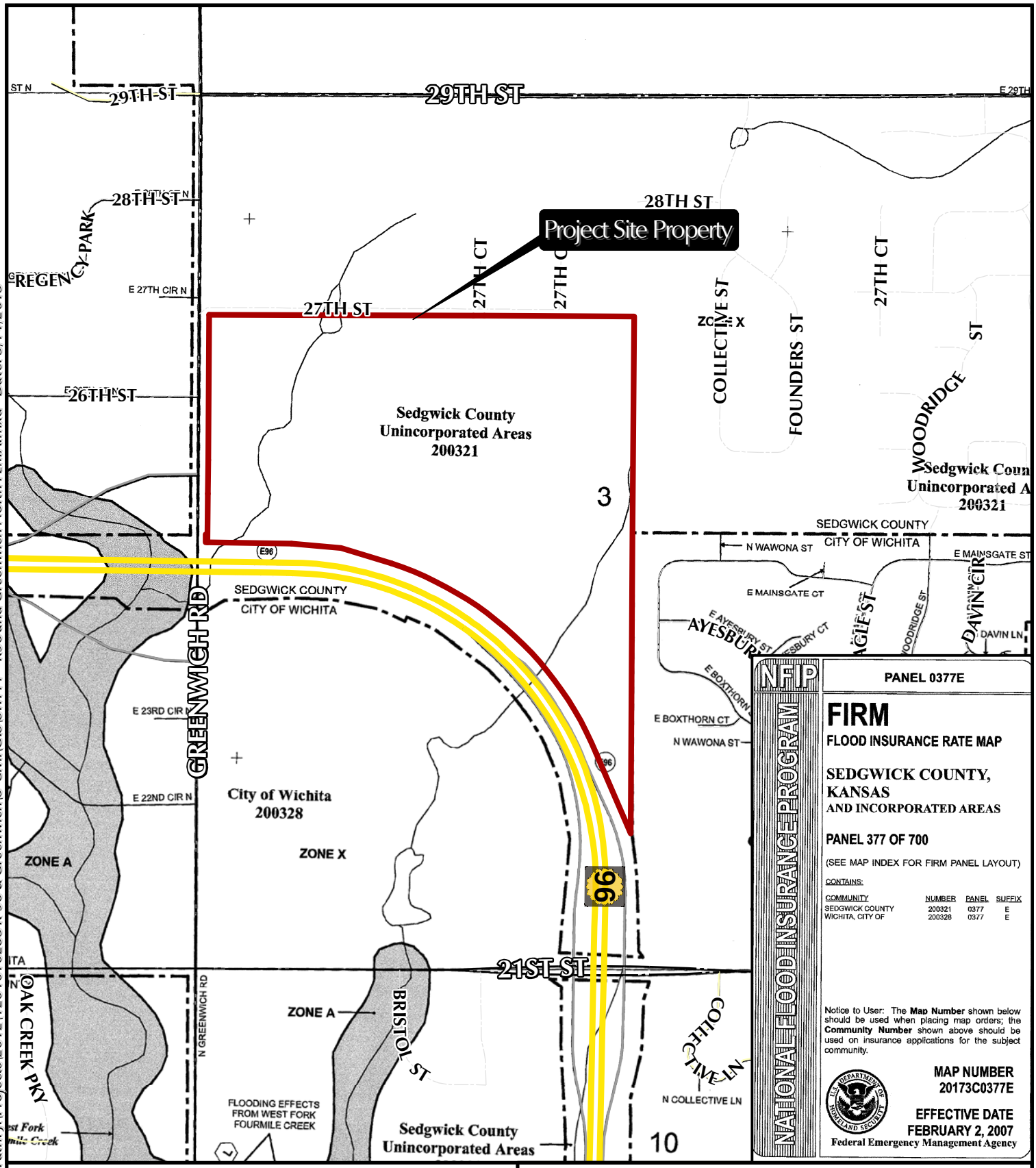


Path: J:\Projects\2012\1201010283 K-96 & Greenwich\5-Civil\GIS\SWPPP - K96 and Greenwich North FEMA.mxd - Date: 3/14/2013

N
W E
S

SEC: 3
TWP: T27S
RNG: R2E

800 400 0 800
Feet

K-96 and Greenwich North
Project Name:
FEMA FIRM
Sheet Title:

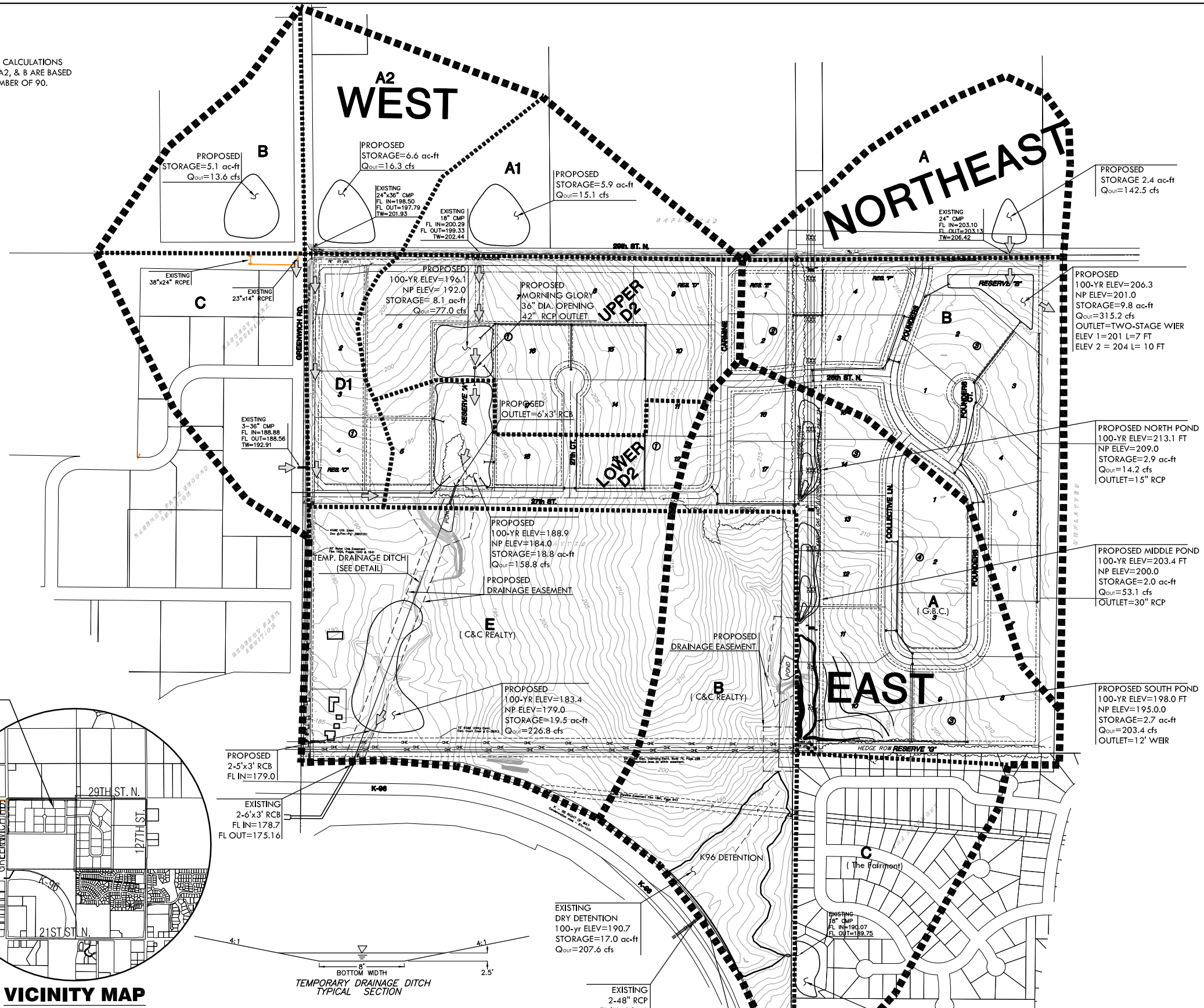
MKEC ENGINEERING CONSULTANTS, INC.

JGD	3/14/2013
Drawn By:	Date:
KLA	1201010283
Design / Review:	Job No.:

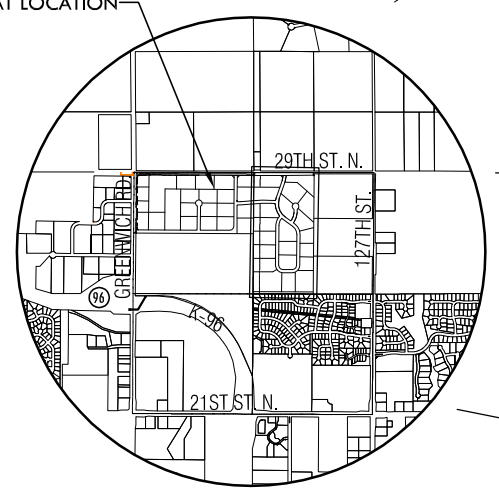
Appendix F

Existing Conditions Drainage Map

NOTE: STORAGE CALCULATIONS FOR BASINS A1, A2, & B ARE BASED ON A CURVE NUMBER OF 90.



PLAT LOCATION



VICINITY MAP

TEMPORARY DRAINAGE DITCH TYPICAL SECTION

NOTES

1. ZONING: Existing - SF-20 and RR
   Proposed - LI upon annexation w/ P.O.
2. ANNEXATION: An application for annexation shall be submitted to the City of Wichita
3. PUBLIC UTILITIES: Shall be extended to site by petitions
4. EXISTING USE: Vacant Land and Cultivated Fields
5. PLAT AREA: Gross= 158.81 Ac.
   Net =155.65 Ac.
6. SURVEY DATE: May 12th, 2005 (by MKEC)
7. MINIMUM PADS: As shown on the Final Drainage Plan
8. LOT TOTAL - 42
9. RESERVES USES: Open space, drainage, utilities, in designated locations, monuments, landscaping, and irrigation.

BENCH MARK

BM #1 Brass Disc on top of curb in front of fire hydrant, Lot 1, Block 1, Recency Park Addition, an Addition to Wichita, Sedgwick County, KS

Elev.=191.56 (City of Wichita)
1378.96 (NGVD 29)

LEGEND

- Sec. Corner
- Fnd. Prop. Corner
- GM - GAS METER
- SSMH - SANITARY SEWER MANHOLE
- POLE - POWER POLE/GUY ANCHOR
- KGE - ELECTRIC BOX
- SN - SIGN
- GATE
- TREES
- EDGE OF TREES
- POLE - POLE
- HLP - HIGH TENSION POWER LINE
- FH - FIRE HYDRANT
- WV - WATER VALVE
- WM - WATER METER
- TR - TELEPHONE RISER
- FENCE
- STORM SEWER PIPE
- WATER LINE
- SANITARY SEWER LINE
- GAS LINE
- TELEPHONE LINE
- OVERHEAD ELECTRIC
- ZONED PARCELS
- STREET DEDICATION WIDTH VARIES 60' ALONG S.L. 75' AT INTERSECTION
- WATERSHED BOUNDARIES
- DRAINAGE BOUNDARIES
- DA - DRAINAGE AREAS
- EAST - WATERSHED AREAS
- FLOW DIRECTION

SCALE: 1"=300'
300 0 300 600

REVISED: JANUARY 2007
ADDED KGE POND IN THE EAST WATERSHED.
MODIFIED OUTLET STRUCTURES IN THE WEST AND NORTHEAST WATERSHEDS.

PROPOSED DETENTION PLAN

GREENWICH BUSINESS CENTER ADDITION

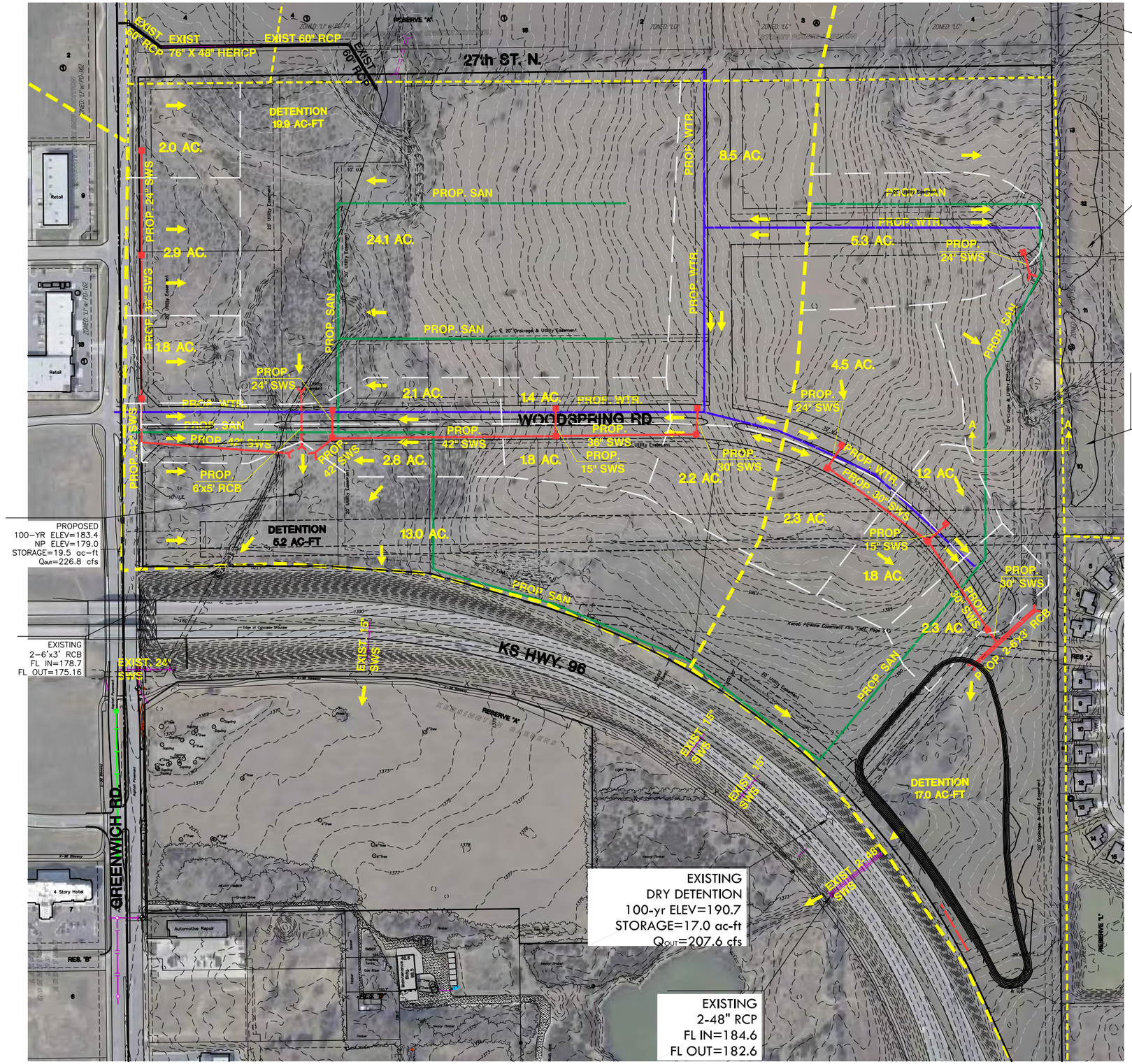
OWNER / DEVELOPER: Ritchie Development Corporation 8100 E. 22nd North, #1000 Wichita, KS 67226-2310 (316) 684-7300

Date: August, 2005

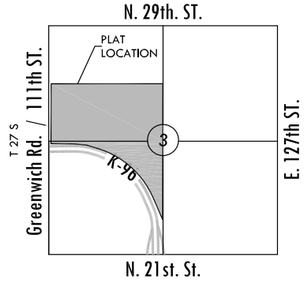
MKEC ENGINEERING CONSULTANTS, INC.
411 N. WEBB ROAD
WICHITA, KS. 67206
316 - 684 - 9600
www.mkec.com

Appendix G

Drainage and Utility Plan



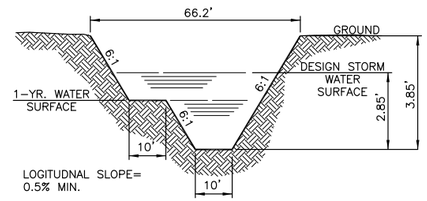
R 2 E



VICINITY MAP

LEGEND

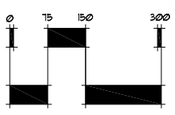
- EXISTING WATER LINE
- EXISTING STORM SEWER
- EXISTING SANITARY SEWER
- EXISTING UNDERGROUND TELEPHONE
- EXISTING UNDERGROUND ELECTRICAL
- EXISTING GAS LINE
- EXISTING CABLE LINE
- PROPERTY LINE
- PROPOSED WATER LINE
- PROPOSED SANITARY SEWER LINE
- PROPOSED SWS / RCB
- FLOW ARROWS
- PROPOSED DRAINAGE BOUNDARY
- DRAINAGE SUB BASIN



A-A PROPOSED CHANNEL

UTILITY PLAN

SCALE: 1" = 150'-0"



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

PRELIMINARY NOT FOR CONSTRUCTION

PRELIMINARY UTILITY PLAN FOR K96 & GREENWICH

DRAINAGE & UTILITY PLAN
SHEET TITLE

12283
PROJECT NUMBER

KLA / CMJ / GJA
DESIGNED DRAWN CHECKED

ISSUED
MARCH 2013

REVISED

SHEET NO.
1 of 2

J:\PROJECTS\2012\12010283 K-96 & GREENWICH\5-CIVIL\CAD\DRAINAGE\DRAWING\12283-DUP.DWG

PLOTTED: Friday, April 05, 2013 @ 01:28PM

Appendix H

RCB Sizing Calculations

Culvert Report

Future Woodspring Rd.

Invert Elev Dn (ft)	=	1376.00
Pipe Length (ft)	=	100.00
Slope (%)	=	0.32
Invert Elev Up (ft)	=	1376.32
Rise (in)	=	36.0
Shape	=	Box
Span (in)	=	72.0
No. Barrels	=	2
n-Value	=	0.013
Inlet Edge	=	Projecting
Coeff. K,M,c,Y,k	=	0.0145, 1.75, 0.0419, 0.64, 0.5

Embankment

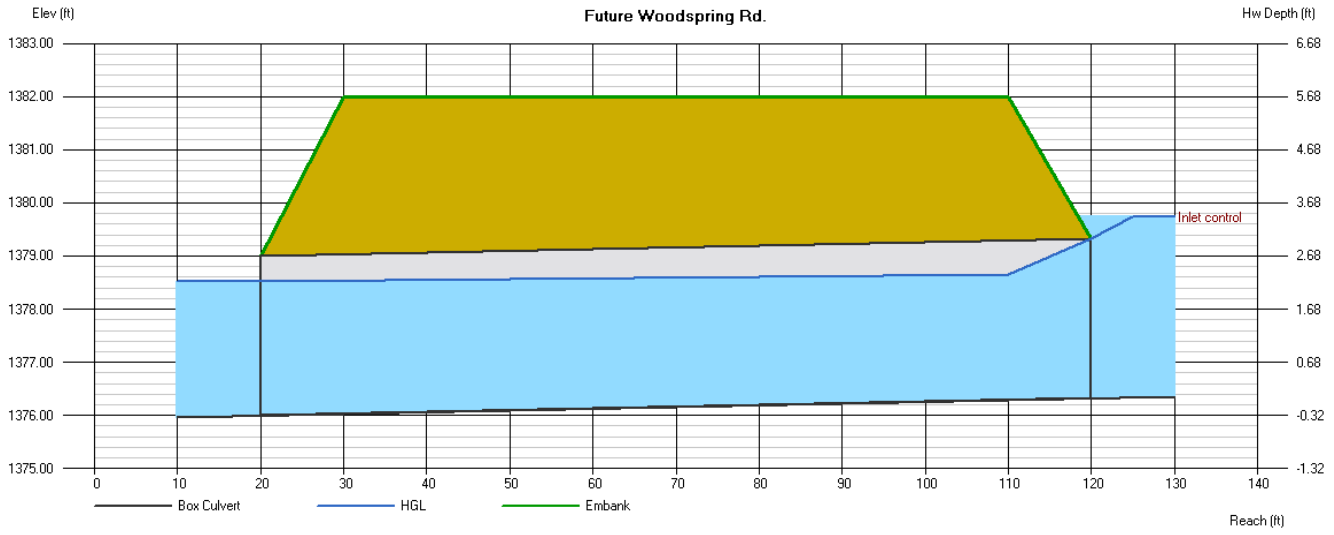
Top Elevation (ft)	=	1382.00
Top Width (ft)	=	80.00
Crest Width (ft)	=	80.00

Calculations

Qmin (cfs)	=	200.00
Qmax (cfs)	=	200.00
Tailwater Elev (ft)	=	(dc+D)/2

Highlighted

Qtotal (cfs)	=	200.00
Qpipe (cfs)	=	200.00
Qovertop (cfs)	=	0.00
Veloc Dn (ft/s)	=	6.60
Veloc Up (ft/s)	=	7.13
HGL Dn (ft)	=	1378.53
HGL Up (ft)	=	1378.66
Hw Elev (ft)	=	1379.73
Hw/D (ft)	=	1.14
Flow Regime	=	Inlet Control



Appendix I

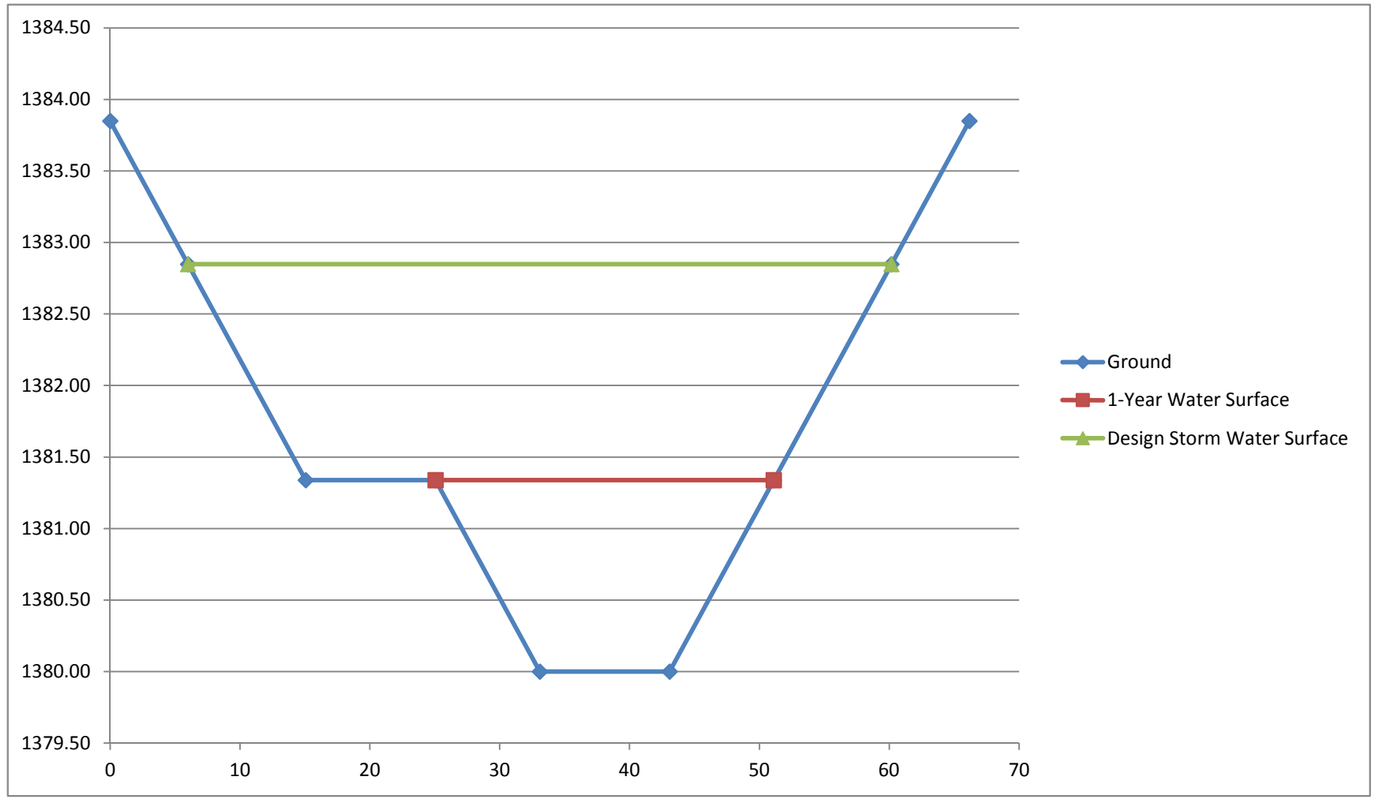
Open Channel Calculations

Compound Channel Sizing Spreadsheet

S	Channel Slope (ft/ft)	0.005
FB	Freeboard (ft)	1
	Bottom Elevation	1380

Auxiliary Channel Sizing for the 1-year Storm using Manning's Equation		
BA	Auxiliary Channel Bottom Width (ft)]	10
SA	Auxiliary Channel Side Slope :1	6
QA	Auxiliary Channel Flow Rate (cfs)	80
nA	Auxiliary Channel Manning's n	0.03
$Qn/(1.49S^{1/2})$	Auxiliary Channel Qn/(1.49S1/2)	22.78
DA	Auxiliary Channel Minimum Depth (ft.)	*1.34*
AA	Auxiliary Channel Area (sq. ft.)	24.12
WPA	Auxiliary Channel Wetted Permieter (ft)	26.28
RA	Auxiliary Radius	0.92
$AR^{2/3}A$	Auxiliary AR2/3	22.78
WA	Auxiliary Channel Top Width	26.05
VA	Auxiliary Velocity (ft/s)	3.32
SA	Auxiliary Shear (lb/ft2)	0.42

*Estimated



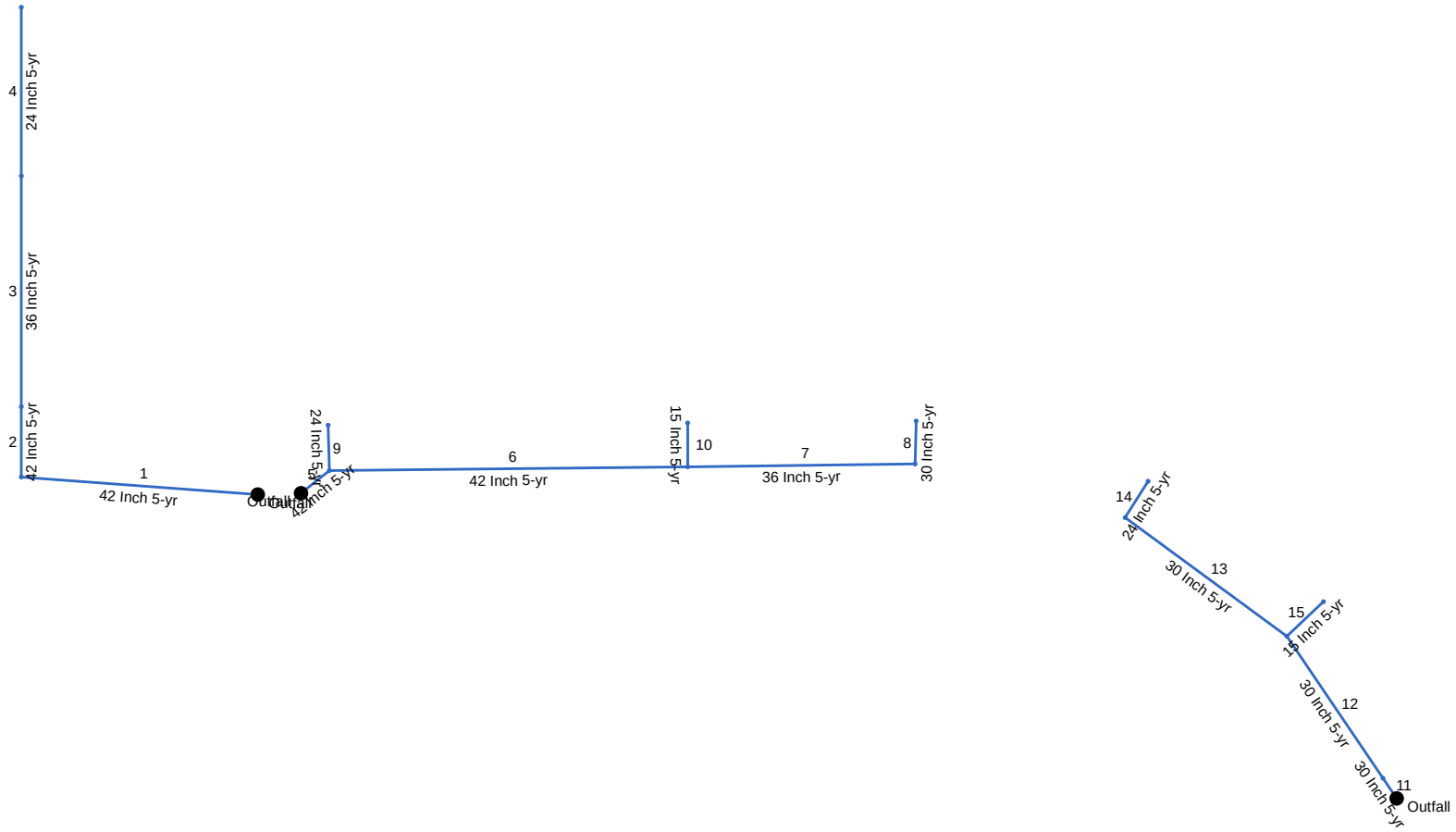
Primary Channel Sizing using Manning's Equation		
BP	Primary Channel Bottom Width (ft)]	10
SP	Primary Channel Side Slope :1	6
Q	Total Flow Rate (cfs)	280
nP	Primary Channel Manning's n	0.03
$Qn/(1.49S^{1/2})$	Aux. Channel Qn/(1.49S1/2)	79.73
DP	Primary Channel Depth (ft.)	*1.51*
AP	Primary Channel Area (sq. ft.)	28.78
WPP	Primary Channel Wetted Permieter (ft)	2.32
AT	Total Area	52.90
WPT	Total Wetted Perimeter	28.59
RT	Total R	1.85
$AR^{2/3}T$	Total $AR^{2/3}$	79.73
DT	Total Depth	2.85
VP	Primary Velocity (ft/s)	5.29
SP	Primary Shear (lb/ft^2)	0.89

Total Width (ft)	66.2
Total Depth (ft)	3.85

Appendix J

Pipe Sizing Calculations

Hydraflow Storm Sewers Extension for AutoCAD® Civil 3D® 2009 Plan



Project File: Pipe Sizing.stm	Number of lines: 16	Date: 04-05-2013

Structure Report

Struct No.	Structure ID	Junction Type	Rim Elev. (ft)	Structure			Line Out			Line In		
				Shape	Length (ft)	Width (ft)	Size (in)	Shape	Invert (ft)	Size (in)	Shape	Invert (ft)
1		Manhole	1373.70	Cir	4.00	4.00	42	Cir	1366.42	42	Cir	1366.42
2		Curb-Horiz	1374.00	Cir	4.00	4.00	42	Cir	1366.54	36	Cir	1367.04
3		Curb-Horiz	1377.00	Cir	4.00	4.00	36	Cir	1367.45	24	Cir	1368.45
4		Curb-Horiz	1378.00	Cir	4.00	4.00	24	Cir	1368.81			
5		Curb-Horiz	1374.70	Cir	4.00	4.00	42	Cir	1366.06	42 24	Cir Cir	1367.06 1367.56
6		Curb-Horiz	1384.10	Cir	4.00	4.00	42	Cir	1367.69	36 15	Cir Cir	1368.19 1369.69
7		Curb-Horiz	1392.50	Cir	4.00	4.00	36	Cir	1368.60	30	Cir	1369.10
8		Curb-Horiz	1392.50	Cir	4.00	4.00	30	Cir	1369.17			
9		Curb-Horiz	1374.70	Cir	4.00	4.00	24	Cir	1367.66			
10		Curb-Horiz	1384.10	Cir	4.00	4.00	15	Cir	1369.83			
11		Curb-Horiz	1378.20	Cir	4.00	4.00	30	Cir	1372.04	30	Cir	1372.54
12		Curb-Horiz	1386.90	Cir	4.00	4.00	30	Cir	1372.85	30 15	Cir Cir	1373.35 1373.85
13		Curb-Horiz	1395.10	Cir	4.00	4.00	30	Cir	1373.70	24	Cir	1374.20
14		Curb-Horiz	1395.10	Cir	4.00	4.00	24	Cir	1374.27			
15		Curb-Horiz	1386.90	Cir	4.00	4.00	15	Cir	1374.00			
16		Curb-Horiz	1387.00	Cir	4.00	4.00	24	Cir	1375.08			

Storm Sewer Inventory Report

Line No.	Alignment				Flow Data				Physical Data								Line ID
	Dnstr line No.	Line length (ft)	Defl angle (deg)	Junc type	Known Q (cfs)	Drng area (ac)	Runoff coeff (C)	Inlet time (min)	Invert El Dn (ft)	Line slope (%)	Invert El Up (ft)	Line size (in)	Line shape	N value (n)	J-loss coeff (K)	Inlet/ Rim El (ft)	
1	End	417.303	-175.773	MH	0.00	0.00	0.87	15.0	1366.00	0.10	1366.42	42	Cir	0.013	1.00	1373.70	42 Inch 5-yr
2	1	123.709	85.773	Curb	0.00	1.80	0.87	15.0	1366.42	0.10	1366.54	42	Cir	0.013	0.50	1374.00	42 Inch 5-yr
3	2	405.954	0.000	Curb	0.00	2.90	0.87	15.0	1367.04	0.10	1367.45	36	Cir	0.013	0.50	1377.00	36 Inch 5-yr
4	3	296.524	0.000	Curb	0.00	2.00	0.87	15.0	1368.45	0.12	1368.81	24	Cir	0.013	1.00	1378.00	24 Inch 5-yr
5	End	63.708	-38.398	Curb	0.00	2.80	0.87	15.0	1366.00	0.09	1366.06	42	Cir	0.013	1.25	1374.70	42 Inch 5-yr
6	5	630.729	37.774	Curb	0.00	1.80	0.87	15.0	1367.06	0.10	1367.69	42	Cir	0.013	1.50	1384.10	42 Inch 5-yr
7	6	400.086	-0.092	Curb	0.00	2.20	0.87	15.0	1368.19	0.10	1368.60	36	Cir	0.013	1.50	1392.50	36 Inch 5-yr
8	7	75.434	-87.755	Curb	0.00	8.50	0.87	15.0	1369.10	0.09	1369.17	30	Cir	0.013	1.00	1392.50	30 Inch 5-yr
9	5	79.989	-53.216	Curb	0.00	2.10	0.87	15.0	1367.56	0.12	1367.66	24	Cir	0.013	1.00	1374.70	24 Inch 5-yr
10	6	76.986	-89.576	Curb	0.00	1.40	0.87	15.0	1369.69	0.18	1369.83	15	Cir	0.013	1.00	1384.10	15 Inch 5-yr
11	End	43.066	-124.202	Curb	0.00	2.30	0.87	15.0	1372.00	0.09	1372.04	30	Cir	0.013	0.50	1378.20	30 Inch 5-yr
12	11	301.515	0.077	Curb	0.00	1.80	0.87	15.0	1372.54	0.10	1372.85	30	Cir	0.013	1.48	1386.90	30 Inch 5-yr
13	12	352.990	-19.608	Curb	0.00	2.30	0.87	15.0	1373.35	0.10	1373.70	30	Cir	0.013	1.50	1395.10	30 Inch 5-yr
14	13	75.394	86.213	Curb	0.00	4.50	0.87	15.0	1374.20	0.09	1374.27	24	Cir	0.013	1.00	1395.10	24 Inch 5-yr
15	12	88.406	80.828	Curb	0.00	1.20	0.87	15.0	1373.85	0.17	1374.00	15	Cir	0.013	1.00	1386.90	15 Inch 5-yr
16	End	75.160	-114.988	Curb	0.00	5.30	0.87	15.0	1375.00	0.11	1375.08	24	Cir	0.013	1.00	1387.00	24 Inch 5-yr

Project File: Pipe Sizing.stm | Number of lines: 16 | Date: 04-05-2013

Storm Sewer Tabulation

Station		Len	Drng Area		Rnoff coeff	Area x C		Tc		Rain (I)	Total flow	Cap full	Vel	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
Line	To Line	(ft)	Incr (ac)	Total (ac)	(C)	Incr	Total	Inlet (min)	Syst (min)	(in/hr)	(cfs)	(cfs)	(ft/s)	Size (in)	Slope (%)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	
1	End	417.303	0.00	6.70	0.87	0.00	5.83	15.0	20.2	4.0	26.52	31.92	4.88	42	0.10	1366.00	1366.42	1367.58	1369.01	0.00	1373.70	42 Inch 5-yr
2	1	123.709	1.80	6.70	0.87	1.57	5.83	15.0	19.4	4.0	26.52	31.33	2.76	42	0.10	1366.42	1366.54	1369.92	1370.00	1373.70	1374.00	42 Inch 5-yr
3	2	405.954	2.90	4.90	0.87	2.52	4.26	15.0	17.0	4.3	19.39	21.19	2.75	36	0.10	1367.04	1367.45	1370.06	1370.39	1374.00	1377.00	36 Inch 5-yr
4	3	296.524	2.00	2.00	0.87	1.74	1.74	15.0	15.0	4.5	7.92	7.88	2.52	24	0.12	1368.45	1368.81	1370.45	1370.81	1377.00	1378.00	24 Inch 5-yr
5	End	63.708	2.80	18.80	0.87	2.44	16.36	15.0	18.1	4.2	74.41	30.89	8.66	42	0.09	1366.00	1366.06	1368.64	1369.48	0.00	1374.70	42 Inch 5-yr
6	5	630.729	1.80	13.90	0.87	1.57	12.09	15.0	16.3	4.4	55.01	31.79	5.72	42	0.10	1367.06	1367.69	1370.66	1372.54	1374.70	1384.10	42 Inch 5-yr
7	6	400.086	2.20	10.70	0.87	1.91	9.31	15.0	15.2	4.5	42.35	21.35	5.99	36	0.10	1368.19	1368.60	1373.31	1374.92	1384.10	1392.50	36 Inch 5-yr
8	7	75.434	8.50	8.50	0.87	7.40	7.40	15.0	15.0	4.5	33.64	12.50	6.85	30	0.09	1369.10	1369.17	1375.76	1376.26	1392.50	1392.50	30 Inch 5-yr
9	5	79.989	2.10	2.10	0.87	1.83	1.83	15.0	15.0	4.5	8.31	8.00	2.65	24	0.12	1367.56	1367.66	1370.66	1370.77	1374.70	1374.70	24 Inch 5-yr
10	6	76.986	1.40	1.40	0.87	1.22	1.22	15.0	15.0	4.5	5.54	2.75	4.52	15	0.18	1369.69	1369.83	1373.31	1373.87	1384.10	1384.10	15 Inch 5-yr
11	End	43.066	2.30	12.10	0.87	2.00	10.53	15.0	16.9	4.3	47.89	12.50	9.99	30	0.09	1372.00	1372.04	1374.27	1374.97	0.00	1378.20	30 Inch 5-yr
12	11	301.515	1.80	9.80	0.87	1.57	8.53	15.0	16.3	4.4	38.79	13.15	7.90	30	0.10	1372.54	1372.85	1375.71	1378.40	1378.20	1386.90	30 Inch 5-yr
13	12	352.990	2.30	6.80	0.87	2.00	5.92	15.0	15.2	4.5	26.91	12.91	5.48	30	0.10	1373.35	1373.70	1379.84	1381.36	1386.90	1395.10	30 Inch 5-yr
14	13	75.394	4.50	4.50	0.87	3.92	3.92	15.0	15.0	4.5	17.81	6.90	5.67	24	0.09	1374.20	1374.27	1382.06	1382.53	1395.10	1395.10	24 Inch 5-yr
15	12	88.406	1.20	1.20	0.87	1.04	1.04	15.0	15.0	4.5	4.75	2.66	3.87	15	0.17	1373.85	1374.00	1379.84	1380.32	1386.90	1386.90	15 Inch 5-yr
16	End	75.160	5.30	5.30	0.87	4.61	4.61	15.0	15.0	4.5	20.98	7.38	7.18	24	0.11	1375.00	1375.08	1376.62	1377.50	0.00	1387.00	24 Inch 5-yr

Project File: Pipe Sizing.stm | Number of lines: 16 | Run Date: 04-05-2013

NOTES: Intensity = 52.62 / (Inlet time + 11.20) ^ 0.75; Return period = 5 Yrs. ; Total flows limited to inlet captured flows. ; c = cir e = ellip b = box

Storm Sewer Summary Report

Line No.	Line ID	Flow rate (cfs)	Line size (in)	Line shape	Line length (ft)	Invert EL Dn (ft)	Invert EL Up (ft)	Line slope (%)	HGL down (ft)	HGL up (ft)	Minor loss (ft)	HGL Junct (ft)	Dns line No.	Junction Type
1	42 Inch 5-yr	26.52	42	Cir	417.303	1366.00	1366.42	0.101	1367.58	1369.01	0.19	1369.20	End	Manhole
2	42 Inch 5-yr	26.52	42	Cir	123.709	1366.42	1366.54	0.097	1369.92	1370.00	0.06	1370.06	1	Curb-Horiz
3	36 Inch 5-yr	19.39	36	Cir	405.954	1367.04	1367.45	0.101	1370.06	1370.39	0.06	1370.44	2	Curb-Horiz
4	24 Inch 5-yr	7.92	24	Cir	296.524	1368.45	1368.81	0.121	1370.45	1370.81	0.10	1370.91	3	Curb-Horiz
5	42 Inch 5-yr	74.41	42	Cir	63.708	1366.00	1366.06	0.094	1368.64	1369.48	1.18	1370.66	End	Curb-Horiz
6	42 Inch 5-yr	55.01	42	Cir	630.729	1367.06	1367.69	0.100	1370.66*	1372.54*	0.76	1373.31	5	Curb-Horiz
7	36 Inch 5-yr	42.35	36	Cir	400.086	1368.19	1368.60	0.102	1373.31*	1374.92*	0.84	1375.76	6	Curb-Horiz
8	30 Inch 5-yr	33.64	30	Cir	75.434	1369.10	1369.17	0.093	1375.76*	1376.26*	0.73	1377.00	7	Curb-Horiz
9	24 Inch 5-yr	8.31	24	Cir	79.989	1367.56	1367.66	0.125	1370.66*	1370.77*	0.11	1370.87	5	Curb-Horiz
10	15 Inch 5-yr	5.54	15	Cir	76.986	1369.69	1369.83	0.182	1373.31*	1373.87*	0.32	1374.19	6	Curb-Horiz
11	30 Inch 5-yr	47.89	30	Cir	43.066	1372.00	1372.04	0.093	1374.27*	1374.97*	0.74	1375.71	End	Curb-Horiz
12	30 Inch 5-yr	38.79	30	Cir	301.515	1372.54	1372.85	0.103	1375.71*	1378.40*	1.44	1379.84	11	Curb-Horiz
13	30 Inch 5-yr	26.91	30	Cir	352.990	1373.35	1373.70	0.099	1379.84*	1381.36*	0.70	1382.06	12	Curb-Horiz
14	24 Inch 5-yr	17.81	24	Cir	75.394	1374.20	1374.27	0.093	1382.06*	1382.53*	0.50	1383.03	13	Curb-Horiz
15	15 Inch 5-yr	4.75	15	Cir	88.406	1373.85	1374.00	0.170	1379.84*	1380.32*	0.23	1380.55	12	Curb-Horiz
16	24 Inch 5-yr	20.98	24	Cir	75.160	1375.00	1375.08	0.106	1376.62*	1377.50*	0.69	1378.19	End	Curb-Horiz

Project File: Pipe Sizing.stm | Number of lines: 16 | Run Date: 04-05-2013

NOTES: Return period = 5 Yrs. ; *Surcharged (HGL above crown).

Appendix K

Water Quality Calculations

Water Quality Volume Calculations
K-96 and Greenwich

Volumentric Runoff Coefficients by Land Use and Hydraulic Soil Group

	Hydrologic Soil Group								Total
	A		B		C		D		
Land Use	**Area (ac)**	**R_V**	**Area (ac)**	**R_V**	**Area (ac)**	**R_V**	**Area (ac)**	**R_V**	**Area (ac)**
Undisturbed		0.02		0.03		0.04		0.05	0
Disturbed Pervious		0.15		0.20		0.22	15.84	0.25	15.84
Impervious Cover		0.95		0.95		0.95	89.76	0.95	89.76
Total Area (ac)	0.00		0.00		0.00		105.6		**105.6**
Volumetric Runoff Coefficient (R_V)	0.00		0.00		0.00		0.85		**0.85**

Rainfall Depth (P) (in)	1.2
Water Quality Protection Volume (WQ_V) (ac-ft)	8.92
Water Quality Protection Volume (Q_{WV}) (in)	1.01
Redevelopment	No

Appendix L

Channel Protection Volume Calculations

Water Quality Volume Calculations
K-96 and Greenwich

Rainfall Depth (P) (in)	2.80
Volumetric Runoff Coefficient (R_V)	0.85
Total Area (A) (ac)	105.60
Pond and Swamp Areas (% of Drainage Area)	0.00
Pond & Swamp Adjustment Factors (F_P)	1.00
Water Quality Protection Volume (Q_{wv}) (in)	2.37
Curve Number (CN)	96.5
Potential Maximum Abstraction (S)	0.36
Initial Abstraction (I_a)	0.07
Initial Abstraction/Rainfall Depth (I_a/P)	0.03
Time of Concentration (T_c) (min)	25.10
Time of Concentration (T_c) (hr)	0.42
Unit Peak Discharge (qu) (csm/in) (Figure 4-6)	700.00
Water Quality Peak Flow (Q_{wq})(cfs)	273.27
Rainfall Excess (Q) (in)	2.41
Peak Discharge (Q_p)	278.05
Ratio of Outflow to Inflow (q_0/q_i) (Figure 4-17)	0.03
Ratio of Storage Volume to Runoff Volume (V_s/V_r)	0.64
Channel Protection Volume (CP_v) (ac-ft)	13.57
Redevelopment	No

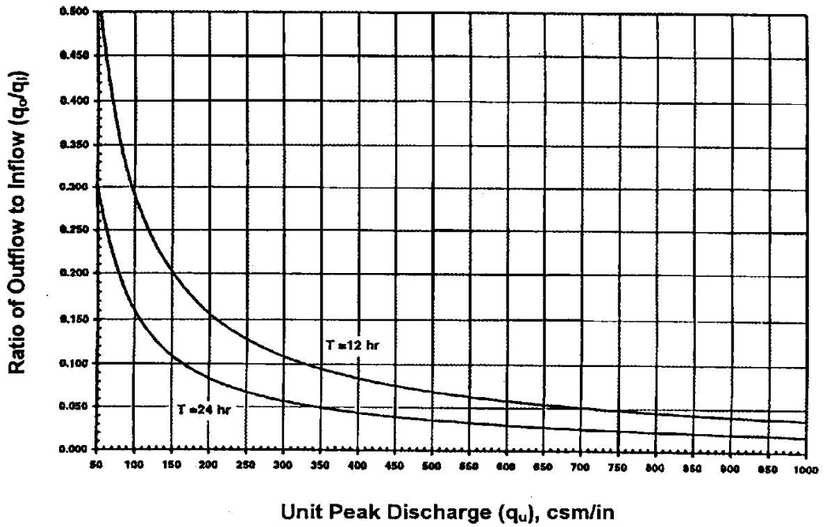


Figure 4-17 Detention Time vs Discharge Ratios
(Source: MDE, 1998)

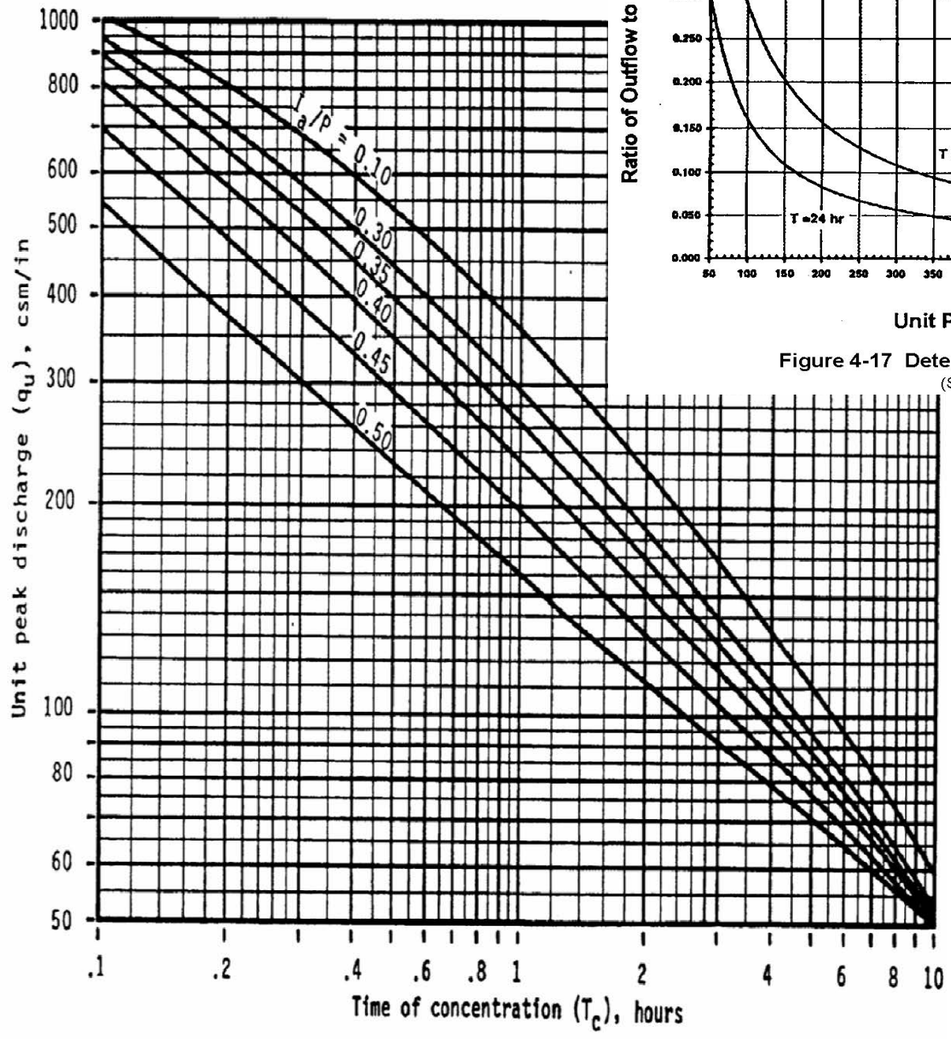


Figure 4-6 SCS Type II Unit Peak Discharge Graph
(Source: SCS, TR-55, Second Edition, June 1986)

Appendix M

Army Corps of Engineers Correspondence

Copies to
Kara
Greg A. 12/15

DEPARTMENT OF THE ARMY
KANSAS CITY DISTRICT, CORPS OF ENGINEERS
STATE REGULATORY PROGRAM OFFICE - KANSAS
2710 N.E. SHADY CREEK ACCESS ROAD
EL DORADO, KANSAS 67042

REPLY TO
ATTENTION OF:

December 1, 2004

Kansas State Regulatory Office
(200500206)
(Butler, KS, NPR)

Mr. Mark Buckingham
MKEC Engineering Consultants, Inc.
411 North Webb Road
Wichita, Kansas 67206

Dear Mr. Buckingham:

This is in response to your letter received on November 2, 2004, requesting a concurrence with a preliminary wetland delineation conducted by Mr. Gregg Armstrong of Geotechnical Services, Inc. for a 160-acre tract known as the Mollet Property. The site is located in Section 6, Township 27 south, Range 3 east, Butler County, Kansas.

The Corps of Engineers has jurisdiction over all waters of the United States. Discharges of dredged or fill material in waters of the United States, including wetlands, require prior authorization from the Corps under Section 404 of the Clean Water Act (33 USC 1344). The implementing regulation for this Act is found at 33 CFR 320-330.

The enclosed Jurisdictional Determination (JD) form describes the extent of waters of the United States on the project site. Also, the enclosed Notification of Administrative Appeal Options and Process and Request for Appeal form (FORM) describes your options in Section 1 of the FORM. If you choose to appeal, and you have new information concerning the elevation of the OHWM, you should complete Section # II of the FORM and return the FORM to this office. If you choose to appeal, but have no new information, please submit the completed FORM directly to **U.S. Army Corps of Engineers, Commander, Northwestern Division (ATTN: CENWD-CM-OR), 12565 West Center Road, Omaha, NE 68144-3869.**

We **concur** with the preliminary wetland delineation, which concludes, "no jurisdictional waters of the United States were identified within the project boundaries". Therefore, Department of the Army permit authorization would not be required for any proposed work within the delineated site. Other Federal, state and/or local permits may be required, however, and you should verify this yourself.

Mr. Thomas A. McCabe, Regulatory Specialist, reviewed the information furnished and made this determination. If you have any questions concerning this matter, please feel free to

contact Mr. McCabe at 316-322-8247 (FAX 316-322-8259).

Copies Furnished:

Environmental Protection Agency,
Water Resources Protection Branch
Kansas Department of Wildlife and Parks
Kansas Department of Agriculture

Geotechnical Services, Inc.
ATTN: Gregg Armstrong
4503 East 47th Street South
Wichita, Kansas 67210

JURISDICTIONAL DETERMINATION Revised 8/13/04
U.S. Army Corps of Engineers

DISTRICT OFFICE: Kansas City District (CENWK)
FILE NUMBER: 200500206

PROJECT LOCATION INFORMATION:
State: Kansas
County: Butler
Center coordinates of site (latitude/longitude): 37 43 59 N / 97 09 00 W
Approximate size of area (parcel) reviewed, including uplands: 160 acres.
Name of nearest waterway: Republican Creek
Name of watershed: Arkansas River

JURISDICTIONAL DETERMINATION
Completed: Desktop determination ☐ Date:
Site visit(s) ☒ Date(s): December 1, 2004

Jurisdictional Determination (JD):

☐ Preliminary JD - Based on available information, ☐ *there appear to be* (or) ☐ *there appear to be no* "waters of the United States" and/or "navigable waters of the United States" on the project site. A preliminary JD is not appealable (Reference 33 CFR part 331).

☒ Approved JD – An approved JD is an appealable action (Reference 33 CFR part 331).
Check all that apply:

☐ *There are* "navigable waters of the United States" (as defined by 33 CFR part 329 and associated guidance) within the reviewed area. Approximate size of jurisdictional area: .

☐ *There are* "waters of the United States" (as defined by 33 CFR part 328 and associated guidance) within the reviewed area. Approximate size of jurisdictional area: .

☐ *There are "isolated, non-navigable, intra-state* waters or wetlands" within the reviewed area.
☐ Decision supported by SWANCC/Migratory Bird Rule Information Sheet for Determination of No Jurisdiction.

BASIS OF JURISDICTIONAL DETERMINATION:

A. Waters defined under 33 CFR part 329 as "navigable waters of the United States":
☐ The presence of waters that are subject to the ebb and flow of the tide and/or are presently used, or have been used in the past, or may be susceptible for use to transport interstate or foreign commerce.

B. Waters defined under 33 CFR part 328.3(a) as "waters of the United States":
☐ (1) The presence of waters, which are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide.
☐ (2) The presence of interstate waters including interstate wetlands[1].
☐ (3) The presence of other waters such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds, the use, degradation or destruction of which could affect interstate commerce including any such waters (check all that apply):
☐ (i) which are or could be used by interstate or foreign travelers for recreational or other purposes.
☐ (ii) from which fish or shellfish are or could be taken and sold in interstate or foreign commerce.
☐ (iii) which are or could be used for industrial purposes by industries in interstate commerce.
☐ (4) Impoundments of waters otherwise defined as waters of the US.
☐ (5) The presence of a tributary to a water identified in (1) – (4) above.
☐ (6) The presence of territorial seas.
☐ (7) The presence of wetlands adjacent[2] to other waters of the US, except for those wetlands adjacent to other wetlands.

Rationale for the Basis of Jurisdictional Determination (applies to any boxes checked above). *If the jurisdictional water or wetland is not itself a navigable water of the United States, describe connection(s) to the downstream navigable waters. If B(1) or B(3) is used as the Basis of Jurisdiction, document navigability and/or interstate commerce connection (i.e., discuss site conditions, including why the waterbody is navigable and/or how the destruction of the waterbody could affect interstate or foreign commerce). If B(2, 4, 5 or 6) is used as the Basis of Jurisdiction, document the rationale used to make the determination. If B(7) is used as the Basis of Jurisdiction, document the rationale used to make adjacency determination:* The grassed waterways within the project site are located above the point of jurisdiction within the tributary system.

Lateral Extent of Jurisdiction: (Reference: 33 CFR parts 328 and 329)

☒ Ordinary High Water Mark indicated by:
- ☐ clear, natural line impressed on the bank
- ☐ the presence of litter and debris
- ☐ changes in the character of soil
- ☐ destruction of terrestrial vegetation
- ☐ shelving
- ☐ other:

☒ High Tide Line indicated by:
- ☐ oil or scum line along shore objects
- ☐ fine shell or debris deposits (foreshore)
- ☐ physical markings/characteristics
- ☐ tidal gages
- ☐ other:

☒ Mean High Water Mark indicated by:
☐ survey to available datum; ☐ physical markings; ☐ vegetation lines/changes in vegetation types.

☒ Wetland boundaries, as shown on the attached wetland delineation map and/or in a delineation report prepared by:

Basis For Not Asserting Jurisdiction:

☒ The reviewed area consists entirely of uplands.
☒ Unable to confirm the presence of waters in 33 CFR part 328(a)(1, 2, or 4-7).
☒ Headquarters declined to approve jurisdiction on the basis of 33 CFR part 328.3(a)(3).
☒ The Corps has made a case-specific determination that the following waters present on the site are not Waters of the United States:
- ☐ Waste treatment systems, including treatment ponds or lagoons, pursuant to 33 CFR part 328.3.
- ☐ Artificially irrigated areas, which would revert to upland if the irrigation ceased.
- ☐ Artificial lakes and ponds created by excavating and/or diking dry land to collect and retain water and which are used exclusively for such purposes as stock watering, irrigation, settling basins, or rice growing.
- ☐ Artificial reflecting or swimming pools or other small ornamental bodies of water created by excavating and/or diking dry land to retain water for primarily aesthetic reasons.
- ☐ Water-filled depressions created in dry land incidental to construction activity and pits excavated in dry land for the purpose of obtaining fill, sand, or gravel unless and until the construction or excavation operation is abandoned and the resulting body of water meets the definition of waters of the United States found at 33 CFR 328.3(a).
- ☐ Isolated, intrastate wetland with no nexus to interstate commerce.
- ☐ Prior converted cropland, as determined by the Natural Resources Conservation Service. Explain rationale:
- ☐ Non-tidal drainage or irrigation ditches excavated on dry land. Explain rationale:
- ☐ Other (explain):

DATA REVIEWED FOR JURSIDICTIONAL DETERMINATION (mark all that apply):

☒ Maps, plans, plots or plat submitted by or on behalf of the applicant.
☒ Data sheets prepared/submitted by or on behalf of the applicant.
- ☒ This office concurs with the delineation report, dated September 2004, prepared by (company): Geotechnical Services Inc.
- ☐ This office does not concur with the delineation report, dated , prepared by (company):

☒ Data sheets prepared by the Corps.
☒ Corps' navigable waters' studies:
☒ U.S. Geological Survey Hydrologic Atlas:
☒ U.S. Geological Survey 7.5 Minute Topographic maps:
☒ U.S. Geological Survey 7.5 Minute Historic quadrangles:
☒ U.S. Geological Survey 15 Minute Historic quadrangles:
☒ USDA Natural Resources Conservation Service Soil Survey:
☒ National wetlands inventory maps:
☒ State/Local wetland inventory maps:
☒ FEMA/FIRM maps (Map Name & Date):
☒ 100-year Floodplain Elevation is: (NGVD)
☒ Aerial Photographs (Name & Date):
☒ Other photographs (Date):
☒ Advanced Identification Wetland maps:
☒ Site visit/determination conducted on:
☒ Applicable/supporting case law:
☒ Other information (please specify):

[1]Wetlands are identified and delineated using the methods and criteria established in the Corps Wetland Delineation Manual (87 Manual) (i.e., occurrence of hydrophytic vegetation, hydric soils and wetland hydrology).

[2]The term "adjacent" means bordering, contiguous, or neighboring. Wetlands separated from other waters of the U.S. by man-made dikes or barriers, natural river berms, beach dunes, and the like are also adjacent.

NOTIFICATION OF ADMINISTRATIVE APPEAL OPTIONS AND PROCESS AND REQUEST FOR APPEAL

Applicant: MKEC Engineering Consultants Inc.- Mollet Property 160-Acre Tract	File Number: 200500206	Date: 12/01/04
Attached is:		See Section below
	A. INITIAL PROFFERED PERMIT (Standard Permit or Letter of Permission)	A
	B. PROFFERED PERMIT (Standard Permit or Letter of Permission)	B
	C. PERMIT DENIAL	C
XX	D. APPROVED JURISDICTIONAL DETERMINATION	D
	E. PRELIMINARY JURISDICTIONAL DETERMINATION	E

SECTION I - The following identifies your rights and options regarding a modification, reconsideration, or administrative appeal of the above decision. Additional information may be found at http://www.usace.army.mil/inet/functions/cw/cecwo/reg or Corps regulations at 33 CFR Part 331.

A: INITIAL PROFFERED PERMIT: You may accept or request modification of the permit.

- ACCEPT: If you received a Standard Permit, you may sign the permit document and return it to the District Engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.
- REQUEST MODIFICATION: If you object to the permit (Standard or LOP) because of certain terms and conditions therein, you may request that the permit be modified accordingly. You must complete Section II of this form and return the form to the District Engineer. Your objections must be received by the District Engineer within 60 days of the date of this notice, or you will forfeit your right to appeal the permit in the future. Upon receipt of your letter, the District Engineer will evaluate your objections and may: (a) modify the permit to address all of your concerns, (b) modify the permit to address some of your objections, or (c) not modify the permit having determined that the permit should be issued as previously written. After evaluating your objections, the District Engineer will send you a proffered permit for your reconsideration, as indicated in Section B below.

B: PROFFERED PERMIT: You may accept or appeal the permit.

- ACCEPT: If you received a Standard Permit, you may sign the permit document and return it to the District Engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.
- APPEAL: If you choose to decline the proffered permit (Standard or LOP) because of certain terms and conditions therein, you may appeal the declined permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the Division Engineer (address on page 2). This form must be received by the Division Engineer within 60 days of the date of this notice.

C: PERMIT DENIAL: You may appeal the denial of a permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the Division Engineer (address on page 2). This form must be received by the Division Engineer within 60 days of the date of this notice.

D: APPROVED JURISDICTIONAL DETERMINATION: You may accept the approved JD, appeal the approved JD, or submit new information and request reconsideration of the approved JD.

- ACCEPT: You do not need to notify the Corps to accept an approved JD. Failure to notify the Corps within 60 days of the date of this notice, means that you accept the approved JD in its entirety, and waive all rights to appeal the approved JD.
- APPEAL: If you disagree with the approved JD, you may appeal the approved JD under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the Division Engineer (address on page 2). This form must be received by the Division Engineer within 60 days of the date of this notice.
- RECONSIDERATION BASED ON NEW INFORMATION: You may submit new information to the District Engineer for reconsideration of an approved JD. You must submit the information within 60 days of the date of this notice.

E: PRELIMINARY JURISDICTIONAL DETERMINATION: You do not need to respond to the Corps regarding the preliminary JD. The preliminary JD is not appealable. If you wish, you may request an approved JD (which may be appealed), by contacting the Corps district for further instruction. Also you may provide new information for further consideration by the Corps to reevaluate the JD.

SECTION II –Fill out this section and return this form to the appropriate office only if submitting a request for modification or reconsideration to the District Engineer, or if submitting a request for Administrative Appeal to the Division Engineer. All such submittals must be made within 60 days of the date of this notice.

Submit the following requests to the District Engineer

A. Modification of an INITIAL PROFFERED PERMIT (Item A).
D. Reconsideration of an APPROVED JURISDICTIONAL DETERMINATION based on NEW INFORMATION (Item D RECONSIDERATION).

Submit the following requests to the Division Engineer

B. Administrative Appeal of a PROFFERED PERMIT (Item B).
C. Administrative Appeal of a PERMIT DENIAL (Item C).
D. Administrative Appeal of an APPROVED JURISDICTIONAL DETERMINATION (Item D APPEAL) (for reasons other than reconsideration of an approved JD based on new information).

(Note: Preliminary Jurisdictional Determinations (Item E) are not appealable. If you have concerns regarding a preliminary Jurisdictional Determination, you can request an approved Jurisdictional Determination).

REASONS FOR APPEAL OR OBJECTIONS: (Describe your reasons for appealing the decision or your objections to an initial proffered permit in clear concise statements. You may attach additional information to this form to clarify where your reasons or objections are addressed in the administrative record.)

SUBMITTAL OF NEW OR ADDITIONAL INFORMATION: The District Engineer may accept and consider new information if you request a modification to an initial proffered permit (Part A), or a reconsideration of an approved JD (Part D). An administrative appeal to the Division Engineer is limited to a review of the administrative record, the Corps memorandum for the record of the appeal conference or meeting, and any supplemental information that the review officer has determined is needed to clarify the administrative record. Neither the appellant nor the Corps may add new information or analyses to the administrative record. However, you may provide additional information to clarify the location of information that is already in the administrative record.

POINT OF CONTACT FOR QUESTIONS OR INFORMATION:

If you have questions regarding this decision and/or the appeal process you may contact: DISTRICT ENGINEER **Attn: Joseph S. Hughes** **Chief Regulatory Branch** **U.S. Army Engineer District, Kansas City** **601 East 12th Street, Room 706** **Kansas City, MO 64106-2896** **Telephone: 816-983-3990** (Use this address for submittals to the District Engineer)	If you wish to submit an appeal or have questions regarding the appeal process you may contact: DIVISION ENGINEER **Attn: Mores V. Bergman** **Appeal Review Officer** **U.S. Army Engineer Division, Northwestern Division** **12565 West Center Road** **Omaha, NE 68144-3869** **Telephone: 402-697-2533**

RIGHT OF ENTRY: Your signature below grants the right of entry to Corps of Engineers personnel, and any government consultants, to conduct investigations of the project site during the course of the appeal process. You will be provided a 15 day notice of any site investigation, and will have the opportunity to participate in all site investigations.

Signature of appellant or agent.	Date:	Telephone number: