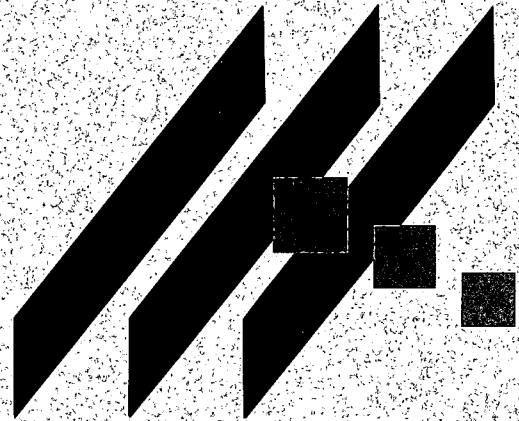


M K E C ENGINEERING CONSULTANTS, I N C



DRAINAGE REPORT

FOR

**CRESTVIEW COUNTRY CLUB ESTATES,
OVERBROOK 5th ADDITION**

**REVISED JANUARY 2004
NOVEMBER 2003**

**Drainage Report for
Crestview Country Club Estates, Overbrook Fifth Addition
Wichita, Sedgwick County, Kansas**

Location

The subject property is in Sedgwick County, Kansas. The proposed development is located North of East 9th Street North, north of Central Avenue, and East of 143rd Street East. The site lies in the Northwest Quarter of Section 13, Township 27 South, Range 2 East. The dimensions of the property are approximately 510 feet north to south and 690 feet east to west at the widest points. The area of the plat is 5.0 acres. The site is shown on the Andover, Kansas Quadrangle, located in Appendix A.

Soils

According to the NRCS (SCS) Sedgwick County Soil Survey in Appendix B, the soil on the site is comprised mostly of Clime Silty Clay with 3-6% slopes (Ce – HSG “C”) and a small area of Rosehill Silty Clay with 1-3% slopes (Rd – HSG “D”). The Hydrological Soil Group (HSG) used to select runoff coefficients is “C”.

Pre-developed Conditions

Current Development

The site is zoned as single family residential. The existing land use is vacant lots.

Current Landform and Slope

Currently the elevation on the site varies from 1331' on the west edge of the property to 1343' on the east edge of the property. Slopes range from 1.0% to 6.0% across the property.

Current Drainage Conditions

Fourmile Creek is the receiving water for the site. Flow through Fourmile Creek near the site is approximately 5,400 cfs in the 100-year design event (Sedgwick County, Kansas FIS Volume 1 of 2, June 3, 1986). According to the Federal Emergency Management Agency (FEMA), the site is in Zone C areas of minimal flooding. The nearest Zone A (area of 100-year flooding) is approximately 2000 feet southwest of the site. (FIRM Panel 150, Sedgwick County, Kansas, June 3, 1986) (shown in Appendix C).

Current Runoff Characteristics

Runoff sheet flows to the west. The site is in a 132-acre watershed that drains to Fourmile Creek. Existing runoff from the watershed is 250-cfs in the 100-year design event. The site is divided into the watersheds shown in the Drainage and Utility Plan in Appendix D. The rational method was used to analyze each watershed.

concentration (t_c) were calculated using the FAA method. Runoff coefficients were selected based upon zero-percent impervious area. The spreadsheet in Appendix E displays the area, runoff coefficient (c), time of concentration (t_c), and flow rate (Q) for the 2, 5, 10, and 100-year event for each watershed. Time of concentrations vary from 15 to 26 in undeveloped conditions. Undeveloped runoff values are found in Table 1.

Table 1. Undeveloped Runoff.

	2-Year (cfs)	5-Year (cfs)	10-Year (cfs)	100-Year (cfs)
A	0.5	0.7	1.1	2.5
B	0.5	0.6	1.0	2.3
C	0.4	0.6	0.9	1.9
D	1.7	2.3	3.5	7.1
E	1.0	1.4	2.1	4.7
G	0.2	.3	0.4	0.8
H	4.1	5.3	7.3	13.0
Totals	6.7	9.1	13.9	30.1

There are two existing ponds northeast and northwest of the site. Hydraflow Hydrographs software by Intelisolve was used to analyze both ponds (see Appendix F). The northeast pond has a drainage area of 15.7 acres and an SCS curve number of 80. Peak outflow from the pond was determined to be 94.0 cfs and water surface elevation was 1345.4 in the 100-year design event. The northwest pond has a drainage area of 97.5 acres and an SCS curve number of 80. Peak outflow from the pond was determined to be 206.3 cfs and water surface elevation was 1333.1 in the 100-year design event. The outflow from the northwest pond was routed through an existing 3-6'x3' reinforced concrete box (RCB) under 9th street. An HY-8 model has been created for the RCB, output is in Appendix G. The flow line of the RCB is 1326.67. The elevation of the street centerline is 1332.35. The 100-year elevation calculated by HY-8 upstream of the box is 1329.42. The centerline of 9th Street is 2.9' above the water surface on the upstream side of the box. The RCB will not overtop 9th Street in the 100-year design event.

Developed Conditions

Proposed Development

The site will develop as 11 residential lots with an average size of 0.45 acres.

Proposed Landform and Slope

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

Proposed Runoff Characteristics

The same watersheds shown in Appendix D were used to analyze developed conditions. Times of concentration (t_c) were calculated using the FAA method and ranged from 15 to 24 minutes. Runoff coefficients were selected based upon 1/2-acre residential lots with twenty five-percent impervious areas. The spreadsheet in Appendix E displays the area, runoff coefficient (c), time of concentration (t_c), and flow rate (Q) for the 2, 5, 10, and 100-year event for each watershed under developed conditions. Developed runoff values are found in Table 2.

Table 2. Developed Runoff.

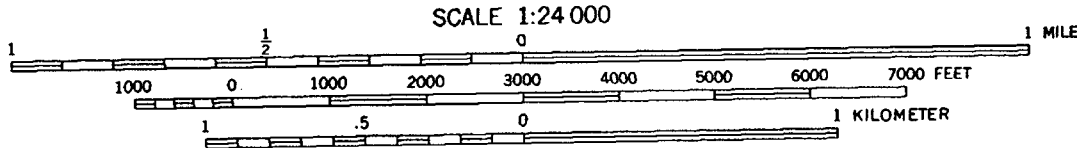
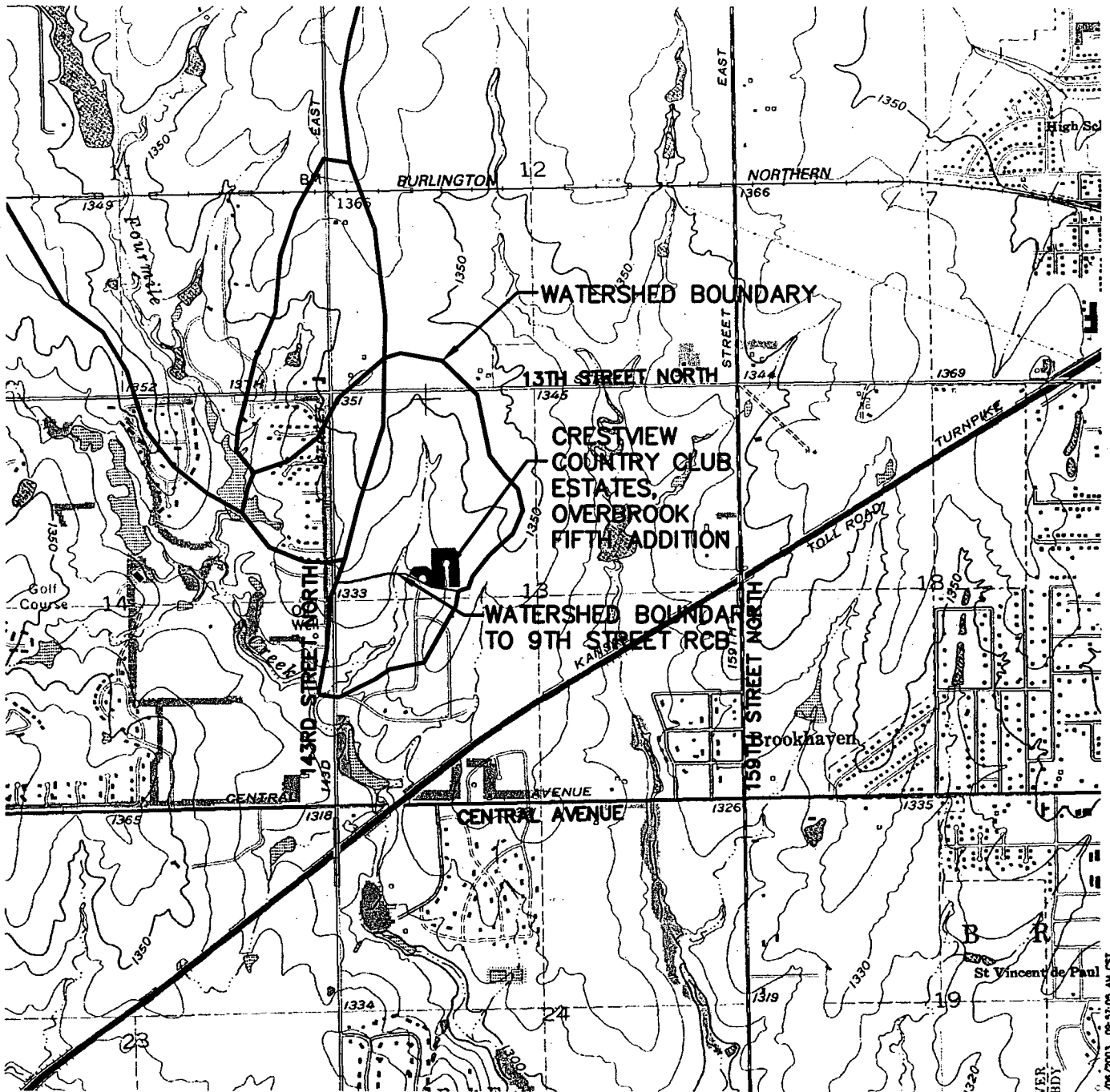
	2-Year (cfs)	5-Year (cfs)	10-Year (cfs)	100-Year (cfs)
A	0.9	1.2	1.6	3.0
B	0.8	1.0	1.5	2.8
C	0.7	0.9	1.3	2.2
D	2.8	3.6	4.8	8.5
E	1.7	2.2	3.2	5.6
G	0.3	0.4	0.5	0.9
H	7.6	10.2	11.7	17.7
Totals	12.6	17.1	22.3	40.9

Runoff from areas A, D, G, and H will flow through 9th Street to the RCB. A model has been created using FlowMaster to determine the capacity of 9th Street, Appendix I. The 100-year design storm will be 0.05' above the street center line elevation, keeping it within the right-of-way.

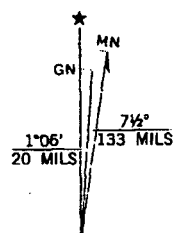
Summary

The Crestview Country Club Estates, Overbrook Fifth Addition is a single-family residential development covering 5.0 acres. The development will have 11 lots approximately 0.5 acres in size. The site drains into a 132-acre watershed that has a peak flow of 203 cfs during the 100-year event. Runoff from the developing site will increase by 10.8 cfs. This is an increase of 5.3% for the watershed. Due to the location of the site in the watershed, peak flow from the site should pass through the watershed and the RCB at 9th Street before the watershed reaches its peak 100-year design flow. The 100-year design flow will stay within the right-of-way of 9th Street. Increased runoff from the 5-acre site is negligible compared to the size of the watershed feeding Fourmile Creek.

**APPENDIX A
QUADRANGLE MAP**



CONTOUR INTERVAL 10 FEET
 NATIONAL GEODETIC VERTICAL DATUM OF 1929



UTM GRID AND 1982 MAGNETIC NORTH
 DECLINATION AT CENTER OF SHEET

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

**CRESTVIEW COUNTRY CLUB ESTATES,
 OVERBROOK FIFTH ADDITION**

PROJECT NAME		
SHEET TITLE	ANDOVER, KANSAS QUADRANGLE	
DESIGN BY.	JSM	GM
DRAWN BY.	JSM	GM
CHECKED BY.		
DATE	NOVEMBER 2003	1 / 1
	03120	SHEET#01
	JOB NO.	

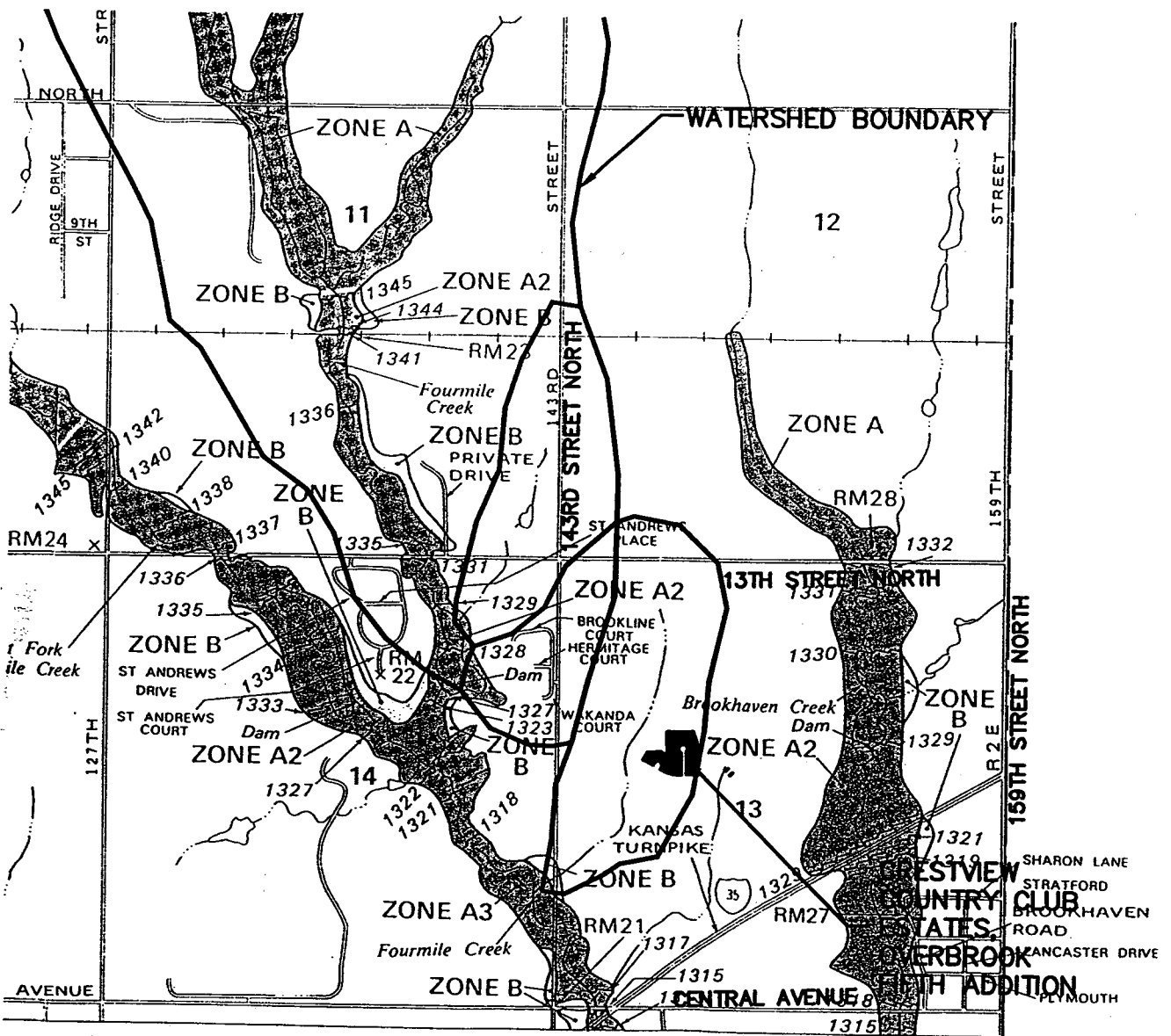
H:\CIVIL\03120\UNMC\Unmc\Unmc.dwg 11/04/2003 08:37:05 AM CST

**APPENDIX B
SOIL SURVEY**



10/10/10

APPENDIX C
FIRM



NATIONAL FLOOD INSURANCE PROGRAM


FIRM
FLOOD INSURANCE RATE MAP

SEDGWICK COUNTY,
KANSAS
(UNINCORPORATED AREAS)

PANEL 150 OF 300

COMMUNITY-PANEL NUMBER
200321 0150 A

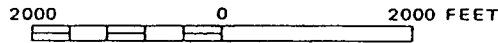

EFFECTIVE DATE:
JUNE 3, 1986



Federal Emergency Management Agency



APPROXIMATE SCALE

MKEC
ENGINEERING CONSULTANTS
431 N. WESS ROAD
WICHITA, KS. 67206
316 - 864 - 9600

**CRESTVIEW COUNTRY CLUB ESTATES,
OVERBROOK FIFTH ADDITION**

PROJECT NAME
**FIRM PANEL 150 OF 300
SEDGWICK COUNTY, KANSAS**

SHEET TITLE

JSM DESIGN BY.	JSM DRAWN BY.	GM CHECKED BY.
NOVEMBER 2003 DATE	03120 JOB NO.	1 / 1 SHEET/OF

**APPENDIX D
DRAINAGE & UTILITY PLAN**

DRAINAGE ANALYSIS SUMMARY
Crestview Country Club Estates, Overbrook Fifth Addition
Soil Group C

Area ID	Area ac	C2	C5	C10	C100	Elev		Flow Length	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	Inlet Size ft	Pipe Size in	Min Slope %	COMMENTS	
						Max	Min																		
Undeveloped																									
A	0.7	0.26	0.29	0.37	0.53	1336.0	1332.0	310	24	24	21	17	3.03	3.73	4.50	7.18	0.51	0.70	1.08	2.47					
B	0.6	0.26	0.29	0.37	0.53	1335.0	1331.0	350	27	26	24	18	2.84	3.50	4.31	6.84	0.46	0.63	0.99	2.25					
C	0.5	0.26	0.29	0.37	0.53	1336.0	1334.0	190	20	20	18	15	3.33	4.10	4.95	7.37	0.42	0.57	0.88	1.67					
D	1.8	0.26	0.29	0.37	0.53	1342.0	1335.0	260	18	17	15	15	3.81	4.43	5.22	7.37	1.71	2.34	3.52	7.11					
E	1.2	0.26	0.29	0.37	0.53	1343.0	1335.0	360	22	21	19	15	3.25	3.90	4.71	7.37	1.02	1.57	2.11	4.73					
G	0.2	0.26	0.29	0.37	0.53	1343.0	1340.0	130	15	15	15	15	3.83	4.56	5.22	7.37	0.20	0.26	0.39	0.78					
H	2.9	0.37	0.40	0.48	0.61	1343.0	1332.3	900	15	15	15	15	3.83	4.56	5.22	7.37	4.11	5.29	7.27	13.04					
A+D+G+H	5.6	0.32	0.35	0.43	0.57				24	24	21	17	3.03	3.73	4.50	7.18	5.35	7.21	10.71	22.88					
Total	7.9	0.30	0.33	0.41	0.56				27	26	24	18	2.84	3.50	4.31	6.84	6.72	9.11	13.94	30.15					
Developed																									
A	0.7	0.40	0.43	0.50	0.63	1336.0	1332.0	310	20	20	17	15	3.33	4.10	4.95	7.37	0.67	1.15	1.61	3.02					
B	0.6	0.40	0.43	0.50	0.63	1335.0	1331.0	350	23	22	19	15	3.17	3.90	4.71	7.37	0.79	1.04	1.46	2.88					
C	0.5	0.40	0.43	0.50	0.63	1336.0	1334.0	190	17	16	15	15	3.61	4.43	5.22	7.37	0.69	0.91	1.25	2.23					
D	1.8	0.40	0.43	0.50	0.63	1342.0	1335.0	260	15	15	15	15	3.83	4.56	5.22	7.37	2.79	3.57	4.75	8.45					
E	1.2	0.40	0.43	0.50	0.63	1343.0	1335.0	360	18	18	16	15	3.51	4.31	5.22	7.37	1.70	2.24	3.16	5.62					
G	0.2	0.40	0.43	0.50	0.63	1343.0	1340.0	130	15	15	15	15	3.83	4.56	5.22	7.37	0.31	0.39	0.52	0.93					
H	2.9	0.68	0.77	0.77	0.83	1343.0	1332.3	900	15	15	15	15	3.83	4.56	5.22	7.37	7.55	10.21	11.66	17.74					
A+D+G+H	5.6	0.55	0.61	0.64	0.73				23	22	19	15	3.17	3.90	4.71	7.37	9.64	13.21	16.81	30.14					
Total	7.9	0.50	0.56	0.60	0.70				23	22	19	15	3.17	3.90	4.71	7.37	12.57	17.08	22.25	40.86					
Watershed																									
	107.3	0.31	0.34	0.42	0.57	1355.0	1325.0	4500	109	105	94	74	1.08	1.49	1.87	3.34	36.28	54.84	84.12	203.52					

**APPENDIX F
HYDRAFLOW FOR EXISTING PONDS**

2000

Hydrograph Summary Report

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Volume (acft)	Inflow hyd(s)	Maximum elevation (ft)	Maximum storage (acft)	Hydrograph description
1	SCS Runoff	93.97	6	720	6.670	---	---	---	NE pond
2	Reservoir	6.03	6	798	4.479	1	1345.43	4.202	NE Pond
4	SCS Runoff	200.61	6	756	36.488	---	---	---	NW pond
5	Combine	206.20	6	762	40.967	2, 4	---	---	To NW Pond
6	Reservoir	206.32	6	762	39.330	5	1333.14	4.753	NW Pond

Hydrograph Report

Hyd. No. 1

NE pond

Hydrograph type	= SCS Runoff	Peak discharge	= 93.97 cfs
Storm frequency	= 100 yrs	Time interval	= 6 min
Drainage area	= 15.70 ac	Curve number	= 80
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 15 min
Total precip.	= 7.80 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

Hydrograph Volume = 6.670 acft

Hydrograph Discharge Table

Time -- Outflow (hrs cfs)	Time -- Outflow (hrs cfs)	Time -- Outflow (hrs cfs)	Time -- Outflow (hrs cfs)
8.60 0.95	12.00 93.97 <<	15.40 3.03	18.80 1.77
8.70 1.01	12.10 85.51	15.50 2.95	18.90 1.74
8.80 1.08	12.20 53.88	15.60 2.88	19.00 1.71
8.90 1.15	12.30 27.66	15.70 2.81	19.10 1.69
9.00 1.23	12.40 15.57	15.80 2.73	19.20 1.66
9.10 1.30	12.50 13.28	15.90 2.66	19.30 1.63
9.20 1.36	12.60 11.14	16.00 2.59	19.40 1.61
9.30 1.41	12.70 9.54	16.10 2.52	19.50 1.58
9.40 1.44	12.80 8.53	16.20 2.46	19.60 1.55
9.50 1.48	12.90 7.88	16.30 2.42	19.70 1.53
9.60 1.52	13.00 7.35	16.40 2.39	19.80 1.50
9.70 1.59	13.10 6.84	16.50 2.37	19.90 1.47
9.80 1.68	13.20 6.41	16.60 2.34	20.00 1.45
9.90 1.79	13.30 6.06	16.70 2.32	20.10 1.42
10.00 1.91	13.40 5.76	16.80 2.29	20.20 1.41
10.10 2.04	13.50 5.47	16.90 2.27	20.30 1.39
10.20 2.19	13.60 5.19	17.00 2.24	20.40 1.39
10.30 2.36	13.70 4.93	17.10 2.21	20.50 1.38
10.40 2.54	13.80 4.70	17.20 2.19	20.60 1.38
10.50 2.73	13.90 4.49	17.30 2.16	20.70 1.37
10.60 2.94	14.00 4.28	17.40 2.13	20.80 1.37
10.70 3.19	14.10 4.09	17.50 2.11	20.90 1.36
10.80 3.48	14.20 3.94	17.60 2.08	21.00 1.36
10.90 3.80	14.30 3.83	17.70 2.06	21.10 1.35
11.00 4.14	14.40 3.75	17.80 2.03	21.20 1.35
11.10 4.39	14.50 3.68	17.90 2.00	21.30 1.34
11.20 4.78	14.60 3.61	18.00 1.98	21.40 1.34
11.30 5.53	14.70 3.53	18.10 1.95	21.50 1.33
11.40 6.40	14.80 3.46	18.20 1.92	21.60 1.33
11.50 7.34	14.90 3.39	18.30 1.90	21.70 1.32
11.60 10.13	15.00 3.32	18.40 1.87	21.80 1.32
11.70 18.60	15.10 3.24	18.50 1.85	21.90 1.31
11.80 34.99	15.20 3.17	18.60 1.82	22.00 1.30
11.90 65.51	15.30 3.10	18.70 1.79	22.10 1.30

Continues on next page...

Hydrograph Discharge Table

Time -- Outflow
(hrs cfs)

22.20	1.29
22.30	1.29
22.40	1.28
22.50	1.28
22.60	1.27
22.70	1.27
22.80	1.26
22.90	1.26
23.00	1.25
23.10	1.25
23.20	1.24
23.30	1.24
23.40	1.23
23.50	1.23
23.60	1.22
23.70	1.22
23.80	1.21
23.90	1.21
24.00	1.20
24.10	0.96

...End

Hydrograph Report

Hyd. No. 2

NE Pond

Hydrograph type = Reservoir
 Storm frequency = 100 yrs
 Inflow hyd. No. = 1
 Max. Elevation = 1345.43 ft

Peak discharge = 6.03 cfs
 Time interval = 6 min
 Reservoir name = NE Pond
 Max. Storage = 4.202 acft

Storage Indication method used.

Outflow hydrograph volume = 4.479 acft

Hydrograph Discharge Table

Time (hrs)	Inflow cfs	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	Clv D cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	Outflow cfs
12.10	85.51	1344.80	1.18	---	---	---	---	---	---	---	---	1.18
12.20	53.88	1345.10	3.20	---	---	---	---	---	---	---	---	3.20
12.30	27.66	1345.24	4.34	---	---	---	---	---	---	---	---	4.34
12.40	15.57	1345.31	4.98	---	---	---	---	---	---	---	---	4.98
12.50	13.28	1345.35	5.28	---	---	---	---	---	---	---	---	5.28
12.60	11.14	1345.37	5.49	---	---	---	---	---	---	---	---	5.49
12.70	9.54	1345.39	5.64	---	---	---	---	---	---	---	---	5.64
12.80	8.53	1345.41	5.77	---	---	---	---	---	---	---	---	5.77
12.90	7.88	1345.42	5.87	---	---	---	---	---	---	---	---	5.87
13.00	7.35	1345.42	5.95	---	---	---	---	---	---	---	---	5.95
13.10	6.84	1345.43	6.00	---	---	---	---	---	---	---	---	6.00
13.20	6.41	1345.43	6.02	---	---	---	---	---	---	---	---	6.02
13.30	6.06	1345.43 <<	6.03	---	---	---	---	---	---	---	---	6.03 <<
13.40	5.76	1345.43	6.03	---	---	---	---	---	---	---	---	6.03
13.50	5.47	1345.43	6.01	---	---	---	---	---	---	---	---	6.01
13.60	5.19	1345.43	5.98	---	---	---	---	---	---	---	---	5.98
13.70	4.93	1345.42	5.94	---	---	---	---	---	---	---	---	5.94
13.80	4.70	1345.42	5.89	---	---	---	---	---	---	---	---	5.89
13.90	4.49	1345.41	5.84	---	---	---	---	---	---	---	---	5.84
14.00	4.28	1345.41	5.77	---	---	---	---	---	---	---	---	5.77
14.10	4.09	1345.40	5.71	---	---	---	---	---	---	---	---	5.71
14.20	3.94	1345.39	5.65	---	---	---	---	---	---	---	---	5.65
14.30	3.83	1345.39	5.60	---	---	---	---	---	---	---	---	5.60
14.40	3.75	1345.38	5.54	---	---	---	---	---	---	---	---	5.54
14.50	3.68	1345.37	5.48	---	---	---	---	---	---	---	---	5.48
14.60	3.61	1345.37	5.43	---	---	---	---	---	---	---	---	5.43
14.70	3.53	1345.36	5.37	---	---	---	---	---	---	---	---	5.37
14.80	3.46	1345.35	5.31	---	---	---	---	---	---	---	---	5.31
14.90	3.39	1345.34	5.25	---	---	---	---	---	---	---	---	5.25
15.00	3.32	1345.34	5.19	---	---	---	---	---	---	---	---	5.19
15.10	3.24	1345.33	5.13	---	---	---	---	---	---	---	---	5.13
15.20	3.17	1345.32	5.07	---	---	---	---	---	---	---	---	5.07
15.30	3.10	1345.31	5.01	---	---	---	---	---	---	---	---	5.01
15.40	3.03	1345.31	4.95	---	---	---	---	---	---	---	---	4.95
15.50	2.95	1345.30	4.89	---	---	---	---	---	---	---	---	4.89
15.60	2.88	1345.29	4.81	---	---	---	---	---	---	---	---	4.81
15.70	2.81	1345.28	4.74	---	---	---	---	---	---	---	---	4.74
15.80	2.73	1345.28	4.66	---	---	---	---	---	---	---	---	4.66

Continues on next page...

Hydrograph Discharge Table

Time (hrs)	Inflow cfs	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	Clv D cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	Outflow cfs
15.90	2.66	1345.27	4.59	----	----	----	----	----	----	----	----	4.59
16.00	2.59	1345.26	4.51	----	----	----	----	----	----	----	----	4.51
16.10	2.52	1345.25	4.44	----	----	----	----	----	----	----	----	4.44
16.20	2.46	1345.25	4.36	----	----	----	----	----	----	----	----	4.36
16.30	2.42	1345.24	4.29	----	----	----	----	----	----	----	----	4.29
16.40	2.39	1345.23	4.21	----	----	----	----	----	----	----	----	4.22
16.50	2.37	1345.22	4.14	----	----	----	----	----	----	----	----	4.14
16.60	2.34	1345.22	4.08	----	----	----	----	----	----	----	----	4.08
16.70	2.32	1345.21	4.01	----	----	----	----	----	----	----	----	4.01
16.80	2.29	1345.20	3.94	----	----	----	----	----	----	----	----	3.94
16.90	2.27	1345.20	3.89	----	----	----	----	----	----	----	----	3.89
17.00	2.24	1345.19	3.84	----	----	----	----	----	----	----	----	3.84
17.10	2.21	1345.19	3.80	----	----	----	----	----	----	----	----	3.80
17.20	2.19	1345.18	3.76	----	----	----	----	----	----	----	----	3.76
17.30	2.16	1345.17	3.72	----	----	----	----	----	----	----	----	3.72
17.40	2.13	1345.17	3.67	----	----	----	----	----	----	----	----	3.67
17.50	2.11	1345.16	3.63	----	----	----	----	----	----	----	----	3.63
17.60	2.08	1345.15	3.59	----	----	----	----	----	----	----	----	3.59
17.70	2.06	1345.15	3.55	----	----	----	----	----	----	----	----	3.55
17.80	2.03	1345.14	3.51	----	----	----	----	----	----	----	----	3.51
17.90	2.00	1345.14	3.47	----	----	----	----	----	----	----	----	3.47
18.00	1.98	1345.13	3.43	----	----	----	----	----	----	----	----	3.43
18.10	1.95	1345.13	3.39	----	----	----	----	----	----	----	----	3.39
18.20	1.92	1345.12	3.36	----	----	----	----	----	----	----	----	3.36
18.30	1.90	1345.11	3.32	----	----	----	----	----	----	----	----	3.32
18.40	1.87	1345.11	3.28	----	----	----	----	----	----	----	----	3.28
18.50	1.85	1345.10	3.24	----	----	----	----	----	----	----	----	3.24
18.60	1.82	1345.10	3.20	----	----	----	----	----	----	----	----	3.20
18.70	1.79	1345.09	3.16	----	----	----	----	----	----	----	----	3.16
18.80	1.77	1345.09	3.11	----	----	----	----	----	----	----	----	3.11
18.90	1.74	1345.08	3.07	----	----	----	----	----	----	----	----	3.07
19.00	1.71	1345.08	3.03	----	----	----	----	----	----	----	----	3.03
19.10	1.69	1345.07	2.99	----	----	----	----	----	----	----	----	2.99
19.20	1.66	1345.07	2.94	----	----	----	----	----	----	----	----	2.94
19.30	1.63	1345.06	2.90	----	----	----	----	----	----	----	----	2.90
19.40	1.61	1345.06	2.86	----	----	----	----	----	----	----	----	2.86
19.50	1.58	1345.05	2.82	----	----	----	----	----	----	----	----	2.82
19.60	1.55	1345.05	2.78	----	----	----	----	----	----	----	----	2.78
19.70	1.53	1345.04	2.74	----	----	----	----	----	----	----	----	2.74
19.80	1.50	1345.04	2.71	----	----	----	----	----	----	----	----	2.71
19.90	1.47	1345.03	2.67	----	----	----	----	----	----	----	----	2.67
20.00	1.45	1345.03	2.63	----	----	----	----	----	----	----	----	2.63
20.10	1.42	1345.02	2.59	----	----	----	----	----	----	----	----	2.59
20.20	1.41	1345.02	2.55	----	----	----	----	----	----	----	----	2.55
20.30	1.39	1345.01	2.52	----	----	----	----	----	----	----	----	2.52
20.40	1.39	1345.01	2.48	----	----	----	----	----	----	----	----	2.48
20.50	1.38	1345.00	2.45	----	----	----	----	----	----	----	----	2.45
20.60	1.38	1345.00	2.41	----	----	----	----	----	----	----	----	2.41
20.70	1.37	1345.00	2.38	----	----	----	----	----	----	----	----	2.38
20.80	1.37	1344.99	2.35	----	----	----	----	----	----	----	----	2.35
20.90	1.36	1344.99	2.32	----	----	----	----	----	----	----	----	2.32

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Hydrograph Discharge Table

Time (hrs)	Inflow cfs	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	Clv D cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	Outflow cfs
21.00	1.36	1344.98	2.29	----	----	----	----	----	----	----	----	2.29
21.10	1.35	1344.98	2.26	----	----	----	----	----	----	----	----	2.26
21.20	1.35	1344.97	2.23	----	----	----	----	----	----	----	----	2.23
21.30	1.34	1344.97	2.20	----	----	----	----	----	----	----	----	2.20
21.40	1.34	1344.97	2.18	----	----	----	----	----	----	----	----	2.18
21.50	1.33	1344.96	2.15	----	----	----	----	----	----	----	----	2.15
21.60	1.33	1344.96	2.13	----	----	----	----	----	----	----	----	2.13
21.70	1.32	1344.96	2.10	----	----	----	----	----	----	----	----	2.10
21.80	1.32	1344.95	2.08	----	----	----	----	----	----	----	----	2.08
21.90	1.31	1344.95	2.05	----	----	----	----	----	----	----	----	2.05
22.00	1.30	1344.94	2.03	----	----	----	----	----	----	----	----	2.03
22.10	1.30	1344.94	2.01	----	----	----	----	----	----	----	----	2.01
22.20	1.29	1344.94	1.98	----	----	----	----	----	----	----	----	1.98
22.30	1.29	1344.94	1.96	----	----	----	----	----	----	----	----	1.96
22.40	1.28	1344.93	1.94	----	----	----	----	----	----	----	----	1.94
22.50	1.28	1344.93	1.92	----	----	----	----	----	----	----	----	1.92
22.60	1.27	1344.93	1.90	----	----	----	----	----	----	----	----	1.90
22.70	1.27	1344.92	1.88	----	----	----	----	----	----	----	----	1.88
22.80	1.26	1344.92	1.86	----	----	----	----	----	----	----	----	1.86
22.90	1.26	1344.92	1.84	----	----	----	----	----	----	----	----	1.84
23.00	1.25	1344.92	1.82	----	----	----	----	----	----	----	----	1.82
23.10	1.25	1344.91	1.81	----	----	----	----	----	----	----	----	1.81
23.20	1.24	1344.91	1.79	----	----	----	----	----	----	----	----	1.79
23.30	1.24	1344.91	1.77	----	----	----	----	----	----	----	----	1.77
23.40	1.23	1344.91	1.76	----	----	----	----	----	----	----	----	1.76
23.50	1.23	1344.90	1.74	----	----	----	----	----	----	----	----	1.74
23.60	1.22	1344.90	1.72	----	----	----	----	----	----	----	----	1.72
23.70	1.22	1344.90	1.71	----	----	----	----	----	----	----	----	1.71
23.80	1.21	1344.90	1.70	----	----	----	----	----	----	----	----	1.70
23.90	1.21	1344.89	1.68	----	----	----	----	----	----	----	----	1.68
24.00	1.20	1344.89	1.67	----	----	----	----	----	----	----	----	1.67
24.10	0.96	1344.89	1.66	----	----	----	----	----	----	----	----	1.66
24.20	0.48	1344.88	1.63	----	----	----	----	----	----	----	----	1.63
24.30	0.16	1344.88	1.60	----	----	----	----	----	----	----	----	1.60
24.40	0.00	1344.87	1.56	----	----	----	----	----	----	----	----	1.56
24.50	0.00	1344.86	1.52	----	----	----	----	----	----	----	----	1.52
24.60	0.00	1344.86	1.48	----	----	----	----	----	----	----	----	1.48
24.70	0.00	1344.85	1.44	----	----	----	----	----	----	----	----	1.44
24.80	0.00	1344.84	1.41	----	----	----	----	----	----	----	----	1.41
24.90	0.00	1344.84	1.37	----	----	----	----	----	----	----	----	1.37
25.00	0.00	1344.83	1.34	----	----	----	----	----	----	----	----	1.34
25.10	0.00	1344.83	1.30	----	----	----	----	----	----	----	----	1.30
25.20	0.00	1344.82	1.27	----	----	----	----	----	----	----	----	1.27
25.30	0.00	1344.81	1.24	----	----	----	----	----	----	----	----	1.24
25.40	0.00	1344.81	1.21	----	----	----	----	----	----	----	----	1.21
25.50	0.00	1344.80	1.17	----	----	----	----	----	----	----	----	1.17
25.60	0.00	1344.80	1.15	----	----	----	----	----	----	----	----	1.15
25.70	0.00	1344.79	1.13	----	----	----	----	----	----	----	----	1.13
25.80	0.00	1344.79	1.10	----	----	----	----	----	----	----	----	1.10
25.90	0.00	1344.78	1.08	----	----	----	----	----	----	----	----	1.08
26.00	0.00	1344.78	1.06	----	----	----	----	----	----	----	----	1.06

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Hydrograph Discharge Table

Time (hrs)	Inflow cfs	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	Clv D cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	Outflow cfs
26.10	0.00	1344.77	1.04	----	----	----	----	----	----	----	----	1.04
26.20	0.00	1344.77	1.02	----	----	----	----	----	----	----	----	1.02
26.30	0.00	1344.76	1.00	----	----	----	----	----	----	----	----	1.00
26.40	0.00	1344.76	0.98	----	----	----	----	----	----	----	----	0.98
26.50	0.00	1344.75	0.96	----	----	----	----	----	----	----	----	0.96
26.60	0.00	1344.75	0.94	----	----	----	----	----	----	----	----	0.94
26.70	0.00	1344.75	0.92	----	----	----	----	----	----	----	----	0.92
26.80	0.00	1344.74	0.90	----	----	----	----	----	----	----	----	0.90
26.90	0.00	1344.74	0.88	----	----	----	----	----	----	----	----	0.88
27.00	0.00	1344.73	0.87	----	----	----	----	----	----	----	----	0.87
27.10	0.00	1344.73	0.85	----	----	----	----	----	----	----	----	0.85
27.20	0.00	1344.73	0.83	----	----	----	----	----	----	----	----	0.83
27.30	0.00	1344.72	0.82	----	----	----	----	----	----	----	----	0.82
27.40	0.00	1344.72	0.80	----	----	----	----	----	----	----	----	0.80
27.50	0.00	1344.71	0.78	----	----	----	----	----	----	----	----	0.78
27.60	0.00	1344.71	0.77	----	----	----	----	----	----	----	----	0.77
27.70	0.00	1344.71	0.75	----	----	----	----	----	----	----	----	0.75
27.80	0.00	1344.70	0.74	----	----	----	----	----	----	----	----	0.74
27.90	0.00	1344.70	0.72	----	----	----	----	----	----	----	----	0.72
28.00	0.00	1344.70	0.71	----	----	----	----	----	----	----	----	0.71
28.10	0.00	1344.69	0.70	----	----	----	----	----	----	----	----	0.70
28.20	0.00	1344.69	0.69	----	----	----	----	----	----	----	----	0.69
28.30	0.00	1344.69	0.68	----	----	----	----	----	----	----	----	0.68
28.40	0.00	1344.68	0.66	----	----	----	----	----	----	----	----	0.66
28.50	0.00	1344.68	0.65	----	----	----	----	----	----	----	----	0.65
28.60	0.00	1344.68	0.64	----	----	----	----	----	----	----	----	0.64
28.70	0.00	1344.68	0.63	----	----	----	----	----	----	----	----	0.63
28.80	0.00	1344.67	0.62	----	----	----	----	----	----	----	----	0.62
28.90	0.00	1344.67	0.61	----	----	----	----	----	----	----	----	0.61
29.00	0.00	1344.67	0.60	----	----	----	----	----	----	----	----	0.60
29.10	0.00	1344.66	0.59	----	----	----	----	----	----	----	----	0.59
29.20	0.00	1344.66	0.58	----	----	----	----	----	----	----	----	0.58
29.30	0.00	1344.66	0.57	----	----	----	----	----	----	----	----	0.57
29.40	0.00	1344.66	0.56	----	----	----	----	----	----	----	----	0.56
29.50	0.00	1344.65	0.55	----	----	----	----	----	----	----	----	0.55
29.60	0.00	1344.65	0.54	----	----	----	----	----	----	----	----	0.54
29.70	0.00	1344.65	0.53	----	----	----	----	----	----	----	----	0.53
29.80	0.00	1344.65	0.52	----	----	----	----	----	----	----	----	0.52
29.90	0.00	1344.64	0.51	----	----	----	----	----	----	----	----	0.51
30.00	0.00	1344.64	0.50	----	----	----	----	----	----	----	----	0.50
30.10	0.00	1344.64	0.50	----	----	----	----	----	----	----	----	0.50
30.20	0.00	1344.64	0.49	----	----	----	----	----	----	----	----	0.49
30.30	0.00	1344.64	0.48	----	----	----	----	----	----	----	----	0.48
30.40	0.00	1344.63	0.47	----	----	----	----	----	----	----	----	0.47
30.50	0.00	1344.63	0.46	----	----	----	----	----	----	----	----	0.46
30.60	0.00	1344.63	0.45	----	----	----	----	----	----	----	----	0.45
30.70	0.00	1344.63	0.45	----	----	----	----	----	----	----	----	0.45
30.80	0.00	1344.62	0.44	----	----	----	----	----	----	----	----	0.44
30.90	0.00	1344.62	0.43	----	----	----	----	----	----	----	----	0.43
31.00	0.00	1344.62	0.42	----	----	----	----	----	----	----	----	0.42
31.10	0.00	1344.62	0.42	----	----	----	----	----	----	----	----	0.42

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Hydrograph Discharge Table

Time (hrs)	Inflow cfs	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	Clv D cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	Outflow cfs
31.20	0.00	1344.62	0.41	----	----	----	----	----	----	----	----	0.41
31.30	0.00	1344.62	0.40	----	----	----	----	----	----	----	----	0.40
31.40	0.00	1344.61	0.40	----	----	----	----	----	----	----	----	0.40
31.50	0.00	1344.61	0.39	----	----	----	----	----	----	----	----	0.39
31.60	0.00	1344.61	0.38	----	----	----	----	----	----	----	----	0.38
31.70	0.00	1344.61	0.38	----	----	----	----	----	----	----	----	0.38
31.80	0.00	1344.61	0.37	----	----	----	----	----	----	----	----	0.37
31.90	0.00	1344.60	0.36	----	----	----	----	----	----	----	----	0.36
32.00	0.00	1344.60	0.36	----	----	----	----	----	----	----	----	0.36
32.10	0.00	1344.60	0.35	----	----	----	----	----	----	----	----	0.35
32.20	0.00	1344.60	0.35	----	----	----	----	----	----	----	----	0.35
32.30	0.00	1344.60	0.34	----	----	----	----	----	----	----	----	0.34
32.40	0.00	1344.60	0.34	----	----	----	----	----	----	----	----	0.34
32.50	0.00	1344.59	0.34	----	----	----	----	----	----	----	----	0.34
32.60	0.00	1344.59	0.33	----	----	----	----	----	----	----	----	0.33
32.70	0.00	1344.59	0.33	----	----	----	----	----	----	----	----	0.33
32.80	0.00	1344.59	0.33	----	----	----	----	----	----	----	----	0.33
32.90	0.00	1344.59	0.32	----	----	----	----	----	----	----	----	0.32
33.00	0.00	1344.59	0.32	----	----	----	----	----	----	----	----	0.32
33.10	0.00	1344.59	0.32	----	----	----	----	----	----	----	----	0.32
33.20	0.00	1344.58	0.31	----	----	----	----	----	----	----	----	0.31
33.30	0.00	1344.58	0.31	----	----	----	----	----	----	----	----	0.31
33.40	0.00	1344.58	0.31	----	----	----	----	----	----	----	----	0.31
33.50	0.00	1344.58	0.30	----	----	----	----	----	----	----	----	0.30
33.60	0.00	1344.58	0.30	----	----	----	----	----	----	----	----	0.30
33.70	0.00	1344.58	0.30	----	----	----	----	----	----	----	----	0.30
33.80	0.00	1344.58	0.29	----	----	----	----	----	----	----	----	0.29
33.90	0.00	1344.57	0.29	----	----	----	----	----	----	----	----	0.29
34.00	0.00	1344.57	0.29	----	----	----	----	----	----	----	----	0.29
34.10	0.00	1344.57	0.29	----	----	----	----	----	----	----	----	0.29
34.20	0.00	1344.57	0.28	----	----	----	----	----	----	----	----	0.28
34.30	0.00	1344.57	0.28	----	----	----	----	----	----	----	----	0.28
34.40	0.00	1344.57	0.28	----	----	----	----	----	----	----	----	0.28
34.50	0.00	1344.57	0.27	----	----	----	----	----	----	----	----	0.27
34.60	0.00	1344.57	0.27	----	----	----	----	----	----	----	----	0.27
34.70	0.00	1344.56	0.27	----	----	----	----	----	----	----	----	0.27
34.80	0.00	1344.56	0.27	----	----	----	----	----	----	----	----	0.27
34.90	0.00	1344.56	0.26	----	----	----	----	----	----	----	----	0.26
35.00	0.00	1344.56	0.26	----	----	----	----	----	----	----	----	0.26
35.10	0.00	1344.56	0.26	----	----	----	----	----	----	----	----	0.26
35.20	0.00	1344.56	0.26	----	----	----	----	----	----	----	----	0.26
35.30	0.00	1344.56	0.25	----	----	----	----	----	----	----	----	0.25
35.40	0.00	1344.56	0.25	----	----	----	----	----	----	----	----	0.25
35.50	0.00	1344.56	0.25	----	----	----	----	----	----	----	----	0.25
35.60	0.00	1344.55	0.25	----	----	----	----	----	----	----	----	0.25
35.70	0.00	1344.55	0.24	----	----	----	----	----	----	----	----	0.24
35.80	0.00	1344.55	0.24	----	----	----	----	----	----	----	----	0.24
35.90	0.00	1344.55	0.24	----	----	----	----	----	----	----	----	0.24
36.00	0.00	1344.55	0.24	----	----	----	----	----	----	----	----	0.24
36.10	0.00	1344.55	0.23	----	----	----	----	----	----	----	----	0.23
36.20	0.00	1344.55	0.23	----	----	----	----	----	----	----	----	0.23

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Hydrograph Discharge Table

Time (hrs)	Inflow cfs	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	Clv D cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	Outflow cfs
36.30	0.00	1344.55	0.23	---	---	---	---	---	---	---	---	0.23
36.40	0.00	1344.55	0.23	---	---	---	---	---	---	---	---	0.23
36.50	0.00	1344.54	0.22	---	---	---	---	---	---	---	---	0.22
36.60	0.00	1344.54	0.22	---	---	---	---	---	---	---	---	0.22
36.70	0.00	1344.54	0.22	---	---	---	---	---	---	---	---	0.22
36.80	0.00	1344.54	0.22	---	---	---	---	---	---	---	---	0.22
36.90	0.00	1344.54	0.22	---	---	---	---	---	---	---	---	0.22
37.00	0.00	1344.54	0.21	---	---	---	---	---	---	---	---	0.21
37.10	0.00	1344.54	0.21	---	---	---	---	---	---	---	---	0.21
37.20	0.00	1344.54	0.21	---	---	---	---	---	---	---	---	0.21
37.30	0.00	1344.54	0.21	---	---	---	---	---	---	---	---	0.21
37.40	0.00	1344.54	0.20	---	---	---	---	---	---	---	---	0.20
37.50	0.00	1344.53	0.20	---	---	---	---	---	---	---	---	0.20
37.60	0.00	1344.53	0.20	---	---	---	---	---	---	---	---	0.20
37.70	0.00	1344.53	0.20	---	---	---	---	---	---	---	---	0.20
37.80	0.00	1344.53	0.20	---	---	---	---	---	---	---	---	0.20
37.90	0.00	1344.53	0.19	---	---	---	---	---	---	---	---	0.19
38.00	0.00	1344.53	0.19	---	---	---	---	---	---	---	---	0.19
38.10	0.00	1344.53	0.19	---	---	---	---	---	---	---	---	0.19
38.20	0.00	1344.53	0.19	---	---	---	---	---	---	---	---	0.19
38.30	0.00	1344.53	0.19	---	---	---	---	---	---	---	---	0.19
38.40	0.00	1344.53	0.18	---	---	---	---	---	---	---	---	0.18
38.50	0.00	1344.53	0.18	---	---	---	---	---	---	---	---	0.18
38.60	0.00	1344.52	0.18	---	---	---	---	---	---	---	---	0.18
38.70	0.00	1344.52	0.18	---	---	---	---	---	---	---	---	0.18
38.80	0.00	1344.52	0.18	---	---	---	---	---	---	---	---	0.18
38.90	0.00	1344.52	0.18	---	---	---	---	---	---	---	---	0.18
39.00	0.00	1344.52	0.17	---	---	---	---	---	---	---	---	0.17
39.10	0.00	1344.52	0.17	---	---	---	---	---	---	---	---	0.17
39.20	0.00	1344.52	0.17	---	---	---	---	---	---	---	---	0.17
39.30	0.00	1344.52	0.17	---	---	---	---	---	---	---	---	0.17
39.40	0.00	1344.52	0.17	---	---	---	---	---	---	---	---	0.17
39.50	0.00	1344.52	0.17	---	---	---	---	---	---	---	---	0.17
39.60	0.00	1344.52	0.16	---	---	---	---	---	---	---	---	0.16
39.70	0.00	1344.52	0.16	---	---	---	---	---	---	---	---	0.16
39.80	0.00	1344.52	0.16	---	---	---	---	---	---	---	---	0.16
39.90	0.00	1344.51	0.16	---	---	---	---	---	---	---	---	0.16
40.00	0.00	1344.51	0.16	---	---	---	---	---	---	---	---	0.16
40.10	0.00	1344.51	0.16	---	---	---	---	---	---	---	---	0.16
40.20	0.00	1344.51	0.15	---	---	---	---	---	---	---	---	0.15
40.30	0.00	1344.51	0.15	---	---	---	---	---	---	---	---	0.15
40.40	0.00	1344.51	0.15	---	---	---	---	---	---	---	---	0.15
40.50	0.00	1344.51	0.15	---	---	---	---	---	---	---	---	0.15
40.60	0.00	1344.51	0.15	---	---	---	---	---	---	---	---	0.15
40.70	0.00	1344.51	0.15	---	---	---	---	---	---	---	---	0.15
40.80	0.00	1344.51	0.15	---	---	---	---	---	---	---	---	0.15
40.90	0.00	1344.51	0.14	---	---	---	---	---	---	---	---	0.14
41.00	0.00	1344.51	0.14	---	---	---	---	---	---	---	---	0.14
41.10	0.00	1344.51	0.14	---	---	---	---	---	---	---	---	0.14
41.20	0.00	1344.51	0.14	---	---	---	---	---	---	---	---	0.14
41.30	0.00	1344.51	0.14	---	---	---	---	---	---	---	---	0.14

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Reservoir Report

Reservoir No. 1 - NE Pond

Hydraflow Hydrographs by Intelisolve

Pond Data

Pond storage is based on known contour areas. Average end area method used.

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (acft)	Total storage (acft)
0.00	1343.00	57,975	0.000	0.000
1.00	1344.00	72,935	1.503	1.503
2.00	1345.00	83,777	1.799	3.301
3.00	1346.00	98,663	2.094	5.396
4.00	1347.00	98,663	2.265	7.661

Culvert / Orifice Structures

	[A]	[B]	[C]	[D]
Rise in	= 24.0	0.0	0.0	0.0
Span in	= 24.0	0.0	0.0	0.0
No. Barrels	= 1	0	0	0
Invert El. ft	= 1344.37	0.00	0.00	0.00
Length ft	= 0.0	0.0	0.0	0.0
Slope %	= 0.00	0.00	0.00	0.00
N-Value	= .013	.000	.000	.000
Orif. Coeff.	= 0.60	0.00	0.00	0.00
Multi-Stage	= n/a	No	No	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len ft	= 250.00	0.00	0.00	0.00
Crest El. ft	= 1345.50	0.00	0.00	0.00
Weir Coeff.	= 3.33	0.00	0.00	0.00
Weir Type	= Rect	—	—	—
Multi-Stage	= No	No	No	No

Exfiltration Rate = 0.00 in/hr/sqft Tailwater Elev. = 0.00 ft

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

Stage / Storage / Discharge Table

Stage ft	Storage acft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	Clv D cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	Total cfs
0.00	0.000	1343.00	0.00	—	—	—	0.00	—	—	—	—	0.00
0.10	0.150	1343.10	0.00	—	—	—	0.00	—	—	—	—	0.00
0.20	0.301	1343.20	0.00	—	—	—	0.00	—	—	—	—	0.00
0.30	0.451	1343.30	0.00	—	—	—	0.00	—	—	—	—	0.00
0.40	0.601	1343.40	0.00	—	—	—	0.00	—	—	—	—	0.00
0.50	0.751	1343.50	0.00	—	—	—	0.00	—	—	—	—	0.00
0.60	0.902	1343.60	0.00	—	—	—	0.00	—	—	—	—	0.00
0.70	1.052	1343.70	0.00	—	—	—	0.00	—	—	—	—	0.00
0.80	1.202	1343.80	0.00	—	—	—	0.00	—	—	—	—	0.00
0.90	1.352	1343.90	0.00	—	—	—	0.00	—	—	—	—	0.00
1.00	1.503	1344.00	0.00	—	—	—	0.00	—	—	—	—	0.00
1.10	1.683	1344.10	0.00	—	—	—	0.00	—	—	—	—	0.00
1.20	1.862	1344.20	0.00	—	—	—	0.00	—	—	—	—	0.00
1.30	2.042	1344.30	0.00	—	—	—	0.00	—	—	—	—	0.00
1.40	2.222	1344.40	0.01	—	—	—	0.00	—	—	—	—	0.01
1.50	2.402	1344.50	0.13	—	—	—	0.00	—	—	—	—	0.13
1.60	2.582	1344.60	0.35	—	—	—	0.00	—	—	—	—	0.35
1.70	2.762	1344.70	0.72	—	—	—	0.00	—	—	—	—	0.72
1.80	2.942	1344.80	1.16	—	—	—	0.00	—	—	—	—	1.16
1.90	3.122	1344.90	1.72	—	—	—	0.00	—	—	—	—	1.72
2.00	3.301	1345.00	2.41	—	—	—	0.00	—	—	—	—	2.41
2.10	3.511	1345.10	3.22	—	—	—	0.00	—	—	—	—	3.22
2.20	3.720	1345.20	3.91	—	—	—	0.00	—	—	—	—	3.91
2.30	3.930	1345.30	4.90	—	—	—	0.00	—	—	—	—	4.90
2.40	4.139	1345.40	5.70	—	—	—	0.00	—	—	—	—	5.70
2.50	4.349	1345.50	6.81	—	—	—	0.00	—	—	—	—	6.81
2.60	4.558	1345.60	7.68	—	—	—	26.27	—	—	—	—	33.95
2.70	4.767	1345.70	8.83	—	—	—	74.37	—	—	—	—	83.20
2.80	4.977	1345.80	9.96	—	—	—	136.66	—	—	—	—	146.62
2.90	5.186	1345.90	11.04	—	—	—	210.43	—	—	—	—	221.47
3.00	5.396	1346.00	12.05	—	—	—	294.33	—	—	—	—	306.38
3.10	5.622	1346.10	12.96	—	—	—	386.89	—	—	—	—	399.85
3.20	5.849	1346.20	13.88	—	—	—	487.51	—	—	—	—	501.40

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Stage / Storage / Discharge Table

Stage ft	Storage acft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	Clv D cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	Total cfs
3.30	6.075	1346.30	14.72	--	--	--	595.61	--	--	--	--	610.33
3.40	6.302	1346.40	15.35	--	--	--	710.69	--	--	--	--	726.03
3.50	6.528	1346.50	16.08	--	--	--	832.35	--	--	--	--	848.42
3.60	6.755	1346.60	16.77	--	--	--	960.25	--	--	--	--	977.03
3.70	6.981	1346.70	17.44	--	--	--	1094.12	--	--	--	--	1111.56
3.80	7.208	1346.80	18.09	--	--	--	1233.68	--	--	--	--	1251.76
3.90	7.434	1346.90	18.71	--	--	--	1378.71	--	--	--	--	1397.42
4.00	7.661	1347.00	19.31	--	--	--	1529.40	--	--	--	--	1548.71

...End

Hydrograph Report

Hyd. No. 4

NW pond

Hydrograph type	= SCS Runoff	Peak discharge	= 200.61 cfs
Storm frequency	= 100 yrs	Time interval	= 6 min
Drainage area	= 81.80 ac	Curve number	= 80
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 74 min
Total precip.	= 7.80 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

Hydrograph Volume = 36.488 acft

Hydrograph Discharge Table

Time -- Outflow (hrs cfs)	Time -- Outflow (hrs cfs)	Time -- Outflow (hrs cfs)	Time -- Outflow (hrs cfs)
7.70 2.08	11.10 14.43	14.50 27.21	17.90 12.01
7.80 2.22	11.20 15.57	14.60 25.96	18.00 11.87
7.90 2.36	11.30 16.90	14.70 24.83	18.10 11.73
8.00 2.50	11.40 18.43	14.80 23.83	18.20 11.58
8.10 2.64	11.50 20.21	14.90 22.95	18.30 11.44
8.20 2.78	11.60 22.87	15.00 22.16	18.40 11.30
8.30 2.94	11.70 27.66	15.10 21.46	18.50 11.15
8.40 3.10	11.80 36.38	15.20 20.82	18.60 11.01
8.50 3.27	11.90 53.17	15.30 20.24	18.70 10.87
8.60 3.45	12.00 75.62	15.40 19.70	18.80 10.72
8.70 3.65	12.10 98.69	15.50 19.21	18.90 10.58
8.80 3.87	12.20 122.17	15.60 18.75	19.00 10.43
8.90 4.10	12.30 145.82	15.70 18.31	19.10 10.29
9.00 4.36	12.40 168.38	15.80 17.89	19.20 10.15
9.10 4.64	12.50 187.66	15.90 17.48	19.30 10.00
9.20 4.93	12.60 200.61 <<	16.00 17.08	19.40 9.86
9.30 5.23	12.70 200.56	16.10 16.68	19.50 9.71
9.40 5.54	12.80 191.13	16.20 16.29	19.60 9.57
9.50 5.85	12.90 180.29	16.30 15.90	19.70 9.42
9.60 6.17	13.00 168.26	16.40 15.53	19.80 9.28
9.70 6.49	13.10 155.25	16.50 15.16	19.90 9.13
9.80 6.82	13.20 141.50	16.60 14.82	20.00 8.99
9.90 7.15	13.30 127.28	16.70 14.49	20.10 8.84
10.00 7.49	13.40 112.76	16.80 14.19	20.20 8.70
10.10 7.85	13.50 98.01	16.90 13.91	20.30 8.56
10.20 8.24	13.60 83.11	17.00 13.66	20.40 8.43
10.30 8.68	13.70 68.51	17.10 13.42	20.50 8.30
10.40 9.16	13.80 55.05	17.20 13.20	20.60 8.18
10.50 9.69	13.90 43.89	17.30 13.00	20.70 8.07
10.60 10.28	14.00 37.56	17.40 12.81	20.80 7.97
10.70 10.94	14.10 34.71	17.50 12.63	20.90 7.88
10.80 11.68	14.20 32.32	17.60 12.47	21.00 7.80
10.90 12.51	14.30 30.32	17.70 12.31	21.10 7.72
11.00 13.43	14.40 28.64	17.80 12.16	21.20 7.66

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Hydrograph Discharge Table**Time -- Outflow
(hrs cfs)**

21.30	7.61
21.40	7.56
21.50	7.51
21.60	7.47
21.70	7.44
21.80	7.41
21.90	7.38
22.00	7.35
22.10	7.32
22.20	7.29
22.30	7.26
22.40	7.23
22.50	7.21
22.60	7.18
22.70	7.15
22.80	7.12
22.90	7.09
23.00	7.06
23.10	7.03
23.20	7.01
23.30	6.98
23.40	6.95
23.50	6.92
23.60	6.89
23.70	6.86
23.80	6.83
23.90	6.81
24.00	6.78
24.10	6.67
24.20	6.49
24.30	6.23
24.40	5.89
24.50	5.48
24.60	4.99
24.70	4.43
24.80	3.79
24.90	3.20
25.00	2.66
25.10	2.18

...End

Hydrograph Report

Hyd. No. 5

To NW Pond

Hydrograph type = Combine
Storm frequency = 100 yrs
Inflow hyds. = 2, 4

Peak discharge = 206.20 cfs
Time interval = 6 min

Hydrograph Volume = 40.967 acft

Hydrograph Discharge Table

Time (hrs)	Hyd. 2 + (cfs)	Hyd. 4 = (cfs)	Outflow (cfs)
7.70	0.00	2.08	2.08
7.80	0.00	2.22	2.22
7.90	0.00	2.36	2.36
8.00	0.00	2.50	2.50
8.10	0.00	2.64	2.64
8.20	0.00	2.78	2.78
8.30	0.00	2.94	2.94
8.40	0.00	3.10	3.10
8.50	0.00	3.27	3.27
8.60	0.00	3.45	3.45
8.70	0.00	3.65	3.65
8.80	0.00	3.87	3.87
8.90	0.00	4.10	4.10
9.00	0.00	4.36	4.36
9.10	0.00	4.64	4.64
9.20	0.00	4.93	4.93
9.30	0.00	5.23	5.23
9.40	0.00	5.54	5.54
9.50	0.00	5.85	5.85
9.60	0.00	6.17	6.17
9.70	0.00	6.49	6.49
9.80	0.00	6.82	6.82
9.90	0.00	7.15	7.15
10.00	0.00	7.49	7.49
10.10	0.00	7.85	7.85
10.20	0.00	8.24	8.24
10.30	0.00	8.68	8.68
10.40	0.00	9.16	9.16
10.50	0.00	9.69	9.69
10.60	0.00	10.28	10.28
10.70	0.00	10.94	10.94
10.80	0.00	11.68	11.68
10.90	0.00	12.51	12.51
11.00	0.00	13.43	13.43
11.10	0.00	14.43	14.43
11.20	0.00	15.57	15.57
11.30	0.00	16.90	16.90
11.40	0.00	18.43	18.43

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Hydrograph Discharge Table

Time (hrs)	Hyd. 2 + (cfs)	Hyd. 4 = (cfs)	Outflow (cfs)
11.50	0.00	20.21	20.21
11.60	0.00	22.87	22.87
11.70	0.00	27.66	27.66
11.80	0.00	36.38	36.38
11.90	0.00	53.17	53.17
12.00	0.01	75.62	75.62
12.10	1.18	98.69	99.87
12.20	3.20	122.17	125.37
12.30	4.34	145.82	150.16
12.40	4.98	168.38	173.37
12.50	5.28	187.66	192.94
12.60	5.49	200.61 <<	206.10
12.70	5.64	200.56	206.20 <<
12.80	5.77	191.13	196.90
12.90	5.87	180.29	186.16
13.00	5.95	168.26	174.20
13.10	6.00	155.25	161.25
13.20	6.02	141.50	147.52
13.30	6.03 <<	127.28	133.31
13.40	6.03	112.76	118.79
13.50	6.01	98.01	104.02
13.60	5.98	83.11	89.09
13.70	5.94	68.51	74.45
13.80	5.89	55.05	60.94
13.90	5.84	43.89	49.72
14.00	5.77	37.56	43.34
14.10	5.71	34.71	40.42
14.20	5.65	32.32	37.97
14.30	5.60	30.32	35.92
14.40	5.54	28.64	34.18
14.50	5.48	27.21	32.70
14.60	5.43	25.96	31.38
14.70	5.37	24.83	30.20
14.80	5.31	23.83	29.14
14.90	5.25	22.95	28.20
15.00	5.19	22.16	27.36
15.10	5.13	21.46	26.59
15.20	5.07	20.82	25.89
15.30	5.01	20.24	25.25
15.40	4.95	19.70	24.66
15.50	4.89	19.21	24.10
15.60	4.81	18.75	23.56
15.70	4.74	18.31	23.04
15.80	4.66	17.89	22.55
15.90	4.59	17.48	22.06
16.00	4.51	17.08	21.59
16.10	4.44	16.68	21.12
16.20	4.36	16.29	20.65
16.30	4.29	15.90	20.19
16.40	4.22	15.53	19.74
16.50	4.14	15.16	19.31

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Hydrograph Discharge Table

Time (hrs)	Hyd. 2 + (cfs)	Hyd. 4 = (cfs)	Outflow (cfs)
16.60	4.08	14.82	18.90
16.70	4.01	14.49	18.50
16.80	3.94	14.19	18.14
16.90	3.89	13.91	17.80
17.00	3.84	13.66	17.50
17.10	3.80	13.42	17.22
17.20	3.76	13.20	16.96
17.30	3.72	13.00	16.71
17.40	3.67	12.81	16.48
17.50	3.63	12.63	16.27
17.60	3.59	12.47	16.06
17.70	3.55	12.31	15.86
17.80	3.51	12.16	15.67
17.90	3.47	12.01	15.48
18.00	3.43	11.87	15.30
18.10	3.39	11.73	15.12
18.20	3.36	11.58	14.94
18.30	3.32	11.44	14.76
18.40	3.28	11.30	14.57
18.50	3.24	11.15	14.39
18.60	3.20	11.01	14.21
18.70	3.16	10.87	14.02
18.80	3.11	10.72	13.83
18.90	3.07	10.58	13.65
19.00	3.03	10.43	13.46
19.10	2.99	10.29	13.28
19.20	2.94	10.15	13.09
19.30	2.90	10.00	12.90
19.40	2.86	9.86	12.72
19.50	2.82	9.71	12.53
19.60	2.78	9.57	12.35
19.70	2.74	9.42	12.17
19.80	2.71	9.28	11.98
19.90	2.67	9.13	11.80
20.00	2.63	8.99	11.62
20.10	2.59	8.84	11.43
20.20	2.55	8.70	11.25
20.30	2.52	8.56	11.08
20.40	2.48	8.43	10.91
20.50	2.45	8.30	10.75
20.60	2.41	8.18	10.59
20.70	2.38	8.07	10.45
20.80	2.35	7.97	10.32
20.90	2.32	7.88	10.20
21.00	2.29	7.80	10.09
21.10	2.26	7.72	9.99
21.20	2.23	7.66	9.89
21.30	2.20	7.61	9.81
21.40	2.18	7.56	9.73
21.50	2.15	7.51	9.66
21.60	2.13	7.47	9.60

Continues on next page...

Hydrograph Discharge Table

Time (hrs)	Hyd. 2 + (cfs)	Hyd. 4 = (cfs)	Outflow (cfs)
21.70	2.10	7.44	9.54
21.80	2.08	7.41	9.48
21.90	2.05	7.38	9.43
22.00	2.03	7.35	9.38
22.10	2.01	7.32	9.32
22.20	1.98	7.29	9.27
22.30	1.96	7.26	9.22
22.40	1.94	7.23	9.17
22.50	1.92	7.21	9.13
22.60	1.90	7.18	9.08
22.70	1.88	7.15	9.03
22.80	1.86	7.12	8.98
22.90	1.84	7.09	8.93
23.00	1.82	7.06	8.89
23.10	1.81	7.03	8.84
23.20	1.79	7.01	8.79
23.30	1.77	6.98	8.75
23.40	1.76	6.95	8.70
23.50	1.74	6.92	8.66
23.60	1.72	6.89	8.61
23.70	1.71	6.86	8.57
23.80	1.70	6.83	8.53
23.90	1.68	6.81	8.49
24.00	1.67	6.78	8.45
24.10	1.66	6.67	8.33
24.20	1.63	6.49	8.12
24.30	1.60	6.23	7.83
24.40	1.56	5.89	7.45
24.50	1.52	5.48	7.00
24.60	1.48	4.99	6.47
24.70	1.44	4.43	5.87
24.80	1.41	3.79	5.20
24.90	1.37	3.20	4.57
25.00	1.34	2.66	4.00
25.10	1.30	2.18	3.48
25.20	1.27	1.74	3.01
25.30	1.24	1.35	2.59
25.40	1.21	1.01	2.22

...End

Hydrograph Report

Hyd. No. 6

NW Pond

Hydrograph type = Reservoir
 Storm frequency = 100 yrs
 Inflow hyd. No. = 5
 Max. Elevation = 1333.14 ft

Peak discharge = 206.32 cfs
 Time interval = 6 min
 Reservoir name = NW Pond
 Max. Storage = 4.753 acft

Storage Indication method used.

Outflow hydrograph volume = 39.330 acft

Hydrograph Discharge Table

Time (hrs)	Inflow cfs	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	Clv D cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	Outflow cfs
11.30	16.90	1332.04	---	---	---	---	2.32	---	---	---	---	2.32
11.40	18.43	1332.10	---	---	---	---	3.36	---	---	---	---	3.36
11.50	20.21	1332.15	---	---	---	---	4.67	---	---	---	---	4.67
11.60	22.87	1332.21	---	---	---	---	6.11	---	---	---	---	6.11
11.70	27.66	1332.27	---	---	---	---	7.97	---	---	---	---	7.97
11.80	36.38	1332.35	---	---	---	---	10.47	---	---	---	---	10.47
11.90	53.17	1332.46	---	---	---	---	14.38	---	---	---	---	14.38
12.00	75.62	1332.63	---	---	---	---	20.74	---	---	---	---	20.74
12.10	99.87	1332.82	---	---	---	---	29.21	14.68	---	---	---	43.89
12.20	125.37	1332.96	---	---	---	---	35.84	66.46	---	---	---	102.28
12.30	150.16	1333.03	---	---	---	---	38.95	96.79	---	---	---	135.75
12.40	173.37	1333.07	---	---	---	---	41.08	119.61	---	---	---	160.69
12.50	192.94	1333.10	---	---	---	---	42.92	139.43	---	---	---	182.34
12.60	206.10	1333.13	---	---	---	---	44.29	155.69	---	---	---	199.98
12.70	206.20 <<	1333.14 <<	---	---	---	---	44.78	161.55	---	---	---	206.32 <<
12.80	196.90	1333.13	---	---	---	---	44.40	157.00	---	---	---	201.42
12.90	186.16	1333.12	---	---	---	---	43.62	147.68	---	---	---	191.26
13.00	174.20	1333.10	---	---	---	---	42.73	137.22	---	---	---	179.94
13.10	161.25	1333.08	---	---	---	---	41.72	126.48	---	---	---	168.23
13.20	147.52	1333.06	---	---	---	---	40.59	114.34	---	---	---	154.95
13.30	133.31	1333.03	---	---	---	---	39.40	101.60	---	---	---	141.02
13.40	118.79	1333.01	---	---	---	---	38.17	88.52	---	---	---	126.67
13.50	104.02	1332.98	---	---	---	---	36.82	75.46	---	---	---	112.29
13.60	89.09	1332.95	---	---	---	---	35.38	62.26	---	---	---	97.64
13.70	74.45	1332.92	---	---	---	---	33.92	48.96	---	---	---	82.86
13.80	60.94	1332.89	---	---	---	---	32.50	36.70	---	---	---	69.19
13.90	49.72	1332.86	---	---	---	---	31.10	27.37	---	---	---	58.47
14.00	43.34	1332.84	---	---	---	---	29.90	19.33	---	---	---	49.23
14.10	40.42	1332.82	---	---	---	---	29.16	14.37	---	---	---	43.54
14.20	37.97	1332.81	---	---	---	---	28.73	11.44	---	---	---	40.18
14.30	35.92	1332.81	---	---	---	---	28.40	9.27	---	---	---	37.68
14.40	34.18	1332.80	---	---	---	---	28.14	7.52	---	---	---	35.64
14.50	32.70	1332.79	---	---	---	---	27.86	6.96	---	---	---	34.82
14.60	31.38	1332.79	---	---	---	---	27.51	6.36	---	---	---	33.86
14.70	30.20	1332.78	---	---	---	---	27.11	5.70	---	---	---	32.81
14.80	29.14	1332.77	---	---	---	---	26.70	5.02	---	---	---	31.73
14.90	28.20	1332.76	---	---	---	---	26.31	4.36	---	---	---	30.68
15.00	27.36	1332.75	---	---	---	---	25.94	3.74	---	---	---	29.68

Continues on next page...

Hydrograph Discharge Table

Time (hrs)	Inflow cfs	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	Clv D cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	Outflow cfs
15.10	26.59	1332.74	----	----	----	----	25.60	3.16	----	----	----	28.75
15.20	25.89	1332.74	----	----	----	----	25.27	2.62	----	----	----	27.89
15.30	25.25	1332.73	----	----	----	----	24.97	2.11	----	----	----	27.09
15.40	24.66	1332.72	----	----	----	----	24.70	1.65	----	----	----	26.36
15.50	24.10	1332.72	----	----	----	----	24.44	1.23	----	----	----	25.68
15.60	23.56	1332.71	----	----	----	----	24.21	0.83	----	----	----	25.04
15.70	23.04	1332.71	----	----	----	----	23.99	0.46	----	----	----	24.44
15.80	22.55	1332.70	----	----	----	----	23.77	0.10	----	----	----	23.88
15.90	22.06	1332.70	----	----	----	----	23.57	----	----	----	----	23.56
16.00	21.59	1332.69	----	----	----	----	23.33	----	----	----	----	23.33
16.10	21.12	1332.68	----	----	----	----	23.06	----	----	----	----	23.06
16.20	20.65	1332.68	----	----	----	----	22.76	----	----	----	----	22.76
16.30	20.19	1332.67	----	----	----	----	22.44	----	----	----	----	22.44
16.40	19.74	1332.66	----	----	----	----	22.11	----	----	----	----	22.11
16.50	19.31	1332.65	----	----	----	----	21.76	----	----	----	----	21.75
16.60	18.90	1332.64	----	----	----	----	21.40	----	----	----	----	21.39
16.70	18.50	1332.64	----	----	----	----	21.02	----	----	----	----	21.03
16.80	18.14	1332.63	----	----	----	----	20.66	----	----	----	----	20.66
16.90	17.80	1332.62	----	----	----	----	20.29	----	----	----	----	20.29
17.00	17.50	1332.61	----	----	----	----	19.93	----	----	----	----	19.93
17.10	17.22	1332.60	----	----	----	----	19.58	----	----	----	----	19.58
17.20	16.96	1332.59	----	----	----	----	19.26	----	----	----	----	19.26
17.30	16.71	1332.58	----	----	----	----	18.95	----	----	----	----	18.95
17.40	16.48	1332.58	----	----	----	----	18.65	----	----	----	----	18.65
17.50	16.27	1332.57	----	----	----	----	18.36	----	----	----	----	18.36
17.60	16.06	1332.56	----	----	----	----	18.08	----	----	----	----	18.08
17.70	15.86	1332.56	----	----	----	----	17.81	----	----	----	----	17.81
17.80	15.67	1332.55	----	----	----	----	17.55	----	----	----	----	17.55
17.90	15.48	1332.54	----	----	----	----	17.30	----	----	----	----	17.30
18.00	15.30	1332.54	----	----	----	----	17.05	----	----	----	----	17.05
18.10	15.12	1332.53	----	----	----	----	16.82	----	----	----	----	16.82
18.20	14.94	1332.52	----	----	----	----	16.59	----	----	----	----	16.59
18.30	14.76	1332.52	----	----	----	----	16.37	----	----	----	----	16.37
18.40	14.57	1332.51	----	----	----	----	16.15	----	----	----	----	16.15
18.50	14.39	1332.51	----	----	----	----	15.94	----	----	----	----	15.94
18.60	14.21	1332.50	----	----	----	----	15.73	----	----	----	----	15.73
18.70	14.02	1332.50	----	----	----	----	15.53	----	----	----	----	15.53
18.80	13.83	1332.49	----	----	----	----	15.34	----	----	----	----	15.34
18.90	13.65	1332.49	----	----	----	----	15.15	----	----	----	----	15.15
19.00	13.46	1332.48	----	----	----	----	14.96	----	----	----	----	14.96
19.10	13.28	1332.48	----	----	----	----	14.78	----	----	----	----	14.78
19.20	13.09	1332.47	----	----	----	----	14.59	----	----	----	----	14.59
19.30	12.90	1332.46	----	----	----	----	14.40	----	----	----	----	14.40
19.40	12.72	1332.46	----	----	----	----	14.21	----	----	----	----	14.21
19.50	12.53	1332.45	----	----	----	----	14.02	----	----	----	----	14.02
19.60	12.35	1332.45	----	----	----	----	13.84	----	----	----	----	13.84
19.70	12.17	1332.44	----	----	----	----	13.65	----	----	----	----	13.65
19.80	11.98	1332.44	----	----	----	----	13.46	----	----	----	----	13.46
19.90	11.80	1332.43	----	----	----	----	13.28	----	----	----	----	13.28
20.00	11.62	1332.43	----	----	----	----	13.09	----	----	----	----	13.09
20.10	11.43	1332.42	----	----	----	----	12.90	----	----	----	----	12.90

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Hydrograph Discharge Table

Time (hrs)	Inflow cfs	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	Clv D cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	Outflow cfs
20.20	11.25	1332.42	---	---	---	---	12.72	---	---	---	---	12.72
20.30	11.08	1332.41	---	---	---	---	12.54	---	---	---	---	12.54
20.40	10.91	1332.41	---	---	---	---	12.35	---	---	---	---	12.35
20.50	10.75	1332.40	---	---	---	---	12.17	---	---	---	---	12.17
20.60	10.59	1332.40	---	---	---	---	12.00	---	---	---	---	12.00
20.70	10.45	1332.39	---	---	---	---	11.84	---	---	---	---	11.84
20.80	10.32	1332.39	---	---	---	---	11.69	---	---	---	---	11.68
20.90	10.20	1332.38	---	---	---	---	11.53	---	---	---	---	11.53
21.00	10.09	1332.38	---	---	---	---	11.38	---	---	---	---	11.38
21.10	9.99	1332.37	---	---	---	---	11.23	---	---	---	---	11.23
21.20	9.89	1332.37	---	---	---	---	11.09	---	---	---	---	11.09
21.30	9.81	1332.37	---	---	---	---	10.96	---	---	---	---	10.96
21.40	9.73	1332.36	---	---	---	---	10.83	---	---	---	---	10.83
21.50	9.66	1332.36	---	---	---	---	10.71	---	---	---	---	10.71
21.60	9.60	1332.35	---	---	---	---	10.59	---	---	---	---	10.59
21.70	9.54	1332.35	---	---	---	---	10.48	---	---	---	---	10.48
21.80	9.48	1332.35	---	---	---	---	10.37	---	---	---	---	10.38
21.90	9.43	1332.34	---	---	---	---	10.27	---	---	---	---	10.28
22.00	9.38	1332.34	---	---	---	---	10.18	---	---	---	---	10.18
22.10	9.32	1332.34	---	---	---	---	10.09	---	---	---	---	10.09
22.20	9.27	1332.34	---	---	---	---	10.00	---	---	---	---	10.01
22.30	9.22	1332.33	---	---	---	---	9.92	---	---	---	---	9.92
22.40	9.17	1332.33	---	---	---	---	9.85	---	---	---	---	9.84
22.50	9.13	1332.33	---	---	---	---	9.77	---	---	---	---	9.77
22.60	9.08	1332.33	---	---	---	---	9.70	---	---	---	---	9.70
22.70	9.03	1332.32	---	---	---	---	9.63	---	---	---	---	9.63
22.80	8.98	1332.32	---	---	---	---	9.56	---	---	---	---	9.56
22.90	8.93	1332.32	---	---	---	---	9.50	---	---	---	---	9.49
23.00	8.89	1332.32	---	---	---	---	9.43	---	---	---	---	9.43
23.10	8.84	1332.32	---	---	---	---	9.37	---	---	---	---	9.37
23.20	8.79	1332.31	---	---	---	---	9.31	---	---	---	---	9.31
23.30	8.75	1332.31	---	---	---	---	9.25	---	---	---	---	9.25
23.40	8.70	1332.31	---	---	---	---	9.20	---	---	---	---	9.19
23.50	8.66	1332.31	---	---	---	---	9.14	---	---	---	---	9.14
23.60	8.61	1332.31	---	---	---	---	9.09	---	---	---	---	9.08
23.70	8.57	1332.31	---	---	---	---	9.03	---	---	---	---	9.03
23.80	8.53	1332.30	---	---	---	---	8.98	---	---	---	---	8.98
23.90	8.49	1332.30	---	---	---	---	8.93	---	---	---	---	8.93
24.00	8.45	1332.30	---	---	---	---	8.88	---	---	---	---	8.88
24.10	8.33	1332.30	---	---	---	---	8.83	---	---	---	---	8.83
24.20	8.12	1332.30	---	---	---	---	8.77	---	---	---	---	8.77
24.30	7.83	1332.30	---	---	---	---	8.69	---	---	---	---	8.69
24.40	7.45	1332.29	---	---	---	---	8.59	---	---	---	---	8.59
24.50	7.00	1332.29	---	---	---	---	8.46	---	---	---	---	8.46
24.60	6.47	1332.28	---	---	---	---	8.29	---	---	---	---	8.29
24.70	5.87	1332.27	---	---	---	---	8.09	---	---	---	---	8.09
24.80	5.20	1332.27	---	---	---	---	7.84	---	---	---	---	7.84
24.90	4.57	1332.26	---	---	---	---	7.55	---	---	---	---	7.55
25.00	4.00	1332.25	---	---	---	---	7.24	---	---	---	---	7.24
25.10	3.48	1332.23	---	---	---	---	6.90	---	---	---	---	6.90
25.20	3.01	1332.22	---	---	---	---	6.54	---	---	---	---	6.54

Continues on next page...

Hydrograph Discharge Table

Time (hrs)	Inflow cfs	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	Clv D cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	Outflow cfs
25.30	2.59	1332.21	----	----	----	----	6.18	----	----	----	----	6.18
25.40	2.22	1332.20	----	----	----	----	5.83	----	----	----	----	5.83
25.50	1.90	1332.18	----	----	----	----	5.51	----	----	----	----	5.52
25.60	1.63	1332.17	----	----	----	----	5.20	----	----	----	----	5.20
25.70	1.41	1332.16	----	----	----	----	4.89	----	----	----	----	4.89
25.80	1.25	1332.15	----	----	----	----	4.59	----	----	----	----	4.59
25.90	1.13	1332.13	----	----	----	----	4.31	----	----	----	----	4.31
26.00	1.06	1332.12	----	----	----	----	4.04	----	----	----	----	4.04
26.10	1.04	1332.11	----	----	----	----	3.79	----	----	----	----	3.79
26.20	1.02	1332.10	----	----	----	----	3.56	----	----	----	----	3.56
26.30	1.00	1332.10	----	----	----	----	3.37	----	----	----	----	3.37
26.40	0.98	1332.09	----	----	----	----	3.21	----	----	----	----	3.21
26.50	0.96	1332.08	----	----	----	----	3.05	----	----	----	----	3.05
26.60	0.94	1332.07	----	----	----	----	2.91	----	----	----	----	2.91
26.70	0.92	1332.07	----	----	----	----	2.78	----	----	----	----	2.78
26.80	0.90	1332.06	----	----	----	----	2.65	----	----	----	----	2.65
26.90	0.88	1332.05	----	----	----	----	2.53	----	----	----	----	2.53
27.00	0.87	1332.05	----	----	----	----	2.42	----	----	----	----	2.42
27.10	0.85	1332.04	----	----	----	----	2.32	----	----	----	----	2.32
27.20	0.83	1332.04	----	----	----	----	2.22	----	----	----	----	2.22
27.30	0.82	1332.03	----	----	----	----	2.12	----	----	----	----	2.12

...End

Reservoir Report

Reservoir No. 2 - NW Pond

Hydraflow Hydrographs by Intelisolve

Pond Data

Pond storage is based on known contour areas. Average end area method used.

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (acft)	Total storage (acft)
0.00	1331.00	78,552	0.000	0.000
1.00	1332.00	98,694	2.035	2.035
2.00	1333.00	106,045	2.350	4.385
3.00	1334.00	127,500	2.681	7.065

Culvert / Orifice Structures

	[A]	[B]	[C]	[D]
Rise in	= 0.0	0.0	0.0	0.0
Span in	= 0.0	0.0	0.0	0.0
No. Barrels	= 0	0	0	0
Invert El. ft	= 0.00	0.00	0.00	0.00
Length ft	= 0.0	0.0	0.0	0.0
Slope %	= 0.00	0.00	0.00	0.00
N-Value	= .013	.000	.000	.000
Orif. Coeff.	= 0.60	0.00	0.00	0.00
Multi-Stage	= n/a	No	No	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len ft	= 9.42	200.00	0.00	0.00
Crest El. ft	= 1331.87	1332.75	0.00	0.00
Weir Coeff.	= 3.33	3.33	0.00	0.00
Weir Type	= Riser	Rect	--	--
Multi-Stage	= No	No	No	No

Exfiltration Rate = 0.00 in/hr/sqft Tailwater Elev. = 0.00 ft

Stage / Storage / Discharge Table

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

Stage ft	Storage acft	Elevation ft	Civ A cfs	Civ B cfs	Civ C cfs	Civ D cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	Total cfs
0.00	0.000	1331.00	--	--	--	--	0.00	0.00	--	--	--	0.00
0.10	0.203	1331.10	--	--	--	--	0.00	0.00	--	--	--	0.00
0.20	0.407	1331.20	--	--	--	--	0.00	0.00	--	--	--	0.00
0.30	0.610	1331.30	--	--	--	--	0.00	0.00	--	--	--	0.00
0.40	0.814	1331.40	--	--	--	--	0.00	0.00	--	--	--	0.00
0.50	1.017	1331.50	--	--	--	--	0.00	0.00	--	--	--	0.00
0.60	1.221	1331.60	--	--	--	--	0.00	0.00	--	--	--	0.00
0.70	1.424	1331.70	--	--	--	--	0.00	0.00	--	--	--	0.00
0.80	1.628	1331.80	--	--	--	--	0.00	0.00	--	--	--	0.00
0.90	1.831	1331.90	--	--	--	--	0.16	0.00	--	--	--	0.16
1.00	2.035	1332.00	--	--	--	--	1.47	0.00	--	--	--	1.47
1.10	2.270	1332.10	--	--	--	--	3.46	0.00	--	--	--	3.46
1.20	2.505	1332.20	--	--	--	--	5.95	0.00	--	--	--	5.95
1.30	2.740	1332.30	--	--	--	--	8.84	0.00	--	--	--	8.84
1.40	2.975	1332.40	--	--	--	--	12.10	0.00	--	--	--	12.10
1.50	3.210	1332.50	--	--	--	--	15.68	0.00	--	--	--	15.68
1.60	3.445	1332.60	--	--	--	--	19.56	0.00	--	--	--	19.56
1.70	3.680	1332.70	--	--	--	--	23.71	0.00	--	--	--	23.71
1.80	3.915	1332.80	--	--	--	--	28.12	7.40	--	--	--	35.53
1.90	4.150	1332.90	--	--	--	--	32.78	38.61	--	--	--	71.39
2.00	4.385	1333.00	--	--	--	--	37.68	83.25	--	--	--	120.93
2.10	4.653	1333.10	--	--	--	--	42.79	137.89	--	--	--	180.68
2.20	4.921	1333.20	--	--	--	--	48.11	201.01	--	--	--	249.12
2.30	5.189	1333.30	--	--	--	--	53.64	271.60	--	--	--	325.24
2.40	5.457	1333.40	--	--	--	--	59.36	348.94	--	--	--	408.30
2.50	5.725	1333.50	--	--	--	--	65.27	432.47	--	--	--	497.75
2.60	5.993	1333.60	--	--	--	--	71.37	521.78	--	--	--	593.15
2.70	6.261	1333.70	--	--	--	--	77.64	616.51	--	--	--	694.16
2.80	6.529	1333.80	--	--	--	--	84.09	716.37	--	--	--	800.46
2.90	6.797	1333.90	--	--	--	--	90.71	821.10	--	--	--	911.81
3.00	7.065	1334.00	--	--	--	--	97.51	930.76	--	--	--	1028.28

APPENDIX G
HY-8 FOR 9th STREET RCB



Handwritten text, possibly a date or initials, located on the left side of the page.

CURRENT DATE: 01-15-2004
CURRENT TIME: 14:05:17

FILE DATE: 01-15-2004
FILE NAME: OVRBRK5

```

AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA FHWA CULVERT ANALYSIS AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA HY-8, VERSION 4.1 AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
C 3 SITE DATA 3 CULVERT SHAPE, MATERIAL, INLET 3
U AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
L 3 INLET OUTLET CULVERT 3 BARRELS 3
V 3 ELEV. ELEV. LENGTH 3 SHAPE SPAN RISE MANNING INLET 3
3 (FT) (FT) (FT) 3 MATERIAL (FT) (FT) n TYPE 3
1 3 1326.67 1326.62 58.94 3 RCB 6.00 3.00 .012 CONVENTIONAL 3
2 3 3 3
3 3 3 3
4 3 3 3
5 3 3 3
6 3 3 3
AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAU

```

AA
SUMMARY OF CULVERT FLOWS (CFS) FILE: OVRBRK5 DATE: 01-15-2004

ELEV (FT)	TOTAL	1	2	3	4	5	6	ROADWAY	ITR
1326.67	0	0	0	0	0	0	0	0	1
1327.36	25	25	0	0	0	0	0	0	1
1327.75	50	50	0	0	0	0	0	0	1
1328.08	75	75	0	0	0	0	0	0	1
1328.37	100	100	0	0	0	0	0	0	1
1328.64	125	125	0	0	0	0	0	0	1
1328.90	150	150	0	0	0	0	0	0	1
1329.13	175	175	0	0	0	0	0	0	1
1329.36	200	200	0	0	0	0	0	0	1
1329.42	206	206	0	0	0	0	0	0	1
1330.20	250	250	0	0	0	0	0	0	1
1332.35	492	492	0	0	0	0	0	0	OVERTOPPING

AA
SUMMARY OF ITERATIVE SOLUTION ERRORS FILE: OVRBRK5 DATE: 01-15-2004

HEAD ELEV (FT)	HEAD ERROR (FT)	TOTAL FLOW (CFS)	FLOW ERROR (CFS)	% FLOW ERROR
1326.67	0.00	0	0	0.00
1327.36	0.00	25	0	0.00
1327.75	0.00	50	0	0.00
1328.08	0.00	75	0	0.00
1328.37	0.00	100	0	0.00
1328.64	0.00	125	0	0.00
1328.90	0.00	150	0	0.00
1329.13	0.00	175	0	0.00
1329.36	0.00	200	0	0.00
1329.42	0.00	206	0	0.00
1330.20	0.00	250	0	0.00

AA
<1> TOLERANCE (FT) = 0.010 <2> TOLERANCE (%) = 1.000
AA

CURRENT DATE: 01-15-2004
CURRENT TIME: 14:05:17

FILE DATE: 01-15-2004
FILE NAME: OVRBRK5

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AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
PERFORMANCE CURVE FOR CULVERT # 1 - 3 ( 6 BY 3 ) RCB
AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
DIS- HEAD- INLET OUTLET [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ]
CHARGE WATER CONTROL CONTROL FLOW NORMAL CRITICAL OUTLET TAILWATER

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FLOW (cfs)	ELEV. (ft)	DEPTH (ft)	DEPTH (ft)	TYPE <F4>	DEPTH (ft)	DEPTH (ft)	VEL. (fps)	DEPTH (ft)	VEL. (fps)	DEPTH (ft)
0	1326.67	0.00	0.00	0-NF	0.00	0.00	0.00	0.00	0.00	0.00
25	1327.36	0.68	0.69	2-M2c	0.61	0.39	3.54	0.39	2.34	0.34
50	1327.75	1.07	1.08	2-M2c	0.95	0.62	4.46	0.62	3.04	0.51
75	1328.08	1.40	1.41	2-M2c	1.25	0.82	5.11	0.82	3.53	0.65
100	1328.37	1.68	1.70	2-M2c	1.52	0.99	5.62	0.99	3.91	0.77
125	1328.64	1.95	1.97	2-M2c	1.78	1.15	6.06	1.15	4.24	0.88
150	1328.90	2.19	2.23	2-M2c	2.03	1.29	6.44	1.29	4.52	0.98
175	1329.13	2.42	2.46	2-M2c	2.27	1.43	6.78	1.43	4.77	1.07
200	1329.36	2.65	2.69	2-M2c	2.50	1.57	7.08	1.57	4.99	1.16
206	1329.42	2.70	2.75	2-M2c	2.55	1.60	7.15	1.60	5.04	1.18
250	1330.20	3.09	3.53	6-FFn	3.00	1.82	4.63	3.00	5.39	1.32

El. inlet face invert 1326.67 ft El. outlet invert 1326.62 ft
 El. inlet throat invert 0.00 ft El. inlet crest 0.00 ft

***** SITE DATA ***** EMBANKMENT TOE *****
 UPSTREAM STATION (FT) 58.94
 UPSTREAM ELEVATION (FT) 1326.67
 UPSTREAM EMBANKMENT SLOPE (X:1) 0.00
 DOWNSTREAM STATION (FT) 0.00
 DOWNSTREAM ELEVATION (FT) 1326.62
 DOWNSTREAM EMBANKMENT SLOPE (X:1) 0.00

***** CULVERT DATA SUMMARY *****
 BARREL SHAPE BOX
 BARREL SPAN 6.00 FT
 BARREL RISE 3.00 FT
 BARREL MATERIAL CONCRETE
 BARREL MANNING'S N 0.012
 INLET TYPE CONVENTIONAL
 INLET EDGE AND WALL SQUARE EDGE (90-45 DEG.)
 INLET DEPRESSION NONE

CURRENT DATE: 01-15-2004
 CURRENT TIME: 14:05:17

FILE DATE: 01-15-2004
 FILE NAME: OVRBRK5

***** TAILWATER *****

***** REGULAR CHANNEL CROSS SECTION *****
 BOTTOM WIDTH (FT) 30.00
 SIDE SLOPE H/V (X:1) 4.0
 CHANNEL SLOPE V/H (FT/FT) 0.010
 MANNING'S N (.01-0.1) 0.030
 CHANNEL INVERT ELEVATION (FT) 1326.62
 CULVERT NO.1 OUTLET INVERT ELEVATION 1326.62 FT

***** UNIFORM FLOW RATING CURVE FOR DOWNSTREAM CHANNEL

FLOW (CFS)	W.S.E. (FT)	FROUDE NUMBER	DEPTH (FT)	VEL. (FPS)	SHEAR (PSF)
0.00	1326.62	0.000	0.00	0.00	0.00
25.00	1326.96	0.708	0.34	2.34	0.21
50.00	1327.13	0.747	0.51	3.04	0.32
75.00	1327.27	0.770	0.65	3.53	0.41
100.00	1327.39	0.785	0.77	3.91	0.48
125.00	1327.50	0.796	0.88	4.24	0.55
150.00	1327.60	0.805	0.98	4.52	0.61
175.00	1327.69	0.812	1.07	4.77	0.67
200.00	1327.78	0.818	1.16	4.99	0.72

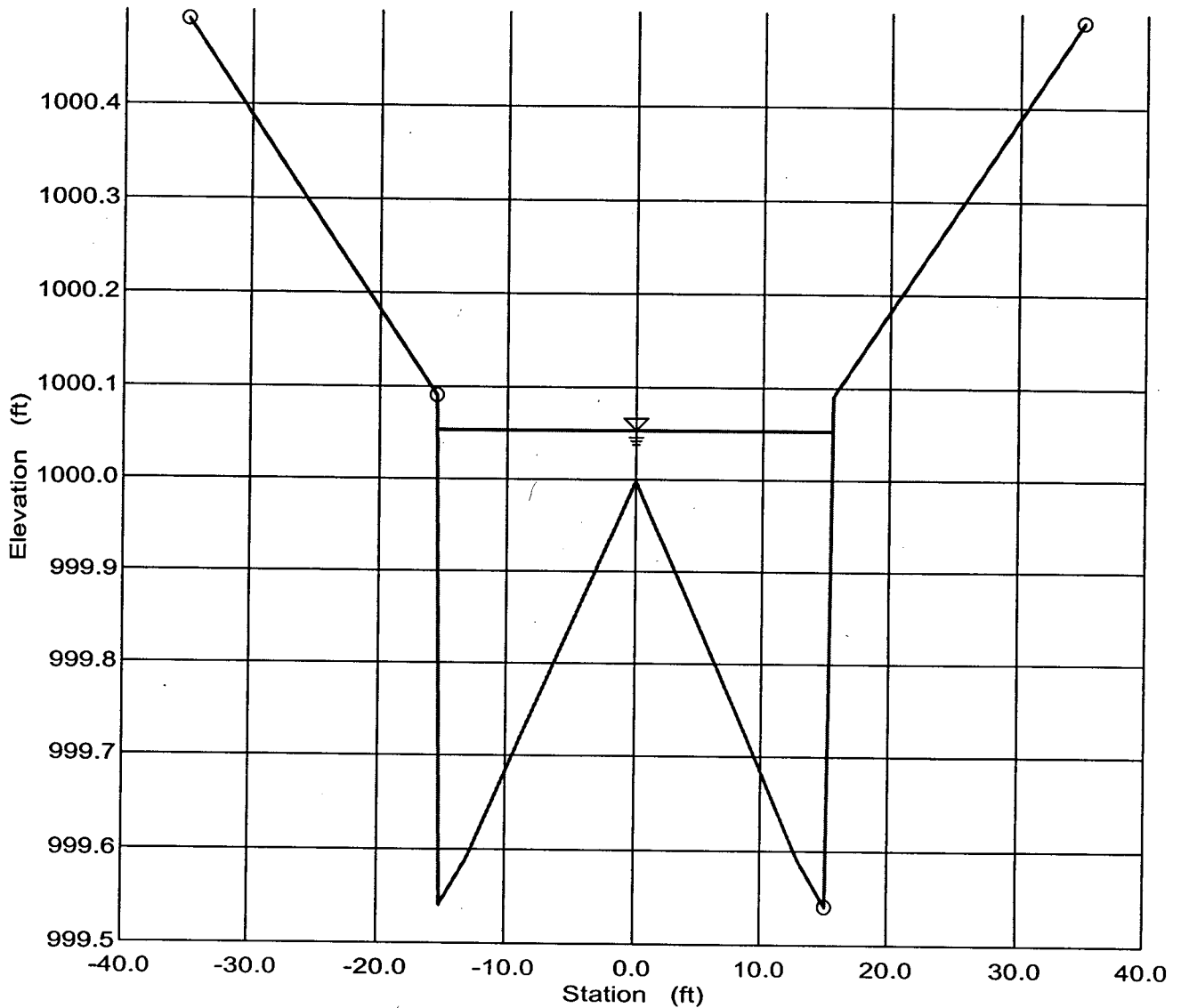
**APPENDIX H
LOT GRADING PLAN**

APPENDIX I
FLOW MASTER OUTPUT

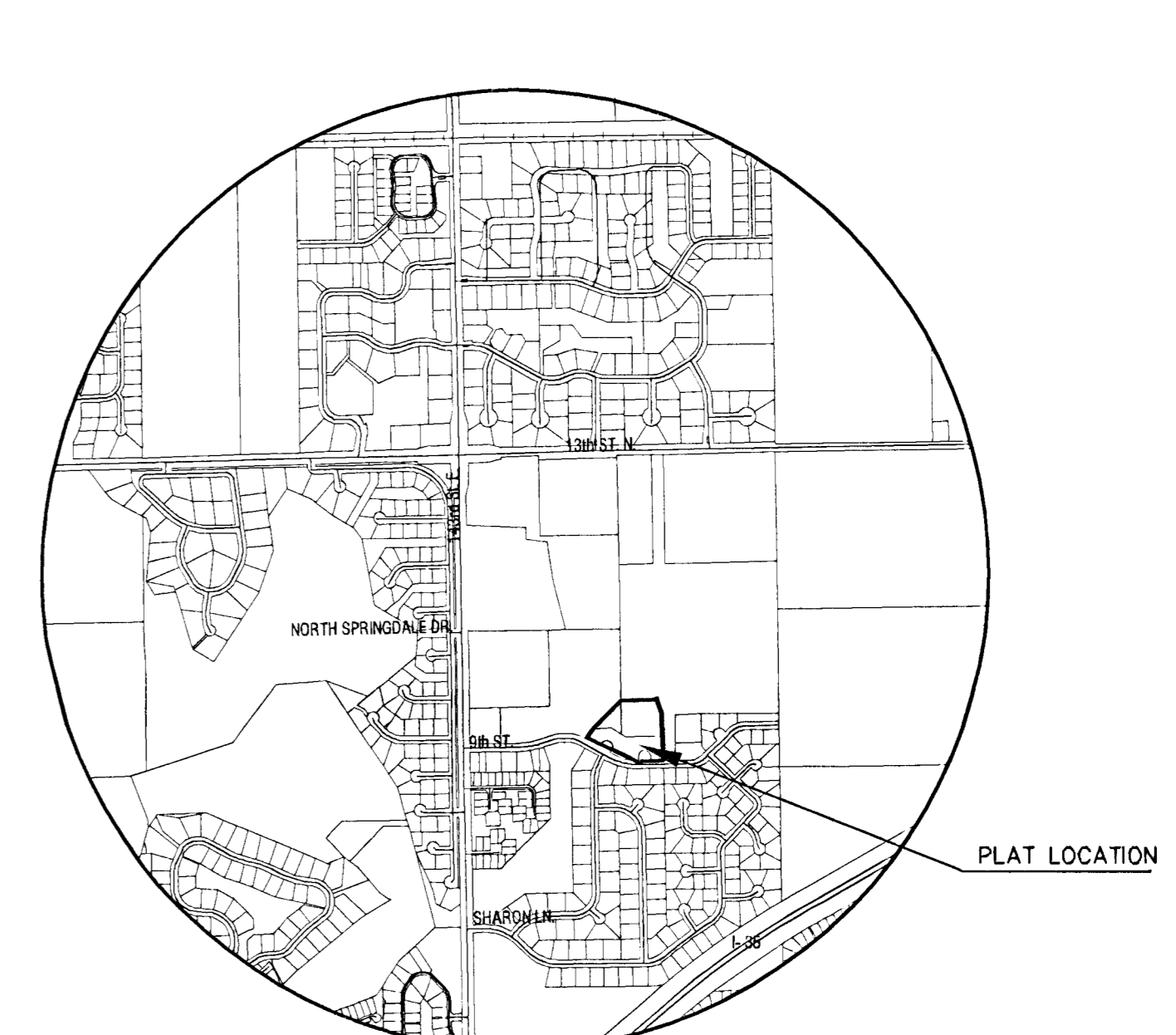
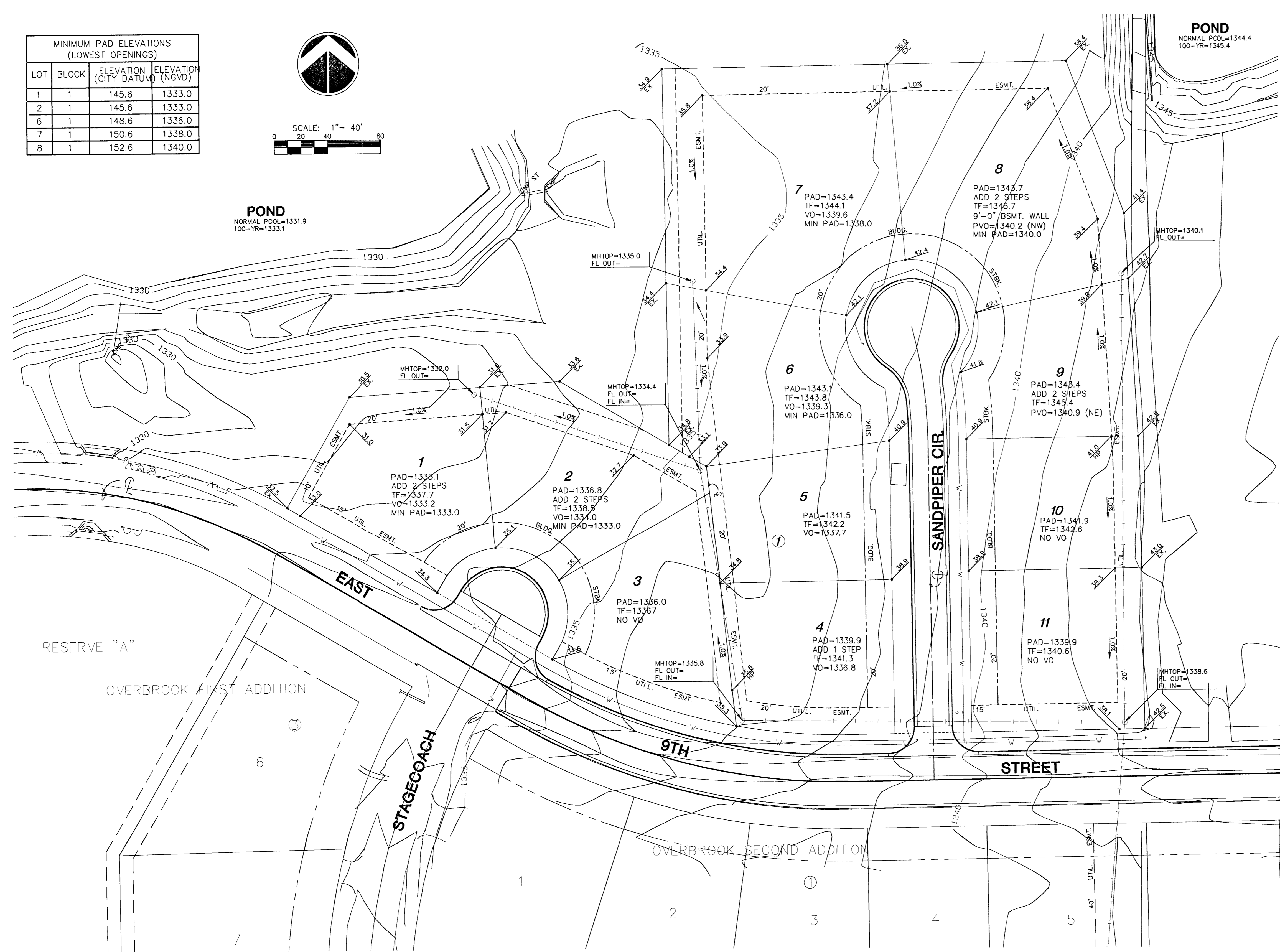
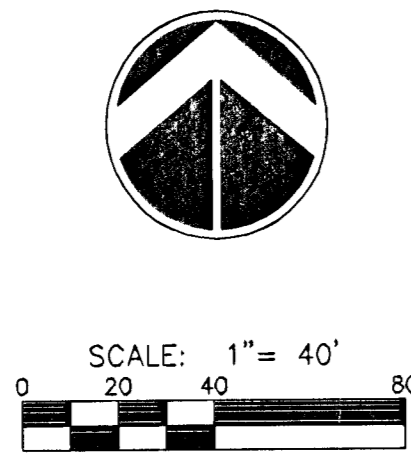
9th Street Paving Cross Section for Irregular Channel

Project Description	
Project File	c:\haestad\fmw\lovrbrk5.fm2
Worksheet	9th Street Paving Typical Section
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Water Elevation

Section Data	
Wtd. Mannings Coefficient	0.013
Channel Slope	0.005000 ft/ft
Water Surface Elevation	1,000.05 ft
Discharge	30.10 cfs



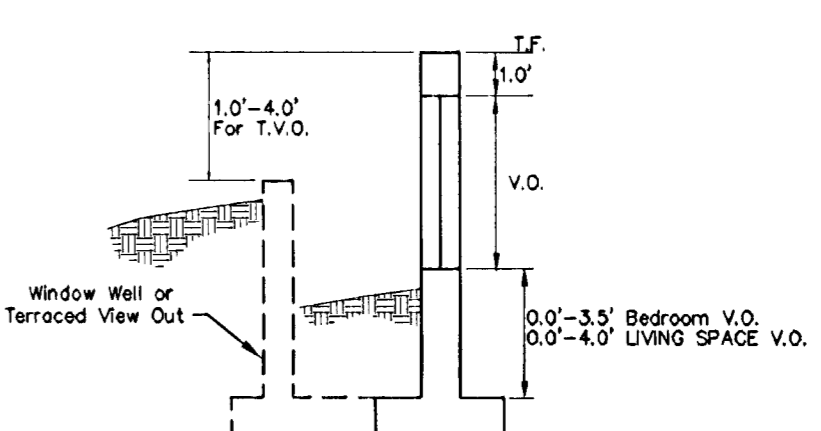
MINIMUM PAD ELEVATIONS (LOWEST OPENINGS)			
LOT	BLOCK	ELEVATION (CITY DATUM)	ELEVATION (NGVD)
1	1	145.6	1333.0
2	1	145.6	1333.0
6	1	148.6	1336.0
7	1	150.6	1338.0
8	1	152.6	1340.0



VICINITY MAP

LEGEND

- CT - CONIFEROUS TREE & DIAMETER
- DT - DECIDUOUS TREE & DIAMETER
- SN - SIGN
- B - BUSH
- ET - EDGE OF TREES
- F - FENCE
- SSMH - SANITARY SEWER MANHOLE
- GM - GAS METER
- P - POLE
- HLP - HIGH LINE POLE
- LP - LIGHT POLE
- FH - FIRE HYDRANT
- WV - WATER VALVE
- WM - WATER METER
- PPA - POWER POLE AND GUY ANCHOR
- TR - TELEPHONE RISER
- I - INLET
- SSP - STORM SEWER PIPE
- WL - WATER LINE
- SSL - SANITARY SEWER LINE
- GL - GAS LINE
- TEL - TELEPHONE LINE
- UEL - UNDERGROUND ELECTRIC LINE
- OEL - OVERHEAD ELECTRIC LINE
- OEL - OVERHEAD TELEPHONE
- OEL - OVERHEAD ELECTRIC
- SC - SECTION CORNER
- PCF - PROPERTY CORNER FOUND
- BM - BENCHMARK
- WO - WALK OUT
- VO - VIEW OUT
- PVO - PARTIAL VIEW OUT
- PWO - PARTIAL WALK OUT
- NVO - NO VIEW OUT



VIEW OUT & TERRACED VIEW OUT DETAIL

PRELIMINARY LOT GRADING PLAN OVERBROOK FIFTH ADDITION

DEVELOPER: INK Enterprise, Inc. A Kansas Corporation Willis E. Hartman II, President 240 N. Rock Rd. Wichita, KS 67206 (316) 681-3500

DATE: JANUARY, 2004

**CRESTVIEW COUNTRY CLUB ESTATES
OVERBROOK 5TH ADDITION**

PROJECT NAME

LOT GRADING

SHEET TITLE

JTC DESIGN BY: KWS DRAWN BY: JTC CHECKED BY:

JANUARY 2004 03120GRD 1 / 1

DATE JOB NO. SHEET/OF

H:\CIVIL\03120\DWG\GRAD\03120GRD