AUSTIN MILLER P.A.
ENGINEERING SERVICES

February 12, 2001

Vicky Huang, P.E.
City of Wichita
455 N. Main, 7th Floor
Wichita, KS 67202

RE: Drainage Plan
Replat of Part of Spencer Gardens Addition

Dear Ms. Huang:

Please find enclosed with this letter the drainage plan and supporting calculations for the Replat of Part of Spencer Gardens. The following paragraphs summarize the methodology and conclusions derived from these calculations.

The subject property contains 22.6 Acres. The property is currently undeveloped, with grass vegetation. Stormwater sewer lines cross the property near the east and west edges of the property. Both are 30-inch pipes draining inlets in Pawnee. These pipes discharge into Gypsum Creek just south of the subject property. The property is currently sloping to the south, with substantial grade difference between the north and south property lines.

The proposed drainage plan would split the property into two drainage areas. The west half (DA-1) contains 11.55 Ac. The east half (DA-2) contains 11.05 Ac. Undeveloped runoff from these areas is calculated at 48.1 cfs and 46.1 cfs respectively. Developed runoff from these areas were calculated at 68.1 cfs and 65.2 cfs respectively. The proposed drainage plan would allow DA-1 to drain directly to Gypsum Creek, following the existing drainage pattern. Runoff from DA-2 would be diverted into a detention pond in the southeast corner of the property. This detention pond would then discharge into Gypsum Creek.

The detention pond and accompanying outfall structure were analyzed two ways. The first analysis considered only the drainage from DA-2 going to the pond. The second analysis included the drainage from the 30-inch stormwater sewer pipe adjacent to the pond. The analysis was performed assuming the 30-inch pipe was flowing full during a 100-year storm, and that the pipe discharged into the pond.

An 18-inch discharge pipe was used for the initial condition in which only the runoff from DA-2 was considered. The pond was sized as shown on the enclosed drainage plan. The depth of the pond is 5 feet. The resulting discharge is 14.4 cfs, with a water surface elevation of 1302.63 feet. When added to the developed runoff from DA-1, the total runoff for developed conditions is 82.5 cfs. This is less than the 94.2 cfs allowed, so adequate detention is provided in this case.

355 N. Waco, Suite 200
Wichita, Kansas 67202
Tel 316-262-1281
http://www.austinmiller.com

The second condition was analyzed using a 36" discharge pipe with the same pond dimensions. Flow through the 30-inch pipe at full-flow conditions was calculated at 45.4 cfs. This was added to the inflow of the detention pond. The 45.4 cfs was also added to the allowable discharge for this condition. Analysis of the pond results in a peak outflow of 52.1 cfs at an elevation of 1302.84 feet. This outflow added to the runoff from DA-1 gives a total of 120.2 cfs. The allowable discharge for this condition is 139.6 cfs. Once again, the detention provided should be adequate.

The layout of this development has not been determined yet, and therefore, the final design of the detention pond should be completed at the time of development. Determination of whether the existing 30-inch pipe is redirected into the detention pond should also be decided at the time of final pond design.

Please review the enclosed calculations and contact me if you have any questions.

Respectfully,
Austin Miller, P. A.

Doug Klassen, P.E.

Runoff Calculations

JOB SPENCER GARDENS DRAINAGE
SHEET NO. 1 OF 2
CALCULATED BY DK DATE 12/22/00
CHECKED BY _____ DATE Revised 1/12/01
SCALE _____

SPENCER GARDENS DRAINAGE:

$DA-2 = \frac{481304}{43560} = 11.05 Ac$ $\quad DA-1 = \frac{503139}{43560} = 11.55 Ac$

UNDEVELOPED CONDITIONS: SOIL GROUP D

5-YEAR: $T_c = 23$ min. $\quad C = 0.54$ $\quad I = 3.73$ in/hr

$Q_{5_{DA-1}} = (0.54)(3.73)(11.55) = 23.3$ cfs

$Q_{5_{DA-2}} = (0.54)(3.73)(11.05) = 22.3$ cfs

TOTAL $Q_5 = 45.6$ cfs

100-YEAR: $T_c = 23$ min. $\quad C = 0.68$ $\quad I = 6.13$ in/hr

$Q_{100_{DA-1}} = (0.68)(6.13)(11.55) = 48.1$ cfs

$Q_{100_{DA-2}} = (0.68)(6.13)(11.05) = 46.1$ cfs

TOTAL $Q_{100} = 94.2$ cfs

DEVELOPED CONDITIONS:

5-YEAR: $I = 4.56 \quad C = 0.69$

$Q_{5_{DA-1}} = (0.69)(4.56)(11.55) = 36.3$ cfs

$Q_{5_{DA-2}} = (0.69)(4.56)(11.05) = 34.8$ cfs

TOTAL $Q_5 = 71.1$ cfs

100-YEAR: $I = 7.37$ in/hr $\quad C = 0.80$

$Q_{100_{DA-1}} = (0.80)(7.37)(11.55) = 68.1$ cfs

$Q_{100_{DA-2}} = (0.80)(7.37)(11.05) = 65.2$ cfs

TOTAL $Q_{100} = 133.3$ cfs

JOB SPENCER GARDENS DRAINAGE
SHEET NO. 2 OF 2
CALCULATED BY DK DATE 12/22/00
CHECKED BY _____ DATE _____
SCALE _____

CAPACITY OF 30" PIPE (EXISTING)

SLOPE = 1.22% $n = 0.013$

$A = 4.909\ ft^2$

$R = 0.625\ ft$

$$Q = \frac{1.49}{n} A R^{2/3} \sqrt{S}$$

$$= \frac{1.49}{0.013} (4.909)(0.625)^{2/3} \sqrt{0.0122}$$

$$= 45.4\ cfs$$

DA-2 + 30" = 46.1 + 45.4 = 91.5

TOTAL UNDEVELOPED RUNOFF INCL. 30":

48.1 + 46.1 + 45.4 = 139.6 cfs (ALLOWABLE)

TOTAL DEVELOPED RUNOFF W/ DETENTION POND:

68.1 + 52.1 = 120.2 cfs < 139.6 Allowed

Detention Pond Calculations:

Not including Existing 30-inch Pipe

Hydrograph Report

Hyd. No. 1

DA-2

Hydrograph type	= Rational	Peak discharge	= 65.11 cfs
Storm frequency	= 100 yrs	Time interval	= 1 min
Drainage area	= 11.05 ac	Runoff coeff.	= .8
Intensity	= 7.37 in/hr	Time of conc. (Tc)	= 15 min
I-D-F Curve	= WICHITA.IDF	Reced. limb factor	= 1

Total Volume = 58,596 cuft, 1.345 acft

Hydrograph Discharge Table

Time -- Outflow (hrs cfs)	
0.02	4.34
0.03	8.68
0.05	13.02
0.07	17.36
0.08	21.70
0.10	26.04
0.12	30.38
0.13	34.72
0.15	39.06
0.17	43.40
0.18	47.75
0.20	52.09
0.22	56.43
0.23	60.77
0.25	65.11 <<
0.27	60.77
0.28	56.43
0.30	52.09
0.32	47.75
0.33	43.40
0.35	39.06
0.37	34.72
0.38	30.38
0.40	26.04
0.42	21.70
0.43	17.36
0.45	13.02
0.47	8.68
0.48	4.34

...End

Hydrograph Report

Hyd. No. 2

Hydrograph type	= Reservoir	Peak discharge	= 14.44 cfs
Storm frequency	= 100 yrs	Time interval	= 1 min
Inflow hyd. No.	= 1	Reservoir name	= Pond 1
Max. Elevation	= 1302.63 ft	Max. Storage	= 43,365 cuft

Storage Indication method used.

Total Volume = 58,596 cuft, 1.345 acft

Hydrograph Discharge Table

Time (hrs)	Inflow (cfs)	Elevation (ft)	Culv. A (cfs)	Culv. B (cfs)	Culv. C (cfs)	Weir A (cfs)	Weir B (cfs)	Weir C (cfs)	Outflow (cfs)
0.05	13.02	1299.11	1.99	-----	-----	-----	-----	-----	1.99
0.07	17.36	1299.19	2.64	-----	-----	-----	-----	-----	2.64
0.08	21.70	1299.30	3.30	-----	-----	-----	-----	-----	3.30
0.10	26.04	1299.43	3.94	-----	-----	-----	-----	-----	3.94
0.12	30.38	1299.58	4.53	-----	-----	-----	-----	-----	4.53
0.13	34.72	1299.76	5.25	-----	-----	-----	-----	-----	5.25
0.15	39.06	1299.96	5.91	-----	-----	-----	-----	-----	5.91
0.17	43.40	1300.16	6.47	-----	-----	-----	-----	-----	6.47
0.18	47.75	1300.36	7.03	-----	-----	-----	-----	-----	7.03
0.20	52.09	1300.59	7.81	-----	-----	-----	-----	-----	7.81
0.22	56.43	1300.84	8.87	-----	-----	-----	-----	-----	8.87
0.23	60.77	1301.09	9.83	-----	-----	-----	-----	-----	9.83
0.25	65.11 <<	1301.32	10.68	-----	-----	-----	-----	-----	10.68
0.27	60.77	1301.56	11.45	-----	-----	-----	-----	-----	11.45
0.28	56.43	1301.77	12.10	-----	-----	-----	-----	-----	12.10
0.30	52.09	1301.96	12.66	-----	-----	-----	-----	-----	12.66
0.32	47.75	1302.11	13.08	-----	-----	-----	-----	-----	13.08
0.33	43.40	1302.24	13.43	-----	-----	-----	-----	-----	13.43
0.35	39.06	1302.35	13.72	-----	-----	-----	-----	-----	13.72
0.37	34.72	1302.44	13.96	-----	-----	-----	-----	-----	13.96
0.38	30.38	1302.51	14.14	-----	-----	-----	-----	-----	14.14
0.40	26.04	1302.57	14.28	-----	-----	-----	-----	-----	14.28
0.42	21.70	1302.61	14.38	-----	-----	-----	-----	-----	14.38
0.43	17.36	1302.63	14.43	-----	-----	-----	-----	-----	14.43
0.45	13.02	1302.63	14.44	-----	-----	-----	-----	-----	14.44 <<
0.47	8.68	1302.62	14.40	-----	-----	-----	-----	-----	14.40
0.48	4.34	1302.58	14.32	-----	-----	-----	-----	-----	14.32
0.50	0.00	1302.54	14.20	-----	-----	-----	-----	-----	14.20
0.52	0.00	1302.48	14.06	-----	-----	-----	-----	-----	14.06
0.53	0.00	1302.43	13.92	-----	-----	-----	-----	-----	13.92
0.55	0.00	1302.37	13.78	-----	-----	-----	-----	-----	13.78
0.57	0.00	1302.32	13.63	-----	-----	-----	-----	-----	13.63
0.58	0.00	1302.26	13.49	-----	-----	-----	-----	-----	13.49
0.60	0.00	1302.21	13.35	-----	-----	-----	-----	-----	13.35
0.62	0.00	1302.16	13.21	-----	-----	-----	-----	-----	13.21
0.63	0.00	1302.11	13.06	-----	-----	-----	-----	-----	13.06
0.65	0.00	1302.06	12.92	-----	-----	-----	-----	-----	12.92

Continues on next page...

Hydrograph Discharge Table

Time (hrs)	Inflow (cfs)	Elevation (ft)	Culv. A (cfs)	Culv. B (cfs)	Culv. C (cfs)	Weir A (cfs)	Weir B (cfs)	Weir C (cfs)	Outflow (cfs)
0.67	0.00	1302.01	12.78	-----	-----	-----	-----	-----	12.78
0.68	0.00	1301.95	12.62	-----	-----	-----	-----	-----	12.62
0.70	0.00	1301.89	12.45	-----	-----	-----	-----	-----	12.45
0.72	0.00	1301.84	12.29	-----	-----	-----	-----	-----	12.29
0.73	0.00	1301.78	12.12	-----	-----	-----	-----	-----	12.12
0.75	0.00	1301.73	11.96	-----	-----	-----	-----	-----	11.96
0.77	0.00	1301.67	11.79	-----	-----	-----	-----	-----	11.79
0.78	0.00	1301.62	11.63	-----	-----	-----	-----	-----	11.63
0.80	0.00	1301.57	11.47	-----	-----	-----	-----	-----	11.47
0.82	0.00	1301.51	11.30	-----	-----	-----	-----	-----	11.30
0.83	0.00	1301.46	11.14	-----	-----	-----	-----	-----	11.14
0.85	0.00	1301.41	10.97	-----	-----	-----	-----	-----	10.97
0.87	0.00	1301.36	10.81	-----	-----	-----	-----	-----	10.81
0.88	0.00	1301.32	10.64	-----	-----	-----	-----	-----	10.64
0.90	0.00	1301.27	10.48	-----	-----	-----	-----	-----	10.48
0.92	0.00	1301.22	10.31	-----	-----	-----	-----	-----	10.31
0.93	0.00	1301.17	10.15	-----	-----	-----	-----	-----	10.15
0.95	0.00	1301.13	9.99	-----	-----	-----	-----	-----	9.99
0.97	0.00	1301.08	9.82	-----	-----	-----	-----	-----	9.82
0.98	0.00	1301.04	9.66	-----	-----	-----	-----	-----	9.66
1.00	0.00	1300.99	9.49	-----	-----	-----	-----	-----	9.49
1.02	0.00	1300.94	9.29	-----	-----	-----	-----	-----	9.29
1.03	0.00	1300.89	9.10	-----	-----	-----	-----	-----	9.10
1.05	0.00	1300.85	8.91	-----	-----	-----	-----	-----	8.91
1.07	0.00	1300.80	8.72	-----	-----	-----	-----	-----	8.72
1.08	0.00	1300.75	8.52	-----	-----	-----	-----	-----	8.52
1.10	0.00	1300.71	8.33	-----	-----	-----	-----	-----	8.33
1.12	0.00	1300.66	8.13	-----	-----	-----	-----	-----	8.13
1.13	0.00	1300.62	7.94	-----	-----	-----	-----	-----	7.94
1.15	0.00	1300.58	7.75	-----	-----	-----	-----	-----	7.75
1.17	0.00	1300.54	7.55	-----	-----	-----	-----	-----	7.55
1.18	0.00	1300.50	7.37	-----	-----	-----	-----	-----	7.37
1.20	0.00	1300.46	7.27	-----	-----	-----	-----	-----	7.27
1.22	0.00	1300.42	7.17	-----	-----	-----	-----	-----	7.17
1.23	0.00	1300.38	7.08	-----	-----	-----	-----	-----	7.08
1.25	0.00	1300.35	6.98	-----	-----	-----	-----	-----	6.98
1.27	0.00	1300.31	6.88	-----	-----	-----	-----	-----	6.88
1.28	0.00	1300.27	6.79	-----	-----	-----	-----	-----	6.79
1.30	0.00	1300.24	6.69	-----	-----	-----	-----	-----	6.69
1.32	0.00	1300.20	6.59	-----	-----	-----	-----	-----	6.59
1.33	0.00	1300.17	6.49	-----	-----	-----	-----	-----	6.49
1.35	0.00	1300.13	6.40	-----	-----	-----	-----	-----	6.40
1.37	0.00	1300.10	6.30	-----	-----	-----	-----	-----	6.30
1.38	0.00	1300.06	6.20	-----	-----	-----	-----	-----	6.20
1.40	0.00	1300.03	6.11	-----	-----	-----	-----	-----	6.11
1.42	0.00	1300.00	6.01	-----	-----	-----	-----	-----	6.01
1.43	0.00	1299.96	5.89	-----	-----	-----	-----	-----	5.89
1.45	0.00	1299.92	5.78	-----	-----	-----	-----	-----	5.78
1.47	0.00	1299.89	5.66	-----	-----	-----	-----	-----	5.66
1.48	0.00	1299.85	5.54	-----	-----	-----	-----	-----	5.54

Continues on next page...

Hydrograph Discharge Table

Time (hrs)	Inflow (cfs)	Elevation (ft)	Culv. A (cfs)	Culv. B (cfs)	Culv. C (cfs)	Weir A (cfs)	Weir B (cfs)	Weir C (cfs)	Outflow (cfs)
1.50	0.00	1299.81	5.43	-----	-----	-----	-----	-----	5.43
1.52	0.00	1299.78	5.31	-----	-----	-----	-----	-----	5.31
1.53	0.00	1299.75	5.19	-----	-----	-----	-----	-----	5.19
1.55	0.00	1299.71	5.08	-----	-----	-----	-----	-----	5.08
1.57	0.00	1299.68	4.95	-----	-----	-----	-----	-----	4.95
1.58	0.00	1299.65	4.80	-----	-----	-----	-----	-----	4.80
1.60	0.00	1299.62	4.66	-----	-----	-----	-----	-----	4.66
1.62	0.00	1299.59	4.54	-----	-----	-----	-----	-----	4.54
1.63	0.00	1299.56	4.45	-----	-----	-----	-----	-----	4.45
1.65	0.00	1299.53	4.36	-----	-----	-----	-----	-----	4.36
1.67	0.00	1299.50	4.27	-----	-----	-----	-----	-----	4.27
1.68	0.00	1299.48	4.15	-----	-----	-----	-----	-----	4.15
1.70	0.00	1299.45	4.04	-----	-----	-----	-----	-----	4.04
1.72	0.00	1299.43	3.92	-----	-----	-----	-----	-----	3.92
1.73	0.00	1299.40	3.81	-----	-----	-----	-----	-----	3.81
1.75	0.00	1299.38	3.69	-----	-----	-----	-----	-----	3.69
1.77	0.00	1299.35	3.57	-----	-----	-----	-----	-----	3.57
1.78	0.00	1299.33	3.45	-----	-----	-----	-----	-----	3.45
1.80	0.00	1299.31	3.34	-----	-----	-----	-----	-----	3.34
1.82	0.00	1299.29	3.22	-----	-----	-----	-----	-----	3.22
1.83	0.00	1299.27	3.10	-----	-----	-----	-----	-----	3.10
1.85	0.00	1299.25	2.98	-----	-----	-----	-----	-----	2.98
1.87	0.00	1299.23	2.87	-----	-----	-----	-----	-----	2.87
1.88	0.00	1299.21	2.76	-----	-----	-----	-----	-----	2.76
1.90	0.00	1299.19	2.64	-----	-----	-----	-----	-----	2.64
1.92	0.00	1299.18	2.51	-----	-----	-----	-----	-----	2.51
1.93	0.00	1299.16	2.39	-----	-----	-----	-----	-----	2.39
1.95	0.00	1299.15	2.27	-----	-----	-----	-----	-----	2.27
1.97	0.00	1299.13	2.16	-----	-----	-----	-----	-----	2.16
1.98	0.00	1299.12	2.05	-----	-----	-----	-----	-----	2.05
2.00	0.00	1299.11	1.95	-----	-----	-----	-----	-----	1.95
2.02	0.00	1299.09	1.79	-----	-----	-----	-----	-----	1.79
2.03	0.00	1299.08	1.58	-----	-----	-----	-----	-----	1.58
2.05	0.00	1299.07	1.40	-----	-----	-----	-----	-----	1.40
2.07	0.00	1299.07	1.24	-----	-----	-----	-----	-----	1.24
2.08	0.00	1299.06	1.09	-----	-----	-----	-----	-----	1.09

...End

Detention Pond Calculations:

Including Existing 30-inch Pipe

Hydrograph

Hyd. No. 1

DA-2

Hydrograph type	
Storm frequency	
Drainage area	
Intensity	
I-D-F Curve	

Hydrograph Disch

Time -- (hrs)	Outflow cfs)
0.02	4.34
0.03	8.68
0.05	13.02
0.07	17.36
0.08	21.70
0.10	26.04
0.12	30.38
0.13	34.72
0.15	39.06
0.17	43.40
0.18	47.75
0.20	52.09
0.22	56.43
0.23	60.77
0.25	65.11 <<
0.27	60.77
0.28	56.43
0.30	52.09
0.32	47.75
0.33	43.40
0.35	39.06
0.37	34.72
0.38	30.38
0.40	26.04
0.42	21.70
0.43	17.36
0.45	13.02
0.47	8.68
0.48	4.34

...End

Hydrograph Report

Hyd. No. 2

Drainage from Exist 30"

Hydrograph type	= Rational	Peak discharge	= 45.37 cfs
Storm frequency	= 100 yrs	Time interval	= 1 min
Drainage area	= 7 ac	Runoff coeff.	= .88
Intensity	= 7.37 in/hr	Time of conc. (Tc)	= 15 min
I-D-F Curve	= WICHITA.IDF	Reced. limb factor	= 1

Total Volume = 40,832 cuft, 0.937 acft

Hydrograph Discharge Table

Time (hrs)	Outflow (cfs)
0.02	3.02
0.03	6.05
0.05	9.07
0.07	12.10
0.08	15.12
0.10	18.15
0.12	21.17
0.13	24.20
0.15	27.22
0.17	30.25
0.18	33.27
0.20	36.30
0.22	39.32
0.23	42.34
0.25	45.37 <<
0.27	42.34
0.28	39.32
0.30	36.30
0.32	33.27
0.33	30.25
0.35	27.22
0.37	24.20
0.38	21.17
0.40	18.15
0.42	15.12
0.43	12.10
0.45	9.07
0.47	6.05
0.48	3.02

...End

Hydrograph Report

Hyd. No. 3

Hydrograph type	= Combine	Peak discharge	= 110.48 cfs
Storm frequency	= 100 yrs	Time interval	= 1 min
1st inflow hyd. No.	= 1	2nd inflow hyd. No.	= 2

Total Volume = 99,428 cuft, 2.283 acft

Hydrograph Discharge Table

Time (hrs)	1st Inflow (cfs)	+	2nd Inflow (cfs)	=	Outflow (cfs)
0.02	4.34		3.02		7.37
0.03	8.68		6.05		14.73
0.05	13.02		9.07		22.10
0.07	17.36		12.10		29.46
0.08	21.70		15.12		36.83
0.10	26.04		18.15		44.19
0.12	30.38		21.17		51.56
0.13	34.72		24.20		58.92
0.15	39.06		27.22		66.29
0.17	43.40		30.25		73.65
0.18	47.75		33.27		81.02
0.20	52.09		36.30		88.38
0.22	56.43		39.32		95.75
0.23	60.77		42.34		103.11
0.25	65.11 <<		45.37 <<		110.48 <<
0.27	60.77		42.34		103.11
0.28	56.43		39.32		95.75
0.30	52.09		36.30		88.38
0.32	47.75		33.27		81.02
0.33	43.40		30.25		73.65
0.35	39.06		27.22		66.29
0.37	34.72		24.20		58.92
0.38	30.38		21.17		51.56
0.40	26.04		18.15		44.19
0.42	21.70		15.12		36.83
0.43	17.36		12.10		29.46
0.45	13.02		9.07		22.10
0.47	8.68		6.05		14.73
0.48	4.34		3.02		7.37

...End

Hydrograph Report

Hyd. No. 4

Hydrograph type	= Reservoir	Peak discharge	= 52.10 cfs
Storm frequency	= 100 yrs	Time interval	= 1 min
Inflow hyd. No.	= 3	Reservoir name	= Pond Option 3
Max. Elevation	= 1302.84 ft	Max. Storage	= 46,628 cuft

Storage Indication method used.

Total Volume = 99,428 cuft, 2.283 acft

Hydrograph Discharge Table

Time (hrs)	Inflow (cfs)	Elevation (ft)	Culv. A (cfs)	Culv. B (cfs)	Culv. C (cfs)	Weir A (cfs)	Weir B (cfs)	Weir C (cfs)	Outflow (cfs)
0.02	7.37	1299.02	1.45	-----	-----	-----	-----	-----	1.45
0.03	14.73	1299.07	5.22	-----	-----	-----	-----	-----	5.22
0.05	22.10	1299.14	8.92	-----	-----	-----	-----	-----	8.92
0.07	29.46	1299.24	11.75	-----	-----	-----	-----	-----	11.75
0.08	36.83	1299.37	14.59	-----	-----	-----	-----	-----	14.59
0.10	44.19	1299.53	17.45	-----	-----	-----	-----	-----	17.45
0.12	51.56	1299.71	20.22	-----	-----	-----	-----	-----	20.22
0.13	58.92	1299.93	23.19	-----	-----	-----	-----	-----	23.19
0.15	66.29	1300.14	25.74	-----	-----	-----	-----	-----	25.74
0.17	73.65	1300.37	28.21	-----	-----	-----	-----	-----	28.21
0.18	81.02	1300.63	30.73	-----	-----	-----	-----	-----	30.72
0.20	88.38	1300.91	33.27	-----	-----	-----	-----	-----	33.27
0.22	95.75	1301.19	35.59	-----	-----	-----	-----	-----	35.59
0.23	103.11	1301.47	37.84	-----	-----	-----	-----	-----	37.84
0.25	110.48 <<	1301.78	40.13	-----	-----	-----	-----	-----	40.13
0.27	103.11	1302.07	42.60	-----	-----	-----	-----	-----	42.60
0.28	95.75	1302.29	45.47	-----	-----	-----	-----	-----	45.47
0.30	88.38	1302.46	47.69	-----	-----	-----	-----	-----	47.69
0.32	81.02	1302.61	49.39	-----	-----	-----	-----	-----	49.39
0.33	73.65	1302.71	50.63	-----	-----	-----	-----	-----	50.63
0.35	66.29	1302.79	51.48	-----	-----	-----	-----	-----	51.48
0.37	58.92	1302.83	51.96	-----	-----	-----	-----	-----	51.96
0.38	51.56	1302.84 <<	52.10	-----	-----	-----	-----	-----	52.10 <<
0.40	44.19	1302.83	51.92	-----	-----	-----	-----	-----	51.92
0.42	36.83	1302.78	51.42	-----	-----	-----	-----	-----	51.42
0.43	29.46	1302.71	50.63	-----	-----	-----	-----	-----	50.63
0.45	22.10	1302.62	49.52	-----	-----	-----	-----	-----	49.52
0.47	14.73	1302.50	48.10	-----	-----	-----	-----	-----	48.10
0.48	7.37	1302.36	46.35	-----	-----	-----	-----	-----	46.35
0.50	0.00	1302.19	44.26	-----	-----	-----	-----	-----	44.26
0.52	0.00	1302.02	41.98	-----	-----	-----	-----	-----	41.98
0.53	0.00	1301.84	40.54	-----	-----	-----	-----	-----	40.54
0.55	0.00	1301.66	39.23	-----	-----	-----	-----	-----	39.23
0.57	0.00	1301.48	37.91	-----	-----	-----	-----	-----	37.91
0.58	0.00	1301.31	36.59	-----	-----	-----	-----	-----	36.59
0.60	0.00	1301.15	35.28	-----	-----	-----	-----	-----	35.28
0.62	0.00	1300.99	33.95	-----	-----	-----	-----	-----	33.95

Continues on next page...

Hydrograph Discharge Table

Time (hrs)	Inflow (cfs)	Elevation (ft)	Culv. A (cfs)	Culv. B (cfs)	Culv. C (cfs)	Weir A (cfs)	Weir B (cfs)	Weir C (cfs)	Outflow (cfs)
0.63	0.00	1300.81	32.40	-----	-----	-----	-----	-----	32.40
0.65	0.00	1300.64	30.85	-----	-----	-----	-----	-----	30.85
0.67	0.00	1300.48	29.31	-----	-----	-----	-----	-----	29.31
0.68	0.00	1300.33	27.76	-----	-----	-----	-----	-----	27.76
0.70	0.00	1300.19	26.21	-----	-----	-----	-----	-----	26.21
0.72	0.00	1300.05	24.66	-----	-----	-----	-----	-----	24.66
0.73	0.00	1299.91	22.93	-----	-----	-----	-----	-----	22.93
0.75	0.00	1299.77	20.59	-----	-----	-----	-----	-----	20.59
0.77	0.00	1299.64	19.24	-----	-----	-----	-----	-----	19.24
0.78	0.00	1299.52	17.38	-----	-----	-----	-----	-----	17.38
0.80	0.00	1299.42	15.52	-----	-----	-----	-----	-----	15.52
0.82	0.00	1299.32	13.64	-----	-----	-----	-----	-----	13.64
0.83	0.00	1299.24	11.76	-----	-----	-----	-----	-----	11.75
0.85	0.00	1299.17	9.86	-----	-----	-----	-----	-----	9.86
0.87	0.00	1299.11	8.05	-----	-----	-----	-----	-----	8.05
0.88	0.00	1299.07	5.38	-----	-----	-----	-----	-----	5.38
0.90	0.00	1299.04	3.27	-----	-----	-----	-----	-----	3.27
0.92	0.00	1299.03	1.98	-----	-----	-----	-----	-----	1.98
0.93	0.00	1299.02	1.20	-----	-----	-----	-----	-----	1.20

...End

Reservoir Report

Reservoir No. 3

Pond Option 3

Culvert / Orifice Structures

		[A]	[B]	[C]
Rise (in)	=	36.0	0.0	0.0
Span (in)	=	36.0	0.0	0.0
No. Barrels	=	1	0	0
Invert El. (ft)	=	1299.00	0.00	0.00
Length (ft)	=	50.0	0.0	0.0
Slope (%)	=	0.50	0.00	0.00
N-Value	=	.013	.013	.013
Orif. Coeff.	=	0.60	0.60	0.60
Multi-Stage	=	-----	No	No

Weir Structures

		[A]	[B]	[C]
Crest Len (ft)	=	0.0	0.0	0.0
Crest El. (ft)	=	0.00	0.00	0.00
Weir Coeff.	=	3.00	3.00	3.00
Eqn. Exp.	=	1.50	1.50	1.50
Multi-Stage	=	No	No	No

Tailwater Elevation = 0.00 ft

Note: All outflows have been analyzed under inlet and outlet control.

Stage / Storage / Discharge Table

Stage (ft)	Storage (cuft)	Elevation (ft)	Culv. A (cfs)	Culv. B (cfs)	Culv. C (cfs)	Weir A (cfs)	Weir B (cfs)	Weir C (cfs)	Discharge (cfs)
0.0	00	1299.00	0.00	---	---	---	---	---	0.00
0.1	933	1299.10	7.61	---	---	---	---	---	7.61
0.2	1,866	1299.20	10.76	---	---	---	---	---	10.76
0.3	2,799	1299.30	13.18	---	---	---	---	---	13.18
0.4	3,732	1299.40	15.22	---	---	---	---	---	15.22
0.5	4,665	1299.50	17.02	---	---	---	---	---	17.02
0.6	5,598	1299.60	18.64	---	---	---	---	---	18.64
0.7	6,531	1299.70	20.13	---	---	---	---	---	20.13
0.8	7,464	1299.80	20.80	---	---	---	---	---	20.80
0.9	8,397	1299.90	22.83	---	---	---	---	---	22.83
1.0	9,330	1300.00	24.07	---	---	---	---	---	24.07
1.1	10,453	1300.10	25.24	---	---	---	---	---	25.24
1.2	11,576	1300.20	26.36	---	---	---	---	---	26.36
1.3	12,699	1300.30	27.44	---	---	---	---	---	27.44
1.4	13,822	1300.40	28.47	---	---	---	---	---	28.47
1.5	14,945	1300.50	29.47	---	---	---	---	---	29.47
1.6	16,067	1300.60	30.44	---	---	---	---	---	30.44
1.7	17,190	1300.70	31.38	---	---	---	---	---	31.38
1.8	18,313	1300.80	32.29	---	---	---	---	---	32.29
1.9	19,436	1300.90	33.17	---	---	---	---	---	33.17
2.0	20,559	1301.00	34.04	---	---	---	---	---	34.04
2.1	21,879	1301.10	34.88	---	---	---	---	---	34.88
2.2	23,199	1301.20	35.70	---	---	---	---	---	35.70
2.3	24,519	1301.30	36.50	---	---	---	---	---	36.50
2.4	25,839	1301.40	37.28	---	---	---	---	---	37.28

Continues on next page...

Stage / Storage / Discharge Table

Stage (ft)	Storage (cuft)	Elevation (ft)	Culv. A (cfs)	Culv. B (cfs)	Culv. C (cfs)	Weir A (cfs)	Weir B (cfs)	Weir C (cfs)	Discharge (cfs)
2.5	27,160	1301.50	38.05	---	---	---	---	---	38.05
2.6	28,480	1301.60	38.80	---	---	---	---	---	38.80
2.7	29,800	1301.70	39.54	---	---	---	---	---	39.54
2.8	31,120	1301.80	40.27	---	---	---	---	---	40.27
2.9	32,440	1301.90	40.98	---	---	---	---	---	40.98
3.0	33,760	1302.00	41.68	---	---	---	---	---	41.68
3.1	35,285	1302.10	43.05	---	---	---	---	---	43.05
3.2	36,809	1302.20	44.37	---	---	---	---	---	44.37
3.3	38,334	1302.30	45.66	---	---	---	---	---	45.66
3.4	39,859	1302.40	46.91	---	---	---	---	---	46.91
3.5	41,384	1302.50	48.13	---	---	---	---	---	48.13
3.6	42,908	1302.60	49.31	---	---	---	---	---	49.31
3.7	44,433	1302.70	50.47	---	---	---	---	---	50.47
3.8	45,958	1302.80	51.61	---	---	---	---	---	51.61
3.9	47,482	1302.90	52.72	---	---	---	---	---	52.72
4.0	49,007	1303.00	53.81	---	---	---	---	---	53.81
4.1	50,744	1303.10	54.87	---	---	---	---	---	54.87
4.2	52,481	1303.20	55.92	---	---	---	---	---	55.92
4.3	54,217	1303.30	56.94	---	---	---	---	---	56.94
4.4	55,954	1303.40	57.95	---	---	---	---	---	57.95
4.5	57,691	1303.50	58.94	---	---	---	---	---	58.94
4.6	59,428	1303.60	59.92	---	---	---	---	---	59.92
4.7	61,165	1303.70	60.87	---	---	---	---	---	60.87
4.8	62,901	1303.80	61.82	---	---	---	---	---	61.82
4.9	64,638	1303.90	62.75	---	---	---	---	---	62.75
5.0	66,375	1304.00	63.67	---	---	---	---	---	63.67

Hydrograph Report

Hyd. No. 5

DA-2 (5 year)

Hydrograph type	= Rational	Peak discharge	= 40.21 cfs
Storm frequency	= 5 yrs	Time interval	= 1 min
Drainage area	= 11.05 ac	Runoff coeff.	= .8
Intensity	= 4.55 in/hr	Time of conc. (Tc)	= 15 min
I-D-F Curve	= WICHITA.IDF	Reced. limb factor	= 1

Total Volume = 36,193 cuft, 0.831 acft

Hydrograph Discharge Table

Time (hrs)	Outflow (cfs)
0.02	2.68
0.03	5.36
0.05	8.04
0.07	10.72
0.08	13.40
0.10	16.09
0.12	18.77
0.13	21.45
0.15	24.13
0.17	26.81
0.18	29.49
0.20	32.17
0.22	34.85
0.23	37.53
0.25	40.21 <<
0.27	37.53
0.28	34.85
0.30	32.17
0.32	29.49
0.33	26.81
0.35	24.13
0.37	21.45
0.38	18.77
0.40	16.09
0.42	13.40
0.43	10.72
0.45	8.04
0.47	5.36
0.48	2.68

...End

Hydrograph Report

Hyd. No. 6

Exist. 30" (5-year)

Hydrograph type	= Rational	Peak discharge	= 28.02 cfs
Storm frequency	= 5 yrs	Time interval	= 1 min
Drainage area	= 7 ac	Runoff coeff.	= .88
Intensity	= 4.55 in/hr	Time of conc. (Tc)	= 15 min
I-D-F Curve	= WICHITA.IDF	Reced. limb factor	= 1

Total Volume = 25,220 cuft, 0.579 acft

Hydrograph Discharge Table

Time (hrs)	Outflow (cfs)
0.02	1.87
0.03	3.74
0.05	5.60
0.07	7.47
0.08	9.34
0.10	11.21
0.12	13.08
0.13	14.95
0.15	16.81
0.17	18.68
0.18	20.55
0.20	22.42
0.22	24.29
0.23	26.15
0.25	28.02 <<
0.27	26.15
0.28	24.29
0.30	22.42
0.32	20.55
0.33	18.68
0.35	16.81
0.37	14.95
0.38	13.08
0.40	11.21
0.42	9.34
0.43	7.47
0.45	5.60
0.47	3.74
0.48	1.87

...End

Hydrograph Report

Hyd. No. 7

Hydrograph type	= Combine	Peak discharge	= 68.24 cfs
Storm frequency	= 5 yrs	Time interval	= 1 min
1st inflow hyd. No.	= 5	2nd inflow hyd. No.	= 6

Total Volume = 61,413 cuft, 1.410 acft

Hydrograph Discharge Table

Time (hrs)	1st Inflow (cfs)	+	2nd Inflow (cfs)	=	Outflow (cfs)
0.02	2.68		1.87		4.55
0.03	5.36		3.74		9.10
0.05	8.04		5.60		13.65
0.07	10.72		7.47		18.20
0.08	13.40		9.34		22.75
0.10	16.09		11.21		27.29
0.12	18.77		13.08		31.84
0.13	21.45		14.95		36.39
0.15	24.13		16.81		40.94
0.17	26.81		18.68		45.49
0.18	29.49		20.55		50.04
0.20	32.17		22.42		54.59
0.22	34.85		24.29		59.14
0.23	37.53		26.15		63.69
0.25	40.21 <<		28.02 <<		68.24 <<
0.27	37.53		26.15		63.69
0.28	34.85		24.29		59.14
0.30	32.17		22.42		54.59
0.32	29.49		20.55		50.04
0.33	26.81		18.68		45.49
0.35	24.13		16.81		40.94
0.37	21.45		14.95		36.39
0.38	18.77		13.08		31.84
0.40	16.09		11.21		27.29
0.42	13.40		9.34		22.75
0.43	10.72		7.47		18.20
0.45	8.04		5.60		13.65
0.47	5.36		3.74		9.10
0.48	2.68		1.87		4.55

...End

Hydrograph Report

Hyd. No. 8

Hydrograph type	= Reservoir	Peak discharge	= 36.19 cfs
Storm frequency	= 5 yrs	Time interval	= 1 min
Inflow hyd. No.	= 7	Reservoir name	= Pond Option 3
Max. Elevation	= 1301.26 ft	Max. Storage	= 24,018 cuft

Storage Indication method used.

Total Volume = 61,413 cuft, 1.410 acft

Hydrograph Discharge Table

Time (hrs)	Inflow (cfs)	Elevation (ft)	Culv. A (cfs)	Culv. B (cfs)	Culv. C (cfs)	Weir A (cfs)	Weir B (cfs)	Weir C (cfs)	Outflow (cfs)
0.03	9.10	1299.04	3.22	-----	-----	-----	-----	-----	3.23
0.05	13.65	1299.08	6.43	-----	-----	-----	-----	-----	6.43
0.07	18.20	1299.14	8.80	-----	-----	-----	-----	-----	8.80
0.08	22.75	1299.21	10.91	-----	-----	-----	-----	-----	10.91
0.10	27.29	1299.29	12.95	-----	-----	-----	-----	-----	12.95
0.12	31.84	1299.39	15.03	-----	-----	-----	-----	-----	15.03
0.13	36.39	1299.51	17.12	-----	-----	-----	-----	-----	17.12
0.15	40.94	1299.64	19.21	-----	-----	-----	-----	-----	19.21
0.17	45.49	1299.79	20.72	-----	-----	-----	-----	-----	20.72
0.18	50.04	1299.95	23.48	-----	-----	-----	-----	-----	23.48
0.20	54.59	1300.11	25.35	-----	-----	-----	-----	-----	25.35
0.22	59.14	1300.27	27.15	-----	-----	-----	-----	-----	27.15
0.23	63.69	1300.45	28.99	-----	-----	-----	-----	-----	28.99
0.25	68.24 <<	1300.64	30.85	-----	-----	-----	-----	-----	30.86
0.27	63.69	1300.83	32.53	-----	-----	-----	-----	-----	32.53
0.28	59.14	1300.98	33.85	-----	-----	-----	-----	-----	33.85
0.30	54.59	1301.08	34.74	-----	-----	-----	-----	-----	34.74
0.32	50.04	1301.16	35.39	-----	-----	-----	-----	-----	35.39
0.33	45.49	1301.22	35.84	-----	-----	-----	-----	-----	35.84
0.35	40.94	1301.25	36.10	-----	-----	-----	-----	-----	36.10
0.37	36.39	1301.26 <<	36.19	-----	-----	-----	-----	-----	36.19 <<
0.38	31.84	1301.25	36.12	-----	-----	-----	-----	-----	36.12
0.40	27.29	1301.22	35.88	-----	-----	-----	-----	-----	35.88
0.42	22.75	1301.18	35.49	-----	-----	-----	-----	-----	35.49
0.43	18.20	1301.11	34.94	-----	-----	-----	-----	-----	34.94
0.45	13.65	1301.02	34.23	-----	-----	-----	-----	-----	34.23
0.47	9.10	1300.91	33.24	-----	-----	-----	-----	-----	33.24
0.48	4.55	1300.77	32.01	-----	-----	-----	-----	-----	32.01
0.50	0.00	1300.61	30.58	-----	-----	-----	-----	-----	30.58
0.52	0.00	1300.46	29.03	-----	-----	-----	-----	-----	29.03
0.53	0.00	1300.30	27.49	-----	-----	-----	-----	-----	27.49
0.55	0.00	1300.16	25.94	-----	-----	-----	-----	-----	25.94
0.57	0.00	1300.03	24.39	-----	-----	-----	-----	-----	24.39
0.58	0.00	1299.88	22.47	-----	-----	-----	-----	-----	22.47
0.60	0.00	1299.74	20.43	-----	-----	-----	-----	-----	20.43
0.62	0.00	1299.62	18.91	-----	-----	-----	-----	-----	18.91
0.63	0.00	1299.50	17.05	-----	-----	-----	-----	-----	17.05

Continues on next page...

Hydrograph Discharge Table

Time (hrs)	Inflow (cfs)	Elevation (ft)	Culv. A (cfs)	Culv. B (cfs)	Culv. C (cfs)	Weir A (cfs)	Weir B (cfs)	Weir C (cfs)	Outflow (cfs)
0.65	0.00	1299.40	15.19	-----	-----	-----	-----	-----	15.19
0.67	0.00	1299.31	13.32	-----	-----	-----	-----	-----	13.32
0.68	0.00	1299.23	11.42	-----	-----	-----	-----	-----	11.42
0.70	0.00	1299.16	9.50	-----	-----	-----	-----	-----	9.50
0.72	0.00	1299.10	7.76	-----	-----	-----	-----	-----	7.75
0.73	0.00	1299.06	4.87	-----	-----	-----	-----	-----	4.87
0.75	0.00	1299.04	2.95	-----	-----	-----	-----	-----	2.96
0.77	0.00	1299.02	1.79	-----	-----	-----	-----	-----	1.79
0.78	0.00	1299.01	1.09	-----	-----	-----	-----	-----	1.09

...End

Reservoir Report

Reservoir No. 3

Pond Option 3

Culvert / Orifice Structures

		[A]	[B]	[C]
Rise (in)	=	36.0	0.0	0.0
Span (in)	=	36.0	0.0	0.0
No. Barrels	=	1	0	0
Invert El. (ft)	=	1299.00	0.00	0.00
Length (ft)	=	50.0	0.0	0.0
Slope (%)	=	0.50	0.00	0.00
N-Value	=	.013	.013	.013
Orif. Coeff.	=	0.60	0.60	0.60
Multi-Stage	=	-----	No	No

Weir Structures

		[A]	[B]	[C]
Crest Len (ft)	=	0.0	0.0	0.0
Crest El. (ft)	=	0.00	0.00	0.00
Weir Coeff.	=	3.00	3.00	3.00
Eqn. Exp.	=	1.50	1.50	1.50
Multi-Stage	=	No	No	No

Tailwater Elevation = 0.00 ft

Note: All outflows have been analyzed under inlet and outlet control.

Stage / Storage / Discharge Table

Stage (ft)	Storage (cuft)	Elevation (ft)	Culv. A (cfs)	Culv. B (cfs)	Culv. C (cfs)	Weir A (cfs)	Weir B (cfs)	Weir C (cfs)	Discharge (cfs)
0.0	00	1299.00	0.00	---	---	---	---	---	0.00
0.1	933	1299.10	7.61	---	---	---	---	---	7.61
0.2	1,866	1299.20	10.76	---	---	---	---	---	10.76
0.3	2,799	1299.30	13.18	---	---	---	---	---	13.18
0.4	3,732	1299.40	15.22	---	---	---	---	---	15.22
0.5	4,665	1299.50	17.02	---	---	---	---	---	17.02
0.6	5,598	1299.60	18.64	---	---	---	---	---	18.64
0.7	6,531	1299.70	20.13	---	---	---	---	---	20.13
0.8	7,464	1299.80	20.80	---	---	---	---	---	20.80
0.9	8,397	1299.90	22.83	---	---	---	---	---	22.83
1.0	9,330	1300.00	24.07	---	---	---	---	---	24.07
1.1	10,453	1300.10	25.24	---	---	---	---	---	25.24
1.2	11,576	1300.20	26.36	---	---	---	---	---	26.36
1.3	12,699	1300.30	27.44	---	---	---	---	---	27.44
1.4	13,822	1300.40	28.47	---	---	---	---	---	28.47
1.5	14,945	1300.50	29.47	---	---	---	---	---	29.47
1.6	16,067	1300.60	30.44	---	---	---	---	---	30.44
1.7	17,190	1300.70	31.38	---	---	---	---	---	31.38
1.8	18,313	1300.80	32.29	---	---	---	---	---	32.29
1.9	19,436	1300.90	33.17	---	---	---	---	---	33.17
2.0	20,559	1301.00	34.04	---	---	---	---	---	34.04
2.1	21,879	1301.10	34.88	---	---	---	---	---	34.88
2.2	23,199	1301.20	35.70	---	---	---	---	---	35.70
2.3	24,519	1301.30	36.50	---	---	---	---	---	36.50
2.4	25,839	1301.40	37.28	---	---	---	---	---	37.28

Continues on next page...

Stage / Storage / Discharge Table

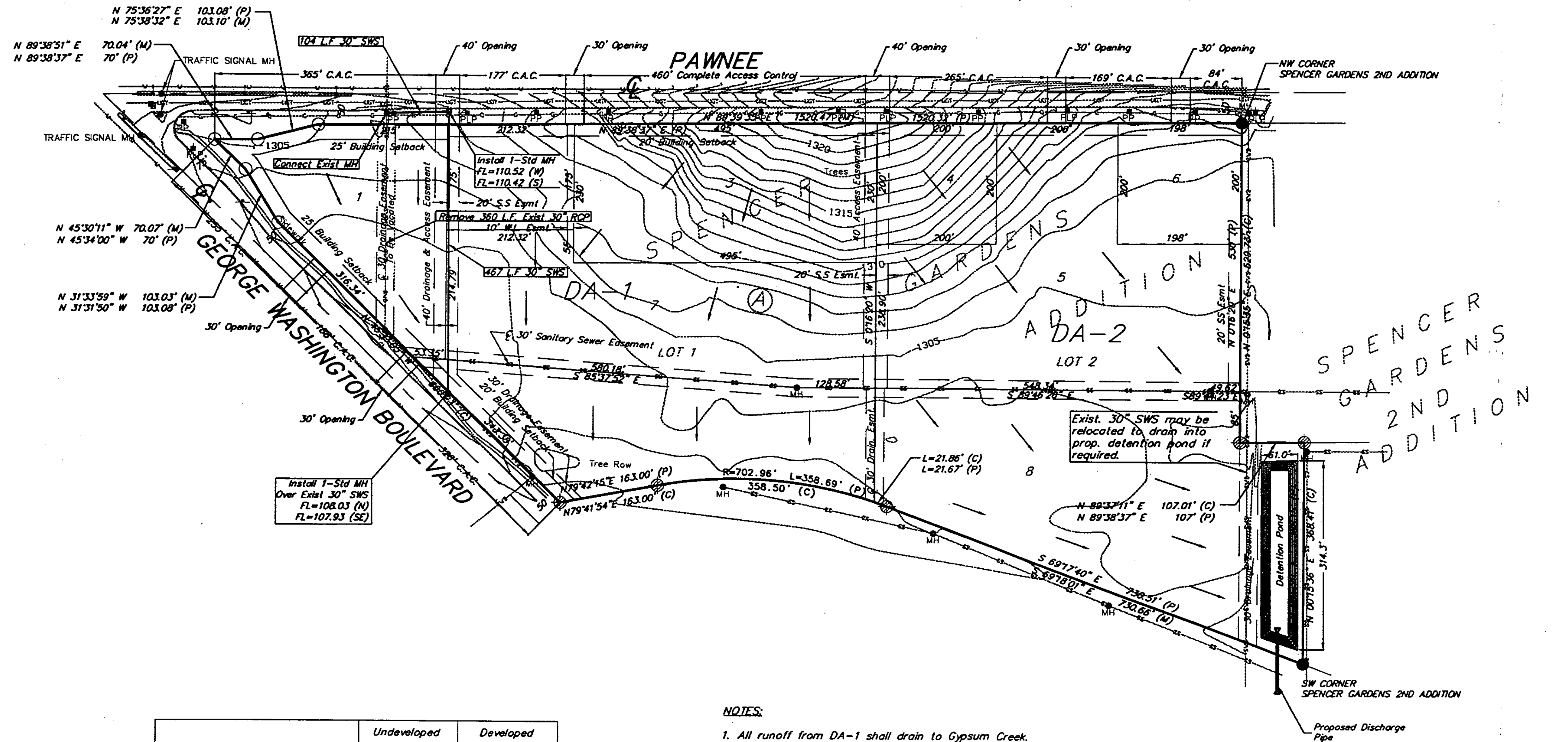
Stage (ft)	Storage (cuft)	Elevation (ft)	Culv. A (cfs)	Culv. B (cfs)	Culv. C (cfs)	Weir A (cfs)	Weir B (cfs)	Weir C (cfs)	Discharge (cfs)
2.5	27,160	1301.50	38.05	---	---	---	---	---	38.05
2.6	28,480	1301.60	38.80	---	---	---	---	---	38.80
2.7	29,800	1301.70	39.54	---	---	---	---	---	39.54
2.8	31,120	1301.80	40.27	---	---	---	---	---	40.27
2.9	32,440	1301.90	40.98	---	---	---	---	---	40.98
3.0	33,760	1302.00	41.68	---	---	---	---	---	41.68
3.1	35,285	1302.10	43.05	---	---	---	---	---	43.05
3.2	36,809	1302.20	44.37	---	---	---	---	---	44.37
3.3	38,334	1302.30	45.66	---	---	---	---	---	45.66
3.4	39,859	1302.40	46.91	---	---	---	---	---	46.91
3.5	41,384	1302.50	48.13	---	---	---	---	---	48.13
3.6	42,908	1302.60	49.31	---	---	---	---	---	49.31
3.7	44,433	1302.70	50.47	---	---	---	---	---	50.47
3.8	45,958	1302.80	51.61	---	---	---	---	---	51.61
3.9	47,482	1302.90	52.72	---	---	---	---	---	52.72
4.0	49,007	1303.00	53.81	---	---	---	---	---	53.81
4.1	50,744	1303.10	54.87	---	---	---	---	---	54.87
4.2	52,481	1303.20	55.92	---	---	---	---	---	55.92
4.3	54,217	1303.30	56.94	---	---	---	---	---	56.94
4.4	55,954	1303.40	57.95	---	---	---	---	---	57.95
4.5	57,691	1303.50	58.94	---	---	---	---	---	58.94
4.6	59,428	1303.60	59.92	---	---	---	---	---	59.92
4.7	61,165	1303.70	60.87	---	---	---	---	---	60.87
4.8	62,901	1303.80	61.82	---	---	---	---	---	61.82
4.9	64,638	1303.90	62.75	---	---	---	---	---	62.75
5.0	66,375	1304.00	63.67	---	---	---	---	---	63.67

DRAINAGE PLAN FOR:

REPLAT OF PART OF SPENCER GARDENS ADDITION

WICHITA, SEDGWICK COUNTY, KANSAS

A TRACT OF LAND IN THE NE 1/4, SEC. 2, T28S, R1E



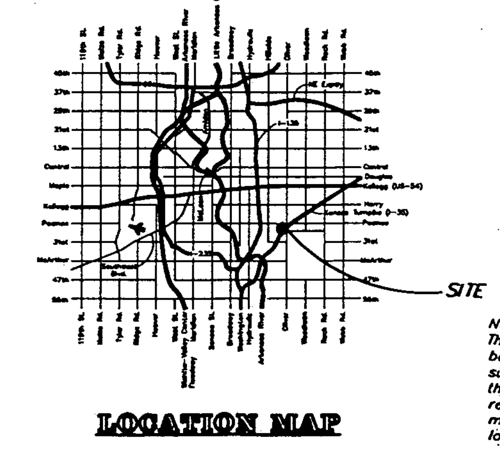
LEGEND

- Water Valve
- Power Pole
- Light Pole
- Power & Light Pole
- Guy Wire
- Manhole
- Tree
- Sign
- Fence
- Underground Gas Line
- Underground Telephone
- 3/4" Iron Pipe (found)
- 5/8" Rebar (found)
- 5/8" Rebar (set) AMPA CLS #104
- (M) Measured
- (P) Platted
- (C) Calculated

				Undeveloped		Developed	
Area #	Area (Ac)	I_5	I_{100}	Q_5 (cfs)	Q_{100} (cfs)	Q_5 (cfs)	Q_{100} (cfs)
1	11.55	4.56	7.37	23.3	48.1	36.3	68.1
2	11.05	4.56	7.37	22.3	46.1	34.8	65.2
TOTAL	22.60			45.6	94.2	71.1	133.3

NOTES:

1. All runoff from DA-1 shall drain to Gypsum Creek.
2. All runoff from DA-2 shall drain to proposed detention pond.
3. Detention pond may or may not be designed to include flow from existing 30" pipe.
4. Discharge pipe size:
   For 30" pipe draining into pond: 36" pipe.
   For 30" pipe not draining into pond: 18" pipe.
5. Detention pond size and shape are preliminary. Final size and shape shall be determined prior to development.
6. Surface drainage shall be coordinated at time of development to allow cross-lot drainage.
7. Detention pond shall be rquired at such time as 40% or more of the total area is developed.



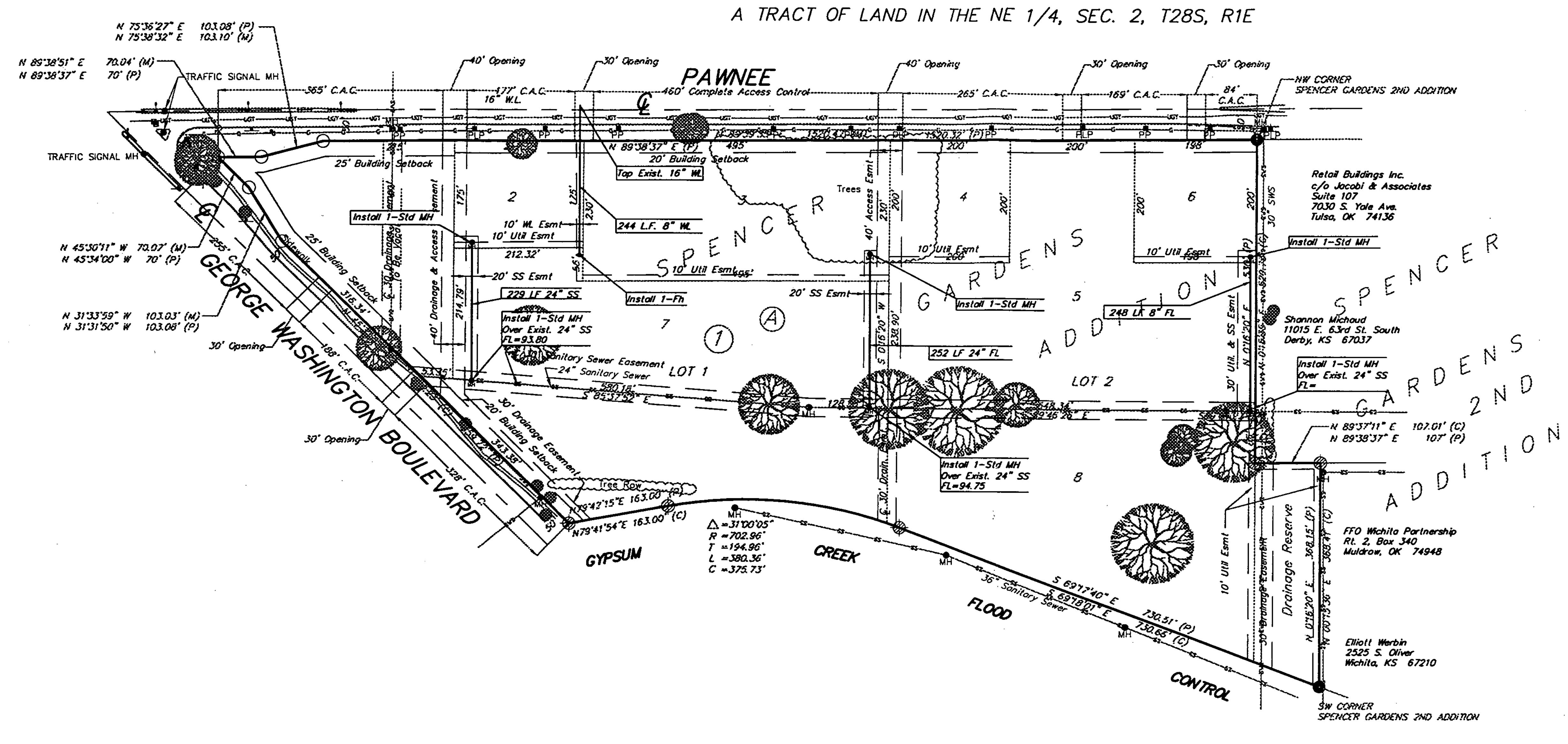
LOCATION MAP

NOTE:
The utility information shown is the best available at the time of the survey. The information was obtained through Kansas One-Call or utility records and no representations are made as to the accurate depth and location of the utilities.

AUSTIN MILLER P.A.
ENGINEERING SERVICES

UTILITY PLAN FOR SPENCER GARDENS ADDITION
WICHITA, SEDGWICK COUNTY, KANSAS

A TRACT OF LAND IN THE NE 1/4, SEC. 2, T28S, R1E

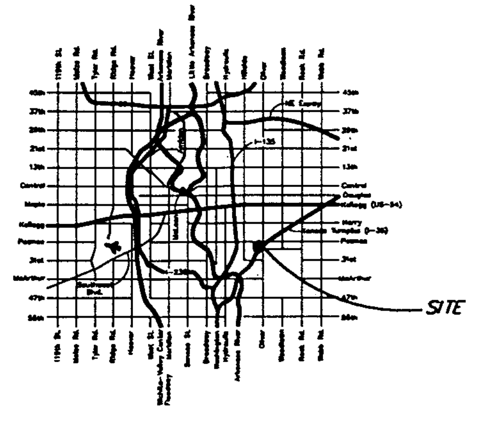


SCALE

100' 0 100' 200'

<u>LEGEND</u>

- Water Valve
- PP Power Pole
- Light Pole
- PLP Power & Light Pole
- Guy Wire
- MH Manhole
- Tree
- Sign
- —x— Fence
- —G— Underground Gas Line
- —UGT— Underground Telephone
- —SWS— Underground Storm Water Sewer
- —SS— Underground Sanitary Sewer
- 3/4" Iron Pipe (found)
- 5/8" Rebar (found)
- 5/8" Rebar (set) AMPA CLS #104
- (M) Measured
- (P) Platted
- (C) Calculated



LOCATION MAP

FILENAME: 00390plat

NOTES:

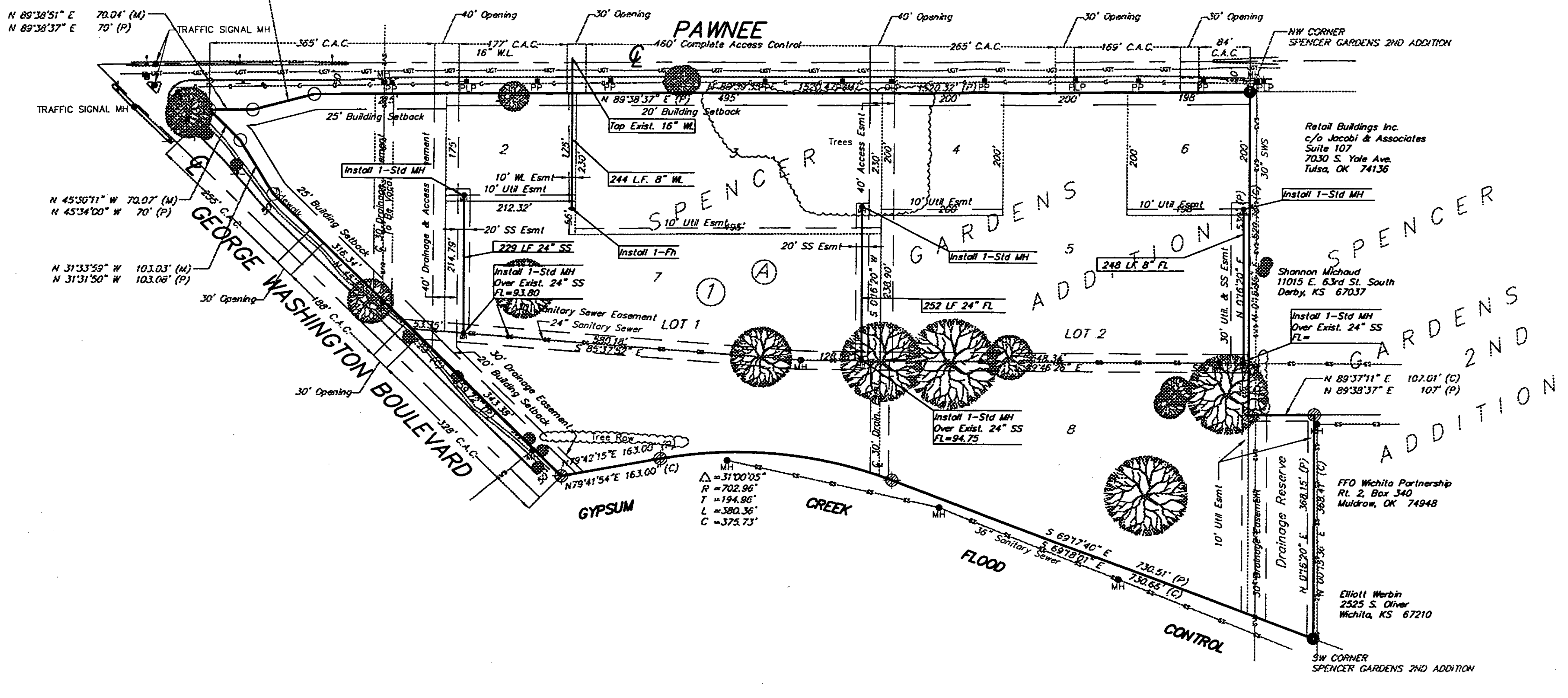
1. This property is subject to the restrictions of Community Unit Plan D.P.-93, on file with the Metropolitan Area Planning Dept.

2. The utility information shown is the best available at the time of the survey. The information was obtained through Kansas One-Call or utility records and no representations are made as to the acutual depth and location of the utilities.

AUSTIN MILLER P.A.
ENGINEERING SERVICES
355 N. Waco, Suite 200 Wichita, KS 67202
316/262-1281 fax: 316/262-6773

UTILITY PLAN FOR SPENCER GARDENS ADDITION
WICHITA, SEDGWICK COUNTY, KANSAS

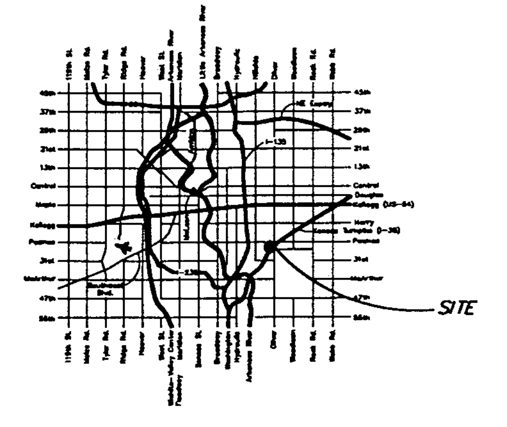
A TRACT OF LAND IN THE NE 1/4, SEC. 2, T28S, R1E



SCALE: 100' 0 100' 200'

LEGEND

- Water Valve
- PP Power Pole
- Light Pole
- PLP Power & Light Pole
- Guy Wire
- MH Manhole
- Tree
- Sign
- —x— Fence
- —G— Underground Gas Line
- —UGT— Underground Telephone
- —SWS— Underground Storm Water Sewer
- —SS— Underground Sanitary Sewer
- ○ 3/4" Iron Pipe (found)
- ● 5/8" Rebar (found)
- 5/8" Rebar (set) AMPA CLS #104
- (M) Measured
- (P) Platted
- (C) Calculated



LOCATION MAP

FILENAME: 00390plat

NOTES:

1. This property is subject to the restrictions of Community Unit Plan D.P.-93, on file with the Metropolitan Area Planning Dept.

2. The utility information shown is the best available at the time of the survey. The information was obtained through Kansas One-Call or utility records and no representations are made as to the acutual depth and location of the utilities.

AUSTIN MILLER P.A.
ENGINEERING SERVICES
355 N. Waco, Suite 200 Wichita, KS 67202
316/262-1281 fax: 316/262-6773