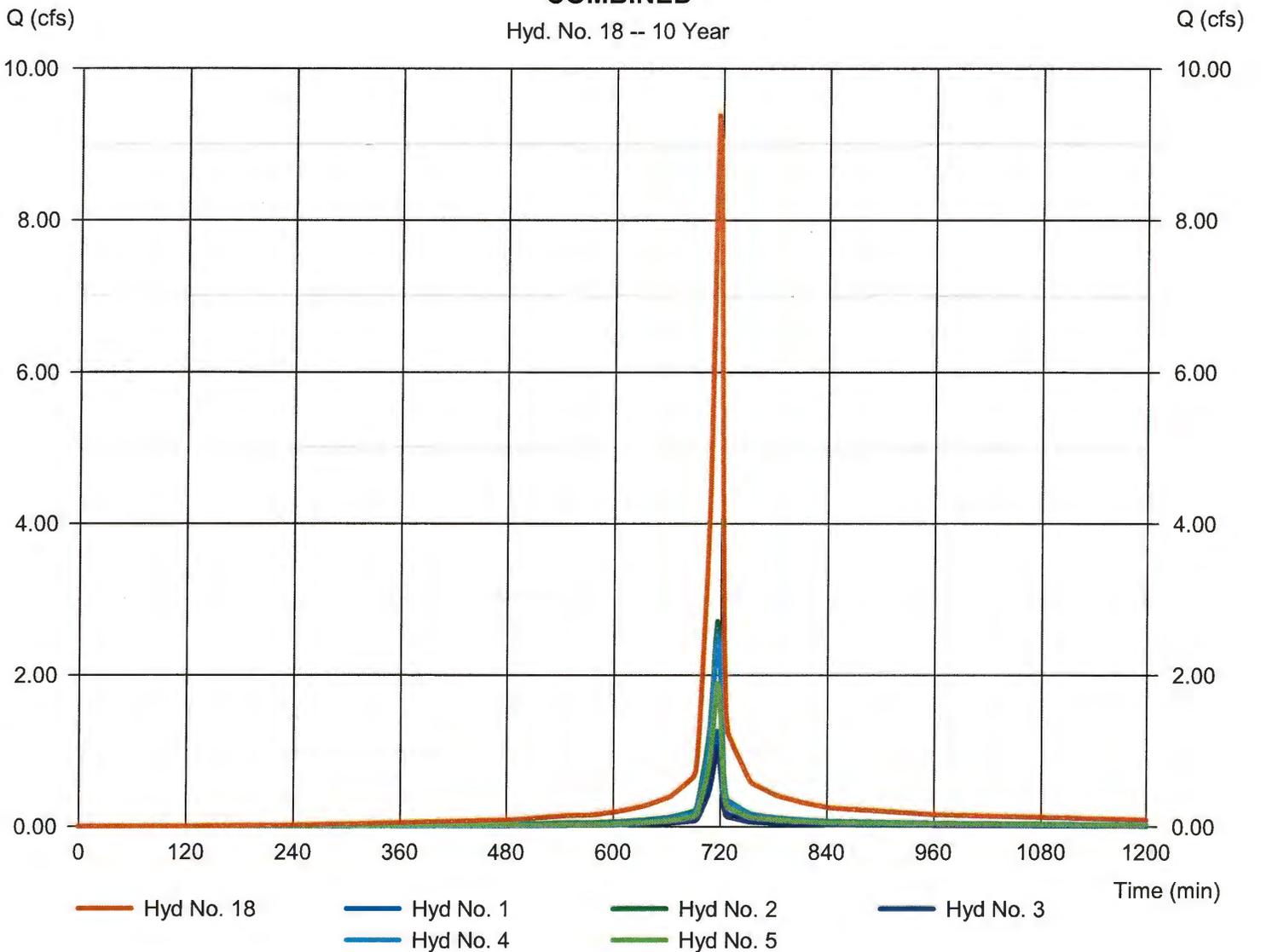
COMBINED

Hydrograph type = Combine
Storm frequency = 10 yrs
Time interval = 2 min
Inflow hyds. = 1, 2, 3, 4, 5

Peak discharge = 9.385 cfs
Time to peak = 716 min
Hyd. volume = 20,626 cuft
Contrib. drain. area = 1.450 ac

COMBINED

Hyd. No. 18 -- 10 Year



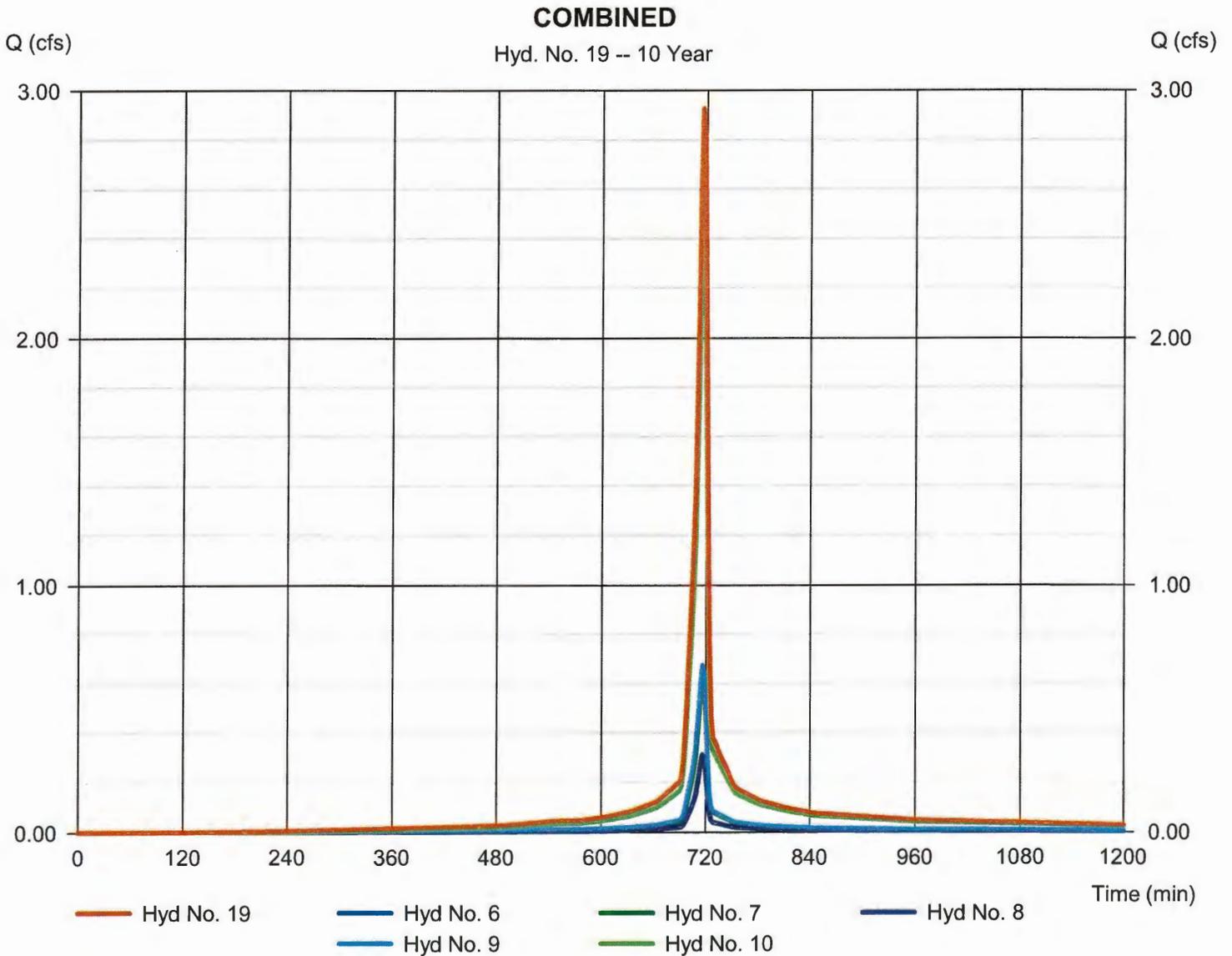
Hydrograph Report

Hyd. No. 19

COMBINED

Hydrograph type = Combine
Storm frequency = 10 yrs
Time interval = 2 min
Inflow hyds. = 6, 7, 8, 9, 10

Peak discharge = 2.926 cfs
Time to peak = 716 min
Hyd. volume = 6,455 cuft
Contrib. drain. area = 0.750 ac



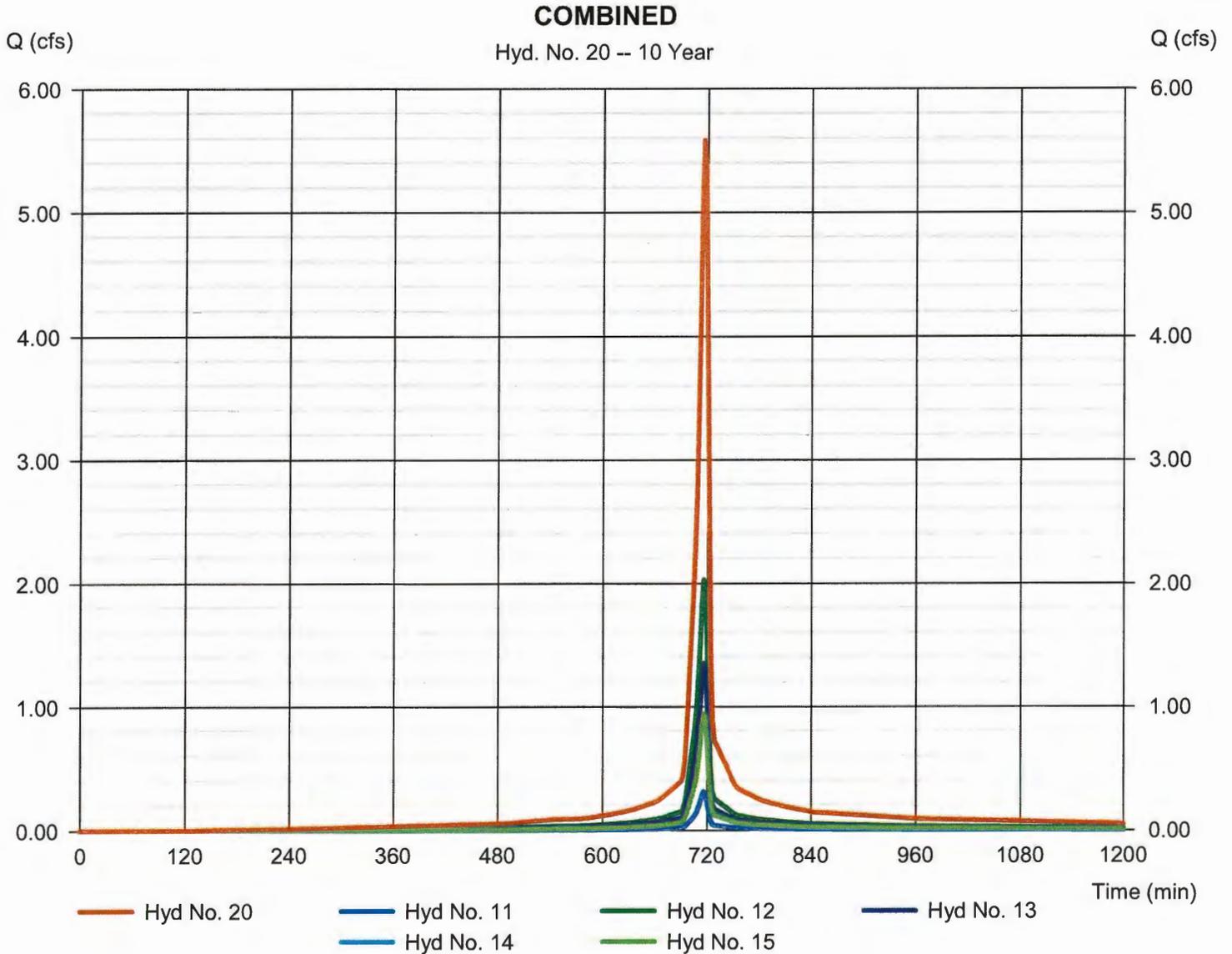
Hydrograph Report

Hyd. No. 20

COMBINED

Hydrograph type = Combine
Storm frequency = 10 yrs
Time interval = 2 min
Inflow hyds. = 11, 12, 13, 14, 15

Peak discharge = 5.586 cfs
Time to peak = 716 min
Hyd. volume = 12,421 cuft
Contrib. drain. area = 0.850 ac



Hydrograph Report

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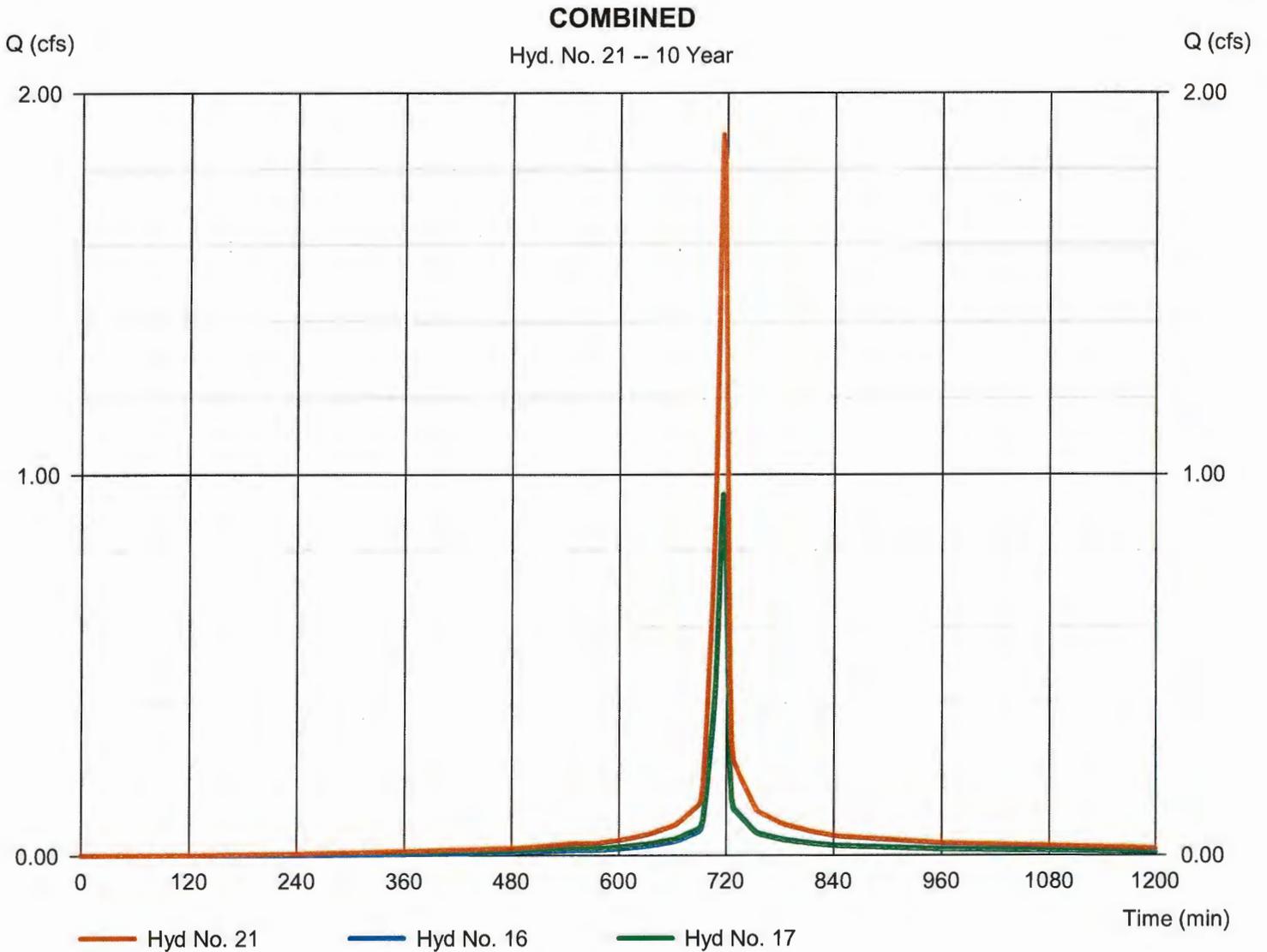
Friday, 07 / 8 / 2016

Hyd. No. 21

COMBINED

Hydrograph type = Combine
Storm frequency = 10 yrs
Time interval = 2 min
Inflow hyds. = 16, 17

Peak discharge = 1.891 cfs
Time to peak = 716 min
Hyd. volume = 4,181 cuft
Contrib. drain. area = 0.290 ac



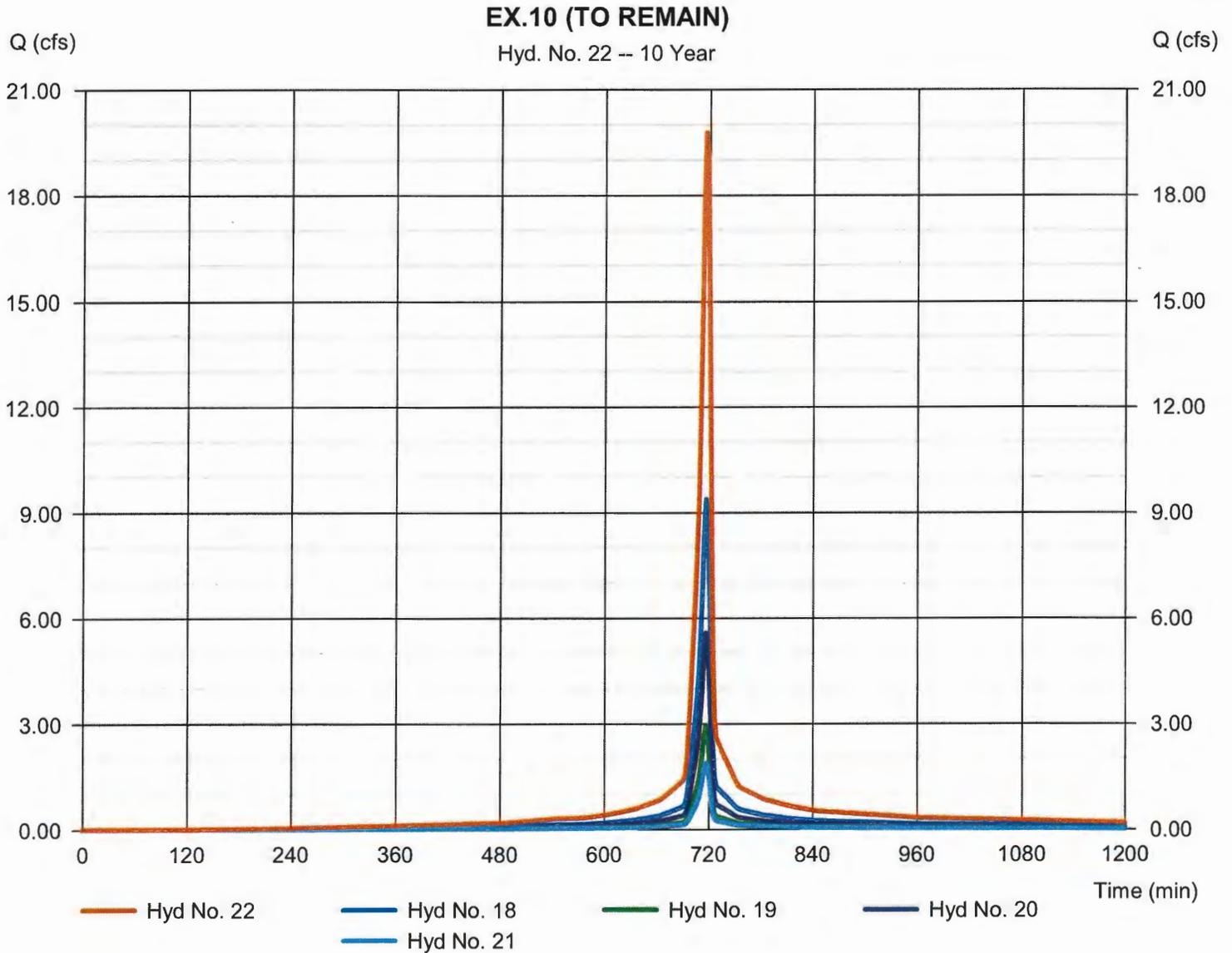
Hydrograph Report

Hyd. No. 22

EX.10 (TO REMAIN)

Hydrograph type = Combine
Storm frequency = 10 yrs
Time interval = 2 min
Inflow hyds. = 18, 19, 20, 21

Peak discharge = 19.79 cfs
Time to peak = 716 min
Hyd. volume = 43,682 cuft
Contrib. drain. area = 0.000 ac



Hydrograph Report

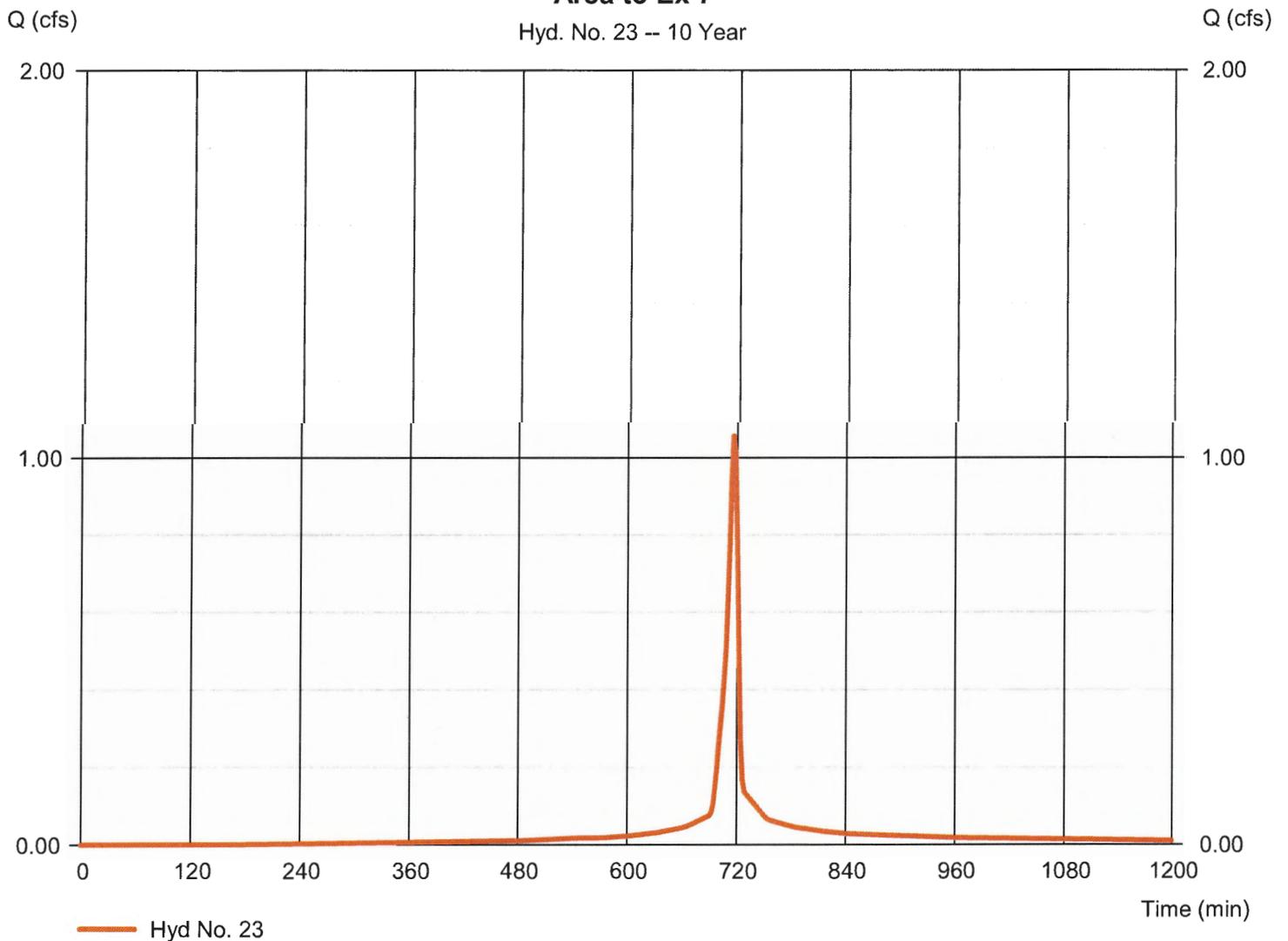
Hyd. No. 23

Area to Ex 7

Hydrograph type	= SCS Runoff	Peak discharge	= 1.056 cfs
Storm frequency	= 10 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 2,339 cuft
Drainage area	= 0.160 ac	Curve number	= 93
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 5.10 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

Area to Ex 7

Hyd. No. 23 -- 10 Year

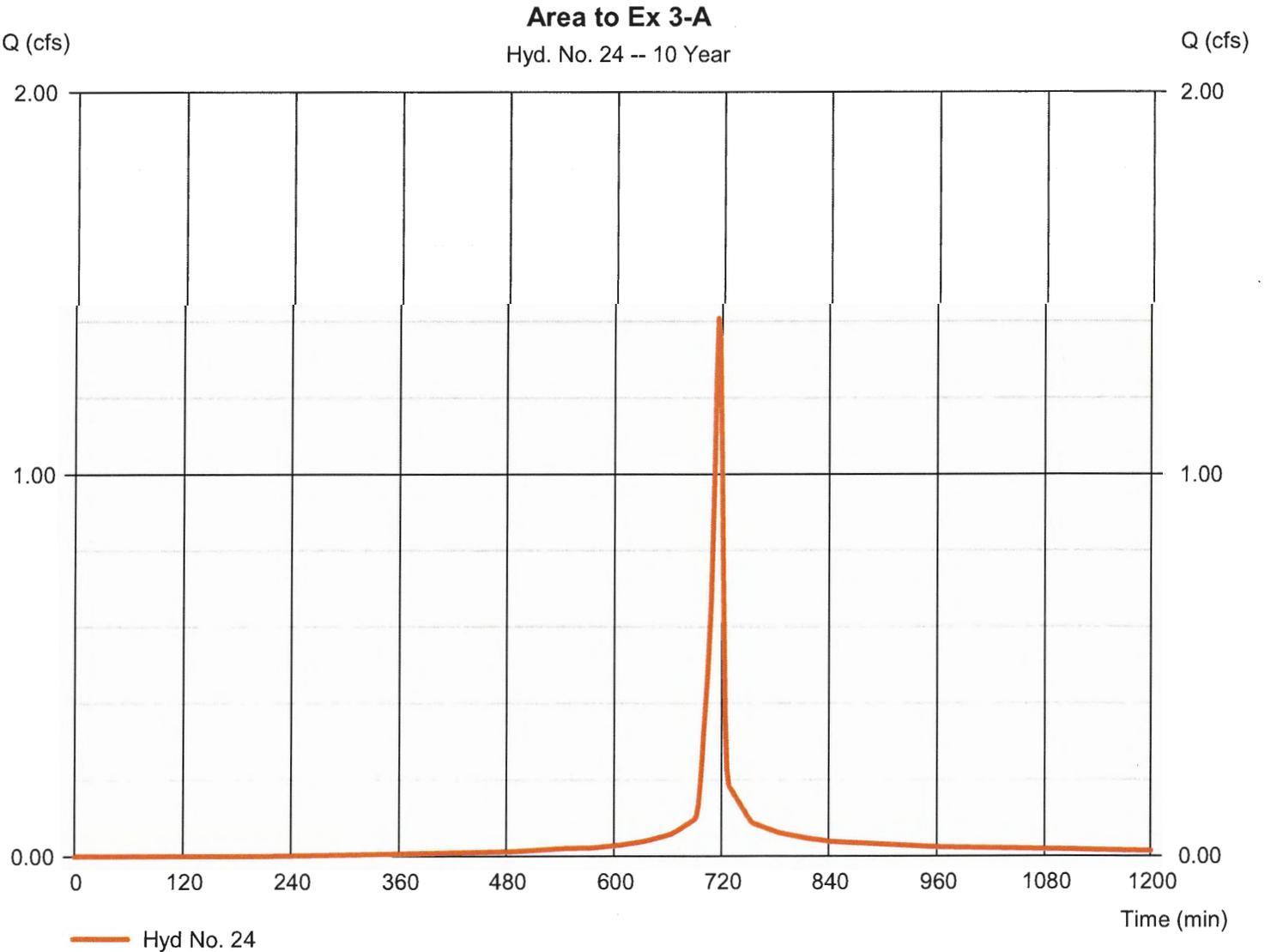


Hydrograph Report

Hyd. No. 24

Area to Ex 3-A

Hydrograph type	= SCS Runoff	Peak discharge	= 1.408 cfs
Storm frequency	= 10 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 3,054 cuft
Drainage area	= 0.220 ac	Curve number	= 91
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 5.10 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

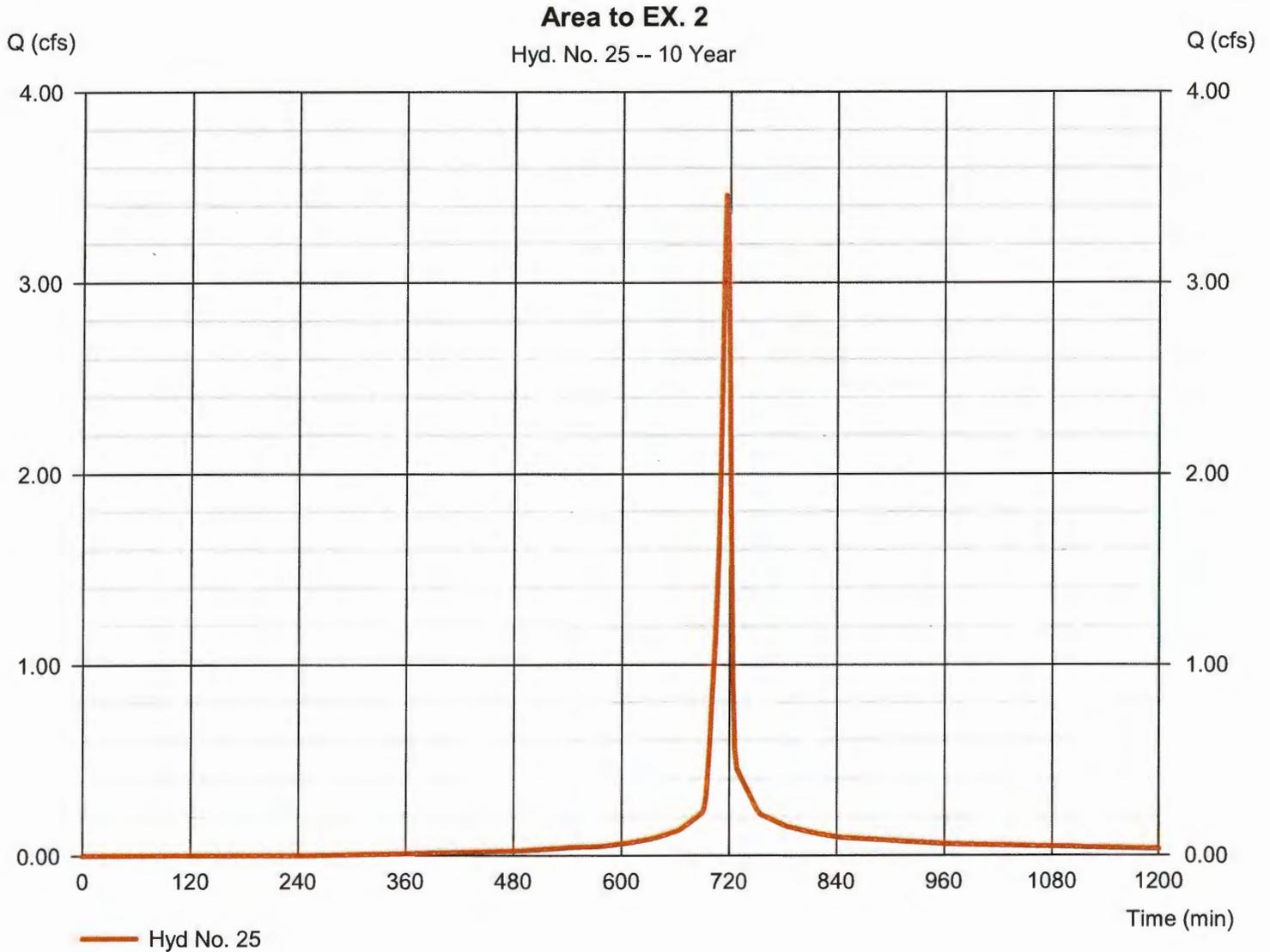


Hydrograph Report

Hyd. No. 25

Area to EX. 2

Hydrograph type	= SCS Runoff	Peak discharge	= 3.459 cfs
Storm frequency	= 10 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 7,371 cuft
Drainage area	= 0.560 ac	Curve number	= 89
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 5.10 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

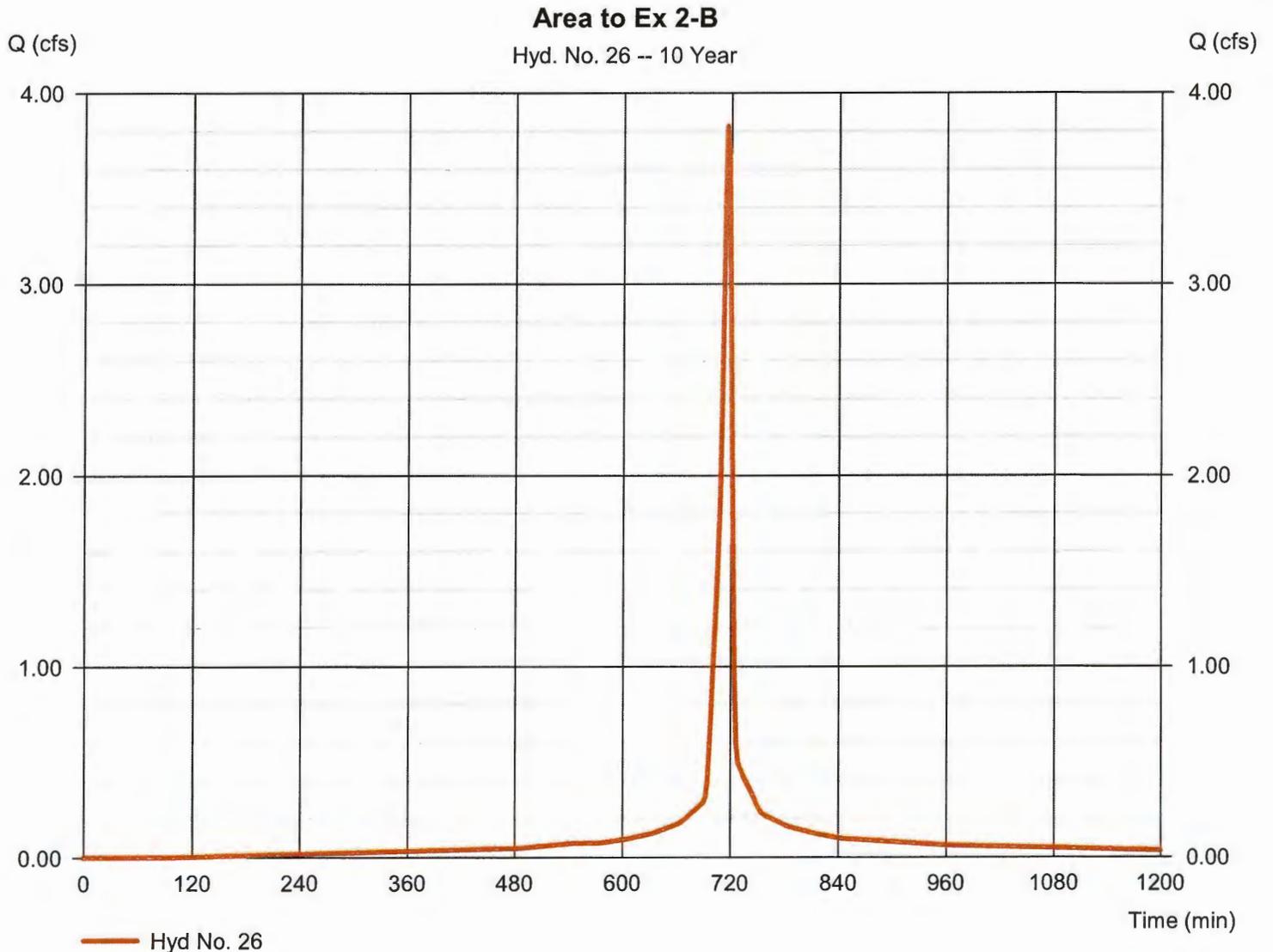
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Hyd. No. 26

Area to Ex 2-B

Hydrograph type	= SCS Runoff	Peak discharge	= 3.827 cfs
Storm frequency	= 10 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 8,827 cuft
Drainage area	= 0.560 ac	Curve number	= 96
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 5.10 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

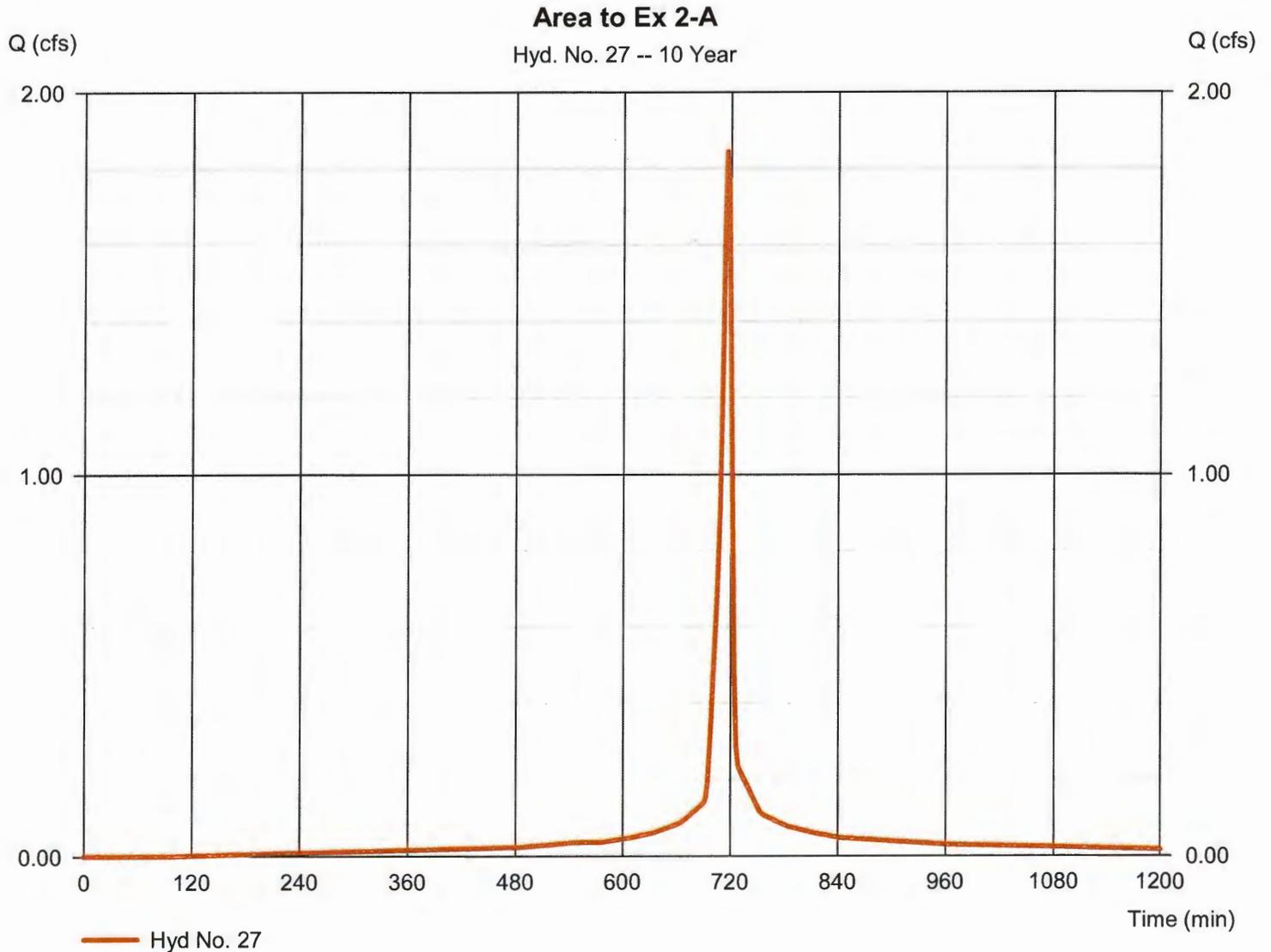


Hydrograph Report

Hyd. No. 27

Area to Ex 2-A

Hydrograph type	= SCS Runoff	Peak discharge	= 1.845 cfs
Storm frequency	= 10 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 4,256 cuft
Drainage area	= 0.270 ac	Curve number	= 96
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 5.10 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

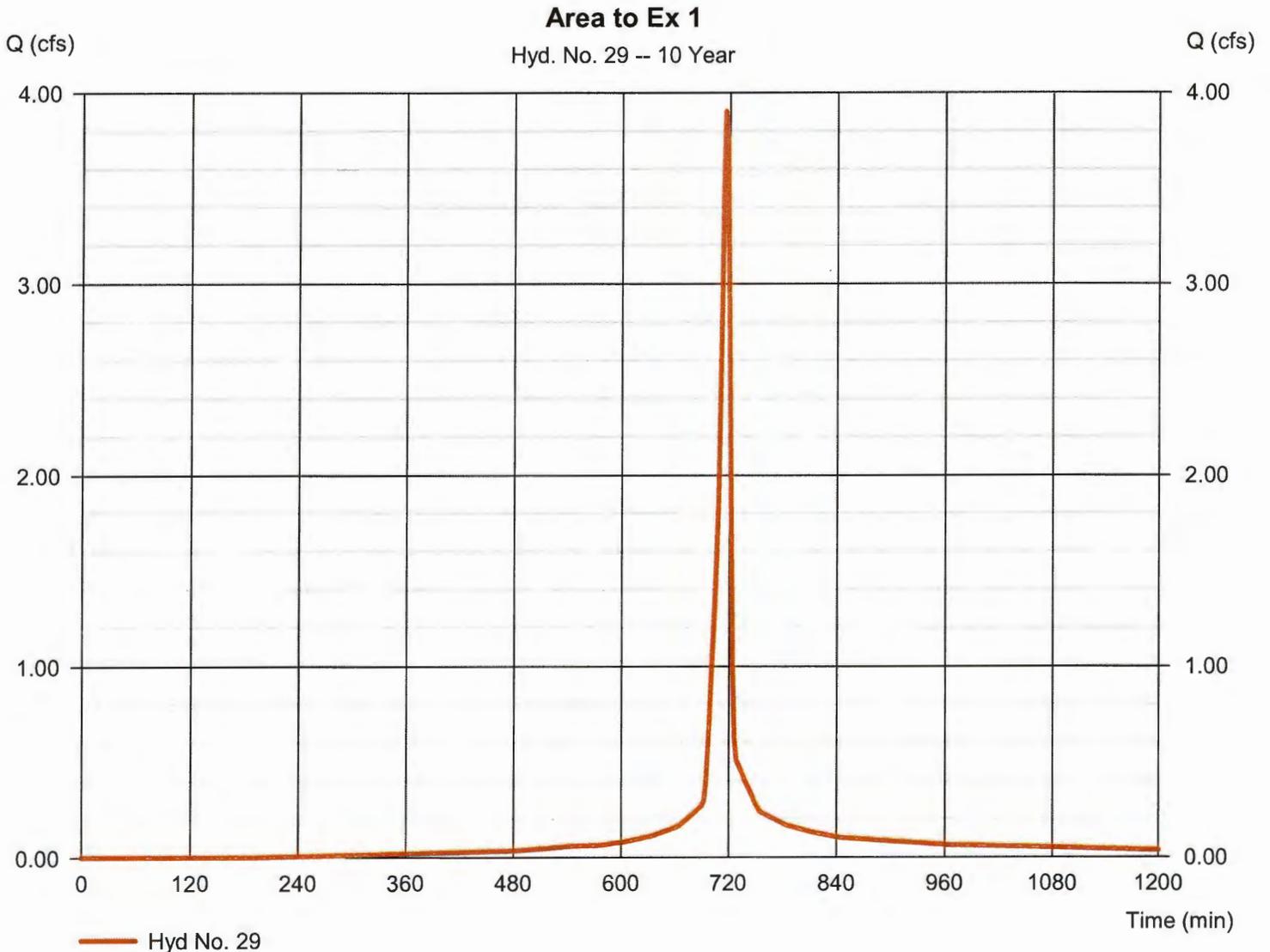
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2016 by Autodesk, Inc. v10.5

Friday, 07 / 8 / 2016

Hyd. No. 29

Area to Ex 1

Hydrograph type	= SCS Runoff	Peak discharge	= 3.903 cfs
Storm frequency	= 10 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 8,549 cuft
Drainage area	= 0.600 ac	Curve number	= 92
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 5.10 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



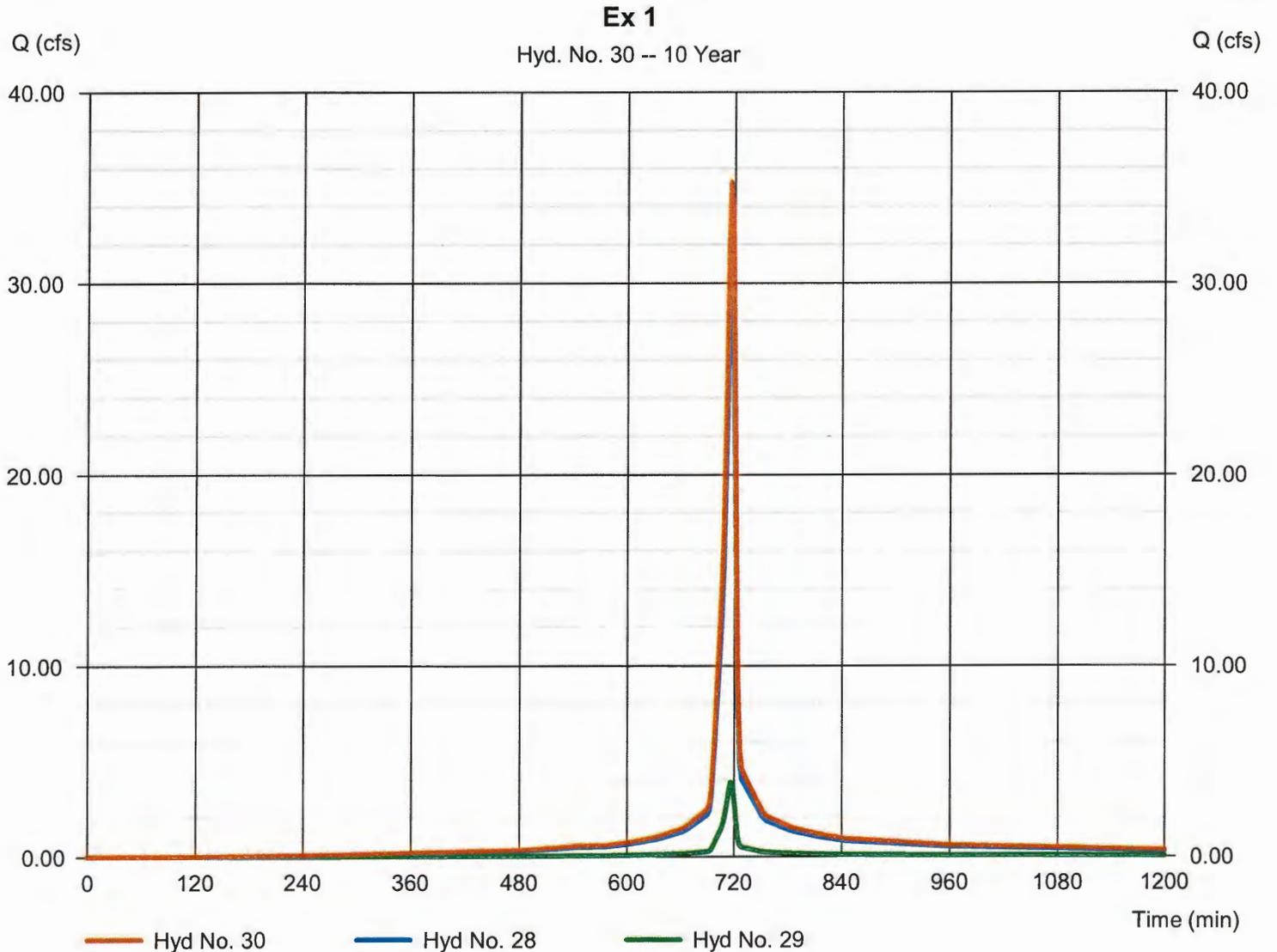
Hydrograph Report

Hyd. No. 30

Ex 1

Hydrograph type = Combine
Storm frequency = 10 yrs
Time interval = 2 min
Inflow hyds. = 28, 29

Peak discharge = 35.29 cfs
Time to peak = 716 min
Hyd. volume = 78,079 cuft
Contrib. drain. area = 0.600 ac



II. APPENDIX

D. STORMWATER MANAGEMENT ROUTING

2. PROPOSED

II. APPENDIX

D. STORMWATER MANAGEMENT ROUTING

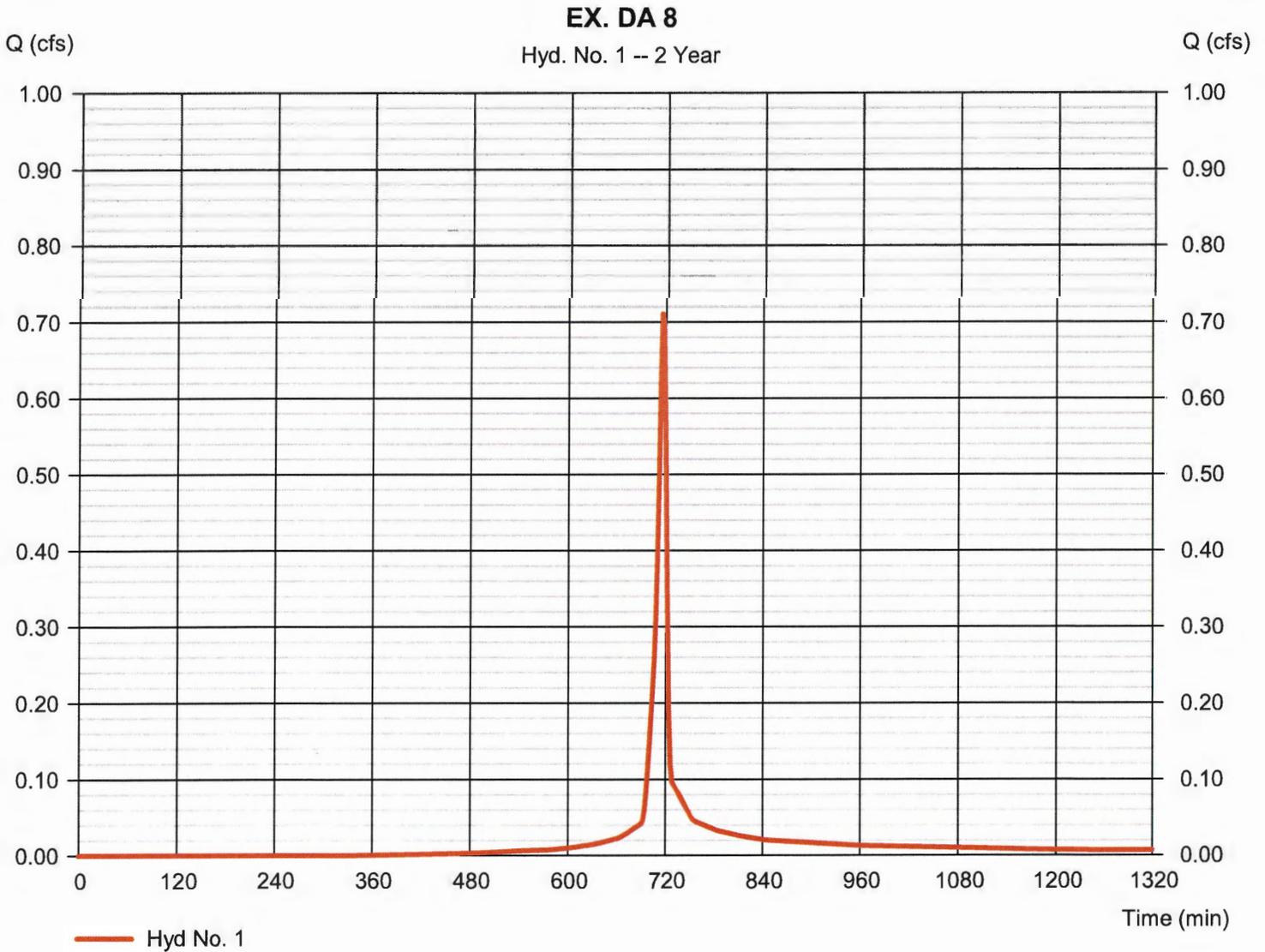
i. 2 YEAR 24 HOUR STORM EVENT

Hydrograph Report

Hyd. No. 1

EX. DA 8

Hydrograph type	= SCS Runoff	Peak discharge	= 0.711 cfs
Storm frequency	= 2 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 1,476 cuft
Drainage area	= 0.200 ac	Curve number	= 90
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.20 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

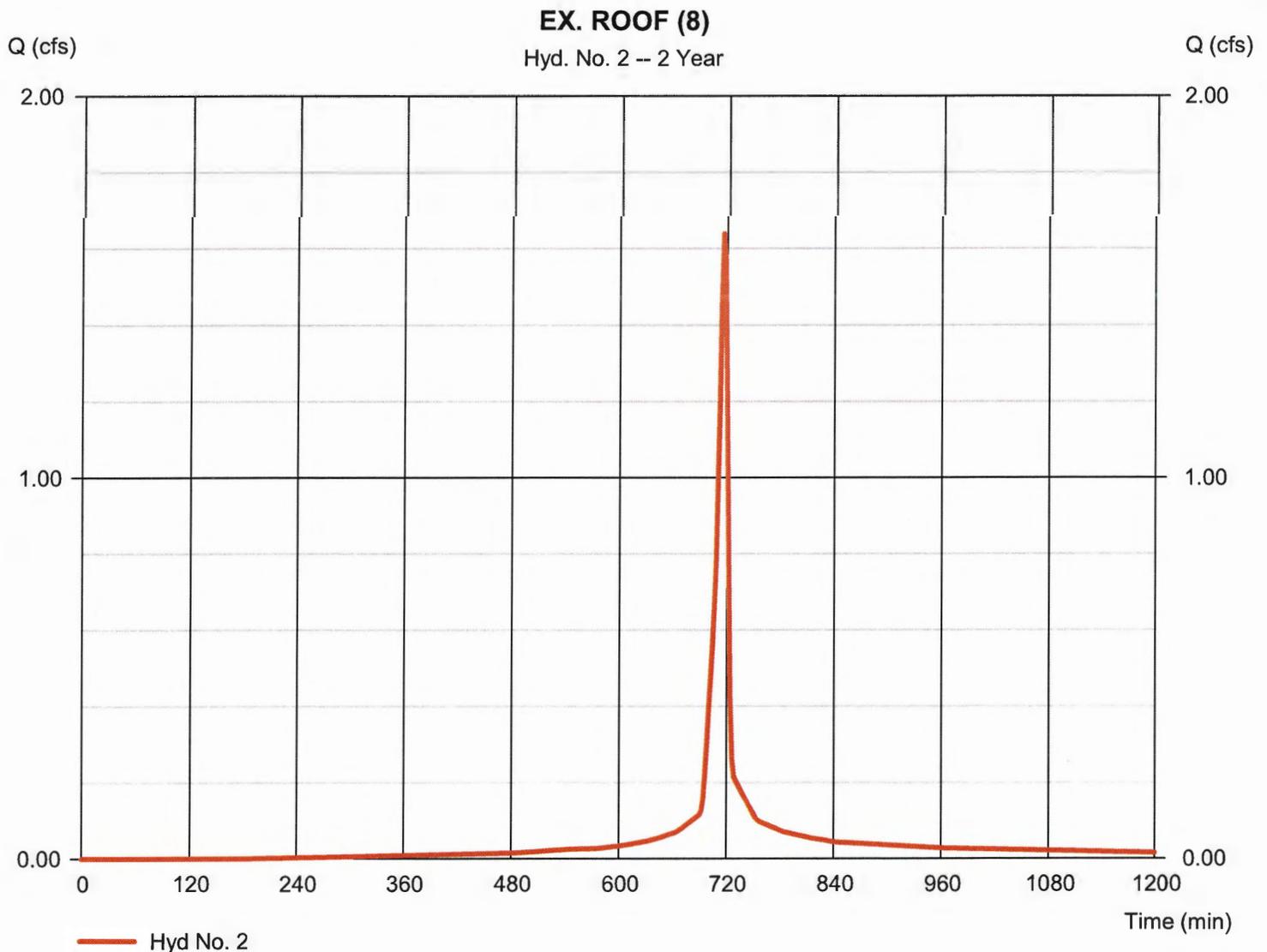


Hydrograph Report

Hyd. No. 2

EX. ROOF (8)

Hydrograph type	= SCS Runoff	Peak discharge	= 1.639 cfs
Storm frequency	= 2 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 3,600 cuft
Drainage area	= 0.400 ac	Curve number	= 95
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.20 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

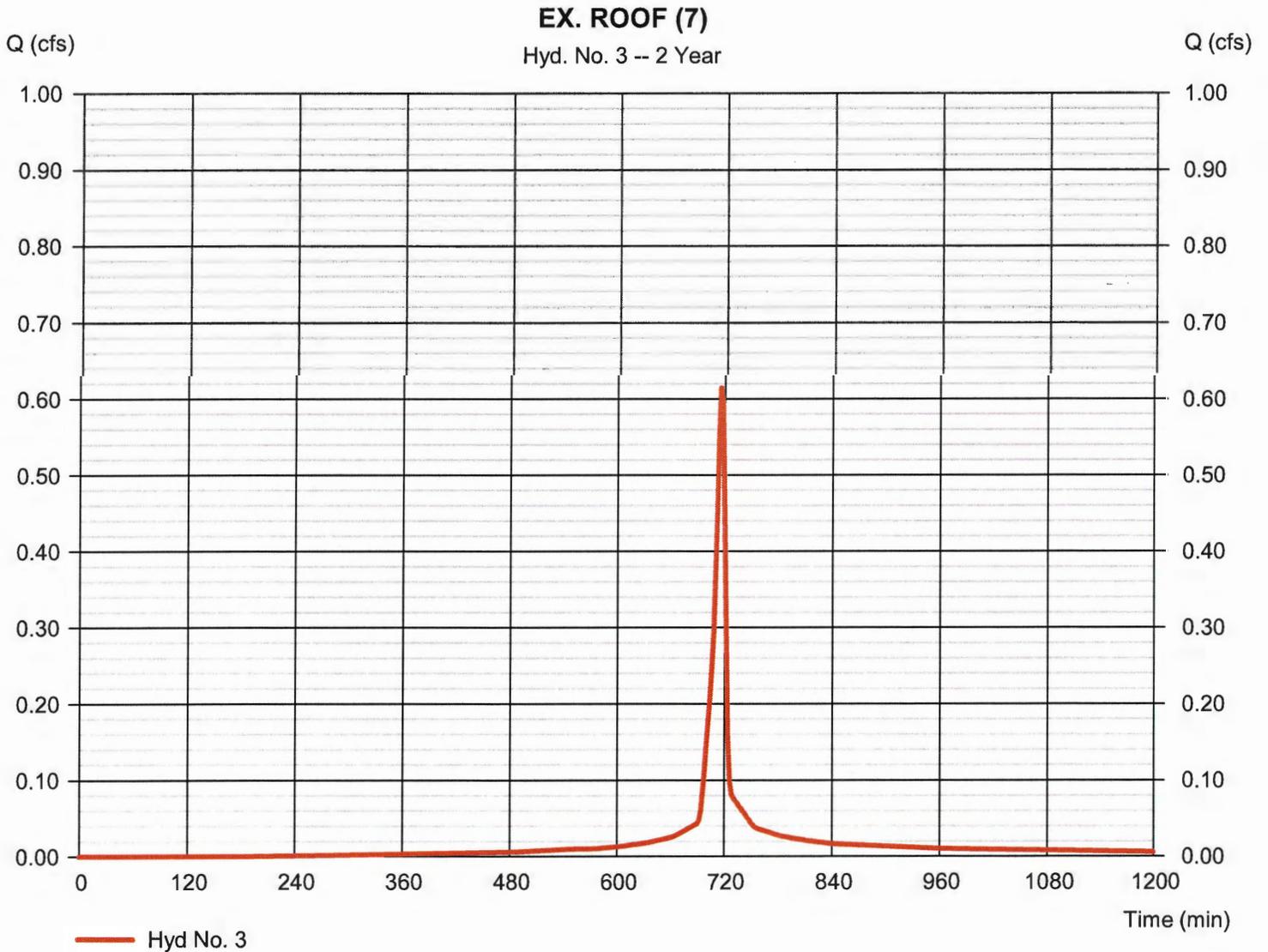


Hydrograph Report

Hyd. No. 3

EX. ROOF (7)

Hydrograph type	= SCS Runoff	Peak discharge	= 0.615 cfs
Storm frequency	= 2 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 1,350 cuft
Drainage area	= 0.150 ac	Curve number	= 95
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.20 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

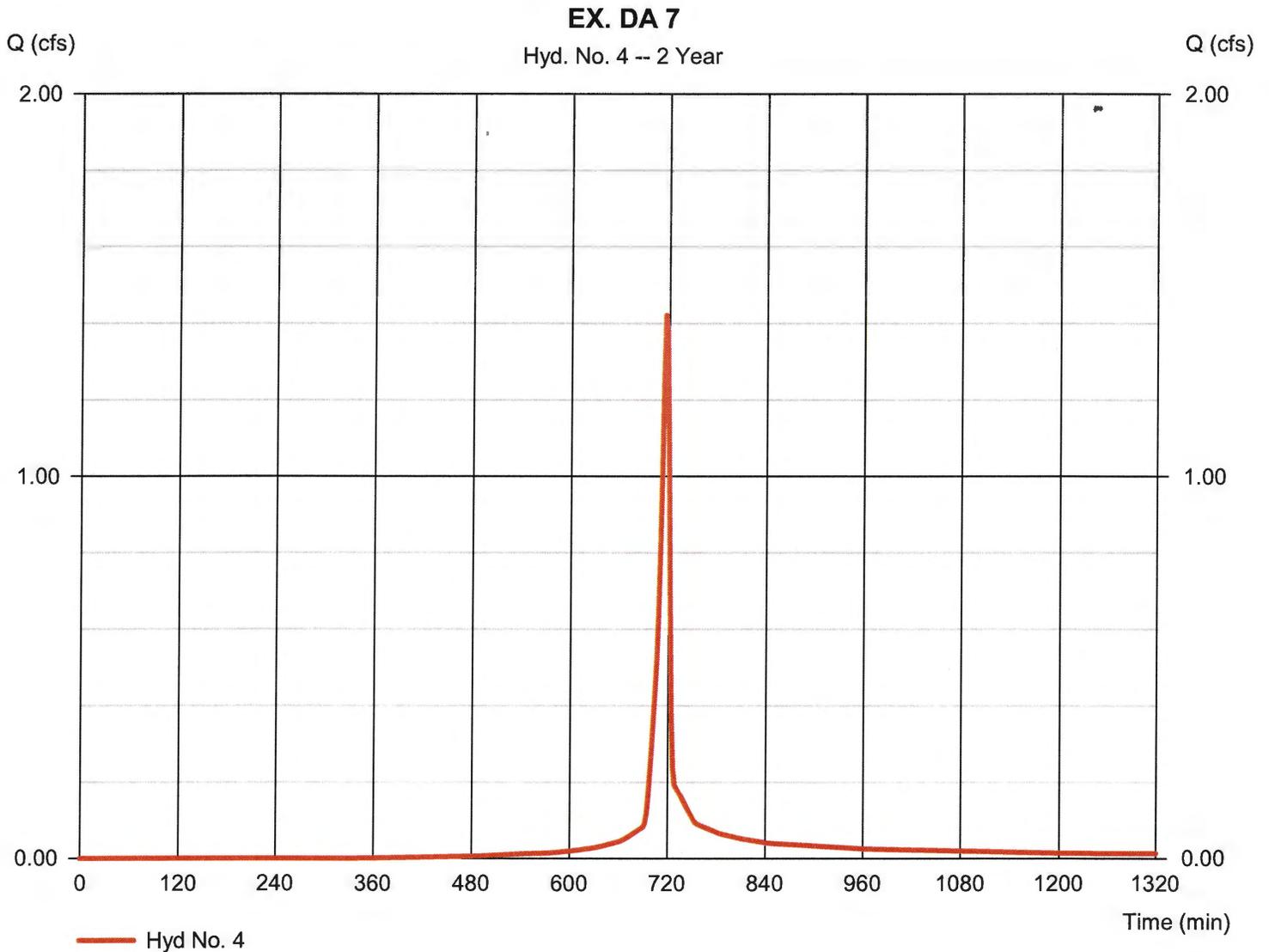


Hydrograph Report

Hyd. No. 4

EX. DA 7

Hydrograph type	= SCS Runoff	Peak discharge	= 1.422 cfs
Storm frequency	= 2 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 2,952 cuft
Drainage area	= 0.400 ac	Curve number	= 90
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.20 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

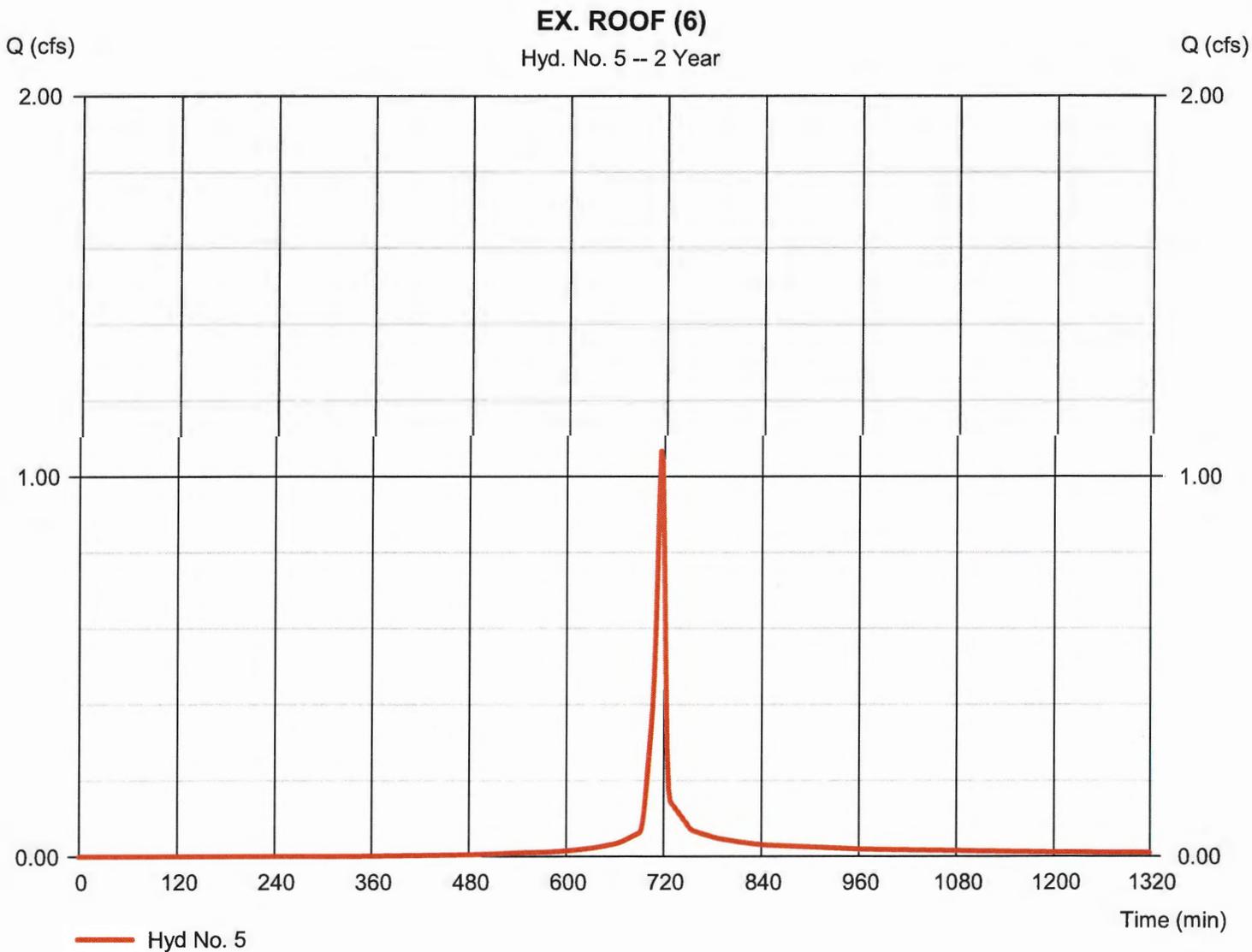


Hydrograph Report

Hyd. No. 5

EX. ROOF (6)

Hydrograph type	= SCS Runoff	Peak discharge	= 1.067 cfs
Storm frequency	= 2 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 2,214 cuft
Drainage area	= 0.300 ac	Curve number	= 90
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.20 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

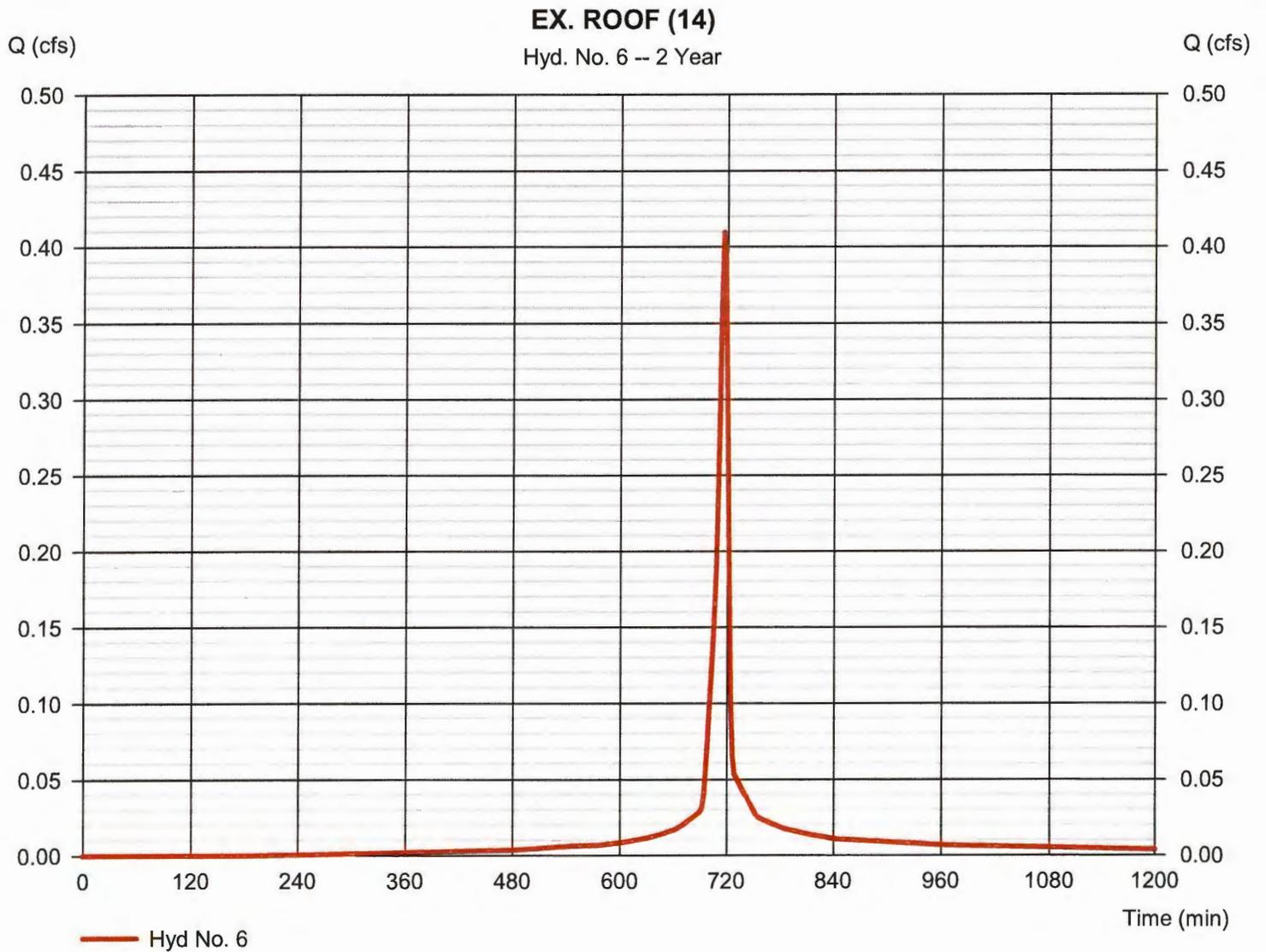
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Friday, 07 / 8 / 2016

Hyd. No. 6

EX. ROOF (14)

Hydrograph type	= SCS Runoff	Peak discharge	= 0.410 cfs
Storm frequency	= 2 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 900 cuft
Drainage area	= 0.100 ac	Curve number	= 95
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.20 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

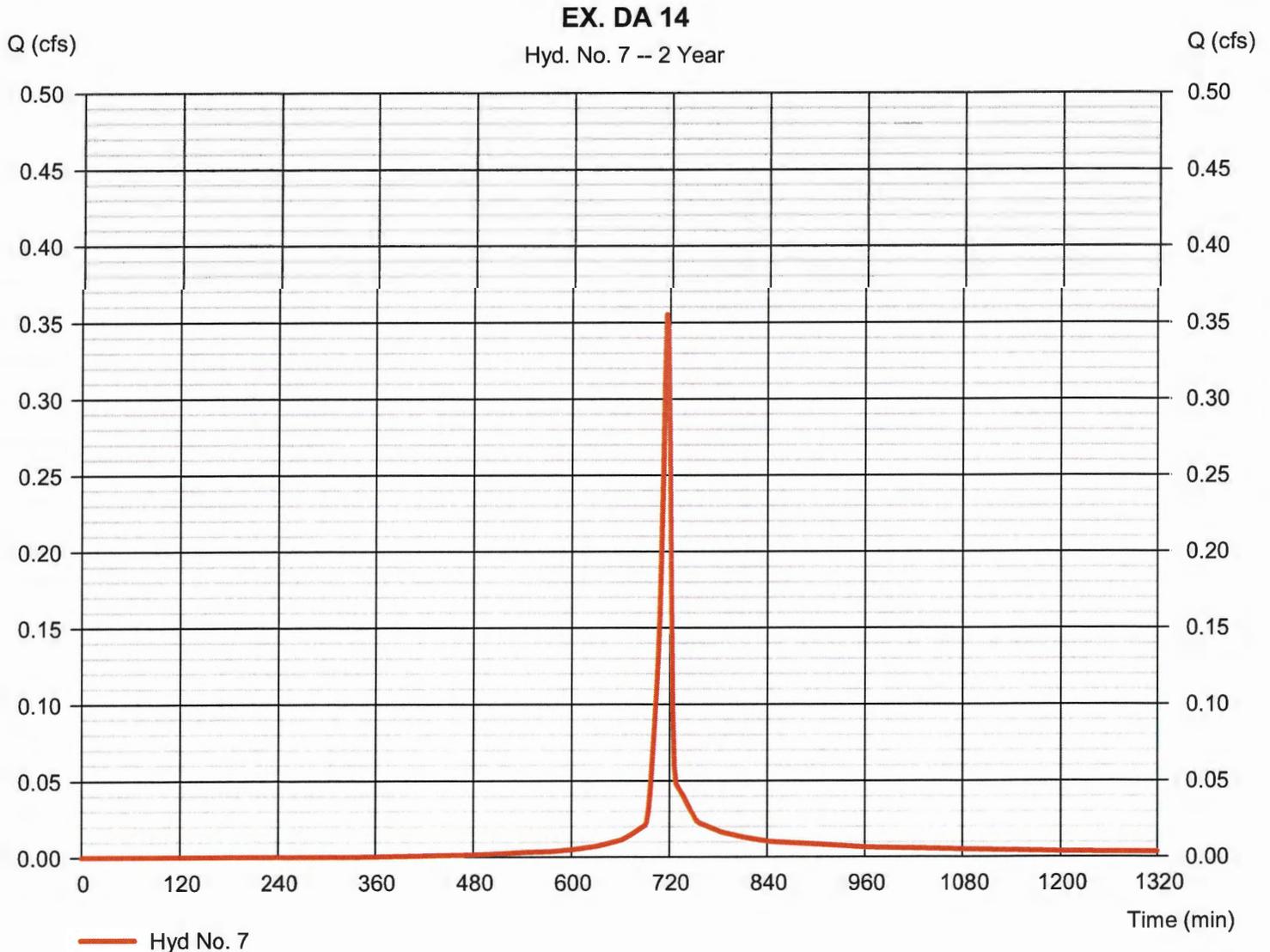


Hydrograph Report

Hyd. No. 7

EX. DA 14

Hydrograph type	= SCS Runoff	Peak discharge	= 0.356 cfs
Storm frequency	= 2 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 738 cuft
Drainage area	= 0.100 ac	Curve number	= 90
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.20 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

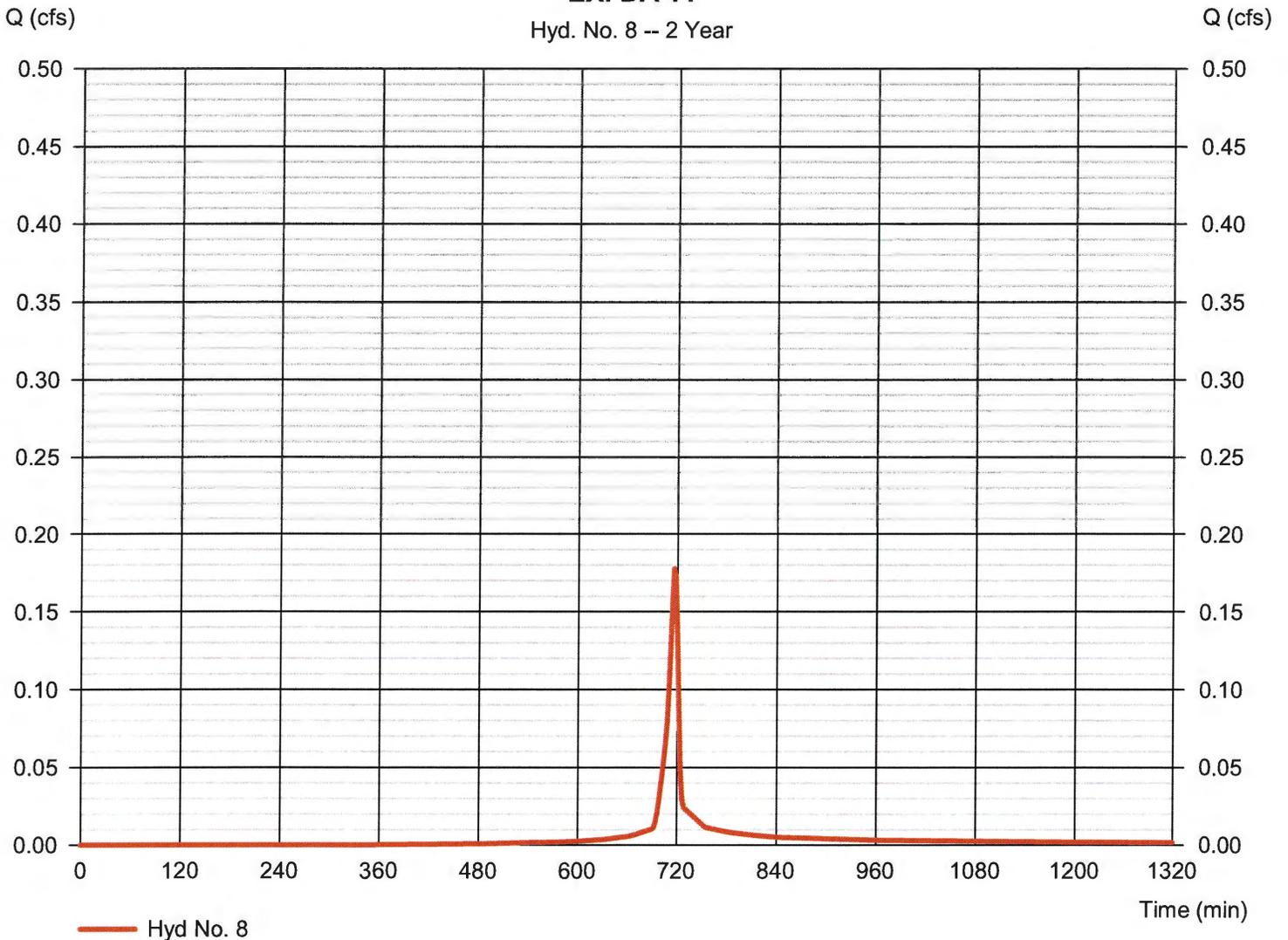
Hyd. No. 8

EX. DA 11

Hydrograph type	= SCS Runoff	Peak discharge	= 0.178 cfs
Storm frequency	= 2 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 369 cuft
Drainage area	= 0.050 ac	Curve number	= 90
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.20 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

EX. DA 11

Hyd. No. 8 -- 2 Year



Hydrograph Report

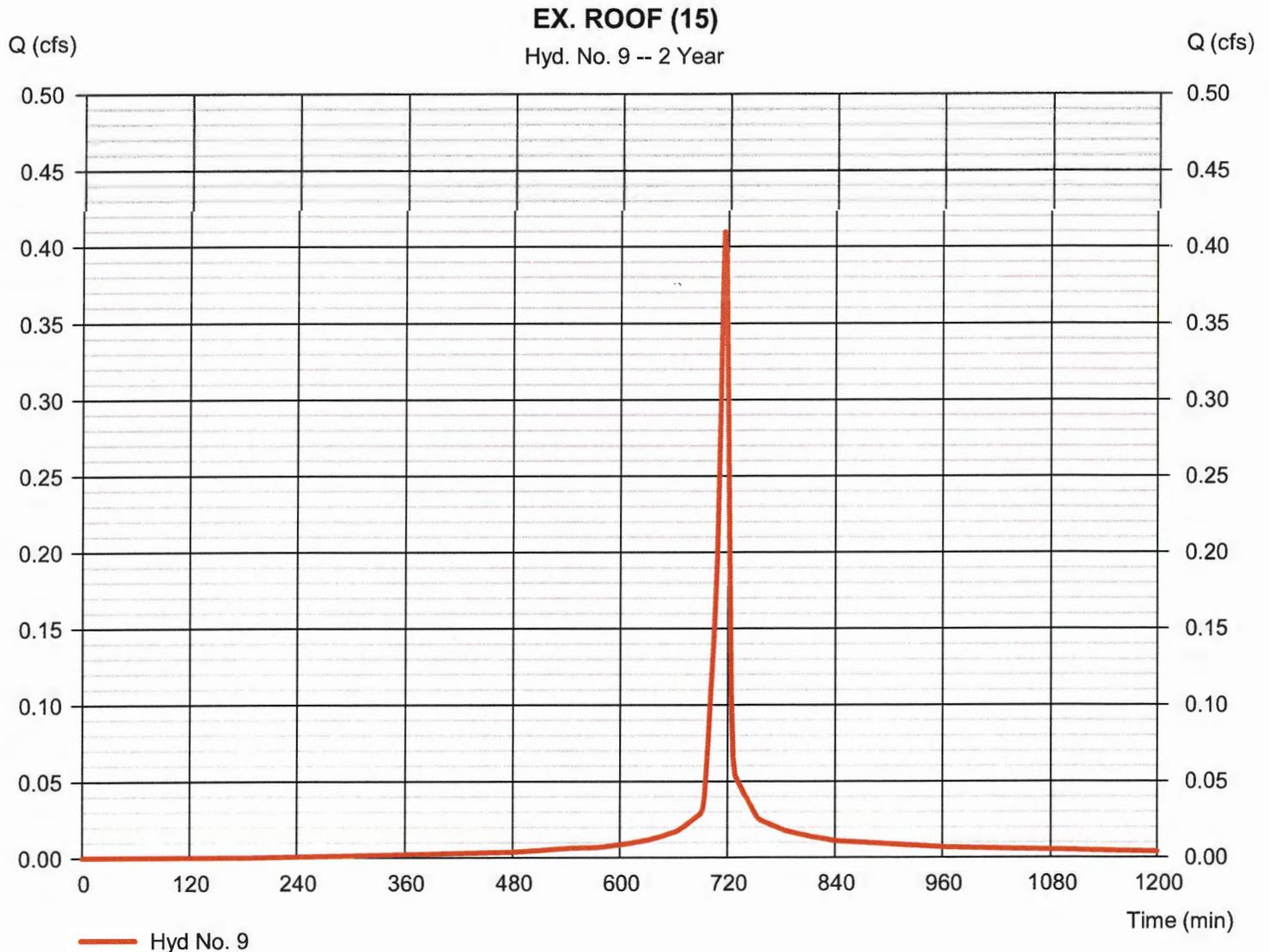
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2016 by Autodesk, Inc. v10.5

Friday, 07 / 8 / 2016

Hyd. No. 9

EX. ROOF (15)

Hydrograph type	= SCS Runoff	Peak discharge	= 0.410 cfs
Storm frequency	= 2 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 900 cuft
Drainage area	= 0.100 ac	Curve number	= 95
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.20 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

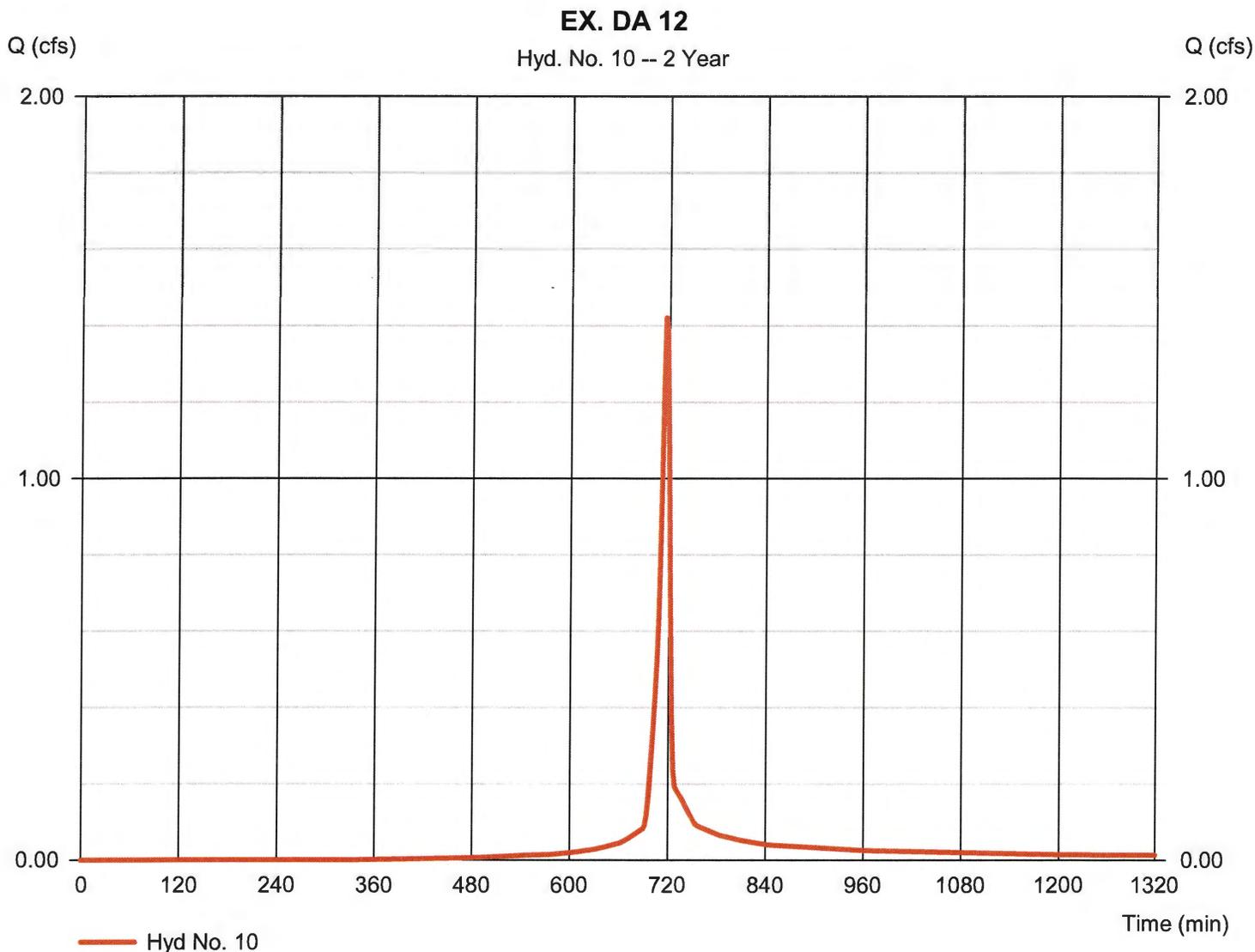


Hydrograph Report

Hyd. No. 10

EX. DA 12

Hydrograph type	= SCS Runoff	Peak discharge	= 1.422 cfs
Storm frequency	= 2 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 2,952 cuft
Drainage area	= 0.400 ac	Curve number	= 90
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.20 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

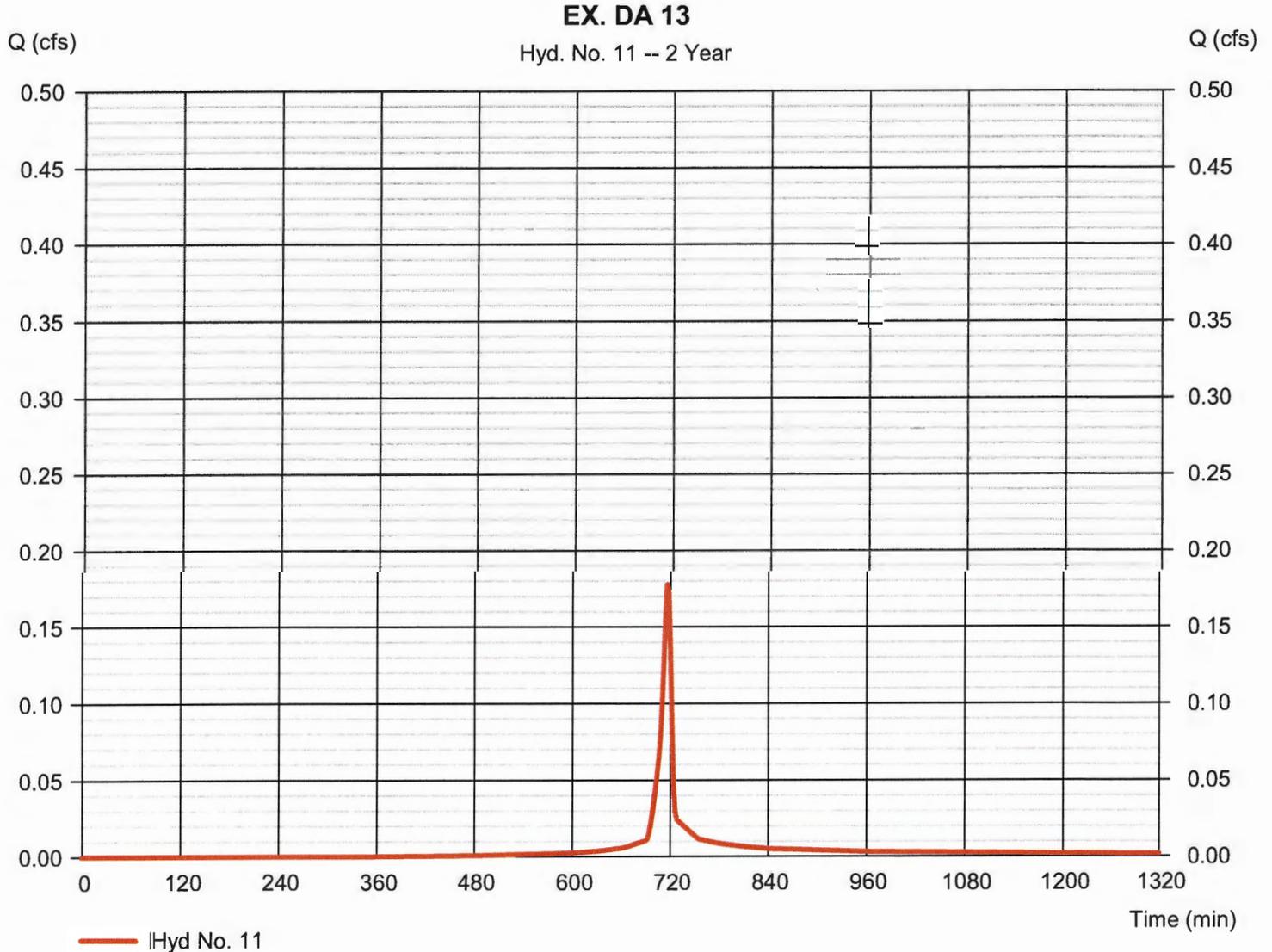


Hydrograph Report

Hyd. No. 11

EX. DA 13

Hydrograph type	= SCS Runoff	Peak discharge	= 0.178 cfs
Storm frequency	= 2 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 369 cuft
Drainage area	= 0.050 ac	Curve number	= 90
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.20 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

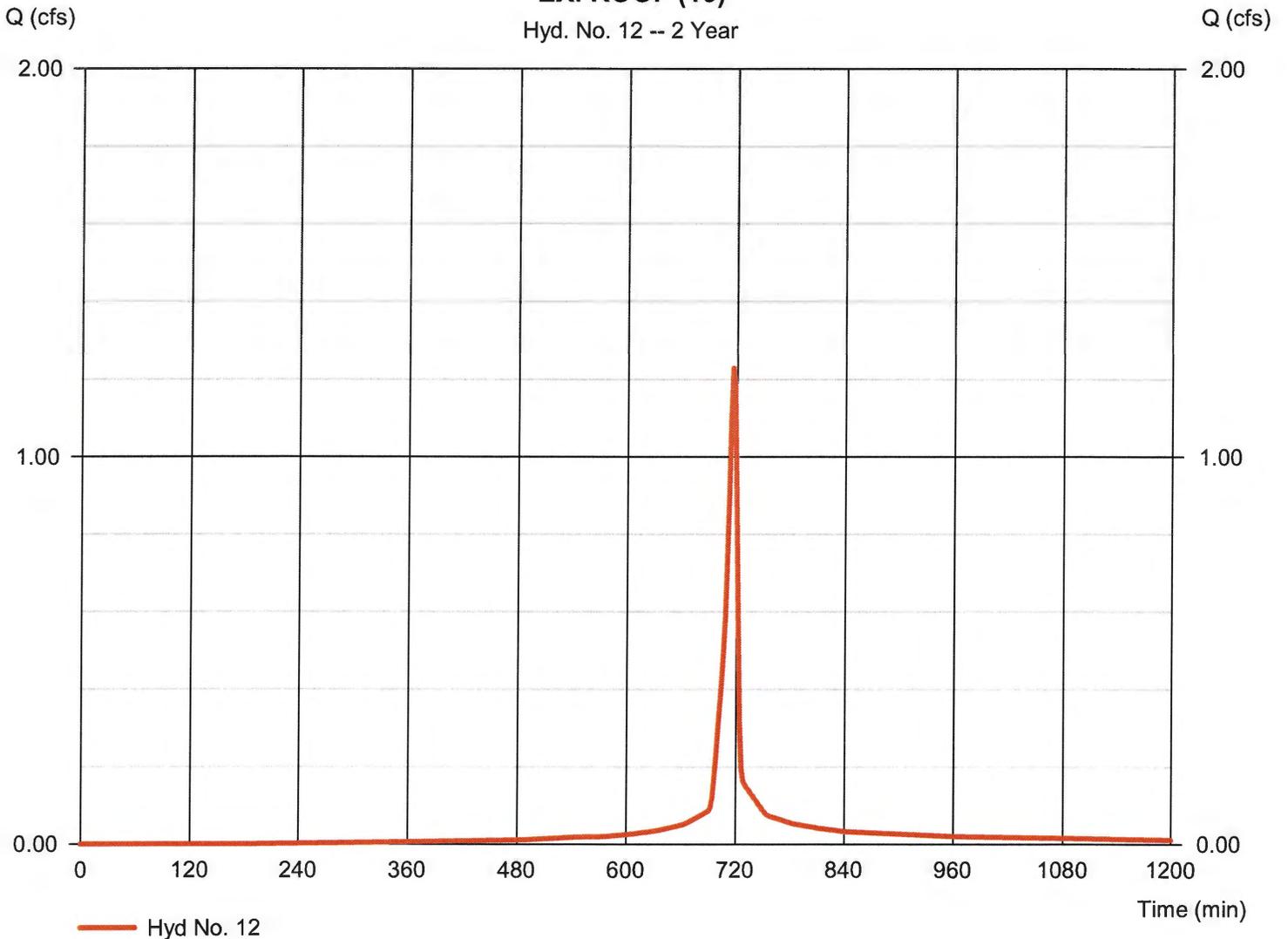
Hyd. No. 12

EX. ROOF (13)

Hydrograph type	= SCS Runoff	Peak discharge	= 1.229 cfs
Storm frequency	= 2 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 2,700 cuft
Drainage area	= 0.300 ac	Curve number	= 95
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.20 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

EX. ROOF (13)

Hyd. No. 12 -- 2 Year



Hydrograph Report

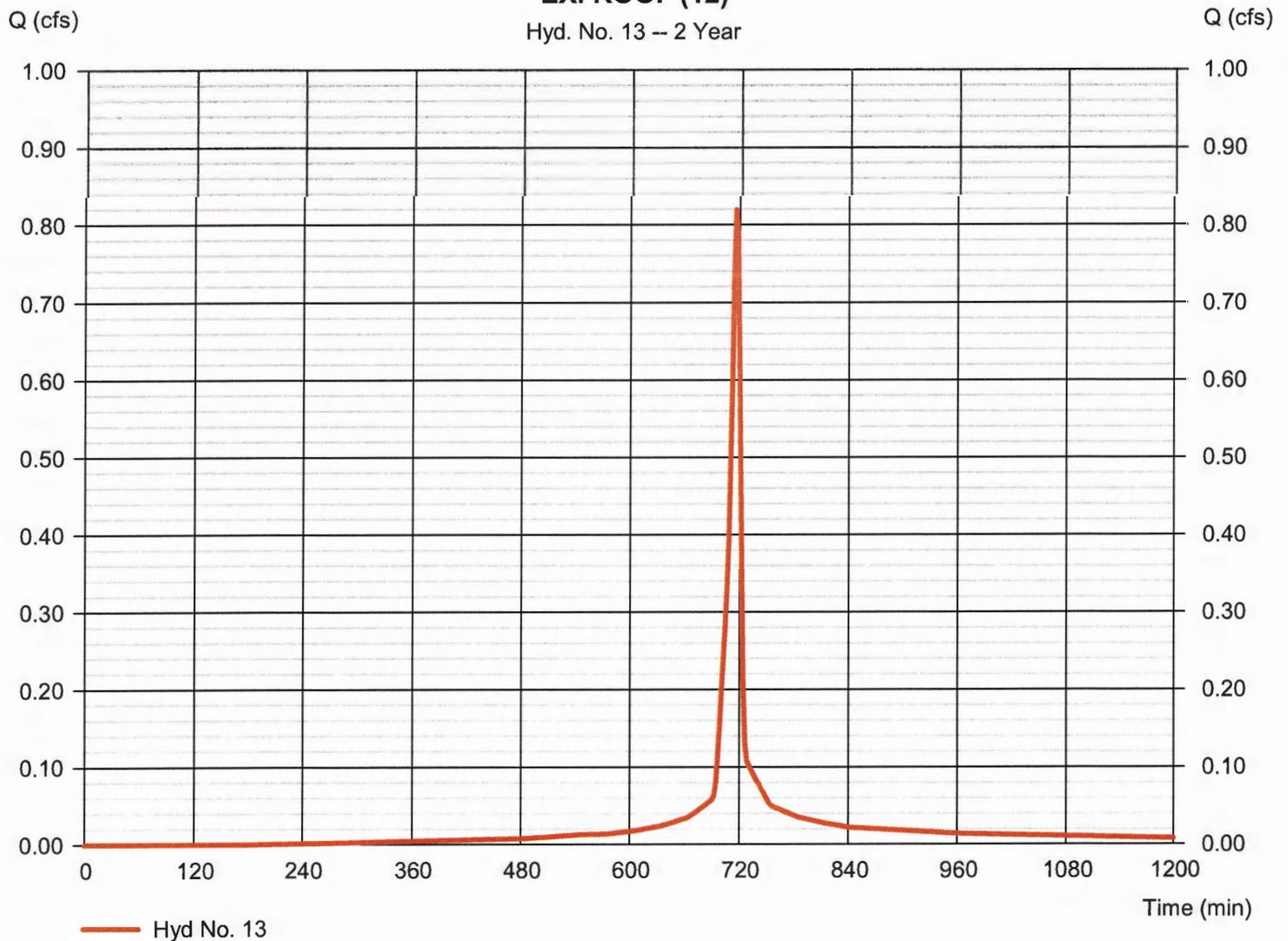
Hyd. No. 13

EX. ROOF (12)

Hydrograph type	= SCS Runoff	Peak discharge	= 0.820 cfs
Storm frequency	= 2 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 1,800 cuft
Drainage area	= 0.200 ac	Curve number	= 95
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.20 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

EX. ROOF (12)

Hyd. No. 13 -- 2 Year

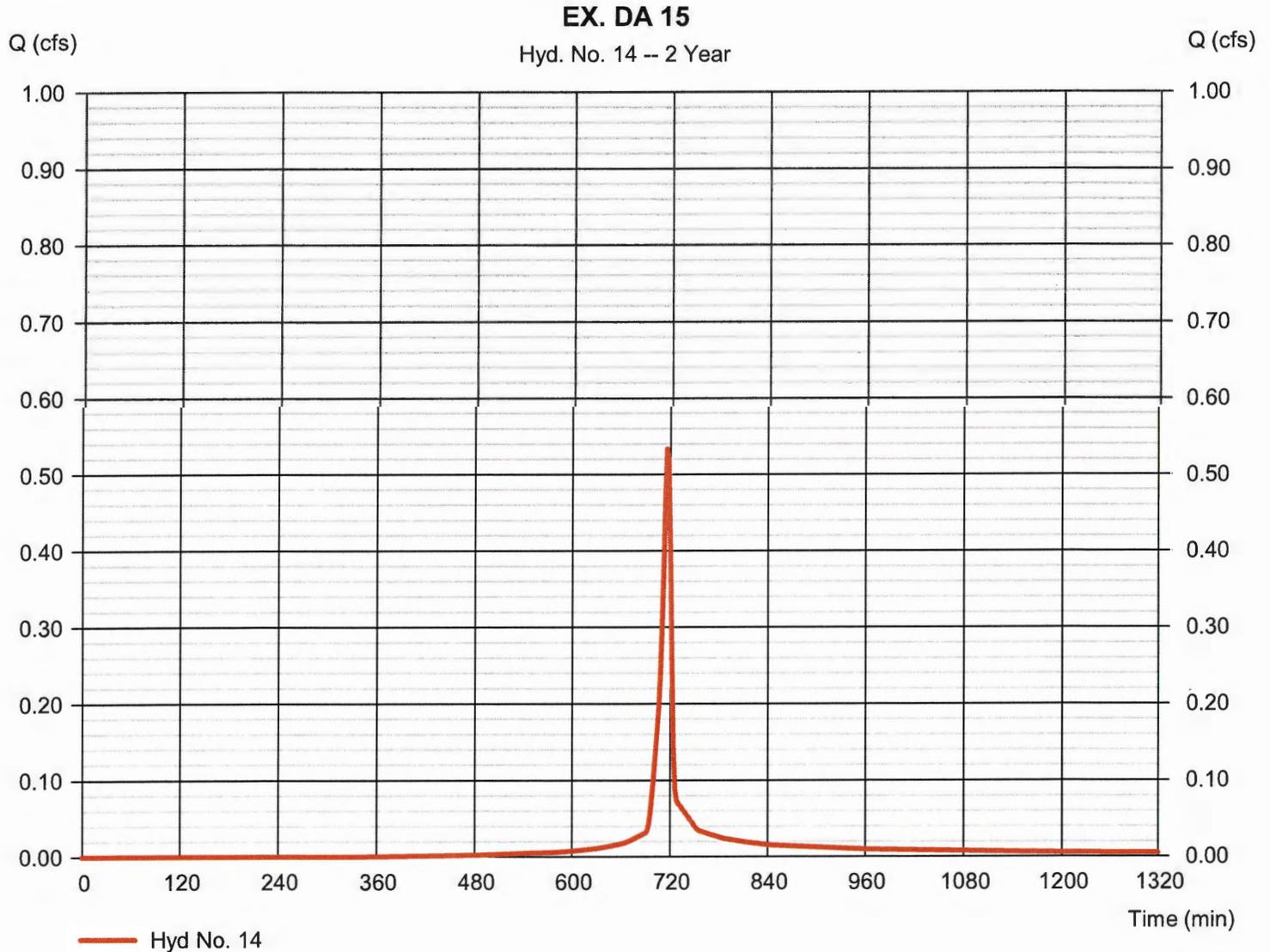


Hydrograph Report

Hyd. No. 14

EX. DA 15

Hydrograph type	= SCS Runoff	Peak discharge	= 0.533 cfs
Storm frequency	= 2 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 1,107 cuft
Drainage area	= 0.150 ac	Curve number	= 90
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.20 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

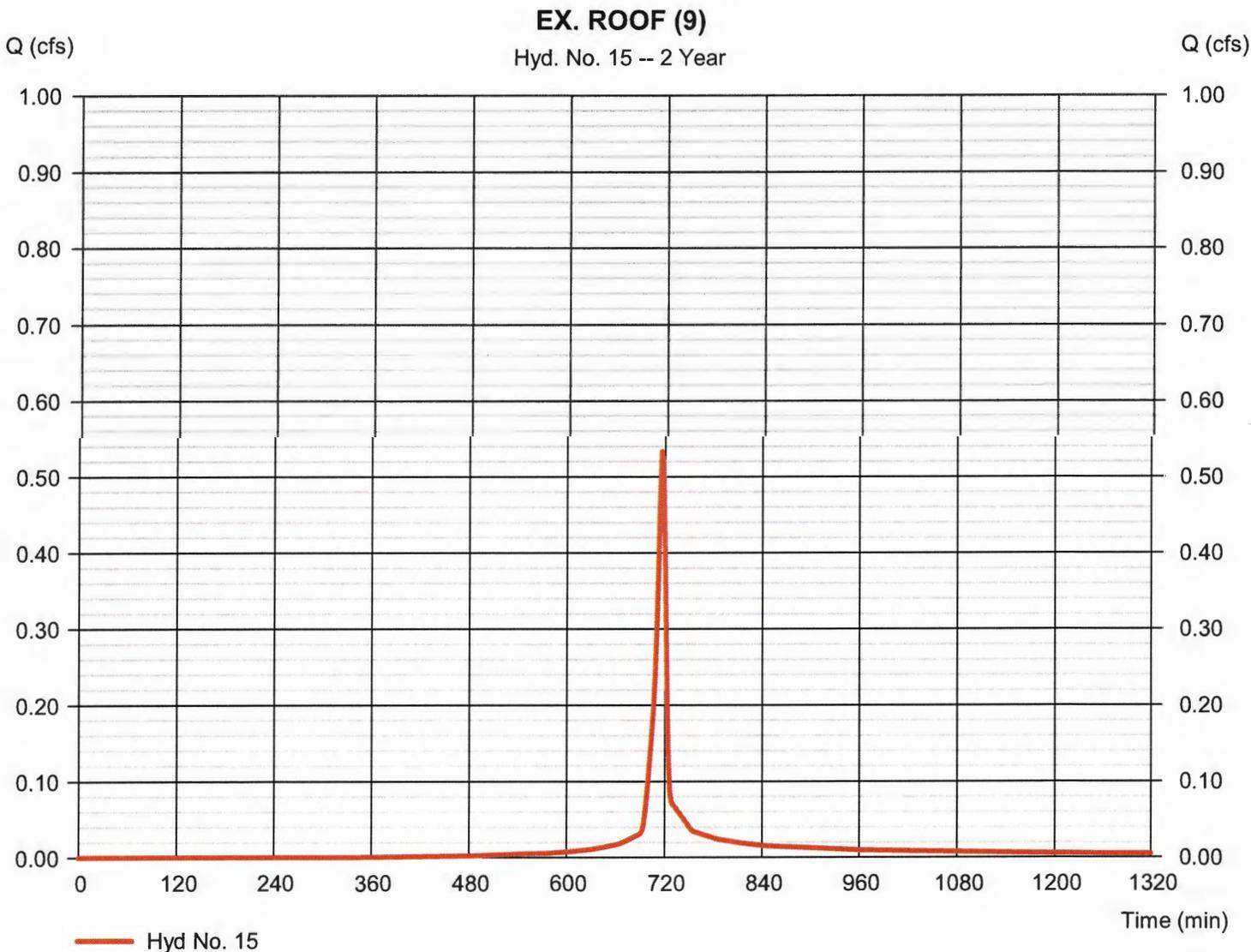


Hydrograph Report

Hyd. No. 15

EX. ROOF (9)

Hydrograph type	= SCS Runoff	Peak discharge	= 0.533 cfs
Storm frequency	= 2 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 1,107 cuft
Drainage area	= 0.150 ac	Curve number	= 90
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.20 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

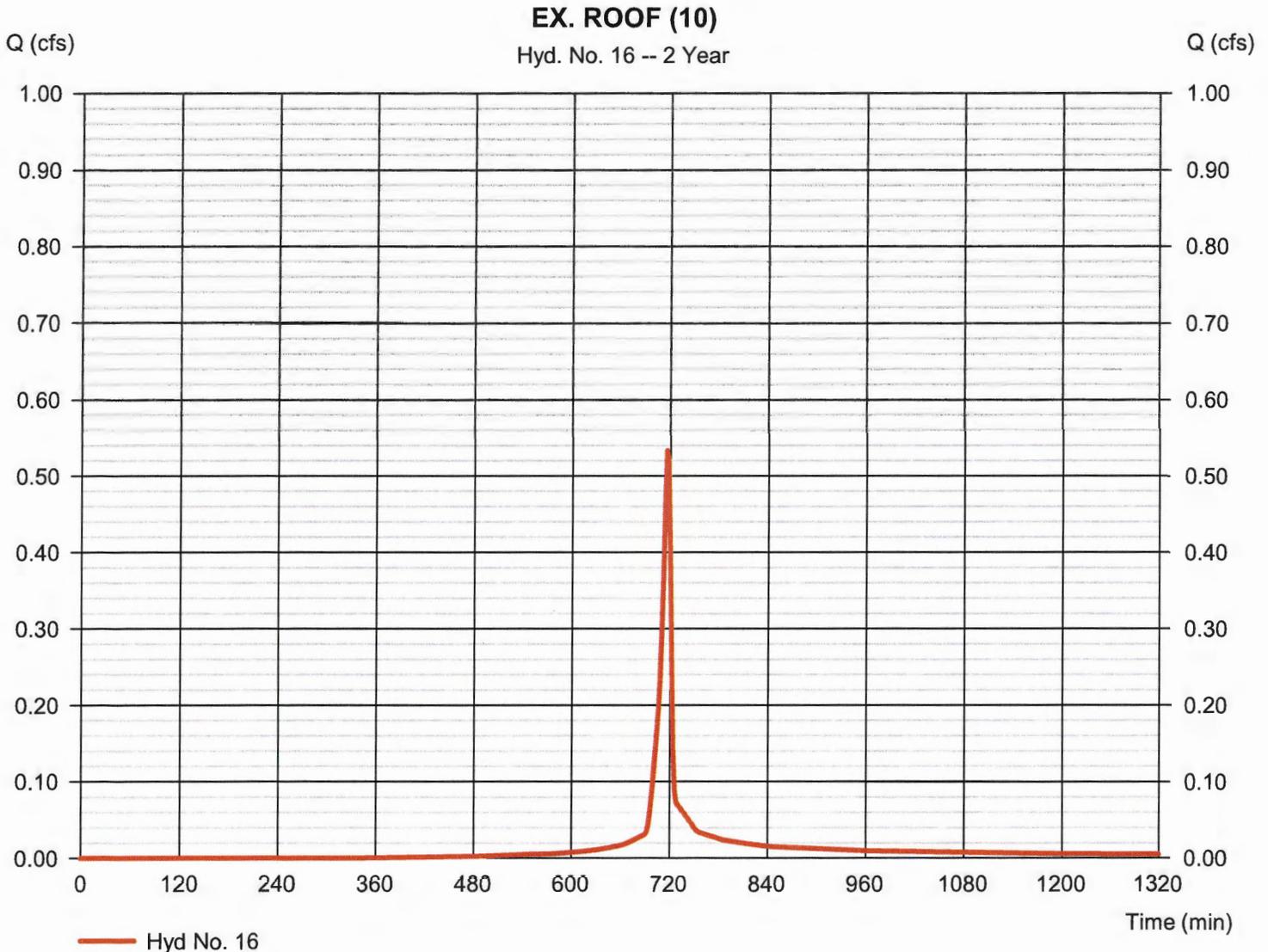
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Hyd. No. 16

EX. ROOF (10)

Hydrograph type	= SCS Runoff	Peak discharge	= 0.533 cfs
Storm frequency	= 2 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 1,107 cuft
Drainage area	= 0.150 ac	Curve number	= 90
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.20 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

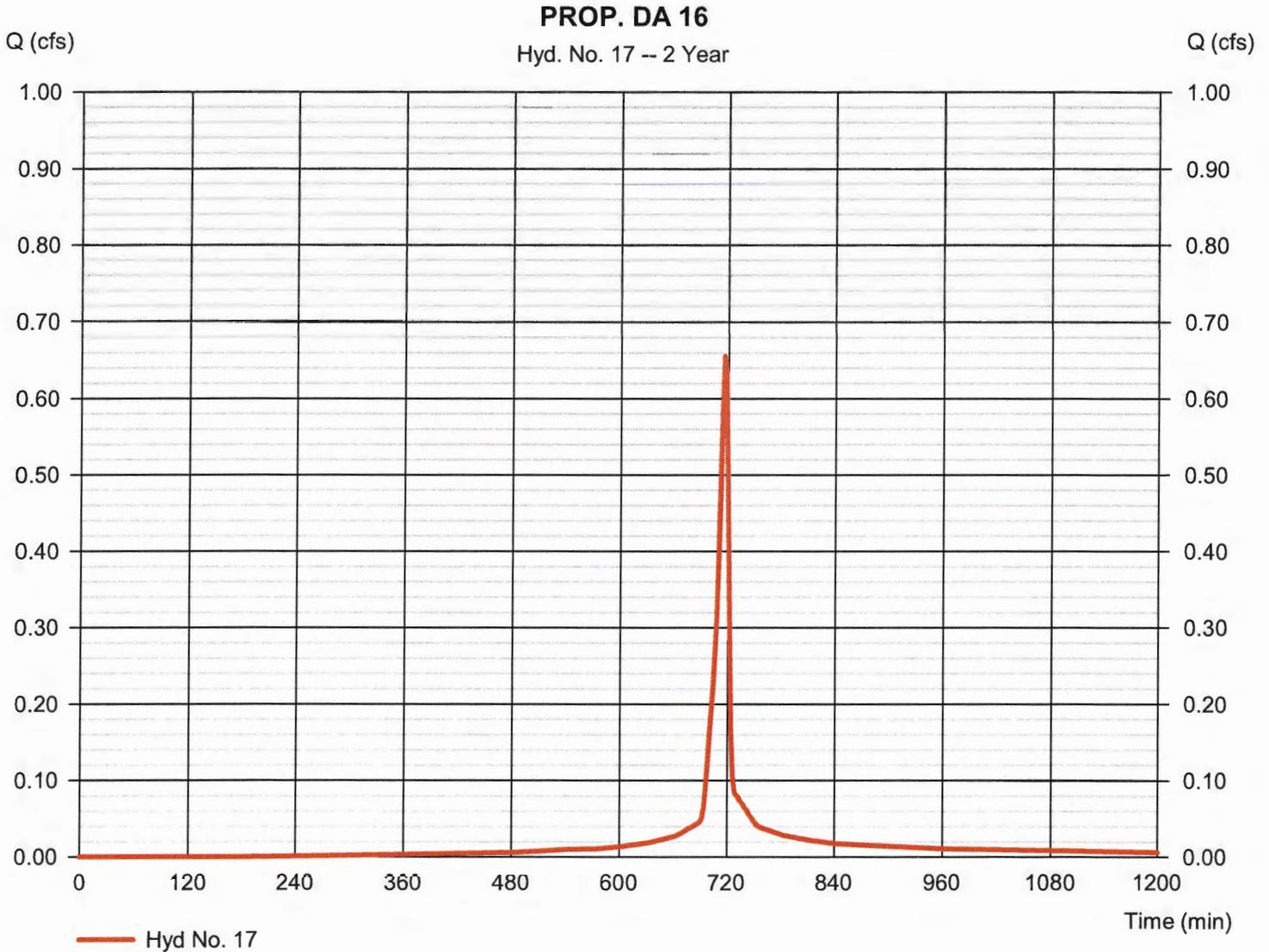
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2016 by Autodesk, Inc. v10.5

Friday, 07 / 8 / 2016

Hyd. No. 17

PROP. DA 16

Hydrograph type	= SCS Runoff	Peak discharge	= 0.656 cfs
Storm frequency	= 2 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 1,440 cuft
Drainage area	= 0.160 ac	Curve number	= 95
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.20 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

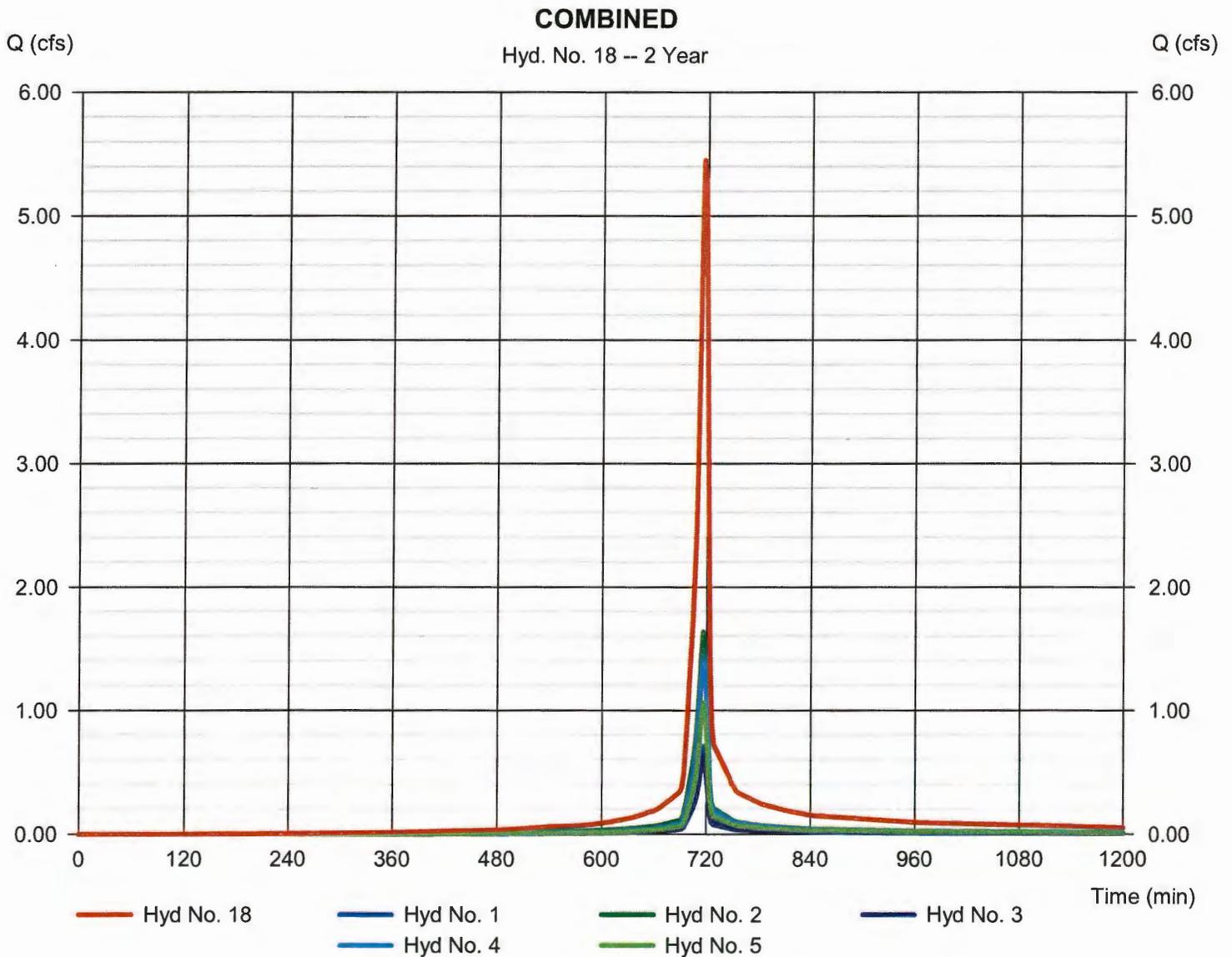
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Friday, 07 / 8 / 2016

Hyd. No. 18

COMBINED

Hydrograph type	= Combine	Peak discharge	= 5.453 cfs
Storm frequency	= 2 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 11,593 cuft
Inflow hyds.	= 1, 2, 3, 4, 5	Contrib. drain. area	= 1.450 ac



Hydrograph Report

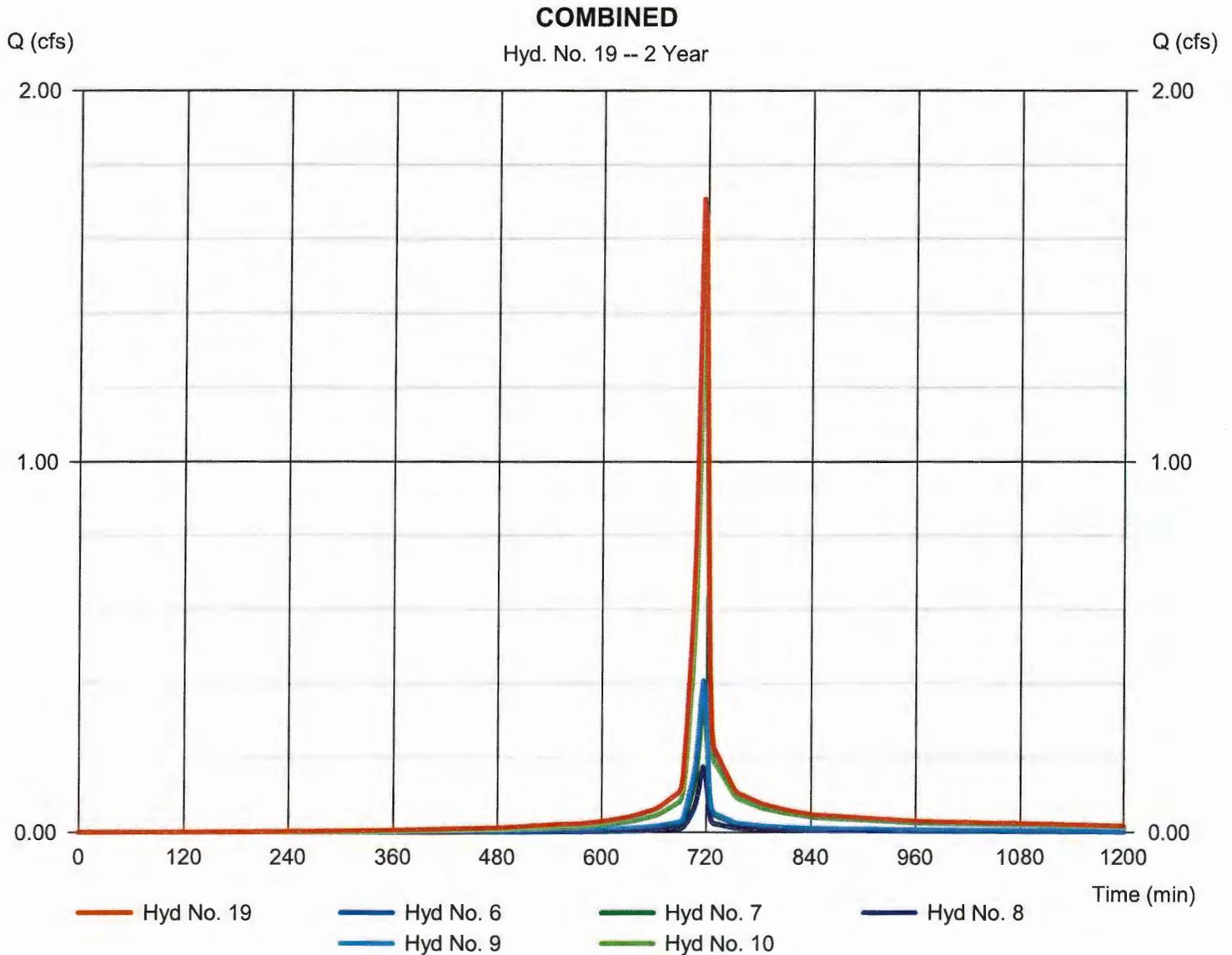
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2016 by Autodesk, Inc. v10.5

Friday, 07 / 8 / 2016

Hyd. No. 19

COMBINED

Hydrograph type	= Combine	Peak discharge	= 1.708 cfs
Storm frequency	= 2 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 3,645 cuft
Inflow hyds.	= 6, 7, 8, 9, 10	Contrib. drain. area	= 0.750 ac

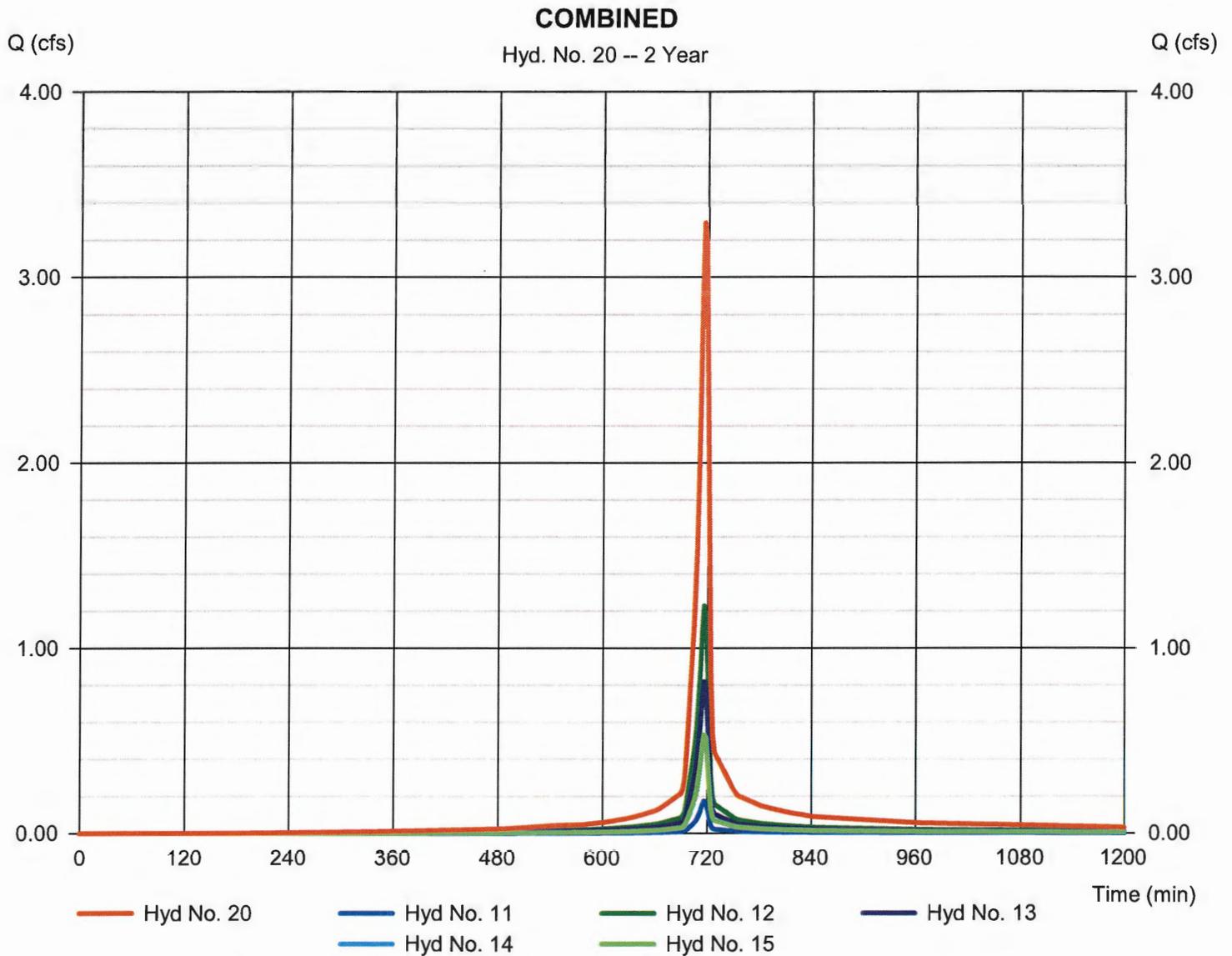


Hydrograph Report

Hyd. No. 20

COMBINED

Hydrograph type	= Combine	Peak discharge	= 3.293 cfs
Storm frequency	= 2 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 7,084 cuft
Inflow hyds.	= 11, 12, 13, 14, 15	Contrib. drain. area	= 0.850 ac



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2016 by Autodesk, Inc. v10.5

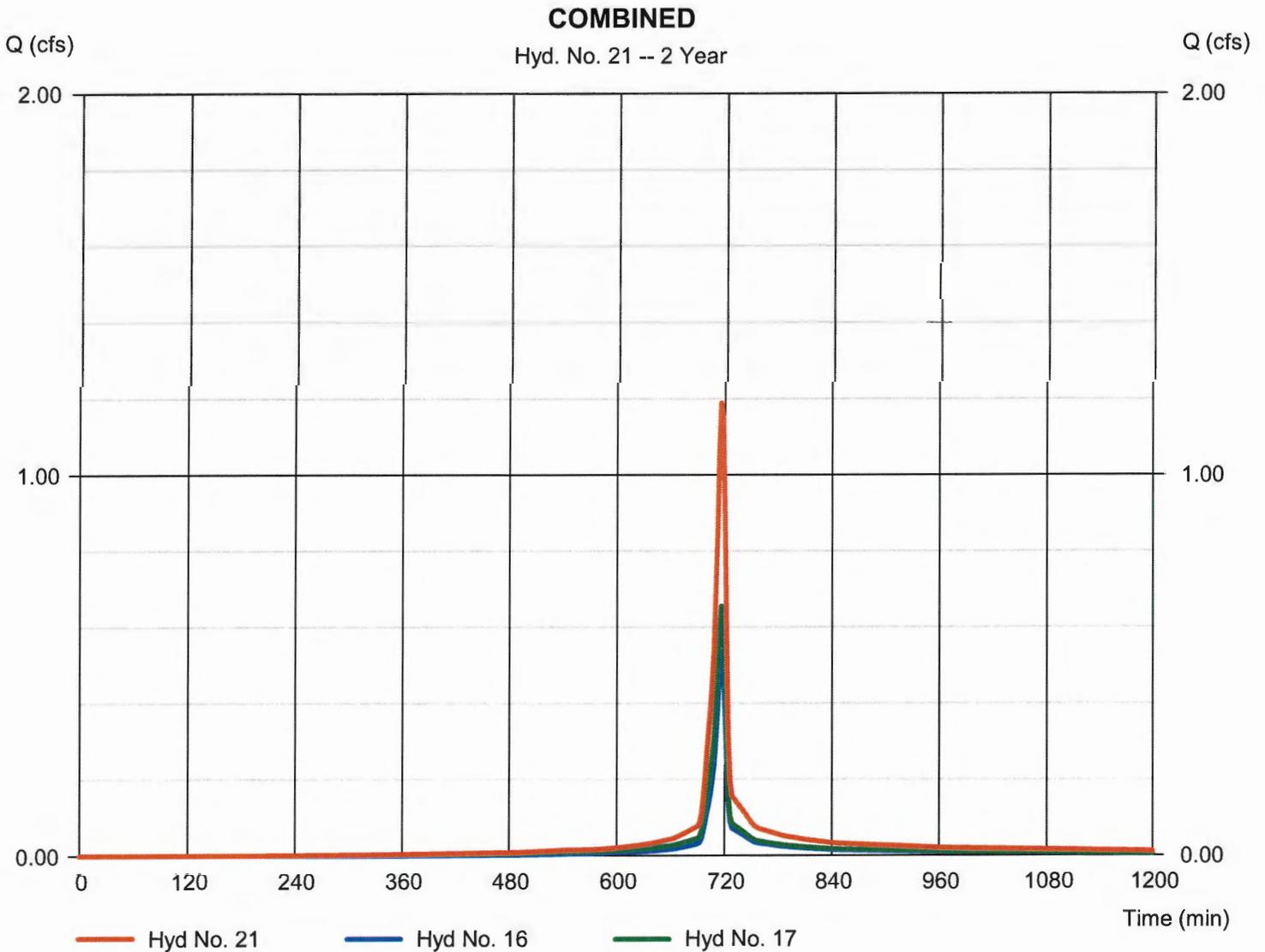
Friday, 07 / 8 / 2016

Hyd. No. 21

COMBINED

Hydrograph type = Combine
Storm frequency = 2 yrs
Time interval = 2 min
Inflow hyds. = 16, 17

Peak discharge = 1.189 cfs
Time to peak = 716 min
Hyd. volume = 2,547 cuft
Contrib. drain. area = 0.310 ac



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2016 by Autodesk, Inc. v10.5

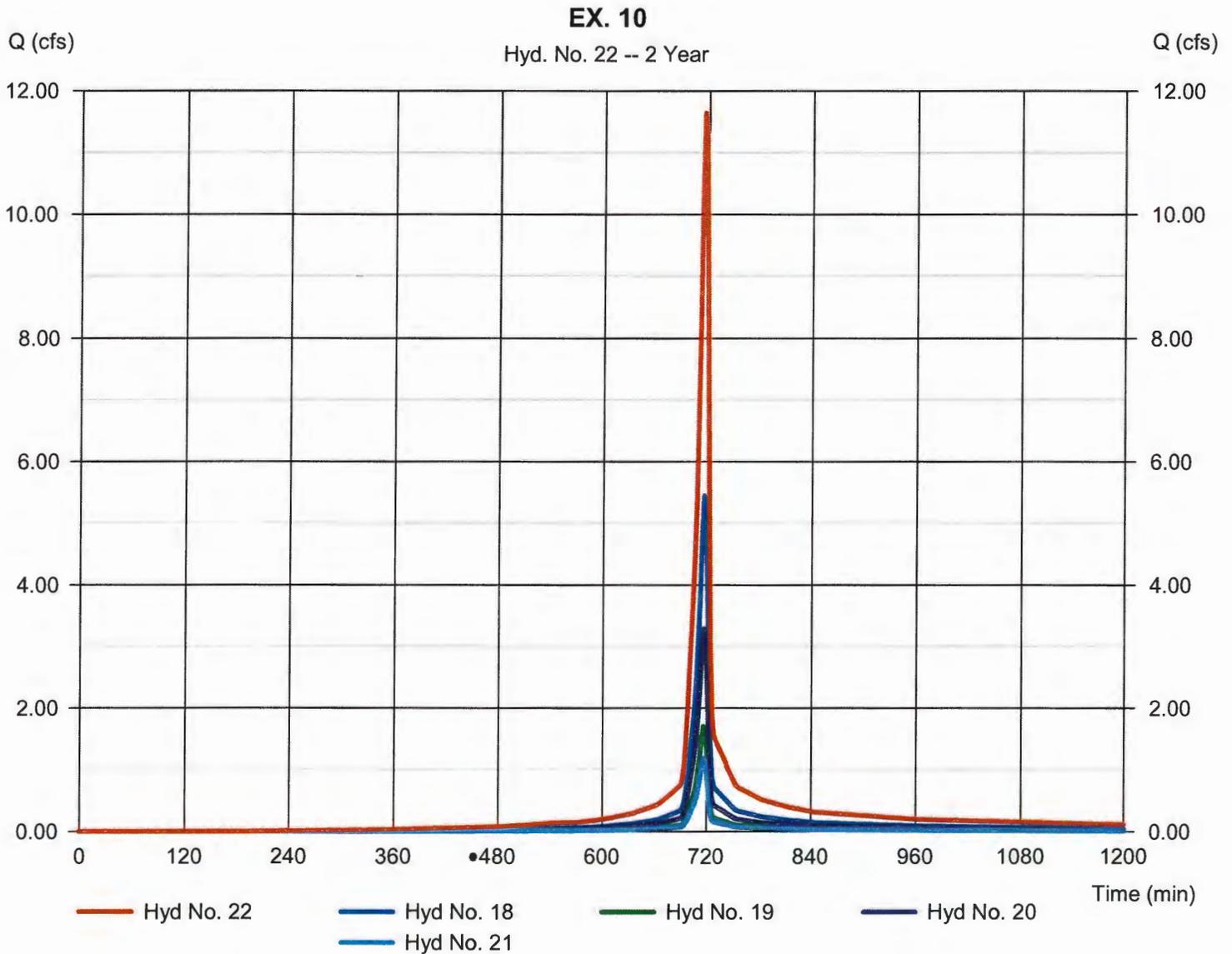
Friday, 07 / 8 / 2016

Hyd. No. 22

EX. 10

Hydrograph type = Combine
Storm frequency = 2 yrs
Time interval = 2 min
Inflow hyds. = 18, 19, 20, 21

Peak discharge = 11.64 cfs
Time to peak = 716 min
Hyd. volume = 24,868 cuft
Contrib. drain. area = 0.000 ac

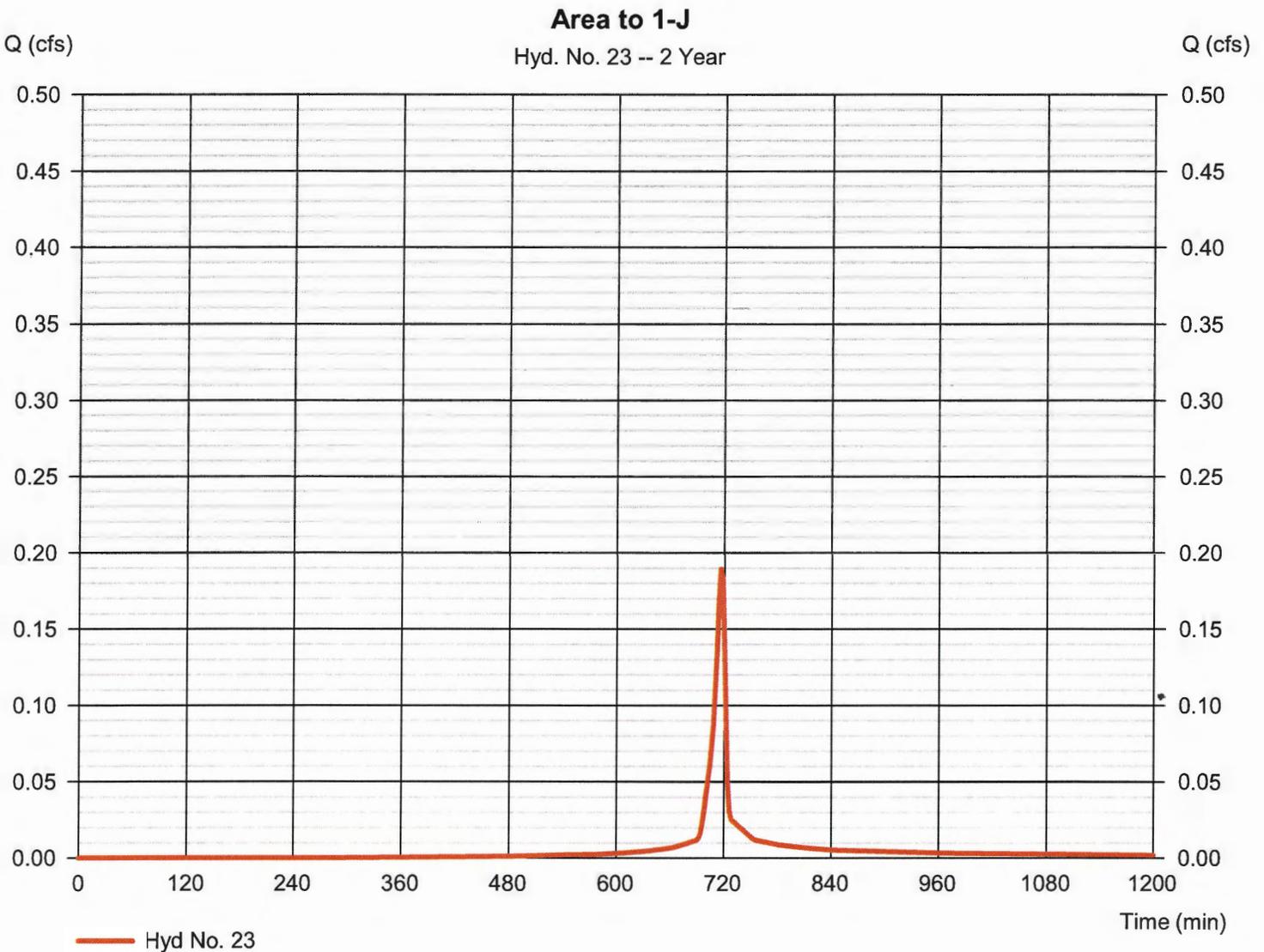


Hydrograph Report

Hyd. No. 23

Area to 1-J

Hydrograph type	= SCS Runoff	Peak discharge	= 0.189 cfs
Storm frequency	= 2 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 400 cuft
Drainage area	= 0.050 ac	Curve number	= 92
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.20 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

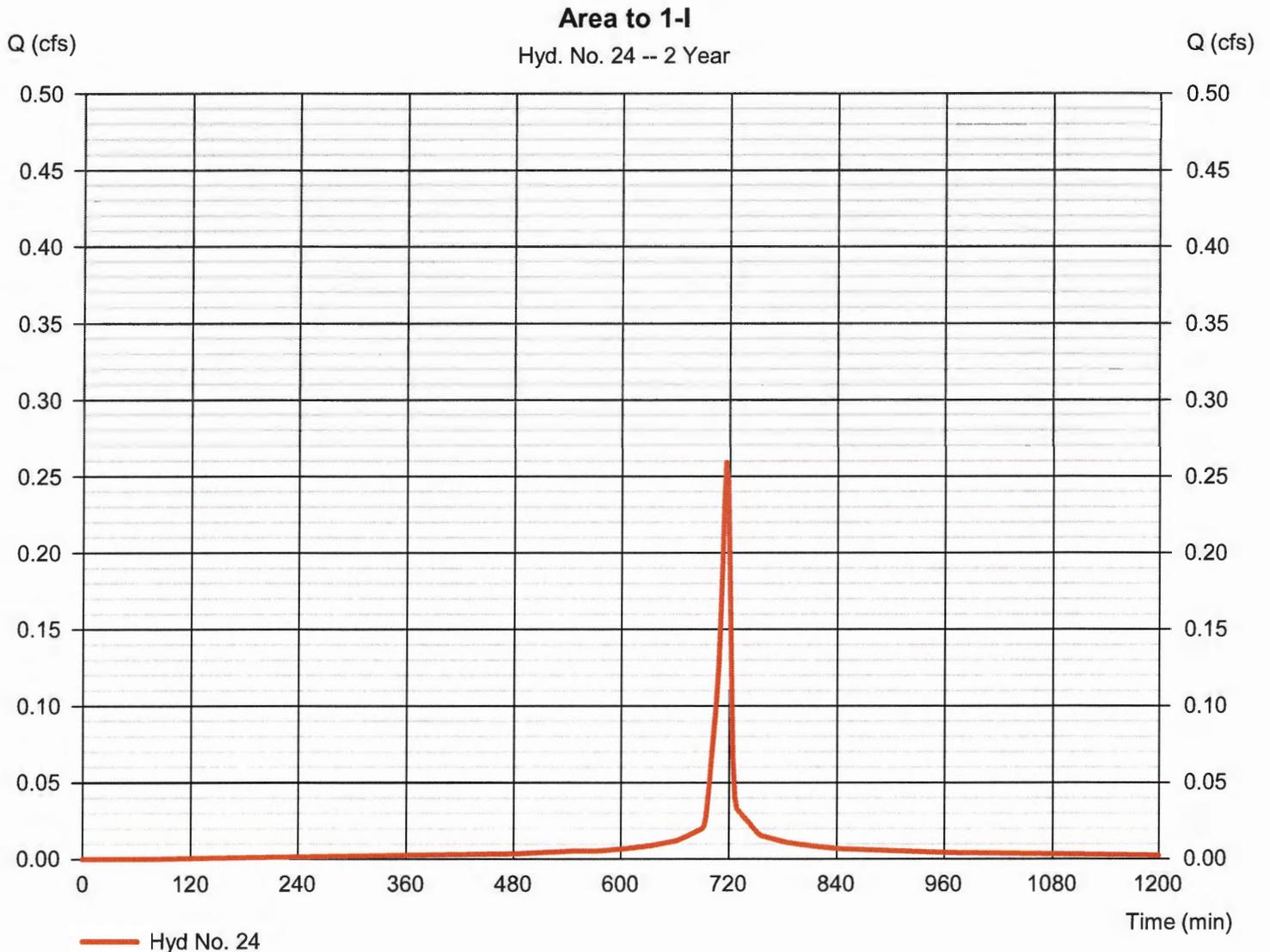


Hydrograph Report

Hyd. No. 24

Area to 1-l

Hydrograph type	= SCS Runoff	Peak discharge	= 0.259 cfs
Storm frequency	= 2 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 606 cuft
Drainage area	= 0.060 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.20 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

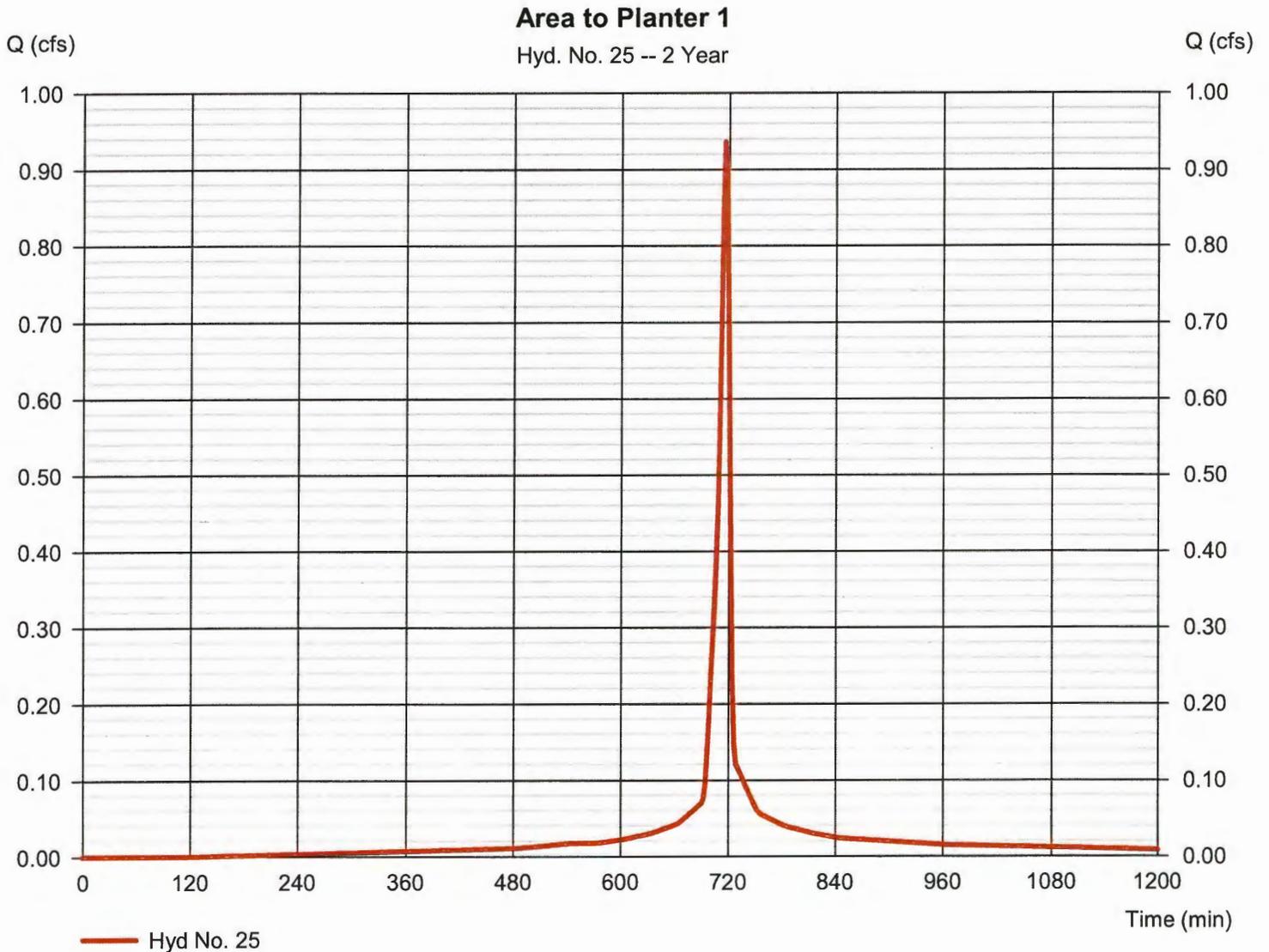


Hydrograph Report

Hyd. No. 25

Area to Planter 1

Hydrograph type	= SCS Runoff	Peak discharge	= 0.937 cfs
Storm frequency	= 2 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 2,139 cuft
Drainage area	= 0.220 ac	Curve number	= 97
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.20 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

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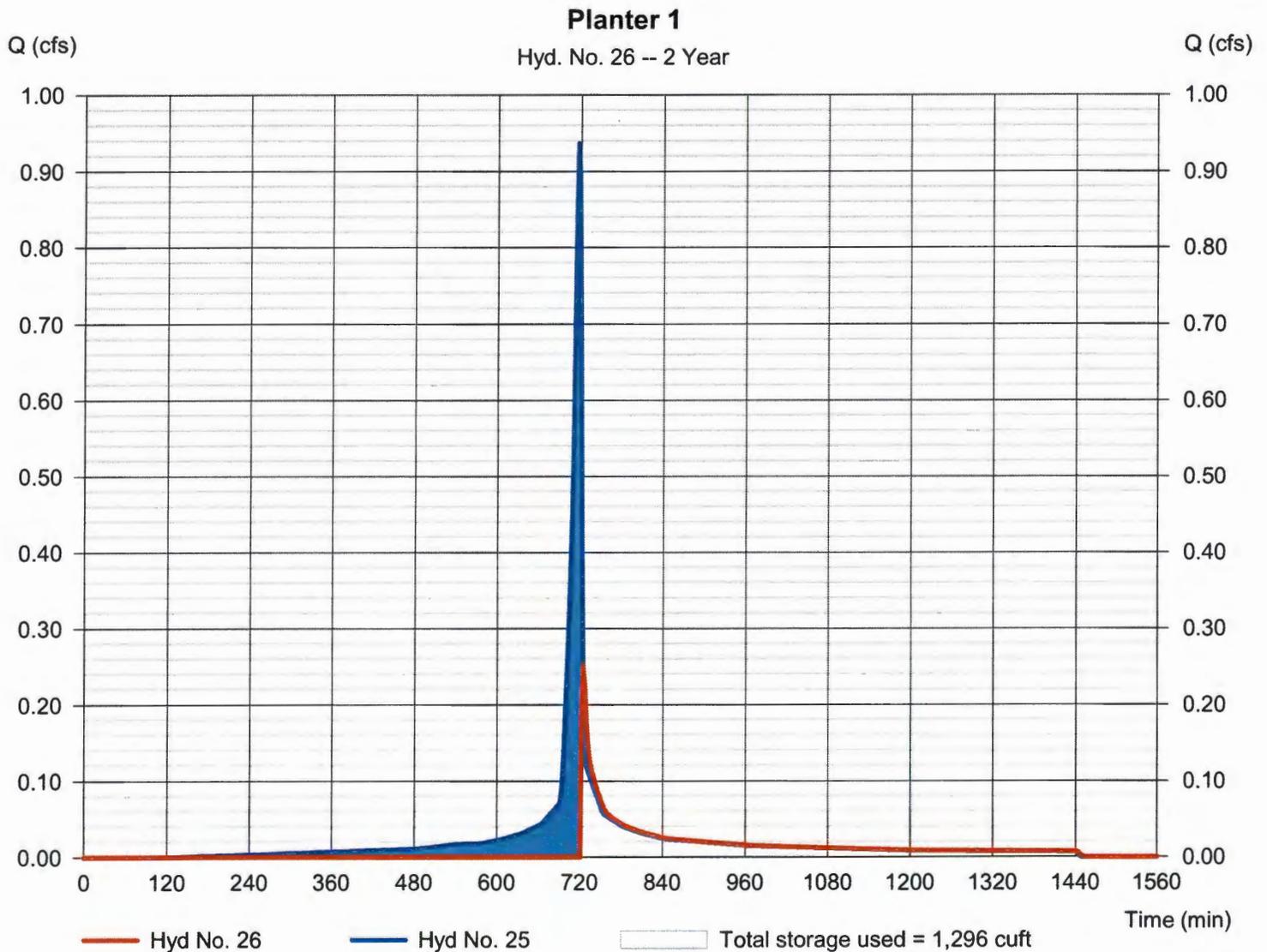
Friday, 07 / 8 / 2016

Hyd. No. 26

Planter 1

Hydrograph type	= Reservoir	Peak discharge	= 0.251 cfs
Storm frequency	= 2 yrs	Time to peak	= 724 min
Time interval	= 2 min	Hyd. volume	= 897 cuft
Inflow hyd. No.	= 25 - Area to Planter 1	Max. Elevation	= 442.58 ft
Reservoir name	= Planter 1	Max. Storage	= 1,296 cuft

Storage Indication method used.

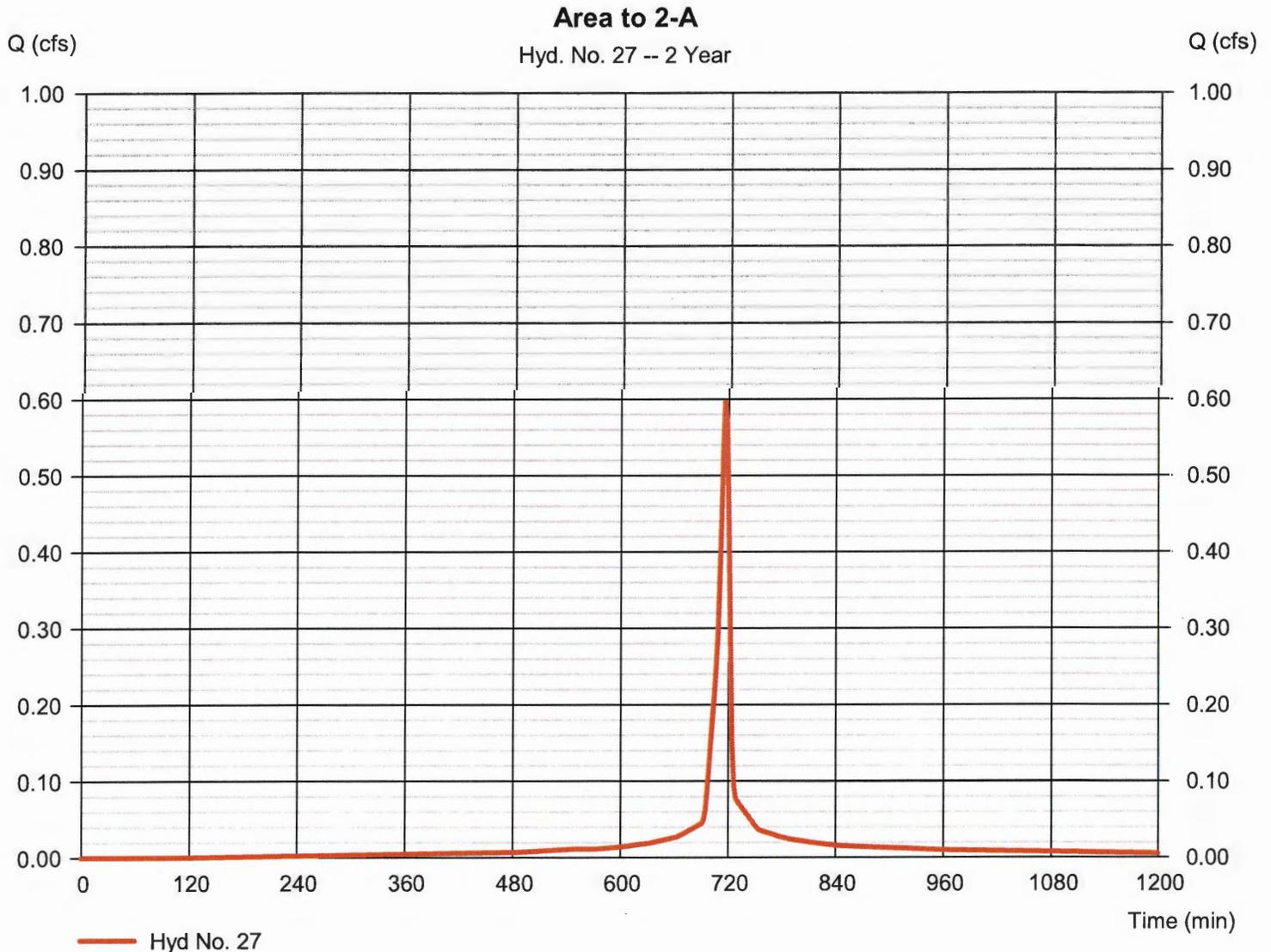


Hydrograph Report

Hyd. No. 27

Area to 2-A

Hydrograph type	= SCS Runoff	Peak discharge	= 0.596 cfs
Storm frequency	= 2 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 1,361 cuft
Drainage area	= 0.140 ac	Curve number	= 97
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.20 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

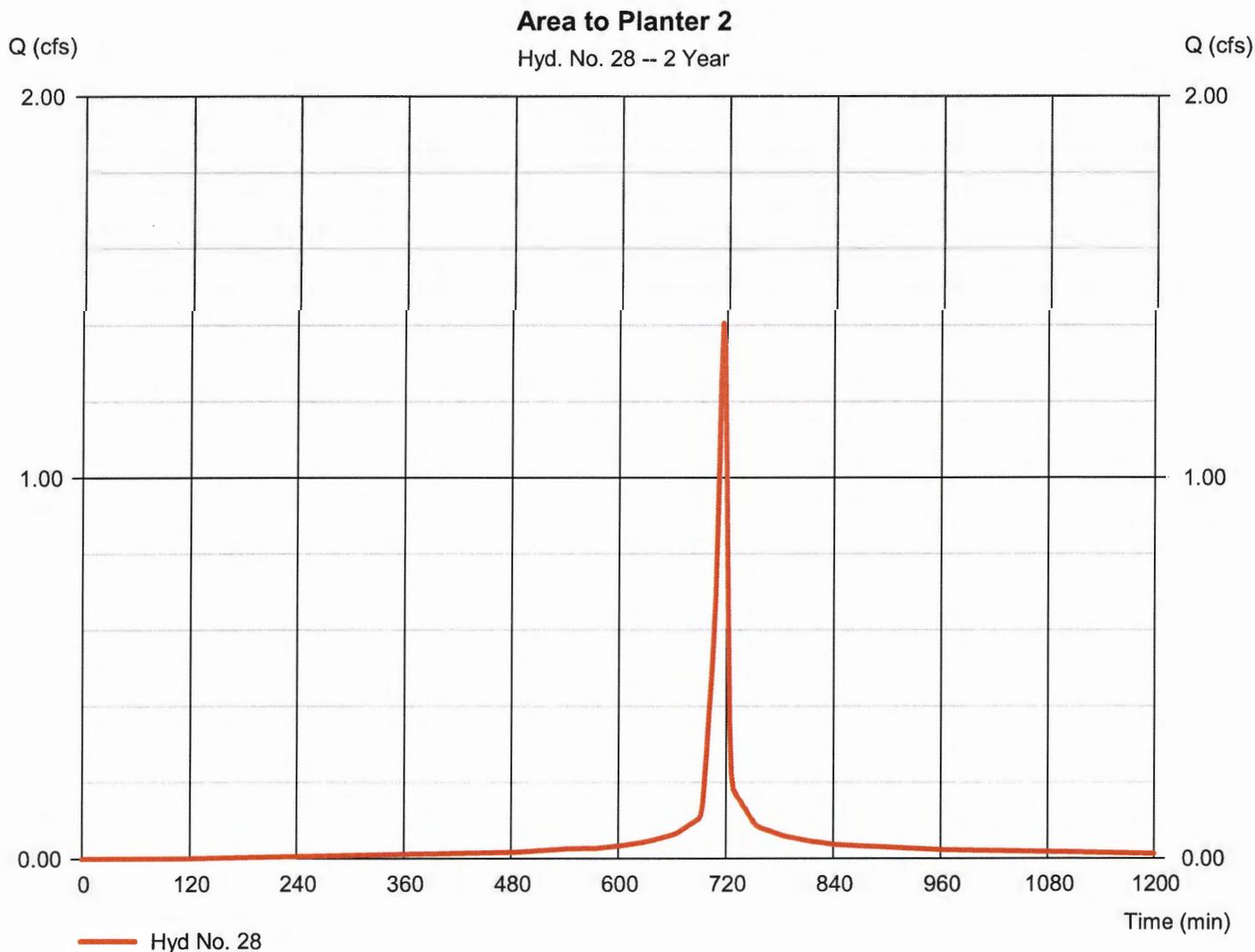


Hydrograph Report

Hyd. No. 28

Area to Planter 2

Hydrograph type	= SCS Runoff	Peak discharge	= 1.406 cfs
Storm frequency	= 2 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 3,208 cuft
Drainage area	= 0.330 ac	Curve number	= 97
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.20 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

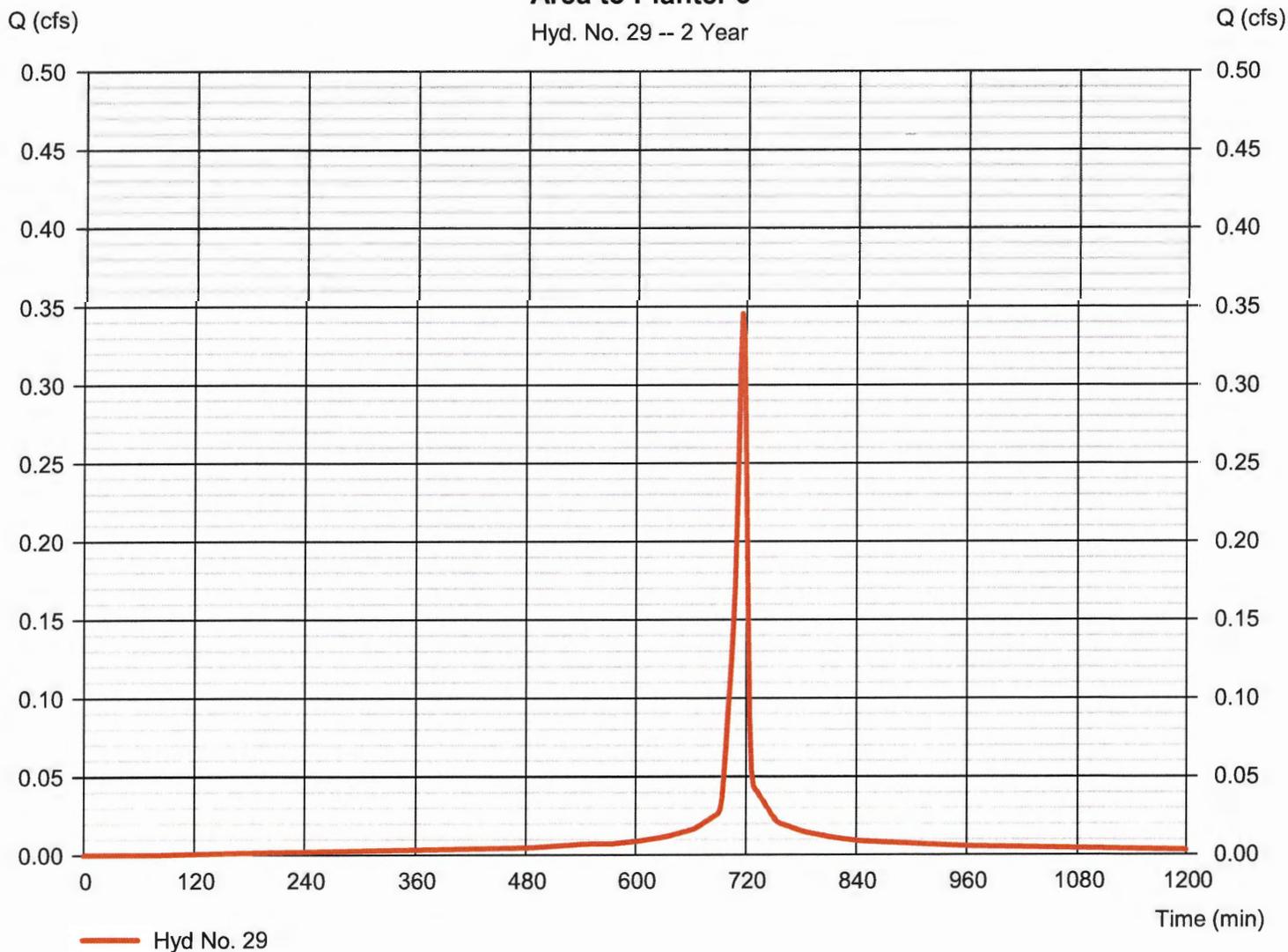
Hyd. No. 29

Area to Planter 3

Hydrograph type	= SCS Runoff	Peak discharge	= 0.345 cfs
Storm frequency	= 2 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 808 cuft
Drainage area	= 0.080 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.20 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

Area to Planter 3

Hyd. No. 29 -- 2 Year



Hydrograph Report

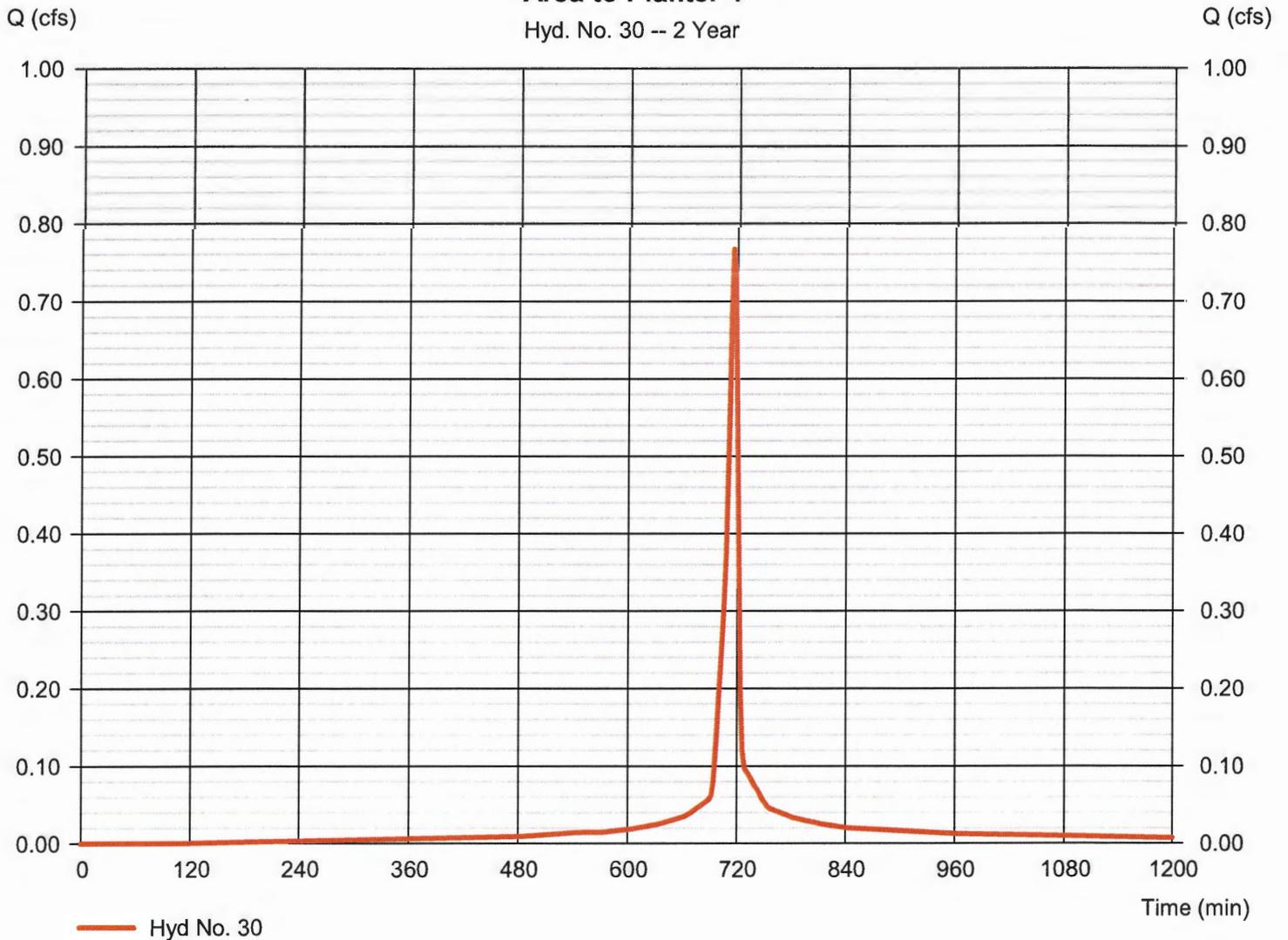
Hyd. No. 30

Area to Planter 4

Hydrograph type	= SCS Runoff	Peak discharge	= 0.767 cfs
Storm frequency	= 2 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 1,750 cuft
Drainage area	= 0.180 ac	Curve number	= 97
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.20 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

Area to Planter 4

Hyd. No. 30 -- 2 Year

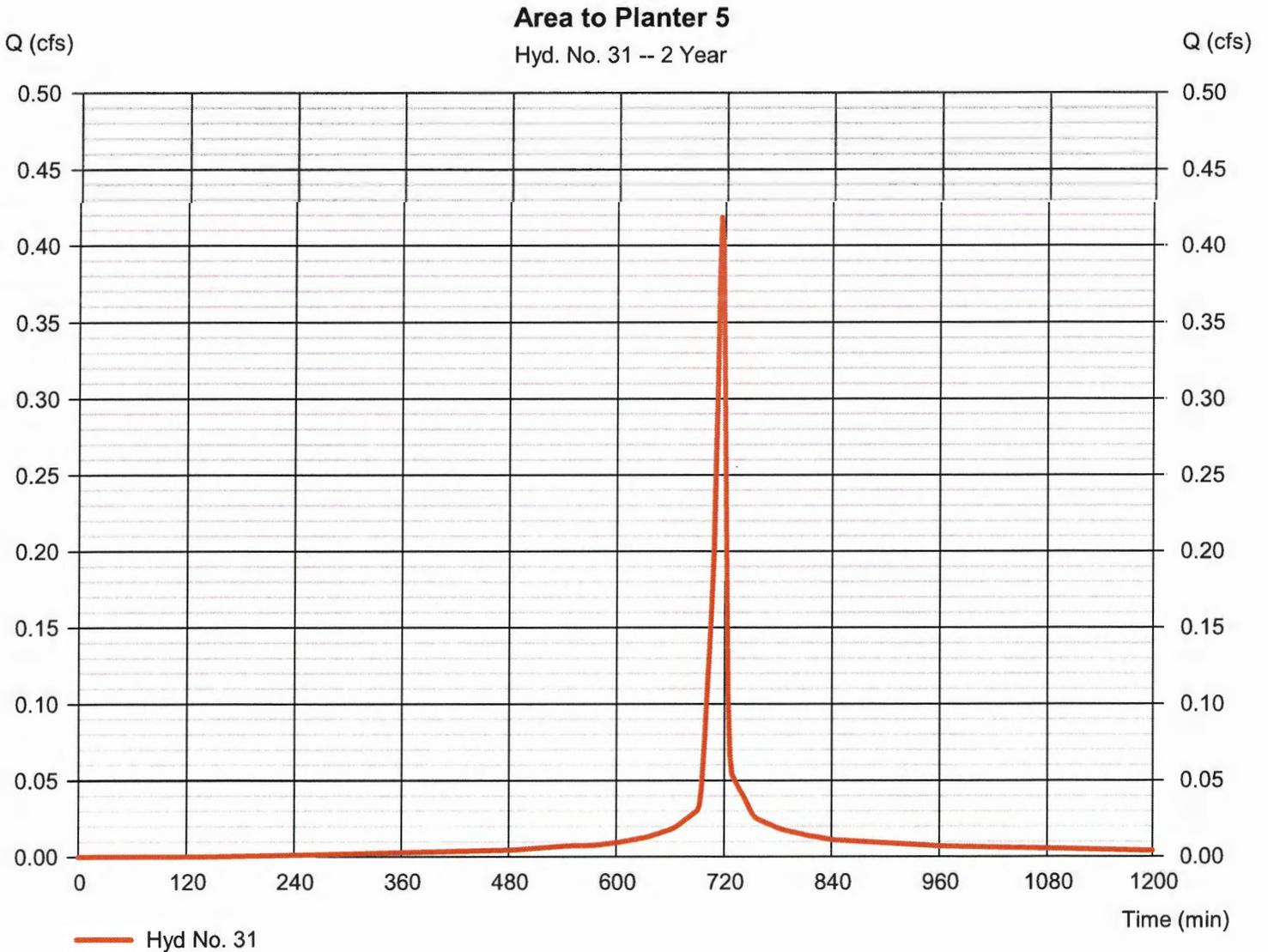


Hydrograph Report

Hyd. No. 31

Area to Planter 5

Hydrograph type	= SCS Runoff	Peak discharge	= 0.418 cfs
Storm frequency	= 2 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 936 cuft
Drainage area	= 0.100 ac	Curve number	= 96
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.20 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

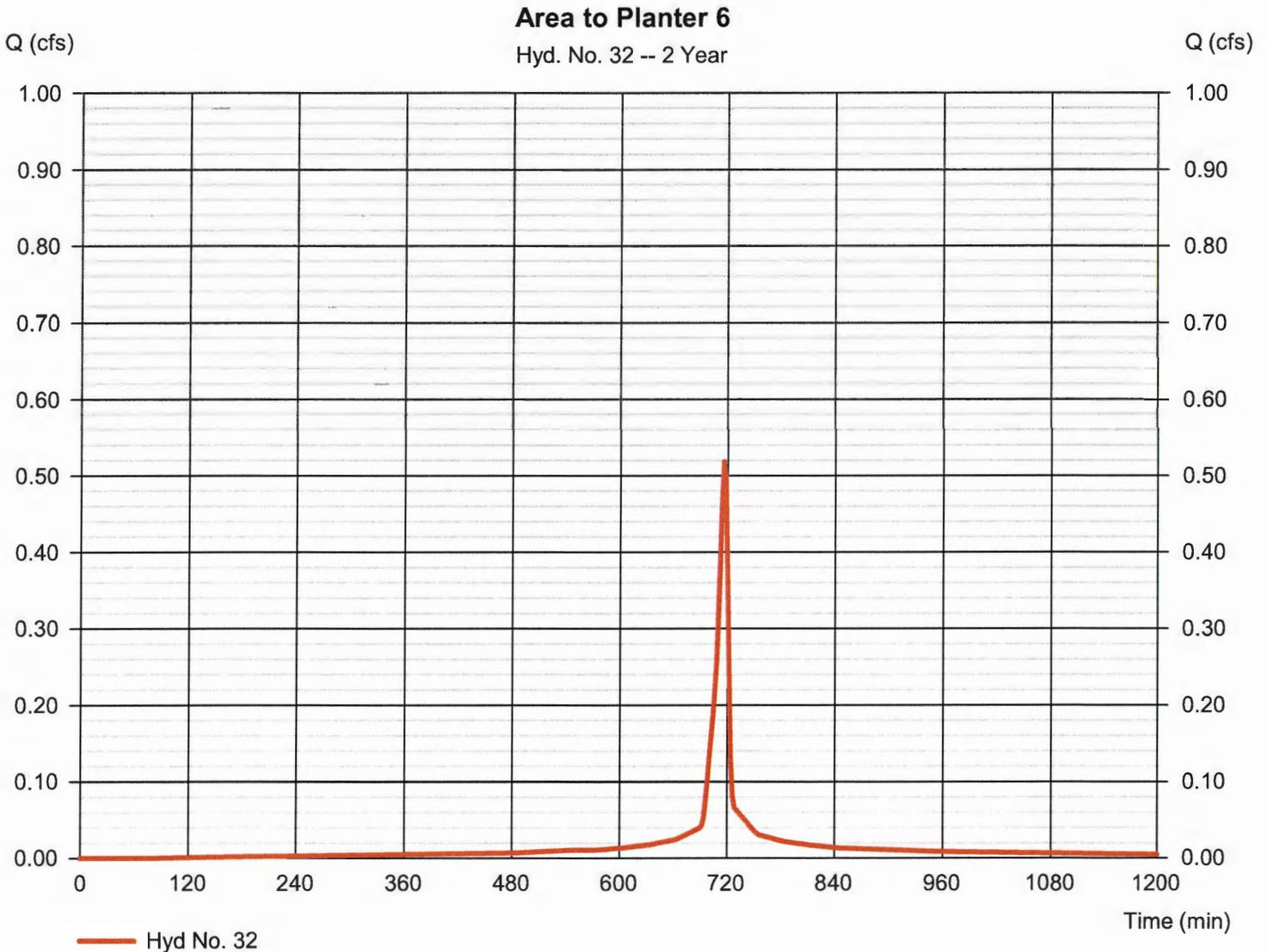
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2016 by Autodesk, Inc. v10.5

Friday, 07 / 8 / 2016

Hyd. No. 32

Area to Planter 6

Hydrograph type	= SCS Runoff	Peak discharge	= 0.518 cfs
Storm frequency	= 2 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 1,212 cuft
Drainage area	= 0.120 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.20 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

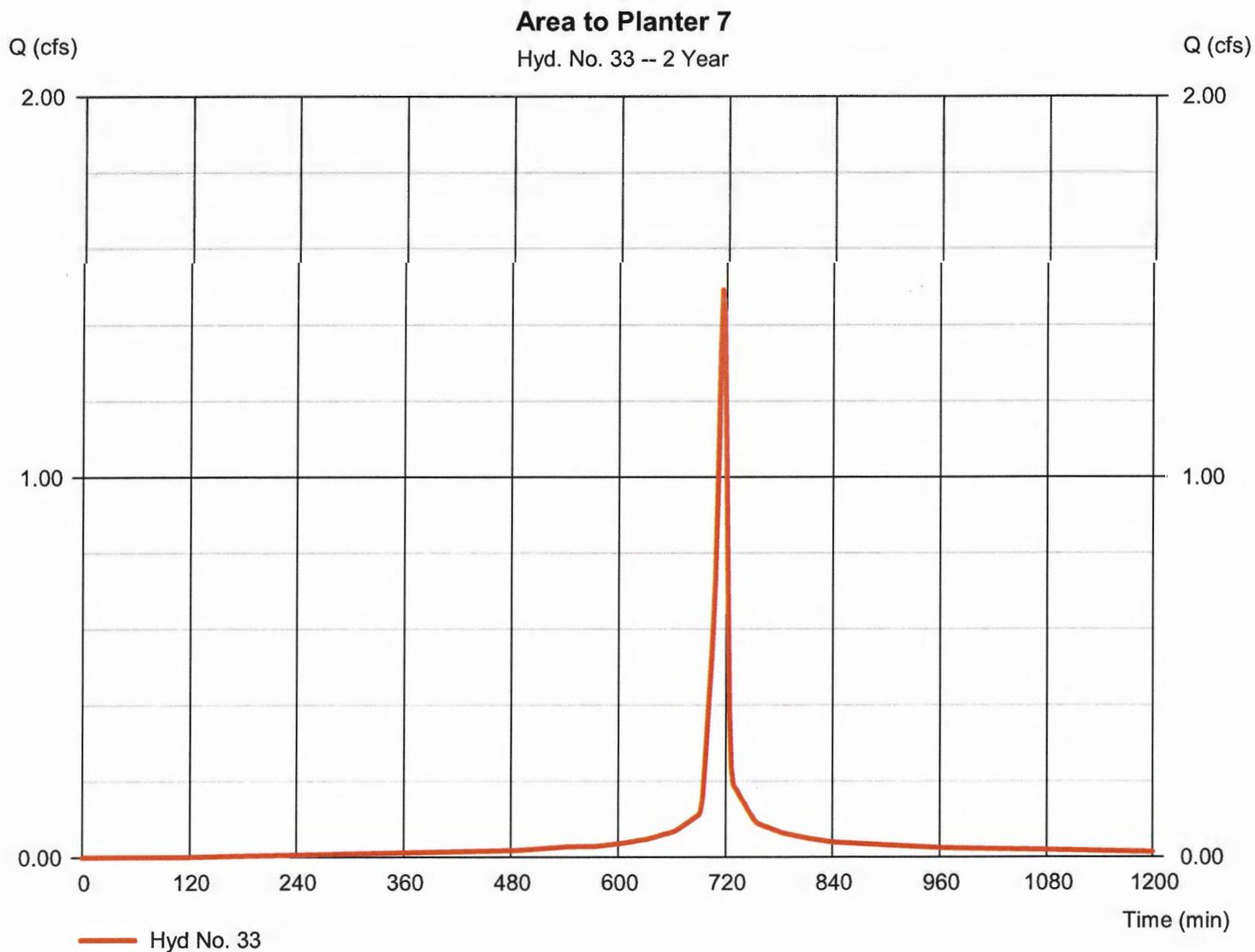


Hydrograph Report

Hyd. No. 33

Area to Planter 7

Hydrograph type	= SCS Runoff	Peak discharge	= 1.491 cfs
Storm frequency	= 2 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 3,402 cuft
Drainage area	= 0.350 ac	Curve number	= 97
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.20 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

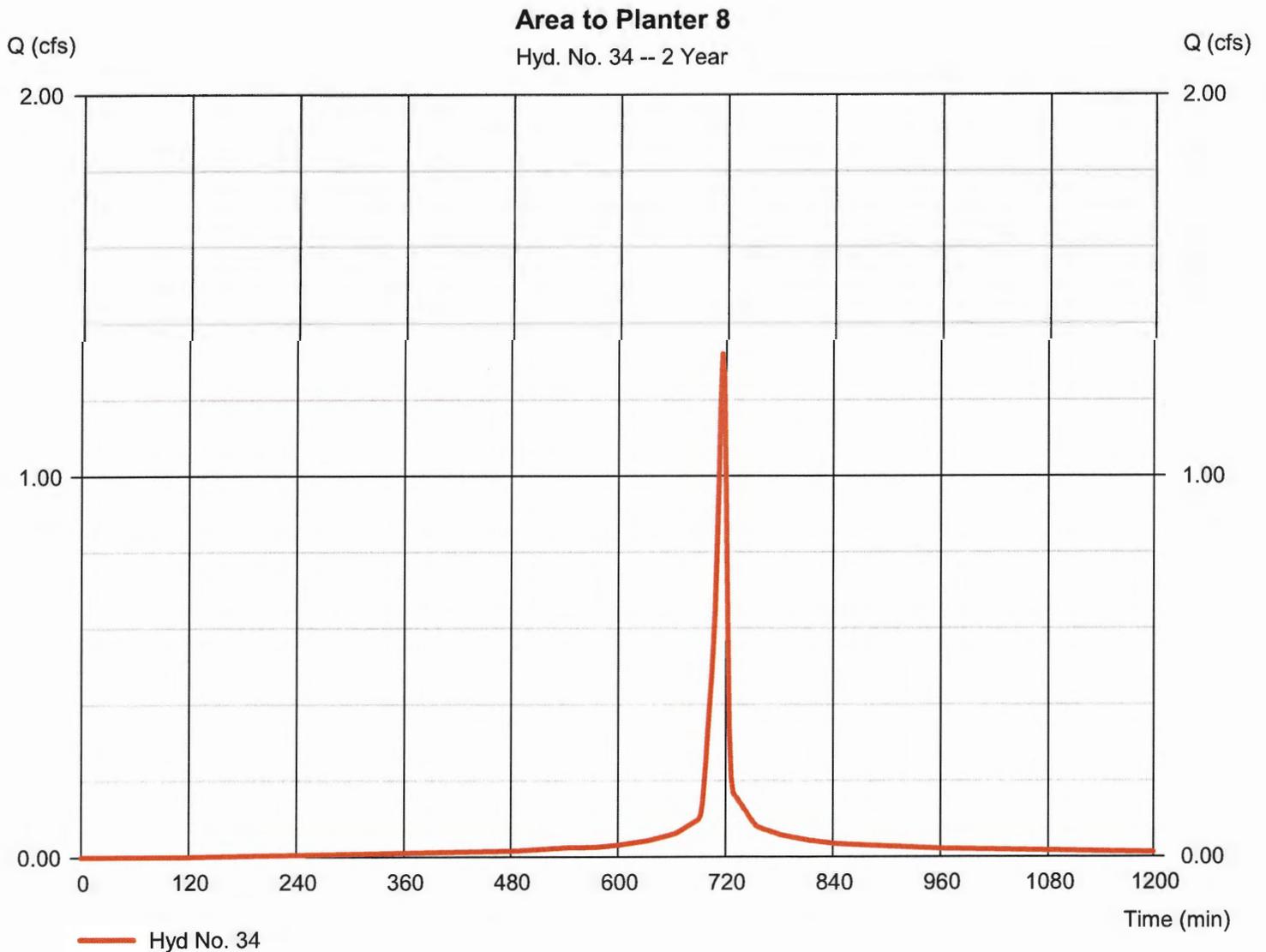
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2016 by Autodesk, Inc. v10.5

Friday, 07 / 8 / 2016

Hyd. No. 34

Area to Planter 8

Hydrograph type	= SCS Runoff	Peak discharge	= 1.320 cfs
Storm frequency	= 2 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 3,014 cuft
Drainage area	= 0.310 ac	Curve number	= 97
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.20 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



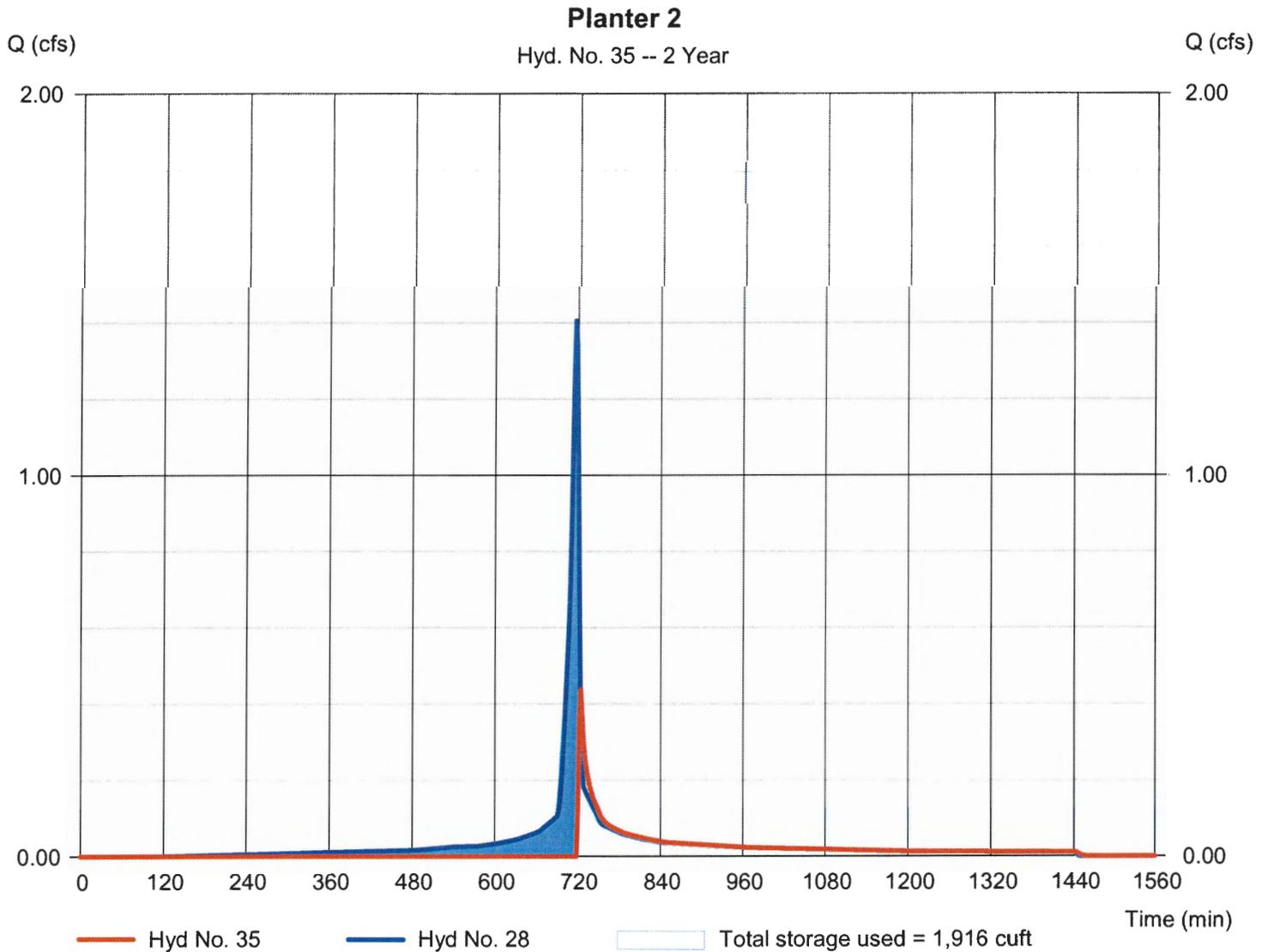
Hydrograph Report

Hyd. No. 35

Planter 2

Hydrograph type	= Reservoir	Peak discharge	= 0.438 cfs
Storm frequency	= 2 yrs	Time to peak	= 724 min
Time interval	= 2 min	Hyd. volume	= 1,416 cuft
Inflow hyd. No.	= 28 - Area to Planter 2	Max. Elevation	= 442.62 ft
Reservoir name	= Planter 2	Max. Storage	= 1,916 cuft

Storage Indication method used.



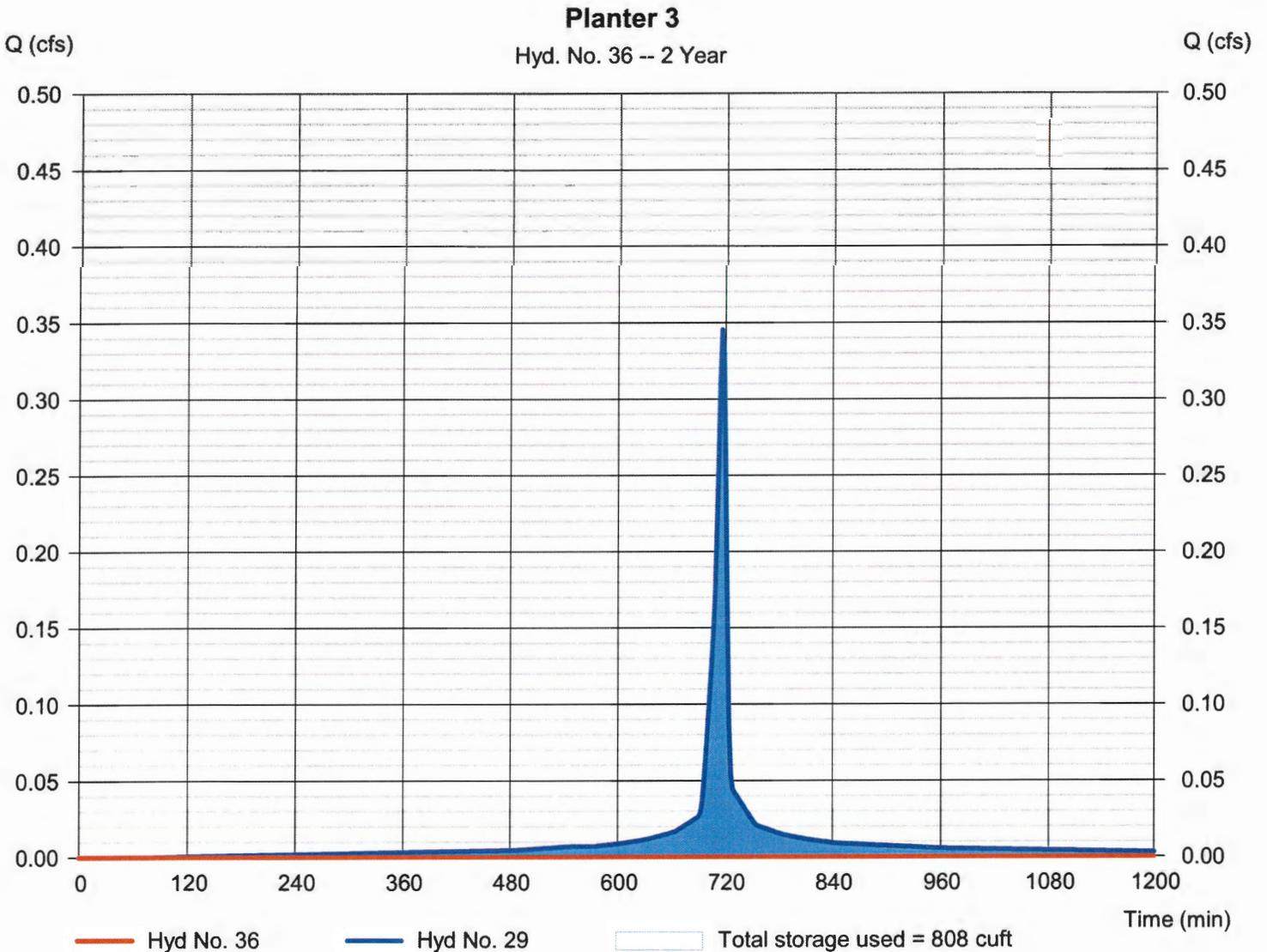
Hydrograph Report

Hyd. No. 36

Planter 3

Hydrograph type	= Reservoir	Peak discharge	= 0.000 cfs
Storm frequency	= 2 yrs	Time to peak	= n/a
Time interval	= 2 min	Hyd. volume	= 0 cuft
Inflow hyd. No.	= 29 - Area to Planter 3	Max. Elevation	= 442.49 ft
Reservoir name	= Planter 3	Max. Storage	= 808 cuft

Storage Indication method used.



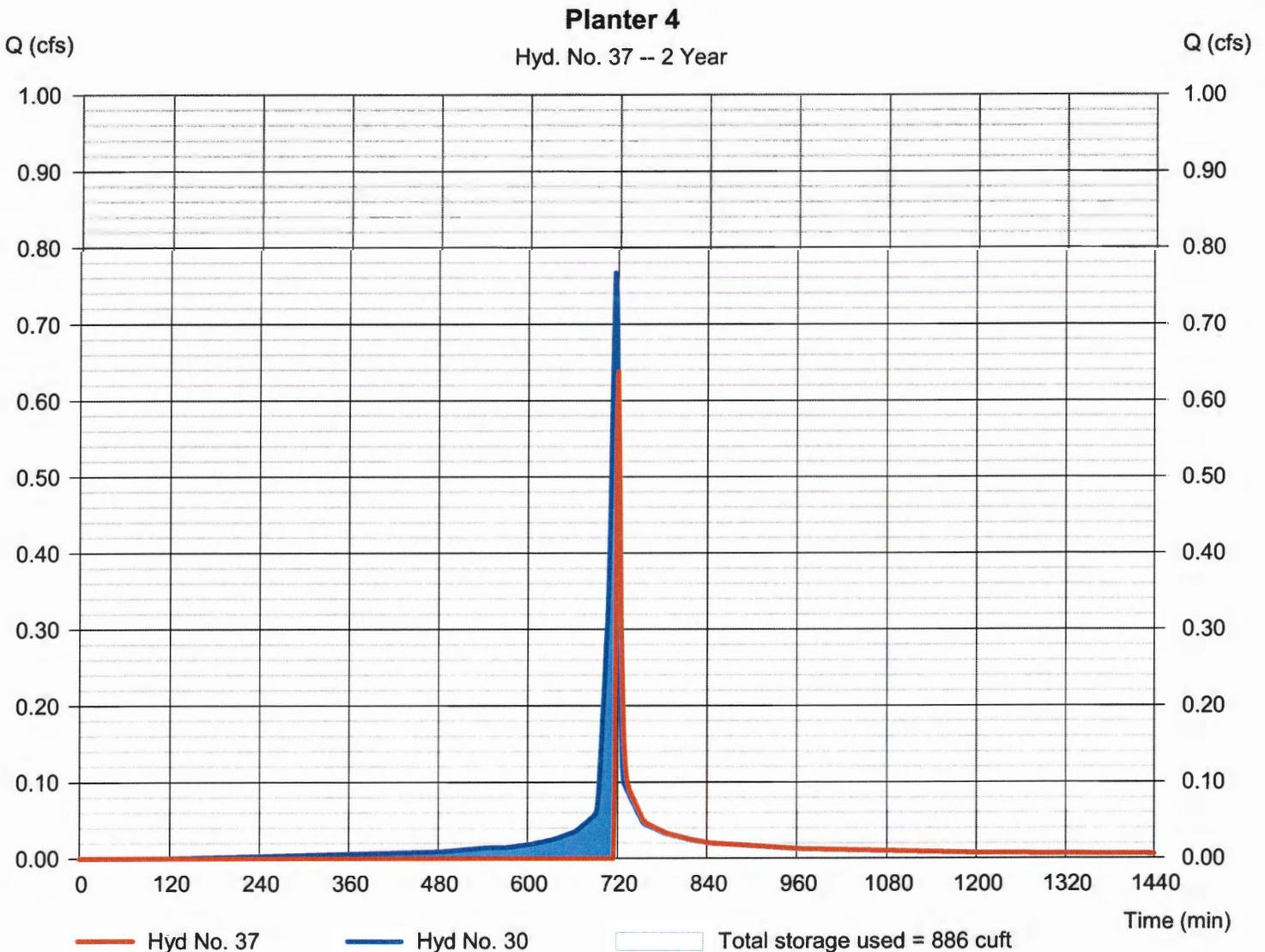
Hydrograph Report

Hyd. No. 37

Planter 4

Hydrograph type	= Reservoir	Peak discharge	= 0.638 cfs
Storm frequency	= 2 yrs	Time to peak	= 720 min
Time interval	= 2 min	Hyd. volume	= 936 cuft
Inflow hyd. No.	= 30 - Area to Planter 4	Max. Elevation	= 442.66 ft
Reservoir name	= Planter 4	Max. Storage	= 886 cuft

Storage Indication method used.



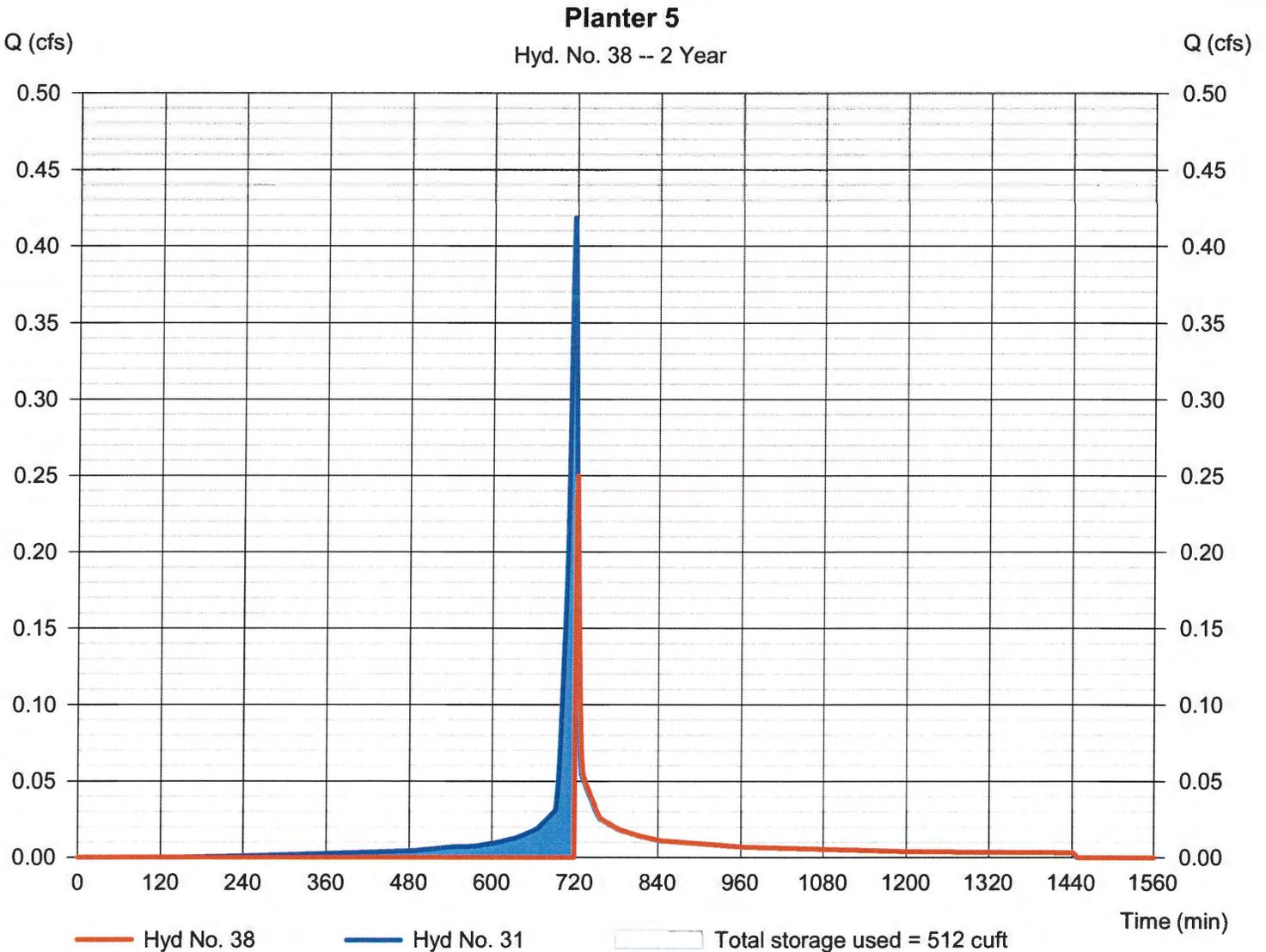
Hydrograph Report

Hyd. No. 38

Planter 5

Hydrograph type	= Reservoir	Peak discharge	= 0.250 cfs
Storm frequency	= 2 yrs	Time to peak	= 722 min
Time interval	= 2 min	Hyd. volume	= 446 cuft
Inflow hyd. No.	= 31 - Area to Planter 5	Max. Elevation	= 442.59 ft
Reservoir name	= Planter 5	Max. Storage	= 512 cuft

Storage Indication method used.



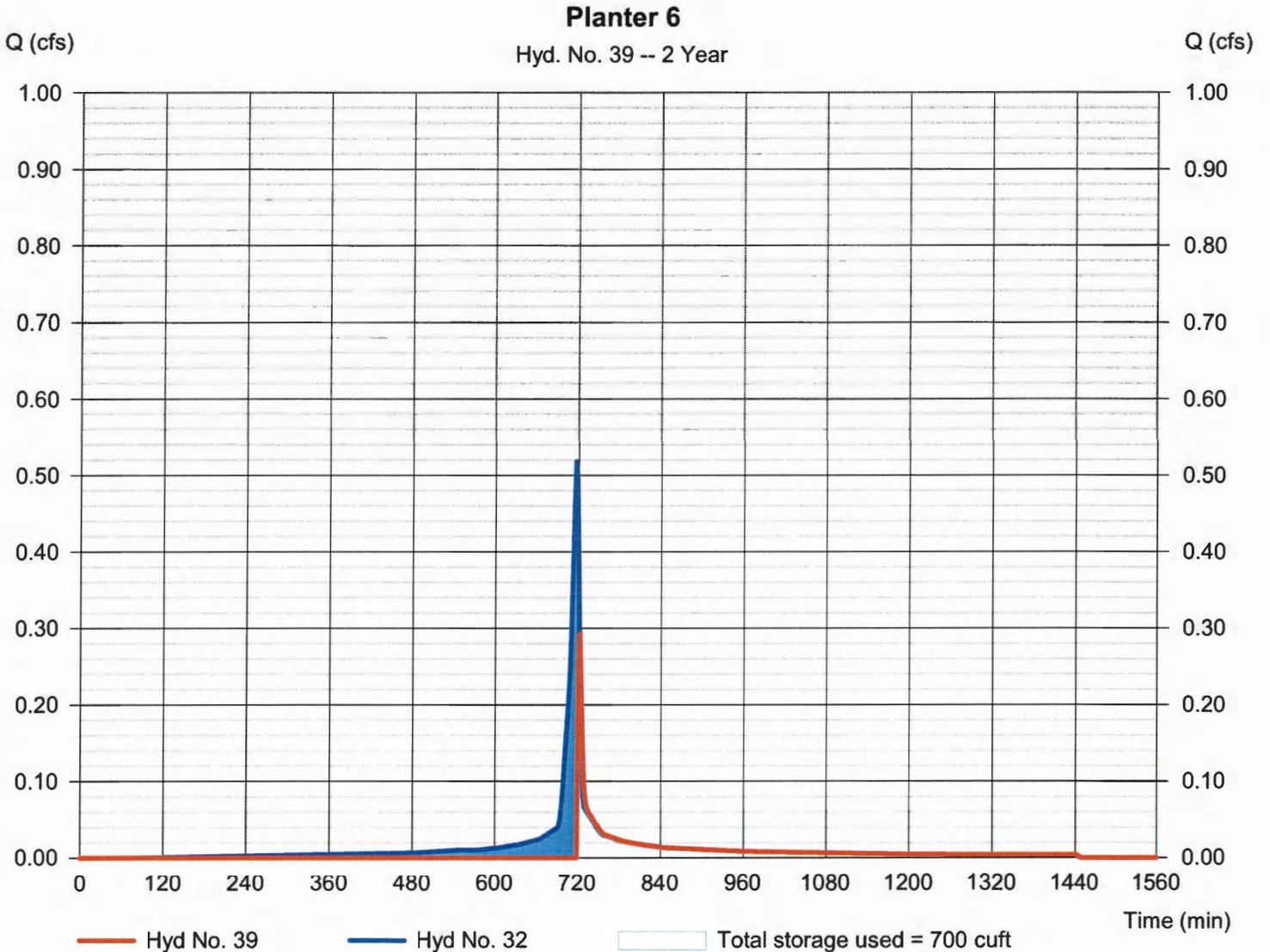
Hydrograph Report

Hyd. No. 39

Planter 6

Hydrograph type	= Reservoir	Peak discharge	= 0.293 cfs
Storm frequency	= 2 yrs	Time to peak	= 722 min
Time interval	= 2 min	Hyd. volume	= 547 cuft
Inflow hyd. No.	= 32 - Area to Planter 6	Max. Elevation	= 442.60 ft
Reservoir name	= Planter 6	Max. Storage	= 700 cuft

Storage Indication method used.



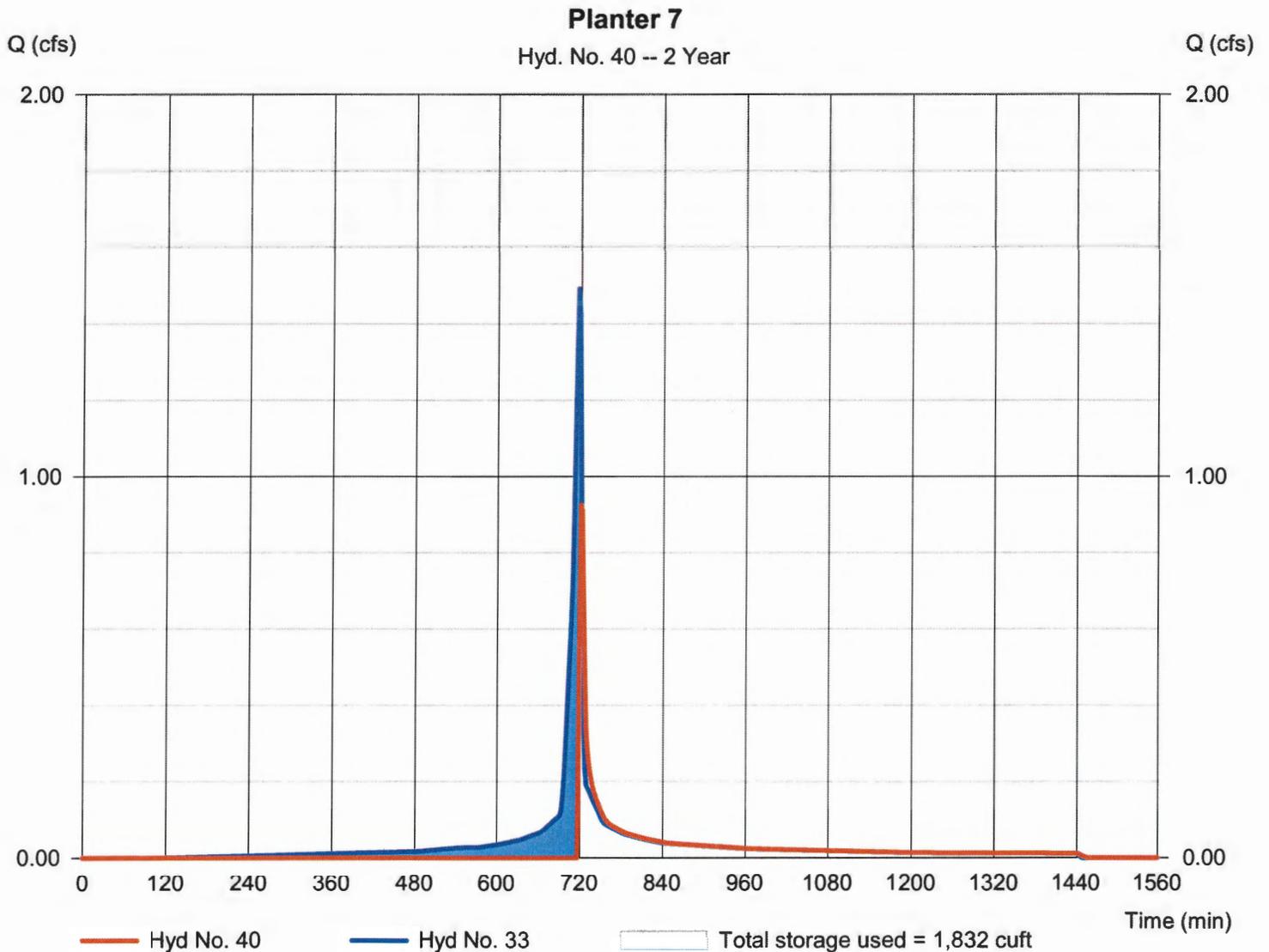
Hydrograph Report

Hyd. No. 40

Planter 7

Hydrograph type	= Reservoir	Peak discharge	= 0.926 cfs
Storm frequency	= 2 yrs	Time to peak	= 720 min
Time interval	= 2 min	Hyd. volume	= 1,761 cuft
Inflow hyd. No.	= 33 - Area to Planter 7	Max. Elevation	= 442.71 ft
Reservoir name	= Planter 7	Max. Storage	= 1,832 cuft

Storage Indication method used.



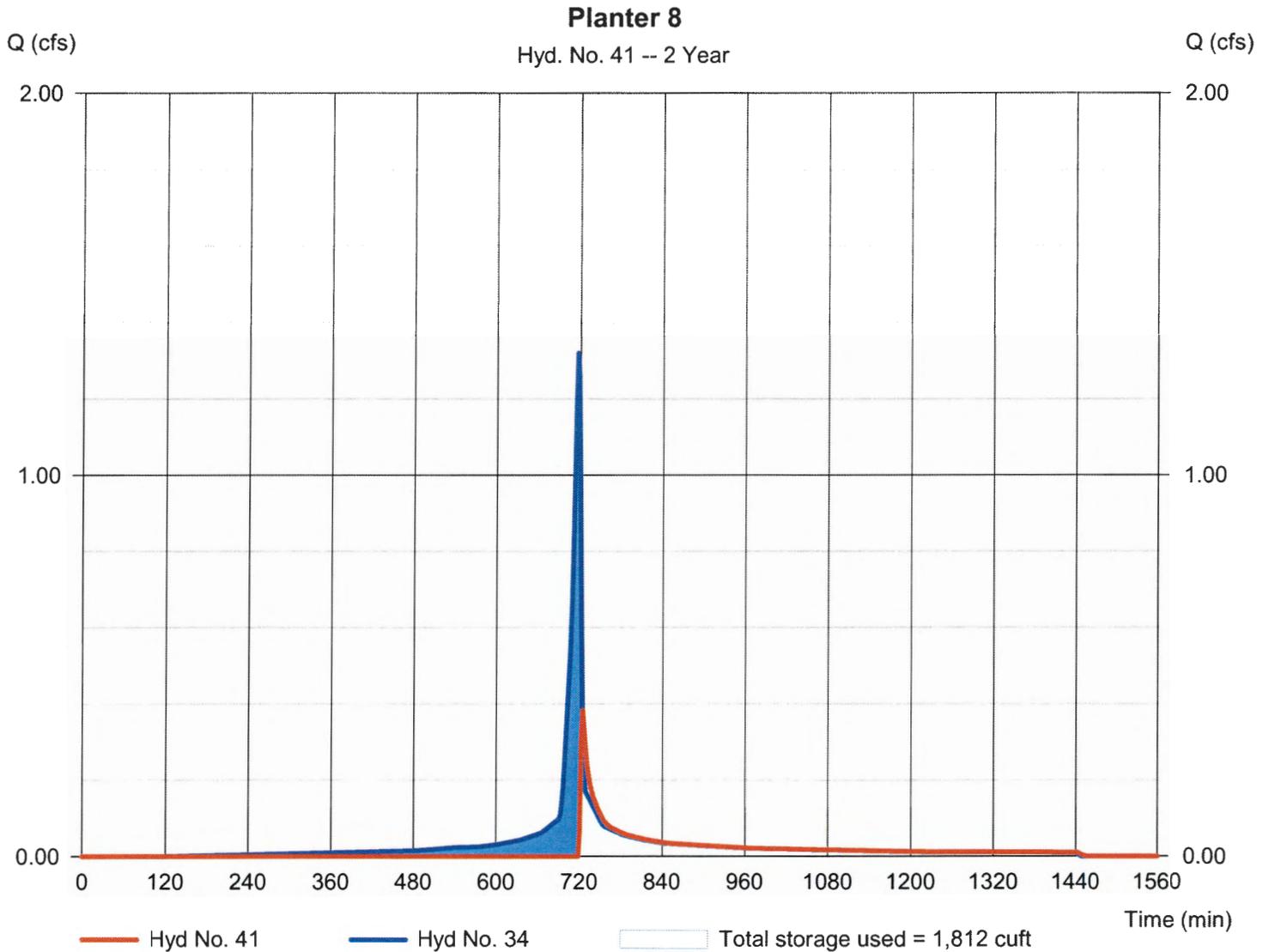
Hydrograph Report

Hyd. No. 41

Planter 8

Hydrograph type	= Reservoir	Peak discharge	= 0.383 cfs
Storm frequency	= 2 yrs	Time to peak	= 724 min
Time interval	= 2 min	Hyd. volume	= 1,310 cuft
Inflow hyd. No.	= 34 - Area to Planter 8	Max. Elevation	= 442.61 ft
Reservoir name	= Planter 8	Max. Storage	= 1,812 cuft

Storage Indication method used.



Hydrograph Report

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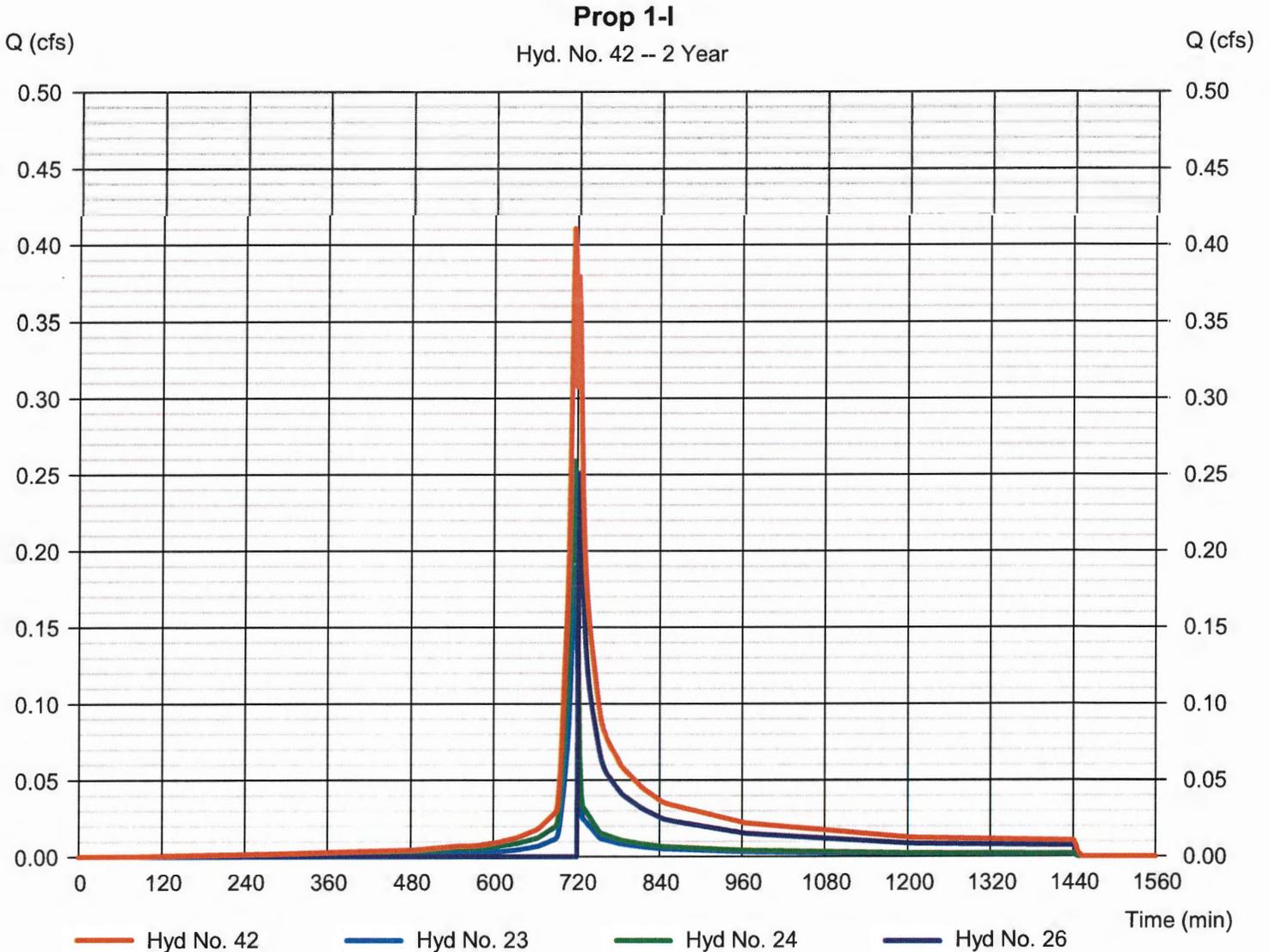
Friday, 07 / 8 / 2016

Hyd. No. 42

Prop 1-I

Hydrograph type = Combine
Storm frequency = 2 yrs
Time interval = 2 min
Inflow hyds. = 23, 24, 26

Peak discharge = 0.411 cfs
Time to peak = 716 min
Hyd. volume = 1,823 cuft
Contrib. drain. area = 0.110 ac



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2016 by Autodesk, Inc. v10.5

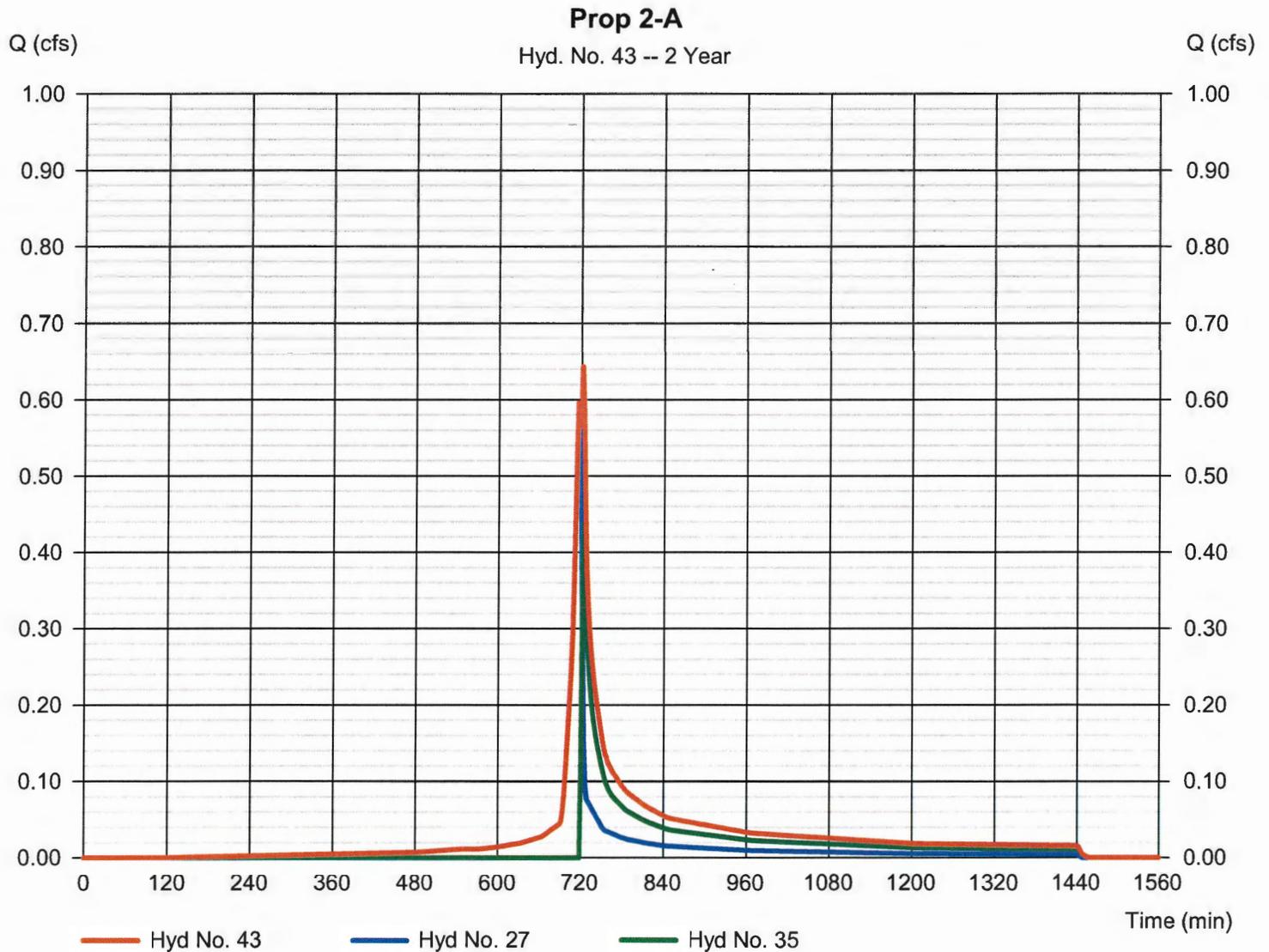
Friday, 07 / 8 / 2016

Hyd. No. 43

Prop 2-A

Hydrograph type = Combine
Storm frequency = 2 yrs
Time interval = 2 min
Inflow hyds. = 27, 35

Peak discharge = 0.643 cfs
Time to peak = 722 min
Hyd. volume = 2,777 cuft
Contrib. drain. area = 0.140 ac



Hydrograph Report

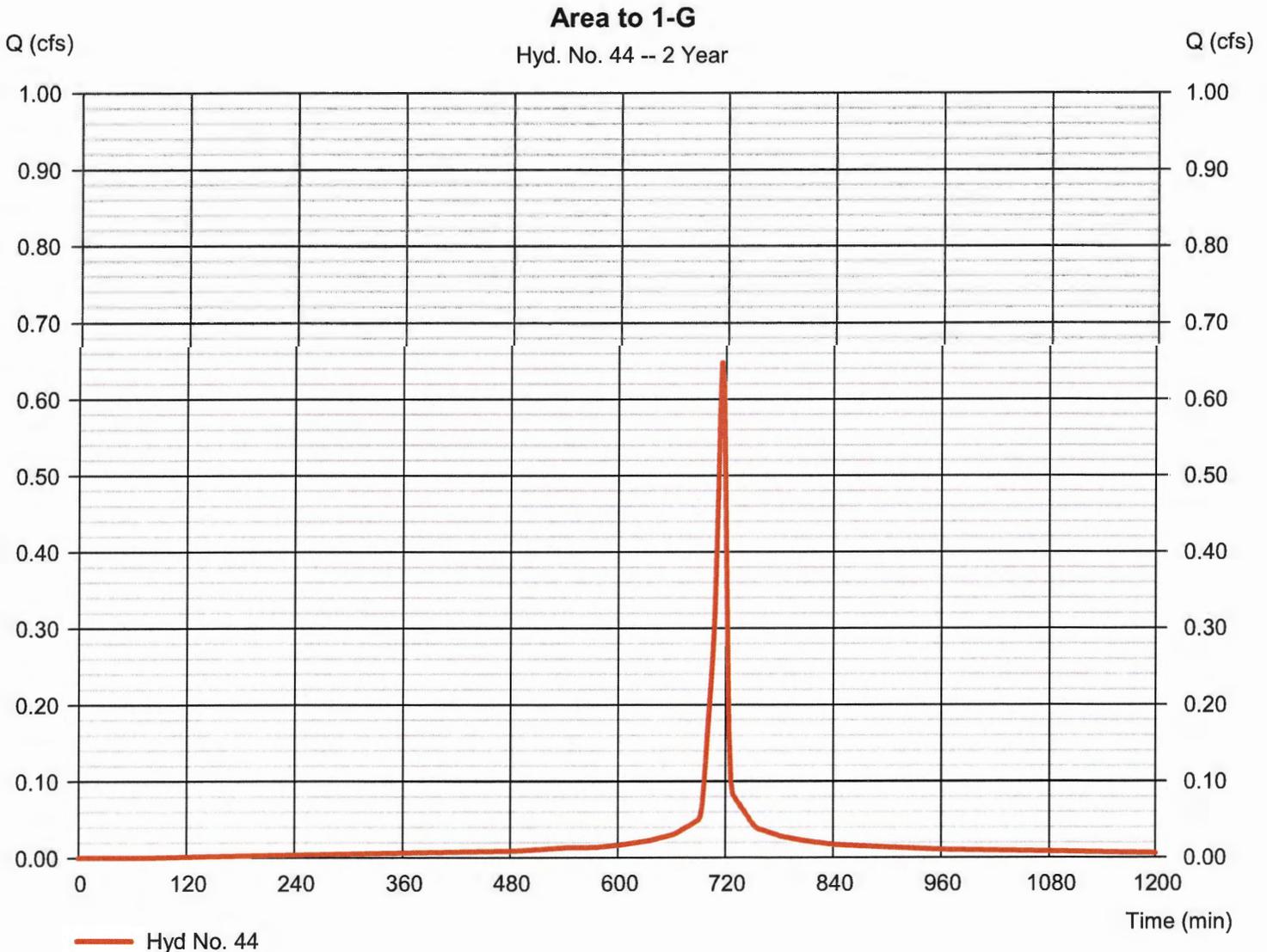
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2016 by Autodesk, Inc. v10.5

Friday, 07 / 8 / 2016

Hyd. No. 44

Area to 1-G

Hydrograph type	= SCS Runoff	Peak discharge	= 0.648 cfs
Storm frequency	= 2 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 1,515 cuft
Drainage area	= 0.150 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.20 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2016 by Autodesk, Inc. v10.5

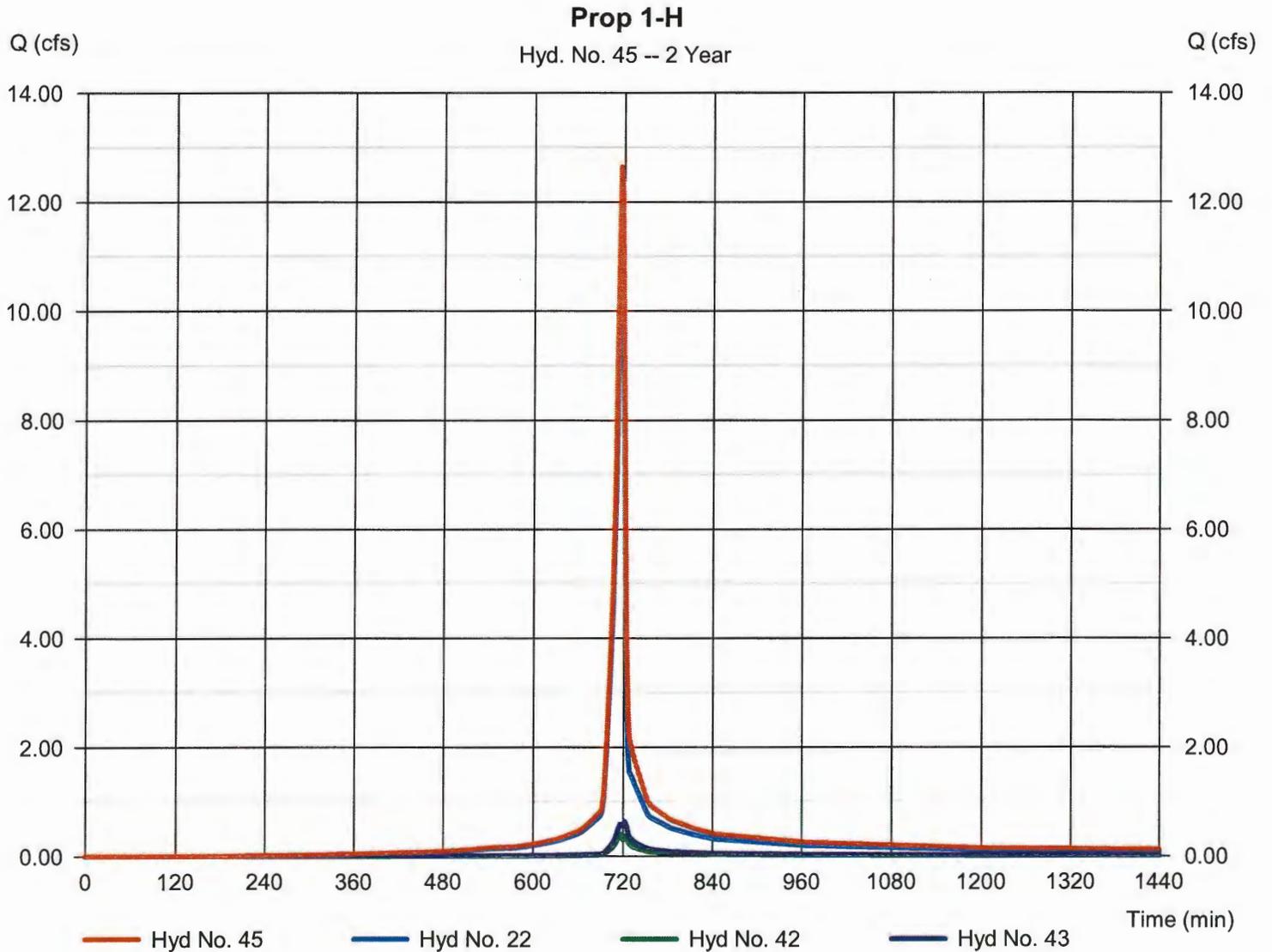
Friday, 07 / 8 / 2016

Hyd. No. 45

Prop 1-H

Hydrograph type = Combine
Storm frequency = 2 yrs
Time interval = 2 min
Inflow hyd. = 22, 42, 43

Peak discharge = 12.65 cfs
Time to peak = 716 min
Hyd. volume = 29,469 cuft
Contrib. drain. area = 0.000 ac



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2016 by Autodesk, Inc. v10.5

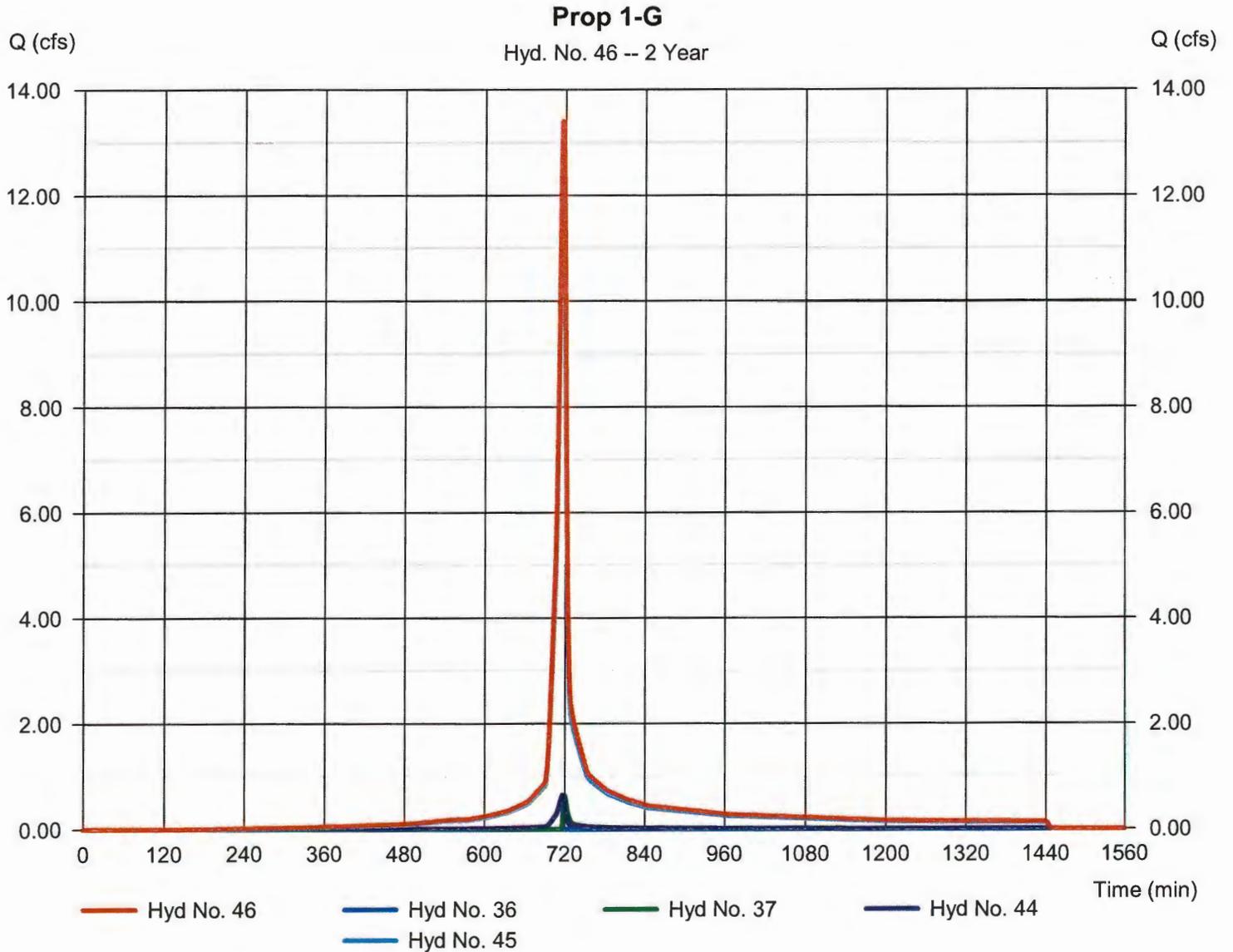
Friday, 07 / 8 / 2016

Hyd. No. 46

Prop 1-G

Hydrograph type = Combine
Storm frequency = 2 yrs
Time interval = 2 min
Inflow hydys. = 36, 37, 44, 45

Peak discharge = 13.40 cfs
Time to peak = 716 min
Hyd. volume = 31,919 cuft
Contrib. drain. area = 0.150 ac



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2016 by Autodesk, Inc. v10.5

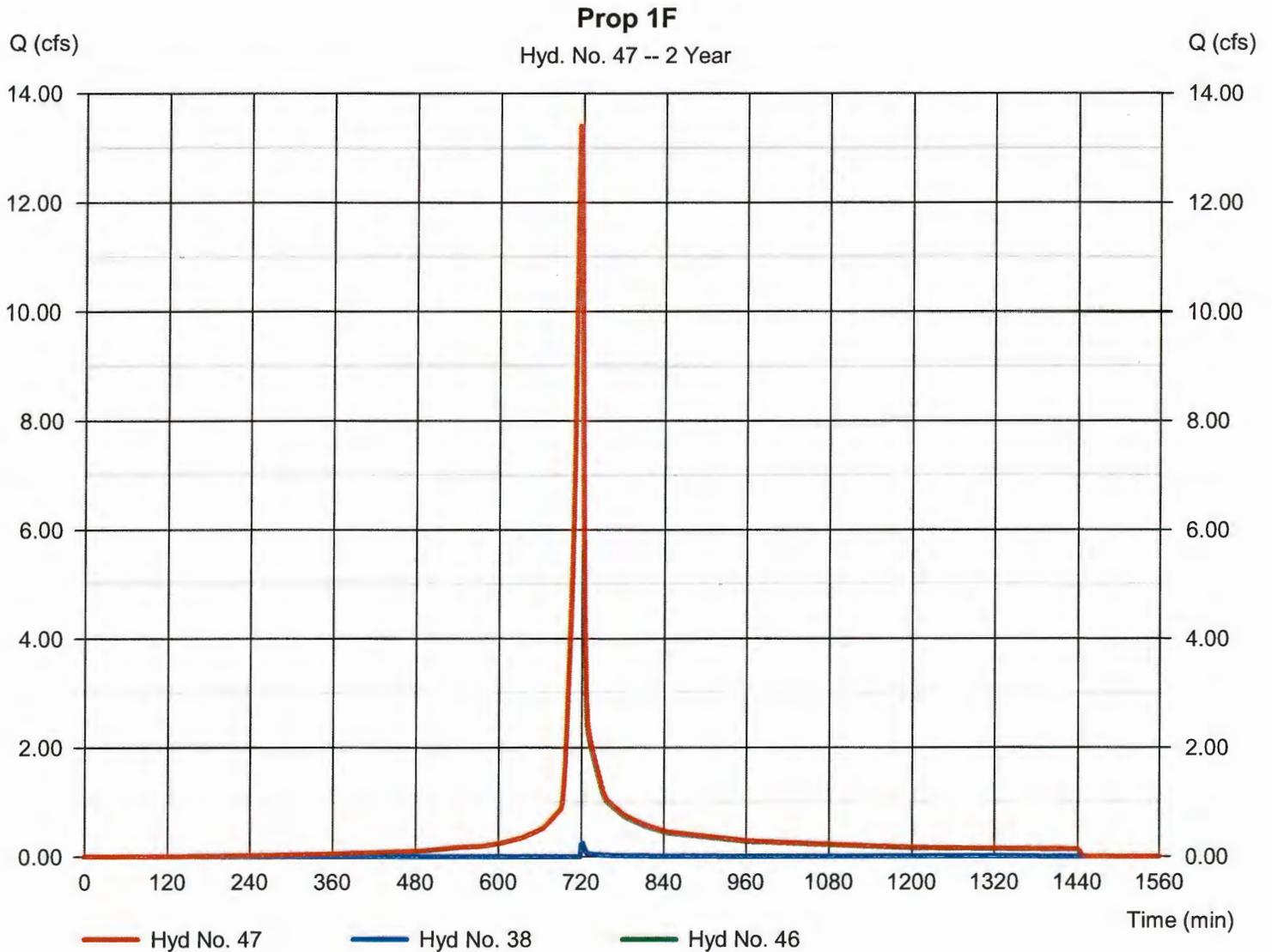
Friday, 07 / 8 / 2016

Hyd. No. 47

Prop 1F

Hydrograph type = Combine
Storm frequency = 2 yrs
Time interval = 2 min
Inflow hyds. = 38, 46

Peak discharge = 13.40 cfs
Time to peak = 716 min
Hyd. volume = 32,365 cuft
Contrib. drain. area = 0.000 ac

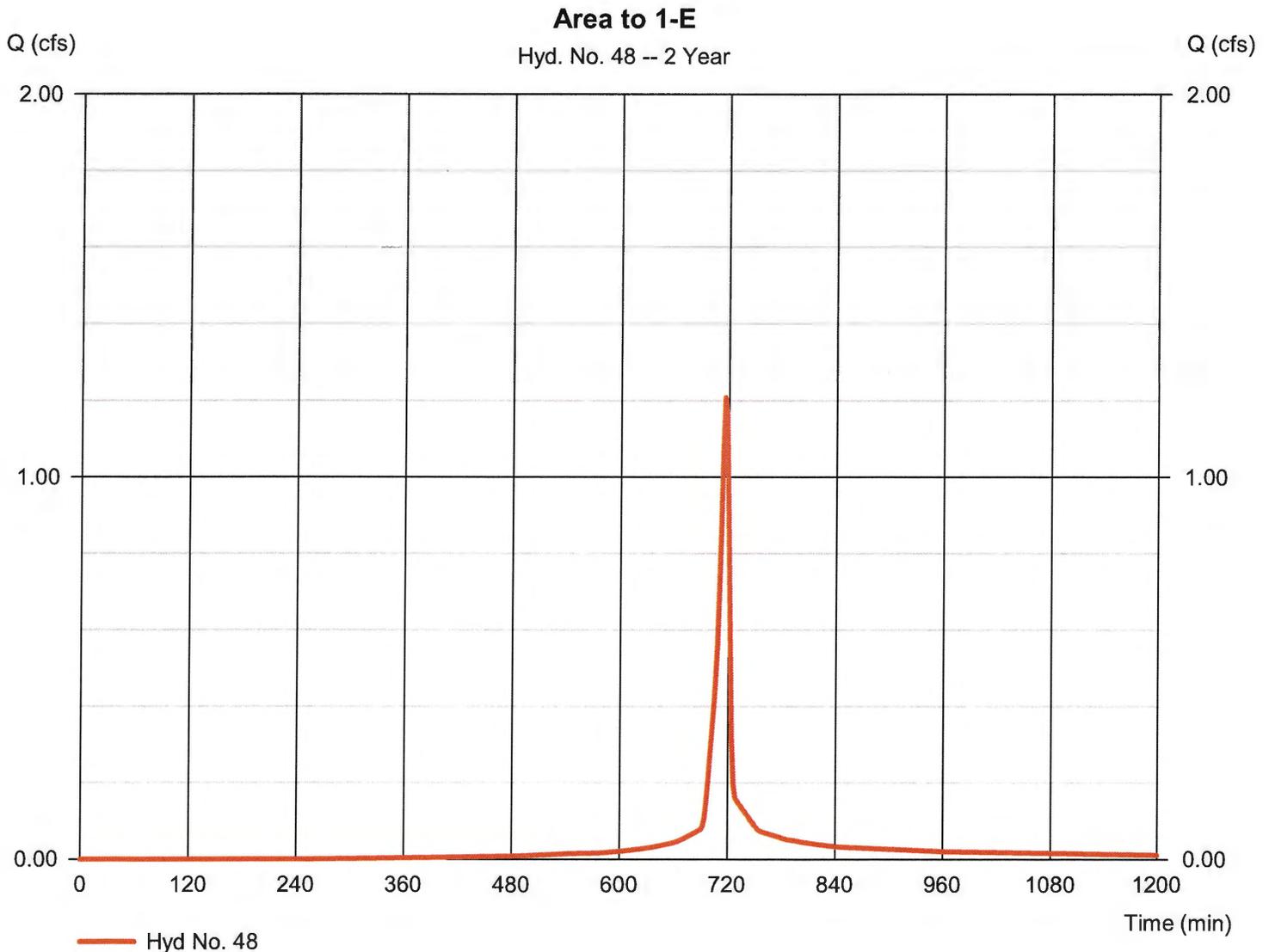


Hydrograph Report

Hyd. No. 48

Area to 1-E

Hydrograph type	= SCS Runoff	Peak discharge	= 1.208 cfs
Storm frequency	= 2 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 2,580 cuft
Drainage area	= 0.310 ac	Curve number	= 93
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.20 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

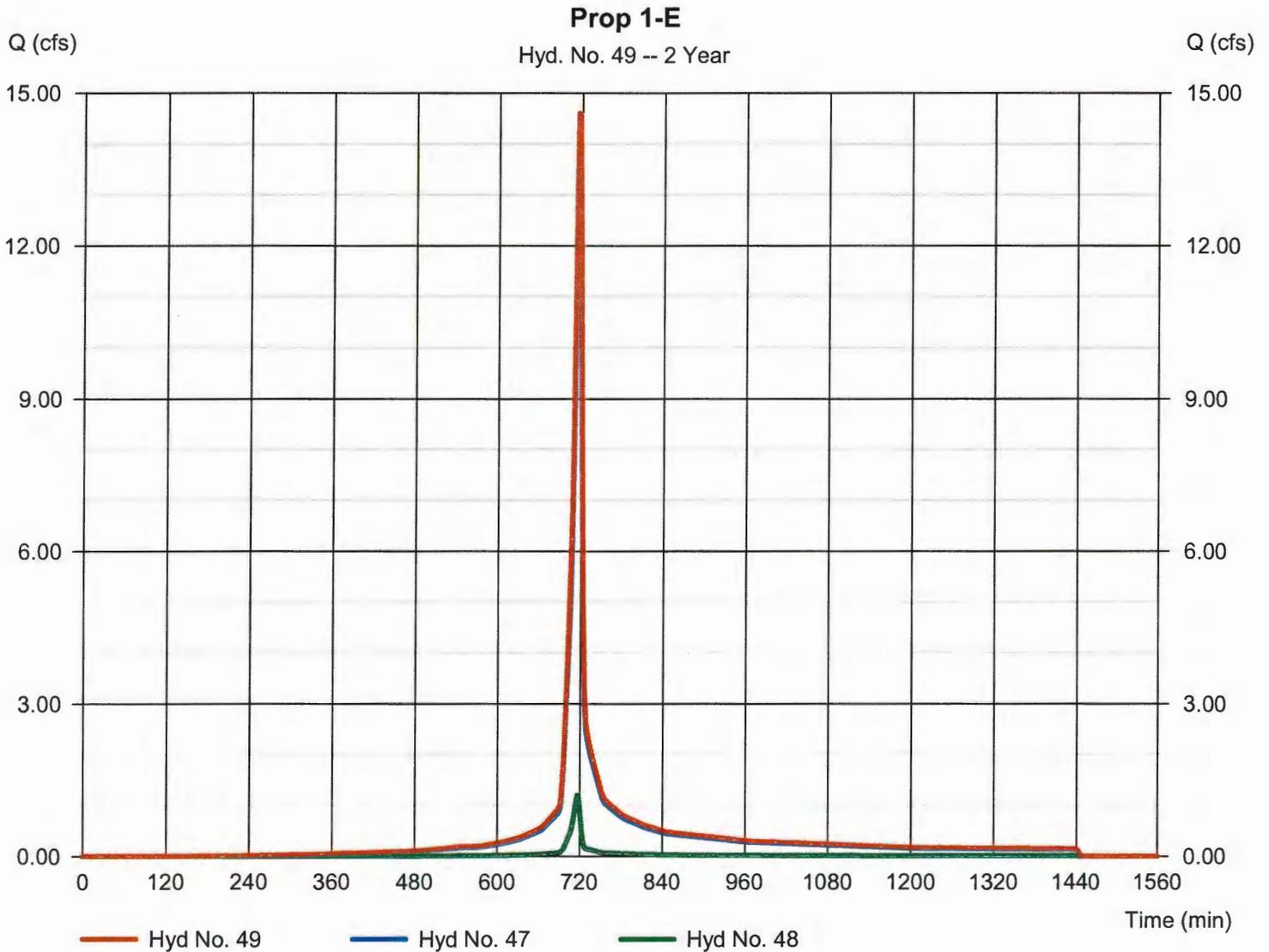
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Friday, 07 / 8 / 2016

Hyd. No. 49

Prop 1-E

Hydrograph type	= Combine	Peak discharge	= 14.61 cfs
Storm frequency	= 2 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 34,945 cuft
Inflow hyds.	= 47, 48	Contrib. drain. area	= 0.310 ac

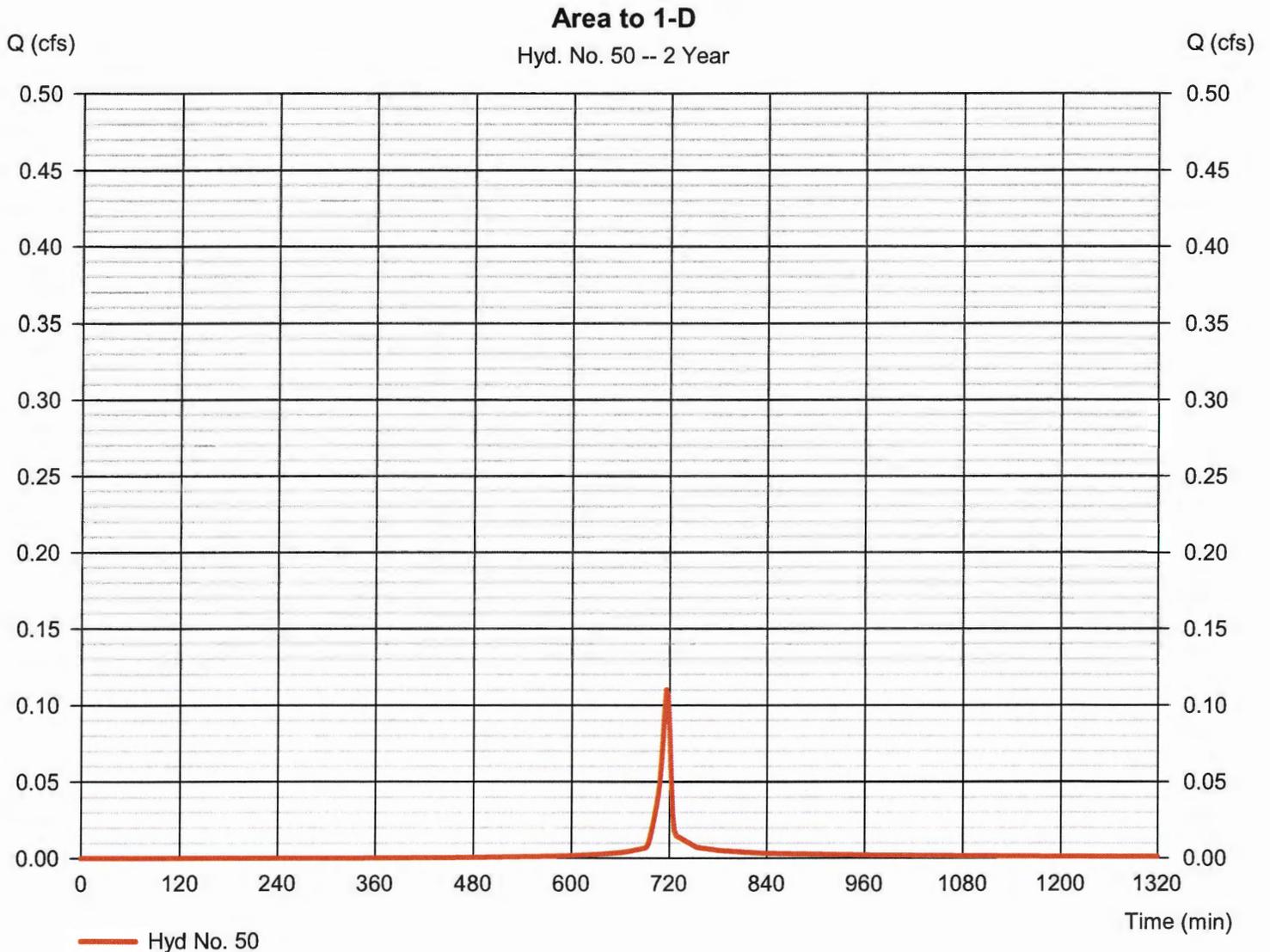


Hydrograph Report

Hyd. No. 50

Area to 1-D

Hydrograph type	= SCS Runoff	Peak discharge	= 0.110 cfs
Storm frequency	= 2 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 231 cuft
Drainage area	= 0.030 ac	Curve number	= 91
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.20 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

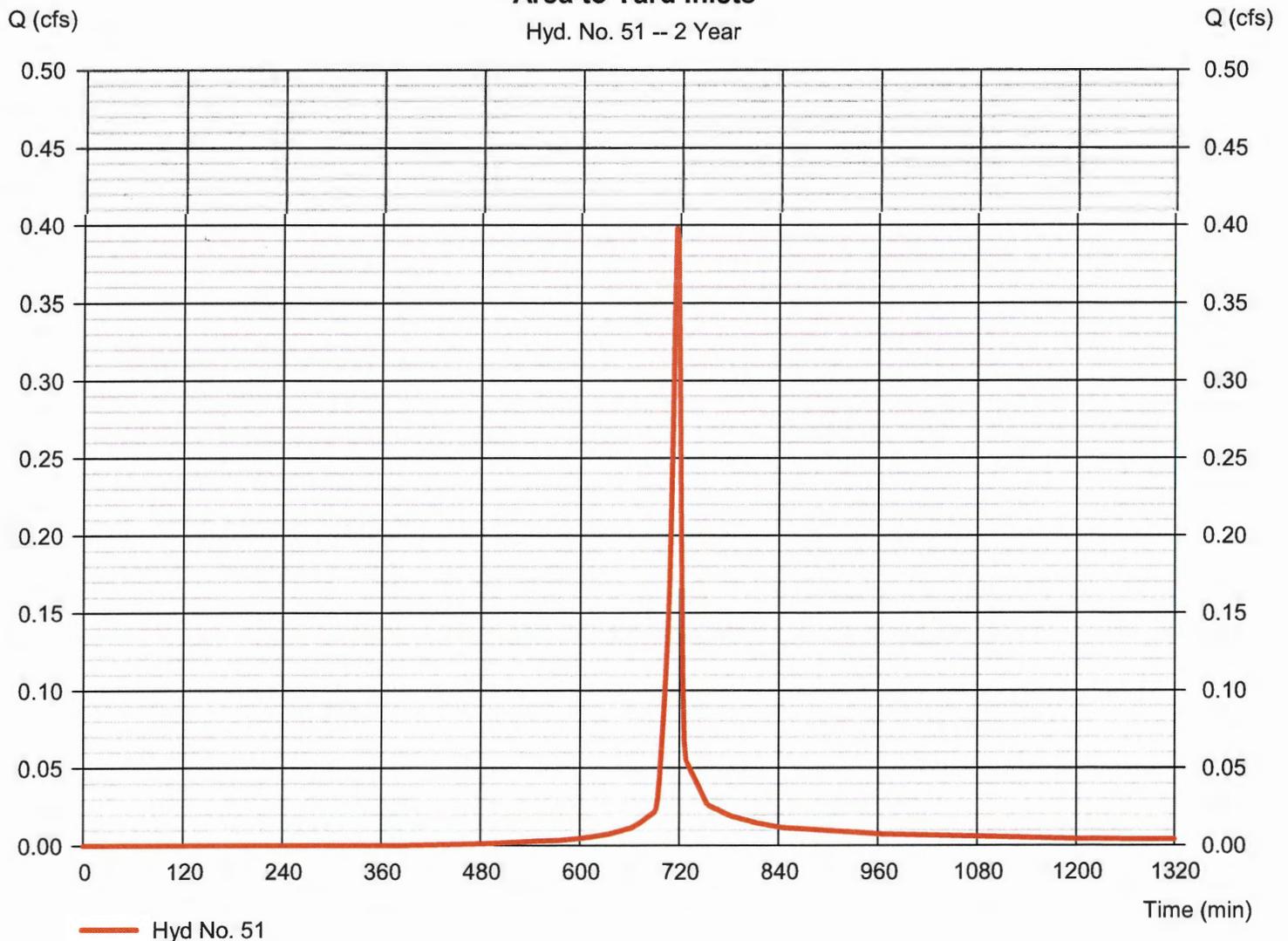
Hyd. No. 51

Area to Yard Inlets

Hydrograph type	= SCS Runoff	Peak discharge	= 0.398 cfs
Storm frequency	= 2 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 816 cuft
Drainage area	= 0.120 ac	Curve number	= 88
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.20 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

Area to Yard Inlets

Hyd. No. 51 -- 2 Year



Hydrograph Report

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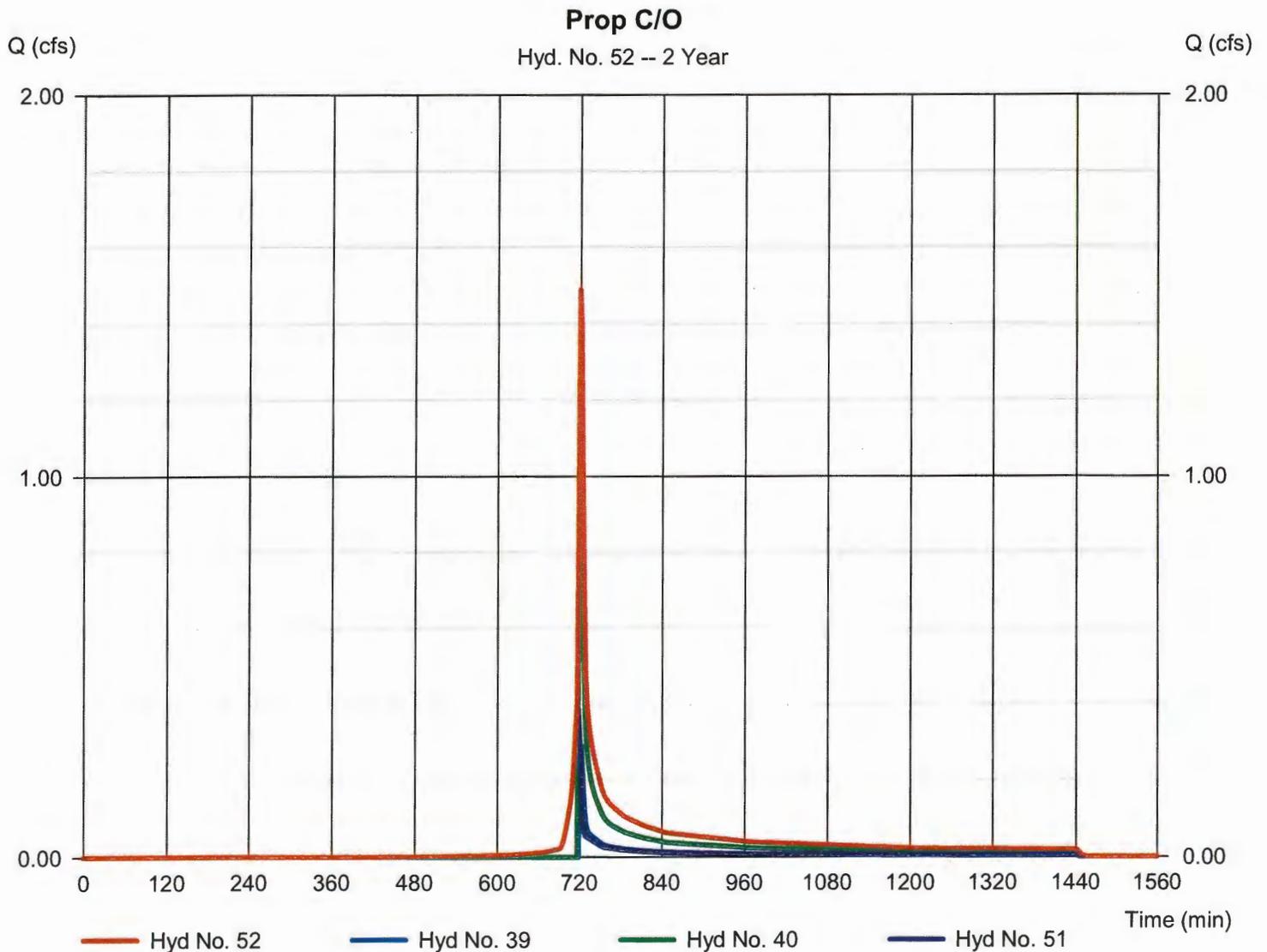
Friday, 07 / 8 / 2016

Hyd. No. 52

Prop C/O

Hydrograph type = Combine
Storm frequency = 2 yrs
Time interval = 2 min
Inflow hyds. = 39, 40, 51

Peak discharge = 1.489 cfs
Time to peak = 720 min
Hyd. volume = 3,123 cuft
Contrib. drain. area = 0.120 ac



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2016 by Autodesk, Inc. v10.5

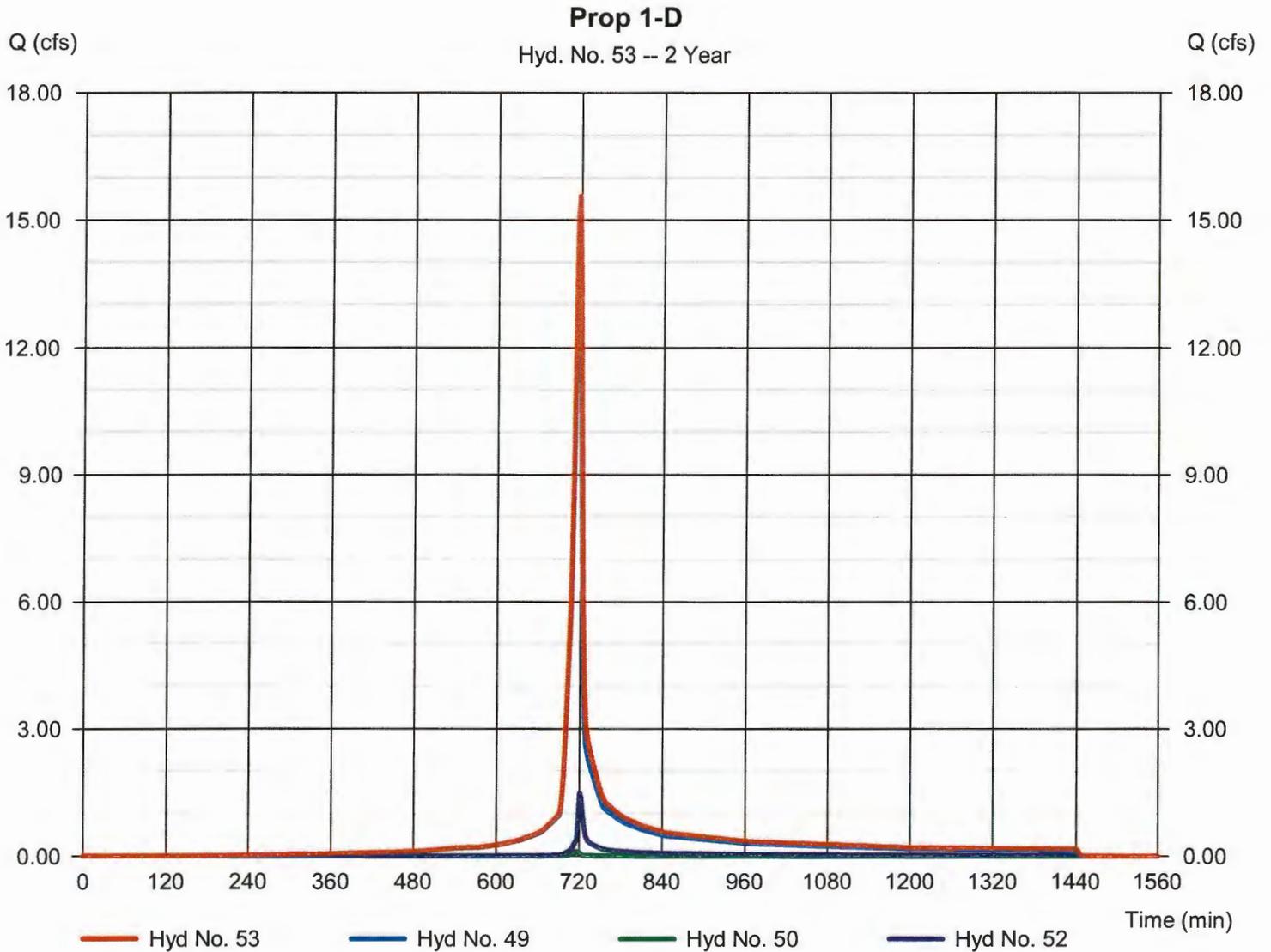
Friday, 07 / 8 / 2016

Hyd. No. 53

Prop 1-D

Hydrograph type = Combine
Storm frequency = 2 yrs
Time interval = 2 min
Inflow hyds. = 49, 50, 52

Peak discharge = 15.57 cfs
Time to peak = 718 min
Hyd. volume = 38,299 cuft
Contrib. drain. area = 0.030 ac

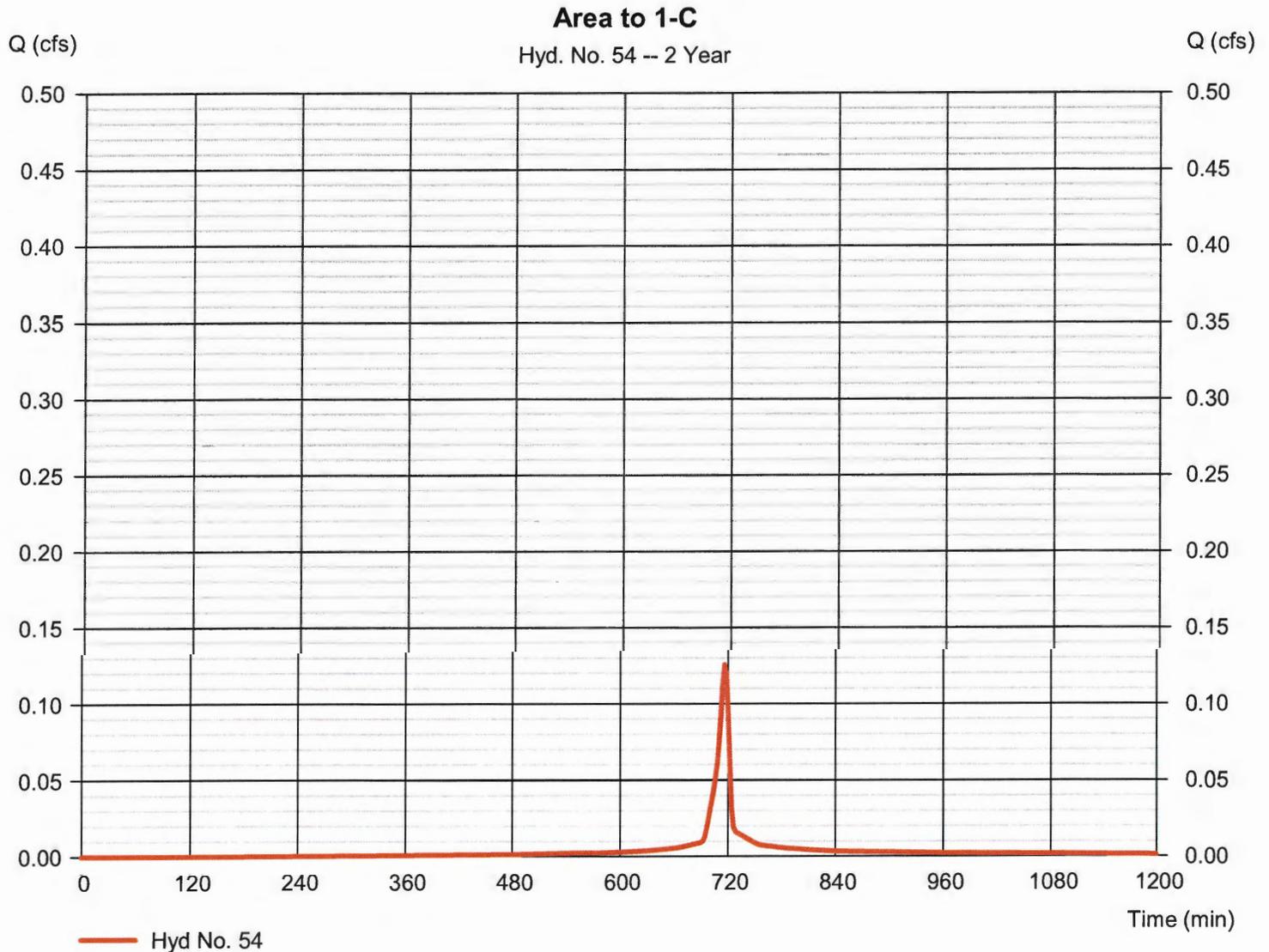


Hydrograph Report

Hyd. No. 54

Area to 1-C

Hydrograph type	= SCS Runoff	Peak discharge	= 0.126 cfs
Storm frequency	= 2 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 281 cuft
Drainage area	= 0.030 ac	Curve number	= 96
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.20 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

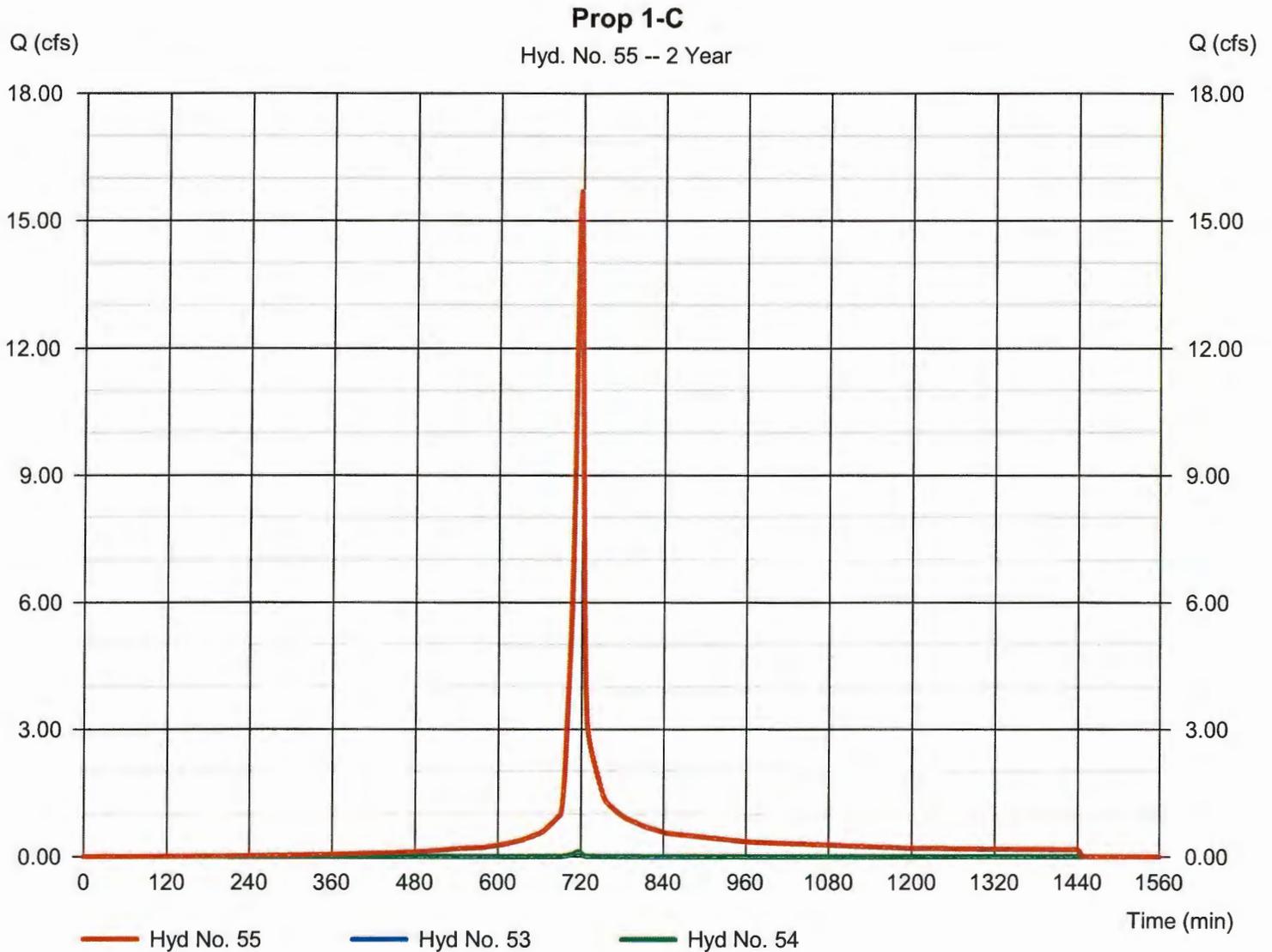


Hydrograph Report

Hyd. No. 55

Prop 1-C

Hydrograph type	= Combine	Peak discharge	= 15.69 cfs
Storm frequency	= 2 yrs	Time to peak	= 718 min
Time interval	= 2 min	Hyd. volume	= 38,579 cuft
Inflow hyds.	= 53, 54	Contrib. drain. area	= 0.030 ac

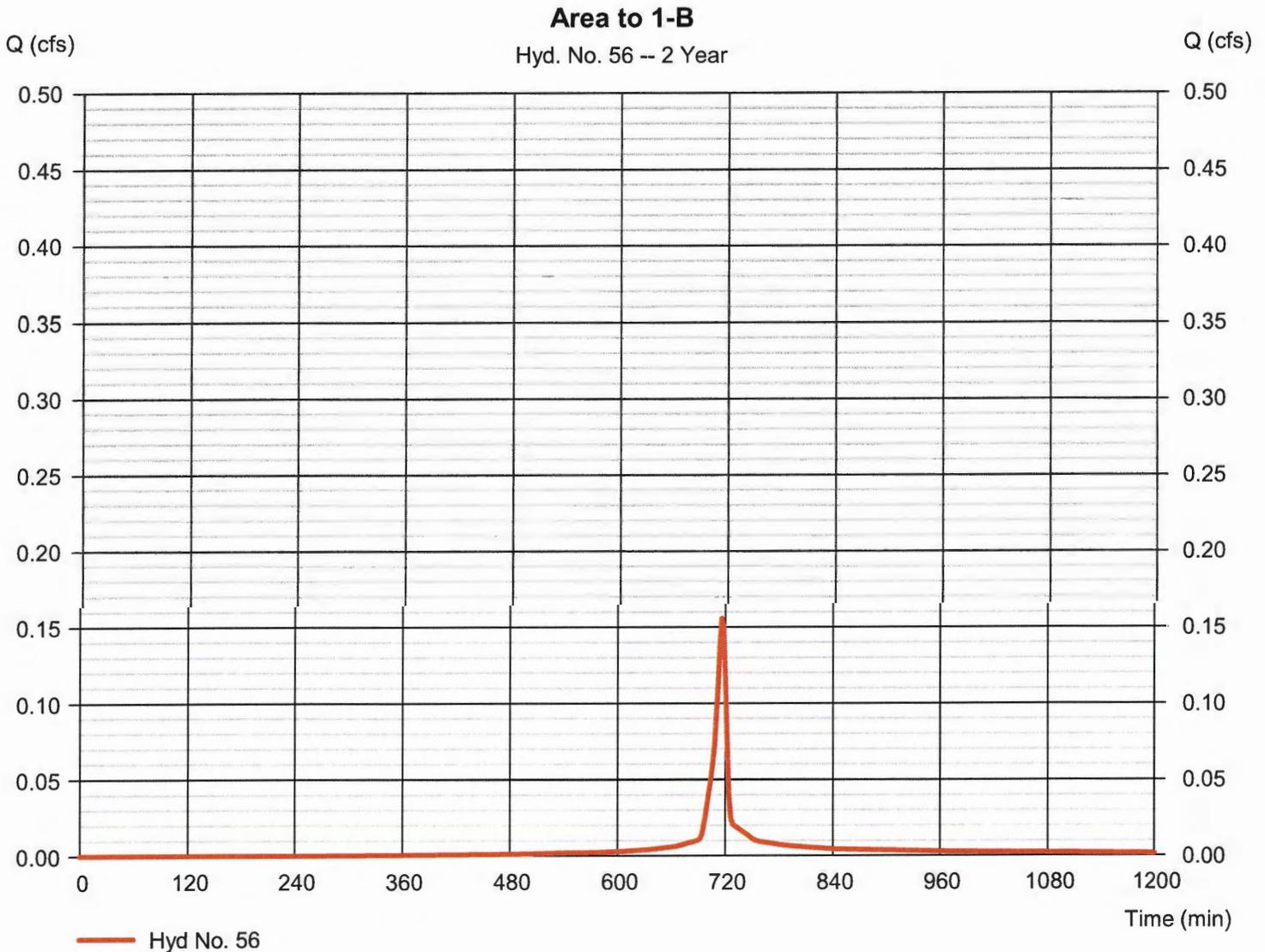


Hydrograph Report

Hyd. No. 56

Area to 1-B

Hydrograph type	= SCS Runoff	Peak discharge	= 0.156 cfs
Storm frequency	= 2 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 333 cuft
Drainage area	= 0.040 ac	Curve number	= 93
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.20 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

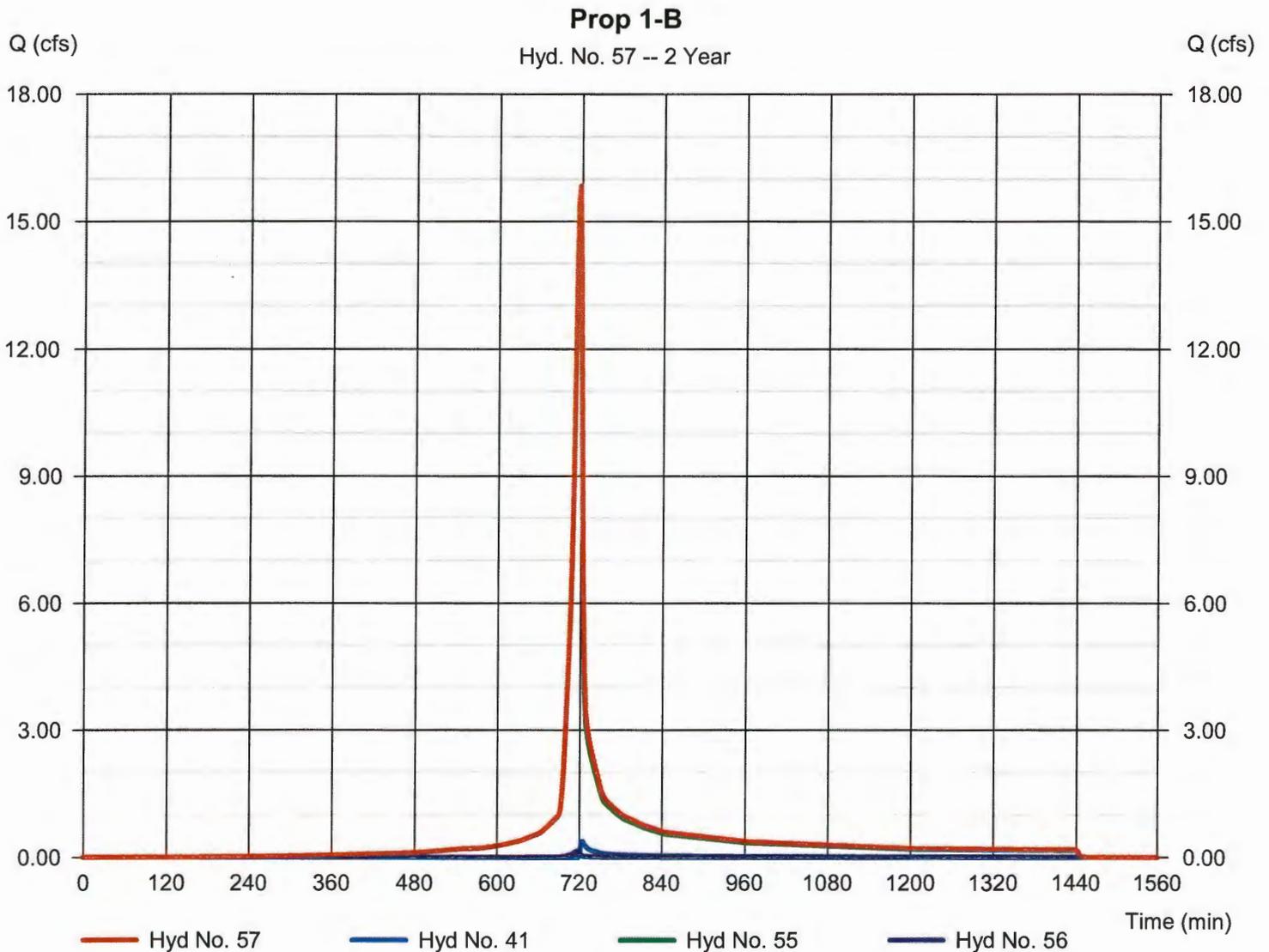
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Friday, 07 / 8 / 2016

Hyd. No. 57

Prop 1-B

Hydrograph type	= Combine	Peak discharge	= 15.84 cfs
Storm frequency	= 2 yrs	Time to peak	= 718 min
Time interval	= 2 min	Hyd. volume	= 40,223 cuft
Inflow hyds.	= 41, 55, 56	Contrib. drain. area	= 0.040 ac



Hydrograph Report

Hyd. No. 58

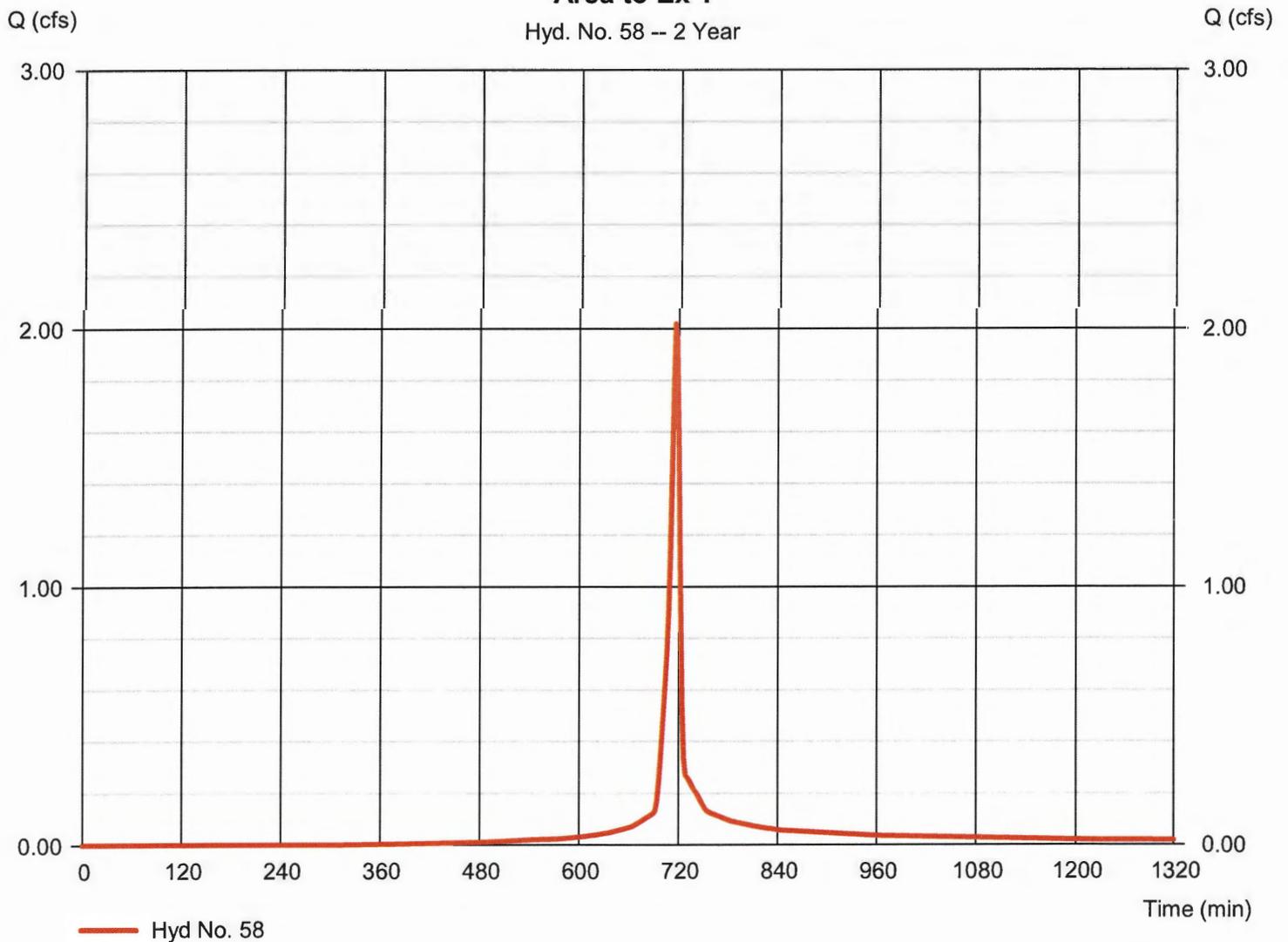
Area to Ex 1

Hydrograph type	= SCS Runoff	Peak discharge	= 2.020 cfs
Storm frequency	= 2 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 4,227 cuft
Drainage area	= 0.550 ac	Curve number	= 91*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.20 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = $[(0.340 \times 98) + (0.210 \times 80)] / 0.550$

Area to Ex 1

Hyd. No. 58 -- 2 Year



Hydrograph Report

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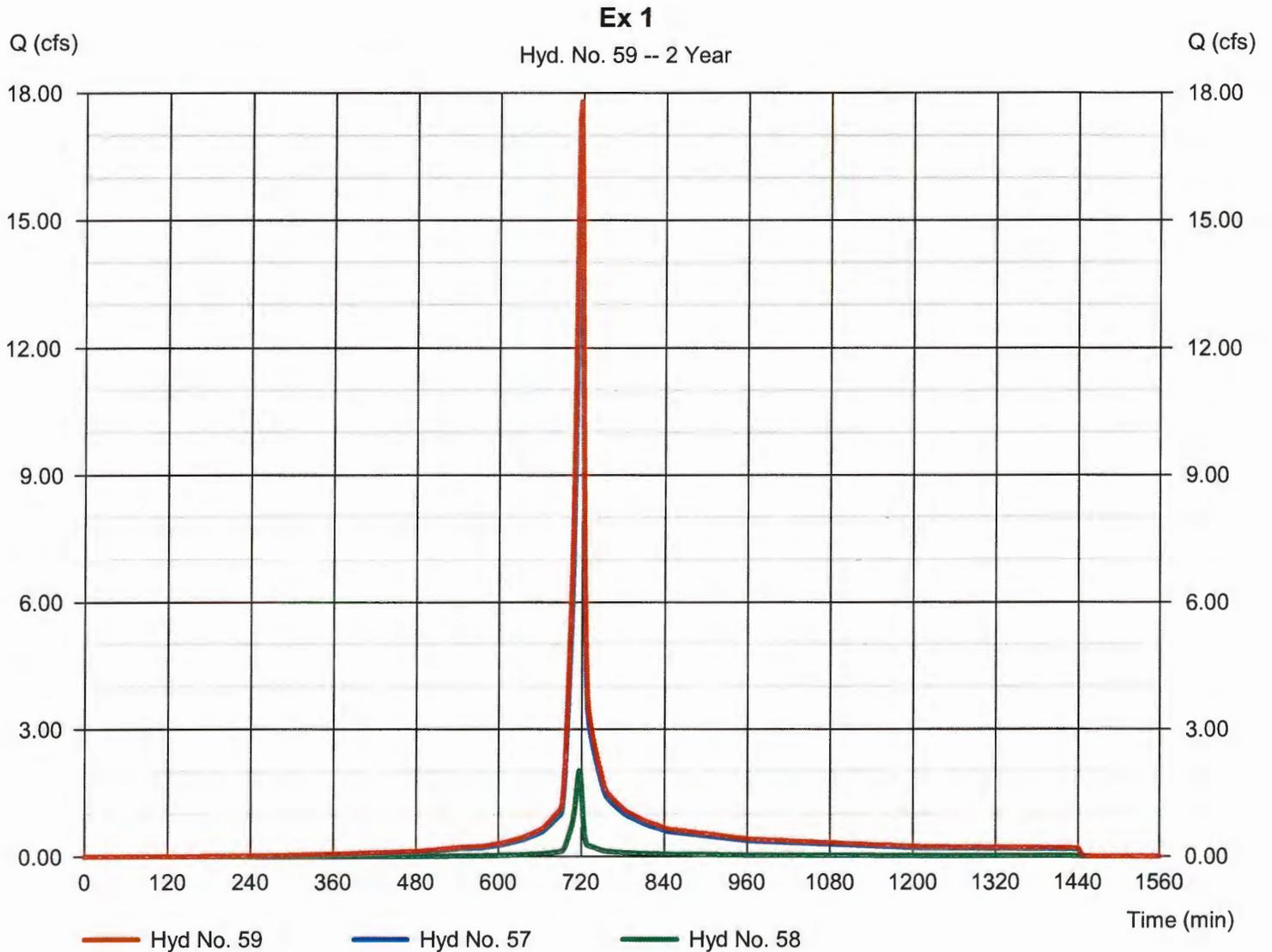
Friday, 07 / 8 / 2016

Hyd. No. 59

Ex 1

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

Peak discharge = 17.80 cfs
Time to peak = 718 min
Hyd. volume = 44,449 cuft
Contrib. drain. area = 0.550 ac



II. APPENDIX

D. STORMWATER MANAGEMENT ROUTING

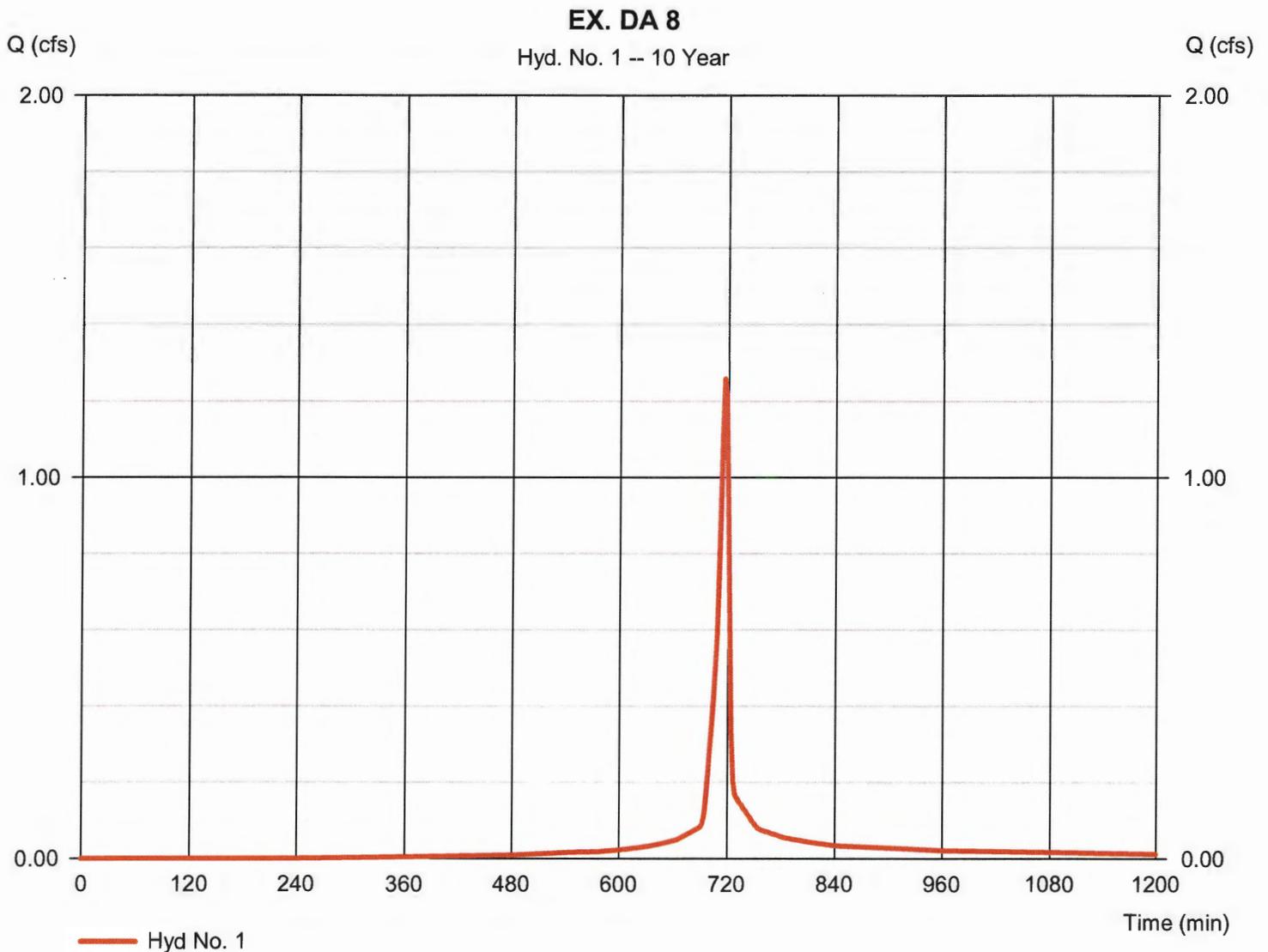
ii. 10 YEAR 24 HOUR STORM EVENT

Hydrograph Report

Hyd. No. 1

EX. DA 8

Hydrograph type	= SCS Runoff	Peak discharge	= 1.258 cfs
Storm frequency	= 10 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 2,704 cuft
Drainage area	= 0.200 ac	Curve number	= 90
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 5.10 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

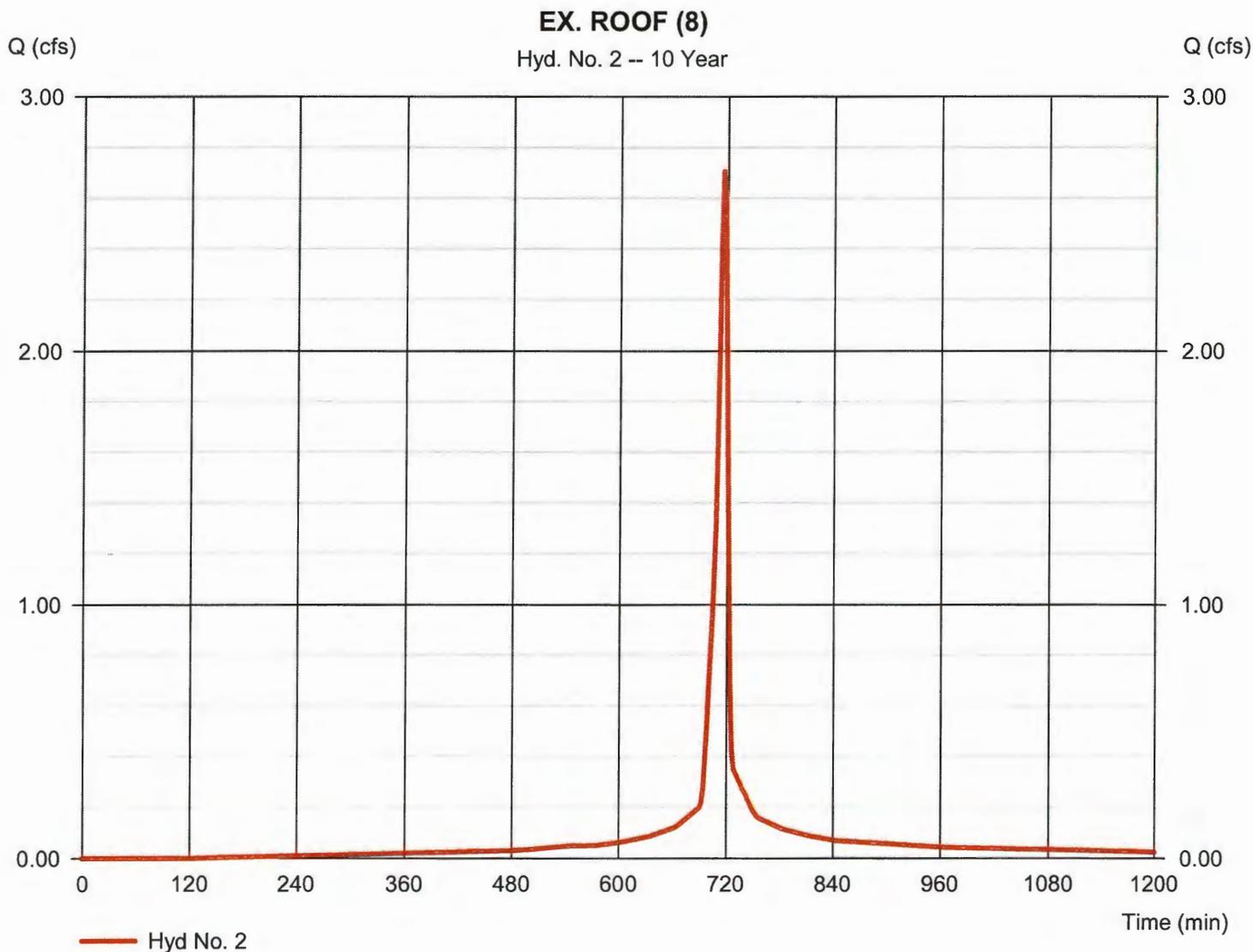


Hydrograph Report

Hyd. No. 2

EX. ROOF (8)

Hydrograph type	= SCS Runoff	Peak discharge	= 2.707 cfs
Storm frequency	= 10 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 6,151 cuft
Drainage area	= 0.400 ac	Curve number	= 95
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 5.10 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

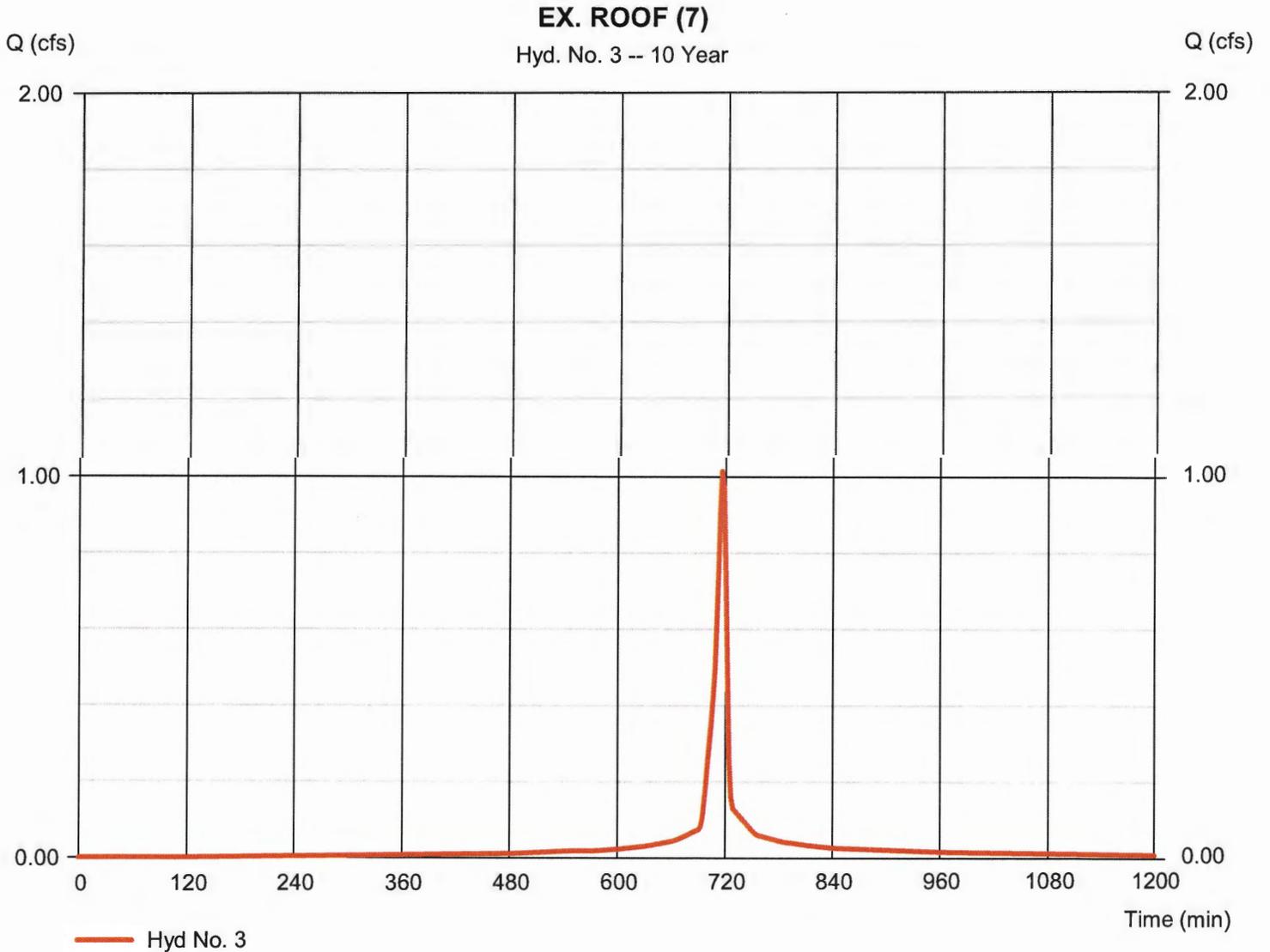


Hydrograph Report

Hyd. No. 3

EX. ROOF (7)

Hydrograph type	= SCS Runoff	Peak discharge	= 1.015 cfs
Storm frequency	= 10 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 2,307 cuft
Drainage area	= 0.150 ac	Curve number	= 95
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 5.10 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

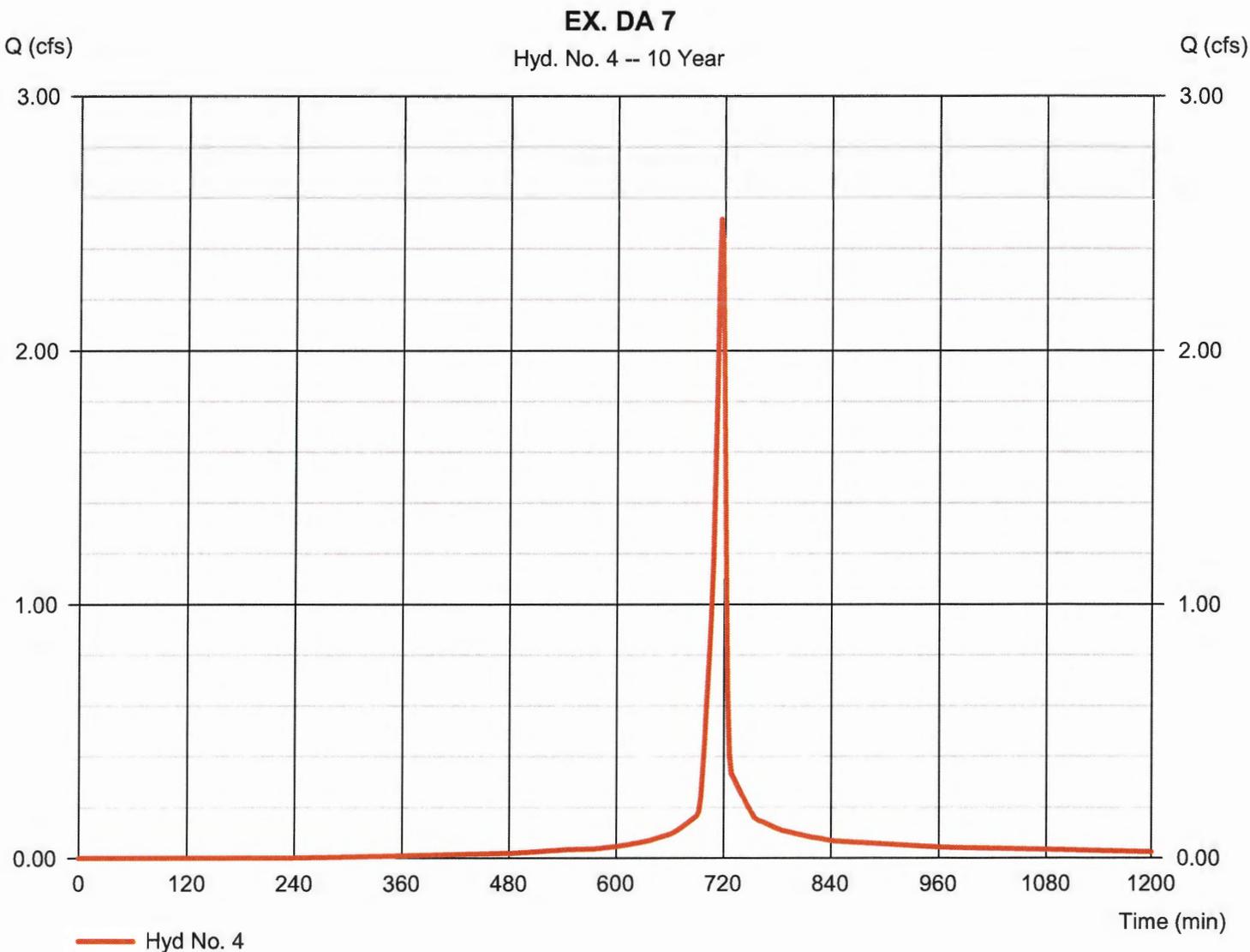


Hydrograph Report

Hyd. No. 4

EX. DA 7

Hydrograph type	= SCS Runoff	Peak discharge	= 2.517 cfs
Storm frequency	= 10 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 5,408 cuft
Drainage area	= 0.400 ac	Curve number	= 90
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 5.10 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

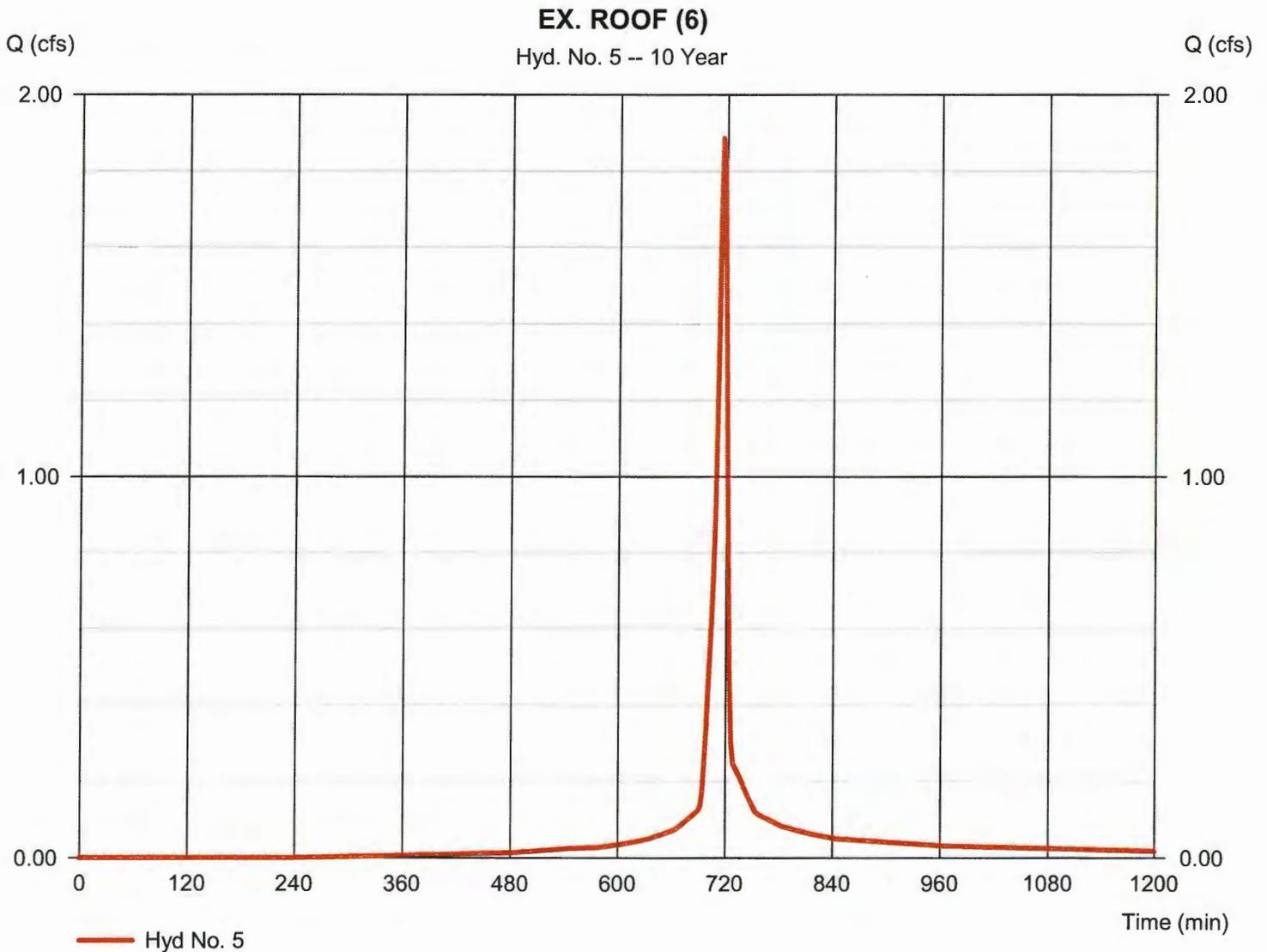


Hydrograph Report

Hyd. No. 5

EX. ROOF (6)

Hydrograph type	= SCS Runoff	Peak discharge	= 1.888 cfs
Storm frequency	= 10 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 4,056 cuft
Drainage area	= 0.300 ac	Curve number	= 90
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 5.10 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

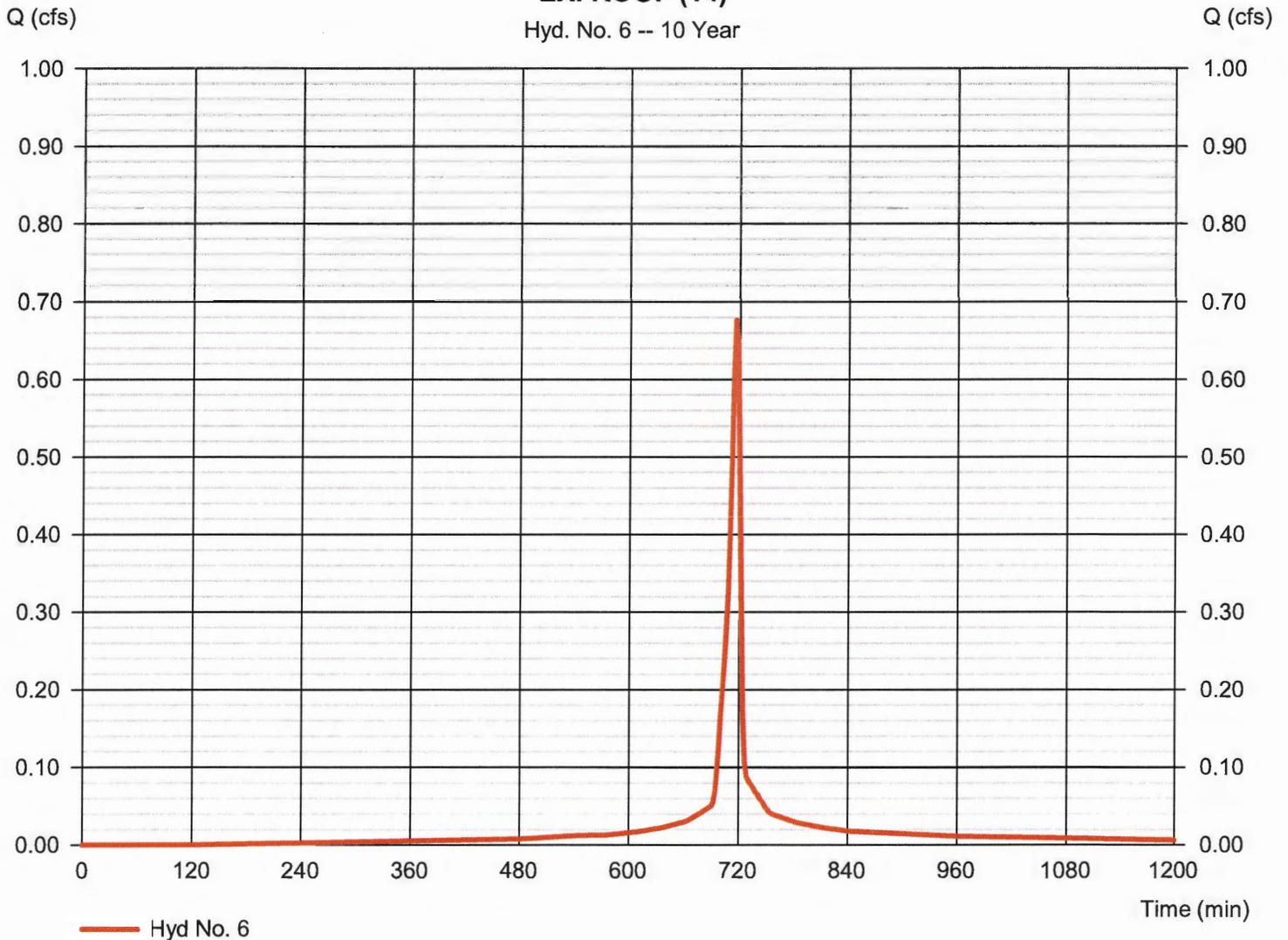
Hyd. No. 6

EX. ROOF (14)

Hydrograph type	= SCS Runoff	Peak discharge	= 0.677 cfs
Storm frequency	= 10 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 1,538 cuft
Drainage area	= 0.100 ac	Curve number	= 95
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 5.10 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

EX. ROOF (14)

Hyd. No. 6 -- 10 Year

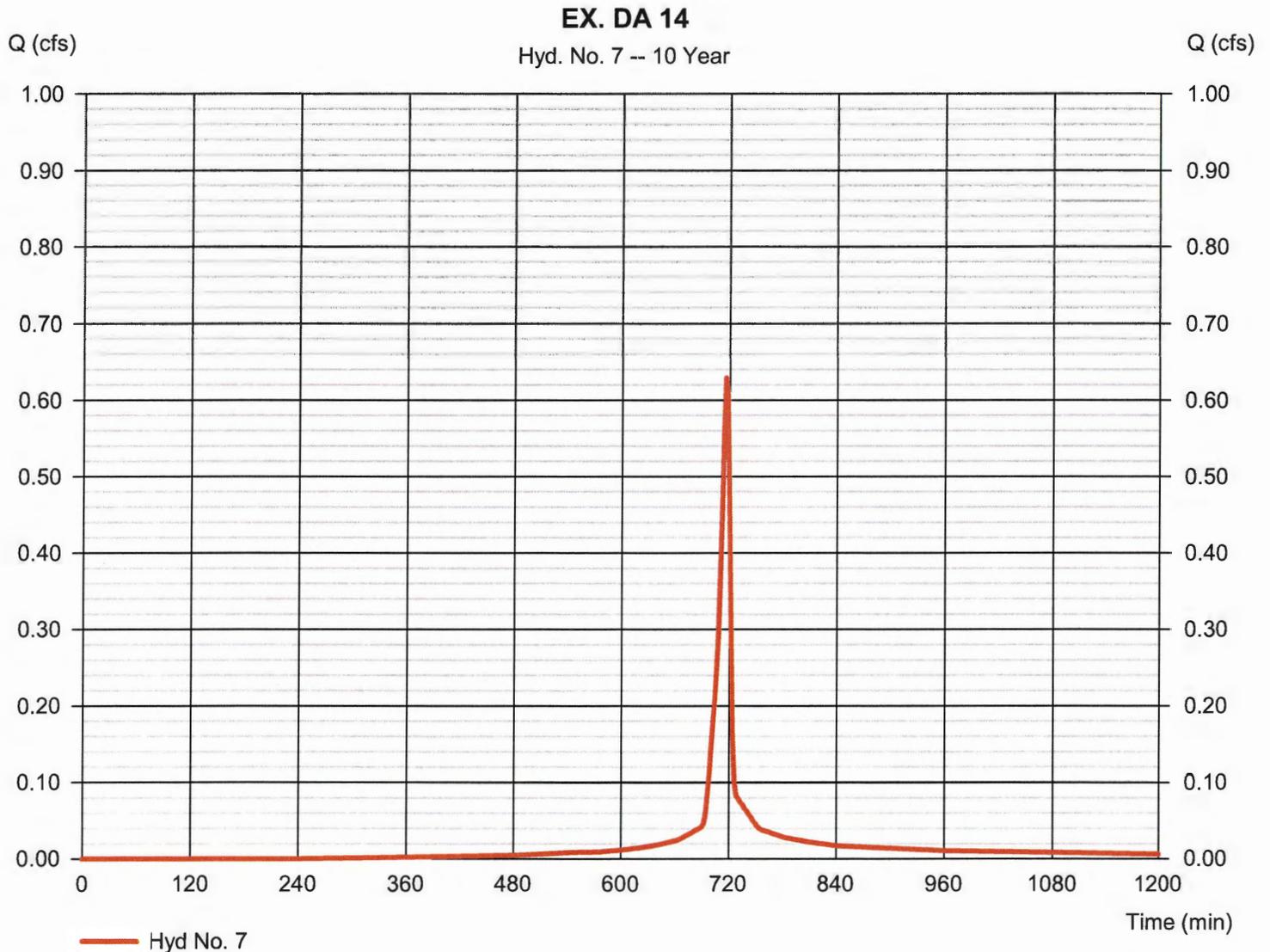


Hydrograph Report

Hyd. No. 7

EX. DA 14

Hydrograph type	= SCS Runoff	Peak discharge	= 0.629 cfs
Storm frequency	= 10 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 1,352 cuft
Drainage area	= 0.100 ac	Curve number	= 90
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 5.10 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

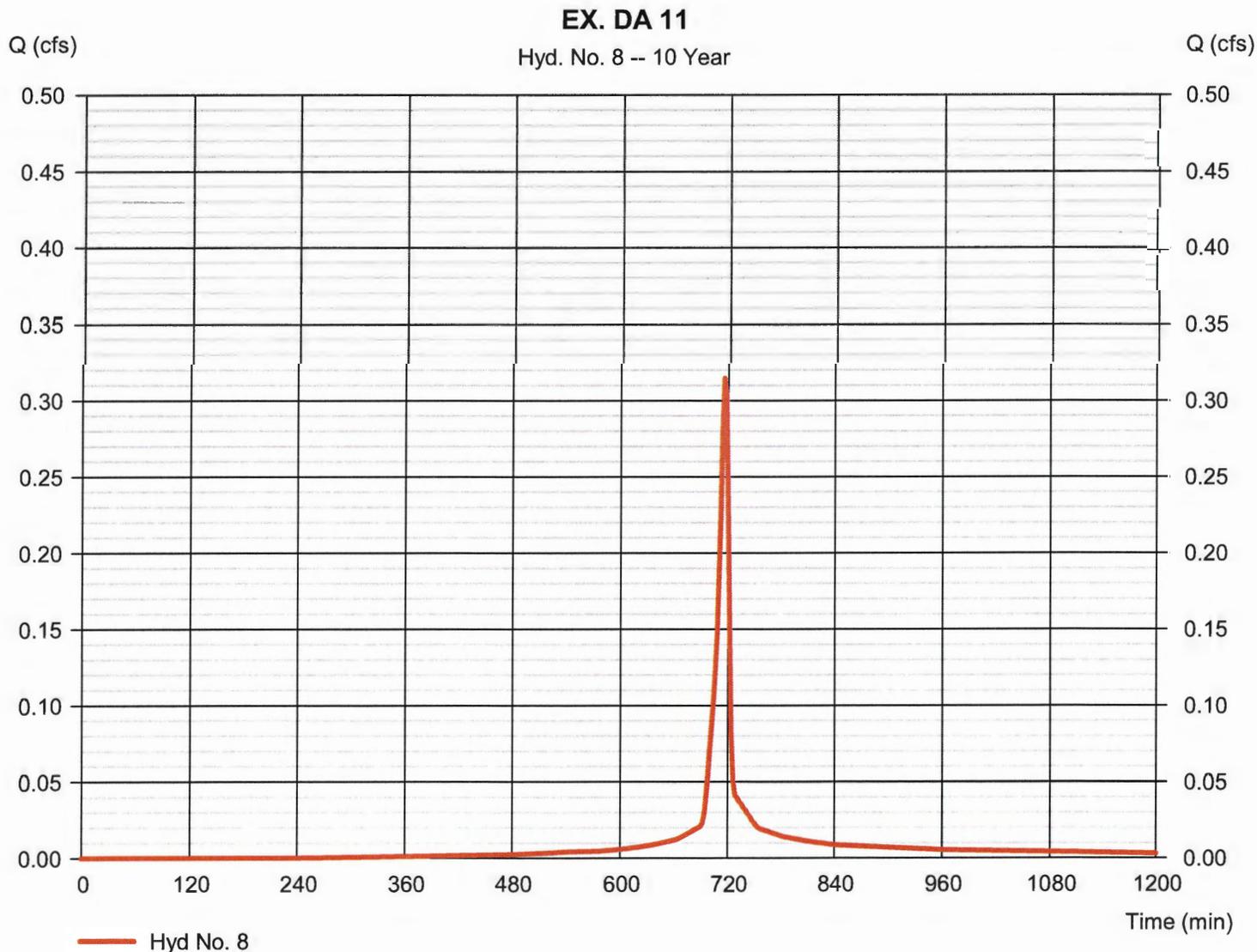


Hydrograph Report

Hyd. No. 8

EX. DA 11

Hydrograph type	= SCS Runoff	Peak discharge	= 0.315 cfs
Storm frequency	= 10 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 676 cuft
Drainage area	= 0.050 ac	Curve number	= 90
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 5.10 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

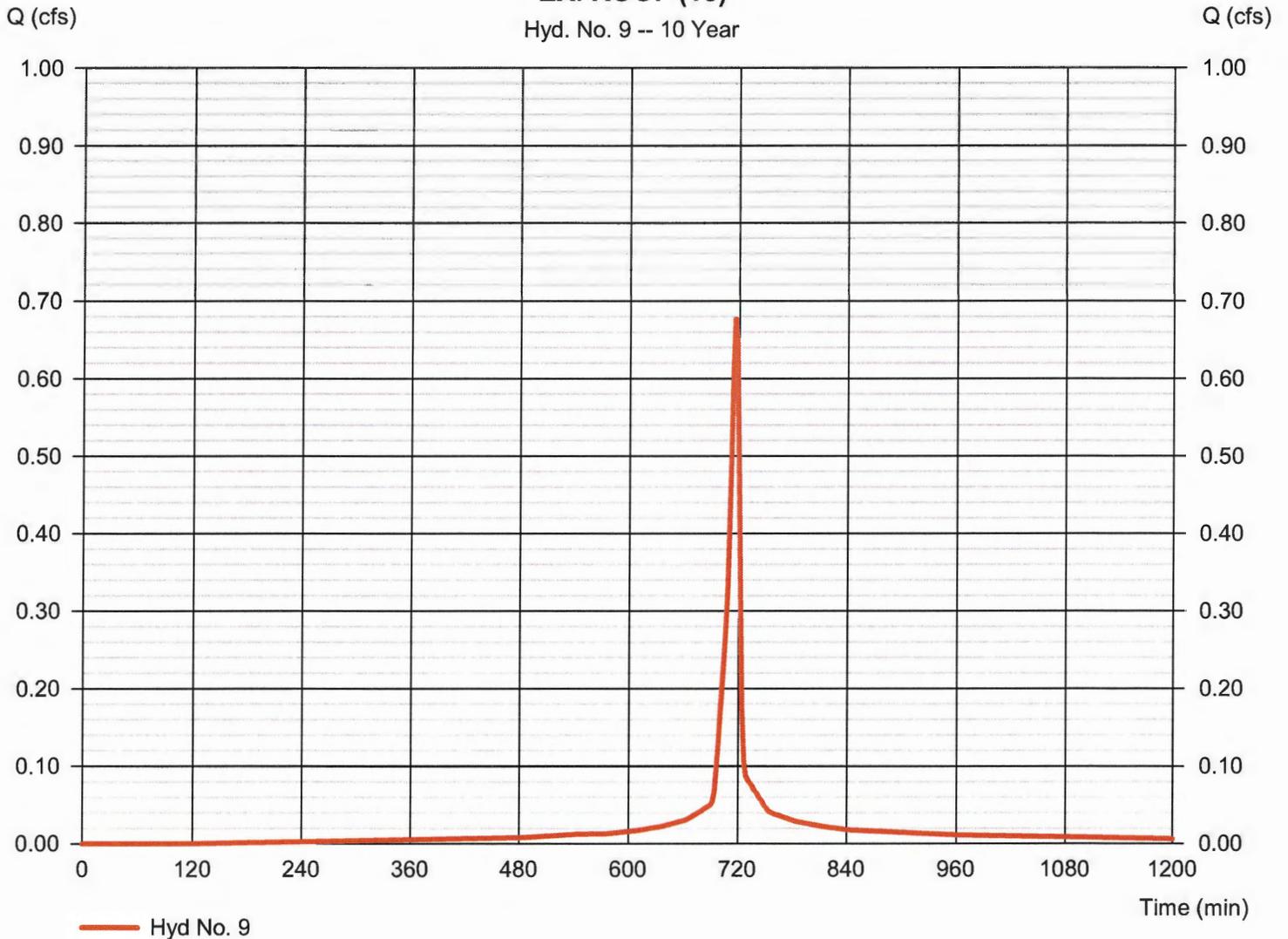
Hyd. No. 9

EX. ROOF (15)

Hydrograph type	= SCS Runoff	Peak discharge	= 0.677 cfs
Storm frequency	= 10 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 1,538 cuft
Drainage area	= 0.100 ac	Curve number	= 95
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 5.10 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

EX. ROOF (15)

Hyd. No. 9 -- 10 Year

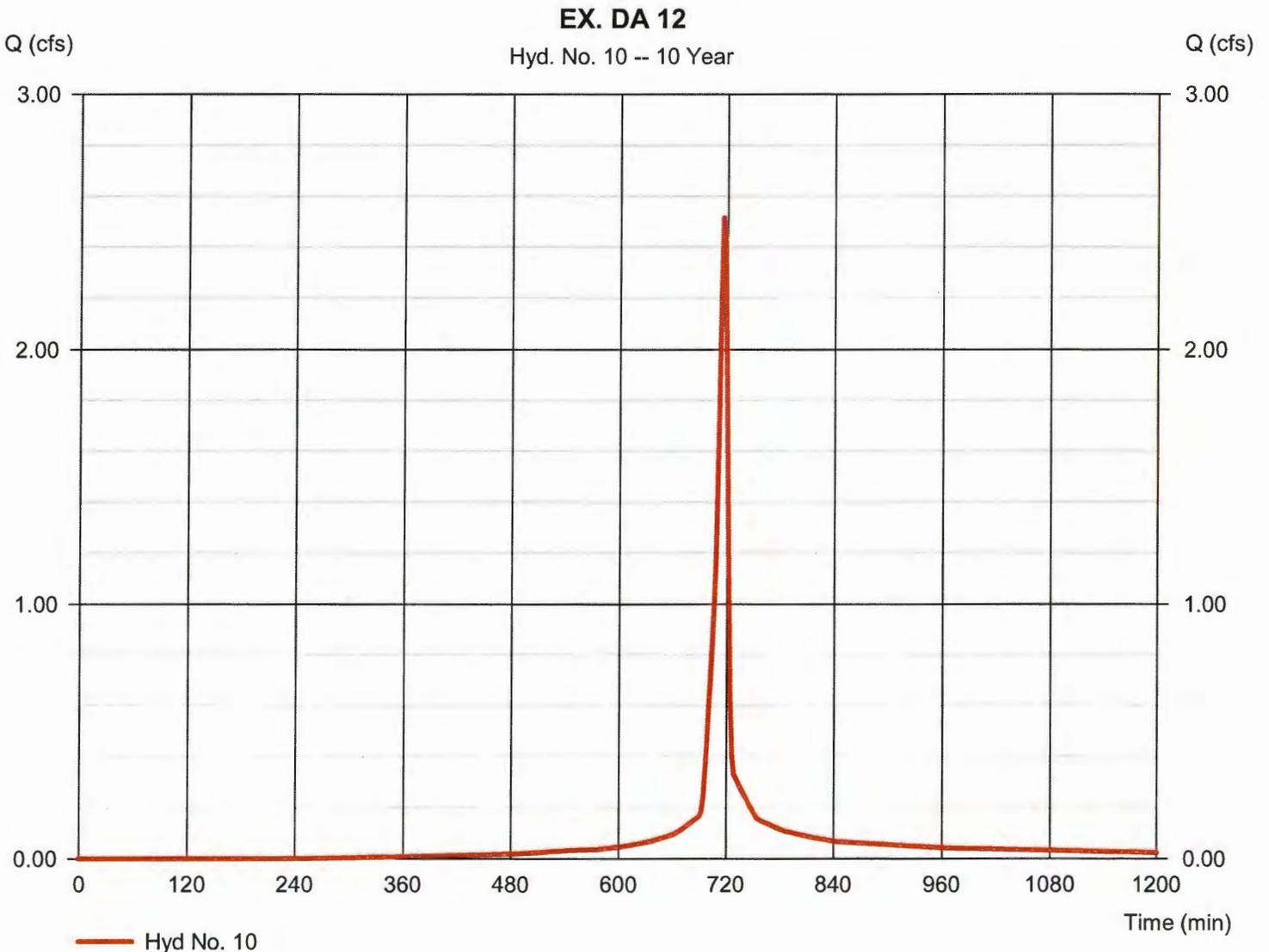


Hydrograph Report

Hyd. No. 10

EX. DA 12

Hydrograph type	= SCS Runoff	Peak discharge	= 2.517 cfs
Storm frequency	= 10 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 5,408 cuft
Drainage area	= 0.400 ac	Curve number	= 90
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 5.10 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

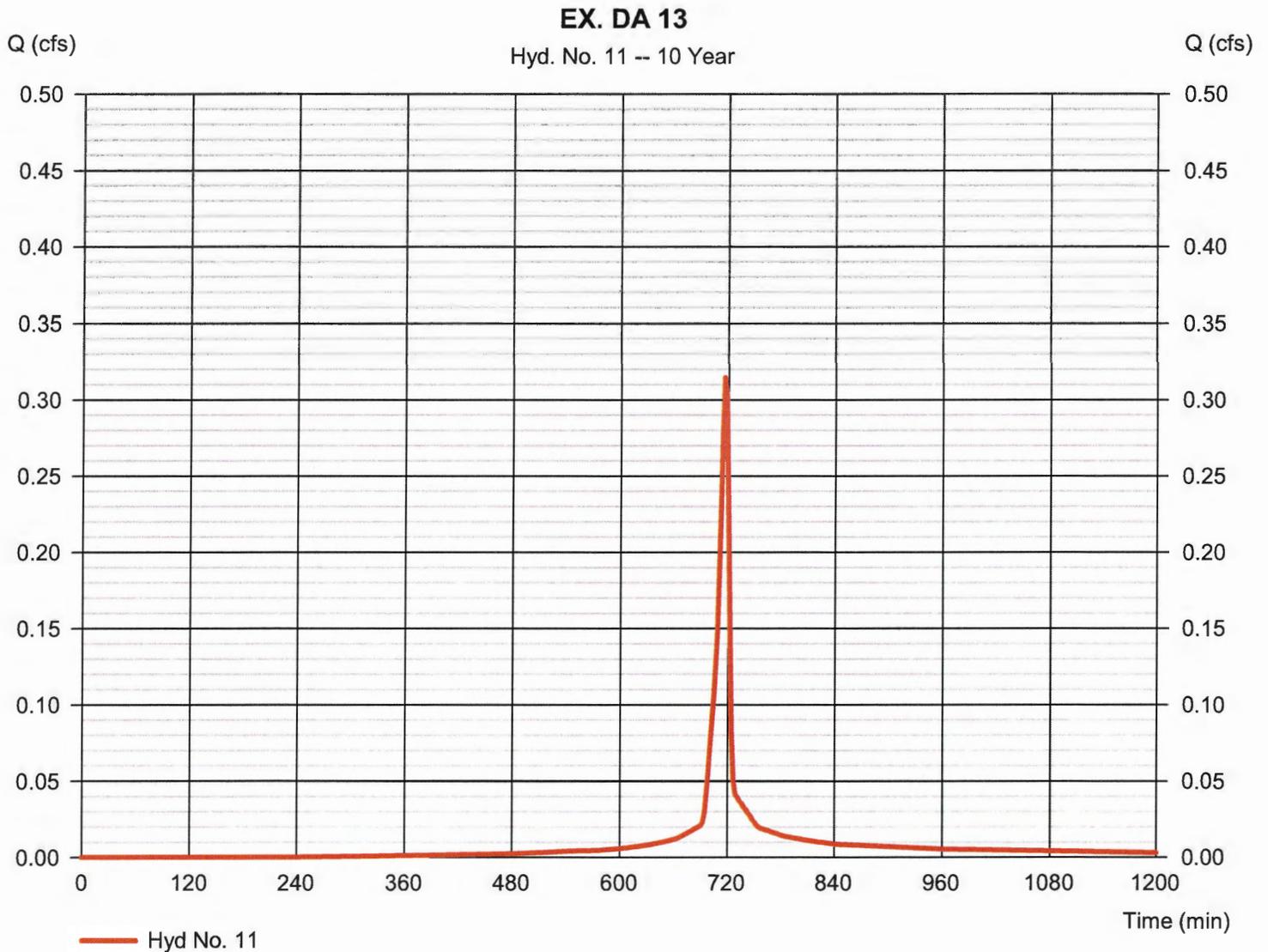


Hydrograph Report

Hyd. No. 11

EX. DA 13

Hydrograph type	= SCS Runoff	Peak discharge	= 0.315 cfs
Storm frequency	= 10 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 676 cuft
Drainage area	= 0.050 ac	Curve number	= 90
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 5.10 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

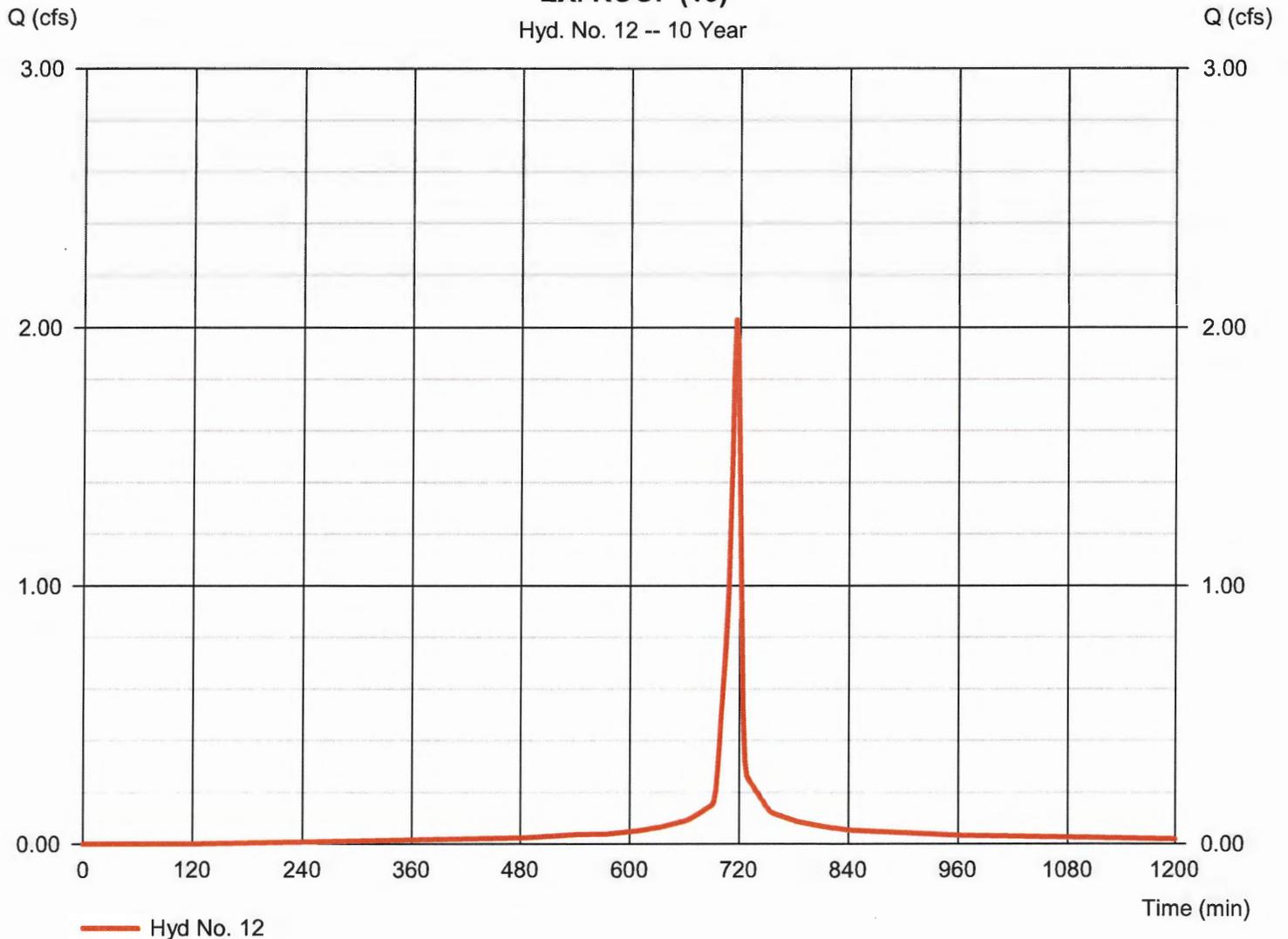
Hyd. No. 12

EX. ROOF (13)

Hydrograph type	= SCS Runoff	Peak discharge	= 2.030 cfs
Storm frequency	= 10 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 4,613 cuft
Drainage area	= 0.300 ac	Curve number	= 95
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 5.10 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

EX. ROOF (13)

Hyd. No. 12 -- 10 Year

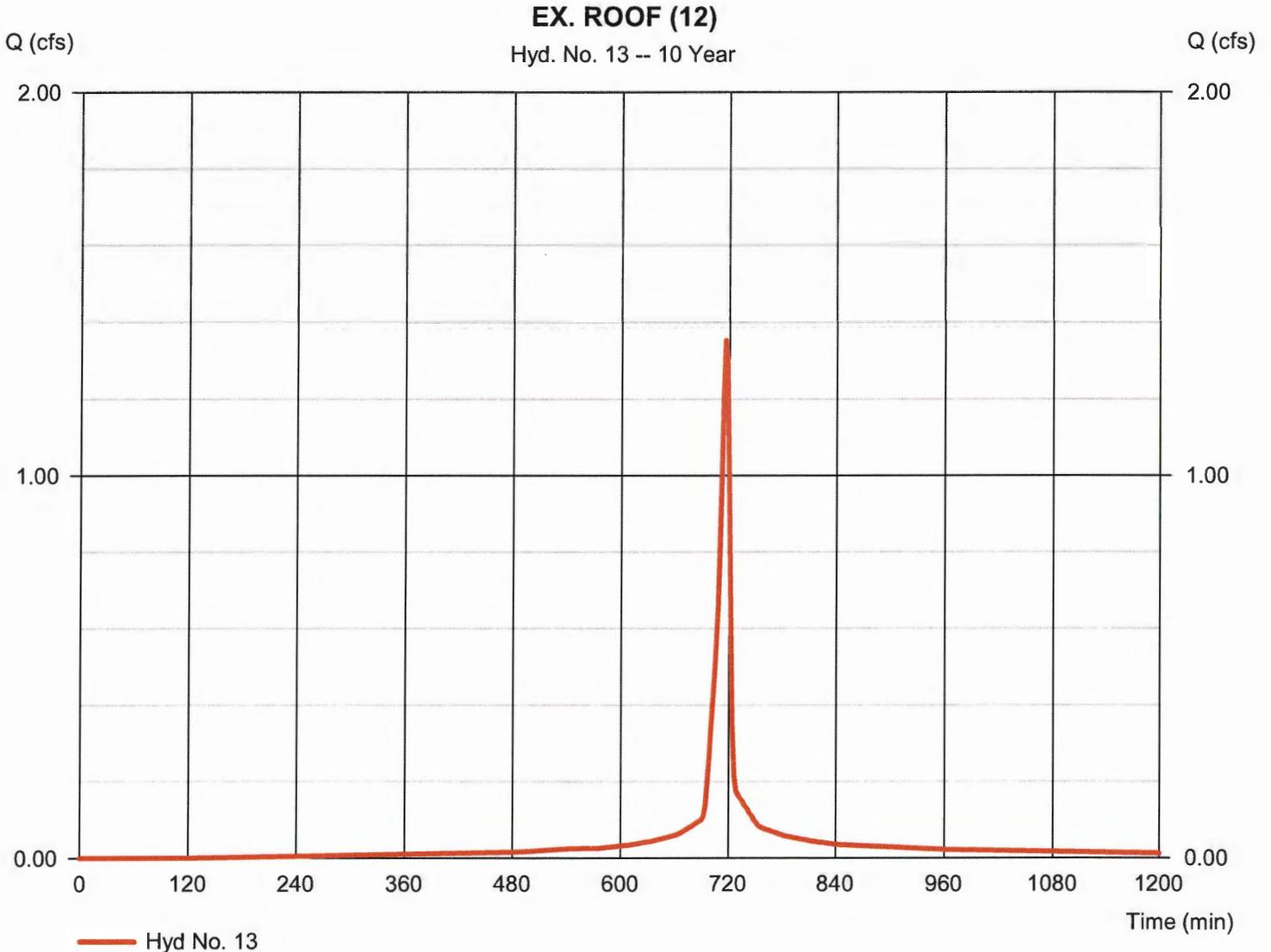


Hydrograph Report

Hyd. No. 13

EX. ROOF (12)

Hydrograph type	= SCS Runoff	Peak discharge	= 1.353 cfs
Storm frequency	= 10 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 3,075 cuft
Drainage area	= 0.200 ac	Curve number	= 95
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 5.10 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

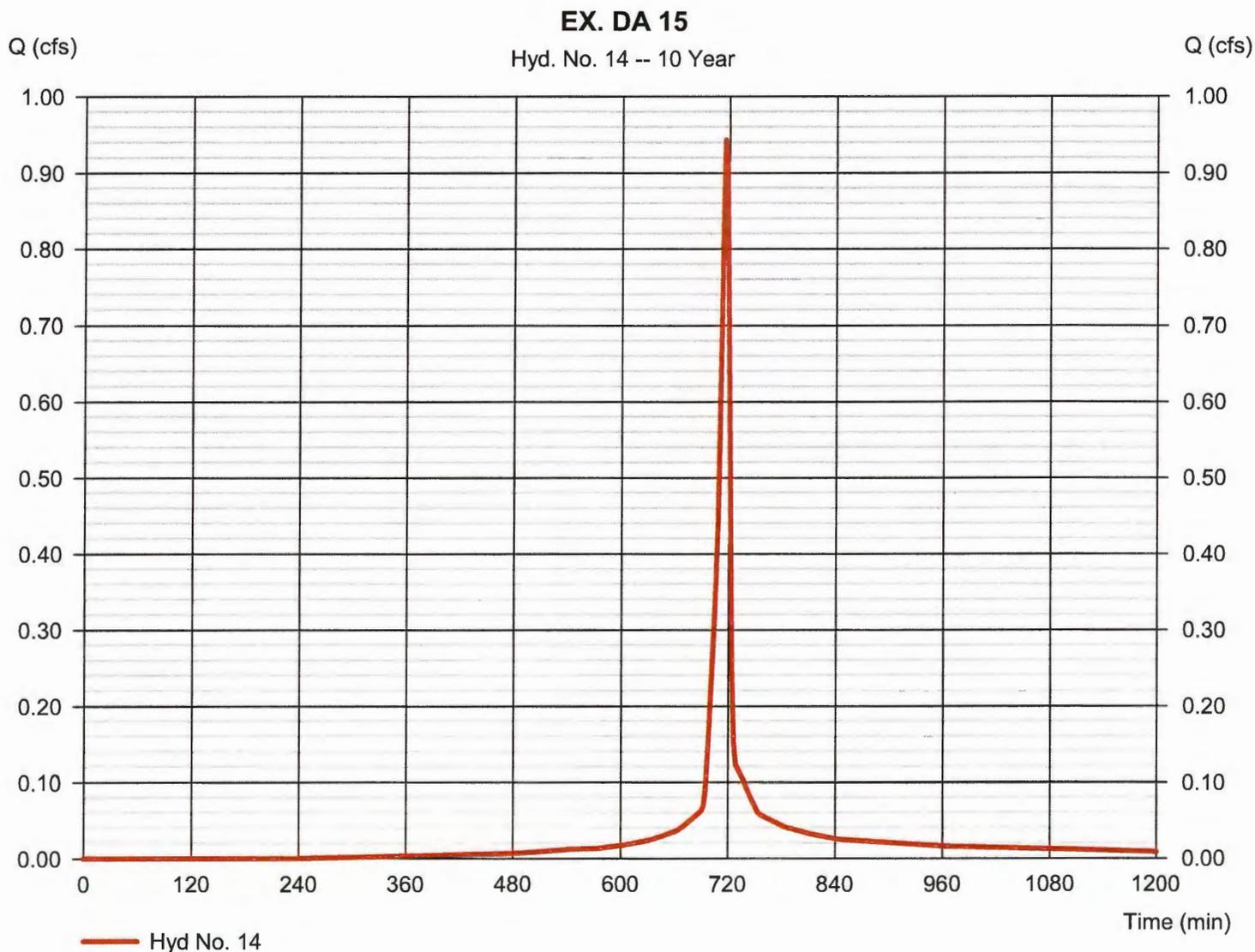


Hydrograph Report

Hyd. No. 14

EX. DA 15

Hydrograph type	= SCS Runoff	Peak discharge	= 0.944 cfs
Storm frequency	= 10 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 2,028 cuft
Drainage area	= 0.150 ac	Curve number	= 90
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 5.10 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

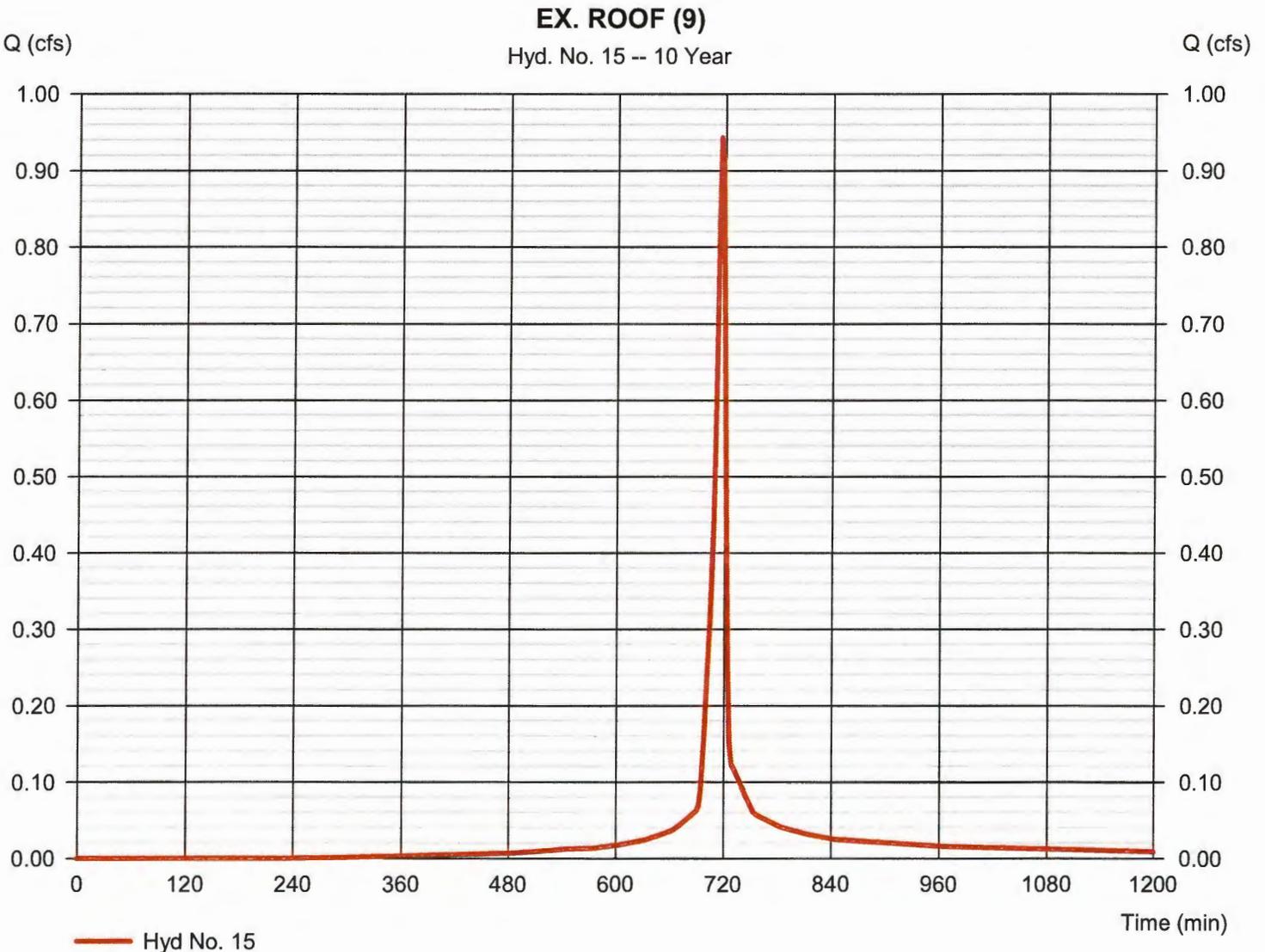


Hydrograph Report

Hyd. No. 15

EX. ROOF (9)

Hydrograph type	= SCS Runoff	Peak discharge	= 0.944 cfs
Storm frequency	= 10 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 2,028 cuft
Drainage area	= 0.150 ac	Curve number	= 90
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 5.10 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

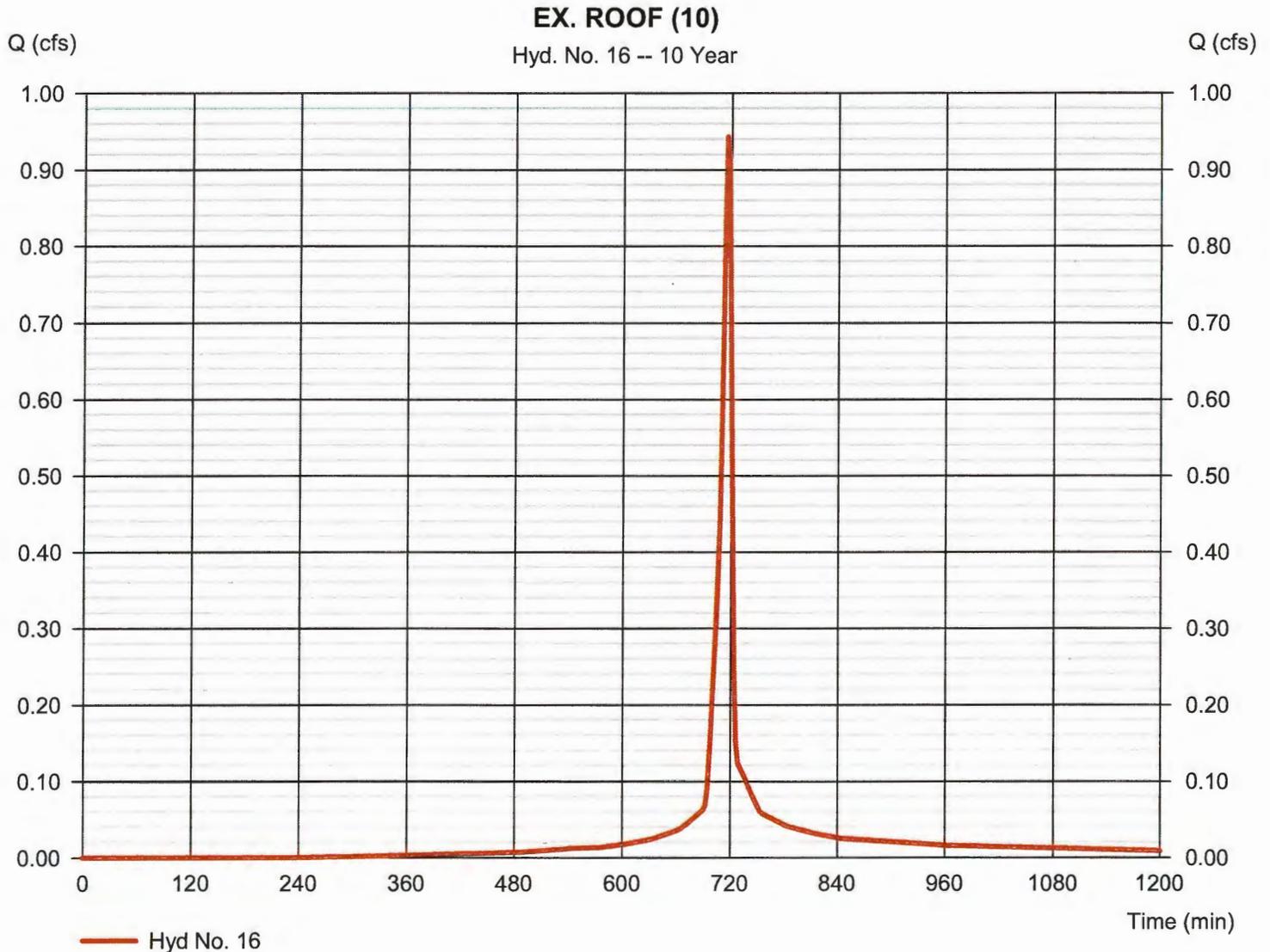


Hydrograph Report

Hyd. No. 16

EX. ROOF (10)

Hydrograph type	= SCS Runoff	Peak discharge	= 0.944 cfs
Storm frequency	= 10 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 2,028 cuft
Drainage area	= 0.150 ac	Curve number	= 90
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 5.10 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

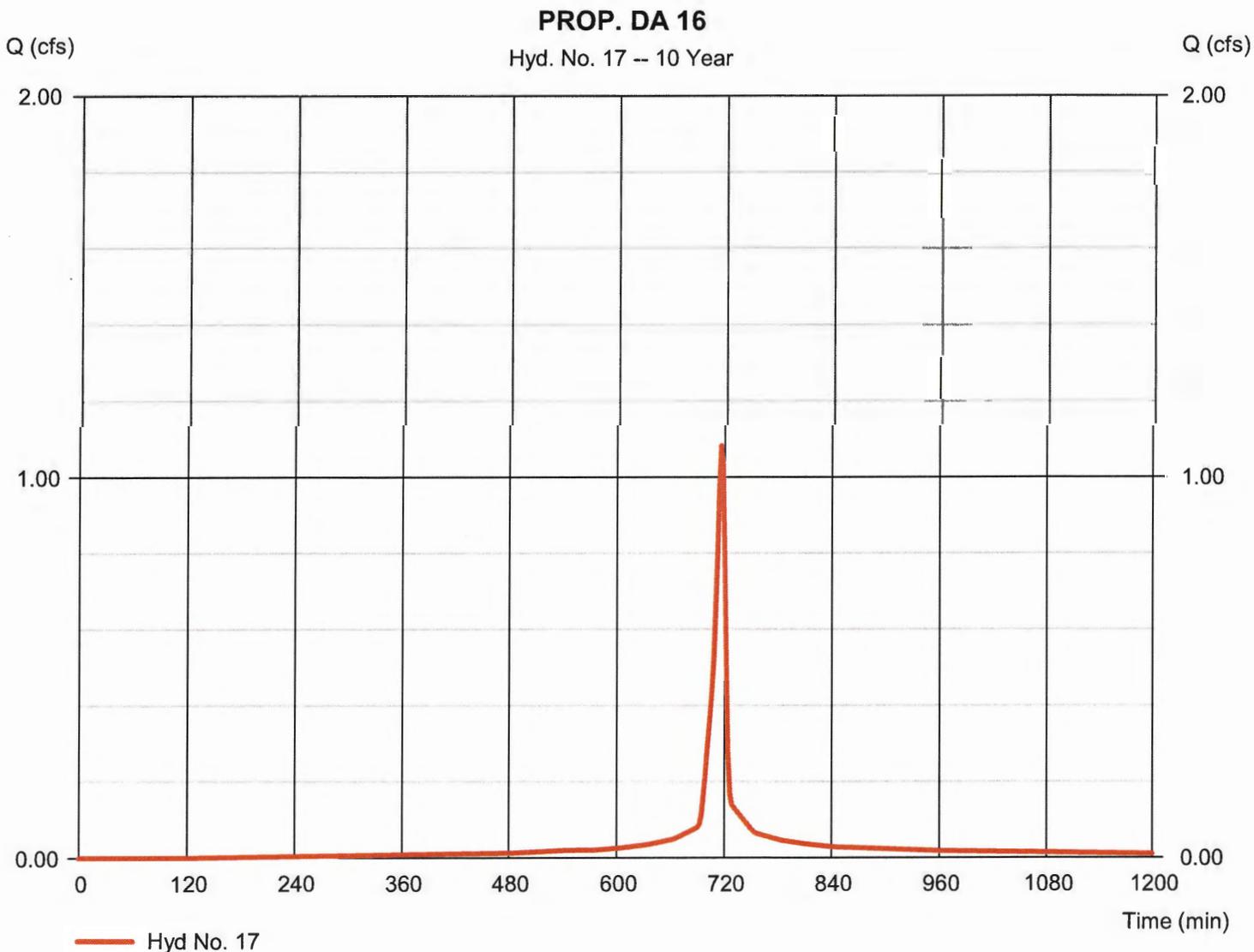


Hydrograph Report

Hyd. No. 17

PROP. DA 16

Hydrograph type	= SCS Runoff	Peak discharge	= 1.083 cfs
Storm frequency	= 10 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 2,460 cuft
Drainage area	= 0.160 ac	Curve number	= 95
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 5.10 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

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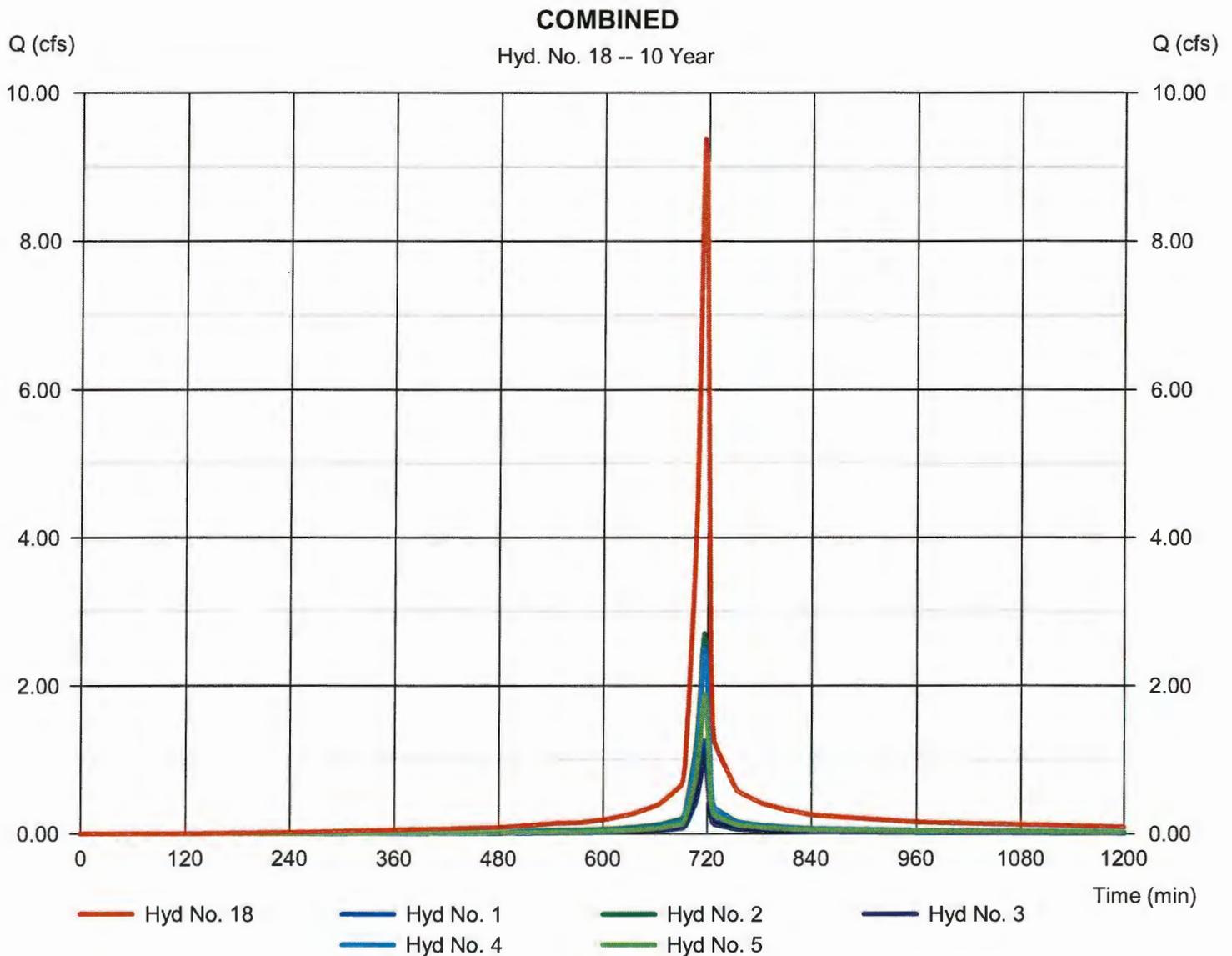
Friday, 07 / 8 / 2016

Hyd. No. 18

COMBINED

Hydrograph type = Combine
Storm frequency = 10 yrs
Time interval = 2 min
Inflow hyds. = 1, 2, 3, 4, 5

Peak discharge = 9.385 cfs
Time to peak = 716 min
Hyd. volume = 20,626 cuft
Contrib. drain. area = 1.450 ac



Hydrograph Report

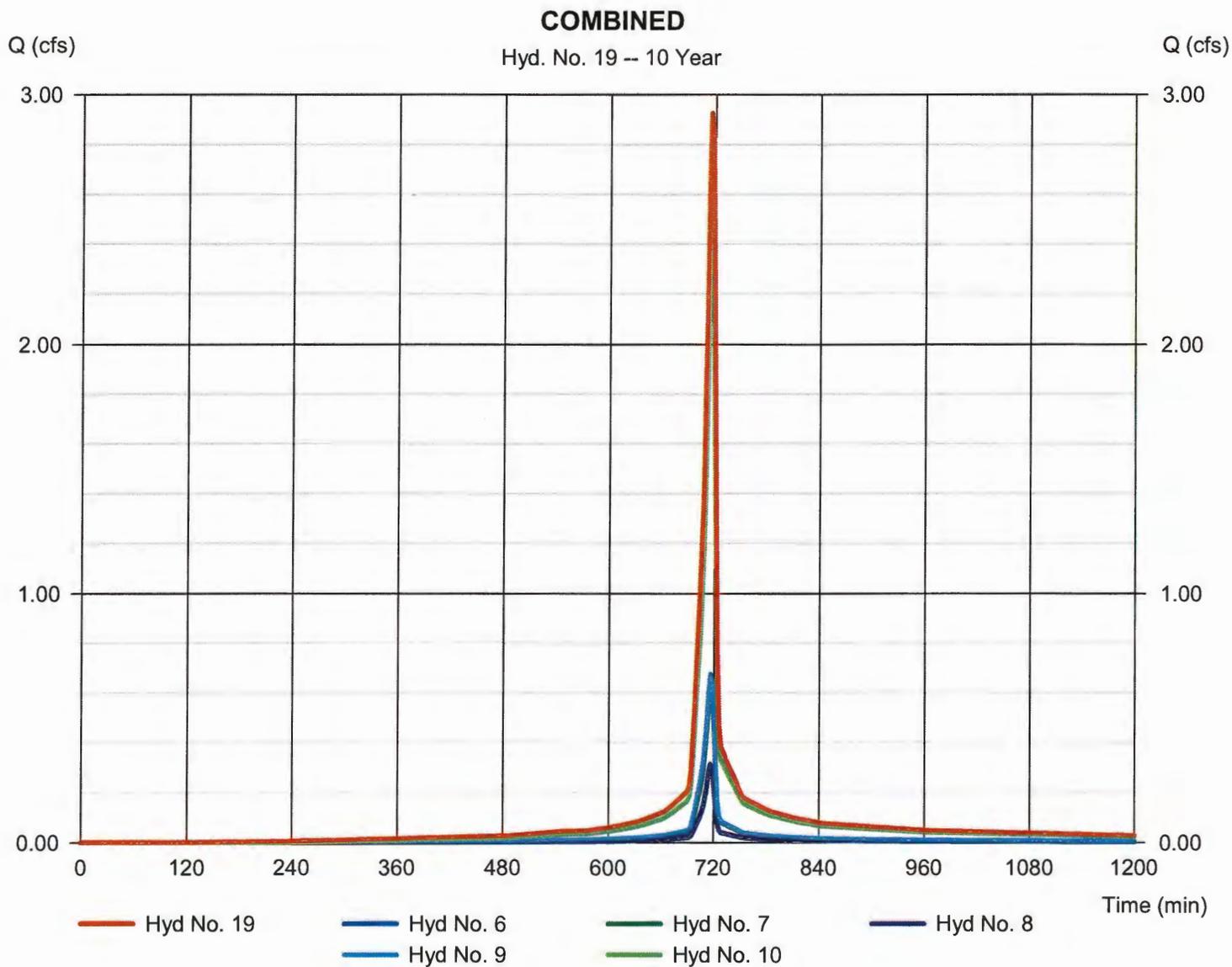
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Friday, 07 / 8 / 2016

Hyd. No. 19

COMBINED

Hydrograph type	= Combine	Peak discharge	= 2.926 cfs
Storm frequency	= 10 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 6,455 cuft
Inflow hyds.	= 6, 7, 8, 9, 10	Contrib. drain. area	= 0.750 ac



Hydrograph Report

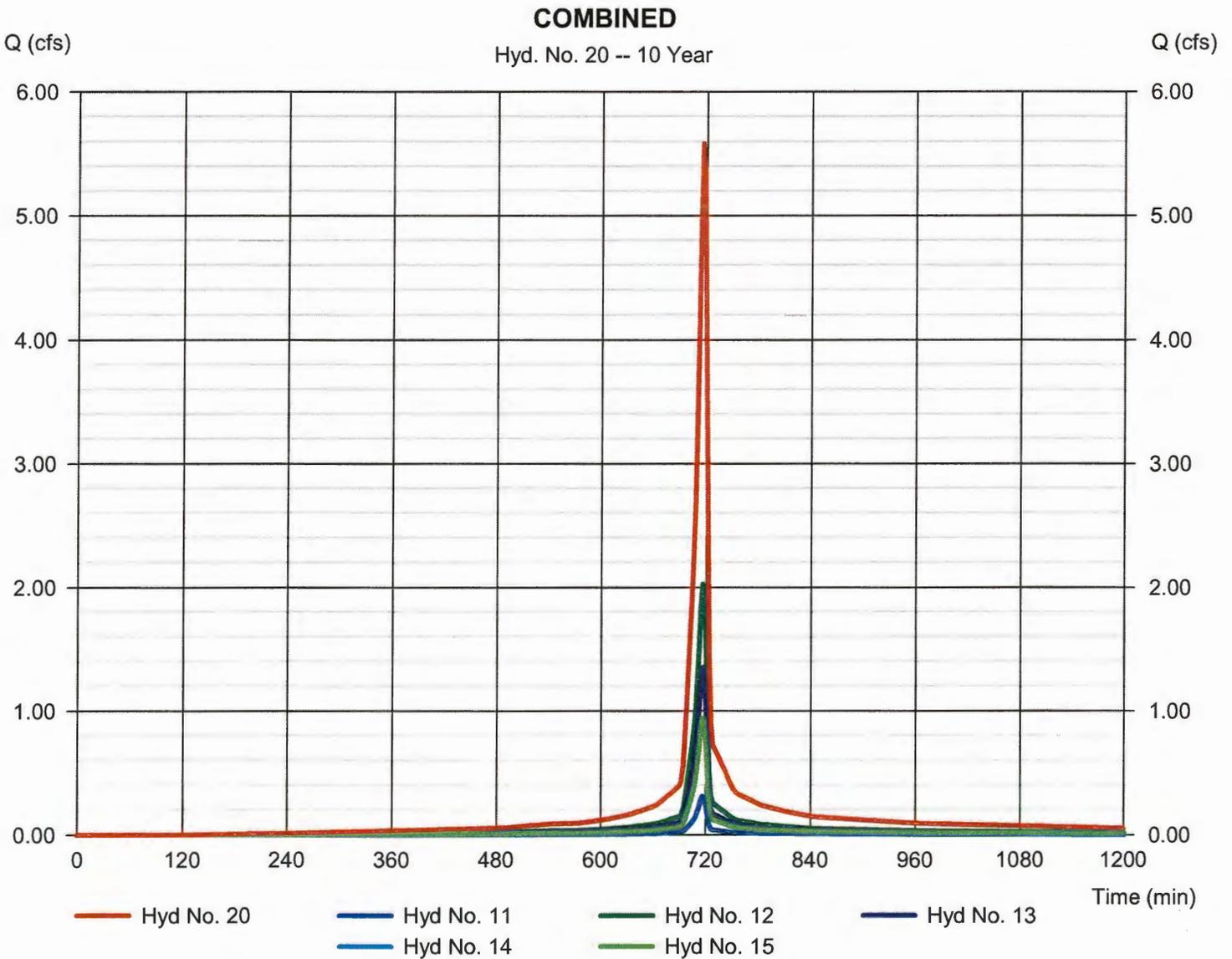
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Friday, 07 / 8 / 2016

Hyd. No. 20

COMBINED

Hydrograph type	= Combine	Peak discharge	= 5.586 cfs
Storm frequency	= 10 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 12,421 cuft
Inflow hyds.	= 11, 12, 13, 14, 15	Contrib. drain. area	= 0.850 ac



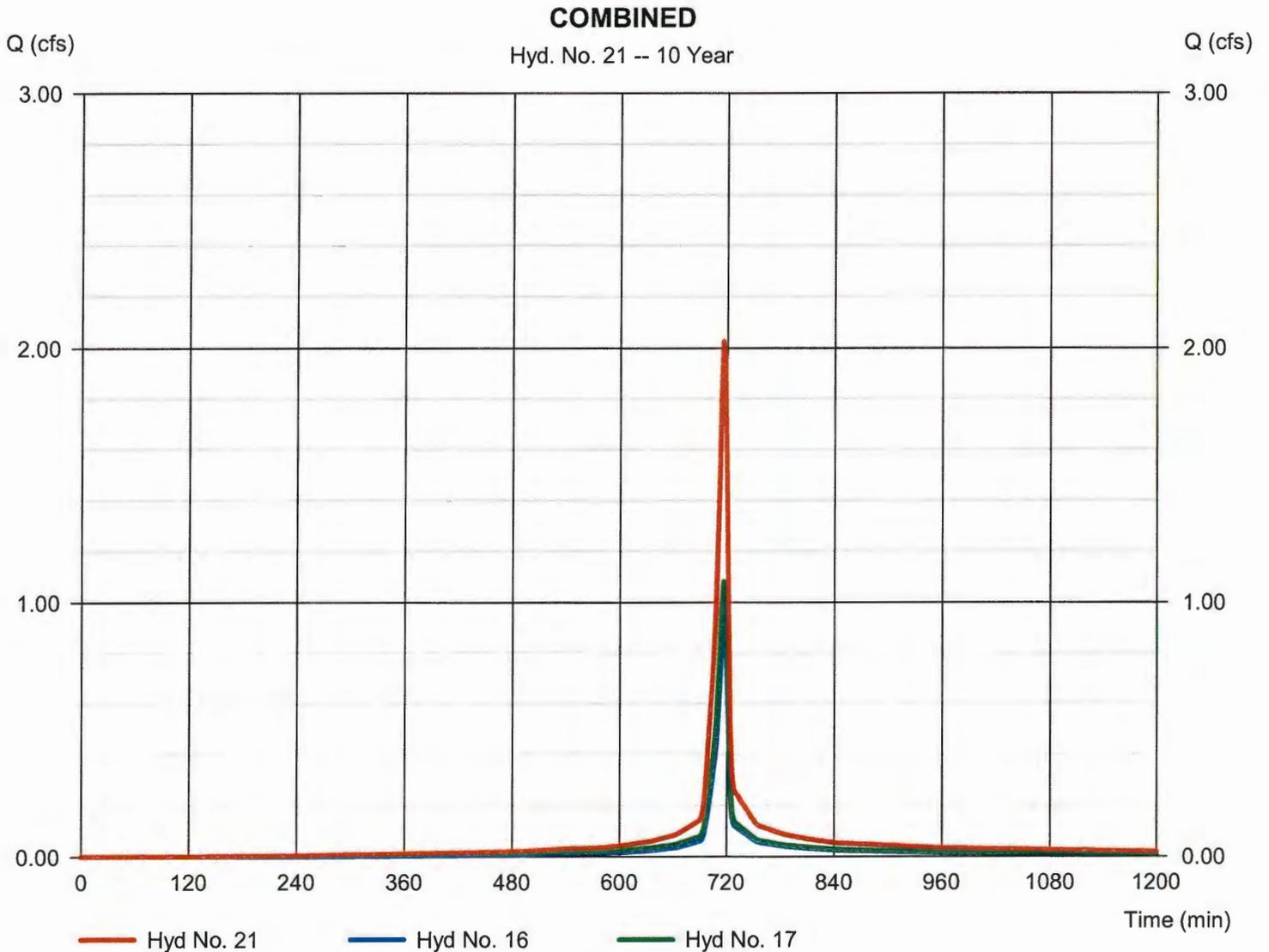
Hydrograph Report

Hyd. No. 21

COMBINED

Hydrograph type = Combine
Storm frequency = 10 yrs
Time interval = 2 min
Inflow hyds. = 16, 17

Peak discharge = 2.026 cfs
Time to peak = 716 min
Hyd. volume = 4,488 cuft
Contrib. drain. area = 0.310 ac



Hydrograph Report

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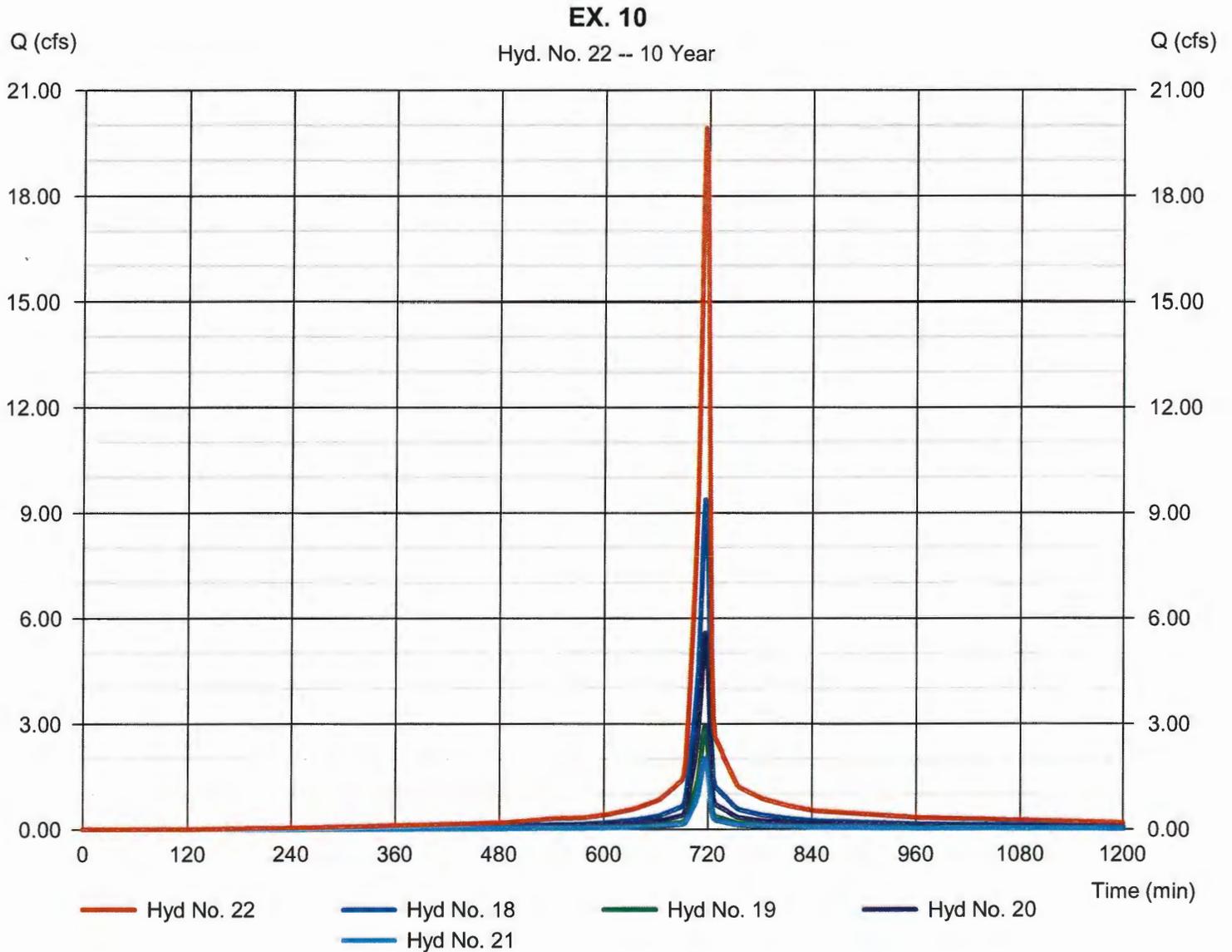
Friday, 07 / 8 / 2016

Hyd. No. 22

EX. 10

Hydrograph type = Combine
Storm frequency = 10 yrs
Time interval = 2 min
Inflow hyds. = 18, 19, 20, 21

Peak discharge = 19.92 cfs
Time to peak = 716 min
Hyd. volume = 43,990 cuft
Contrib. drain. area = 0.000 ac



Hydrograph Report

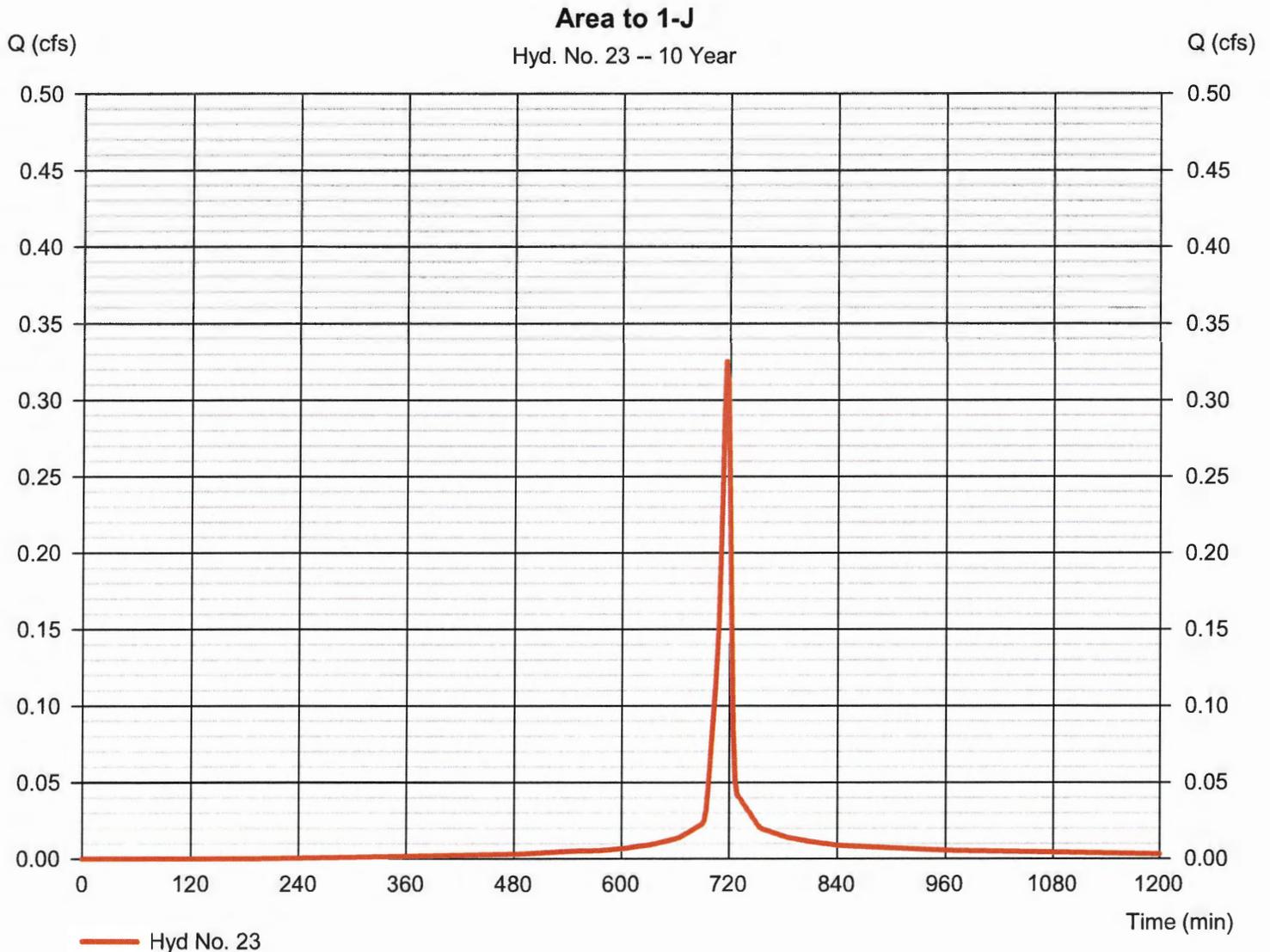
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Hyd. No. 23

Area to 1-J

Hydrograph type	= SCS Runoff	Peak discharge	= 0.325 cfs
Storm frequency	= 10 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 712 cuft
Drainage area	= 0.050 ac	Curve number	= 92
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 5.10 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

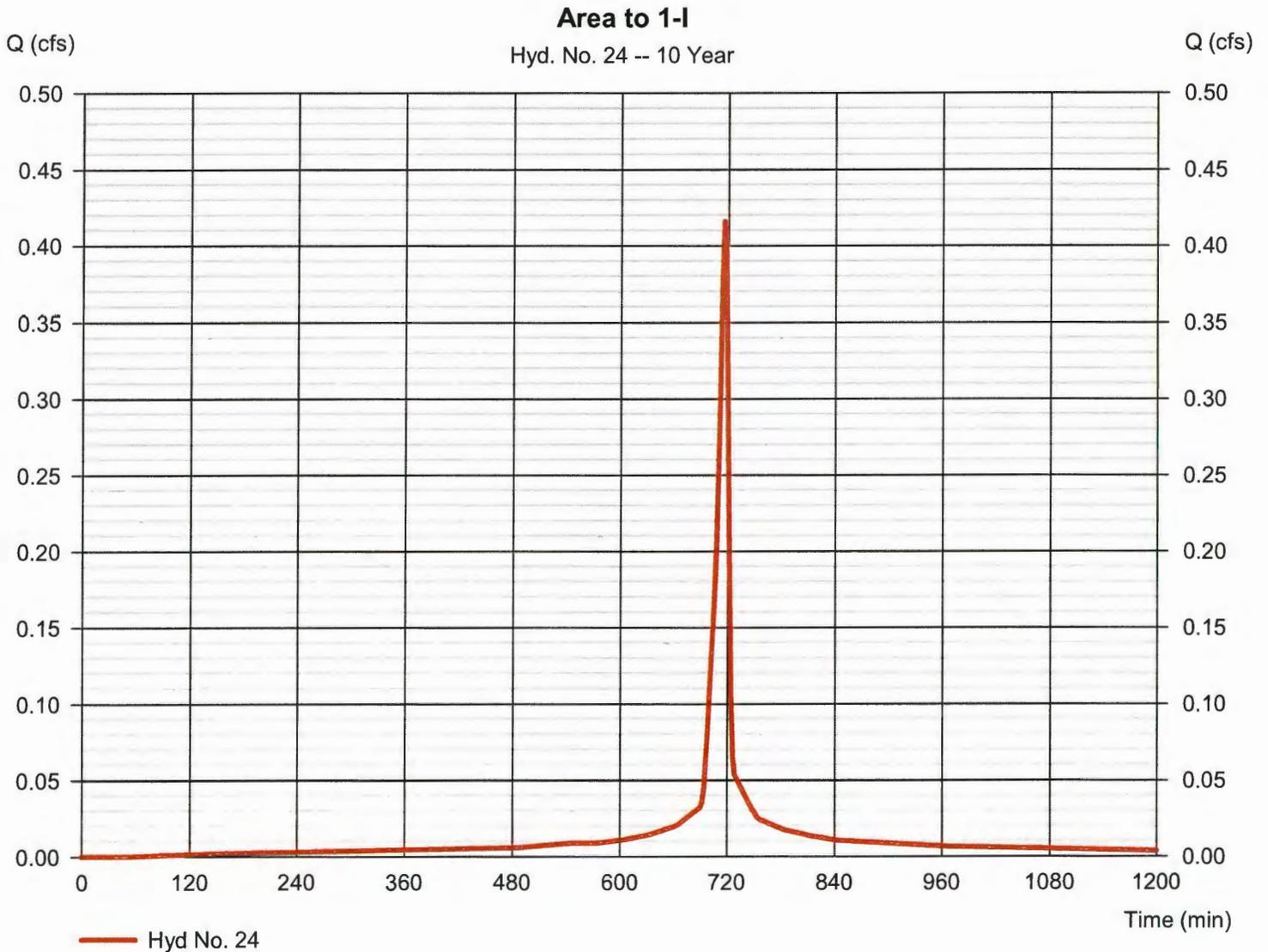
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Hyd. No. 24

Area to 1-I

Hydrograph type	= SCS Runoff	Peak discharge	= 0.416 cfs
Storm frequency	= 10 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 993 cuft
Drainage area	= 0.060 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 5.10 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

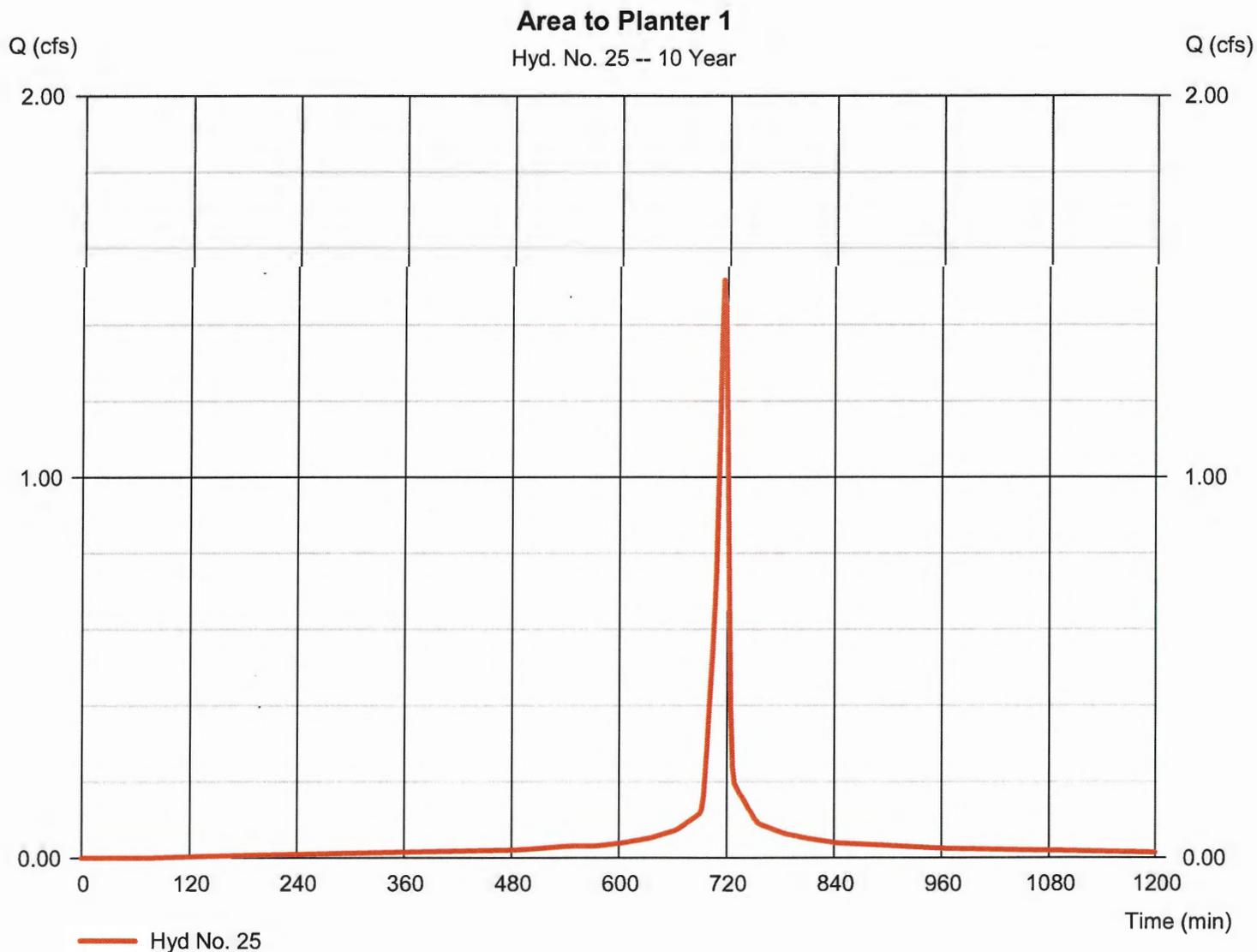


Hydrograph Report

Hyd. No. 25

Area to Planter 1

Hydrograph type	= SCS Runoff	Peak discharge	= 1.516 cfs
Storm frequency	= 10 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 3,554 cuft
Drainage area	= 0.220 ac	Curve number	= 97
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 5.10 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



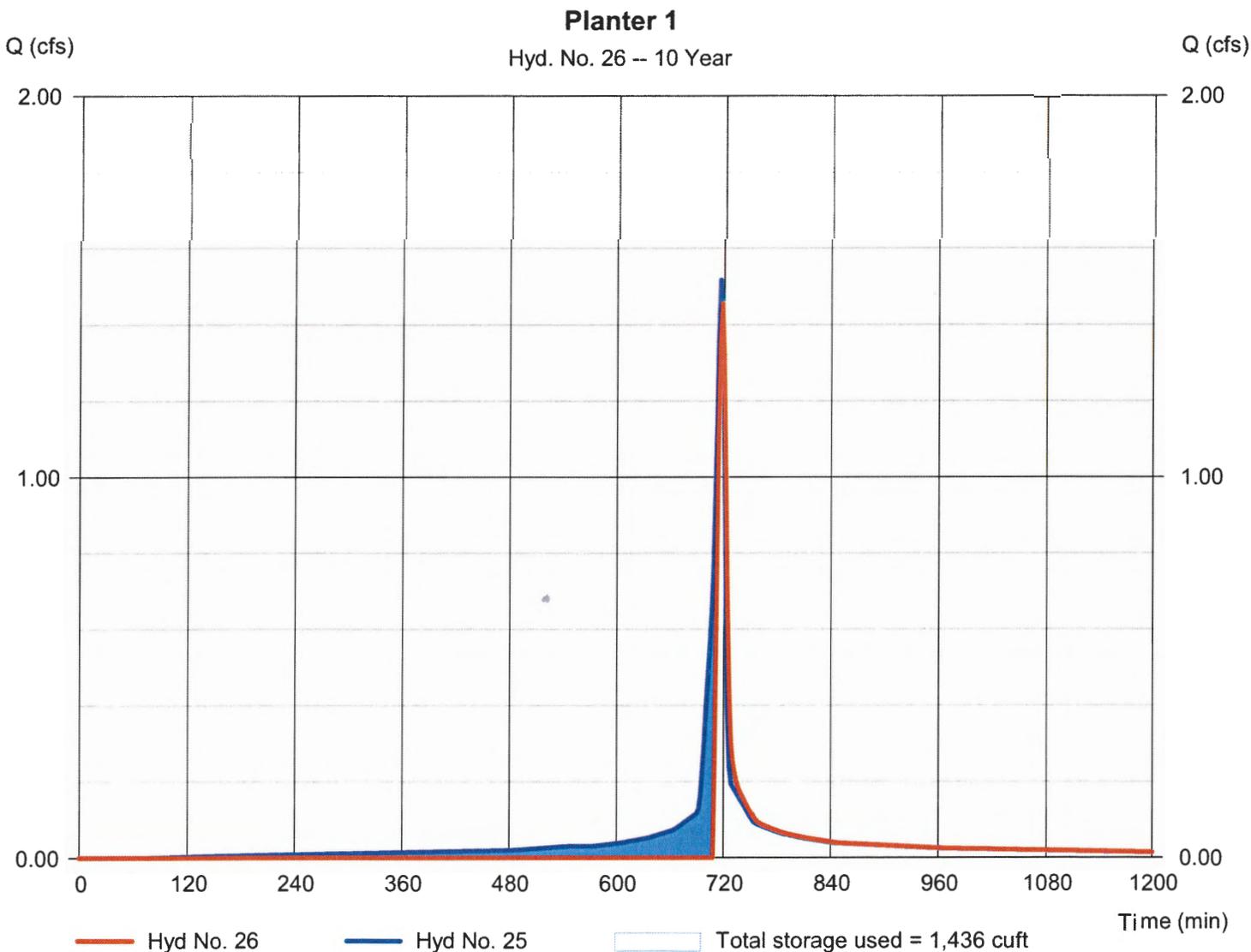
Hydrograph Report

Hyd. No. 26

Planter 1

Hydrograph type	= Reservoir	Peak discharge	= 1.456 cfs
Storm frequency	= 10 yrs	Time to peak	= 718 min
Time interval	= 2 min	Hyd. volume	= 2,313 cuft
Inflow hyd. No.	= 25 - Area to Planter 1	Max. Elevation	= 442.77 ft
Reservoir name	= Planter 1	Max. Storage	= 1,436 cuft

Storage Indication method used.



Hydrograph Report

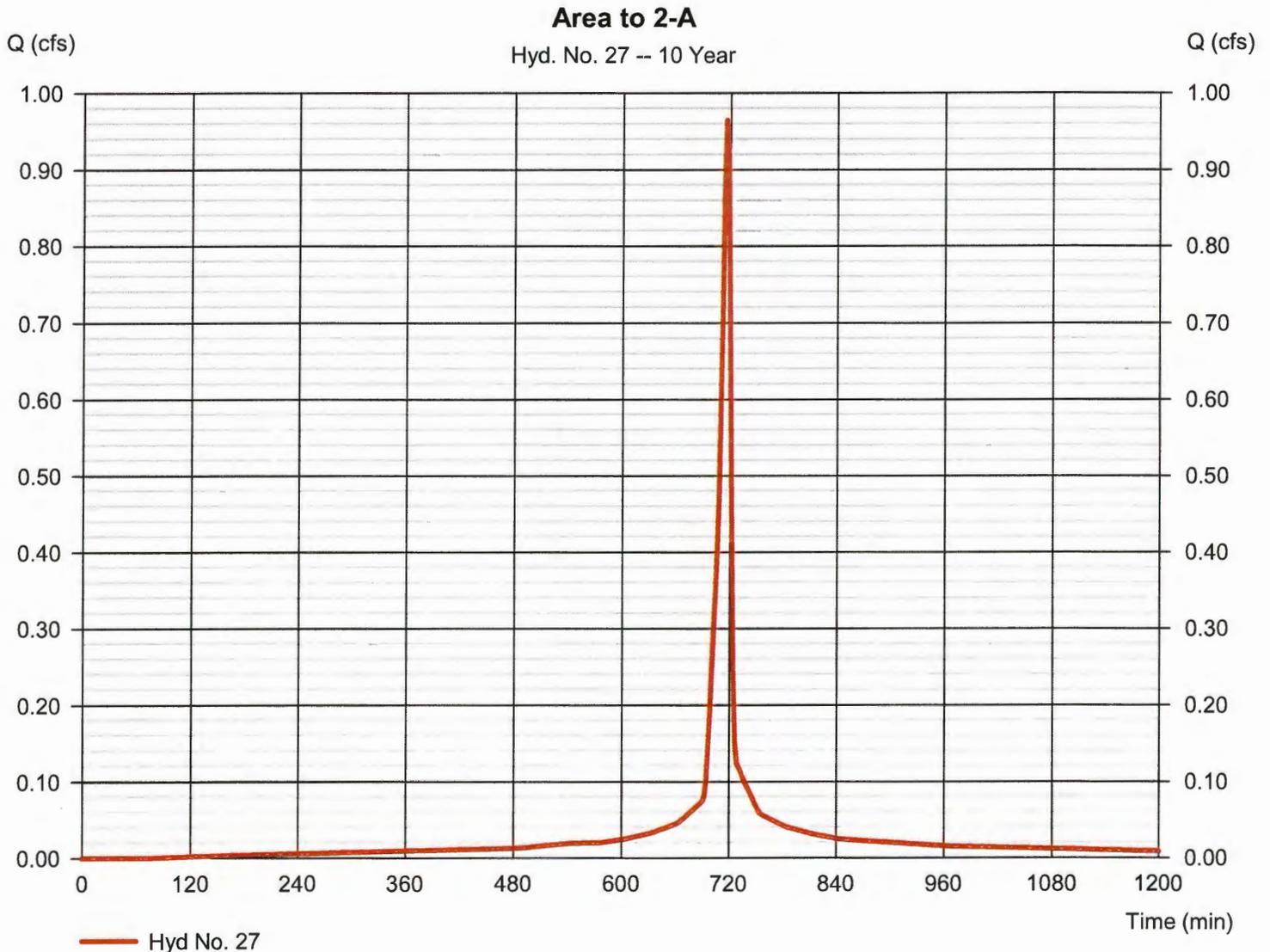
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Hyd. No. 27

Area to 2-A

Hydrograph type	= SCS Runoff	Peak discharge	= 0.965 cfs
Storm frequency	= 10 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 2,262 cuft
Drainage area	= 0.140 ac	Curve number	= 97
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 5.10 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

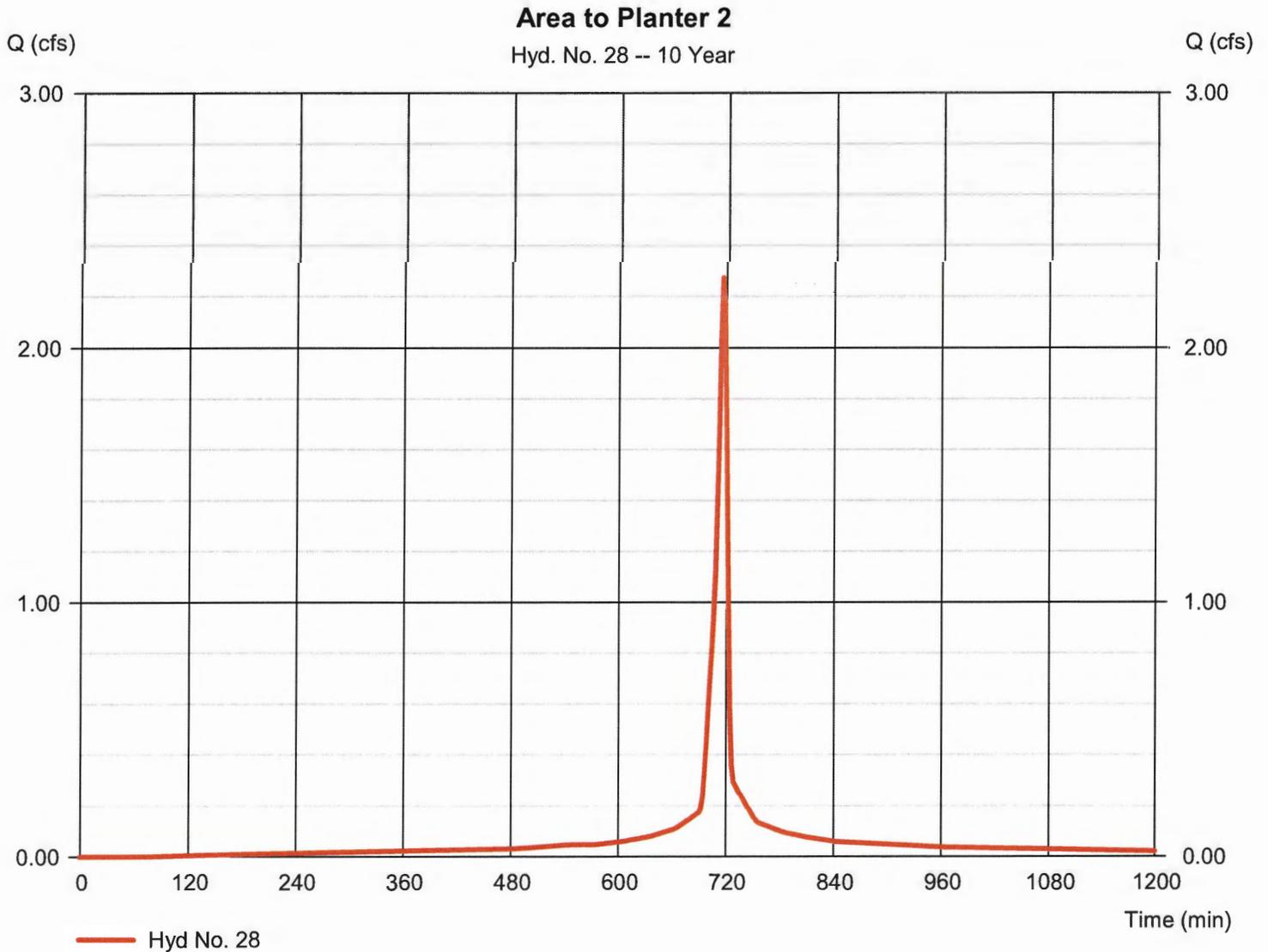
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Hyd. No. 28

Area to Planter 2

Hydrograph type	= SCS Runoff	Peak discharge	= 2.274 cfs
Storm frequency	= 10 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 5,331 cuft
Drainage area	= 0.330 ac	Curve number	= 97
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 5.10 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

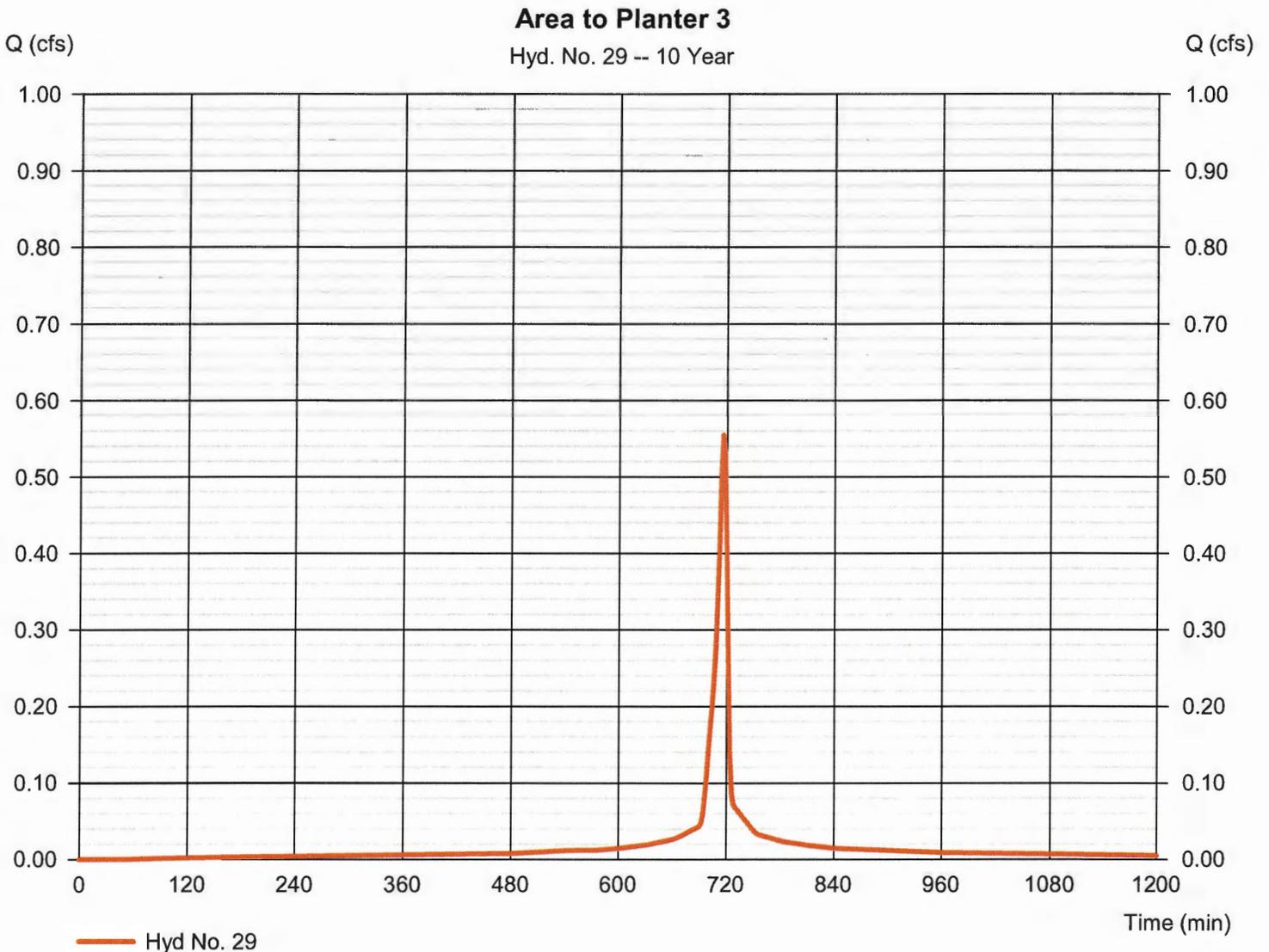
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Hyd. No. 29

Area to Planter 3

Hydrograph type	= SCS Runoff	Peak discharge	= 0.555 cfs
Storm frequency	= 10 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 1,324 cuft
Drainage area	= 0.080 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 5.10 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

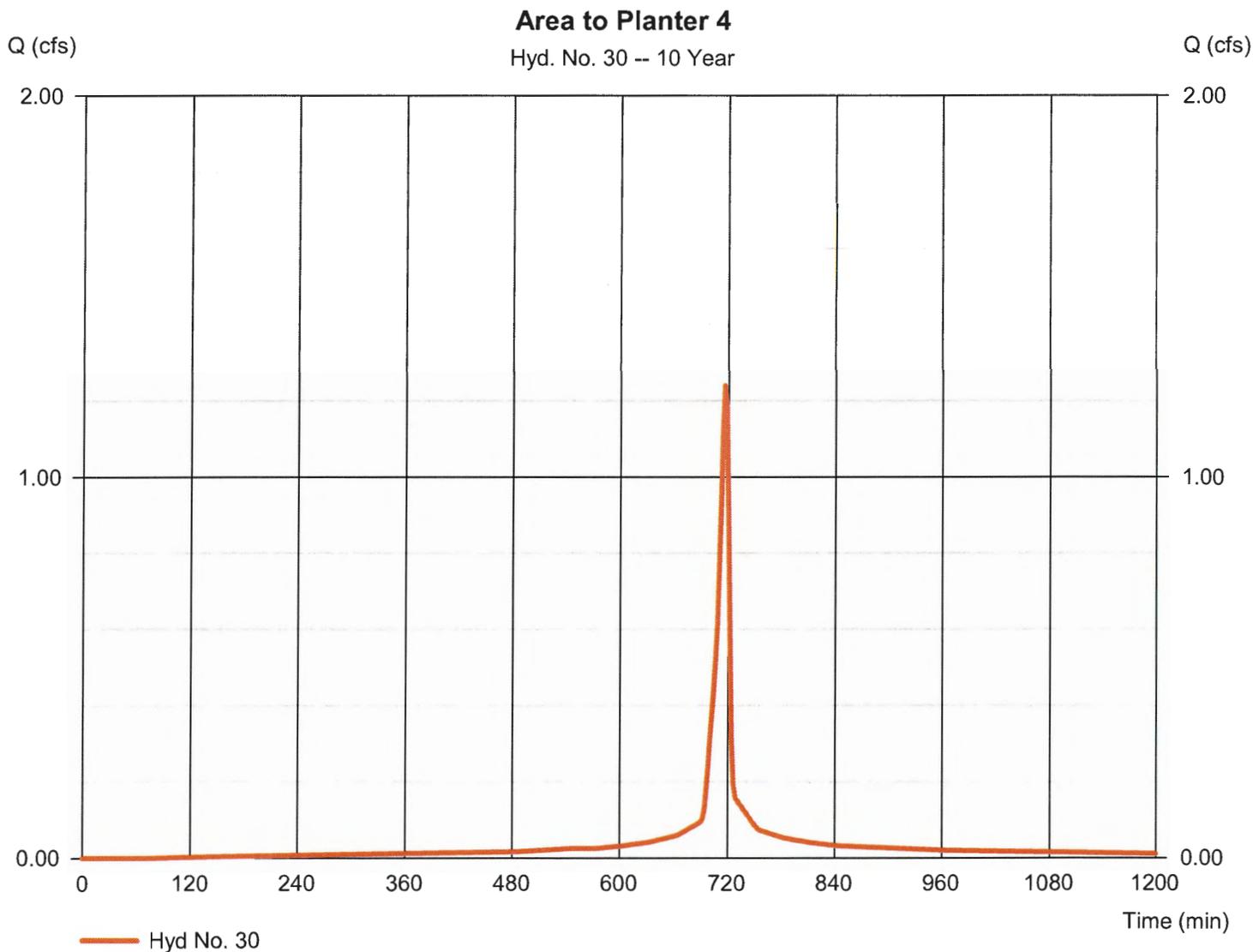


Hydrograph Report

Hyd. No. 30

Area to Planter 4

Hydrograph type	= SCS Runoff	Peak discharge	= 1.240 cfs
Storm frequency	= 10 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 2,908 cuft
Drainage area	= 0.180 ac	Curve number	= 97
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 5.10 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

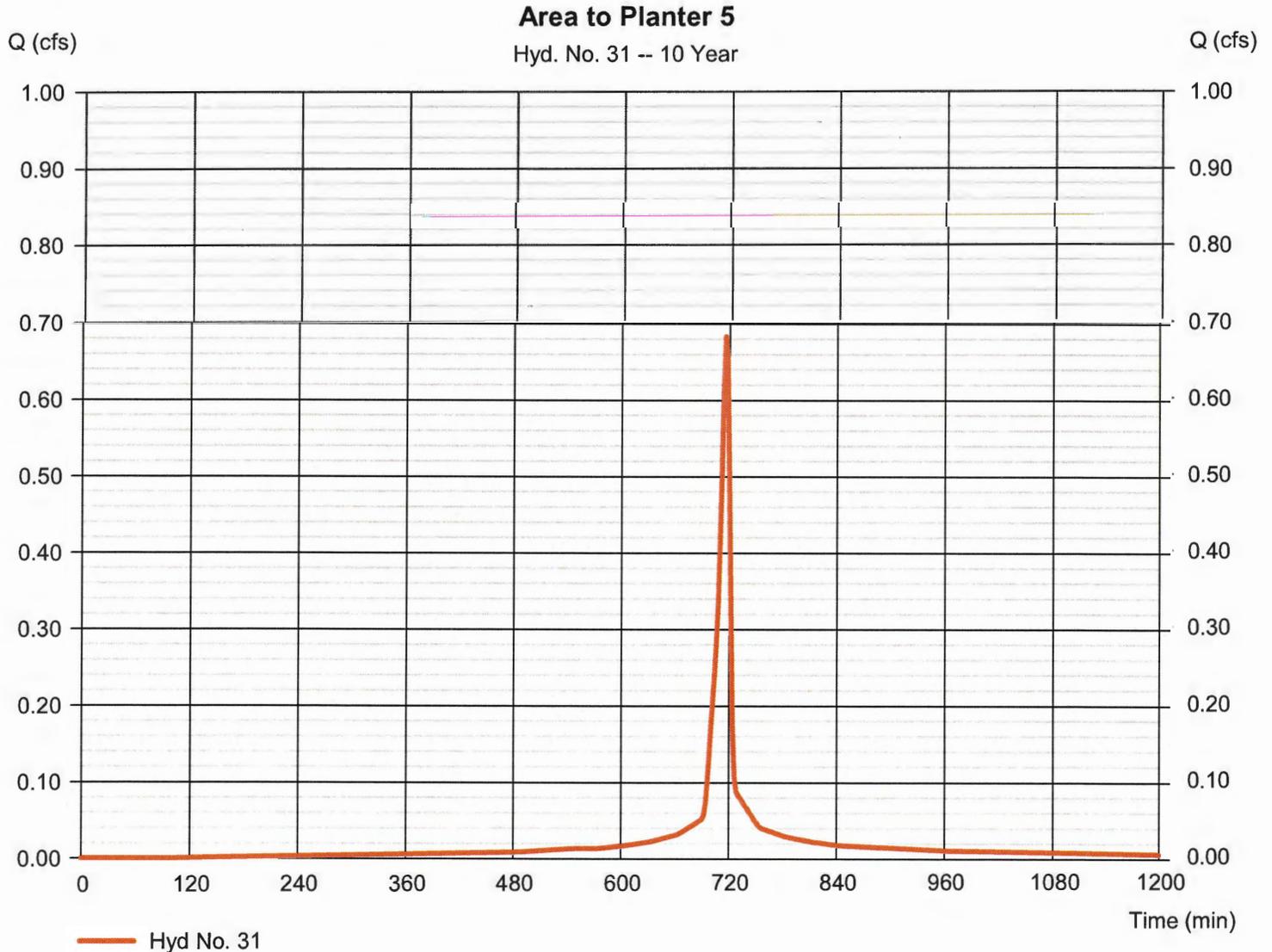


Hydrograph Report

Hyd. No. 31

Area to Planter 5

Hydrograph type	= SCS Runoff	Peak discharge	= 0.683 cfs
Storm frequency	= 10 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 1,576 cuft
Drainage area	= 0.100 ac	Curve number	= 96
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 5.10 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

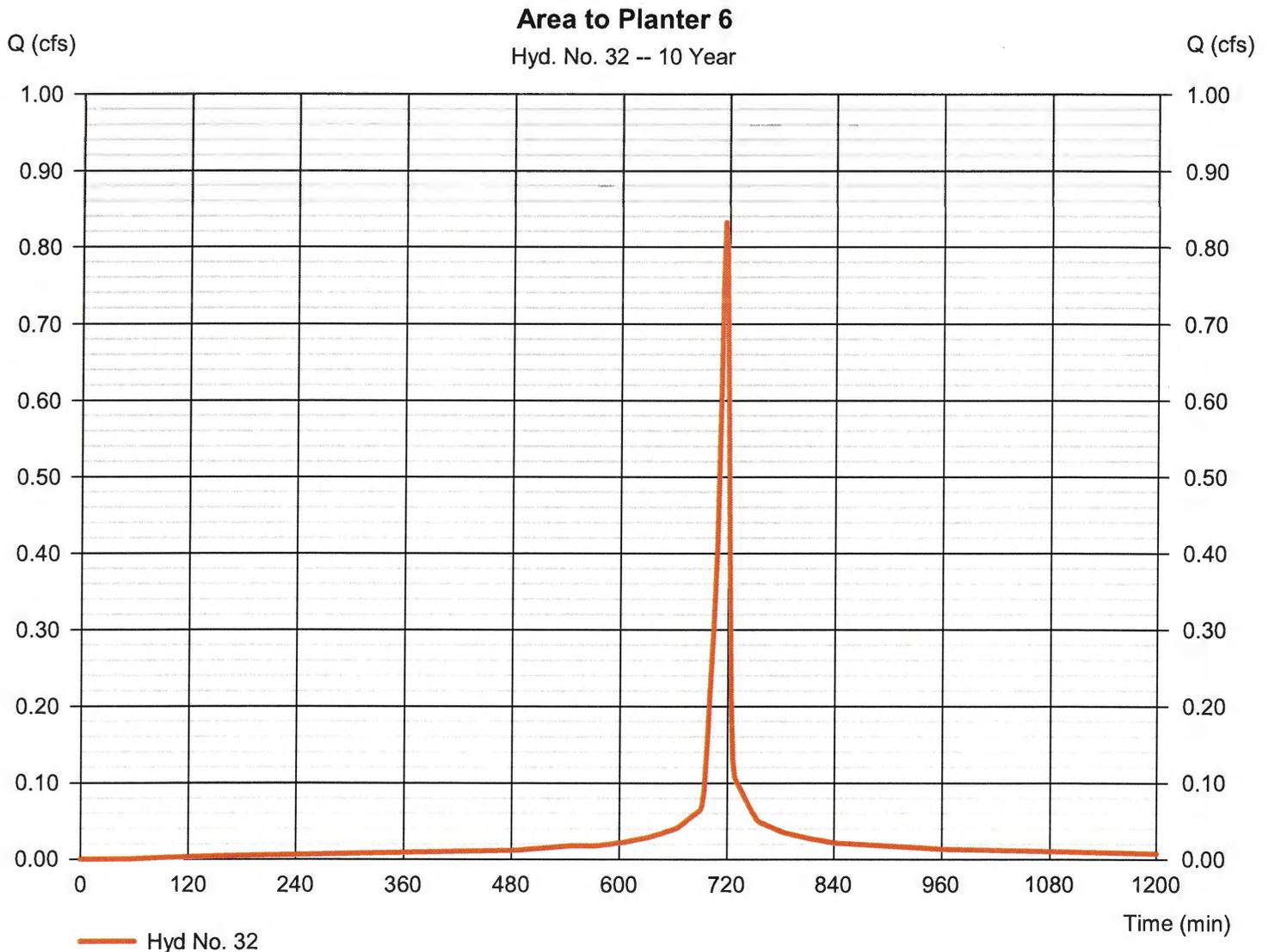


Hydrograph Report

Hyd. No. 32

Area to Planter 6

Hydrograph type	= SCS Runoff	Peak discharge	= 0.832 cfs
Storm frequency	= 10 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 1,986 cuft
Drainage area	= 0.120 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 5.10 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

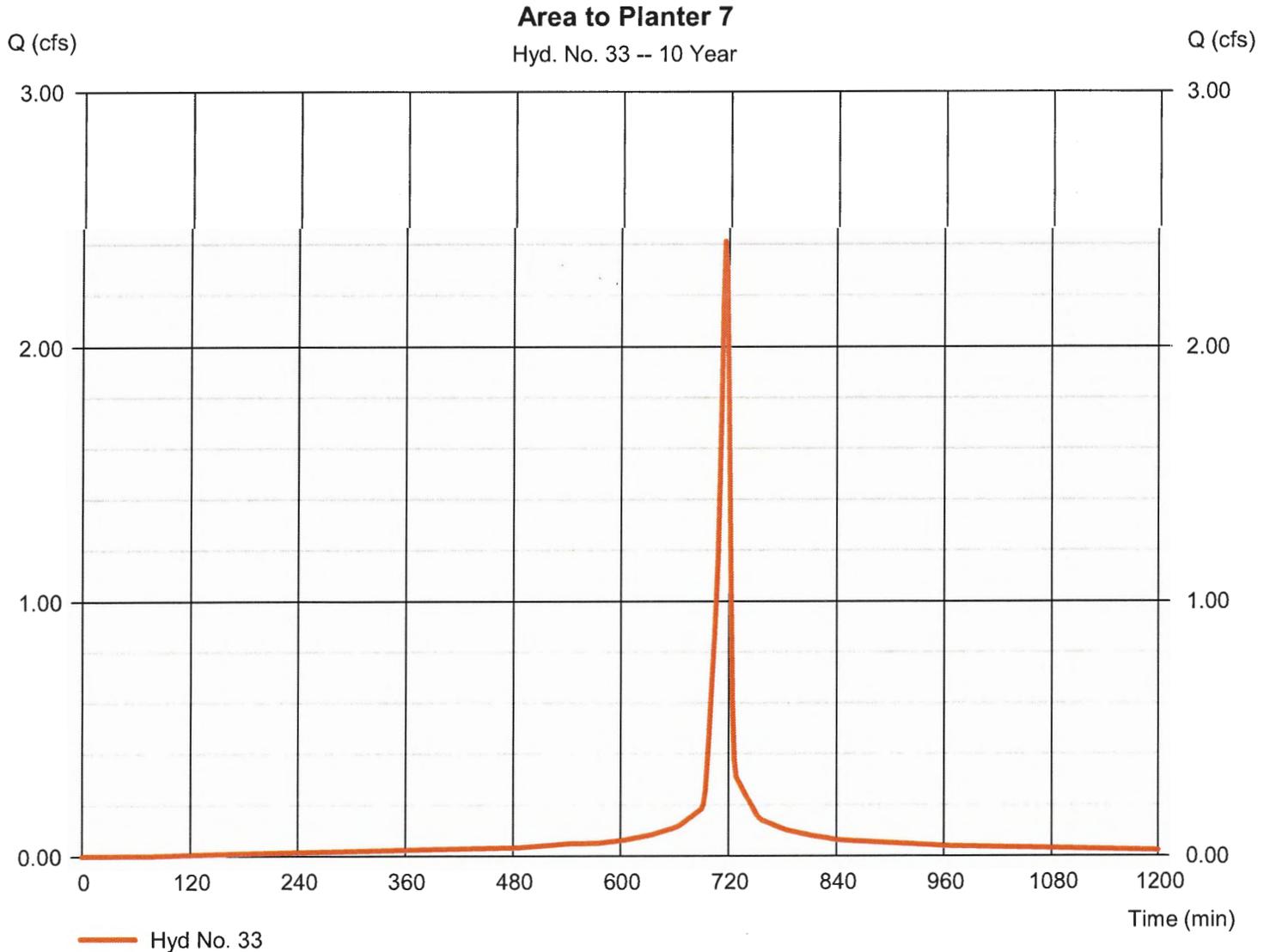


Hydrograph Report

Hyd. No. 33

Area to Planter 7

Hydrograph type	= SCS Runoff	Peak discharge	= 2.412 cfs
Storm frequency	= 10 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 5,654 cuft
Drainage area	= 0.350 ac	Curve number	= 97
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 5.10 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

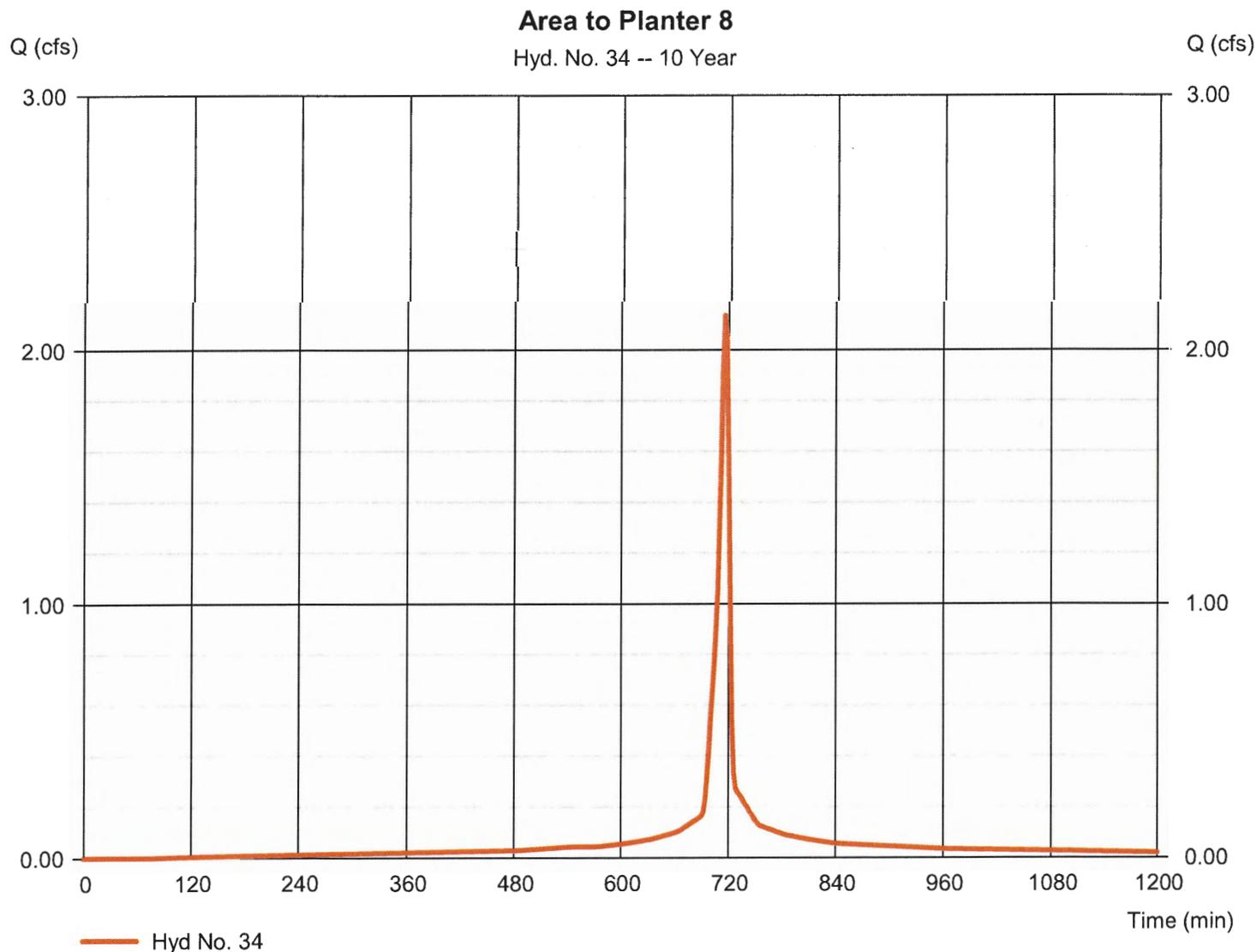


Hydrograph Report

Hyd. No. 34

Area to Planter 8

Hydrograph type	= SCS Runoff	Peak discharge	= 2.136 cfs
Storm frequency	= 10 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 5,008 cuft
Drainage area	= 0.310 ac	Curve number	= 97
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 5.10 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

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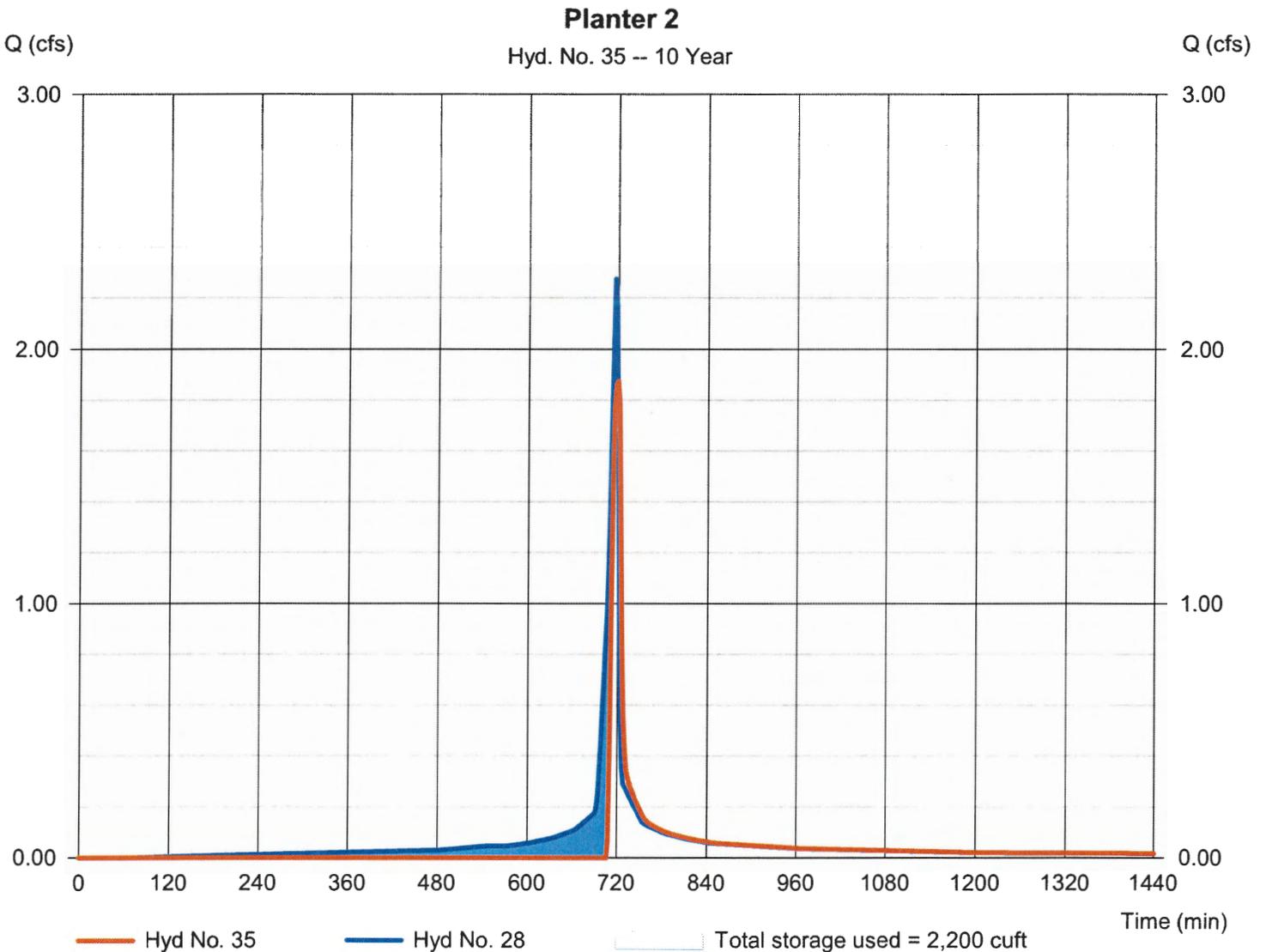
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Hyd. No. 35

Planter 2

Hydrograph type	= Reservoir	Peak discharge	= 1.874 cfs
Storm frequency	= 10 yrs	Time to peak	= 720 min
Time interval	= 2 min	Hyd. volume	= 3,538 cuft
Inflow hyd. No.	= 28 - Area to Planter 2	Max. Elevation	= 442.90 ft
Reservoir name	= Planter 2	Max. Storage	= 2,200 cuft

Storage Indication method used.



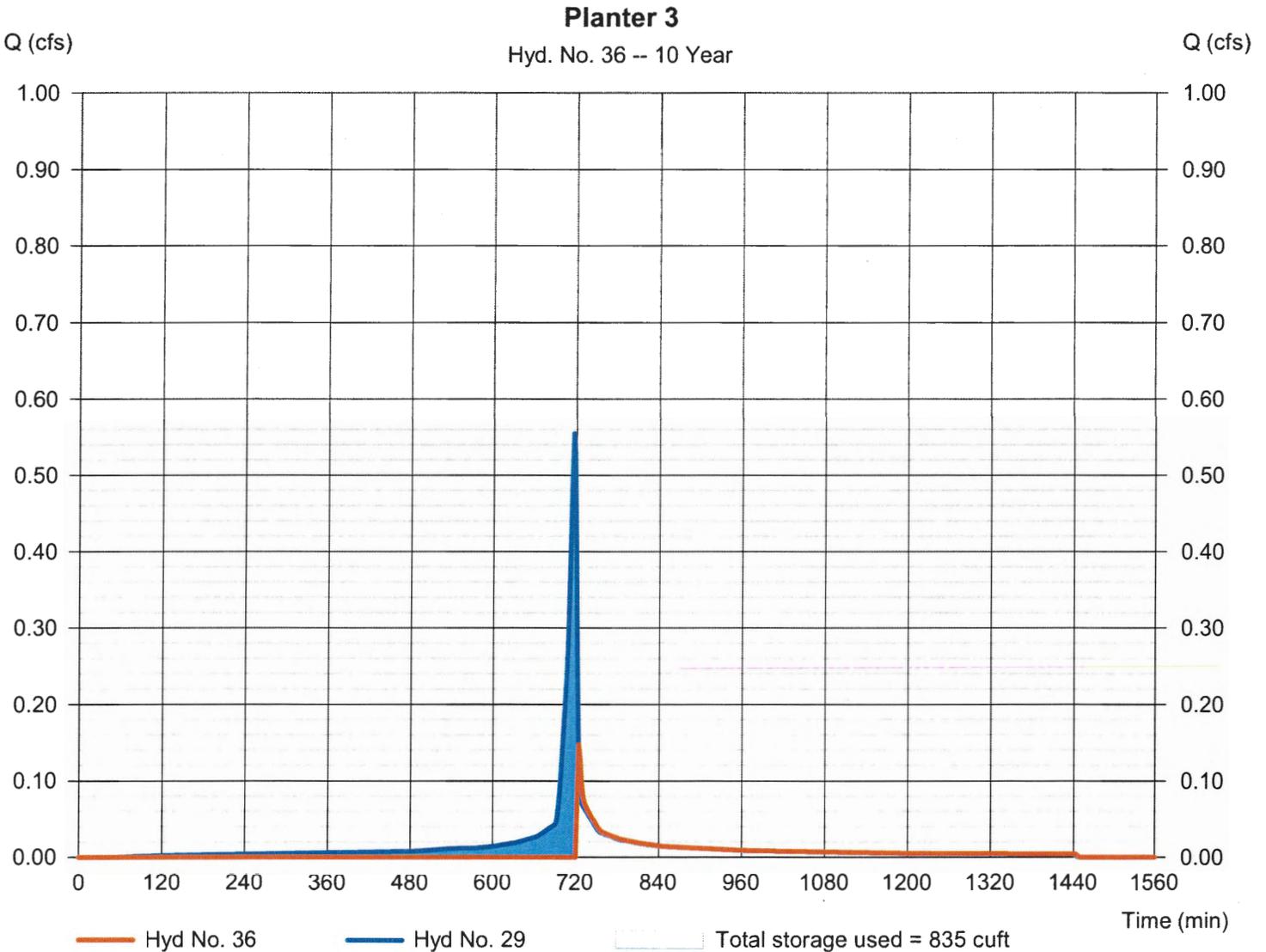
Hydrograph Report

Hyd. No. 36

Planter 3

Hydrograph type	= Reservoir	Peak discharge	= 0.147 cfs
Storm frequency	= 10 yrs	Time to peak	= 724 min
Time interval	= 2 min	Hyd. volume	= 510 cuft
Inflow hyd. No.	= 29 - Area to Planter 3	Max. Elevation	= 442.55 ft
Reservoir name	= Planter 3	Max. Storage	= 835 cuft

Storage Indication method used.



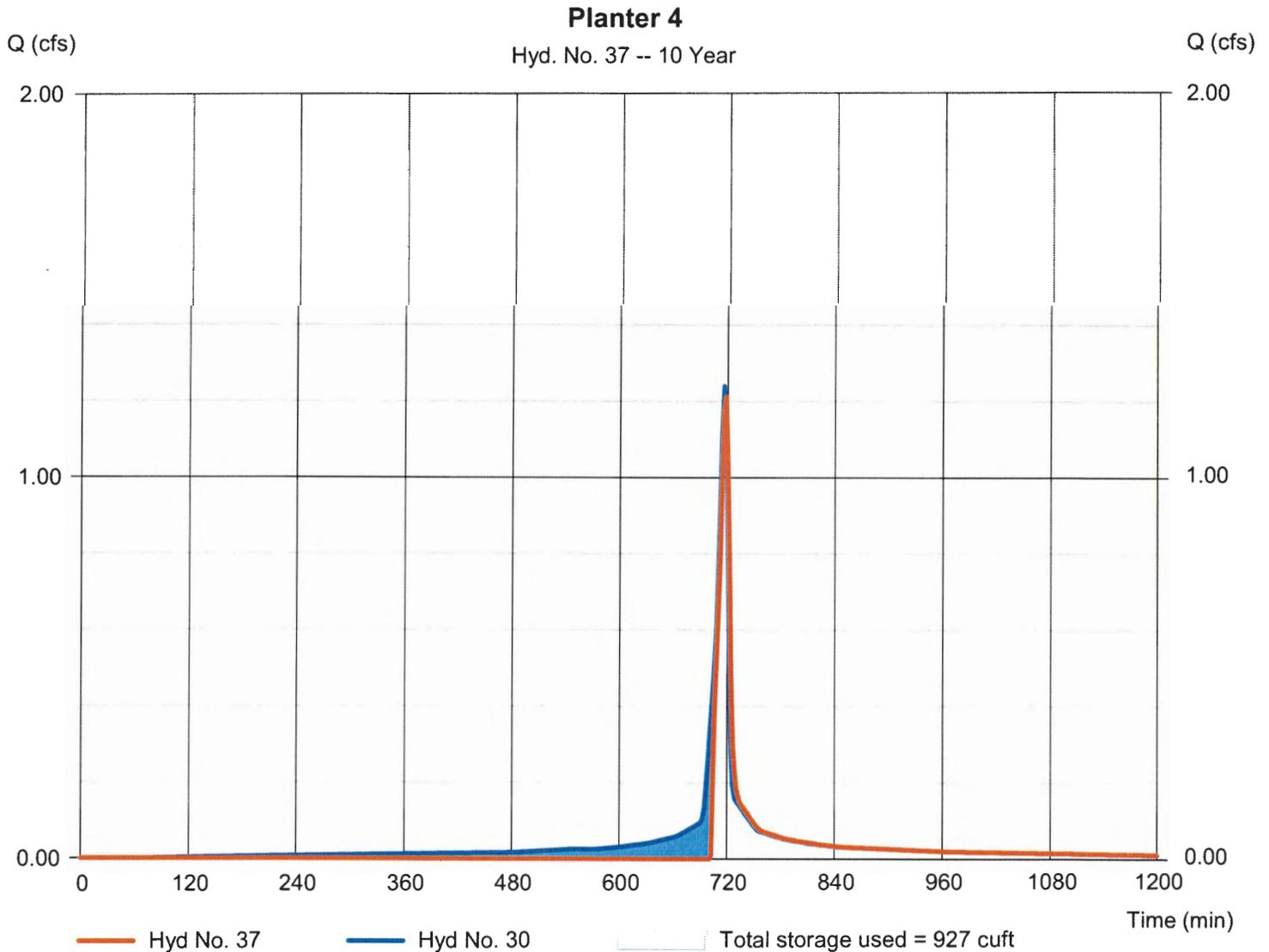
Hydrograph Report

Hyd. No. 37

Planter 4

Hydrograph type	= Reservoir	Peak discharge	= 1.212 cfs
Storm frequency	= 10 yrs	Time to peak	= 718 min
Time interval	= 2 min	Hyd. volume	= 2,093 cuft
Inflow hyd. No.	= 30 - Area to Planter 4	Max. Elevation	= 442.74 ft
Reservoir name	= Planter 4	Max. Storage	= 927 cuft

Storage Indication method used.



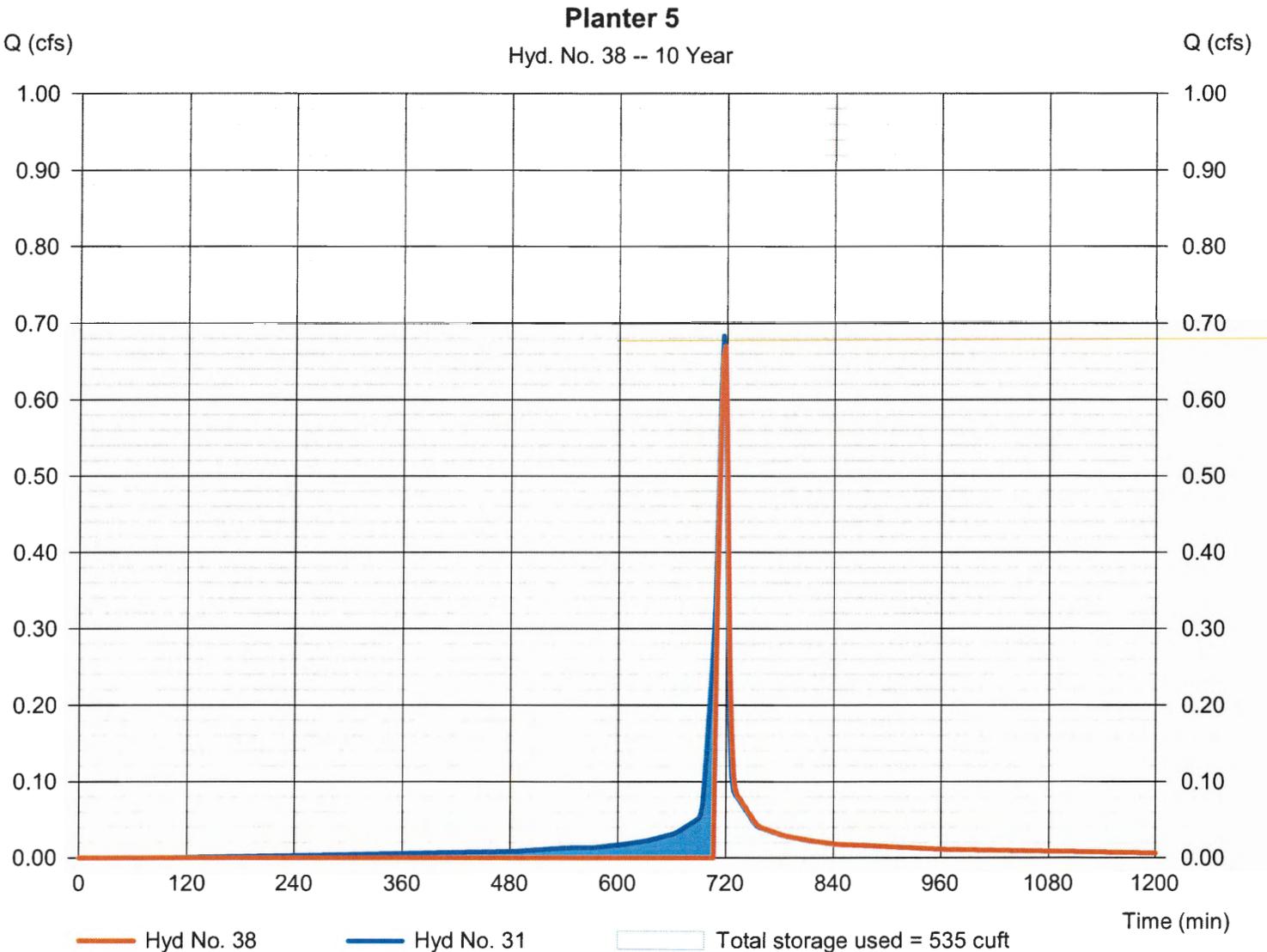
Hydrograph Report

Hyd. No. 38

Planter 5

Hydrograph type	= Reservoir	Peak discharge	= 0.670 cfs
Storm frequency	= 10 yrs	Time to peak	= 718 min
Time interval	= 2 min	Hyd. volume	= 1,086 cuft
Inflow hyd. No.	= 31 - Area to Planter 5	Max. Elevation	= 442.66 ft
Reservoir name	= Planter 5	Max. Storage	= 535 cuft

Storage Indication method used.



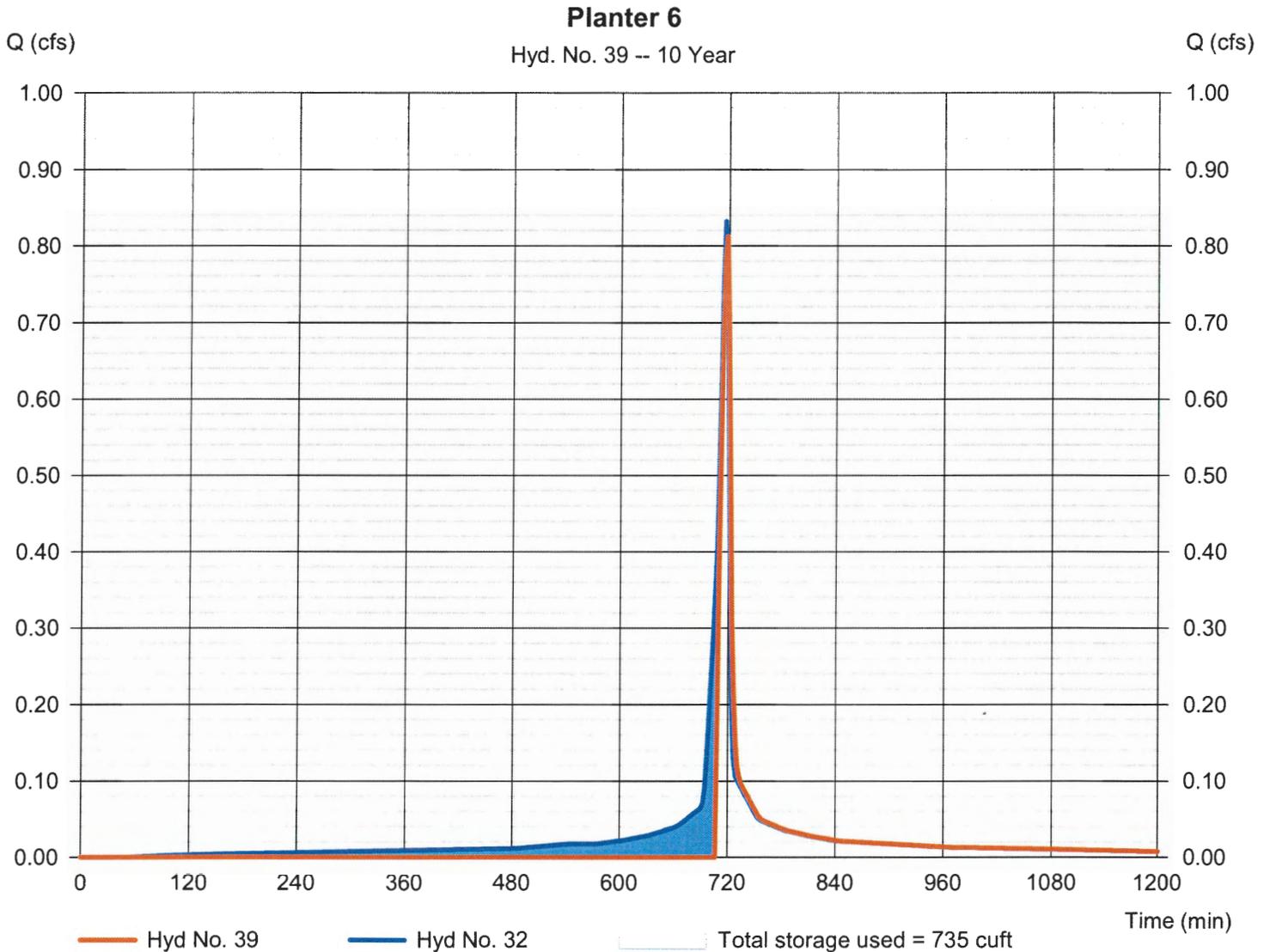
Hydrograph Report

Hyd. No. 39

Planter 6

Hydrograph type	= Reservoir	Peak discharge	= 0.812 cfs
Storm frequency	= 10 yrs	Time to peak	= 718 min
Time interval	= 2 min	Hyd. volume	= 1,321 cuft
Inflow hyd. No.	= 32 - Area to Planter 6	Max. Elevation	= 442.68 ft
Reservoir name	= Planter 6	Max. Storage	= 735 cuft

Storage Indication method used.



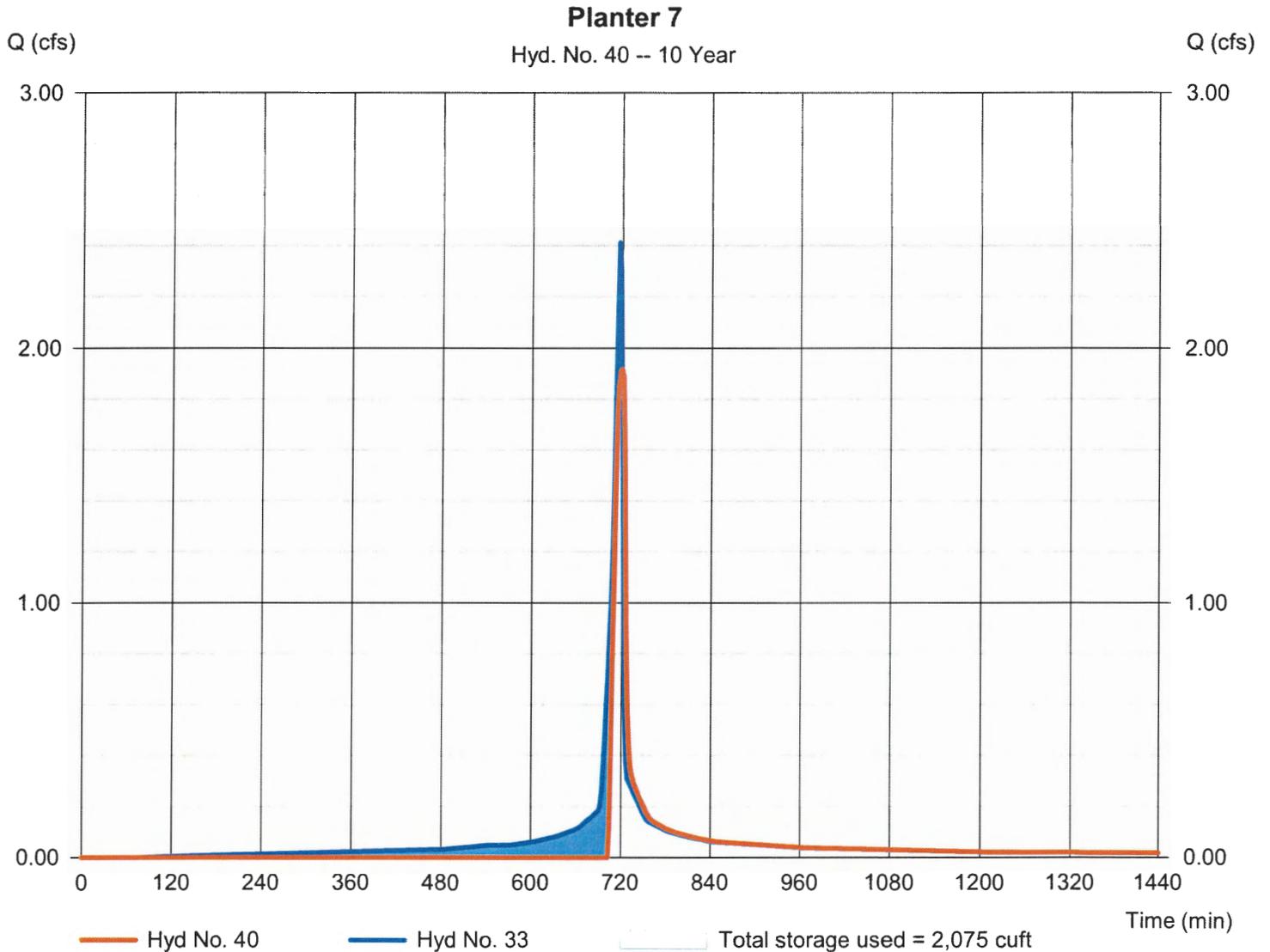
Hydrograph Report

Hyd. No. 40

Planter 7

Hydrograph type	= Reservoir	Peak discharge	= 1.916 cfs
Storm frequency	= 10 yrs	Time to peak	= 720 min
Time interval	= 2 min	Hyd. volume	= 4,013 cuft
Inflow hyd. No.	= 33 - Area to Planter 7	Max. Elevation	= 442.96 ft
Reservoir name	= Planter 7	Max. Storage	= 2,075 cuft

Storage Indication method used.



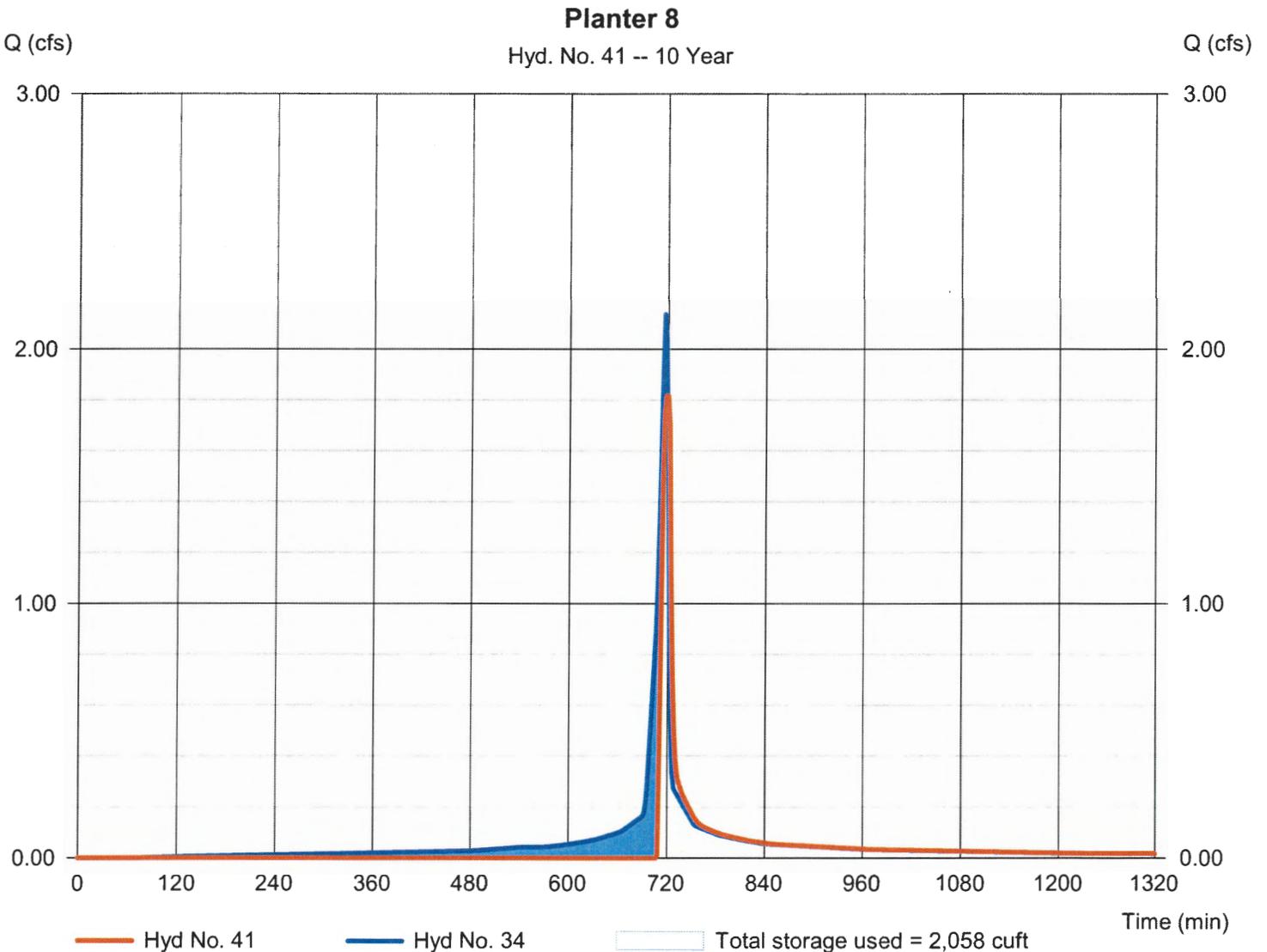
Hydrograph Report

Hyd. No. 41

Planter 8

Hydrograph type	= Reservoir	Peak discharge	= 1.816 cfs
Storm frequency	= 10 yrs	Time to peak	= 718 min
Time interval	= 2 min	Hyd. volume	= 3,304 cuft
Inflow hyd. No.	= 34 - Area to Planter 8	Max. Elevation	= 442.87 ft
Reservoir name	= Planter 8	Max. Storage	= 2,058 cuft

Storage Indication method used.



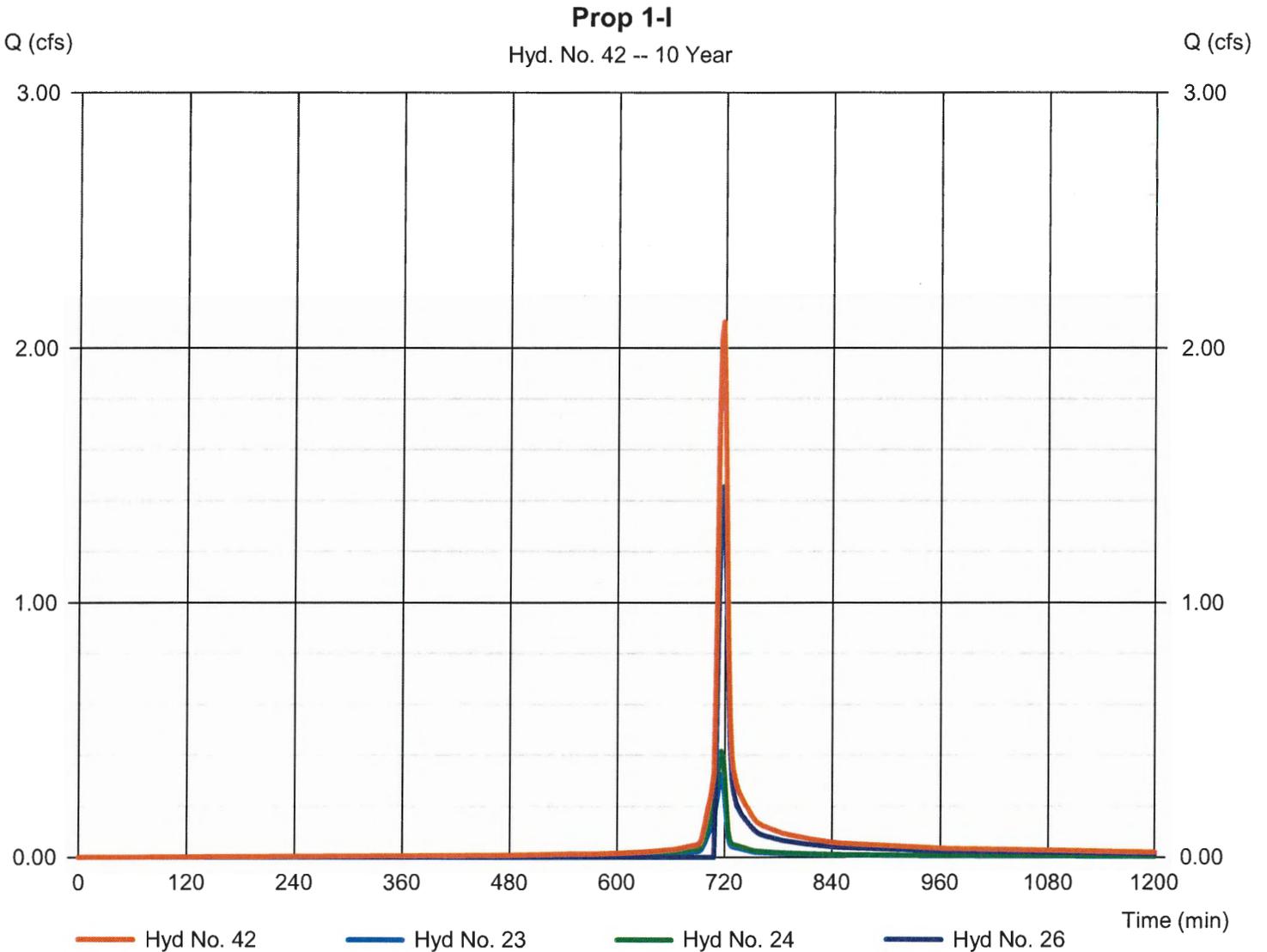
Hydrograph Report

Hyd. No. 42

Prop 1-I

Hydrograph type = Combine
Storm frequency = 10 yrs
Time interval = 2 min
Inflow hyds. = 23, 24, 26

Peak discharge = 2.102 cfs
Time to peak = 718 min
Hyd. volume = 3,876 cuft
Contrib. drain. area = 0.110 ac



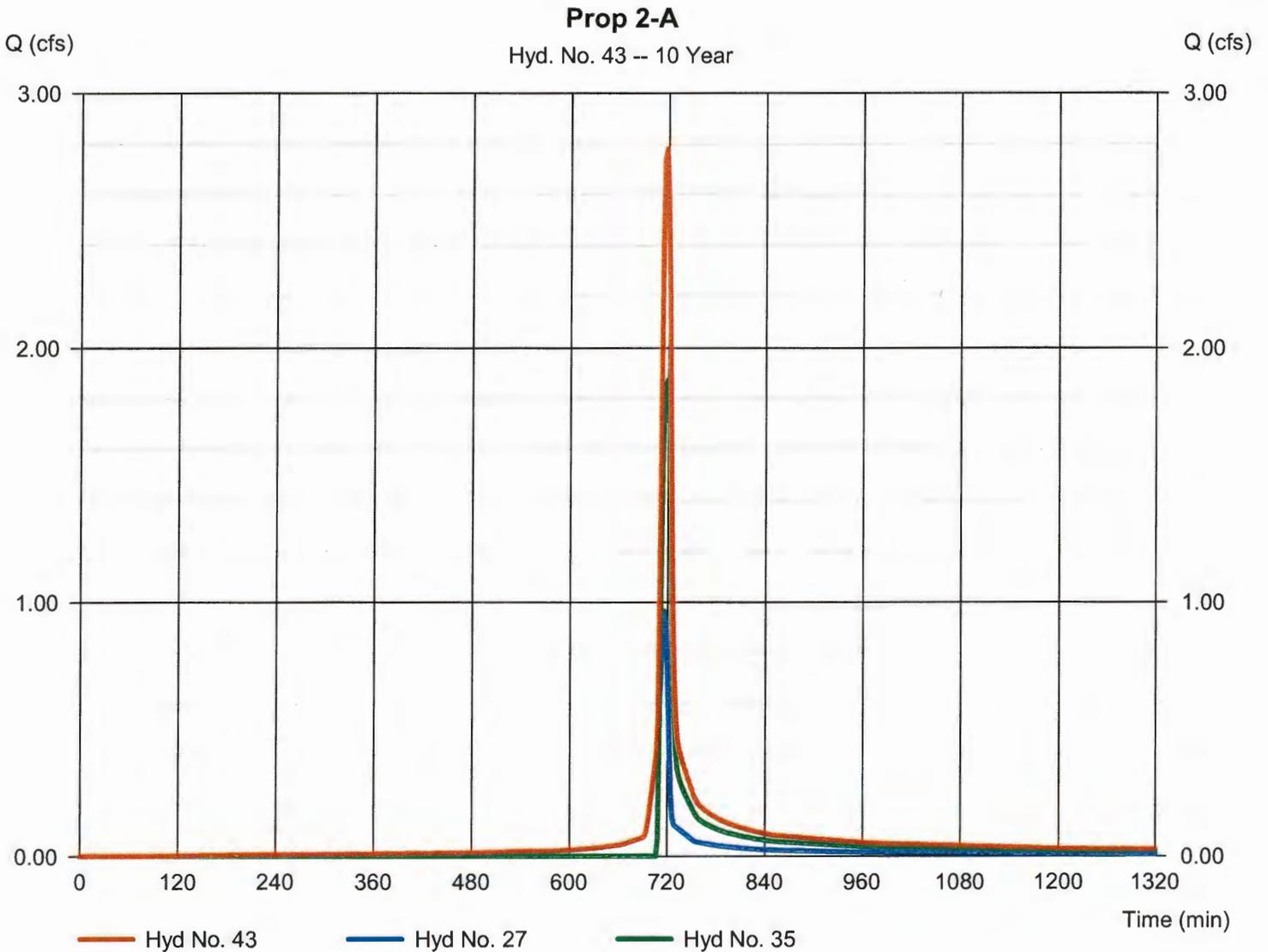
Hydrograph Report

Hyd. No. 43

Prop 2-A

Hydrograph type = Combine
Storm frequency = 10 yrs
Time interval = 2 min
Inflow hyds. = 27, 35

Peak discharge = 2.783 cfs
Time to peak = 718 min
Hyd. volume = 5,800 cuft
Contrib. drain. area = 0.140 ac

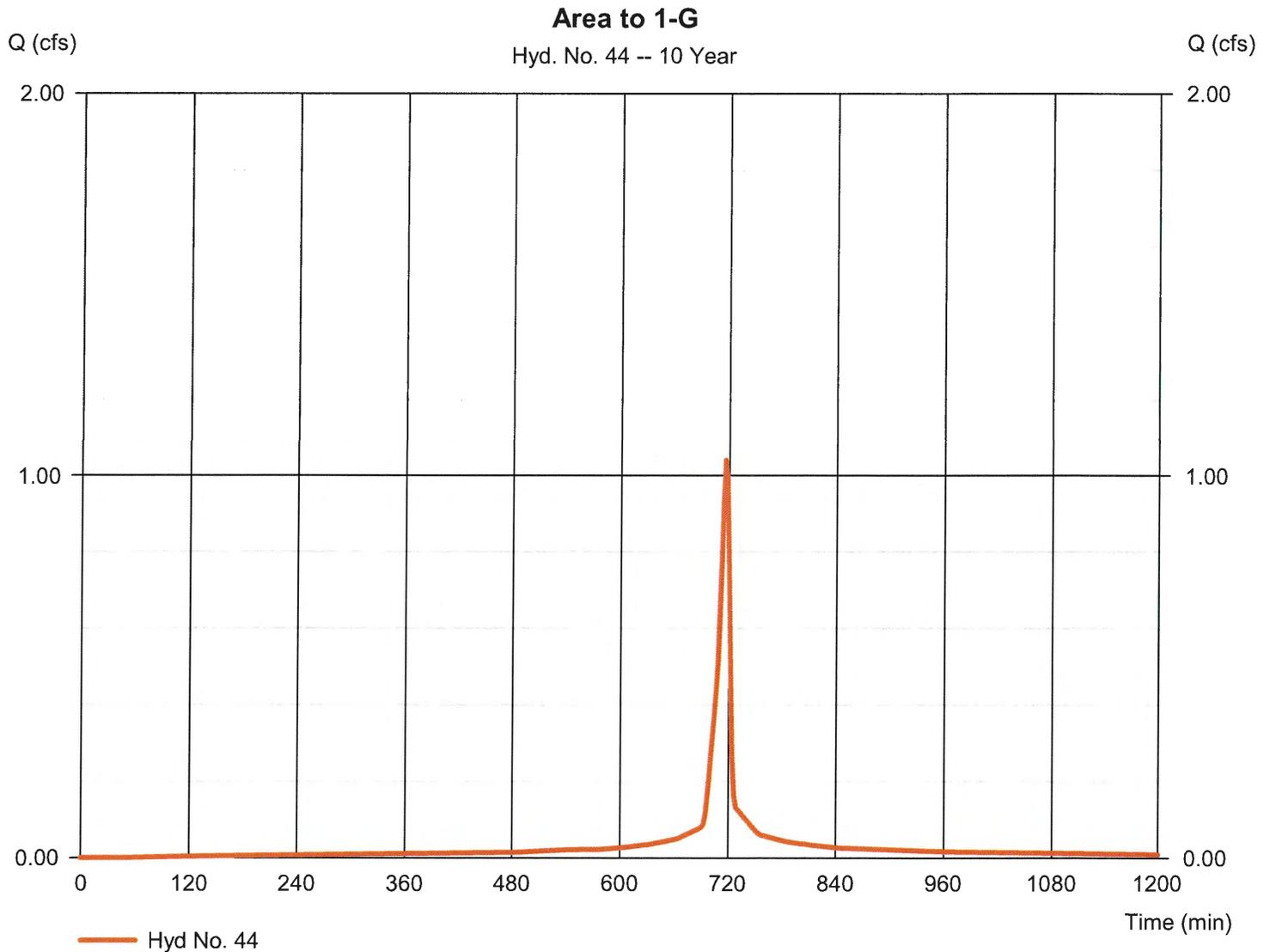


Hydrograph Report

Hyd. No. 44

Area to 1-G

Hydrograph type	= SCS Runoff	Peak discharge	= 1.040 cfs
Storm frequency	= 10 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 2,482 cuft
Drainage area	= 0.150 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 5.10 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2016 by Autodesk, Inc. v10.5

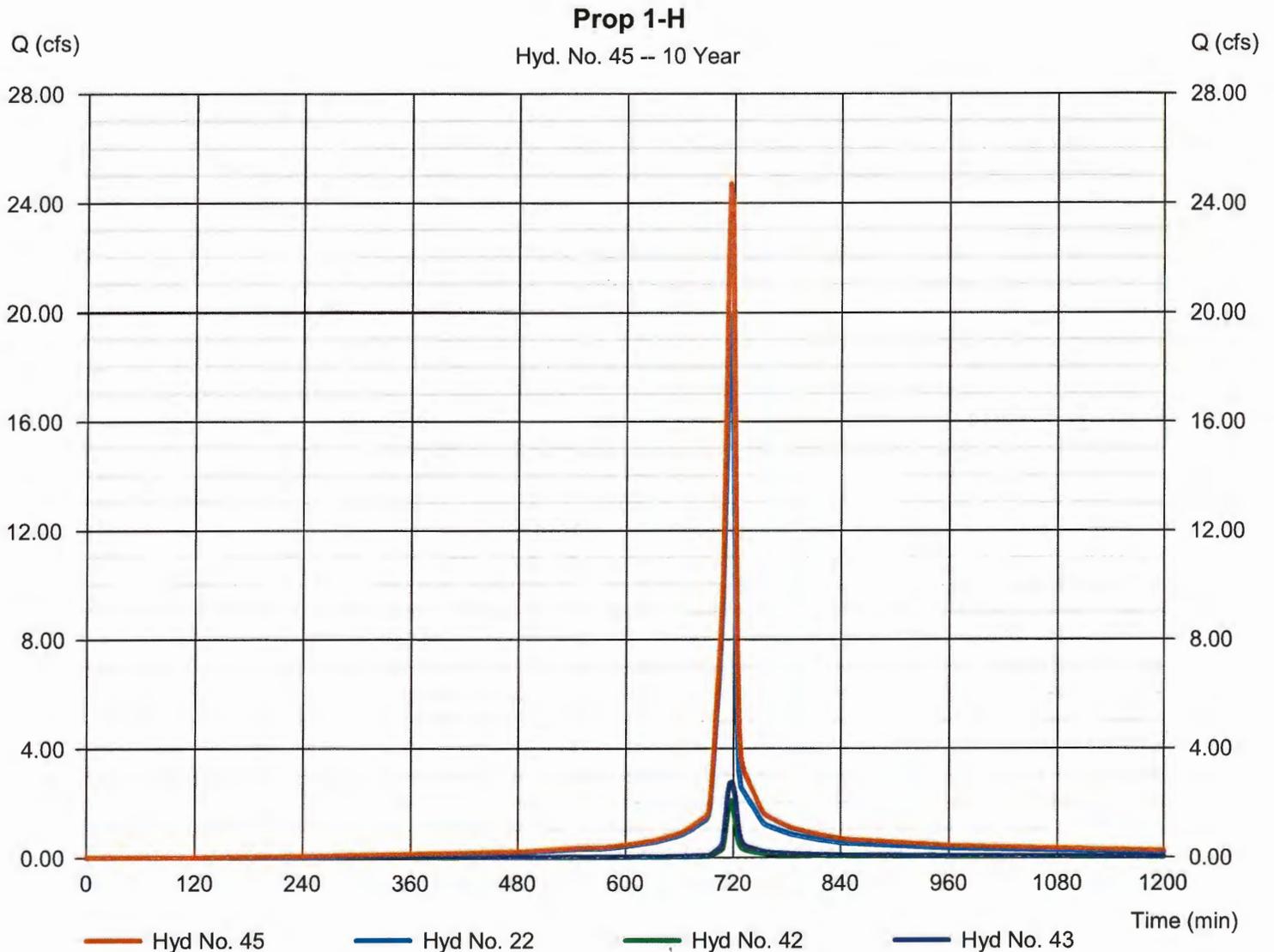
Friday, 07 / 8 / 2016

Hyd. No. 45

Prop 1-H

Hydrograph type = Combine
Storm frequency = 10 yrs
Time interval = 2 min
Inflow hyds. = 22, 42, 43

Peak discharge = 24.71 cfs
Time to peak = 716 min
Hyd. volume = 53,665 cuft
Contrib. drain. area = 0.000 ac



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2016 by Autodesk, Inc. v10.5

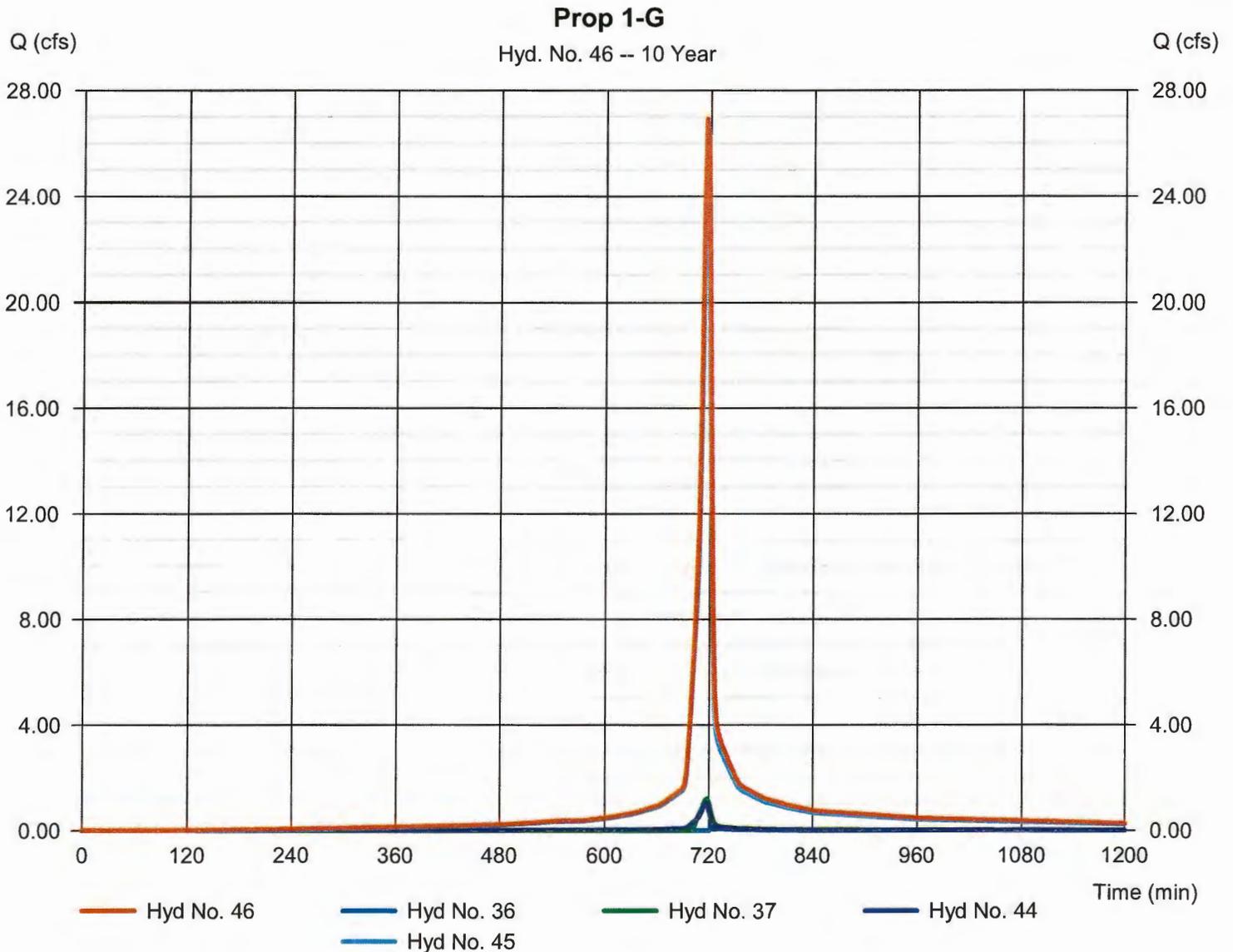
Friday, 07 / 8 / 2016

Hyd. No. 46

Prop 1-G

Hydrograph type = Combine
Storm frequency = 10 yrs
Time interval = 2 min
Inflow hyds. = 36, 37, 44, 45

Peak discharge = 26.92 cfs
Time to peak = 716 min
Hyd. volume = 58,751 cuft
Contrib. drain. area = 0.150 ac



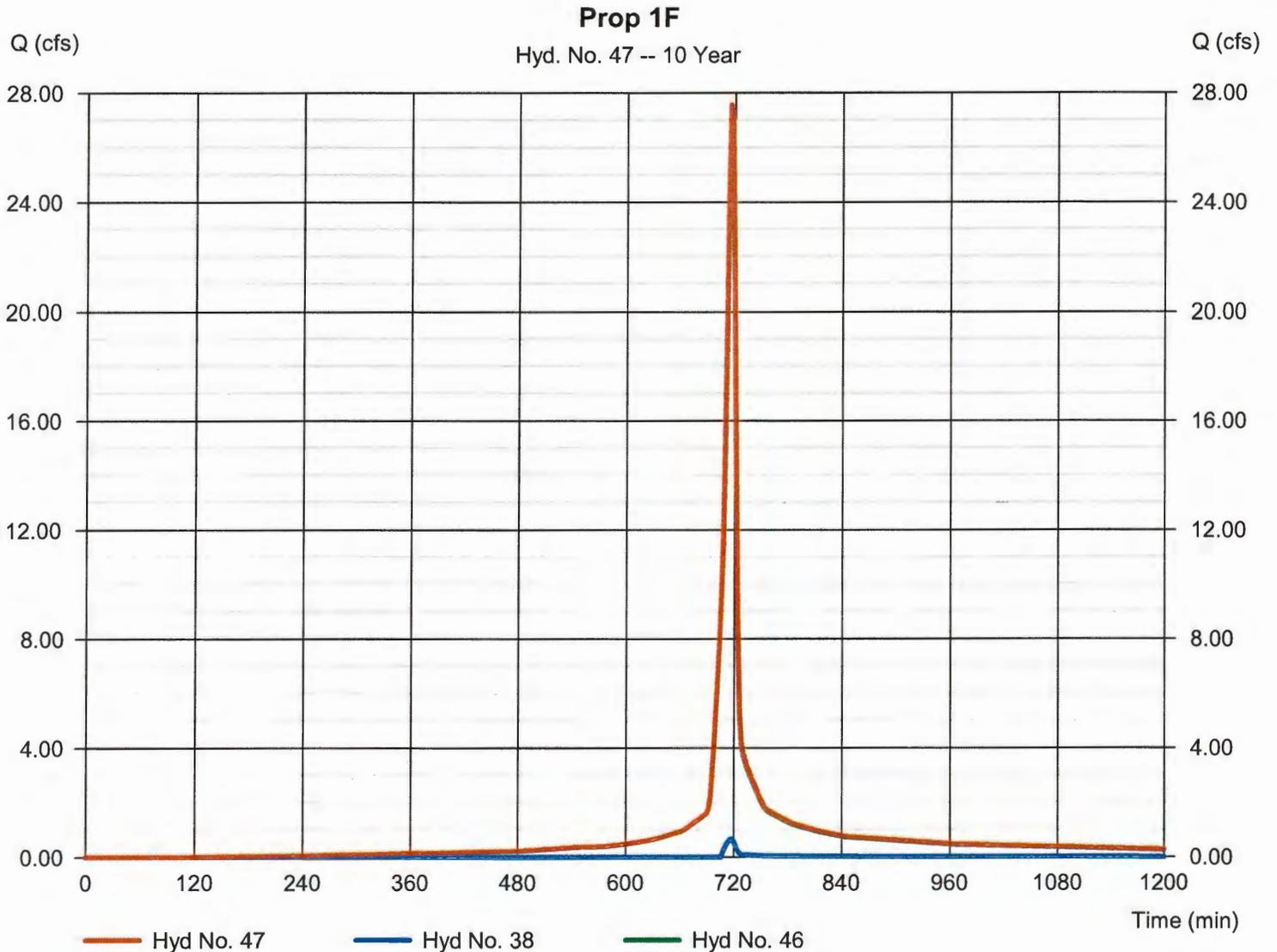
Hydrograph Report

Hyd. No. 47

Prop 1F

Hydrograph type = Combine
Storm frequency = 10 yrs
Time interval = 2 min
Inflow hyds. = 38, 46

Peak discharge = 27.58 cfs
Time to peak = 716 min
Hyd. volume = 59,837 cuft
Contrib. drain. area = 0.000 ac

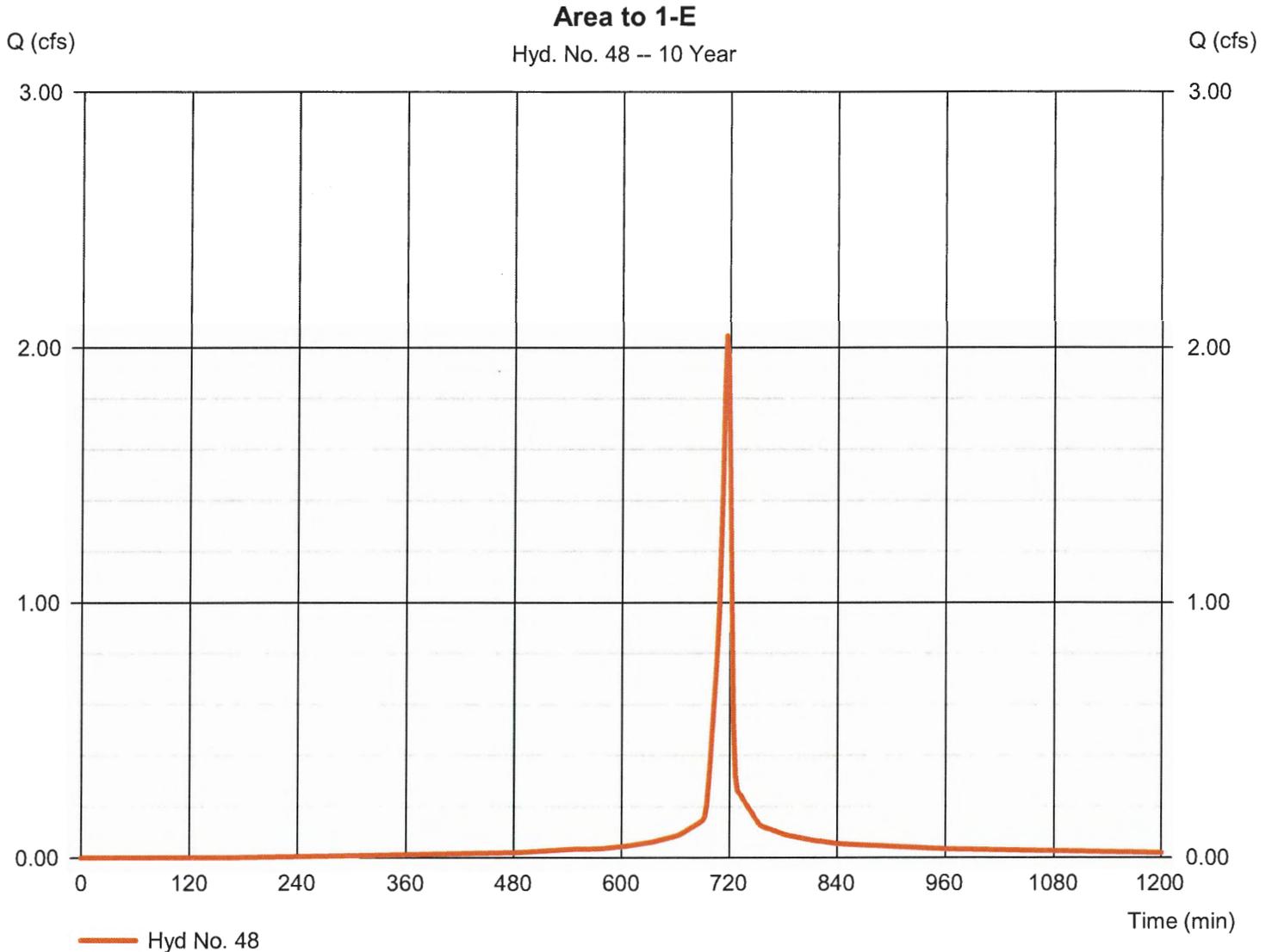


Hydrograph Report

Hyd. No. 48

Area to 1-E

Hydrograph type	= SCS Runoff	Peak discharge	= 2.046 cfs
Storm frequency	= 10 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 4,532 cuft
Drainage area	= 0.310 ac	Curve number	= 93
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 5.10 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2016 by Autodesk, Inc. v10.5

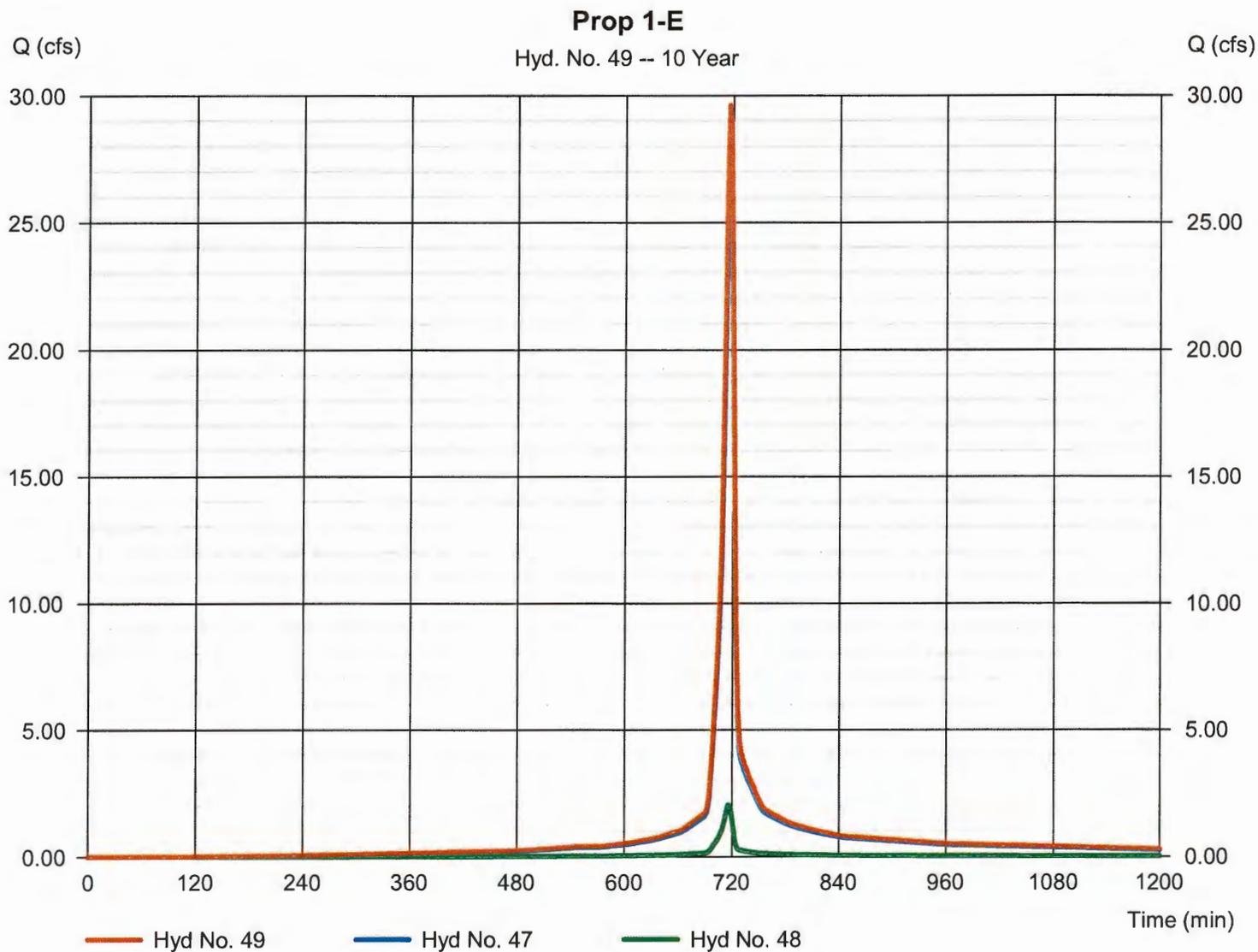
Friday, 07 / 8 / 2016

Hyd. No. 49

Prop 1-E

Hydrograph type = Combine
Storm frequency = 10 yrs
Time interval = 2 min
Inflow hyds. = 47, 48

Peak discharge = 29.62 cfs
Time to peak = 716 min
Hyd. volume = 64,370 cuft
Contrib. drain. area = 0.310 ac

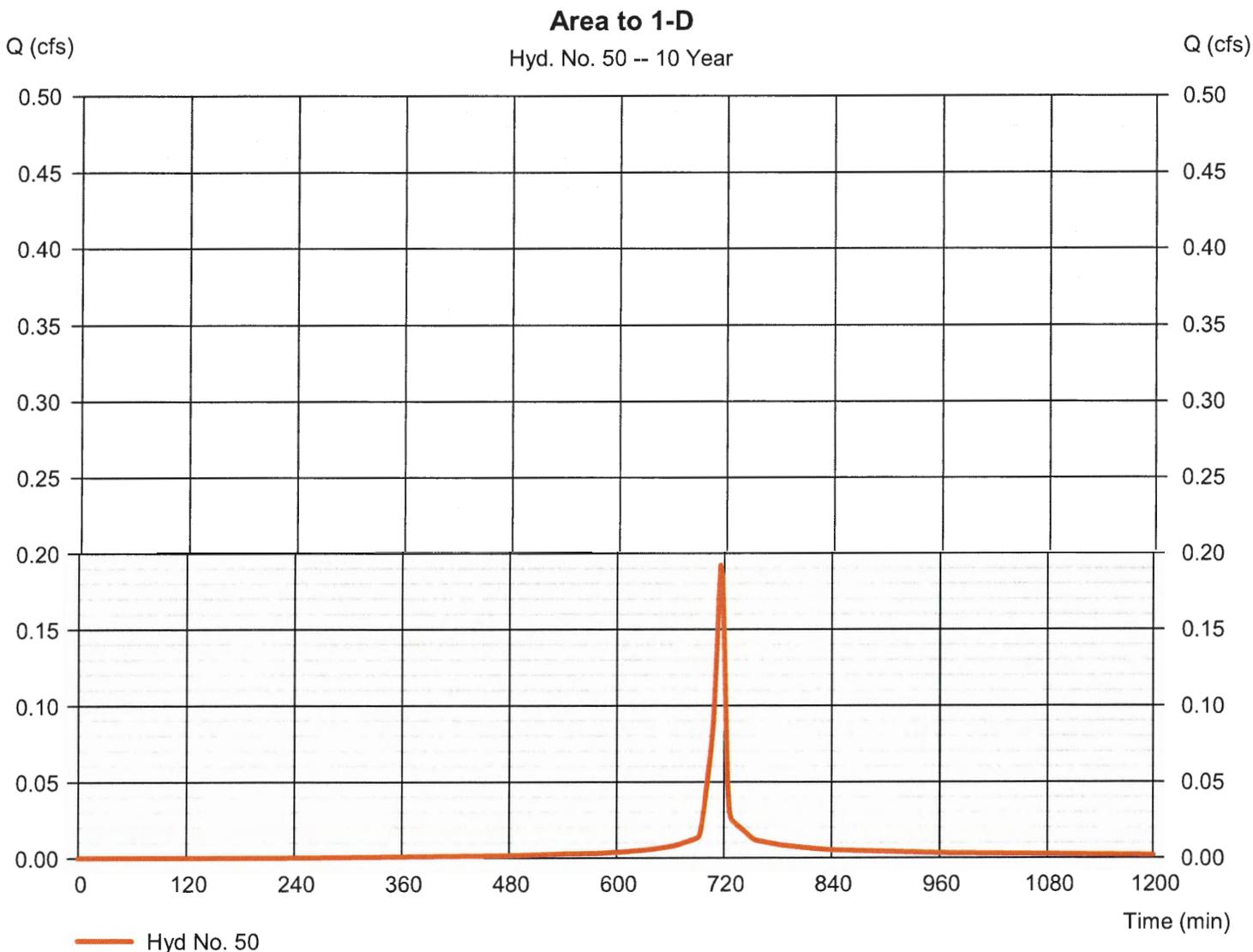


Hydrograph Report

Hyd. No. 50

Area to 1-D

Hydrograph type	= SCS Runoff	Peak discharge	= 0.192 cfs
Storm frequency	= 10 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 416 cuft
Drainage area	= 0.030 ac	Curve number	= 91
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 5.10 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2016 by Autodesk, Inc. v10.5

Friday, 07 / 8 / 2016

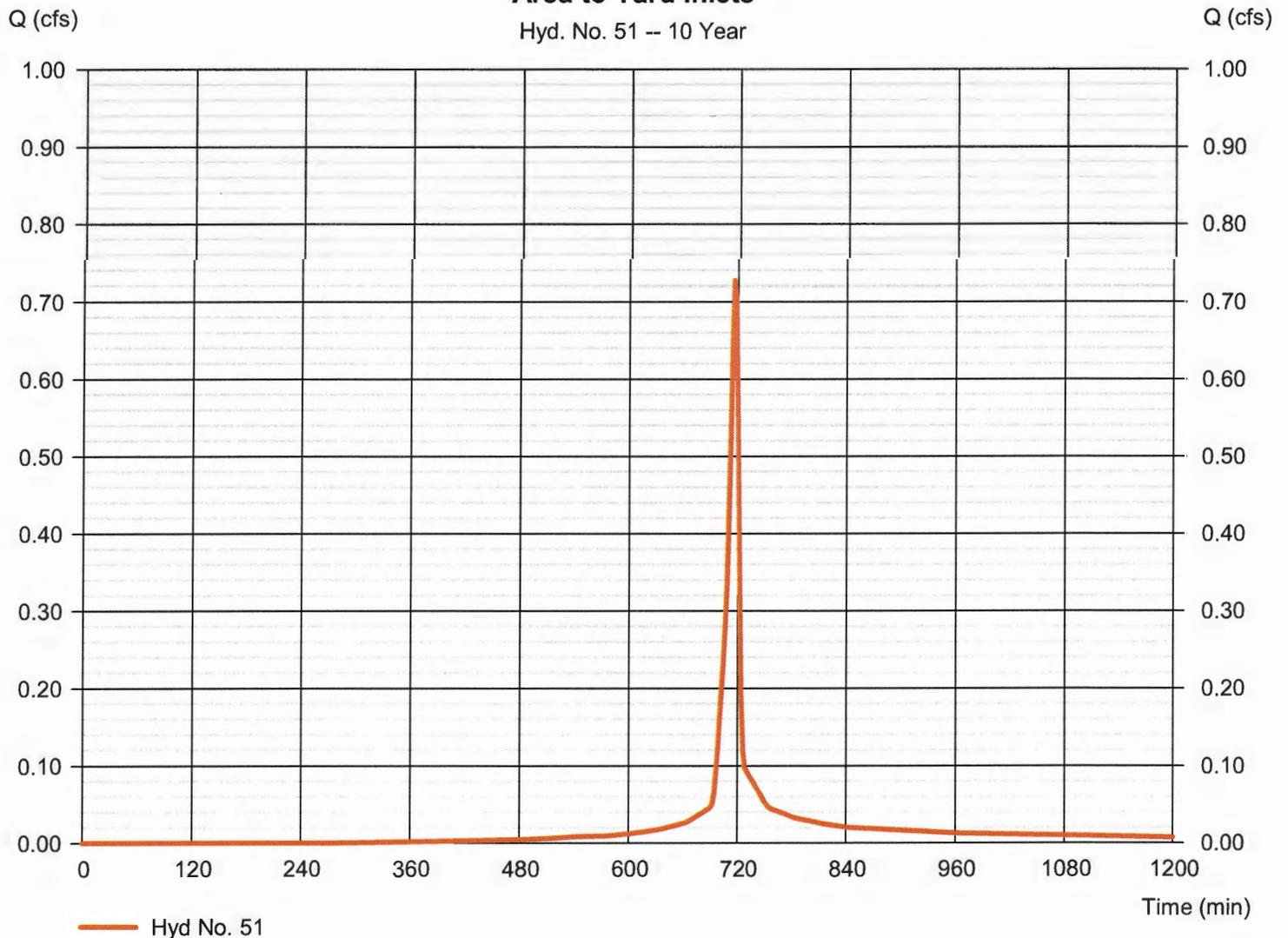
Hyd. No. 51

Area to Yard Inlets

Hydrograph type	= SCS Runoff	Peak discharge	= 0.727 cfs
Storm frequency	= 10 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 1,537 cuft
Drainage area	= 0.120 ac	Curve number	= 88
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 5.10 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

Area to Yard Inlets

Hyd. No. 51 -- 10 Year



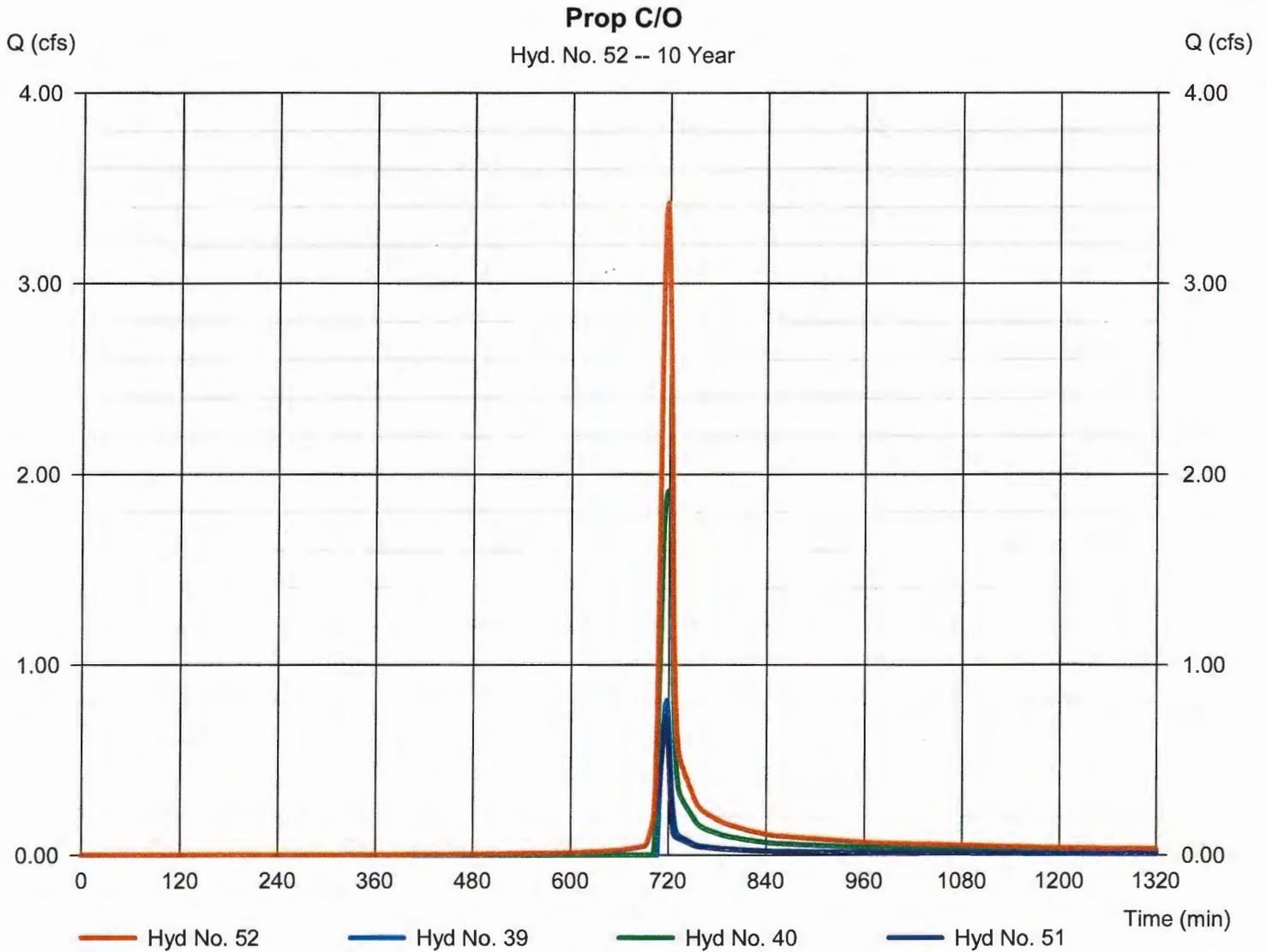
Hydrograph Report

Hyd. No. 52

Prop C/O

Hydrograph type = Combine
Storm frequency = 10 yrs
Time interval = 2 min
Inflow hyd. = 39, 40, 51

Peak discharge = 3.424 cfs
Time to peak = 718 min
Hyd. volume = 6,871 cuft
Contrib. drain. area = 0.120 ac



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2016 by Autodesk, Inc. v10.5

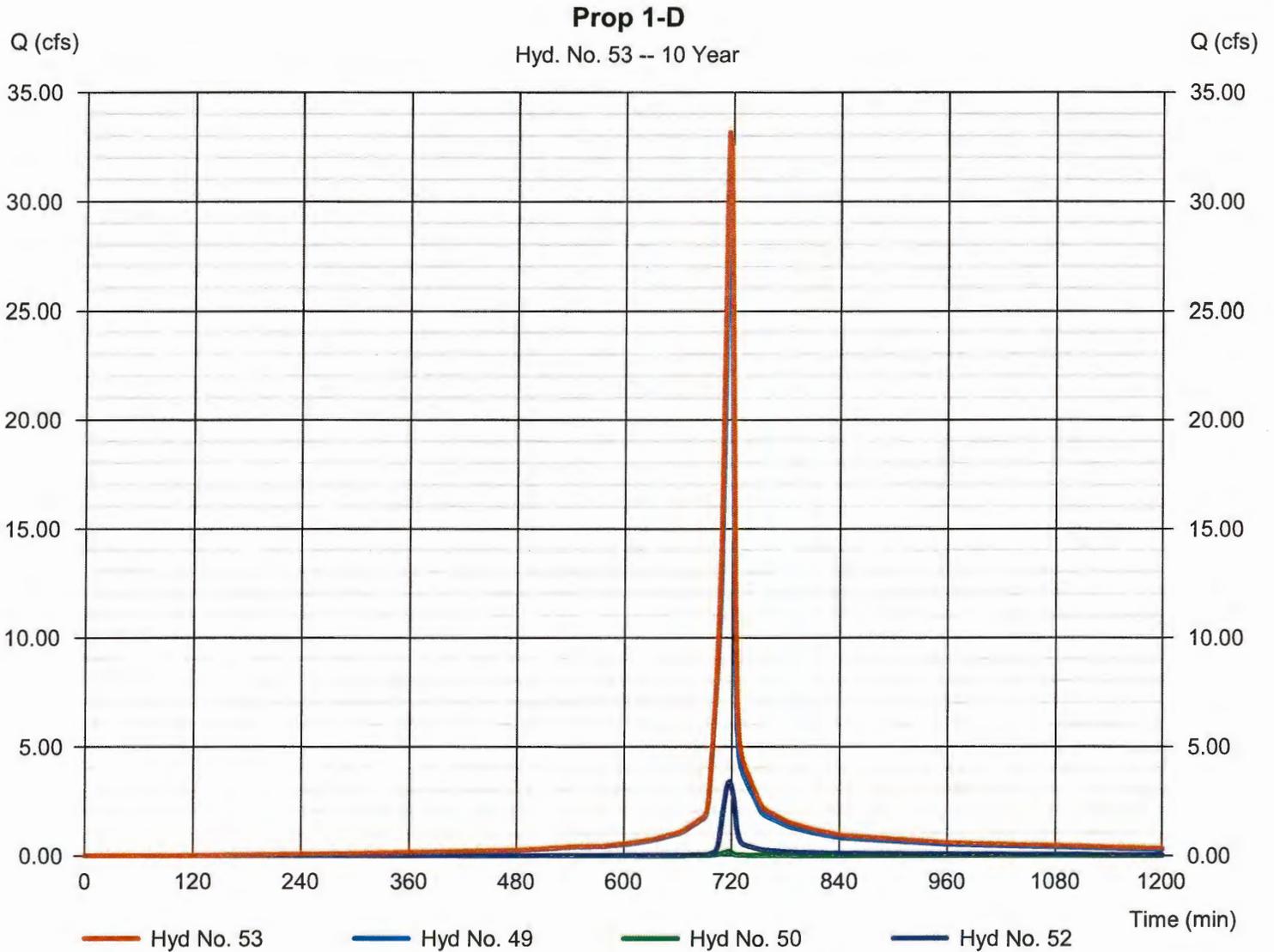
Friday, 07 / 8 / 2016

Hyd. No. 53

Prop 1-D

Hydrograph type = Combine
Storm frequency = 10 yrs
Time interval = 2 min
Inflow hyds. = 49, 50, 52

Peak discharge = 33.18 cfs
Time to peak = 716 min
Hyd. volume = 71,657 cuft
Contrib. drain. area = 0.030 ac



Hydrograph Report

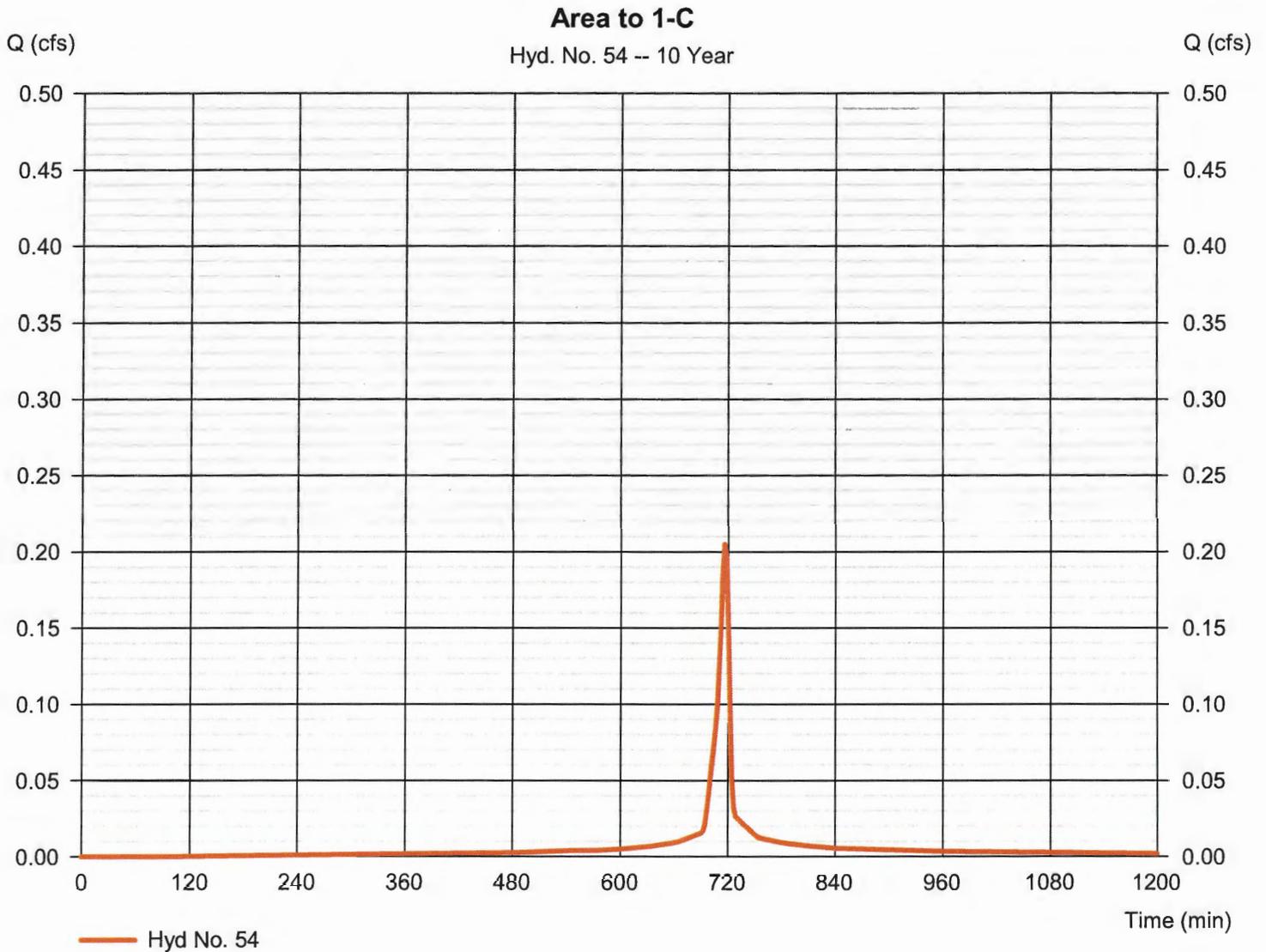
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2016 by Autodesk, Inc. v10.5

Friday, 07 / 8 / 2016

Hyd. No. 54

Area to 1-C

Hydrograph type	= SCS Runoff	Peak discharge	= 0.205 cfs
Storm frequency	= 10 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 473 cuft
Drainage area	= 0.030 ac	Curve number	= 96
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 5.10 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



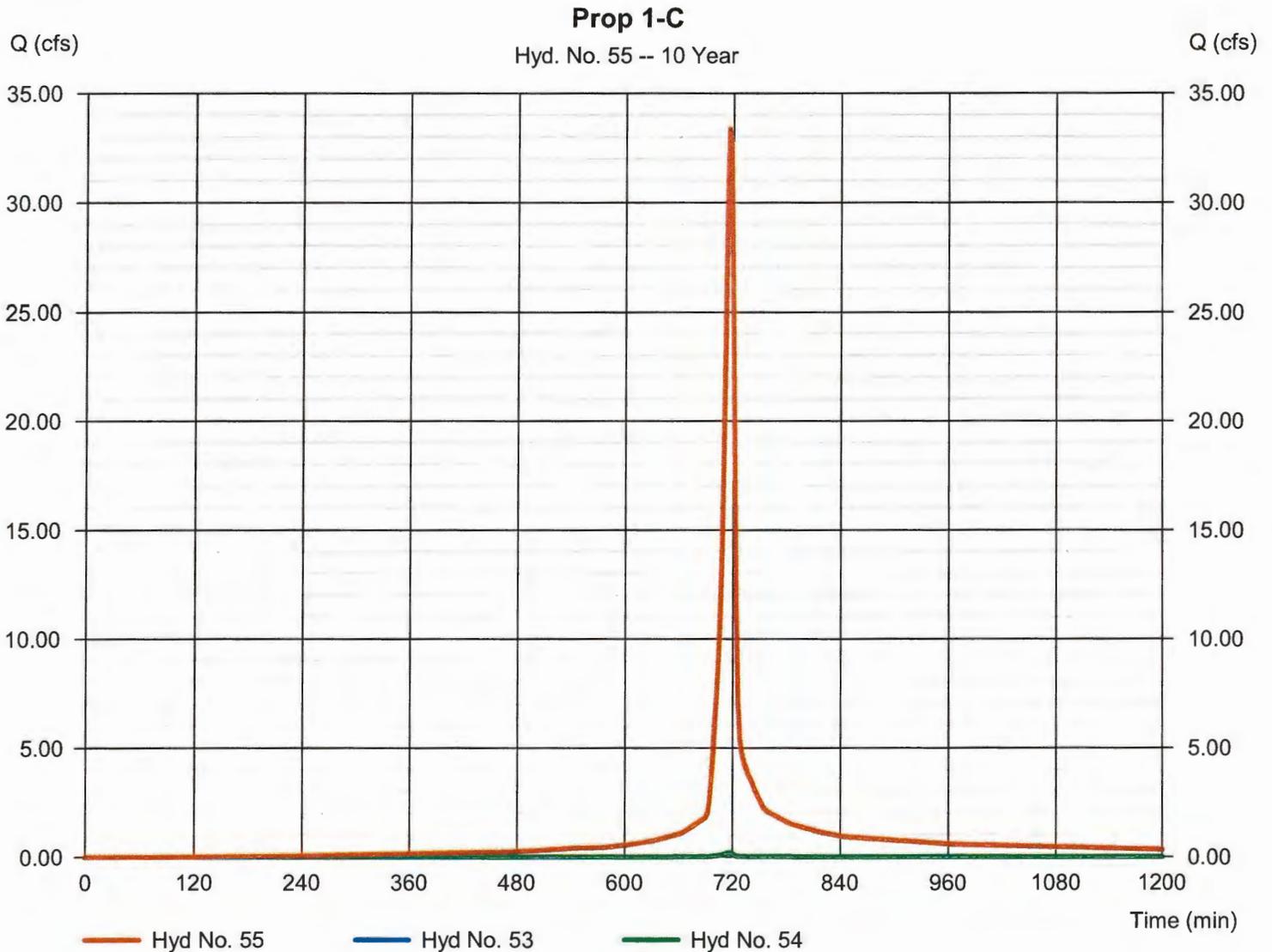
Hydrograph Report

Hyd. No. 55

Prop 1-C

Hydrograph type = Combine
Storm frequency = 10 yrs
Time interval = 2 min
Inflow hyds. = 53, 54

Peak discharge = 33.38 cfs
Time to peak = 716 min
Hyd. volume = 72,130 cuft
Contrib. drain. area = 0.030 ac

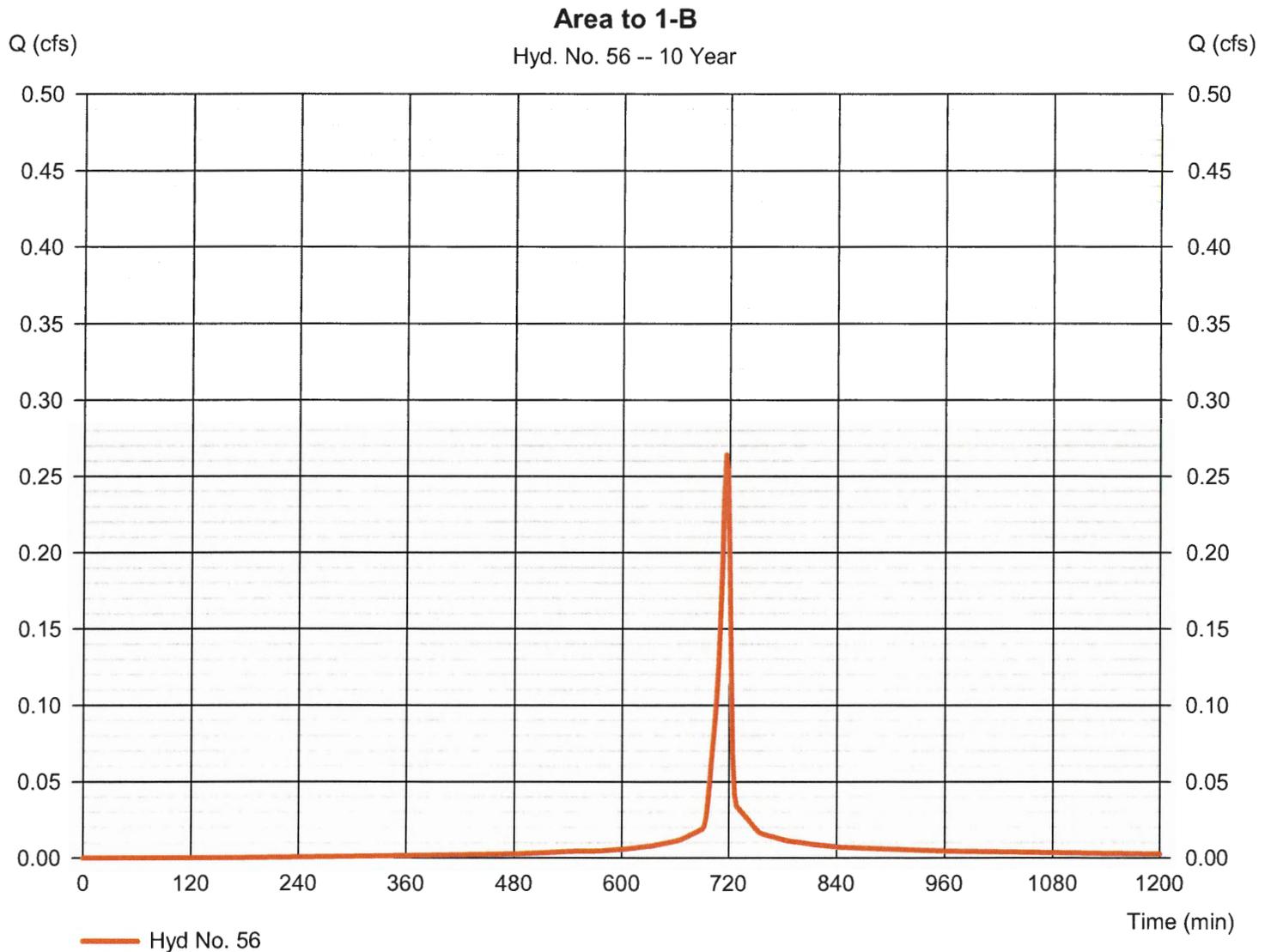


Hydrograph Report

Hyd. No. 56

Area to 1-B

Hydrograph type	= SCS Runoff	Peak discharge	= 0.264 cfs
Storm frequency	= 10 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 585 cuft
Drainage area	= 0.040 ac	Curve number	= 93
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 5.10 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2016 by Autodesk, Inc. v10.5

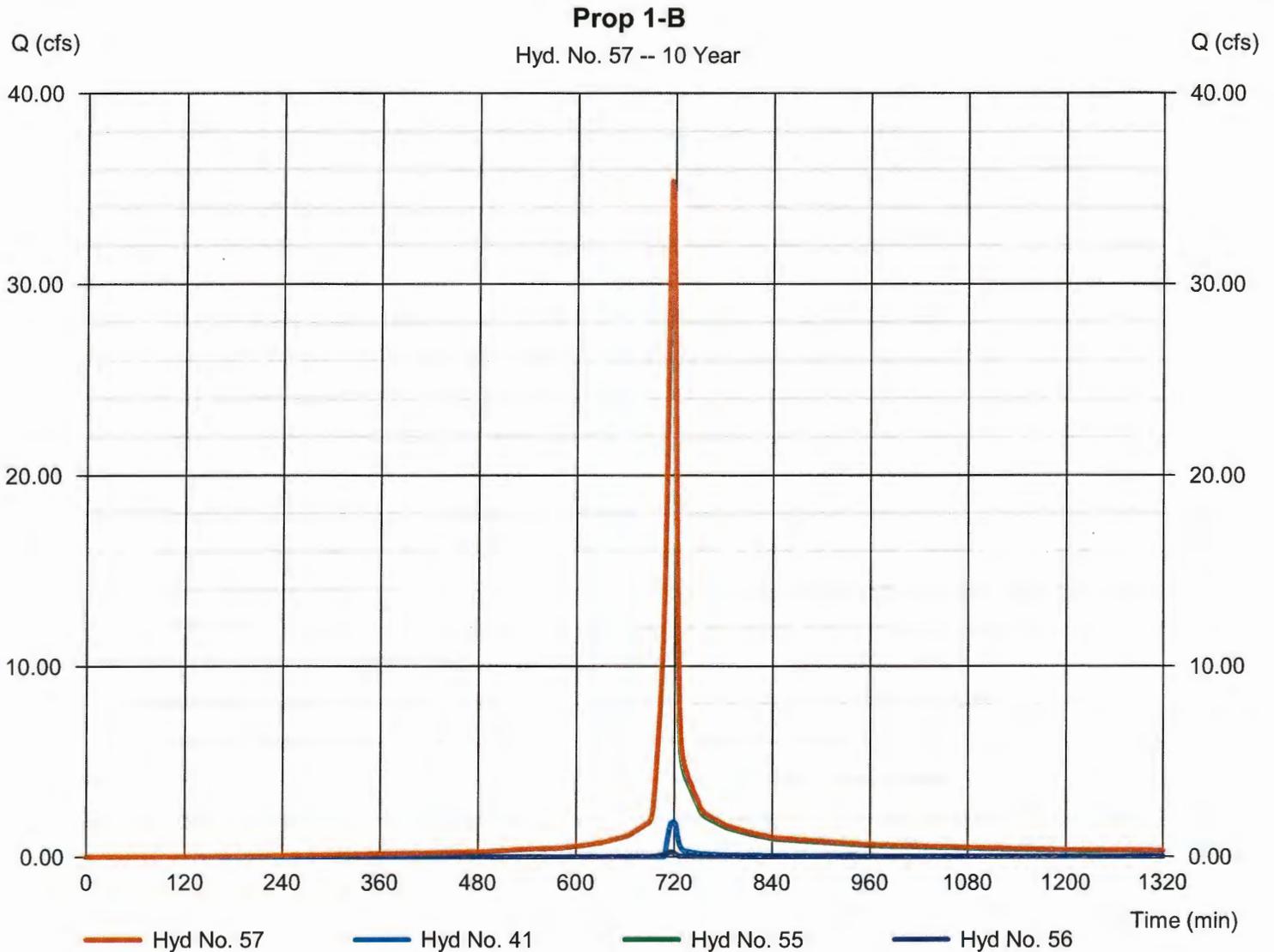
Friday, 07 / 8 / 2016

Hyd. No. 57

Prop 1-B

Hydrograph type = Combine
Storm frequency = 10 yrs
Time interval = 2 min
Inflow hyds. = 41, 55, 56

Peak discharge = 35.40 cfs
Time to peak = 716 min
Hyd. volume = 76,019 cuft
Contrib. drain. area = 0.040 ac



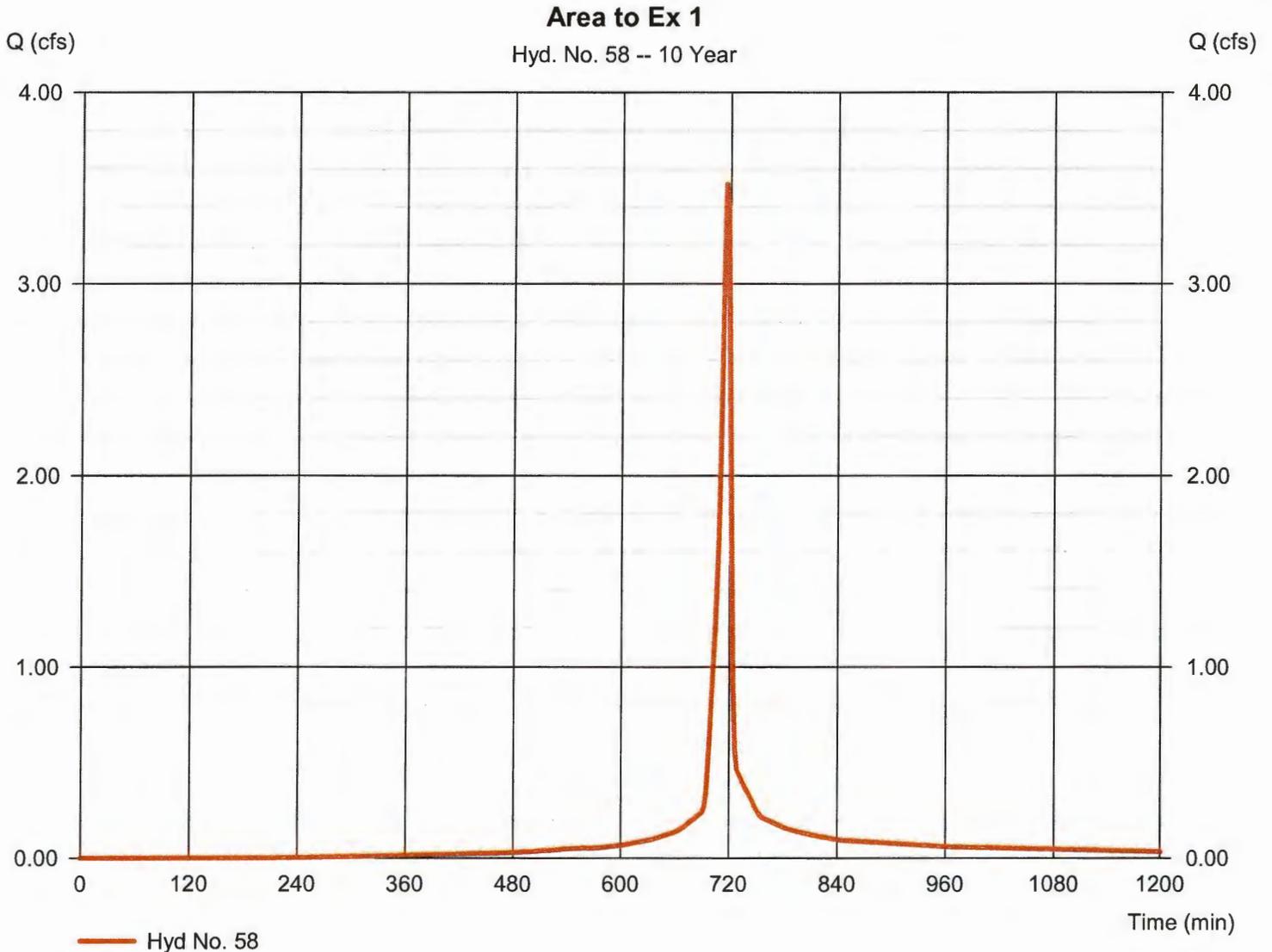
Hydrograph Report

Hyd. No. 58

Area to Ex 1

Hydrograph type	= SCS Runoff	Peak discharge	= 3.521 cfs
Storm frequency	= 10 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 7,635 cuft
Drainage area	= 0.550 ac	Curve number	= 91*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 5.10 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = $[(0.340 \times 98) + (0.210 \times 80)] / 0.550$



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2016 by Autodesk, Inc. v10.5

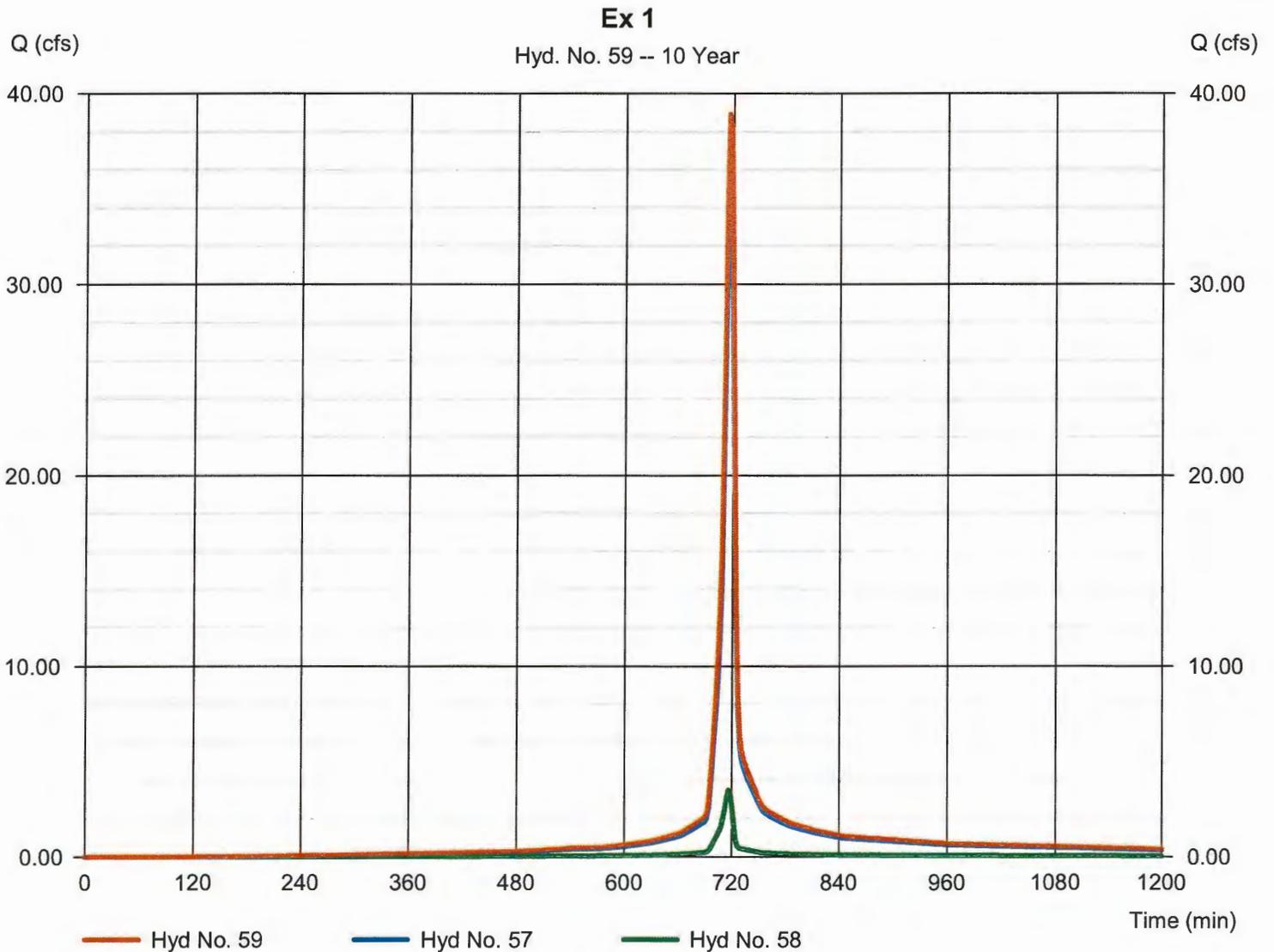
Friday, 07 / 8 / 2016

Hyd. No. 59

Ex 1

Hydrograph type = Combine
Storm frequency = 10 yrs
Time interval = 2 min
Inflow hyds. = 57, 58

Peak discharge = 38.92 cfs
Time to peak = 716 min
Hyd. volume = 83,654 cuft
Contrib. drain. area = 0.550 ac



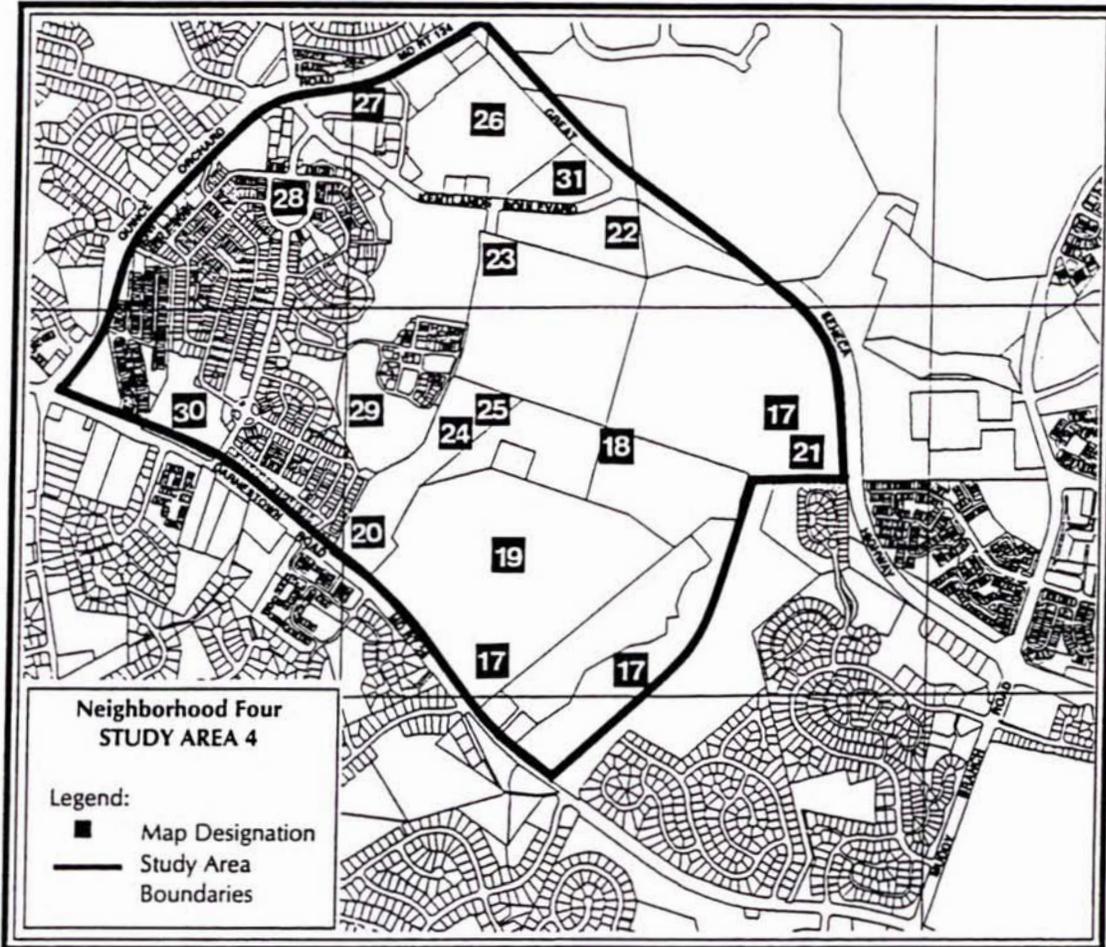
II. APPENDIX

E. STAGE STORAGE INPUTS

II. APPENDIX

F. HYDROFLOW RAINFALL REPORT

STUDY AREA 4



Total Area	711 Acres
Estimated Population	3,490
Housing Units	1,108
Predominant Land use	Mixed Residential

This study area is bounded on the north and west by Quince Orchard Road and Great Seneca Highway, on the east by Muddy Branch Creek, and on the south by Maryland Route 28.

The study area consists of the Kentlands property, land formerly owned by National Geographic Society (NGS) now known as the Lakelands, and the Manor Care, Inc. property, also formerly owned by NGS. Located in the Kentlands are the historically significant buildings of the Tschiffely-Kent farm—the mansion, barn, firehouse, grotto, and spring house.

The traditional neighborhood development, known as Kentlands, is currently under the final stages of residential construction with nearly 300 acres of open space and land developed pursuant to the Mixed Use Development (MXD) zone. The Manor Care Inc. property, consisting of approximately 98 acres, is undergoing building and site modifications as the corporation moves its national headquarters onto the site.

The Lakelands property, consisting of 296 acres within this study area, and the remaining vacant land at Kentlands, were recently the subject of a planning charrette sponsored jointly by the two property owners. It culminated in a second traditional neighborhood plan for the study area linking Kentlands and the future Lakelands. A rezoning application has been submitted by the developers of Lakelands seeking the Mixed Use Development (MXD) Zone, which is consistent with the land uses proposed in this land use plan. The rezoning application will be reviewed simultaneously with this plan so that both will be consistent with one another.

Housing densities, number of units and mix for this study area are discussed in the introduction of this neighborhood land use plan.

The remainder of the study area consists of the Orchards townhouse development and the Potomac Valley shopping center, both integral components of the neighborhood. Transportation improvements are being made in the study area, which include the widening of Maryland Route 124 to four lanes. Maryland Route 28 is being designed for widening to four lanes as well. New roads within the Lakelands and the planned Shady Grove-Clarksburg Transitway will also improve the area transportation system and are reflected on the Transportation Element of the Master Plan.

Land use options, identified by map designation numbers on the Neighborhood Four Study Area 4 map on page 17, and listed in the accompanying chart beginning on page 28, are described as follows:

Land Use Options

- 17** Redesignate approximately 124 acres of the former National Geographic Society property now known as Lakelands (82 acres) and Manor Care, Inc. property (36 acres), and Kentlands (6 acres) currently zoned R-A, E-1, and I-3, from open space and industrial-research-office to all **open space** (Map Designation 17). This designation consists of the floodplain, wetlands, streams, lakes, and their buffers, required to be preserved by the City's Environmental Standards, and shown on the Natural Resource Inventory for the Lakelands and Manor Care properties. Included are Lakes Nirvana, Placid, and Varuna, and the Muddy Branch stream and its tributaries. It also includes the open space on the Manor Care property that exists between Lake Inspiration and Maryland Route 28. All of the open space areas designated herein may be used to fulfill the open space requirements of the MXD zone. Retention of this open space will create a green corridor that will act as a wildlife refuge and public open space amenity and is planned as a greenway in the Sensitive Areas Master Plan for the City. It is intended to include a major greenway trail system that will have connections to the surrounding neighborhoods of Washingtonian Woods, The Woods at Muddy Branch, Westleigh, Kentlands, and the planned Lakelands community and Manor Care Inc. Campus on the former National Geographic Society property. This trail and bikeway network is shown on the Greenways Map within the Sensitive Areas Master Plan and provides the beginning of a regional bikeway through the Muddy Branch Greenway leading to the C&O Canal National Park along the Potomac River. Creative mechanisms for ownership and maintenance of the Lakeland portion of this land will be evaluated at the SDP level.

Land Use and Zoning Actions:

- Adopted **open space** land use designation
- Property rezoned to **MXD**

- 18** **Redesignate** approximately 158 acres of the former National Geographic property (Lakelands) currently zoned I-3 from industrial-research-office to **mixed residential** (Map Designation 18). This includes the developable portions of the following parcels: P126, P222, P342, part of P426, part of P465, P435, and P840. This is consistent with the plan emanating from the March 1996 Charrette for Kentlands and Lakelands which proposes a mixed-use traditional neighborhood development on this site including residences and complimentary non-residential uses (e.g., restaurants, "corner store," day care, etc.). The plan includes a grid system of narrow streets designed to create a traditional neighborhood that allows for slower moving traffic and more importance given to the pedestrian. The plan also includes public spaces in the form of parks, squares, and plazas located prominently in the community. The streets will be of a higher quality with sidewalks and street trees, and garages will be, for the most part, located along alleys to the rear of the lots. The extension of public roads into the site are proposed from Maryland Route 28 through the 98-acre Manor Care property, which includes the former National Geographic Society office building and warehouse; from various neighborhoods in Kentlands; and directly from Great Seneca Highway across the Lake Varuna dam. This area will also include a bikeway connection from the Lake District area of Kentlands to the Muddy Branch stream valley, which is shown on the charrette plan and the Greenways portion of the Sensitive Areas Master Plan. As was previously mentioned, the zoning for this area has been requested by the property owner via a rezoning application for the Mixed Use Development (MXD) Zone. It is important that this area have a variable mix of unit and lot types throughout. The housing in this portion of Lakelands in conjunction with the unit totals from the Gatehouse area shall have a target percentage of 50 percent single-family detached.

Land Use and Zoning Actions:

- Adopted **mixed residential** land use designation
- Property rezoned to **MXD**

- 19** **Redesignate** the Parcel N663, containing the Manor Care, Inc. main headquarters building and warehouse, currently zoned I-3, from industrial-research-office to **commercial-industrial-research-office** (Map Designation 19), which will allow the property owner to submit a rezoning application for the MXD zone. This designation and ultimate mixed-use zoning will allow for greater flexibility in expectation of the future expansion of this corporate office park. Manor Care is expected to add approximately 800,000 to 1 million square feet of office space. Given the environmental sensitivity of the property, due to the existence of lakes, streams and mature forest, the ultimate flexibility in siting additional buildings and parking is desirable. The existing westerly access to the site, which has recently been signalized at Maryland Route 28, is the most logical choice for the proposed public road that will provide a linkage between this property and the Lakelands. The existing road extends from Maryland Route 28 to the rear of the site and may need only minor modifications to meet the design standards for a public street, subject to review by the City Department of Public Works and Engineering. Commitment to its dedication will be necessary prior to future expansion of office space on the site pursuant to the staging requirements contained herein. Dedication for the widening of Maryland Route 28 by Maryland State Highway Administration is also necessary in order to complete that road improvement project. The planting of street trees, at 30-foot intervals along widened Maryland Route 28, is strongly recommended along the entire City boundary from Muddy Branch Road to Quince Orchard Road, both within an adequate planting strip between the sidewalk and curb and within the proposed median as well. Manor Care, Inc. has recently added over 800 parking spaces to accommodate their employees within the existing office structure. Any future expansion of their office space should include a reduction in single-occupancy vehicle trips with one or more of the following: the use of van-pools, shuttle buses, and ride-sharing programs that will have direct linkages to existing and planned

transportation nodes. The addition of more surface parking spaces is strongly discouraged due to the environmental sensitivity of the property and to reduce levels of air pollution caused by automobiles.

Land Use and Zoning Actions:

- Adopted **commercial-industrial-research-office** land use designation
- Property rezoned to **MXD**

- 20** **Redesignate** Part of parcel P426, located between the Kentlands and the westerly entrance to the Manor Care, Inc. property, but existing as a portion of the Lakelands property, from industrial-research-office to **low-medium density residential** (Map Designation 20). This approximately 6-acre parcel, currently zoned E-1, wraps around Lake Nirvana and is suitable for residential development at a density and design similar to that of the abutting Kentlands homes. In fact, the March 1996 Charrette for the property proposed development of that type as an extension of the Kentlands development with access solely from within Kentlands. This plan strongly supports that concept but does not rule out the possibility of gaining access from the future public street that will extend through the Manor Care property. This site is also slated to have a bikeway that will provide a connection from Inspiration Lake in Kentlands to the Manor Care, Inc. property.

Land Use and Zoning Actions:

- Adopted **low-medium density residential** land use designation
- Property rezoned to **MXD**

- 21** **Retain** the designation of approximately 13 acres of the former National Geographic Property (Lakelands), with frontage and access along Great Seneca Highway, as **industrial-research-office/residential** (Map Designation 21). Any residential development proposal should include mitigation of the noise emanating from Great Seneca Highway pursuant to the newly adopted Noise Abatement Guidelines. The developable area should be limited to 7-8 acres. The future development of the property, currently zoned E-1, should be developed under the MXD zone to allow for the best possible site layout. Tree preservation is very important as the site contains many mature specimen trees. Trees and forest area should be preserved at a minimum to the "break even" point for this parcel alone as established in the City's Forest Conservation Ordinance. Areas along the highway and the adjacent Washingtonian Woods community should be the priority location for this tree preservation and parking lots should be placed behind the building, if possible, or at a minimum screened from view. An expert urban forester should be utilized to assist in the site design and layout in order to achieve this goal.

Land Use and Zoning Actions:

- Adopted **industrial-research-office/residential** land use designation
- Property rezoned to **MXD**

- 22** **Redesignate** the developable portion of parcel N862, consisting of 10.2 acres and currently zoned MXD, from commercial/industrial-research-office to **high density residential/industrial-research-office** (Map Designation 22). The property is located adjacent to Great Seneca Highway and is within the Kentlands development having access from Kentlands Boulevard. Noise from the highway is also a problem for this site in terms of development with a residential land use unless multi-family units are used which can mitigate the interior noise (inside of the buildings) and use the buildings themselves to block the exterior noise. Ideally, the site could develop as a mix of office and residential units with the parking hidden from the surrounding

streets by fronting buildings on the street. It is one of the last parcels within Kentlands that can be left available for future office development thus having a more positive impact on the City's tax base than residential development. This parcel is also very visible from other parts of the neighborhood especially from Great Seneca Highway, Quince Orchard Park, from distant Muddy Branch Road, and from within the future Lakelands community. Both the views of the site and from the site must be considered when planning the property— thus the architectural nature of the buildings are also very important. A focal point should be provided in the form of a bell-tower, clock-tower, or public art and placed at the corner of Great Seneca Highway and Kentlands Boulevard.

Land Use and Zoning Actions:

- Adopted **high density residential/industrial-research-office** land use designation
- Zoning remains **MXD**

23 Redesignate approximately 52 acres of property existing as a portion of the former National Geographic Society property (parcel P126), and as a portion of the former Midtown area within Kentlands from commercial-office-residential and industrial-research-office to all **commercial-office-residential**(Map Designation 23). Thus the area, currently zoned MXD and I-3, spans the common boundary between these two adjacent properties and is proposed to contain the "Town Center" for both the Kentlands and future Lakelands communities. The plan emanating from the March 1996 Charrette for Kentlands and Lakelands proposed a mixed use, destination-entertainment area, focused around a town square and developed under the MXD zone. This concept includes the original "Main Street" vision that was part of the plan for Kentlands including "live-work" units. The design of the retail component should not preclude future retrofitting of the site with additional buildings and structured parking in the parking lots. Therefore, utilities will have to be located within drive aisles to allow for this. The residential component of this area should be of the highest density possible while maintaining the high level of urbanism achieved by the plan created at the March 1996 charette. The dwelling units of this portion of Lakelands can be excluded from the density and mix requirements on the balance of the property. The Shady Grove-Clarksburg Transitway is currently planned to extend from the Shady Grove Metro station to Clarksburg, Maryland, and travel through Gaithersburg along Great Seneca Highway and Maryland Route 124. The alignment currently is shown to be on the northeast side of Great Seneca Highway, then passing through the Quince Orchard Park community where a transit station is planned. During the charrette for Lakelands and Kentlands, the alignment was proposed to shift and move through the Lakelands and Kentlands site with stops at key points around the "town center" area. It is proposed to enter the Lakelands/Kentlands site along Kentlands Boulevard and then return to the adopted alignment. The final alignment will be reflected on the Transportation Element of the Master Plan. Continued coordination on the exact alignment is necessary as the Town Center SDP is reviewed.

Land Use and Zoning Actions:

- Adopted **commercial-office-residential** land use designation
- Zoning remains **MXD**

24 Redesignate approximately 10 acres of land, currently zoned I-3 and existing within the Lakelands property adjacent to the Old Farm neighborhood of Kentlands and the Manor Care, Inc. property, from industrial-research-office to **institutional** (Map Designation 24). This site is to be reserved for a future park/school site serving the surrounding population. Until it is needed by the Montgomery County Public Schools (MCPS), it is to be developed as an active recreational park owned and maintained by the City of Gaithersburg. The developer of Lakelands is encouraged to dedicate property toward this site.

Land Use and Zoning Actions:

- Adopted **institutional** land use designation
- Property rezoned to **MXD**

- 25** **Redesignate** approximately 10 acres of land, currently zoned I-3 and existing within the Lakelands property adjacent to Map Designation 24 from **industrial-research-office** to **institutional/mixed residential**. This land is the additional 10 acres needed for park/school site.

Land Use and Zoning Actions:

- Adopted **institutional/mixed residential** land use designation
- Property rezoned to **MXD**

- 26** **Retain** the designation of approximately 47 acres of land, currently zoned MXD, and consisting of the Kentlands Square Shopping Center and surrounding commercial development, as **commercial-industrial-research-office** (Map Designation 26). It is intended that this property retain the MXD zoning to allow for the future redevelopment of the blocks of parking within the shopping center and surrounding commercial development. Development of the vacant land within this map designation should conform to the "urbanism" principles established on the plan developed at the March 1996 Charrette for Kentlands/Lakelands. This includes providing buildings that front on the street with parking in the rear which will create a higher quality public space between opposing buildings that face the street.

Land Use and Zoning Actions:

- Adopted **commercial-industrial-research-office** land use designation
- Zoning remains **MXD**

- 27** **Redesignate** approximately 14 acres of land that exist as the Beacon Place Apartments, Copperfield Crossing Condominiums, and several open space parcels from **commercial/industrial-research-office** to **high density residential** (Map Designation 27) to be more consistent with the actual land uses. This property can retain its MXD zoning.

Land Use and Zoning Actions:

- Adopted **high density residential** land use designation
- Zoning remains **MXD**

- 28** **Redesignate** the majority of the Kentlands development, including the Hill District, Lake Districts, Gatehouse District, Old Farm District and civic uses such as the church, day care, general store, village green, and the historically significant mansion, barn, and firehouse from open space, mixed residential, commercial-office-residential and institutional to all **mixed residential** (Map Designation 28) to more accurately reflect the actual boundaries of these land uses within the development. This area will retain its MXD zoning.

Land Use and Zoning Actions:

- Adopted **mixed residential** land use designation
- Zoning remains **MXD**

29 Redesignate the approximately 47 acres of lakes, wetlands, and parks within Kentlands from open space, mixed residential, and commercial-office-residential to all **open space** (Map Designation 29) to more accurately reflect the actual land use established in the development of Kentlands. This area will retain its MXD zoning.

Land Use and Zoning Actions:

- Adopted **open space** land use designation
- Zoning remains **MXD**

30 Redesignate the 13-acre Rachel Carson Elementary School site from institutional and mixed residential to all **institutional** (Map Designation 30) to more accurately reflect the actual development boundaries of the site. This area will retain its MXD zoning.

Land Use and Zoning Actions:

- Adopted **institutional** land use designation
- Zoning remains **MXD**

31 Redesignate approximately 9 acres of land in Kentlands, known as Retail Section 3 from commercial/industrial-research-office to **commercial-industrial-research-office** (Map Designation 31).

Land Use and Zoning Actions:

- Adopted to **commercial-industrial-research-office** land use designation
- Zoning remains **MXD**

**CURRENT AND PROJECTED POPULATION
FOR STUDY AREA 4**

Population	Current Estimated 3490	Projected Future 3982+Lakelands
Housing Units	Existing	Future
Single-Family Detached	362	486+Lakelands
Single-Family Attached	452	455+Lakelands
Apartments	468	468+Lakelands
Cottages	27	120+Lakelands
TOTAL	1309	1529+Lakelands
School-Age Children	Current Estimated	Projected Future
K-5	323	687+Lakelands
6-8	114	138+Lakelands
9-12	118	147+Lakelands
TOTAL	555	972+Lakelands

CURRENT AND PROJECTED POPULATION FOR NEIGHBORHOOD FOUR

Population	Current Estimated 7031	Projected Future 9873+Lakelands
Housing Units	Existing	Future
Single-Family Detached	929	1464+Lakelands
Single-Family Attached	846	1048+Lakelands
Apartments	752	973+Lakelands
Cottages	27	120+Lakelands
TOTAL	2554	3605+Lakelands
School-Age Children	Current Estimated	Projected Future
K-5	683	1290+Lakelands
6-8	248	362+Lakelands
9-12	269	403+Lakelands
TOTAL	1200	2055+Lakelands

STAGING PLAN

Many of the following staging elements will be adopted in greater detail pursuant to future agreements between the City and the property owners involved. These stages are not intended to require development in a chronological fashion according to each stage rather, they are geographic sections of future development that are tied to specific transportation-related improvements. The exception is Stage 1, which is the area required to be submitted first. Subsequent stages can be developed in any order.

STAGE 1

Schematic Development Plan (SDP) for Kentlands/Lakelands Town Center, Kentlands Section 3 and 4 and surrounding high density residential

- This must be the first SDP submitted for both Kentlands and Lakelands and must as a minimum include the "Town Center." Access from Great Seneca Highway across the dam road must be provided within the SDP submission.
- The provision for the transitway, within this portion of the Lakelands/Kentlands, is to be made part and parcel of the SDP. Construction of any bus shelters required through staff review of the SDP shall be completed prior to release of bonds for each phase of the SDP.
- Payment of an amount agreed upon by the City and developers of Kentlands and Lakelands, related to the cost of Great Seneca Highway widening, shall be made along with each building permit and may be prorated over the entire development of both Lakelands and Kentlands. The City will use the funds for improving the Ride-On Bus system in coordination with Montgomery County and as funding for the future Corridor Cities Transitway or other transportation related improvements.
- An additional payment, in an amount agreed upon by the City, related to intersection improvements for Muddy Branch at Great Seneca Highway, Sam Eig at Great Seneca Highway, Kentlands Boulevard at Great Seneca Highway, and Route 28 at Muddy Branch is also required along with the issuance of building permits for both Kentlands and Lakelands. These improvements are to be coordinated with the improvements required of Johns Hopkins University at the same intersections. In lieu of making the intersection improvement payment, the developers of Kentlands and Lakelands may make the improvements privately within a time frame agreed upon by the City.
- A plan for the planting of street trees along the Great Seneca Highway frontages of both Kentlands and Lakelands must be submitted. The planting of the trees is required by each respective developer along the limits of their frontage during the first available planting season after the issuance of the 100th residential occupancy permit within each development related to this stage.
- Improvements to Kentlands Boulevard, pursuant to a plan approved by the City in conjunction with the SDP in this stage, are to be completed by the developers of Kentlands prior to the release of bonds for the Town Center portion of the SDP.
- The design of a new bus shelter prototype and an overall plan identifying locations of shelters must also be submitted and approved in this stage.

STAGE 2**A site plan for additional office space at the Manor Care site in excess of 50,000 square feet but not to exceed 150,000 (likely to be an addition to the existing building)**

- Dedication of a right-of-way extending from the Lakelands property to Maryland Route 28 along the alignment of the westerly access road over the existing dam, which currently is signalized at Maryland Route 28, must have been recorded prior to the approval of plans for this stage, or an agreement to dedicate must have been executed with the City.
- A Wildlife Habitat Enhancement, Bikeways and Nature Trails plan that connects to the system of trails on adjacent properties must be submitted.
- Dedication of any needed right-of-way for the widening of Maryland Route 28 is required when requested by Maryland State Highway Administration.

STAGE 3**SDP's for Gatehouse addition, NIKE site (Map Designation 8) and Eagles Head (Map Designation 10) and Map Designation 21, all within Lakelands**

- Dedication of and improvements to Conservation Lane, through Izaak Walton League is required in conjunction with an SDP that includes the Eagles head (Map Designation 10).
- Payment toward cost of Great Seneca Highway widening is required along with issuance of building permits.
- Construction of any bus shelters required by the City in conjunction with this portion of Lakelands must be completed prior to the issuance of any occupancy permits.
- A Wildlife Habitat Enhancement, Bikeways and Nature Trails plan for all of Lakelands must be submitted and approved with any SDP in this stage. Payment of funds, in an amount agreed to between the City and the developer, to act as "seed money" for the maintenance of the entire open space system within Lakelands is required if the property is not to be maintained by the Lakelands HOA.
- Major recreational amenities provided by the developer of Lakelands are to be in place prior to the issuance of a permit for the seven-hundredth dwelling unit within Lakelands, excluding portions that will provide separate recreational facilities.

STAGE 4**Additional SDP's for the balance of Lakelands**

- Payment must be made toward the cost of Great Seneca Highway widening along with building permits.
- The SDP that includes the identified park/school site is to include conveyance of 10 acres to the City for use as a Park/School site. Conveyance to the Montgomery County Board of Education will occur at a time determined appropriate by the City. Any excess acreage, not needed by the Board will be retained by the City as parkland for use by all City residents.
- Along with the first SDP in this stage, the dedication of a public road through Manor Care, which will include any necessary improvements or maintenance done to the road and dam as required by the City, must be made. The Manor Care road connecting to Maryland Route 28, providing access to the park/school site from Maryland Route 28, must be open to traffic and must be completed prior to the issuance of the 100th occupancy permit within this stage of Lakelands. The road shall be connected to the Lakelands road network prior to issuance of building permits for the second half of this stage.
- The construction of bus shelters within the first half of this stage is also required pursuant to the approved SDP prior to issuance of building permits for the second half of this stage.
- The implementation of the Wildlife Habitat Enhancement, Bikeways and Nature trail plan must be complete prior to the issuance of permits for the second half of this stage of Lakelands.

STAGE 5**Additional office buildings at Manor Care (over and above the first 150,000 square feet of additional space)**

- A traffic study must be submitted demonstrating the impact of development on the surrounding road network, including Great Seneca Highway, Maryland Route 28, and Muddy Branch Road. A plan for reducing single-occupancy vehicle trips with the use of one or more of the following: van-pools, shuttle busses, and ride-sharing programs that will have direct linkages to transportation nodes must also be submitted.
- The implementation of the Wildlife Habitat Enhancement, Bikeways and Nature trail plan must be complete prior to the issuance of occupancy permits within this stage.
- The widening of Maryland Route 28 between Maryland Route 124 and Key West Avenue to four lanes must also be under construction prior to the occupancy of any new office space within this stage.

NEIGHBORHOOD FOUR
LAND USE PLAN DESIGNATIONS AND COMPREHENSIVE REZONING
1997

MAP DESIG	STUDY AREA	SUBDIVISION/ PARCEL/LOT	ACRES	PROPERTY OWNERS	1996 ZONING	1988 LAND USE DESIGNATION	1996 DRAFT PLAN LAND USE DESIGNATION	PLANNING COMMISSION RECOMMENDATION	MAYOR & COUNCIL ADOPTION	ADOPTED ZONING
1	1	N295	8.4	Q.O.C.C.-1 Associates	I-3	Ind-Rsch-Off	Ind-Rsch-Off	Ind-Rsch-Off	Ind-Rsch-Off	I-3
2	1	N550	30.0	GE Real Est Credit Corp	MXD	Ind-Rsch-Off	Res-Off	Res-Off	Res-Off	MXD
3	1	N550	67.0	GE Real Est Credit Corp	MXD	Ind-Rsch-Off	Mixed Res	Mixed Res	Mixed Res	MXD
4	1	N550	67.7	GE Real Est Credit Corp	MXD	Ind-Rsch-Off Open Space Comm/Ind-Rsch-Off	Comm/Ind-Rsch-Off	Comm/Ind-Rsch-Off	Comm/Ind-Rsch-Off	MXD
5	1	N550	5.4	GE Real Est Credit Corp	MXD	Open Space Ind-Rsch-Off	Inst	Inst	Inst	MXD
6	2	N159	9.0		CB	Comm-Off-Res	Med Den Res	Med Den Res	Med Den Res	C.B
7	2	P322 Part P222	15.0	Gaith Community Assoc ¹ USA	CB R-A	Inst	Comm-Off-Res	Comm-Off-Res	Comm-Off-Res	MXD
8 A	2	Part P222	26.0	Gaith Comm Assoc	CB	Comm-Off-Res	Mixed Res	Mixed Res	Mixed Res	MXD
8 B	2	Part P222	5.0	Gaith Comm Assoc	C-1	Comm	Comm-Off-Res	Comm-Off-Res	Comm-Off-Res	MXD
9	2	Part P222	9.0	Gaith Comm Assoc	RA	Open Space	Open Space	Open Space	Open Space	MXD
10	2	Part P222	6.0	Gaith Comm Assoc	RA	Open Space	Low-Med Den Res	Low-Med Den Res	Low-Med Den Res	MXD
11	2	Par One	8.9	Trust Co. of the West	C-1	Comm	Comm	Comm	Comm	C-2
12	3	Westleigh Woods at Muddy Branch	100.0	N/A	R-90	Low Den Res	Low Den Res	Low Den Res	Low Den Res	R-90

MAP DESIG	STUDY AREA	SUBDIVISION/ PARCEL/LOT	ACRES	PROPERTY OWNERS	1996 ZONING	1988 LAND USE DESIGNATION	1996 DRAFT PLAN LAND USE DESIGNATION	PLANNING COMMISSION RECOMMENDATION	MAYOR & COUNCIL ADOPTION	ADOPTED ZONING
13	3	P290	9.54	USA	RPT	Inst	Low Den Res	Low Den Res	Low Den Res	MXD
14	3	Part P222	10.3	City of Gaithersburg	R-90	Low Den Res	Open Space	Open Space	Open Space	R-90
15	3	P780, P720 Par C, P560 PB08, P722 P777, Part Par B	21.0	City Wash Woods HOA	RPT	Open Space	Open Space	Open Space	Open Space	MXD
16	3	Wash Woods	120.0	Multiple Owners	RPT	Med-Low Den Res Med Den Res High Den Res	Mixed Res	Mixed Res	Mixed Res	MXD
17	4	Parts of P222 PB40, P40	130.0	Gaith Comm Assoc ¹	R-A E-1 I-3	Open Space Ind-Rsch-Off	Open Space	Open Space	Open Space	MXD
18	4	Portions of P222, P126 P342, P426 P465, P435 PB40	158.0	Gaith Comm Assoc	I-3	Ind-Rsch-Off	Mixed Res	Mixed Res	Mixed Res	MXD
19	4	N663	98.79	Manor Care Inc.	I-3	Ind-Rsch-Off	Comm/Ind-Rsch-Off	Comm/Ind-Rsch-Off	Comm/Ind-Rsch-Off	MXD
20	4	Part of P426	6.0	Gaith Comm Assoc	E-1	Ind-Rsch-Off	Low-Med Den Res	Low-Med Den Res	Low-Med Den Res	MXD
21	4	Part of P222	13.0	Gaith Comm Assoc	E-1	Ind-Rsch-Off	Ind-Rsch-Off	Ind-Rsch-Off/Res	Ind-Rsch-Off/Res	MXD
22	4	Part of P660	10.2	Great Seneca Devel Corp	MXD	Comm/Ind-Rsch-Off	High Den Res/ Ind-Rsch-Off	High Den Res/ Ind-Rsch-Off	High Den Res/ Ind-Rsch-Off	MXD

Abbreviations: *Comm* = Commercial *Ind* = Industrial *Med* = Medium *Opt* = Option *Res* = Residential
 Den = Density *Inst* = Institutional *Off* = Office *Rec* = Recreational *Rsch* = Research

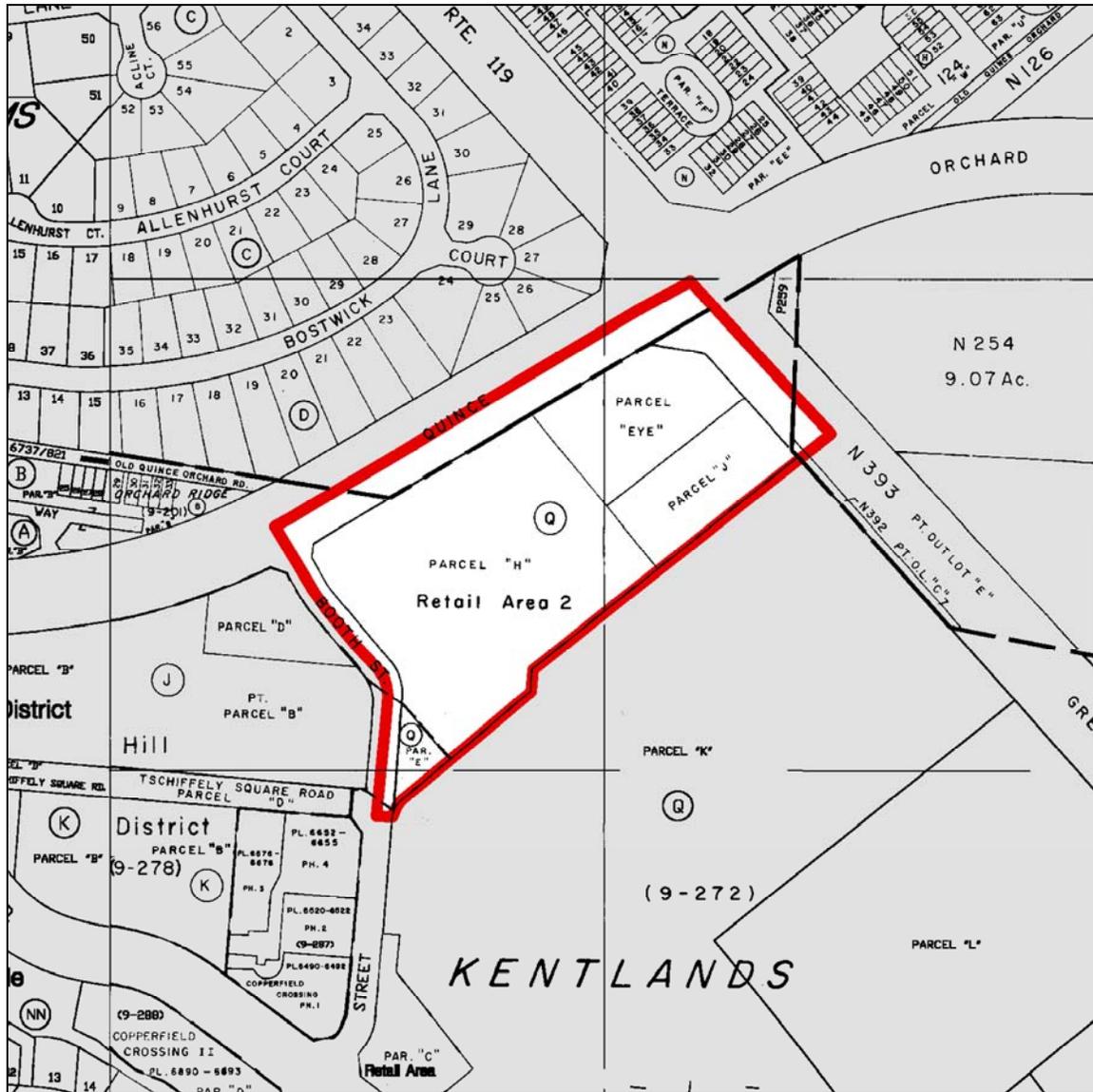
¹ Contract Purchaser

MAP DESIG	STUDY AREA	SUBDIVISION/ PARCEL/LOT	ACRES	PROPERTY OWNERS	1996 ZONING	1988 LAND USE DESIGNATION	1996 DRAFT PLAN LAND USE DESIGNATION	PLANNING COMMISSION RECOMMENDATION	MAYOR & COUNCIL ADOPTION	ADOPTED ZONING
23	4	Parts of P126 and P660	52.0	Gaith Comm Assoc & Great Seneca Devel Corp	MXD I-3	Comm-Off-Res, Ind-Rsch-Off	Comm Off-Res	Comm-Off-Res	Comm-Off-Res	MXD
24	4	Parts of P426 and P342	10.0	Gaith Comm Assoc	I-3	Ind-Rsch-Off	Inst	Inst	Inst	MXD
25	4	Parts of P426 and P342	10.0	Gaith Comm Assoc	I-3	Ind-Rsch-Off	Inst/Mixed Res	-	Inst/Mixed Res	MXD
26	4	Part P660, Part N391	47.0	Multiple Owners	MXD	Comm/Ind-Rsch-Off	Comm/Ind-Rsch-Off	Comm/Ind-Rsch-Off	Comm/Ind-Rsch-Off	MXD
27	4	Kentlands 9-27B	14.0	Bozzuto	MXD	Comm/Ind-Rsch-Off	High Den Res	High Den Res	High Den Res	MXD
28	4	Kentlands 9-272, 9-280	240.0	Multiple Owners	MXD	Open Space Mixed Res Comm-Off-Res Inst	Mixed Res	Mixed Res	Mixed Res	MXD
29	4	81."G" Parcel H	20.0	City Of Gaithersburg	MXD	Open Space Mixed Res Comm-Off-Res	Open Space	Open Space	Open Space	MXD
30	4	P260	13.08	Mont County Board of Education	MXD	Inst Mixed Res	Inst	Inst	Inst	MXD
31	4	Part of P660	9.0	Great Seneca Devel Corp	MXD	Comm/Ind-Rsch-Off	High Den Res Comm-Ind-Off	Comm/Ind-Rsch-Off	Comm/Ind-Rsch-Off	MXD

Abbreviations: *Comm* = Commercial *Ind* = Industrial *Med* = Medium *Opt* = Option *Res* = Residential
 Den = Density *Inst* = Institutional *Off* = Office *Rec* = Recreational *Rsch* = Research

¹ Contact Purchaser

SPECIAL STUDY AREA 8: UPTONS/BOSTON MARKET SITE



Approximate Total Area:	7.55 Acres
Existing Land Use:	Retail-Commercial
Current Land Use Designation:	Commercial/Industrial-Research-Office
Current Zoning:	MXD (Mixed Use Development)

TAX MAP REFERENCE:

Parcels E, H, I (eye), and J Block Q Kentlands

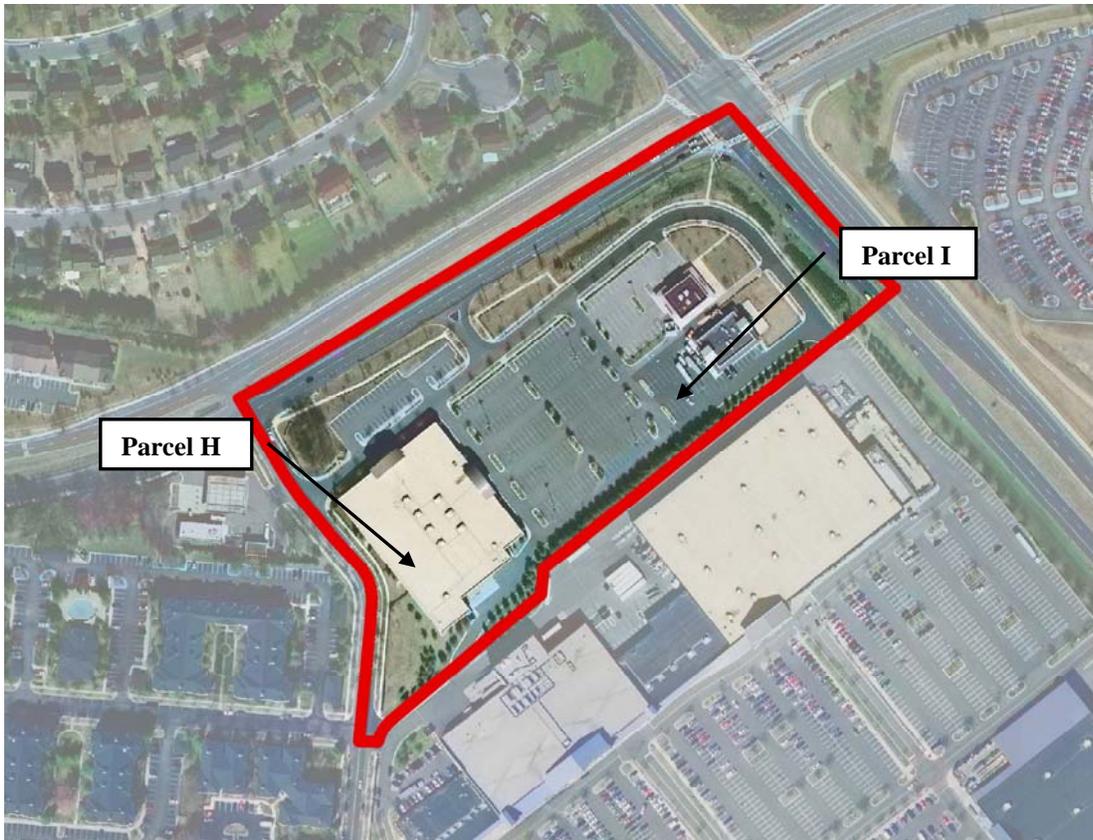
LOCATION:

The study area is located south of Quince Orchard Road, between Booth Street and Great Seneca Highway in the Kentlands development. The study area is accessed via Quince Orchard Road and Booth Street.

BACKGROUND:

The Upton's and Boston Market Special Study Area consists of two parcels, Parcel H and Parcel I, which are located in the Mixed Use Development (MXD) Zone in the Kentlands development. The properties involve two vacant buildings, the Uptons retail building and a Boston Market restaurant building. Both have been vacant since 1999. A Schematic Development Plan application for mixed land use was received on July 30, 2001 for a 350 unit residential development on Parcel H with 84,406 sq. ft. of green area, and approximately 3,000 sq. ft. of retail commercial land use.

EXISTING LAND USE/PHYSICAL CHARACTERISTICS:



The study area consists of one vacant retail building on Parcel H (Uptons) and one vacant restaurant on Parcel I (Boston Market). The surface area around the buildings is covered by a large parking lot and minimally landscaped islands. A landscaped buffer borders the study area along Quince Orchard Road and along

Great Seneca Highway. There are no significant surface features and the study area slopes gently towards Quince Orchard Road. An additional landscaped berm separates the study area from the K-Mart and Giant stores located in Kentlands Square.

The designated land use for the entire study area is commercial-industrial-research-office. Nearby land uses include Kentlands residential and Kentlands Square Retail Center. Residential developments are located to the west of the study area on Quince Orchard Road. Office land uses are located to the northeast of the study area, and these office uses are part of the Quince Orchard Park development.

SPECIAL STUDY AREA REVIEW

The City of Gaithersburg held a Stakeholders Meeting on May 8, 2002 for the Uptons and Boston Market parcels as part of the Master Plan update process. The stakeholders were informed of their role in shaping the future of Kentlands, and they were requested to provide information on how the Uptons/Boston Market site could change and improve. The stakeholders were asked to consider what are the most economically and socially beneficial land use alternatives for the study area. They were also asked to provide insight into the challenges and opportunities for addressing growth and change in the area.

The stakeholders were presented with several land use options and spent time brainstorming additional land use options. The land use options were reduced to three preferred options: 1. Mixed; 2. Educational, and 3. Recreational

PROPOSED LAND USE OPTIONS

The three preferred options were presented to the Mayor and City Council and Planning Commission during a public work session on May 28, 2002. The Mayor and City Council endorsed a mixed land use option for the study area.

SUBSEQUENT LAND USE DECISIONS

A Schematic Development Plan for a mixed use development was approved by the Mayor and City Council for the study area on July 15, 2002 (Resolution R-77-02) for 307 residential apartments; 13,193 sq. ft. of commercial/office space; 1,500 sq. ft. of leasing office; 5,413 sq. ft. of clubhouse amenity space; a 6.5 level parking garage; and a 30,000 sq. ft. office building. Final site plans for both Parcels H & I are approved.

Land Use and Zoning Action

- Designate as **Commercial-Office-Residential**
- Zoning remains **MXD** (Mixed Use Development).

