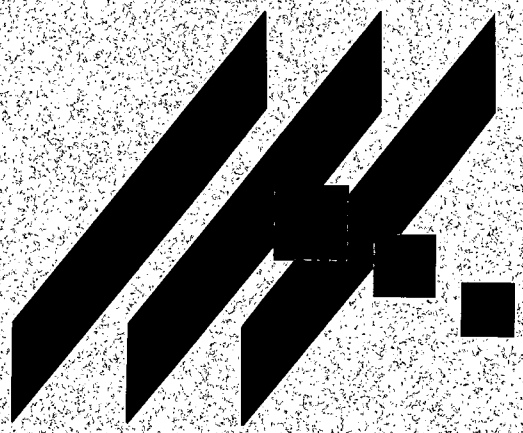
MKEC ENGINEERING CONSULTANTS, INC



DRAINAGE REPORT

FOR

NORTH RIDGE VILLAGE ADDITION
Wichita, Sedgwick County, Kansas

November 2004

411 N WEBB ROAD • WICHITA KS 67206 • 316 684 9600 • FAX 316 684 5100

Drainage Report for North Ridge Village
Wichita, Sedgwick County, Kansas

Location

The subject property is in the city of Wichita, Sedgwick County, Kansas. The development is at the southwest corner of K-96 and Ridge Road in the North ½ of the Southeast Quarter of Section 28, Township 26 South, Range 1 West. The entire tract is approximately 56 acres. The Property is rectangular in shape, minus an area in the northeast corner taken as right-of-way for the K-96 off-ramp. The east to west dimension is approximately 2600 feet and the north to south is approximately 990 feet, both measured at their widest point. The site is shown on the Valley Center, Kansas Quadrangle, located in Appendix A.

Soils

According to the NRCS (SCS) Sedgwick County Soil Survey (Appendix B) soils on the site are mostly sandy loam. Table 1 shows the soil types found on the site. The Hydraulic Soil Group (HSG) used in runoff calculations is "C".

Table 1. Soil types.

Soil Type	Map Unit Designation	Typical Slopes	Hydrologic Soil Group	Typical Distance below Grade to High Ground Water Table
Waldeck Sandy Loam	Wa	Nearly level	C	2' – 6'
Leosho Loam	La	Nearly level	C	2' – 6'
Pratt Loamy fine sand	Pc	1% - 5%	A	> 6'
Plevna fine sandy loam	Pb	Nearly level	D	0' – 4'
Farnum Loam	Fc	0 – 1%	B	> 6'

Pre-Project Conditions

Pre-Project Development

The site is currently divided into a 30-acre tract in the north and a 20-acre tract in the south. Both tracts have residential houses and out buildings. The western one-third harbors fairly dense, wooded vegetation and several apparent wetland areas. Undeveloped grasslands cover the eastern two-thirds of the site.

Pre-Project Landform and Slope

This site is flat, especially the eastern two-thirds targeted for development. This portion of the site generally drains from northeast to southwest. There is at most a 1' change in elevation between these two areas of the site. Portions of the northwest corner draining to the west and a portion of the northeast corner draining east toward Ridge Road.

Pre-Project Drainage Conditions

This property is within the floodplain of Big Slough and Little Slough Creeks. Little Slough enters the site from the north after passing through bridges underneath K-96 and flows due south. Big Slough also enters from the north and meanders on and off the site. The confluence of these creeks occurs near the southwest corner of the site. After combining, the creeks exit the site to the south.

Nearly the entire site is in Zone A – areas of 1% annual chance flood. A small portion of the site near the east edge of the site is in Zone B – area of 0.2% annual chance flood. A small portion of the site along the far east edge of the property is Zone C – area of minimal flooding. The east third of the site is in the FEMA designated floodway. (FIRM Panel 125, Sedgwick County, Kansas, June 3, 1986 Sedgwick County, Kansas) (shown in Appendix C).

Pre-Project Runoff Characteristics

The site and the Little Slough were modeled with Hydraflow Hydrographs by Intelisolve. Computer output is shown in Appendix D. In the model, the North Ridge Village site is modeled using pre-project conditions. The curve number for North Ridge Village was chosen to represent undeveloped land. Time of Concentration (T_c) for the basin was calculated using the FAA method, Appendix E. The runoff hydrograph for Little Slough was modeled using the drainage area of 6.2 square miles shown in the FEMA Flood Insurance Study (FIS). The curve number and time of concentration were chosen to closely approximate the peak discharges given in the FIS report. Pre-Project Runoff is shown in Table 2.

Table 2. Pre-Project runoff.

	2-Year	5-Year	10-Year	50-Year	100-Year
Little Slough from FIS	n/a	n/a	650	960	1080
Little Slough	318.6	496.3	618.2	955.5	1086.6
North Ridge Village Addition	9.4	17.0	22.5	38.1	44.3
Little Slough and North Ridge Village	318.8	496.3	618.8	956.6	1087.9

Post-Project Conditions

Post-Project Development
This site will develop as commercial/medical lots. The site will include office buildings, retail centers, a hotel, paved streets and parking. An east to west boulevard intersecting Ridge Road will provide the primary access to the site.

Post-Project Landform and Slope
Proposed slopes are expected to range from 0.5% to 2.0%. The development will occur outside the floodway, thus limiting this activity to the eastern two-thirds (approx. 38 acres). Development of this property will require fill to elevate it out of the 100-year floodplain.

Proposed Stormwater sewer and swales will convey runoff from to the west. The drainage and utility plan, Appendix F, shows the proposed utilities and detention. The Lot Grading Plan, Appendix G, shows proposed grades.

Post-Project Runoff Characteristics
The Hydraflow Hydrographs model, Appendix D, also includes modeling showing post-project conditions for the North Ridge Village Site. The SCS curve number for the site was increased to represent the proposed development. The Time of Concentration was decreased due to the development, Appendix E. Table 3 shows proposed runoff for the site and Little Slough.

Table 3. Post-Project runoff.

	2-Year	5-Year	10-Year	50-Year	100-Year
Little Slough from FIS	n/a	n/a	650	960	1080
Little Slough	318.6	496.3	618.2	955.5	1086.6
North Ridge Village Addition	39.7	57.4	69.1	100.4	112.2
Little Slough and North Ridge Village	318.6	495.9	618.3	955.9	1087.1

The site was divided into the watersheds shown on the drainage and utility plan, Appendix F. Pipes on the site were analyzed using the rational method. The spreadsheet in Appendix H shows pipe sizing calculations.

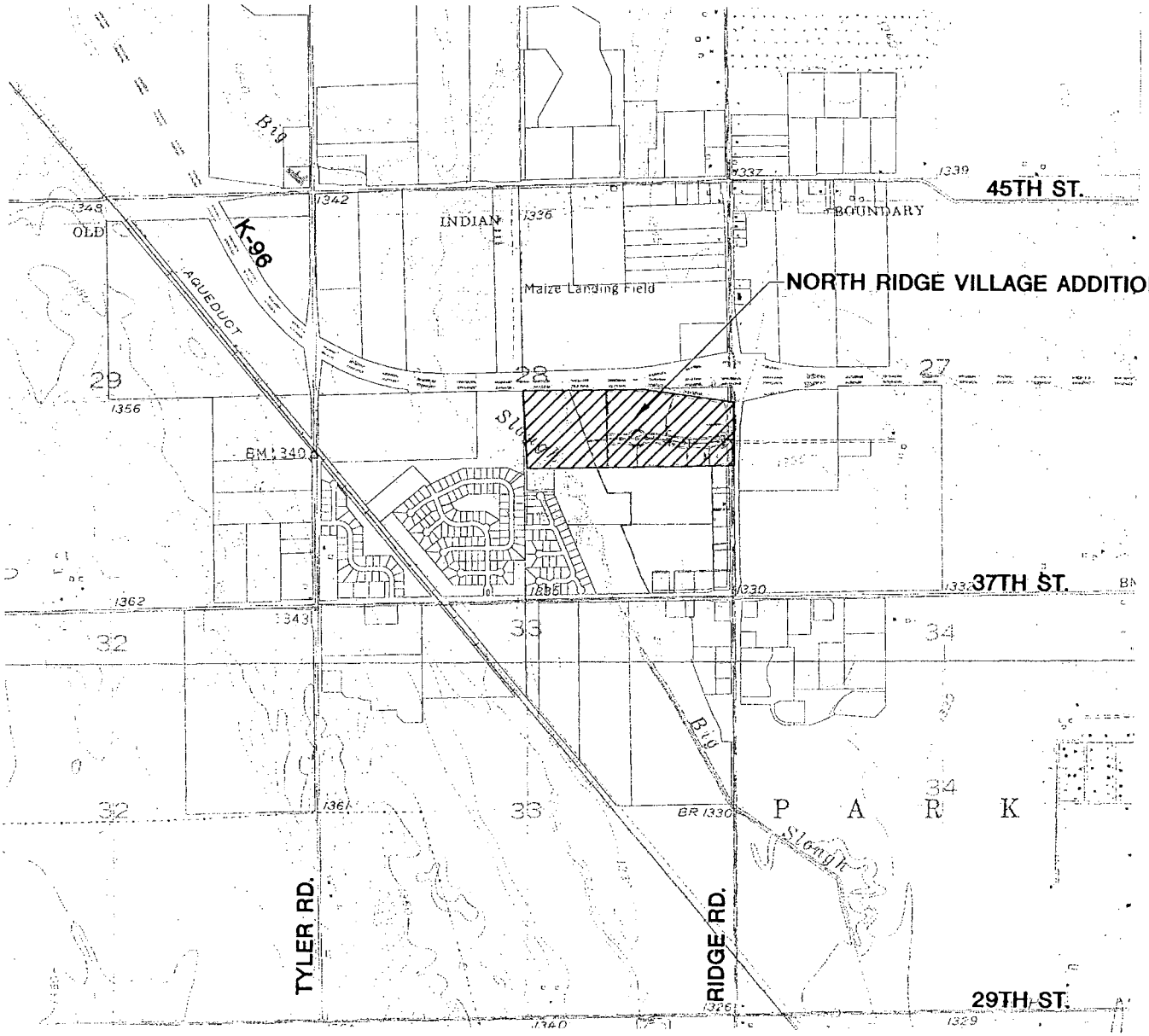
Summary

The North Ridge Village Addition will develop as commercial and medical offices. Runoff from the North Ridge Village site will increase due to this development. The site drains directly into the Little Slough and converges with the Big Slough. The time to peak of the creeks is much greater than the time to peak from the site. Runoff from this site will pass through the creeks before the peak flow through the creeks occurs. Due to the proximity of the site to the Big Slough and Little Slough Creeks, the site will have a

negligible impact downstream. In the 2-year design event, peak flow through Little Slough will remain essentially unchanged with 318.8 cfs under pre-project conditions and 318.6 cfs under post project conditions. In the 100-year design event runoff remains nearly unchanged with 1087.9 cfs under pre-project conditions and 1087.1 under post-project conditions. Increased runoff from this site will not increase flow through Little Slough and Big Slough. Detention is not recommended for this site. Providing detention on this site could increase flows through Little Slough by delaying the time and releasing runoff at a time when the flow through Little Slough is greater.

Appendix A

Quadrangle Map



SCALE 1:24 000

1 0 1 MILE

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

1 .5 0 1 KILOMETER

CONTOUR INTERVAL 5 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929

N

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

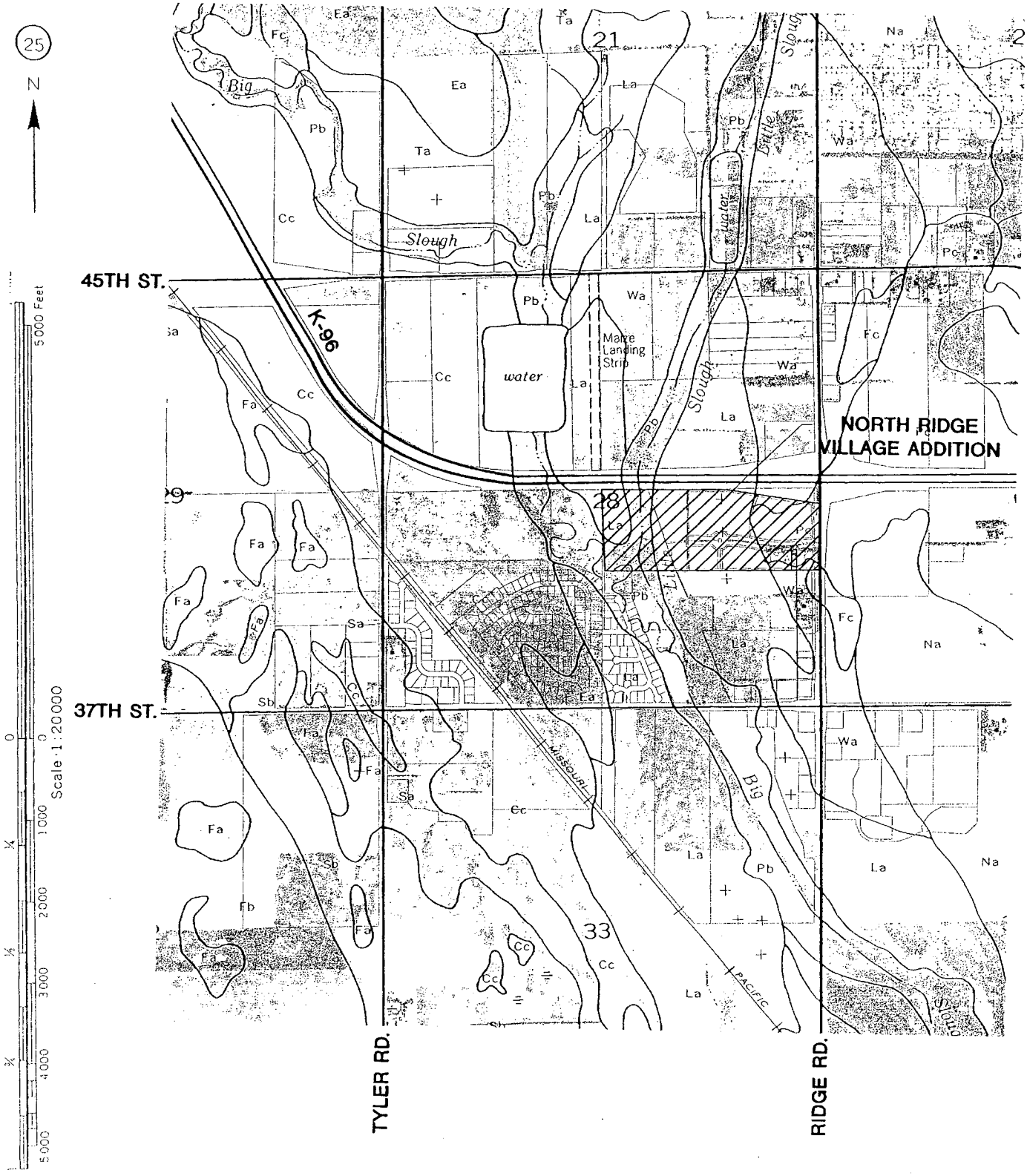
NORTH RIDGE VILLAGE ADDITION
PROJECT NAME

USGS GEOLOGICAL SURVEY
WICHITA WEST, KANSAS QUANRANGLE
SHEET TITLE

KLA	KWS	GJA
DESIGN BY:	DRAWN BY:	CHECKED BY:
NOVEMBER 2004	04394	1 / 1
DATE	JOB NO.	SHEET/OF

Appendix B

Soil Survey



MKEC ENGINEERING CONSULTANTS
411 N. WEBB ROAD
WICHITA, KS. 67206
316 - 684 - 0600

NORTH RIDGE VILLAGE ADDITION
PROJECT NAME

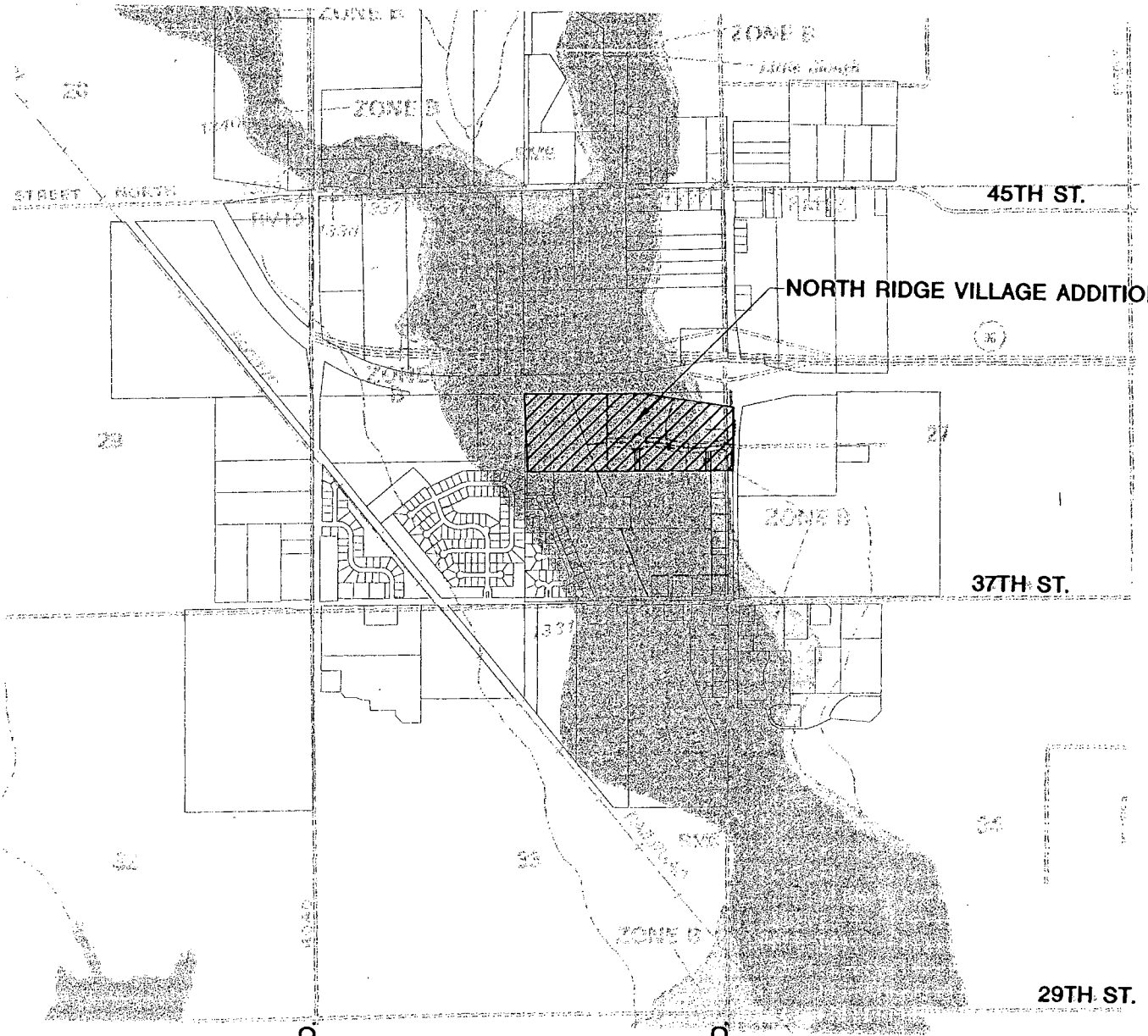
SOIL SURVEY
SEDGWICK COUNTY, KANSAS
SHEET TITLE

KLA	KWS	GJA
DESIGN BY:	DRAWN BY:	CHECKED BY:

NOVEMBER 2004	04394	1 / 1
DATE	JOB NO.	SHEET/OF

Appendix C

FIRM & FBFM



NATIONAL FLOOD INSURANCE PROGRAM

FIRM
FLOOD INSURANCE RATE MAP

SEDGWICK, COUNTY, KANSAS
(UNINCORPORATED AREAS)

PANEL 125 OF 300

COMMUNITY-PANEL NUMBER
200321 0125 A

EFFECTIVE DATE:
JUNE 3, 1986

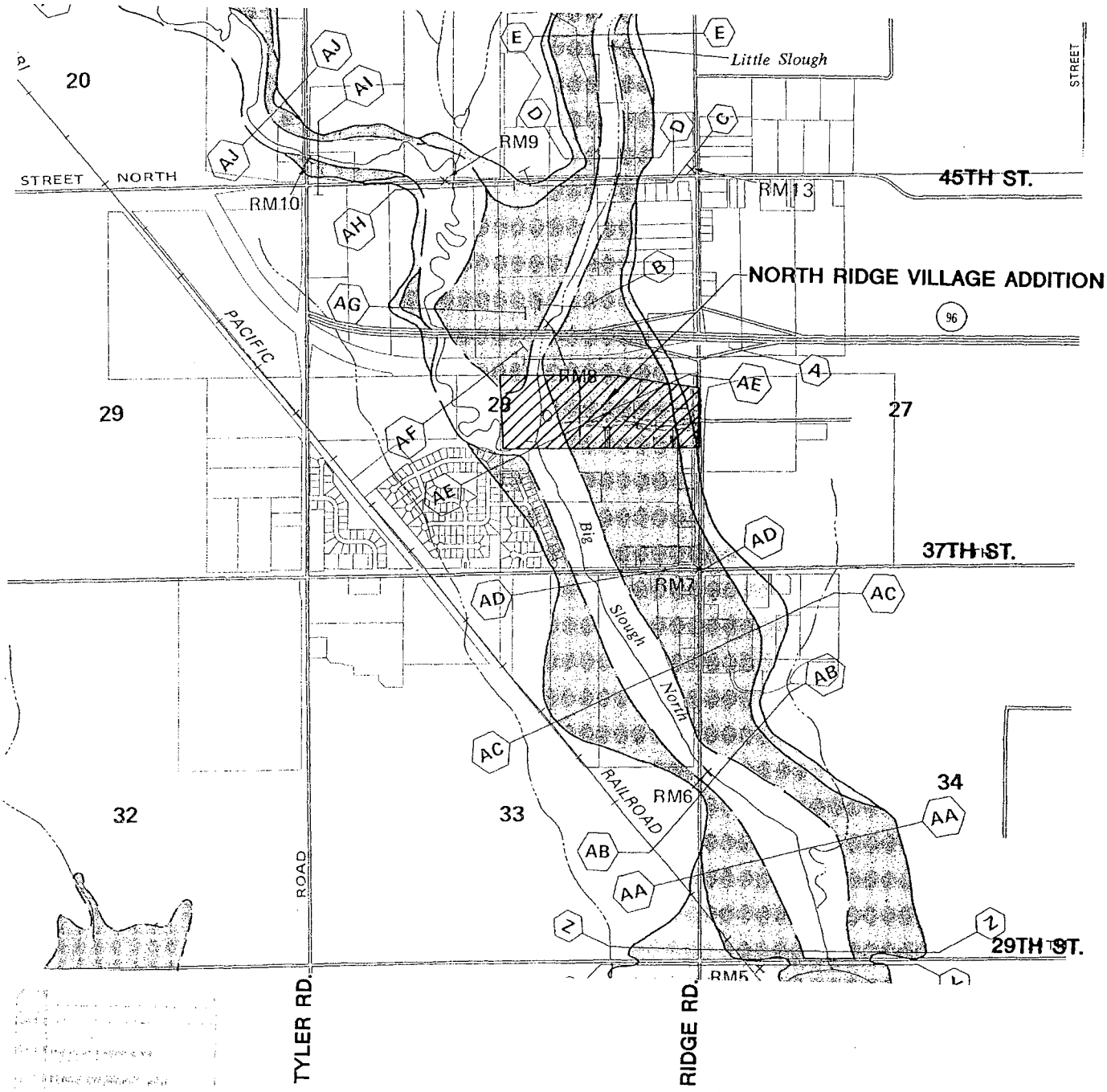
Federal Emergency Management Agency

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

NORTH RIDGE VILLAGE ADDITION
PROJECT NAME

FIRM MAP
SHEET TITLE

KLA	KWS	GJA
DESIGN BY:	DRAWN BY:	CHECKED BY:
NOVEMBER 2004	04394	1 / 1
DATE	JOB NO.	SHEET/OF



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NORTH RIDGE VILLAGE ADDITION
PROJECT NAME

FLOOD BOUNDARY AND FLOODWAY MAP
SHEET TITLE

KLA	KWS	GJA
DESIGN BY:	DRAWN BY:	CHECKED BY:
NOVEMBER 2004	04394	1 / 1
DATE	JOB NO.	SHEET/OF

Appendix D

Hydraflow Hydrographs Output

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	-------	-------	318.57	-------	495.87	618.15	-------	955.49	1086.60	Little Slough
2	SCS Runoff	-------	-------	9.37	-------	17.01	22.50	-------	38.09	44.26	North Ridge - Pre-Project
3	Combine	1, 2	-------	318.76	-------	496.29	618.75	-------	956.58	1087.93	Little Slough - Pre-Project
4	SCS Runoff	-------	-------	39.65	-------	57.39	69.12	-------	100.37	112.16	North Ridge - Post-Project
5	Combine	1, 4	-------	318.57	-------	495.91	618.27	-------	955.88	1087.14	Little Slough - Post-Project

Proj. file: North Ridge.gpw

Run date: 11-24-2004

Hydrograph Summary Report

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Maximum storage (cuft)	Hydrograph description
1	SCS Runoff	318.57	6	1554	23,364,010	----	------	------	Little Slough
2	SCS Runoff	9.37	6	786	114,460	----	------	------	North Ridge - Pre-Project
3	Combine	318.76	6	1548	23,478,470	1, 2	------	------	Little Slough - Pre-Project
4	SCS Runoff	39.65	6	756	291,101	----	------	------	North Ridge - Post-Project
5	Combine	318.57	6	1554	23,655,110	1, 4	------	------	Little Slough - Post-Project

Hydrograph Summary Report

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Maximum storage (cuft)	Hydrograph description
1	SCS Runoff	495.87	6	1536	36,104,720	----	------	------	Little Slough
2	SCS Runoff	17.01	6	786	194,129	----	------	------	North Ridge - Pre-Project
3	Combine	496.29	6	1536	36,298,850	1, 2	------	------	Little Slough - Pre-Project
4	SCS Runoff	57.39	6	756	423,045	----	------	------	North Ridge - Post-Project
5	Combine	495.91	6	1536	36,527,760	1, 4	------	------	Little Slough - Post-Project

Hydrograph Summary Report

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Maximum storage (cuft)	Hydrograph description
1	SCS Runoff	618.15	6	1530	44,868,810	----	------	------	Little Slough
2	SCS Runoff	22.50	6	786	251,260	----	------	------	North Ridge - Pre-Project
3	Combine	618.75	6	1524	45,120,060	1, 2	------	------	Little Slough - Pre-Project
4	SCS Runoff	69.12	6	750	511,513	----	------	------	North Ridge - Post-Project
5	Combine	618.27	6	1524	45,380,320	1, 4	------	------	Little Slough - Post-Project

Proj. file: North Ridge.gpw | Return Period: 10 yr | Run date: 11-24-2004

Hydrograph Summary Report

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Maximum storage (cuft)	Hydrograph description
1	SCS Runoff	955.49	6	1518	69,014,560	----	------	------	Little Slough
2	SCS Runoff	38.09	6	786	414,664	----	------	------	North Ridge - Pre-Project
3	Combine	956.58	6	1518	69,429,230	1, 2	------	------	Little Slough - Pre-Project
4	SCS Runoff	100.37	6	750	749,931	----	------	------	North Ridge - Post-Project
5	Combine	955.88	6	1512	69,764,490	1, 4	------	------	Little Slough - Post-Project

Hydrograph Summary Report

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Maximum storage (cuft)	Hydrograph description
1	SCS Runoff	1086.60	6	1518	78,399,770	----	------	------	Little Slough
2	SCS Runoff	44.26	6	786	479,811	----	------	------	North Ridge - Pre-Project
3	Combine	1087.93	6	1512	78,879,580	1, 2	------	------	Little Slough - Pre-Project
4	SCS Runoff	112.16	6	750	841,259	----	------	------	North Ridge - Post-Project
5	Combine	1087.14	6	1512	79,241,020	1, 4	------	------	Little Slough - Post-Project

Proj. file: North Ridge.gpw | Return Period: 100 yr | Run date: 11-24-2004

Hydrograph Report

Hydraflow Hydrographs by Intelisolve

Hyd. No. 1

Little Slough

Hydrograph type	= SCS Runoff	Peak discharge	= 1086.60 cfs
Storm frequency	= 100 yrs	Time interval	= 6 min
Drainage area	= 3968.00 ac	Curve number	= 80
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 1320 min
Total precip.	= 7.80 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

Hydrograph Volume = 78,399,770 cuft

Hydrograph Discharge Table

Time (hrs)	Outflow cfs	Time (hrs)	Outflow cfs	Time (hrs)	Outflow cfs	Time (hrs)	Outflow cfs
14.70	219.99	18.10	499.51	21.50	802.52	24.90	1084.58
14.80	227.68	18.20	508.20	21.60	811.53	25.00	1085.60
14.90	235.42	18.30	516.90	21.70	820.54	25.10	1086.24
15.00	243.20	18.40	525.63	21.80	829.54	25.20	1086.56
15.10	251.01	18.50	534.37	21.90	838.53	25.30	1086.60 <<
15.20	258.86	18.60	543.14	22.00	847.51	25.40	1086.39
15.30	266.75	18.70	551.92	22.10	856.48	25.50	1085.99
15.40	274.67	18.80	560.72	22.20	865.44	25.60	1085.43
15.50	282.62	18.90	569.54	22.30	874.38	25.70	1084.70
15.60	290.61	19.00	578.38	22.40	883.31	25.80	1083.83
15.70	298.63	19.10	587.23	22.50	892.23	25.90	1082.82
15.80	306.69	19.20	596.09	22.60	901.14	26.00	1081.69
15.90	314.77	19.30	604.97	22.70	910.02	26.10	1080.43
16.00	322.88	19.40	613.87	22.80	918.89	26.20	1079.06
16.10	331.02	19.50	622.78	22.90	927.73	26.30	1077.58
16.20	339.20	19.60	631.70	23.00	936.55	26.40	1076.00
16.30	347.39	19.70	640.63	23.10	945.34	26.50	1074.32
16.40	355.62	19.80	649.57	23.20	954.10	26.60	1072.55
16.50	363.88	19.90	658.52	23.30	962.82	26.70	1070.70
16.60	372.16	20.00	667.48	23.40	971.50	26.80	1068.75
16.70	380.47	20.10	676.45	23.50	980.15	26.90	1066.73
16.80	388.81	20.20	685.42	23.60	988.74	27.00	1064.63
16.90	397.17	20.30	694.40	23.70	997.28	27.10	1062.45
17.00	405.57	20.40	703.39	23.80	1005.76	27.20	1060.21
17.10	413.98	20.50	712.39	23.90	1014.17	27.30	1057.89
17.20	422.42	20.60	721.39	24.00	1022.51	27.40	1055.50
17.30	430.89	20.70	730.39	24.10	1030.77	27.50	1053.04
17.40	439.39	20.80	739.40	24.20	1038.91	27.60	1050.52
17.50	447.90	20.90	748.42	24.30	1046.92	27.70	1047.93
17.60	456.45	21.00	757.43	24.40	1054.78	27.80	1045.27
17.70	465.01	21.10	766.45	24.50	1062.48	27.90	1042.56
17.80	473.60	21.20	775.47	24.60	1069.82	28.00	1039.78
17.90	482.22	21.30	784.49	24.70	1076.42	28.10	1036.94
18.00	490.85	21.40	793.51	24.80	1081.75	28.20	1034.04

Continues on next page...

Hydrograph Discharge Table

Time (hrs)	Outflow cfs)	Time (hrs)	Outflow cfs)	Time (hrs)	Outflow cfs)	Time (hrs)	Outflow cfs)
28.30	1031.09	33.40	823.83	38.50	543.92	43.60	250.51
28.40	1028.07	33.50	818.90	38.60	538.14	43.70	244.87
28.50	1025.01	33.60	813.95	38.70	532.36	43.80	239.24
28.60	1021.89	33.70	808.97	38.80	526.57	43.90	233.61
28.70	1018.72	33.80	803.97	38.90	520.79	44.00	228.00
28.80	1015.50	33.90	798.94	39.00	515.00	44.10	222.40
28.90	1012.23	34.00	793.88	39.10	509.22		
29.00	1008.91	34.10	788.80	39.20	503.43		
29.10	1005.54	34.20	783.69	39.30	497.65	*...End*	
29.20	1002.13	34.30	778.56	39.40	491.86		
29.30	998.68	34.40	773.40	39.50	486.08		
29.40	995.18	34.50	768.22	39.60	480.30		
29.50	991.63	34.60	763.01	39.70	474.51		
29.60	988.04	34.70	757.78	39.80	468.73		
29.70	984.41	34.80	752.52	39.90	462.94		
29.80	980.73	34.90	747.23	40.00	457.16		
29.90	977.01	35.00	741.92	40.10	451.38		
30.00	973.25	35.10	736.59	40.20	445.59		
30.10	969.44	35.20	731.23	40.30	439.81		
30.20	965.60	35.30	725.85	40.40	434.03		
30.30	961.71	35.40	720.44	40.50	428.25		
30.40	957.79	35.50	715.01	40.60	422.47		
30.50	953.82	35.60	709.56	40.70	416.69		
30.60	949.82	35.70	704.08	40.80	410.91		
30.70	945.77	35.80	698.57	40.90	405.14		
30.80	941.69	35.90	693.04	41.00	399.37		
30.90	937.57	36.00	687.49	41.10	393.59		
31.00	933.42	36.10	681.92	41.20	387.83		
31.10	929.22	36.20	676.32	41.30	382.06		
31.20	924.99	36.30	670.70	41.40	376.29		
31.30	920.73	36.40	665.05	41.50	370.53		
31.40	916.43	36.50	659.38	41.60	364.77		
31.50	912.10	36.60	653.69	41.70	359.02		
31.60	907.73	36.70	647.97	41.80	353.26		
31.70	903.32	36.80	642.23	41.90	347.52		
31.80	898.89	36.90	636.47	42.00	341.77		
31.90	894.42	37.00	630.69	42.10	336.03		
32.00	889.92	37.10	624.90	42.20	330.29		
32.10	885.39	37.20	619.12	42.30	324.56		
32.20	880.83	37.30	613.34	42.40	318.83		
32.30	876.23	37.40	607.55	42.50	313.10		
32.40	871.61	37.50	601.77	42.60	307.38		
32.50	866.96	37.60	595.98	42.70	301.67		
32.60	862.28	37.70	590.20	42.80	295.95		
32.70	857.56	37.80	584.41	42.90	290.25		
32.80	852.83	37.90	578.63	43.00	284.55		
32.90	848.06	38.00	572.85	43.10	278.86		
33.00	843.27	38.10	567.06	43.20	273.17		
33.10	838.45	38.20	561.28	43.30	267.50		
33.20	833.60	38.30	555.49	43.40	261.83		
33.30	828.73	38.40	549.71	43.50	256.17		

Hydrograph Report

Hydraflow Hydrographs by Intelisolve

Hyd. No. 2

North Ridge - Pre-Project

Hydrograph type	= SCS Runoff	Peak discharge	= 44.26 cfs
Storm frequency	= 100 yrs	Time interval	= 6 min
Drainage area	= 30.00 ac	Curve number	= 71
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 119 min
Total precip.	= 7.80 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

Hydrograph Volume = 479,811 cuft

Hydrograph Discharge Table

Time (hrs)	Outflow (cfs)
12.00	10.83
12.10	14.11
12.20	17.50
12.30	20.98
12.40	24.53
12.50	28.09
12.60	31.66
12.70	35.21
12.80	38.62
12.90	41.62
13.00	43.81
13.10	44.26 <<
13.20	43.37
13.30	42.27
13.40	40.96
13.50	39.49
13.60	37.89
13.70	36.20
13.80	34.42
13.90	32.57
14.00	30.66
14.10	28.70
14.20	26.69
14.30	24.63
14.40	22.55
14.50	20.44
14.60	18.32
14.70	16.19
14.80	14.10
14.90	12.15
15.00	10.49
15.10	9.48
15.20	8.96

...End

Hydrograph Report

Hydraflow Hydrographs by Intelisolve

Hyd. No. 3

Little Slough - Pre-Project

Hydrograph type	= Combine	Peak discharge	= 1087.93 cfs
Storm frequency	= 100 yrs	Time interval	= 6 min
Inflow hyds.	= 1, 2		

Hydrograph Volume = 78,879,580 cuft

Hydrograph Discharge Table

Time (hrs)	Hyd. 1 + (cfs)	Hyd. 2 = (cfs)	Outflow (cfs)
14.40	197.14	22.55	219.69
14.50	204.71	20.44	225.15
14.60	212.33	18.32	230.65
14.70	219.99	16.19	236.17
14.80	227.68	14.10	241.78
14.90	235.42	12.15	247.57
15.00	243.20	10.49	253.69
15.10	251.01	9.48	260.49
15.20	258.86	8.96	267.82
15.30	266.75	8.52	275.27
15.40	274.67	8.14	282.81
15.50	282.62	7.82	290.44
15.60	290.61	7.53	298.15
15.70	298.63	7.28	305.91
15.80	306.69	7.05	313.73
15.90	314.77	6.83	321.60
16.00	322.88	6.63	329.51
16.10	331.02	6.45	337.47
16.20	339.20	6.27	345.47
16.30	347.39	6.11	353.50
16.40	355.62	5.95	361.58
16.50	363.88	5.81	369.69
16.60	372.16	5.67	377.83
16.70	380.47	5.54	386.01
16.80	388.81	5.42	394.23
16.90	397.17	5.30	402.47
17.00	405.57	5.19	410.75
17.10	413.98	5.08	419.06
17.20	422.42	4.98	427.41
17.30	430.89	4.89	435.78
17.40	439.39	4.80	444.18
17.50	447.90	4.71	452.61
17.60	456.45	4.63	461.07
17.70	465.01	4.55	469.56
17.80	473.60	4.48	478.08
17.90	482.22	4.41	486.62
18.00	490.85	4.34	495.19
18.10	499.51	4.28	503.79

Continues on next page...

Hydrograph Discharge Table

Time (hrs)	Hyd. 1 + (cfs)	Hyd. 2 = (cfs)	Outflow (cfs)
18.20	508.20	4.22	512.41
18.30	516.90	4.16	521.06
18.40	525.63	4.10	529.73
18.50	534.37	4.05	538.42
18.60	543.14	4.00	547.13
18.70	551.92	3.94	555.86
18.80	560.72	3.89	564.62
18.90	569.54	3.85	573.39
19.00	578.38	3.80	582.17
19.10	587.23	3.75	590.98
19.20	596.09	3.70	599.79
19.30	604.97	3.65	608.63
19.40	613.87	3.60	617.47
19.50	622.78	3.56	626.33
19.60	631.70	3.51	635.20
19.70	640.63	3.46	644.09
19.80	649.57	3.41	652.98
19.90	658.52	3.36	661.88
20.00	667.48	3.31	670.79
20.10	676.45	3.27	679.71
20.20	685.42	3.22	688.64
20.30	694.40	3.17	697.57
20.40	703.39	3.12	706.52
20.50	712.39	3.08	715.46
20.60	721.39	3.03	724.42
20.70	730.39	2.99	733.38
20.80	739.40	2.94	742.35
20.90	748.42	2.90	751.32
21.00	757.43	2.86	760.30
21.10	766.45	2.83	769.28
21.20	775.47	2.79	778.26
21.30	784.49	2.76	787.25
21.40	793.51	2.73	796.24
21.50	802.52	2.71	805.23
21.60	811.53	2.68	814.21
21.70	820.54	2.66	823.20
21.80	829.54	2.64	832.17
21.90	838.53	2.62	841.14
22.00	847.51	2.60	850.11
22.10	856.48	2.58	859.06
22.20	865.44	2.56	868.00
22.30	874.38	2.55	876.93
22.40	883.31	2.54	885.85
22.50	892.23	2.52	894.76
22.60	901.14	2.51	903.65
22.70	910.02	2.50	912.52
22.80	918.89	2.49	921.38
22.90	927.73	2.48	930.21
23.00	936.55	2.47	939.02
23.10	945.34	2.46	947.80
23.20	954.10	2.45	956.55

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Hydrograph Discharge Table

Time (hrs)	Hyd. 1 + (cfs)	Hyd. 2 = (cfs)	Outflow (cfs)
23.30	962.82	2.44	965.26
23.40	971.50	2.43	973.94
23.50	980.15	2.42	982.57
23.60	988.74	2.42	991.16
23.70	997.28	2.41	999.69
23.80	1005.76	2.40	1008.16
23.90	1014.17	2.39	1016.56
24.00	1022.51	2.38	1024.89
24.10	1030.77	2.36	1033.12
24.20	1038.91	2.32	1041.23
24.30	1046.92	2.28	1049.20
24.40	1054.78	2.22	1057.00
24.50	1062.48	2.16	1064.64
24.60	1069.82	2.08	1071.90
24.70	1076.42	1.99	1078.41
24.80	1081.75	1.89	1083.63
24.90	1084.58	1.77	1086.36
25.00	1085.60	1.65	1087.25
25.10	1086.24	1.51	1087.76
25.20	1086.56	1.37	1087.93 <<
25.30	1086.60 <<	1.23	1087.83
25.40	1086.39	1.10	1087.49
25.50	1085.99	0.98	1086.97
25.60	1085.43	0.86	1086.29
25.70	1084.70	0.75	1085.45
25.80	1083.83	0.65	1084.48
25.90	1082.82	0.56	1083.38
26.00	1081.69	0.47	1082.16
26.10	1080.43	0.39	1080.82
26.20	1079.06	0.32	1079.38
26.30	1077.58	0.26	1077.84
26.40	1076.00	0.20	1076.20
26.50	1074.32	0.15	1074.47
26.60	1072.55	0.11	1072.66
26.70	1070.70	0.07	1070.77
26.80	1068.75	0.04	1068.79
26.90	1066.73	0.02	1066.75
27.00	1064.63	0.01	1064.64
27.10	1062.45	0.00	1062.45
27.20	1060.21	0.00	1060.21
27.30	1057.89	0.00	1057.89
27.40	1055.50	0.00	1055.50
27.50	1053.04	0.00	1053.04
27.60	1050.52	0.00	1050.52
27.70	1047.93	0.00	1047.93
27.80	1045.27	0.00	1045.27
27.90	1042.56	0.00	1042.56
28.00	1039.78	0.00	1039.78
28.10	1036.94	0.00	1036.94
28.20	1034.04	0.00	1034.04
28.30	1031.09	0.00	1031.09

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Hydrograph Discharge Table

Time (hrs)	Hyd. 1 + (cfs)	Hyd. 2 = (cfs)	Outflow (cfs)
28.40	1028.07	0.00	1028.07
28.50	1025.01	0.00	1025.01
28.60	1021.89	0.00	1021.89
28.70	1018.72	0.00	1018.72
28.80	1015.50	0.00	1015.50
28.90	1012.23	0.00	1012.23
29.00	1008.91	0.00	1008.91
29.10	1005.54	0.00	1005.54
29.20	1002.13	0.00	1002.13
29.30	998.68	0.00	998.68
29.40	995.18	0.00	995.18
29.50	991.63	0.00	991.63
29.60	988.04	0.00	988.04
29.70	984.41	0.00	984.41
29.80	980.73	0.00	980.73
29.90	977.01	0.00	977.01
30.00	973.25	0.00	973.25
30.10	969.44	0.00	969.44
30.20	965.60	0.00	965.60
30.30	961.71	0.00	961.71
30.40	957.79	0.00	957.79
30.50	953.82	0.00	953.82
30.60	949.82	0.00	949.82
30.70	945.77	0.00	945.77
30.80	941.69	0.00	941.69
30.90	937.57	0.00	937.57
31.00	933.42	0.00	933.42
31.10	929.22	0.00	929.22
31.20	924.99	0.00	924.99
31.30	920.73	0.00	920.73
31.40	916.43	0.00	916.43
31.50	912.10	0.00	912.10
31.60	907.73	0.00	907.73
31.70	903.32	0.00	903.32
31.80	898.89	0.00	898.89
31.90	894.42	0.00	894.42
32.00	889.92	0.00	889.92
32.10	885.39	0.00	885.39
32.20	880.83	0.00	880.83
32.30	876.23	0.00	876.23
32.40	871.61	0.00	871.61
32.50	866.96	0.00	866.96
32.60	862.28	0.00	862.28
32.70	857.56	0.00	857.56
32.80	852.83	0.00	852.83
32.90	848.06	0.00	848.06
33.00	843.27	0.00	843.27
33.10	838.45	0.00	838.45
33.20	833.60	0.00	833.60
33.30	828.73	0.00	828.73
33.40	823.83	0.00	823.83

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Hydrograph Discharge Table

Time (hrs)	Hyd. 1 + (cfs)	Hyd. 2 = (cfs)	Outflow (cfs)
33.50	818.90	0.00	818.90
33.60	813.95	0.00	813.95
33.70	808.97	0.00	808.97
33.80	803.97	0.00	803.97
33.90	798.94	0.00	798.94
34.00	793.88	0.00	793.88
34.10	788.80	0.00	788.80
34.20	783.69	0.00	783.69
34.30	778.56	0.00	778.56
34.40	773.40	0.00	773.40
34.50	768.22	0.00	768.22
34.60	763.01	0.00	763.01
34.70	757.78	0.00	757.78
34.80	752.52	0.00	752.52
34.90	747.23	0.00	747.23
35.00	741.92	0.00	741.92
35.10	736.59	0.00	736.59
35.20	731.23	0.00	731.23
35.30	725.85	0.00	725.85
35.40	720.44	0.00	720.44
35.50	715.01	0.00	715.01
35.60	709.56	0.00	709.56
35.70	704.08	0.00	704.08
35.80	698.57	0.00	698.57
35.90	693.04	0.00	693.04
36.00	687.49	0.00	687.49
36.10	681.92	0.00	681.92
36.20	676.32	0.00	676.32
36.30	670.70	0.00	670.70
36.40	665.05	0.00	665.05
36.50	659.38	0.00	659.38
36.60	653.69	0.00	653.69
36.70	647.97	0.00	647.97
36.80	642.23	0.00	642.23
36.90	636.47	0.00	636.47
37.00	630.69	0.00	630.69
37.10	624.90	0.00	624.90
37.20	619.12	0.00	619.12
37.30	613.34	0.00	613.34
37.40	607.55	0.00	607.55
37.50	601.77	0.00	601.77
37.60	595.98	0.00	595.98
37.70	590.20	0.00	590.20
37.80	584.41	0.00	584.41
37.90	578.63	0.00	578.63
38.00	572.85	0.00	572.85
38.10	567.06	0.00	567.06
38.20	561.28	0.00	561.28
38.30	555.49	0.00	555.49
38.40	549.71	0.00	549.71
38.50	543.92	0.00	543.92

Continues on next page...

Hydrograph Discharge Table

Time (hrs)	Hyd. 1 + (cfs)	Hyd. 2 = (cfs)	Outflow (cfs)
38.60	538.14	0.00	538.14
38.70	532.36	0.00	532.36
38.80	526.57	0.00	526.57
38.90	520.79	0.00	520.79
39.00	515.00	0.00	515.00
39.10	509.22	0.00	509.22
39.20	503.43	0.00	503.43
39.30	497.65	0.00	497.65
39.40	491.86	0.00	491.86
39.50	486.08	0.00	486.08
39.60	480.30	0.00	480.30
39.70	474.51	0.00	474.51
39.80	468.73	0.00	468.73
39.90	462.94	0.00	462.94
40.00	457.16	0.00	457.16
40.10	451.38	0.00	451.38
40.20	445.59	0.00	445.59
40.30	439.81	0.00	439.81
40.40	434.03	0.00	434.03
40.50	428.25	0.00	428.25
40.60	422.47	0.00	422.47
40.70	416.69	0.00	416.69
40.80	410.91	0.00	410.91
40.90	405.14	0.00	405.14
41.00	399.37	0.00	399.37
41.10	393.59	0.00	393.59
41.20	387.83	0.00	387.83
41.30	382.06	0.00	382.06
41.40	376.29	0.00	376.29
41.50	370.53	0.00	370.53
41.60	364.77	0.00	364.77
41.70	359.02	0.00	359.02
41.80	353.26	0.00	353.26
41.90	347.52	0.00	347.52
42.00	341.77	0.00	341.77
42.10	336.03	0.00	336.03
42.20	330.29	0.00	330.29
42.30	324.56	0.00	324.56
42.40	318.83	0.00	318.83
42.50	313.10	0.00	313.10
42.60	307.38	0.00	307.38
42.70	301.67	0.00	301.67
42.80	295.95	0.00	295.95
42.90	290.25	0.00	290.25
43.00	284.55	0.00	284.55
43.10	278.86	0.00	278.86
43.20	273.17	0.00	273.17
43.30	267.50	0.00	267.50
43.40	261.83	0.00	261.83
43.50	256.17	0.00	256.17
43.60	250.51	0.00	250.51

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Hydrograph Discharge Table

Time (hrs)	Hyd. 1 + (cfs)	Hyd. 2 = (cfs)	Outflow (cfs)
43.70	244.87	0.00	244.87
43.80	239.24	0.00	239.24
43.90	233.61	0.00	233.61
44.00	228.00	0.00	228.00
44.10	222.40	0.00	222.40

...End

Hydrograph Report

Hydraflow Hydrographs by Intelisolve

Hyd. No. 4

North Ridge - Post-Project

Hydrograph type	= SCS Runoff	Peak discharge	= 112.16 cfs
Storm frequency	= 100 yrs	Time interval	= 6 min
Drainage area	= 36.40 ac	Curve number	= 87
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 61 min
Total precip.	= 7.80 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

Hydrograph Volume = 841,259 cuft

Hydrograph Discharge Table

Time (hrs)	Outflow cfs)
11.80	24.02
11.90	34.88
12.00	49.22
12.10	63.83
12.20	78.58
12.30	92.60
12.40	104.45
12.50	112.16 <<
12.60	111.65
12.70	105.40
12.80	98.34
12.90	90.60
13.00	82.31
13.10	73.64
13.20	64.74
13.30	55.73
13.40	46.65
13.50	37.80
13.60	29.71
13.70	23.09

...End

Hydrograph Report

Hydraflow Hydrographs by Intelisolve

Hyd. No. 5

Little Slough - Post-Project

Hydrograph type	= Combine	Peak discharge	= 1087.14 cfs
Storm frequency	= 100 yrs	Time interval	= 6 min
Inflow hyds.	= 1, 4		

Hydrograph Volume = 79,241,020 cuft

Hydrograph Discharge Table

Time (hrs)	Hyd. 1 + (cfs)	Hyd. 4 = (cfs)	Outflow (cfs)
14.60	212.33	11.97	224.29
14.70	219.99	11.48	231.47
14.80	227.68	11.06	238.75
14.90	235.42	10.68	246.11
15.00	243.20	10.35	253.54
15.10	251.01	10.04	261.05
15.20	258.86	9.77	268.63
15.30	266.75	9.52	276.26
15.40	274.67	9.28	283.95
15.50	282.62	9.06	291.69
15.60	290.61	8.85	299.47
15.70	298.63	8.65	307.29
15.80	306.69	8.46	315.14
15.90	314.77	8.26	323.03
16.00	322.88	8.07	330.95
16.10	331.02	7.87	338.90
16.20	339.20	7.68	346.88
16.30	347.39	7.50	354.89
16.40	355.62	7.31	362.94
16.50	363.88	7.14	371.02
16.60	372.16	6.98	379.14
16.70	380.47	6.83	387.31
16.80	388.81	6.70	395.51
16.90	397.17	6.57	403.75
17.00	405.57	6.46	412.02
17.10	413.98	6.35	420.33
17.20	422.42	6.26	428.68
17.30	430.89	6.17	437.06
17.40	439.39	6.08	445.47
17.50	447.90	6.00	453.91
17.60	456.45	5.93	462.38
17.70	465.01	5.86	470.87
17.80	473.60	5.79	479.39
17.90	482.22	5.72	487.93
18.00	490.85	5.65	496.50
18.10	499.51	5.58	505.09
18.20	508.20	5.51	513.71
18.30	516.90	5.44	522.34

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Hydrograph Discharge Table

Time (hrs)	Hyd. 1 + (cfs)	Hyd. 4 = (cfs)	Outflow (cfs)
18.40	525.63	5.37	530.99
18.50	534.37	5.30	539.67
18.60	543.14	5.23	548.37
18.70	551.92	5.16	557.08
18.80	560.72	5.09	565.81
18.90	569.54	5.02	574.56
19.00	578.38	4.95	583.33
19.10	587.23	4.88	592.11
19.20	596.09	4.81	600.90
19.30	604.97	4.74	609.71
19.40	613.87	4.67	618.54
19.50	622.78	4.60	627.38
19.60	631.70	4.53	636.23
19.70	640.63	4.46	645.09
19.80	649.57	4.39	653.96
19.90	658.52	4.32	662.84
20.00	667.48	4.25	671.73
20.10	676.45	4.18	680.62
20.20	685.42	4.11	689.53
20.30	694.40	4.04	698.45
20.40	703.39	3.98	707.37
20.50	712.39	3.92	716.31
20.60	721.39	3.87	725.25
20.70	730.39	3.82	734.21
20.80	739.40	3.77	743.18
20.90	748.42	3.73	752.15
21.00	757.43	3.70	761.13
21.10	766.45	3.67	770.12
21.20	775.47	3.64	779.11
21.30	784.49	3.62	788.11
21.40	793.51	3.60	797.11
21.50	802.52	3.58	806.10
21.60	811.53	3.57	815.10
21.70	820.54	3.55	824.09
21.80	829.54	3.54	833.08
21.90	838.53	3.52	842.05
22.00	847.51	3.51	851.02
22.10	856.48	3.50	859.97
22.20	865.44	3.48	868.92
22.30	874.38	3.47	877.85
22.40	883.31	3.45	886.77
22.50	892.23	3.44	895.67
22.60	901.14	3.43	904.56
22.70	910.02	3.41	913.43
22.80	918.89	3.40	922.28
22.90	927.73	3.38	931.11
23.00	936.55	3.37	939.92
23.10	945.34	3.36	948.69
23.20	954.10	3.34	957.44
23.30	962.82	3.33	966.15
23.40	971.50	3.31	974.82

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Hydrograph Discharge Table

Time (hrs)	Hyd. 1 + (cfs)	Hyd. 4 = (cfs)	Outflow (cfs)
23.50	980.15	3.30	983.45
23.60	988.74	3.29	992.03
23.70	997.28	3.27	1000.55
23.80	1005.76	3.26	1009.02
23.90	1014.17	3.25	1017.42
24.00	1022.51	3.23	1025.74
24.10	1030.77	3.17	1033.94
24.20	1038.91	3.06	1041.97
24.30	1046.92	2.91	1049.83
24.40	1054.78	2.71	1057.49
24.50	1062.48	2.46	1064.95
24.60	1069.82	2.17	1071.99
24.70	1076.42	1.84	1078.26
24.80	1081.75	1.53	1083.27
24.90	1084.58	1.25	1085.83
25.00	1085.60	1.00	1086.60
25.10	1086.24	0.77	1087.02
25.20	1086.56	0.58	1087.14 <<
25.30	1086.60 <<	0.41	1087.01
25.40	1086.39	0.28	1086.67
25.50	1085.99	0.16	1086.16
25.60	1085.43	0.08	1085.51
25.70	1084.70	0.03	1084.73
25.80	1083.83	0.00	1083.83
25.90	1082.82	0.00	1082.82
26.00	1081.69	0.00	1081.69
26.10	1080.43	0.00	1080.43
26.20	1079.06	0.00	1079.06
26.30	1077.58	0.00	1077.58
26.40	1076.00	0.00	1076.00
26.50	1074.32	0.00	1074.32
26.60	1072.55	0.00	1072.55
26.70	1070.70	0.00	1070.70
26.80	1068.75	0.00	1068.75
26.90	1066.73	0.00	1066.73
27.00	1064.63	0.00	1064.63
27.10	1062.45	0.00	1062.45
27.20	1060.21	0.00	1060.21
27.30	1057.89	0.00	1057.89
27.40	1055.50	0.00	1055.50
27.50	1053.04	0.00	1053.04
27.60	1050.52	0.00	1050.52
27.70	1047.93	0.00	1047.93
27.80	1045.27	0.00	1045.27
27.90	1042.56	0.00	1042.56
28.00	1039.78	0.00	1039.78
28.10	1036.94	0.00	1036.94
28.20	1034.04	0.00	1034.04
28.30	1031.09	0.00	1031.09
28.40	1028.07	0.00	1028.07
28.50	1025.01	0.00	1025.01

Continues on next page...

Hydrograph Discharge Table

Time (hrs)	Hyd. 1 + (cfs)	Hyd. 4 = (cfs)	Outflow (cfs)
28.60	1021.89	0.00	1021.89
28.70	1018.72	0.00	1018.72
28.80	1015.50	0.00	1015.50
28.90	1012.23	0.00	1012.23
29.00	1008.91	0.00	1008.91
29.10	1005.54	0.00	1005.54
29.20	1002.13	0.00	1002.13
29.30	998.68	0.00	998.68
29.40	995.18	0.00	995.18
29.50	991.63	0.00	991.63
29.60	988.04	0.00	988.04
29.70	984.41	0.00	984.41
29.80	980.73	0.00	980.73
29.90	977.01	0.00	977.01
30.00	973.25	0.00	973.25
30.10	969.44	0.00	969.44
30.20	965.60	0.00	965.60
30.30	961.71	0.00	961.71
30.40	957.79	0.00	957.79
30.50	953.82	0.00	953.82
30.60	949.82	0.00	949.82
30.70	945.77	0.00	945.77
30.80	941.69	0.00	941.69
30.90	937.57	0.00	937.57
31.00	933.42	0.00	933.42
31.10	929.22	0.00	929.22
31.20	924.99	0.00	924.99
31.30	920.73	0.00	920.73
31.40	916.43	0.00	916.43
31.50	912.10	0.00	912.10
31.60	907.73	0.00	907.73
31.70	903.32	0.00	903.32
31.80	898.89	0.00	898.89
31.90	894.42	0.00	894.42
32.00	889.92	0.00	889.92
32.10	885.39	0.00	885.39
32.20	880.83	0.00	880.83
32.30	876.23	0.00	876.23
32.40	871.61	0.00	871.61
32.50	866.96	0.00	866.96
32.60	862.28	0.00	862.28
32.70	857.56	0.00	857.56
32.80	852.83	0.00	852.83
32.90	848.06	0.00	848.06
33.00	843.27	0.00	843.27
33.10	838.45	0.00	838.45
33.20	833.60	0.00	833.60
33.30	828.73	0.00	828.73
33.40	823.83	0.00	823.83
33.50	818.90	0.00	818.90
33.60	813.95	0.00	813.95

Continues on next page...

Hydrograph Discharge Table

Time (hrs)	Hyd. 1 + (cfs)	Hyd. 4 = (cfs)	Outflow (cfs)
33.70	808.97	0.00	808.97
33.80	803.97	0.00	803.97
33.90	798.94	0.00	798.94
34.00	793.88	0.00	793.88
34.10	788.80	0.00	788.80
34.20	783.69	0.00	783.69
34.30	778.56	0.00	778.56
34.40	773.40	0.00	773.40
34.50	768.22	0.00	768.22
34.60	763.01	0.00	763.01
34.70	757.78	0.00	757.78
34.80	752.52	0.00	752.52
34.90	747.23	0.00	747.23
35.00	741.92	0.00	741.92
35.10	736.59	0.00	736.59
35.20	731.23	0.00	731.23
35.30	725.85	0.00	725.85
35.40	720.44	0.00	720.44
35.50	715.01	0.00	715.01
35.60	709.56	0.00	709.56
35.70	704.08	0.00	704.08
35.80	698.57	0.00	698.57
35.90	693.04	0.00	693.04
36.00	687.49	0.00	687.49
36.10	681.92	0.00	681.92
36.20	676.32	0.00	676.32
36.30	670.70	0.00	670.70
36.40	665.05	0.00	665.05
36.50	659.38	0.00	659.38
36.60	653.69	0.00	653.69
36.70	647.97	0.00	647.97
36.80	642.23	0.00	642.23
36.90	636.47	0.00	636.47
37.00	630.69	0.00	630.69
37.10	624.90	0.00	624.90
37.20	619.12	0.00	619.12
37.30	613.34	0.00	613.34
37.40	607.55	0.00	607.55
37.50	601.77	0.00	601.77
37.60	595.98	0.00	595.98
37.70	590.20	0.00	590.20
37.80	584.41	0.00	584.41
37.90	578.63	0.00	578.63
38.00	572.85	0.00	572.85
38.10	567.06	0.00	567.06
38.20	561.28	0.00	561.28
38.30	555.49	0.00	555.49
38.40	549.71	0.00	549.71
38.50	543.92	0.00	543.92
38.60	538.14	0.00	538.14
38.70	532.36	0.00	532.36

Continues on next page...

Hydrograph Discharge Table

Time (hrs)	Hyd. 1 + (cfs)	Hyd. 4 = (cfs)	Outflow (cfs)
38.80	526.57	0.00	526.57
38.90	520.79	0.00	520.79
39.00	515.00	0.00	515.00
39.10	509.22	0.00	509.22
39.20	503.43	0.00	503.43
39.30	497.65	0.00	497.65
39.40	491.86	0.00	491.86
39.50	486.08	0.00	486.08
39.60	480.30	0.00	480.30
39.70	474.51	0.00	474.51
39.80	468.73	0.00	468.73
39.90	462.94	0.00	462.94
40.00	457.16	0.00	457.16
40.10	451.38	0.00	451.38
40.20	445.59	0.00	445.59
40.30	439.81	0.00	439.81
40.40	434.03	0.00	434.03
40.50	428.25	0.00	428.25
40.60	422.47	0.00	422.47
40.70	416.69	0.00	416.69
40.80	410.91	0.00	410.91
40.90	405.14	0.00	405.14
41.00	399.37	0.00	399.37
41.10	393.59	0.00	393.59
41.20	387.83	0.00	387.83
41.30	382.06	0.00	382.06
41.40	376.29	0.00	376.29
41.50	370.53	0.00	370.53
41.60	364.77	0.00	364.77
41.70	359.02	0.00	359.02
41.80	353.26	0.00	353.26
41.90	347.52	0.00	347.52
42.00	341.77	0.00	341.77
42.10	336.03	0.00	336.03
42.20	330.29	0.00	330.29
42.30	324.56	0.00	324.56
42.40	318.83	0.00	318.83
42.50	313.10	0.00	313.10
42.60	307.38	0.00	307.38
42.70	301.67	0.00	301.67
42.80	295.95	0.00	295.95
42.90	290.25	0.00	290.25
43.00	284.55	0.00	284.55
43.10	278.86	0.00	278.86
43.20	273.17	0.00	273.17
43.30	267.50	0.00	267.50
43.40	261.83	0.00	261.83
43.50	256.17	0.00	256.17
43.60	250.51	0.00	250.51
43.70	244.87	0.00	244.87
43.80	239.24	0.00	239.24

Continues on next page...

Hydrograph Discharge Table

Time (hrs)	Hyd. 1 + (cfs)	Hyd. 4 = (cfs)	Outflow (cfs)
43.90	233.61	0.00	233.61
44.00	228.00	0.00	228.00
44.10	222.40	0.00	222.40

...End

Appendix E

Time of Concentration Calculations

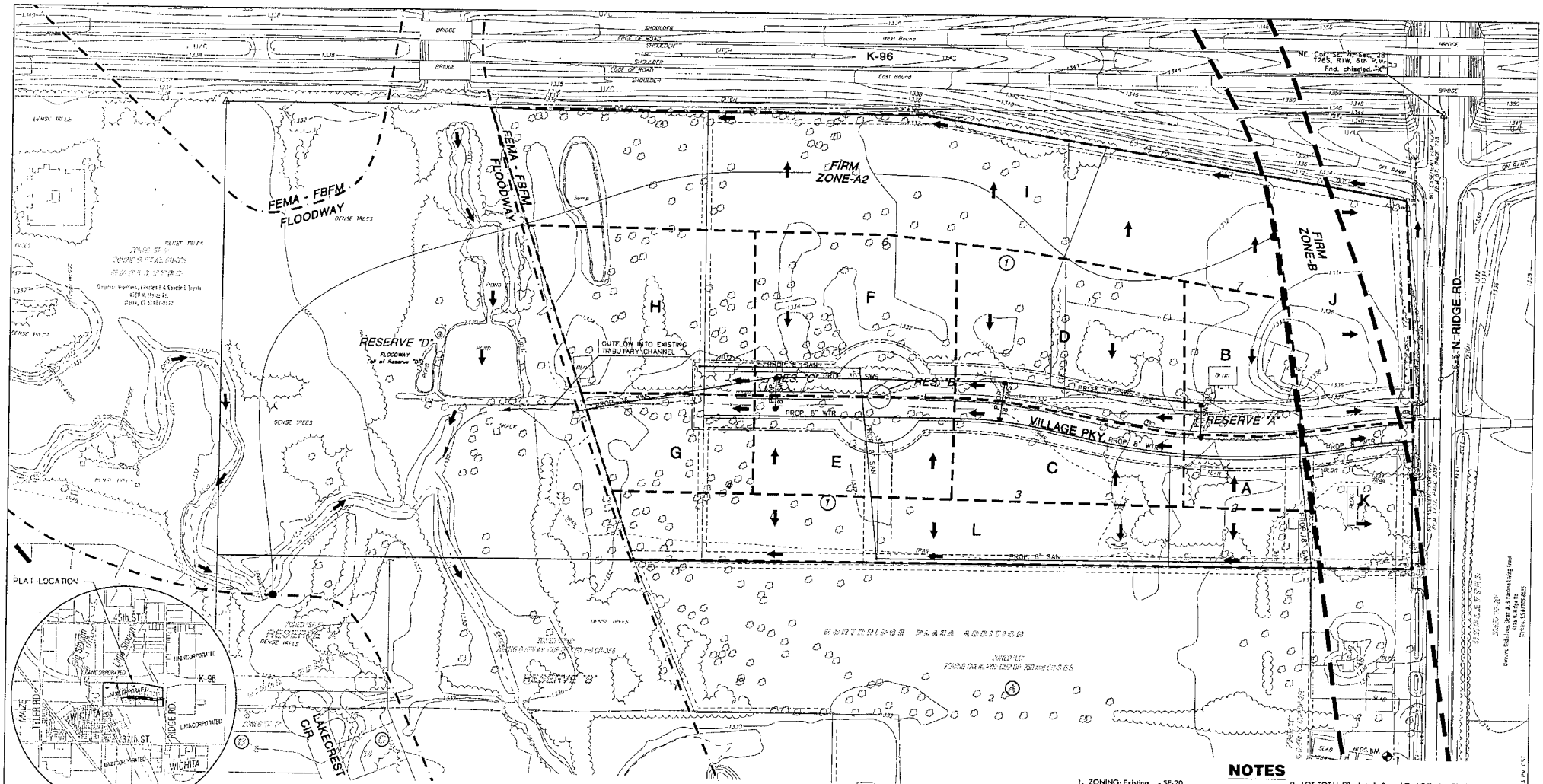
11/ 24/ 2004

Time of Concentration Calculations
North Ridge Village Addition
Soil Group C

Area ID	Area ac	C	Elev Max	Elev Min	Flow Length	Tc Calc	Tc min
Pre-Project							
North Ridge Village Addition	30.0	0.37	1332.0	1330.0	1850	118.63	119
Post-Project							
North Ridge Village Addition	36.4	0.66	1333.3	1330.0	1850	60.51	61

Appendix F

Drainage & Utility Plan



VICINITY MAP

BENCH MARK

BM Square cut on hubguard of R.C.B.C., 73' West of SE. Cor., SE. ¼, Sec. 28, T26S, R1W. Elev. = 1331.52 (NGVD) 144.12 (City)

LEGEND

- Δ - Sec. Corner
- SIGN
- GATE
- TREES
- EDGE OF TREES
- POLE
- Fnd. Prop. Corner
- GAS METER
- SANITARY SEWER MANHOLE
- POWER POLE/GUY ANCHOR
- ELECTRIC BOX
- FIRE HYDRANT
- WATER VALVE
- WATER METER
- TELEPHONE RISER
- FENCE
- STORM SEWER PIPE
- WATER LINE
- SANITARY SEWER LINE
- GAS LINE
- TELEPHONE LINE
- OVERHEAD ELECTRIC

NOTES

1. ZONING: Existing - SF-20
   Proposed - LC and SF-5 (SF-5 by annexation)
   (this plat shall conform with) CUP DP-280
2. ANNEXATION: An application for annexation has been submitted to the City of Wichita
3. PUBLIC UTILITIES: Shall be extended to site by petitions
4. LEGAL DESCRIPTION: See attached
5. EXISTING USE: Vacant Land
6. PLAT AREA: 55.95 AC
7. SURVEY DATE: April 9th, 2003 (by MARKHURD)
8. MINIMUM PADS: As shown on the Final Drainage Plan
9. LOT TOTAL (7) - Lots 1, 2, and 7 - LC Zoning District
   Lots 3, 4, 5, and 6- GO Zoning District
10. RESERVES: "A", "B", "C", and "D" are platted for for signs, landscaping, irrigation, open space, monuments, and water features. Reserve "A" and "C" shall allow for public access across Reserve "A" and "C", at various locations for driveways. Reserve "D" is platted for pedestrian access, open space, drainage, and floodplain.

100 0 100 200

MINIMUM PAD ELEVATIONS (LOWEST OPENINGS)			
LOT	BLOCK	ELEVATION (CITY DATUM)	ELEVATION (USGS)
5,6,7	1	149.1	1336.5
1,2,3,4	1	148.1	1335.5

MKEC ENGINEERING CONSULTANTS

Prelim. Drainage and Utility Plan

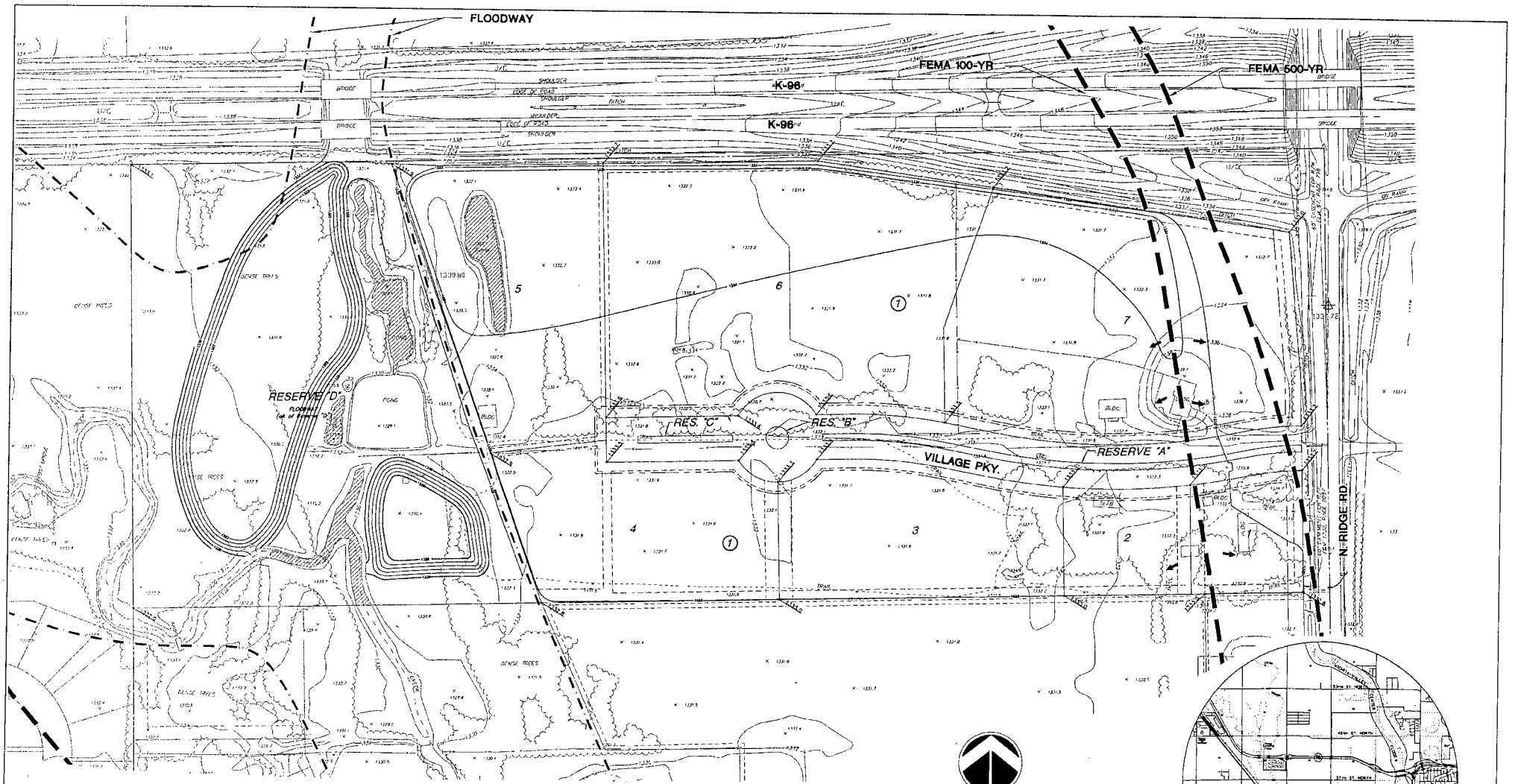
NORTH RIDGE VILLAGE ADDITION

OWNER / DEVELOPER: Kansas Bait & Tackle, LLC, a Kansas limited liability company 7570 W. 21st ST. N., Bldg 1050 Suite B, Wichita, KS. 67205 (316) 838-2020
COF, LLC, a Kansas limited liability company P.O. BOX 480, Fredonia, KS 66736 (620) 378-2114

Date: November 2004

Appendix G

Grading Plan



Preliminary Grading Plan

NORTH RIDGE VILLAGE ADDITION

OWNER / DEVELOPER: Kansas Bait & Tackle, LLC, a Kansas limited liability company 7570 W. 21st ST. N., Bldg 1050 Suite B, Wichita, KS. 67205 (316) 838-2020
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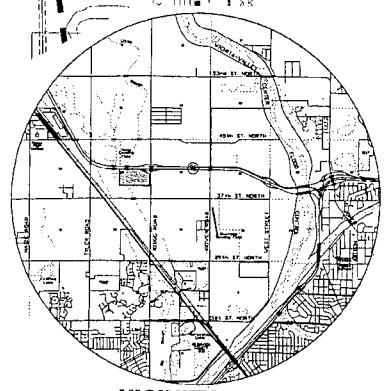
Date: November 2004



VICINITY MAP

Appendix H

Pipe Sizing Calculations

11/ 29/ 2004

COMPUTATION FORM
NORTH RIDGE VILLAGE ADDITION
STORM DRAINAGE SYSTEM DESIGN BY THE RATIONAL METHOD
SOIL GROUP C

X Preliminary
____ Final
Design

Drainage Area ____
Project No. 04394
Design Storm 5 year
n = 0.013

Area ID	Area	Accum. Area	Runoff Coefficients					Slope Data						Rainfall Intensity					Storm Flows				Design Flow	Design Storm	System Design				
			C2	C5	C10	C100	Explanation of Runoff Coefficients	Elev Max	Elev Min	Flow Length	Tc100 Calc	Avg V100	Tc2 min	Tc5 min	Tc10 min	Tc100 min	I2 in/hr	I5 in/hr	I10 in/hr	I100 in/hr	Q2 cfs	Q5 cfs	Q10 cfs	Q100 cfs	(cfs)	(Year)	Pipe Size Descr. (in)	Slope min. %	Slope des. %	V des. f.p.s.	Cap. (all.) c.f.s.
	ac	ac																												
A	1.0		0.68	0.69	0.73	0.80							15	15	15	15	3.83	4.56	5.22	7.37	2.66	3.21	3.89	6.01	3.21	5	15	0.25	0.60	4.1	5.0
B	1.7		0.68	0.69	0.73	0.80							15	15	15	15	3.83	4.56	5.22	7.37	4.48	5.41	6.55	10.14							
A+B	2.7		0.68	0.69	0.73	0.80							15	15	15	15	3.83	4.56	5.22	7.37	7.14	8.62	10.44	16.16	8.62	5	18	0.67	2.60	9.6	16.9
C	2.2		0.68	0.69	0.73	0.80							15	15	15	15	3.83	4.56	5.22	7.37	5.81	7.02	8.50	13.15	7.02	5	18	0.45	3.60	11.3	19.9
D	3.2		0.68	0.69	0.73	0.80							15	15	15	15	3.83	4.56	5.22	7.37	8.23	9.94	12.04	18.63							
A+B+C+D	8.1		0.68	0.69	0.73	0.80							15	15	15	15	3.83	4.56	5.22	7.37	21.17	25.58	30.98	47.93	25.58	5	30	0.39	5.60	19.8	97.1
E	2.1		0.68	0.69	0.73	0.80							15	15	15	15	3.83	4.56	5.22	7.37	5.57	6.73	8.15	12.62	6.73	5	18	0.41	6.60	15.3	27.0
F	3.5		0.68	0.69	0.73	0.80							15	15	15	15	3.83	4.56	5.22	7.37	9.17	11.08	13.41	20.75							
A+B+C+D+E+F	13.8		0.68	0.69	0.73	0.80							15	15	15	15	3.83	4.56	5.22	7.37	35.91	43.39	52.55	81.31	43.39	5	36	0.42	8.60	27.7	195.6
G	1.7		0.68	0.69	0.73	0.80							15	15	15	15	3.83	4.56	5.22	7.37	4.35	5.25	6.36	9.85							
H	3.6		0.68	0.69	0.73	0.80							15	15	15	15	3.83	4.56	5.22	7.37	9.35	11.30	13.68	21.17							
I	10.0		0.68	0.69	0.73	0.80							15	15	15	15	3.83	4.56	5.22	7.37	25.99	31.40	38.03	58.84							
J	3.2		0.68	0.69	0.73	0.80							15	15	15	15	3.83	4.56	5.22	7.37	8.31	10.04	12.16	18.81							
K	1.5		0.68	0.69	0.73	0.80							15	15	15	15	3.83	4.56	5.22	7.37	4.01	4.85	5.87	9.08							
L	4.7		0.68	0.69	0.73	0.80							15	15	15	15	3.83	4.56	5.22	7.37	12.27	14.82	17.95	27.77							

FLOODWAY

FEMA 100-YR

FEMA 600-YR

K-96

K-96

RESERVE "D"
FLOODWAY
(all of Reserve "D")

RES. "C"

RES. "B"

VILLAGE PKY.

RESERVE "A"

N. RIDGE RD.

SCALE: 1" = 100'

100 0 100 200

Preliminary Grading Plan

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COF, LLC, a Kansas limited liability company P.O. BOX 480, Fredonia, KS 66736 (620) 378-2114

Date: November 2004

VICINITY MAP

J:\CIVIL\04-394\DWG\DRNG\LOMR\04-394GP