DRAINAGE PLAN
LANGE 2ND ADDITION
TO
WICHITA, SEDGWICK COUNTY, KANSAS

PREPARED BY

Baughman
ENGINEERING | SURVEYING | PLANNING
LANDSCAPE ARCHITECTURE

30 APRIL 2013

ENGINEERING | SURVEYING | PLANNING
LANDSCAPE ARCHITECTURE

DRAINAGE PLAN
LANGE 2ND ADDITON

FINAL REPORT

Prepared by Baughman Company, P.A.
30 April 2013

By Trevor R. Kurth, P.E., CFM
N. Brent Wooten, P.E., L.S.

REPORT CONTENTS

EXISTING CONDITIONS

The site is located along West Street just south of Macarthur Road in Wichita, Kansas. A majority of the site is currently platted as Limited Industrial in Lange Addition. The site is currently partially developed and is a storage facility for storage containers. The site is mainly gravel parking with various out-buildings near the frontage which will remain.

The site has a detention pond located in the center to rear half of the property. The pond does not appear to have an apparent outlet and appears to drain overland to the south. The site accepts offsite runoff from the north adjacent Duling Addition and overland flow from the north undeveloped area.

The site lies within a FEMA SFHA Zone X. The drainage patterns as defined above can be seen on the Aerial (Exhibit 2).

PROPOSED CONDITIONS

The property is being platted as one lot and a drainage easement covering the low lying area and detention pond. This plat is being submitted in order to 'clean up' the boundaries as well as secure zoning on the northern rear unplatted property. Therefore, the existing conditions for this plat are the same as the developed conditions.

For a half-scale copy of the Plat, see Exhibit 3.

OFFSITE CONDITIONS

There appears to be approximately 44 acres entering the site from the north adjacent property, currently being platted as Duling Addition as well as north undeveloped land north of that. The north property is generally flat with what appears to be less than a 0.2% slope, and there is an adjacent detention pond which appears to have storage and no defined outfall.

Just adjacent and downstream of the site is a platted residential area which has a detention pond that accepts this sites discharge. Based on aerial photography, all of this basins runoff flows through a series of ponds and defined channel sections at a minimum 1 mile downstream.

The overall site location and hydrogeodatabase can be seen with the site location plotted as Exhibit 1.

FORWARD

At this time, we do not expect any further development or disturbance on the site. Therefore the existing conditions and proposed conditions are assumed to be the same as the site is currently developed. The site will continue to function as storage. If any development is to occur on this site in the future an updated drainage plan will need to be submitted based on the proposed site plan. The following methods and standards are used for both existing and proposed cover conditions.

DRAINAGE METHODS & STANDARDS

The following methods and standards, although not a complete list, were used in calculating the existing conditions runoff values.

- STORM SERIES
  - 24-hour; 2-yr, 5-yr, 10-yr, 25-yr, 100-yr Storm Events Modeled
  - 2-yr Rainfall Depth = 3.5 in
  - 10-yr Rainfall Depth = 5.3 in
  - 100-yr Rainfall Depth = 7.9 in

- FLOW DATA
  - Areas per LIDAR data, USGS Quadrangle Sheet, Aerial Photos, and Site Visits
  - SCS Hydrograph Method used for Existing Flows (CN = 84, Soil Type C/D, Disturbed cover)
  - Time of Concentration: Lag Method (minimum 15 min)

SITE CHARACTERISTICS

The majority of the site is currently zoned and platted as limited industrial. The front half of the site is currently developed with buildings, drives, and concrete pads. The central portion of the site is gravel and is used for storage of storage containers. The rear half of the site is low lying and has a detention area and is heavily vegetated/treed. The site is relatively flat with the majority draining to the east and into the pond. The frontage area, where the current development is, sheet flows to the West Street ROW ditch section.
The existing site characteristics can be seen from the aerial exhibit (Exhibit 2).

HYDROLOGIC ANALYSIS

The site was analyzed for pre-development conditions using the SCS Hydrograph Method for the entire storm series. A CN of 84 was used based on partially developed and disturbed area in Types C and D Soils. A portion of the site is gravel storage whereas the rear of the property is open space wetland type area. A Tc was calculated using a hydrologic run length of 750', basin slope of 0.2%. The Tc was approximately 50 minutes.

DETENTION FACILITIES

There is currently one existing detention pond on the site located near the center of the property. The pond does not appear to have a true static elevation or defined outfall section. The pond was modeled with the overflow elevation as the

static pool elevation. The pond has been expanded slightly since being modeled in the previous Lange Addition.

- Pond

  The pond is located at the center of the property and currently accepts runoff from this site as well as offsite from the north. The pond is relatively 'low' at this time, and appears to have adequate storage for detention values for this site, if needed. The pond was modeled with the overflow elevation as the pool elevation and a 25' broadcrested overflow weir and the primary outlet. The pond will have 100-year WSE at approximate elevation 1282.0, the weir section is at elevation 1281.0. The pond appears to have adequate storage to the east also in the low lying vegetated and treed property.

DOWNSTREAM DRAINAGE CAPACITY

At this time, we are not aware of any downstream restrictions or issues immediately downstream of this site. There is an offsite pond to the south which accepts this sites and ponds runoff.

SOURCE OF FLOODPLAIN INFORMATION

The site lies within a FEMA Zone X - Shaded. The location of the property, on FEMA FIRM Panel 485E of 700 for Sedgwick County, Kansas, effective February 2, 2007, is attached as Exhibit 5.

FEDERAL, STATE, & LOCAL PERMITTING

US ARMY CORPS OF ENGINEERS

There does not appear to be any jurisdictional waters of the US on this site.

KANSAS DEPT OF AGRICULTURE – DWR PERMITTING

There does not appear to be any DWR permitting needed on the proposed site at this time.

FEMA

There is no mapped A or AE floodplain located upon the proposed site. Therefore, no FEMA permitting is expected at this time.

KANSAS DEPT OF TRANSPORTATION

There is no KDOT ROW located along the property.

SEDGWICK COUNTY PERMITTING

There does not appear to be any Sedgwick County permitting needed at this time.

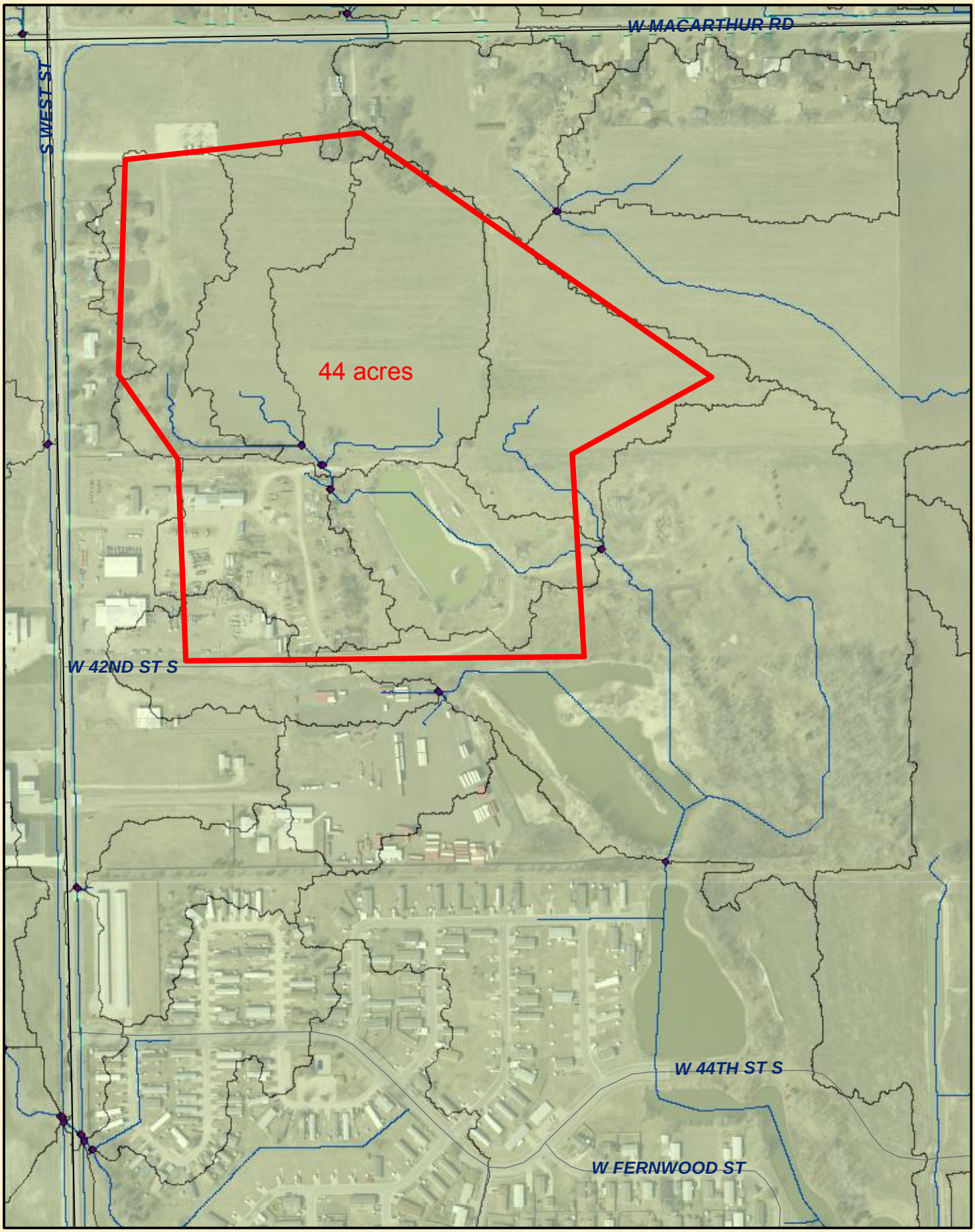
EXHIBIT 1: Site Location Map

EXHIBIT 2: Aerial Photo Exhibit with Lidar Topography

EXHIBIT 3: Plat – Half Scale

EXHIBIT 4: Drainage Plan – Half Scale

EXHIBIT 5: Floodplain Location (FIRM)



LANGE 2ND ADDITION

0 105 210 420 Feet

Baughman
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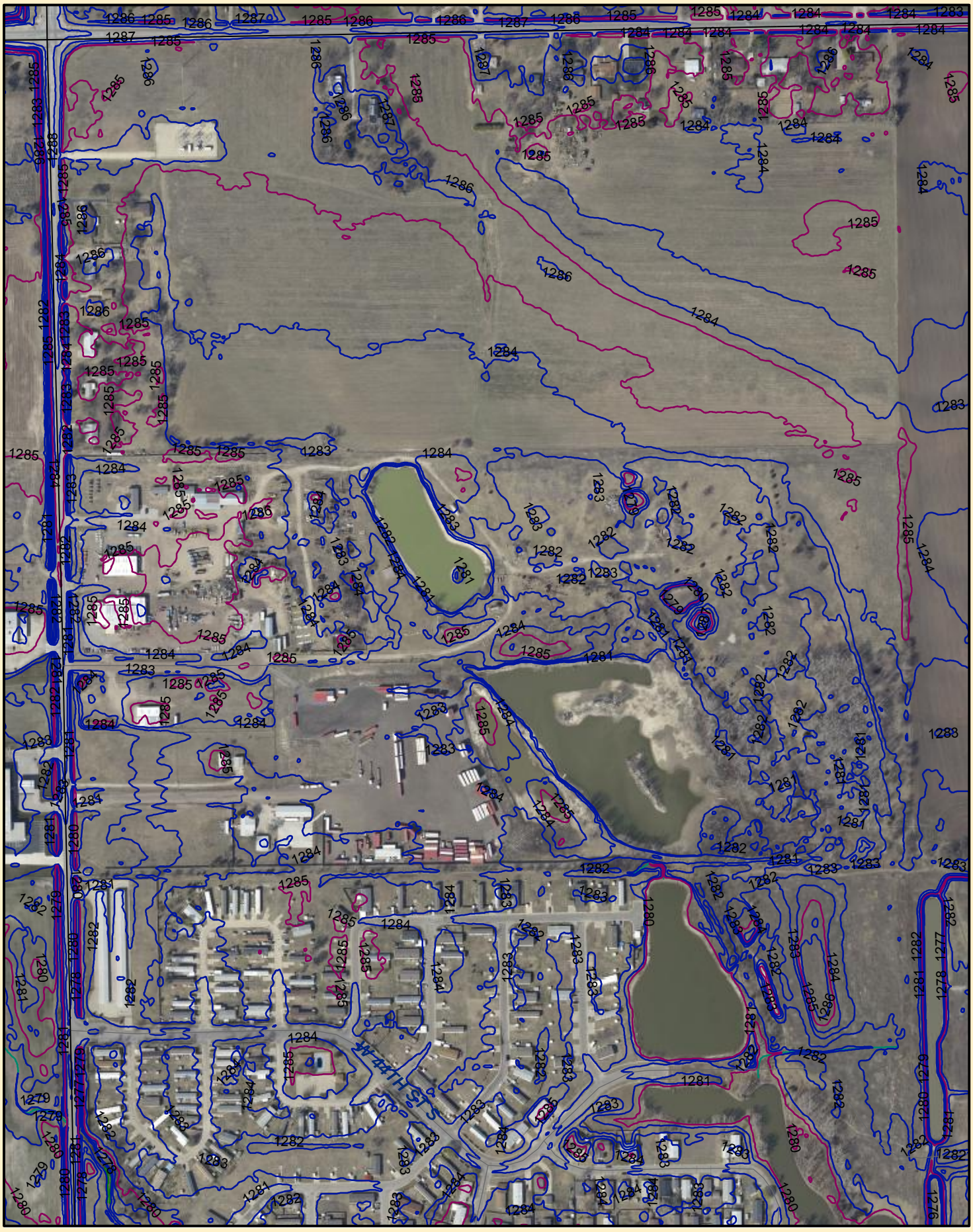
LANDSCAPE ARCHITECTURE



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LANGE 2ND ADDITION

0 100 200 400 Feet

Baughman
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LANDSCAPE ARCHITECTURE

LANGE 2ND ADDITION
WICHITA, SEDGWICK COUNTY, KANSAS

This plat of "LANGE 2ND ADDITION", Wichita, Sedgwick County, Kansas has been submitted to and approved by the Wichita–Sedgwick County Metropolitan Area Planning Commission, Wichita, Kansas.

Dated this ____ day of _____, 2013.
Wichita–Sedgwick County Metropolitan Area Planning Commission

_____, Chair
David Dennis

_____, Secretary
John L. Schlegel

This plat approved and all dedications shown hereon accepted by the City Council of the City of Wichita, Kansas, this ____ day of _____, 2013.

_____, Mayor
Carl Brewer

_____, City Clerk
Karen Sublett

Reviewed in accordance with K.S.A. 58–2005 on this ____ day of _____, 2013.

_____
Tricia L. Robello, L.S. #1246
Deputy County Surveyor
Sedgwick County, Kansas

Entered on transfer record this ____ day of _____, 2013.

_____, County Clerk
Kelly B. Arnold

State of Kansas)
Sedgwick County) SS This is to certify that this plat has been filed for record in the office of the Register of Deeds, this ____ day of _____, 2013 at _____ o'clock __M; and is duly recorded.

_____, Register of Deeds
Bill Meek

_____, Deputy
Tonya Buckingham

We the undersigned holders of a mortgage on the above described property, do hereby consent to this plat of "LANGE 2ND ADDITION", Wichita, Sedgwick County, Kansas.

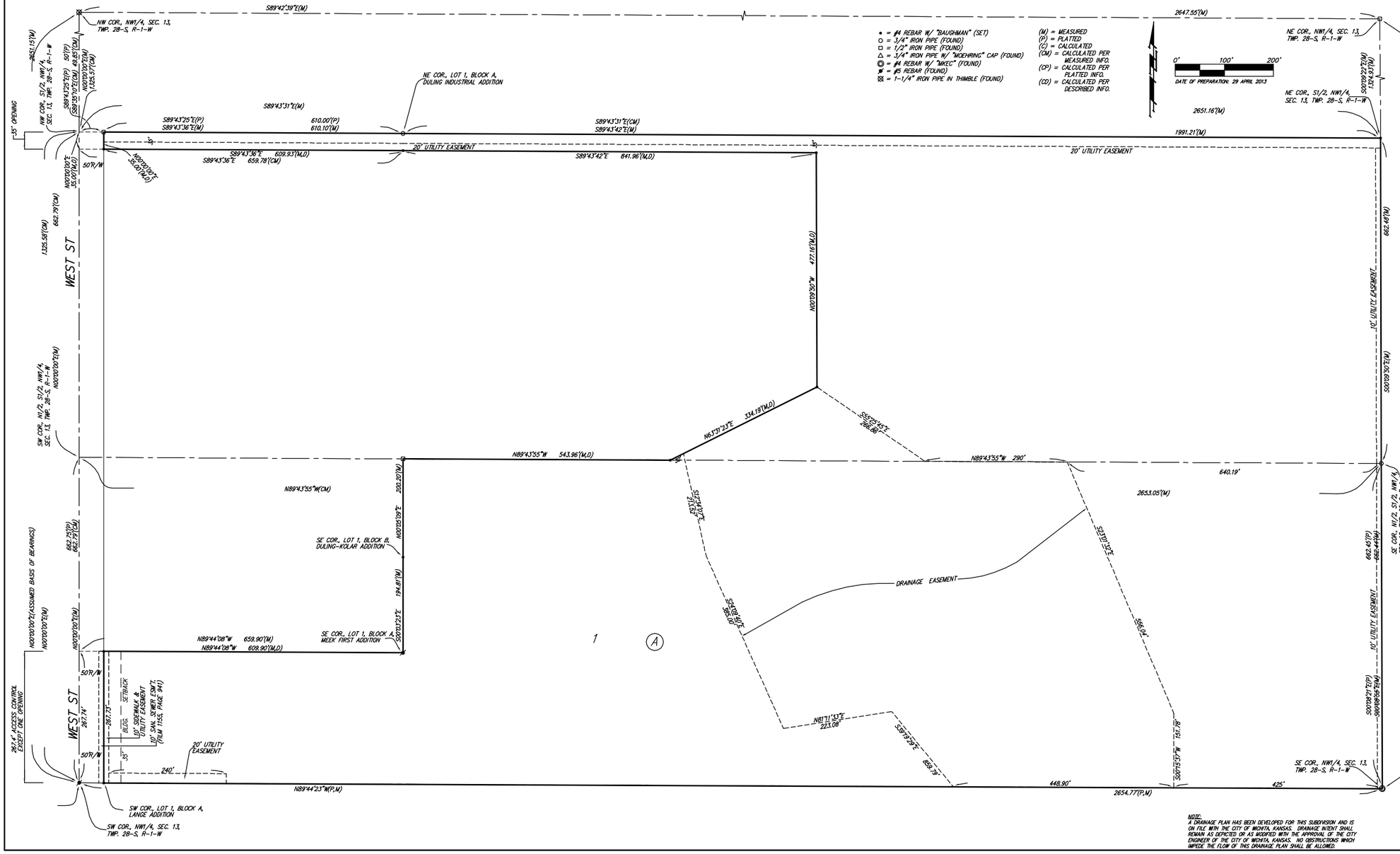
Kanza Bank

_____, _____
(Title)

State of Kansas)
Sedgwick County) SS The foregoing instrument acknowledged before me, this ____ day of _____, 2013, by _____, _____ (Title) of Kanza Bank, on behalf of the bank.

_____, Notary Public

My App't. Exp. _____



Existing public easements and dedications being vacated by virtue of K.S.A. 12–512b, as amended.

Baughman Company, P.A.

_____, Surveyor
Michael G. Conrey

Know all men by these presents that we, the undersigned, have caused the land in the surveyors certificate to be platted into a Lot, and a Block, to be known as "LANGE 2ND ADDITION", Wichita, Sedgwick County, Kansas. The utility easements are hereby granted as indicated for the construction and maintenance of all public utilities. The sidewalk and utility easement is hereby granted as indicated for the construction and maintenance of a public sidewalk and for the construction and maintenance of all public utilities. The drainage easements are hereby granted as indicated for drainage purposes. The streets are hereby dedicated to and for the use of the public. Access controls shall be as depicted on the face of the plat and are hereby granted to the City of Wichita, Kansas. The permitted opening locations shall be as determined by the City Engineer of the City of Wichita, Kansas. The Minimum Building Pad Elevations for the lowest opening to the structures shall be as indicated on the face of the plat.

JBL, Inc., a Kansas corporation

_____, President
Jeff M. Lange

State of Kansas)
Sedgwick County) SS The foregoing instrument acknowledged before me, this ____ day of _____, 2013, by Jeff M. Lange, President of JBL, Inc., a Kansas corporation, on behalf of the corporation.

_____ Notary Public

My App't. Exp. _____

BENCHMARK:
CITY OF WICHITA BENCHMARK DISC, 50.70' E. OF ℄ OF WEST ST. 53.49' ENE OF THE SW COR., NW1/4, SEC. 13, TWP. 28–S, R–1–W ON THE NW CORNER OF A CONCRETE SLAB FOR A SANITARY SEWER LIFT STATION. ELEV. = 1282.52 NAVD88

NOTE:
ADDITIONAL BUILDING SETBACKS ALONG THE SOUTH PROPERTY LINE PER PROTECTIVE OVERLAY #198.

MINIMUM BUILDING PAD ELEVATIONS FOR LOWEST OPENING TO THE STRUCTURES		
LOT	BLOCK	ELEVATION
		NAVD88
1	A	1284.7

NOTE:
A DRAINAGE PLAN HAS BEEN DEVELOPED FOR THIS SUBDIVISION AND IS ON FILE WITH THE CITY OF WICHITA, KANSAS. DRAINAGE INTENT SHALL REMAIN AS DEPICTED OR AS MODIFIED WITH THE APPROVAL OF THE CITY ENGINEER OF THE CITY OF WICHITA, KANSAS. NO OBSTRUCTIONS WHICH IMPEDE THE FLOW OF THIS DRAINAGE PLAN SHALL BE ALLOWED.

LANGE 2ND ADDITION
29 APRIL 2013

Baughman Company, P.A.
315 Ellis St Wichita, KS 67211 P 316-262-7271 F 316-262-0149
ENGINEERING | SURVEYING | PLANNING | LANDSCAPE ARCHITECTURE

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DRAINAGE PLAN

LANGE 2ND ADDITION

WICHITA, SEDGWICK COUNTY, KANSAS

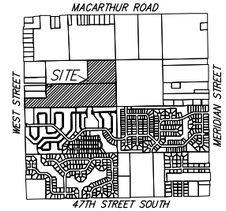
CO = Cleanout
CP = Cable TV Pedestal
EB = Electric Box
FH = Fire Hydrant
GM = Gas Meter
GU = Guard Post(Bollard)
Guy = Guy Anchor
GV = Gas Valve
LP = Light Pole
MB = Mail Box
PP = Power Pole
Sign = Sign
SSMH = Sanitary Sewer Manhole
ATT Ped = ATT Pedestal
TR = Tree
Well = Cased Well
WM = Water Meter
WV = Water Valve
XFMR = Transformer
YH = Yard Hydrant(Spigot)

● = #4 REBAR W/ "BAUGHMAN" (SET)
○ = 3/4" IRON PIPE (FOUND)
□ = 1/2" IRON PIPE (FOUND)
△ = 3/4" IRON PIPE W/ "MOEHRING" CAP (FOUND)
◇ = #4 REBAR W/ "MKEC" (FOUND)
⊠ = #5 REBAR (FOUND)
⊠ = 1-1/4" IRON PIPE IN THIMBLE (FOUND)

(M) = MEASURED
(P) = PLATTED
(C) = CALCULATED
(CM) = CALCULATED PER MEASURED INFO.
(CP) = CALCULATED PER PLATTED INFO.
(CD) = CALCULATED PER DESCRIBED INFO.

0' 100' 200'

DATE OF PREPARATION: 29 APRIL 2013
DATE OF TOPOGRAPHY: 6 MARCH 2013
CONTOUR INTERVALS = 1 FOOT



VICINITY MAP
SEC. 13, T28S, R1W

WATER LINE
SOUTHWESTERN BELL
GAS LINE
CABLE TV
FENCE
OVERHEAD ELECTRIC LINE
SANITARY SEWER
UNDERGROUND ELECTRIC LINE

Shoemaker, Donald F.
4160 S. West St.
Wichita, KS 67217-3812
ZONED "SF-20"

Brammer, William R. Etal
19141 NE 44th Ct.
Sammamish, WA 98074-4653
ZONED "SF-20"

Leis, Dorothy Etal
3505 W. MacArthur Rd.
Wichita, KS 67217-3850
ZONED "SF-20"

VANDERHOFF, ALBERT W & BETTE A
6220 W 47TH ST S
WICHITA, KS 67217-9407
ZONED "SF-20"

DULING INDUSTRIAL ADDITION
ZONED "LI"
LYNDE INDUSTRIAL ADDITION
ZONED "LI"
PARKER OIL ADDITION
ZONED "MH"
J & P INDUSTRIAL
ZONED "MH"
THE LEGACY ADDITION
ZONED "SF-5"
COTTONWOOD GROVE
ZONED "OC"
COTTONWOOD GROVE SECOND ADDITION
ZONED "MH"
COTTONWOOD GROVE 3RD ADDITION
ZONED "MH"

WEST ST
2ND ADDITION
PROPOSED DULING INDUSTRIAL 3RD ADDITION
RESERVE "A"
RESERVE "B"
MEEK FIRST ADDITION
2nd Street South VACATED
Gravel Road
Barn
House
Garage
Concrete
DRAINAGE EASEMENT
20' UTILITY EASEMENT
10' SIDEWALK & UTILITY EASEMENT
35' BUILDING SETBACK
ZONED "LI"
PROPOSED ZONING "LI" ZONED "SF-20"

EXISTING POND (Static WS = 1281.0)

STAGE	INFLOW	OUTFLOW	ELEVATION
5 yr	41 cfs	26 cfs	1281.5
10 yr	61 cfs	33 cfs	1281.6
100 yr	105 cfs	65 cfs	1282.0

PROPOSED POND

ELEVATION	AREA (acres)
1281	283350
1282	600000
1283	650000

OFFSITE FLOW
Area = 44 acres
CN = 82
Tc = 134 min
Q 2 = 24 cfs
Q 5 = 36 cfs
Q 10 = 45 cfs
Q 100 = 77 cfs

EAST SITE FLOW
Area = 17.3 acres
CN = 84
Tc = 49 min
Q 2 = 21 cfs
Q 5 = 31 cfs
Q 10 = 38 cfs
Q 100 = 65 cfs

WEST SITE FLOW
Area = 6.5 acres
CN = 84
Tc = 32 min
Q 2 = 11 cfs
Q 5 = 16 cfs
Q 10 = 19 cfs
Q 100 = 32 cfs

BENCHMARK:
CITY OF WICHITA BENCHMARK DISC, 50.70' E. OF ℄ OF WEST ST. 53.49' ENE OF THE SW COR., NW1/4, SEC. 13, TWP. 28-S, R-1-W ON THE NW CORNER OF A CONCRETE SLAB FOR A SANITARY SEWER LIFT STATION. ELEV. = 1282.32 NAVD88

NOTE:
ADDITIONAL BUILDING SETBACKS ALONG THE SOUTH PROPERTY LINE PER PROTECTIVE OVERLAY #198.

MINIMUM BUILDING PAD ELEVATIONS FOR LOWEST OPENING TO THE STRUCTURES

LOT	BLOCK	ELEVATION NAVD88
1	A	1284.7

25' Overland Overflow Weir Elevation 1281.0

Upon development of the west portion of the site - which drains to West Street - may need to provide additional onsite detention if adding more than 1 acre of additional impervious area. Additionally, if West Street is improved in the future this site may need to add SWS at the time of site development also.

This property is currently partially developed and used primarily for storage container storage. The onsite pond has no apparent outlet or static pool elevation, and appears to overtop the south bank and flow southerly into the adjacent pond(s).

No development or land disturbance is expected with this plat at this time. Upon site development in the future, an updated drainage plan will need to be provided based on proposed conditions.

DRAINAGE PLAN
LANGE 2ND ADDITION
30 APRIL 2013

Baughman Company, P.A.
315 Ellis St. Wichita, KS 67211 P 316-262-7271 F 316-262-0149
BAUGHMAN ENGINEERING | SURVEYING | PLANNING | LANDSCAPE ARCHITECTURE

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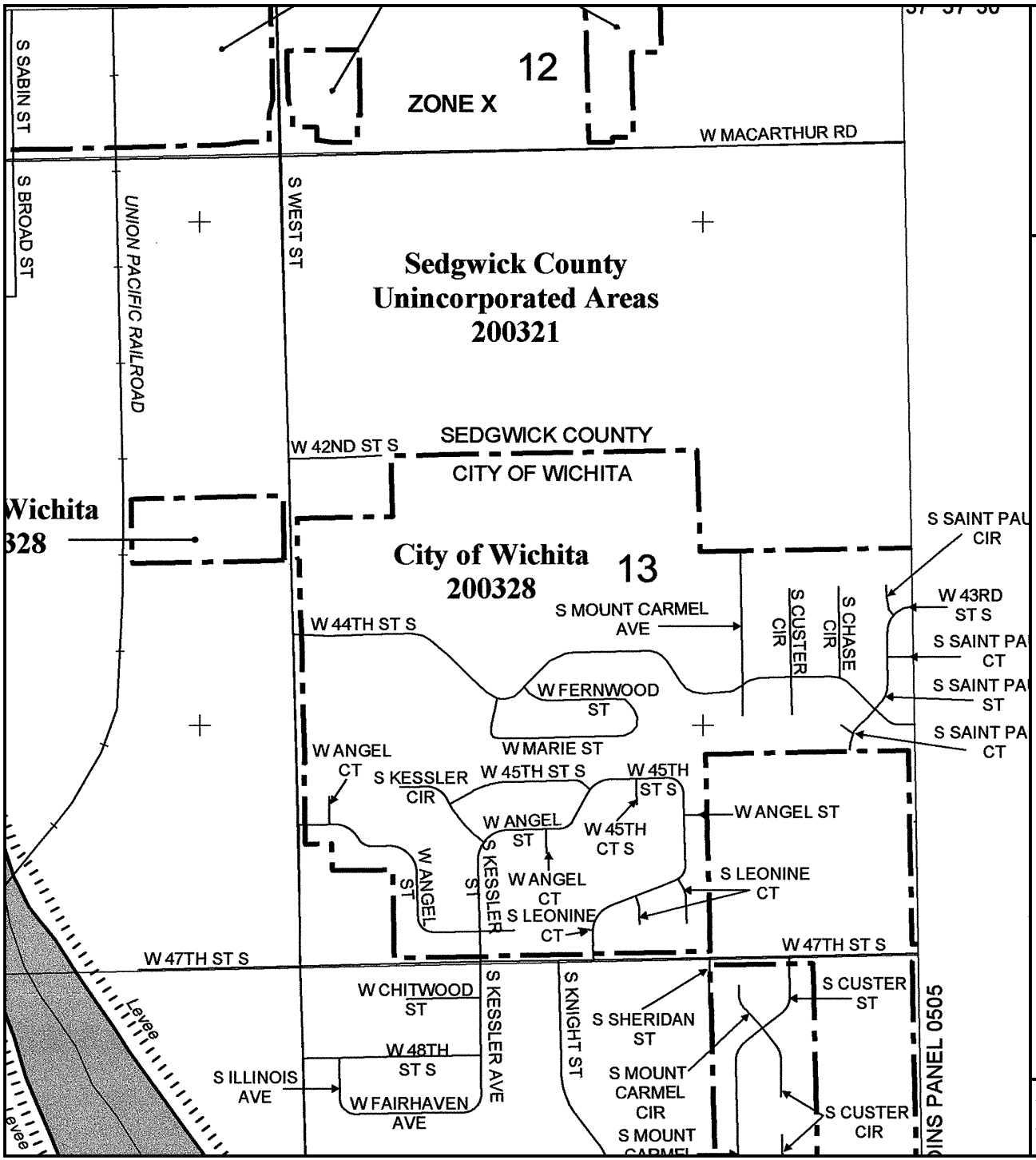


MAP SCALE 1" = 1000'

500 0 1000 2000 FEET

PANEL 0485E

FIRM

FLOOD INSURANCE RATE MAP

SEDGWICK COUNTY, KANSAS
AND INCORPORATED AREAS

PANEL 485 OF 700

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
HAYSVILLE, CITY OF	200324	0485	E
SEDGWICK COUNTY	200321	0485	E
WICHITA, CITY OF	200328	0485	E

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
20173C0485E

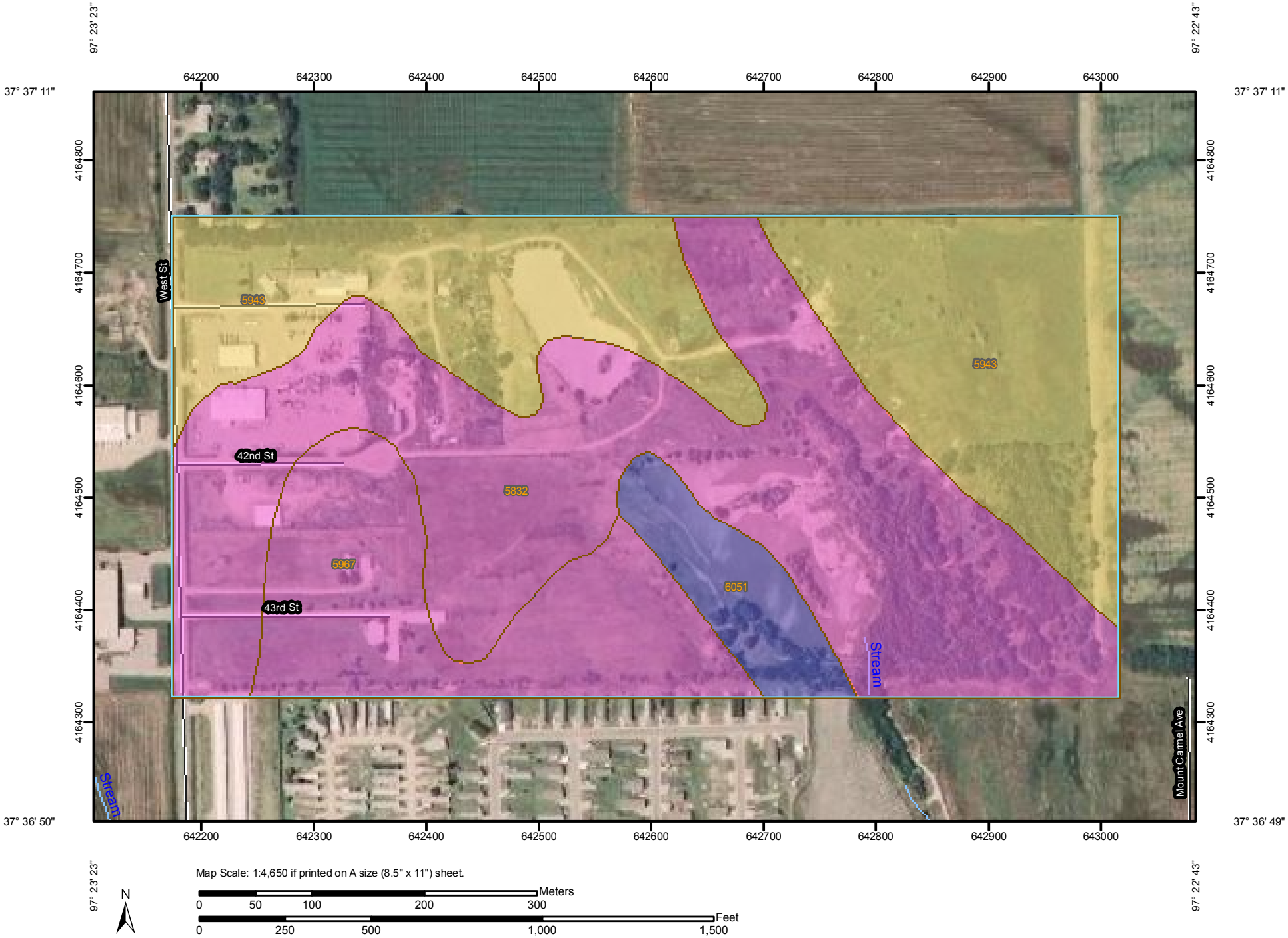
EFFECTIVE DATE
FEBRUARY 2, 2007

Federal Emergency Management Agency

APPENDIX A: USGS Soils Survey

APPENDIX B: HydraFlow Hydrographs
- Site Flow & Pond Routing

USGS Soils Survey


97° 23' 23"
97° 22' 43"
37° 37' 11"
37° 36' 50"
37° 36' 49"
642200
642300
642400
642500
642600
642700
642800
642900
643000
4164800
4164700
4164600
4164500
4164400
4164300
West St
42nd St
43rd St
Mount Carmel Ave
Stream
5943
5832
5967
6051
Map Scale: 1:4,650 if printed on A size (8.5" x 11") sheet.
N
Meters
0 50 100 200 300
Feet
0 250 500 1,000 1,500

MAP LEGEND

Area of Interest (AOI)

- Area of Interest (AOI)

Soils

- Soil Map Units

Soil Ratings

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Political Features

- Cities

Water Features

- Streams and Canals

Transportation

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

MAP INFORMATION

Map Scale: 1:4,650 if printed on A size (8.5" × 11") sheet.

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

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

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

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

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: UTM Zone 14N NAD83

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

Soil Survey Area: Sedgwick County, Kansas
Survey Area Data: Version 8, Sep 20, 2012

Date(s) aerial images were photographed: 6/20/2006

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

Hydrologic Soil Group

Hydrologic Soil Group— Summary by Map Unit — Sedgwick County, Kansas (KS173)				
Map unit symbol	**Map unit name**	**Rating**	**Acres in AOI**	**Percent of AOI**
5832	Punkin-Taver complex, 0 to 1 percent slopes	D	38.3	43.1%
5943	Saltcreek and Naron fine sandy loams, 0 to 1 percent slopes	C	32.1	36.1%
5967	Tabler silty clay loam, 0 to 1 percent slopes	D	13.9	15.6%
6051	Elandco silt loam, frequently flooded	B	4.6	5.2%
Totals for Area of Interest			**89.0**	**100.0%**

Description

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

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

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

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

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

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

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

Rating Options

Aggregation Method: Dominant Condition

Aggregation is the process by which a set of component attribute values is reduced to a single value that represents the map unit as a whole.

A map unit is typically composed of one or more "components". A component is either some type of soil or some nonsoil entity, e.g., rock outcrop. For the attribute being aggregated, the first step of the aggregation process is to derive one attribute value for each of a map unit's components. From this set of component attributes, the next step of the aggregation process derives a single value that represents the map unit as a whole. Once a single value for each map unit is derived, a thematic map for soil map units can be rendered. Aggregation must be done because, on any soil map, map units are delineated but components are not.

For each of a map unit's components, a corresponding percent composition is recorded. A percent composition of 60 indicates that the corresponding component typically makes up approximately 60% of the map unit. Percent composition is a critical factor in some, but not all, aggregation methods.

The aggregation method "Dominant Condition" first groups like attribute values for the components in a map unit. For each group, percent composition is set to the sum of the percent composition of all components participating in that group. These groups now represent "conditions" rather than components. The attribute value associated with the group with the highest cumulative percent composition is returned. If more than one group shares the highest cumulative percent composition, the corresponding "tie-break" rule determines which value should be returned. The "tie-break" rule indicates whether the lower or higher group value should be returned in the case of a percent composition tie.

The result returned by this aggregation method represents the dominant condition throughout the map unit only when no tie has occurred.

Component Percent Cutoff: None Specified

Components whose percent composition is below the cutoff value will not be considered. If no cutoff value is specified, all components in the database will be considered. The data for some contrasting soils of minor extent may not be in the database, and therefore are not considered.

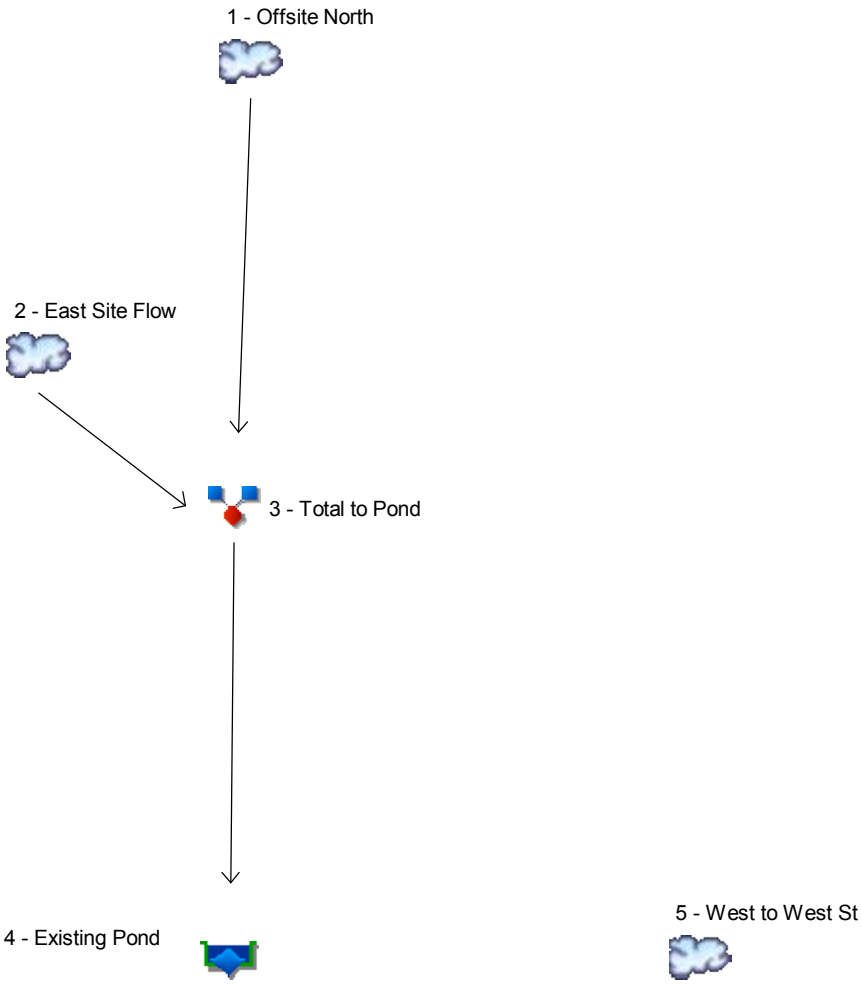
Tie-break Rule: Higher

The tie-break rule indicates which value should be selected from a set of multiple candidate values, or which value should be selected in the event of a percent composition tie.

HydraFlow Hydrographs

Site Flow & Pond Routing

Watershed Model Schematic



Legend

Hyd.	Origin	Description
1	SCS Runoff	Offsite North
2	SCS Runoff	East Site Flow
3	Combine	Total to Pond
4	Reservoir	Existing Pond
5	SCS Runoff	West to West St

Hydrograph Return Period Recap

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	------	16.09	23.98	1.911	35.94	44.57	55.85	65.97	77.41	Offsite North
2	SCS Runoff	------	14.85	21.44	2.127	31.24	38.26	47.36	55.48	64.60	East Site Flow
3	Combine	1, 2	22.18	32.89	2.848	49.09	60.79	76.06	89.77	105.27	Total to Pond
4	Reservoir	3	9.656	15.69	0.942	25.72	33.38	43.79	53.43	64.60	Existing Pond
5	SCS Runoff	------	7.414	10.69	1.076	15.57	19.05	23.55	27.57	32.08	West to West St

Hydrograph Summary Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8

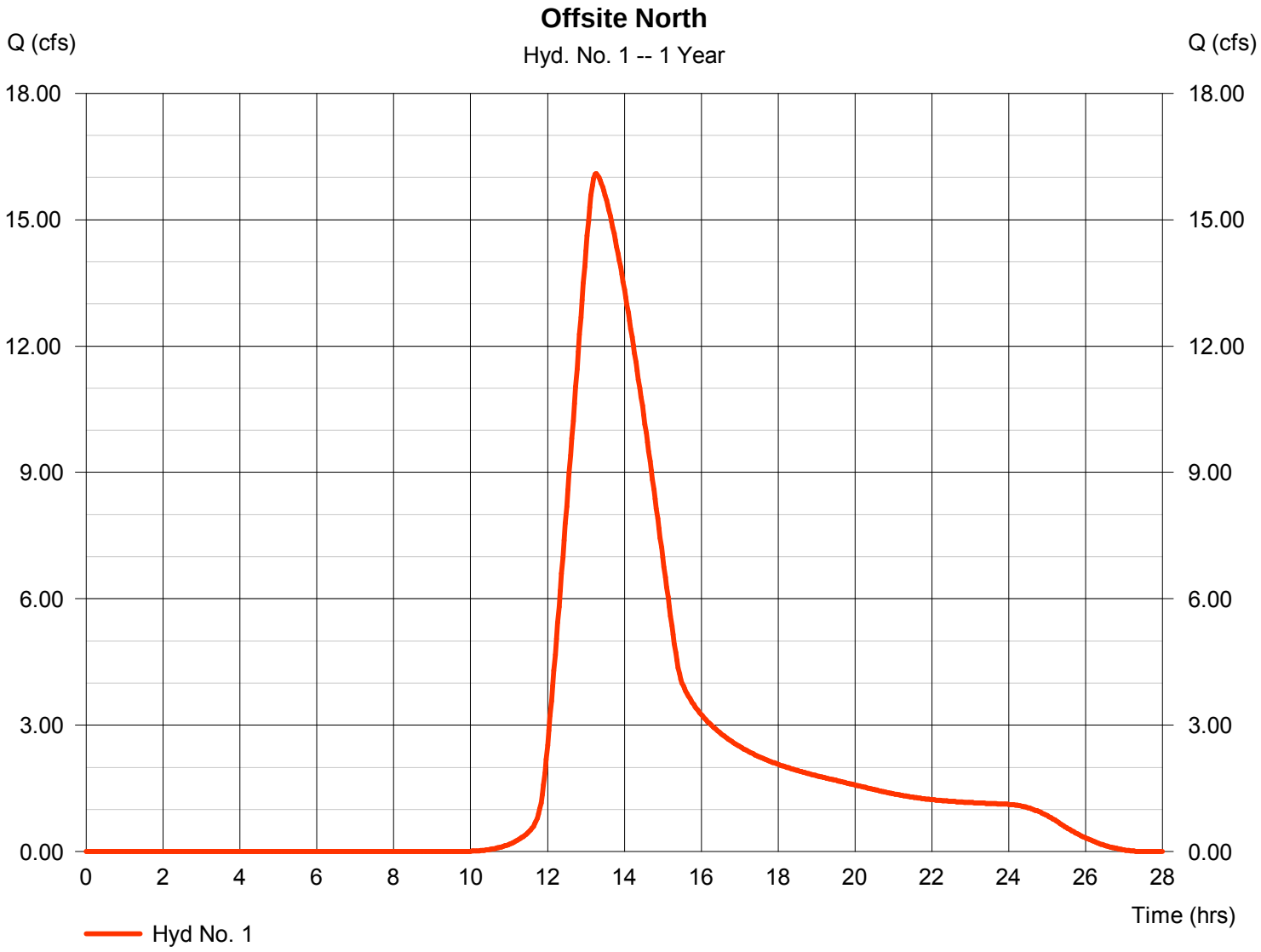
Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	16.09	2	796	196,022	------	------	------	Offsite North
2	SCS Runoff	14.85	2	744	84,991	------	------	------	East Site Flow
3	Combine	22.18	2	750	281,013	1, 2	------	------	Total to Pond
4	Reservoir	9.656	2	888	280,992	3	1281.28	120,494	Existing Pond
5	SCS Runoff	7.414	2	734	32,332	------	------	------	West to West St

Hydrograph Report

Hyd. No. 1

Offsite North

Hydrograph type	= SCS Runoff	Peak discharge	= 16.09 cfs
Storm frequency	= 1 yrs	Time to peak	= 13.27 hrs
Time interval	= 2 min	Hyd. volume	= 196,022 cuft
Drainage area	= 44.000 ac	Curve number	= 82
Basin Slope	= 0.2 %	Hydraulic length	= 2000 ft
Tc method	= LAG	Time of conc. (Tc)	= 134.29 min
Total precip.	= 2.80 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

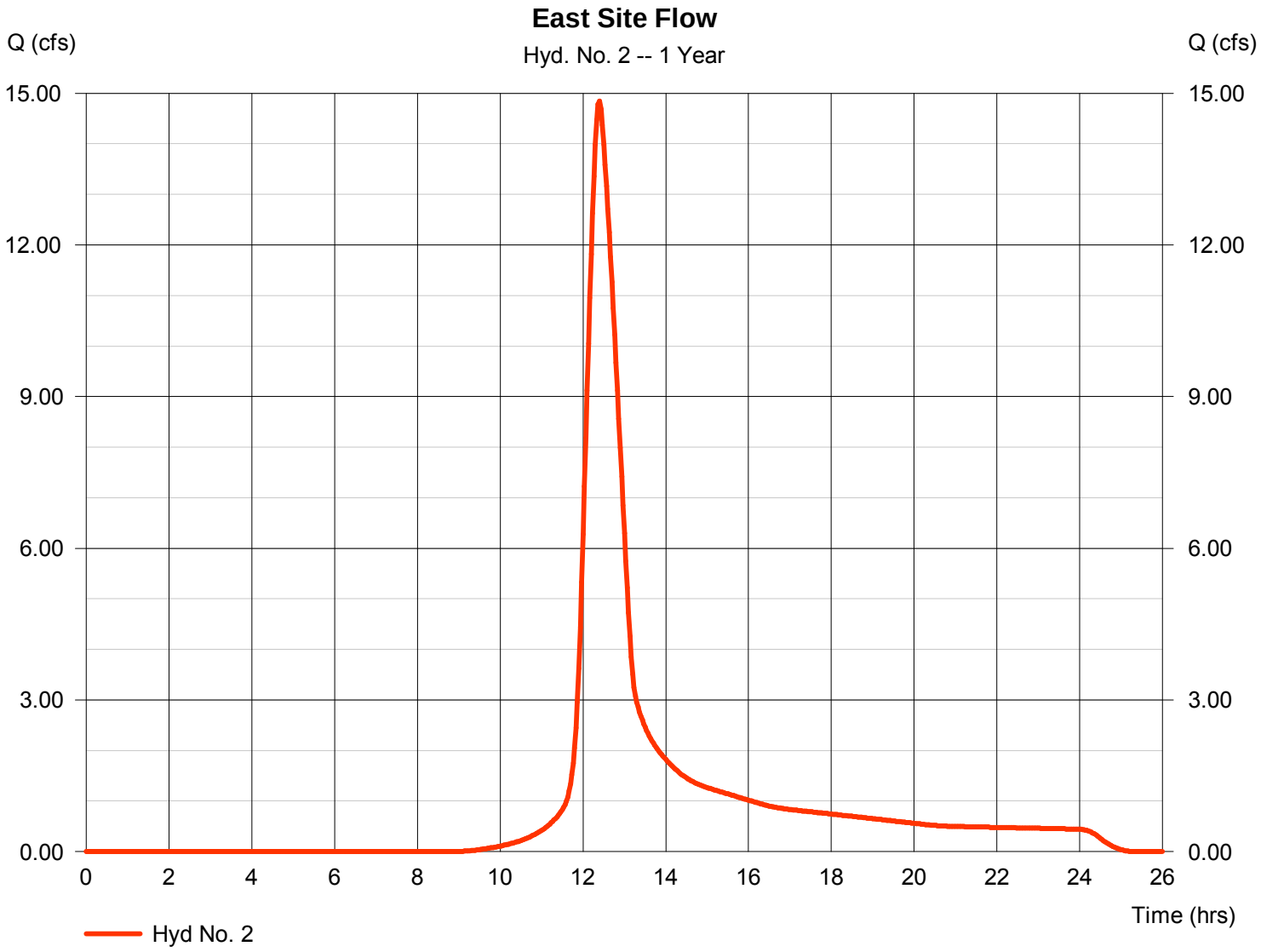


Hydrograph Report

Hyd. No. 2

East Site Flow

Hydrograph type	= SCS Runoff	Peak discharge	= 14.85 cfs
Storm frequency	= 1 yrs	Time to peak	= 12.40 hrs
Time interval	= 2 min	Hyd. volume	= 84,991 cuft
Drainage area	= 17.300 ac	Curve number	= 84
Basin Slope	= 0.2 %	Hydraulic length	= 750 ft
Tc method	= LAG	Time of conc. (Tc)	= 49.64 min
Total precip.	= 2.80 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

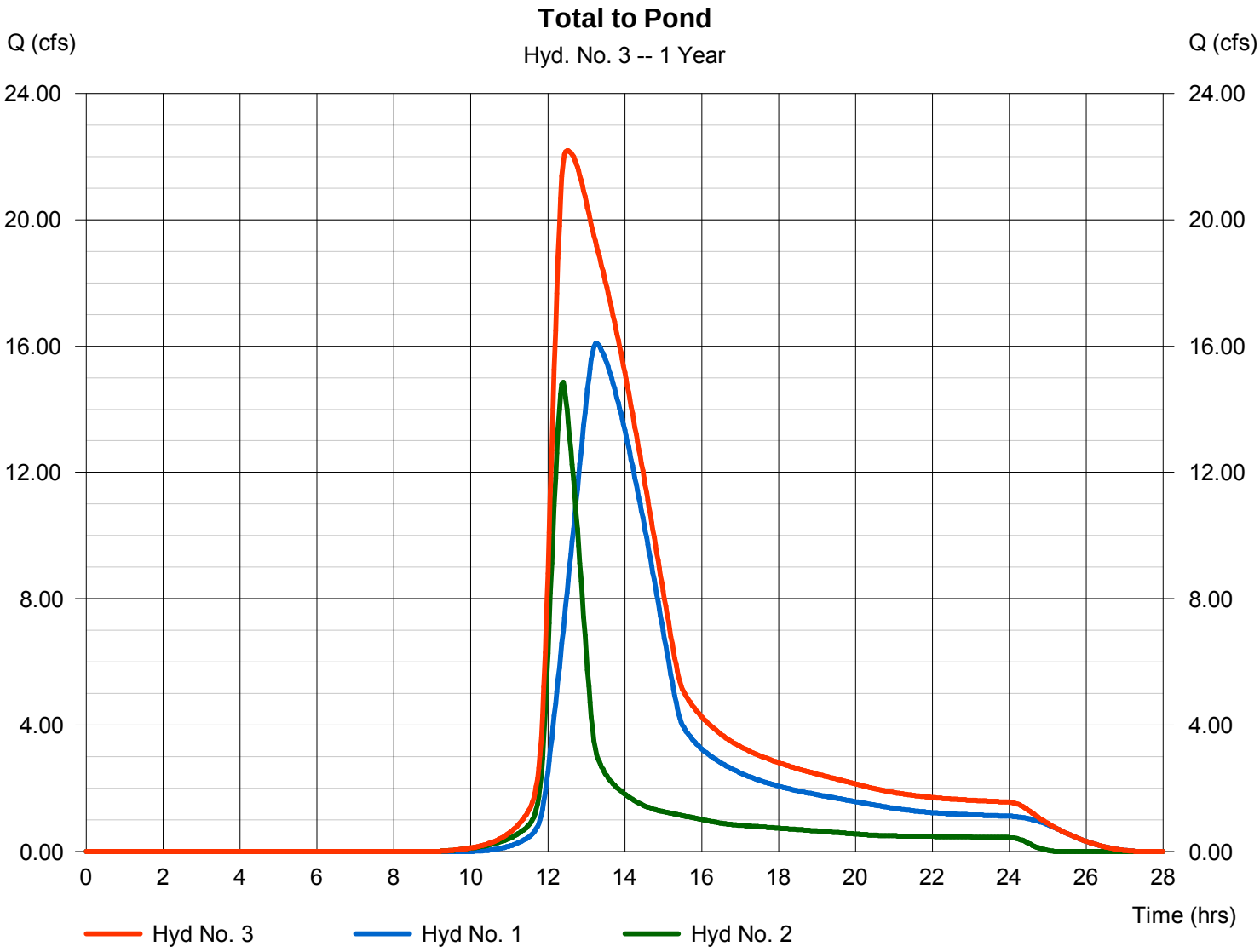


Hydrograph Report

Hyd. No. 3

Total to Pond

Hydrograph type	= Combine	Peak discharge	= 22.18 cfs
Storm frequency	= 1 yrs	Time to peak	= 12.50 hrs
Time interval	= 2 min	Hyd. volume	= 281,013 cuft
Inflow hyds.	= 1, 2	Contrib. drain. area	= 61.300 ac



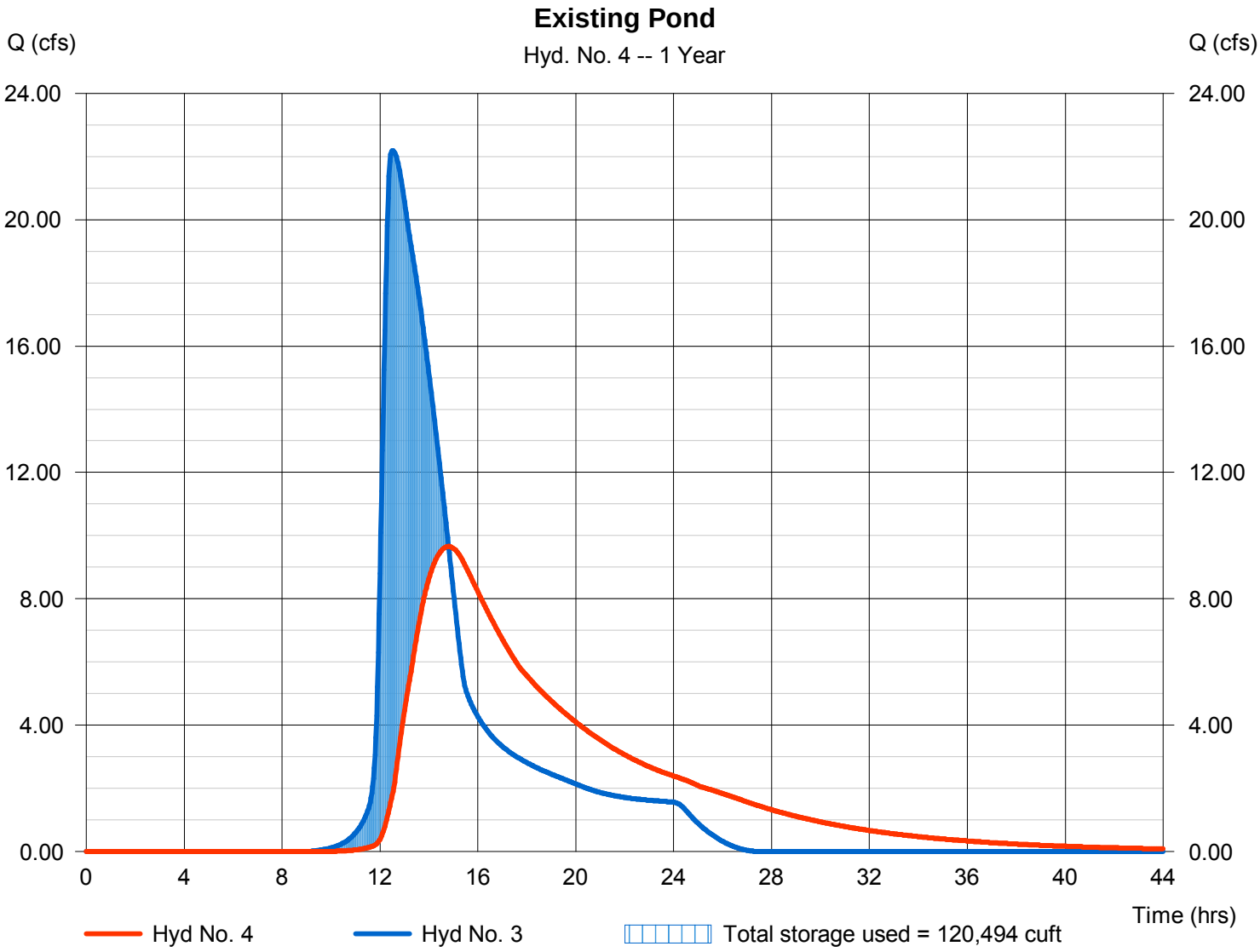
Hydrograph Report

Hyd. No. 4

Existing Pond

Hydrograph type	= Reservoir	Peak discharge	= 9.656 cfs
Storm frequency	= 1 yrs	Time to peak	= 14.80 hrs
Time interval	= 2 min	Hyd. volume	= 280,992 cuft
Inflow hyd. No.	= 3 - Total to Pond	Max. Elevation	= 1281.28 ft
Reservoir name	= Existing Pond	Max. Storage	= 120,494 cuft

Storage Indication method used.



Pond Report

Pond No. 1 - Existing Pond

Pond Data

Contours - User-defined contour areas. Conic method used for volume calculation. Begining Elevation = 1281.00 ft

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	1281.00	283,350	0	0
1.00	1282.00	600,000	431,848	431,848
2.00	1283.00	650,000	624,771	1,056,619

Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 0.00	0.00	0.00	0.00
Span (in)	= 0.00	0.00	0.00	0.00
No. Barrels	= 0	0	0	0
Invert El. (ft)	= 0.00	0.00	0.00	0.00
Length (ft)	= 0.00	0.00	0.00	0.00
Slope (%)	= 0.00	0.00	0.00	n/a
N-Value	= .013	.013	.013	n/a
Orifice Coeff.	= 0.60	0.60	0.60	0.60
Multi-Stage	= n/a	No	No	No

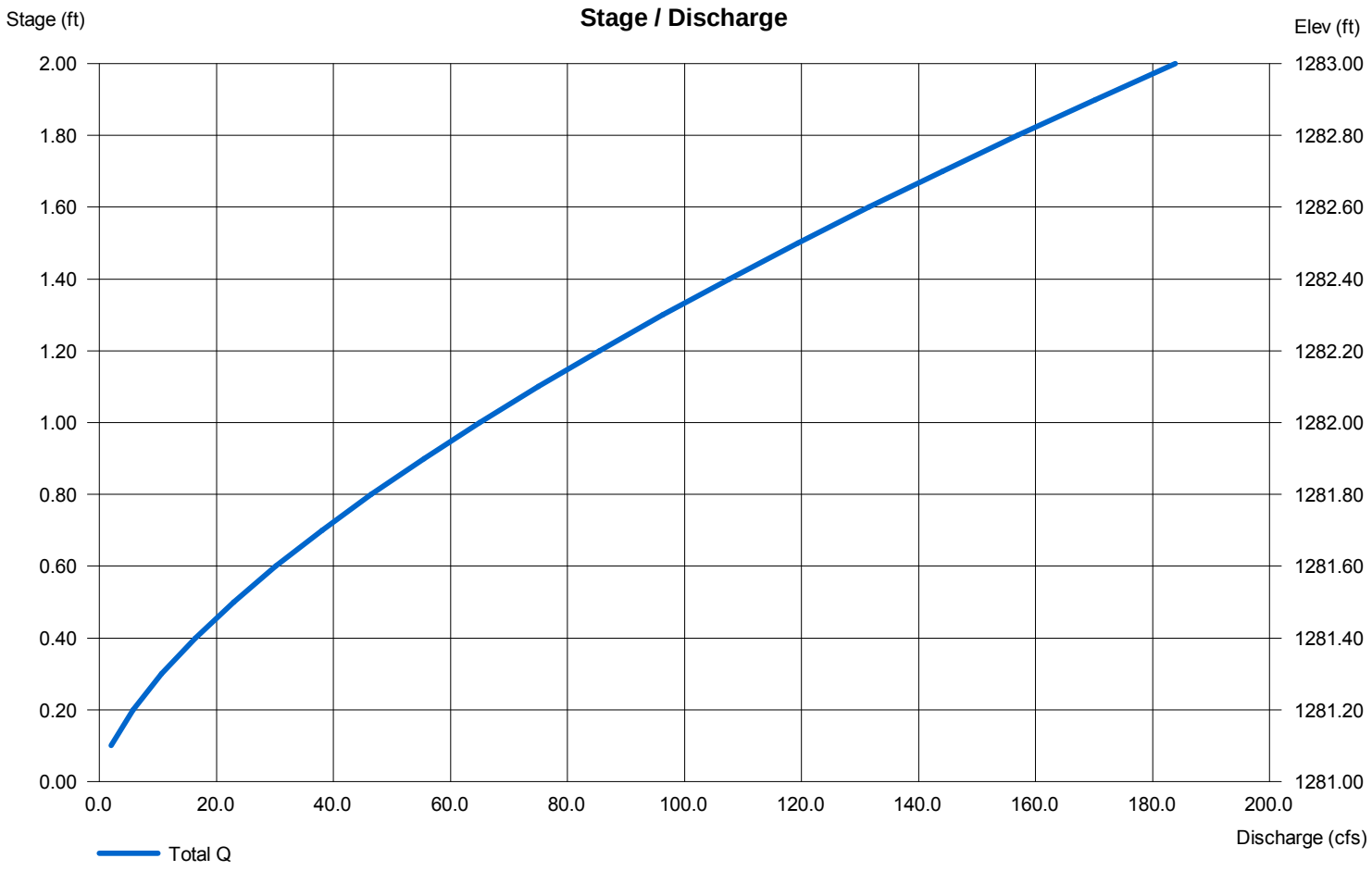
Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 25.00	0.00	0.00	0.00
Crest El. (ft)	= 1281.00	0.00	0.00	0.00
Weir Coeff.	= 2.60	3.33	3.33	3.33
Weir Type	= Broad	---	---	---
Multi-Stage	= No	No	No	No

Exfil.(in/hr) = 0.000 (by Wet area)

TW Elev. (ft) = 0.00

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

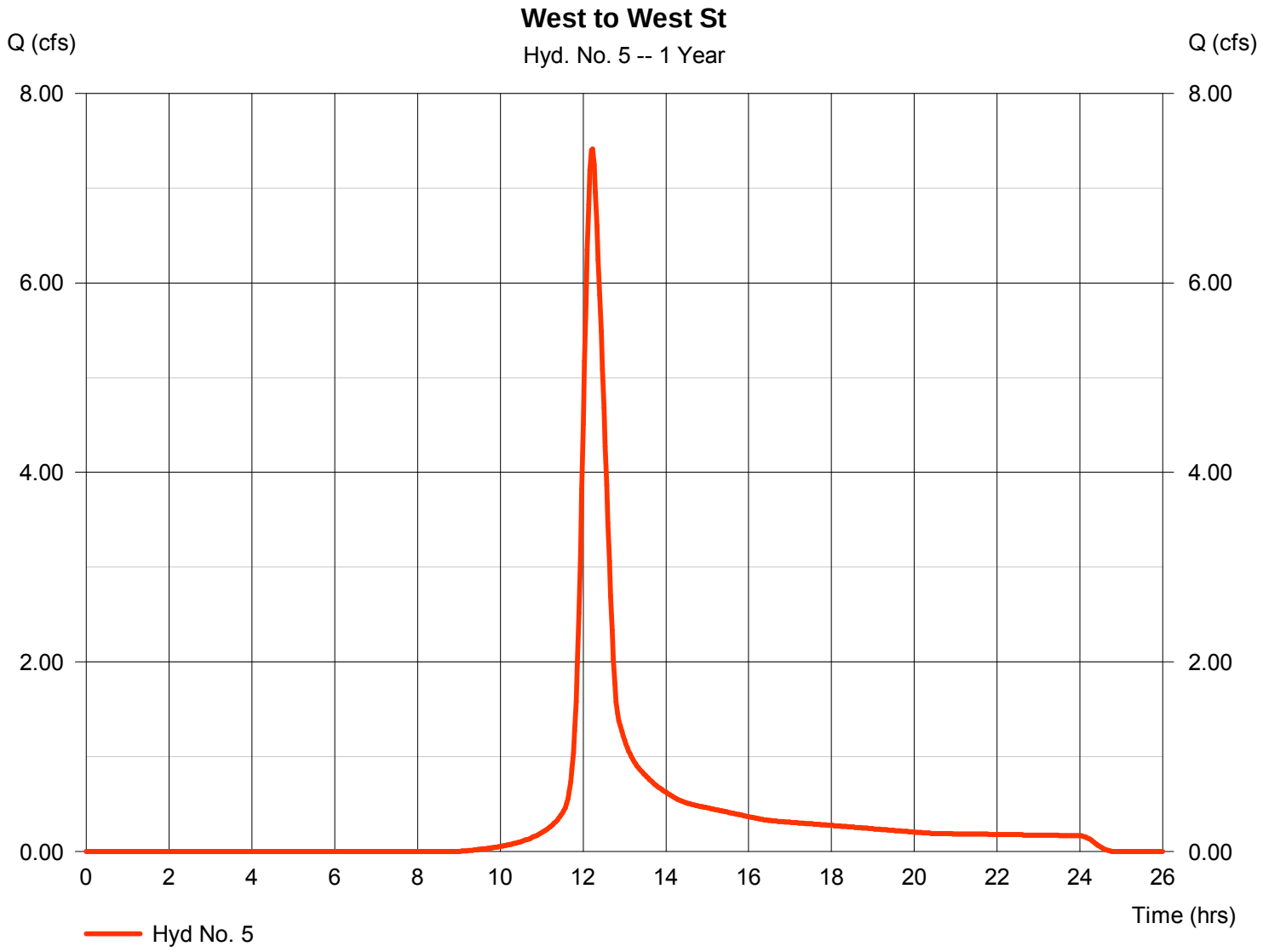


Hydrograph Report

Hyd. No. 5

West to West St

Hydrograph type	= SCS Runoff	Peak discharge	= 7.414 cfs
Storm frequency	= 1 yrs	Time to peak	= 12.23 hrs
Time interval	= 2 min	Hyd. volume	= 32,332 cuft
Drainage area	= 6.500 ac	Curve number	= 84
Basin Slope	= 0.6 %	Hydraulic length	= 850 ft
Tc method	= LAG	Time of conc. (Tc)	= 31.68 min
Total precip.	= 2.80 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Summary Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8

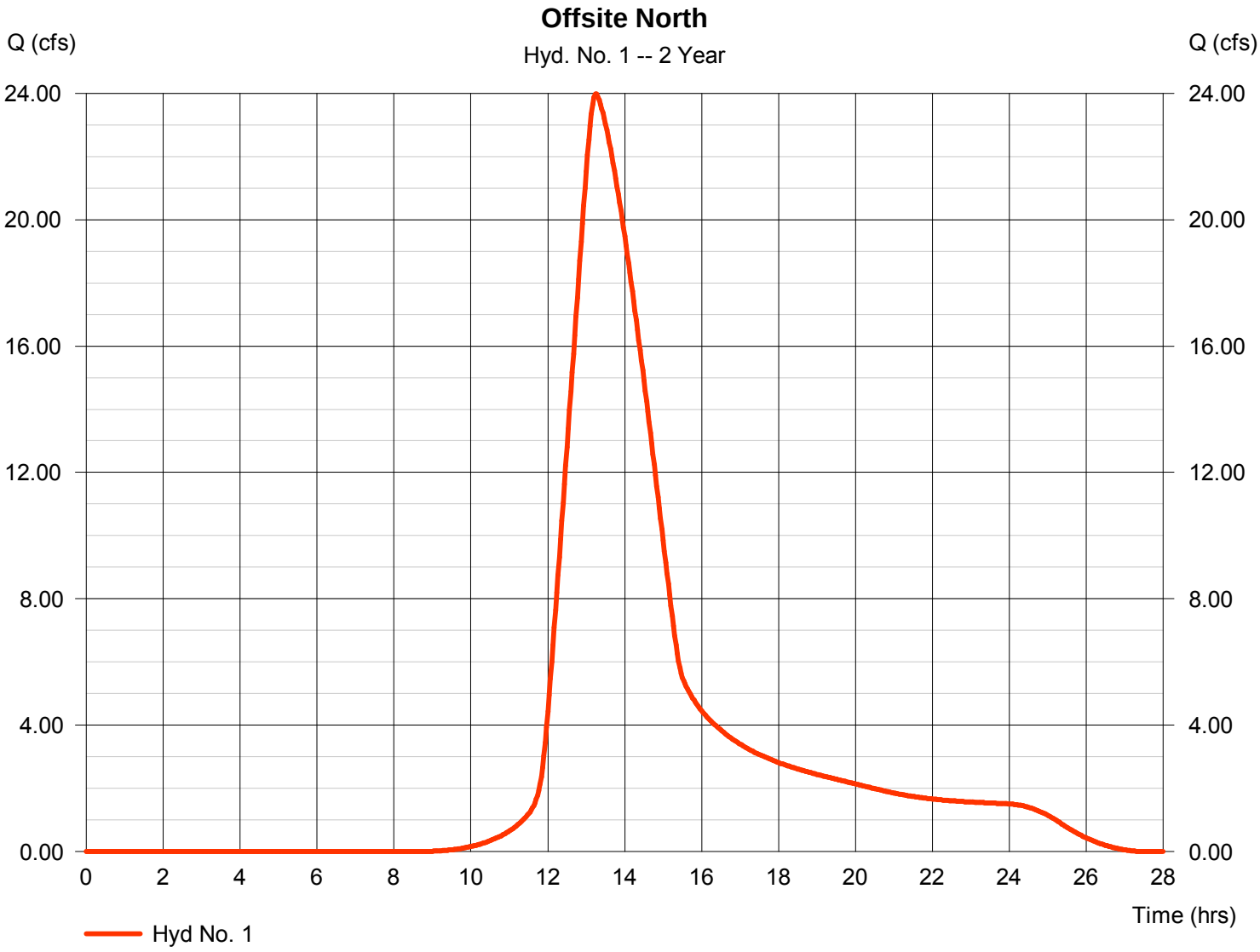
Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	23.98	2	794	285,608	------	------	------	Offsite North
2	SCS Runoff	21.44	2	744	121,608	------	------	------	East Site Flow
3	Combine	32.89	2	750	407,216	1, 2	------	------	Total to Pond
4	Reservoir	15.69	2	876	407,195	3	1281.39	167,138	Existing Pond
5	SCS Runoff	10.69	2	732	46,262	------	------	------	West to West St

Hydrograph Report

Hyd. No. 1

Offsite North

Hydrograph type	= SCS Runoff	Peak discharge	= 23.98 cfs
Storm frequency	= 2 yrs	Time to peak	= 13.23 hrs
Time interval	= 2 min	Hyd. volume	= 285,608 cuft
Drainage area	= 44.000 ac	Curve number	= 82
Basin Slope	= 0.2 %	Hydraulic length	= 2000 ft
Tc method	= LAG	Time of conc. (Tc)	= 134.29 min
Total precip.	= 3.50 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

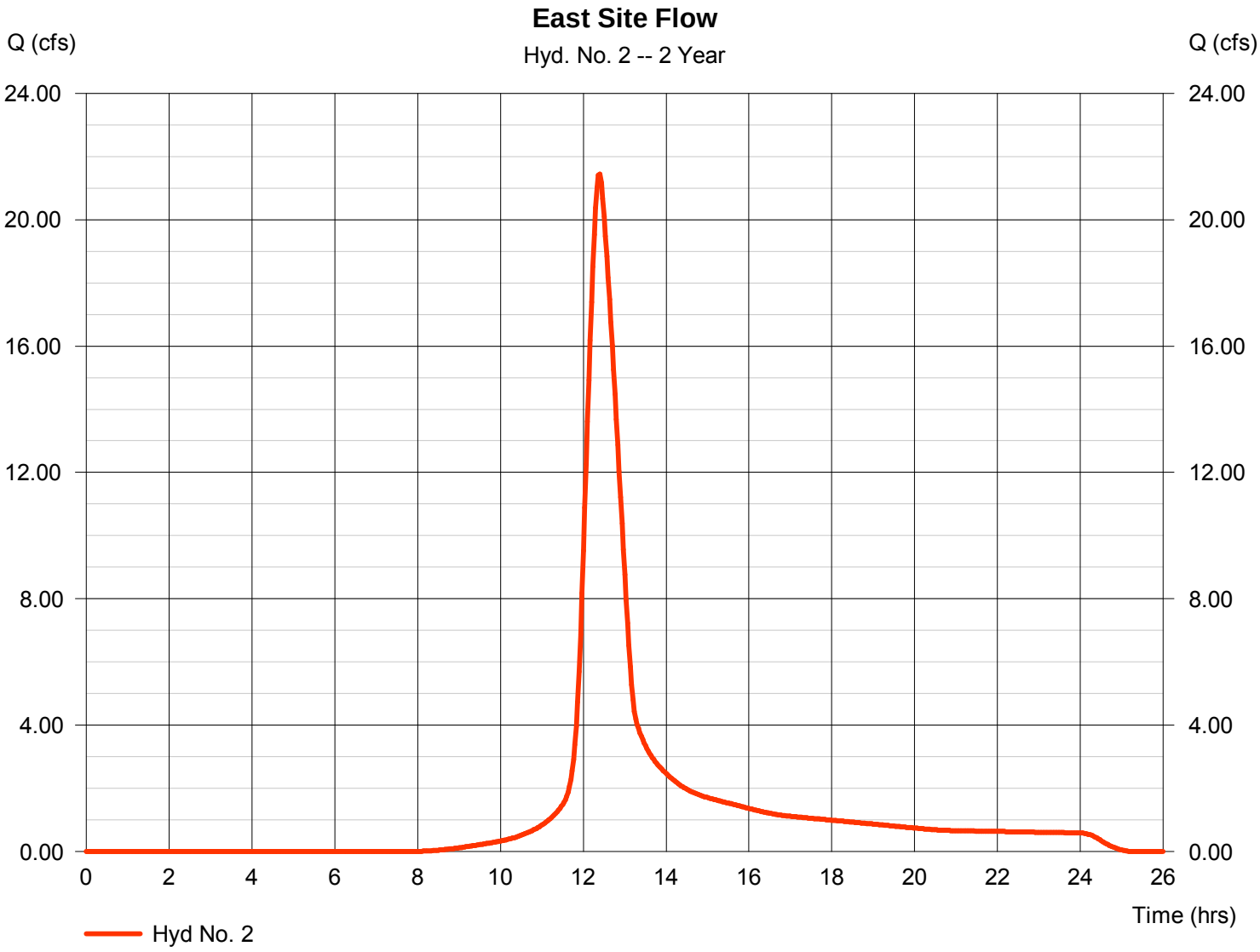


Hydrograph Report

Hyd. No. 2

East Site Flow

Hydrograph type	= SCS Runoff	Peak discharge	= 21.44 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.40 hrs
Time interval	= 2 min	Hyd. volume	= 121,608 cuft
Drainage area	= 17.300 ac	Curve number	= 84
Basin Slope	= 0.2 %	Hydraulic length	= 750 ft
Tc method	= LAG	Time of conc. (Tc)	= 49.64 min
Total precip.	= 3.50 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

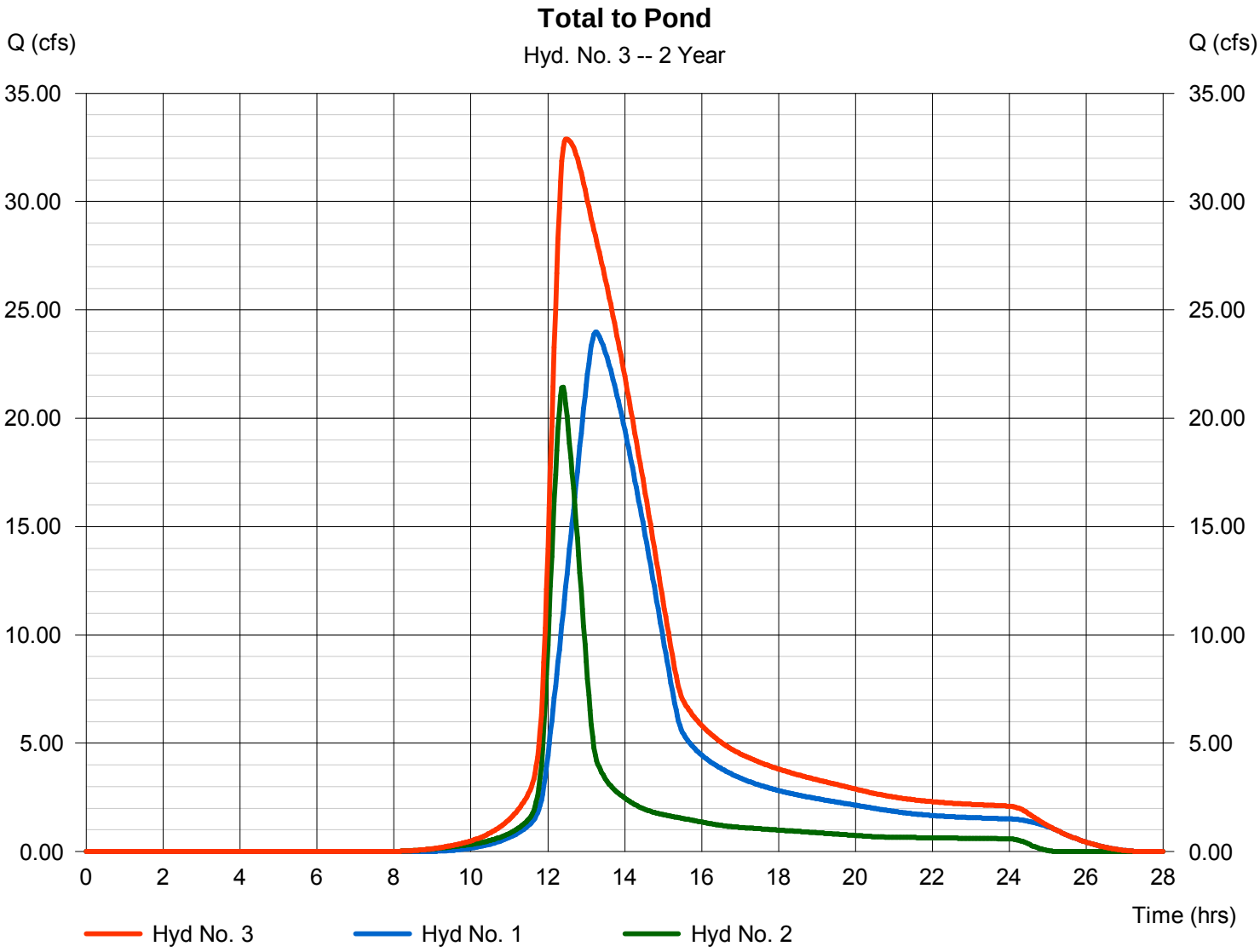


Hydrograph Report

Hyd. No. 3

Total to Pond

Hydrograph type	= Combine	Peak discharge	= 32.89 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.50 hrs
Time interval	= 2 min	Hyd. volume	= 407,216 cuft
Inflow hyds.	= 1, 2	Contrib. drain. area	= 61.300 ac



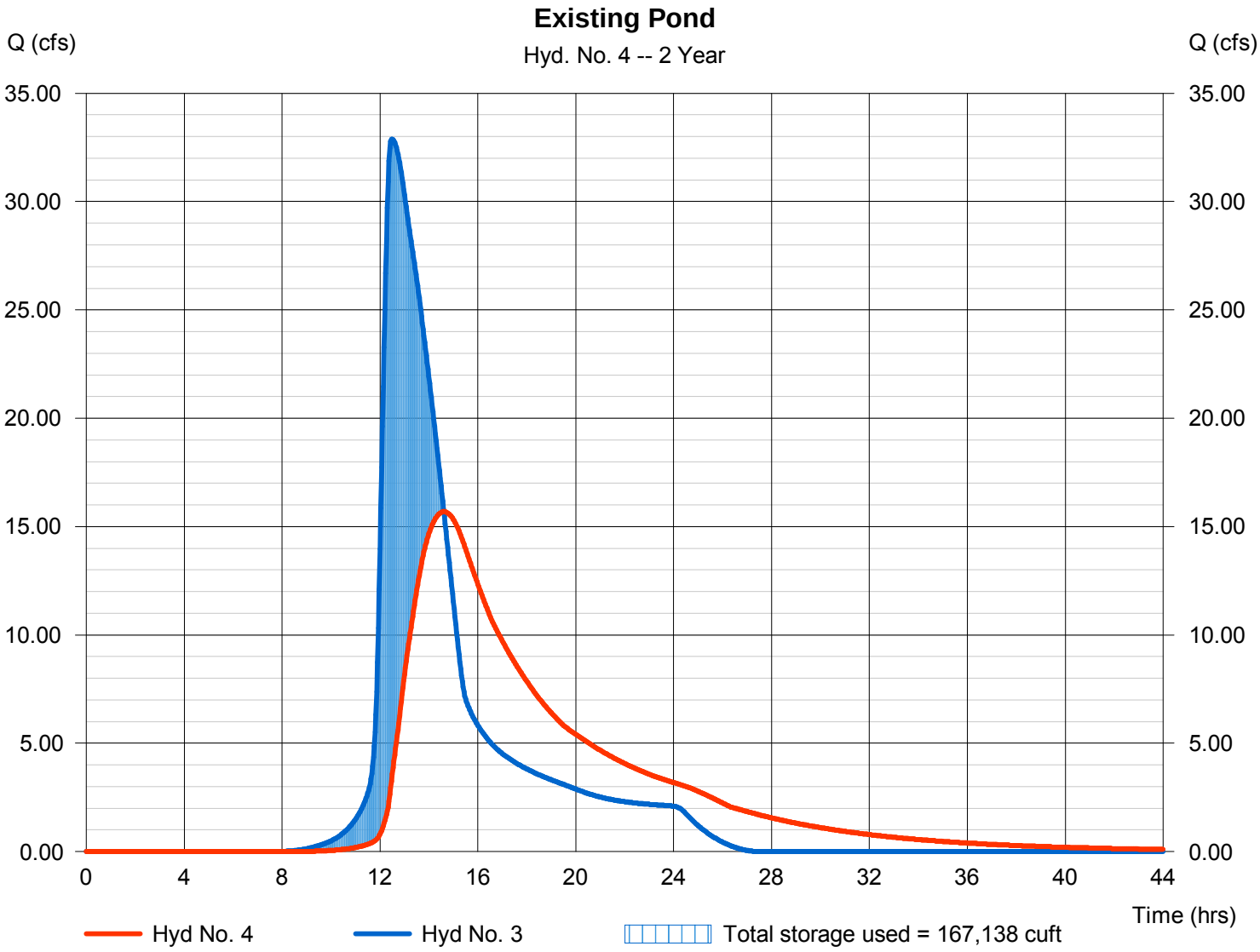
Hydrograph Report

Hyd. No. 4

Existing Pond

Hydrograph type	= Reservoir	Peak discharge	= 15.69 cfs
Storm frequency	= 2 yrs	Time to peak	= 14.60 hrs
Time interval	= 2 min	Hyd. volume	= 407,195 cuft
Inflow hyd. No.	= 3 - Total to Pond	Max. Elevation	= 1281.39 ft
Reservoir name	= Existing Pond	Max. Storage	= 167,138 cuft

Storage Indication method used.

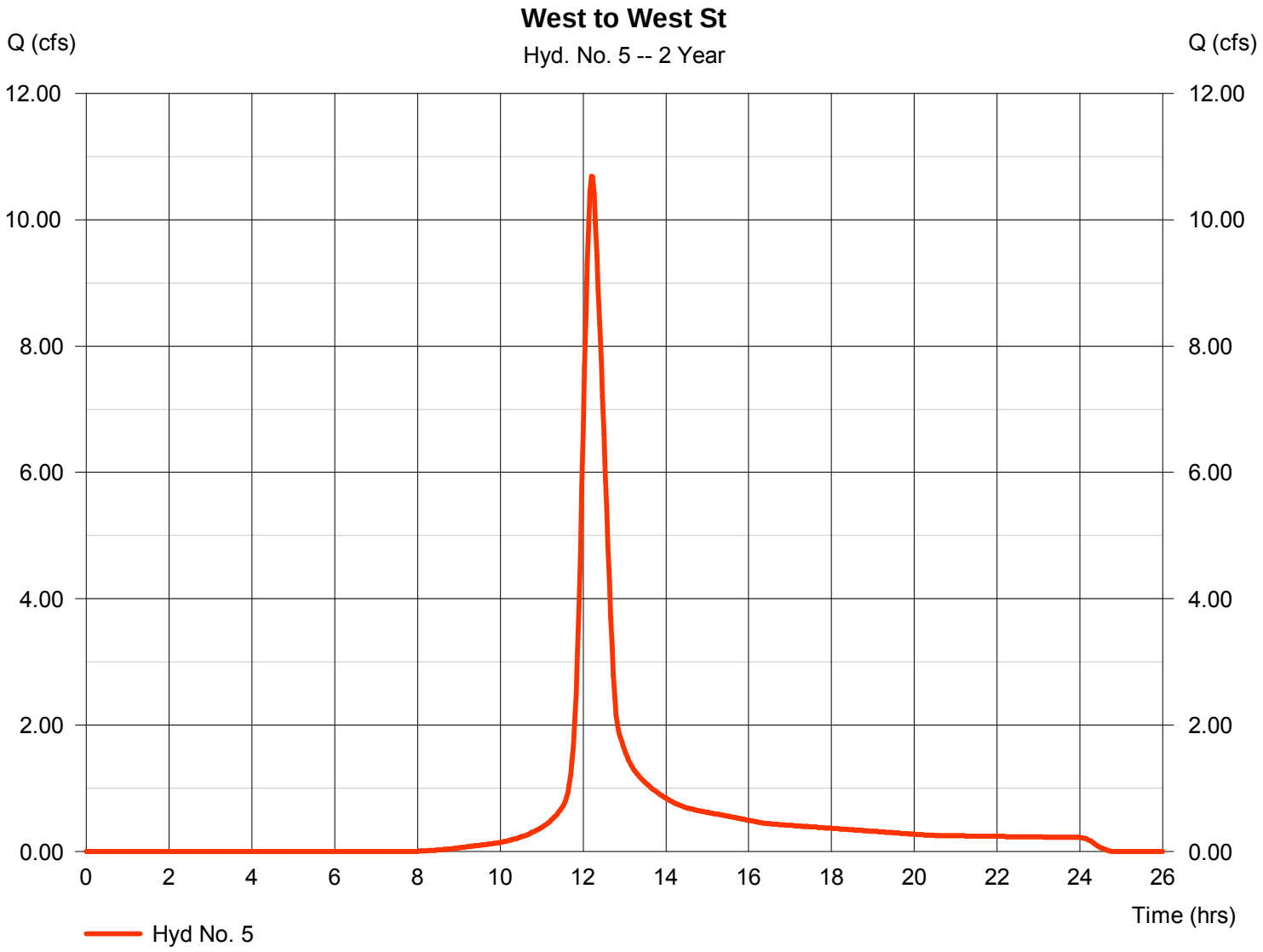


Hydrograph Report

Hyd. No. 5

West to West St

Hydrograph type	= SCS Runoff	Peak discharge	= 10.69 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.20 hrs
Time interval	= 2 min	Hyd. volume	= 46,262 cuft
Drainage area	= 6.500 ac	Curve number	= 84
Basin Slope	= 0.6 %	Hydraulic length	= 850 ft
Tc method	= LAG	Time of conc. (Tc)	= 31.68 min
Total precip.	= 3.50 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Summary Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8

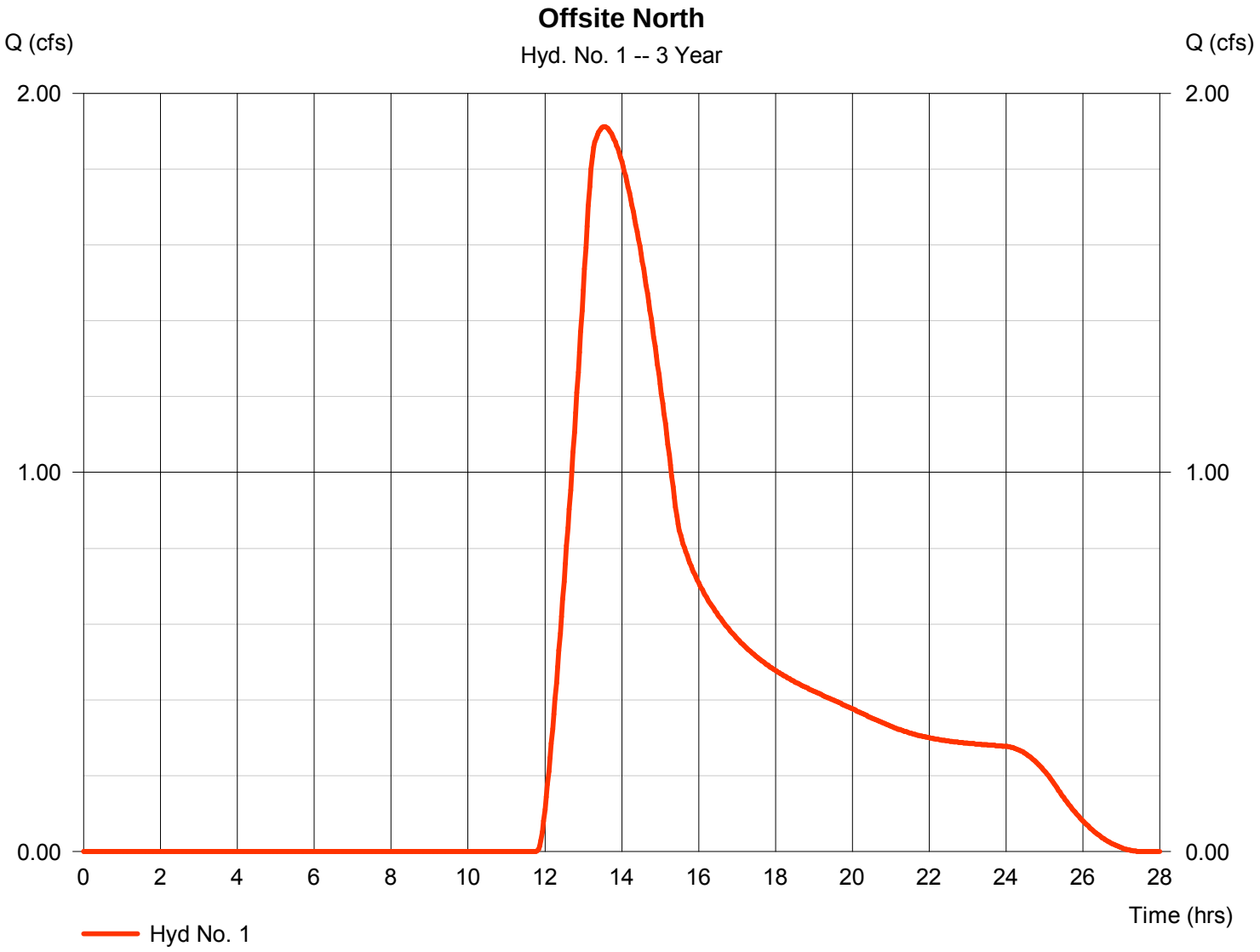
Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	1.911	2	812	31,376	------	------	------	Offsite North
2	SCS Runoff	2.127	2	746	15,466	------	------	------	East Site Flow
3	Combine	2.848	2	760	46,843	1, 2	------	------	Total to Pond
4	Reservoir	0.942	2	964	46,822	3	1281.05	19,808	Existing Pond
5	SCS Runoff	1.076	2	736	5,884	------	------	------	West to West St

Hydrograph Report

Hyd. No. 1

Offsite North

Hydrograph type	= SCS Runoff	Peak discharge	= 1.911 cfs
Storm frequency	= 3 yrs	Time to peak	= 13.53 hrs
Time interval	= 2 min	Hyd. volume	= 31,376 cuft
Drainage area	= 44.000 ac	Curve number	= 82
Basin Slope	= 0.2 %	Hydraulic length	= 2000 ft
Tc method	= LAG	Time of conc. (Tc)	= 134.29 min
Total precip.	= 1.20 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

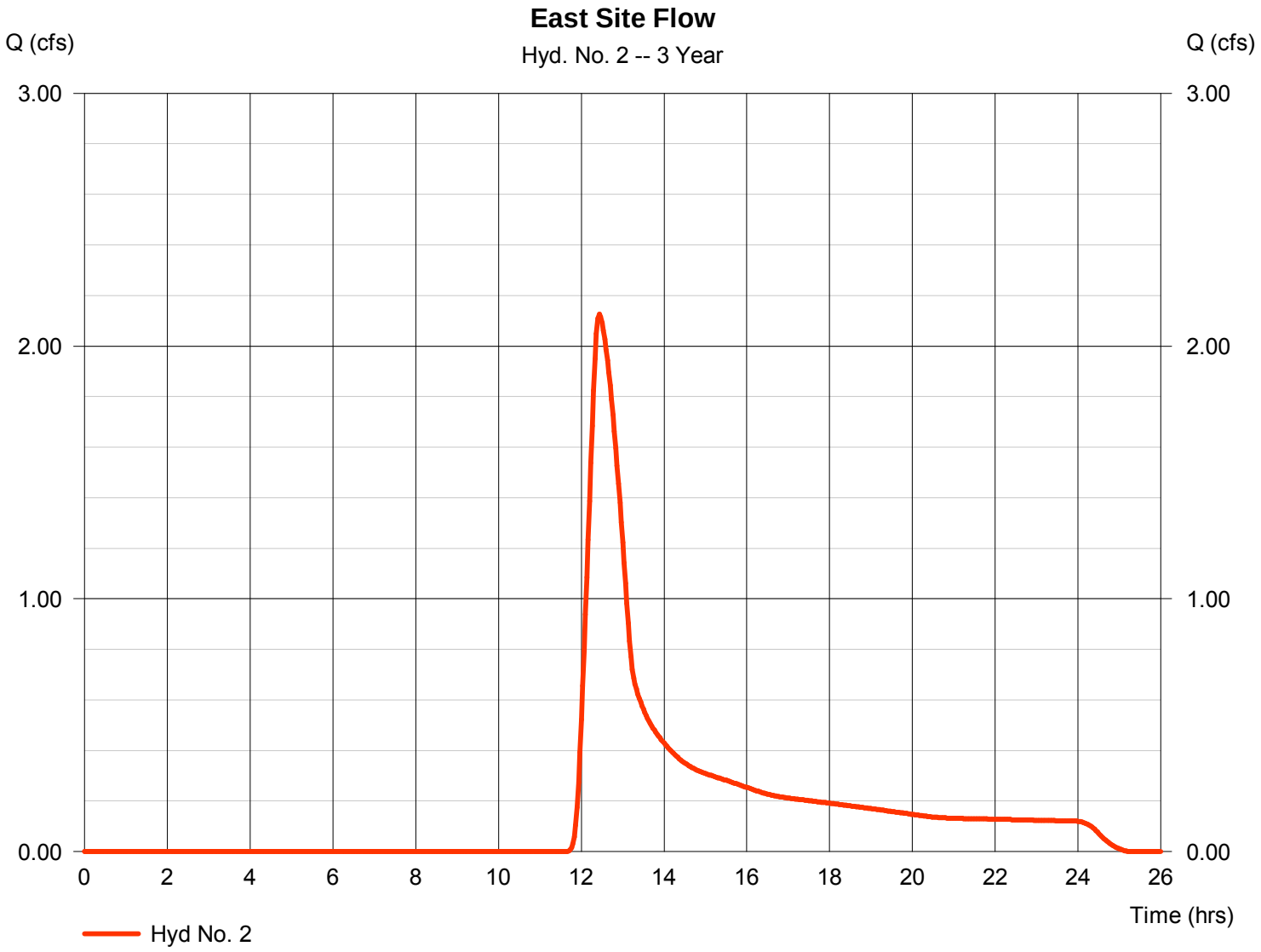


Hydrograph Report

Hyd. No. 2

East Site Flow

Hydrograph type	=	SCS Runoff	Peak discharge	=	2.127 cfs
Storm frequency	=	3 yrs	Time to peak	=	12.43 hrs
Time interval	=	2 min	Hyd. volume	=	15,466 cuft
Drainage area	=	17.300 ac	Curve number	=	84
Basin Slope	=	0.2 %	Hydraulic length	=	750 ft
Tc method	=	LAG	Time of conc. (Tc)	=	49.64 min
Total precip.	=	1.20 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

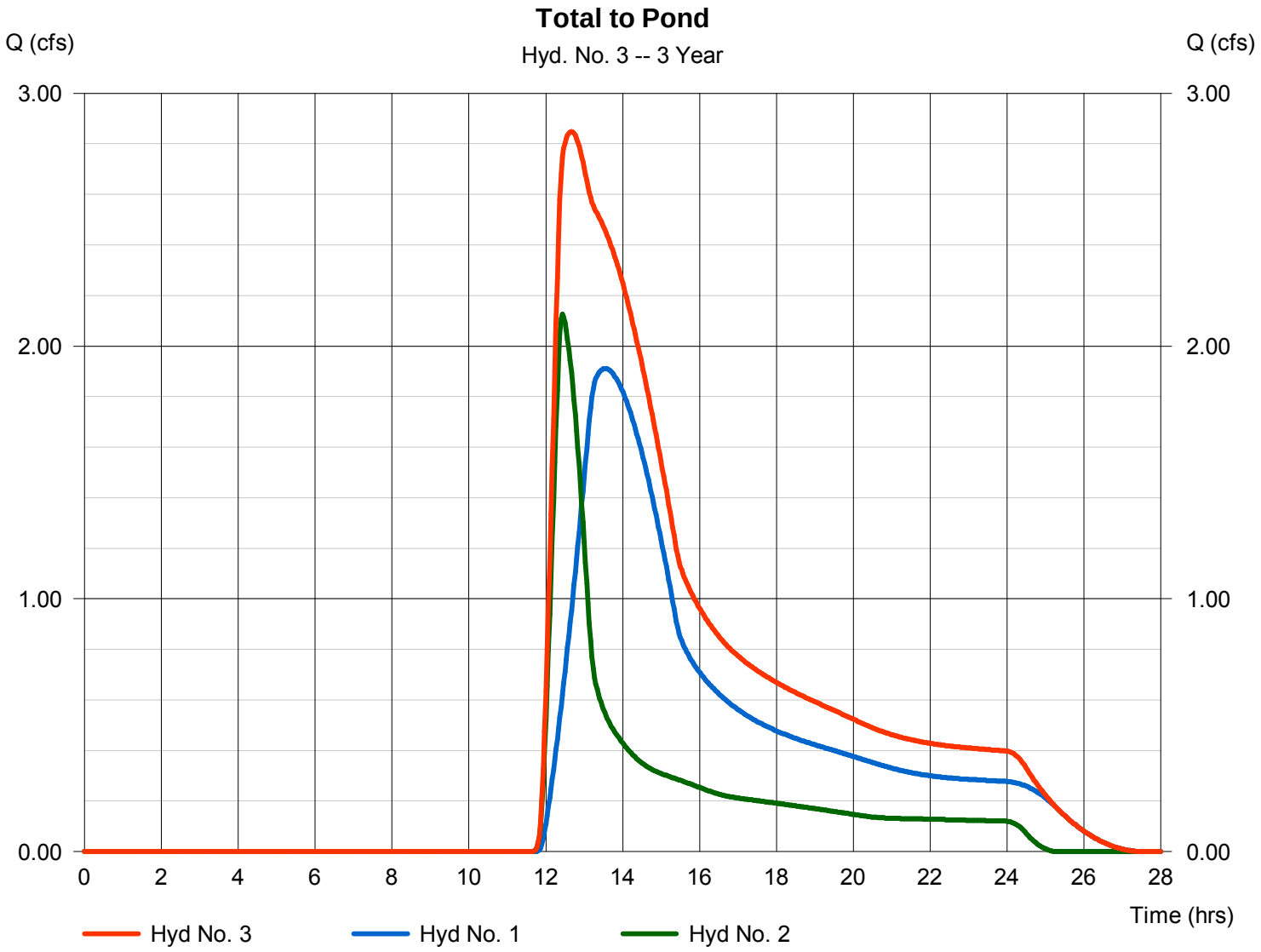


Hydrograph Report

Hyd. No. 3

Total to Pond

Hydrograph type	= Combine	Peak discharge	= 2.848 cfs
Storm frequency	= 3 yrs	Time to peak	= 12.67 hrs
Time interval	= 2 min	Hyd. volume	= 46,843 cuft
Inflow hyds.	= 1, 2	Contrib. drain. area	= 61.300 ac



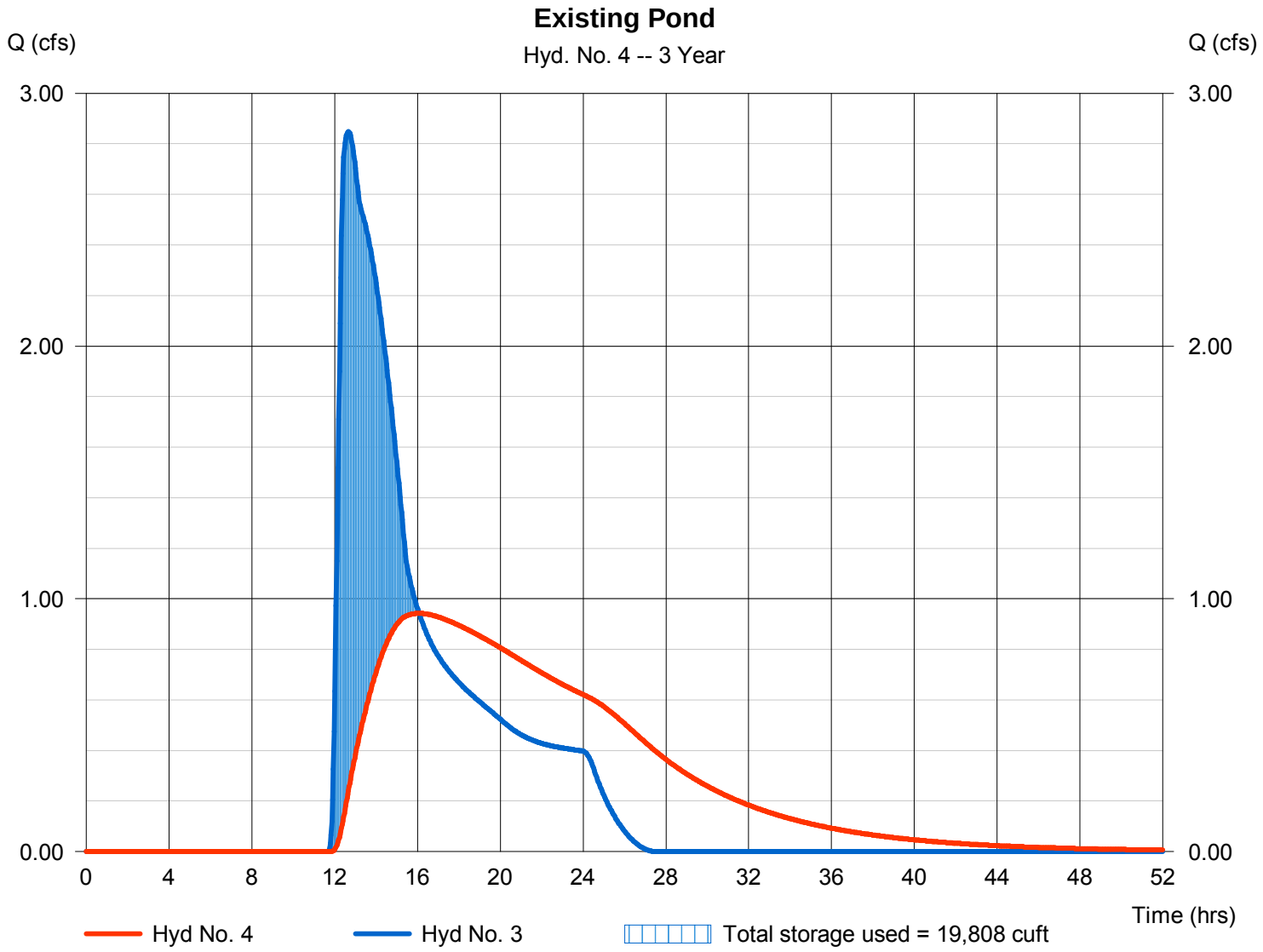
Hydrograph Report

Hyd. No. 4

Existing Pond

Hydrograph type	= Reservoir	Peak discharge	= 0.942 cfs
Storm frequency	= 3 yrs	Time to peak	= 16.07 hrs
Time interval	= 2 min	Hyd. volume	= 46,822 cuft
Inflow hyd. No.	= 3 - Total to Pond	Max. Elevation	= 1281.05 ft
Reservoir name	= Existing Pond	Max. Storage	= 19,808 cuft

Storage Indication method used.

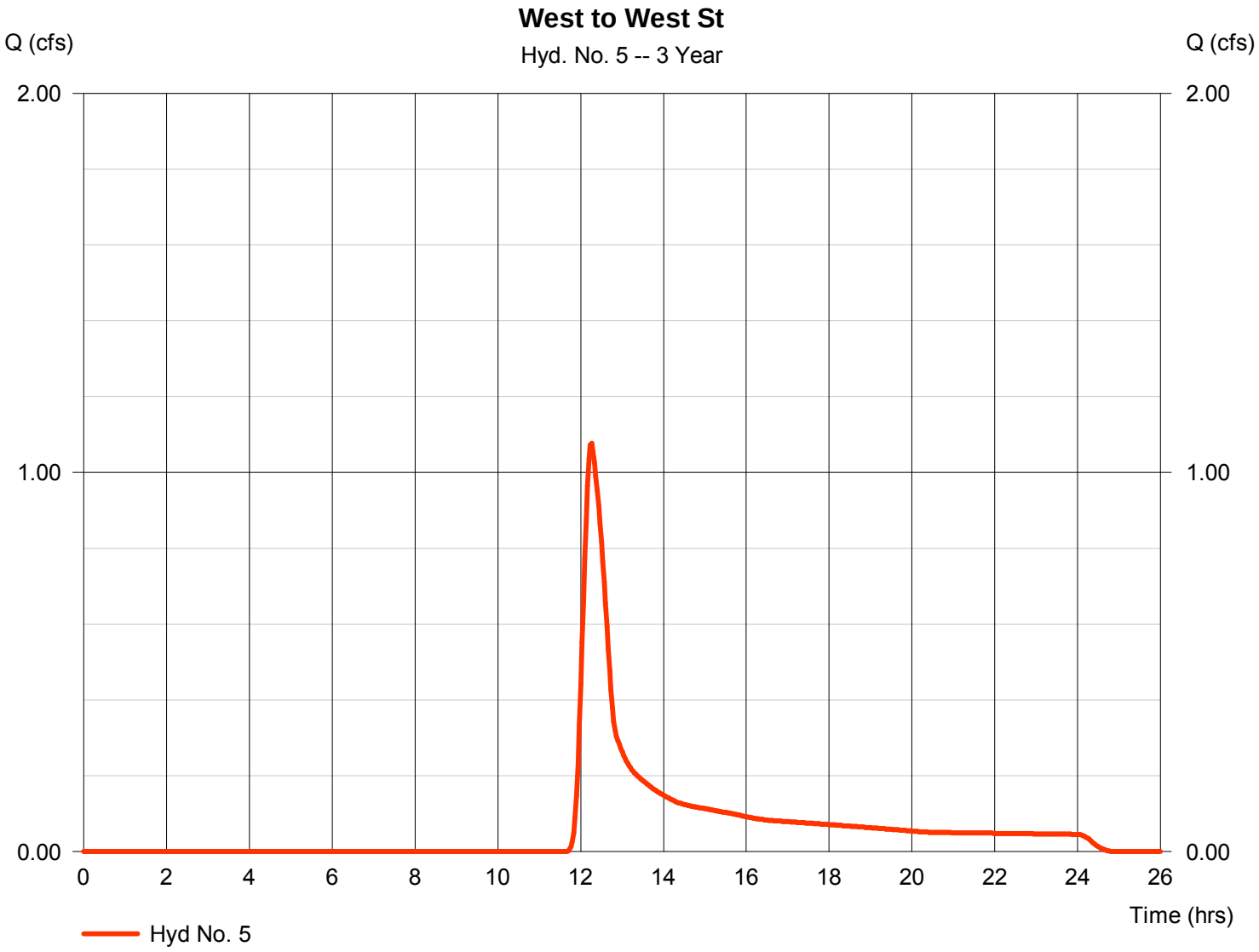


Hydrograph Report

Hyd. No. 5

West to West St

Hydrograph type	= SCS Runoff	Peak discharge	= 1.076 cfs
Storm frequency	= 3 yrs	Time to peak	= 12.27 hrs
Time interval	= 2 min	Hyd. volume	= 5,884 cuft
Drainage area	= 6.500 ac	Curve number	= 84
Basin Slope	= 0.6 %	Hydraulic length	= 850 ft
Tc method	= LAG	Time of conc. (Tc)	= 31.68 min
Total precip.	= 1.20 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Summary Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8

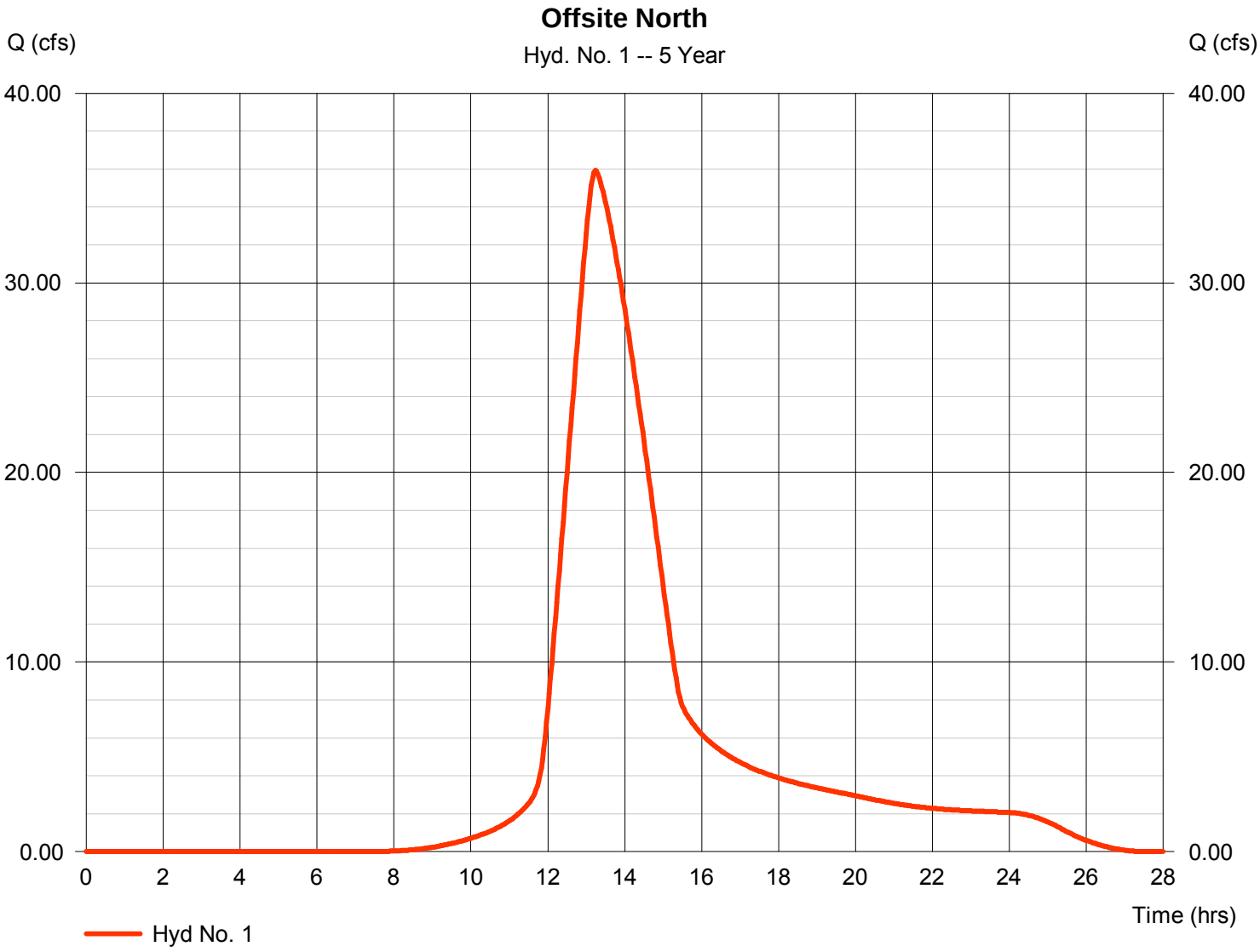
Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	35.94	2	794	422,349	------	------	------	Offsite North
2	SCS Runoff	31.24	2	742	176,879	------	------	------	East Site Flow
3	Combine	49.09	2	748	599,227	1, 2	------	------	Total to Pond
4	Reservoir	25.72	2	864	599,207	3	1281.54	232,357	Existing Pond
5	SCS Runoff	15.57	2	732	67,288	------	------	------	West to West St

Hydrograph Report

Hyd. No. 1

Offsite North

Hydrograph type	= SCS Runoff	Peak discharge	= 35.94 cfs
Storm frequency	= 5 yrs	Time to peak	= 13.23 hrs
Time interval	= 2 min	Hyd. volume	= 422,349 cuft
Drainage area	= 44.000 ac	Curve number	= 82
Basin Slope	= 0.2 %	Hydraulic length	= 2000 ft
Tc method	= LAG	Time of conc. (Tc)	= 134.29 min
Total precip.	= 4.50 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

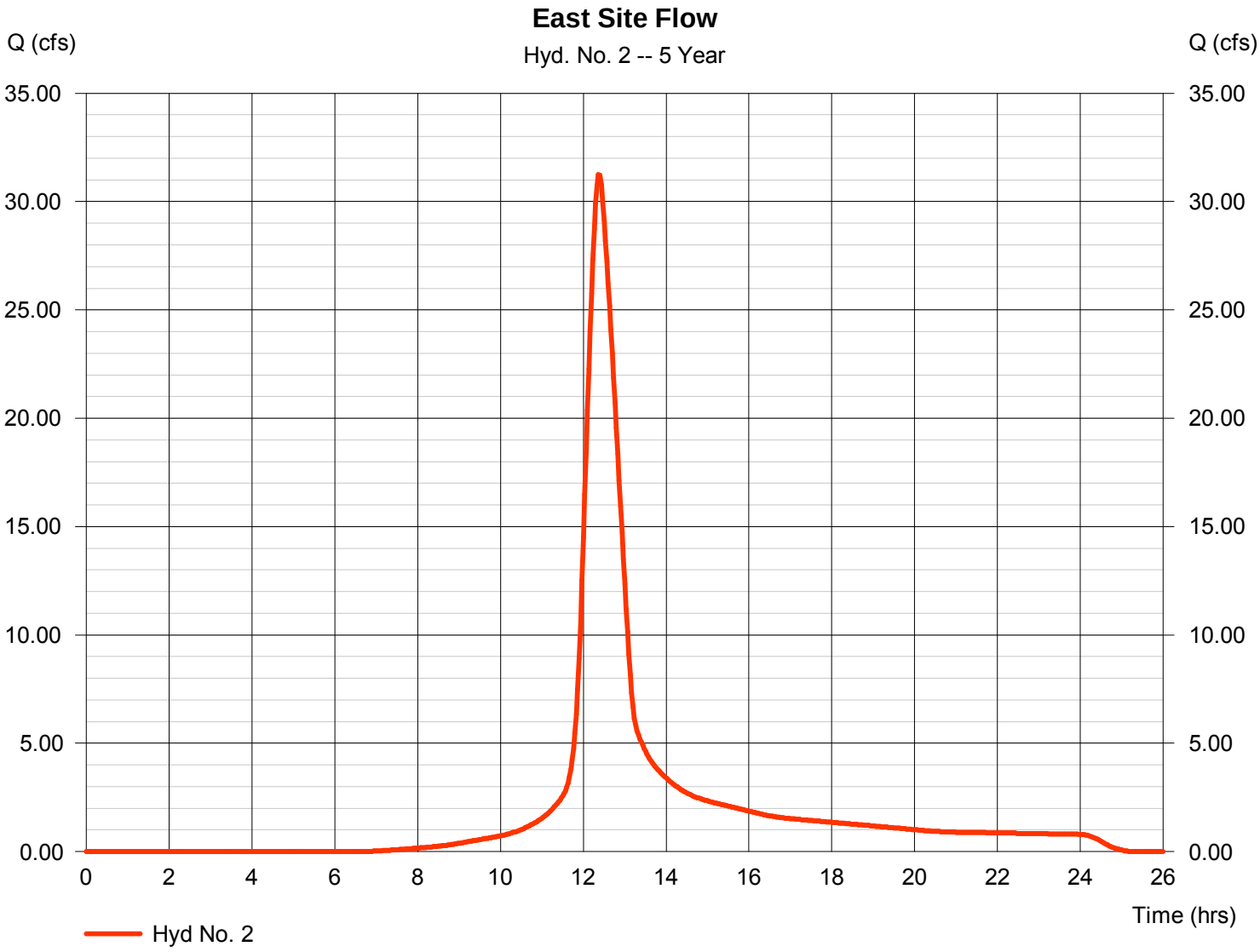


Hydrograph Report

Hyd. No. 2

East Site Flow

Hydrograph type	= SCS Runoff	Peak discharge	= 31.24 cfs
Storm frequency	= 5 yrs	Time to peak	= 12.37 hrs
Time interval	= 2 min	Hyd. volume	= 176,879 cuft
Drainage area	= 17.300 ac	Curve number	= 84
Basin Slope	= 0.2 %	Hydraulic length	= 750 ft
Tc method	= LAG	Time of conc. (Tc)	= 49.64 min
Total precip.	= 4.50 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

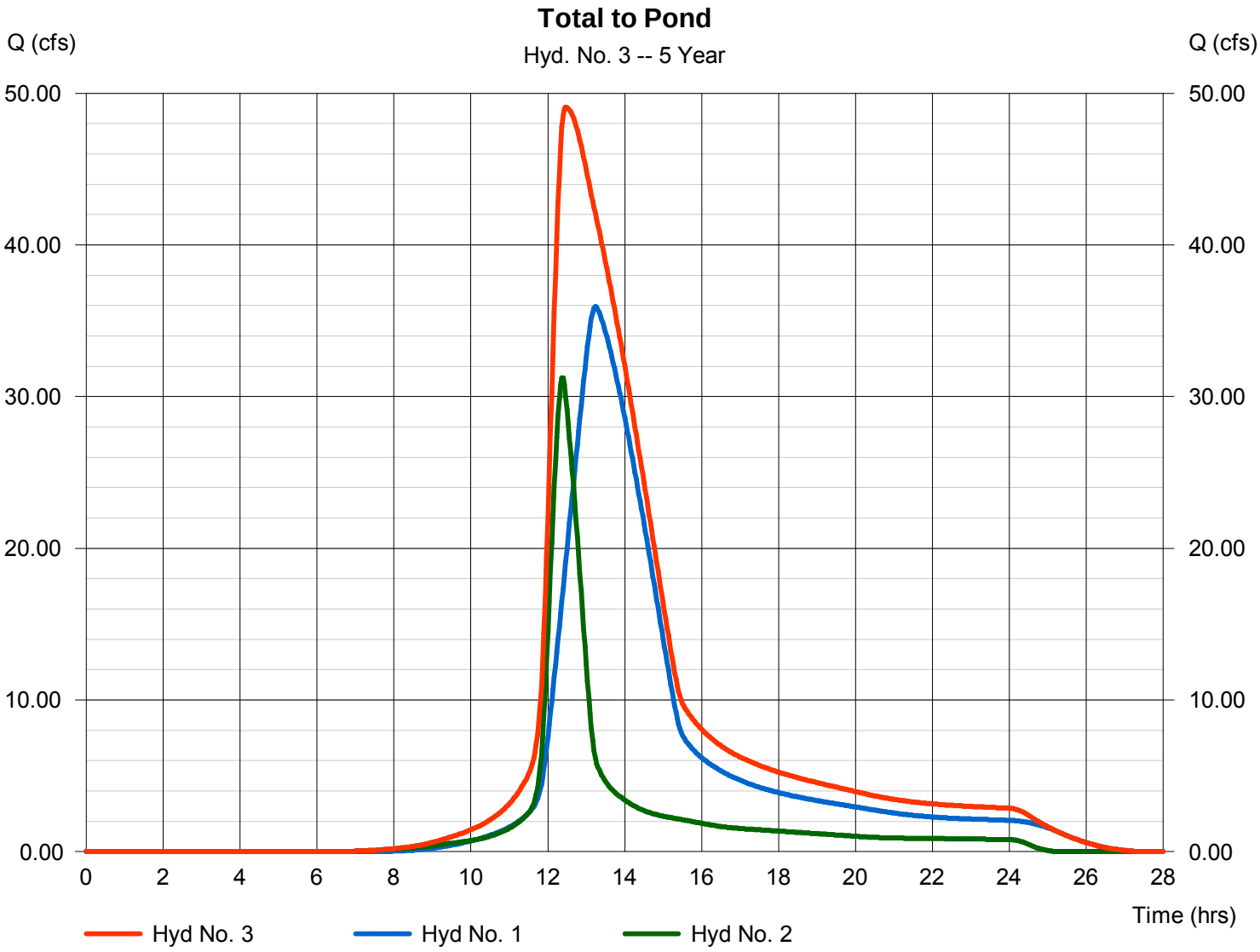


Hydrograph Report

Hyd. No. 3

Total to Pond

Hydrograph type	= Combine	Peak discharge	= 49.09 cfs
Storm frequency	= 5 yrs	Time to peak	= 12.47 hrs
Time interval	= 2 min	Hyd. volume	= 599,227 cuft
Inflow hyds.	= 1, 2	Contrib. drain. area	= 61.300 ac



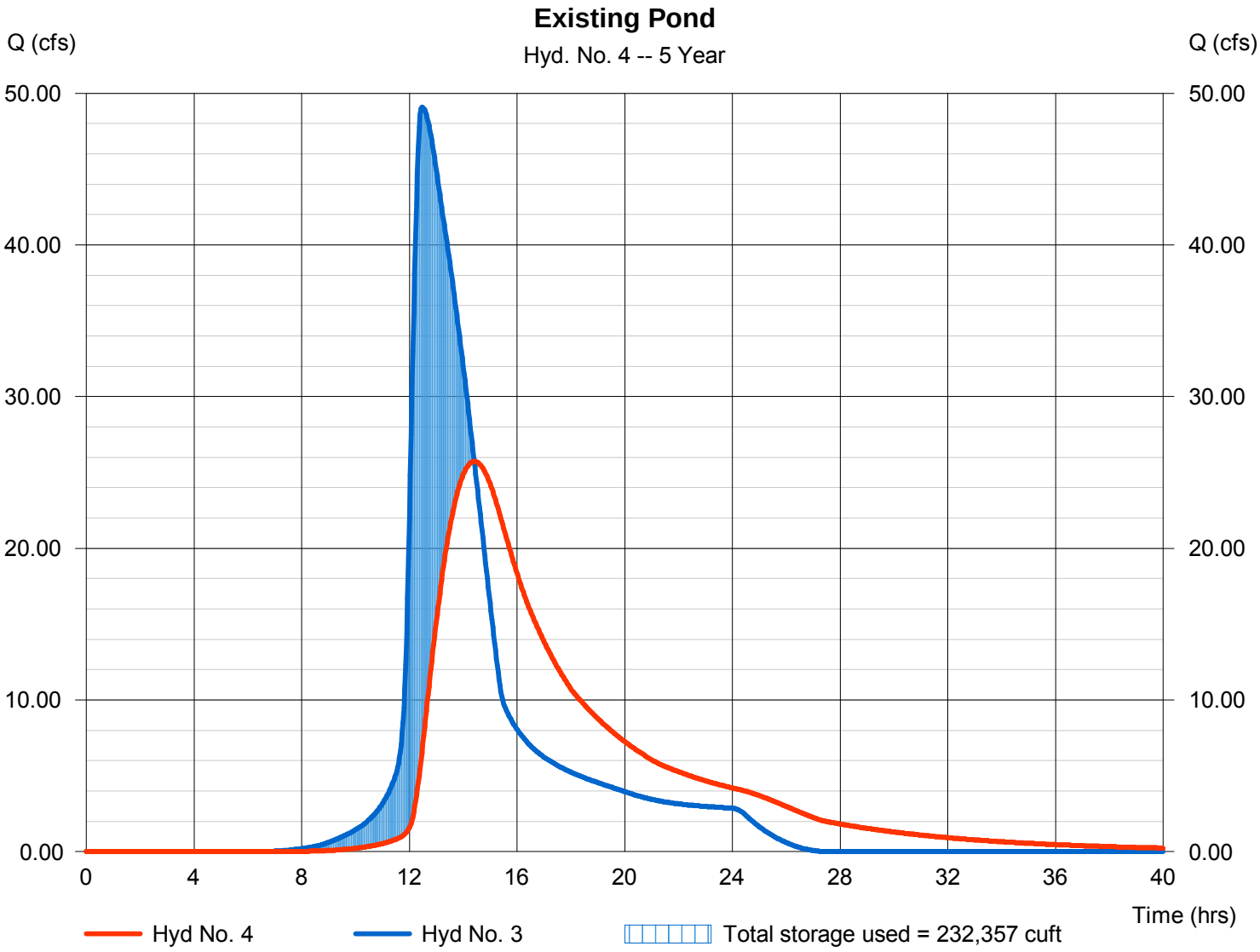
Hydrograph Report

Hyd. No. 4

Existing Pond

Hydrograph type	= Reservoir	Peak discharge	= 25.72 cfs
Storm frequency	= 5 yrs	Time to peak	= 14.40 hrs
Time interval	= 2 min	Hyd. volume	= 599,207 cuft
Inflow hyd. No.	= 3 - Total to Pond	Max. Elevation	= 1281.54 ft
Reservoir name	= Existing Pond	Max. Storage	= 232,357 cuft

Storage Indication method used.

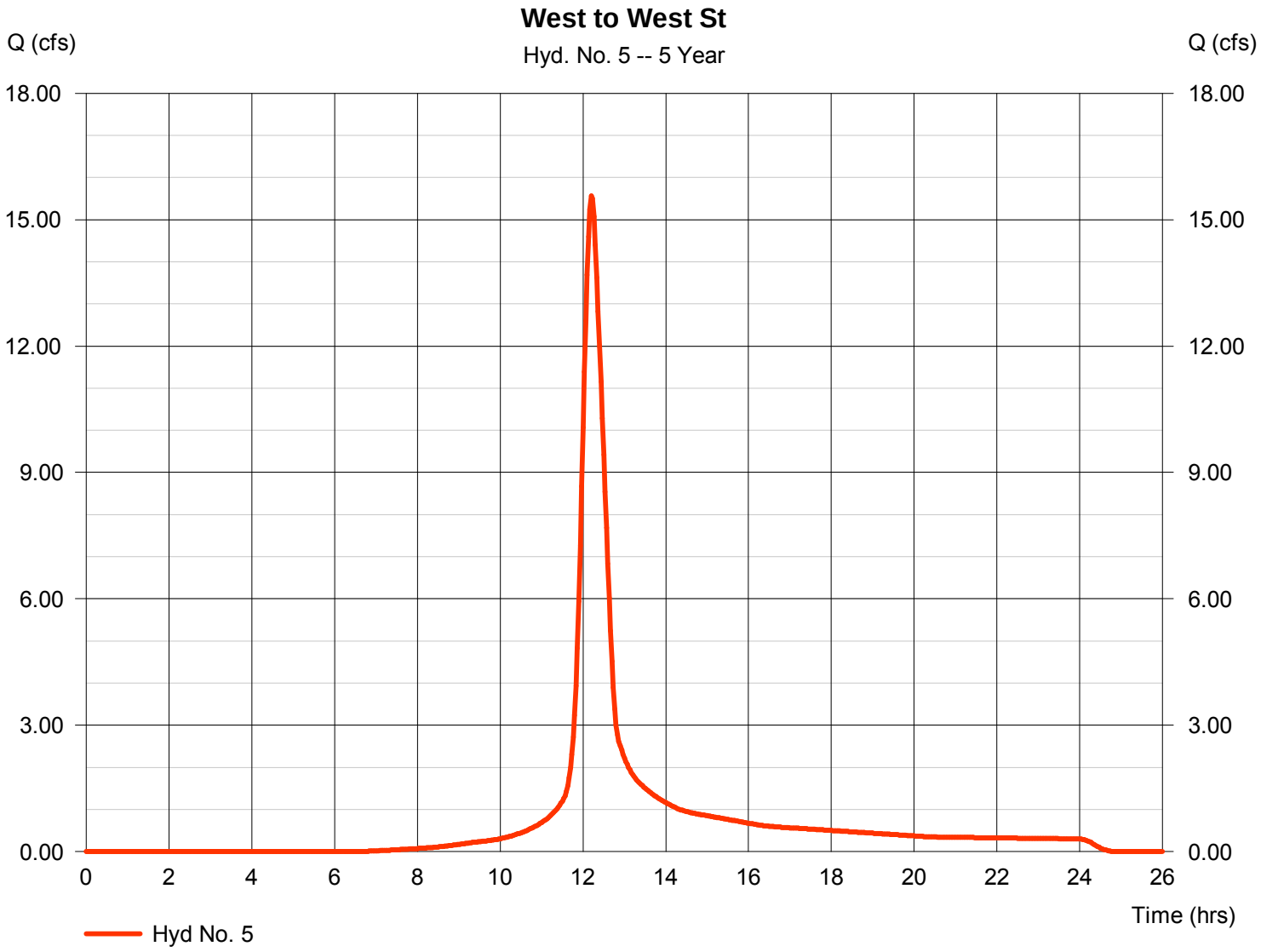


Hydrograph Report

Hyd. No. 5

West to West St

Hydrograph type	= SCS Runoff	Peak discharge	= 15.57 cfs
Storm frequency	= 5 yrs	Time to peak	= 12.20 hrs
Time interval	= 2 min	Hyd. volume	= 67,288 cuft
Drainage area	= 6.500 ac	Curve number	= 84
Basin Slope	= 0.6 %	Hydraulic length	= 850 ft
Tc method	= LAG	Time of conc. (Tc)	= 31.68 min
Total precip.	= 4.50 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Summary Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8

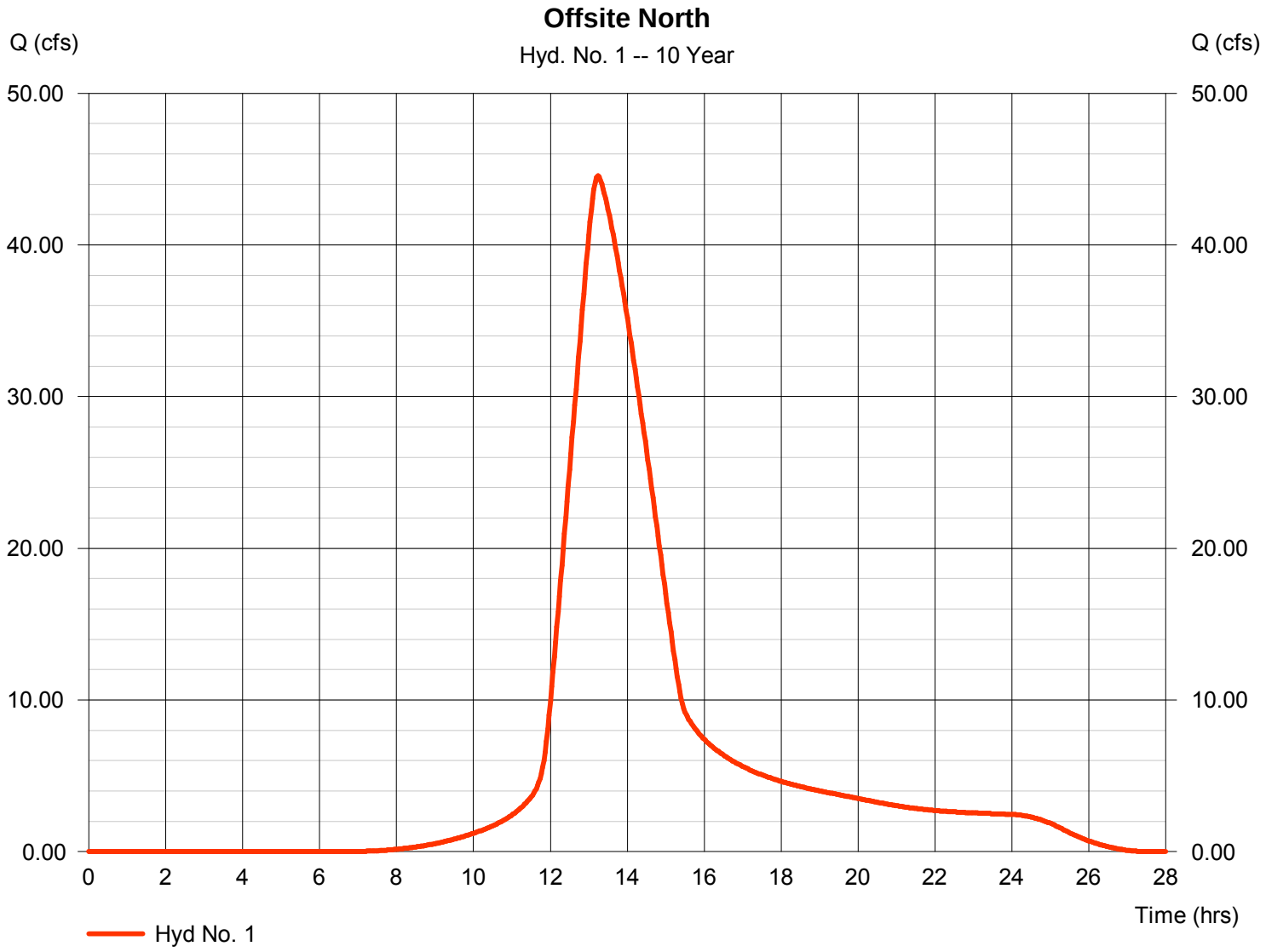
Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	44.57	2	794	522,084	------	------	------	Offsite North
2	SCS Runoff	38.26	2	742	216,900	------	------	------	East Site Flow
3	Combine	60.79	2	748	738,983	1, 2	------	------	Total to Pond
4	Reservoir	33.38	2	858	738,963	3	1281.64	276,614	Existing Pond
5	SCS Runoff	19.05	2	732	82,513	------	------	------	West to West St

Hydrograph Report

Hyd. No. 1

Offsite North

Hydrograph type	= SCS Runoff	Peak discharge	= 44.57 cfs
Storm frequency	= 10 yrs	Time to peak	= 13.23 hrs
Time interval	= 2 min	Hyd. volume	= 522,084 cuft
Drainage area	= 44.000 ac	Curve number	= 82
Basin Slope	= 0.2 %	Hydraulic length	= 2000 ft
Tc method	= LAG	Time of conc. (Tc)	= 134.29 min
Total precip.	= 5.20 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

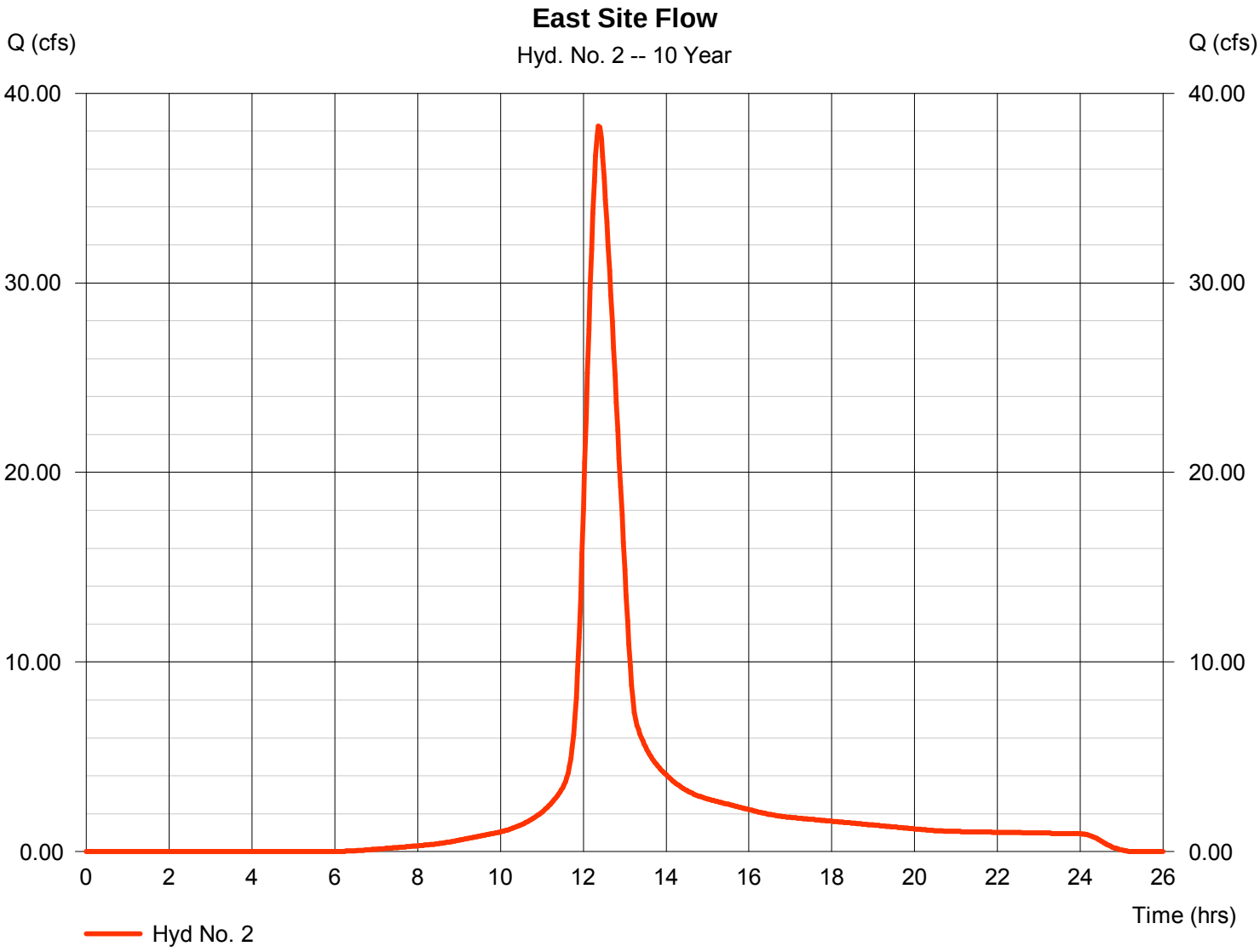


Hydrograph Report

Hyd. No. 2

East Site Flow

Hydrograph type	= SCS Runoff	Peak discharge	= 38.26 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.37 hrs
Time interval	= 2 min	Hyd. volume	= 216,900 cuft
Drainage area	= 17.300 ac	Curve number	= 84
Basin Slope	= 0.2 %	Hydraulic length	= 750 ft
Tc method	= LAG	Time of conc. (Tc)	= 49.64 min
Total precip.	= 5.20 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

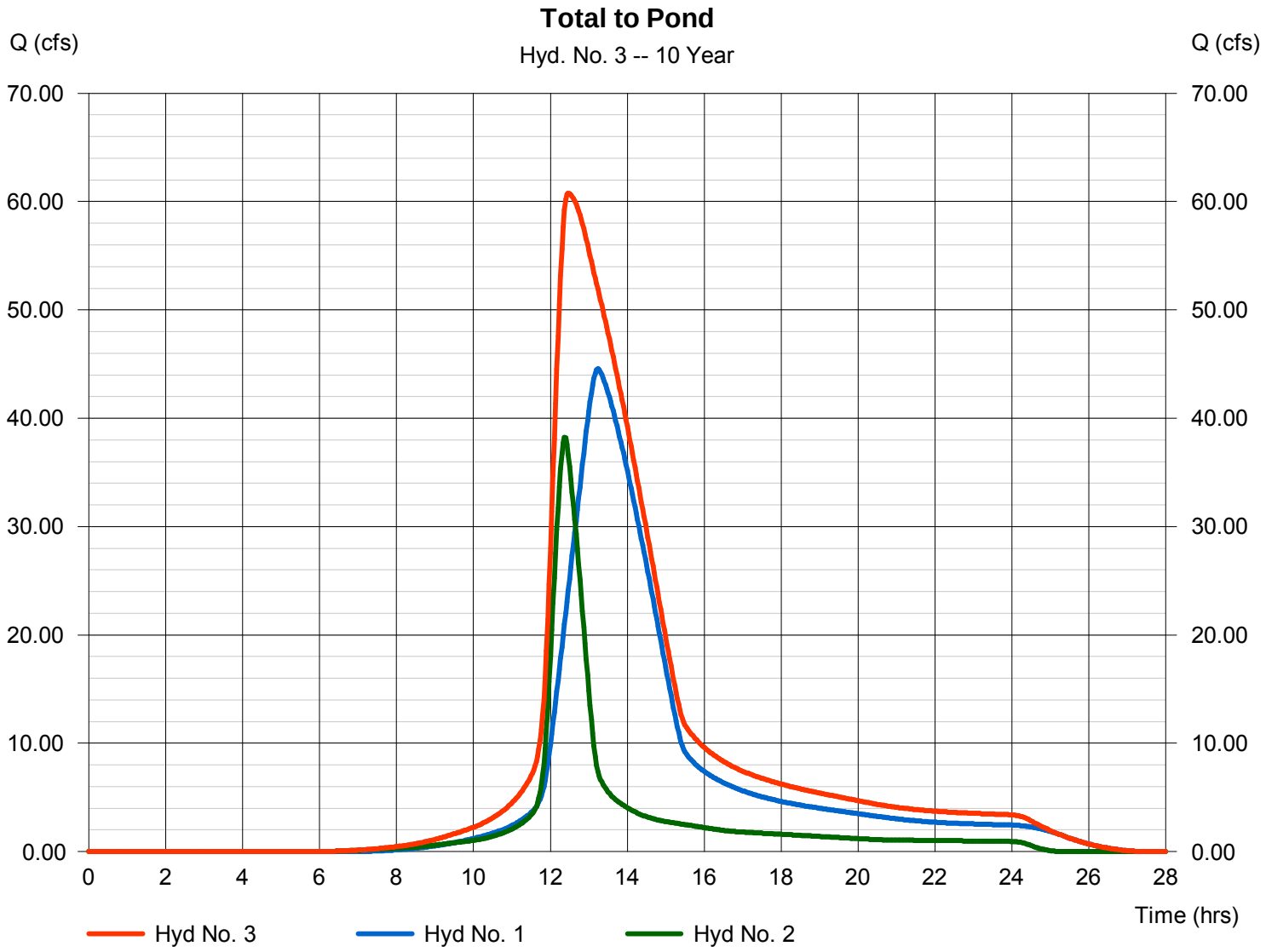


Hydrograph Report

Hyd. No. 3

Total to Pond

Hydrograph type	= Combine	Peak discharge	= 60.79 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.47 hrs
Time interval	= 2 min	Hyd. volume	= 738,983 cuft
Inflow hyds.	= 1, 2	Contrib. drain. area	= 61.300 ac



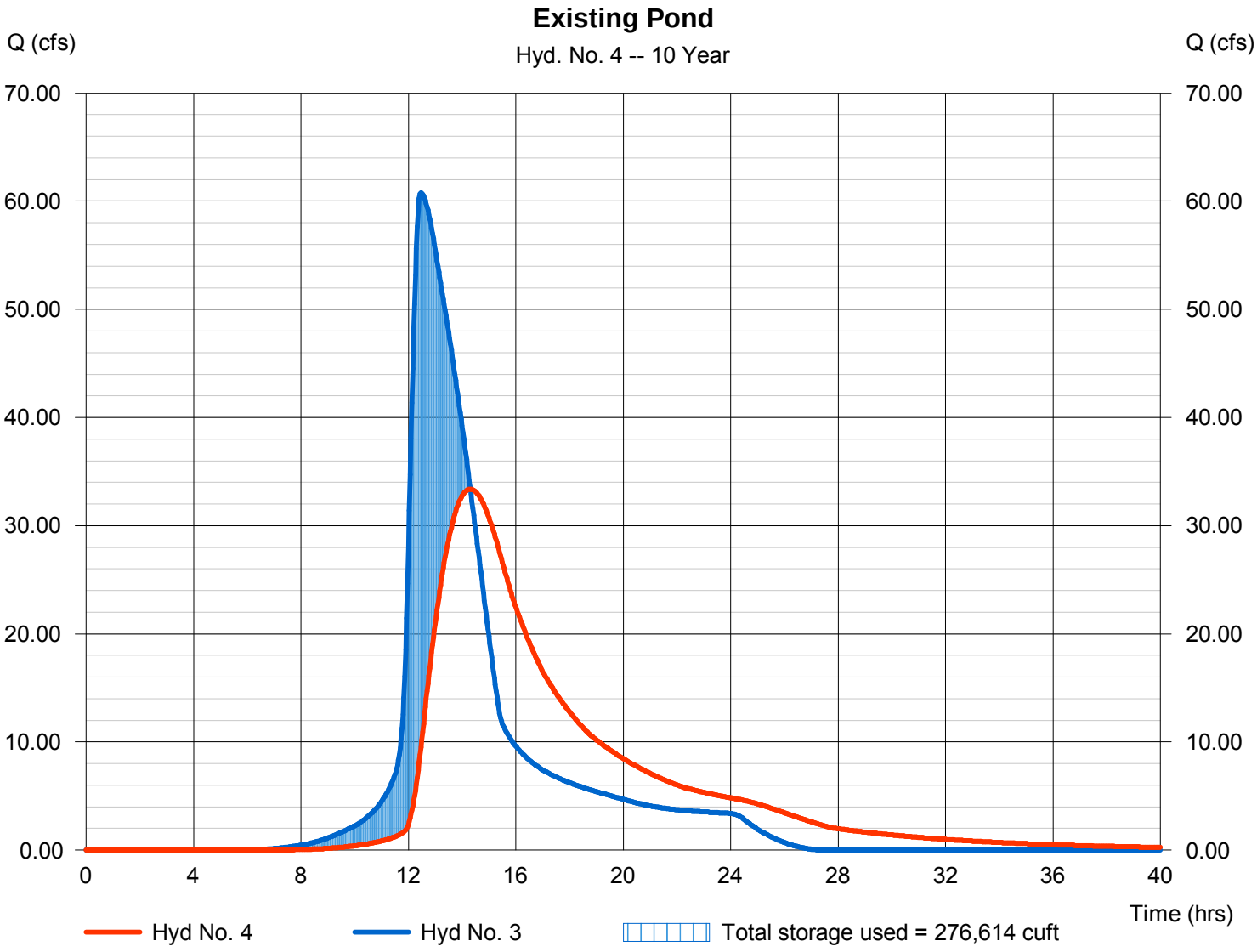
Hydrograph Report

Hyd. No. 4

Existing Pond

Hydrograph type	= Reservoir	Peak discharge	= 33.38 cfs
Storm frequency	= 10 yrs	Time to peak	= 14.30 hrs
Time interval	= 2 min	Hyd. volume	= 738,963 cuft
Inflow hyd. No.	= 3 - Total to Pond	Max. Elevation	= 1281.64 ft
Reservoir name	= Existing Pond	Max. Storage	= 276,614 cuft

Storage Indication method used.

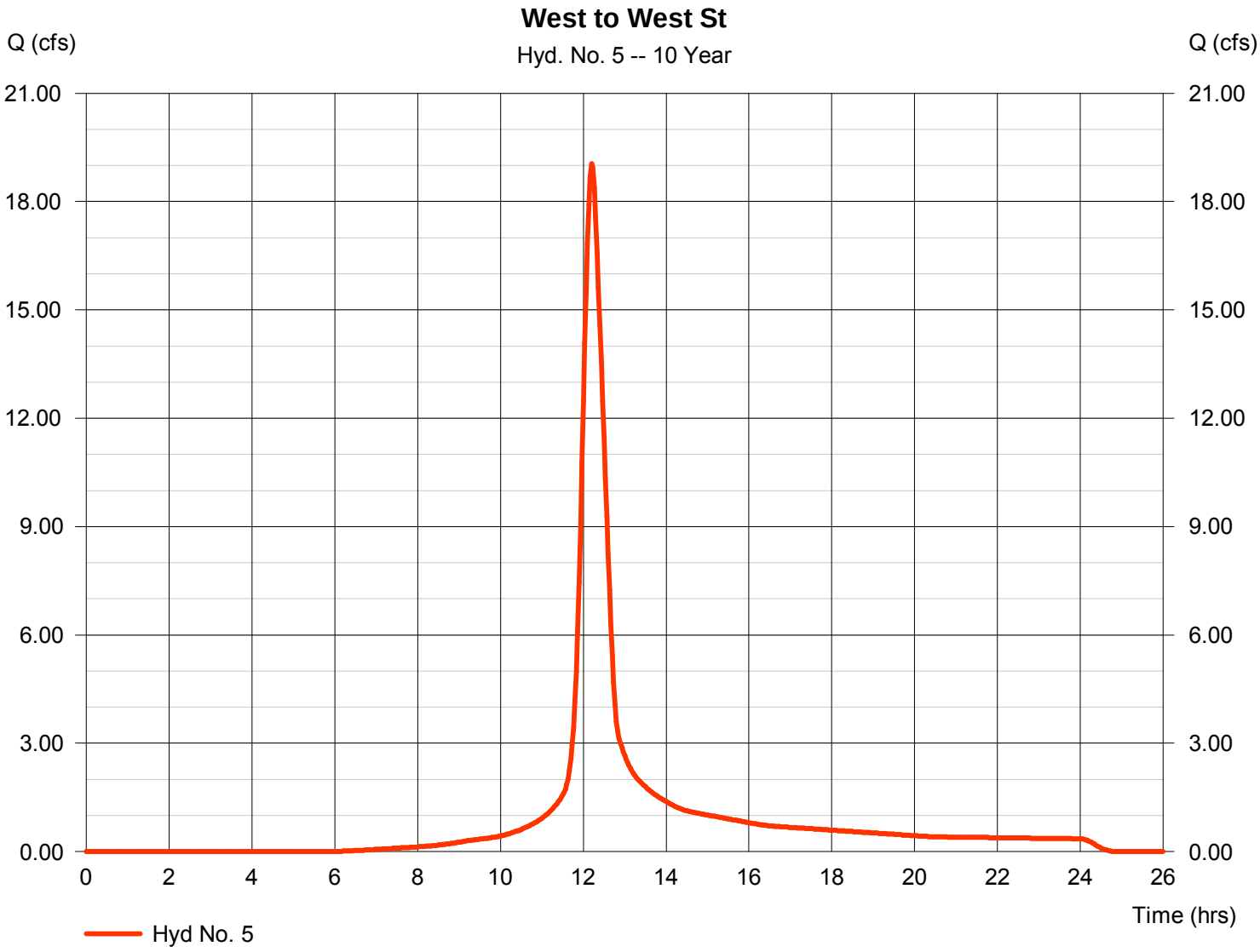


Hydrograph Report

Hyd. No. 5

West to West St

Hydrograph type	= SCS Runoff	Peak discharge	= 19.05 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.20 hrs
Time interval	= 2 min	Hyd. volume	= 82,513 cuft
Drainage area	= 6.500 ac	Curve number	= 84
Basin Slope	= 0.6 %	Hydraulic length	= 850 ft
Tc method	= LAG	Time of conc. (Tc)	= 31.68 min
Total precip.	= 5.20 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Summary Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8

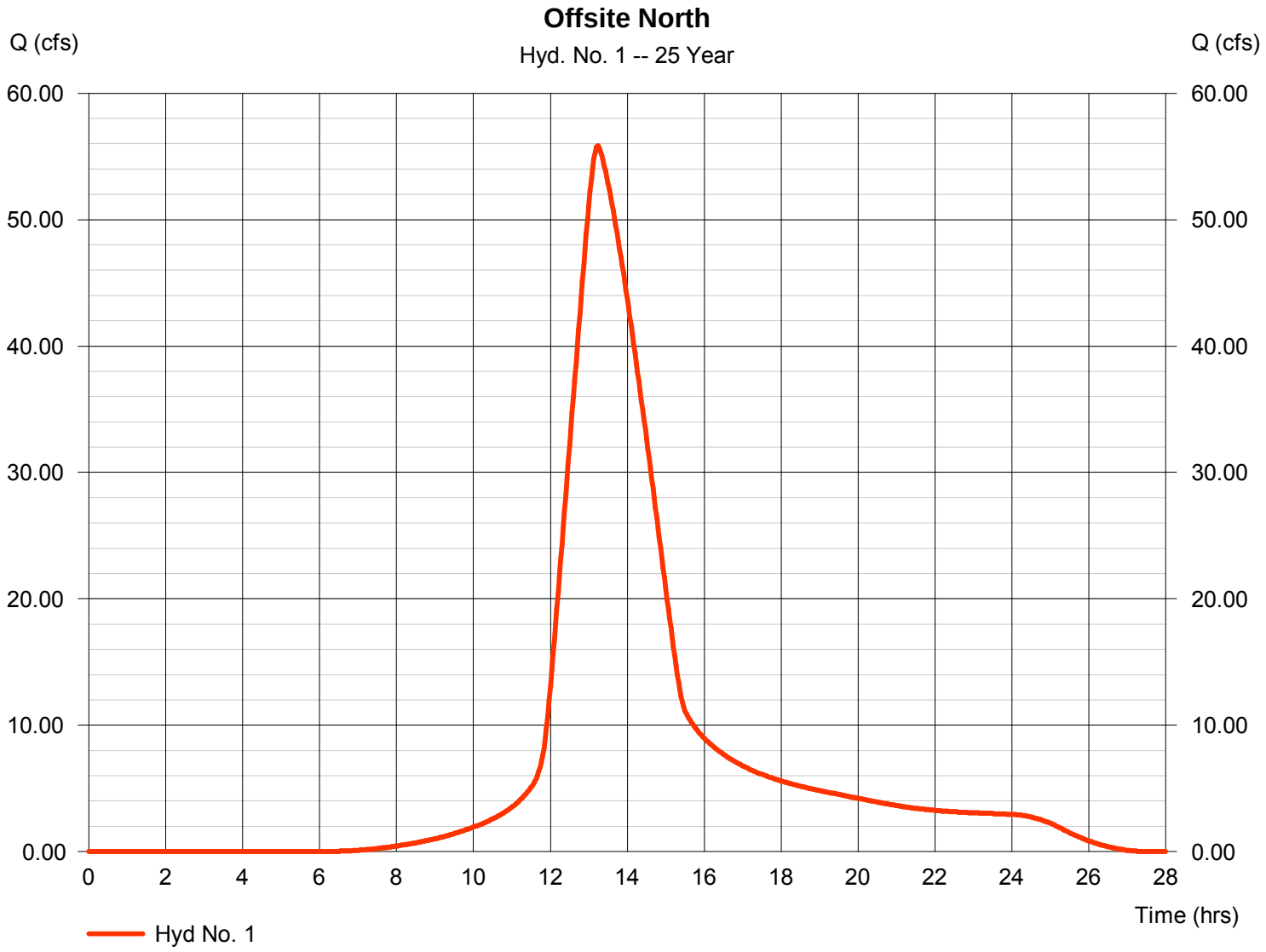
Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	55.85	2	794	653,566	------	------	------	Offsite North
2	SCS Runoff	47.36	2	742	269,419	------	------	------	East Site Flow
3	Combine	76.06	2	748	922,985	1, 2	------	------	Total to Pond
4	Reservoir	43.79	2	852	922,964	3	1281.77	331,653	Existing Pond
5	SCS Runoff	23.55	2	732	102,492	------	------	------	West to West St

Hydrograph Report

Hyd. No. 1

Offsite North

Hydrograph type	= SCS Runoff	Peak discharge	= 55.85 cfs
Storm frequency	= 25 yrs	Time to peak	= 13.23 hrs
Time interval	= 2 min	Hyd. volume	= 653,566 cuft
Drainage area	= 44.000 ac	Curve number	= 82
Basin Slope	= 0.2 %	Hydraulic length	= 2000 ft
Tc method	= LAG	Time of conc. (Tc)	= 134.29 min
Total precip.	= 6.10 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

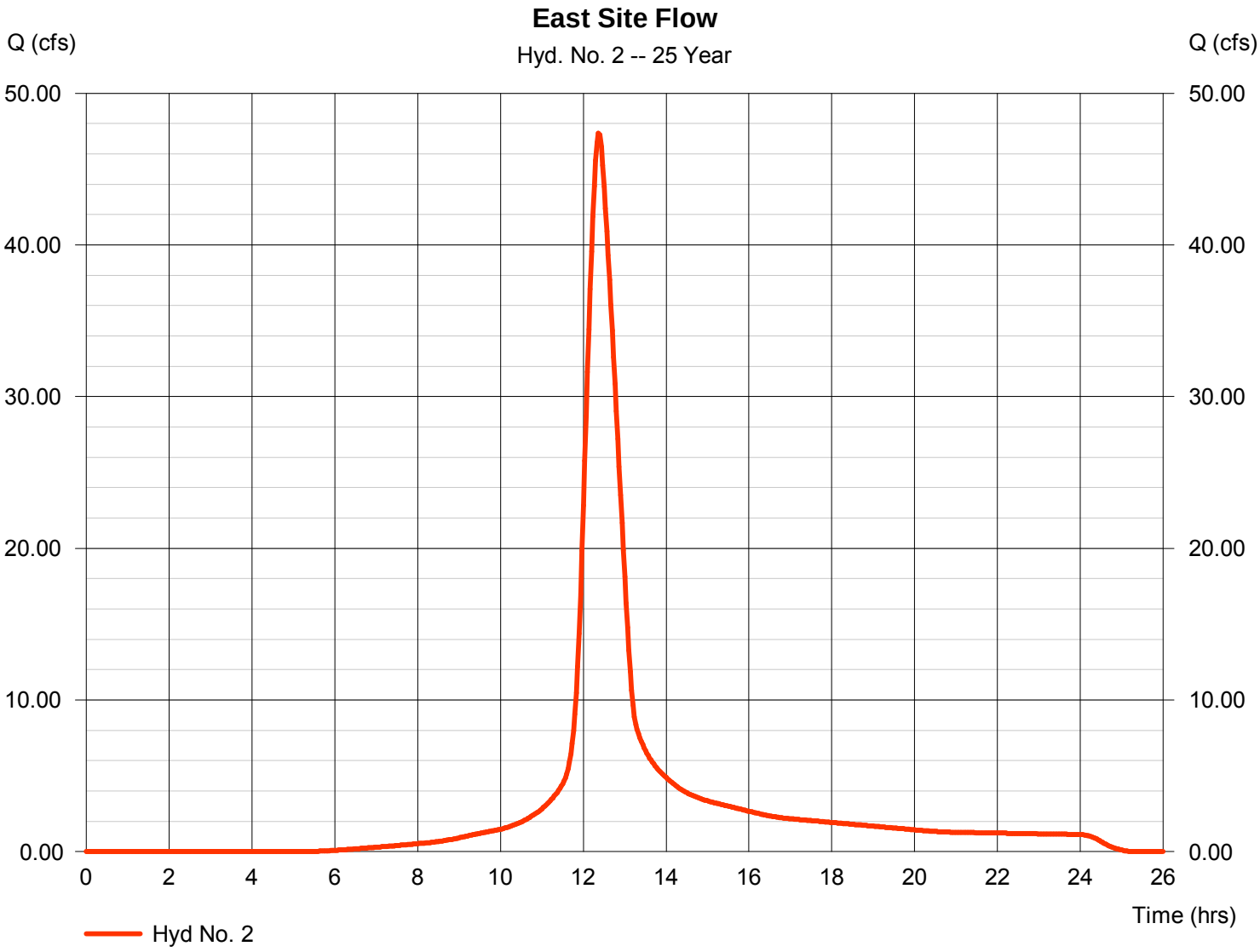


Hydrograph Report

Hyd. No. 2

East Site Flow

Hydrograph type	= SCS Runoff	Peak discharge	= 47.36 cfs
Storm frequency	= 25 yrs	Time to peak	= 12.37 hrs
Time interval	= 2 min	Hyd. volume	= 269,419 cuft
Drainage area	= 17.300 ac	Curve number	= 84
Basin Slope	= 0.2 %	Hydraulic length	= 750 ft
Tc method	= LAG	Time of conc. (Tc)	= 49.64 min
Total precip.	= 6.10 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

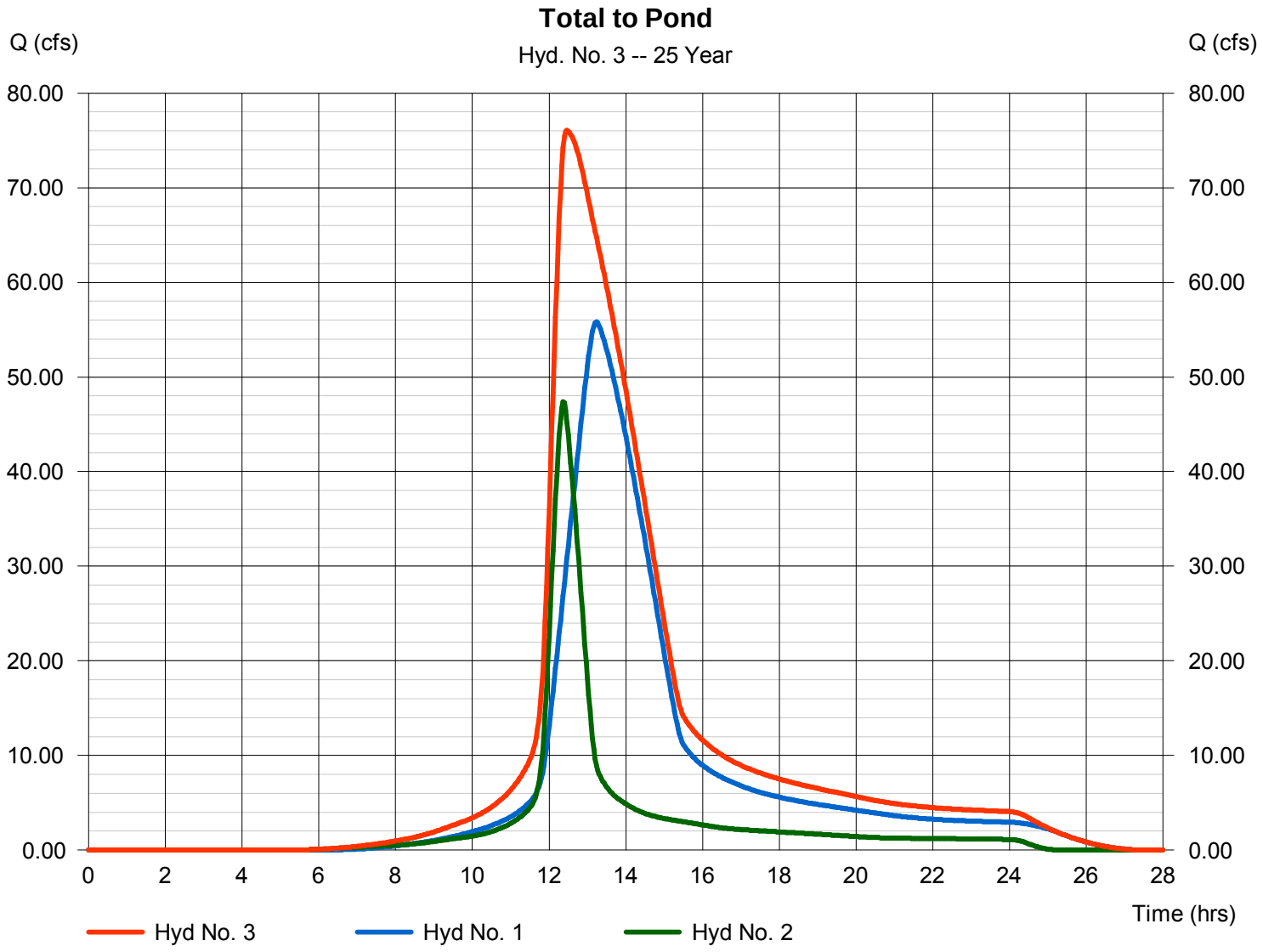


Hydrograph Report

Hyd. No. 3

Total to Pond

Hydrograph type	= Combine	Peak discharge	= 76.06 cfs
Storm frequency	= 25 yrs	Time to peak	= 12.47 hrs
Time interval	= 2 min	Hyd. volume	= 922,985 cuft
Inflow hyds.	= 1, 2	Contrib. drain. area	= 61.300 ac



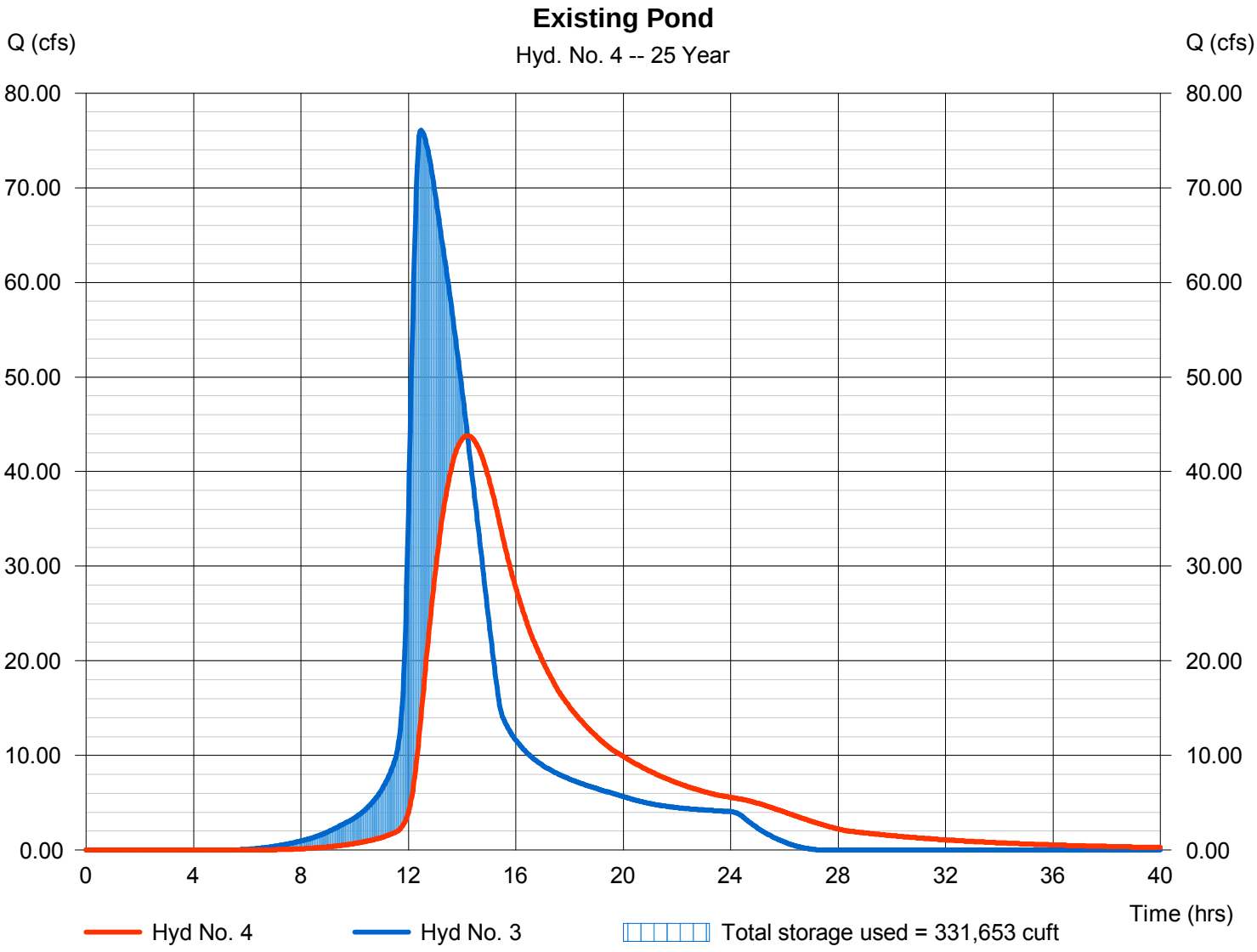
Hydrograph Report

Hyd. No. 4

Existing Pond

Hydrograph type	= Reservoir	Peak discharge	= 43.79 cfs
Storm frequency	= 25 yrs	Time to peak	= 14.20 hrs
Time interval	= 2 min	Hyd. volume	= 922,964 cuft
Inflow hyd. No.	= 3 - Total to Pond	Max. Elevation	= 1281.77 ft
Reservoir name	= Existing Pond	Max. Storage	= 331,653 cuft

Storage Indication method used.

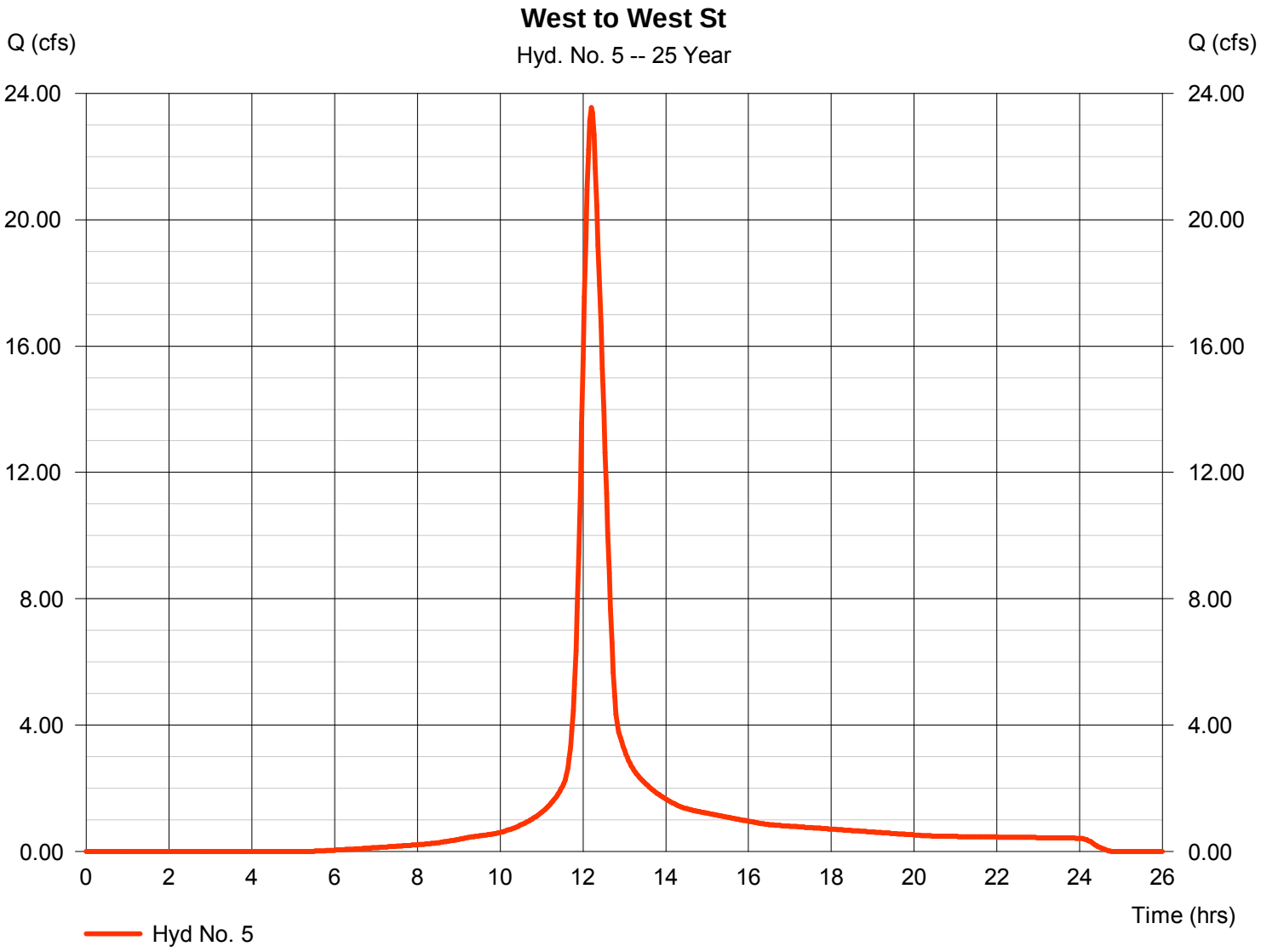


Hydrograph Report

Hyd. No. 5

West to West St

Hydrograph type	= SCS Runoff	Peak discharge	= 23.55 cfs
Storm frequency	= 25 yrs	Time to peak	= 12.20 hrs
Time interval	= 2 min	Hyd. volume	= 102,492 cuft
Drainage area	= 6.500 ac	Curve number	= 84
Basin Slope	= 0.6 %	Hydraulic length	= 850 ft
Tc method	= LAG	Time of conc. (Tc)	= 31.68 min
Total precip.	= 6.10 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Summary Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8

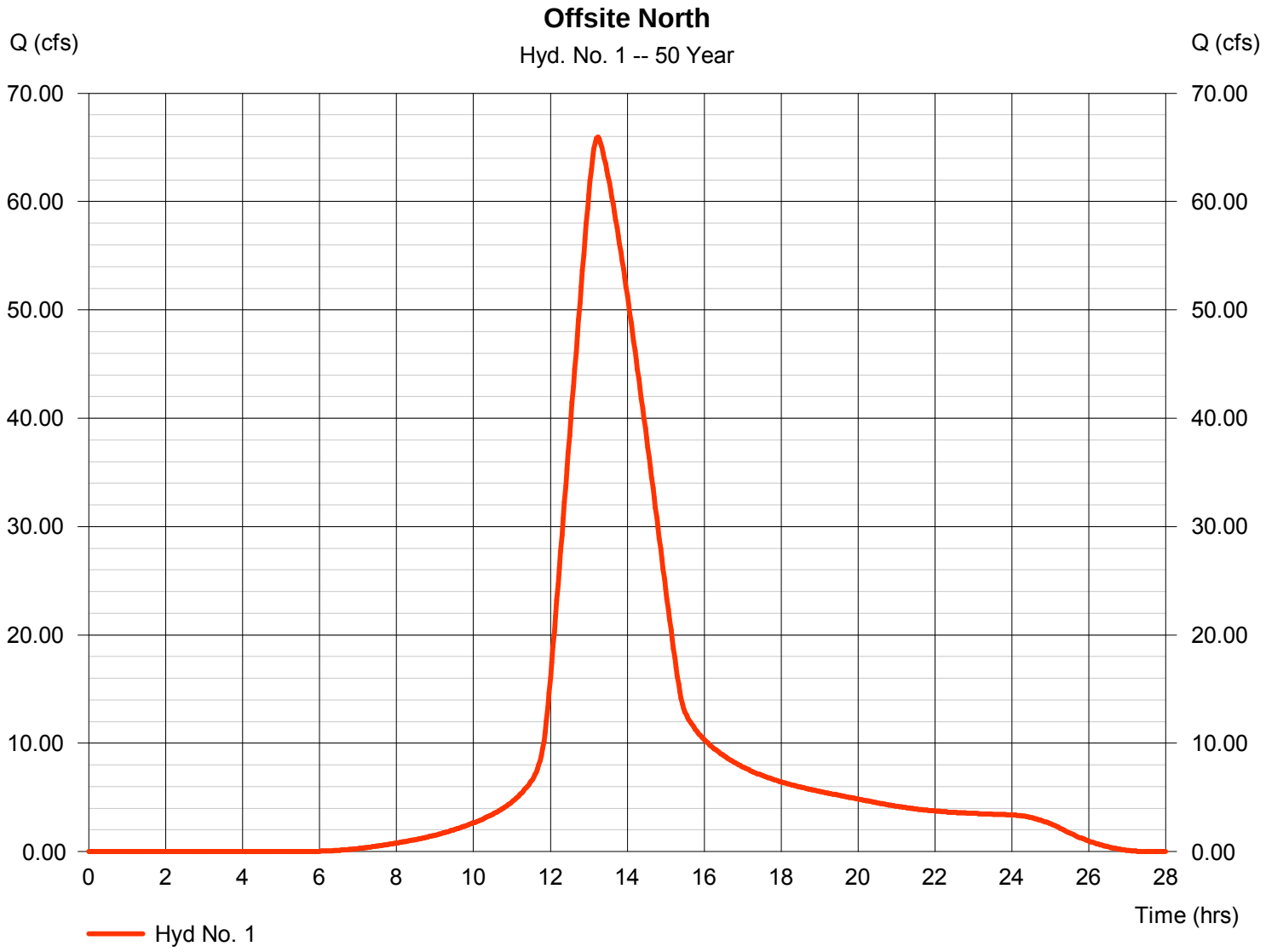
Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	65.97	2	794	772,659	------	------	------	Offsite North
2	SCS Runoff	55.48	2	742	316,820	------	------	------	East Site Flow
3	Combine	89.77	2	748	1,089,479	1, 2	------	------	Total to Pond
4	Reservoir	53.43	2	848	1,089,459	3	1281.88	378,828	Existing Pond
5	SCS Runoff	27.57	2	732	120,524	------	------	------	West to West St

Hydrograph Report

Hyd. No. 1

Offsite North

Hydrograph type	= SCS Runoff	Peak discharge	= 65.97 cfs
Storm frequency	= 50 yrs	Time to peak	= 13.23 hrs
Time interval	= 2 min	Hyd. volume	= 772,659 cuft
Drainage area	= 44.000 ac	Curve number	= 82
Basin Slope	= 0.2 %	Hydraulic length	= 2000 ft
Tc method	= LAG	Time of conc. (Tc)	= 134.29 min
Total precip.	= 6.90 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

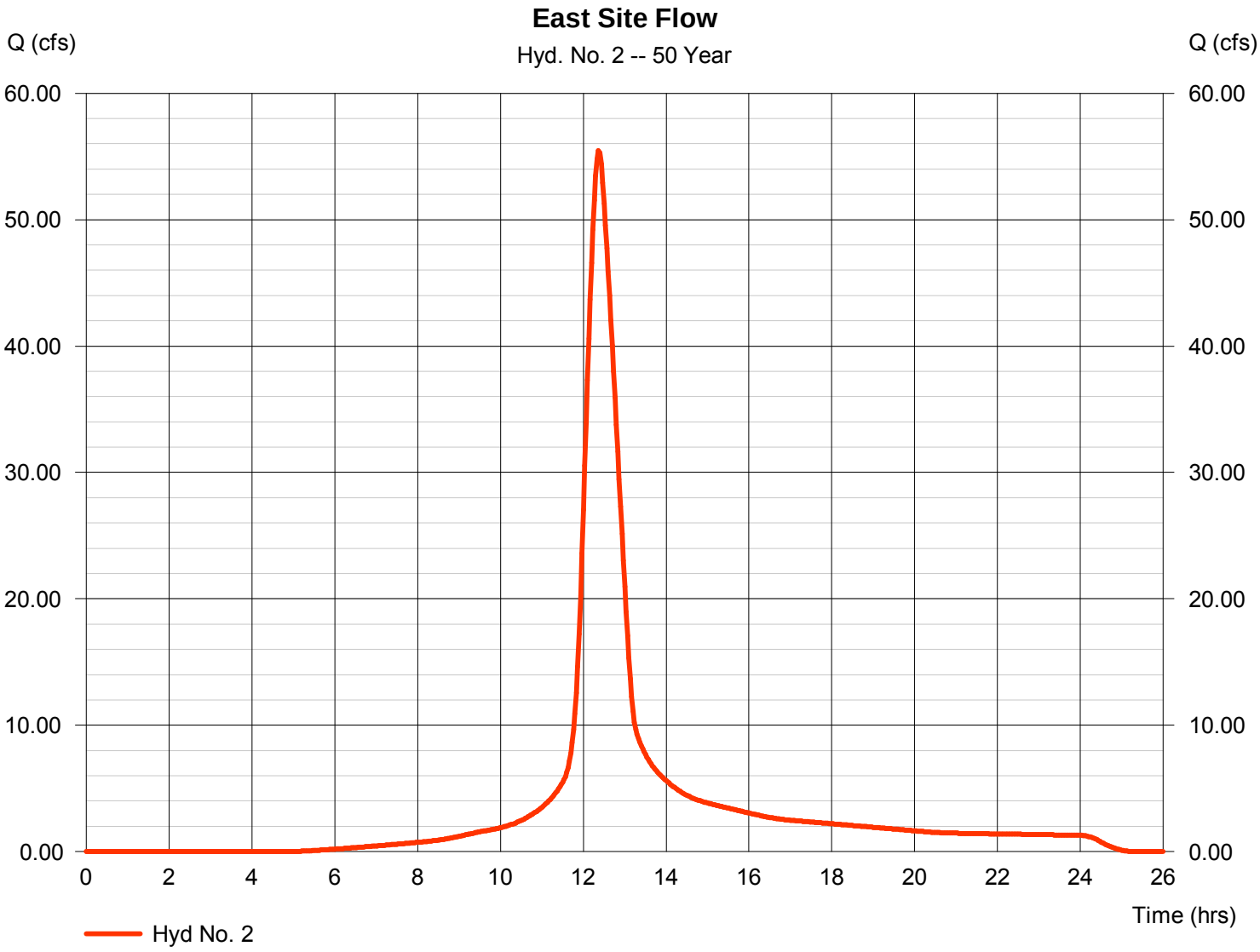


Hydrograph Report

Hyd. No. 2

East Site Flow

Hydrograph type	= SCS Runoff	Peak discharge	= 55.48 cfs
Storm frequency	= 50 yrs	Time to peak	= 12.37 hrs
Time interval	= 2 min	Hyd. volume	= 316,820 cuft
Drainage area	= 17.300 ac	Curve number	= 84
Basin Slope	= 0.2 %	Hydraulic length	= 750 ft
Tc method	= LAG	Time of conc. (Tc)	= 49.64 min
Total precip.	= 6.90 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

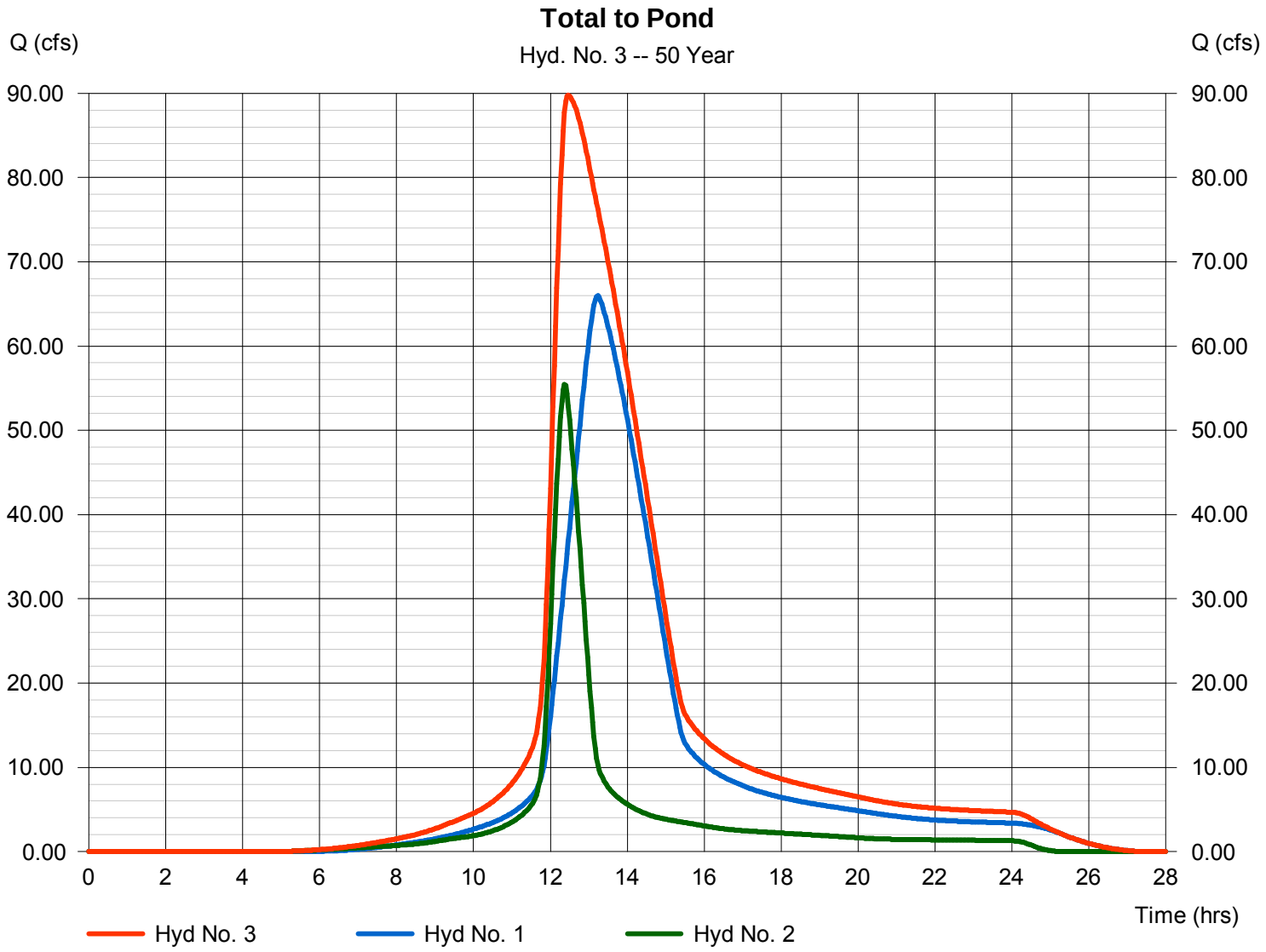


Hydrograph Report

Hyd. No. 3

Total to Pond

Hydrograph type	= Combine	Peak discharge	= 89.77 cfs
Storm frequency	= 50 yrs	Time to peak	= 12.47 hrs
Time interval	= 2 min	Hyd. volume	= 1,089,479 cuft
Inflow hyds.	= 1, 2	Contrib. drain. area	= 61.300 ac



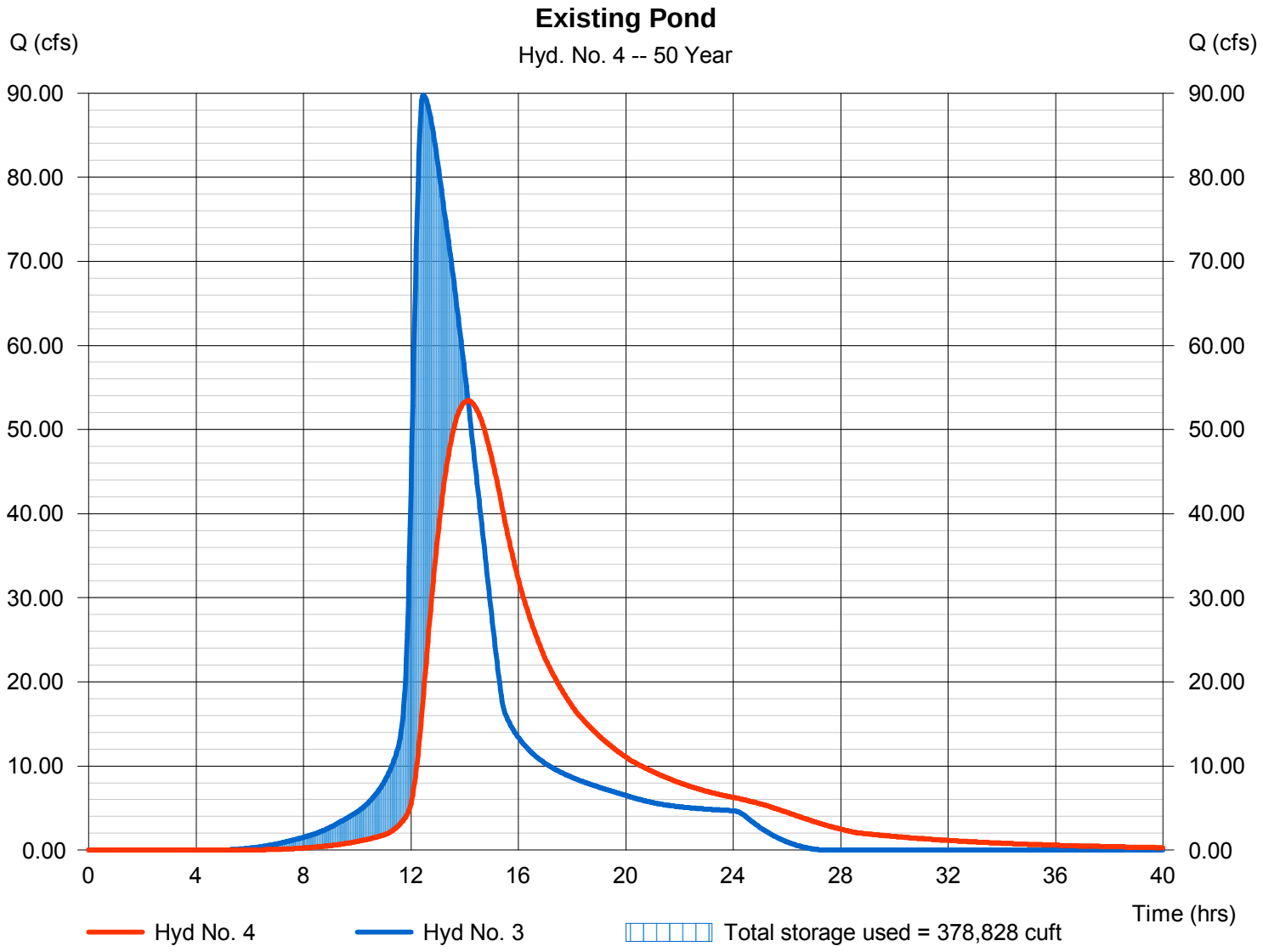
Hydrograph Report

Hyd. No. 4

Existing Pond

Hydrograph type	= Reservoir	Peak discharge	= 53.43 cfs
Storm frequency	= 50 yrs	Time to peak	= 14.13 hrs
Time interval	= 2 min	Hyd. volume	= 1,089,459 cuft
Inflow hyd. No.	= 3 - Total to Pond	Max. Elevation	= 1281.88 ft
Reservoir name	= Existing Pond	Max. Storage	= 378,828 cuft

Storage Indication method used.

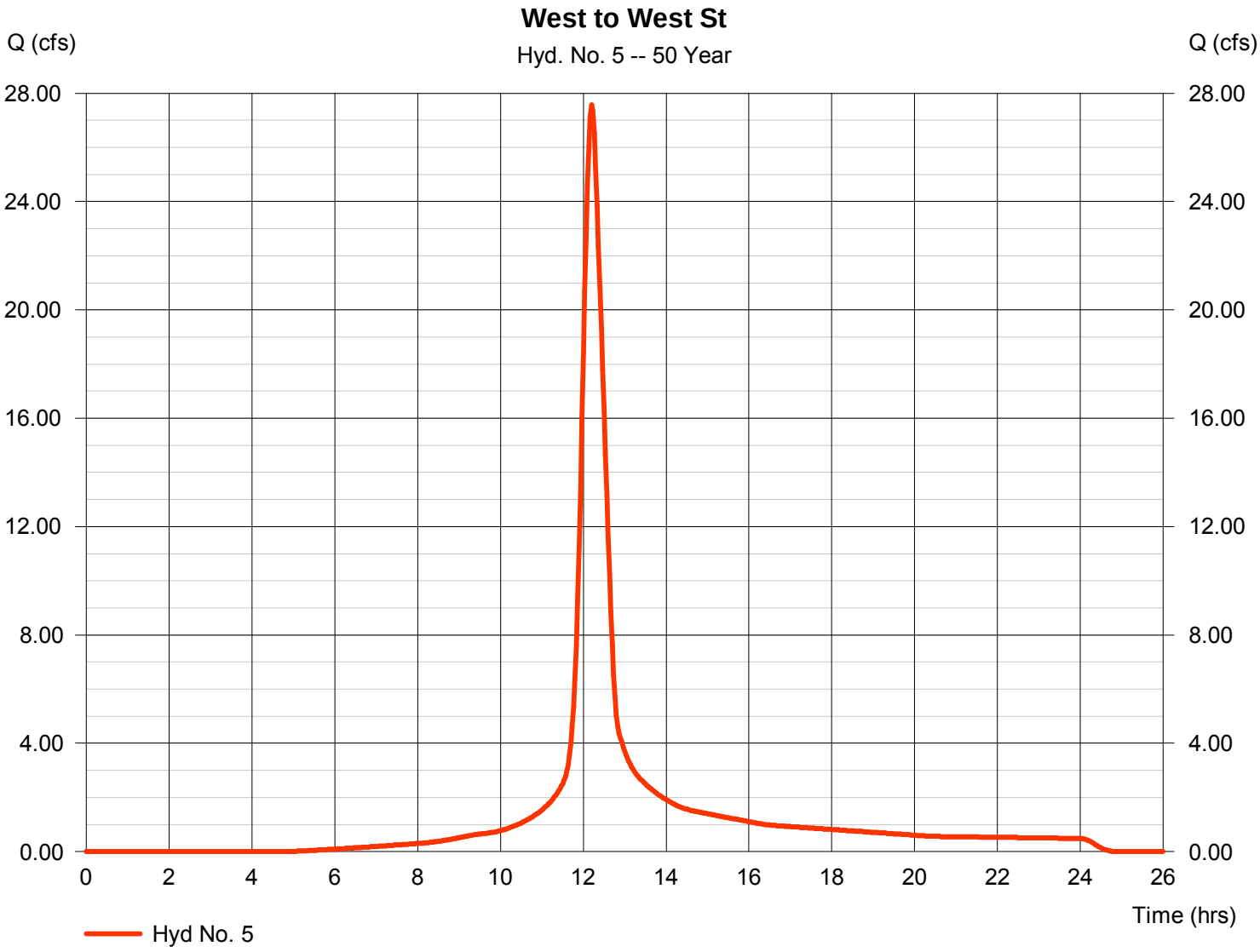


Hydrograph Report

Hyd. No. 5

West to West St

Hydrograph type	= SCS Runoff	Peak discharge	= 27.57 cfs
Storm frequency	= 50 yrs	Time to peak	= 12.20 hrs
Time interval	= 2 min	Hyd. volume	= 120,524 cuft
Drainage area	= 6.500 ac	Curve number	= 84
Basin Slope	= 0.6 %	Hydraulic length	= 850 ft
Tc method	= LAG	Time of conc. (Tc)	= 31.68 min
Total precip.	= 6.90 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Summary Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8

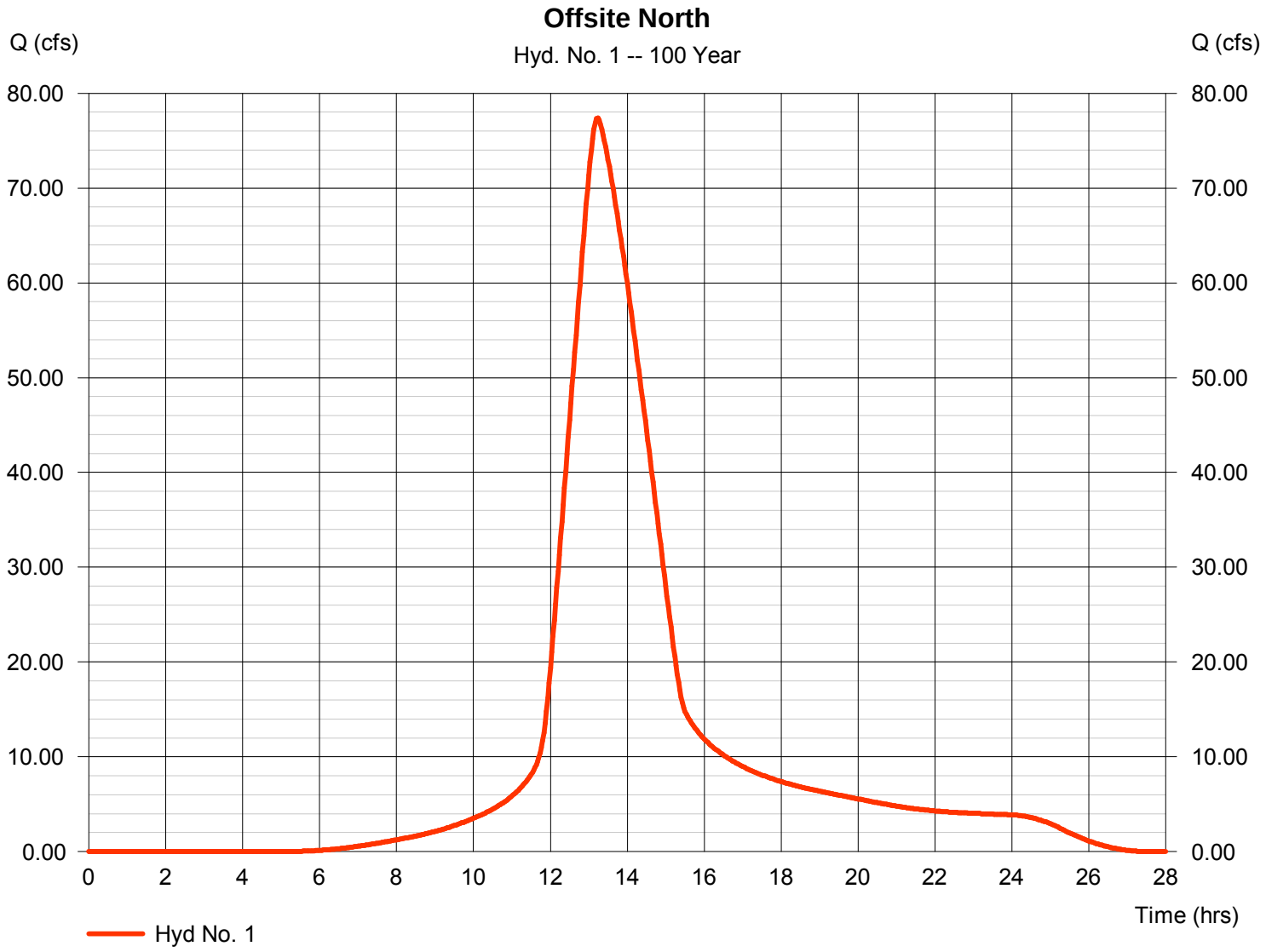
Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	77.41	2	794	908,456	------	------	------	Offsite North
2	SCS Runoff	64.60	2	742	370,728	------	------	------	East Site Flow
3	Combine	105.27	2	748	1,279,185	1, 2	------	------	Total to Pond
4	Reservoir	64.60	2	844	1,279,163	3	1282.00	430,020	Existing Pond
5	SCS Runoff	32.08	2	732	141,032	------	------	------	West to West St

Hydrograph Report

Hyd. No. 1

Offsite North

Hydrograph type	= SCS Runoff	Peak discharge	= 77.41 cfs
Storm frequency	= 100 yrs	Time to peak	= 13.23 hrs
Time interval	= 2 min	Hyd. volume	= 908,456 cuft
Drainage area	= 44.000 ac	Curve number	= 82
Basin Slope	= 0.2 %	Hydraulic length	= 2000 ft
Tc method	= LAG	Time of conc. (Tc)	= 134.29 min
Total precip.	= 7.80 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

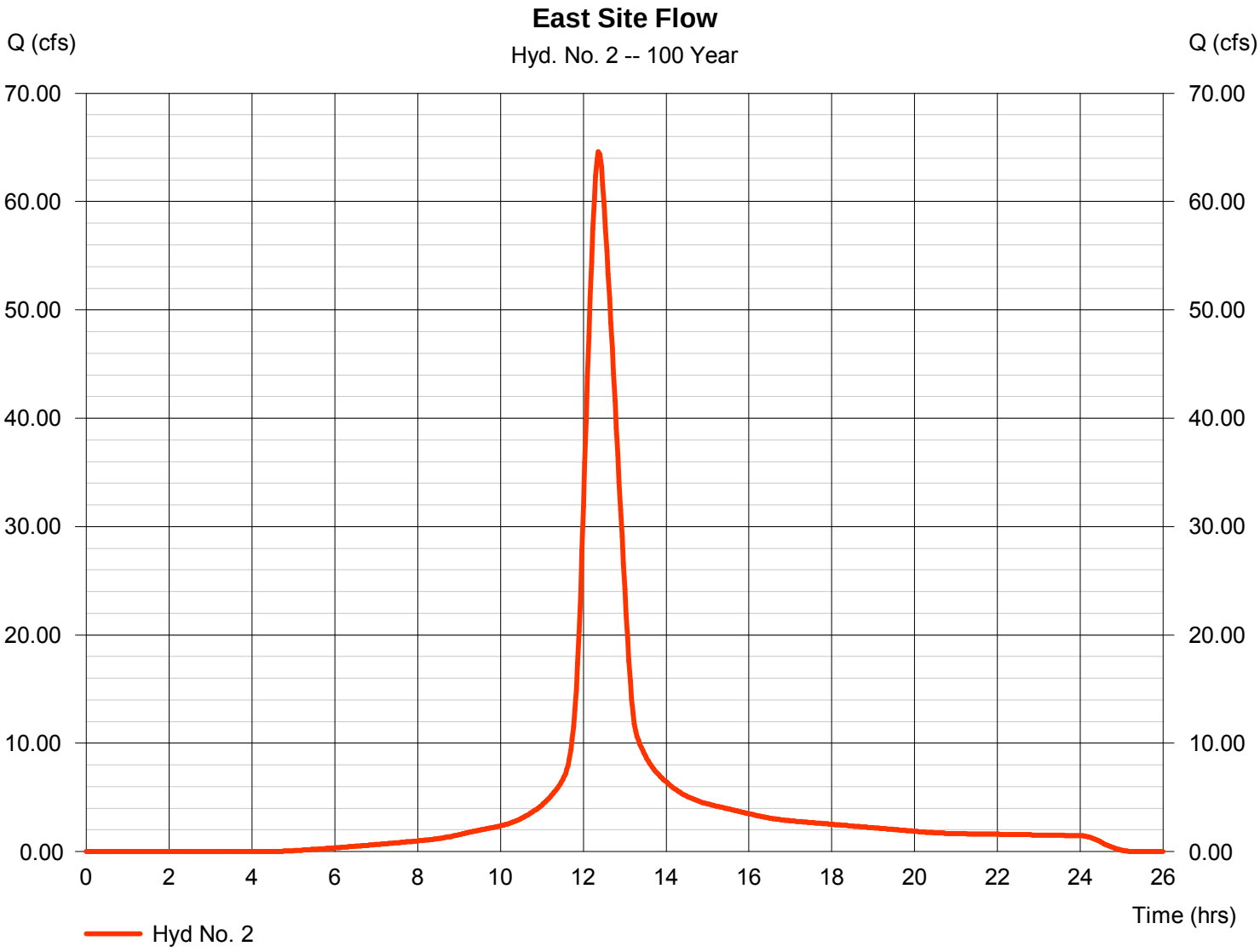


Hydrograph Report

Hyd. No. 2

East Site Flow

Hydrograph type	= SCS Runoff	Peak discharge	= 64.60 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.37 hrs
Time interval	= 2 min	Hyd. volume	= 370,728 cuft
Drainage area	= 17.300 ac	Curve number	= 84
Basin Slope	= 0.2 %	Hydraulic length	= 750 ft
Tc method	= LAG	Time of conc. (Tc)	= 49.64 min
Total precip.	= 7.80 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

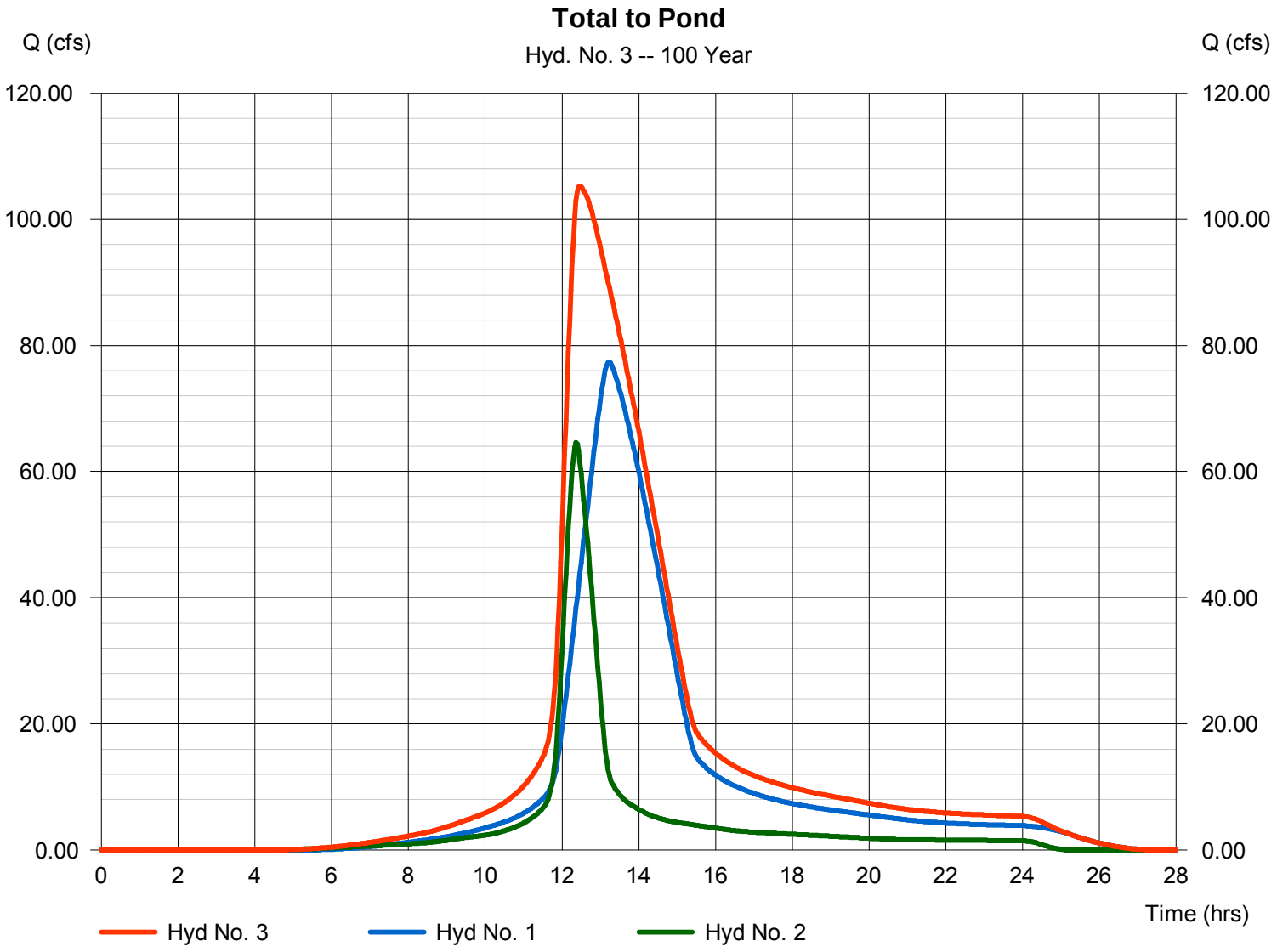


Hydrograph Report

Hyd. No. 3

Total to Pond

Hydrograph type	= Combine	Peak discharge	= 105.27 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.47 hrs
Time interval	= 2 min	Hyd. volume	= 1,279,185 cuft
Inflow hyds.	= 1, 2	Contrib. drain. area	= 61.300 ac



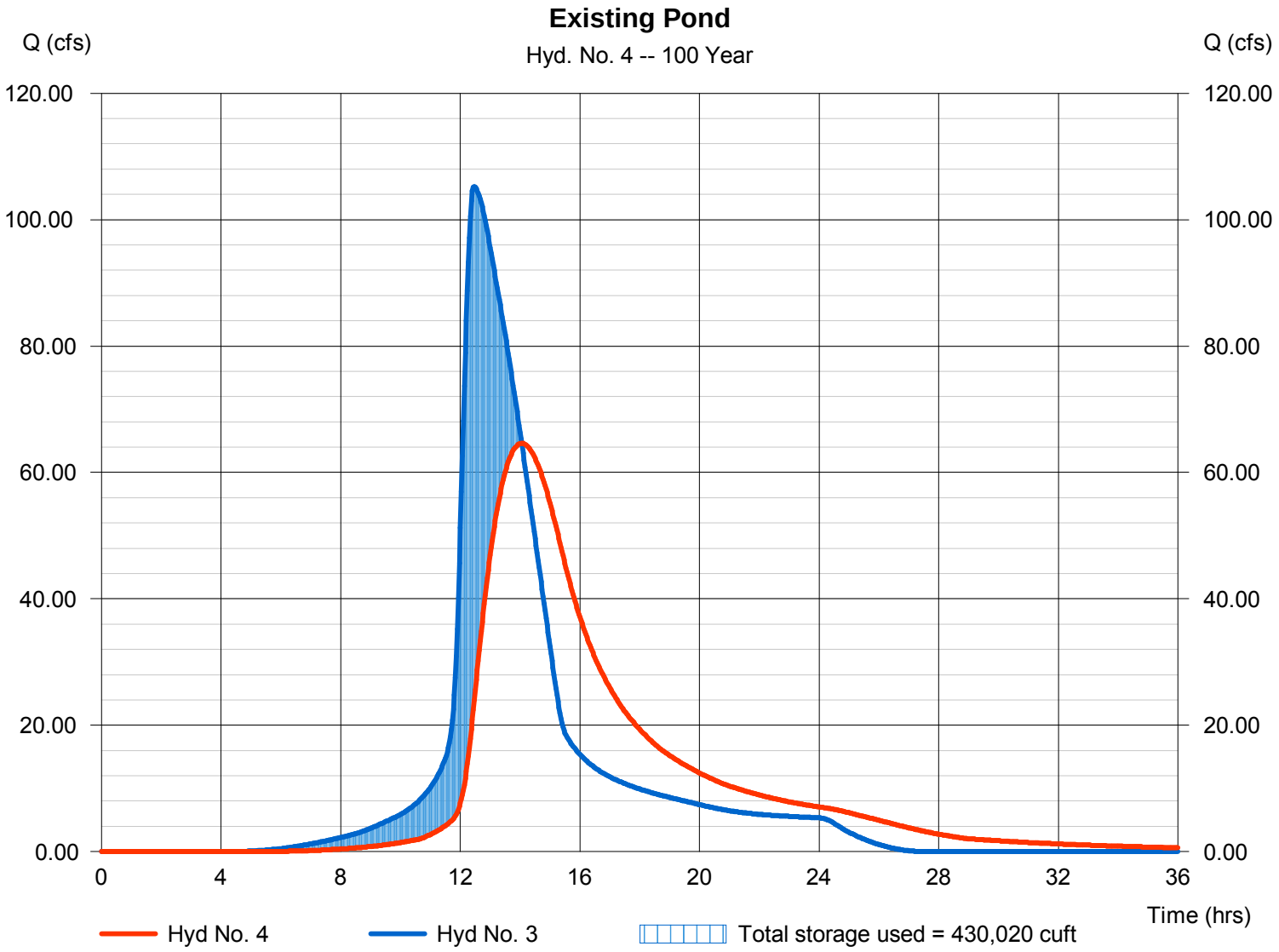
Hydrograph Report

Hyd. No. 4

Existing Pond

Hydrograph type	= Reservoir	Peak discharge	= 64.60 cfs
Storm frequency	= 100 yrs	Time to peak	= 14.07 hrs
Time interval	= 2 min	Hyd. volume	= 1,279,163 cuft
Inflow hyd. No.	= 3 - Total to Pond	Max. Elevation	= 1282.00 ft
Reservoir name	= Existing Pond	Max. Storage	= 430,020 cuft

Storage Indication method used.

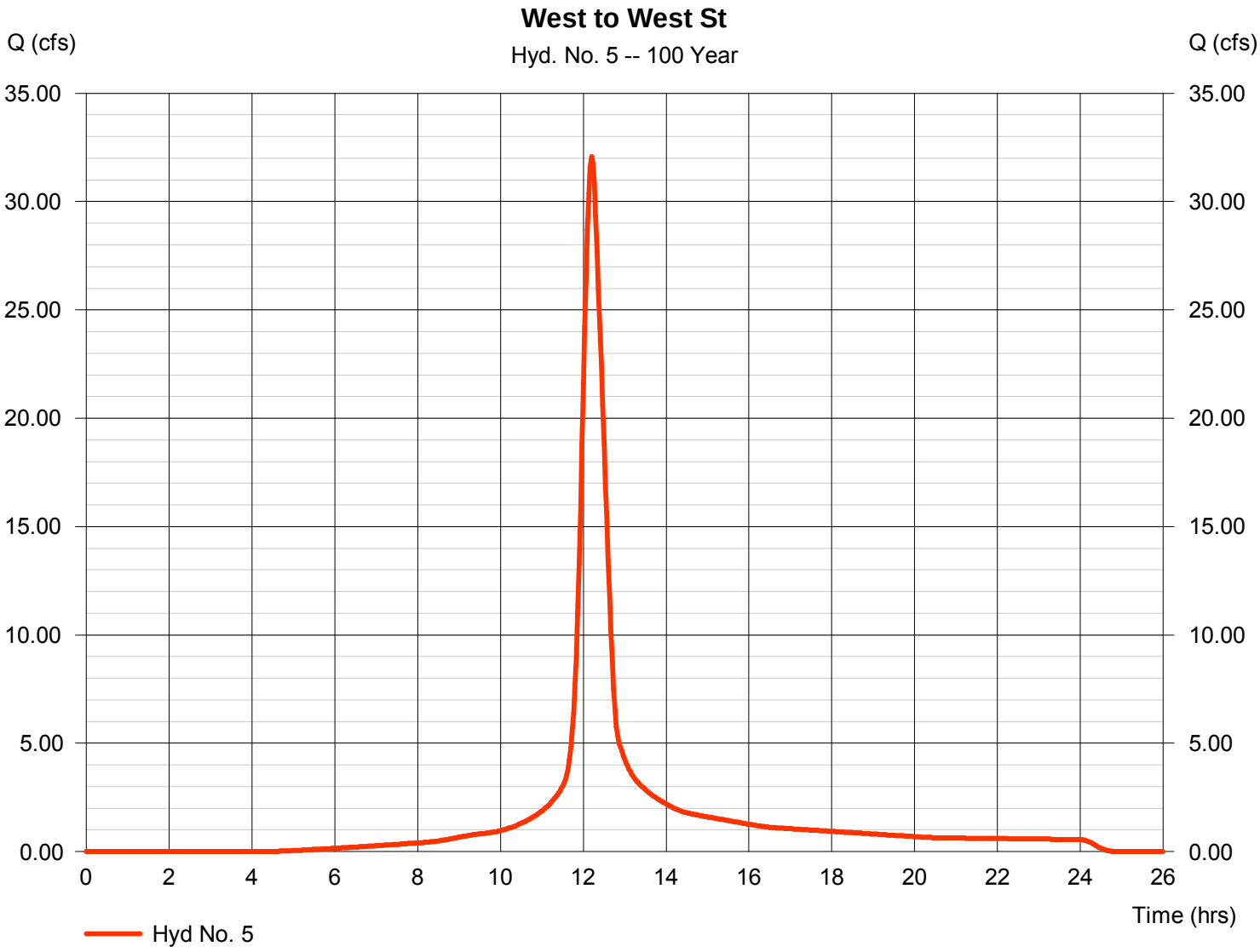


Hydrograph Report

Hyd. No. 5

West to West St

Hydrograph type	= SCS Runoff	Peak discharge	= 32.08 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.20 hrs
Time interval	= 2 min	Hyd. volume	= 141,032 cuft
Drainage area	= 6.500 ac	Curve number	= 84
Basin Slope	= 0.6 %	Hydraulic length	= 850 ft
Tc method	= LAG	Time of conc. (Tc)	= 31.68 min
Total precip.	= 7.80 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydraflow Rainfall Report

Return Period (Yrs)	Intensity-Duration-Frequency Equation Coefficients (FHA)			
	B	D	E	(N/A)
1	27.8967	9.8000	0.7047	--------
2	76.3137	14.3000	0.8844	--------
3	1.2000	0.1000	0.0000	--------
5	52.6224	11.2000	0.7497	--------
10	55.1841	11.1000	0.7229	--------
25	60.7012	11.1000	0.7068	--------
50	66.9222	11.3000	0.7004	--------
100	62.2794	10.1000	0.6624	--------

File name: wich_IDF.IDF

Intensity = B / (Tc + D)^E

Return Period (Yrs)	Intensity Values (in/hr)											
	5 min	10	15	20	25	30	35	40	45	50	55	60
1	4.18	3.40	2.90	2.55	2.29	2.08	1.91	1.78	1.66	1.56	1.48	1.40
2	5.57	4.54	3.85	3.35	2.97	2.67	2.43	2.23	2.06	1.92	1.80	1.69
3	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20
5	6.52	5.33	4.55	3.99	3.57	3.24	2.97	2.75	2.57	2.41	2.27	2.15
10	7.40	6.09	5.22	4.60	4.13	3.76	3.46	3.21	3.00	2.82	2.67	2.53
25	8.51	7.03	6.05	5.35	4.81	4.39	4.05	3.76	3.52	3.32	3.14	2.98
50	9.47	7.86	6.78	6.00	5.41	4.94	4.56	4.24	3.98	3.75	3.55	3.37
100	10.31	8.53	7.37	6.53	5.90	5.40	5.00	4.66	4.37	4.13	3.92	3.73

Tc = time in minutes. Values may exceed 60.

Precip. file name: wich_24hr.pcp

Storm Distribution	Rainfall Precipitation Table (in)							
	1-yr	2-yr	3-yr	5-yr	10-yr	25-yr	50-yr	100-yr
SCS 24-hour	2.80	3.50	1.20	4.50	5.20	6.10	6.90	7.80
SCS 6-Hr	0.00	1.80	0.00	0.00	2.60	0.00	0.00	4.00
Huff-1st	0.00	1.55	0.00	2.75	4.00	5.38	6.50	8.00
Huff-2nd	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-3rd	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-4th	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-Indy	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Custom	0.00	1.75	0.00	2.80	3.90	5.25	6.00	7.10

Hydraflow Table of Contents

Drainage Plan

1:100 Scale