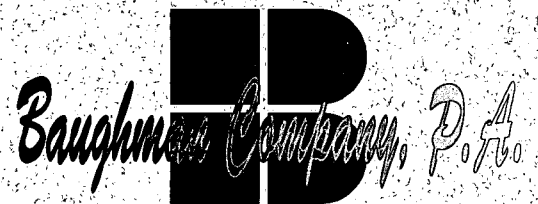


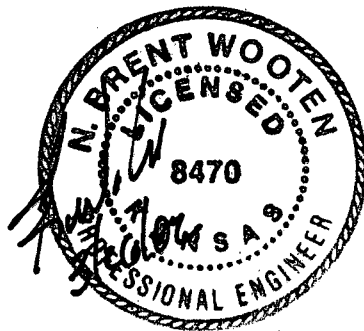
**DRAINAGE PLAN  
HIDDEN GLEN  
WICHITA, SEDGWICK COUNTY, KANSAS**

*March 27, 2002*



**DRAINAGE PLAN  
HIDDEN GLEN  
WICHITA, SEDGWICK COUNTY, KANSAS**

*March 27, 2002*



*Faint, illegible text or stamp.*

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## INTRODUCTION

This report provides information and supporting documentation for the "Drainage Plan" located in Section 16, T-28-S, R-1-E in Wichita, Sedgwick County, Kansas. The "Drainage Plan" being submitted herein is intended to serve as a guide for the design of streets, stormwater sewers, and site grading to the proposed development. Modifications to structures, pipes, etc. may be made as necessary during the final design in order to obtain the most economical design and construction possible.

## INITIAL DATA

The plat is part of one large drainage basin that generally drains from west to east and concentrates in the northeast corner of the plat. The stormwater runoff will pond in that area until it reaches a depth of less than two feet and then drains into the Hydraulic Street right-of-way. The general topography is flat on the low side and is approximately half percent grade on the high side of the plat. The total area of the plat is 13.9 acres with contributing off-site drainage from the west and north.

The existing soil types per S.C.S. "Soil Survey of Sedgwick County" is Canadian-Waldeck fine sandy loam. The hydrologic soil type is B. The rational method's runoff coefficients have been selected based on this information.

The tract of land is located in a Federal Emergency Management Agency (FEMA) Zone C as mapped on the Flood Insurance Rate Map (FIRM) community-panel number 200328 0035B, effective date May 15, 1986.

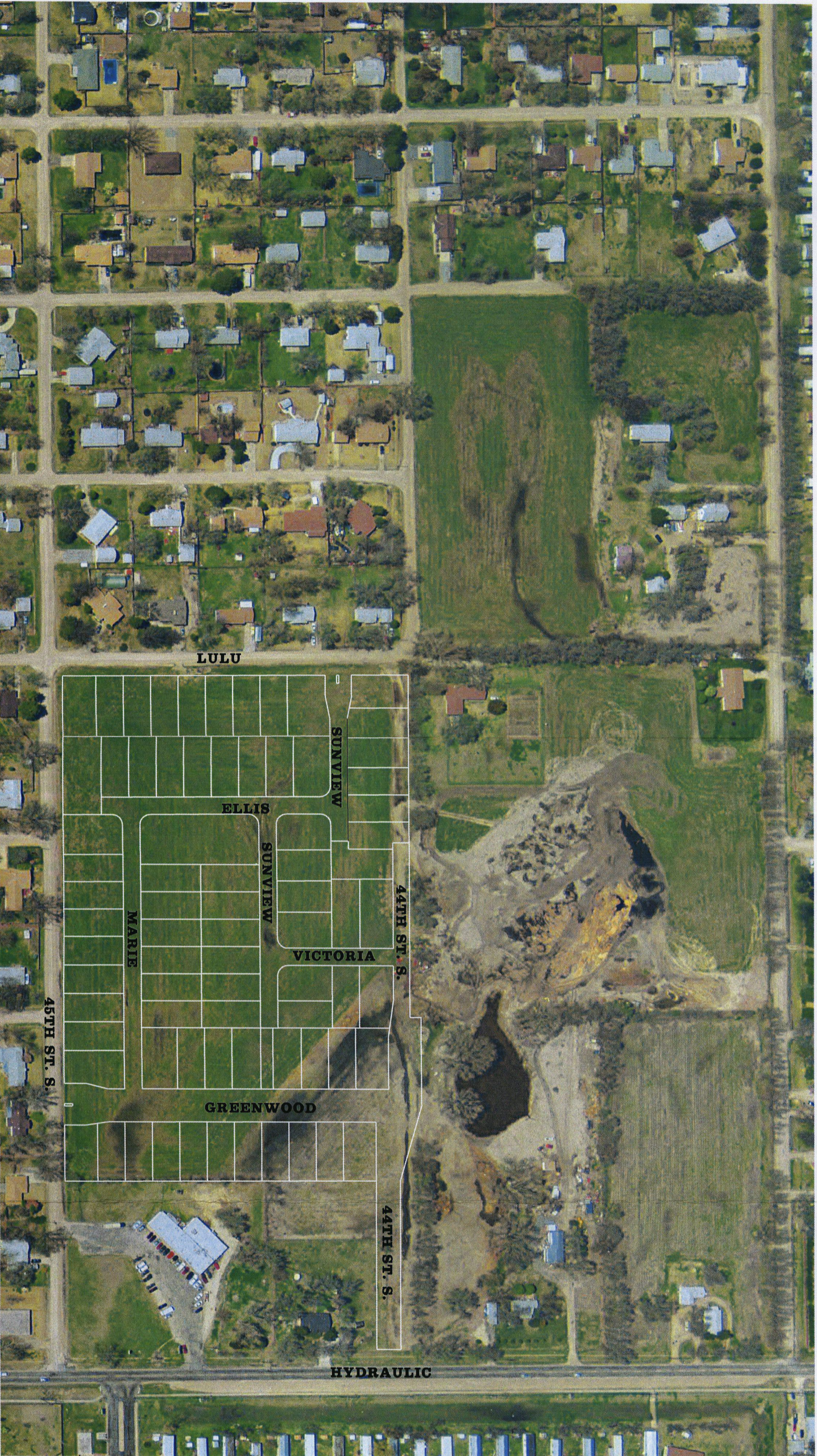
The time of concentration ( $T_c$ ) for the site was determined using the S.C.S method TR-55 and the standard fifteen-minute minimum.

## COMPUTATIONS

The residential subdivision stormwater sewer system has been design to convey all stormwater in the pipe during a two-year storm event. The two-year storm event is defined for which there is a 50 percent probability of occurrence in any given year. In the event a 100-year storm event occurs, the plat has been graded to maintain positive drainage away from the proposed homes and elevations set to protect the structures. There may be a short period of ponding in the street right-of-ways at the sump locations for storm events greater than a two year design storm. We have developed a computer model using StormCad to determine the hydraulic grade lines in the system for a two-year design storm. The peak flow rate, using the rational method was entered into the model for each inlet. See the individual system routing for pipe sizing and other specific information. This storm sewer system as shown on the drainage plan will drain to the proposed double 7'x3' RCBC. The box will constructed as part of the Hydraulic Street pavement and drainage project. In addition the detention requirements have been met by an off-site pond that will be constructed with the the Hydraulic project.

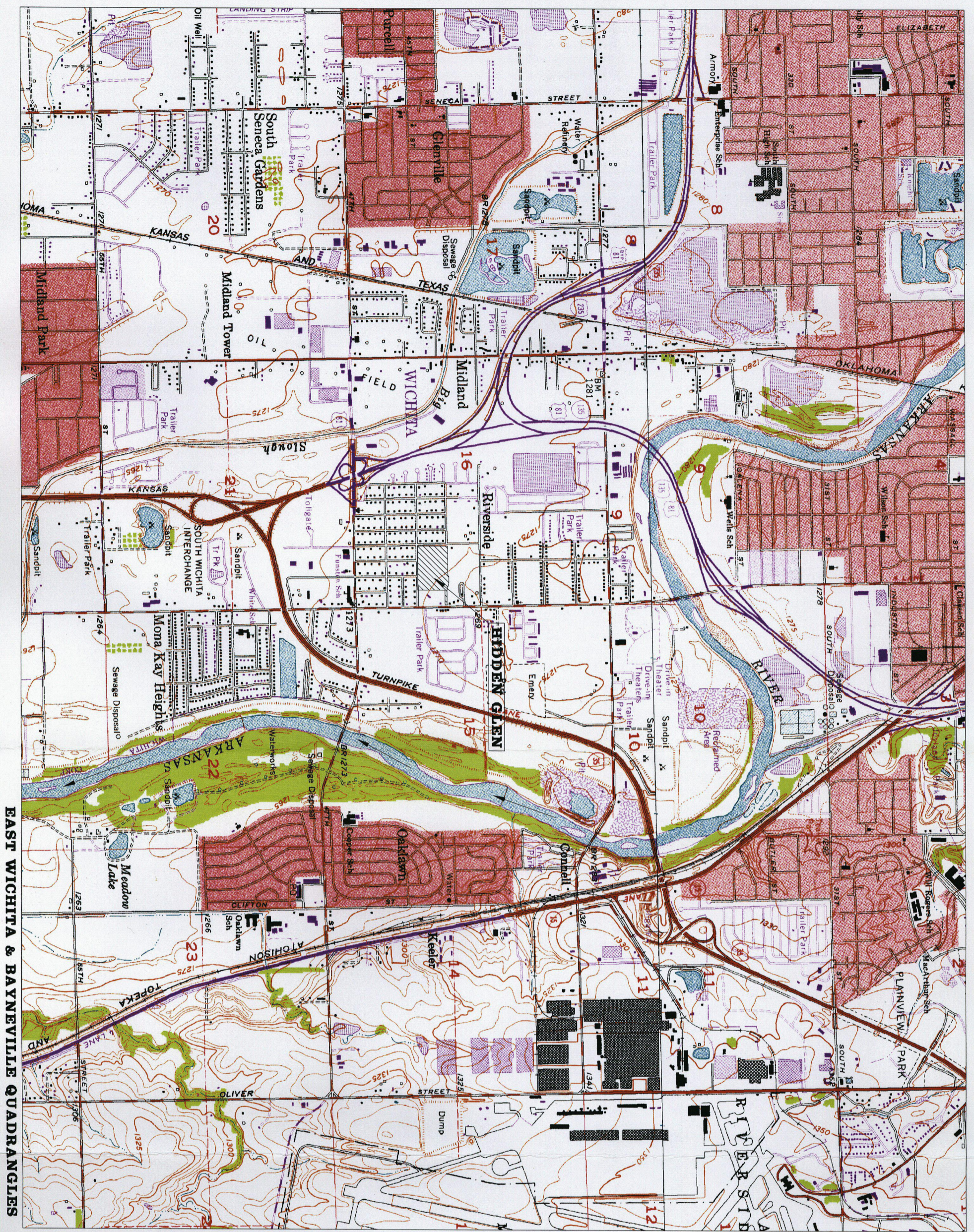
**SITE AERIAL MAP**

**HIDDEN GLEN  
WICHITA, SEDGWICK COUNTY, KANSAS**



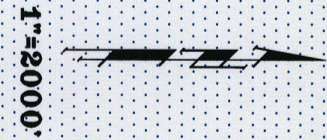
1" = 200'

USGS QUADRANGLE MAP



EAST WICHITA & BAYNEVILLE QUADRANGLES

LOCATION:  
**HIDDEN GLEN**  
 WICHITA, SEDGWICK COUNTY, KANSAS

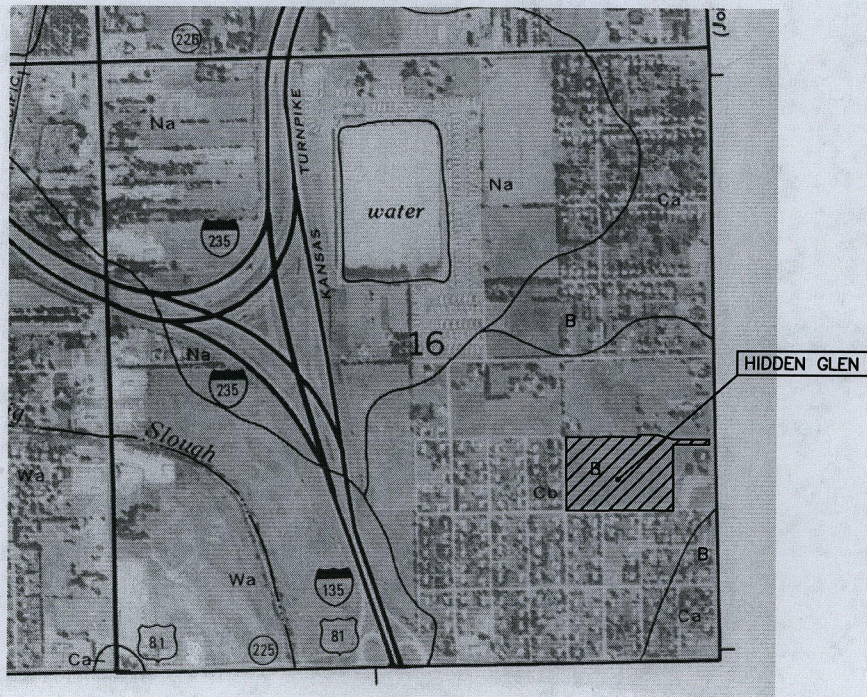


**SCS AERIAL PHOTOGRAPH**

# SEDGWICK COUNTY SOIL SURVEY FOR HIDDEN GLEN

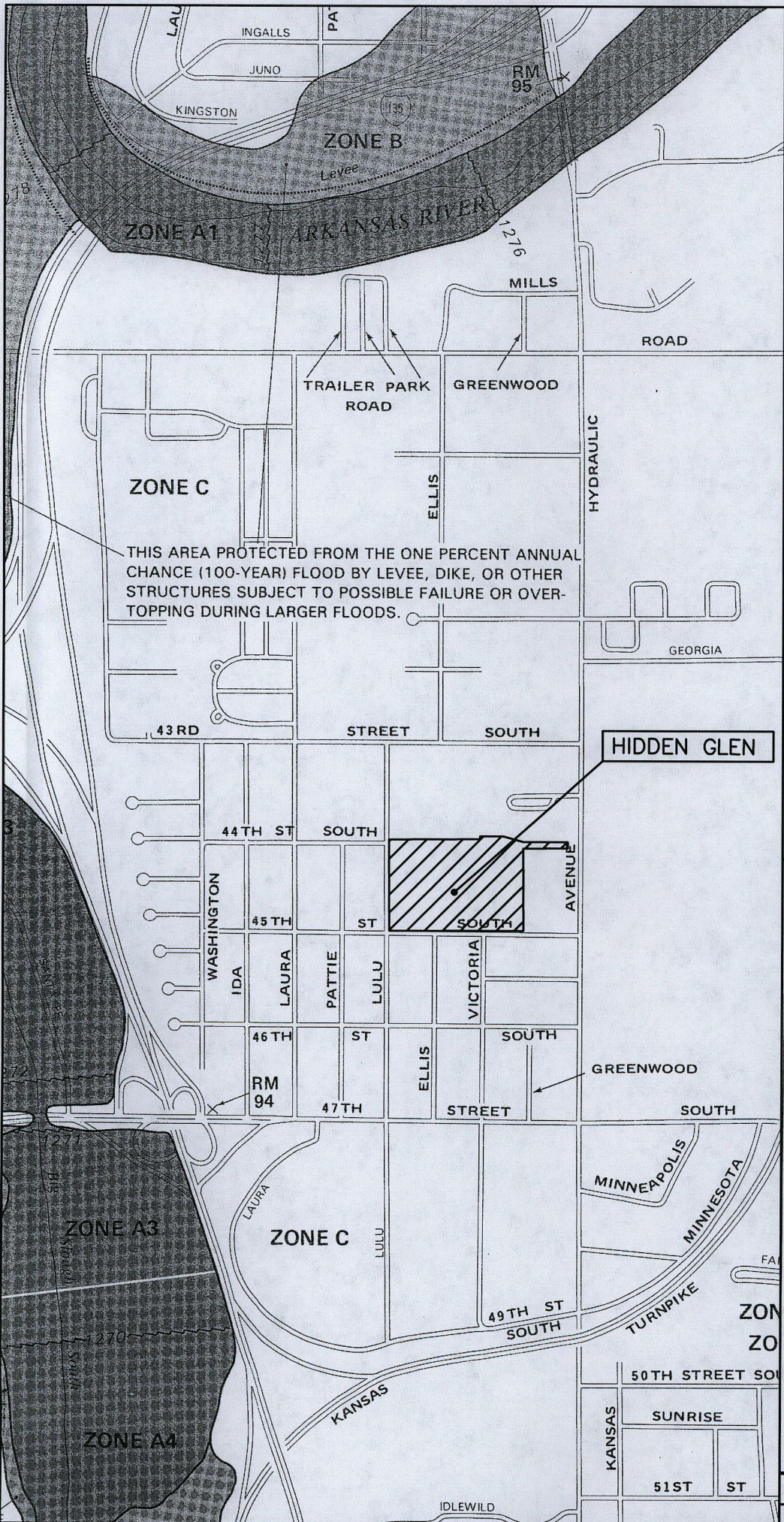


Scale - 1:20000



Cb : Canadian - Waldeck Fine Sandy Loam - Hydrologic Group B (100% of Drainage Basin)

**F.E.M.A. LOCATION MAP**



THIS AREA PROTECTED FROM THE ONE PERCENT ANNUAL CHANCE (100-YEAR) FLOOD BY LEVEE, DIKE, OR OTHER STRUCTURES SUBJECT TO POSSIBLE FAILURE OR OVERTOPPING DURING LARGER FLOODS.

HIDDEN GLEN

NATIONAL FLOOD INSURANCE PROGRAM


**FIRM**  
FLOOD INSURANCE RATE MAP

CITY OF  
WICHITA,  
KANSAS  
SEDGWICK COUNTY

PANEL 35 OF 40  
(SEE MAP INDEX FOR PANELS NOT PRINTED)

COMMUNITY-PANEL NUMBER  
200328 0035 B

EFFECTIVE DATE:  
MAY 15, 1986



Federal Emergency Management Agency

**PRE-DEVELOPMENT DRAINAGE CONDITIONS**

# PRE-DEVELOPED DRAINAGE CONDITIONS HIDDEN GLEN AN ADDITION TO WICHITA, SEDGWICK COUNTY, KANSAS

H. GLENN SITE  
 D.A. = 7.2 ac  
 I<sub>a</sub> = 15 min.  
 C = 0.52  
 Q = 2.3 cfs  
 O<sub>10</sub> = 4.6 cfs

H. GLENN SITE  
 D.A. = 8.6 ac  
 I<sub>a</sub> = 27 min.  
 C = 0.40  
 Q = 1.2 cfs  
 O<sub>10</sub> = 2.0 cfs

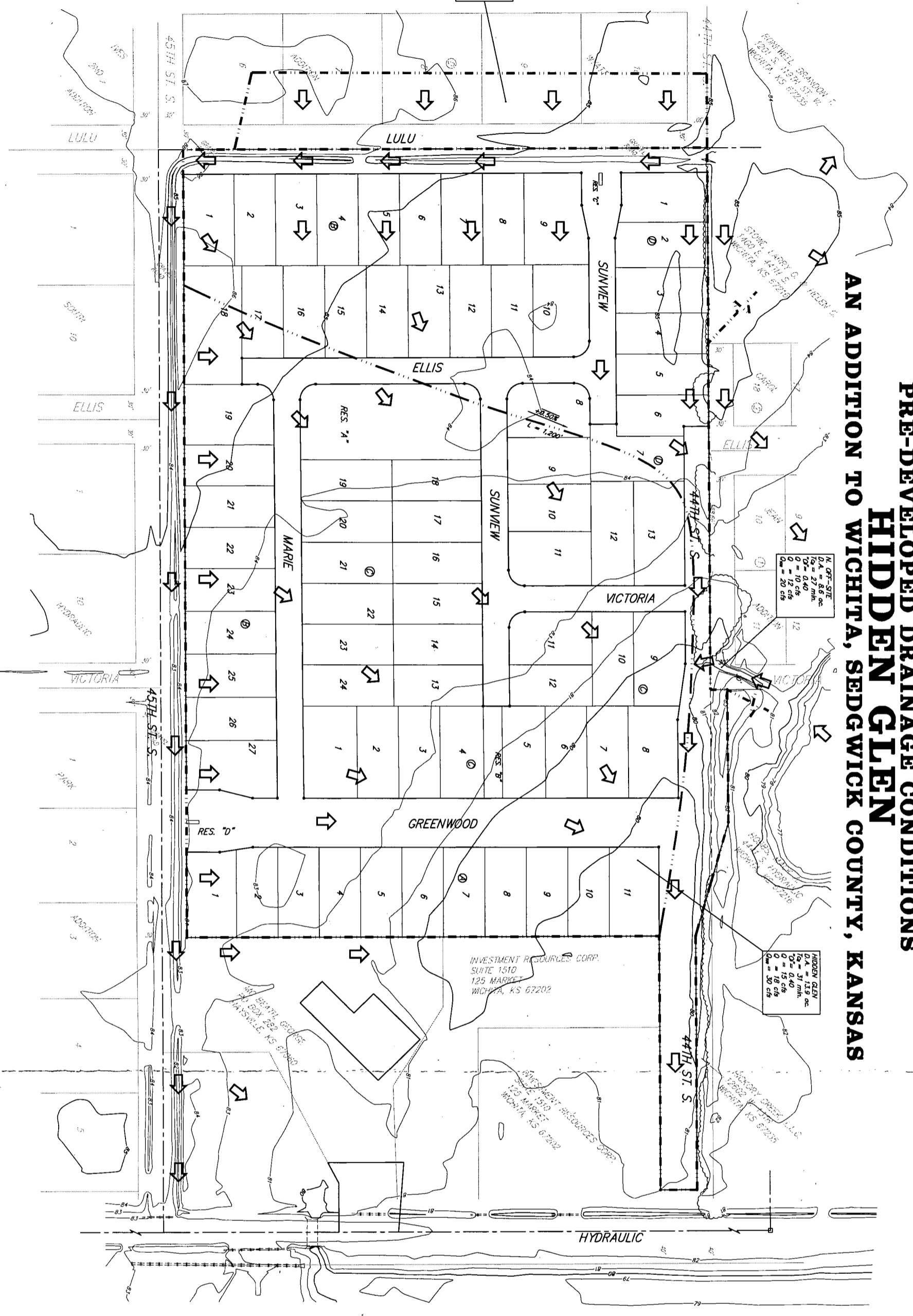
HIDDEN GLEN  
 D.A. = 13.9 ac  
 I<sub>a</sub> = 15 min.  
 C = 0.40  
 Q = 1.8 cfs  
 O<sub>10</sub> = 3.0 cfs

INVESTMENT RESOURCES CORP.  
 SUITE 1510  
 125 MARKET  
 WICHITA, KS 67202

HIDDEN GLEN  
 125 MARKET  
 WICHITA, KS 67202

INVESTMENT RESOURCES CORP.  
 SUITE 1510  
 125 MARKET  
 WICHITA, KS 67202

HIDDEN GLEN  
 125 MARKET  
 WICHITA, KS 67202



BOUNDARIES  
 City of Wichita benchmark, SE corner of intersection of  
 Hydraulic and 43rd St. South, 25.50' east and 37' south of  
 corner of 44th St. South  
 Date - 04/19 City Datum

03/27/2002  
**BAUGHMAN COMPANY P.A.**  
 ENGINEERING, SURVEYING & PLANNING  
 200 N. W. 10th St., Suite 1000, Wichita, Kansas 67202

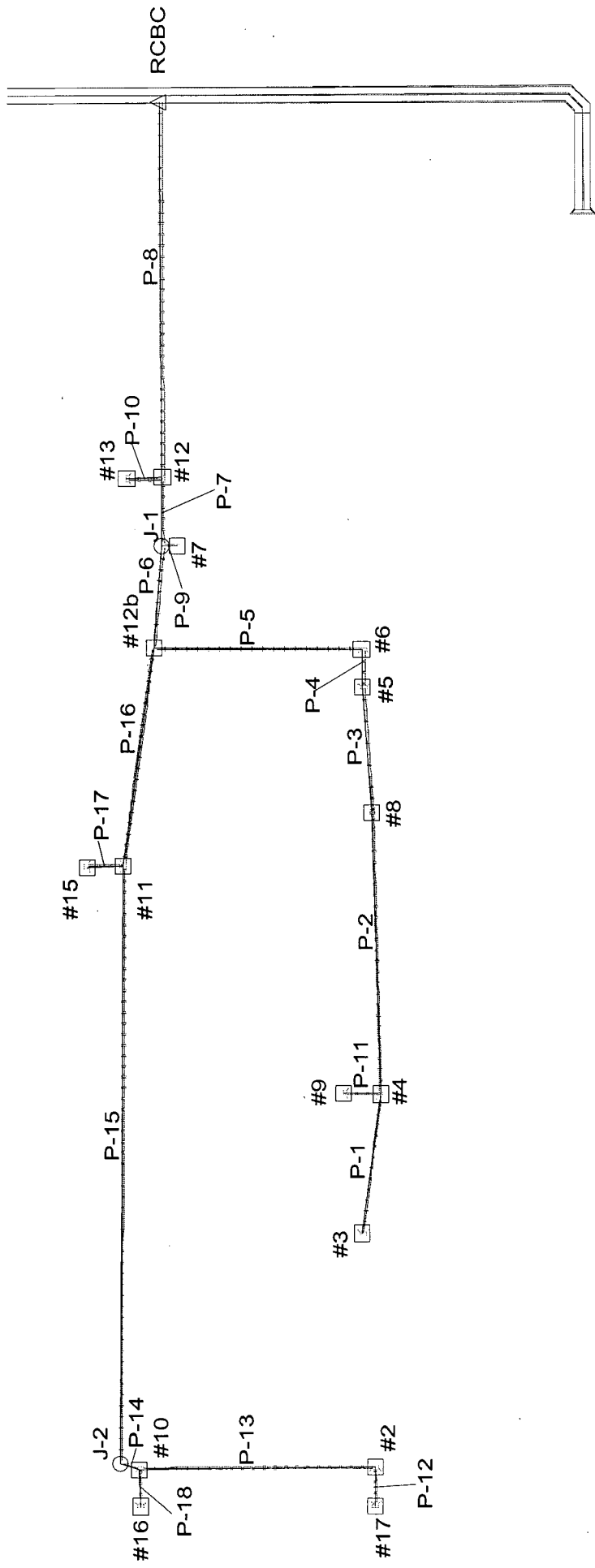
SCL

Hidden Glen  
Wichita  
Sedgwick County, Kansas

Sub-Area Time of Concentration Details

Sub-Area Identifier/	Flow Length (ft)	Slope (ft/ft)	Mannings's n	End Area (sq ft)	Wetted Perimeter (ft)	Velocity (ft/sec)	Travel Time (hr)
-----							
N. OFFSITE							
SHEET	100	0.0030					0.297
SHALLOW	500	0.0030	0.050				0.157
							Time of Concentration 0.454
							=====
PLAT							
SHEET	100	0.0050					0.242
SHALLOW	1100	0.0050	3.5				0.268
							Time of Concentration 0.510
							=====

**SWS SYSTEM #1**



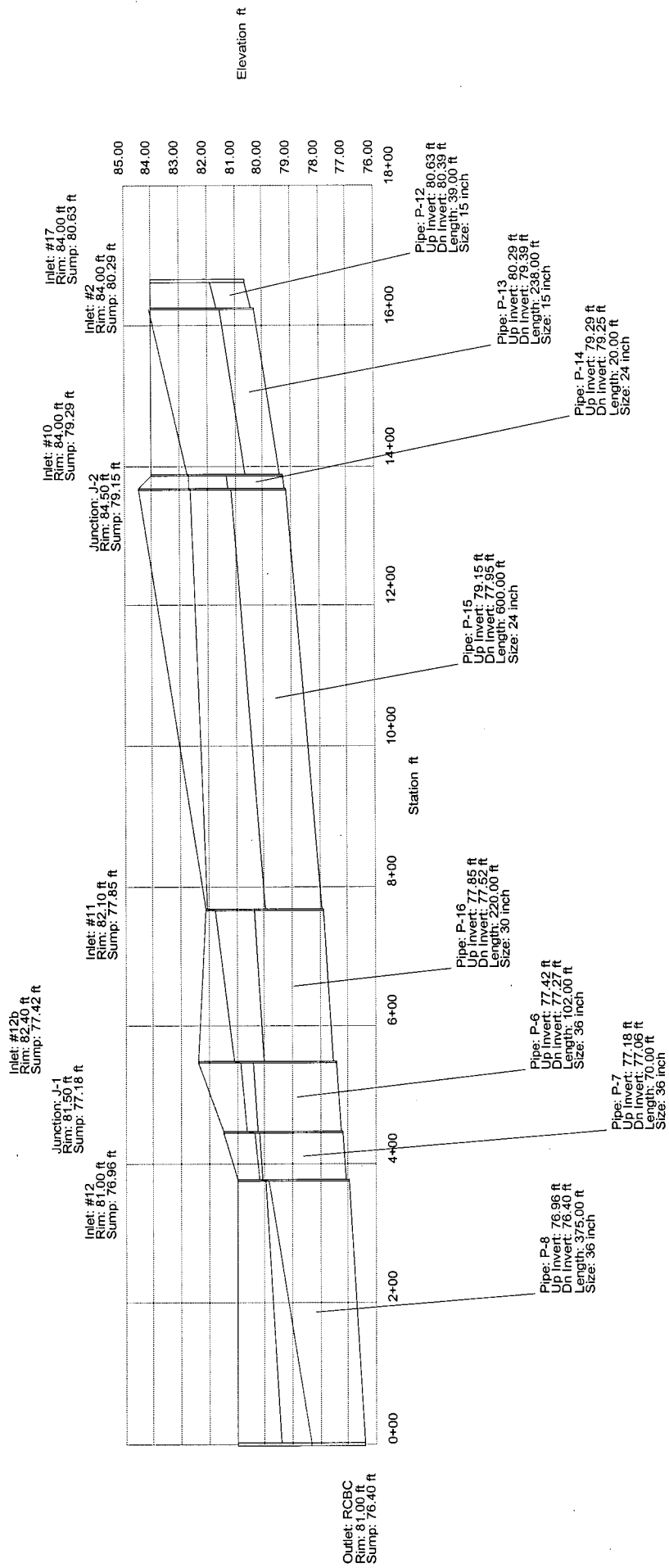
SYSTEM #1

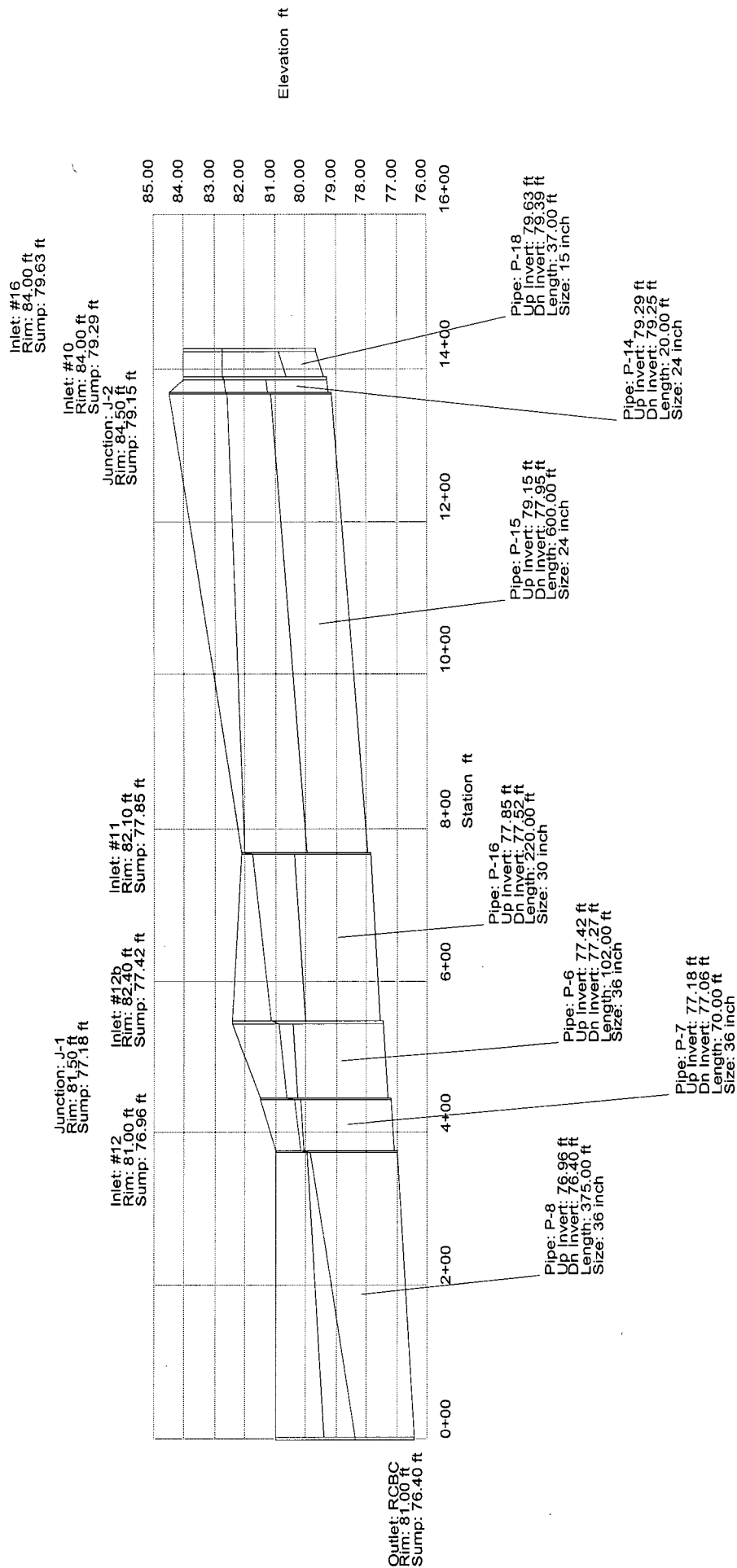
Node Report										
Node	Area (acres)	Runoff Coefficient	Tc (min)	Rainfall Intensity (in/hr)	Added Flow (cfs)	Discharge (cfs)	Ground Elevation (ft)	HGL In (ft)	HGL Out (ft)	
#13	0.26	0.52	15	3.83	0.5	0.5	81.00	80.18	80.18	
#7	0.68	0.52	15	3.83	1.4	1.4	81.00	81.00	81.00	
#15	8.60	0.52	27	2.84	13.0	13.0	82.10	82.10	82.10	
#16	0.27	0.52	15	3.83	0.5	0.5	84.00	82.73	82.73	
#17	0.91	0.52	15	3.83	1.8	1.8	84.00	84.00	84.00	
#2	1.56	0.52	15	3.78	3.1	4.9	84.00	84.00	84.00	
#10	0.73	0.52	15	3.66	1.5	6.9	84.00	82.73	82.67	
J-2	N/A	N/A	N/A	3.65	N/A	6.9	84.50	82.65	82.59	
#11	1.24	0.52	15	3.23	2.5	22.4	82.10	82.03	81.77	
#9	0.74	0.52	15	3.83	1.5	1.5	83.90	83.02	83.00	
#3	1.18	0.52	15	3.83	2.4	2.4	85.20	83.70	83.63	
#4	1.12	0.52	15	3.74	2.2	6.1	83.90	82.98	82.84	
#8	0.55	0.52	15	3.60	1.1	7.2	83.00	81.88	81.84	
#5	0.44	0.52	15	3.50	0.9	8.1	82.00	81.71	81.66	
#6	0.75	0.52	15	3.48	1.5	9.6	82.00	81.61	81.50	
#12b	0.00	0.52	15	3.17	0.0	32.0	82.40	81.12	80.86	
J-1	N/A	N/A	N/A	3.14	N/A	33.4	81.50	80.63	80.35	
#12	1.01	0.52	15	3.12	2.0	35.9	81.00	80.18	79.85	
RCBC	N/A	N/A	N/A	3.06	N/A	N/A	81.00	78.35	78.35	

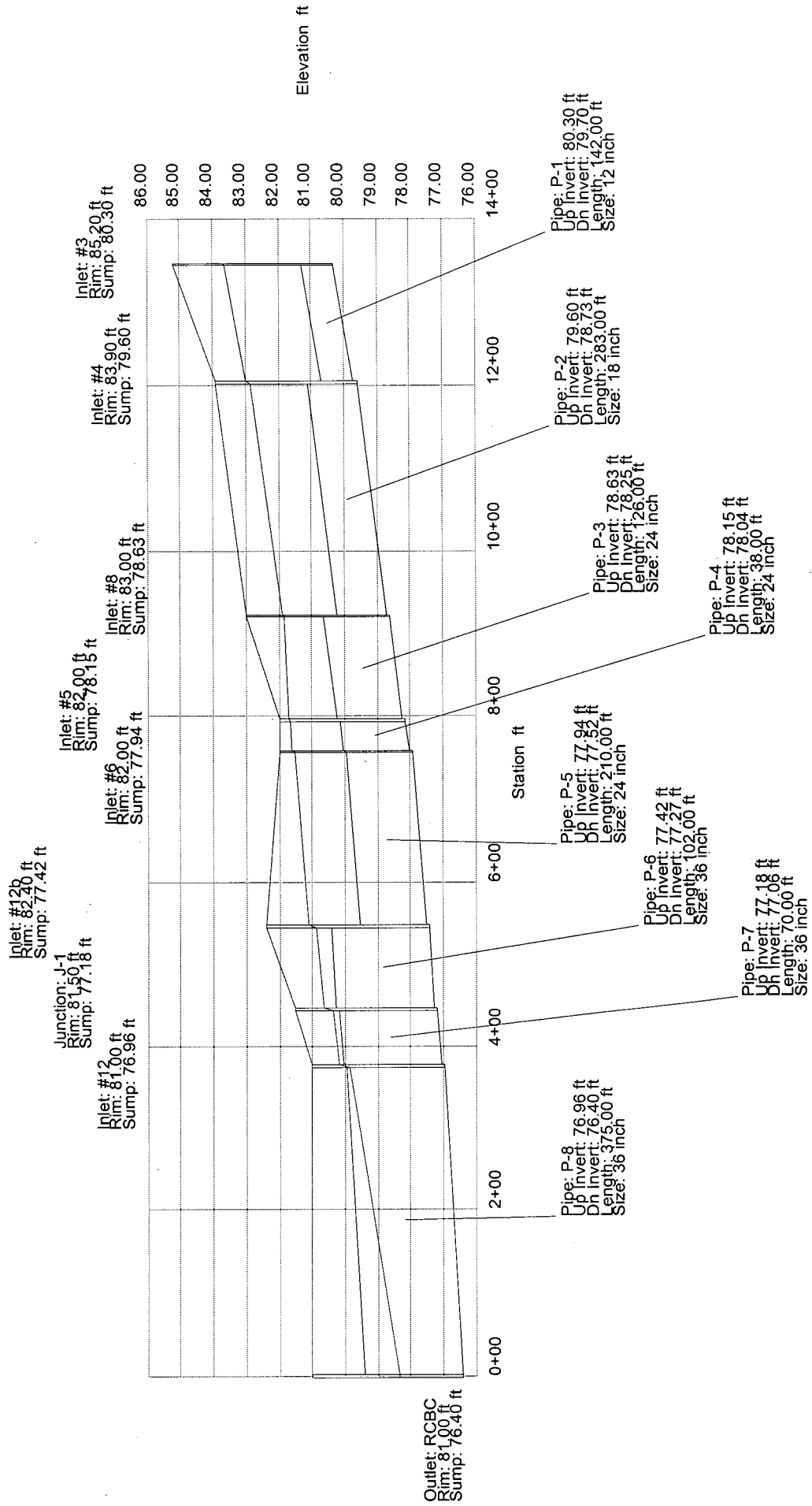
2-yr

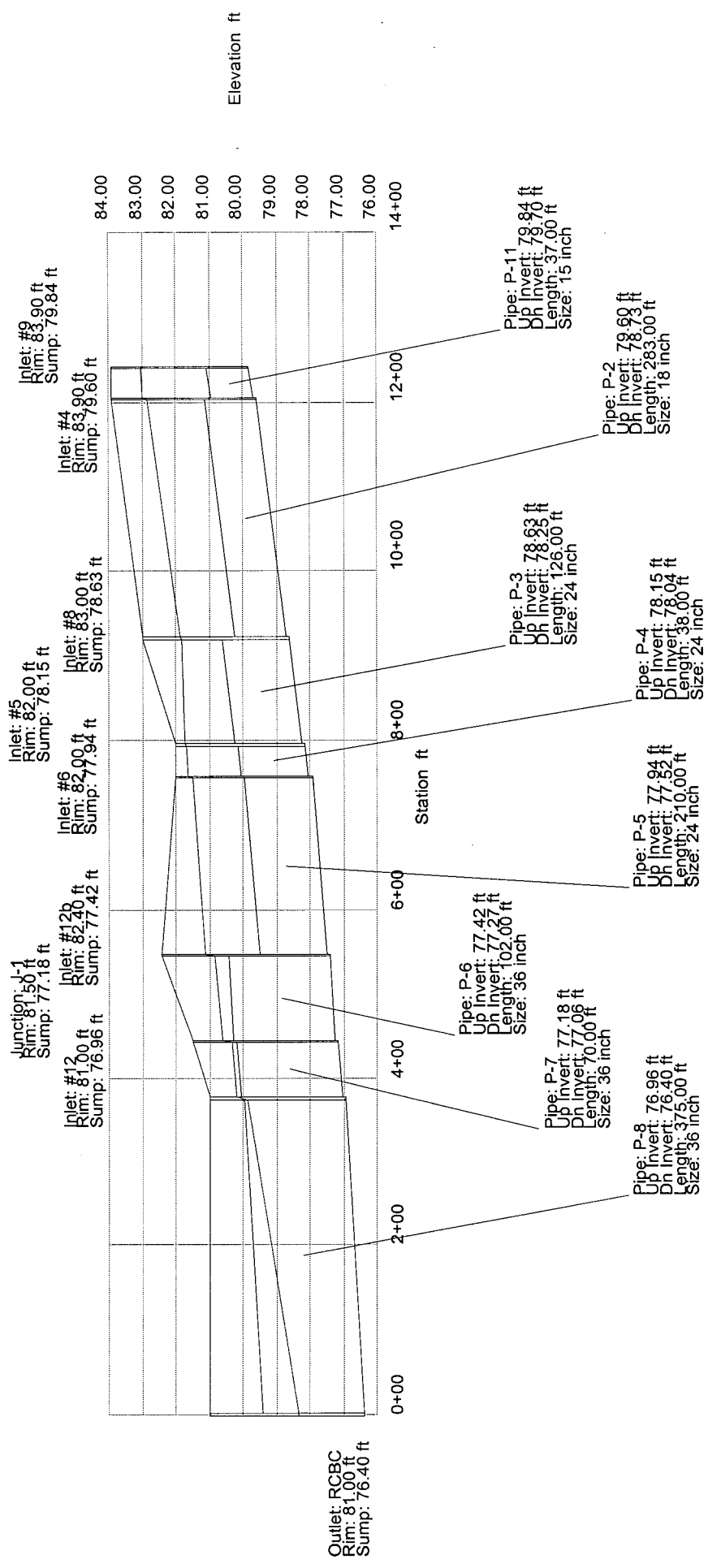
Pipe Report													
Pipe Section	Upstream Node	Downstream Node	Discharge (cfs)	Constructed (ft/ft)	Length (ft)	Section Size	Mannings n	Upstream Invert (ft)	Downstream Invert (ft)	Upstream Ground (ft)	Downstream Ground (ft)	Upstream HGL (ft)	Downstream HGL (ft)
P-10	#13	#12	0.5	0.00306	36	18 inch	0.013	77.17	77.06	81.00	81.00	80.18	80.18
P-9	#7	J-1	1.4	0.15625	16	12 inch	0.013	81.00	78.50	81.00	81.50	81.50	80.63
P-17	#15	#11	13	0.00324	37	24 inch	0.013	78.10	77.98	82.10	82.10	82.16	82.03
P-18	#16	#10	0.5	0.00649	37	15 inch	0.013	79.63	79.39	84.00	84.00	82.73	82.73
P-12	#17	#2	1.8	0.00615	39	15 inch	0.013	80.63	80.39	84.00	84.00	84.03	84.00
P-13	#2	#10	4.9	0.00378	238	15 inch	0.013	80.29	79.39	84.00	84.00	84.10	82.73
P-14	#10	J-2	6.9	0.00200	20	24 inch	0.013	79.29	79.25	84.00	84.50	82.67	82.65
P-15	J-2	#11	6.9	0.00200	600	24 inch	0.013	79.15	77.95	84.50	82.10	82.59	82.03
P-16	#11	#12b	22.4	0.00150	220	30 inch	0.013	77.85	77.52	82.10	82.40	81.77	81.12
P-11	#9	#4	1.5	0.00378	37	15 inch	0.013	79.84	79.70	83.90	83.90	83.00	82.98
P-1	#3	#4	2.4	0.00423	142	12 inch	0.013	80.30	79.70	85.20	83.90	83.63	82.98
P-2	#4	#8	6.1	0.00307	283	18 inch	0.013	79.60	78.73	83.90	83.00	82.84	81.88
P-3	#8	#5	7.2	0.00302	126	24 inch	0.013	78.63	78.25	83.00	82.00	81.84	81.71
P-4	#5	#6	8.1	0.00290	38	24 inch	0.013	78.15	78.04	82.00	82.00	81.66	81.61
P-5	#6	#12b	9.6	0.00200	210	24 inch	0.013	77.94	77.52	82.00	82.40	81.50	81.12
P-6	#12b	J-1	32	0.00147	102	36 inch	0.013	77.42	77.27	82.40	81.50	80.86	80.63
P-7	J-1	#12	33.4	0.00171	70	36 inch	0.013	77.18	77.06	81.50	81.00	80.35	80.18
P-8	#12	RCBC	35.9	0.00149	375	36 inch	0.013	76.96	76.40	81.00	81.00	79.85	78.35

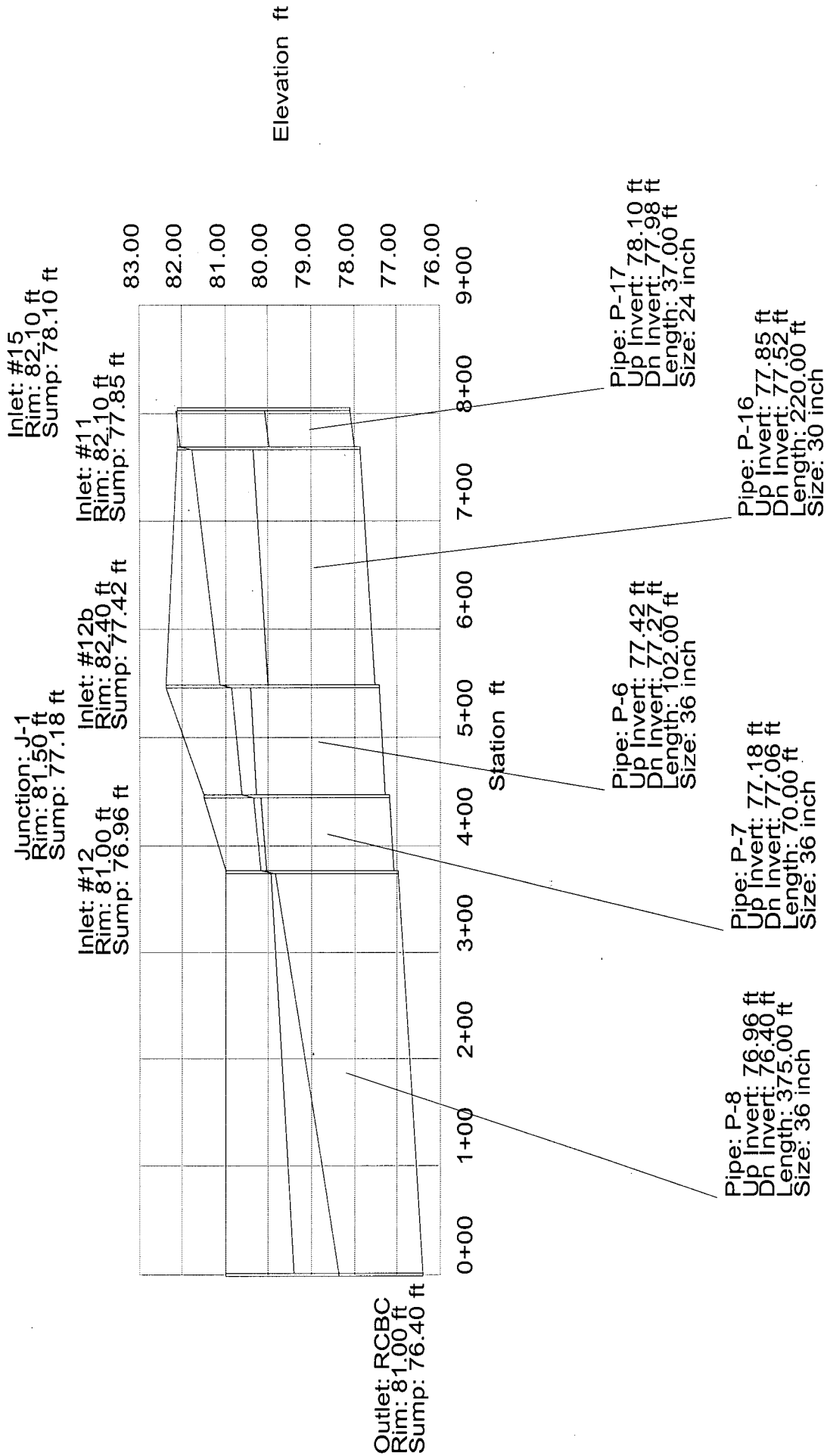
2-yr









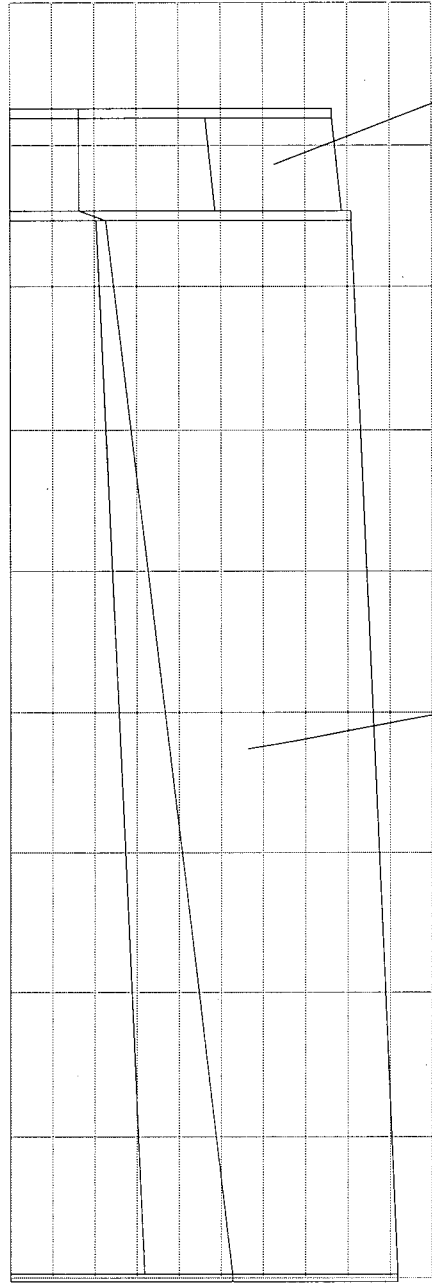


Inlet: #13  
 Rim: 81.00 ft  
 Sump: 77.17 ft

Inlet: #12  
 Rim: 81.00 ft  
 Sump: 76.96 ft

Outlet: RCBC  
 Rim: 81.00 ft  
 Sump: 76.40 ft

81.00  
 80.50  
 80.00  
 79.50  
 79.00  
 78.50  
 78.00  
 77.50  
 77.00  
 76.50  
 76.00



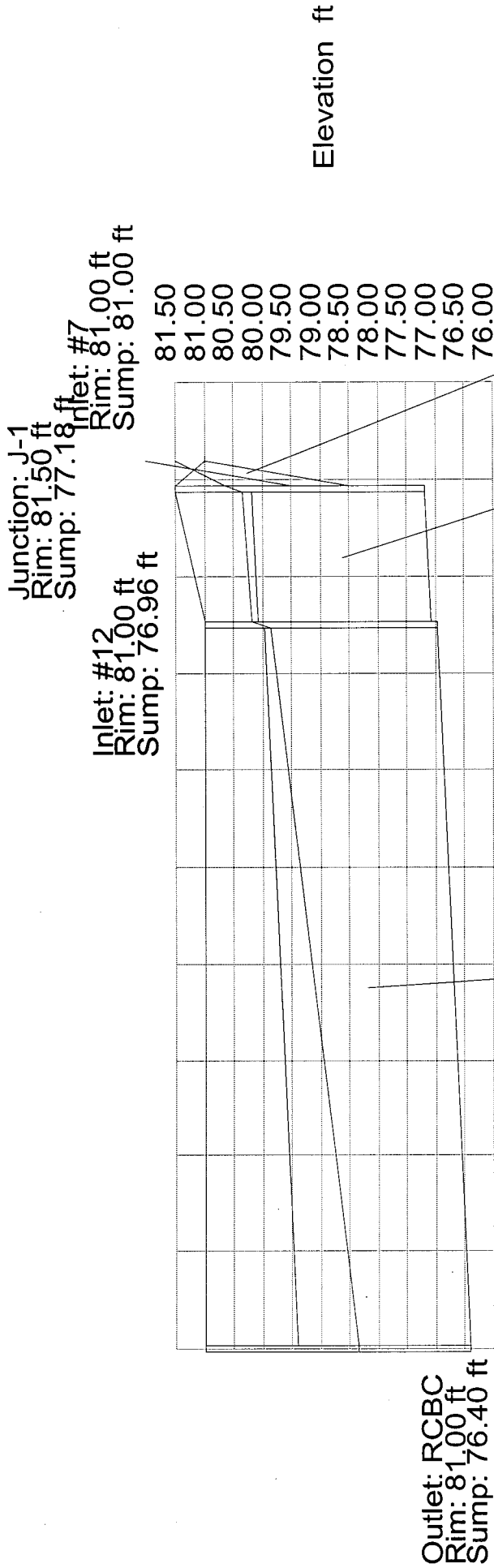
0+00 0+50 1+00 1+50 2+00 2+50 3+00 3+50 4+00 4+50

Station ft

Elevation ft

Pipe: P-10  
 Up Invert: 77.17 ft  
 Dn Invert: 77.06 ft  
 Length: 36.00 ft  
 Size: 18 inch

Pipe: P-8  
 Up Invert: 76.96 ft  
 Dn Invert: 76.40 ft  
 Length: 375.00 ft  
 Size: 36 inch

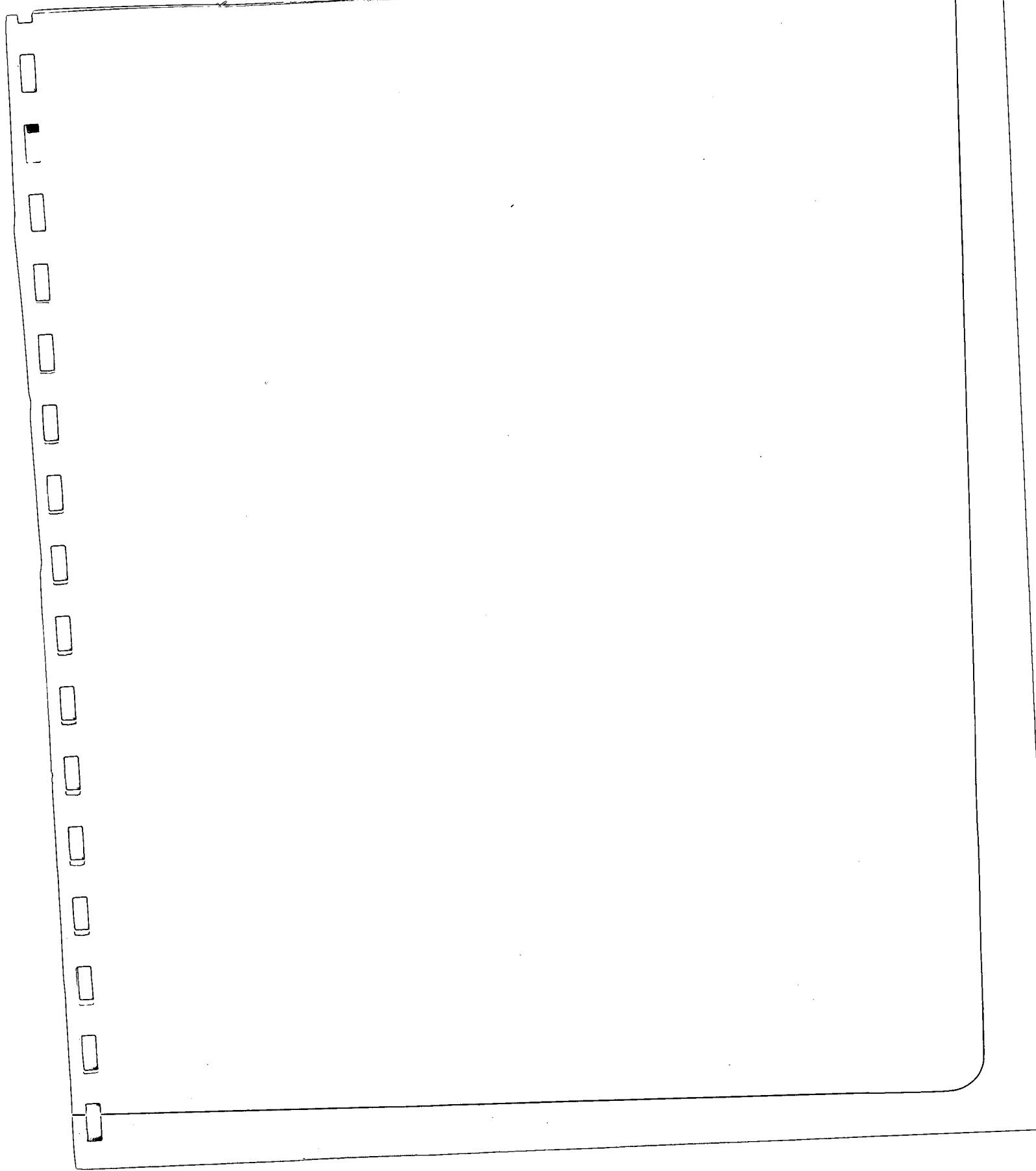


Pipe: P-8  
 Up Invert: 76.96 ft  
 Dn Invert: 76.40 ft  
 Length: 375.00 ft  
 Size: 36 inch

Pipe: P-7  
 Up Invert: 77.18 ft  
 Dn Invert: 77.06 ft  
 Length: 70.00 ft  
 Size: 36 inch

Pipe: P-9  
 Up Invert: 81.00 ft  
 Dn Invert: 78.50 ft  
 Length: 16.00 ft  
 Size: 12 inch

**DRAINAGE PLAN**



**LOT GRADING PLAN**