

PRELIMINARY DRAINAGE REPORT

FOR

WICHITA COUNTRY CLUB SECOND ADDITION
Wichita, Kansas

FEBRUARY 2007

Wichita Country Club Second Addition

Preliminary Drainage Report

Wichita, Sedgwick County, Kansas

Location

The subject property is in the City of Wichita, Sedgwick County, Kansas. The proposed development is between Rock Road and Webb Road on East 13th Street, specifically 8501 East 13th Street. The site lies in the northwest ¼ of Section 17, Township 27 South, Range 2 West. The Wichita Country Club facility is approximately 162 acres with the platted area consisting of 41.6 acres. Three residential housing additions, Rounds Estates, Woodcrest Addition and Bradford Place Addition, border the site to the east. Another residential addition is to the south of the site, Vickridge Second Addition. The site is shown on the Andover and Wichita East, Kansas Quadrangle, located in Appendix A.

Soils

The predominant soil type on site is Urban Land Irwin Complex 1 – 3 percent slopes, Hydrologic Soil Group (HSG) “D”, according to the NRCS (SCS) GIS Sedgwick County Soil Survey (Appendix B). Soils categorized as HSG “D” dominate the watersheds in which the project site is located. This soil classification was used to determine rational coefficients and curve numbers for the site and associated watersheds.

Pre-Project Conditions

Pre-Project Development

The property is currently developed as a private country club facility, including a golf course, pool, tennis courts, a clubhouse, other facility structures, and associated parking and driveways.

Pre-Project Landform and Slope

The Middle Branch of Gypsum Creek bisects the site from north to south, just west of the platted area. A majority of the site drains from east to west into this drainage channel. The site area west of the Creek drains west to east to the channel. A small portion of the site drains to the southeast corner of the site. Slopes across the site range from 1 to 3 percent with elevations ranging from 1380 in the northeast section to 1350 along the drainage channel

Pre-Project Drainage Conditions

The platted area is located in Zone X, areas determined to be outside the 500-year floodplain. Because the Middle Branch passes through the site, portions of the golf course are within Zone AE and the Zone AE floodway. Zone AE areas are subject to inundation by the 100-year flood, however, base flood elevations have been established for these areas. Zone AE floodway areas consist of the channel of a stream and adjacent floodplain areas that must be kept free of encroachment. (Sedgwick County February 2, 2007, Kansas FIRM Panel 528 of 700) (Appendix C).

Pre-Project Runoff Characteristics

Runoff exits the subject property in two locations. Approximately, 140 acres of the Wichita Country Club are a part of a 2,000 acre watershed (Watershed 1) that drains into Gypsum Creek. The Creek exits the western half of the subject property draining south. A small portion of the site

drains to the southeast and exits the property from the southeast corner (Watershed 2). The Drainage Boundary Map shows the existing watershed boundaries (Appendix D).

The SCS Runoff Hydrograph Method was used to calculate the runoff flow rates for Watershed 1. This method was used because the basin area exceeded 320 acres. The Rational Method was used to calculate runoff flow rates from Watershed 2, which is significantly smaller in size than Watershed 1. Time of concentration calculations, curve number calculations, and rational coefficients, which were all used in the runoff analysis, are in Appendix E. Watersheds 1 and 2 were modeled in Hydraflow Hydrographs by Intelisolve, Appendix F. Table 1 is a summary of the pre-project runoff from the two outlets for the 2, 5, 10, 25 and 100-year design storms.

Table 1. Pre-Project Flow Rates

Watershed	Area (acres)	2-year (cfs)	5-year (cfs)	10-year (cfs)	25-year (cfs)	100-year (cfs)
Watershed 1	2,000	1,120	1,610	1,933	2,418	3,109
Watershed 2	22	15	19	22	26	33

Post-Project Conditions

Post-Project Development

The following improvements are proposed for the platted area within the Wichita Country Club:

- Construction of additional tennis facilities
- Remodel of the existing clubhouse
- Construction of a new golf cart storage facility
- Replacement/expansion of existing parking area
- Construction of sanitary sewer and water lines

Post-Project Landform and Slope

Current grades/slopes will be maintained from pre to post-project. The proposed modifications will not significantly affect the landform of the subject property. A Preliminary Grading Plan is in Appendix G.

Post-Project Runoff Characteristics

The Preliminary Drainage & Utility Plan in Appendix H shows the proposed post-project drainage pattern through the site. This drainage pattern is nearly identical to pre-project conditions. The proposed construction will increase the impervious area of Watershed 1 by 0.05%. This negligible increase in impervious area did not affect the flow rates from the watershed. Pre and post-project flows are indistinguishable.

The proposed modifications will increase the impervious area in Watershed 2 by 2.3%. Flows increased slightly from pre to post-project in Watershed 2. In order to bring post-project flows equal to or below pre-project rates, a detention pond is proposed for Watershed 2. The area will be re-graded as required to provide 1 acre-foot of additional storage. The detention will continue to exit the site in the southeast corner. Table 2 shows the post-project flow rates from Watershed 1 and 2.

Table 2. Post-Project Flow Rates

Watershed	Area (acres)	2-year (cfs)	5-year (cfs)	10-year (cfs)	25-year (cfs)	100-year (cfs)
Watershed 1	2,000	1,120	1,610	1,933	2,418	3,109
Watershed 2	22	11	15	18	22	28

Post-project time of concentration calculations are shown in Appendix E. The post-project flow rates for Watershed 1 and 2 were modeled in Hydraflow Hydrographs by Intelisolve using the SCS Runoff Hydrograph Method and Rational Method, respectively, Appendix F.

Table 3 shows a comparison of the pre and post-project flows from Watershed 1 and 2.

Table 3. Pre and Post-Project Flow Rates

Watershed	2-year (cfs)	5-year (cfs)	10-year (cfs)	25-year (cfs)	100-year (cfs)
Pre-Project Watershed 1	1,120	1,610	1,933	2,418	3,109
Post-Project Watershed 1	1,120	1,610	1,933	2,418	3,109
Pre-Project Watershed 2	15	19	22	26	33
Post-Project Watershed 2	11	15	18	22	28

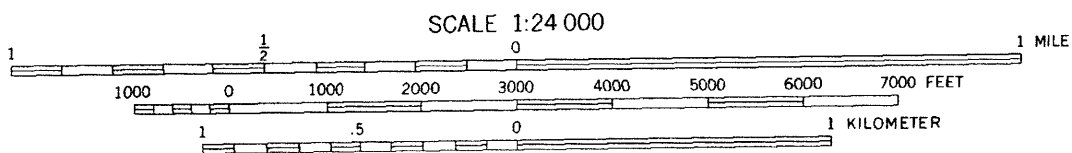
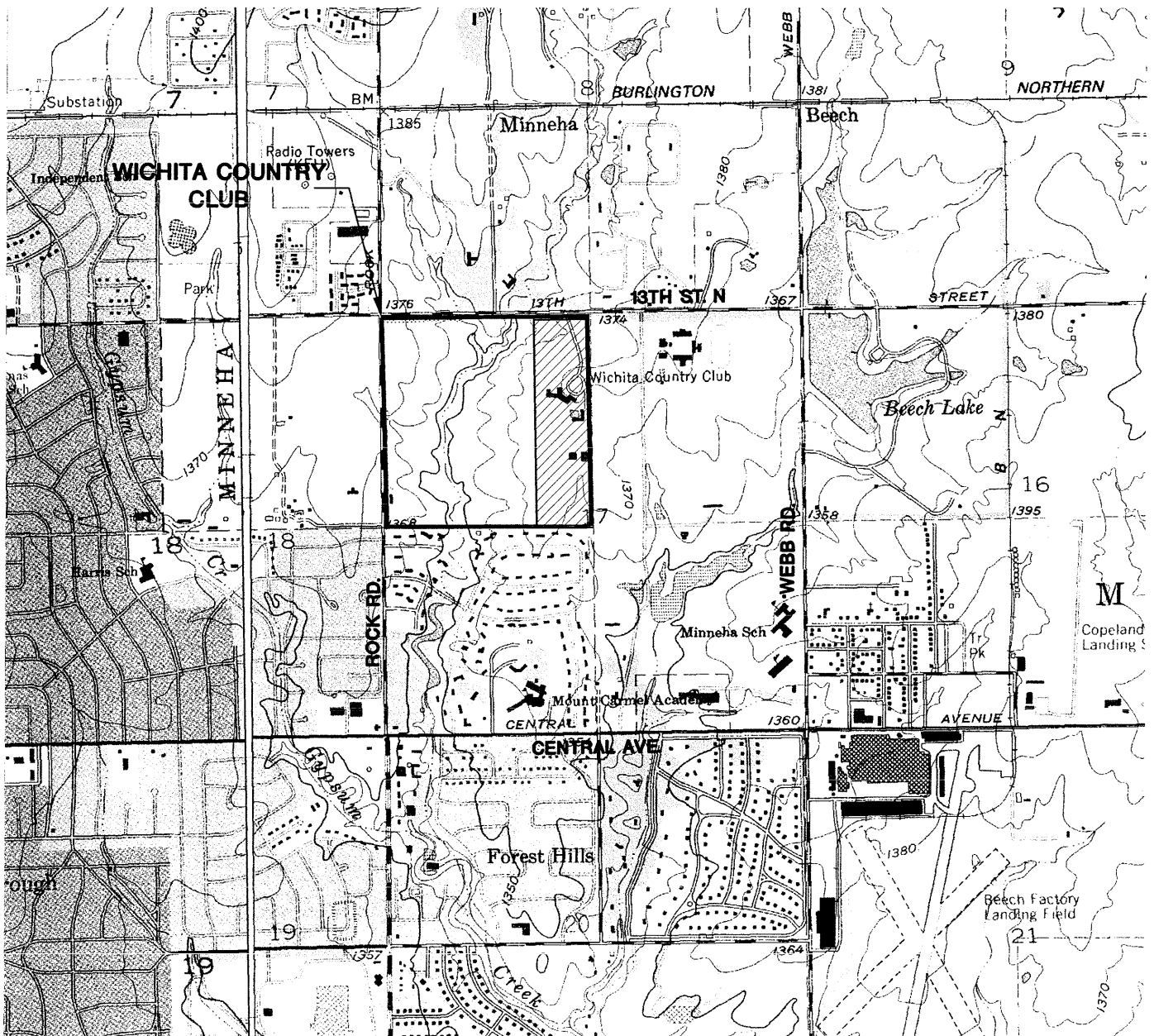
Utilities

The proposed sanitary sewer and water lines are shown on the Preliminary Drainage & Utility Plan, Appendix H. Additional storm sewer is not proposed for the site. A copy of the preliminary plat is in Appendix I.

Summary

The subject property is in the City of Wichita, Sedgwick County, Kansas. The proposed development is between Rock Road and Webb Road on East 13th Street, specifically 8501 East 13th Street. The Wichita Country Club facility is approximately 162 acres with the platted area consisting of 41.6 acres. Several improvements are proposed for the platted area of the site. In order to maintain pre-project runoff the site will be re-graded to provide an additional 1 ac-ft of detention for the southeast section of the site. With the utilization of this pond, post-project flows from the site either remain the same as pre-project flows or are reduced for the 2, 5, 10, 25 and 100-year design storms.

Appendix A
Quadrangle and Aerial



CONTOUR INTERVAL 10 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929



PLATTED AREA

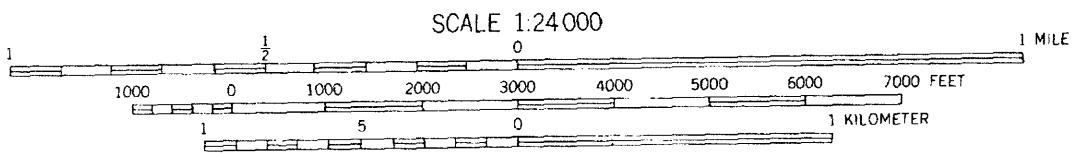
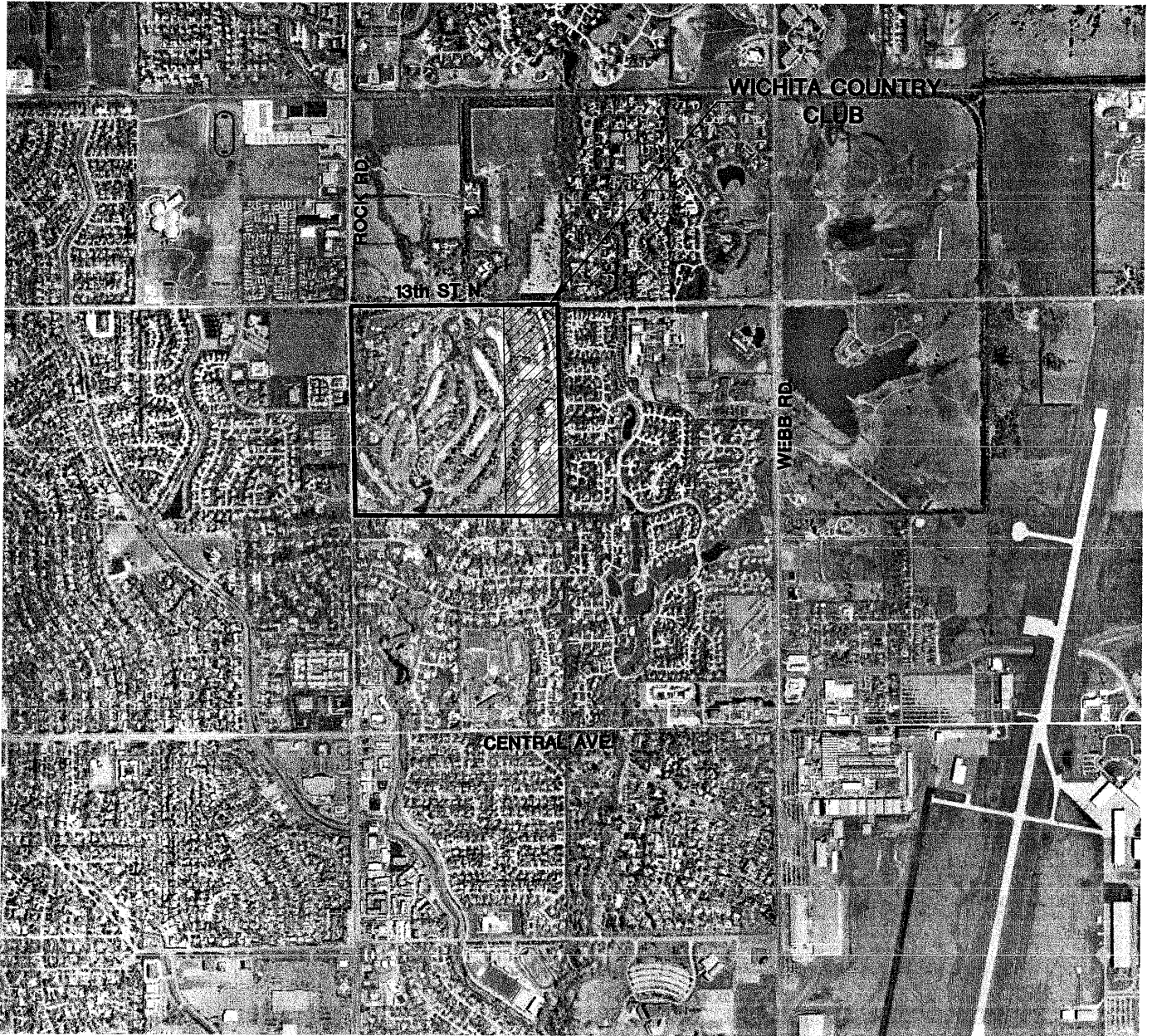


MKEC
ENGINEERING
CONSULTANTS
411 N. WEBB ROAD
WICHITA, KS. 67206
316 - 684 - 9600

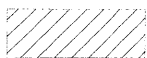
WICHITA COUNTRY CLUB SECOND ADDITION
PROJECT NAME

ANDOVER & WICHITA EAST QUADRANGLES
SHEET TITLE

TMH DESIGN BY:	SMB DRAWN BY:	TMH CHECKED BY:
FEBRUARY 2007 DATE	07038 JOB NO.	1 / 1 SHEET/OF



CONTOUR INTERVAL 10 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929



PLATTED AREA



MKEC
ENGINEERING
CONSULTANTS
411 N. WEBB ROAD
WICHITA, KS. 67206
316 - 684 - 9600

WICHITA COUNTRY CLUB SECOND ADDITION
PROJECT NAME

MINNEHA AERIAL
SHEET TITLE

TMH
DESIGN BY:

SMB
DRAWN BY:

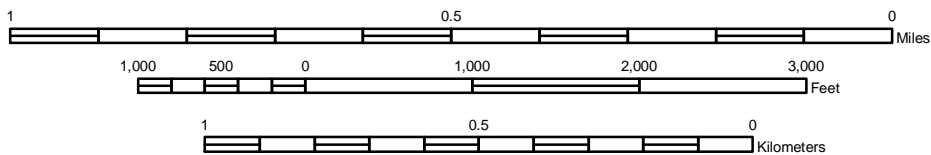
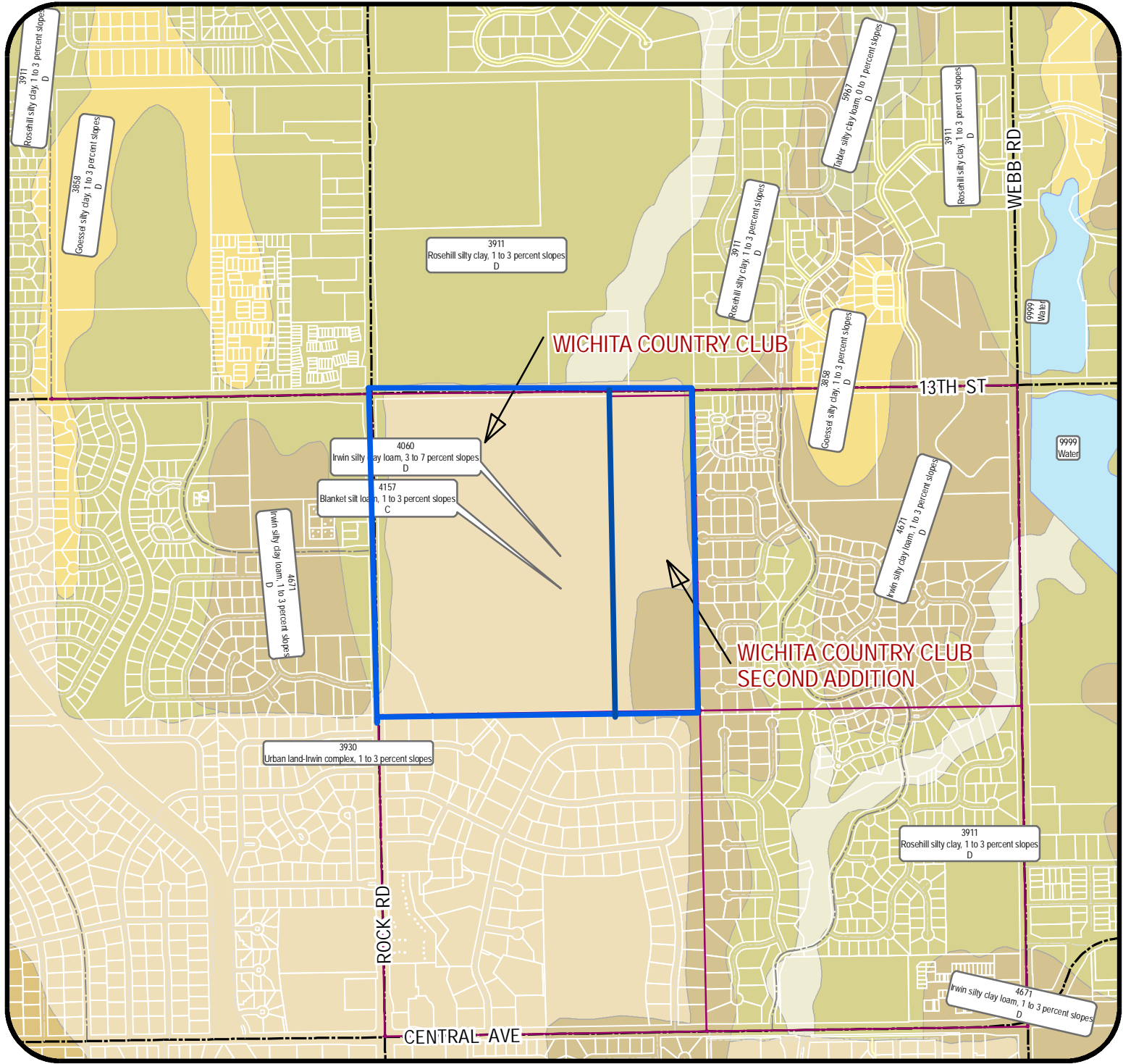
TMH
CHECKED BY:

FEBRUARY 2007
DATE

07038
JOB NO.

1 / 1
SHEET/OF

Appendix B
Soil Survey



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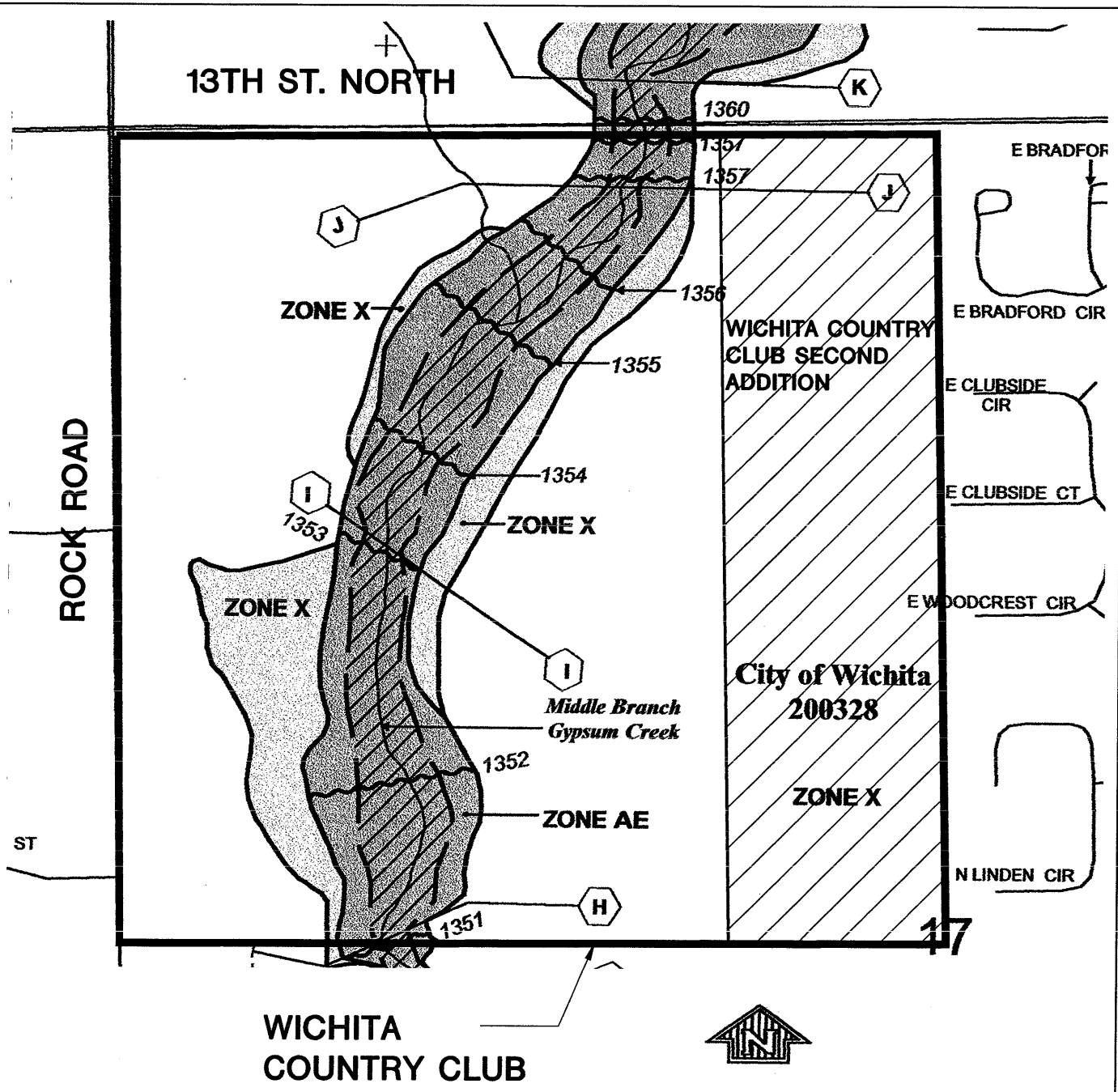
WICHITA COUNTRY CLUB SECOND ADDITION

Project Name: _____
 Soil Survey - Sedgwick County, KS
 Sheet Title: _____



CMJ	February 2007
Drawn By:	Date:
TMH/KLA	07038
Design / Review:	Job No.:

Appendix C
FIRM



NFIP
NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0378E

FIRM
 FLOOD INSURANCE RATE MAP

SEDGWICK COUNTY,
 KANSAS
 AND INCORPORATED AREAS

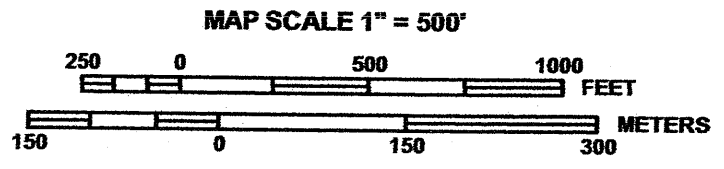
PANEL 378 OF 700
 (SEE MAP INDEX FOR FIRM PANEL LAYOUT)

COMMUNITY: SEDGWICK COUNTY
 WICHITA, CITY OF

MAP NUMBER: 20173C0378E

EFFECTIVE DATE: FEBRUARY 2, 2007

Federal Emergency Management Agency



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 CONSULTANTS
 411 N. WEBB ROAD
 WICHITA, KS. 67206
 316 - 684 - 9600

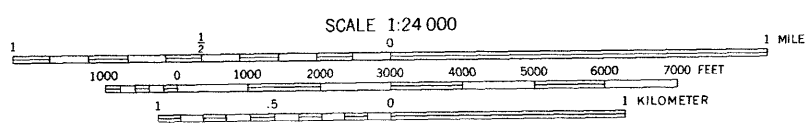
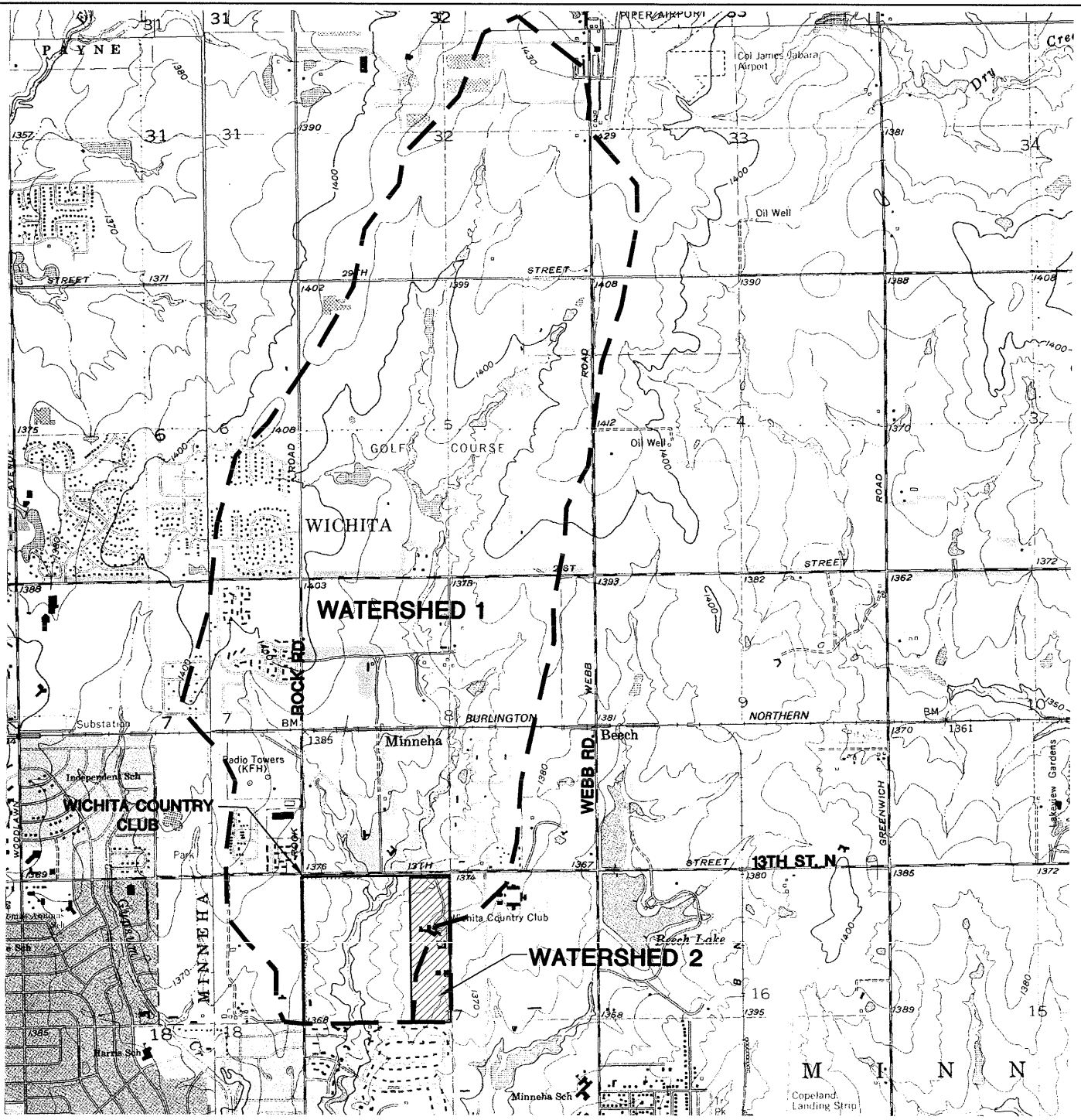
WICHITA COUNTRY CLUB ADDITION
 PROJECT NAME

FIRM PANEL 378 OF 700
SEDGWICK COUNTY, KANSAS
 SHEET TITLE

TMH DESIGN BY:	SMB DRAWN BY:	GJA CHECKED BY:
FEBRUARY 2007 DATE	07038 JOB NO.	1 / 1 SHEET/OF

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Appendix D
Pre and Post-Project Watershed Boundary Map



CONTOUR INTERVAL 10 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929

LEGEND

- WATERSHED BOUNDARY
- PLATTED AREA

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WICHITA, KS. 67206
316 - 684 - 9600

WICHITA COUNTRY CLUB SECOND ADDITION
PROJECT NAME

WATERSHED BOUNDARY MAP
SHEET TITLE

TMH DESIGN BY:	CMJ DRAWN BY:	TMH CHECKED BY:
FEBRUARY 2007 DATE	07038 JOB NO.	1 / 1 SHEET/OF

Appendix E
Hydraflow Hydrographs



1



2



4



5



6

Legend

<u>Hvd.</u>	<u>Origin</u>	<u>Description</u>
1	SCS Runoff	PRE PROJECT WS1
2	SCS Runoff	POST PROJECT WS 1
4	Rational	PRE PROJECT WS 2
5	Rational	POST PROJECT WS 2
6	Reservoir	POND

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	-----	-----	1119.89	-----	1609.87	1932.81	2417.78	-----	3109.09	PRE PROJECT WS1
2	SCS Runoff	-----	-----	1119.89	-----	1609.87	1932.81	2417.78	-----	3109.09	POST PROJECT WS 1
4	Rational	-----	-----	15.04	-----	19.05	22.39	26.36	-----	32.94	PRE PROJECT WS 2
5	Rational	-----	-----	16.21	-----	20.48	24.06	28.30	-----	35.33	POST PROJECT WS 2
6	Reservoir	5	-----	11.33	-----	15.16	18.30	21.97	-----	27.65	POND

Hydrograph Summary Report

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Volume (acft)	Inflow hyd(s)	Maximum elevation (ft)	Maximum storage (acft)	Hydrograph description	
1	SCS Runoff	1119.89	6	822	377.985	----	-----	-----	PRE PROJECT WS1	
2	SCS Runoff	1119.89	6	822	377.985	----	-----	-----	POST PROJECT WS 1	
4	Rational	15.04	1	57	1.181	----	-----	-----	PRE PROJECT WS 2	
5	Rational	16.21	1	55	1.228	----	-----	-----	POST PROJECT WS 2	
6	Reservoir	11.33	1	72	1.228	5	1371.03	0.524	POND	
07038-WCC.gpw					Return Period: 2 Year			Monday, Feb 19 2007, 2:16 PM		

Hydrograph Summary Report

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Volume (acft)	Inflow hyd(s)	Maximum elevation (ft)	Maximum storage (acft)	Hydrograph description	
1	SCS Runoff	1609.87	6	822	543.837	----	-----	-----	PRE PROJECT WS1	
2	SCS Runoff	1609.87	6	822	543.837	----	-----	-----	POST PROJECT WS 1	
4	Rational	19.05	1	57	1.496	----	-----	-----	PRE PROJECT WS 2	
5	Rational	20.48	1	55	1.552	----	-----	-----	POST PROJECT WS 2	
6	Reservoir	15.16	1	69	1.551	5	1371.22	0.609	POND	
07038-WCC.gpw					Return Period: 5 Year			Monday, Feb 19 2007, 2:16 PM		

Hydrograph Summary Report

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Volume (acft)	Inflow hyd(s)	Maximum elevation (ft)	Maximum storage (acft)	Hydrograph description
1	SCS Runoff	1932.81	6	822	654.626	---	-----	-----	PRE PROJECT WS1
2	SCS Runoff	1932.81	6	822	654.626	---	-----	-----	POST PROJECT WS 1
4	Rational	22.39	1	57	1.758	---	-----	-----	PRE PROJECT WS 2
5	Rational	24.06	1	55	1.822	---	-----	-----	POST PROJECT WS 2
6	Reservoir	18.30	1	68	1.822	5	1371.37	0.675	POND
07038-WCC.gpw					Return Period: 10 Year			Monday, Feb 19 2007, 2:16 PM	

Hydrograph Summary Report

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Volume (acft)	Inflow hyd(s)	Maximum elevation (ft)	Maximum storage (acft)	Hydrograph description	
1	SCS Runoff	2417.78	6	822	822.901	---	-----	-----	PRE PROJECT WS1	
2	SCS Runoff	2417.78	6	822	822.901	---	-----	-----	POST PROJECT WS 1	
4	Rational	26.36	1	57	2.070	---	-----	-----	PRE PROJECT WS 2	
5	Rational	28.30	1	55	2.144	---	-----	-----	POST PROJECT WS 2	
6	Reservoir	21.97	1	67	2.144	5	1371.54	0.750	POND	
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Hydrograph Summary Report

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Volume (acft)	Inflow hyd(s)	Maximum elevation (ft)	Maximum storage (acft)	Hydrograph description	
1	SCS Runoff	3109.09	6	822	1066.057	----	-----	-----	PRE PROJECT WS1	
2	SCS Runoff	3109.09	6	822	1066.057	----	-----	-----	POST PROJECT WS 1	
4	Rational	32.94	1	57	2.587	----	-----	-----	PRE PROJECT WS 2	
5	Rational	35.33	1	55	2.677	----	-----	-----	POST PROJECT WS 2	
6	Reservoir	27.65	1	67	2.676	5	1371.83	0.876	POND	
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Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

Monday, Feb 19 2007, 2:16 PM

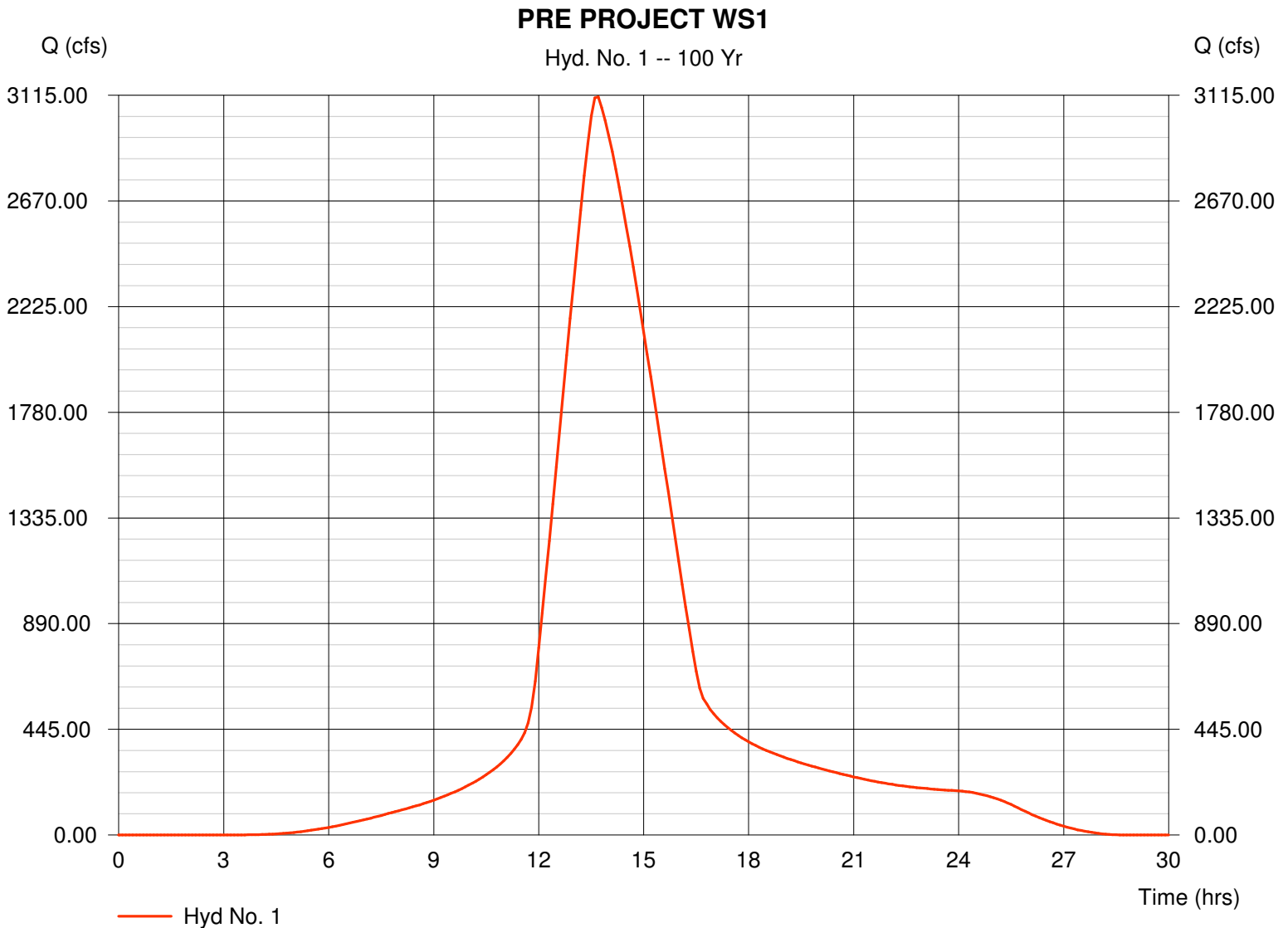
Hyd. No. 1

PRE PROJECT WS1

Hydrograph type = SCS Runoff
Storm frequency = 100 yrs
Drainage area = 2000.000 ac
Basin Slope = 0.0 %
Tc method = USER
Total precip. = 7.80 in
Storm duration = 24 hrs

Peak discharge = 3109.09 cfs
Time interval = 6 min
Curve number = 88.2
Hydraulic length = 0 ft
Time of conc. (Tc) = 176.60 min
Distribution = Type II
Shape factor = 484

Hydrograph Volume = 1066.057 acft



Hydrograph Plot

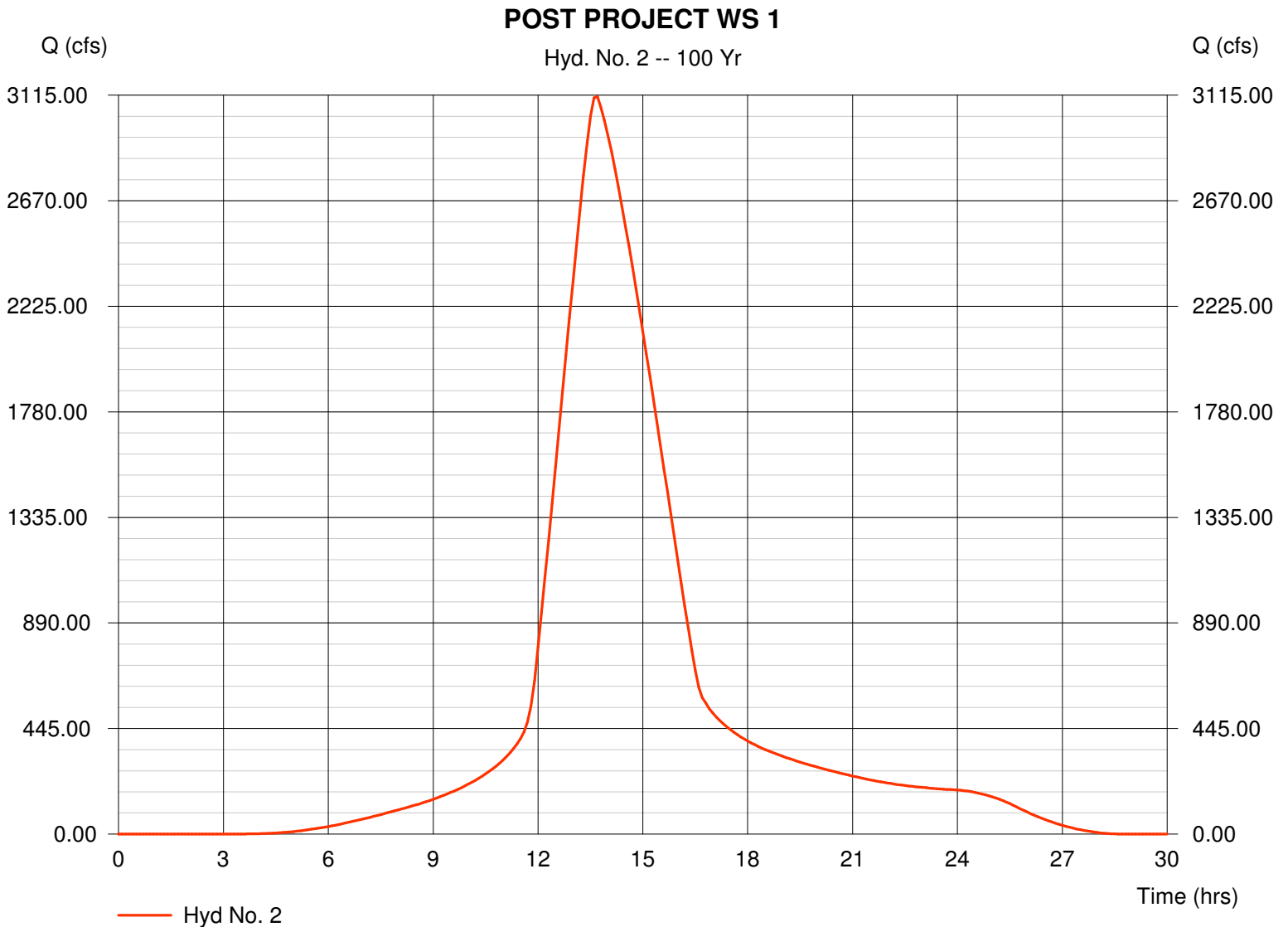
Hyd. No. 2

POST PROJECT WS 1

Hydrograph type = SCS Runoff
Storm frequency = 100 yrs
Drainage area = 2000.000 ac
Basin Slope = 0.0 %
Tc method = USER
Total precip. = 7.80 in
Storm duration = 24 hrs

Peak discharge = 3109.09 cfs
Time interval = 6 min
Curve number = 88.2
Hydraulic length = 0 ft
Time of conc. (Tc) = 176.60 min
Distribution = Type II
Shape factor = 484

Hydrograph Volume = 1066.057 acft



Hydrograph Plot

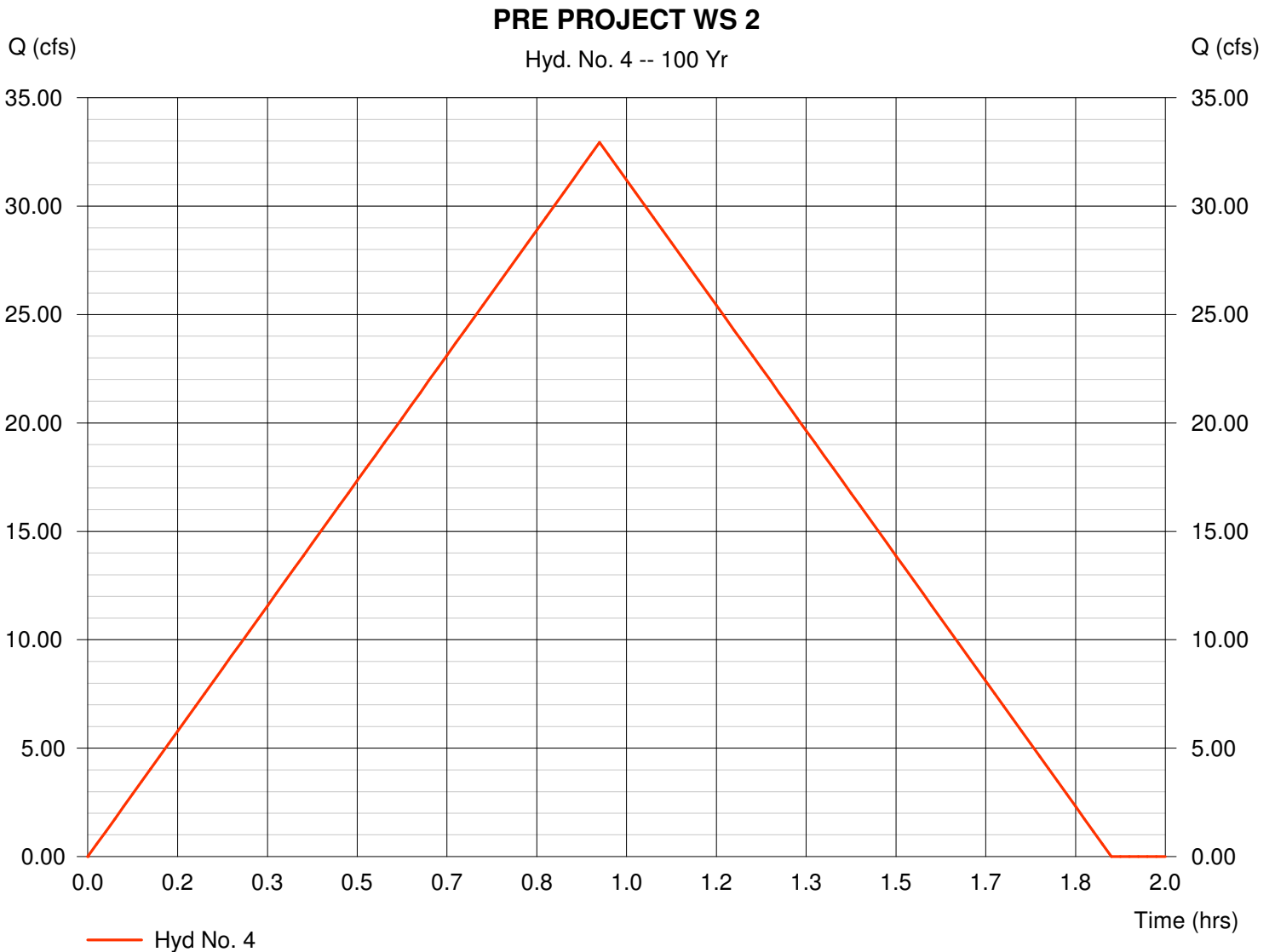
Hyd. No. 4

PRE PROJECT WS 2

Hydrograph type = Rational
Storm frequency = 100 yrs
Drainage area = 22.000 ac
Intensity = 3.840 in/hr
IDF Curve = SedgwickCoKS.IDF

Peak discharge = 32.94 cfs
Time interval = 1 min
Runoff coeff. = 0.39
Tc by User = 57.00 min
Asc/Rec limb fact = 1/1

Hydrograph Volume = 2.587 acft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

Monday, Feb 19 2007, 2:16 PM

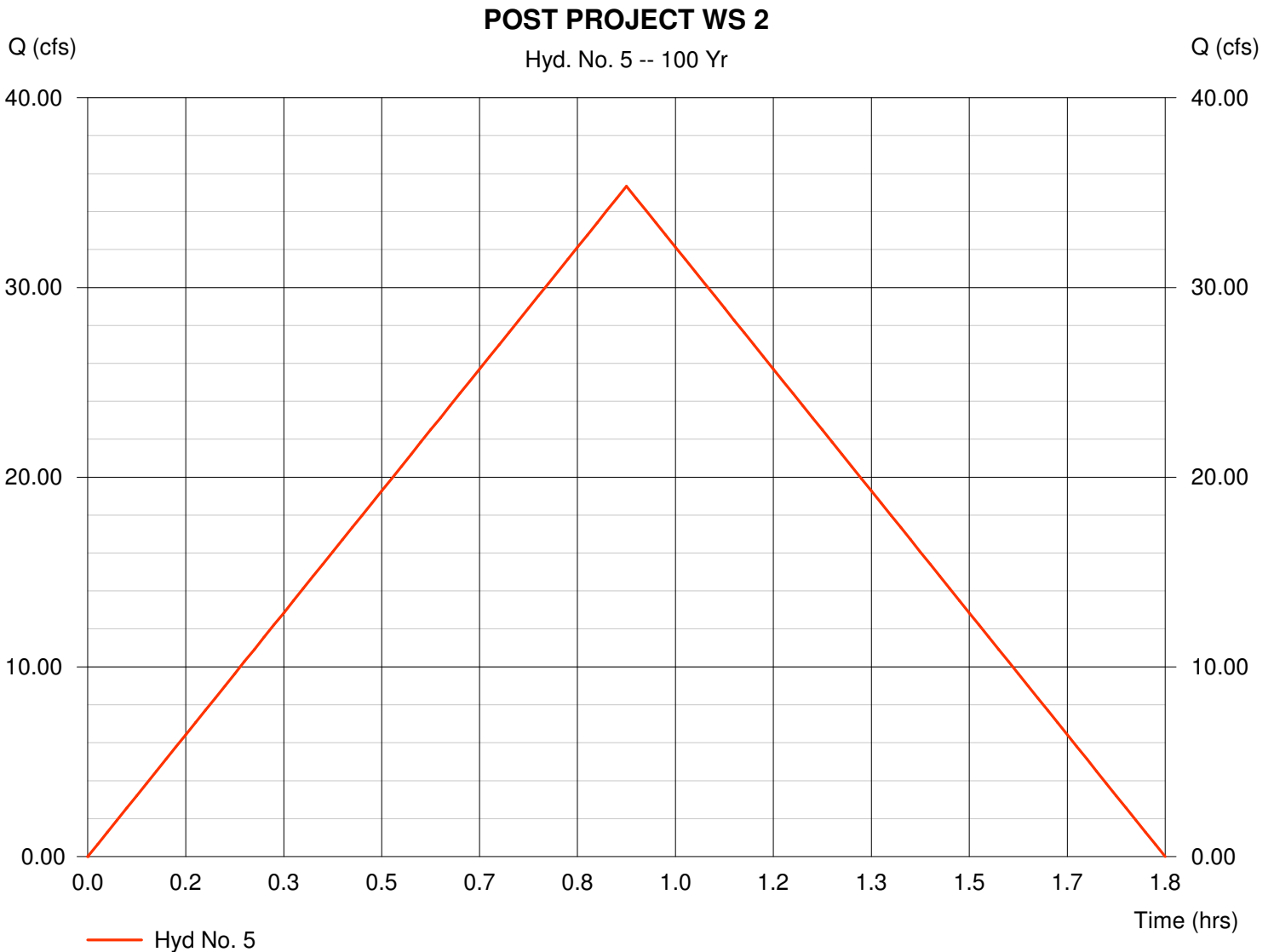
Hyd. No. 5

POST PROJECT WS 2

Hydrograph type = Rational
Storm frequency = 100 yrs
Drainage area = 22.000 ac
Intensity = 3.917 in/hr
IDF Curve = SedgwickCoKS.IDF

Peak discharge = 35.33 cfs
Time interval = 1 min
Runoff coeff. = 0.41
Tc by User = 55.00 min
Asc/Rec limb fact = 1/1

Hydrograph Volume = 2.677 acft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

Monday, Feb 19 2007, 2:16 PM

Hyd. No. 6

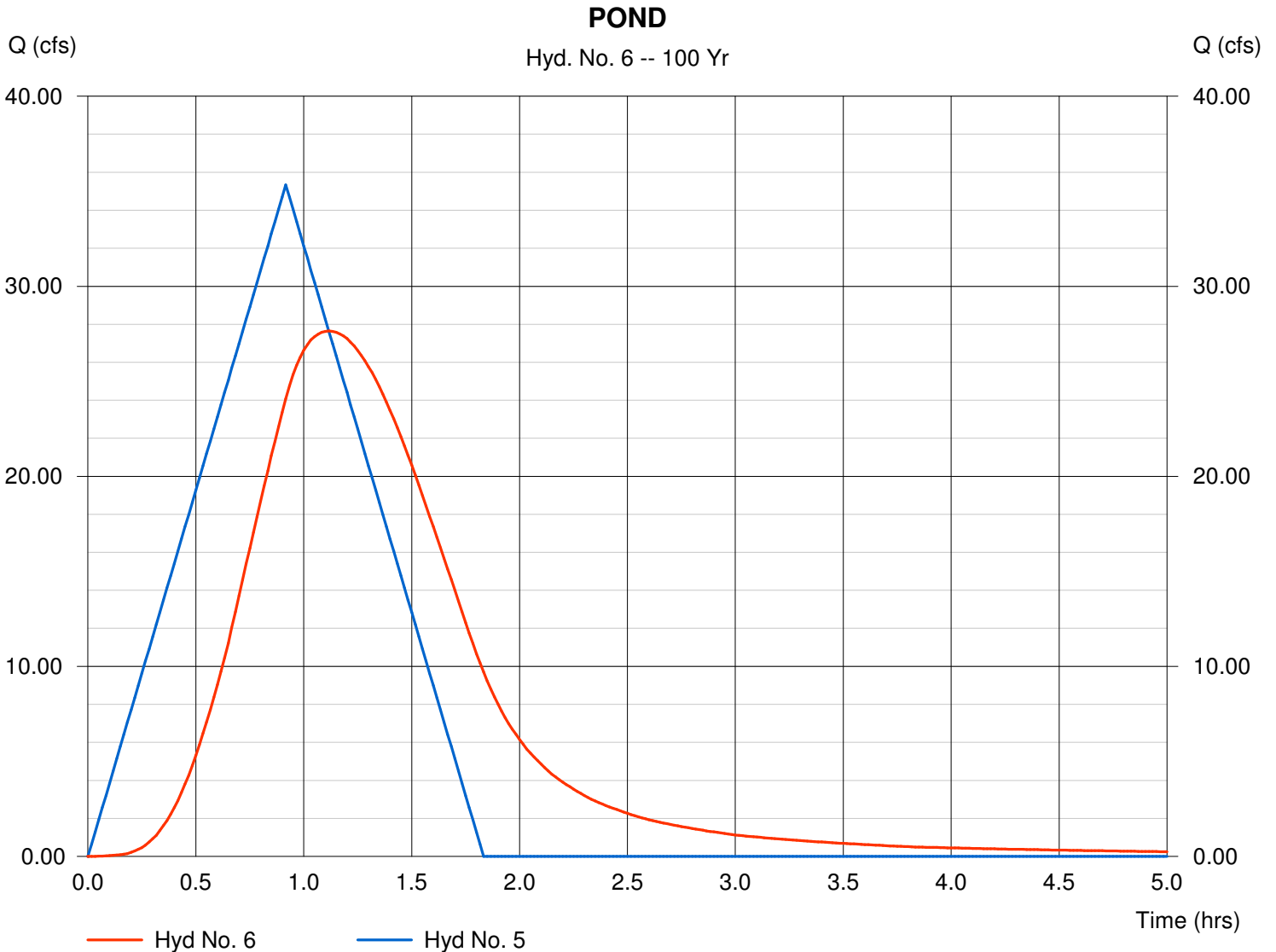
POND

Hydrograph type = Reservoir
Storm frequency = 100 yrs
Inflow hyd. No. = 5
Reservoir name = POND CONTOURS

Peak discharge = 27.65 cfs
Time interval = 1 min
Max. Elevation = 1371.83 ft
Max. Storage = 0.876 acft

Storage Indication method used.

Hydrograph Volume = 2.676 acft



Pond Report

Hydraflow Hydrographs by Intelisolve

Monday, Feb 19 2007, 2:16 PM

Pond No. 3 - POND CONTOURS

Pond Data

Pond storage is based on known contour areas. Average end area method used.

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (acft)	Total storage (acft)
0.00	1370.00	23,720	0.000	0.000
1.00	1371.00	20,743	0.510	0.510
2.00	1372.00	17,868	0.443	0.954

Culvert / Orifice Structures

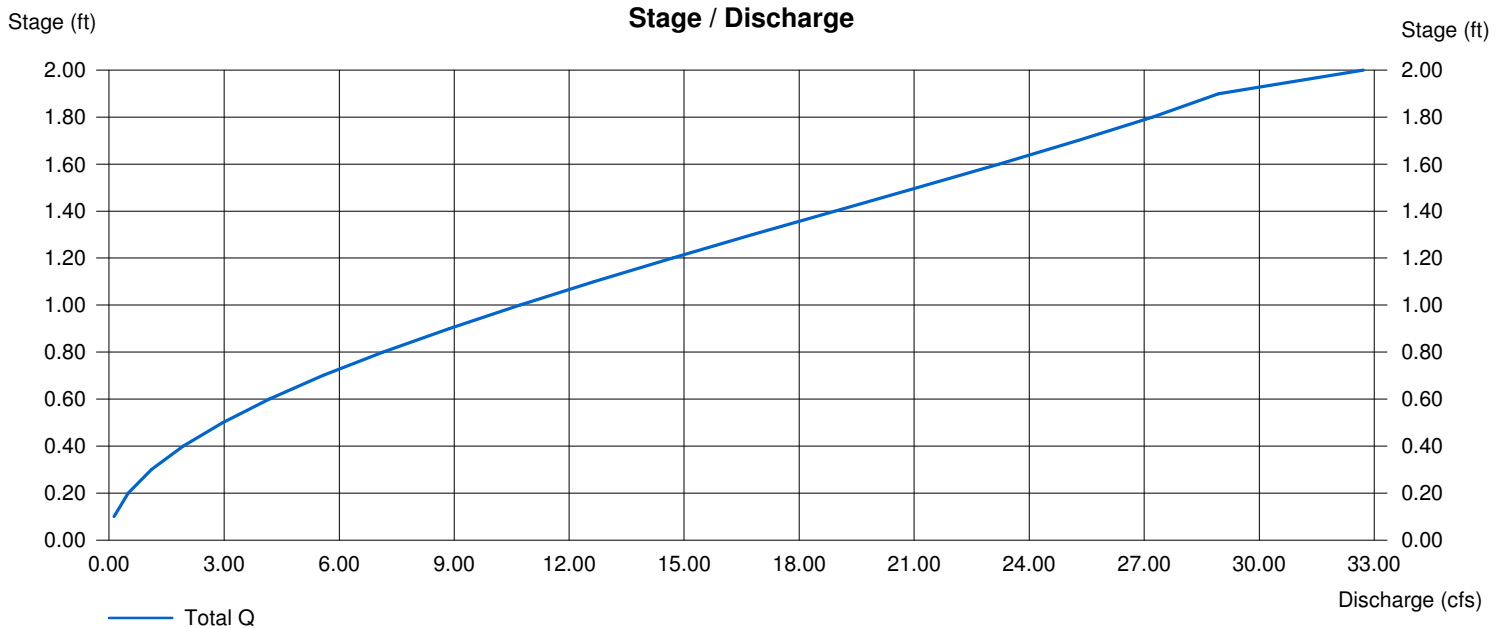
	[A]	[B]	[C]	[D]
Rise (in)	= 24.00	0.00	0.00	0.00
Span (in)	= 24.00	0.00	0.00	0.00
No. Barrels	= 2	0	0	0
Invert El. (ft)	= 1370.00	0.00	0.00	0.00
Length (ft)	= 0.00	0.00	0.00	0.00
Slope (%)	= 0.00	0.00	0.00	0.00
N-Value	= .013	.000	.000	.000
Orif. Coeff.	= 0.60	0.00	0.00	0.00
Multi-Stage	= n/a	No	No	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 30.00	0.00	0.00	0.00
Crest El. (ft)	= 1371.90	0.00	0.00	0.00
Weir Coeff.	= 2.60	0.00	0.00	0.00
Weir Type	= Broad	---	---	---
Multi-Stage	= No	No	No	No

Exfiltration = 0.000 in/hr (Contour) Tailwater Elev. = 0.00 ft

Note: Culvert/Orifice outflows have been analyzed under inlet and outlet control.



Appendix F
Rational Coefficients and Time of Concentration Calculations

Time of Concentration Calculations by the FAA method
 Wichita Country Club

Project Number 7038

$$T_c = \frac{(1.1-C)L^{1/2}}{100 S^{1/3}}$$

Area Name	Land Use	Soil Group	Maximum Elevation	Minimum Elevation	Length (L)	Rational Runoff Coefficient, C			Time of Concentration (min), T _c			Time of Concentration (hr), T _c			CN		
						2-Year	5-Year	10-Year	2-Year	5-Year	10-Year	2-Year	5-Year	10-Year			
Pre Project Watershed 1	Residential - 1/4 Acre	D	1430.0	1350.0	21,567	0.50	0.54	0.62	0.76	220.7	206.0	206.0	3.43	3.43	2.94	2.08	88.18
Post Project Watershed 1	Residential - 1/4 Acre	D	1430.0	1350.0	21,567	0.50	0.54	0.62	0.76	220.7	206.0	206.0	3.43	3.43	2.94	2.08	88.19
Pre Project Watershed 2	Agricultural - Cultivated - Slopes <1%	D	1380.0	1365.0	1,772	0.24	0.29	0.39	0.59	68.9	64.9	64.9	1.08	1.15	0.95	0.68	80.80
Post Project Watershed 2	Agricultural - Cultivated - Slopes 1-4%	D	1380.0	1365.0	1,772	0.26	0.31	0.41	0.61	67.3	63.3	63.3	1.05	1.12	0.92	0.65	81.30

Appendix G
Preliminary Lot Grading Plan

SW. Cor., NW. 1/4, Sec. 17, T27S, R2E, 6th P.M. Find. 3" Pipe

SE. Cor., NW. 1/4, Sec. 17, T27S, R2E, 6th P.M. Set 3/8" Rebar w/ MKEC CIS 39" dia cap

Owners: Wichita Country Club Association
8501 E. 13th St
Wichita, Kansas 67206

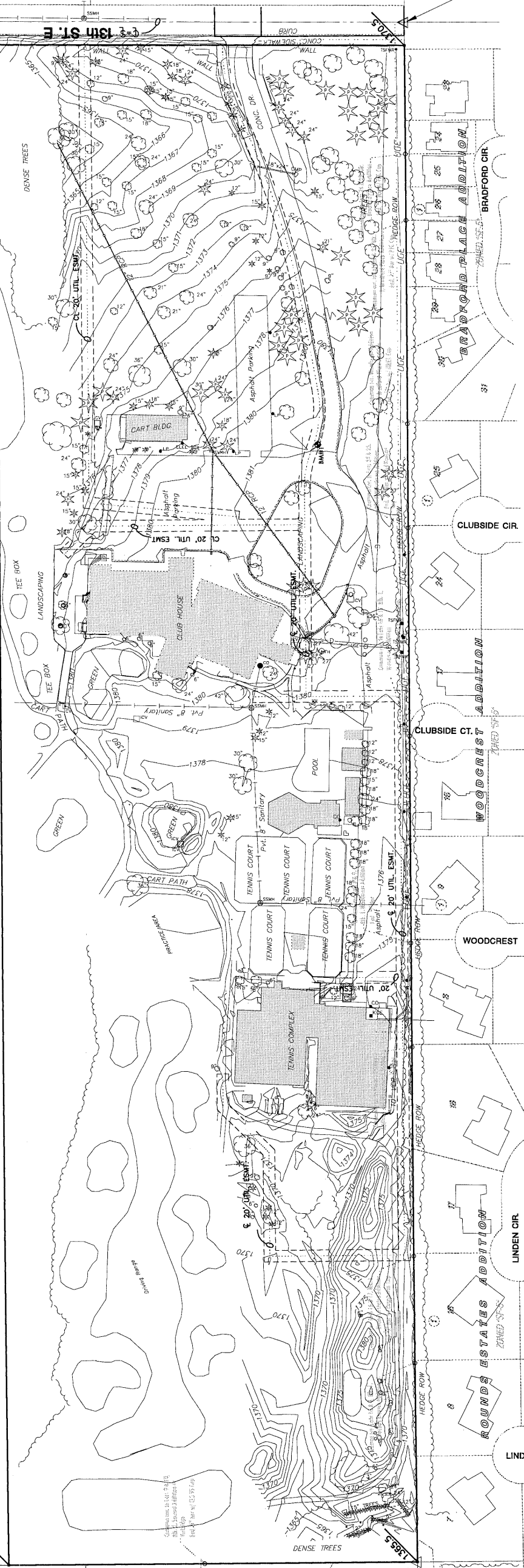
UNPLATTED

NW. Cor., NW. 1/4, Sec. 17, T27S, R2E, 6th P.M. Find. 3" Pipe

Owners: Charles & Elizabeth Koch Real Estate
4111 E 37th St N
Wichita, Kansas 67220

UNPLATTED

NE. Cor., NW. 1/4, Sec. 17, T27S, R2E, 6th P.M. Set



LEGEND

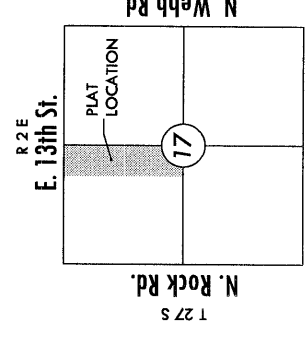
- ★ - CONFEROUS TREE & DIAMETER
- - DECIDUOUS TREE & DIAMETER
- - SIGN
- - POWER POLE AND GUY ANCHOR
- - ELECTRIC BOX
- - LIGHT POLE
- - FIRE HYDRANT
- - WATER VALVE
- - WATER METER
- - SECTION CORNER
- - BENCHMARK
- - EASEMENT
- - BUILDING SETBACK
- - FENCE
- - STORM SEWER PIPE
- - WATER LINE
- - SANITARY SEWER LINE
- - TELEPHONE LINE
- - UNDERGROUND ELECTRIC LINE
- - OVERHEAD ELECTRIC
- - SPOT ELEVATION

LEGAL DESCRIPTION

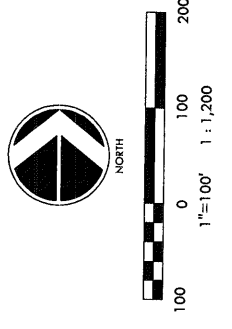
The East 700 feet of the Northwest Quarter, Section 17, Township 27 South, Range 2 West, of the 6th Prime Meridian, Wichita, Sedgwick County, Kansas, EXCEPT, the North 40 feet.

BENCH MARKS

- BM 1 - Cut on top of curb at the NW corner of the intersection of the main entrance road and main parking lot. Located 134' west of the east property line.
Elev. = 1381.28 (ngvd 29)
193.88 (city datum)



VICINITY MAP

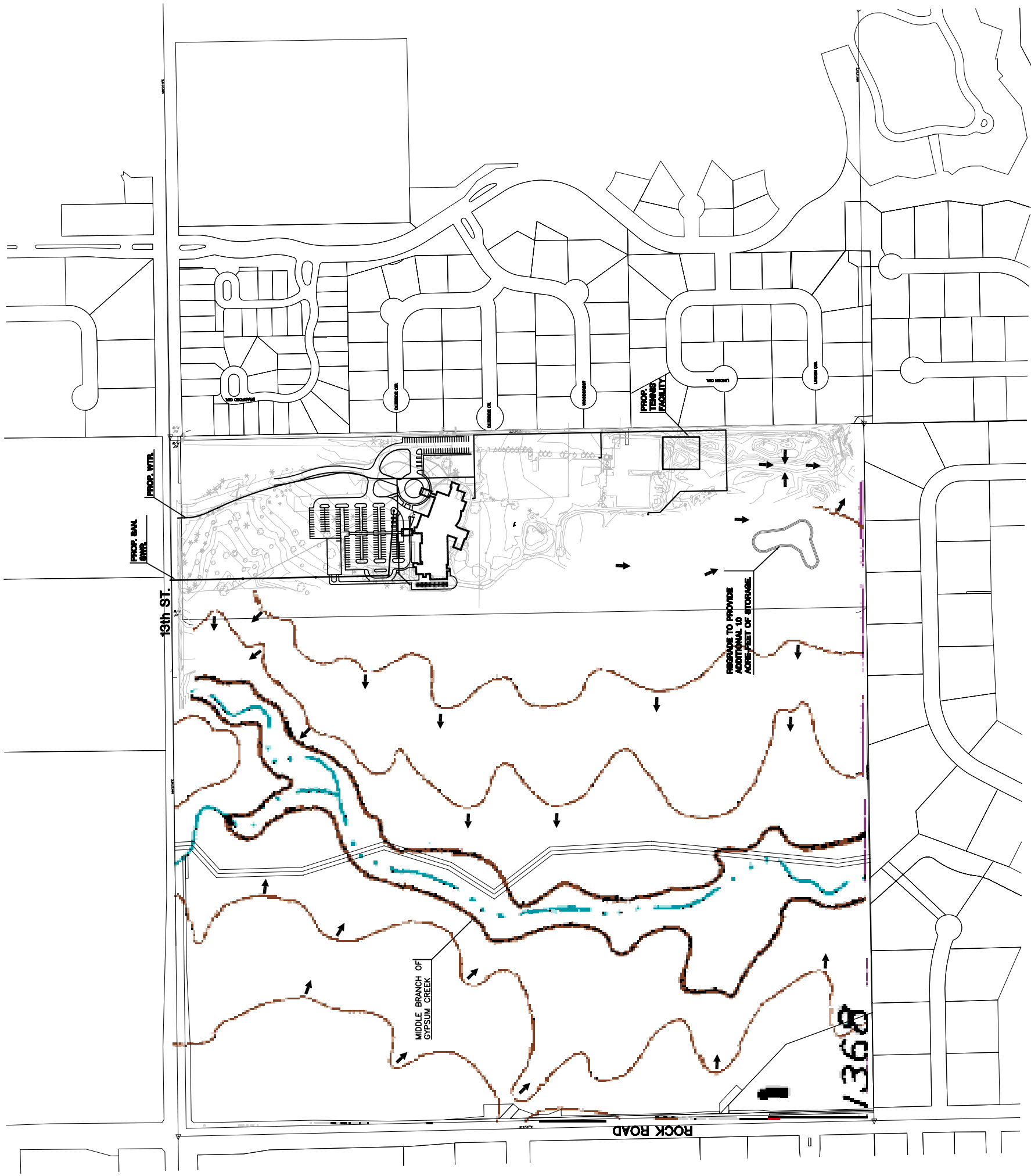


MKEC
ENGINEERING
CONSULTANTS
411 N. WEBB ROAD
WICHITA, KS. 67206
316 - 684 - 9600

WICHITA COUNTRY CLUB SECOND ADDITION
PROJECT NAME
PRELIMINARY LOT GRADING PLAN
SHEET TITLE
TMH
DESIGN BY: DM
DRAWN BY: KLA
CHECKED BY:
FEBRUARY 2007
DATE
07038
JOB NO.
1 / 1
SHEET OF

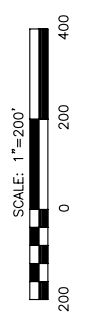
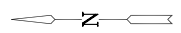
J:\Cml\07038\DWG\GRADE\07038C1.dwg

Appendix H
Preliminary Drainage and Utility Plan



LEGEND

- CT - CONIFEROUS TREE
- DT - DECIDUOUS TREE
- SP - SIGN
- PP - POWER POLE
- EB - ELECTRIC BOX
- LP - LIGHT POLE
- FH - FIRE HYDRANT
- WV - WATER VALVE
- WM - WATER METER
- SC - SECTION CORNER
- BM - BENCHMARK
- EA - EASEMENT
- BS - BUILDING SETBACK
- FE - FENCE
- SSP - STORM SEWER PIPE
- WL - WATER LINE
- SS - SANITARY SEWER LINE
- GL - GAS LINE
- TL - TELEPHONE LINE
- UE - UNDERGROUND ELEC.
- OE - OVERHEAD ELECTRIC
- FOC - FIBER OPTIC CABLE
- DSB - DRAINAGE SUB BASIN
- DB - DRAINAGE BASIN
- FA - FLOW ARROW



WICHITA COUNTRY CLUB SECOND ADDITION

PROJECT NAME: _____
 SHEET TITLE: **DRAINAGE AND UTILITY PLAN**

DESIGN BY: **TMH** | DRAWN BY: **CMJ** | CHECKED BY: **TMH**

DATE: **FEBRUARY 2007** | JOB NO.: **07083** | SHEET/OF: **1 / 1**

MKEC
 ENGINEERING CONSULTANTS
 411 N. WEBB ROAD
 WICHITA, KS. 67206
 316 - 684 - 9600

L:\Civ\1\07038\DWG\DWG\07038DUP.DWG

Appendix I
Preliminary Plat

SW. Cor., NW. 1/4, Sec. 17, T27S, R2E, 6th P.M. Find. PK Nail

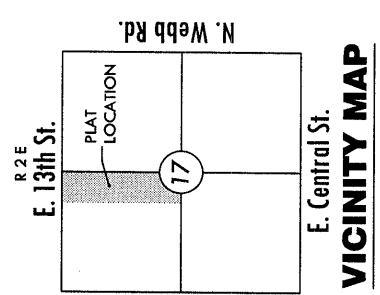
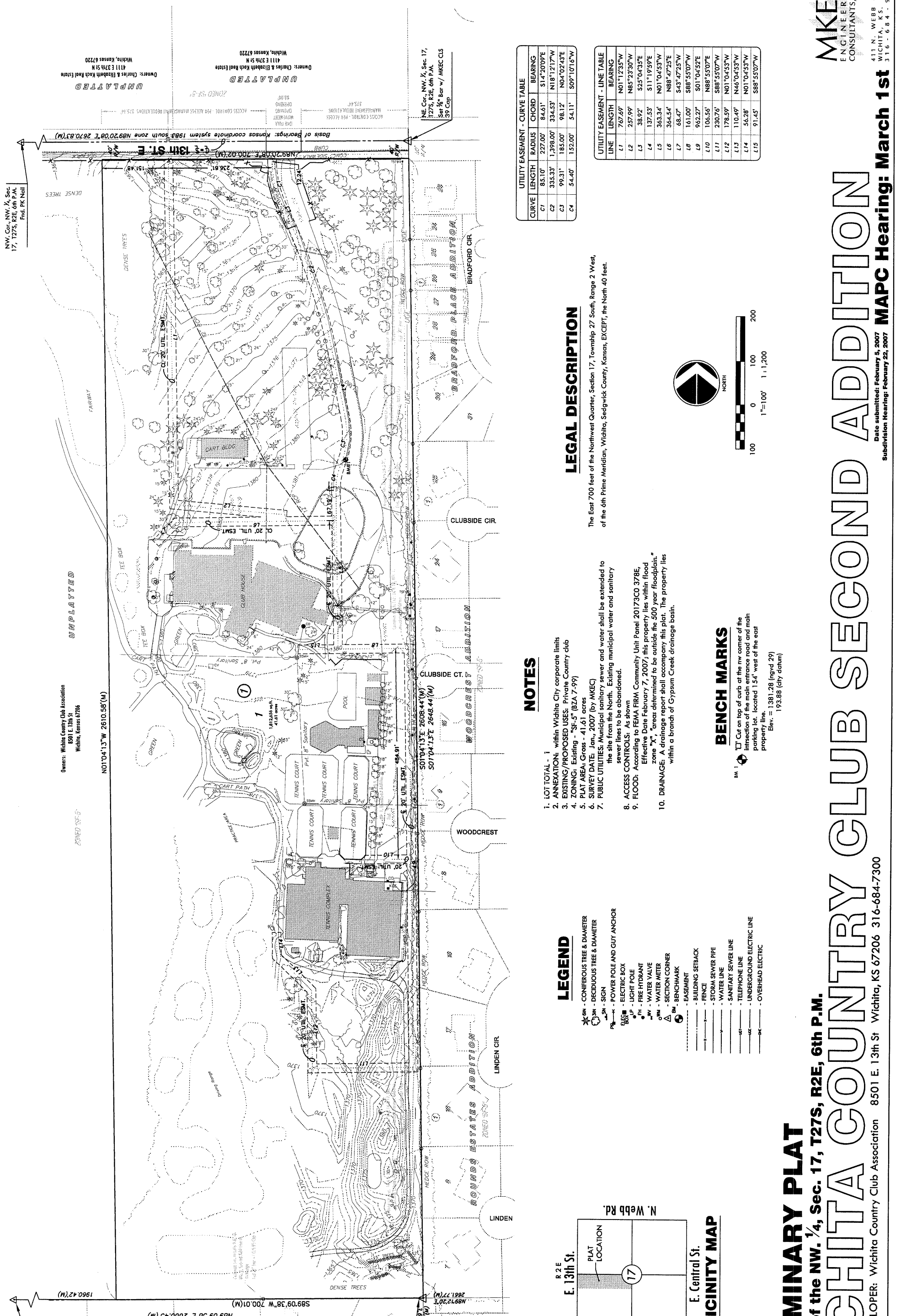
NW. Cor., NW. 1/4, Sec. 17, T27S, R2E, 6th P.M. Find. PK Nail

UNPLATTED
Owners: Charles & Elizabeth Koch Real Estate
4111 E 37th St N
Wichita, Kansas 67220

UNPLATTED
Owners: Charles & Elizabeth Koch Real Estate
4111 E 37th St N
Wichita, Kansas 67220

SE. Cor., NW. 1/4, Sec. 17, T27S, R2E, 6th P.M. See 1/2" Bar w/ MKEC CLS 39' Id cap.

NE. Cor., NW. 1/4, Sec. 17, T27S, R2E, 6th P.M. See 1/2" Bar w/ MKEC CLS 39' Id cap.



- LEGEND**
- ★ - CONIFEROUS TREE & DIAMETER
 - - DECIDUOUS TREE & DIAMETER
 - SN - SIGN
 - ⊕ - POWER POLE AND GUY ANCHOR
 - ⊖ - ELECTRIC BOX
 - ⊙ - LIGHT POLE
 - ⊙ - FIRE HYDRANT
 - ⊙ - WATER VALVE
 - ⊙ - WATER METER
 - △ - SECTION CORNER
 - ⊙ - BENCHMARK
 - - EASEMENT
 - - BUILDING SETBACK
 - - FENCE
 - - STORM SEWER PIPE
 - - WATER LINE
 - - SANITARY SEWER LINE
 - - TELEPHONE LINE
 - - UNDERGROUND ELECTRIC LINE
 - - OVERHEAD ELECTRIC

- NOTES**
1. LOT TOTAL - 1
 2. ANNEXATION: within Wichita City corporate limits
 3. EXISTING/PROPOSED USES: Private Country club
 4. ZONING: Existing - "SF-5" (BZA 7-99)
 5. PLAT AREA: Gross - 41.61 acres
 6. SURVEY DATE: Jan., 2007 (by MKEC)
 7. PUBLIC UTILITIES: Municipal sanitary sewer and water shall be extended to the site from the North. Existing municipal water and sanitary sewer lines to be abandoned.
 8. ACCESS CONTROLS: As shown
 9. FLOOD: According to FEMA FIRM Community Unit Panel 20173CO 378E, Effective Date February 7, 2007; this property lies within flood zone "X", areas determined to be outside the 500 year floodplain. A drainage report shall accompany this plat. The property lies within a branch of Gypsum Creek drainage basin.

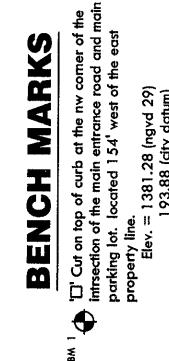
- LEGAL DESCRIPTION**
- The East 700 feet of the Northwest Quarter, Section 17, Township 27 South, Range 2 West, of the 6th Prime Meridian, Wichita, Sedgwick County, Kansas, EXCEPT, the North 40 feet.

UTILITY EASEMENT - CURVE TABLE

CURVE	LENGTH	RADIUS	CHORD	BEARING
C1	85.10'	227.00'	84.61'	S14°20'09"E
C2	335.33'	1,398.00'	334.53'	N18°12'17"W
C3	99.31'	185.00'	98.12'	N04°02'43"E
C4	54.40'	152.00'	54.11'	S09°10'16"W

UTILITY EASEMENT - LINE TABLE

LINE	LENGTH	BEARING
L1	767.69'	N01°12'35"W
L2	257.99'	N85°23'30"W
L3	38.92'	S25°04'35"E
L4	137.53'	S11°19'59"E
L5	363.34'	N01°04'53"W
L6	364.54'	N88°47'25"E
L7	68.47'	S43°47'25"W
L8	161.00'	S88°55'07"W
L9	962.27'	S01°04'52"E
L10	106.56'	N88°55'07"E
L11	230.76'	S88°55'07"W
L12	178.59'	N01°04'53"W
L13	110.49'	N46°04'53"W
L14	56.28'	N01°04'53"W
L15	91.45'	S88°55'07"W



PRELIMINARY PLAT
A portion of the NW. 1/4, Sec. 17, T27S, R2E, 6th P.M.

WICHITA COUNTRY CLUB SECOND ADDITION

OWNERS / DEVELOPER: Wichita Country Club Association 8501 E. 13th St Wichita, KS 67206 316-684-7300

MKEC
ENGINEERING
CONSULTANTS, INC.
411 N. WEBB ROAD
WICHITA, KS 67206
316-684-9600

Date submitted: February 5, 2007
Subdivision Hearing: February 22, 2007
MAPC Hearing: March 1st