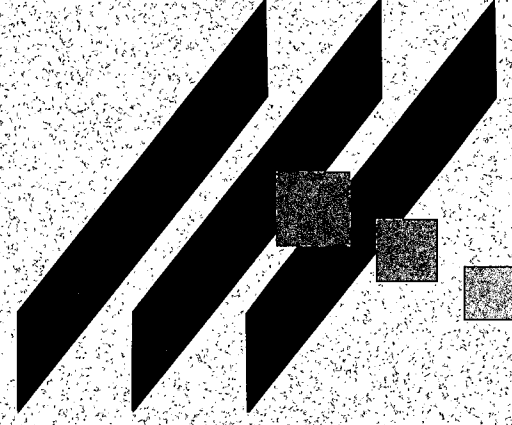


M K E C ENGINEERING CONSULTANTS, INC.



PRELIMINARY DRAINAGE REPORT

FOR

**HAWTHORNE 3<sup>RD</sup> ADDITION**

March 2004

4111 N. WEBB ROAD • WICHITA, KS 67206 • 316-684-9600 • FAX 316-684-5100

**Preliminary Drainage Report for Hawthorne 3<sup>rd</sup> Addition  
Wichita, Sedgwick County, Kansas**

**Location**

The site is located in Sedgwick County, Kansas, on the northeast corner of 127<sup>th</sup> Street East and 21<sup>st</sup> Street North. It lies predominately within the southeast quarter, Section 2, Township 27 South, Range 2 East. Additionally, portions of the site lie within the northeast quarter & southeast quarter of the southwest quarter of the same Section. The total area is approximately 80 acres. Hawthorne Addition lies to the west of the site, 21<sup>st</sup> Street to the south, and undeveloped agricultural land to the north and east. A portion of the site was platted with the Hawthorne Addition. The site is shown in the Andover, Kansas Quadrangle located in Appendix A.

**Soils**

According to the NRCS (SCS) Sedgwick County Soil Survey (Appendix B), most of the site is the Rose Hill Series (Rd: silty clay, 1 to 3 percent slopes), with a small portion in the northeast corner being Irwin series (Ia: silty clay loam, 1 to 3 percent slopes). The Hydrological Soil Group (HSG) for the site is "D".

**Pre-developed Conditions**

*Current Development*

The site is undeveloped agricultural land.

*Current Landform and Slope*

Fourmile creek passes through Hawthorne Addition, which as mentioned previously, abuts this site to the west. Currently, this site drains into an unnamed tributary of Fourmile Creek. Elevations of the watershed vary from a high of approximately 1392 feet on the east edge (northeast of the site), to 1346 feet at the south border of the site where the tributary crosses underneath 21<sup>st</sup> Street. Watershed slopes vary from 1.0% to 5.0%. Within the site, elevations vary from 1377 on the east to the aforementioned 1346 to the south and slopes vary between 1.0% to 3.0%.

*Current Drainage Conditions*

The entire site is designated as Zone C (FIRM Panel 150, Sedgwick County, June 3, 1986) (shown in Appendix C).

*Current Runoff Characteristics*

The general drainage pattern for the site is north to south. Runoff enters the site predominately from the north and east. The west border of the site correlates closely

with the watershed boundary between Fourmile Creek and the tributary. As a result, runoff typically does not enter the site from the west. Since the overall drainage pattern is north to south, flow does not enter the site from the south.

The tributary is already carrying most of the runoff entering the site from the north. Approximately 81 acres of the watershed drain into the tributary prior to its entering the site. Runoff continues to accumulate in the tributary as it traverses the site and moves south to its confluence with Fourmile Creek, which occurs south of 21<sup>st</sup> Street.

From the east, some runoff will enter the site in route to the tributary. Currently, this area is undeveloped agriculture land, but is to become the Krug North Addition, a residential development.

Drainage exits the south side of the site through a double 6' x 4' reinforced concrete box (RCB) that carries the flow from the tributary underneath 21<sup>st</sup> Street. The RCB has been analyzed with the development of the Hawthome Addition.

Calculations for the amounts of flow currently experienced were performed using the Rational Method. The following table contains the calculated peak discharge rates for the 2, 5, 10, and 100-year return periods. Drainage calculations are found in the spreadsheet in Appendix D. Drainage boundaries are shown in the Drainage and Utility Plan in Appendix E.

**Table 2. Pre-Developed runoff.**

Watershed Description	Area (ac)	2-Year (cfs)	5-Year (cfs)	10-Year (cfs)	100-Year (cfs)
North Watershed Boundary to North Site Border	81	33	53	89	233
Area to be Developed	80	31	51	85	223
North Watershed Boundary to 21 <sup>st</sup> Street	202	62	102	172	473

The North Watershed Boundary to North Site Border represents the flow being carried by the tributary as it enters the north side of the site. The Area to be Developed is the proposed area to become a residential development and the peak flows currently experienced from this area are shown. Finally, the North Watershed Boundary to 21<sup>st</sup> Street is the entire watershed within which the site rests. Approximately 80 acres are to be developed with 122 acres to remain as they currently exist.

## Developed Condition

### *Proposed Development*

The site will develop as residential lots. The average size of the lots will be approximately ¼ acre.

### *Proposed Landform and Slope*

Runoff will be allowed to continue its general pattern of draining into the Fourmile Creek tributary. Two detention ponds will be designed and constructed along the tributary and sized to accommodate excess runoff created by the proposed development. At this time, these ponds have yet to be sized.

Final slopes in the residential development have not been determined, but the minimum will be 0.5% within street right-of-way, and 1-2% in backyards. The preliminary lot grading plan is shown in Appendix F.

### *Proposed Runoff Characteristics*

In addition to the detention provided in the previous Hawthorne Additions, the site will have two detention ponds sized to detain the excess runoff generated by the increase in the impervious area. The watershed area associated with the proposed development was delineated and the peak flows calculated for both the pre- and post-development scenarios. The Rational Method was used to determine the peak flows that will occur once the site has been developed. The change in runoff coefficient resulting from the change in impervious area and the estimated changes in slope were incorporated into the Rational Method calculations for post-development peak flow. The following chart summarizes the expected differences.

**Table 2. Developed runoff.**

Watershed Description	Area (ac)	2-Year (cfs)	5-Year (cfs)	10-Year (cfs)	100-Year (cfs)
Area to be Developed, Pre-Development	80	31	51	85	223
Area to be Developed, Post-Development	80	65	95	140	304

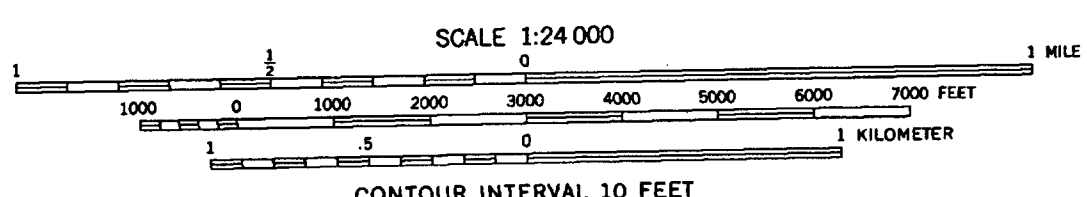
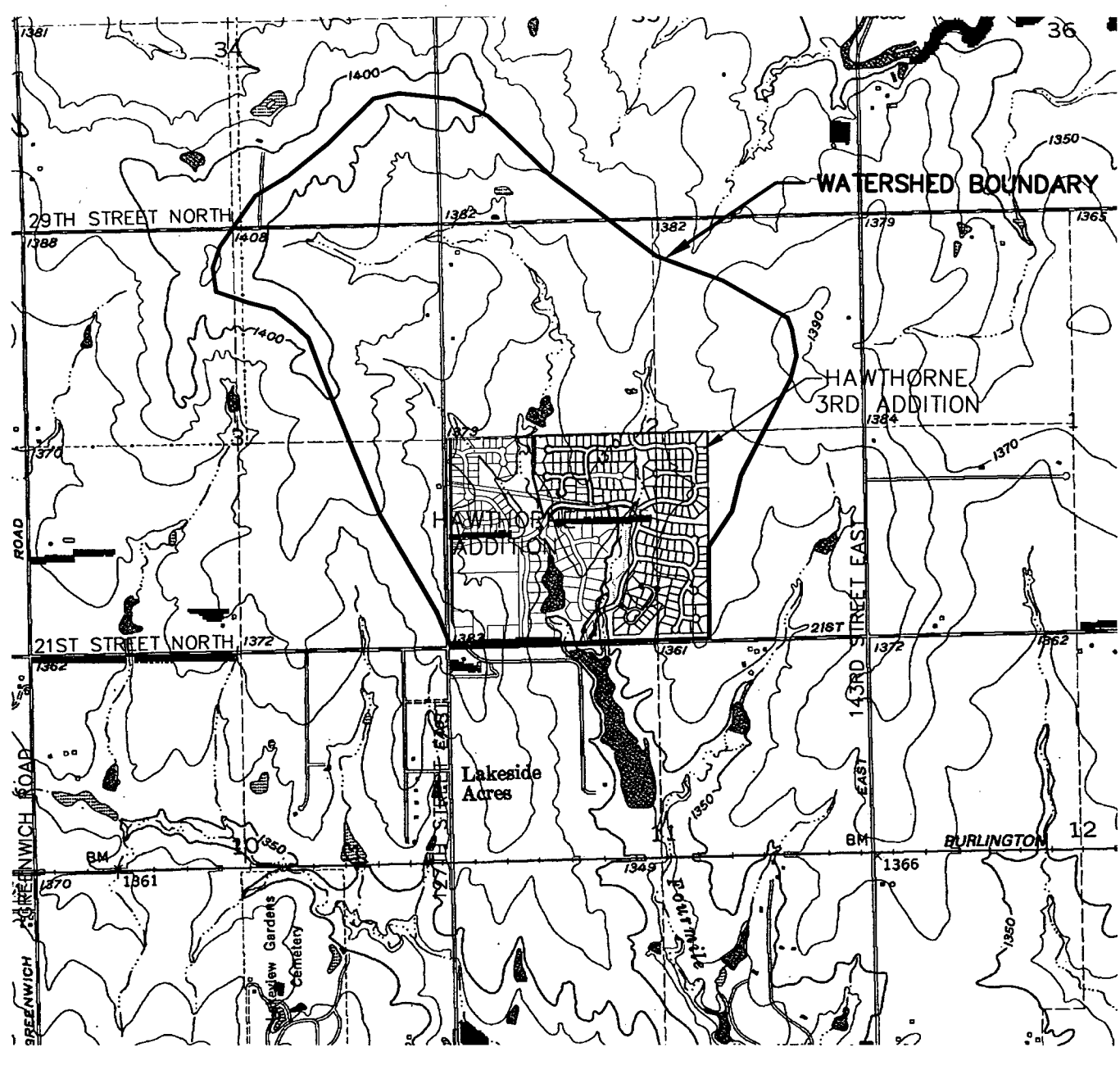
## Summary

Hawthorne 3<sup>rd</sup> Addition is located in Sedgwick County, Kansas, on the northeast corner of 127<sup>th</sup> Street East and 21<sup>st</sup> Street North. The Hawthorne Addition will develop into residential lots approximately ¼ acre in size. The development will include several reserves for ponds, landscaping, and drainage. Runoff from the developed areas will increase. Two new ponds within Hawthorne 3<sup>rd</sup> Addition will provide adequate

detention and prevent increased peak flows from exiting the site. Storm sewers will carry runoff from the streets into the detention ponds and into existing ditches along 21<sup>st</sup> Street. The overall watershed has been studied in its existing condition and the area to be developed has been analyzed for both pre-developed and post-developed conditions. The total change in discharge to the south will increase by approximately 81-cfs in the 100-year design event and the detention ponds will be sized to accommodate this increase in flow.


APPENDIX A  
QUADRANGLE MAP





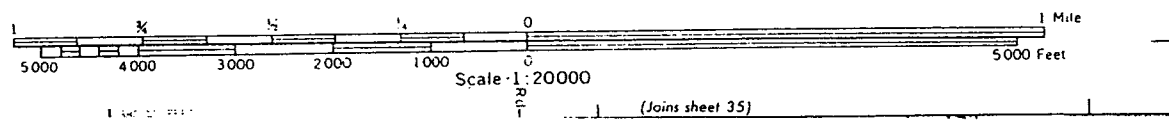
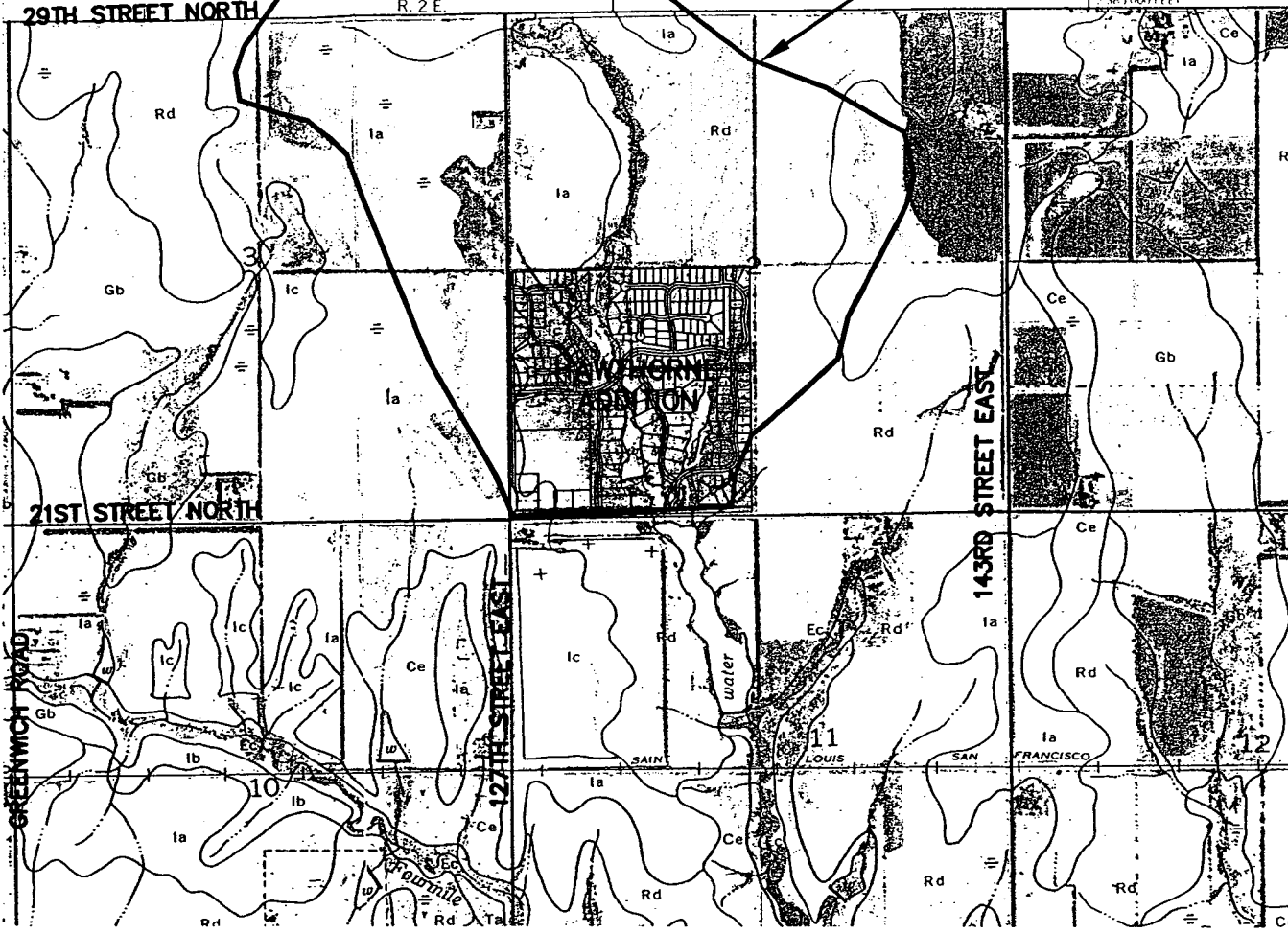
CONTOUR INTERVAL 10 FEET  
 NATIONAL GEODETIC VERTICAL DATUM OF 1929


\A:\proj\102167\DWG\102167.dwg 18/03/2004 10:00:00

 <b>MKEC</b> ENGINEERING CONSULTANTS 411 N. WHEEL ROAD WICHITA, KS 67208 316-608-9888	<b>HAWTHORNE 3RD ADDITION</b>		
	PROJECT NAME		
<b>ANDOVER QUADRANGLE</b>			
SHEET TITLE			
DESIGN BY: <b>KLA</b>	DRAWN BY: <b>JFL</b>	CHECKED BY: <b>CJA</b>	
DATE: <b>MARCH 2004</b>	JOB NO.: <b>02167</b>	SHEET/OF: <b>1 / 1</b>	

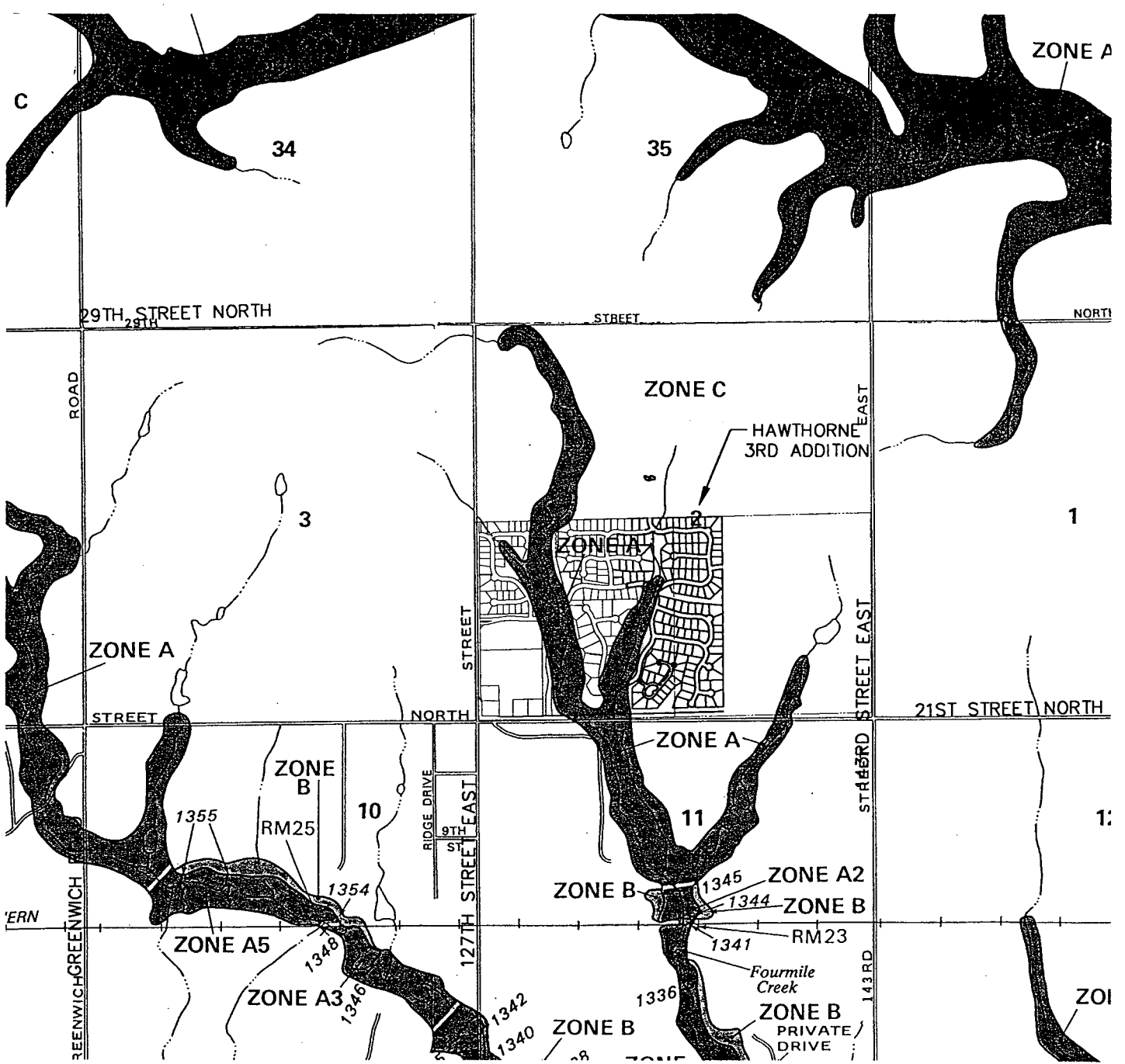
APPENDIX B  
SOIL SURVEY

WATERSHED BOUNDARY

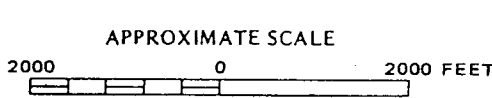


 <b>MKEC</b> ENGINEERING CONSULTANTS 411 N. WESS ROAD WICHITA, KS. 67208 316-684-9488	<b>HAWTHORNE ADDITION</b>		
	PROJECT NAME		
	<b>SOIL SURVEY OF SEDGWICK COUNTY, KANSAS</b>		
	SHEET TITLE		
	DESIGN BY.	DRAWN BY.	CHECKED BY.
JMA	JMA	JMA	
DATE	LOG NO.	SHEET NO.	
JUNE 2002	02187	1 / 1	

APPENDIX C  
FIRM



NATIONAL FLOOD INSURANCE PROGRAM  
**FIRM**  
 FLOOD INSURANCE RATE MAP  
 SEDGWICK COUNTY,  
 KANSAS  
 (UNINCORPORATED AREAS)  
 PANEL 150 OF 300  
 COMMUNITY PANEL NUMBER  
 200221 0150 A  
 EFFECTIVE DATE:  
 JUNE 3, 1994  
 Federal Emergency Management Agency

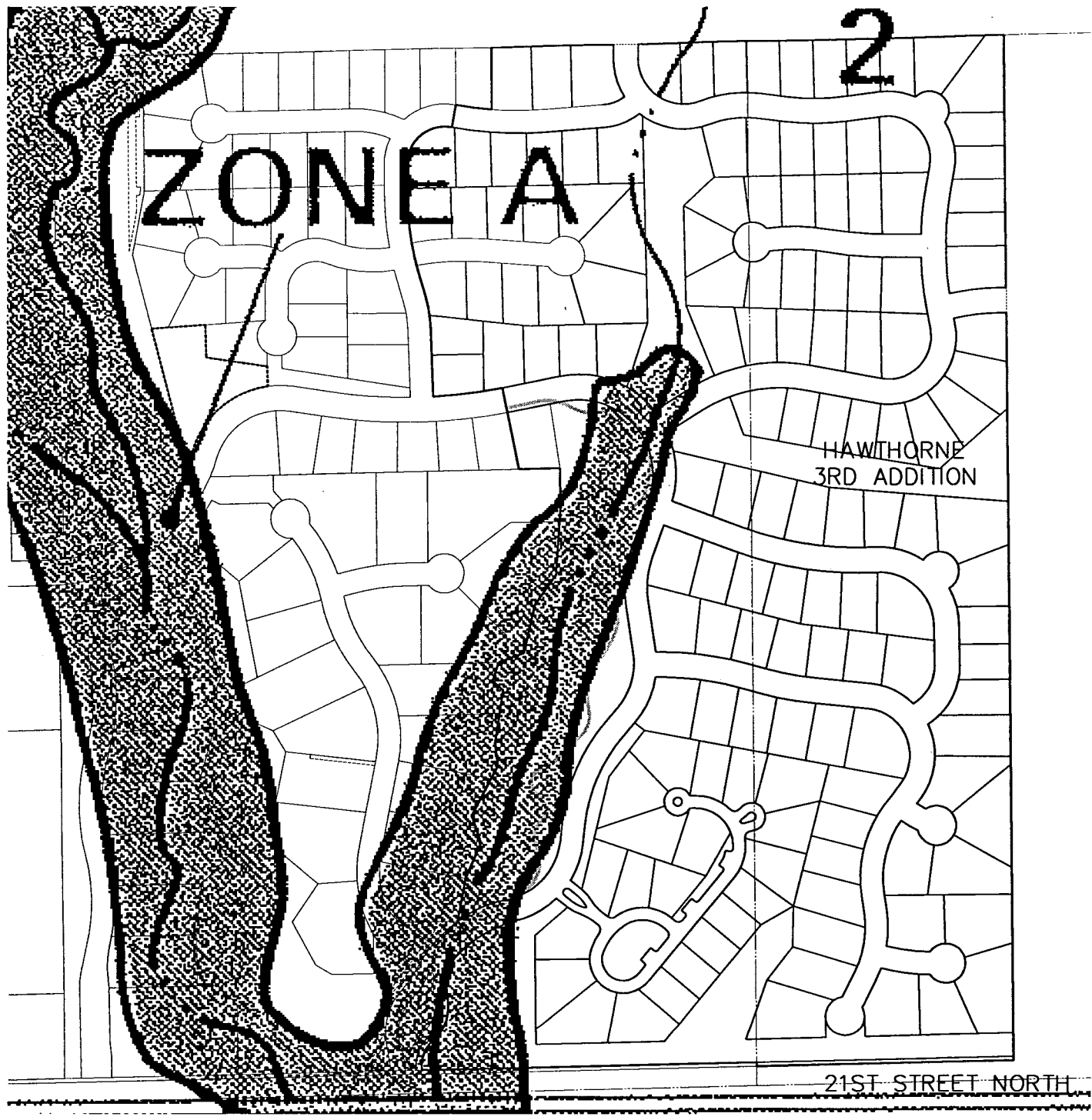


**MKEC**  
 ENGINEERING  
 CONSULTANTS  
 411 N. WEBB ROAD  
 WICHITA, KS. 67204  
 316 - 844 - 8400

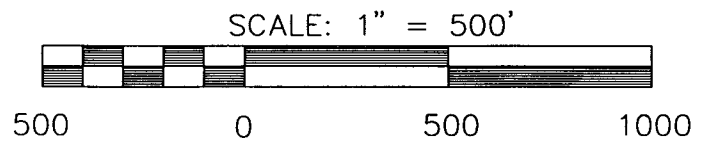
**HAWTHORNE 3RD ADDITION**  
 PROJECT NAME  
**FIRM PANEL 150 OF 300**  
**SEDGWICK COUNTY, KANSAS**  
 SHEET TITLE

DESIGN BY. KLA	DRAWN BY. JFL	CHECKED BY. GLA
DATE MARCH 2004	JOB NO. 02167	SHEET NO. 1 / 1

P:\WORK\2004\20040310\FIRM\02167\FIRM.DWG



NATIONAL FLOOD HAZARD PROGRAM  
**FIRM**  
 FLOOD INSURANCE RATE MAP  
 SEDGWICK COUNTY,  
 KANSAS  
 UNINCORPORATED AREAS  
 PANEL 150 OF 300  
 COMMUNITY-PANEL NUMBER  
 20021 0150 A  
 EFFECTIVE DATE:  
 JUNE 3, 1986  
 Federal Emergency Management Agency

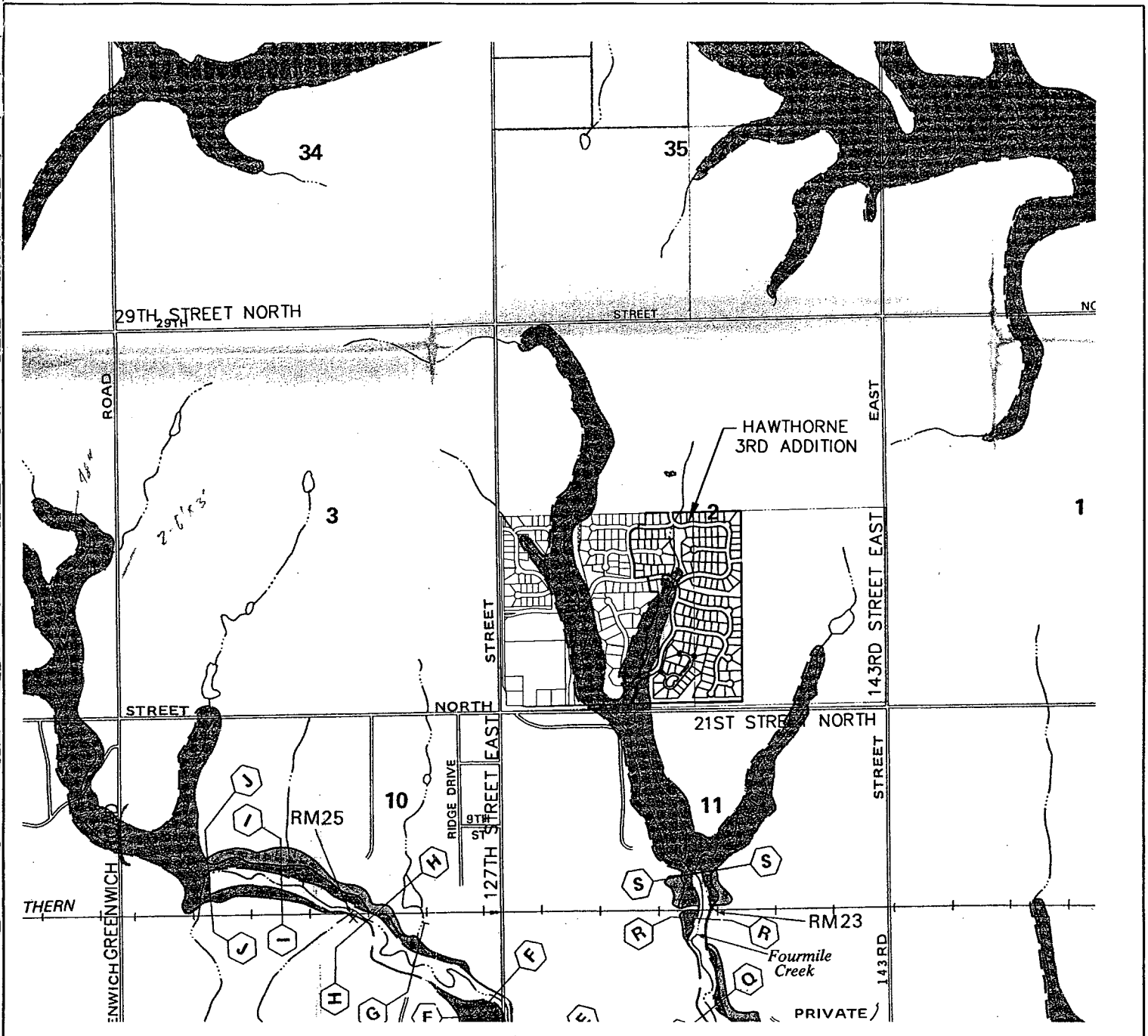


**MKEC**  
 ENGINEERING  
 CONSULTANTS  
 411 N. WEST ROAD  
 WICHITA, KS. 67204  
 316 - 264 - 9499

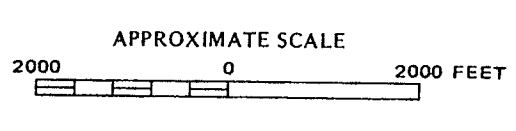
**HAWTHORNE 3RD ADDITION**  
 PROJECT NAME  
**FIRM PANEL 150 OF 300**  
 SEDGWICK COUNTY, KANSAS  
 SHEET TITLE

KIA	JFL	CJA
DESIGN BY:	DRAWN BY:	CHECKED BY:
MARCH 2004	02167	1 / 1
DATE	JOB NO.	SHEET/OF

P:\CIVIL\2004\21ST STREET\HAWTHORNE\21ST FIRM.DWG



NATIONAL FLOOD INSURANCE PROGRAM  
**FLOODWAY**  
 FLOOD BOUNDARY AND  
 FLOODWAY MAP  
 SEDGWICK  
 COUNTY,  
 KANSAS  
 (UNINCORPORATED AREAS)  
 PANEL 150 OF 300  
 SEE MAP INDEX FOR PANEL AND SHEET NUMBERS  
 COMMUNITY PANEL NUMBER  
 200321 0150  
 EFFECTIVE DATE:  
 JUNE 3, 1984  
 Federal Emergency Management Agency

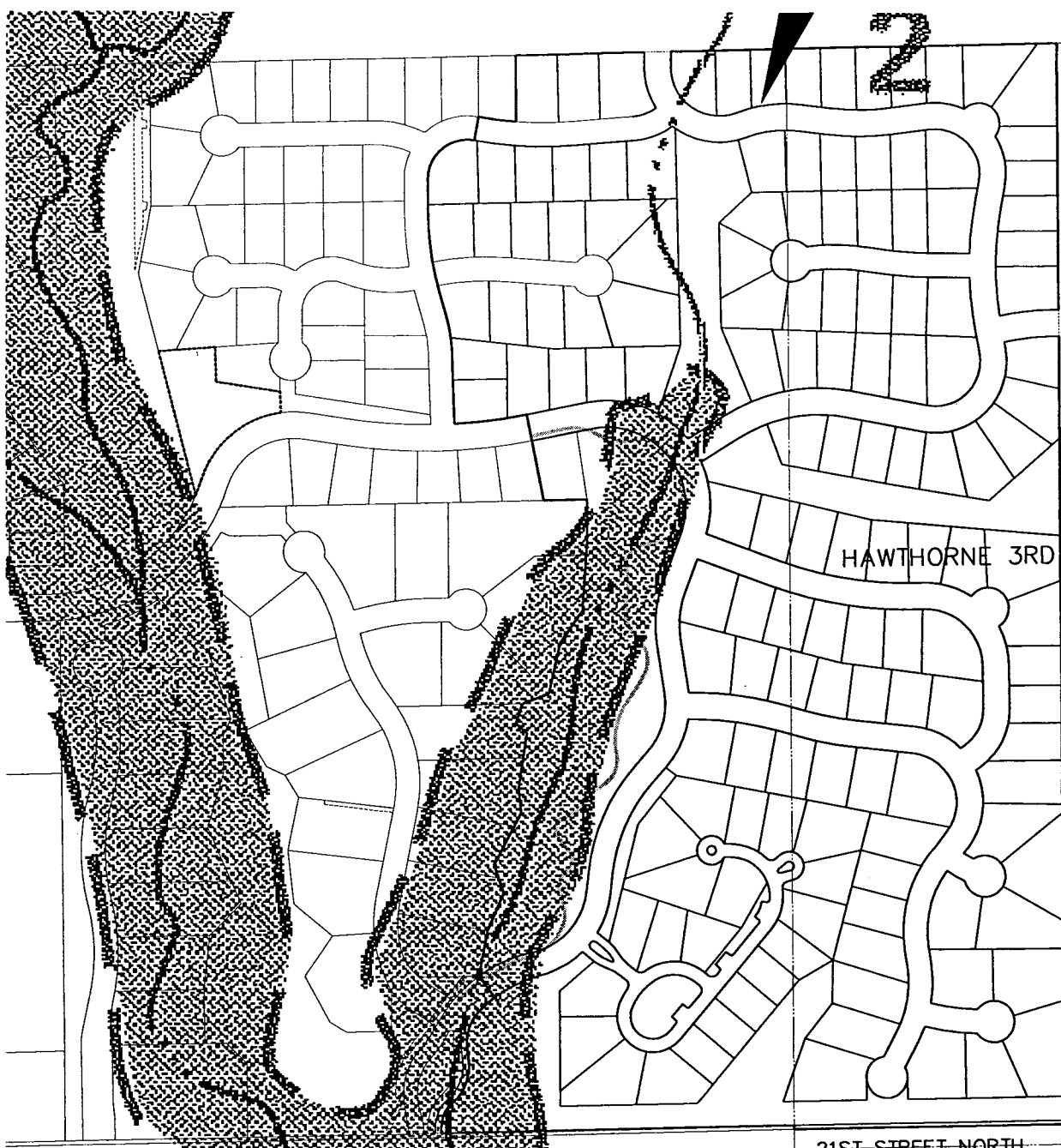


**MKEC**  
 ENGINEERING  
 CONSULTANTS  
 411 N. WEBB ROAD  
 WICHITA, KS 67204  
 314 - 684 - 9400

**HAWTHORNE 3RD ADDITION**  
 PROJECT NAME  
**FLOODWAY PANEL 150 OF 300**  
**SEDGWICK COUNTY, KANSAS**  
 SHEET TITLE

DESIGN BY: KLA	DRAWN BY: JFL	CHECKED BY: GJA
DATE: MARCH 2004	102167	1 / 1
	JOB NO.	SHEET NO.

P:\CADD\2004\20040321\0150\FLOODWAY.DWG



HAWTHORNE 3RD ADDITION

21ST STREET NORTH

NATIONAL FLOOD INSURANCE PROGRAM

**FLOODWAY**  
FLOOD BOUNDARY AND  
FLOODWAY MAP

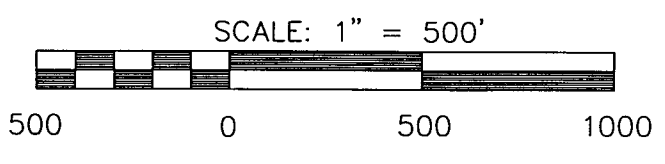
SEDGWICK  
COUNTY,  
KANSAS  
(UNINCORPORATED AREAS)

PANEL 150 OF 300  
SEE MAP PANEL 150 FOR PANELS NOT SHOWN

COMMUNITY PANEL NUMBER  
900221 0050

EFFECTIVE DATE:  
JUNE 3, 1995

Federal Emergency Management Agency



**MKEC**  
ENGINEERING  
CONSULTANTS  
411 N. WESSA ROAD  
WICHITA, KS. 67208  
316 - 264 - 9400

<b>HAWTHORNE 3RD ADDITION</b>		
PROJECT NAME		
<b>FLOODWAY PANEL 150 OF 300</b>		
SEDGWICK COUNTY, KANSAS		
SHEET TITLE		
DESIGN BY:	DRAWN BY:	CHECKED BY:
KLA	JPL	GJA
DATE	JOB NO.	SHEET OF
MARCH 2004	02167	1 / 1

H:\GIVE\G02817\DWG\W000A\DWG\02167.FLD

APPENDIX D  
DRAINAGE CALCULATIONS

**PRELIMINARY DRAINAGE ANALYSIS SUMMARY**  
**Hawthorne 3rd Addition**  
**Soil Group D**

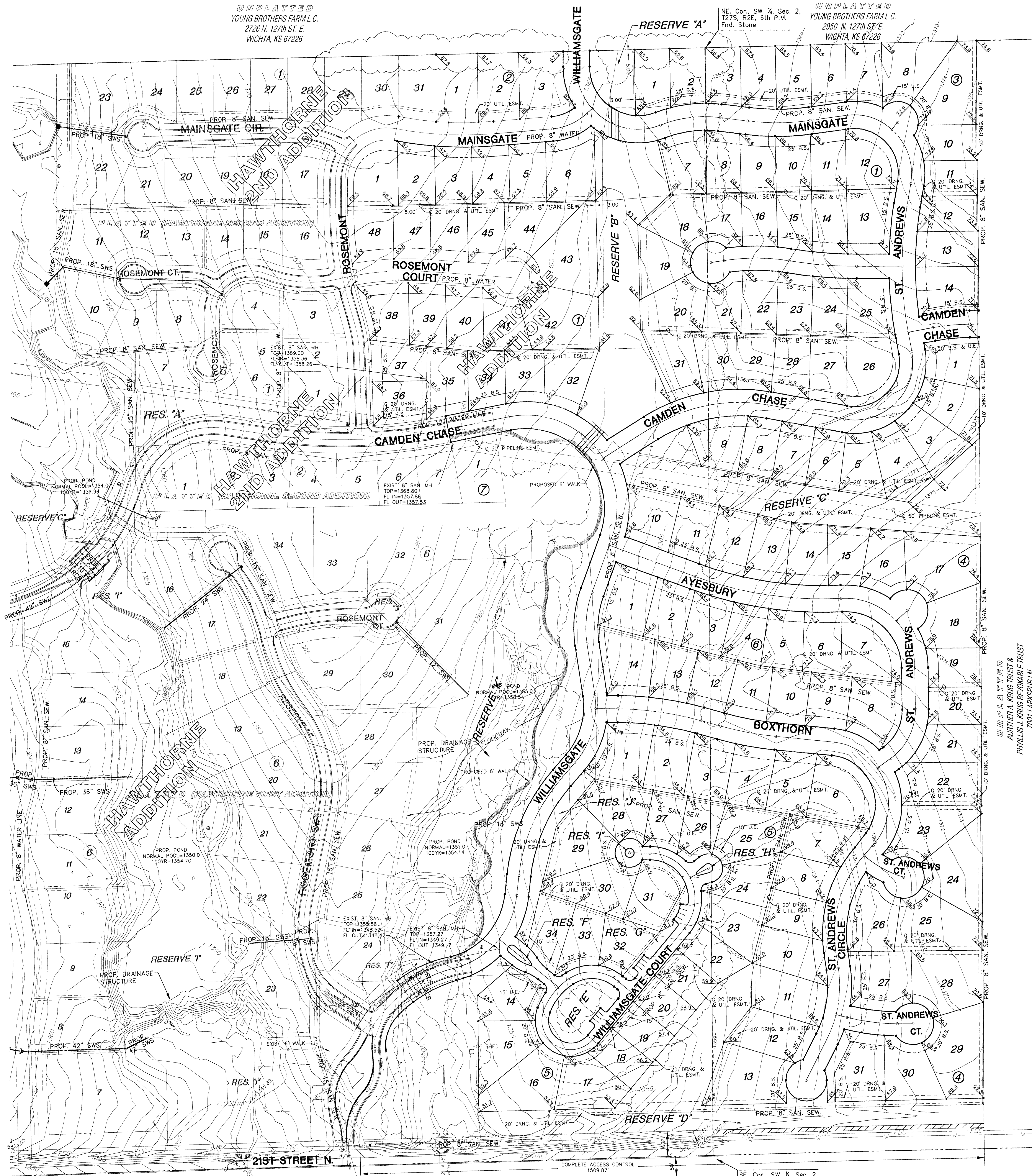
Area ID	Area ac	C2	C5	C10	C100	Elev Max	Elev Min	Flow Length	Tc2		Tc5		Tc10		Tc100		I5 in/hr	I10 in/hr	I100 in/hr	Q2 cfs	Q5 cfs	Q10 cfs	Q100 cfs		
									Calc	Avg V2	Calc	Avg V5	Calc	Avg V10	Calc	Avg V100								min	min
North Watershed Boundary to 21st Street	202.0	0.30	0.35	0.45	0.65	1381.0	1346.0	5000.0	114.68	0.73	107.51	0.78	93.18	0.89	64.51	1.29	65	1.03	1.45	1.89	3.60	62.42	102.52	171.80	472.68
North Watershed Boundary to North Site Border	81.0	0.30	0.35	0.45	0.65	1381.0	1346.0	2350.0	79.35	0.49	74.39	0.53	64.47	0.61	44.63	0.88	79	1.03	1.45	1.89	3.60	62.42	102.52	171.80	472.68
Area to be Developed (pre-development)	80.0	0.30	0.35	0.45	0.65	1365.0	1346.0	2700.0	84.12	0.53	78.88	0.57	68.35	0.66	47.32	0.95	84	1.37	1.88	2.44	4.43	33.29	53.30	88.94	233.24
Area to be Developed (post-development)	80.0	0.50	0.54	0.62	0.76	1365.0	1346.0	2700.0	63.09	0.71	58.89	0.76	50.47	0.89	35.75	1.26	63	1.82	2.35	2.83	31.44	50.96	84.60	222.96	304.00

**APPENDIX E**  
**DRAINAGE BOUNDARY & UTILITY PLAN**

**APPENDIX F**  
**PRELIMINARY LOT GRADING PLAN**

UNPLATTED  
YOUNG BROTHERS FARM L.C.  
2726 N. 127th ST. E.  
WICHITA, KS 67226

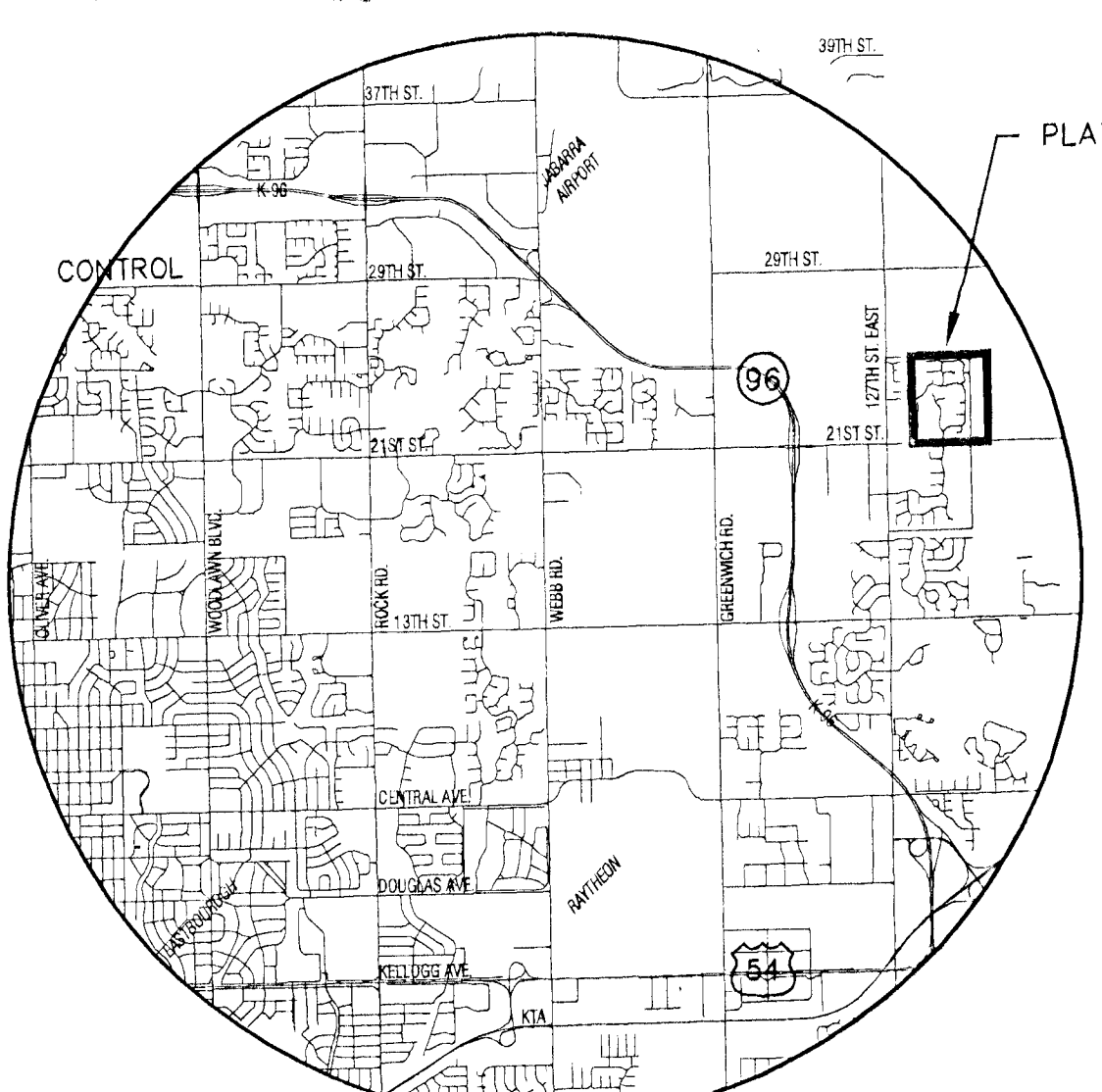
UNPLATTED  
YOUNG BROTHERS FARM L.C.  
2850 N. 127th ST. E.  
WICHITA, KS 67226



PLATTED (REDS COVE ADDITION)  
21/127 L.L.C.  
8100 E. 22nd St. N.  
SUITE #1000, WICHITA, KS 67226

UNPLATTED (PROPOSED  
REDS COVE THIRD ADDITION)  
21/127 L.L.C.  
8100 E. 22nd St. N.  
SUITE #1000, WICHITA, KS 67226

UNPLATTED  
AURITERA KRIG TRUST &  
PHYLIS J. KRIG REDEEMABLE TRUST  
7001 LARKSPUR LN.  
MIDDELTOWN, OH 43044



VICINITY MAP

**LEGEND**

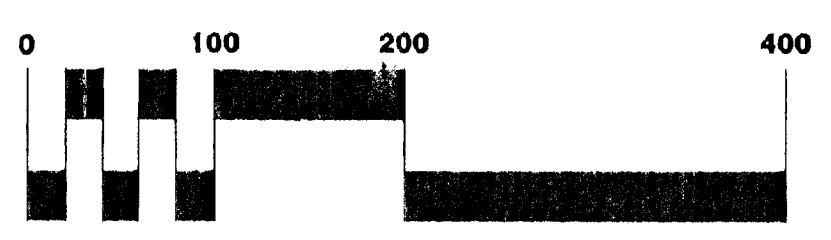
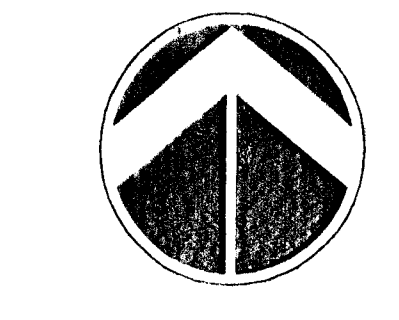
<ul style="list-style-type: none"> <li>● 6N - CONIFEROUS TREE &amp; DIAMETER</li> <li>● 6D - DECIDUOUS TREE &amp; DIAMETER</li> <li>● 6S - SIGN</li> <li>● 6B - BUSH</li> <li>--- EDGE OF TREES</li> <li>--- FENCE</li> <li>● 6SMH - SANITARY SEWER MANHOLE</li> <li>● 6GM - GAS METER</li> <li>● 6P - POLE</li> <li>--- GATE</li> <li>--- WALL</li> <li>● 6LP - LIGHT POLE</li> <li>● 6FH - FIRE HYDRANT</li> <li>● 6W - WATER VALVE</li> <li>● 6WM - WATER METER</li> <li>● 6PA - POWER POLE AND GUY ANCHOR</li> <li>△ SECTION CORNER MONUMENT FOUND</li> <li>○ FOUND PROPERTY CORNER REBAR</li> <li>● SET 5/8" REBAR W/ MKEC CLS #39 CAP</li> </ul>	<ul style="list-style-type: none"> <li>--- TELEPHONE RISER</li> <li>--- INLET</li> <li>--- STORM SEWER PIPE</li> <li>--- WATER LINE</li> <li>--- SANITARY SEWER LINE</li> <li>--- GAS LINE</li> <li>--- TELEPHONE LINE</li> <li>--- UNDERGROUND ELECTRIC LINE</li> <li>--- OVERHEAD TELEPHONE</li> <li>--- OVERHEAD ELECTRIC</li> <li>--- UNDERGROUND FIBER OPTIC CABLE</li> <li>--- HIGH PRESSURE GAS PIPELINE</li> <li>B.S. = BUILDING SETBACK</li> <li>U.E. = UTILITY EASEMENT</li> <li>(M) = MEASURED DIMENSION</li> <li>--- STREET DEDICATION</li> <li>--- STREET VACATION</li> </ul>
--	--

**NOTES**

- ZONING: Existing Single Family "SF-20"  
Proposed Single Family "SF-5"
- RESERVES platted for:
  - "A" lakes, floodway, drainage, landscaping, irrigation and open space
  - "B" lakes, floodway, drainage, landscaping, irrigation and open space
  - "C" walks, berming, drainage, landscaping, irrigation and open space
  - "D" lakes, floodway, monuments, walks, berming, drainage, landscaping, irrigation and open space
  - "E" walks, playground, landscaping, irrigation and open space
  - "F" monuments, landscaping, irrigation and open space
  - "G" walks, drainage, landscaping, irrigation and open space
  - "H" landscaping, irrigation and open space
  - "I" landscaping, irrigation and open space
  - "J" walks, berming, drainage, landscaping, irrigation and open space
  - "K" lakes, floodway, playground, walks, drainage, landscaping, irrigation and open space
- Lot minimum pad elevations as indicated on the DRAINAGE PLAN, provided at the time of FINAL PLATTING.

**BENCHMARKS**

- BM#1 Square cut SW corner signal light pole base NE corner West and 13th  
ELEV. = 185.945 (City Datum)  
1373.345' NGVD
- BM#2 Top of Iron at SW Cor., SW 1/4, Sec. 2, T27S, R2E, (127th St. E. & 21st St. N.)  
ELEV. = 198.01 (CITY DATUM)  
1385.41 NGVD



SCALE: 1" = 100'

# PRELIMINARY LOT GRADING PLAN HAWTHORNE THIRD ADDITION

OWNERS/DEVELOPER: Twenty-First Growth, L.L.C. 816 Terradyne Andover KS 67002

DATE: MARCH, 2004

