Baughman

TRANSMITTAL

TO:
Vicky Huang
COMPANY:
City of Wichita
ADDRESS:
7th Floor City Hall
CITY/ STATE:
Wichita, Kansas

FROM:
Trevor Kurth
DATE:
7-03-07
PROJECT:
Kings Court Drain/Grade
PROJECT NUMBER:

RE:
Kings Court Drain/Grade

VIA: DELIVERY

We are sending you ☒ ATTACHED ☐ UNDER SEPARATE COVER

☒ PLANS ☐ PRINTS ☐ SHOP DRAWINGS ☐ SAMPLES ☐ SPECS
☐ COPY OF LETTER ☐ CHANGE ORDER ☐ DISK ☐ OTHER

COPIES	DATE	DESCRIPTION
1	**7-03-07**	Kings Court Drain/Grade

☐ URGENT ☒ FOR APPROVAL ☐ FOR YOUR INFO ☒ FOR REVIEW & COMMENT
☐ APPROVED, AS NOTED ☐ REVISE AS NOTED ☐ REVISE AND RETURN
☐ AS REQUESTED ☐ PLEASE REPLY ☐ FOR BIDS DUE ☐

NOTES/ COMMENTS:

SIGNED:
Trevor R. Kurth, I.E.

Copy: file

ENGINEERING
SURVEYING
PLANNING
LANDSCAPE ARCHITECTURE

Baughman Company, P.A.
315 Ellis Street
Wichita, Kansas 67203
P 316.262.7271
F 316.262.0149

DRAINAGE PLAN

KINGS COURT ADDITION

TO

WICHITA, SEDGWICK COUNTY, KANSAS

PREPARED BY

Baughman

ENGINEERING | SURVEYING | PLANNING
LANDSCAPE ARCHITECTURE

02 JULY 2007

N. BRENT WOOTEN
8470
7/3/07

ENGINEERING | SURVEYING | PLANNING
LANDSCAPE ARCHITECTURE

DRAINAGE PLAN
KINGS COURT ADDITION

FINAL REPORT

Prepared by Baughman Company, P.A.
02 July 2007

By N. Brent Wooten, P.E.
Trevor R. Kurth, I.E.
Nicholas H. Jefferson, I.E.

REPORT CONTENTS

WICHITA

Adopted: February 23, 2007

Public Works, Engineering Division
Final Drainage Plan Submittal Checklist

Reviewer:________________ Date:________________

Subdivision Name: KINGS COURT ADD Location: MAPLE LN & UNIVERSITY

Total Land Area Of Ownership: 1.1 Acres

Type: X Residential ___ Commercial ___ Industrial ___ Recreation ___ Municipal ___ Other

Applicant: DON KLAUSMEYER Contact: DON KLAUSMEYER Phone #:________________

Engineer: BAUGHMAN CO. PA Contact: TREVOR KORTH Phone # 262-7271

Please check the appropriate box: I = Included; NA = Non-Applicable; R= Required prior to development *(If "NA" is checked, an explanation must be entered)*

	Applicant			Engr	
Tab 1. Project Narrative	**I**	**NA**	**Explanation / Location in Plan**	**I**	**NA**
A. Site Location Map, using USGS Map	X				
B. Discussion of development, existing conditions, and proposed impacts on stormwater, wetland, riparian, and flood plain	X				
C. Discussion of offsite conditions	X				
D. Summary of runoff calculations (pre/post development) No increase in peak discharge for all storm series	X				
E. Narrative description of the type and function of the permanent best management practices that are incorporated into the site design	X				
F. Copy of the plat	X				
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.)	X				
H. Professional Engineer seal, signature and date on cover of report	X				
I. CD of drainage plan in PDF format (one file) and one paper copy bound with this checklist included behind the cover	X				

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

Consulting Engineer Initials TLK

J. Location of existing utilities (e.g., water, sewer, gas, electric) and easements	x				
K. Location of existing conveyance systems such as storm drains, inlets, catch basins, channels, swales, and areas of overland flow	x				
L. Flow paths	x				
M. Location and dimensions of existing channels, bridges or culvert crossings	x				
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	x				
O. Assumed pre-developed runoff curve numbers	x				
P. Existing time of concentrations used in calculations	x				
Q. Evaluate immediate downstream drainage capacity, not to exceed more than 0.25 miles downstream of site	x				
R. Existing structural elevations (e.g., invert of pipes, manholes, etc.)	x				
S. Cross-section data for open channels	x				
T. Ground water elevations, if applicable		x			

	Applicant			Engr	
Tab 3. Post-Development Hydrologic Analysis	**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)	x				
B. Proposed time of concentrations used in calculations	x				
C. Assumed post-developed runoff curve numbers	x				
D. Proposed contours for detention facilities (to equal area used in outlet rating curves)		x	No detention provided		
E. Preliminary sizing calculations for stormwater controls including contributing drainage area, storage, and outlet configuration	x				
F. Stage-storage-discharge or outlet rating curves and inflow and outflow hydrographs for storage facilities		x	" "		
G. Final analysis of potential upstream/downstream impact/effects of project, where necessary	x				
H. Existing and proposed structural elevations (e.g., invert of pipes, manholes, etc.)	x				
I. Design water surface elevations and normal pool elevation for ponds.		x	No detention provided		
J. Typical detail for outlet structures, embankments, spillways, grade control structures, conveyance channels, etc. To include height, width, elevation, and/or diameter.	x				
K. Proposed limits of clearing and grading	x				
L. Location of existing and proposed roads, buildings, parking lots and other impervious areas.	x				
M. Location of existing and proposed utilities (e.g., water, sewer) and easements		x	Proposed see 'Utility Plan'		
N. Location of existing and proposed conveyance systems such as storm drains, inlets, catch basins, channels, swales, and areas of overland flow	x				
O. Preliminary location and dimensions of proposed channel modifications, such as bridge or culvert crossings	x				

Consulting Engineer Initials TRK

P. Preliminary selection and location of stormwater controls	X				
Q. Emergency overflow structure's flow path	X				
R. Detention facility provides one-foot of freeboard above the HWL and emergency outfall shown (top of berm elevation shown)		X	No facility provided.		
S. The 100-year 24-hour HWL delineated on the plan for detention pond		X	" "		
T. Lowest opening elevations table on the plat for structures located adjacent to channels or ponds		X	" "		
U. Stormwater Management Facilities located within a Reserve		X	" "		
V. Maintenance responsibility of stormwater management facility shall be specified in the platters text. (e.g. HOA, Lot Owners Association, or lot)		X	" "		
W. Off-site drainage easements or agreements required, where necessary	X				

	Applicant			Engr	
Tab 4. Floodplain Submittal	**I**	**NA**	**Explanation / Location in Plan**	**I**	**NA**
A. Provide source of flood profile	X				
B. Nearest base flood elevations		X	No FEMA near plat		
C. Delineation of pre-developed regulatory floodplain/floodway limits		X	" "		
D. Delineation of post-developed regulatory floodplain and floodway limits		X	" "		
E. Floodplain boundary determination per elevation (project limits shown)		X	" "		
F. Provide source of floodway data table and discharges		X	" "		
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		X	" "		
H. Provide regulatory floodway and four natural profile models (10,50,100, and 500-yr) for existing and future watershed conditions		X	" "		
I. Location of floodplain/floodway limits and relationship of site to upstream/downstream properties (floodplain limits to be per elevation and scaled location)		X	" "		
J. Flood plains and floodways located within a Reserve, where necessary		X	" "		

	Applicant			Engr	
Tab 5. Federal, State and Local Permits (to be provided prior to construction unless otherwise specified)	**I/R**	**NA**	**Explanation / Location in Plan**	**I/R**	**NA**
A. US Army Corps of Engineers - Regulatory program permits (404 water quality certification)	~~X~~	X	No Corps Jurisdiction		
B. Kansas Department of Agriculture - Division of Water Resources Permits (Stream Obstruction, Channel Change, Flood Plain Fill, Levee, Water Appropriations, Dam safety permit, etc.)		X	" "		
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.		X	" "		
D. Kansas Department of Transportation		X	" "		
E. Sedgwick County Right-of-way Permit		X	" "		

Consulting Engineer Initials TK

EXISTING CONDITIONS

The site is located on University between Maple Lane and Arapaho. The property is approximately 1.1 acres. The site is currently open space with grass cover. The site is relatively flat but generally drains to the south. There is no FEMA SFHA located on the property as of this report.

As of this report, a SWS as well as University street improvements are commencing. A SWS line is being installed along University with curb inlets on a sump along the south edge of the property. According to the project plan sheets, the street grade is being raised approximately 0.5′ and will not allow the existing site to continue to drain to the south.

PROPOSED CONDITIONS

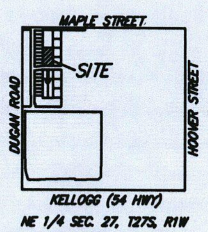
The property is to be developed as a residential subdivision consisting of 4 lots with corresponding homes, driveways, and lawn areas. The site will continue to drain to the south and into the University SWS System. Two inlets are proposed to be placed along Reserve A to collect storm water runoff from the subdivision.

OFFSITE CONDITIONS

The site generally drains to the south. There does not appear to be any significant amount of drainage encroaching the property.

USGS WICHITA WEST, KANSAS, QUADRANGLE

SCALE 1"=200'



NE 1/4 SEC. 27, T27S, R1W
VICINITY MAP

LOCATION EXHIBIT
KING'S COURT ADDITION
02 JULY 2007

Baughman
Baughman Company, P.A.
315 Ellis St. Wichita, KS 67211 P 316-262-7271 F 316-262-0149
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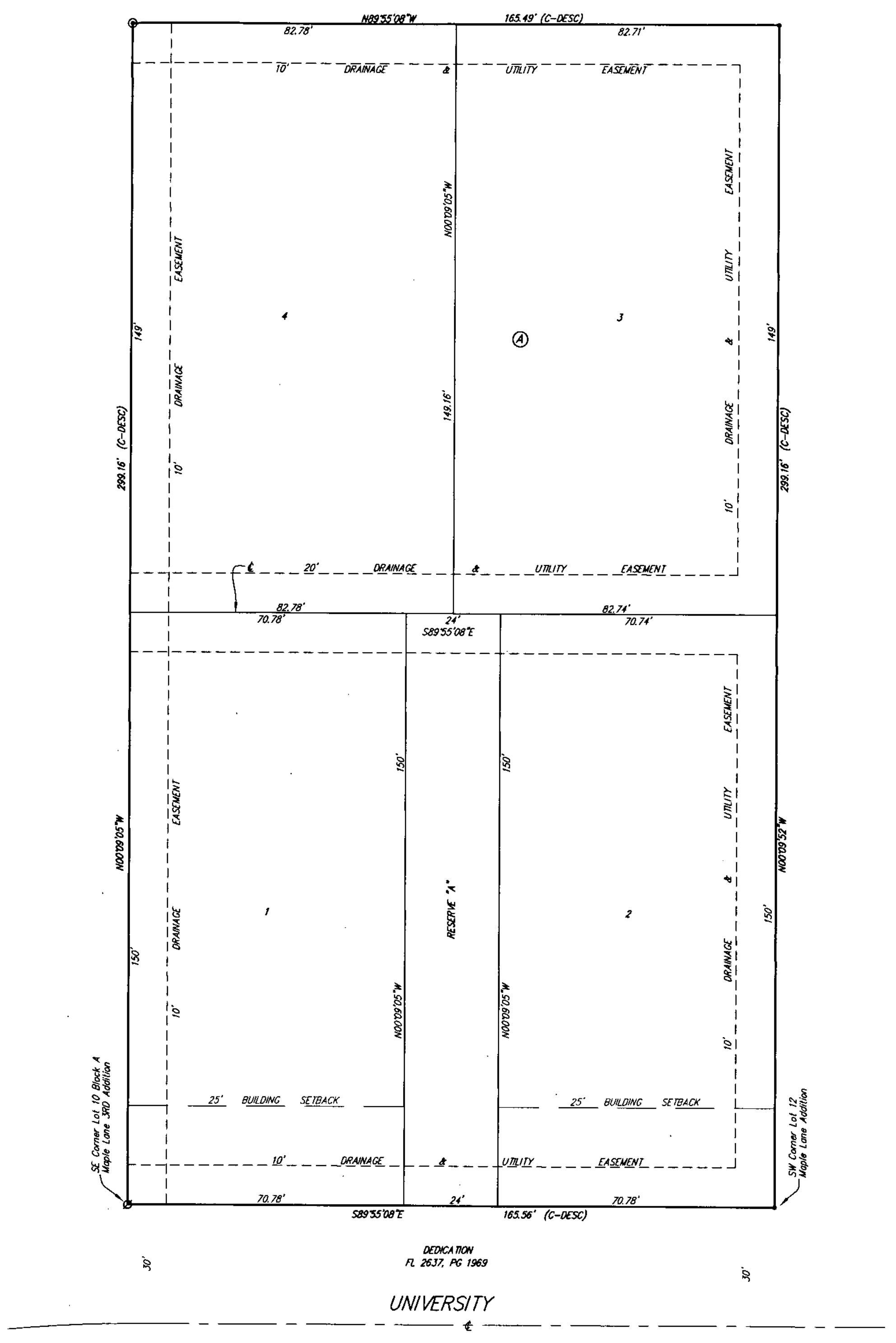
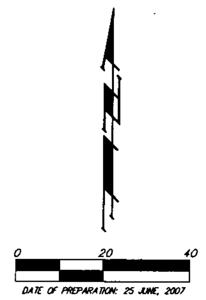
F:/PLAT/KINGS COURT ADDITION/dwg\KINGS COURT P.dwg

KING'S COURT ADDITION
WICHITA, SEDGWICK COUNTY, KANSAS





DATE OF PREPARATION: 25 JUNE, 2007

BENCHMARK:
RAILROAD SPIKE IN S. SIDE OF POWER POLE 15.8' S. OF S.W. COR. LOT 12, MAPLE LANE ADD.
ELEVATION= 1309.20 (NGVD 29)

● = #4 REBAR W/ "BAUGHMAN" CAP (SET)
⊙ = #4 REBAR W/ "SRB" CAP (FOUND)
Ø = 3/4" IRON (FOUND)

(C-DESC) = CALCULATED PER TRACT DESCRIPTION

NOTE:
A master grading plan for drainage has been developed for this subdivision and is on file with the City of Wichita, Kansas. All drainage easements, right-of-ways, or reserves shall remain at established grades or as modified with the approval of the City Engineer of the City of Wichita, Kansas. No obstructions which impede the flow of this drainage system shall be allowed.

State of Kansas)
Sedgwick County) SS

We, Baughman Company, P.A., Surveyors in aforesaid county and state do hereby certify that we have surveyed and platted "KING'S COURT ADDITION", Wichita, Sedgwick County, Kansas and that the accompanying plat is a true and correct exhibit of the property surveyed, described as the south half of the north half of the east 5 acres of the west 15 acres of the north half of the northeast quarter of Section 27, Township 27 South, Range 1 West of the Sixth Principal Meridian, Sedgwick County, Kansas, except the south 30 feet thereof dedicated for street puposes.

Existing public easements and dedications being vacated by virtue of K.S.A. 12-512(b).

Baughman Company, P.A.

______________________________, Surveyor
Michael G. Conrey

Know all men by these presents that we, the undersigned, have caused the land in the surveyors certificate to be platted into Lots, Block, and Reserve to be known as "KING'S COURT ADDITION", Wichita, Sedgwick County, Kansas. The utility easements are hereby granted as indicated for the construction and maintenance of all public utilities. The drainage and utility easements are hereby granted as indicated for drainage purposes and for the construction and maintenance of all public utilities. The drainage easements are hereby granted as indicated for drainage purposes. Reserve "A" is reserved for private drive, drainage purposes, and utilities, Reserve "A" is to be owned and maintained by the owners of lots 3 and 4.

Kristy Gerstner

______________________________, Owner
Kristy Gerstner

State of Kansas)
Sedgwick County) SS

The foregoing instrument acknowledged before me, this_____day of___________, 2007, by Kristy Gerstner, Owner, a private individual.

______________________________ Notary Public

My App't. Exp. __________

This plat of "KING'S COURT ADDITION", Wichita, Sedgwick County, Kansas has been submitted to and approved by the Wichita-Sedgwick County Metropolitan Area Planning Commission, Wichita, Kansas.

Dated this____ day of ________________, 2007.
Wichita-Sedgwick County Metropolitan Area Planning Commission

______________________________, Chair
Darrell A. Downing

______________________________, Secretary
John L. Schlegel

This plat approved and all dedications shown hereon accepted by the City Council of the City of Wichita, Kansas, this_____ day of ________________, 2007.

______________________________, Mayor
Carl Brewer

______________________________, City Clerk
Karen Sublett

Reviewed in accordance with K.S.A. 58-2005 on this_______day of ___________, 2007.

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

Entered on transfer record this_______day of ___________, 2007.

______________________________, County Clerk
Don Brace

State of Kansas)
Sedgwick County) SS

This is to certify that this plat has been filed for record in the office of the Register of Deeds, this____day of___________, 2007 at_____o'clock___M; and is duly recorded.

______________________________, Register of Deeds
Bill Meek

______________________________, Deputy
Tonya Buckingham

KING'S COURT ADDITION
25 JUNE, 2007

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

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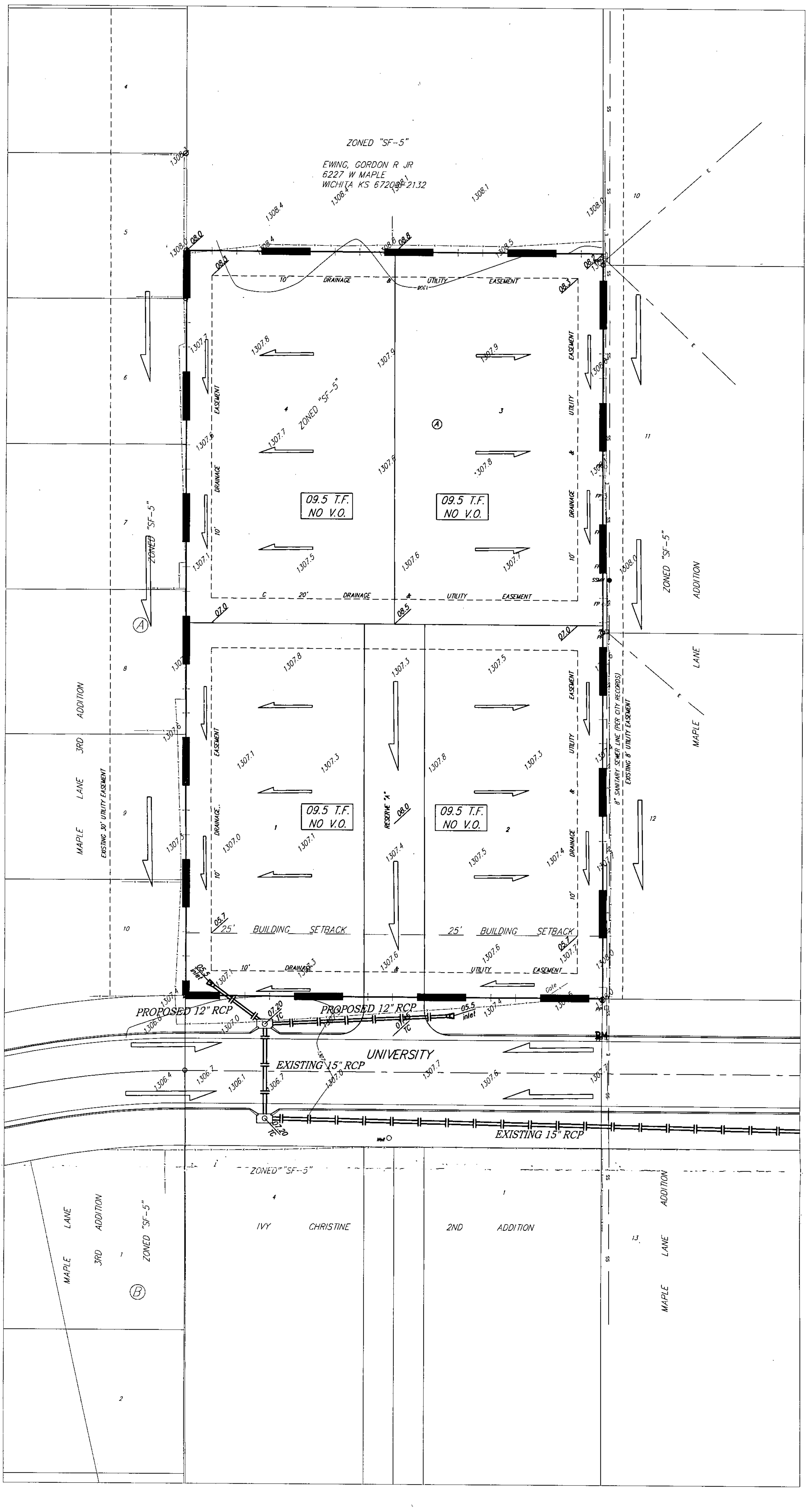
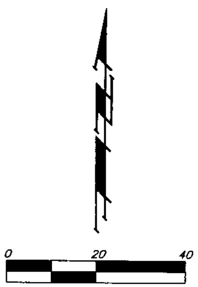
DRAINAGE CONCEPT

KING'S COURT ADDITION
WICHITA, SEDGWICK COUNTY, KANSAS



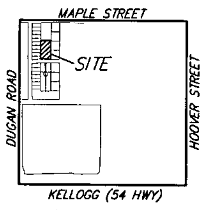


DATE OF PREPARATION: 02 JULY 2007

OWNER:
GERSTNER, KRISTY ETAL
9330 HARDTNER
WICHITA KS 67212-3971

LEGAL DESCRIPTION:
THE SOUTH HALF OF THE NORTH HALF OF THE EAST 5 ACRES OF THE WEST 15 ACRES OF THE NORTH HALF OF THE NORTHEAST QUARTER OF SECTION 27, TOWNSHIP 27 SOUTH, RANGE 1 WEST OF THE SIXTH PRINCIPAL MERIDIAN, SEDGWICK COUNTY, KANSAS, EXCEPT THE SOUTH 30 FEET THEREOF DEDICATED FOR STREET PUPOSES.

BENCHMARK:
RAILROAD SPIKE IN S. SIDE OF POWER POLE 15.8' S. OF S.W. COR. LOT 12, MAPLE LANE ADD.
ELEVATION= 1309.20 (NGVD 29)



NE 1/4 SEC. 27, T27S, R1W
VICINITY MAP

⌿ = #4 REBAR W/ "BAUGHMAN" CAP (FOUND)
◉ = #4 REBAR W/ "SRB" CAP (FOUND)
⊡ = #4 REBAR W/ "ARMSTRONG" CAP (FOUND)
△ = 1" ANGLE IRON (FOUND)
○ = 1/2" IRON (FOUND)
Ø = 3/4" IRON (FOUND)

SSMH ● = Sanitary Sewer Manhole
PP ⊡ = Power Pole
VP ○ = Vent Pipe
FH ○– = Fire Hydrant
WV ⋈ = Water Valve
FP ○ = Fence Post
= Tree

W WATER LINE W
FENCE
ELECTIRC LINE E
SS SANITARY SEWER SS

Area = 1.1 acres
Soil Type = B
Tc = 15 min

EXISTING	DEVELOPED
CN = 61	CN = 75
Q_2 = 0.6 cfs	Q_2 = 1.8 cfs
Q_5 = 1.3 cfs	Q_5 = 2.8 cfs
Q_{10} = 2.0 cfs	Q_{10} = 3.6 cfs
Q_{100} = 4.5 cfs	Q_{100} = 6.8 cfs

This site lies within FEMA Zone X Shaded per FEMA FIRM Panel 345 of 700, for Sedgwick County, Kansas, effective February 2, 2007.

NOTE: Existing SWS and street per 'Street Paving Improvements to University Street' per City of Wichita Project #472 84299.

DRAINAGE CONCEPT
KING'S COURT ADDITION
02 JULY 2007

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315 Ellis St. Wichita, KS 67211 P 316-262-7271 F 316-262-0149
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EXISTING CONDITIONS RUNOFF CALCULATIONS

DRAINAGE METHODS & STANDARDS

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

- ➢ STORM SERIES
  - Rational Method utilized for site runoff
  - 24-hour; 2-yr, 5-yr, 10-yr, 25-yr, 50-yr, 100-yr Storm Events

- ➢ DRAINAGE AREAS
  - Areas per existing topography
  - HydraFlow Hydrographs utilized for flow calculations
  - Minimum Time of Concentration Equals 15 min
  - Existing CN= 61 (Open Spaces, Good Condition)

SITE CHARACTERISTICS

The proposed site is currently open space with grass cover. The site is flat but generally drains to the south. The proposed University Street and SWS improvements are underway. The proposed street grades, according to plan, will raise the elevation by approximately 0.6' and not allow the site's runoff to convey to the south.

The soil type of the site is Type B and can be viewed in Appendix A. An aerial photograph with existing topography can be viewed in Exhibit 4.

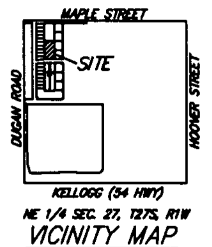
EXISTING CONDITIONS HYDROLOGIC ANALYSIS

The property currently drains to the south and into the platted University ROW. The runoff sheet flows to the south. There does not appear to be any offsite drainage encroaching the property.
There is currently no FEMA SFHA found on the property.

DOWNSTREAM DRAINAGE CAPACITY

A proposed SWS is currently being constructed to convey water to the east and into an existing system. The system consists of sump curb inlets in University and consists of 15" and 18" RCP. According to the SWS plan, it appears the site is assumed to sheet drain over the curb and into University. However, the plan shows

SCALE 1"=80'



NE 1/4 SEC. 27, T27S, R1W
VICINITY MAP

AERIAL EXHIBIT
KING'S COURT ADDITION

02 JULY 2007

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F/PLAT/KINGS COURT ADDITION/dwg\KINGS COURT P.dwg

POST-DEVELOPMENT HYDROLOGIC ANALYSIS

DRAINAGE METHODS & STANDARDS

The following methods and standards, although not a complete list, were used in developing the drainage and grading plans.

- STORM SERIES
  - Rational Method utilized for site runoff
  - 24-hour; 2-yr, 5-yr, 10-yr, 25-yr, 50-yr, 100-yr Storm Events

- DRAINAGE AREAS
  - Areas per existing topography
  - HydraFlow Hydrographs utilized for flow calculations
  - Time of Concentration using City of Wichita minimum 15 min
  - Developed CN = 75 (Residential, ¼ acre lot)

DETENTION FACILITIES

There is no detention ponds proposed on the property.

DISCHARGE POINTS SUMMARY

The main discharge that this site utilizes is the north proposed curb inlet in University. . All flows are the 24-hour, 100-year storm event. The structure was modeled using HydraFlow Storm Sewer using flowlines obtained from plan. The south curb inlet was assumed to have a flow of 8.0 cfs from street runoff as well as the adjacent south property. The two proposed stubs consist of 12" RCP with open end sections that connect to the north curb inlet. According to the storm sewer model, it appears that the system will handle the sites runoff as well as runoff from the south property.

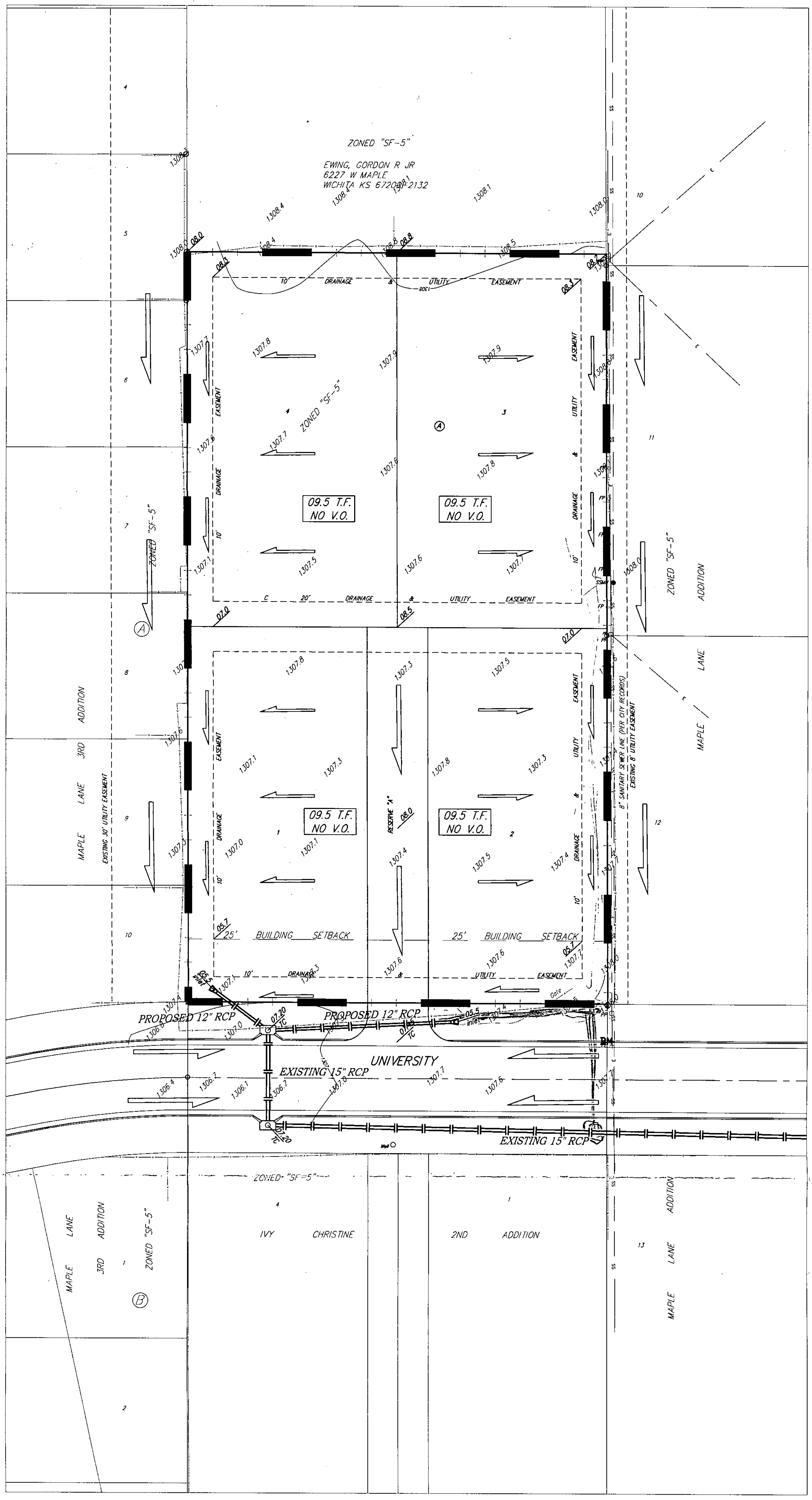
POTENTIAL UPSTREAM/DOWNSTREAM IMPACTS

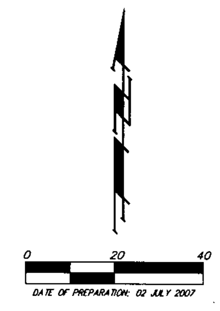
No potential upstream impacts are expected with this development. Due to minimal amount of increased runoff from proposed site, there are no negative downstream impacts expected. Proposed flows will be raised 2 cfs to the site's discharge point for the 100-yr storm event.

DRAINAGE CONCEPT

KING'S COURT ADDITION

WICHITA, SEDGWICK COUNTY, KANSAS





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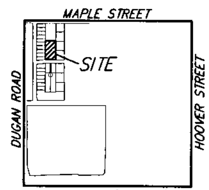

NE 1/4 SEC. 27, T27S, R1W

VICINITY MAP

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x FENCE
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SS SANITARY SEWER

Area = 1.1 acres
Soil Type = B
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NOTE: *Existing SWS and street per 'Street Paving Improvements to University Street' per City of Wichita Project #472 84299.*

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02 JULY 2007

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SOURCE OF FLOODPLAIN INFORMATION

The site lies within a FEMA Zone X - Shaded. The site is not located within a mapped FEMA SFHA. The location of the property, on FEMA FIRM Panel 345 of 700, map 20173C0345E, is attached as Exhibit 6 (for Sedgwick, effective February 2, 2007).

NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The **community map repository** should be consulted for possible updated or additional flood hazard information.

To obtain more detailed information in areas where **Base Flood Elevations** (BFEs) and/or **floodways** have been determined, users are encouraged to consult the Flood Profiles and Floodway Data and/or Summary of Stillwater Elevations tables contained within the Flood Insurance Study (FIS) report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded whole-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS report should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction

FEMA recommends that a Flood Insurance Policy be purchased for structures in areas where levees are shown as providing protection from the 1% annual chance flood. Flooding is not covered by standard property/fire/dwelling insurance policies nor is it covered by Homeowners Insurance, Renters Insurance, Condominium Owners Insurance, or Commercial Property insurance. Contact your insurance agent and local floodplain administrator for further information. Visit http://www.fema.gov/pdf/fhm/frm_gsah.pdf for information on levees and the risk of flooding in areas shown as being protected by levees.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures.** Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures in this jurisdiction.

The **projection** used in the preparation of this map was Universal Transverse Mercator (UTM) zone 14. The **horizontal datum** was NAD 83, GRS80 spheroid. Differences in datum, spheroid, projection or UTM zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

Flood elevations on this map are referenced to the North American Vertical Datum of 1988. These flood elevations must be compared to structure and ground elevations referenced to the same **vertical datum.** For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at http://www.ngs.noaa.gov or contact the National Geodetic Survey at the following address:

Spatial Reference System Division
National Geodetic Survey, NOAA
Silver Spring Metro Center
1315 East-West Highway
Silver Spring, Maryland 20910
(301) 713-3191

To obtain current elevation, description, and/or location information about the **bench marks** shown on this map, please contact the Information Services Branch of the National Geodetic Survey at **(301) 713-3242**, or visit their website at http://www.ngs.noaa.gov.

Base map information shown on this FIRM was provided by Sedgwick County GIS as digital data in Kansas State Plane Coordinate System South at a scale of 1:12,000 from photography dated June 2000.

Corporate limits shown on this map are based on the best data available at the time of publication. Because changes due to annexations or de-annexations may have occurred after this map was published, map users should contact appropriate community officials to verify current corporate limit locations.

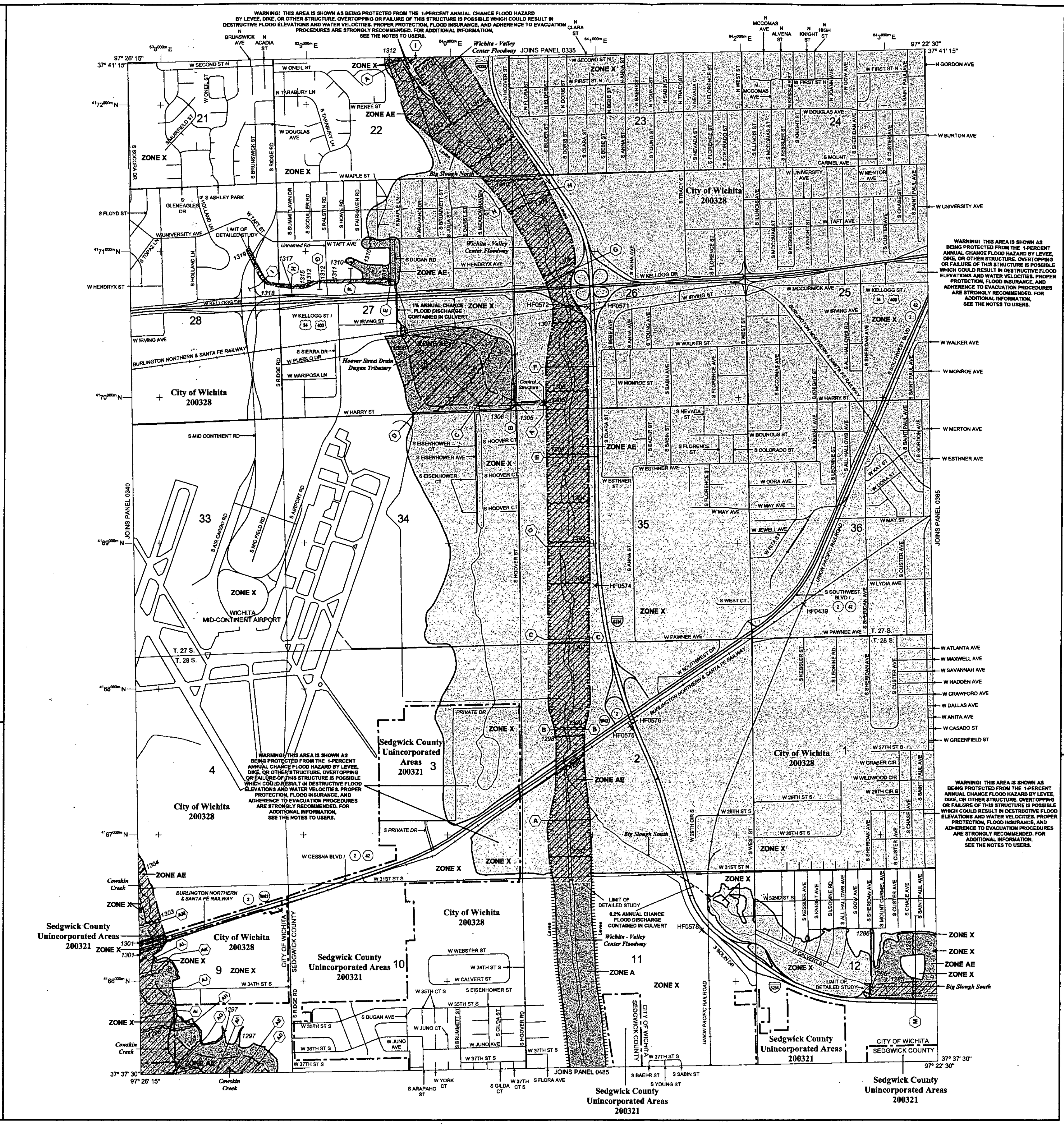
This map reflects more detailed up-to-date **stream channel configurations** than those shown on the previous FIRM for this jurisdiction. The floodplains and floodways that were transferred from the previous FIRM may have been adjusted to conform to these new stream channel configurations. As a result, the Flood Profiles and Floodway Data tables in the Flood Insurance Study report (which contains authoritative hydraulic data) may reflect stream channel distances that differ from what is shown on this map.

Please refer to the separately printed **Map Index** for an overview map of the county showing the layout of map panels; community map repository addresses; and a Listing of Communities table containing National Flood Insurance Program dates for each community as well as a listing of the panels on which each community is located.

Contact the **FEMA Map Service Center** at 1-800-358-9616 for information on available products associated with this FIRM. Available products may include previously issued Letters of Map Change, a Flood Insurance Study report, and/or digital versions of this map. The FEMA Map Service Center may also be reached by Fax at 1-800-358-9620 and their website at http://www.fema.gov/msc.

If you have **questions about this map** or questions concerning the National Flood Insurance Program in general, please call **1- 877- FEMA MAP** (1-877-336-2627) or visit the FEMA website at http://www.fema.gov.

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.



LEGEND

▨ SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A	No Base Flood Elevations determined.
ZONE AE	Base Flood Elevations determined.
ZONE AH	Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
ZONE AO	Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
ZONE AR	Special Flood Hazard Areas formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
ZONE A99	Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
ZONE V	Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
ZONE VE	Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

▨ FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

▨ OTHER FLOOD AREAS

ZONE X	Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

☐ OTHER AREAS

ZONE X	Areas determined to be outside the 0.2% annual chance floodplain.
ZONE D	Areas in which flood hazards are undetermined, but possible.

▧ COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

▧ OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

———	Floodplain boundary
— —	Floodway boundary
— —	Zone D boundary
• • • • •	CBRS and OPA boundary
▨ ←	Boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
~~ 513 ~~~	Base Flood Elevation line and value; elevation in feet*
(EL 987)	Base Flood Elevation value where uniform within zone; elevation in feet*

*Referenced to the North American Vertical Datum of 1988

(A)———(A)	Cross section line
(23)- - - -(23)	Transect line
45° 02' 08", 93° 02' 12"	Geographic coordinates referenced to the North American Datum of 1983 (NAD 83), Western Hemisphere.
$^{48}89^{000m}$ N	1000-meter Universal Transverse Mercator grid values, zone 14
ML5510 ×	Bench mark (see explanation in Notes to Users section of this FIRM panel)
• M1.5	River Mile

MAP REPOSITORY
Refer to listing of Map Repositories on Map Index

EFFECTIVE DATE OF COUNTYWIDE
FLOOD INSURANCE RATE MAP

FEBRUARY 2, 2007

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

For community map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 1000'

500 0 1000 2000 FEET
300 0 300 600 METERS

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0345E

FIRM

FLOOD INSURANCE RATE MAP

SEDGWICK COUNTY, KANSAS
AND INCORPORATED AREAS

PANEL 345 OF 700

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
SEDGWICK COUNTY	200321	0345	E
WICHITA, CITY OF	200328	0345	E

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

MAP NUMBER
20173C0345E

EFFECTIVE DATE
FEBRUARY 2, 2007

Federal Emergency Management Agency

FEDERAL, STATE, & LOCAL PERMITTING

US ARMY CORPS OF ENGINEERS
There does not appear to be any USACOE permitting needed on the proposed site at this time.

KANSAS DEPT OF AGRICULTURE - DWR PERMITTING
There does not appear to be any DWR permitting needed on the proposed site at this time.

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

KANSAS DEPT OF TRANSPORTATION
There does not appear to be any KDOT permitting needed on the proposed project.

SEDGWICK COUNTY ROW
There does not appear to be any discharge into the Sedgwick County ROW as this plat is located totally in the City of Wichita.

SUPPORTING CALCULATIONS

APPENDIX A: USGS Soils Survey

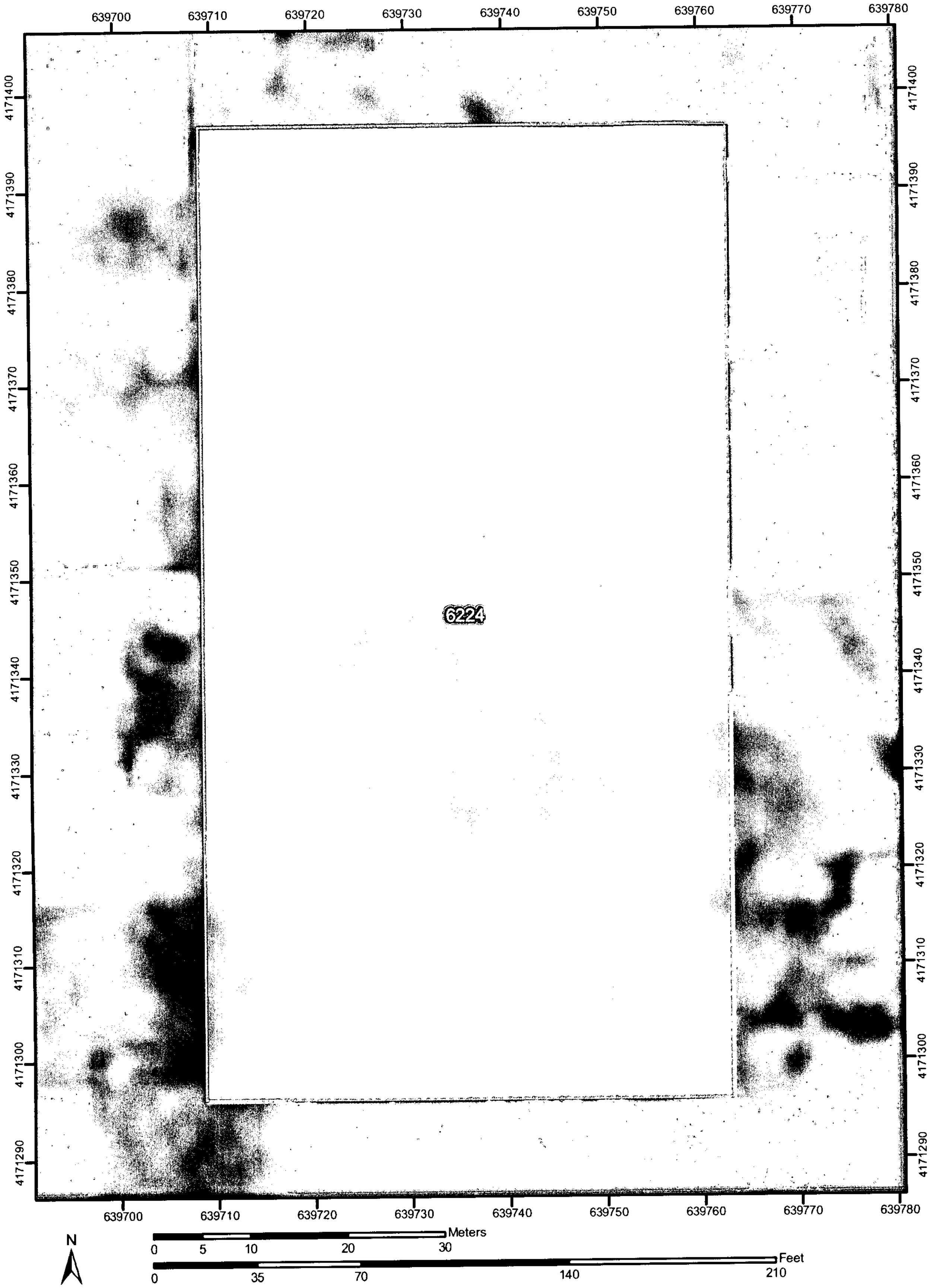
APPENDIX B: Hydraflow Hydrograph
- Existing & Proposed Conditions

APPENDIX C: HydraFlow Stormsewer
- 100-yr, 24-hour return period

APPENDIX A

USGS Soils Survey

Hydrologic Soil Group–Sedgwick County, Kansas
(Kings Court)



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

Municipalities

◉ Cities

⊞ Urban Areas

Water Features

■ Oceans

∼ Streams and Canals

Transportation

┼ Rails

Roads

∼ Interstate Highways

∼ US Routes

∼ State Highways

∼ Local Roads

∼ Other Roads

MAP INFOR

Original soil survey map sheets were
Viewing scale and printing scale, ho
original. Please rely on the bar scale
map measurements.

Source of Map: Natural Resource
Web Soil Survey URL: http://webs
Coordinate System: UTM Zone 1

This product is generated from the U
the version date(s) listed below.

Soil Survey Area: Sedgwick Coun
Survey Area Data: Version 3, Dec

Date(s) aerial images were photogr

The orthophoto or other base map o
compiled and digitized probably diff
imagery displayed on these maps. A
of map unit boundaries may be evid

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**
6224	Canadian fine sandy loam, rarely flooded	B	1.3	100.0%

Totals for Area of Interest (AOI)	1.3	100.0%

Description

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

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

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

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

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

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

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

Rating Options

Aggregation Method: Dominant Condition

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

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

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

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

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

Component Percent Cutoff: *None Specified*

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

Tie-break Rule: Lower

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

APPENDIX B

HydraFlow Hydrographs

Watershed Model Schematic

Legend

Hyd.	Origin	Description
1	SCS Runoff	Existing
2	SCS Runoff	Developed

Hydrograph Return Period Recap

Hyd. No.	Hydrograph type (origin)	Inflow Hyd(s)	Peak Outflow (cfs)								Hydrograph description
			1-Yr	2-Yr	3-Yr	5-Yr	10-Yr	25-Yr	50-Yr	100-Yr	
1	SCS Runoff	-------	-------	0.605	-------	1.348	1.942	2.461	3.464	4.519	Existing
2	SCS Runoff	-------	-------	1.760	-------	2.831	3.624	4.287	5.511	6.719	Developed

Hydrograph Summary Report

Hydraflow Hydrographs by Intelisolve v9.02

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Hyd. volume (acft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (acft)	Hydrograph description
1	SCS Runoff	0.605	2	724	0.051	----	------	------	Existing
2	SCS Runoff	1.760	2	722	0.116	----	------	------	Developed

Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.02

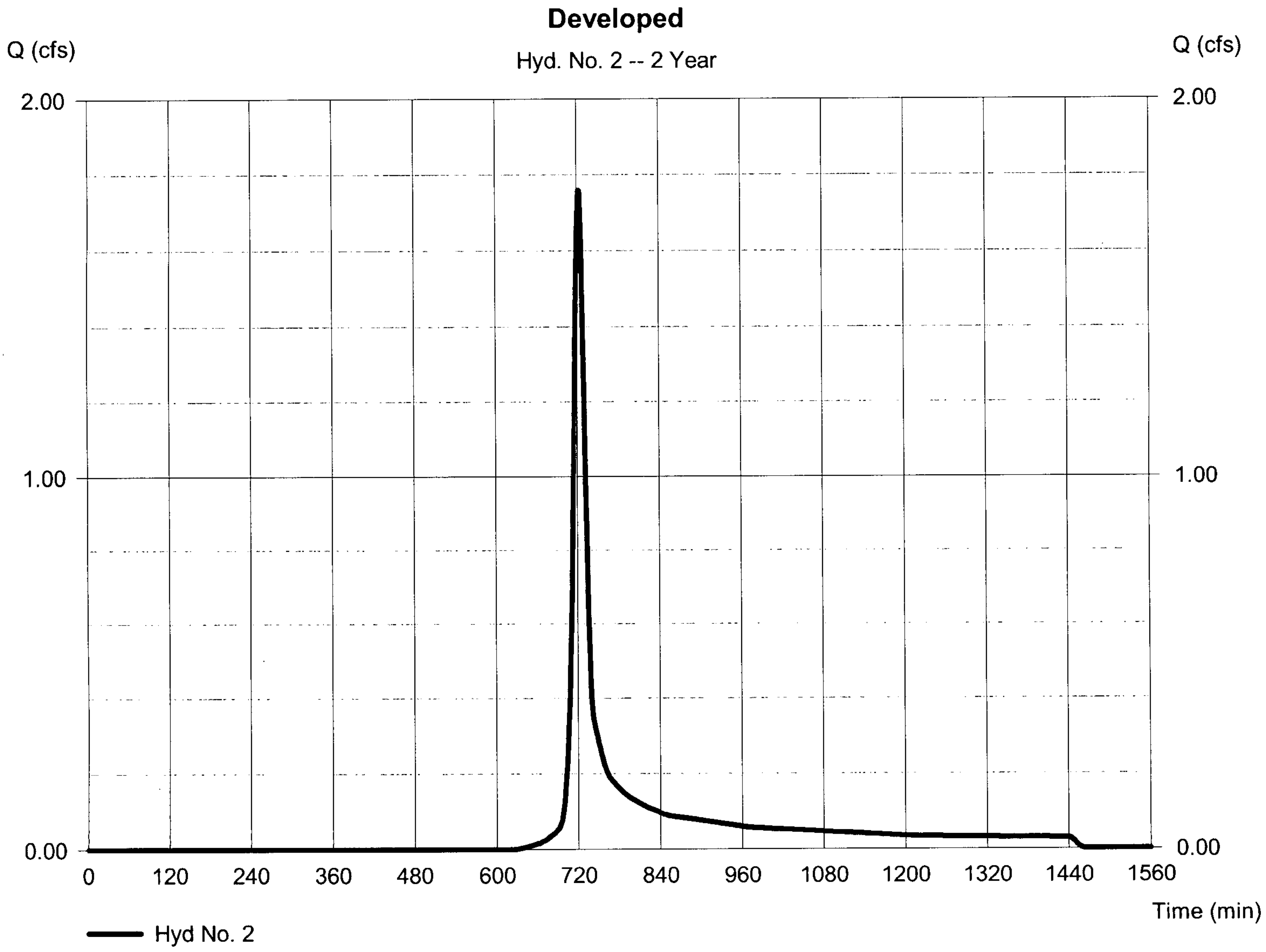
Monday, Jul 2, 2007

Hyd. No. 2

Developed

Hydrograph type = SCS Runoff
Storm frequency = 2 yrs
Time interval = 2 min
Drainage area = 1.100 ac
Basin Slope = 0.0 %
Tc method = USER
Total precip. = 3.50 in
Storm duration = 24 hrs

Peak discharge = 1.760 cfs
Time to peak = 722 min
Hyd. volume = 0.116 acft
Curve number = 75
Hydraulic length = 0 ft
Time of conc. (Tc) = 15.00 min
Distribution = Type II
Shape factor = 484



Hydrograph Summary Report

Hydraflow Hydrographs by Intelisolve v9.02

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Hyd. volume (acft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (acft)	Hydrograph description
1	SCS Runoff	1.348	2	724	0.096	----	------	------	Existing
2	SCS Runoff	2.831	2	722	0.183	----	------	------	Developed

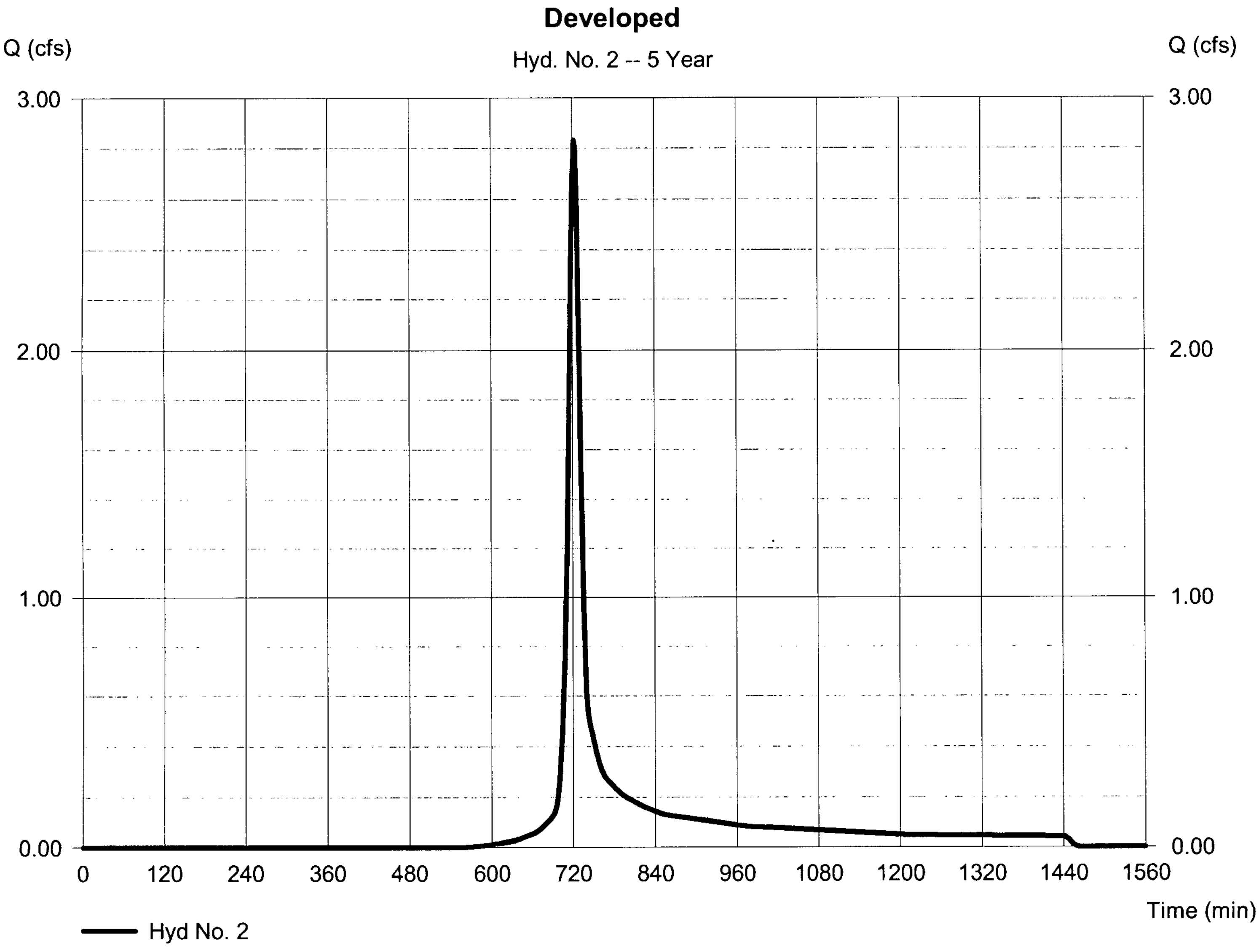
runoff.gpw	Return Period: 5 Year	Monday, Jul 2, 2007

Hydrograph Report

Hyd. No. 2

Developed

Hydrograph type	= SCS Runoff	Peak discharge	= 2.831 cfs
Storm frequency	= 5 yrs	Time to peak	= 722 min
Time interval	= 2 min	Hyd. volume	= 0.183 acft
Drainage area	= 1.100 ac	Curve number	= 75
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 15.00 min
Total precip.	= 4.50 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Summary Report

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Hyd. volume (acft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (acft)	Hydrograph description
1	SCS Runoff	1.942	2	724	0.133	----	------	------	Existing
2	SCS Runoff	3.624	2	722	0.233	----	------	------	Developed

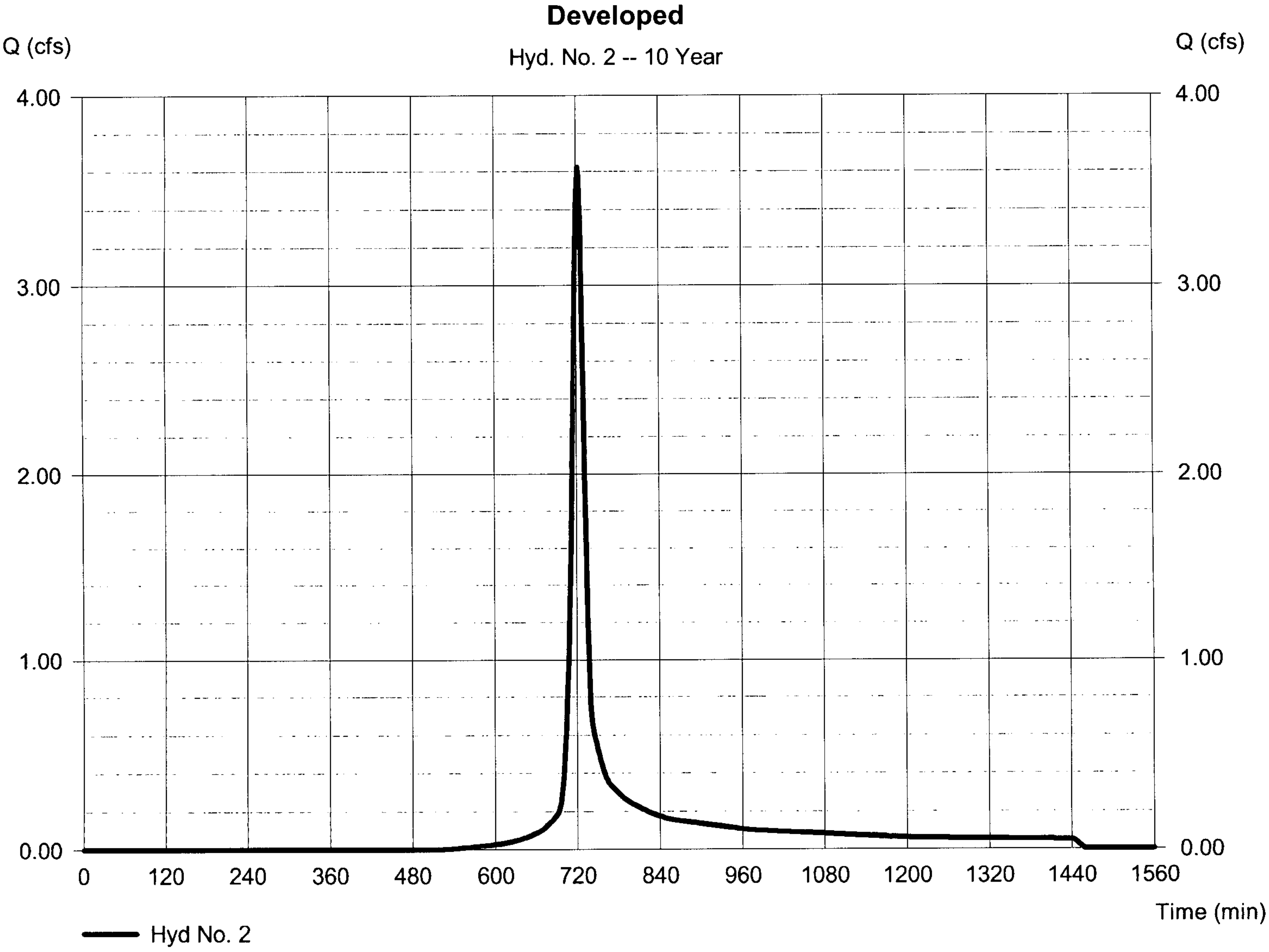
Hydrograph Report

Hyd. No. 2

Developed

Hydrograph type = SCS Runoff
Storm frequency = 10 yrs
Time interval = 2 min
Drainage area = 1.100 ac
Basin Slope = 0.0 %
Tc method = USER
Total precip. = 5.20 in
Storm duration = 24 hrs

Peak discharge = 3.624 cfs
Time to peak = 722 min
Hyd. volume = 0.233 acft
Curve number = 75
Hydraulic length = 0 ft
Time of conc. (Tc) = 15.00 min
Distribution = Type II
Shape factor = 484



Hydrograph Summary Report

Hydraflow Hydrographs by Intelisolve v9.02

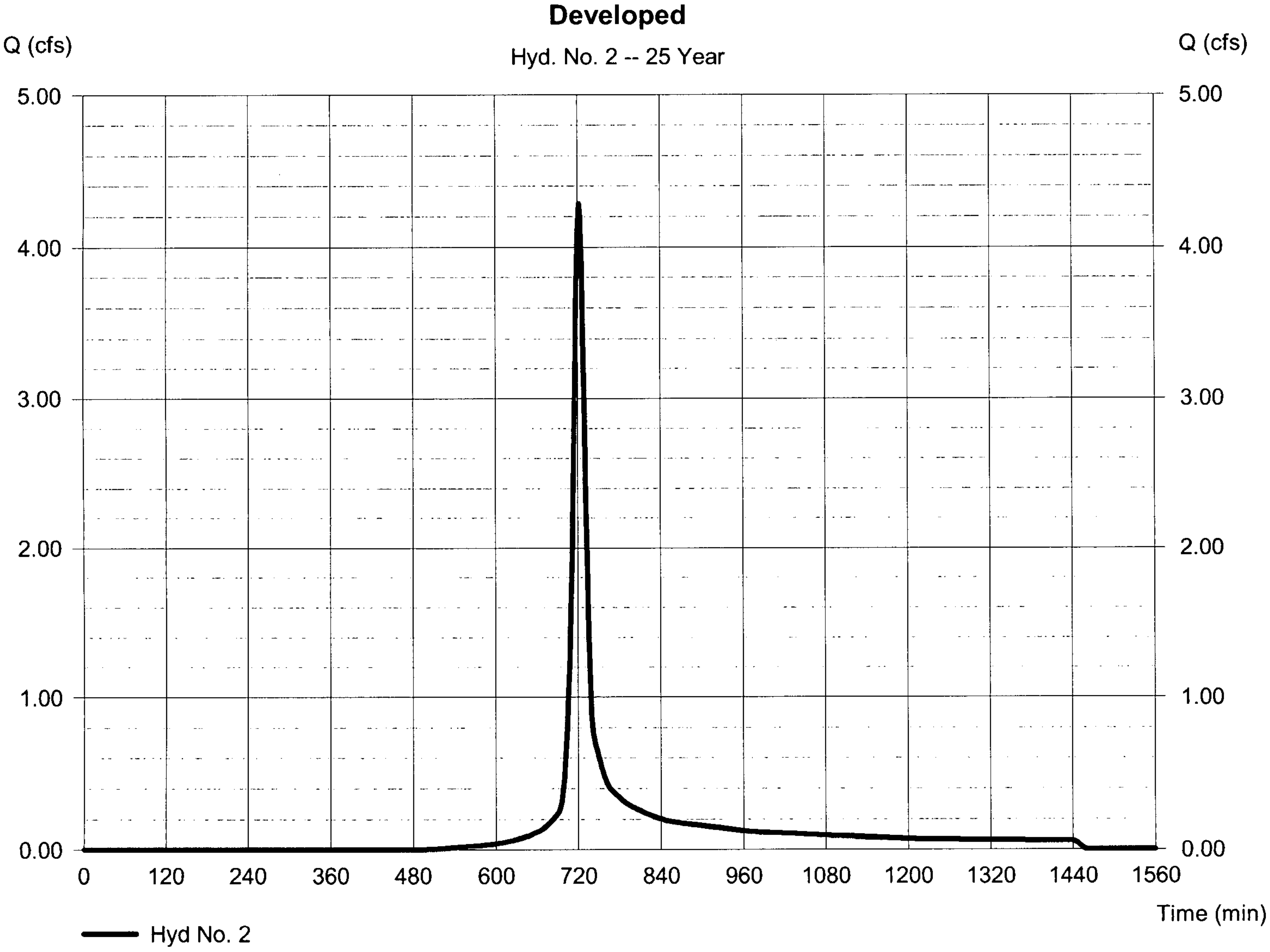
Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Hyd. volume (acft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (acft)	Hydrograph description
1	SCS Runoff	2.461	2	724	0.166	----	------	------	Existing
2	SCS Runoff	4.287	2	722	0.276	----	------	------	Developed

Hydrograph Report

Hyd. No. 2

Developed

Hydrograph type	= SCS Runoff	Peak discharge	= 4.287 cfs
Storm frequency	= 25 yrs	Time to peak	= 722 min
Time interval	= 2 min	Hyd. volume	= 0.276 acft
Drainage area	= 1.100 ac	Curve number	= 75
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 15.00 min
Total precip.	= 5.77 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Summary Report

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Hyd. volume (acft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (acft)	Hydrograph description
1	SCS Runoff	3.464	2	722	0.229	----	------	------	Existing
2	SCS Runoff	5.511	2	722	0.355	----	------	------	Developed

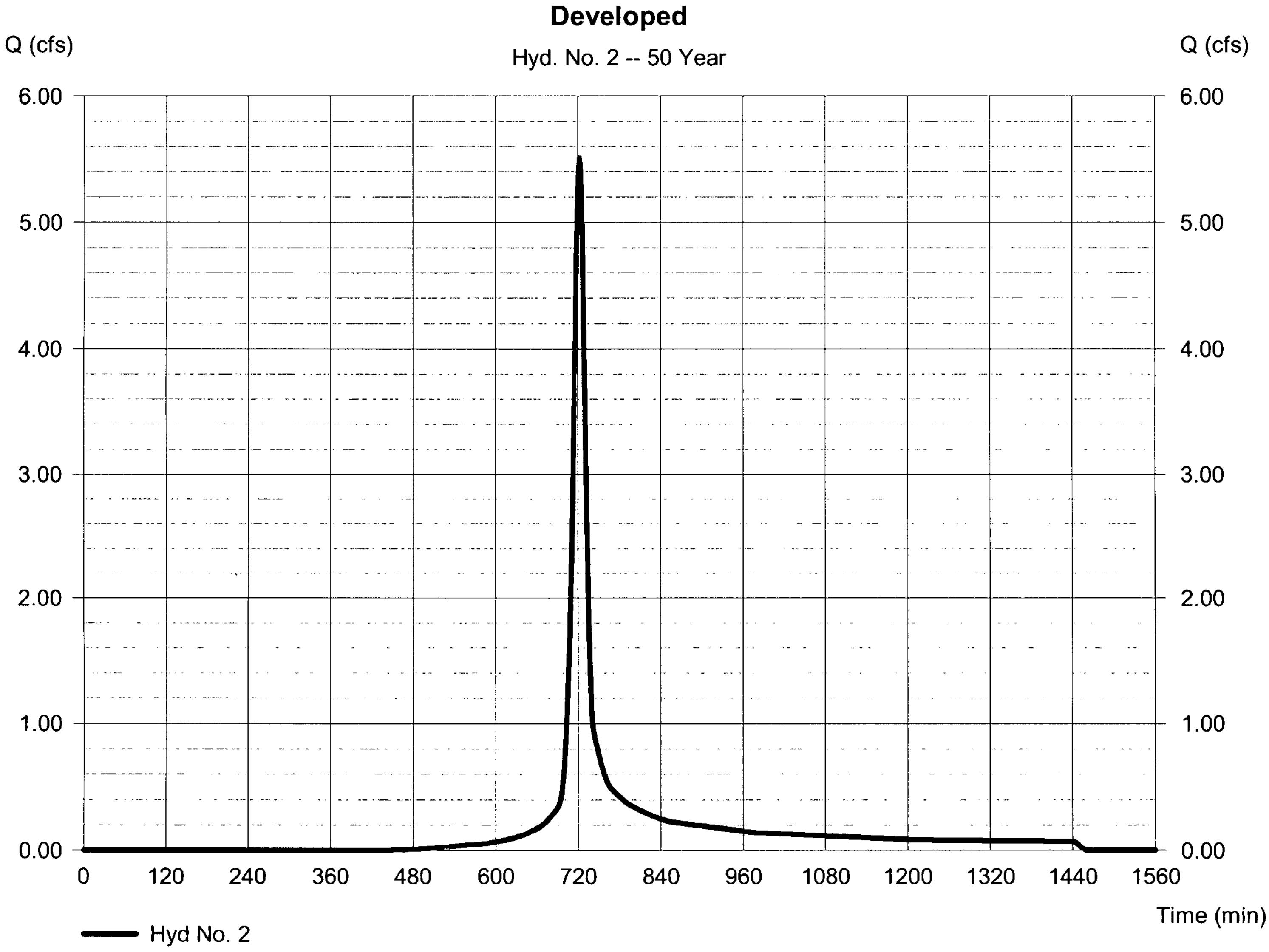
runoff.gpw	Return Period: 50 Year	Monday, Jul 2, 2007

Hydrograph Report

Hyd. No. 2

Developed

Hydrograph type	= SCS Runoff	Peak discharge	= 5.511 cfs
Storm frequency	= 50 yrs	Time to peak	= 722 min
Time interval	= 2 min	Hyd. volume	= 0.355 acft
Drainage area	= 1.100 ac	Curve number	= 75
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 15.00 min
Total precip.	= 6.80 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Summary Report

Hydraflow Hydrographs by Intelisolve v9.02

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Hyd. volume (acft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (acft)	Hydrograph description
1	SCS Runoff	4.519	2	722	0.294	----	------	------	Existing
2	SCS Runoff	6.719	2	722	0.435	----	------	------	Developed

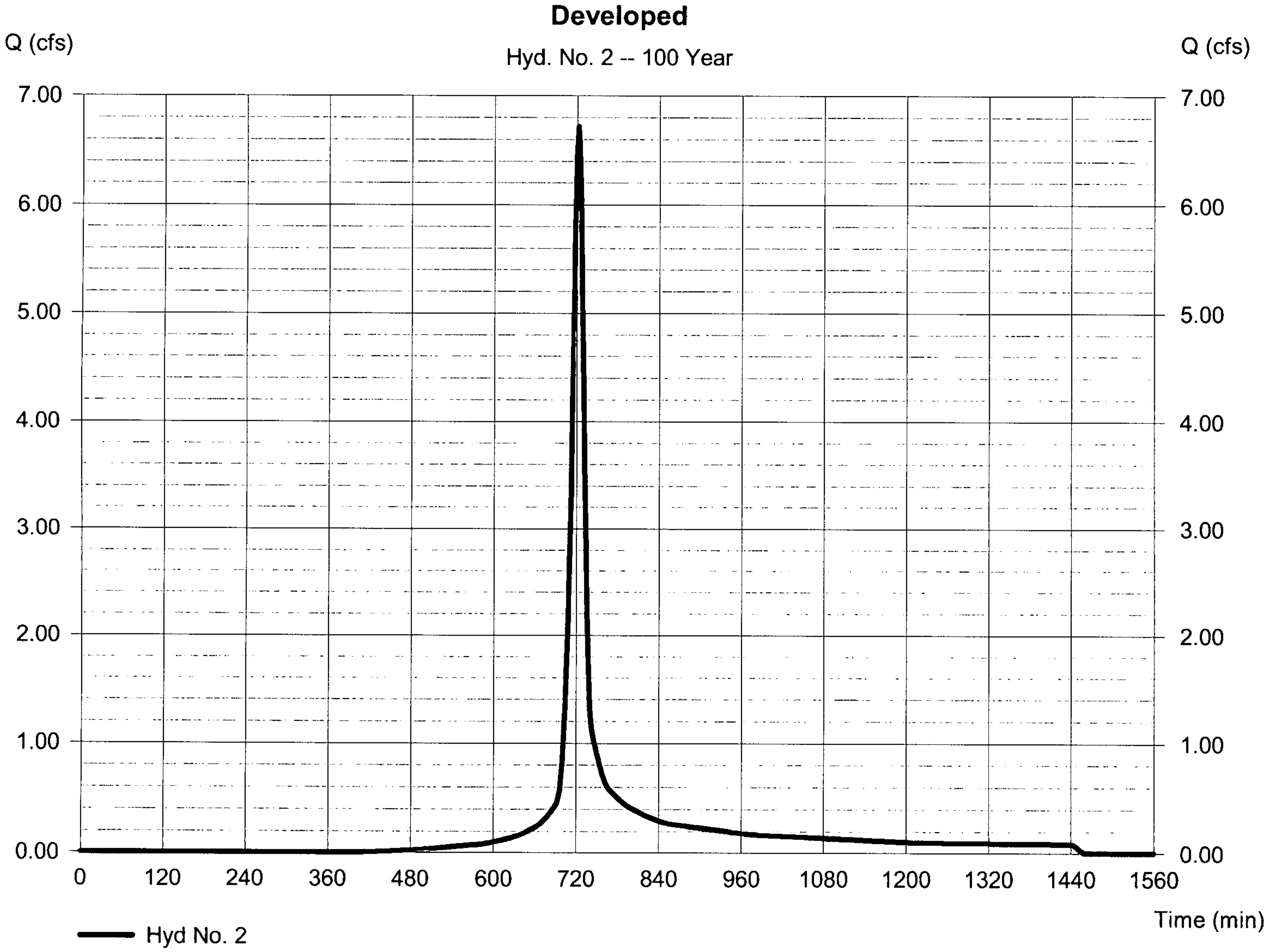
runoff.gpw | Return Period: 100 Year | Monday, Jul 2, 2007

Hydrograph Report

Hyd. No. 2

Developed

Hydrograph type	= SCS Runoff	Peak discharge	= 6.719 cfs
Storm frequency	= 100 yrs	Time to peak	= 722 min
Time interval	= 2 min	Hyd. volume	= 0.435 acft
Drainage area	= 1.100 ac	Curve number	= 75
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 15.00 min
Total precip.	= 7.80 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydraflow Rainfall Report

Return Period (Yrs)	Intensity-Duration-Frequency Equation Coefficients (FHA)			
	B	D	E	(N/A)
1	0.0000	0.0000	0.0000	--------
2	69.8703	13.1000	0.8658	--------
3	0.0000	0.0000	0.0000	--------
5	79.2597	14.6000	0.8369	--------
10	88.2351	15.5000	0.8279	--------
25	102.6072	16.5000	0.8217	--------
50	114.8193	17.2000	0.8199	--------
100	127.1596	17.8000	0.8186	--------

File name: SampleFHA.idf

Intensity = B / (Tc + D)^E

Return Period (Yrs)	Intensity Values (in/hr)											
	5 min	10	15	20	25	30	35	40	45	50	55	60
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	5.69	4.61	3.89	3.38	2.99	2.69	2.44	2.24	2.07	1.93	1.81	1.70
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	6.57	5.43	4.65	4.08	3.65	3.30	3.02	2.79	2.59	2.42	2.27	2.15
10	7.24	6.04	5.21	4.59	4.12	3.74	3.43	3.17	2.95	2.77	2.60	2.46
25	8.25	6.95	6.03	5.34	4.80	4.38	4.02	3.73	3.48	3.26	3.07	2.91
50	9.04	7.65	6.66	5.92	5.34	4.87	4.49	4.16	3.88	3.65	3.44	3.25
100	9.83	8.36	7.30	6.50	5.87	5.36	4.94	4.59	4.29	4.03	3.80	3.60

Tc = time in minutes. Values may exceed 60.

Precip. file name: SCS_24HR.pcp

Storm Distribution	Rainfall Precipitation Table (in)							
	1-yr	2-yr	3-yr	5-yr	10-yr	25-yr	50-yr	100-yr
SCS 24-hour	0.00	3.50	0.00	4.50	5.20	5.77	6.80	7.80
SCS 6-Hr	0.00	1.80	0.00	0.00	2.60	0.00	0.00	4.00
Huff-1st	0.00	1.55	0.00	2.75	4.00	5.38	6.50	8.00
Huff-2nd	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-3rd	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-4th	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-Indy	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Custom	0.00	1.75	0.00	2.80	3.90	5.25	6.00	7.10

Hydraflow Table of Contents

2 - Year

5 - Year

10 - Year

25 - Year

50 - Year

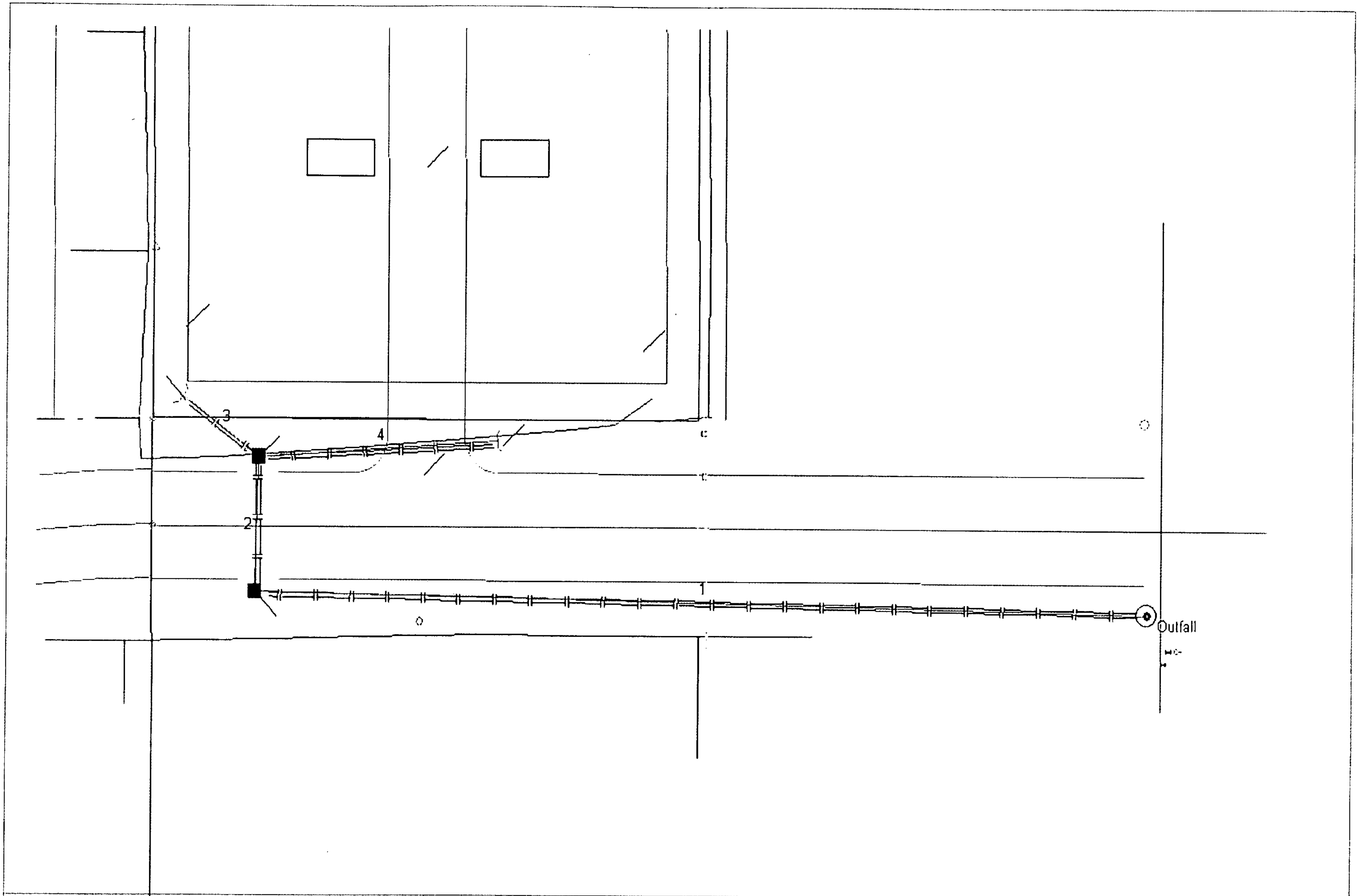
100 - Year

APPENDIX C

HydraFlow Stormsewer

- 100yr

Hydraflow Plan View



Kings Court Add	No. Lines: 4	07-02-2007

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 El Dn (ft)	Line slope (%)	Invert El Up (ft)	Line size (in)	Line type	N value (n)	J-loss coeff (K)	Inlet/ Rim El (ft)	
1	End	271.4	-178.8	Curb	8.00	0.00	0.00	0.0	3.20	0.18	3.70	15	Cir	0.013	1.50	7.00	
2	1	37.6	90.3	Curb	3.50	0.00	0.00	0.0	3.70	0.53	3.90	15	Cir	0.013	1.50	7.00	
3	2	28.1	-55.5	Hdwl	3.40	0.00	0.00	0.0	3.90	5.70	5.50	12	Cir	0.013	1.00	5.50	
4	2	73.4	84.9	Hdwl	3.40	0.00	0.00	0.0	3.90	2.18	5.50	12	Cir	0.013	1.00	5.50	

Kings Court Add

Number of lines: 4

Date: 07-02-2007

Storm Sewer Summary Report

Line No.	Line ID	Flow rate (cfs)	Line size (in)	Line length (ft)	Invert EL Dn (ft)	Invert EL Up (ft)	Line slope (%)	HGL down (ft)	HGL up (ft)	Minor loss (ft)	HGL Junct (ft)	Dns line No.
1		2.77	15 c	271.4	3.20	3.70	0.184	3.87*	5.10*	0.12	5.22	End
2		4.71	15 c	37.6	3.70	3.90	0.532	5.22*	5.42*	0.34	5.76	1
3		8.50	12 c	28.1	3.90	5.50	5.697	5.76*	7.36*	n/a	10.74 i	2
4		5.26	12 c	73.4	3.90	5.50	2.180	5.76*	7.36*	n/a	7.81 i	2

Kings Court Add	Number of lines: 4	Run Date: 07-02-2007

NOTES: c = cir; e = ellip; b = box; Return period = 100 Yrs. ; *Surcharged (HGL above crown). ; i - Inlet control.

Inlet Report

Line No	Inlet ID	Q = CIA (cfs)	Q carry (cfs)	Q capt (cfs)	Q byp (cfs)	Junc type	Curb Inlet		Grate Inlet			Gutter							Inlet			Byp line No
							Ht (in)	L (ft)	area (sqft)	L (ft)	W (ft)	So (ft/ft)	W (ft)	Sw (ft/ft)	Sx (ft/ft)	n	Depth (ft)	Spread (ft)	Depth (ft)	Spread (ft)	Depr (in)	
1		0.00*	0.00	0.00	0.00	Curb	6.0	6.00	2.00	4.00	2.00	Sag	2.00	0.080	0.050	0.013	0.00	0.00	0.00	0.00	2.00	Off
2		0.00*	0.00	0.00	0.00	Curb	6.0	6.00	2.00	4.00	2.00	Sag	2.00	0.080	0.050	0.013	0.00	0.00	0.00	0.00	2.00	1
3		0.00*	0.00	0.00	0.00	Hdwl	6.0	6.00	2.00	4.00	2.00	Sag	2.00	0.080	0.050	0.013	0.00	0.00	0.00	0.00	0.00	2
4		0.00*	0.00	0.00	0.00	Hdwl	6.0	6.00	2.00	4.00	2.00	Sag	2.00	0.080	0.050	0.013	0.00	0.00	0.00	0.00	0.00	2

Kings Court Add

Number of lines: 4

Run Date: 07-02-2007

NOTES: Inlet N-Values = 0.016 ; Intensity = 124.57 / (Inlet time + 17.60) ^ 0.81; Return period = 100 Yrs. ; * Indicates Known Q added

Hydraulic Grade Line Computations

Line	Size	Q	Downstream								Len	Upstream								Check		JL coeff	Minor loss
	(in)	(cfs)	Invert elev (ft)	HGL elev (ft)	Depth (ft)	Area (sqft)	Vel (ft/s)	Vel head (ft)	EGL elev (ft)	Sf (%)	(ft)	Invert elev (ft)	HGL elev (ft)	Depth (ft)	Area (sqft)	Vel (ft/s)	Vel head (ft)	EGL elev (ft)	Sf (%)	Ave Sf (%)	Enrgy loss (ft)	(K)	(ft)
1	15	2.77	3.20	3.87	0.67	0.67	4.14	0.27	4.14	0.584	271	3.70	5.10	1.25	1.23	2.26	0.08	5.18	0.184	0.384	1.043	1.50	0.12
2	15	4.71	3.70	5.22	1.25	1.23	3.84	0.23	5.45	0.533	37.6	3.90	5.42	1.25	1.23	3.84	0.23	5.65	0.532	0.533	0.200	1.50	0.34
3	12	8.50	3.90	5.76	1.00	0.79	10.82	1.82	7.58	n/a	28.1	5.50	7.36	1.00	0.79	10.82	1.82	9.18i	n/a	n/a	-0.221	1.00	n/a
4	12	5.26	3.90	5.76	1.00	0.79	6.70	0.70	6.46	n/a	73.4	5.50	7.36	1.00	0.79	6.69	0.70	8.06i	n/a	n/a	0.904	1.00	n/a

Kings Court Add	Number of lines: 4	Run Date: 07-02-2007

PLAN SHEETS

DRAINAGE & GRADING PLAN Scale 1:20