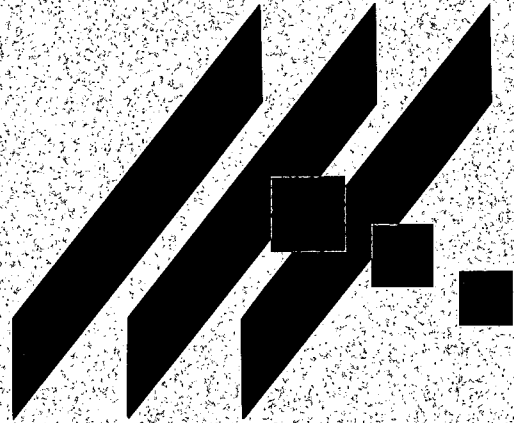


M K E C E N G I N E E R I N G C O N S U L T A N T S , I N C



PRELIMINARY DRAINAGE REPORT

FOR

WILSON FARMS FOURTH ADDITION

May 2003

Preliminary Drainage Report for Wilson Farms Fourth Addition Wichita, Sedgwick County, Kansas

Location

The subject property is in Wichita, Sedgwick County, Kansas. The proposed development is located south of 21st Street North and west of Webb Road. Wilson Estates Parkway borders the site to the north, Wilson Farms Addition to the west, and Legacy Wilson Estates Addition to the East. An abandoned railroad right of way borders the site to the south and a KGE easement crosses the south edge. The site was previously platted as a portion of the Legacy Park Wilson Estates Addition. The site lies in the Southeast Quarter of Section 8, Township 27 South, Range 2 East. The dimensions of the property are approximately 1000 feet north to south and 450 feet east to west at the widest point. The area of the plat is 10.38 acres. The site is shown on the Andover, Kansas Quadrangle, located in Appendix A.

Soils

According to the NRCS (SCS) Sedgwick County Soil Survey in Appendix B, the soil on the site is nearly all Tabler Silty Loam (Ta – HSG “D”). The Northwest corner of the site is Irwin Silty Clay Loam, 1-3% slopes (Ia - HSG “D”). The Hydrological Soil Group (HSG) used to select runoff coefficients is “D”.

Pre-developed Conditions

Current Development

The site is an undeveloped, vacant lot. The site has been used to stockpile excess soil from surrounding developments.

Current Landform and Slope

Currently the elevation on the site varies from 198' to 215' at the top of the stockpile. Existing elevations appear to have ranged from 198' to 201'.

Current Drainage Conditions

According to the Federal Emergency Management Agency (FEMA), the site is in Zone C – areas of minimal flooding. The nearest Zone A (areas of 100-year flooding) is approximately 600 feet west of the site. (FIRM Panel 15, Wichita, Sedgwick County, Kansas, May 15, 1986) (shown in Appendix C).

Current Runoff Characteristics

The site is on a natural ridge. Runoff sheet flows to the west and the southeast. Watersheds “18” and “38” of the 1997 Wilson Farms Addition Drainage and Utility Plan include nearly all of the Wilson Farms Fourth Addition site. The Drainage and Utility Plan

for the Wilson Farms Fourth Addition is found in Appendix D. The site was divided into 5 watersheds, similar to those used for the Wilson Farms Addition. Drainage areas were modified to reflect existing conditions and changes caused by the development of Wilson Farms Fourth Addition. The rational method was used to analyze each watershed shown in the Drainage and Utility Plan. Times of concentration (t_c) were calculated using the FAA method. The spreadsheet in Appendix E displays the area, runoff coefficient (c), time of concentration (t_c), and flow rate (Q) for the 2, 5, 10, and 100-year event for each watershed. Time of concentrations vary from 15 to 50 in undeveloped conditions. The total runoff from the site is 49.5 cfs in the 100-year event. Undeveloped runoff values are found in Table 1.

Table 1. Undeveloped Runoff.

	2-Year (cfs)	5-Year (cfs)	10-Year (cfs)	100-Year (cfs)
To Wilson Farms (A,B,C,D)	7.9	11.9	19.6	49.5
To KGE Easement (E)	0.8	1.1	1.8	4.4

Developed Conditions

Proposed Development

The site will develop as 16 residential lots with an average size of 1/3 acre. The south end of the site is designated as a reserve that will be used for berming and landscaping.

Proposed Landform and Slope

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

Proposed Runoff Characteristics

The same watersheds shown in Appendix D were used to analyze developed conditions. According to the Drainage and Utility Plan for the Wilson Farms Addition, developed runoff from the site during the 100-year design event was 58.7 cfs. Results of the 1997 study are included in Table 2. For the new watershed boundaries, times of concentration (t_c) were calculated using the FAA method. The spreadsheet in Appendix E displays the area, runoff coefficient (c), time of concentration (t_c), and flow rate (Q) for the 2, 5, 10, and 100-year event for each watershed under developed conditions. Time of concentrations vary from 15 to 44 in developed conditions. The total runoff from the developing site is 61.6 cfs in the 100-year event. Developed runoff values are found in Table 2.

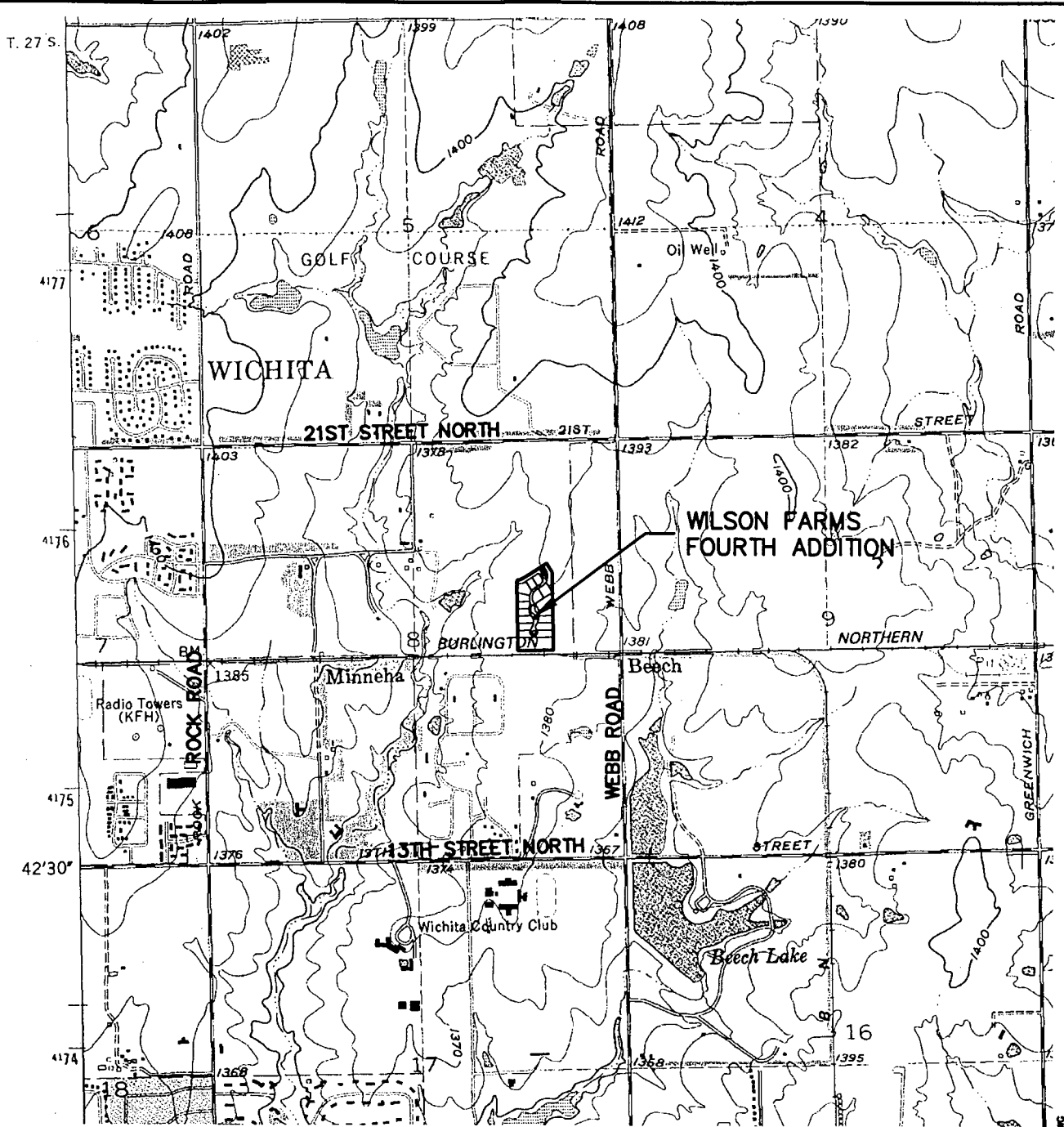
Table 2. Developed Runoff.

	2-Year (cfs)	5-Year (cfs)	10-Year (cfs)	100-Year (cfs)
1997 Wilson Farms Addition Drainage and Utility Plan (18+38)	14.4	19.7	N/A	58.7
To Wilson Farms (A,B,C,D)	14.0	19.6	28.7	61.6
To KGE Easement (E)	1.1	1.6	2.3	4.9

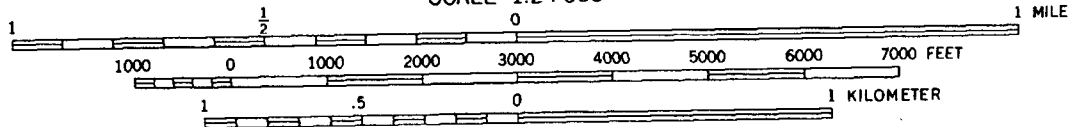
Summary

Wilson Farms Fourth Addition is a residential development covering 10 acres. It will consist of 16 lots approximately 1/3 acre in size. There will be reserves and easements for landscaping. The site was previously platted in the Legacy Park Wilson Addition, but is currently a vacant lot without any improvements. The area was included as developed in the Drainage and Utility Plan for the Wilson Farms Addition in 1997. According to the drainage calculations for the Wilson Farms Addition, a flow of 58.7 cfs is expected in the 100-year event. The Wilson Farms Fourth Addition was analyzed under existing and proposed conditions using the rational method. Runoff from the site into the Wilson Farms Addition, during the 100-year event increases from 49.5 cfs to 61.6 cfs due to the development. The calculations for this plat show an increase of 2.9 cfs from the runoff expected in the Wilson Farms Drainage and Utility Plan. The Wilson Farms Addition anticipated development of this site and accounted for the increased runoff. Drainage facilities in the Wilson Farms Addition were designed to handle the additional runoff from Wilson Farms Fourth Addition.

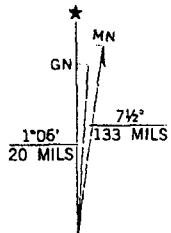
**APPENDIX A
QUADRANGLE MAP**



SCALE 1:24 000



CONTOUR INTERVAL 10 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929



UTM GRID AND 1982 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET



MKEC
ENGINEERING
CONSULTANTS
411 N. WEBB ROAD
WICHITA, KS. 67206
316 - 684 - 9688

WILSON FARMS FOURTH ADDITION
PROJECT NAME

ANDOVER, KANSAS QUADRANGLE
SHEET TITLE

KLA DESIGN BY.	KLA DRAWN BY.	GM CHECKED BY.
MAY 2003 DATE	03131 JOB NO.	1 / 1 SHEET/DF

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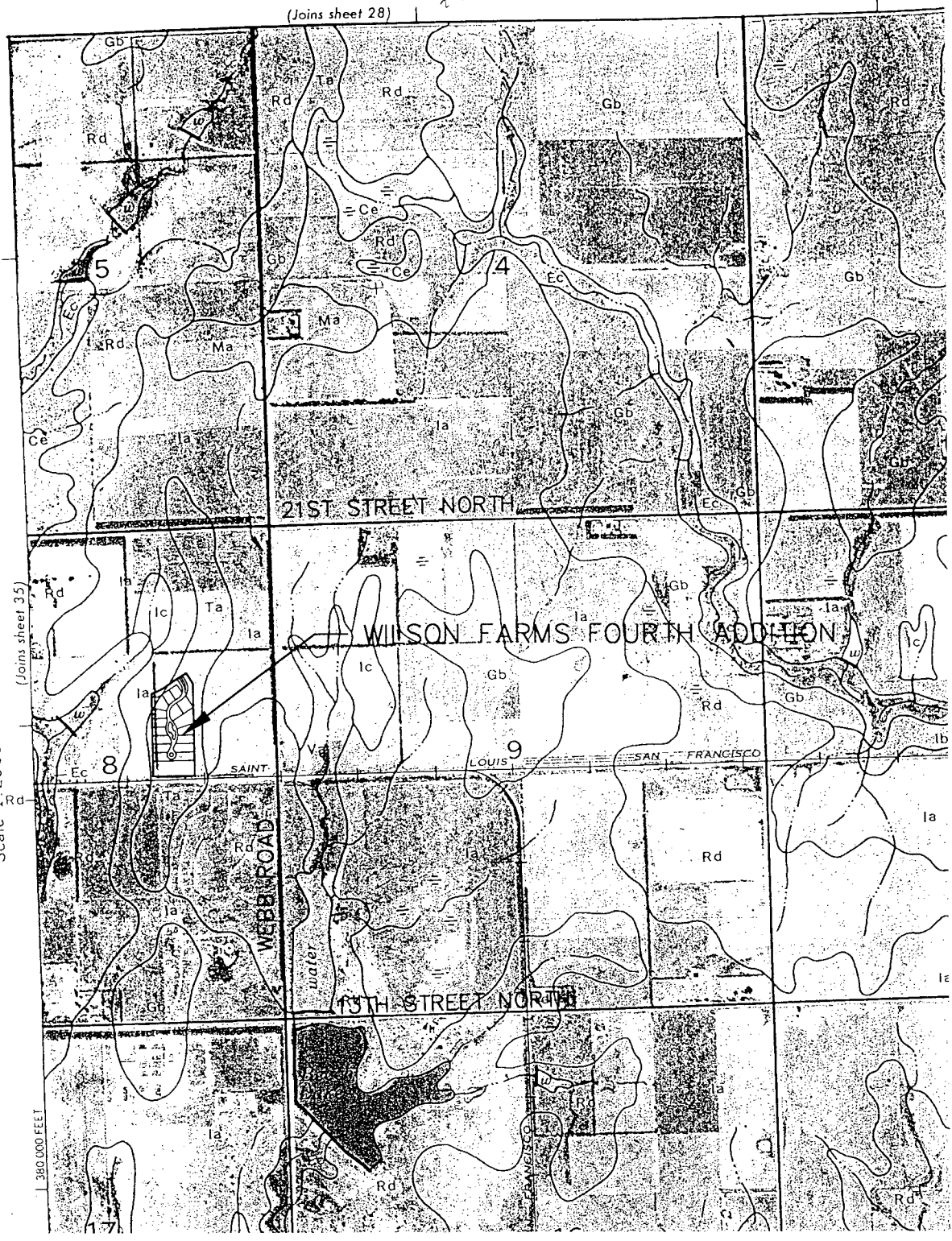
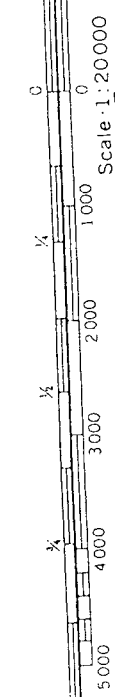
**APPENDIX B
SOIL SURVEY**

36

(Joins sheet 28)



1 Mile
5000 Feet



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

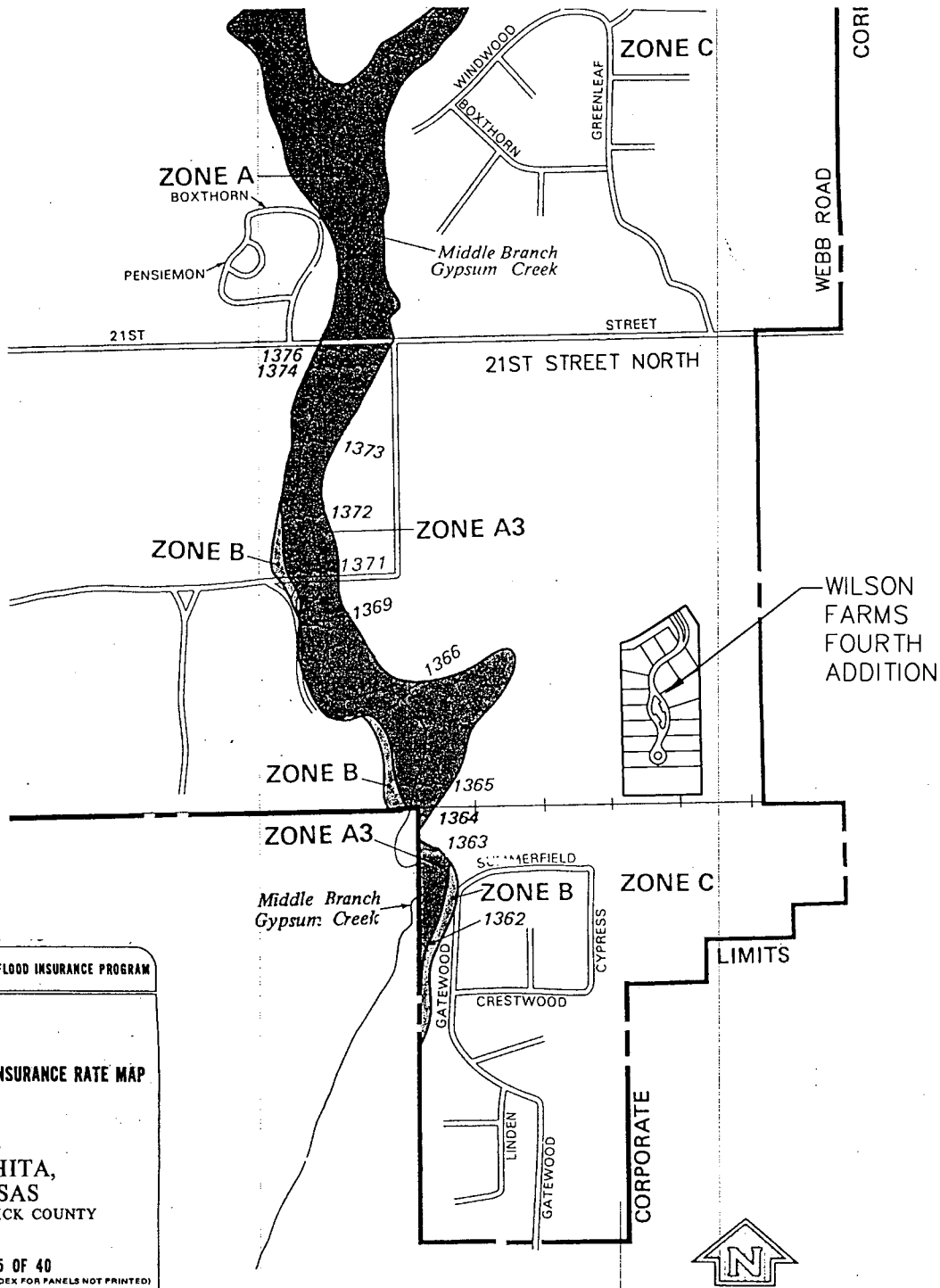
WILSON FARMS FOURTH ADDITION
PROJECT NAME

SOIL SURVEY
SEDGWICK COUNTY, KANSAS
SHEET TITLE

KLA DESIGN BY.	KLA DRAWN BY.	GJA CHECKED BY.
MAY 2003 DATE	03131 JOB NO.	1 / 1 SHEET/OF

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APPENDIX C
FIRM



NATIONAL FLOOD INSURANCE PROGRAM


FIRM
FLOOD INSURANCE RATE MAP

CITY OF
WICHITA,
KANSAS
SEDGWICK COUNTY

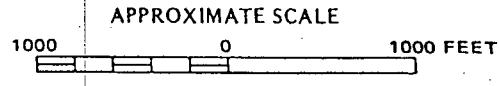

PANEL 15 OF 40
(SEE MAP INDEX FOR PANELS NOT PRINTED)

COMMUNITY-PANEL NUMBER
200328 0015/B7

EFFECTIVE DATE:
MAY 15, 1986



Federal Emergency Management Agency

MKEC
ENGINEERING
CONSULTANTS

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

WILSON FARMS FOURTH ADDITION
PROJECT NAME

FLOOD INSURANCE RATE MAP
WICHITA, KANSAS - PANEL 15 OF 40
SHEET TITLE

KLA DESIGN BY:	KLA DRAWN BY:	GJA CHECKED BY:
MAY 2003 DATE	03131 JOB NO.	1 / 1 SHEET/OF

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**APPENDIX D
DRAINAGE & UTILITY PLAN**

APPENDIX E
DRAINAGE CALCULATIONS

5/9/03

DRAINAGE ANALYSIS SUMMARY
Wilson Farms Fourth Addition

Area ID		Area	C2	C5	C10	C100	Elev	Elev	Flow	Tc2	Tc5	Tc10	Tc100	I2	I5	I10	I100	Q2	Q5	Q10	Q100
		ac					Max	Min	Length	min	min	min	min	in/hr	in/hr	in/hr	in/hr	cf/s	cf/s	cf/s	cf/s
Undeveloped																					
A		6.1	0.30	0.35	0.45	0.65	200.0	189.0	1200	51	48	42	29	1.92	2.47	3.17	5.59	3.53	5.30	8.74	22.27
B		2.6	0.30	0.35	0.45	0.65	200.0	195.0	385	26	24	21	15	2.96	3.65	4.50	7.37	2.27	3.27	5.18	12.26
C		4.6	0.30	0.35	0.45	0.65	205.1	199.0	1000	54	50	44	30	1.86	2.41	3.09	5.40	2.57	3.88	6.40	16.15
D		0.8	0.30	0.35	0.45	0.65	203.2	200.0	290	24	22	19	15	3.10	3.81	4.71	7.37	0.76	1.09	1.74	3.93
E		0.9	0.30	0.35	0.45	0.65	203.2	199.0	415	29	27	24	16	2.72	3.43	4.31	7.18	0.77	1.13	1.82	4.39
To Wilson Farms Addition (A+B+C+D)		14.1	0.30	0.35	0.45	0.65				54	50	44	30	1.86	2.41	3.09	5.40	7.87	11.90	19.62	49.53
Developed																					
A		6.1	0.41	0.45	0.54	0.71	200.0	189.0	1200	44	42	36	25	2.11	2.72	3.46	5.90	5.30	7.50	11.45	25.68
B		2.6	0.46	0.50	0.59	0.73	200.0	195.0	385	21	19	17	15	3.33	4.10	5.08	7.37	3.92	5.25	7.67	13.77
C		4.6	0.57	0.61	0.66	0.79	205.1	199.0	1000	44	42	36	25	2.11	2.72	3.46	5.90	5.53	7.63	10.50	21.44
D		0.8	0.41	0.45	0.54	0.71	203.2	200.0	290	20	19	17	15	3.33	4.10	5.08	7.37	1.12	1.51	2.25	4.29
E		0.9	0.41	0.45	0.54	0.71	203.2	199.0	415	25	24	20	15	2.96	3.73	4.60	7.37	1.14	1.58	2.33	4.92
To Wilson Farms Addition (A+B+C+D)		14.1	0.47	0.51	0.59	0.74				44	42	36	25	2.11	2.72	3.46	5.90	14.03	19.62	28.72	61.58

**APPENDIX F
LOT GRADING PLAN**

LEGAL DESCRIPTION

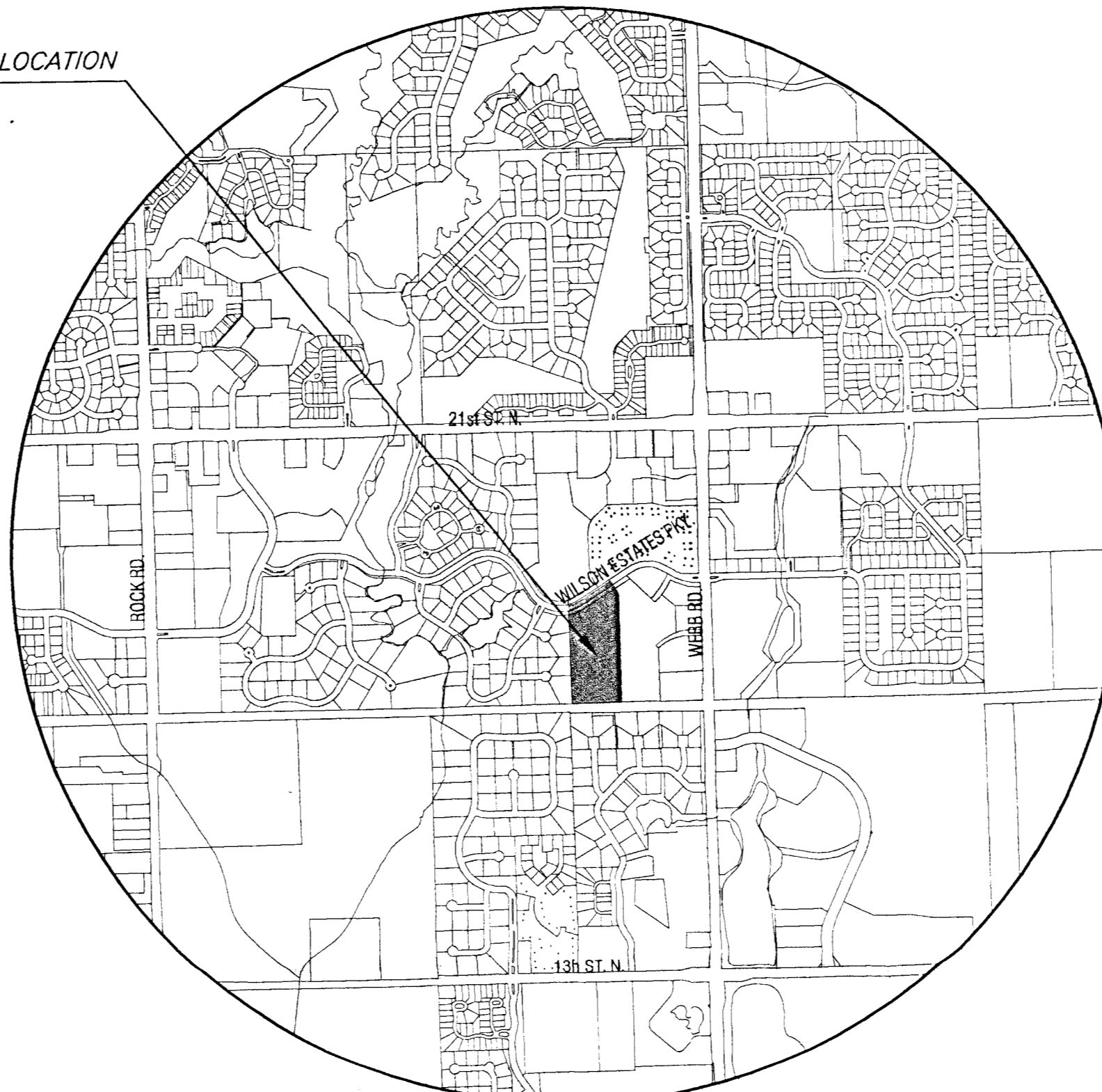
A tract of land lying in a portion of Lot 1, Block 2, Legacy Park Wilson Estates Addition to Wichita, Sedgewick County, Kansas, TOGETHER WITH, a portion of Reserve "B", of said addition, said tract being more particularly described as follows:

BEGINNING at the Southwest corner of said Lot 1, said Legacy Park Wilson Estates Addition, thence along the Westerly boundary line of said Legacy Park Wilson Estates Addition, on a plotted bearing of $N01^{\circ}01'47''W$, 889.19 feet to the Northwest corner of said Reserve "B" said corner lying on a curve to the left; thence along said North line and along said curve 121.47 feet, said curve having a central angle of $20^{\circ}12'16''$, a radius of 344.50 feet, and a long chord distance of 120.85 feet, bearing $N67^{\circ}30'41''E$; thence continuing along said North line $N57^{\circ}24'50''E$, 319.76 feet; thence $S32^{\circ}35'10''E$, 133.86 feet, thence $S01^{\circ}01'47''E$, 986.69 feet to the South line of said addition; thence along said South line $S88^{\circ}58'13''W$ 455.00 feet to the POINT OF BEGINNING.

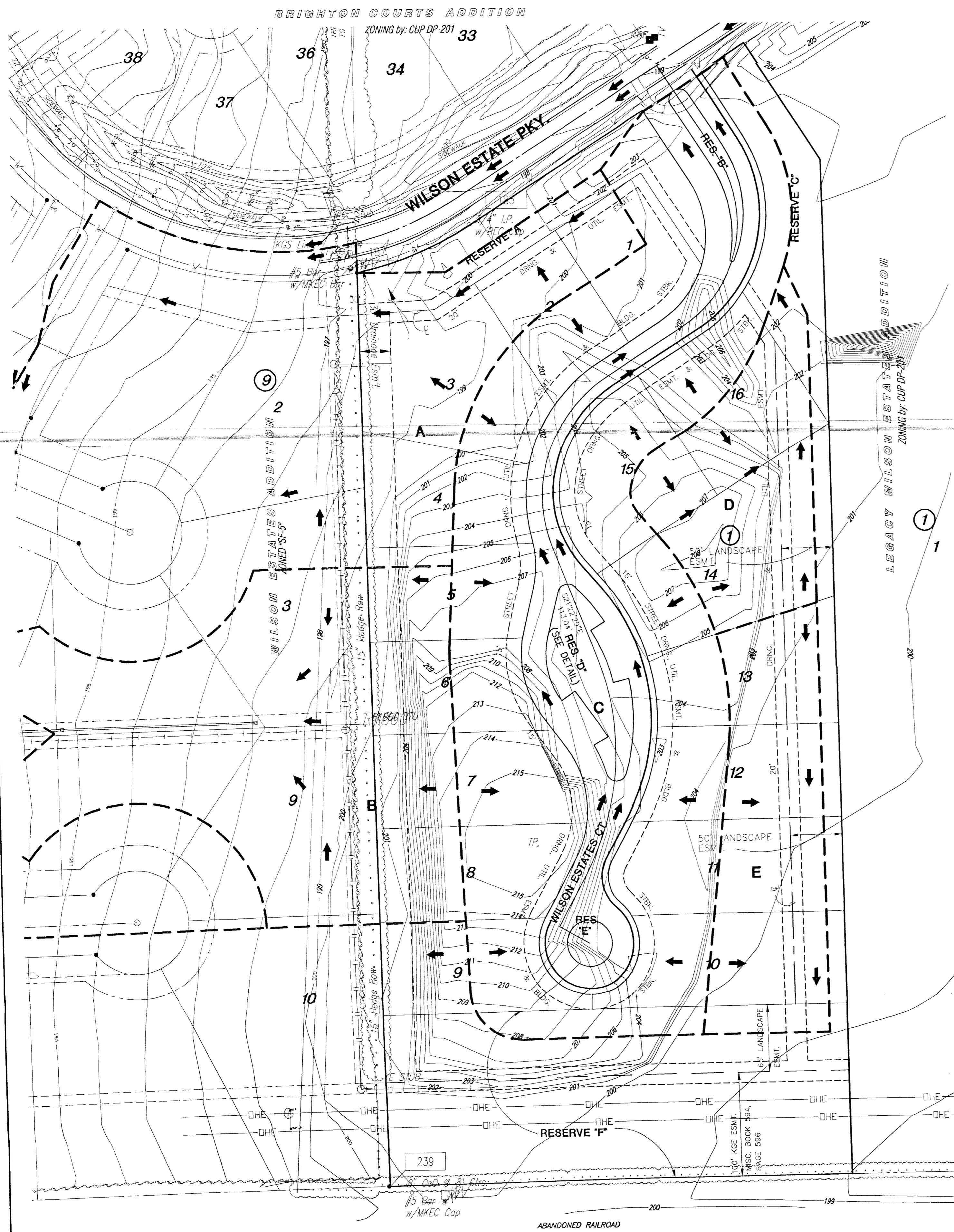
LEGEND

— Found Survey Monument	— Storm Sewer Pipe
— Set $\frac{3}{4}$ " Rebar w/ Mkec Cts 39 Id Cap	— Water Line
— Section Corner Monument	— Sanitary Sewer Line
— Benchmark	— Gas Line
B.S. — Building Setback	— Telephone Line
U.E. — Utility Easement	— Underground Electric Line
(P) — Plotted Measurement	— Overhead Telephone
(M) — Measured	— Overhead Electric
(D) — Deeded	— Fence
(CM) — Calculated From Measured	— Edge Of Trees
— Power Pole And Guy Anchor	— Coniferous Tree & Diameter
— Electric Box	— Deciduous Tree & Diameter
— Fire Hydrant	— Bush
— Water Valve	
— Water Meter	
— Gate Inlet	
— Telephone Riser	
— Inlet	
— Storm Water Manhole	
— Sanitary Sewer Manhole	
— 15' Street Drainage, Utility Easement, and Building Setback	

PLAT LOCATION



VICINITY MAP

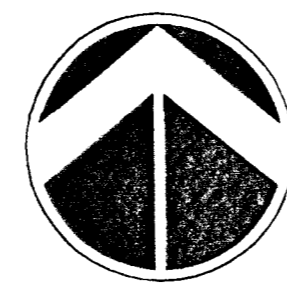


NOTES

- ZONING:
Existing / Proposed: CUP DP-260
- PLAT AREA: 10.38 acres
- SURVEY DATE: March, 2002
- EXISTING USE: Vacant Lot
- LOT TOTAL: 16
- RESERVE DESIGNATION AND USES:
 - Irrigation (ALL)
 - Landscaping (ALL)
 - Berming (A, B, C, D, E, F)
 - Monuments (A, B, C, D)
 - Open Space (A, B, C, D, E, F)
 - Drainage (A, C, F)
 - Utilities (A, B, C, D, F)
- This plat conforms to CUP DP-260.

BENCHMARK

BM#1 — Chiseled square on the South end of the East headwall of a RCB, 101' South and 20' East of the Southernmost corner of Lot 27, Block 1, Wilson Farms Third Addition.
Elevation = 189.38 City Datum
1376.78 NGVD



SCALE: 1"=60'
0 60 120

DRAINAGE AND UTILITY PLAN WILSON FARMS FOURTH ADDITION

Owners/Developer: WILSON RESIDENTIAL COMPANY L.L.C., 8100 E. 22ND ST. NORTH, BLDG. 1000, WICHITA, KS 67226 316-684-2968

DATE: May, 2003

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