

FUNSTON ADDITION

DRAINAGE REPORT



POE & ASSOCIATES, INC.
CONSULTING ENGINEERS
5940 E. Central, Suite 200 ■ Wichita, KS 67208-4242
Phone 316/685-4114 ■ FAX 316/685-4444

OCTOBER 2009
REVISED JANUARY 2010



Public Works, Engineering Division Final Drainage Plan Submittal Checklist

Reviewer: <u>Timothy R. Austin, P.E.</u>	Date: <u>29 January 2010</u>
Subdivision Name: <u>Funston Addition</u>	Location: <u>NE 1/4, Section 21-T28S-R1E</u>
Total Land Area Of Ownership: <u>8.5</u> Acres	
Type: <input checked="" type="checkbox"/> Residential <input checked="" type="checkbox"/> Commercial <input type="checkbox"/> Industrial <input type="checkbox"/> Recreation <input type="checkbox"/> Municipal <input type="checkbox"/> Other	
Applicant: <u>Southfork Investments, LLC</u>	Contact: <u>Jay S. Maxwell, Member</u> Phone #: <u>(316) 219-8551</u>
Engineer: <u>Poe & Associates, Inc.</u>	Contact: <u>Jason P. Dickman, P.E.</u> Phone #: <u>(316) 685-4114</u>

Please check the appropriate box:

I = Included; NA = Non-Applicable; R= Required prior to development
(If "NA" is checked, an explanation must be entered)

Tab 1. Project Narrative	Applicant			Engr	
	I	NA	Explanation / Location in Plan	I	NA
A. Site Location Map, using USGS Map	✓			✓	
B. Discussion of development, existing conditions, and proposed impacts on stormwater, wetland, riparian, and flood plain	✓			✓	
C. Discussion of offsite conditions	✓			✓	
D. Summary of runoff calculations (pre/post development) No increase in peak discharge for all storm series	✓			✓	
E. Narrative description of the type and function of the permanent best management practices that are incorporated into the site design	✓			✓	
F. Copy of the plat	✓			✓	
G. Preliminary grading plan (The final grading plan shall be sealed, signed and dated prior to Engineering receiving the final sanitary sewer plans. One plan sheet and PDF shall be submitted to the Subdivision Engineer.)	✓			✓	
H. Professional Engineer seal, signature and date on cover of report	✓			✓	
I. CD of drainage plan in PDF format (one file) and one paper copy bound with this checklist included behind the cover	✓			✓	

Tab 2. Existing Conditions Runoff Calculations	Applicant			Engr	
	I	NA	Explanation / Location in Plan	I	NA
A. Copy of applicable orthophoto showing proposed project boundaries (preferable in color)	✓			✓	
B. Runoff Method (Rational, Hydrograph Method, or other approved methods by Engineering)	✓			✓	
C. Existing topography (no greater than 2-foot contours, 1-foot recommend)	✓			✓	
D. Total Site Area and Total Impervious Area (acres)	✓			✓	
E. Benchmarks used for site control	✓			✓	
F. Streams, creeks, and waterway labeled	✓			✓	
G. Predominant soils from USDA soil surveys, and/or on site soil borings	✓			✓	
H. Location and boundaries of natural features such as wetlands, lakes, and ponds with the normal water elevation noted	✓			✓	
I. Location of existing roads, buildings, parking lots and other impervious areas.	✓			✓	



J. Location of existing utilities (e.g., water, sewer, gas, electric) and easements	✓			✓	
K. Location of existing conveyance systems such as storm drains, inlets, catch basins, channels, swales, and areas of overland flow	✓			✓	
L. Flow paths	✓			✓	
M. Location and dimensions of existing channels, bridges or culvert crossings	✓			✓	
N. Existing conditions hydrologic analysis for runoff rates, volumes and velocities showing methodologies used and supporting calculations (2, 5, 10, 25 & 100 year, 24-hour storm events) or Critical Duration	✓			✓	
O. Assumed pre-developed runoff curve numbers	✓			✓	
P. Existing time of concentrations used in calculations	✓			✓	
Q. Evaluate immediate downstream drainage capacity, not to exceed more than 0.25 miles downstream of site	✓			✓	
R. Existing structural elevations (e.g., invert of pipes, manholes, etc.)	✓			✓	
S. Cross-section data for open channels	✓			✓	
T. Ground water elevations, if applicable	✓			✓	

Tab 3. Post-Development Hydrologic Analysis	Applicant			Engr	
	I	NA	Explanation / Location in Plan	I	NA
A. Proposed (post-development) conditions hydrologic and hydraulic analysis for runoff rates, volumes, HGL, and velocities showing the methodologies used and supporting calculations for all applicable design storms (2, 5, 10, 25 & 100 year, 24-hour storm events)	✓			✓	
B. Proposed time of concentrations used in calculations	✓			✓	
C. Assumed post-developed runoff curve numbers	✓			✓	
D. Proposed contours for detention facilities (to equal area used in outlet rating curves)		✓			✓
E. Preliminary sizing calculations for stormwater controls including contributing drainage area, storage, and outlet configuration	✓			✓	
F. Stage-storage-discharge or outlet rating curves and inflow and outflow hydrographs for storage facilities	✓			✓	
G. Final analysis of potential upstream/downstream impact/effects of project, where necessary	✓			✓	
H. Existing and proposed structural elevations (e.g., invert of pipes, manholes, etc.)	✓			✓	
I. Design water surface elevations and normal pool elevation for ponds.		✓			✓
J. Typical detail for outlet structures, embankments, spillways, grade control structures, conveyance channels, etc. To include height, width, elevation, and/or diameter.	✓			✓	
K. Proposed limits of clearing and grading	✓			✓	
L. Location of existing and proposed roads, buildings, parking lots and other impervious areas.	✓			✓	
M. Location of existing and proposed utilities (e.g., water, sewer) and easements	✓			✓	
N. Location of existing and proposed conveyance systems such as storm drains, inlets, catch basins, channels, swales, and areas of overland flow	✓			✓	
O. Preliminary location and dimensions of proposed channel modifications, such as bridge or culvert crossings		✓			✓



P. Preliminary selection and location of stormwater controls	✓			✓	
Q. Emergency overflow structure's flow path	✓			✓	
R. Detention facility provides one-foot of freeboard above the HWL and emergency outfall shown (top of berm elevation shown)		✓			✓
S. The 100-year 24-hour HWL delineated on the plan for detention pond		✓			✓
T. Lowest opening elevations table on the plat for structures located adjacent to channels or ponds		✓			✓
U. Stormwater Management Facilities located within a Reserve		✓			✓
V. Maintenance responsibility of stormwater management facility shall be specified in the platters text. (e.g. HOA, Lot Owners Association, or lot)	✓			✓	
W. Off-site drainage easements or agreements required, where necessary		✓			✓

Tab 4. Floodplain Submittal	Applicant			Engr	
	I	NA	Explanation / Location in Plan	I	NA
A. Provide source of flood profile		✓	No changes to floodplain or floodway limits		✓
B. Nearest base flood elevations		✓	No changes to floodplain or floodway limits		✓
C. Delineation of pre-developed regulatory floodplain/floodway limits		✓	No changes to floodplain or floodway limits		✓
D. Delineation of post-developed regulatory floodplain and floodway limits		✓	No changes to floodplain or floodway limits		✓
E. Floodplain boundary determination per elevation (project limits shown)		✓	No changes to floodplain or floodway limits		✓
F. Provide source of floodway data table and discharges		✓	No changes to floodplain or floodway limits		✓
G. Provide all hydrologic and hydraulic study information for site-specific floodplain studies, unnumbered Zone A area elevation determinations and flood plain map revisions or required permits		✓	No changes to floodplain or floodway limits		✓
H. Provide regulatory floodway and four natural profile models (10,50,100, and 500-yr) for existing and future watershed conditions		✓	No changes to floodplain or floodway limits		✓
I. Location of floodplain/floodway limits and relationship of site to upstream/downstream properties (floodplain limits to be per elevation and scaled location)		✓	No changes to floodplain or floodway limits		✓
J. Flood plains and floodways located within a Reserve, where necessary		✓			✓

Tab 5. Federal, State and Local Permits (to be provided prior to construction unless otherwise specified)	Applicant			Engr	
	I/R	NA	Explanation / Location in Plan	I/R	NA
A. US Army Corps of Engineers - Regulatory program permits (404 water quality certification)		✓	Not Required		✓
B. Kansas Department of Agriculture - Division of Water Resources Permits (Stream Obstruction, Channel Change, Flood Plain Fill, Levee, Water Appropriations, Dam safety permit, etc.)		✓	Not Required		✓
C. Federal Emergency Management Agency (FEMA) Letter of Map Changes (LOMA, LOMR, LOMR-f, CLOMR, etc.) Shall be included and approved when project modifies the limits of the floodway.		✓	Not Required		✓
D. Kansas Department of Transportation		✓	Not Required		✓
E. Sedgwick County Right-of-way Permit		✓	Not Required		✓

Tab 1. Project Narrative

A. Site location map, using USGS Map

Funston Addition is an approximate 8.25-acre tract of land located in the Northeast Quarter of Section 21-T28S-R1E in the City Wichita, Sedgwick County, Kansas. The area includes un-platted tracts inside the City of Wichita. The site is bounded on the north by 47th Street South, on the east by Hydraulic Street, on the south by the Kansas Turnpike, and on the west by I-135. See Exhibit 1-1 for USGS Map, 1-2 for Aerial Photo of this area, and 1-3 for an Alta Survey of the property.

B. Discussion of development, existing conditions, and proposed impacts

The property is currently zoned to allow Single Family (SF-5) types of use (refer to Exhibit 1-4 for Zoning information). It is anticipated that this site will be developed as a General Commercial (GC) subdivision, which would be a mix of both commercial and residential areas. A Community Unit Plan (CUP 2008-40, DP-315, Exhibit 1-7) is also proposed for this site. Typically, assumptions for design flows in a commercial area include up to 85% impervious area and a residential area would include impervious areas of up to 65%. Detention ponds in this area are not proposed and do not currently exist.

Presently, Tracts 1, 2, & 3 were the sites for an elementary school that was recently cleared. Single-family homes occupied each of the remaining Tracts 4, 5, & 6. The entire area shall be vacant prior to any future development. As shown in the Drainage Plan (Exhibit 1-5), the site drainage is split into three areas. Run-off from each area takes overland routes to adjacent streets to the north, east, and west. Each of these streets contains underground storm sewer systems that all ultimately drain into the Arkansas River. According to the NRCS Soil Survey, the predominant soil type is a Canadian Fine Sandy Loam series material. See Exhibit 1-6 for NRCS Soil Survey map and information showing existing soil types and descriptions.

The site is not within a FEMA Floodway (refer to Exhibit 1-7 for proposed CUP and Exhibit 1-8 for FIRM Panel 0505E, Wichita, Sedgwick County, Kansas, February 2, 2007). No impact on storm water shall be addressed in the summary of runoff calculations text. The site does not contain wetland or riparian areas, and thus the development has no impact in that regard.

C. Discussion of off-site conditions

Multi-family and single-family areas are located around a majority of this site. Commercial and office warehouse uses lie to the northwest and south. To the south and west lie limited industrial uses. The original, modern land use for the site was a mixture of commercial, residential, and agricultural uses.

Total developed on-site drainage area equals 8.25 acres. The site is at the upper limit of three drainage basins and examination of those basins is outside the scope of this report. Land use

within the drainage basins varies from open space, limited/general industrial and commercial, and residential in character. The natural grades convey storm water away from the subject property. Storm water is presently conveyed off-site through the previously discussed storm water sewer systems (See Exhibit 1-5).

D. Summary of runoff calculations

North Site Existing Conditions (24-Hour Storm)						North Site Proposed Conditions (24-Hour Storm)				
CN= 92.0		Area(Ac)= 1.135				CN= 92.0		Area(Ac)= 1.187		
2-Year	5-Year	10-Year	25-Year	100-Year	2-Year	5-Year	10-Year	25-Year	100-Year	
Flow (cfs)	3.79	4.99	5.89	7.09	8.86	3.96	5.22	6.16	7.41	9.27

East Site Existing Conditions (24-Hour Storm)					East Site Proposed Conditions (24-Hour Storm)					
CN= 88.0		Area(Ac)= 2.191			CN= 92.0		Area(Ac)= 1.742			
2-Year	5-Year	10-Year	25-Year	100-Year	2-Year	5-Year	10-Year	25-Year	100-Year	
Flow (cfs)	6.47	8.81	10.57	12.91	16.39	5.81	7.66	9.04	10.87	13.60

Southwest Site Existing Conditions (24-Hour Storm)					Southwest Site Proposed Conditions (24-Hour Storm)					
CN= 69.0		Area(Ac)= 4.920			CN= 85.0		Area(Ac)= 5.318			
2-Year	5-Year	10-Year	25-Year	100-Year	2-Year	5-Year	10-Year	25-Year	100-Year	
Flow (cfs)	4.88	8.32	11.13	15.11	21.44	14.11	19.73	23.99	29.69	38.21

Using the SCS Method, calculations were made to determine the existing flows from this site (the complete flow information shown on Exhibit 1-9 as the Return Period Recap attached herewith). Both the existing and proposed site drainage is split into three areas as shown on the attached Drainage Plan, Exhibit 1-5. Off-site drainage is not considered, and does not enter this study site. Each area is evaluated based on existing and proposed conditions.

On-site time of concentration is estimated to be 15 minutes for all separate drainage areas. The only exception is the southwest existing area in which T_c is estimated to be approximately 22 minutes based upon the TR-55 method. On-site detention is not recommended for this development. It is assumed that immediate downstream capacities are adequate to handle current flows leaving this site. The final design of on-site drainage systems shall comply with current City of Wichita design criteria.

E. Narrative description of permanent best management practices

The contractor shall provide stabilized construction entrance prior to any street paving. A buffer of 10 feet of undisturbed native vegetation shall be maintained around perimeter of site where possible. Earthwork stockpiles shall be maintained away from any ponds. Fuel storage and refueling of equipment shall not be allowed around any ponds, drainage channels, or other waterways. Sediment barriers will be placed at storm sewer inlets and rock rip-rap at outlets. Sediment barriers (type determined by owner or contractor) shall be used to prevent sediment from flowing off site. Disturbed earth shall be stabilized where construction activity ceases for at least 21 days with owner's choice of mulch, temporary seed (Rye grass) during the planting season or other suitable BMP device. BMP devices shall be in place until there is a good stand of grass. Disturbed portions of the site where construction activities permanently cease shall be stabilized with permanent seed no later than 21 days after the last construction activity in that area (during the planting season only).

The permanent seed shall consist of fescue or grass chosen by the owner. BMP devices shall be used at back of curb/edge of pavement until vegetation is 75% established.

F. Copy of plat

A copy of the proposed CUP is attached as Exhibit 1-7.

G. Preliminary grading plan

Grading Plans currently not established. The Drainage Plan is found on Exhibit 1-5.

H. Professional Engineer Seal

A signed and dated Professional Engineer's seal is located on the cover of this report.

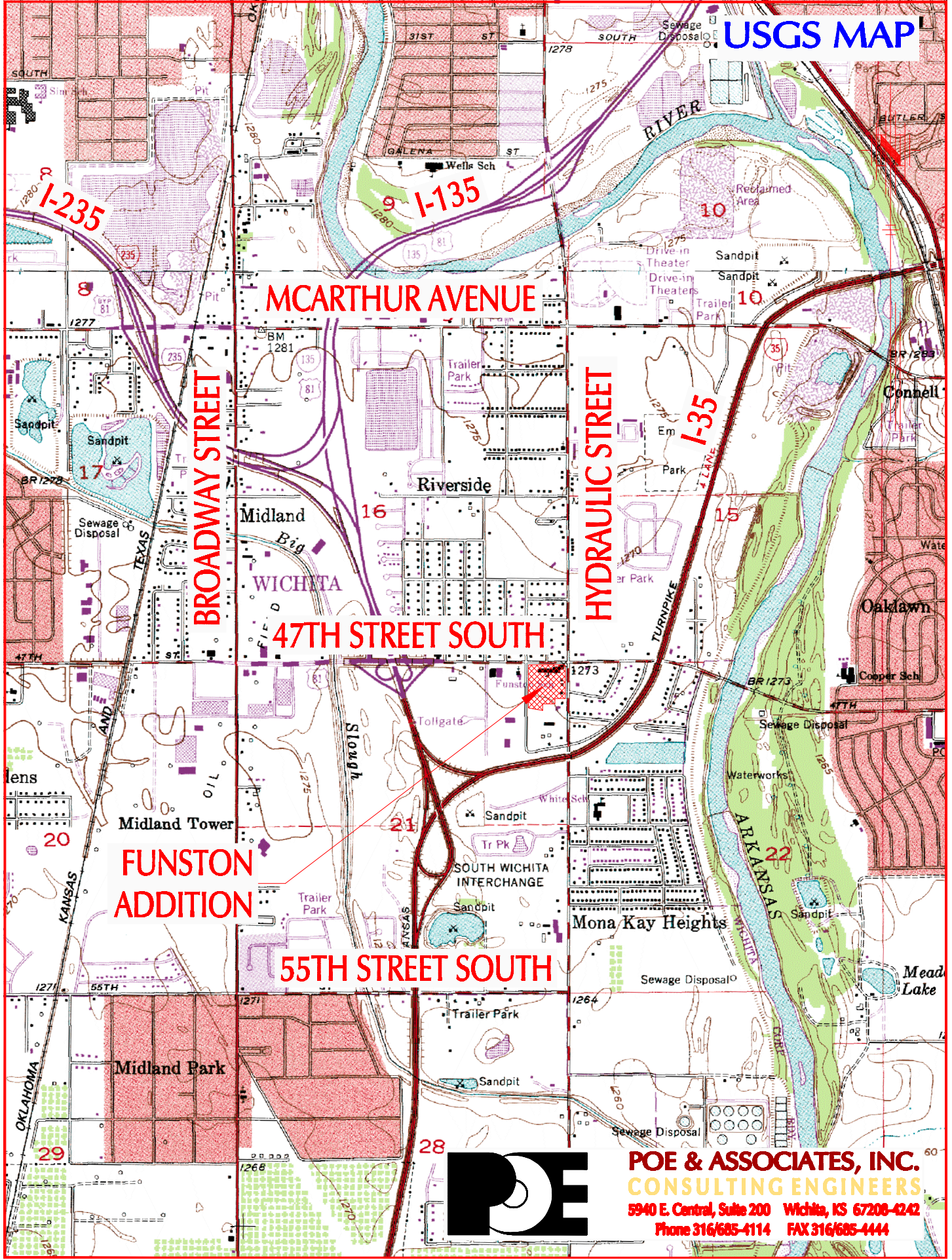
I. CD of drainage plan

A CD of this report in full is attached herewith.

FUNSTON ADDITION

EXHIBIT 1-1

USGS MAP



I-235

I-135

MCARTHUR AVENUE

BROADWAY STREET

HYDRAULIC STREET

I-35

47TH STREET SOUTH

FUNSTON ADDITION

55TH STREET SOUTH



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FUNSTON ADDITION

EXHIBIT 1-2

AERIAL MAP

I-235

I-135

MCARTHUR AVENUE

BROADWAY STREET

HYDRAULIC STREET

I-35

47TH STREET SOUTH

**FUNSTON
ADDITION**

55TH STREET SOUTH



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FUNSTON ADDITION

EXHIBIT 1-3

ALTA/ACSM LAND TITLE SURVEY

SW. Corner Hydraulic & 47th Street S. Wichita, Kansas

TO ALL PARTIES INTERESTED IN TITLE TO THE PREMISES SURVEYED:

Southfork Investment, L.L.C., a Kansas limited liability company
First American Title Insurance Company of Kansas

LEGAL DESCRIPTION:

Parcel 1 The East 206.25 feet of the North 244.25 feet of the Northeast Quarter of Section 21, Township 28 South, Range 1 East of the 6th P.M. Sedgwick County, Kansas, Except the East 40 feet thereof for road, Except beginning 40 feet South and 40 feet West of the Northeast corner of section 21, Township 28 South, Range 1 East of the 6th P.M. Sedgwick County, Kansas; thence West 40 feet, South of and parallel to the North line of said Section 21, a distance of 20.00 feet; thence Southeast a distance of 28.33 feet to a point 40.00 feet West of the East line of said section 21 and 20.00 feet South of the point of beginning; thence North 40.00 feet, West of and parallel to the East line of said Section 21, a distance of 20.00 feet to the point of beginning, subject to road rights-of-way of recorded on the North and East.

Parcel 2 The West 198 feet of the East 404.25 feet of the North 660 feet of the Northeast Quarter of Section 21, Township 28-S, Range 1 East of the 6th P.M. Sedgwick County, Kansas, subject to road rights-of-way of recorded on the North.

Parcel 3 The West 255 feet of the East 659.25 feet of the following described tract: Beginning at the Northeast corner of the Northeast Quarter of the Northeast Quarter of Section 21, Township 28-S, Range 1 East of the 6th P.M. Sedgwick County, Kansas; thence West to Northwest corner of said Northeast Quarter of the Northeast Quarter; thence South 641 feet; thence Southeast to a point on the East line of the said Northeast Quarter, 861 feet South of the Northeast corner of said Northeast Quarter; thence North 861 feet to beginning, Except therefrom the Southernly 30 feet thereof, and Except therefrom the Westerly 30 feet thereof, subject to road rights-of-way of recorded on the North.

Parcel 4 The North 80 feet of the East 206.25 feet of the South 415.75 feet of the North 660 feet of the East Half of the Northeast Quarter of Section 21, Township 28-S, Range 1 East of the 6th P.M. Sedgwick County, Kansas, subject to road rights-of-way of recorded on the East.

Parcel 5 The South 99.75 feet of the North 179.75 feet of the East 206.25 feet of the South 415.75 feet of the North 660 feet of the East Half of the Northeast Quarter of Section 21, Township 28-S, Range 1 East of the 6th P.M. Sedgwick County, Kansas, subject to road rights-of-way of recorded on the East.

Parcel 6 The North 150 feet of the South 236 feet of the East 206.25 feet of the North 660 feet of the Northeast Quarter of Section 21, Township 28-S, Range 1 East of the 6th P.M. Sedgwick County, Kansas, Except the East 40 feet thereof for road, subject to road rights-of-way of recorded on the East.

There are no encroachments on said parcel by buildings on the adjacent parcels.

The accompanying sketch is a true and correct exhibit of said survey.

State of Kansas)
Sedgwick County) SS

This is to certify that this map or plat and the survey on which it is based were made in accordance with the "Minimum Standards Detail Requirements for ALTA/ACSM Land Title Surveys," jointly established and adopted by ALTA and NSPS in 2005, and includes Items 1, 2, 3, 4, 5, 6, 7a, 7b, 7c, 7d, 8, 9, 10, 11b, 13, 14, and 17 of Table A thereof. Pursuant to the Accuracy Standards as adopted by ALTA and NSPS and in effect on the date of this certification, undersigned further certifies that in my professional opinion, as a land surveyor registered in the State of Kansas, the Relative Positional Accuracy of this survey does not exceed that which is specified therein.

Date: _____
Lenny D. Wood

NOTES:

- RECORD INFORMATION:** Title Commitment # 922628, #939145, #950322, #1012699, provided by First American Title.
- BLANKET EASEMENT:** Easement for pipeline right-of-way NE_{1/4} of the NE_{1/4} Section 21, Twp. 28 S. R-1-E per Book Misc. 165, Page 419.
- AREA:** (NET to R/W); 370,356.30 sq.ft. ± 8.50 Acres ±
- FLOOD ZONE DESIGNATION:** According to the National Flood Insurance Rate Map Community Panel No. 20173C0505E, effective February 2, 2007; the property shown hereon is located in Zone X (Unshaded).
- SF-5 ZONING:** (1) Minimum lot size: 5,000 square feet
(2) Minimum lot width: 50 feet
(3) Minimum front setback: 25 feet
(4) Minimum rear setback: 20 feet, except that the rear setback may be reduced to five feet when adjacent to a platted reserve which has a minimum width of 20 feet, provided however, there shall be no encroachment into or over any utility easement
(5) Minimum interior side setback: six feet, except five feet if lot is below 6,000 square feet, and that one required side yard for a one-family dwelling may be reduced to as little as zero feet if setback lines are established that ensure a minimum of ten feet between structures on contiguous lots
(6) Minimum street side setback: 15 feet
(7) Maximum height: 35 feet
- STREET RIGHT-OF-WAY:** Right-of-way subject to requirements of Platting process.

NOTE:

Location of all utilities shown on this drawing, reflect the best information available, consisting of both field observation and information from the records of the various utility companies. Before completing any final design or beginning any excavation on this site, contact the appropriate utility companies for verification of the utility locations.

Kansas One-Call

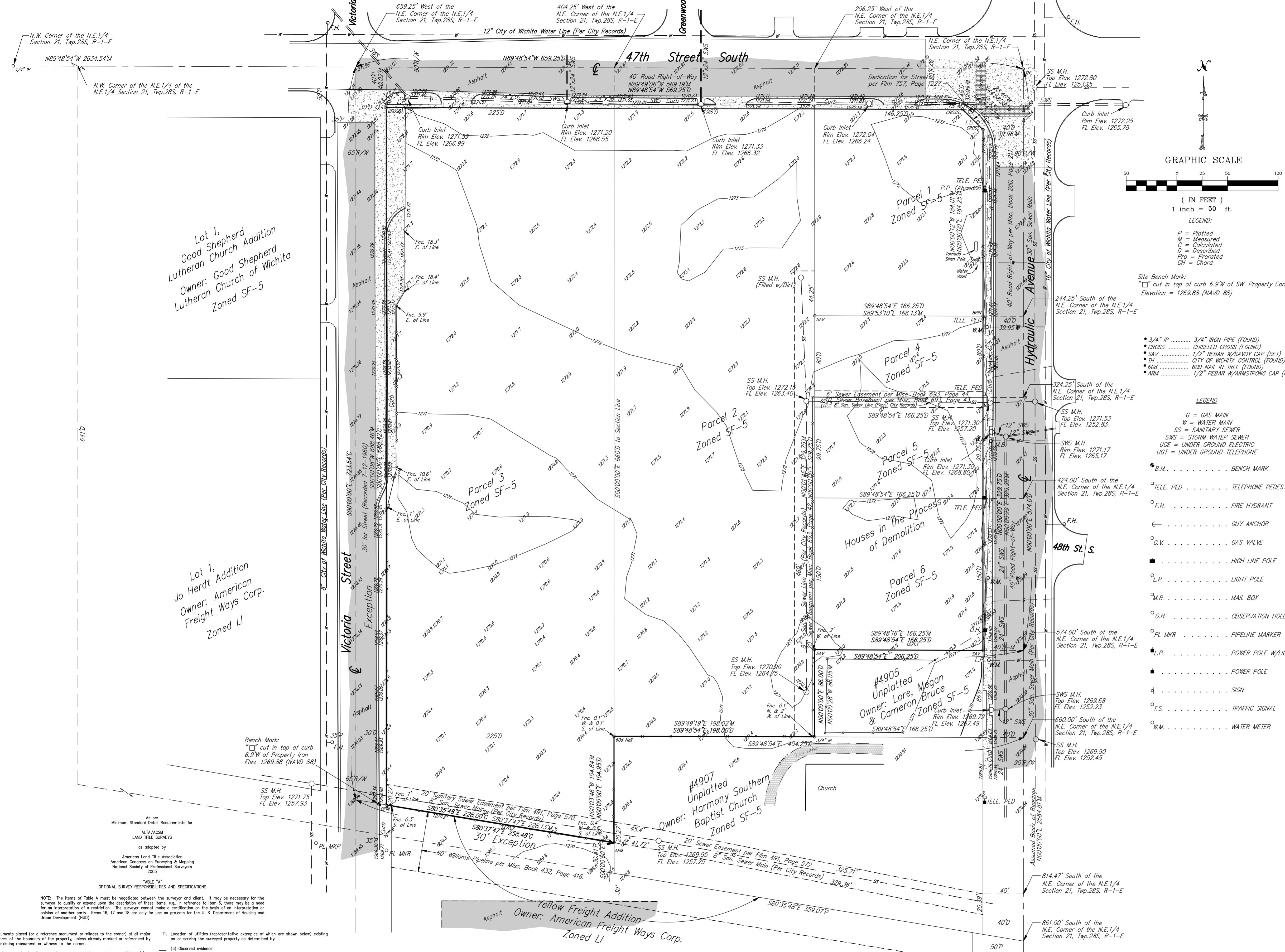
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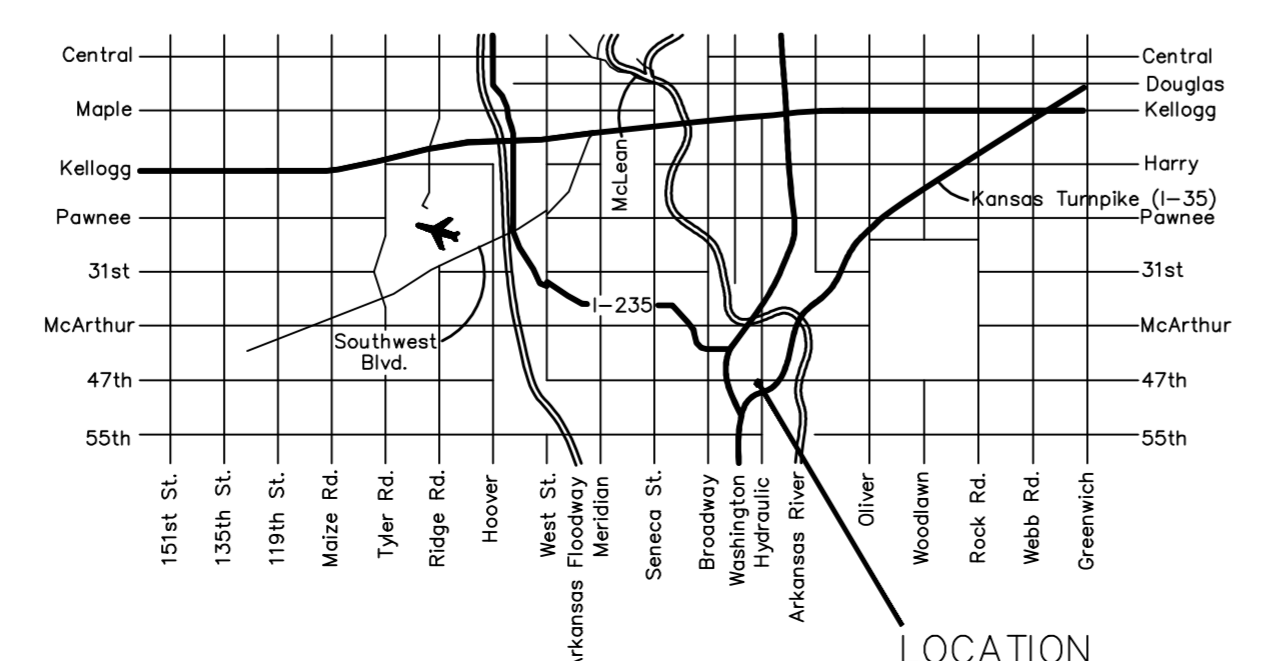
Savoy Company, P.A.
Land Surveyors

316 948-8888
316 948-8888

September, 3 2008



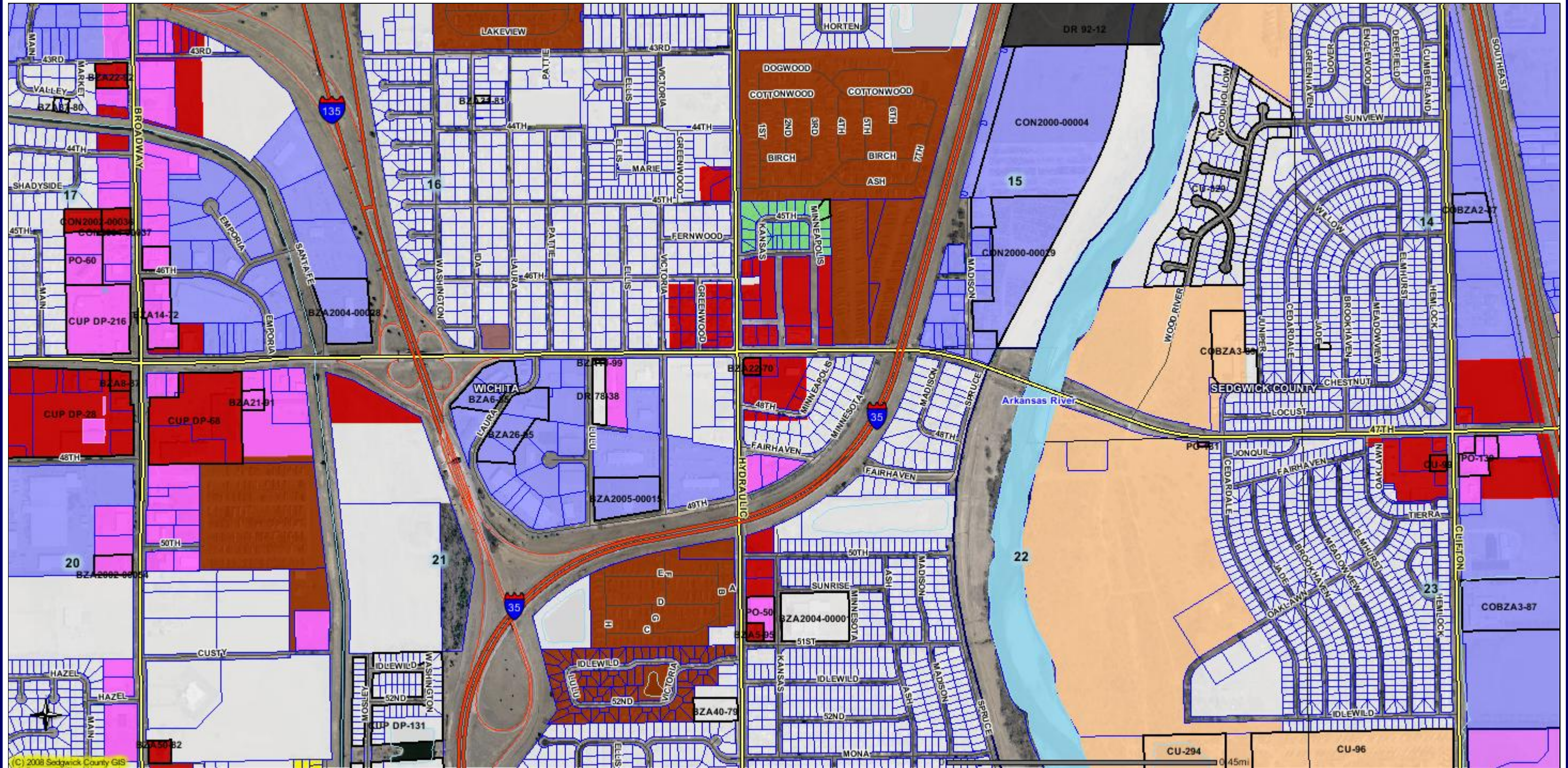
- NOTE: The items of Table A must be negotiated between the surveyor and client. It may be necessary for the surveyor to qualify or expand upon the description of these items, e.g. in reference to item 6, there may be a need for an interpretation of a restriction. The surveyor cannot make a certification on the basis of an interpretation or opinion of another party. Items 16, 17 and 18 are only for use on projects for the U. S. Department of Housing and Urban Development (HUD).
- Monuments placed (or a reference monument or witness to the corner) at all major corners of the boundary of the property, unless already marked or referenced by an existing monument or witness to the corner.
 - Vicinity map showing the property surveyed in reference to nearby highway(s) or major street intersection(s).
 - Flood zone designation (with proper annotation based on Federal Flood Insurance Rate Maps or the state or local equivalent, by scaled map plotting and graphic plotting only).
 - Gross land area (and other areas if specified by the client).
 - Contours and the datum of the elevations.
 - List setback, height, and floor space area restrictions disclosed by applicable zoning or building codes (beyond those required under paragraph 5d of these standards), if none, so state. The source of such information must be disclosed. See "Note" above.
 - (a) Exterior dimensions of all buildings at ground level
(b) Square footage of:
(1) exterior footprint of all buildings at ground level
(2) gross floor area of all buildings; or
(3) other areas to be defined by the client.
 - (a) Measured height of all buildings above grade at a defined location. If no defined location is provided, the point of measurement shall be shown.
 - Substantial, visible improvements (in addition to buildings) such as billboards, signs, parking structures, swimming pools, etc.
 - Parking areas and, if striped, the striping and the type (e.g. handicapped, motorcycle, regular, etc.) and number of parking spaces.
 - Indication of access to public way on land such as curb cuts, driveways, and to and from waters adjoining the surveyed tract, such as boat slips, launches, piers and docks.
 - Location of utilities (representative examples of which are shown below) existing on or serving the surveyed property as determined by:
(a) Observed evidence
(b) Observed evidence together with evidence from plans obtained from utility companies or provided by client, and markings by utility companies, and other appropriate sources (with reference as to the source of information)
 - railroad tracks and sidings;
 - manholes, catch basins, valve vaults or other surface indication of subterranean uses;
 - wires and cables (including their function, if readily identifiable) crossing the surveyed premises, at poles or within ten feet of the surveyed premises; and the dimensions of all encumbrances or overheads affecting the surveyed premises; and
 - utility company installations on the surveyed premises.
 - Governmental Agency survey-related requirements as specified by the client.
 - Names of adjoining owners of platted lands.
 - The distance to the nearest intersecting street as designated by the client.
 - Rectified orthorectification, photogrammetric mapping, laser scanning and other similar products, tools or technologies may be utilized as the basis for the location of certain features (including boundaries) where ground measurements are not otherwise necessary to locate those features to an appropriate and acceptable accuracy relative to the nearby boundary. The surveyor shall (a) disclose the ramifications of such methodologies (e.g. the potential accuracy and completeness of the data gathered thereby) with the title company, lender and client prior to the performance of the survey and, (b) place a note on the face of the survey explaining the source, date, relative accuracy and other relevant qualifications of any such data.
 - Observable evidence of earth moving work, building construction or building additions within recent months.
 - Any changes in street right of way lines either completed or proposed, and available from the controlling jurisdiction. Observable evidence of recent street or sidewalk construction or repairs.
 - Observable evidence of site use as a solid waste dump, pump or sanitary landfill.



PROJECT NO. 08HH09875 S

FUNSTON ADDITION

EXHIBIT 1-4



(C) 2008 Sedgwick County GIS



Sedgwick County
 Geographic Information Services
 Division of Information & Operations
www.sedgwickcounty.org/gis
 525 N. Main, Suite 212, Wichita, KS 67203
 Tel: 316.660.9290 Fax: 316.262.1174

DISCLAIMER: It is understood that, while Sedgwick County Geographic Information Services (SCGIS), City of Wichita GIS, (for purposes of the road centerline file), participating agencies, and information suppliers, have no indication or reason to believe that there are inaccuracies in information provided, SCGIS, its suppliers make no representations of any kind, including, but not limited to, warranties of merchantability or fitness for a particular use, nor are any such warranties to be implied with respect to the information, data or service furnished herein. In no event shall the Data Providers become liable to users of these data, or any other party, for any loss or damages, consequential or otherwise, including but not limited to time, money, or goodwill, arising from the use, operation or modification of the data. In using these data, users further agree to indemnify, defend, and hold harmless the Data Providers for any and all liability of any nature arising out of or resulting from the lack of accuracy or correctness of the data, or the use of the data. No person shall sell, give or receive for the purpose of selling or offering for sale, any portion of the information provided herein.

Historic Site Buffers

-  1000' National Historic Site Buffers
-  500' Local Historic Site Buffers
-  Historic Districts
-  Nationally Registered Historic Sites
-  Locally Registered Historic Sites
-  Special Use Cases

Zoning Districts

-  Rural Residential
-  Single Family 20,000
-  Single Family 10,000
-  Single Family 5,000
-  Two-Family
-  Multi-Family 18 d.u./ac
-  Multi-Family 29 d.u./ac
-  Multi-Family 75 d.u./ac
-  Manufactured Housing
-  Neighborhood Office
-  General Office
-  Neighborhood Retail
-  Limited Commercial
-  Office Warehouse
-  General Commercial
-  Industrial Park
-  Industrial Park - Airport
-  Central Business District
-  Limited Industrial
-  General Industrial
-  University
-  Planned Unit Development
-  Air Force Base
-  Unknown
-  Not Zoned

FUNSTON ADDITION

EXHIBIT 1-5

LEGAL DESCRIPTION

Tract 1 The East 206.25 feet of the North 244.25 feet of the Northeast Quarter of Section 21, Township 28 South, Range 1 East of the 6th P.M. Sedgwick County, Kansas, Except the East 40 feet thereof for road, Except beginning 40 feet South and 40 feet West of the Northeast corner of section 21, Township 28 South, Range 1 East of the 6th P.M. Sedgwick County, Kansas; thence West 40 feet, South of and parallel to the North line of said Section 21, a distance of 20.00 feet; thence Southeast a distance of 28.33 feet to a point 40.00 feet West of the East line of said section 21 and 20.00 feet South of the point of beginning; thence North 40.00 feet, West of and parallel to the East line of said Section 21, a distance of 20.00 feet to the point of beginning, subject to road rights-of-way of recorded on the North and East.

Tract 2 The West 198 feet of the East 404.25 feet of the North 660 feet of the Northeast Quarter of Section 21, Township 28-S, Range 1 East of the 6th P.M. Sedgwick County, Kansas, subject to road rights-of-way of recorded on the North.

Tract 3 The West 255 feet of the East 659.25 feet of the following described tract: Beginning at the Northeast corner of the Northeast Quarter of the Northeast Quarter of Section 21, Township 28-S, Range 1 East of the 6th P.M. Sedgwick County, Kansas; thence West to Northwest corner of said Northeast Quarter of the Northeast Quarter; thence South 641 feet; thence Southeast to a point on the East line of the said Northeast Quarter, 861 feet South of the Northeast corner of said Northeast Quarter; thence North 861 feet to beginning, Except therefrom the Southerly 30 feet thereof, and Except therefrom the Westerly 30 feet thereof, subject to road rights-of-way of recorded on the North.

Tract 4 The North 80 feet of the East 206.25 feet of the South 415.75 feet of the North 660 feet of the East Half of the Northeast Quarter of Section 21, Township 28-S, Range 1 East of the 6th P.M. Sedgwick County, Kansas, subject to road rights-of-way of recorded on the East.

Tract 5 The South 99.75 feet of the North 179.75 feet of the East 206.25 feet of the South 415.75 feet of the North 660 feet of the East Half of the Northeast Quarter of Section 21, Township 28-S, Range 1 East of the 6th P.M. Sedgwick County, Kansas, subject to road rights-of-way of recorded on the East.

Tract 6 The North 150 feet of the South 236 feet of the East 206.25 feet of the North 660 feet of the Northeast Quarter of Section 21, Township 28-S, Range 1 East of the 6th P.M. Sedgwick County, Kansas, Except the East 40 feet thereof for road, subject to road rights-of-way of recorded on the East.

NOTES

- Cross-drainage agreement shall be required at the time of platting.
- Storage required in the north and east sub-basins shall be accomplished in the parking lots. The southwest area storage shall be in a dry detention area and storm sewer pipes, unless otherwise designed. See Drainage Report for information.
- Detailed site grading and final drainage plans to be designed by a licensed professional engineer at the time of building permit.
- Minimum Pad Elevation North & East = 1275.0 (MSL)
Minimum Pad Elevation Southwest = 1274.5 (MSL)
- Storm sewer easements will be provided at the time of building permit only as needed to allow drainage to discharge across adjacent lots.
- Any revised drainage plan must be approved by storm water engineer prior to building permits being issued.
- Any storm water detention areas required may be revised when the final plans for the development are completed but the runoff amounts will be at or below the pre-development discharge rates. The filed final drainage report shall show discharge rates and stage/storage/discharge curves for any on-site detention areas.
- A guarantee to extend storm sewer to serve the southwest sub-basin shall be submitted at the time of platting.
- The detention pond as shown is proposed. The final pond location, configuration, and design will need to be resolved at the time of building permit.

CALCULATION NOTES

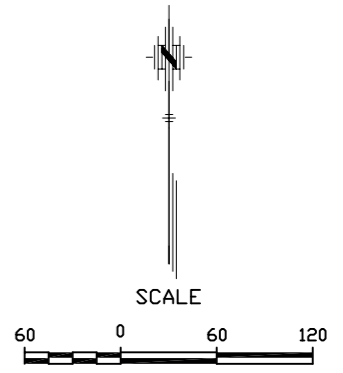
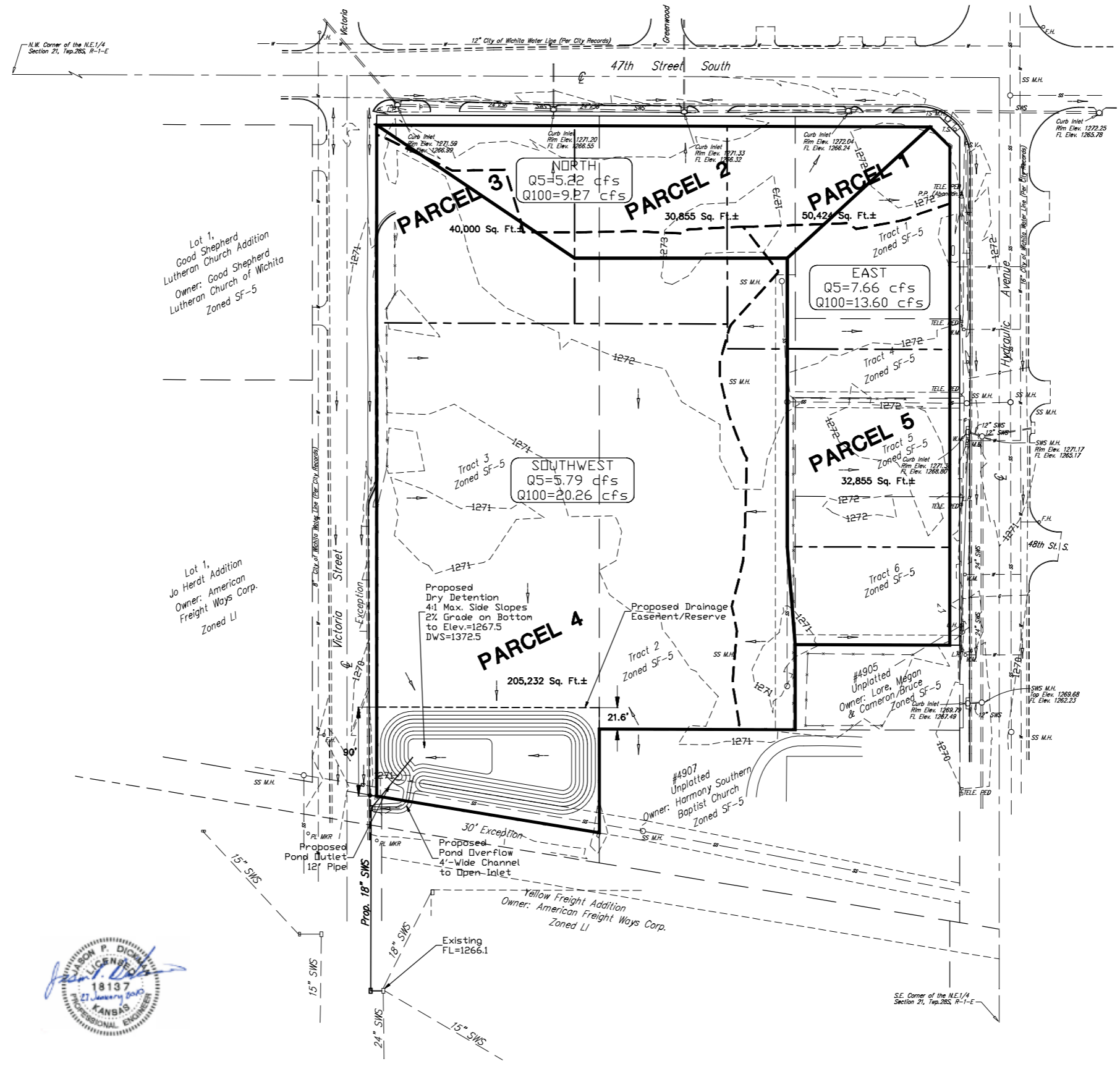
- Determination of Q's was made using the SCS method.
- Curve Numbers weighted based on hydrologic soil groups.

Existing Conditions (24-Hour Storm)							
Site	Area	CN	2-Year	5-Year	10-Year	25-Year	100-Year
North	1.135	92.0	3.79	4.99	5.89	7.09	8.86
East	2.191	88.0	6.47	8.81	10.57	12.91	16.39
SW	4.920	69.0	4.88	8.32	11.13	15.11	21.44

Developed Conditions (24-Hour Storm)							
Site	Area	CN	2-Year	5-Year	10-Year	25-Year	100-Year
North	1.250	92.0	3.96	5.22	6.16	7.41	9.27
East	1.678	92.0	5.81	7.66	9.04	10.87	13.60
SW	5.318	85.0	5.06	5.79	6.84	12.11	20.26

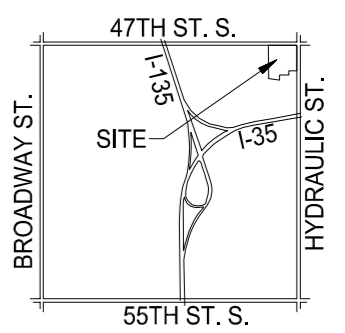
Stage-Storage-Discharge Table		
Stage (elev)	Storage (cuft)	Discharge (cfs)
1267.50	0.00	0
1268.00	0.30	0.947
1269.00	1.246	3.049
1270.00	6.173	4.528
1271.00	14.402	5.631
1272.00	24.720	11.26
1273.00	36.841	31.83
1274.00	50.543	60.73

DRAINAGE PLAN FOR FUNSTON ADDITION WICHITA, SEDGWICK COUNTY, KANSAS



LEGEND

- G = GAS MAIN
 - W = WATER MAIN
 - SS = SANITARY SEWER
 - SWS = STORM WATER SEWER
 - UGE = UNDER GROUND ELECTRIC
 - UGT = UNDER GROUND TELEPHONE
-
- - - - - EXIST. DRAINAGE AREA
 - PROP. DRAINAGE AREA
 - B.M. BENCH MARK
 - TELE. PED. TELEPHONE PEDESTAL
 - F.H. FIRE HYDRANT
 - GUY ANCHOR
 - G.V. GAS VALVE
 - H.L.P. HIGH LINE POLE
 - L.P. LIGHT POLE
 - M.B. MAIL BOX
 - O.H. OBSERVATION HOLE
 - PL MKR PIPELINE MARKER
 - L.P. POWER POLE W/LIGHT
 - P.P. POWER POLE
 - SIGN
 - T.S. TRAFFIC SIGNAL
 - W.M. WATER METER



LOCATION MAP
No Scale

BENCHMARK

BM #1 - Chiseled square in top of curb 6.9' W of SW. Property Corner
Elevation = 1269.88 (NAVD 88)

Survey completed by:
Savoy Company, 3 September 2008



Revision

Approved

By

Date

No.

FUNSTON ADDITION
DRAINAGE PLAN
CITY OF WICHITA, KANSAS
JAMES L. ARMOUR P.E. - CITY ENGINEER

POE & ASSOCIATES, INC.
CONSULTING ENGINEERS
5940 E. Central, Suite 200 • Wichita, KS 67208-0242
Phone 316/685-4114 • FAX 316/685-4444

FINAL

Designed By: J. Dickman
Drawn By: S. Schmidt
Drawing File: P:\858F-Funston-DA\DA_Funston_Elem.dwg
Date: 1/27/2010


Sheet
1 of 1

FUNSTON ADDITION

EXHIBIT 1-6

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


Public Land Survey

 Township and Range

 Section

Water Features

 Oceans

 Streams and Canals

Transportation

 Rails

Roads

 Interstate Highways

 US Routes

 State Highways



Local Roads



Other Roads

MAP INFORMATION

Original soil survey map sheets were prepared at publication scale. Viewing scale and printing scale, however, may vary from the original. Please rely on the bar scale on each map sheet for proper map measurements.

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

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 4, Dec 29, 2007

Date(s) aerial images were photographed: 3/20/1996

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				
Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
5550	Imano clay loam, occasionally flooded	B	9.3	0.3%
5672	Waldeck sandy loam, occasionally flooded	C	406.4	13.0%
5836	Urban land-Farnum complex, 0 to 3 percent slopes	B	22.5	0.7%
5909	Naron fine sandy loam, 0 to 1 percent slopes	B	351.0	11.2%
5928	Pratt loamy fine sand, 1 to 5 percent slopes	A	83.3	2.7%
5941	Pratt-Tivoli loamy fine sands, 5 to 15 percent slopes	A	107.3	3.4%
5967	Tabler silty clay loam, 0 to 1 percent slopes	D	36.8	1.2%
5977	Vanoss silt loam, 1 to 3 percent slopes	B	0.3	0.0%
6052	Elandco silt loam, occasionally flooded	B	16.9	0.5%
6060	Lincoln soils, frequently flooded	A	107.1	3.4%
6224	Canadian fine sandy loam, rarely flooded	B	1,022.6	32.7%
6228	Canadian-Waldeck fine sandy loams, rarely flooded	B	426.8	13.6%
6244	Elandco silt loam, rarely flooded	B	162.2	5.2%
6330	Carwile fine sandy loam, 0 to 1 percent slopes	D	53.4	1.7%
6369	Milan loam, 1 to 3 percent slopes	B	128.6	4.1%
6370	Milan loam, 3 to 6 percent slopes	B	24.1	0.8%
9993	Pits		45.5	1.5%
9999	Water		127.3	4.1%
Totals for Area of Interest (AOI)			3,131.2	100.0%

Rating Options

Aggregation Method: All Components

Component Percent Cutoff: None Specified

Tie-break Rule: Lower

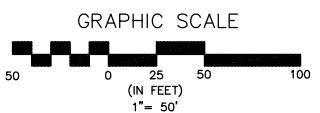
FUNSTON ADDITION

EXHIBIT 1-7



GENERAL PROVISIONS

- THIS DEVELOPMENT CONTAINS 8.25 ACRES, MORE OR LESS.
- THE DEVELOPMENT CONTAINS FIVE (5) PARCELS PERMITTING GENERAL COMMERCIAL USES. SEE PARCEL DESCRIPTION (GENERAL PROVISION NO. 27) FOR SPECIFIC USES.
- ALL UTILITIES SHALL BE INSTALLED UNDERGROUND.
- SIGNAGE WILL BE PERMITTED AS ALLOWED BY THE SIGN CODE, CITY CODE TITLE 24.04, WITH THE FOLLOWING ADDITIONAL CONDITIONS/LIMITATIONS:
 - NO PORTABLE, OFF-SITE OR BILLBOARD SIGNS SHALL BE PERMITTED.
 - ALL SIGNS: SHALL BE MONUMENT STYLE. NO POLE SIGNS SHALL BE PERMITTED.
 - TEMPORARY ADVERTISING DECORATION OR BANNER-TYPE SIGNS AS ALLOWED BY THE SIGN CODE, EXCLUDING TINSEL OR PENNANT STREAMERS OR OTHER SIMILAR DECORATION, SHALL BE PERMITTED, BUT SHALL BE LIMITED TO NO MORE THAN 36 SQUARE FEET IN SIZE, TO NO MORE THAN 15 DAY PLACEMENTS, AND TO NO MORE THAN THREE SUCH BANNER OR ADVERTISING DECORATION SIGNS IN THE CUP AT ANY TIME. ANY ADVERTISING DECORATION OR BANNER SIGNS SHALL BE SECURELY ATTACHED TO A BUILDING, WALL OR FENCE.
- ALL DRAINAGE AND DRAINAGE EASEMENTS SHALL BE CONFIRMED AT THE TIME OF PLATTING. A SPECIFIC LOT GRADING PLAN WILL BE PREPARED IN CONFORMANCE WITH THE GENERAL DRAINAGE CONCEPT PLAN FOR REVIEW PRIOR TO THE ISSUANCE OF A BUILDING PERMIT.
- ANY OPEN SPACE, SIGNS, LOGOS, DRAINAGE FACILITIES, DRIVES OR PARKING AREAS CONTAINED WITHIN THE DESCRIBED PARCELS SHALL BE PRIVATELY OWNED AND MAINTAINED. IF MULTIPLE OWNERSHIP OCCURS AN AGREEMENT PROVIDING FOR THE MAINTENANCE OF RESERVES, OPEN SPACE, INTERNAL DRIVES, PARKING AREAS, DRAINAGE IMPROVEMENTS, ETC., SHALL BE FILED WITH THE PLAT.
- PARKING SHALL BE PROVIDED IN ACCORDANCE WITH THE UNIFIED ZONING CODE OF THE CITY OF WICHITA. ALL PARKING AND DRIVES SHALL BE HARD SURFACED WITH CONCRETE OR ASPHALT.
 - FIRE LANES: FIRE LANES SHALL BE IN ACCORDANCE WITH THE APPROPRIATE FIRE CODE OF THE CITY OF WICHITA. NO PARKING SHALL BE ALLOWED IN SAID FIRE LANES, ALTHOUGH THEY MAY BE USED FOR PASSENGER LOADING AND UNLOADING.
 - DURING BUILDING PERMIT REVIEW THE FIRE CHIEF OR HIS DESIGNATED REPRESENTATIVE SHALL REVIEW AND APPROVE THE SITE PLAN REGARDING FIRE LANE(S) AND FIRE HYDRANT LOCATION, PRIOR TO CONSTRUCTION.
- ACCESS CONTROL: AS SHOWN ON THE RECORDED PLAT, IF THE ACCESS CONTROLS OF THE RECORDED PLAT ARE ALTERED BY AN APPROVED VACATION ORDER OF THE WICHITA CITY COUNCIL THE C.U.P. SHALL BE CONSIDERED TO HAVE BEEN ADJUSTED ACCORDINGLY.
- CROSS LOT CIRCULATION AND INTERNAL ACCESS SHALL BE PROVIDED AT THE TIME OF PLATTING. AN INTERNAL CIRCULATION DRIVE SHALL PROVIDE CROSS-LOT ACCESS ALONG THE LINE BETWEEN OUT PARCELS; AND, ALSO THE MAIN PARCEL IF DEVELOPED WITH A COMMERCIAL USE.
- THE TRANSFER OF TITLE ON ALL OR ANY PORTION OF THE LAND INCLUDED IN THE C.U.P. DOES NOT CONSTITUTE A TERMINATION OF THE PLAN OR ANY PORTION THEREOF, BUT SAID PLAN SHALL RUN WITH THE LAND AND BE BINDING UPON THE PRESENT OWNERS, THEIR SUCCESSORS AND ASSIGNS AND THEIR LESSEES UNLESS AMENDED. ANY MAJOR CHANGES IN THIS DEVELOPMENT PLAN SHALL BE SUBMITTED TO THE PLANNING COMMISSION FOR ITS CONSIDERATION.
- NO DEVELOPMENT OF THE CUP SHALL OCCUR UNTIL MUNICIPAL WATER AND SEWER SERVICES HAVE BEEN EXTENDED TO SERVE THE SITE.
- ALL LIGHTS SHALL BE SHIELDED TO REFLECT LIGHT DOWNWARD OR DIRECT LIGHT AWAY FROM RESIDENTIAL AREAS. LIGHT POLES ON PARCELS SHALL BE LIMITED TO 20 FEET IN HEIGHT. ALL PARKING LOT LIGHTING WITHIN THE CUP SHALL SHARE CONSISTENT DESIGN (I.E. FIXTURES, POLES, LAMP BASES). LIGHTING HEIGHT SHALL BE LIMITED TO 15 FEET WHEN WITHIN 100 FEET OF RESIDENTIAL ZONING.
- TRASH RECEPTACLES SHALL BE APPROPRIATELY SCREENED TO REASONABLY HIDE THEM FROM GROUND VIEW. SCREENING SHALL BE CONSTRUCTED OF MATERIALS AND/OR LANDSCAPING COMPATIBLE WITH AND COMPLEMENTARY TO THE EXTERIOR OF THE BUILDINGS TO WHICH THE TRASH RECEPTACLE PROVIDES SERVICE. LOADING DOCKS AND SERVICE AREAS SHALL ALSO BE SCREENED FROM 47TH STREET NORTH AND HYDRAULIC AVE, WITH SCREENING WALLS AND/OR LANDSCAPING APPROVED BY THE PLANNING DIRECTOR.
- ON ALL PARCELS ROOF-TOP EQUIPMENT SHALL BE SCREENED FROM GROUND LEVEL VIEW FROM ADJACENT RESIDENTIAL AREAS; NO ROOF-TOP FENCING ALLOWED.
- DEVELOPMENT OF ALL PARCELS WITHIN THE CUP SHALL COMPLY WITH THE LANDSCAPE ORDINANCE OF THE CITY OF WICHITA. A LANDSCAPE PLAN SHALL BE PREPARED BY A STATE OF KANSAS REGISTERED LANDSCAPE ARCHITECT FOR THE REQUIRED LANDSCAPING, INDICATING THE TYPE, LOCATION AND SPECIFICATIONS OF ALL PLANT MATERIAL. THIS PLAN SHALL BE SUBMITTED TO THE PLANNING DEPARTMENT FOR THEIR REVIEW AND APPROVAL PRIOR TO ISSUANCE OF A BUILDING PERMIT.
- A FINANCIAL GUARANTEE FOR THE PLANT MATERIAL APPROVED ON THE LANDSCAPE PLAN FOR THAT PORTION OF THE CUP BEING DEVELOPED SHALL BE REQUIRED PRIOR TO ISSUANCE OF ANY OCCUPANCY PERMIT, IF THE REQUIRED LANDSCAPING HAS NOT BEEN PLANTED.
- ALL PARCELS IN THE CUP SHALL SHARE A SIMILAR OR COMPATIBLE PLANT PALETTE, AS DETERMINED BY THE REGISTERED LANDSCAPE ARCHITECT PREPARING REQUIRED PLAN.
- ALL BUILDINGS OF THE SAME GENERAL LAND USE SHALL HAVE CONSISTENT EXTERIOR BUILDING MATERIALS WITH CONSISTENT ARCHITECTURAL CHARACTER, FORM, COLOR, AND TEXTURE. BUILDING WALLS SHALL BE BROKEN UP BY PROJECTIONS, RECESSES, CHANGES IN ROOF LINE, AND CHANGES IN COLORS, TEXTURES AND/OR MATERIALS, RELATING TO INTERIOR BUILDING FUNCTIONS WHERE FEASIBLE. BUILDINGS SHOULD HAVE A RECOGNIZABLE "BASE" AND "TOP".
- BUILDINGS IN PARCELS ALONG THE ARTERIAL STREETS SHOULD BE SITED WITH A PRIMARY BUILDING FACADE ALONG THE STREET AND NO MORE THAN ONE DRIVING AISLE. MINIMUM SETBACK ALONG ARTERIAL STREETS MAY BE REDUCED TO A MINIMUM OF 20 FEET IF THE FRONT YARD AREA IS LANDSCAPED. A MINIMUM OF 50 PERCENT OF THE BUILDING FRONTAGE FACING THE ARTERIAL STREETS MUST HAVE WINDOWS OR DOOR OPENINGS.
- GAS ISLANDS, ATMS, BANK DRIVE-THROUGH WINDOWS, OVERHEAD DOORS AND SIMILAR UTILITARIAN ITEMS SHALL BE SCREENED OR SITED BEHIND BUILDINGS TO MINIMIZE THEIR VIEW FROM THE STREET.
- A SIX (6) FOOT HIGH MASONRY WALL SHALL BE CONSTRUCTED ALONG PARCEL 4 WHERE ADJACENT TO SF-5 RESIDENTIAL ZONING. EXCEPT THAT IF PARCEL 4 IS DEVELOPED WITH A RESIDENTIAL USE, THE WALL MAY BE SUBSTITUTED WITH A WOOD FENCE NO LESS THAN SIX FEET IN HEIGHT. NO UTILITIES SHALL BE PLACED WITHIN THE 5 FOOT WALL EASEMENT.
- EXTENSIVE USE OF BACKLIT CANOPIES AND NEON OR FLUORESCENT TUBE LIGHTING ON BUILDINGS IS NOT PERMITTED.
- THIS C.U.P. DOCUMENT IS GENERAL IN CHARACTER AND WILL REQUIRE THE SUBMISSION OF A SITE PLAN AND A LANDSCAPE PLAN FOR EACH PARCEL OR PORTION THEREOF. THIS SITE PLAN WILL REQUIRE ADMINISTRATIVE APPROVAL AT THE PLAN REVIEW STAGE PRIOR TO ISSUANCE OF A BUILDING PERMIT. THE SITE PLAN SHALL SHOW LAND USE RELATIONSHIPS, ACCESS POINTS AND/OR CONTROL SETBACKS, INTERIOR CIRCULATION, PARKING, SCREENING AND OTHER SIMILAR DESIGN CONSIDERATIONS.
- THE DEVELOPMENT OF THIS PROPERTY SHALL PROCEED IN ACCORDANCE WITH THE DEVELOPMENT PLAN AS RECOMMENDED FOR APPROVAL BY THE PLANNING COMMISSION AND APPROVED BY THE GOVERNING BODY, AND ANY SUBSTANTIAL DEVIATION OF THE PLAN, AS DETERMINED BY THE ZONING ADMINISTRATOR AND THE DIRECTOR OF PLANNING, SHALL CONSTITUTE A VIOLATION OF THE BUILDING PERMIT AUTHORIZING CONSTRUCTION OF THE PROPOSED DEVELOPMENT.
- THE FOLLOWING USES SHALL BE PROHIBITED IN ALL PARCELS: CEMETARY, CORRECTIONAL PLACEMENT RESIDENCES, NIGHT CLUB IN THE CITY, ANY USES ALLOWED ONLY BY CONDITIONAL USE SHALL NOT BE ALLOWED EXCEPT BY CUP AMENDMENT. THE FOLLOWING USES SHALL BE PROHIBITED WITHIN 200 FEET OF RESIDENTIALLY ZONED PROPERTY: SERVICE STATIONS, CONVENIENCE STORES WITH GAS ISLANDS, RESTAURANTS WITH DRIVE-IN OR DRIVE-THROUGH FACILITIES AND VEHICLE REPAIR. THERE SHALL BE NO OVERHEAD DOORS FOR AUTO SERVICES OR REPAIR USES FACING RESIDENTIAL DISTRICTS.



Parcel No.	Net Area	Maximum Building Coverage	Total Number of Buildings	Parking	Maximum Building Height	Gross Floor Area Ratio
1	50,424 SQ. FT. (1.16 ACRES)	15,127 SQ. FT. (30% MAX.)	8	SEE GENERAL PROVISION NUMBER 7	35 FEET	35%
2	30,855 SQ. FT. (0.71 ACRES)	30%	3	SEE GENERAL PROVISION NUMBER 7	35 FEET	30%
3	40,000 SQ. FT. (0.92 ACRES)	30%	3	SEE GENERAL PROVISION NUMBER 7	35 FEET	30%
4	205,232 SQ. FT. (4.71 ACRES)	30%	3	SEE GENERAL PROVISION NUMBER 7	35 FEET	30%
5	32,855 SQ. FT. (0.75 ACRES)	30%	3	SEE GENERAL PROVISION NUMBER 7	35 FEET	30%

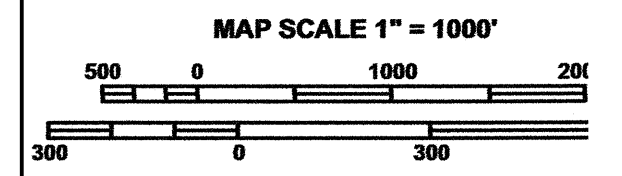
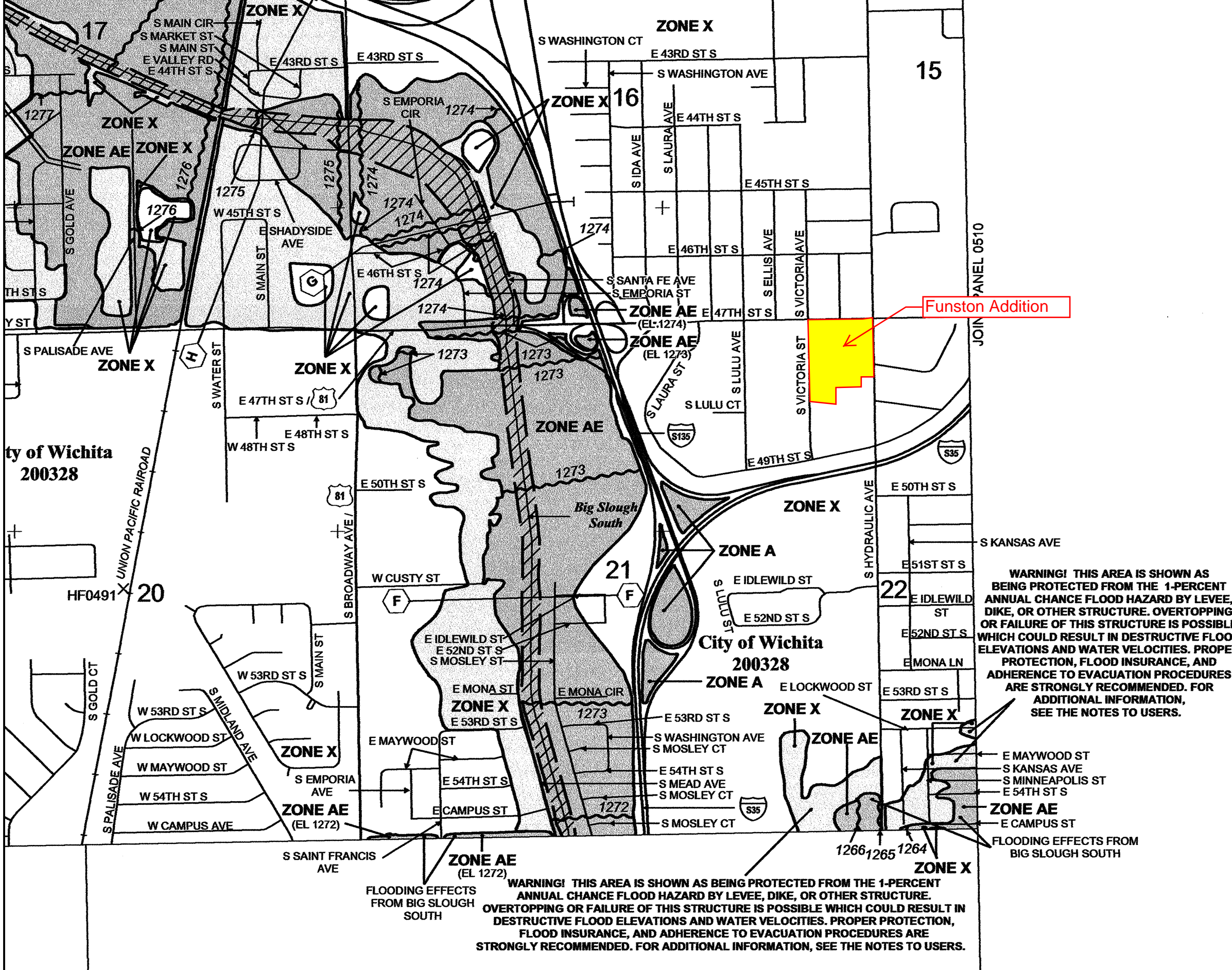
LEGAL DESCRIPTION

A TRACT OF LAND DESCRIBED AS FOLLOWS:

THE EAST 206.25 FEET OF THE NORTH 244.25 FEET OF THE NORTHEAST QUARTER OF SECTION 21, TOWNSHIP 28 SOUTH, RANGE 1 EAST OF THE 6TH P.M. SEDGWICK COUNTY, KANSAS, EXCEPT THE EAST 40 FEET THEREOF FOR ROAD, EXCEPT BEGINNING 40 FEET SOUTH AND 40 FEET WEST OF THE NORTHEAST CORNER OF SECTION 21, TOWNSHIP 28 SOUTH, RANGE 1 EAST OF THE 6TH P.M. SEDGWICK COUNTY, KANSAS; THENCE WEST 40 FEET, SOUTH OF AND PARALLEL TO THE NORTH LINE OF SAID SECTION 21, A DISTANCE OF 20.00 FEET; THENCE SOUTHEASTERLY A DISTANCE OF 28.33 FEET TO A POINT 40.00 FEET WEST OF THE EAST LINE OF SAID SECTION 21 AND 20.00 FEET SOUTH OF THE POINT OF BEGINNING; THENCE NORTH 40.00 FEET, WEST OF AND PARALLEL TO THE EAST LINE OF SAID SECTION 21, A DISTANCE OF 20.00 FEET TO THE POINT OF BEGINNING, SUBJECT TO ROAD RIGHTS-OF-WAY OF RECORDED ON THE NORTH AND EAST; ALONG WITH THE WEST 198 FEET OF THE EAST 404.25 FEET OF THE NORTH 660 FEET OF THE NORTHEAST QUARTER OF SECTION 21, TOWNSHIP 28-S, RANGE 1 EAST OF THE 6TH P.M. SEDGWICK COUNTY, KANSAS; SUBJECT TO ROAD RIGHTS-OF-WAY OF RECORDED ON THE NORTH; AND ALONG WITH THE WEST 255 FEET OF THE EAST 659.25 FEET OF THE FOLLOWING DESCRIBED TRACT: BEGINNING AT THE NORTHEAST CORNER OF THE NORTHEAST QUARTER OF SECTION 21, TOWNSHIP 28-S, RANGE 1 EAST OF THE 6TH P.M. SEDGWICK COUNTY, KANSAS; THENCE WEST TO NORTHWEST CORNER OF SAID NORTHEAST QUARTER OF THE NORTHEAST QUARTER; THENCE SOUTH 641 FEET; THENCE SOUTHEAST TO A POINT ON THE EAST LINE OF THE SAID NORTHEAST QUARTER, 861 FEET SOUTH OF THE NORTHEAST CORNER OF SAID NORTHEAST QUARTER; THENCE NORTH 861 FEET TO BEGINNING, EXCEPT THEREFROM THE SOUTHERLY 30 FEET THEREOF, AND EXCEPT THEREFROM THE WESTERLY 30 FEET THEREOF, SUBJECT TO ROAD RIGHTS-OF-WAY OF RECORDED ON THE NORTH; AND ALONG WITH THE NORTH 80 FEET OF THE EAST 206.25 FEET OF THE SOUTH 415.75 FEET OF THE NORTH 660 FEET OF THE EAST HALF OF THE NORTHEAST QUARTER OF SECTION 21, TOWNSHIP 28-S, RANGE 1 EAST OF THE 6TH P.M. SEDGWICK COUNTY, KANSAS, SUBJECT TO ROAD RIGHTS-OF-WAY OF RECORDED ON THE EAST; AND ALONG WITH THE SOUTH 99.75 FEET OF THE NORTH 179.75 FEET OF THE EAST 206.25 FEET OF THE SOUTH 415.75 FEET OF THE NORTH 660 FEET OF THE EAST HALF OF THE NORTHEAST QUARTER OF SECTION 21, TOWNSHIP 28-S, RANGE 1 EAST OF THE 6TH P.M. SEDGWICK COUNTY, KANSAS, SUBJECT TO ROAD RIGHTS-OF-WAY OF RECORDED ON THE EAST; AND ALONG WITH THE NORTH 150 FEET OF THE SOUTH 236 FEET OF THE EAST 206.25 FEET OF THE NORTH 660 FEET OF THE NORTHEAST QUARTER OF SECTION 21, TOWNSHIP 28-S, RANGE 1 EAST OF THE 6TH P.M. SEDGWICK COUNTY, KANSAS, EXCEPT THE EAST 40 FEET THEREOF FOR ROAD, SUBJECT TO ROAD RIGHTS-OF-WAY OF RECORDED ON THE EAST.

FUNSTON ADDITION

EXHIBIT 1-8



PANEL 0505E

FIRM
FLOOD INSURANCE RATE MAP

**SEDGWICK COUNTY,
 KANSAS
 AND INCORPORATED AREAS**

PANEL 505 OF 700

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
HAYSVILLE, CITY OF	200324	0505	E
SEDGWICK COUNTY	200321	0505	E
WICHITA, CITY OF	200328	0505	E

WARNING! THIS AREA IS SHOWN AS BEING PROTECTED FROM THE 1-PERCENT ANNUAL CHANCE FLOOD HAZARD BY LEVEE, DIKE, OR OTHER STRUCTURE. OVERTOPPING OR FAILURE OF THIS STRUCTURE IS POSSIBLE WHICH COULD RESULT IN DESTRUCTIVE FLOOD ELEVATIONS AND WATER VELOCITIES. PROPER PROTECTION, FLOOD INSURANCE, AND ADHERENCE TO EVACUATION PROCEDURES ARE STRONGLY RECOMMENDED. FOR ADDITIONAL INFORMATION, SEE THE NOTES TO USERS.

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
 20173C0505E**

**EFFECTIVE DATE
 FEBRUARY 2, 2007**

Federal Emergency Management Agency

WARNING! THIS AREA IS SHOWN AS BEING PROTECTED FROM THE 1-PERCENT ANNUAL CHANCE FLOOD HAZARD BY LEVEE, DIKE, OR OTHER STRUCTURE. OVERTOPPING OR FAILURE OF THIS STRUCTURE IS POSSIBLE WHICH COULD RESULT IN DESTRUCTIVE FLOOD ELEVATIONS AND WATER VELOCITIES. PROPER PROTECTION, FLOOD INSURANCE, AND ADHERENCE TO EVACUATION PROCEDURES ARE STRONGLY RECOMMENDED. FOR ADDITIONAL INFORMATION, SEE THE NOTES TO USERS.

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov

FUNSTON ADDITION

EXHIBIT 1-9

Hydrograph Return Period Recap

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2009 by Autodesk, Inc. v6.066

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	-----	2.875	3.786	-----	4.993	5.893	7.085	7.975	8.862	N
2	SCS Runoff	-----	4.726	6.468	-----	8.811	10.57	12.91	14.65	16.39	E
3	SCS Runoff	-----	2.624	4.879	-----	8.323	11.13	15.11	18.23	21.44	SW

Hydrograph Return Period Recap

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2009 by Autodesk, Inc. v6.066

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	-----	3.007	3.959	-----	5.222	6.163	7.410	8.341	9.268	N
2	SCS Runoff	-----	4.413	5.810	-----	7.663	9.044	10.87	12.24	13.60	E
3	SCS Runoff	-----	9.986	14.11	-----	19.73	23.99	29.69	33.95	38.21	SW
4	Reservoir	3	4.450	5.062	-----	5.789	6.844	12.11	16.07	20.26	SW Outlet
5	SCS Runoff	-----	5.450	7.697	-----	10.77	13.09	16.20	18.53	20.85	South Offsite

Tab 2. Existing Conditions Runoff Calculations

A. Copy of orthophotograph showing existing boundaries

See Exhibit 1-2 for aerial photograph showing existing site boundaries.

B. Runoff method

The runoff method used to determine storm water flows was the SCS method. Supporting data and calculation results are shown on Exhibit 2-1.

C. Existing topography

The existing topography is shown on the Drainage Plan as seen on Exhibit 1-5.

D. Total site area and total impervious area

The total area Funston Addition encompasses is 8.25 acres. The total impervious area for the developed condition, based on actual land use, is estimated at 85% of the north and east drainage areas. The southwest drainage area impervious area is estimated at 65%. Therefore, the total impervious area on the entire site could be 5.95 acres, or just over 72% of the site.

E. Benchmarks used for site control

The benchmark used for site control is shown on the Drainage Plan, which is Exhibit 1-5.

F. Streams, creeks, and waterways labeled

Exhibit 1-5 shows any water features within the site.

G. Predominate soils from USDA soil surveys

The predominant soil type is a Canadian Fine Sandy Loam (6224) series material, which is found in just over 95% of the property. The site also contains nearly 5% of Canadian-Waldeck fine sandy loams (6228) soil. See Exhibit 1-6 for NRCS Soil Survey map and information showing existing soil types and descriptions. The site soils are both classified as Hydrologic Group B soils. The Hydrologic Groups are used to select curve numbers for the runoff calculations in both the existing and developed conditions.

H. Location and boundaries of natural features

The site does not contain wetlands, lakes, or ponds.

I. Location of existing roads, buildings, parking lots, and other impervious areas

Currently, the property is being completely cleared for development. At the time of this report, only one structure remained for demolition. All undisturbed areas within the site have fair grass cover and minimal concentrations of trees and shrubs.

J. Location of existing utilities

Locates shall be called in prior to any excavation in this area. The site contains various utility connections along the north and east side of the property. A sanitary sewer line ties in between Tracts 4 & 5 and runs in an easement along the back line of the existing residential houses. The sanitary sewer main is located in Hydraulic Avenue, another line runs in an easement along the south line of the property. Water mains are found along the north edge of 47th Street South and the east edge of Hydraulic Avenue. Water and gas service lines cross Hydraulic Avenue to the east property line. Underground telephone, gas and electric are located within the right-of-way of Hydraulic Avenue as well. Light poles are located along the north and east property lines as well as a tornado siren about 120 feet south of the northeast property corner on the east line.

K. Location of existing conveyance systems

Flow within the site is carried by overland flow. Curb inlets along the south side of 47th Street South (4 inlets) and the west side of Hydraulic Avenue (2 inlets) drain a majority of the site once the runoff gets into the respective streets. The southwest area sheet drains west and south into the east gutter of Victoria Street.

L. Flow paths

The drainage plan shows the general flow paths for each drainage area in the basin. The site drainage is all collected in the current storm water sewer systems of the adjacent streets. The north and east areas drain by overland flow to 47th Street South and Hydraulic Avenue, respectively. As mentioned, the southwest area sheet drains west and south into the east gutter of Victoria Street.

M. Location and dimensions of existing channels, bridges or culvert crossings

No existing channels, bridges, or culverts on site.

N. Existing conditions hydrologic analysis

The analysis was completed using the SCS method. The 2, 5, 10, 25, & 100 year, 24-hour storm events were evaluated, and the information appears in Exhibit 2-1. The results are summarized in the following table.

Area/Frequency	24-Hour Storm Flows (cfs)				
	2-Year	5-Year	10-Year	25-Year	100-Year
North	3.79	4.99	5.89	7.09	8.86
East	6.47	8.81	10.57	12.91	16.39
Southwest	4.88	8.32	11.13	15.11	21.44

O. Assumed pre-developed runoff curve numbers

For the existing condition, the curve numbers were weighted based on area of their respective hydrologic soil groups over the site. The results are shown in the table below, to include those for the proposed condition as required by Tab 3, Section C.

EXISTING DRAINAGE AREAS				Hydrologic Group	Area		% of Area	CN
DA	Soil Information				Square Feet	Acres	%	Existing
N	Canadian fine sandy loam, rarely flooded		6224	B	49443.08	1.135	13.76%	92.0
E	Canadian fine sandy loam, rarely flooded		6224	B	95443.81	2.191	26.57%	88.0
SW	Canadian fine sandy loam, rarely flooded		6224	B	196843.52	4.519	54.80%	69.0
	CanadianWaldeck fine sandy loams, rarely flooded		6228	B	17478.64	0.401	4.87%	69.0
TOTALS					359209.05	8.246	100.00%	77.2

PROPOSED DRAINAGE AREAS				Hydrologic Group	Area		% of Area	CN
DA	Soil Information				Square Feet	Acres	%	Proposed
N	Canadian fine sandy loam, rarely flooded		6224	B	51687.85	1.187	14.39%	92.0
E	Canadian fine sandy loam, rarely flooded		6224	B	75863.09	1.742	21.12%	92.0
SW	Canadian fine sandy loam, rarely flooded		6224	B	214177.39	4.917	59.63%	85.0
	Canadian-Waldeck fine sandy loams, rarely flooded		6228	B	17478.64	0.401	4.87%	85.0
TOTALS					359206.97	8.246	100.00%	87.5

P. Existing times of concentration used in calculations

Area	T _c (min)
North	15.0
East	15.0
Southwest	21.9

Q. Evaluation of immediate downstream drainage capacity

The downstream capacity in the three systems surrounding the site shall be considered adequate to accommodate the current run-off flows exiting this site.

R. Existing structural elevations

See Drainage Plan for existing storm sewer elevations.

S. Cross-section data for open channels

Channels do not currently exist within this site.

T. Ground water elevations

This property is within a zone identified by the City Engineers' office as likely to have groundwater at some or all times within 10 feet of the ground surface elevation. Building with specially engineered foundations or with the lowest floor opening above groundwater is recommended, and owners seeking building permits on this property will be similarly advised. More detailed information on recorded groundwater elevations in the vicinity of this property is available in the City Engineers' office.

FUNSTON ADDITION

EXHIBIT 2-1

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Watershed Model Schematic

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2009 by Autodesk, Inc. v6.066



Legend

<u>Hyd. Origin</u>	<u>Description</u>
1	SCS Runoff N
2	SCS Runoff E
3	SCS Runoff SW

Hydrograph Return Period Recap

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2009 by Autodesk, Inc. v6.066

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	-----	2.875	3.786	-----	4.993	5.893	7.085	7.975	8.862	N
2	SCS Runoff	-----	4.726	6.468	-----	8.811	10.57	12.91	14.65	16.39	E
3	SCS Runoff	-----	2.624	4.879	-----	8.323	11.13	15.11	18.23	21.44	SW

Hydrograph Summary Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2009 by Autodesk, Inc. v6.066

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	3.786	2	722	10,977	----	----	----	N	
2	SCS Runoff	6.468	2	722	18,301	----	----	----	E	
3	SCS Runoff	4.879	2	728	18,440	----	----	----	SW	
EXIST HYD.gpw					Return Period: 2 Year			Thursday, Jan 28, 2010		

Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2009 by Autodesk, Inc. v6.066

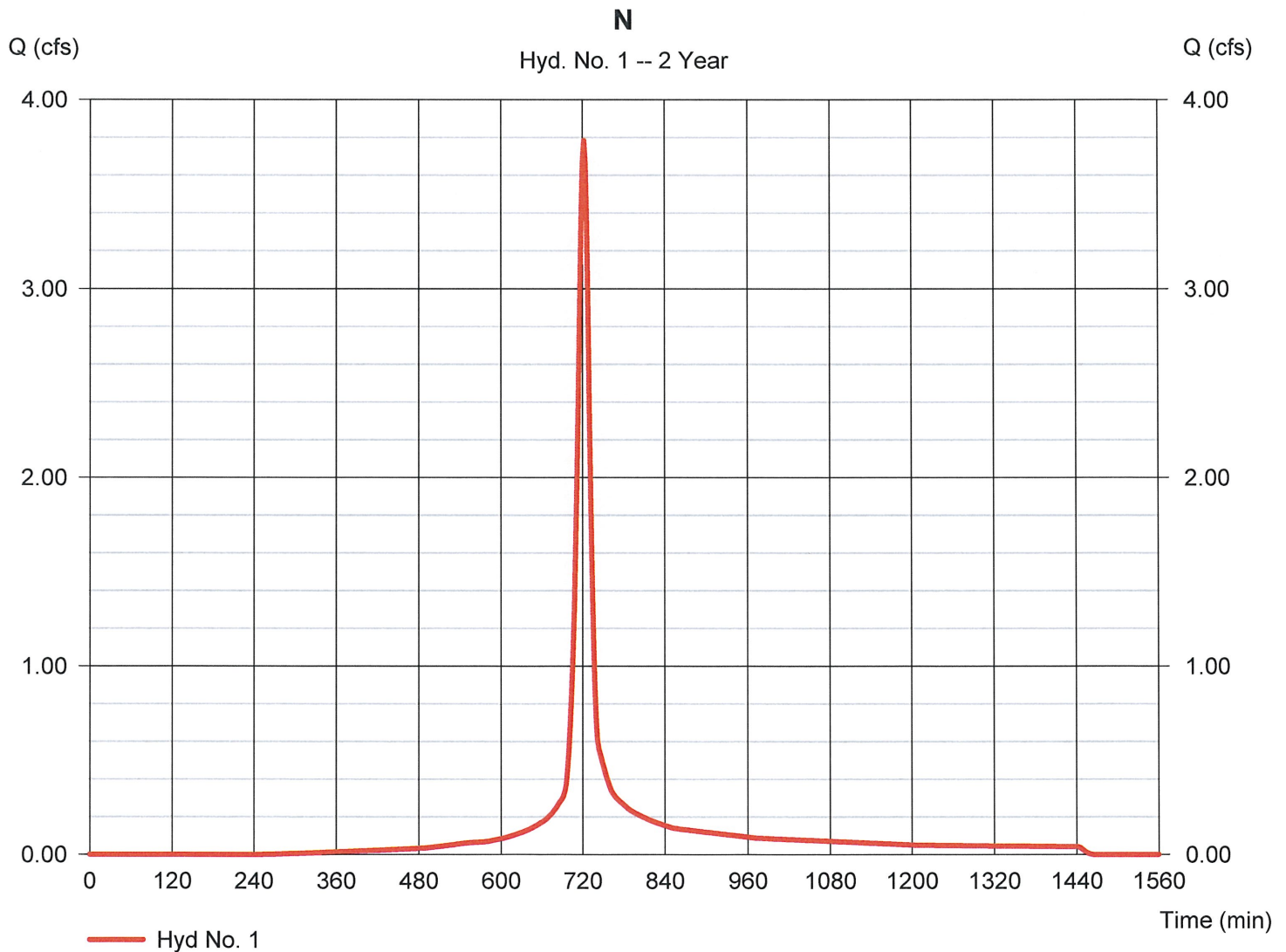
Thursday, Jan 28, 2010

Hyd. No. 1

N

Hydrograph type = SCS Runoff
 Storm frequency = 2 yrs
 Time interval = 2 min
 Drainage area = 1.135 ac
 Basin Slope = 0.0 %
 Tc method = USER
 Total precip. = 3.60 in
 Storm duration = 24 hrs

Peak discharge = 3.786 cfs
 Time to peak = 722 min
 Hyd. volume = 10,977 cuft
 Curve number = 92
 Hydraulic length = 0 ft
 Time of conc. (Tc) = 15.00 min
 Distribution = Type II
 Shape factor = 484



Hydrograph Report

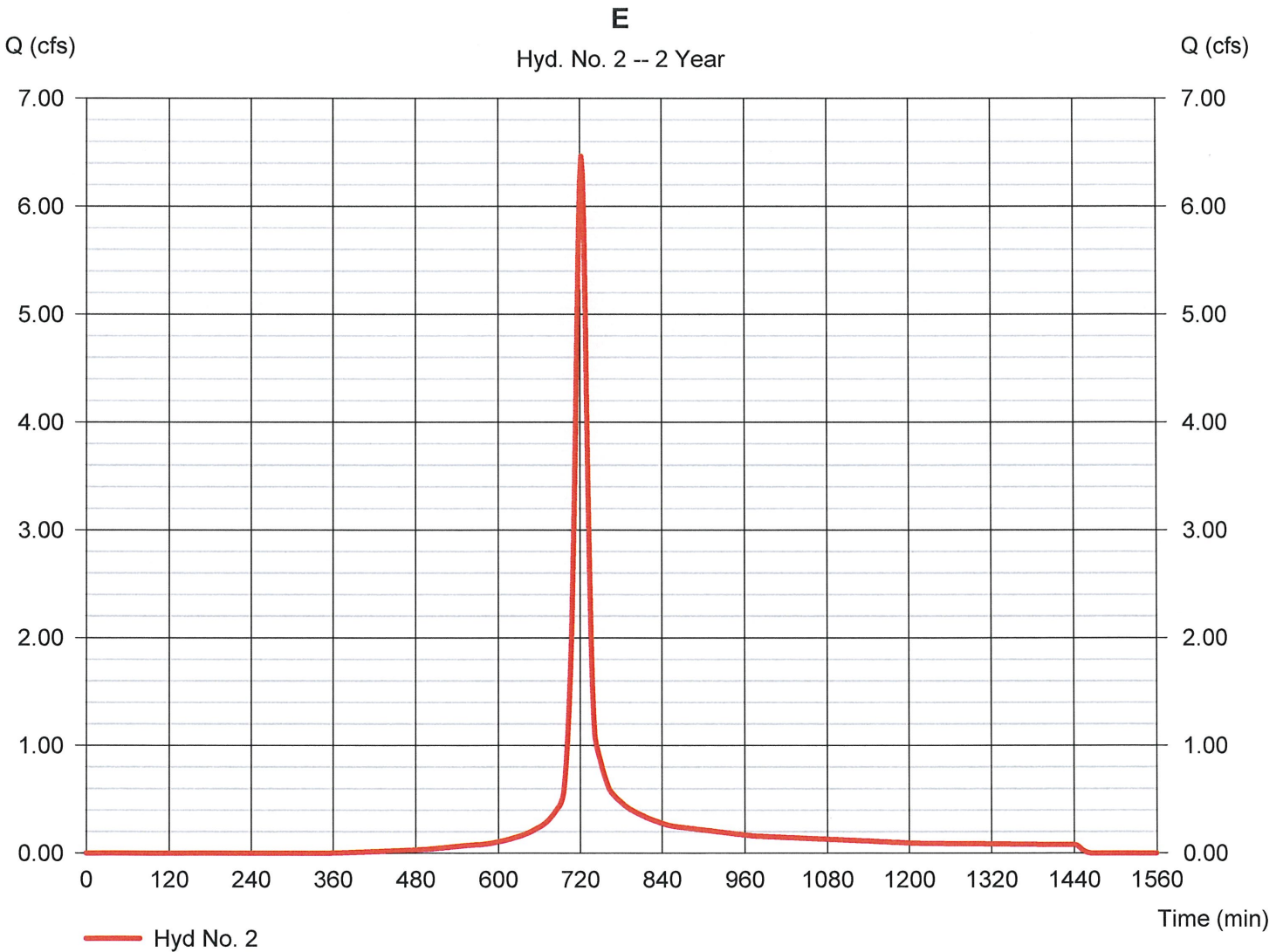
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2009 by Autodesk, Inc. v6.066

Thursday, Jan 28, 2010

Hyd. No. 2

E

Hydrograph type	= SCS Runoff	Peak discharge	= 6.468 cfs
Storm frequency	= 2 yrs	Time to peak	= 722 min
Time interval	= 2 min	Hyd. volume	= 18,301 cuft
Drainage area	= 2.191 ac	Curve number	= 88
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 15.00 min
Total precip.	= 3.60 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2009 by Autodesk, Inc. v6.066

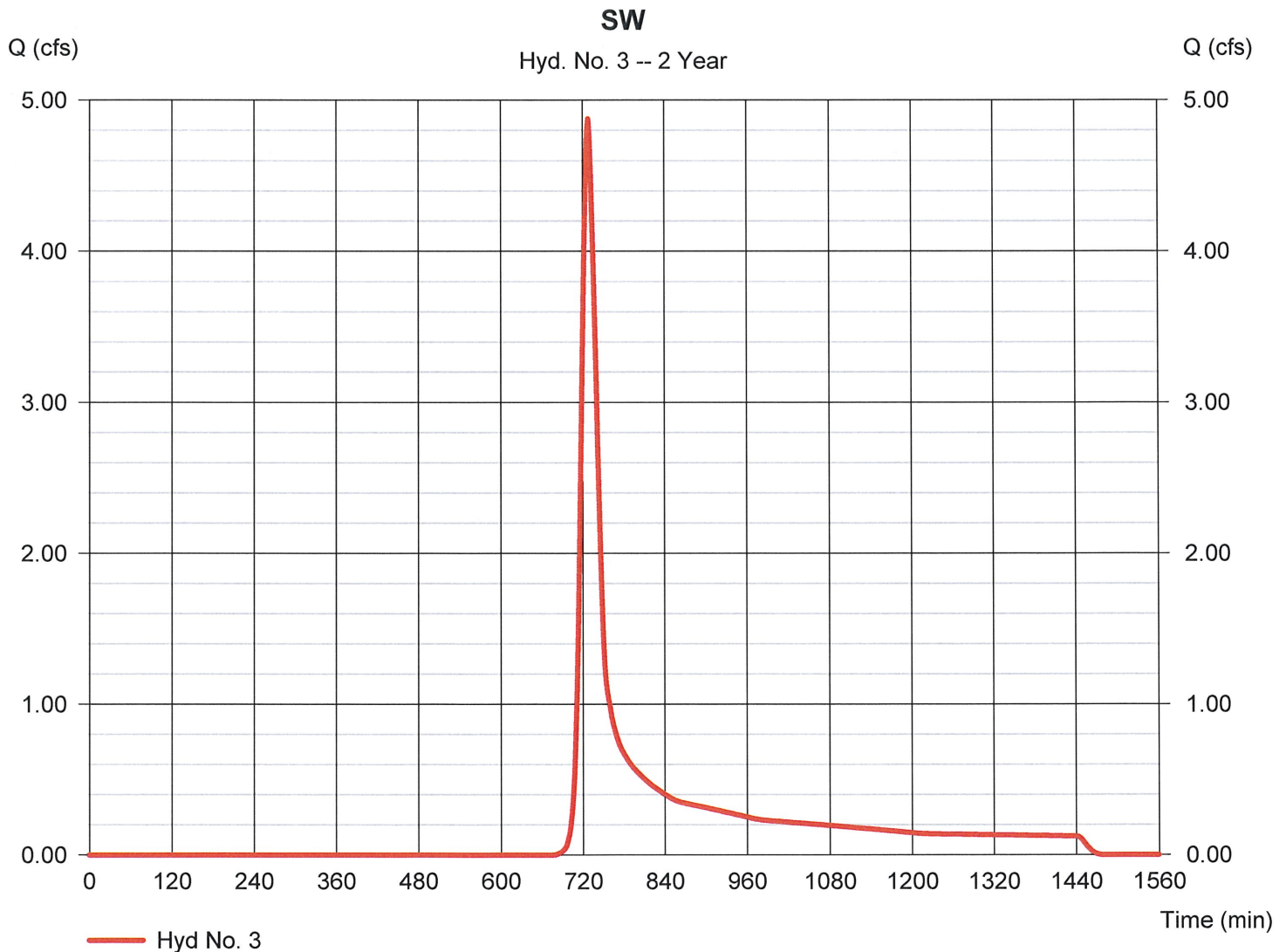
Thursday, Jan 28, 2010

Hyd. No. 3

SW

Hydrograph type = SCS Runoff
 Storm frequency = 2 yrs
 Time interval = 2 min
 Drainage area = 4.920 ac
 Basin Slope = 0.0 %
 Tc method = TR55
 Total precip. = 3.60 in
 Storm duration = 24 hrs

Peak discharge = 4.879 cfs
 Time to peak = 728 min
 Hyd. volume = 18,440 cuft
 Curve number = 69
 Hydraulic length = 0 ft
 Time of conc. (Tc) = 21.90 min
 Distribution = Type II
 Shape factor = 484



TR55 Tc Worksheet

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2009 by Autodesk, Inc. v6.066

Hyd. No. 3

SW

<u>Description</u>	<u>A</u>	<u>B</u>	<u>C</u>	<u>Totals</u>
Sheet Flow				
Manning's n-value	= 0.050	0.011	0.011	
Flow length (ft)	= 300.0	0.0	0.0	
Two-year 24-hr precip. (in)	= 3.60	0.00	0.00	
Land slope (%)	= 0.50	0.00	0.00	
Travel Time (min)	= 16.08	+ 0.00	+ 0.00	= 16.08
Shallow Concentrated Flow				
Flow length (ft)	= 400.00	0.00	0.00	
Watercourse slope (%)	= 0.50	0.00	0.00	
Surface description	= Unpaved	Paved	Paved	
Average velocity (ft/s)	= 1.14	0.00	0.00	
Travel Time (min)	= 5.84	+ 0.00	+ 0.00	= 5.84
Channel Flow				
X sectional flow area (sqft)	= 0.00	0.00	0.00	
Wetted perimeter (ft)	= 0.00	0.00	0.00	
Channel slope (%)	= 0.50	0.00	0.00	
Manning's n-value	= 0.015	0.015	0.015	
Velocity (ft/s)	= 0.00	0.00	0.00	
Flow length (ft)	= 0.0	0.0	0.0	
Travel Time (min)	= 0.00	+ 0.00	+ 0.00	= 0.00
Total Travel Time, Tc				21.90 min

Hydrograph Summary Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2009 by Autodesk, Inc. v6.066

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	4.993	2	722	14,704	----	----	----	N	
2	SCS Runoff	8.811	2	722	25,223	----	----	----	E	
3	SCS Runoff	8.323	2	728	29,887	----	----	----	SW	
EXIST HYD.gpw					Return Period: 5 Year			Thursday, Jan 28, 2010		

Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2009 by Autodesk, Inc. v6.066

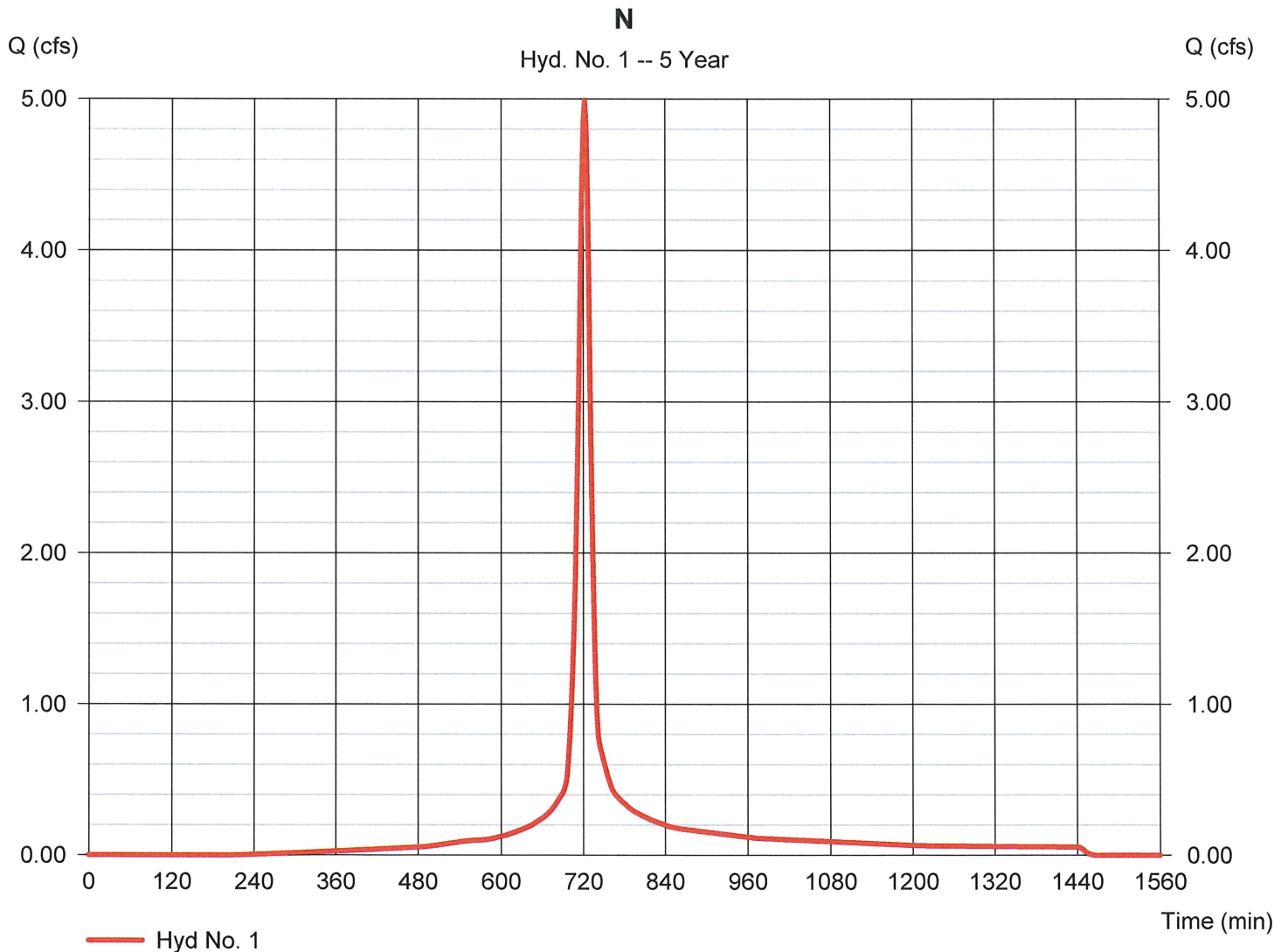
Thursday, Jan 28, 2010

Hyd. No. 1

N

Hydrograph type = SCS Runoff
 Storm frequency = 5 yrs
 Time interval = 2 min
 Drainage area = 1.135 ac
 Basin Slope = 0.0 %
 Tc method = USER
 Total precip. = 4.56 in
 Storm duration = 24 hrs

Peak discharge = 4.993 cfs
 Time to peak = 722 min
 Hyd. volume = 14,704 cuft
 Curve number = 92
 Hydraulic length = 0 ft
 Time of conc. (Tc) = 15.00 min
 Distribution = Type II
 Shape factor = 484



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2009 by Autodesk, Inc. v6.066

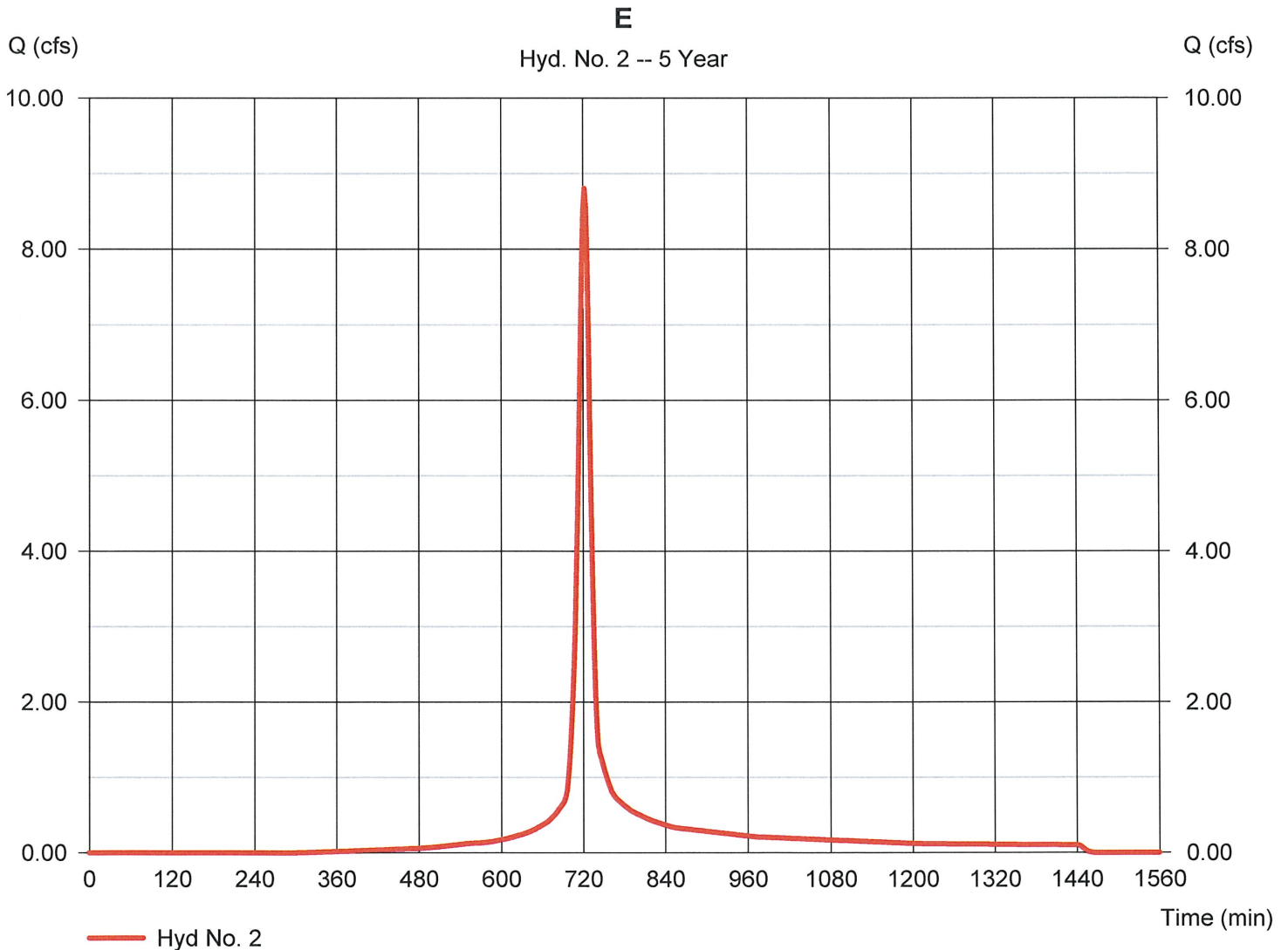
Thursday, Jan 28, 2010

Hyd. No. 2

E

Hydrograph type = SCS Runoff
 Storm frequency = 5 yrs
 Time interval = 2 min
 Drainage area = 2.191 ac
 Basin Slope = 0.0 %
 Tc method = USER
 Total precip. = 4.56 in
 Storm duration = 24 hrs

Peak discharge = 8.811 cfs
 Time to peak = 722 min
 Hyd. volume = 25,223 cuft
 Curve number = 88
 Hydraulic length = 0 ft
 Time of conc. (Tc) = 15.00 min
 Distribution = Type II
 Shape factor = 484



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2009 by Autodesk, Inc. v6.066

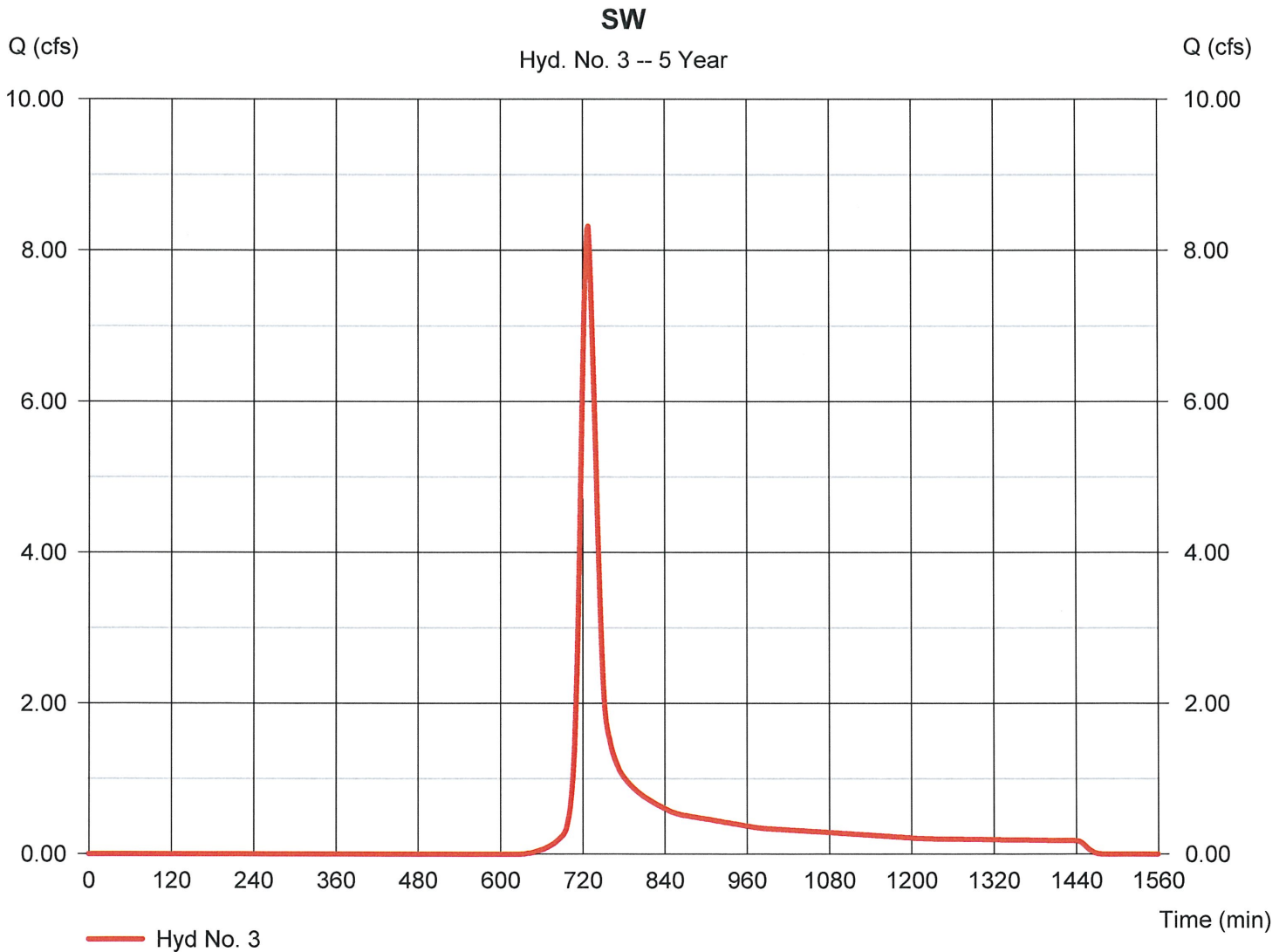
Thursday, Jan 28, 2010

Hyd. No. 3

SW

Hydrograph type = SCS Runoff
 Storm frequency = 5 yrs
 Time interval = 2 min
 Drainage area = 4.920 ac
 Basin Slope = 0.0 %
 Tc method = TR55
 Total precip. = 4.56 in
 Storm duration = 24 hrs

Peak discharge = 8.323 cfs
 Time to peak = 728 min
 Hyd. volume = 29,887 cuft
 Curve number = 69
 Hydraulic length = 0 ft
 Time of conc. (Tc) = 21.90 min
 Distribution = Type II
 Shape factor = 484



Hydrograph Summary Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2009 by Autodesk, Inc. v6.066

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	5.893	2	722	17,527	----	----	----	N	
2	SCS Runoff	10.57	2	722	30,518	----	----	----	E	
3	SCS Runoff	11.13	2	728	39,325	----	----	----	SW	
EXIST HYD.gpw					Return Period: 10 Year			Thursday, Jan 28, 2010		

Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2009 by Autodesk, Inc. v6.066

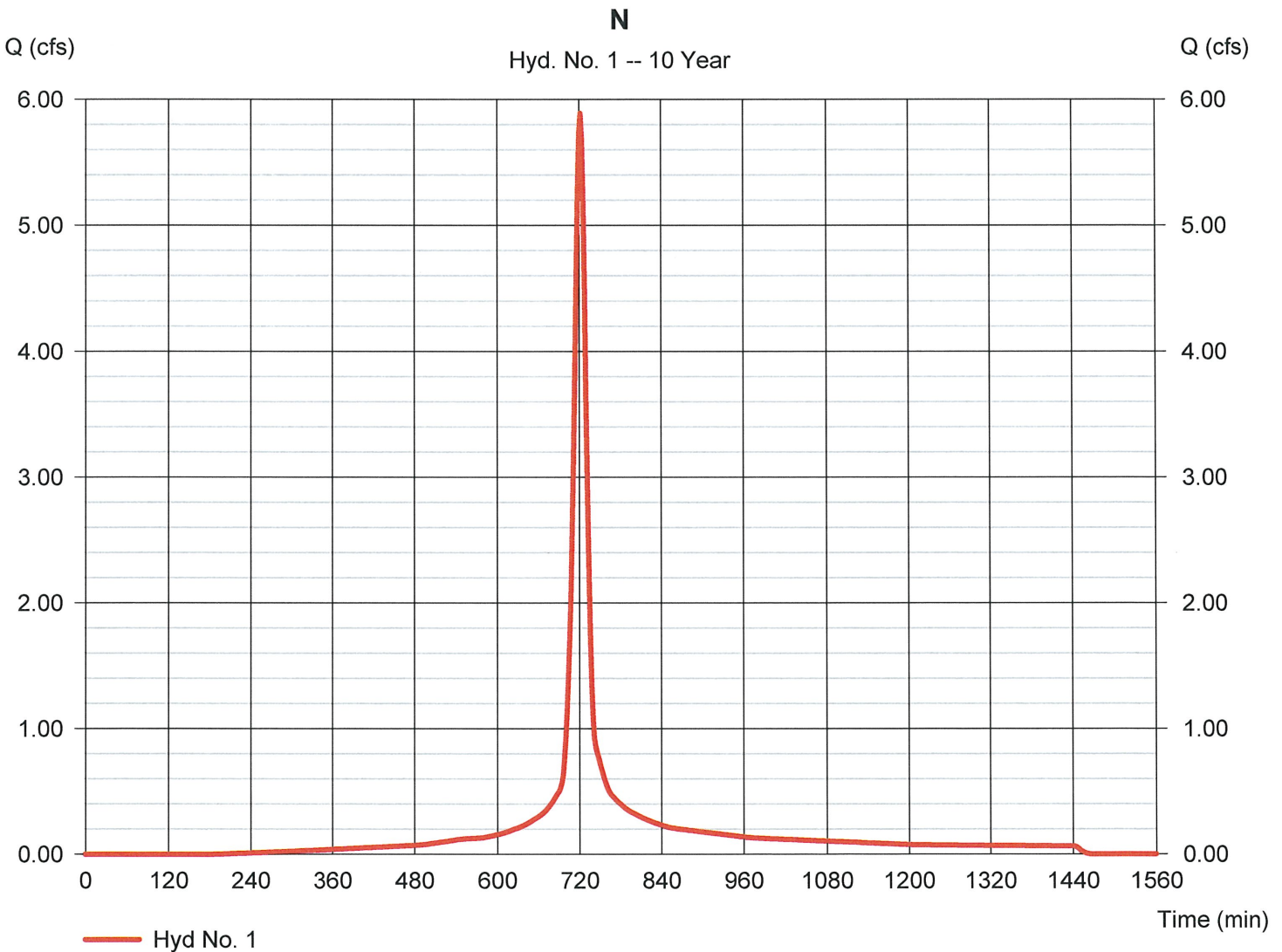
Thursday, Jan 28, 2010

Hyd. No. 1

N

Hydrograph type = SCS Runoff
 Storm frequency = 10 yrs
 Time interval = 2 min
 Drainage area = 1.135 ac
 Basin Slope = 0.0 %
 Tc method = USER
 Total precip. = 5.28 in
 Storm duration = 24 hrs

Peak discharge = 5.893 cfs
 Time to peak = 722 min
 Hyd. volume = 17,527 cuft
 Curve number = 92
 Hydraulic length = 0 ft
 Time of conc. (Tc) = 15.00 min
 Distribution = Type II
 Shape factor = 484



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2009 by Autodesk, Inc. v6.066

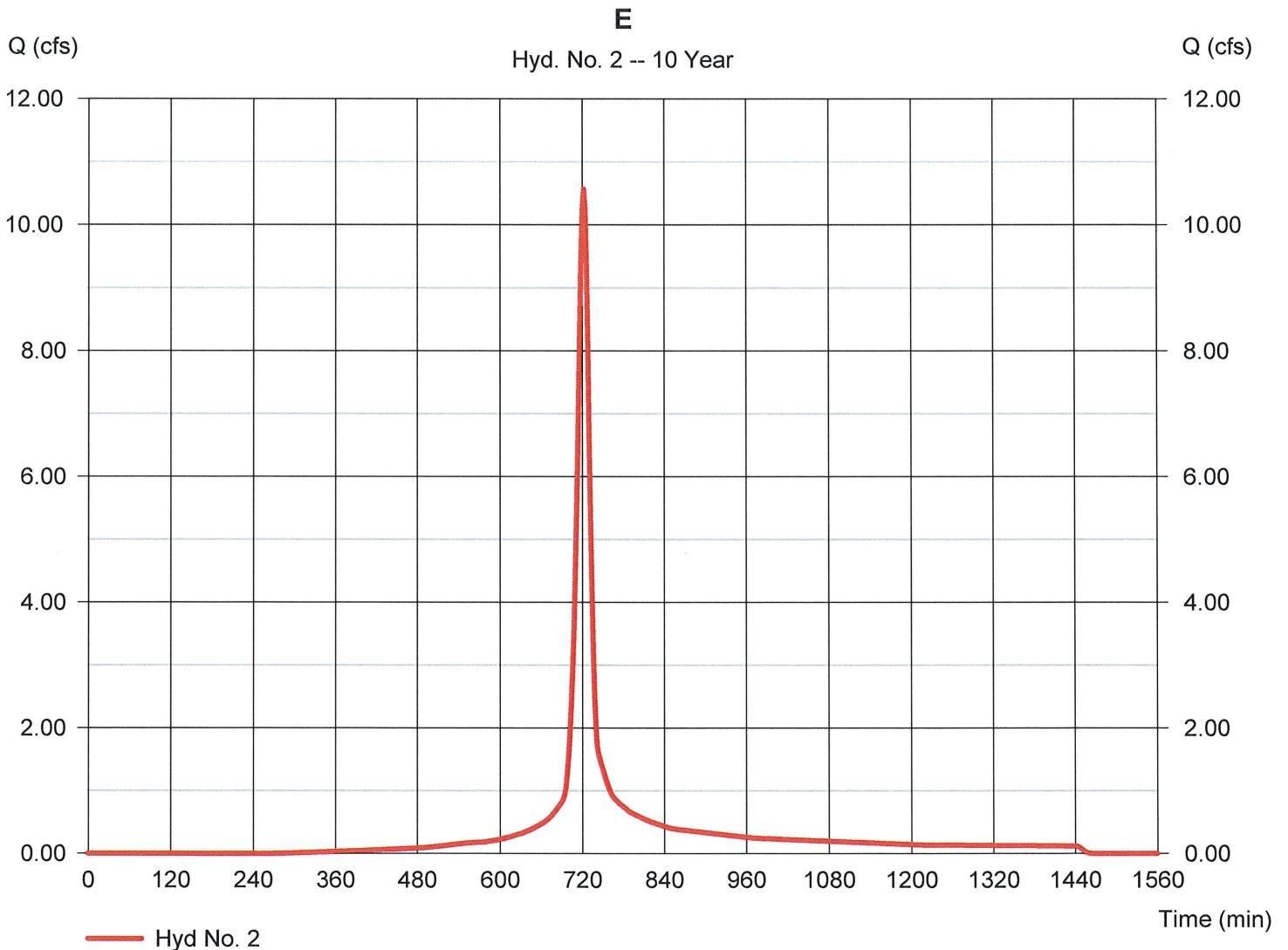
Thursday, Jan 28, 2010

Hyd. No. 2

E

Hydrograph type = SCS Runoff
 Storm frequency = 10 yrs
 Time interval = 2 min
 Drainage area = 2.191 ac
 Basin Slope = 0.0 %
 Tc method = USER
 Total precip. = 5.28 in
 Storm duration = 24 hrs

Peak discharge = 10.57 cfs
 Time to peak = 722 min
 Hyd. volume = 30,518 cuft
 Curve number = 88
 Hydraulic length = 0 ft
 Time of conc. (Tc) = 15.00 min
 Distribution = Type II
 Shape factor = 484



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2009 by Autodesk, Inc. v6.066

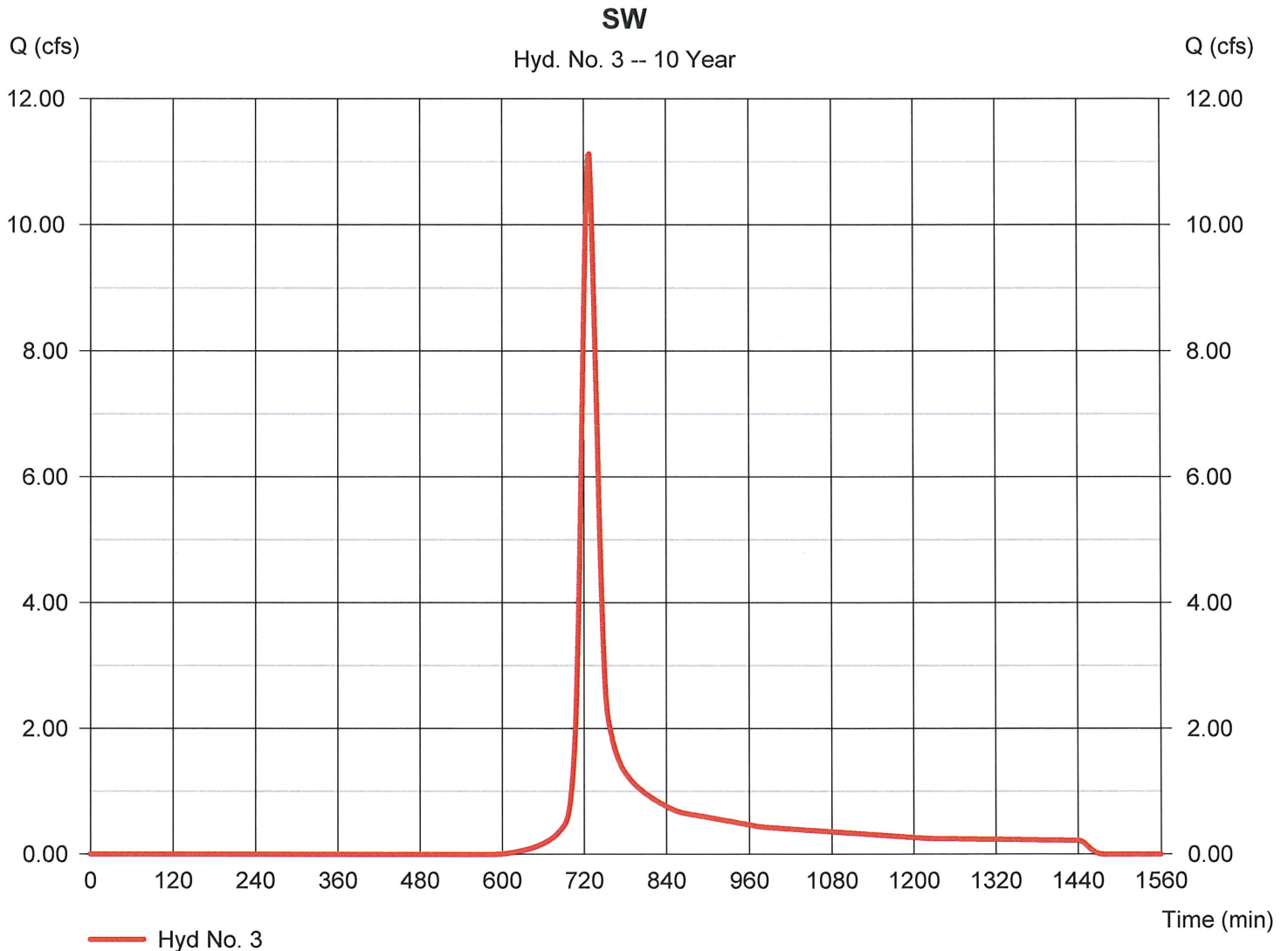
Thursday, Jan 28, 2010

Hyd. No. 3

SW

Hydrograph type = SCS Runoff
Storm frequency = 10 yrs
Time interval = 2 min
Drainage area = 4.920 ac
Basin Slope = 0.0 %
Tc method = TR55
Total precip. = 5.28 in
Storm duration = 24 hrs

Peak discharge = 11.13 cfs
Time to peak = 728 min
Hyd. volume = 39,325 cuft
Curve number = 69
Hydraulic length = 0 ft
Time of conc. (Tc) = 21.90 min
Distribution = Type II
Shape factor = 484



Hydrograph Summary Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2009 by Autodesk, Inc. v6.066

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	7.085	2	722	21,313	----	----	----	N	
2	SCS Runoff	12.91	2	722	37,666	----	----	----	E	
3	SCS Runoff	15.11	2	726	52,740	----	----	----	SW	
EXIST HYD.gpw					Return Period: 25 Year			Thursday, Jan 28, 2010		

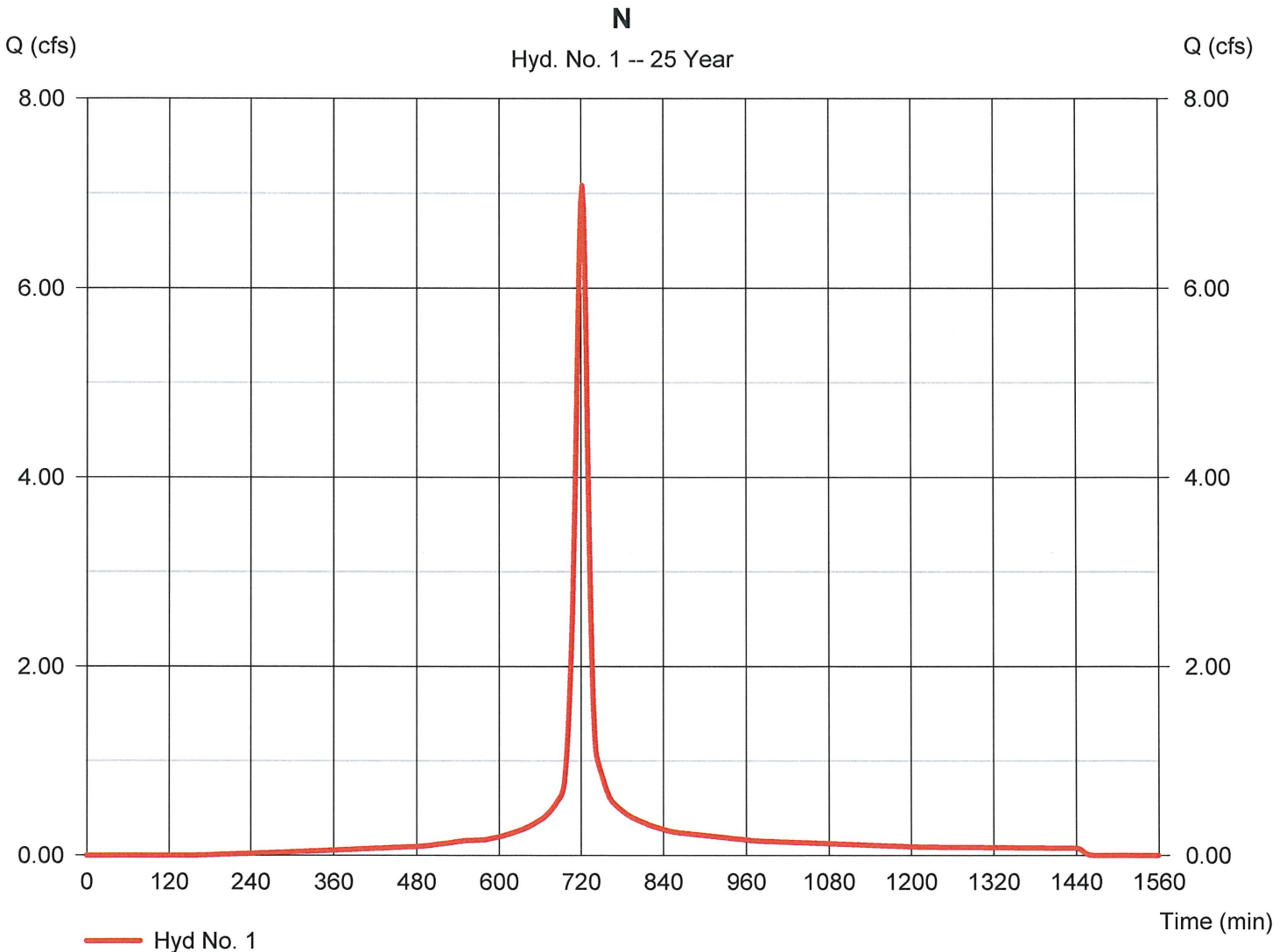
Hydrograph Report

Hyd. No. 1

N

Hydrograph type = SCS Runoff
Storm frequency = 25 yrs
Time interval = 2 min
Drainage area = 1.135 ac
Basin Slope = 0.0 %
Tc method = USER
Total precip. = 6.24 in
Storm duration = 24 hrs

Peak discharge = 7.085 cfs
Time to peak = 722 min
Hyd. volume = 21,313 cuft
Curve number = 92
Hydraulic length = 0 ft
Time of conc. (Tc) = 15.00 min
Distribution = Type II
Shape factor = 484



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2009 by Autodesk, Inc. v6.066

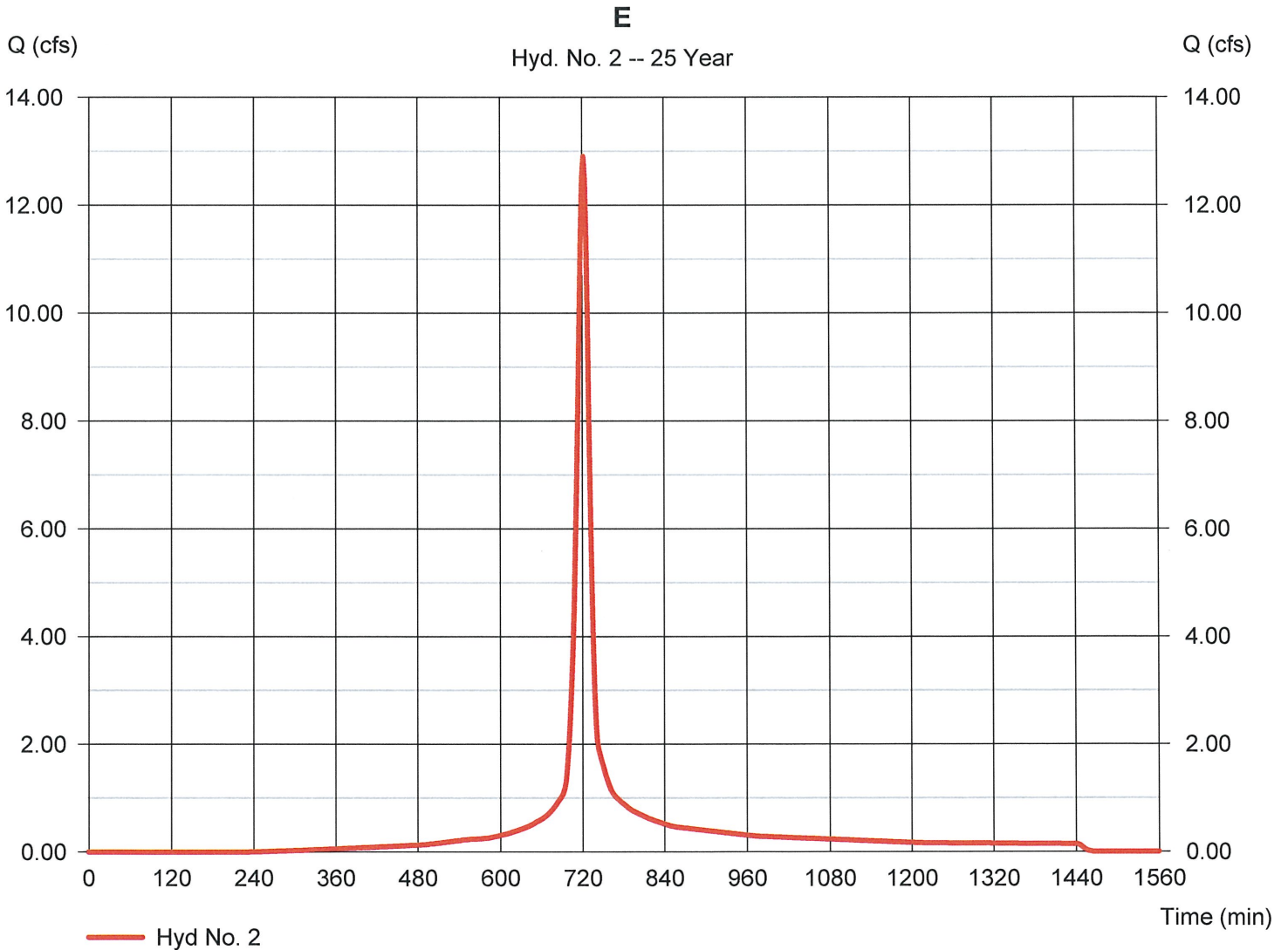
Thursday, Jan 28, 2010

Hyd. No. 2

E

Hydrograph type = SCS Runoff
Storm frequency = 25 yrs
Time interval = 2 min
Drainage area = 2.191 ac
Basin Slope = 0.0 %
Tc method = USER
Total precip. = 6.24 in
Storm duration = 24 hrs

Peak discharge = 12.91 cfs
Time to peak = 722 min
Hyd. volume = 37,666 cuft
Curve number = 88
Hydraulic length = 0 ft
Time of conc. (Tc) = 15.00 min
Distribution = Type II
Shape factor = 484



Hydrograph Report

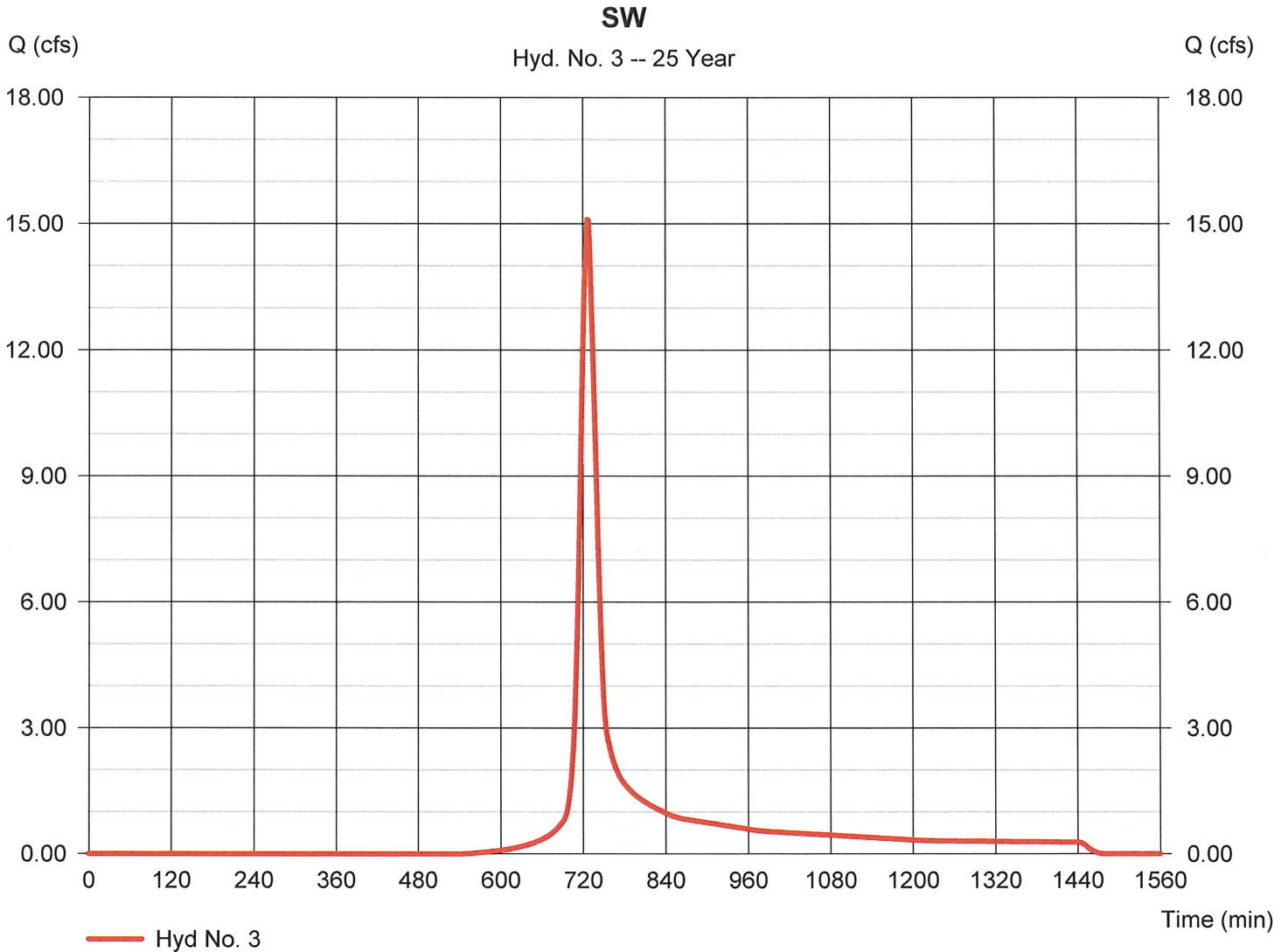
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2009 by Autodesk, Inc. v6.066

Thursday, Jan 28, 2010

Hyd. No. 3

SW

Hydrograph type	= SCS Runoff	Peak discharge	= 15.11 cfs
Storm frequency	= 25 yrs	Time to peak	= 726 min
Time interval	= 2 min	Hyd. volume	= 52,740 cuft
Drainage area	= 4.920 ac	Curve number	= 69
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 21.90 min
Total precip.	= 6.24 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Summary Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2009 by Autodesk, Inc. v6.066

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	8.862	2	722	27,022	----	----	----	N
2	SCS Runoff	16.39	2	722	48,509	----	----	----	E
3	SCS Runoff	21.44	2	726	74,151	----	----	----	SW
EXIST HYD.gpw					Return Period: 100 Year		Thursday, Jan 28, 2010		

Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2009 by Autodesk, Inc. v6.066

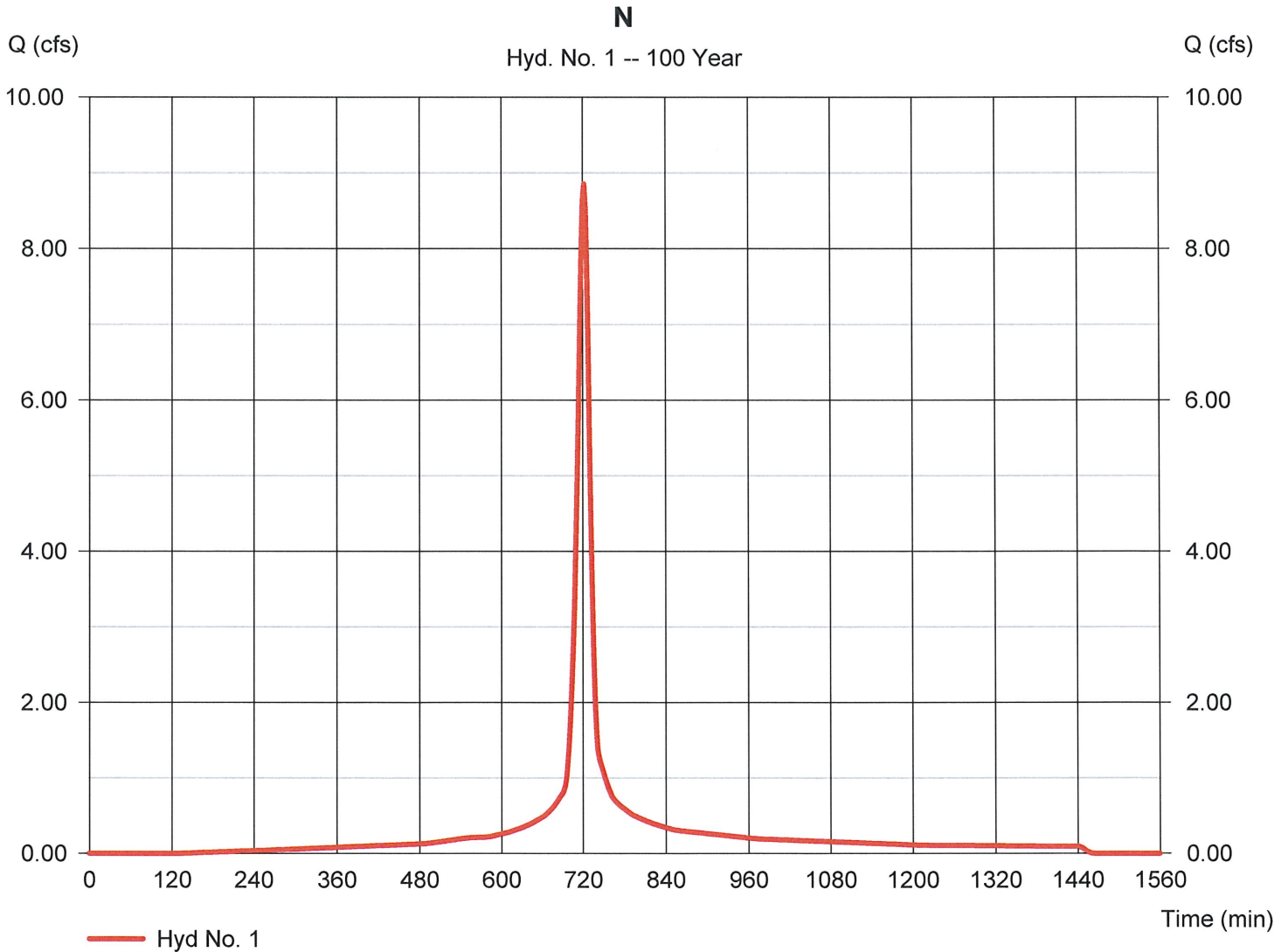
Thursday, Jan 28, 2010

Hyd. No. 1

N

Hydrograph type = SCS Runoff
Storm frequency = 100 yrs
Time interval = 2 min
Drainage area = 1.135 ac
Basin Slope = 0.0 %
Tc method = USER
Total precip. = 7.68 in
Storm duration = 24 hrs

Peak discharge = 8.862 cfs
Time to peak = 722 min
Hyd. volume = 27,022 cuft
Curve number = 92
Hydraulic length = 0 ft
Time of conc. (Tc) = 15.00 min
Distribution = Type II
Shape factor = 484



Hydrograph Report

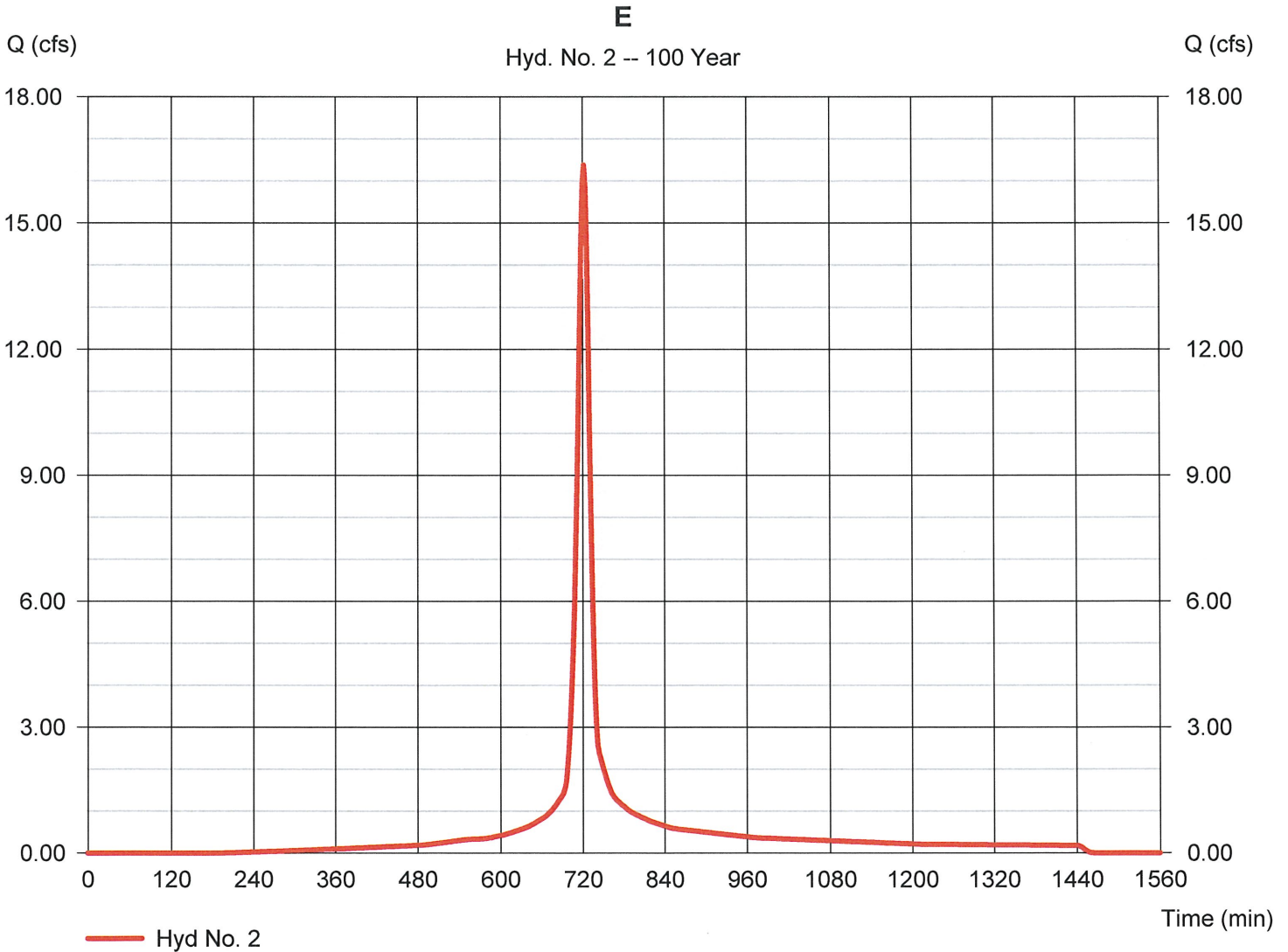
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Thursday, Jan 28, 2010

Hyd. No. 2

E

Hydrograph type	=	SCS Runoff	Peak discharge	=	16.39 cfs
Storm frequency	=	100 yrs	Time to peak	=	722 min
Time interval	=	2 min	Hyd. volume	=	48,509 cuft
Drainage area	=	2.191 ac	Curve number	=	88
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	USER	Time of conc. (Tc)	=	15.00 min
Total precip.	=	7.68 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2009 by Autodesk, Inc. v6.066

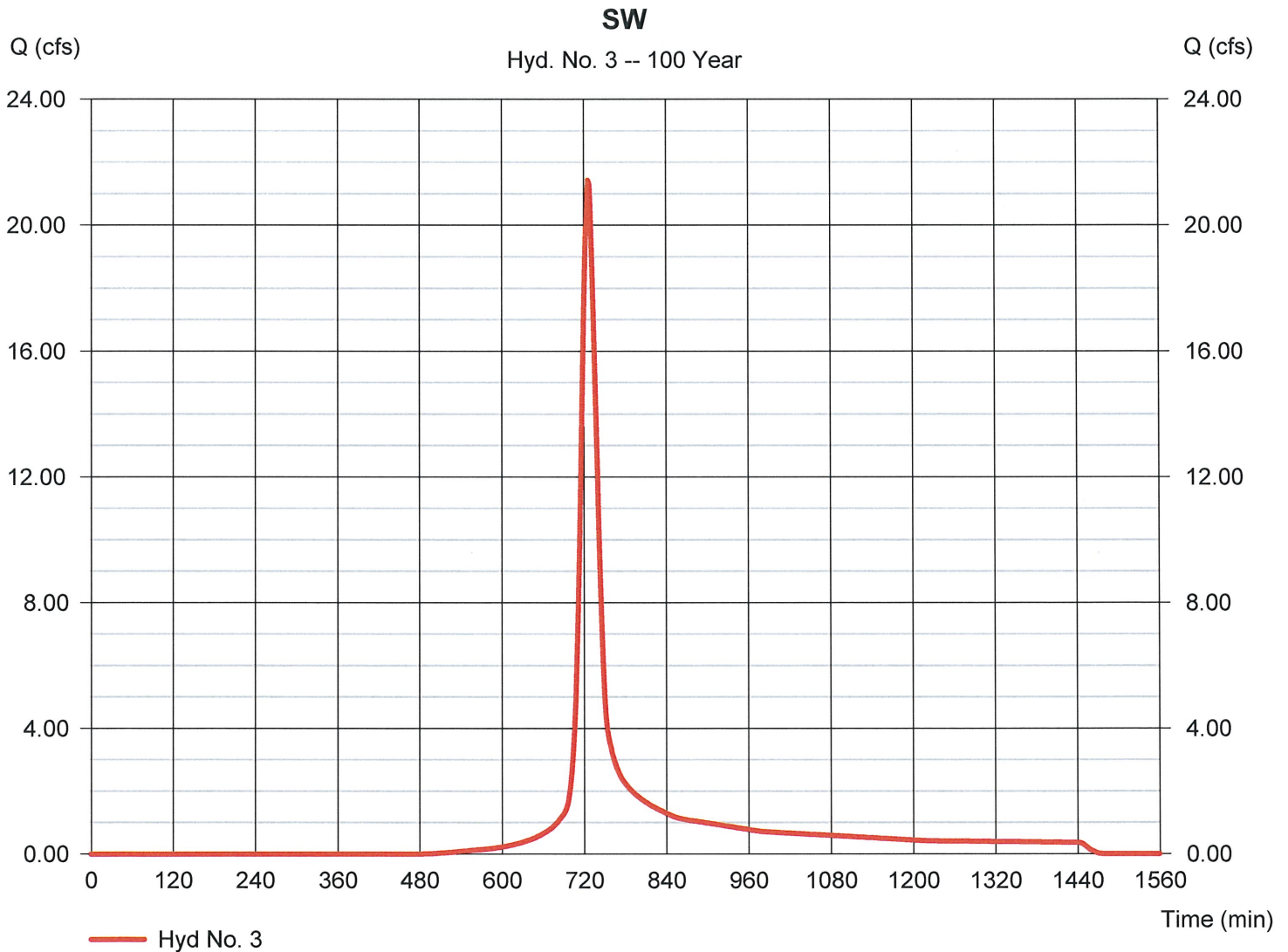
Thursday, Jan 28, 2010

Hyd. No. 3

SW

Hydrograph type = SCS Runoff
 Storm frequency = 100 yrs
 Time interval = 2 min
 Drainage area = 4.920 ac
 Basin Slope = 0.0 %
 Tc method = TR55
 Total precip. = 7.68 in
 Storm duration = 24 hrs

Peak discharge = 21.44 cfs
 Time to peak = 726 min
 Hyd. volume = 74,151 cuft
 Curve number = 69
 Hydraulic length = 0 ft
 Time of conc. (Tc) = 21.90 min
 Distribution = Type II
 Shape factor = 484



Tab 3. Post-Development Hydrologic Analysis

A. Proposed conditions hydrologic and hydraulic analysis

The analysis was completed using the SCS Hydrograph method. The 2, 5, 10, 25, & 100 year, 24-hour storm events were evaluated. The information appears in Exhibit 3-1. The results are summarized in the following table.

Area/Frequency	24-Hour Storm Flows (cfs)				
	2-Year	5-Year	10-Year	25-Year	100-Year
North	3.96	5.22	6.16	7.41	9.27
East	5.81	7.66	9.04	10.87	13.60
Southwest	14.11	19.73	23.99	29.69	38.21
Pond Outflow	5.06	5.79	6.84	12.11	20.26
South Offsite	7.70	10.77	13.09	16.20	20.85

B. Proposed times of concentration used in calculations

Area	T _c (min)
North	15.0
East	15.0
Southwest	15.0
South Offsite	15.0

C. Assumed post-developed runoff curve numbers

See table shown in Tab 2, Section O for proposed curve numbers.

D. Proposed contours for detention facilities

Site detention is to be provided in parking areas in the North and East drainage areas and by dry detention in the Southwest area. The detention design and proposed location is shown on the Drainage Plan (Exhibit 1-5).

E. Preliminary sizing calculations for storm water controls

Sizing for all storm water controls is shown in Exhibit 3-2.

F. Stage-storage-discharge curve and inflow/outflow hydrographs for storage facilities

Storage curve was computed for the volume of water that could be stored for proposed runoff within the southwest drainage area. Exhibit 3-1 includes design information for the detention pond along with all hydrograph data. The resulting stage-storage-discharge table is shown on the Drainage Plan. Peak flows for each design storm were limited to the pre-developed flows except for the 2-year event. That event has an existing runoff of 4.88 cfs while the proposed

outflow of the pond during the 2-year event yields a flow of 5.06 cfs through a 12" pipe. This equates to a 3.7% increase of flow and is not enough to impact the system negatively in the future. All other events' proposed outflow through the pond give a significant decrease in post-developed flows in relation to existing flows as discussed. The hydraulic grade line of the complete system was then computed using computed flows for each of the design storms. The results are shown in Exhibit 3-2.

G. Final analysis of potential upstream/downstream impacts

No relevant impacts are noted from this analysis. The north and east drainage areas will have minimal changes to the existing runoff and any storage required shall be made in parking areas and routed the existing storm sewers. The southwest area drainage may connect to the storm sewer system located in Victoria Street. That system outflow is to a pit pond south and east of the I-135/I35 interchange. With the dry detention system, flows are not increasing to that system and therefore have no impact on the downstream existing pond.

H. Existing and proposed structural elevations

Proposed elevations for all storm water controls is shown in Exhibit 3-2.

I. Design water surface elevations and normal pool elevations for ponds

The dry detention pond shall have a design water surface elevation of 1272.5 based on a 12" outflow pipe starting at an elevation of 1267.5 and a pond over flow channel with a width of 4' and elevation of 1271.5 at the pond. See Exhibit 1-5 for layout of pond. Maximum ponding within parking areas shall be limited to 0.5' above the inlet tops.

J. Typical details for structures

Standard City of Wichita details.

K. Proposed limits of clearing and grading

Clearing and grading shall be done only as needed and will be established upon any submittal for site improvements.

L. Location of existing and proposed impervious areas

Existing impervious areas are shown on the site layout. New areas proposed are estimated for the purposes of this report.

M. Location of existing and proposed utilities and easements.

See Tab 2, Section J for discussion of existing utilities. The plat (Exhibit 1-3) shows current easements, which will be the location for any future utilities.

N. Location of existing and proposed conveyance systems

Existing conveyance systems are discussed in Tab 2, Section K. Proposed changes include adding grated inlets at sump areas as needed in proposed parking areas and connecting a new storm sewer from the proposed detention pond in the SW drainage area to an existing 24" storm sewer located on the east side of Victoria Street. The analysis in Exhibit 3-2 shows that the hydraulic grade line at the pond is 1272.67 based on a full pipe at the outfall. The top of the pond will be set at an elevation of 1274.0 based on the outlet designs given in the exhibit. Any new storm sewers will drain through new pipe networks into the existing storm sewer systems as appropriate. The drainage plan shows the location of proposed changes required for the detention pond. Any additional storm sewer designs shall comply with the latest City of Wichita design criteria to convey any added site runoff.

O. Preliminary location and dimensions of proposed channel modifications

This development will not require/include any channel modifications.

P. Preliminary selection and location of storm water controls

Storm water controls will include appropriate inlet and pipe networks at locations to be finalized as part of the construction plans. The layouts are shown in Exhibit 3-2. When these networks are needed, they will convey the five-year storm at a minimum. Sump locations in specific drainage areas will have flows routed overland to other low points and carried through the remainder of the system.

Q. Emergency overflow structure's flow path

The emergency overflow routes storm water from the dry detention pond at an elevation of 1271.5 to a proposed inlet near the southwest corner of the property.

R. Detention facility freeboard

The freeboard for the detention facility is a minimum of one foot (1') above the proposed design water surface elevation. The top of the pond in the design calculations was set to an elevation of 1274.0.

S. The 100-year, 24-hour High Water Line

The HWL established for the pond in the SW drainage area is 1272.5.

T. Lowest opening elevation table

The lowest opening elevation table is shown on the Drainage Plan (Exhibit 1-5).

U. Storm water management facilities located within a reserve

No facilities or construction activities are planned within any reserves at this time. The intent for the proposed dry detention facility is to allow flexibility in its location. The Drainage Plan shows a proposed easement/reserve for the pond. It is expected that the final location of the pond be determined as part of the final design and grading plans for the property. Changes to this Drainage Plan must be approved by the appropriate governing body prior to issuing any building permit to ensure that drainage requirements are met.

V. Maintenance responsibility of storm water management facilities

The maintenance of storm water management facilities shall be the responsibility of the owner and shall be transferred to new owner upon the sale of any part thereof.

W. Off-site drainage easements or agreements

No off-site drainage easements or agreements required for this development.

FUNSTON ADDITION

EXHIBIT 3-1

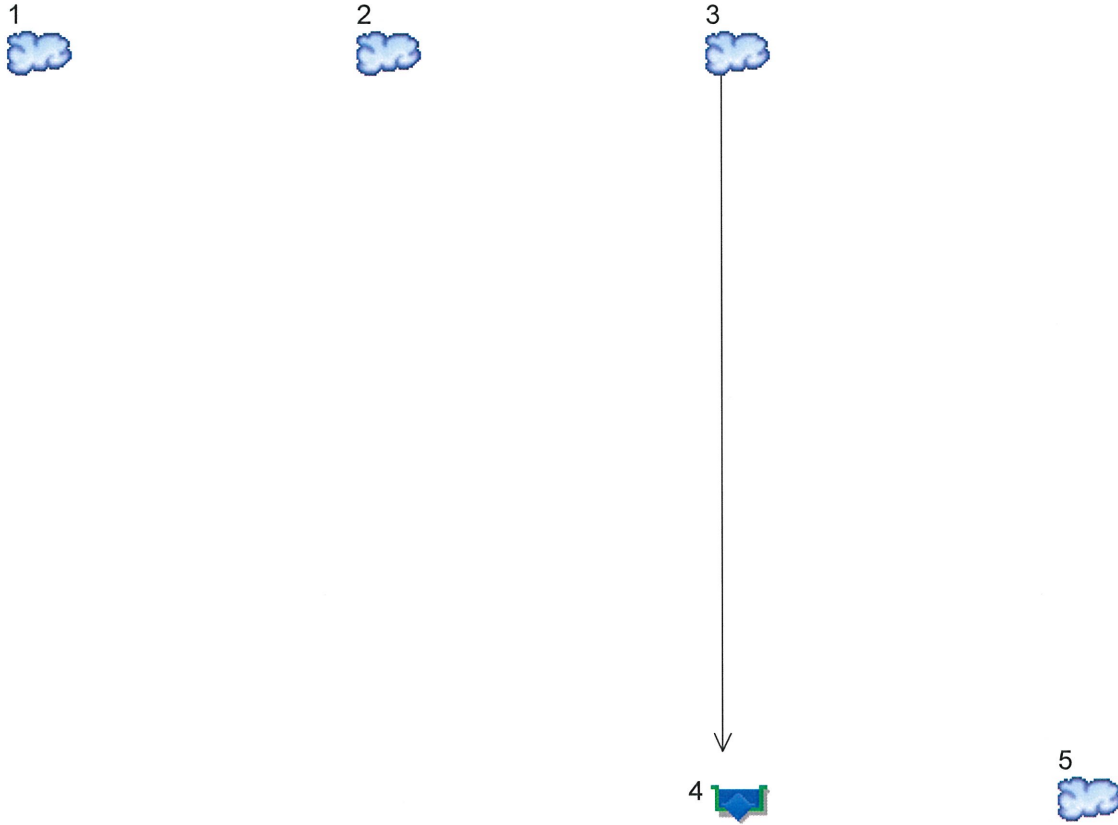
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Watershed Model Schematic

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Legend

Hyd.	Origin	Description
1	SCS Runoff	N
2	SCS Runoff	E
3	SCS Runoff	SW
4	Reservoir	SW Outlet
5	SCS Runoff	South Offsite

Hydrograph Return Period Recap

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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	-----	3.007	3.959	-----	5.222	6.163	7.410	8.341	9.268	N
2	SCS Runoff	-----	4.413	5.810	-----	7.663	9.044	10.87	12.24	13.60	E
3	SCS Runoff	-----	9.986	14.11	-----	19.73	23.99	29.69	33.95	38.21	SW
4	Reservoir	3	4.450	5.062	-----	5.789	6.844	12.11	16.07	20.26	SW Outlet
5	SCS Runoff	-----	5.450	7.697	-----	10.77	13.09	16.20	18.53	20.85	South Offsite

Hydrograph Summary Report

Hydroflow Hydrographs Extension for AutoCAD® Civil 3D® 2009 by Autodesk, Inc. v6.066

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	3.959	2	722	11,480	----	----	----	N
2	SCS Runoff	5.810	2	722	16,847	----	----	----	E
3	SCS Runoff	14.11	2	722	39,596	----	----	----	SW
4	Reservoir	5.062	2	736	39,596	3	1270.46	9,937	SW Outlet
5	SCS Runoff	7.697	2	722	21,607	----	----	----	South Offsite
PROP HYD REV.gpw					Return Period: 2 Year			Thursday, Jan 28, 2010	

Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2009 by Autodesk, Inc. v6.066

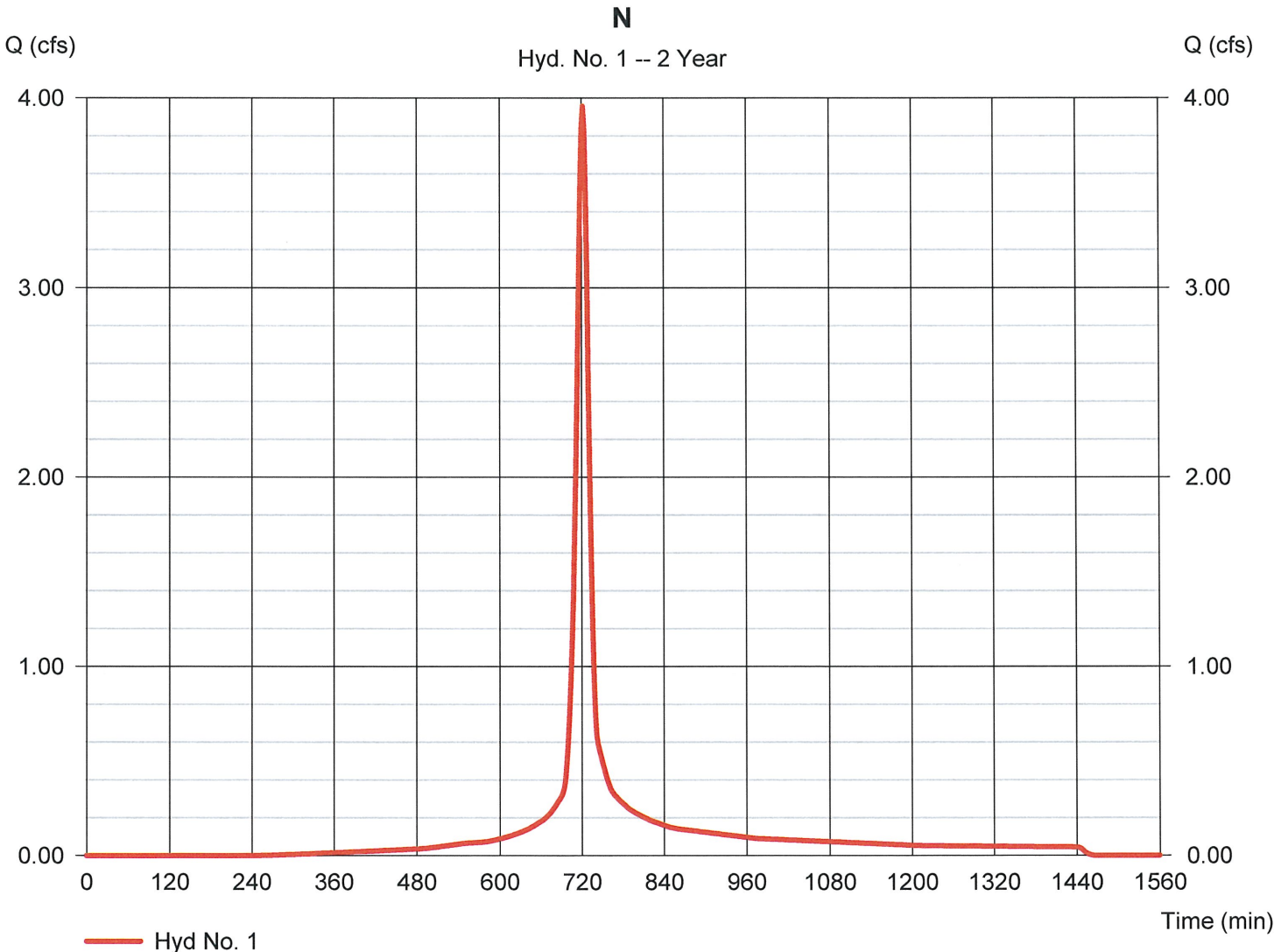
Thursday, Jan 28, 2010

Hyd. No. 1

N

Hydrograph type = SCS Runoff
 Storm frequency = 2 yrs
 Time interval = 2 min
 Drainage area = 1.187 ac
 Basin Slope = 0.0 %
 Tc method = USER
 Total precip. = 3.60 in
 Storm duration = 24 hrs

Peak discharge = 3.959 cfs
 Time to peak = 722 min
 Hyd. volume = 11,480 cuft
 Curve number = 92
 Hydraulic length = 0 ft
 Time of conc. (Tc) = 15.00 min
 Distribution = Type II
 Shape factor = 484



Hydrograph Report

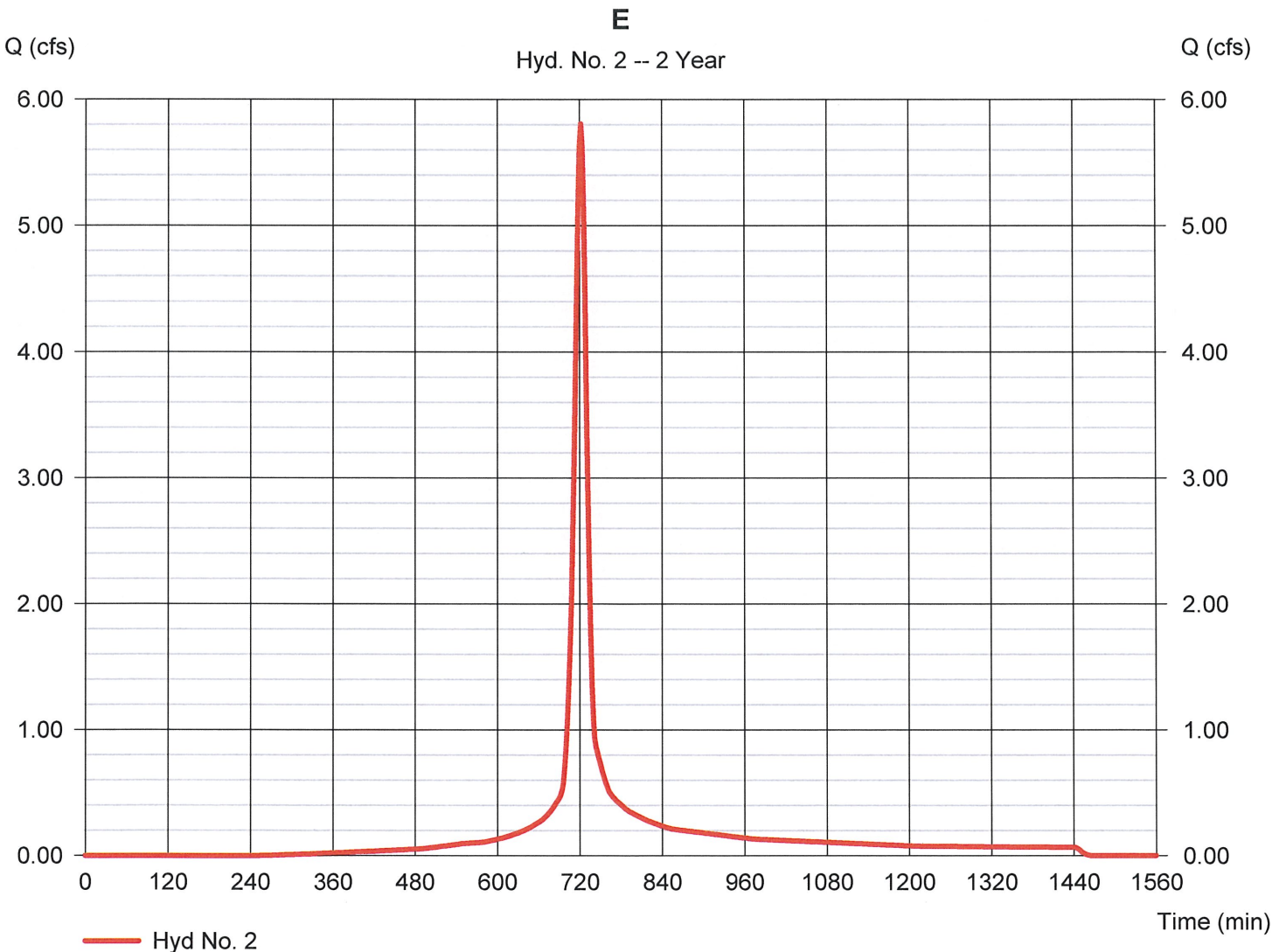
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2009 by Autodesk, Inc. v6.066

Thursday, Jan 28, 2010

Hyd. No. 2

E

Hydrograph type	= SCS Runoff	Peak discharge	= 5.810 cfs
Storm frequency	= 2 yrs	Time to peak	= 722 min
Time interval	= 2 min	Hyd. volume	= 16,847 cuft
Drainage area	= 1.742 ac	Curve number	= 92
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 15.00 min
Total precip.	= 3.60 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2009 by Autodesk, Inc. v6.066

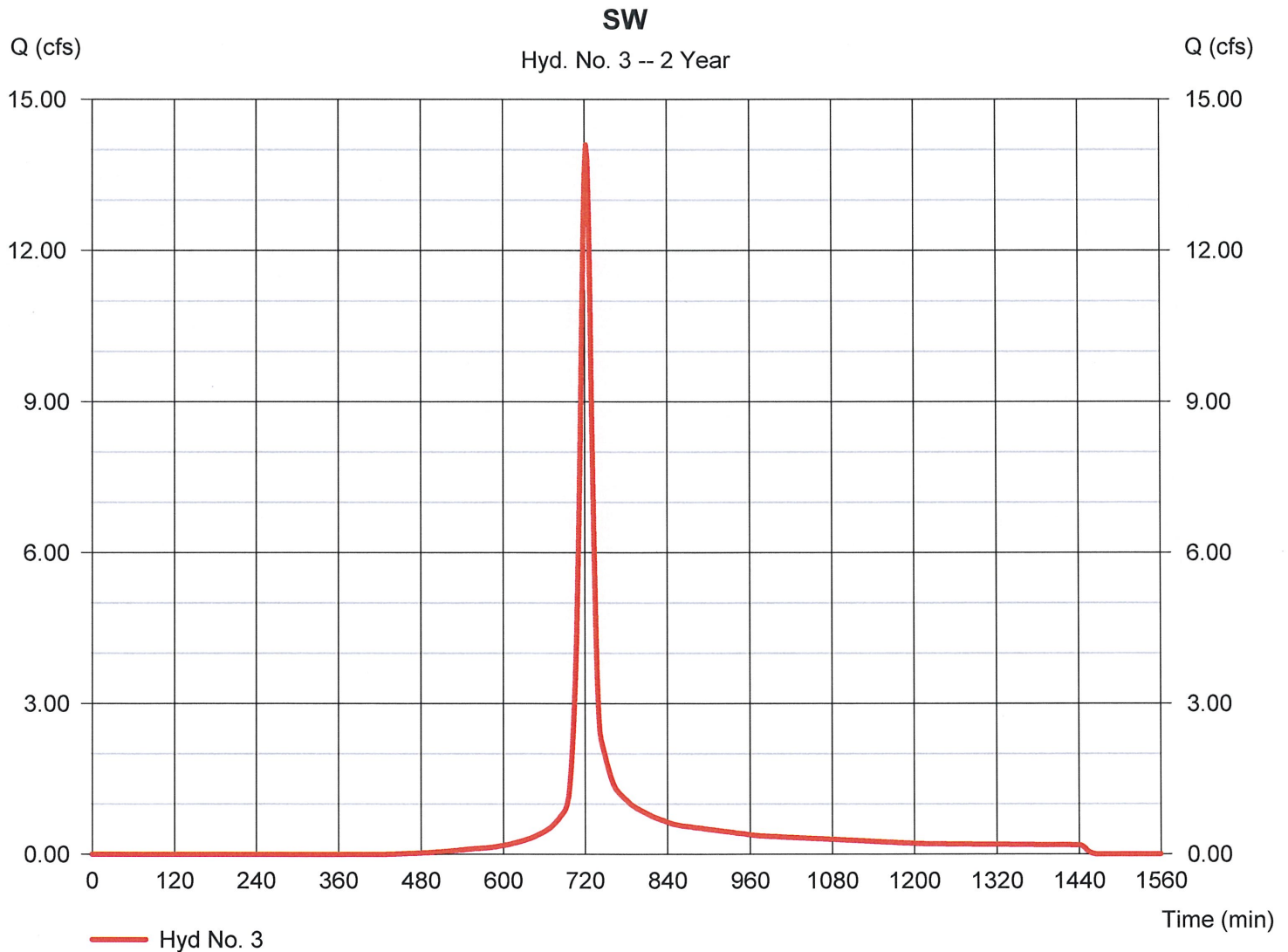
Thursday, Jan 28, 2010

Hyd. No. 3

SW

Hydrograph type = SCS Runoff
 Storm frequency = 2 yrs
 Time interval = 2 min
 Drainage area = 5.318 ac
 Basin Slope = 0.0 %
 Tc method = USER
 Total precip. = 3.60 in
 Storm duration = 24 hrs

Peak discharge = 14.11 cfs
 Time to peak = 722 min
 Hyd. volume = 39,596 cuft
 Curve number = 85
 Hydraulic length = 0 ft
 Time of conc. (Tc) = 15.00 min
 Distribution = Type II
 Shape factor = 484



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2009 by Autodesk, Inc. v6.066

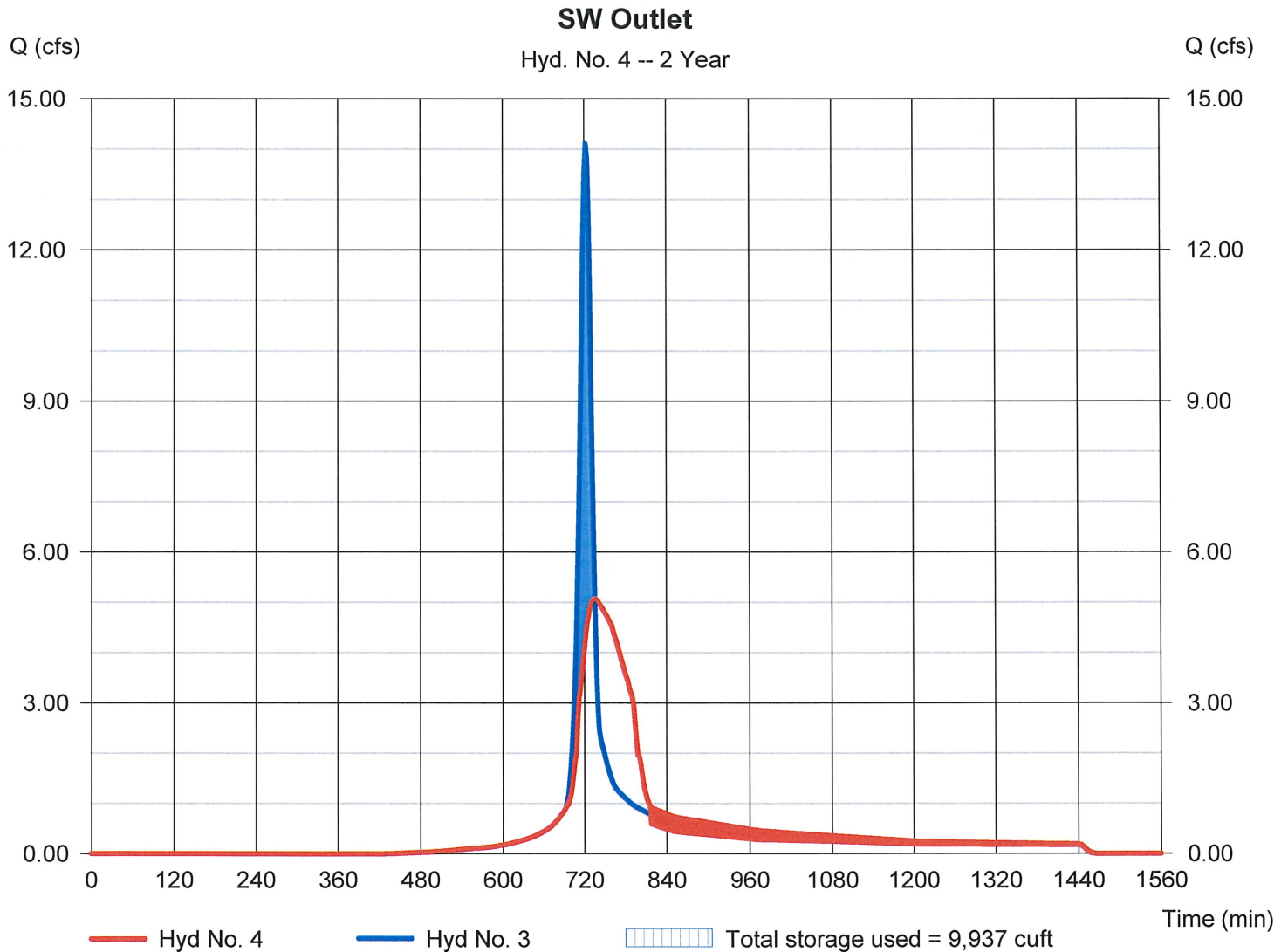
Thursday, Jan 28, 2010

Hyd. No. 4

SW Outlet

Hydrograph type	= Reservoir	Peak discharge	= 5.062 cfs
Storm frequency	= 2 yrs	Time to peak	= 736 min
Time interval	= 2 min	Hyd. volume	= 39,596 cuft
Inflow hyd. No.	= 3 - SW	Max. Elevation	= 1270.46 ft
Reservoir name	= <New Pond>	Max. Storage	= 9,937 cuft

Storage Indication method used.



Pond Report

Pond No. 1 - <New Pond>

Pond Data

Contours - User-defined contour areas. Average end area method used for volume calculation. Beginning Elevation = 1267.50 ft

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	1267.50	00	0	0
0.50	1268.00	01	0	0
1.50	1269.00	2,491	1,246	1,246
2.50	1270.00	7,362	4,927	6,173
3.50	1271.00	9,097	8,229	14,402
4.50	1272.00	11,538	10,318	24,720
5.50	1273.00	12,704	12,121	36,841
6.50	1274.00	14,701	13,703	50,543

Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 12.00	0.00	0.00	0.00
Span (in)	= 12.00	0.00	0.00	0.00
No. Barrels	= 1	0	0	0
Invert El. (ft)	= 1267.50	0.00	0.00	0.00
Length (ft)	= 66.00	0.00	0.00	0.00
Slope (%)	= 0.50	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)	= 4.00	Inactive	0.00	0.00
Crest El. (ft)	= 1271.50	1270.55	0.00	0.00
Weir Coeff.	= 3.33	3.33	3.33	3.33
Weir Type	= Ciplti	Rect	---	---
Multi-Stage	= No	No	No	No
Exfil.(in/hr)	= 0.000 (by Wet area)			
TW Elev. (ft)	= 1267.51			

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

Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Civ A cfs	Civ B cfs	Civ C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
0.00	0	1267.50	0.00	---	---	---	0.00	0.00	---	---	---	---	0.000
0.50	0	1268.00	0.95 ic	---	---	---	0.00	0.00	---	---	---	---	0.947
1.50	1,246	1269.00	3.05 oc	---	---	---	0.00	0.00	---	---	---	---	3.049
2.50	6,173	1270.00	4.53 oc	---	---	---	0.00	0.00	---	---	---	---	4.528
3.50	14,402	1271.00	5.63 oc	---	---	---	0.00	0.00	---	---	---	---	5.631
4.50	24,720	1272.00	6.55 oc	---	---	---	4.71	0.00	---	---	---	---	11.26
5.50	36,841	1273.00	7.36 oc	---	---	---	24.47	0.00	---	---	---	---	31.83
6.50	50,543	1274.00	8.08 oc	---	---	---	52.65	0.00	---	---	---	---	60.73

Hydrograph Report

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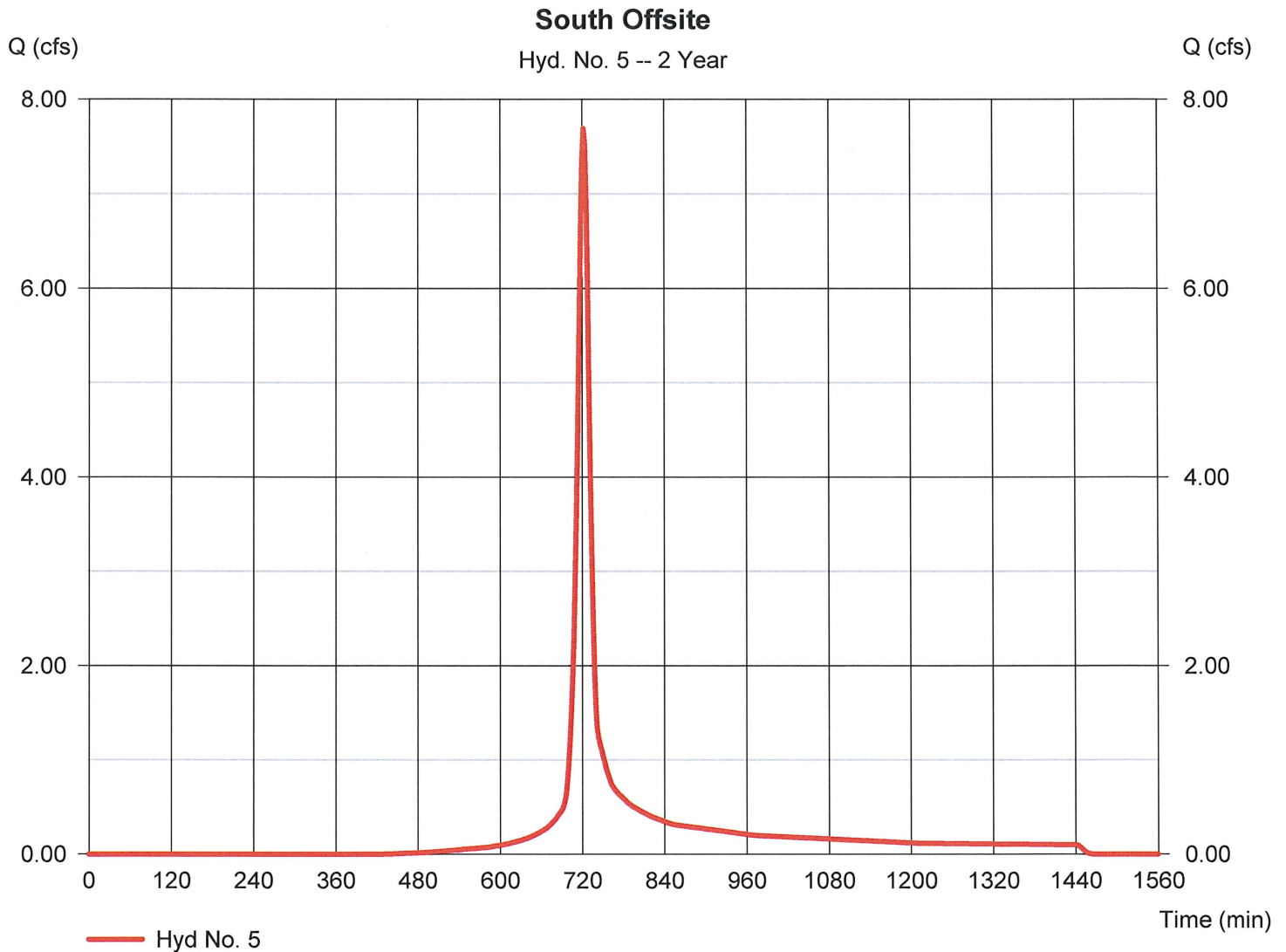
Thursday, Jan 28, 2010

Hyd. No. 5

South Offsite

Hydrograph type = SCS Runoff
 Storm frequency = 2 yrs
 Time interval = 2 min
 Drainage area = 2.902 ac
 Basin Slope = 0.0 %
 Tc method = USER
 Total precip. = 3.60 in
 Storm duration = 24 hrs

Peak discharge = 7.697 cfs
 Time to peak = 722 min
 Hyd. volume = 21,607 cuft
 Curve number = 85
 Hydraulic length = 0 ft
 Time of conc. (Tc) = 15.00 min
 Distribution = Type II
 Shape factor = 484



Hydrograph Summary Report

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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	5.222	2	722	15,378	-----	-----	-----	N	
2	SCS Runoff	7.663	2	722	22,568	-----	-----	-----	E	
3	SCS Runoff	19.73	2	722	55,785	-----	-----	-----	SW	
4	Reservoir	5.789	2	736	55,785	3	1271.17	16,072	SW Outlet	
5	SCS Runoff	10.77	2	722	30,441	-----	-----	-----	South Offsite	
PROP HYD REV.gpw					Return Period: 5 Year			Thursday, Jan 28, 2010		

Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2009 by Autodesk, Inc. v6.066

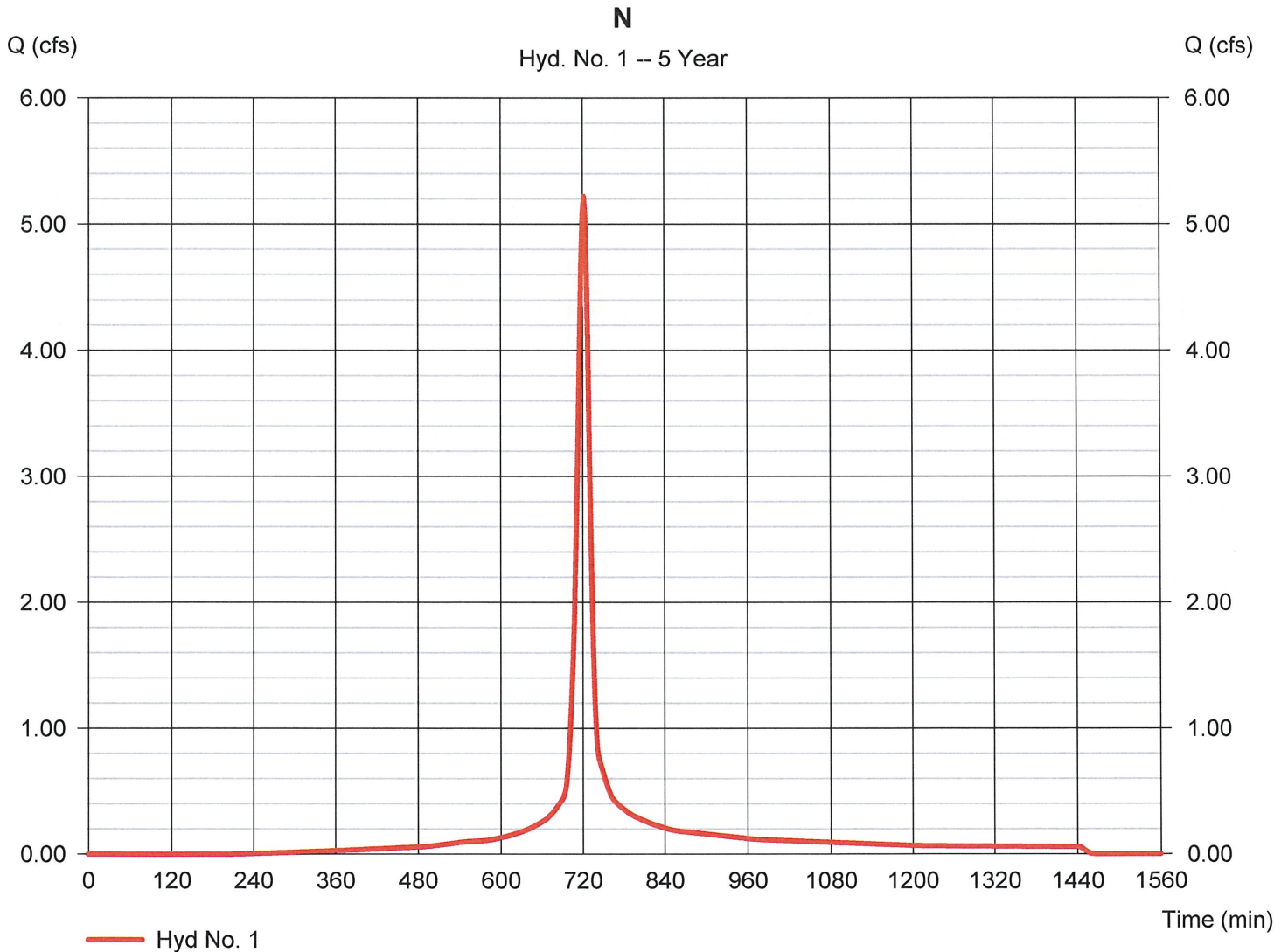
Thursday, Jan 28, 2010

Hyd. No. 1

N

Hydrograph type = SCS Runoff
 Storm frequency = 5 yrs
 Time interval = 2 min
 Drainage area = 1.187 ac
 Basin Slope = 0.0 %
 Tc method = USER
 Total precip. = 4.56 in
 Storm duration = 24 hrs

Peak discharge = 5.222 cfs
 Time to peak = 722 min
 Hyd. volume = 15,378 cuft
 Curve number = 92
 Hydraulic length = 0 ft
 Time of conc. (Tc) = 15.00 min
 Distribution = Type II
 Shape factor = 484



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2009 by Autodesk, Inc. v6.066

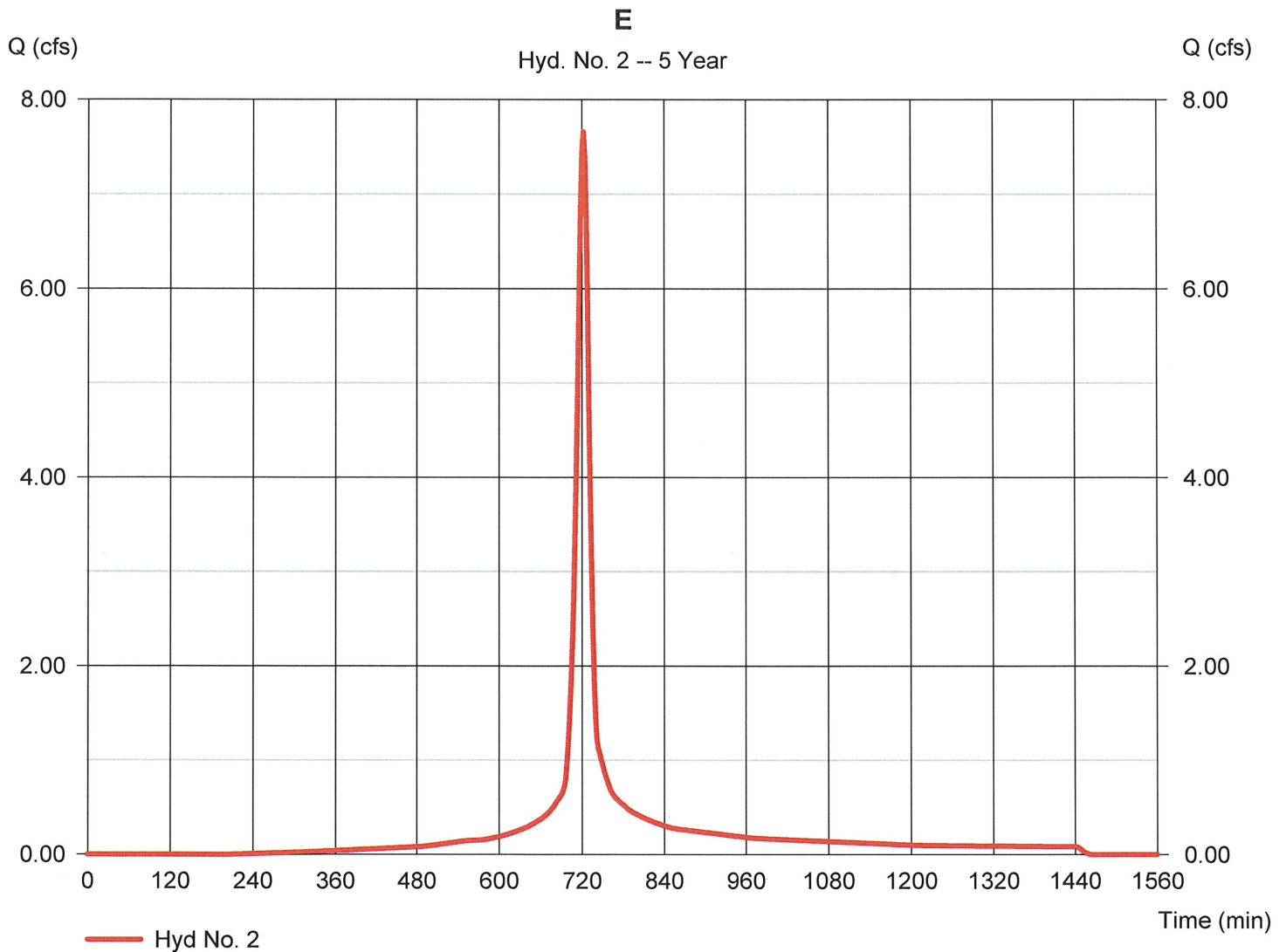
Thursday, Jan 28, 2010

Hyd. No. 2

E

Hydrograph type = SCS Runoff
 Storm frequency = 5 yrs
 Time interval = 2 min
 Drainage area = 1.742 ac
 Basin Slope = 0.0 %
 Tc method = USER
 Total precip. = 4.56 in
 Storm duration = 24 hrs

Peak discharge = 7.663 cfs
 Time to peak = 722 min
 Hyd. volume = 22,568 cuft
 Curve number = 92
 Hydraulic length = 0 ft
 Time of conc. (Tc) = 15.00 min
 Distribution = Type II
 Shape factor = 484



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2009 by Autodesk, Inc. v6.066

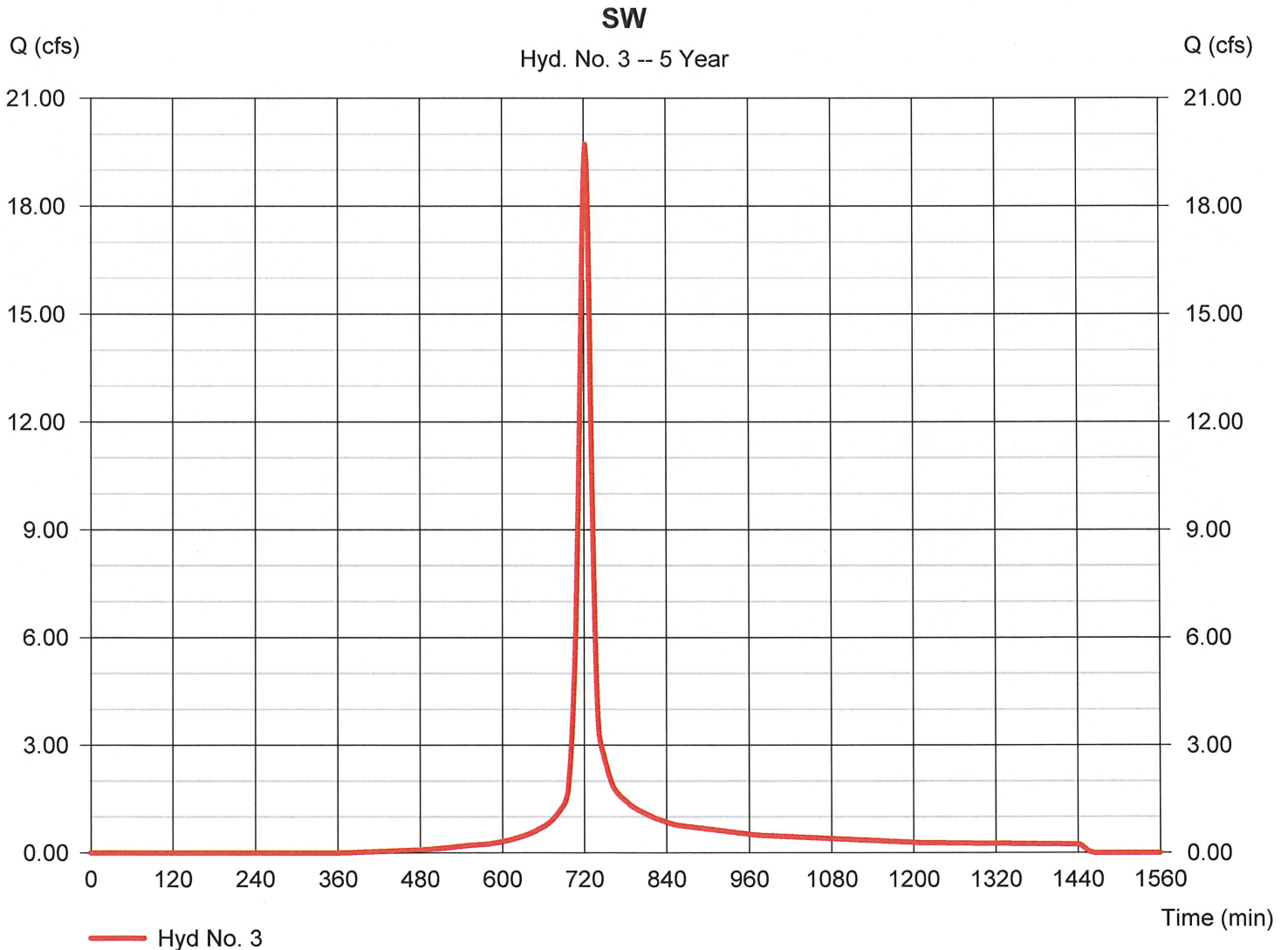
Thursday, Jan 28, 2010

Hyd. No. 3

SW

Hydrograph type = SCS Runoff
 Storm frequency = 5 yrs
 Time interval = 2 min
 Drainage area = 5.318 ac
 Basin Slope = 0.0 %
 Tc method = USER
 Total precip. = 4.56 in
 Storm duration = 24 hrs

Peak discharge = 19.73 cfs
 Time to peak = 722 min
 Hyd. volume = 55,785 cuft
 Curve number = 85
 Hydraulic length = 0 ft
 Time of conc. (Tc) = 15.00 min
 Distribution = Type II
 Shape factor = 484



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2009 by Autodesk, Inc. v6.066

Thursday, Jan 28, 2010

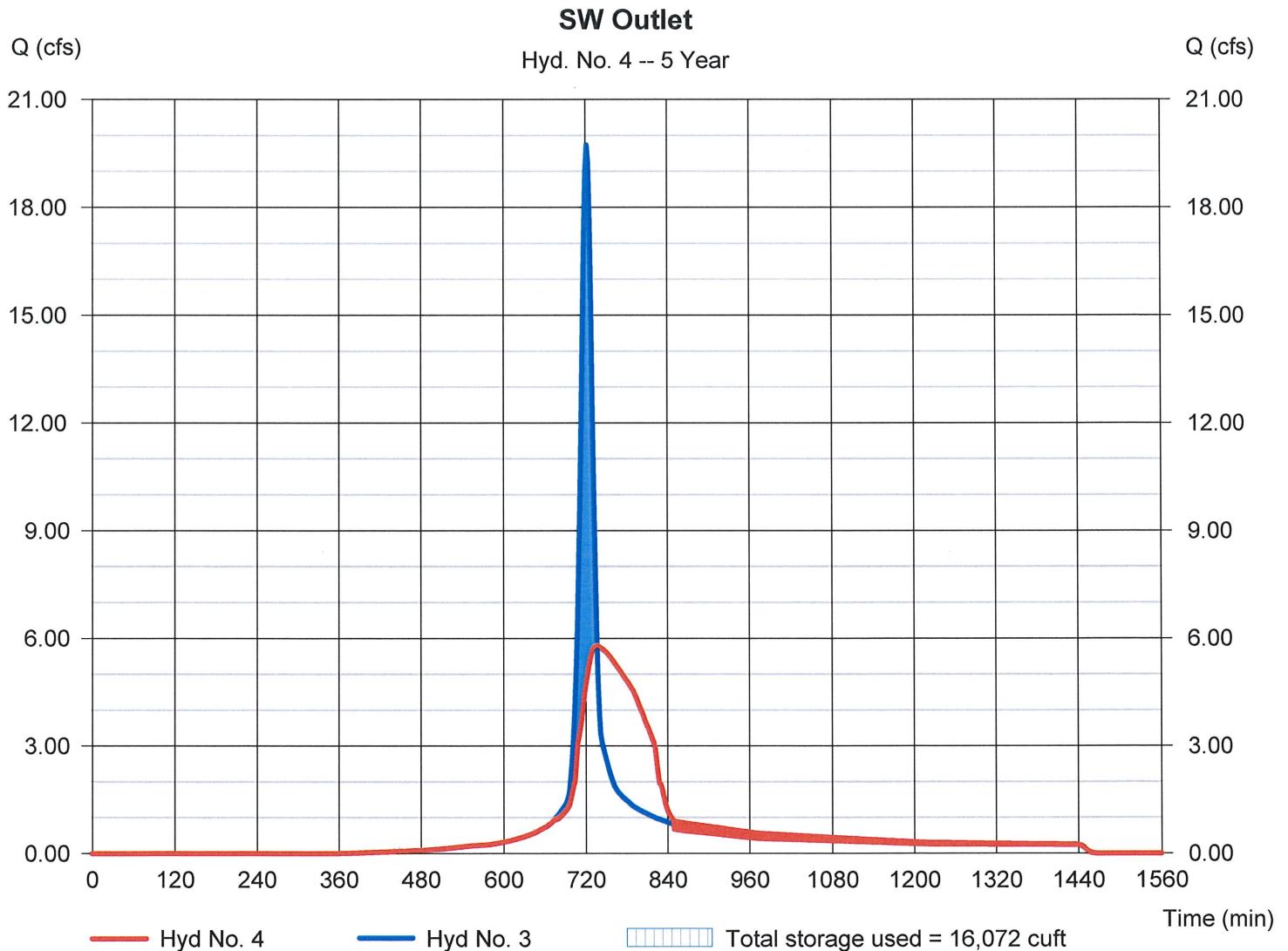
Hyd. No. 4

SW Outlet

Hydrograph type = Reservoir
 Storm frequency = 5 yrs
 Time interval = 2 min
 Inflow hyd. No. = 3 - SW
 Reservoir name = <New Pond>

Peak discharge = 5.789 cfs
 Time to peak = 736 min
 Hyd. volume = 55,785 cuft
 Max. Elevation = 1271.17 ft
 Max. Storage = 16,072 cuft

Storage Indication method used.



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2009 by Autodesk, Inc. v6.066

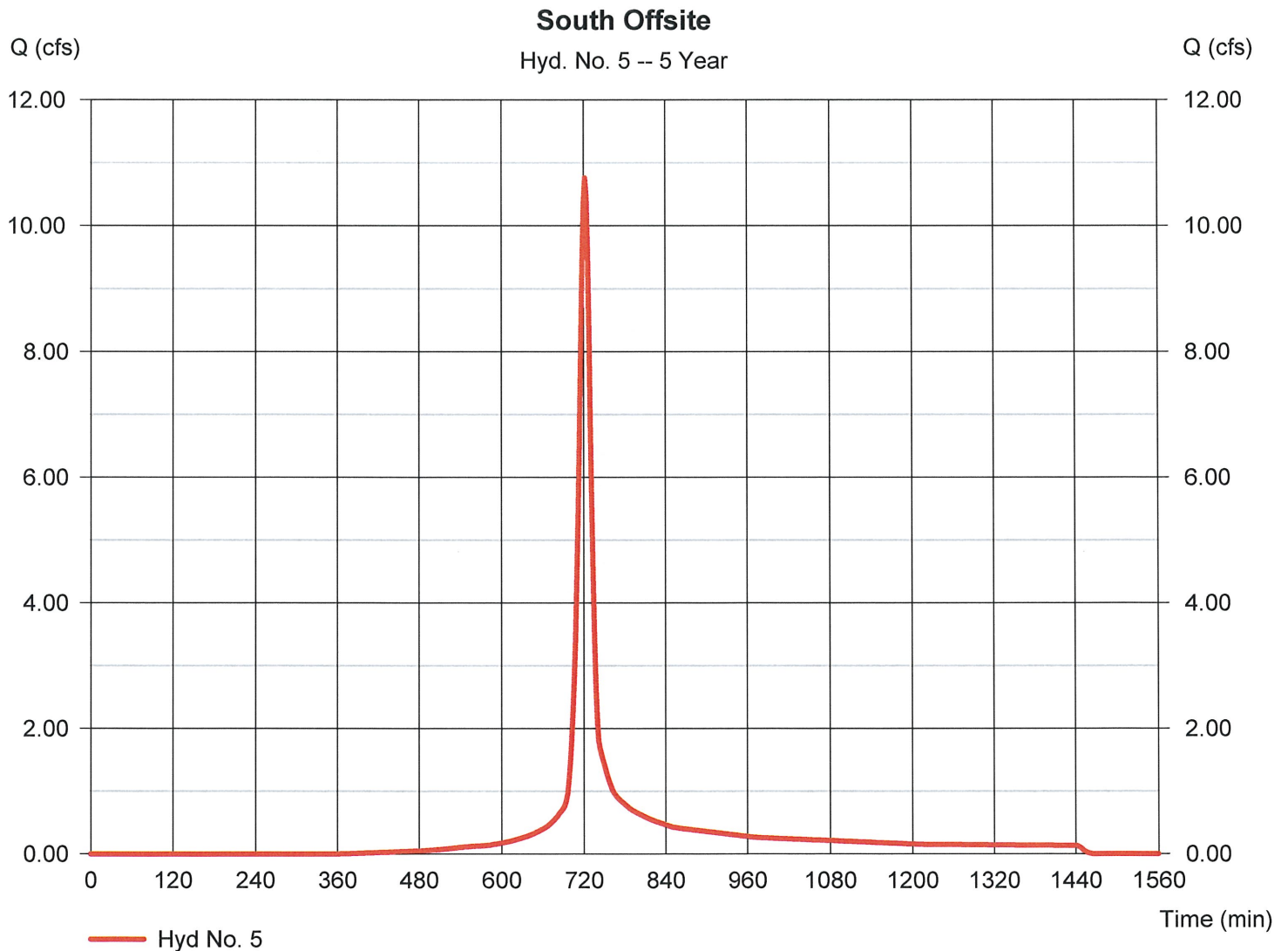
Thursday, Jan 28, 2010

Hyd. No. 5

South Offsite

Hydrograph type = SCS Runoff
 Storm frequency = 5 yrs
 Time interval = 2 min
 Drainage area = 2.902 ac
 Basin Slope = 0.0 %
 Tc method = USER
 Total precip. = 4.56 in
 Storm duration = 24 hrs

Peak discharge = 10.77 cfs
 Time to peak = 722 min
 Hyd. volume = 30,441 cuft
 Curve number = 85
 Hydraulic length = 0 ft
 Time of conc. (Tc) = 15.00 min
 Distribution = Type II
 Shape factor = 484



Hydrograph Summary Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2009 by Autodesk, Inc. v6.066

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	6.163	2	722	18,330	-----	-----	-----	N	
2	SCS Runoff	9.044	2	722	26,900	-----	-----	-----	E	
3	SCS Runoff	23.99	2	722	68,280	-----	-----	-----	SW	
4	Reservoir	6.844	2	736	68,280	3	1271.63	20,862	SW Outlet	
5	SCS Runoff	13.09	2	722	37,260	-----	-----	-----	South Offsite	
PROP HYD REV.gpw					Return Period: 10 Year			Thursday, Jan 28, 2010		

Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2009 by Autodesk, Inc. v6.066

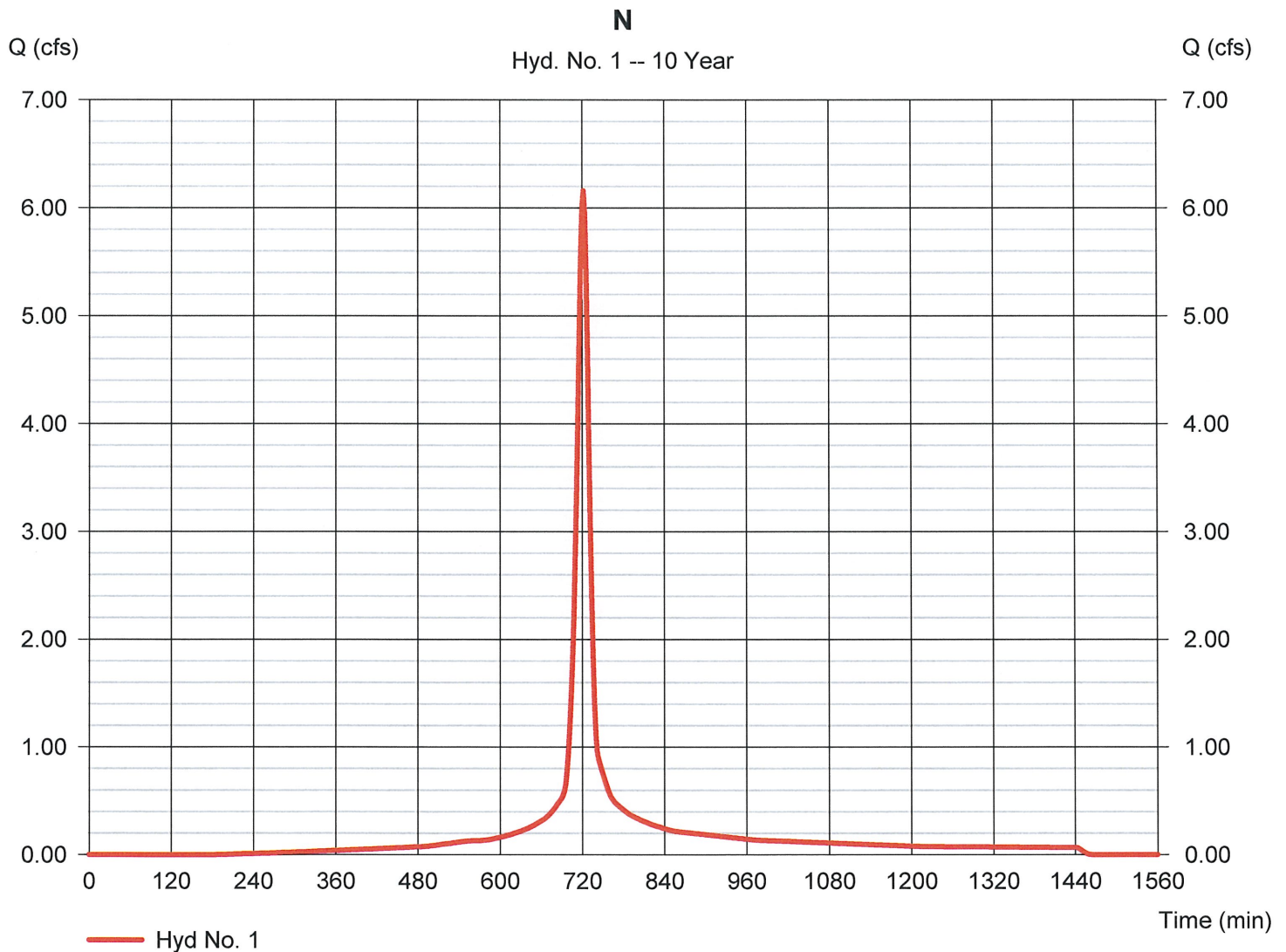
Thursday, Jan 28, 2010

Hyd. No. 1

N

Hydrograph type = SCS Runoff
 Storm frequency = 10 yrs
 Time interval = 2 min
 Drainage area = 1.187 ac
 Basin Slope = 0.0 %
 Tc method = USER
 Total precip. = 5.28 in
 Storm duration = 24 hrs

Peak discharge = 6.163 cfs
 Time to peak = 722 min
 Hyd. volume = 18,330 cuft
 Curve number = 92
 Hydraulic length = 0 ft
 Time of conc. (Tc) = 15.00 min
 Distribution = Type II
 Shape factor = 484



Hydrograph Report

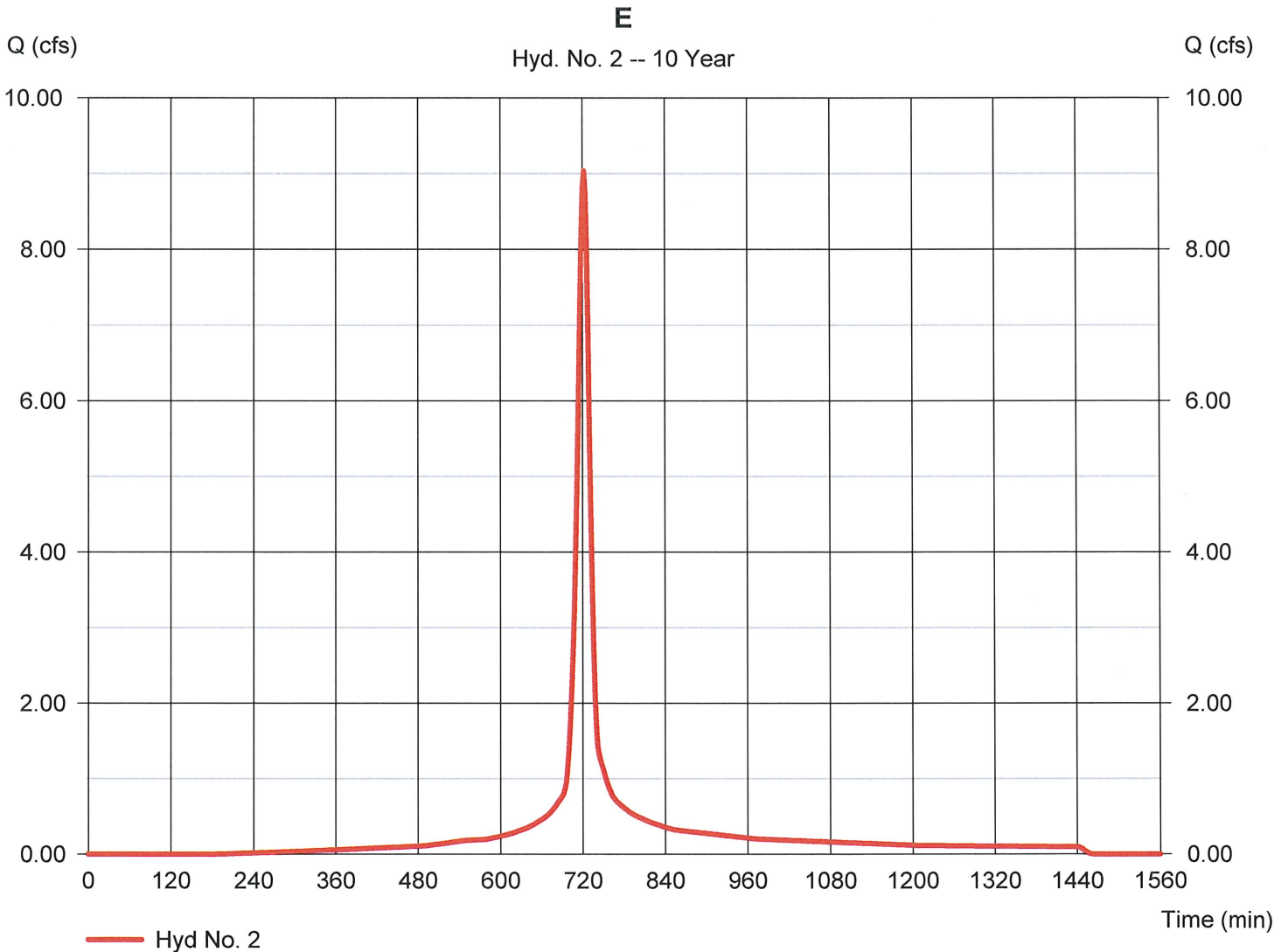
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2009 by Autodesk, Inc. v6.066

Thursday, Jan 28, 2010

Hyd. No. 2

E

Hydrograph type	= SCS Runoff	Peak discharge	= 9.044 cfs
Storm frequency	= 10 yrs	Time to peak	= 722 min
Time interval	= 2 min	Hyd. volume	= 26,900 cuft
Drainage area	= 1.742 ac	Curve number	= 92
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 15.00 min
Total precip.	= 5.28 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2009 by Autodesk, Inc. v6.066

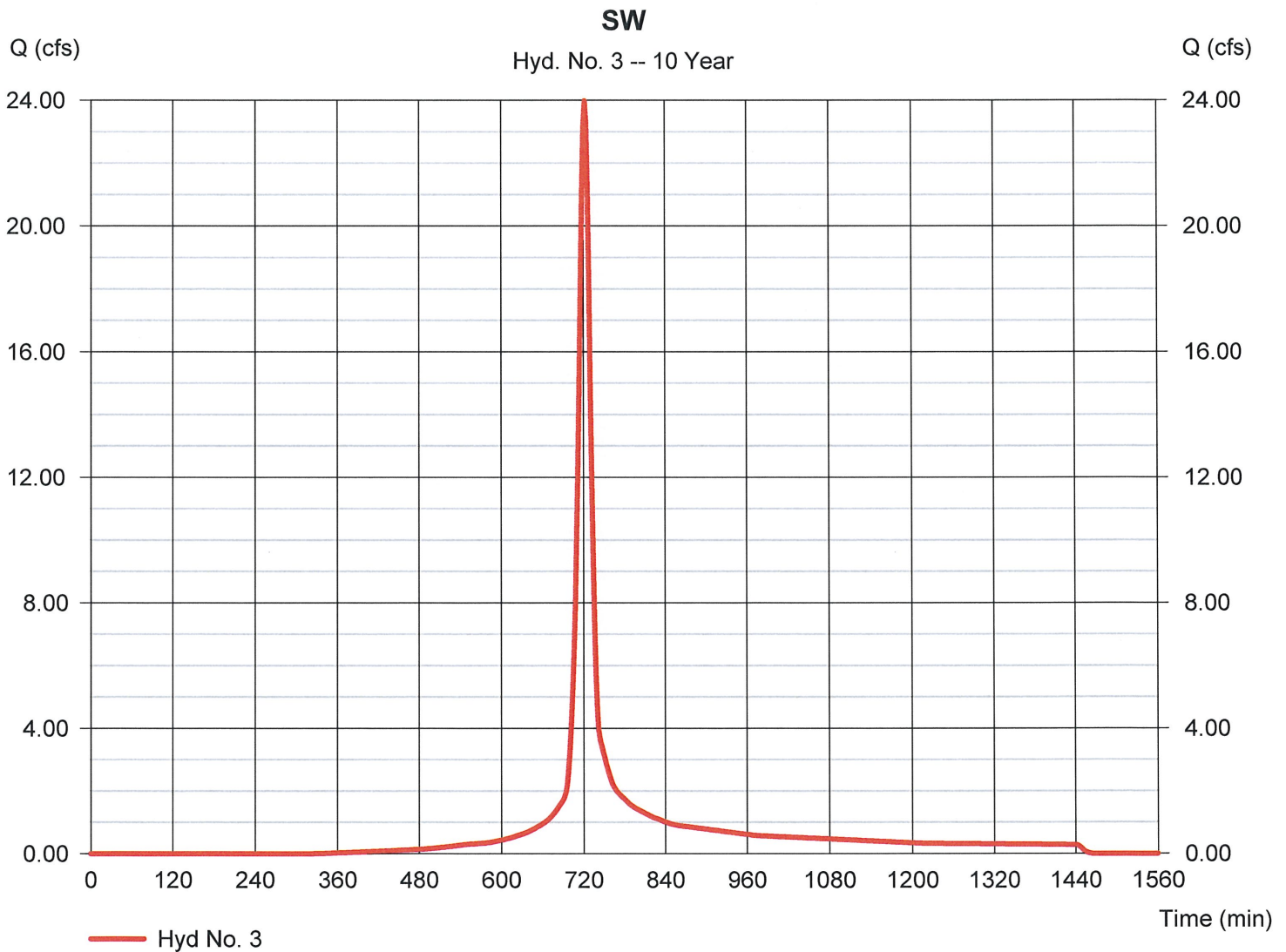
Thursday, Jan 28, 2010

Hyd. No. 3

SW

Hydrograph type = SCS Runoff
 Storm frequency = 10 yrs
 Time interval = 2 min
 Drainage area = 5.318 ac
 Basin Slope = 0.0 %
 Tc method = USER
 Total precip. = 5.28 in
 Storm duration = 24 hrs

Peak discharge = 23.99 cfs
 Time to peak = 722 min
 Hyd. volume = 68,280 cuft
 Curve number = 85
 Hydraulic length = 0 ft
 Time of conc. (Tc) = 15.00 min
 Distribution = Type II
 Shape factor = 484



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2009 by Autodesk, Inc. v6.066

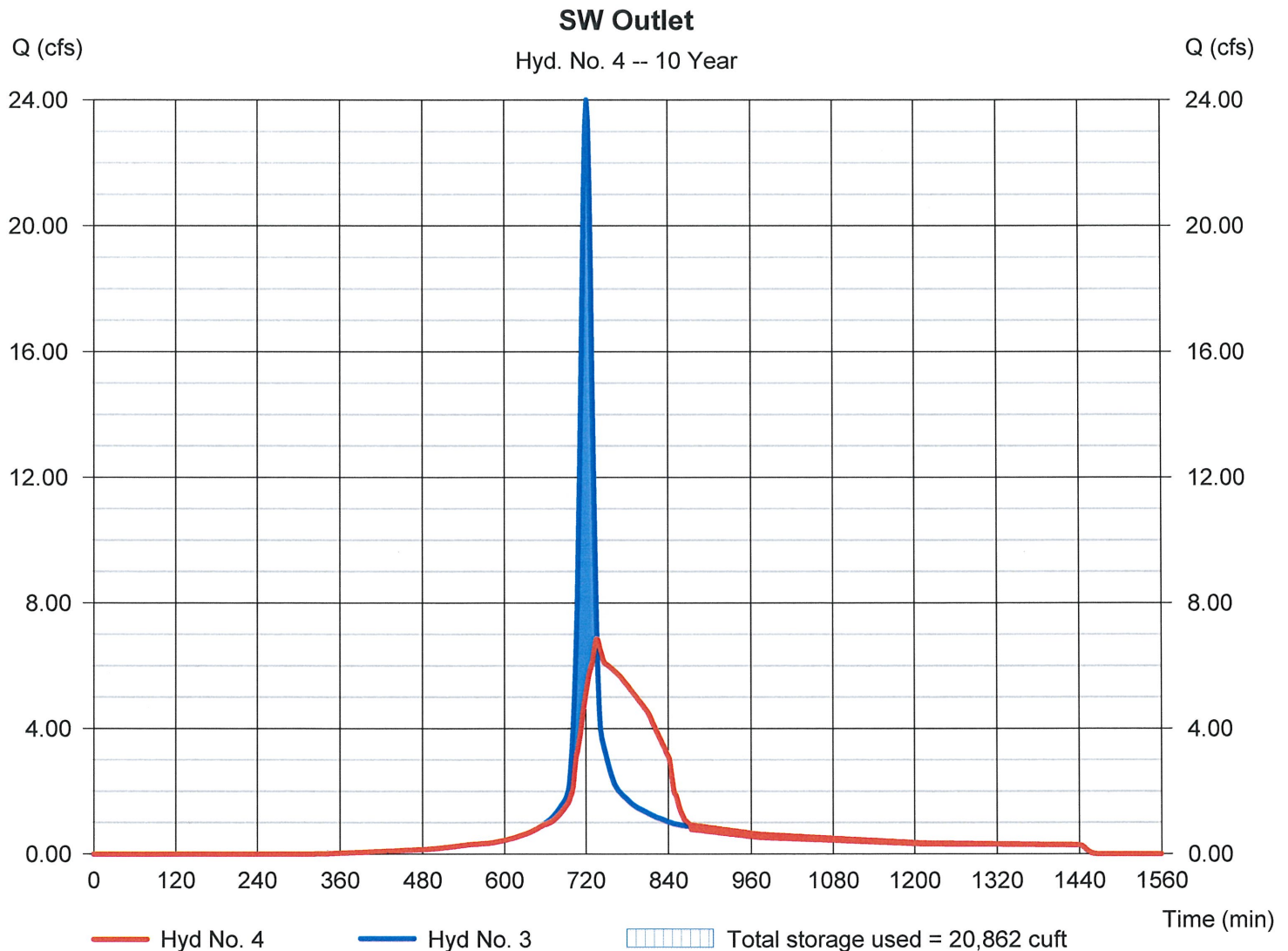
Thursday, Jan 28, 2010

Hyd. No. 4

SW Outlet

Hydrograph type	= Reservoir	Peak discharge	= 6.844 cfs
Storm frequency	= 10 yrs	Time to peak	= 736 min
Time interval	= 2 min	Hyd. volume	= 68,280 cuft
Inflow hyd. No.	= 3 - SW	Max. Elevation	= 1271.63 ft
Reservoir name	= <New Pond>	Max. Storage	= 20,862 cuft

Storage Indication method used.



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2009 by Autodesk, Inc. v6.066

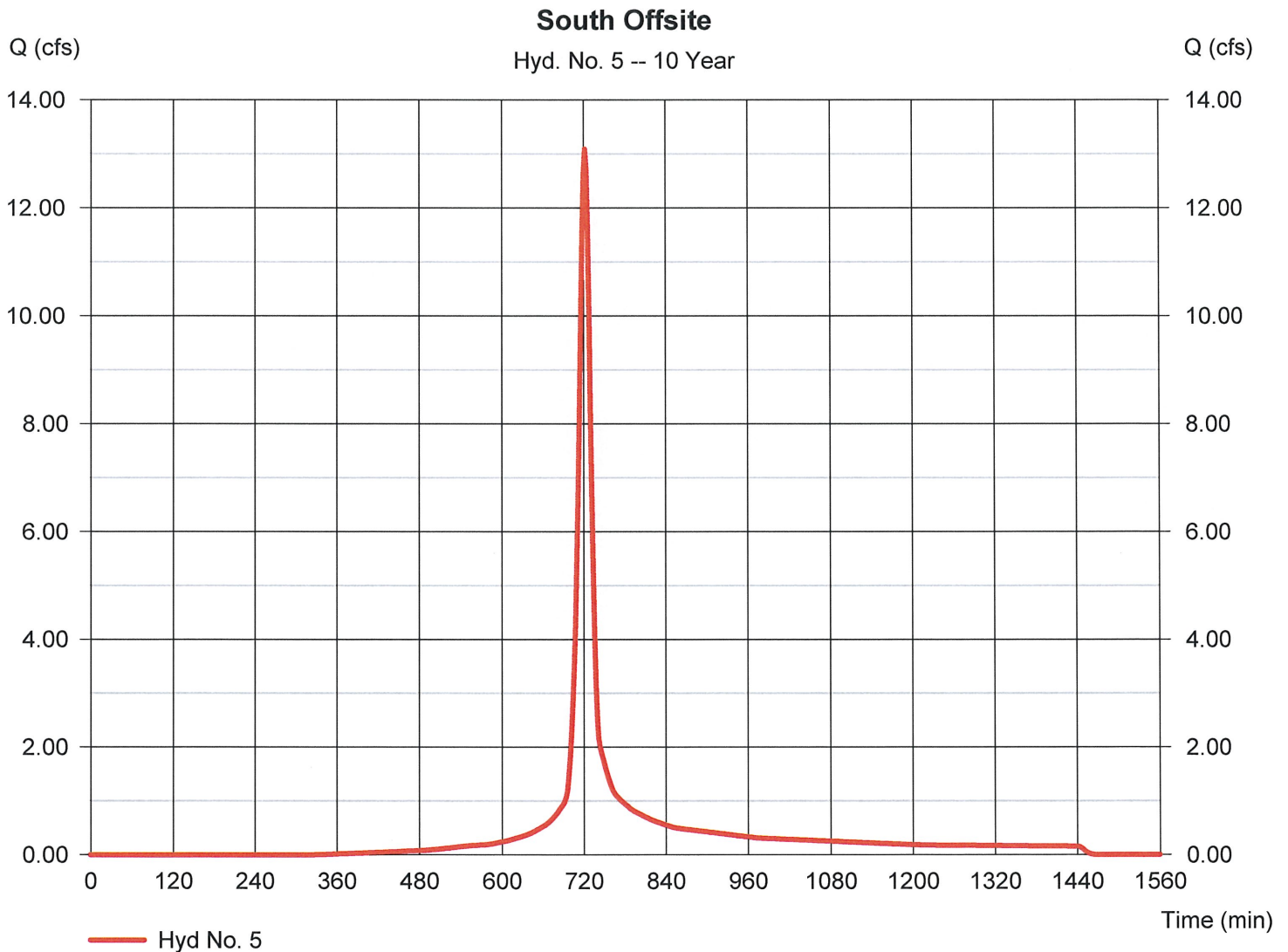
Thursday, Jan 28, 2010

Hyd. No. 5

South Offsite

Hydrograph type = SCS Runoff
 Storm frequency = 10 yrs
 Time interval = 2 min
 Drainage area = 2.902 ac
 Basin Slope = 0.0 %
 Tc method = USER
 Total precip. = 5.28 in
 Storm duration = 24 hrs

Peak discharge = 13.09 cfs
 Time to peak = 722 min
 Hyd. volume = 37,260 cuft
 Curve number = 85
 Hydraulic length = 0 ft
 Time of conc. (Tc) = 15.00 min
 Distribution = Type II
 Shape factor = 484



Hydrograph Summary Report

Hydranlow Hydrographs Extension for AutoCAD® Civil 3D® 2009 by Autodesk, Inc. v6.066

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	7.410	2	722	22,289	-----	-----	-----	N	
2	SCS Runoff	10.87	2	722	32,711	-----	-----	-----	E	
3	SCS Runoff	29.69	2	722	85,250	-----	-----	-----	SW	
4	Reservoir	12.11	2	734	85,250	3	1272.06	25,380	SW Outlet	
5	SCS Runoff	16.20	2	722	46,520	-----	-----	-----	South Offsite	
PROP HYD REV.gpw					Return Period: 25 Year			Thursday, Jan 28, 2010		

Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2009 by Autodesk, Inc. v6.066

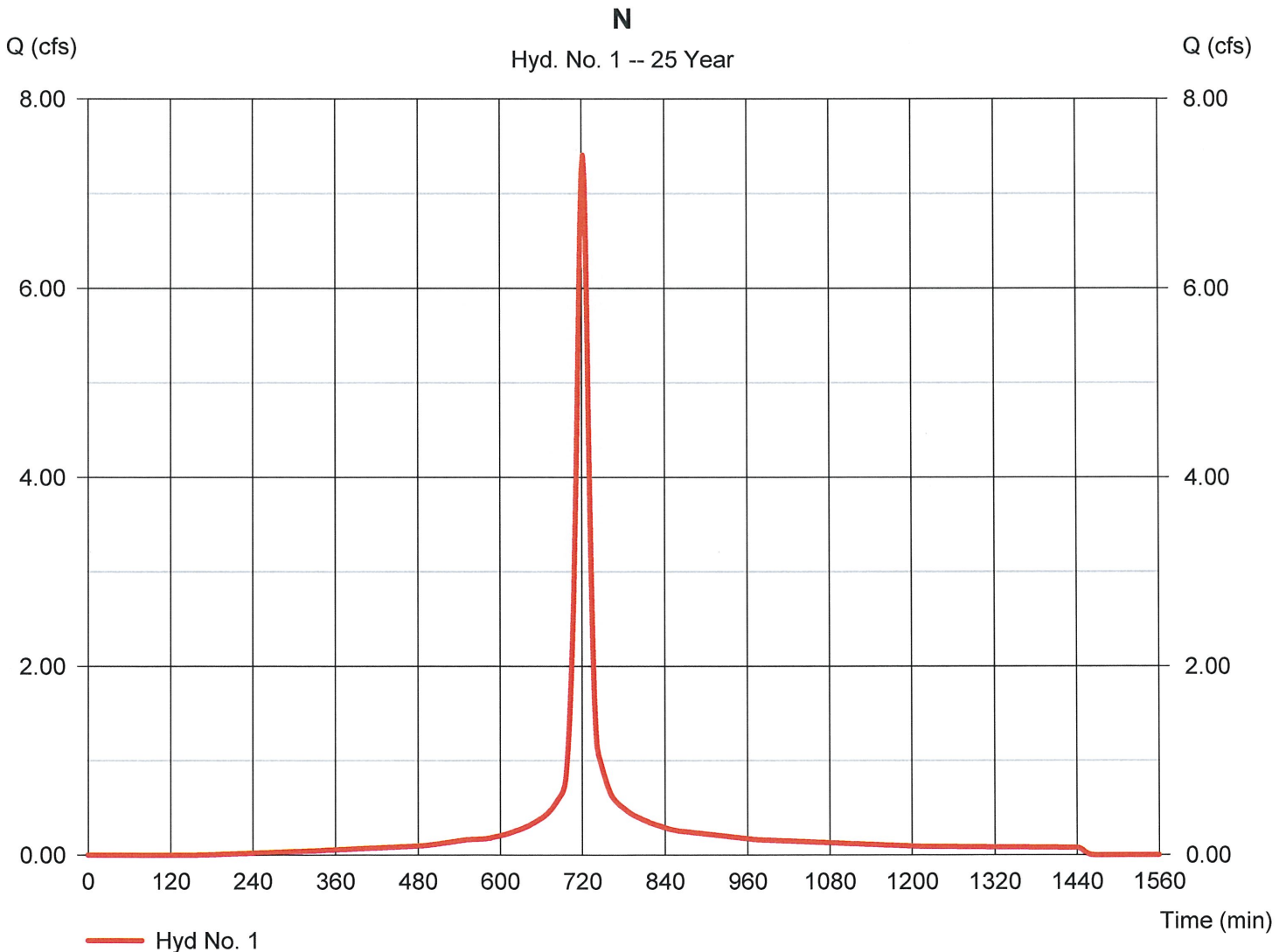
Thursday, Jan 28, 2010

Hyd. No. 1

N

Hydrograph type = SCS Runoff
 Storm frequency = 25 yrs
 Time interval = 2 min
 Drainage area = 1.187 ac
 Basin Slope = 0.0 %
 Tc method = USER
 Total precip. = 6.24 in
 Storm duration = 24 hrs

Peak discharge = 7.410 cfs
 Time to peak = 722 min
 Hyd. volume = 22,289 cuft
 Curve number = 92
 Hydraulic length = 0 ft
 Time of conc. (Tc) = 15.00 min
 Distribution = Type II
 Shape factor = 484



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2009 by Autodesk, Inc. v6.066

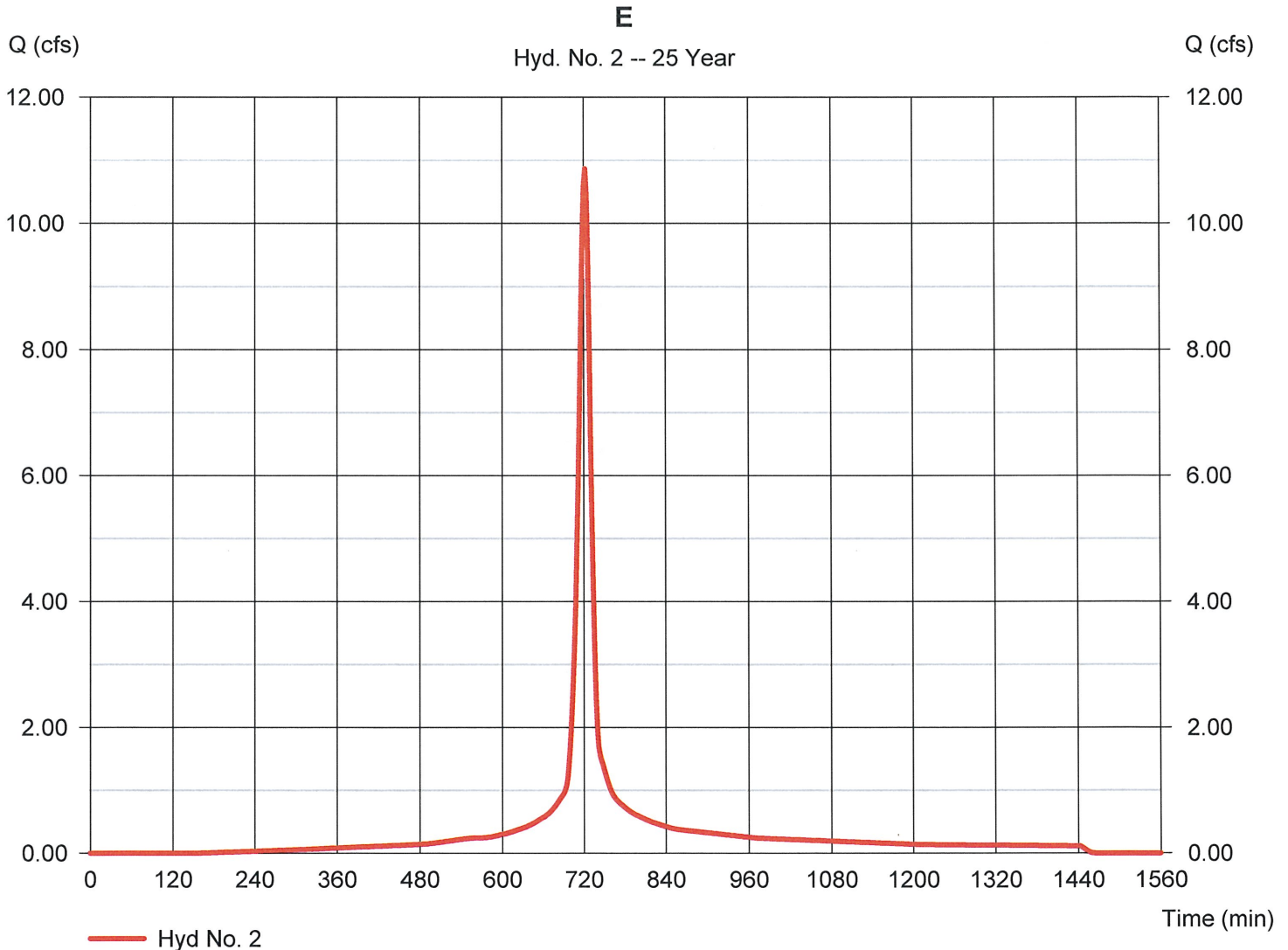
Thursday, Jan 28, 2010

Hyd. No. 2

E

Hydrograph type = SCS Runoff
Storm frequency = 25 yrs
Time interval = 2 min
Drainage area = 1.742 ac
Basin Slope = 0.0 %
Tc method = USER
Total precip. = 6.24 in
Storm duration = 24 hrs

Peak discharge = 10.87 cfs
Time to peak = 722 min
Hyd. volume = 32,711 cuft
Curve number = 92
Hydraulic length = 0 ft
Time of conc. (Tc) = 15.00 min
Distribution = Type II
Shape factor = 484



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2009 by Autodesk, Inc. v6.066

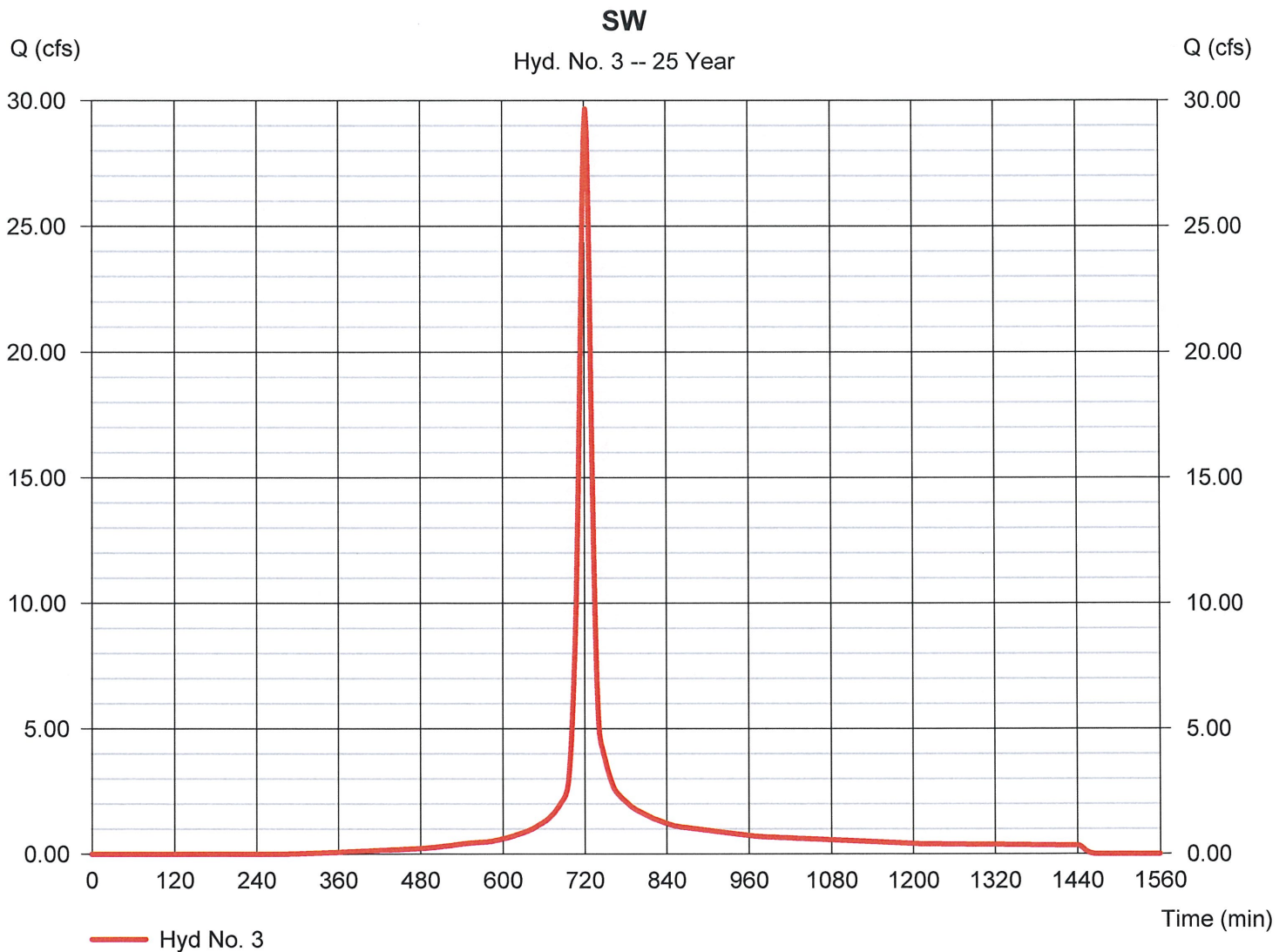
Thursday, Jan 28, 2010

Hyd. No. 3

SW

Hydrograph type = SCS Runoff
 Storm frequency = 25 yrs
 Time interval = 2 min
 Drainage area = 5.318 ac
 Basin Slope = 0.0 %
 Tc method = USER
 Total precip. = 6.24 in
 Storm duration = 24 hrs

Peak discharge = 29.69 cfs
 Time to peak = 722 min
 Hyd. volume = 85,250 cuft
 Curve number = 85
 Hydraulic length = 0 ft
 Time of conc. (Tc) = 15.00 min
 Distribution = Type II
 Shape factor = 484



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2009 by Autodesk, Inc. v6.066

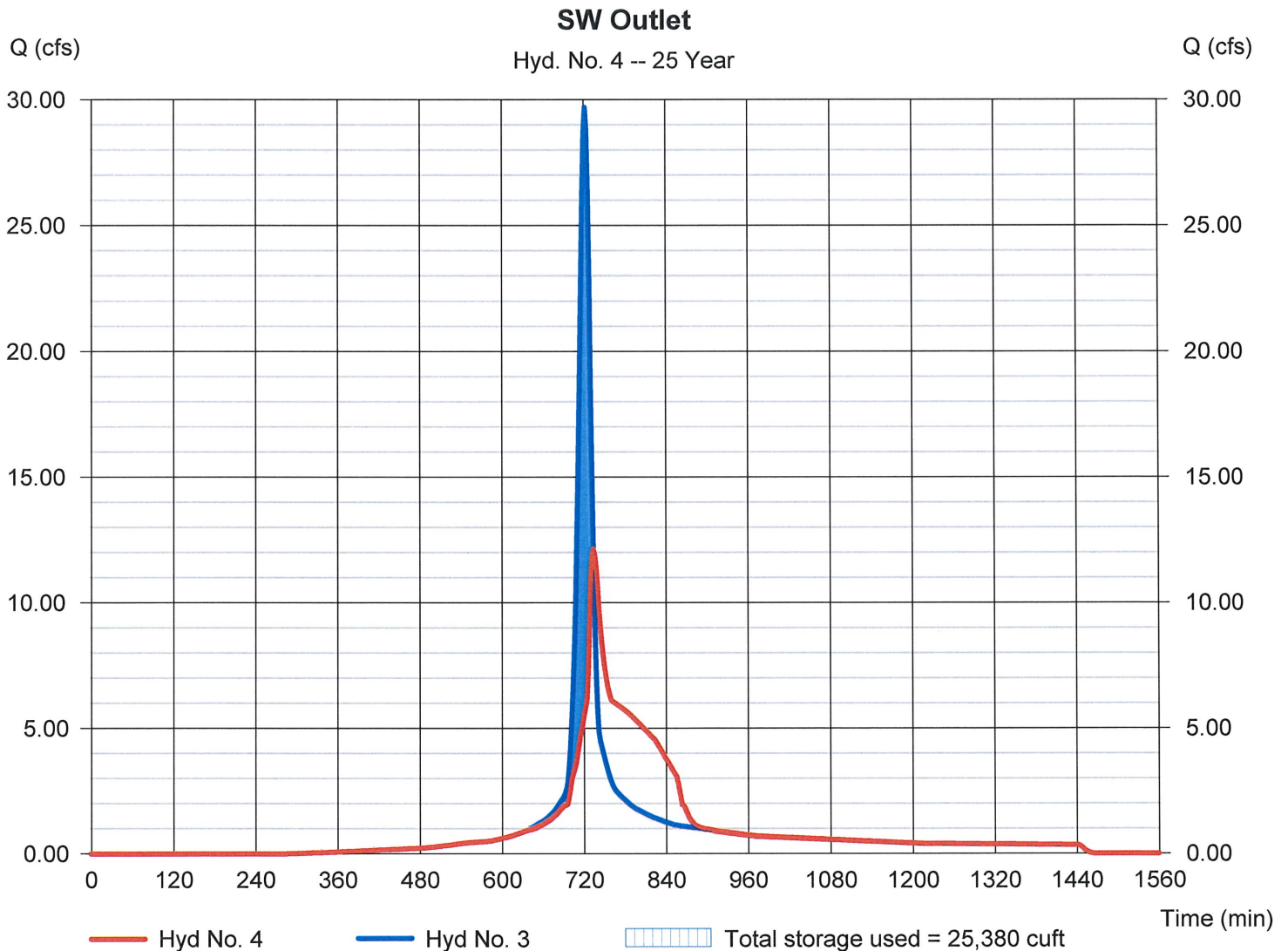
Thursday, Jan 28, 2010

Hyd. No. 4

SW Outlet

Hydrograph type	= Reservoir	Peak discharge	= 12.11 cfs
Storm frequency	= 25 yrs	Time to peak	= 734 min
Time interval	= 2 min	Hyd. volume	= 85,250 cuft
Inflow hyd. No.	= 3 - SW	Max. Elevation	= 1272.06 ft
Reservoir name	= <New Pond>	Max. Storage	= 25,380 cuft

Storage Indication method used.



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2009 by Autodesk, Inc. v6.066

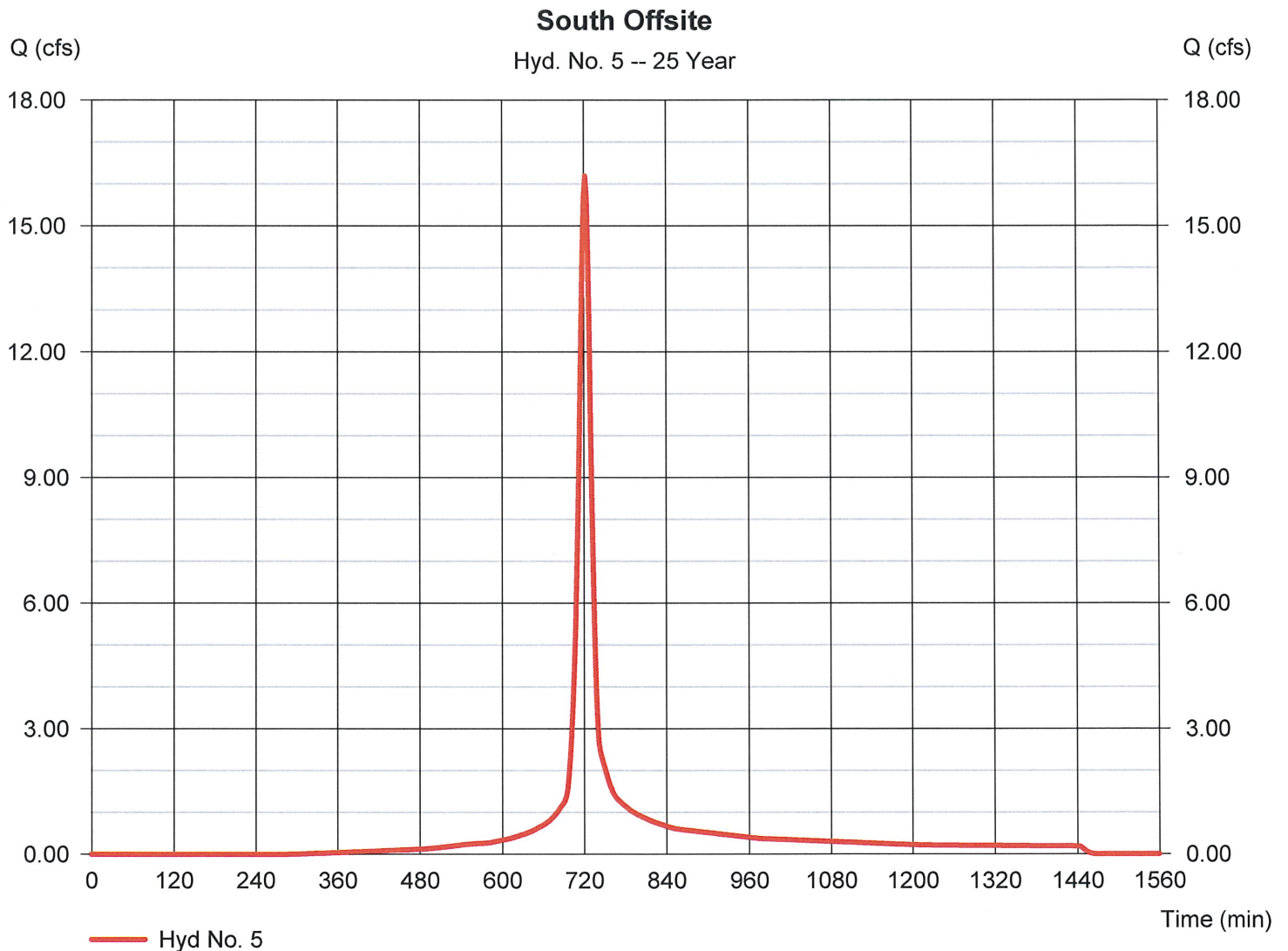
Thursday, Jan 28, 2010

Hyd. No. 5

South Offsite

Hydrograph type = SCS Runoff
 Storm frequency = 25 yrs
 Time interval = 2 min
 Drainage area = 2.902 ac
 Basin Slope = 0.0 %
 Tc method = USER
 Total precip. = 6.24 in
 Storm duration = 24 hrs

Peak discharge = 16.20 cfs
 Time to peak = 722 min
 Hyd. volume = 46,520 cuft
 Curve number = 85
 Hydraulic length = 0 ft
 Time of conc. (Tc) = 15.00 min
 Distribution = Type II
 Shape factor = 484



Hydrograph Summary Report

Hydroflow Hydrographs Extension for AutoCAD® Civil 3D® 2009 by Autodesk, Inc. v6.066

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	9.268	2	722	28,260	-----	-----	-----	N	
2	SCS Runoff	13.60	2	722	41,473	-----	-----	-----	E	
3	SCS Runoff	38.21	2	722	111,140	-----	-----	-----	SW	
4	Reservoir	20.26	2	732	111,140	3	1272.50	30,765	SW Outlet	
5	SCS Runoff	20.85	2	722	60,649	-----	-----	-----	South Offsite	
PROP HYD REV.gpw					Return Period: 100 Year			Thursday, Jan 28, 2010		

Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2009 by Autodesk, Inc. v6.066

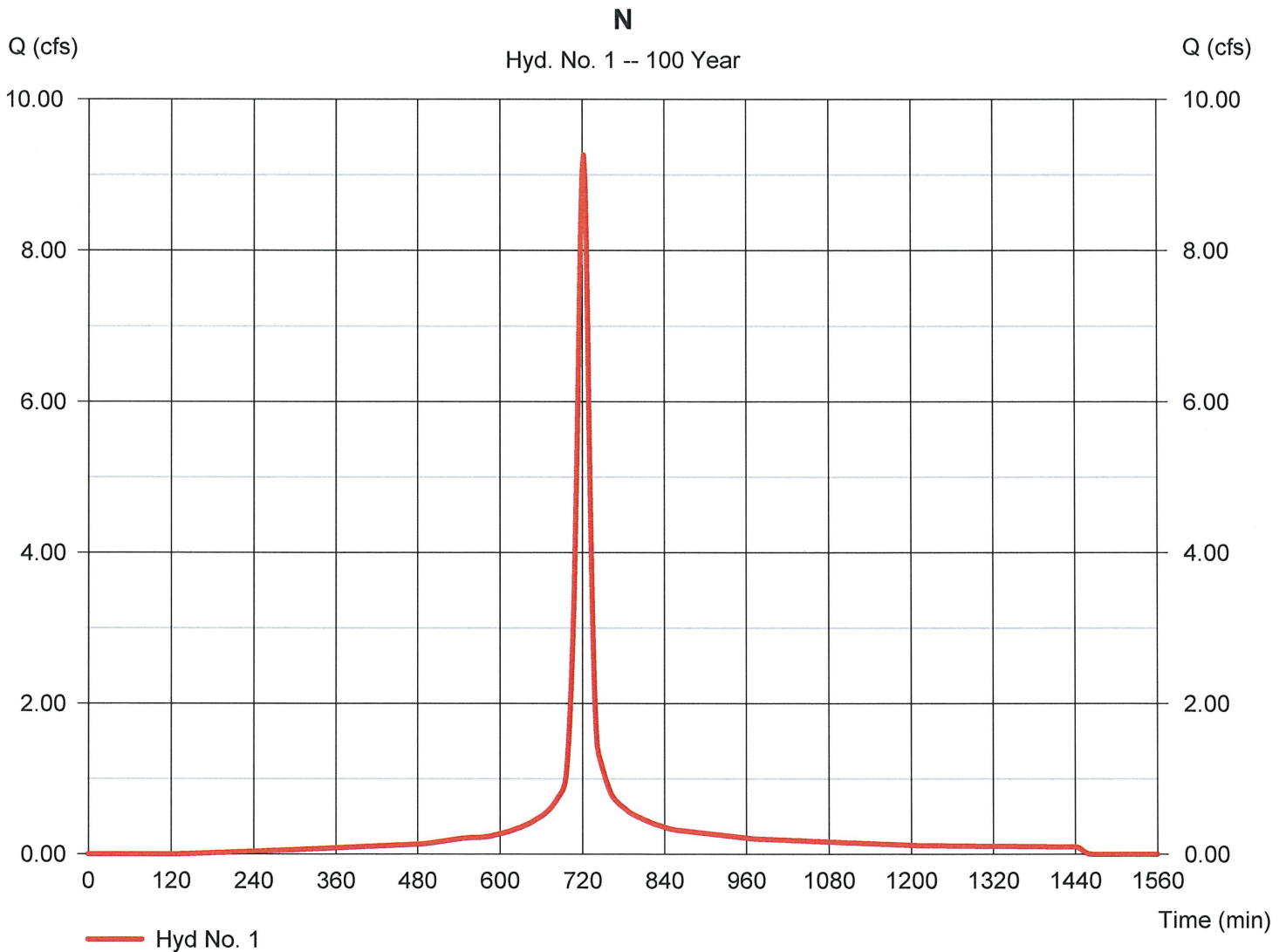
Thursday, Jan 28, 2010

Hyd. No. 1

N

Hydrograph type = SCS Runoff
 Storm frequency = 100 yrs
 Time interval = 2 min
 Drainage area = 1.187 ac
 Basin Slope = 0.0 %
 Tc method = USER
 Total precip. = 7.68 in
 Storm duration = 24 hrs

Peak discharge = 9.268 cfs
 Time to peak = 722 min
 Hyd. volume = 28,260 cuft
 Curve number = 92
 Hydraulic length = 0 ft
 Time of conc. (Tc) = 15.00 min
 Distribution = Type II
 Shape factor = 484



Hydrograph Report

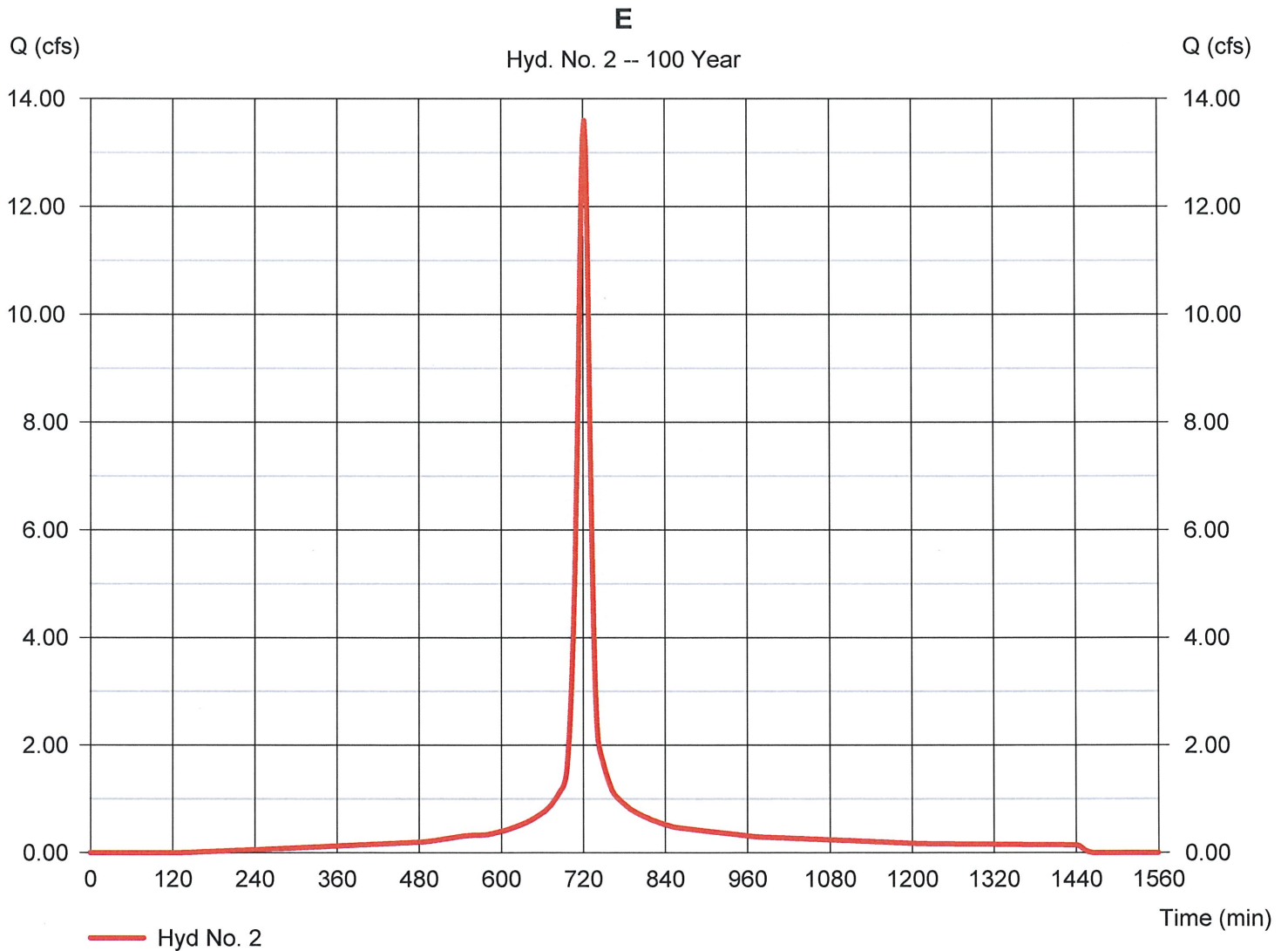
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2009 by Autodesk, Inc. v6.066

Thursday, Jan 28, 2010

Hyd. No. 2

E

Hydrograph type	= SCS Runoff	Peak discharge	= 13.60 cfs
Storm frequency	= 100 yrs	Time to peak	= 722 min
Time interval	= 2 min	Hyd. volume	= 41,473 cuft
Drainage area	= 1.742 ac	Curve number	= 92
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 15.00 min
Total precip.	= 7.68 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2009 by Autodesk, Inc. v6.066

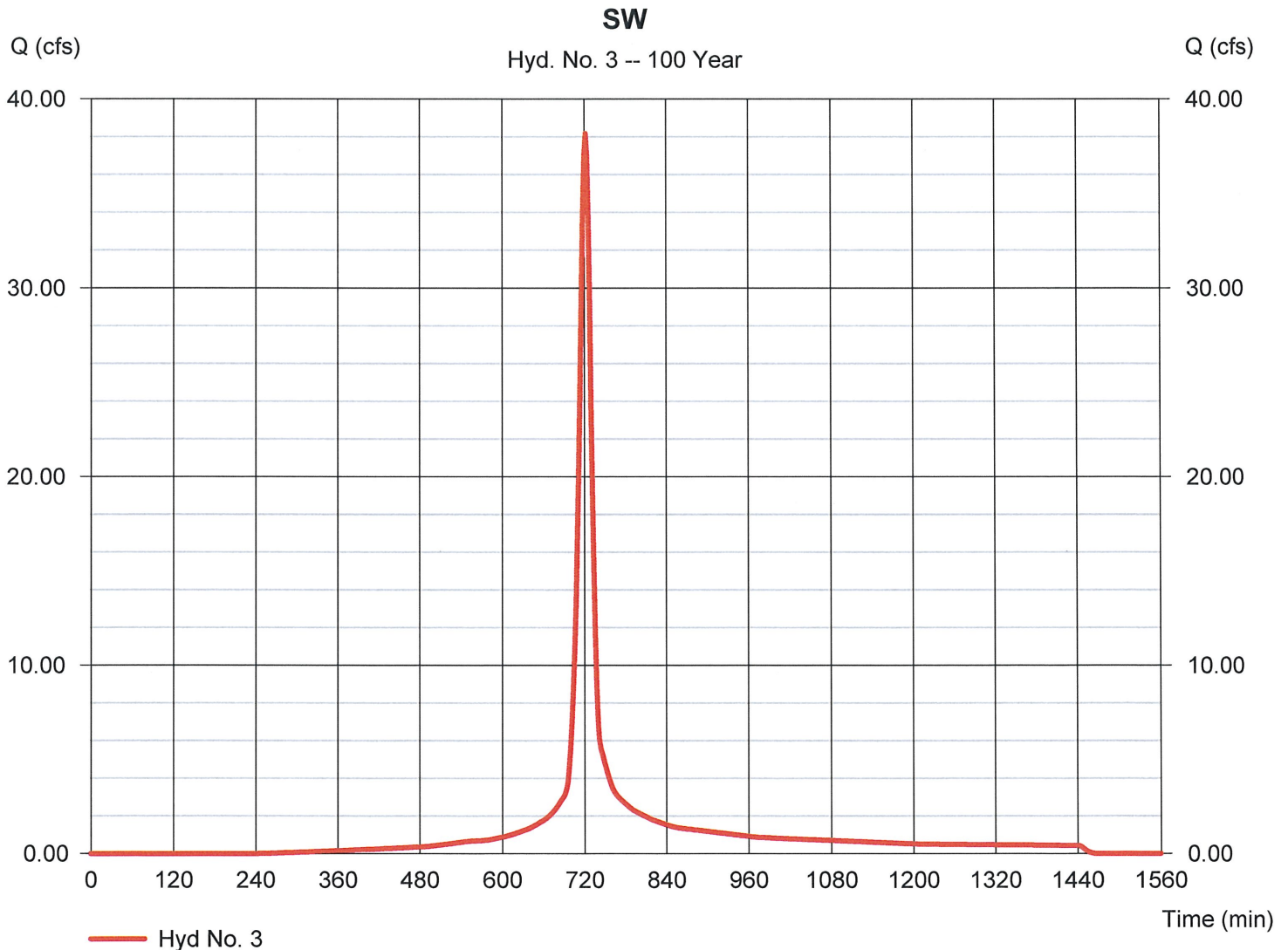
Thursday, Jan 28, 2010

Hyd. No. 3

SW

Hydrograph type = SCS Runoff
 Storm frequency = 100 yrs
 Time interval = 2 min
 Drainage area = 5.318 ac
 Basin Slope = 0.0 %
 Tc method = USER
 Total precip. = 7.68 in
 Storm duration = 24 hrs

Peak discharge = 38.21 cfs
 Time to peak = 722 min
 Hyd. volume = 111,140 cuft
 Curve number = 85
 Hydraulic length = 0 ft
 Time of conc. (Tc) = 15.00 min
 Distribution = Type II
 Shape factor = 484



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2009 by Autodesk, Inc. v6.066

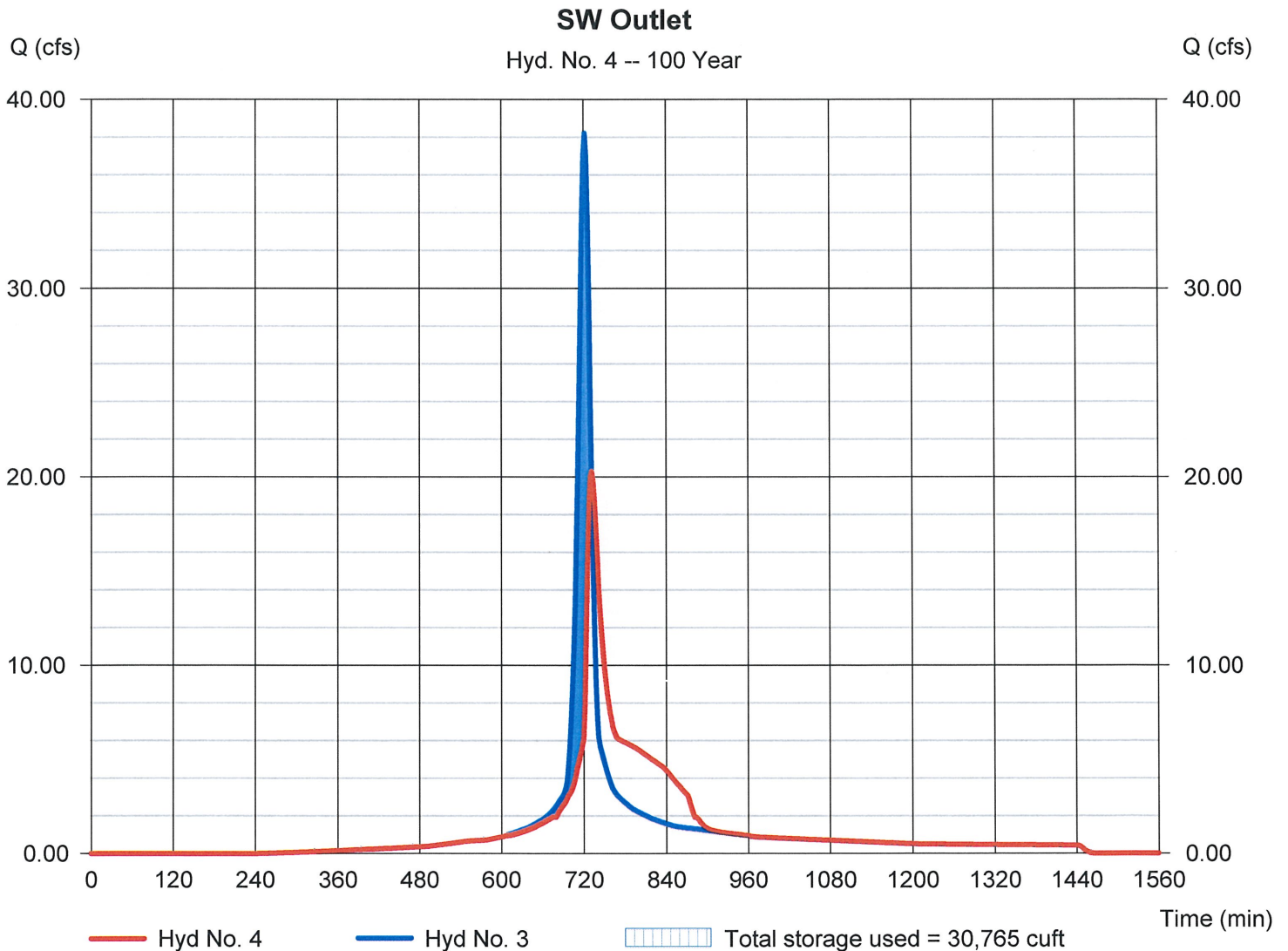
Thursday, Jan 28, 2010

Hyd. No. 4

SW Outlet

Hydrograph type	= Reservoir	Peak discharge	= 20.26 cfs
Storm frequency	= 100 yrs	Time to peak	= 732 min
Time interval	= 2 min	Hyd. volume	= 111,140 cuft
Inflow hyd. No.	= 3 - SW	Max. Elevation	= 1272.50 ft
Reservoir name	= <New Pond>	Max. Storage	= 30,765 cuft

Storage Indication method used.



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2009 by Autodesk, Inc. v6.066

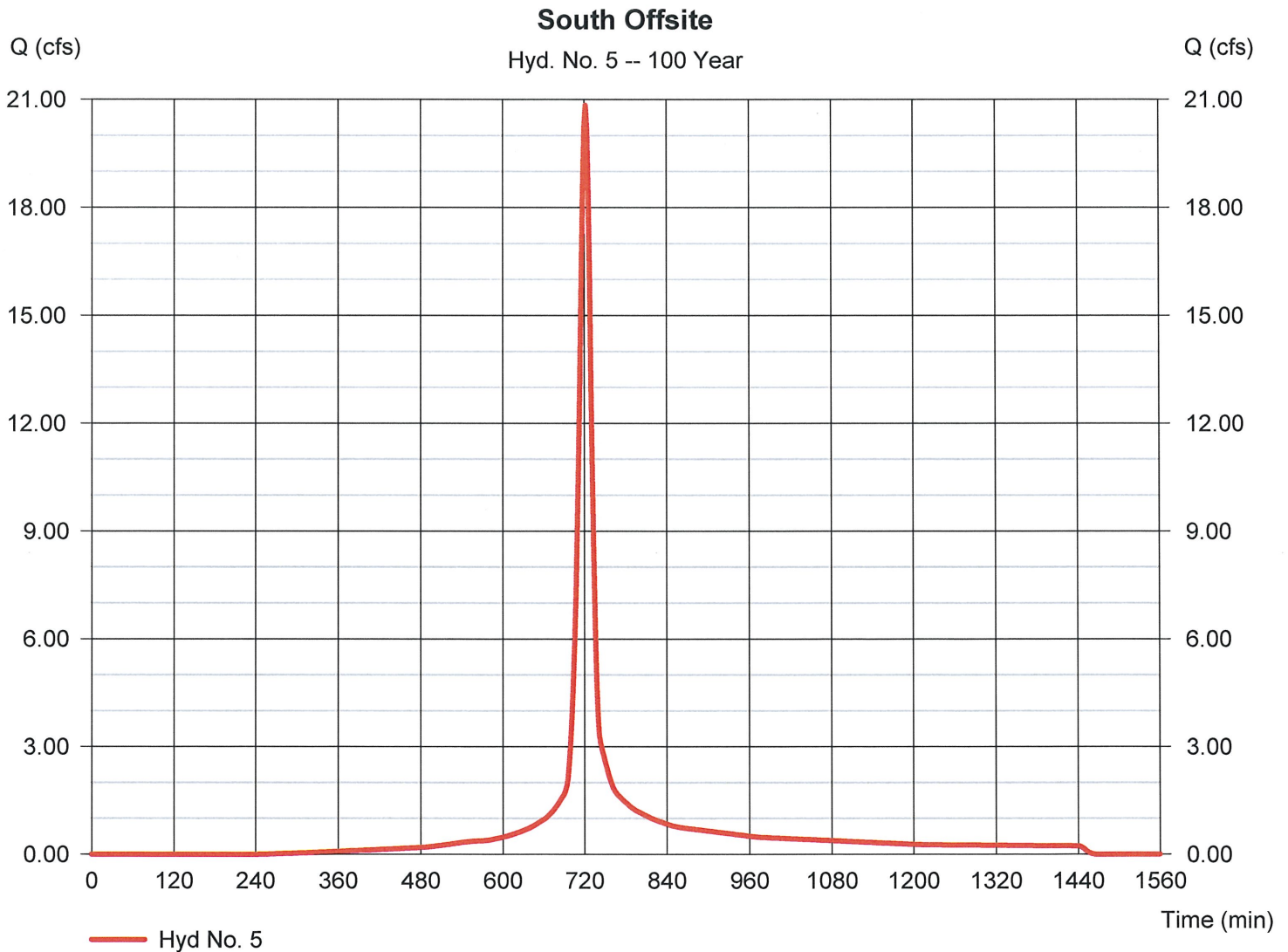
Thursday, Jan 28, 2010

Hyd. No. 5

South Offsite

Hydrograph type = SCS Runoff
 Storm frequency = 100 yrs
 Time interval = 2 min
 Drainage area = 2.902 ac
 Basin Slope = 0.0 %
 Tc method = USER
 Total precip. = 7.68 in
 Storm duration = 24 hrs

Peak discharge = 20.85 cfs
 Time to peak = 722 min
 Hyd. volume = 60,649 cuft
 Curve number = 85
 Hydraulic length = 0 ft
 Time of conc. (Tc) = 15.00 min
 Distribution = Type II
 Shape factor = 484



FUNSTON ADDITION

EXHIBIT 3-2

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5 - Year	
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Hydrograph Return Period Recap

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2009 by Autodesk, Inc. v6.066

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	-----	3.007	3.959	-----	5.222	6.163	7.410	8.341	9.268	N
2	SCS Runoff	-----	4.413	5.810	-----	7.663	9.044	10.87	12.24	13.60	E
3	SCS Runoff	-----	9.986	14.11	-----	19.73	23.99	29.69	33.95	38.21	SW
4	Reservoir	3	4.450	5.062	-----	5.789	6.844	12.11	16.07	20.26	SW Outlet
5	SCS Runoff	-----	5.450	7.697	-----	10.77	13.09	16.20	18.53	20.85	South Offsite

Hydrograph Summary Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2009 by Autodesk, Inc. v6.066

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	5.222	2	722	15,378	-----	-----	-----	N	
2	SCS Runoff	7.663	2	722	22,568	-----	-----	-----	E	
3	SCS Runoff	19.73	2	722	55,785	-----	-----	-----	SW	
4	Reservoir	5.789	2	736	55,785	3	1271.17	16,072	SW Outlet	
5	SCS Runoff	10.77	2	722	30,441	-----	-----	-----	South Offsite	
PROP HYD REV.gpw					Return Period: 5 Year			Thursday, Jan 28, 2010		

Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2009 by Autodesk, Inc. v6.066

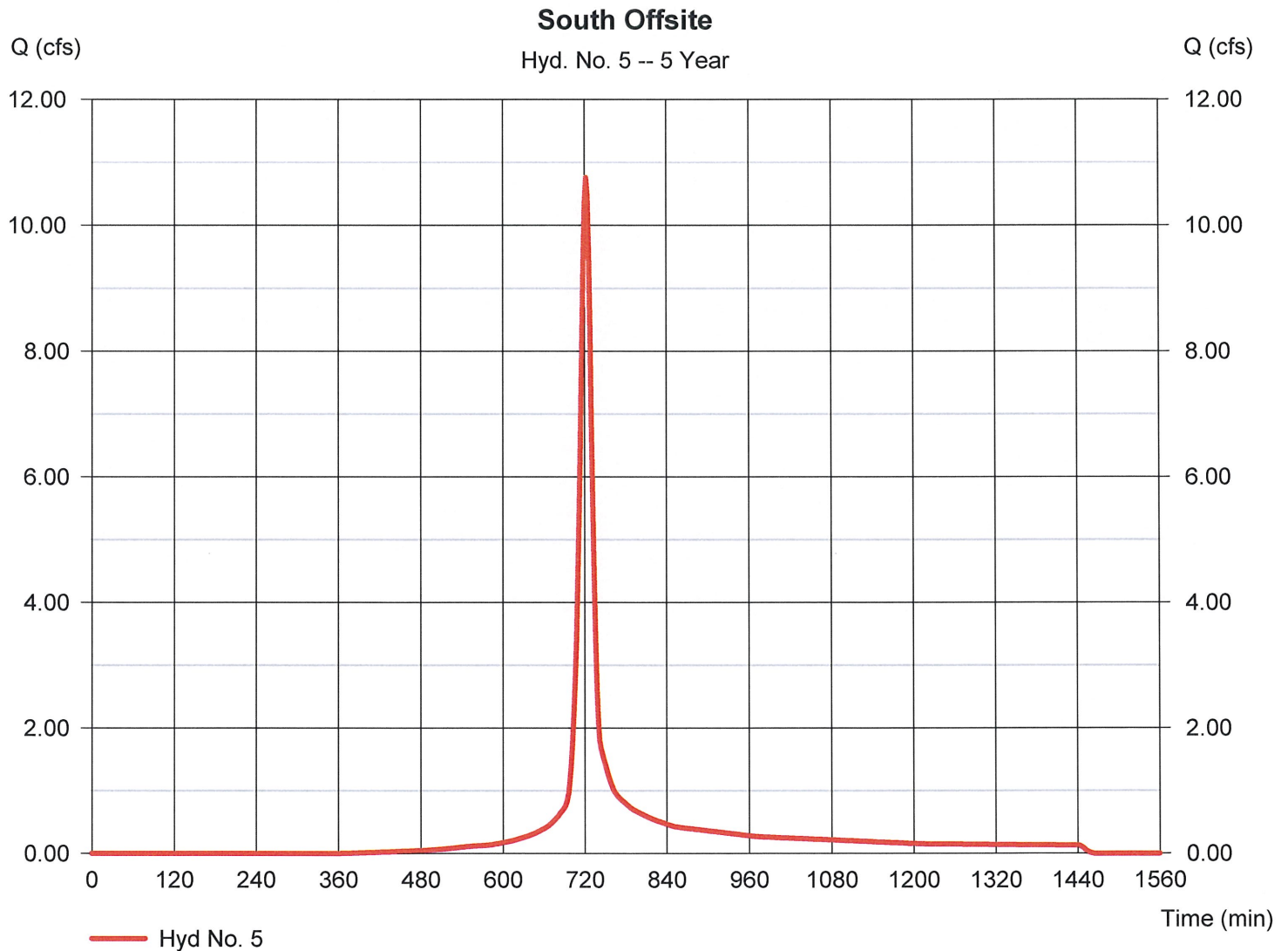
Thursday, Jan 28, 2010

Hyd. No. 5

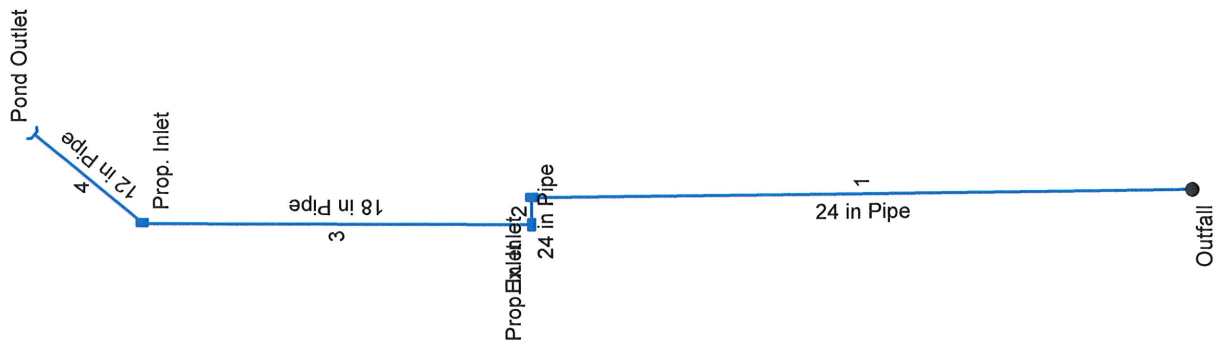
South Offsite

Hydrograph type = SCS Runoff
 Storm frequency = 5 yrs
 Time interval = 2 min
 Drainage area = 2.902 ac
 Basin Slope = 0.0 %
 Tc method = USER
 Total precip. = 4.56 in
 Storm duration = 24 hrs

Peak discharge = 10.77 cfs
 Time to peak = 722 min
 Hyd. volume = 30,441 cuft
 Curve number = 85
 Hydraulic length = 0 ft
 Time of conc. (Tc) = 15.00 min
 Distribution = Type II
 Shape factor = 484



Hydraflow Storm Sewers Extension for AutoCAD® Civil 3D® 2009 Plan



Storm Sewer Inventory Report

Line No.	Alignment				Flow Data				Physical Data							Line ID	
	Dnstr line No.	Line length (ft)	Defl angle (deg)	Junc type	Known Q (cfs)	Drng area (ac)	Runoff coeff (C)	Inlet time (min)	Invert EI Dn (ft)	Line slope (%)	Invert EI Up (ft)	Line size (in)	Line shape	N value (n)	J-loss coeff (K)		Inlet/ Rim EI (ft)
1	End	313.849	-90.686	Curb	10.77	0.00	0.00	0.0	1264.52	0.50	1266.09	24	Cir	0.015	1.50	1270.00	24 in Pipe
2	1	12.654	-89.314	MH	0.00	0.00	0.00	0.0	1266.09	0.24	1266.12	24	Cir	0.015	1.00	1270.00	24 in Pipe
3	2	184.639	90.121	MH	0.00	0.00	0.00	0.0	1266.22	0.30	1266.77	18	Cir	0.015	0.68	1271.00	18 in Pipe
4	3	66.224	39.063	Hdwl	5.79	0.00	0.00	0.0	1267.17	0.50	1267.50	12	Cir	0.015	1.00	1268.50	12 in Pipe
Project File: SWS Prop.stm Number of lines: 4 Date: 01-28-2010																	

Structure Report

Struct No.	Structure ID	Junction Type	Rim Elev. (ft)	Structure			Line Out			Line In		
				Shape	Length (ft)	Width (ft)	Size (in)	Shape	Invert (ft)	Size (in)	Shape	Invert (ft)
1	Ex. Inlet	Curb-	1270.00	Rect	5.00	3.00	24	Cir	1266.09	24	Cir	1266.09
2	Prop. Inlet	Manhole	1270.00	Rect	5.00	3.00	24	Cir	1266.12	18	Cir	1266.22
3	Prop. Inlet	Manhole	1271.00	Rect	5.00	3.00	18	Cir	1266.77	12	Cir	1267.17
4	Pond Outlet	OpenHeadwall	1268.50	n/a	n/a	n/a	12	Cir	1267.50			
Project File: SWS Prop.stm							Number of Structures: 4			Run Date: 01-28-2010		

FL-DOT Report

Line No	To Line	Type of struc	n - value	Len (ft)	Drainage Area			Time of conc (min)	Time of flow in sect (min)	Inten (l) (in/hr)	Total CA	Add Q		Inlet elev (ft)	Elev of HGL			Rise Span	HGL Pipe	Actual		Date: 01-28-2010	
					C1 = 0.2	C2 = 0.5	C3 = 0.9					Total flow	Q (cfs)		Up (ft)	Down (ft)	Fall (ft)			Size (in)	Slope (%)		Vel (ft/s)
					Incr-ment (ac)	Sub-total (ac)	Sum CA						Q (cfs)		Up (ft)	Down (ft)	Fall (ft)						Line description
1	End	Curb	0.015	313.84	0.00	0.00	0.00	1.20	0.99	0.00	0.00	10.77	1270.00	1268.76	1266.52	2.24	24	0.71	5.27	16.56	01-28-2010	24 in Pipe	
					0.00	0.00	0.00					16.56		1268.09	1266.52		24	0.50	4.41	13.86			
					0.00	0.00	0.00							1266.09	1264.52	1.57	Cir						
2	1	MH	0.015	12.654	0.00	0.00	0.00	1.09	0.11	0.00	0.00	0.00	1270.00	1269.42	1269.41	0.01	24	0.09	1.84	5.79		24 in Pipe	
					0.00	0.00	0.00					5.79		1268.12	1268.09		24	0.24	3.04	9.55			
					0.00	0.00	0.00							1266.12	1266.09	0.03	Cir						
3	2	MH	0.015	184.63	0.00	0.00	0.00	0.15	0.94	0.00	0.00	0.00	1271.00	1270.22	1269.47	0.75	18	0.40	3.28	5.79		18 in Pipe	
					0.00	0.00	0.00					5.79		1268.27	1267.72		18	0.30	2.81	4.97			
					0.00	0.00	0.00							1266.77	1266.22	0.55	Cir						
4	3	Hdwl	0.015	66.224	0.00	0.00	0.00	0.00	0.15	0.00	0.00	5.79	1268.50	1272.67	1270.33	2.33	12	3.52	7.37	5.79		12 in Pipe	
					0.00	0.00	0.00					5.79		1268.50	1268.17		12	0.50	2.77	2.18			
					0.00	0.00	0.00							1267.50	1267.17	0.33	Cir						

NOTES: Intensity = 61.49 / (Inlet time + 12.70) ^ 0.78 (in/hr)

Project File: SWS Prop.stm

Hydraulic Grade Line Computations

Line	Size (in)	Q (cfs)	Downstream							Len (ft)	Upstream							Check Ave Sf (%) Engry loss (ft)	JL coeff (K)	Minor loss (ft)		
			Invert elev (ft)	HGL elev (ft)	Depth (ft)	Area (sqft)	Vel (ft/s)	Vel head (ft)	EGL elev (ft)		Sf (%)	Invert elev (ft)	HGL elev (ft)	Depth (ft)	Area (sqft)	Vel (ft/s)	Vel head (ft)				EGL elev (ft)	Sf (%)
1	24	16.56	1264.52	1266.52	2.00	3.14	5.27	0.43	1266.95	0.714	313.84	1266.09	1268.76	2.00	3.14	5.27	0.43	1269.19	0.714	2.240	1.50	0.65
2	24	5.79	1266.09	1269.41	2.00	3.14	1.84	0.05	1269.46	0.087	12.654	1266.12	1269.42	2.00	3.14	1.84	0.05	1269.47	0.087	0.011	1.00	0.05
3	18	5.79	1266.22	1269.47	1.50	1.77	3.28	0.17	1269.64	0.405	184.63	1266.77	1270.22	1.50	1.77	3.28	0.17	1270.39	0.405	0.747	0.68	0.11
4	12	5.79	1267.17	1270.33	1.00	0.79	7.37	0.85	1271.18	3.521	66.224	1267.50	1272.67	1.00	0.79	7.37	0.84	1273.51	3.519	2.331	1.00	0.84

Project File: SWS Prop.stm

Number of lines: 4

Run Date: 01-28-2010

; c = cir e = ellip b = box

Tab 4. Floodplain Submittal

A. Source of flood profile

Not applicable to this development.

B. Nearest base flood elevations

Not applicable to this development.

C. Delineation of pre-developed regulatory floodplain/floodway limits

Not applicable to this development.

D. Delineation of post-developed regulatory floodplain/floodway limits

Not applicable to this development.

E. Floodplain boundary determination per elevation

Not applicable to this development.

F. Provide source of floodway data table and discharges

Not applicable to this development.

G. Provide all hydrologic and hydraulic study information for site-specific floodplain studies

Not applicable to this development.

H. Provide regulatory floodway and four natural profile models (10, 50, 100, & 500-yr) for existing and future watershed conditions

Not applicable to this development.

I. Location of floodplain/floodway limits and relationship of site to upstream/downstream properties

Not applicable to this development.

J. Floodplains and floodways located within a Reserve

Not applicable to this development.

Tab 5. Federal, State, and Local Permits

A. US Army Corps of Engineers – Regulatory Program Permits

Not applicable to this development.

B. Kansas Department of Agriculture – Division of Water Resources Permits

Not applicable to this development.

C. Federal Emergency Management Agency (FEMA) Letter of Map Changes

Not applicable to this development.

D. Kansas Department of Transportation

Not applicable to this development.

E. Sedgwick County Right-of-Way Permit

Not applicable to this development.