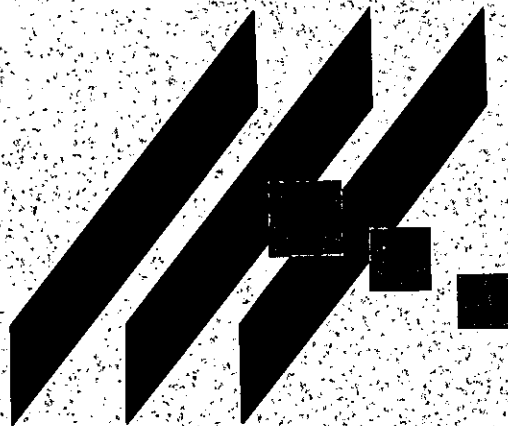


M K E C E N G I N E E R I N G C O N S U L T A N T S , I N C



DRAINAGE REPORT

Watershed North of the Balthrop Addition

July, 2001

Pine Meadow

Drainage Report for the Watershed North of the Balthrop Addition

Location

The majority of the watershed area is located South of 13th Street, North of the Balthrop Addition, West of K-96 Highway, and East of Greenwich Road. A small portion of the watershed lies west of Greenwich Road, as shown on sheet 1 of 1 in Appendix A. The watershed includes most of the Northwest Quarter of Section 15, T27S, R2E, with the small portion mentioned before in the Eastern half of Section 16, T27S, R2E. The total watershed area is approximately 154.5 acres.

Soils

According to the NRCS (SCS) Sedgwick County Soil Survey, the drainage watershed is in the Irwin Series: silty clay loam, 1-3 percent slopes, and the Rosehill Series: silty clay, 1-3 percent slopes. The Hydrological Soil Group (HSG) for both soils is "D".

Pre-developed Conditions

Current Development

Currently, the Warren Theater is being developed and the Killenwood Pointe paving is complete. For purpose of analysis, we studied watershed conditions prior to all development.

Current Landform and Slope

A natural channel passes through an existing pond on the eastern section of the watershed and exits in the southern portion of the watershed through the Balthrop Addition. Based on the Andover, Kansas Quadrangle map, Appendix B, local elevations vary from roughly 1404 feet on the west edge of the watershed, to 1361 feet on the south edge of the watershed. Watershed slopes vary from 0.7% to 2.5%. Runoff leaves the site toward a low swale that discharges south to the drainage reserve in the Balthrop Addition.

Current Drainage Conditions

No portion of the site is included in a regulatory floodplain (FBFM Panels 150 and 255, Sedgwick County, June 3, 1986). Zone A is 3/4-mile southwest of the discharge point.

Upstream of Site

The watershed is at the upstream end of the basin; therefore no runoff enters from offsite.

Current Runoff Characteristics

The pre-developed watershed is divided into five different sub-watersheds: N, NW, W, S, and C (as seen on the drawing in Appendix A). The SCS TR-20 method was used for calculating discharge hydrographs at locations of concern. The curve number used for the watershed is 83.0, which corresponds to undeveloped agricultural uses. The time of concentrations range from 25 minutes to 41 minutes. Discharge hydrographs were calculated for the 2, 5, 10, and 100-year return periods. The pre-developed peak discharge from the sub-watersheds and watershed (entering the Balthrop Addition) for each return period is listed in Table 1. TR-20 program output for the pre-developed watershed basin is included in Appendix C.

Table 1. Pre-developed runoff.

Sub-Watershed	2-Year (cfs)	5-Year (cfs)	10-Year (cfs)	100-Year (cfs)
W	44	67	82	139
NW	9	13	17	28
N	65	98	120	203
C	31	47	58	97
S	68	101	125	210
Watershed Discharge	129	209	274	571

Post-Developed Condition

Proposed Development

The watershed will be developed as residential and commercial subdivisions. The Gateway and Kiser West Additions will be commercial development. The Killenwood Pointe and Pine Meadow Additions will be developed as residential subdivisions with the average lot size approximately $\frac{1}{4}$ acre.

Proposed Landform and Slope

The commercial areas will have surface slopes ranging from 0.75% to 4.0%. Final slopes in the residential development have not been determined, but the minimum will be 0.5% within street right-of-way, and 1-2% in backyards.

Proposed Runoff Characteristics

Curve numbers for the watershed will range from 83.0 to 95.0, which vary from undeveloped agricultural to commercial and business use. The time of concentration for the sub-areas in the watershed will range from 16 to 32 minutes, as calculated using the City of Wichita Method.

The rational method was used in determining the size of the storm sewers from the sub-watersheds shown in drainage and utility plans, Appendix D. This encompasses the Kiser West Addition, the Killenwood Pointe Addition, and the Pine Meadow Addition. The

spreadsheets in Appendix D display the area, runoff coefficient (c), time of concentration (t_c), and the flow rate (Q) for each sub-watershed, for the 2 and 5 year events. Once the discharge was determined for each of the sub-watersheds, we used the Manning's nomograph to determine a preliminary size for the structures. The structure sizes are listed in the spreadsheet also.

The watershed is divided into six sub-watersheds: N, NW, W, KW, S, and C. (as seen sheet 2 of 2, Appendix A). The sub-watershed hydrographs have been combined using the SCS TR-20 software program. Sub-watersheds N and C were routed through storage in the proposed north pond, as indicated on sheet 2 of 2 in Appendix A. Hydrographs representing runoff from sub-watersheds W, KW, NW, S and the discharge from the north pond were routed through the proposed south pond detention. The SCS output for the post-development watershed model is shown in shown in Appendix E.

Table 2. Post-developed runoff.

Sub-Watershed	2-Year (cfs)	5-Year (cfs)	10-Year (cfs)	100-Year (cfs)
N	133	179	208	314
C	40	58	69	111
$Q_{in Prop. North Pond}$	174	236	277	425
$Q_{out Prop. North Pond}$	100	129	148	222
W	30	46	56	95
NW	19	26	30	46
S	94	136	164	264
$Q_{in Prop. South Pond}$	246	344	405	634
$Q_{out Prop. South Pond}$ (Watershed Discharge)	128	203	254	458

Summary

Development is proposed for all platted areas of this watershed. Development will occur in these four separate plats: the Gateway, Killenwood Pointe, Kiser West, and Pine Meadow Additions. The Gateway and Kiser West developments will be commercial. The Killenwood Pointe and Pine Meadow Additions will be residential. To control excess runoff generated by the residential and commercial development of the watershed, two detention ponds are proposed. The ponds are under design at this time and are scheduled to begin construction this summer. They will be located to the East of the Pine Meadow Addition. To analyze this watershed, it has been divided into sub-watersheds and examined under pre- and post- development conditions using the SCS TR-20 software. This analysis shows that the detention ponds will decrease runoff downstream. The watershed's post-developed peak discharge will be less than the pre-developed peak discharge, as shown in Tables 1 and 2, prior to entering the Balthrop Addition. The detention ponds support the development of this watershed and prevent drainage problems downstream.

Appendix A

Appendix B

Appendix C



*****80-80 LIST OF INPUT DATA FOR TR-20 HYDROLOGY*****

JOB TR-20
 TITLE 003 Existing runoff @ KILLENWOOD POINTE NGG 2,5,10,100-YR EVENTS
 TITLE FAA TC PRELIM. EVALUATIONS K=484 FILENAME KPEX.T20

SUMMARY

4 DIMHYD	0.02					484
8	.000	.030	.100	.190	.310	
8	.470	.660	.820	.930	.990	
8	1.000	.990	.930	.860	.780	
8	.680	.560	.460	.390	.330	
8	.280	.241	.207	.174	.147	
8	.126	.107	.091	.077	.066	
8	.055	.047	.040	.034	.029	
8	.025	.021	.018	.015	.013	
8	.011	.009	.008	.007	.006	
8	.005	.004	.003	.002	.001	
8	.000	.000	.000	.000	.000	
9 ENDTBL						
5 RAINFL 7	0.08333					6-HR M&L
8	0.0000	0.0033	0.0066	0.0099	0.0132	
8	0.0166	0.0198	0.0248	0.0296	0.0346	
8	0.0404	0.0463	0.0522	0.0590	0.0658	
8	0.0727	0.0796	0.0864	0.0933	0.1136	
8	0.1340	0.1572	0.1832	0.2124	0.2473	
8	0.2850	0.3400	0.4464	0.6034	0.6752	
8	0.7220	0.7409	0.7598	0.7758	0.7919	
8	0.8072	0.8224	0.8310	0.8396	0.8468	
8	0.8540	0.8628	0.8714	0.8773	0.8832	
8	0.8890	0.8939	0.8988	0.9038	0.9086	
8	0.9136	0.9184	0.9233	0.9282	0.9332	
8	0.9380	0.9429	0.9478	0.9527	0.9576	
8	0.9626	0.9664	0.9704	0.9742	0.9782	
8	0.9821	0.9860	0.9884	0.9906	0.9930	
8	0.9954	0.9976	1.0000	1.0000	1.0000	
9 ENDTBL						
5 RAINFL 8	0.5					24-HRSCS ZONE 5
8	.000	.002	.005	.009	.013	
8	.018	.023	.029	.035	.042	
8	.050	.059	.068	.078	.089	
8	.101	.114	.128	.144	.162	
8	.183	.208	.244	.339	.723	
8	.773	.802	.825	.844	.861	
8	.876	.890	.903	.914	.924	
8	.934	.943	.951	.959	.966	
8	.972	.977	.982	.986	.990	
8	.993	.996	.998	1.000	1.000	
9 ENDTBL						
3 STRUCT	30					N POND

*****80-80 LIST OF INPUT DATA (CONTINUED)*****

ENDJOB 2

*****END OF 80-80 LIST*****

TR20

Existing runoff @ KILLENWOOD POINTE NGG 2,5,10,100-YR EVENTS VERSION
07/12/** TC PRELIM. EVALUATIONS K=484 FILENAME KPEX.T20 10/01/90
10:30:33 PASS 1 PAGE 1

COMPUTED PEAK RATE FACTOR = 484.00

EXECUTIVE CONTROL INCREM MAIN TIME INCREMENT = .08 HOURS

EXECUTIVE CONTROL COMPUT FROM XSECTION 1 TO XSECTION 45 2-YR 6-H
STARTING TIME = .00 RAIN DEPTH = 2.52 RAIN DURATION= 1.00
ANT. MOIST. COND. = 2 MAIN TIME INCREMENT = .08 HOURS
ALTERNATE NO.=11 STORM NO.= 1 RAIN TABLE NO.= 7

EXECUTIVE CONTROL ENDCMP COMPUTATIONS COMPLETED FOR PASS 1

EXECUTIVE CONTROL COMPUT FROM XSECTION 1 TO XSECTION 45 5-YR 6-H
STARTING TIME = .00 RAIN DEPTH = 3.42 RAIN DURATION= 1.00
ANT. MOIST. COND. = 2 MAIN TIME INCREMENT = .08 HOURS
ALTERNATE NO.=12 STORM NO.= 2 RAIN TABLE NO.= 7

EXECUTIVE CONTROL ENDCMP COMPUTATIONS COMPLETED FOR PASS 2

EXECUTIVE CONTROL COMPUT FROM XSECTION 1 TO XSECTION 45 10-YR 6-
STARTING TIME = .00 RAIN DEPTH = 4.02 RAIN DURATION= 1.00
ANT. MOIST. COND. = 2 MAIN TIME INCREMENT = .08 HOURS
ALTERNATE NO.=13 STORM NO.= 3 RAIN TABLE NO.= 7

EXECUTIVE CONTROL ENDCMP COMPUTATIONS COMPLETED FOR PASS 3

EXECUTIVE CONTROL COMPUT FROM XSECTION 1 TO XSECTION 45 100-YR 6
STARTING TIME = .00 RAIN DEPTH = 5.94 RAIN DURATION= 1.00
ANT. MOIST. COND. = 2 MAIN TIME INCREMENT = .08 HOURS
ALTERNATE NO.=16 STORM NO.= 6 RAIN TABLE NO.= 7

EXECUTIVE CONTROL ENDCMP COMPUTATIONS COMPLETED FOR PASS 4

TR20 Existing runoff @ KILLENWOOD POINTE NGG 2,5,10,100-YR EVENTS VERSION
07/12/** TC PRELIM. EVALUATIONS K=484 FILENAME KPEX.T20 10/01/90
10:30:33 PASS 5 PAGE 2

EXECUTIVE CONTROL COMPUT FROM XSECTION 1 TO XSECTION 45 2-YR TYP
STARTING TIME = .00 RAIN DEPTH = 3.48 RAIN DURATION= 1.00
ANT. MOIST. COND. = 2 MAIN TIME INCREMENT = .08 HOURS
ALTERNATE NO.=21 STORM NO.= 1 RAIN TABLE NO.= 2

EXECUTIVE CONTROL ENDCMP COMPUTATIONS COMPLETED FOR PASS 5

EXECUTIVE CONTROL COMPUT FROM XSECTION 1 TO XSECTION 45 5-YR TYP
STARTING TIME = .00 RAIN DEPTH = 4.55 RAIN DURATION= 1.00
ANT. MOIST. COND. = 2 MAIN TIME INCREMENT = .08 HOURS
ALTERNATE NO.=22 STORM NO.= 2 RAIN TABLE NO.= 2

EXECUTIVE CONTROL ENDCMP COMPUTATIONS COMPLETED FOR PASS 6

EXECUTIVE CONTROL COMPUT FROM XSECTION 1 TO XSECTION 45 10-YR TY
STARTING TIME = .00 RAIN DEPTH = 5.25 RAIN DURATION= 1.00
ANT. MOIST. COND. = 2 MAIN TIME INCREMENT = .08 HOURS
ALTERNATE NO.=23 STORM NO.= 3 RAIN TABLE NO.= 2

EXECUTIVE CONTROL ENDCMP COMPUTATIONS COMPLETED FOR PASS 7

EXECUTIVE CONTROL COMPUT FROM XSECTION 1 TO XSECTION 45 100-YR T
STARTING TIME = .00 RAIN DEPTH = 7.80 RAIN DURATION= 1.00
ANT. MOIST. COND. = 2 MAIN TIME INCREMENT = .08 HOURS
ALTERNATE NO.=26 STORM NO.= 6 RAIN TABLE NO.= 2

EXECUTIVE CONTROL ENDCMP COMPUTATIONS COMPLETED FOR PASS 8

TR20

Existing runoff @ KILLENWOOD POINTE NGG 2,5,10,100-YR EVENTS VERSION
07/12/** TC PRELIM. EVALUATIONS K=484 FILENAME KPEX.T20 10/01/90
10:30:33 PASS 9 PAGE 3

EXECUTIVE CONTROL COMPUT FROM XSECTION 1 TO XSECTION 45 2-YR ZON
STARTING TIME = .00 RAIN DEPTH = 3.48 RAIN DURATION= 1.00
ANT. MOIST. COND. = 2 MAIN TIME INCREMENT = .08 HOURS
ALTERNATE NO.=41 STORM NO.= 1 RAIN TABLE NO.= 8

EXECUTIVE CONTROL ENDCMP COMPUTATIONS COMPLETED FOR PASS 9

EXECUTIVE CONTROL COMPUT FROM XSECTION 1 TO XSECTION 45 5-YR ZON
STARTING TIME = .00 RAIN DEPTH = 4.55 RAIN DURATION= 1.00
ANT. MOIST. COND. = 2 MAIN TIME INCREMENT = .08 HOURS
ALTERNATE NO.=42 STORM NO.= 2 RAIN TABLE NO.= 8

EXECUTIVE CONTROL ENDCMP COMPUTATIONS COMPLETED FOR PASS 10

EXECUTIVE CONTROL COMPUT FROM XSECTION 1 TO XSECTION 45 10-YR ZO
STARTING TIME = .00 RAIN DEPTH = 5.25 RAIN DURATION= 1.00
ANT. MOIST. COND. = 2 MAIN TIME INCREMENT = .08 HOURS
ALTERNATE NO.=43 STORM NO.= 3 RAIN TABLE NO.= 8

EXECUTIVE CONTROL ENDCMP COMPUTATIONS COMPLETED FOR PASS 11

EXECUTIVE CONTROL COMPUT FROM XSECTION 1 TO XSECTION 45 100-YR Z
STARTING TIME = .00 RAIN DEPTH = 7.80 RAIN DURATION= 1.00
ANT. MOIST. COND. = 2 MAIN TIME INCREMENT = .08 HOURS
ALTERNATE NO.=46 STORM NO.= 6 RAIN TABLE NO.= 8

EXECUTIVE CONTROL ENDCMP COMPUTATIONS COMPLETED FOR PASS 12

SUMMARY TABLE 1

SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL IN ORDER PERFORMED.
 A CHARACTER FOLLOWING THE PEAK DISCHARGE TIME AND RATE (CFS) INDICATES:
 F-FLAT TOP HYDROGRAPH T-TRUNCATED HYDROGRAPH R-RISING TRUNCATED HYDROGRAPH

XSECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RUNOFF AMOUNT (IN)	PEAK DISCHARGE			
				ELEVATION (FT)	TIME (HR)	RATE (CFS)	RATE (CSM)

RAINFALL OF 2.52 inches AND 6.00 hr DURATION, BEGINS AT .0 hrs.
 RAINFALL NUMBER 7, AMC 2
 MAIN TIME INCREMENT .08 HOURS

ALTERNATE 11 STORM 1	
XSECTION 1	RUNOFF .05 1.07 --- 2.66 31 620.0
XSECTION 5	RUNOFF .01 1.07 --- 2.67 6 600.0
XSECTION 10	RUNOFF .08 1.07 --- 2.70 47 587.5
XSECTION 15	RUNOFF .08 1.07 --- 2.76 45 562.5
XSECTION 20	RUNOFF .03 1.07 --- 2.58 22 733.3
XSECTION 25	ADDHYD .11 1.07 --- 2.69 63 572.7
STRUCTURE 30	RESVOR .11 1.07 1370.11 3.66 16 145.5
XSECTION 35	ADDHYD .06 1.07 --- 2.66 37 616.7
XSECTION 40	ADDHYD .13 1.07 --- 2.68 84 646.2
XSECTION 45	ADDHYD .24 1.07 --- 2.69 89 370.8

ALTERNATE 12 STORM 2	
XSECTION 1	RUNOFF .05 1.79 --- 2.64 53 1060.0
XSECTION 5	RUNOFF .01 1.79 --- 2.66 11 1100.0
XSECTION 10	RUNOFF .08 1.79 --- 2.69 81 1012.5
XSECTION 15	RUNOFF .08 1.79 --- 2.74 78 975.0
XSECTION 20	RUNOFF .03 1.79 --- 2.57 38 1266.7
XSECTION 25	ADDHYD .11 1.79 --- 2.67 109 990.9
STRUCTURE 30	RESVOR .11 1.79 1370.58 3.32 42 381.8
XSECTION 35	ADDHYD .06 1.79 --- 2.65 64 1066.7
XSECTION 40	ADDHYD .13 1.79 --- 2.67 144 1107.7
XSECTION 45	ADDHYD .24 1.79 --- 2.69 153 637.5

SUMMARY TABLE 1

SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL IN ORDER PERFORMED.
 A CHARACTER FOLLOWING THE PEAK DISCHARGE TIME AND RATE (CFS) INDICATES:
 F-FLAT TOP HYDROGRAPH T-TRUNCATED HYDROGRAPH R-RISING TRUNCATED HYDROGRAPH

XSECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RUNOFF AMOUNT (IN)	ELEVATION (FT)	PEAK DISCHARGE		
					TIME (HR)	RATE (CFS)	RATE (CSM)
RAINFALL OF 4.02 inches AND 6.00 hr DURATION, BEGINS AT .0 hrs.							
ALTERNATE 13 STORM 3							
XSECTION 1	RUNOFF	.05	2.30	---	2.64	69	1380.0
XSECTION 5	RUNOFF	.01	2.30	---	2.65	14	1400.0
XSECTION 10	RUNOFF	.08	2.30	---	2.68	104	1300.0
XSECTION 15	RUNOFF	.08	2.30	---	2.74	101	1262.5
XSECTION 20	RUNOFF	.03	2.30	---	2.56	48	1600.0
XSECTION 25	ADDHYD	.11	2.30	---	2.66	141	1281.8
STRUCTURE 30	RESVOR	.11	2.30	1370.84	3.14	73	663.6
XSECTION 35	ADDHYD	.06	2.30	---	2.64	83	1383.3
XSECTION 40	ADDHYD	.13	2.30	---	2.66	186	1430.8
XSECTION 45	ADDHYD	.24	2.30	---	2.72	207	862.5
RAINFALL OF 5.94 inches AND 6.00 hr DURATION, BEGINS AT .0 hrs.							
ALTERNATE 16 STORM 6							
XSECTION 1	RUNOFF	.05	4.04	---	2.63	122	2440.0
XSECTION 5	RUNOFF	.01	4.03	---	2.64	24	2400.0
XSECTION 10	RUNOFF	.08	4.04	---	2.67	186	2325.0
XSECTION 15	RUNOFF	.08	4.03	---	2.73	179	2237.5
XSECTION 20	RUNOFF	.03	4.03	---	2.55	85	2833.3
XSECTION 25	ADDHYD	.11	4.03	---	2.66	249	2263.6
STRUCTURE 30	RESVOR	.11	4.03	1371.28	2.93	185	1681.8
XSECTION 35	ADDHYD	.06	4.03	---	2.63	146	2433.3
XSECTION 40	ADDHYD	.13	4.04	---	2.65	331	2546.2
XSECTION 45	ADDHYD	.24	4.03	---	2.76	456	1900.0

SUMMARY TABLE 1

SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL IN ORDER PERFORMED.
 A CHARACTER FOLLOWING THE PEAK DISCHARGE TIME AND RATE (CFS) INDICATES:
 F-FLAT TOP HYDROGRAPH T-TRUNCATED HYDROGRAPH R-RISING TRUNCATED HYDROGRAPH

XSECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RUNOFF AMOUNT (IN)	ELEVATION (FT)	PEAK DISCHARGE			
					TIME (HR)	RATE (CFS)	RATE (CSM)	
RAINFALL OF 3.48 inches AND 24.00 hr DURATION, BEGINS AT .0 hrs.								
RAINTABLE NUMBER 2, AMC 2								
ALTERNATE 21 STORM 1								
XSECTION	1	RUNOFF	.05	1.84	---	12.20	44	880.0
XSECTION	5	RUNOFF	.01	1.84	---	12.22	9	900.0
XSECTION	10	RUNOFF	.08	1.84	---	12.24	68	850.0
XSECTION	15	RUNOFF	.08	1.84	---	12.30	65	812.5
XSECTION	20	RUNOFF	.03	1.84	---	12.14	31	1033.3
XSECTION	25	ADDHYD	.11	1.84	---	12.23	90	818.2
STRUCTURE	30	RESVOR	.11	1.84	1370.40	12.84	32	290.9
XSECTION	35	ADDHYD	.06	1.84	---	12.21	53	883.3
XSECTION	40	ADDHYD	.13	1.84	---	12.23	121	930.8
XSECTION	45	ADDHYD	.24	1.84	---	12.24	129	537.5
RAINFALL OF 4.55 inches AND 24.00 hr DURATION, BEGINS AT .0 hrs.								
ALTERNATE 22 STORM 2								
XSECTION	1	RUNOFF	.05	2.77	---	12.20	67	1340.0
XSECTION	5	RUNOFF	.01	2.76	---	12.21	13	1300.0
XSECTION	10	RUNOFF	.08	2.77	---	12.24	101	1262.5
XSECTION	15	RUNOFF	.08	2.77	---	12.29	98	1225.0
XSECTION	20	RUNOFF	.03	2.77	---	12.13	47	1566.7
XSECTION	25	ADDHYD	.11	2.77	---	12.22	137	1245.5
STRUCTURE	30	RESVOR	.11	2.76	1370.84	12.63	73	663.6
XSECTION	35	ADDHYD	.06	2.77	---	12.20	81	1350.0

TR20

Existing runoff @ KILLENWOOD POINTE NGG 2,5,10,100-YR EVENTS VERSION
 07/12/** TC PRELIM. EVALUATIONS K=484 FILENAME KPEX.T20 10/01/90
 10:30:33 PAGE 7

SUMMARY TABLE 1

SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL IN ORDER PERFORMED.
 A CHARACTER FOLLOWING THE PEAK DISCHARGE TIME AND RATE (CFS) INDICATES:
 F-FLAT TOP HYDROGRAPH T-TRUNCATED HYDROGRAPH R-RISING TRUNCATED HYDROGRAPH

XSECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RUNOFF AMOUNT (IN)	PEAK DISCHARGE			
				ELEVATION (FT)	TIME (HR)	RATE (CFS)	RATE (CSM)
ALTERNATE 22 STORM 2							
XSECTION 40	ADDHYD	.13	2.77	---	12.22	181	1392.3
XSECTION 45	ADDHYD	.24	2.77	---	12.27	209	870.8
RAINFALL OF 5.25 inches AND 24.00 hr DURATION, BEGINS AT						.0 hrs.	
ALTERNATE 23 STORM 3							
XSECTION 1	RUNOFF	.05	3.40	---	12.20	82	1640.0
XSECTION 5	RUNOFF	.01	3.40	---	12.20	17	1700.0
XSECTION 10	RUNOFF	.08	3.39	---	12.23	125	1562.5
XSECTION 15	RUNOFF	.08	3.40	---	12.29	120	1500.0
XSECTION 20	RUNOFF	.03	3.40	---	12.13	58	1933.3
XSECTION 25	ADDHYD	.11	3.40	---	12.22	168	1527.3
STRUCTURE 30	RESVOR	.11	3.39	1371.02	12.54	110	1000.0
XSECTION 35	ADDHYD	.06	3.40	---	12.20	99	1650.0
XSECTION 40	ADDHYD	.13	3.40	---	12.22	222	1707.7
XSECTION 45	ADDHYD	.24	3.39	---	12.34	274	1141.7
RAINFALL OF 7.80 inches AND 24.00 hr DURATION, BEGINS AT						.0 hrs.	
ALTERNATE 26 STORM 6							
XSECTION 1	RUNOFF	.05	5.78	---	12.19	139	2780.0
XSECTION 5	RUNOFF	.01	5.78	---	12.20	28	2800.0
XSECTION 10	RUNOFF	.08	5.78	---	12.23	210	2625.0
XSECTION 15	RUNOFF	.08	5.78	---	12.28	203	2537.5
XSECTION 20	RUNOFF	.03	5.78	---	12.13	97	3233.3
XSECTION 25	ADDHYD	.11	5.78	---	12.21	284	2581.8
STRUCTURE 30	RESVOR	.11	5.77	1371.41	12.41	235	2136.4
XSECTION 35	ADDHYD	.06	5.78	---	12.20	166	2766.7
XSECTION 40	ADDHYD	.13	5.78	---	12.21	375	2884.6
XSECTION 45	ADDHYD	.24	5.78	---	12.29	571	2379.2

SUMMARY TABLE 1

SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL IN ORDER PERFORMED.
 A CHARACTER FOLLOWING THE PEAK DISCHARGE TIME AND RATE (CFS) INDICATES:
 F-FLAT TOP HYDROGRAPH T-TRUNCATED HYDROGRAPH R-RISING TRUNCATED HYDROGRAPH

XSECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RUNOFF AMOUNT (IN)	ELEVATION (FT)	PEAK DISCHARGE		
					TIME (HR)	RATE (CFS)	RATE (CSM)
RAINFALL OF 3.48 inches AND 24.00 hr DURATION, BEGINS AT .0 hrs.							
RAINTABLE NUMBER. 8, AMC 2							
ALTERNATE 41 STORM 1							
XSECTION	1	RUNOFF	.05	1.84	---	12.12	42 840.0
XSECTION	5	RUNOFF	.01	1.84	---	12.13	8 800.0
XSECTION	10	RUNOFF	.08	1.84	---	12.15	65 812.5
XSECTION	15	RUNOFF	.08	1.84	---	12.20	64 800.0
XSECTION	20	RUNOFF	.03	1.84	---	12.06	28 933.3
XSECTION	25	ADDHYD	.11	1.84	---	12.15	89 809.1
STRUCTURE	30	RESVOR	.11	1.84	1370.46	12.69	35 318.2
XSECTION	35	ADDHYD	.06	1.84	---	12.12	50 833.3
XSECTION	40	ADDHYD	.13	1.84	---	12.14	115 884.6
XSECTION	45	ADDHYD	.24	1.84	---	12.20	126 525.0
RAINFALL OF 4.55 inches AND 24.00 hr DURATION, BEGINS AT .0 hrs.							
ALTERNATE 42 STORM 2							
XSECTION	1	RUNOFF	.05	2.77	---	12.12	63 1260.0
XSECTION	5	RUNOFF	.01	2.77	---	12.12	13 1300.0
XSECTION	10	RUNOFF	.08	2.77	---	12.15	98 1225.0
XSECTION	15	RUNOFF	.08	2.77	---	12.20	96 1200.0
XSECTION	20	RUNOFF	.03	2.77	---	12.06	42 1400.0
XSECTION	25	ADDHYD	.11	2.77	---	12.14	134 1218.2
STRUCTURE	30	RESVOR	.11	2.76	1370.89	12.49	82 745.5
XSECTION	35	ADDHYD	.06	2.77	---	12.12	75 1250.0

TR20

Existing runoff @ KILLENWOOD POINTE NGG 2,5,10,100-YR EVENTS VERSION
07/12/** TC PRELIM. EVALUATIONS K=484 FILENAME KPEX.T20 10/01/90
10:30:33 PAGE 9

SUMMARY TABLE 1

SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL IN ORDER PERFORMED.
A CHARACTER FOLLOWING THE PEAK DISCHARGE TIME AND RATE (CFS) INDICATES:
F-FLAT TOP HYDROGRAPH T-TRUNCATED HYDROGRAPH R-RISING TRUNCATED HYDROGRAPH

XSECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RUNOFF AMOUNT (IN)	ELEVATION (FT)	PEAK DISCHARGE		
					TIME (HR)	RATE (CFS)	RATE (CSM)
ALTERNATE 42 STORM		2					
XSECTION 40	ADDHYD	.13	2.77	---	12.13	173	1330.8
XSECTION 45	ADDHYD	.24	2.77	---	12.19	211	879.2
RAINFALL OF 5.25 inches AND		24.00 hr DURATION, BEGINS AT			.0 hrs.		
ALTERNATE 43 STORM		3					
XSECTION 1	RUNOFF	.05	3.40	---	12.12	77	1540.0
XSECTION 5	RUNOFF	.01	3.40	---	12.12	15	1500.0
XSECTION 10	RUNOFF	.08	3.40	---	12.15	119	1487.5
XSECTION 15	RUNOFF	.08	3.40	---	12.19	118	1475.0
XSECTION 20	RUNOFF	.03	3.40	---	12.06	51	1700.0
XSECTION 25	ADDHYD	.11	3.40	---	12.14	164	1490.9
STRUCTURE 30	RESVOR	.11	3.40	1371.05	12.41	118	1072.7
XSECTION 35	ADDHYD	.06	3.40	---	12.12	92	1533.3
XSECTION 40	ADDHYD	.13	3.40	---	12.13	211	1623.1
XSECTION 45	ADDHYD	.24	3.40	---	12.26	294	1225.0
RAINFALL OF 7.80 inches AND		24.00 hr DURATION, BEGINS AT			.0 hrs.		
ALTERNATE 46 STORM		6					
XSECTION 1	RUNOFF	.05	5.78	---	12.12	128	2560.0
XSECTION 5	RUNOFF	.01	5.78	---	12.12	26	2600.0
XSECTION 10	RUNOFF	.08	5.78	---	12.14	199	2487.5
XSECTION 15	RUNOFF	.08	5.78	---	12.20	197	2462.5
XSECTION 20	RUNOFF	.03	5.78	---	12.06	85	2833.3
XSECTION 25	ADDHYD	.11	5.78	---	12.14	274	2490.9
STRUCTURE 30	RESVOR	.11	5.78	1371.42	12.30	239	2172.7
XSECTION 35	ADDHYD	.06	5.78	---	12.12	154	2566.7
XSECTION 40	ADDHYD	.13	5.78	---	12.13	353	2715.4
XSECTION 45	ADDHYD	.24	5.78	---	12.20	569	2370.8

SUMMARY TABLE 3

STORM DISCHARGES (CFS) AT XSECTIONS AND STRUCTURES FOR ALL ALTERNATES

XSECTION/ STRUCTURE ID	DRAINAGE AREA (SQ MI)	STORM NUMBERS.....			
		1	2	3	6
STRUCTURE 30 .11					
ALTERNATE 11		16	*****	*****	*****
ALTERNATE 12		*****	42	*****	*****
ALTERNATE 13		*****	*****	73	*****
ALTERNATE 16		*****	*****	*****	185
ALTERNATE 21		32	*****	*****	*****
ALTERNATE 22		*****	73	*****	*****
ALTERNATE 23		*****	*****	110	*****
ALTERNATE 26		*****	*****	*****	235
ALTERNATE 41		35	*****	*****	*****
ALTERNATE 42		*****	82	*****	*****
ALTERNATE 43		*****	*****	118	*****
ALTERNATE 46		*****	*****	*****	239
XSECTION 1 .05					
ALTERNATE 11		31	*****	*****	*****
ALTERNATE 12		*****	53	*****	*****
ALTERNATE 13		*****	*****	69	*****
ALTERNATE 16		*****	*****	*****	122
ALTERNATE 21		44	*****	*****	*****
ALTERNATE 22		*****	67	*****	*****
ALTERNATE 23		*****	*****	82	*****
ALTERNATE 26		*****	*****	*****	139
ALTERNATE 41		42	*****	*****	*****
ALTERNATE 42		*****	63	*****	*****
ALTERNATE 43		*****	*****	77	*****
ALTERNATE 46		*****	*****	*****	128
XSECTION 5 .01					
ALTERNATE 11		6	*****	*****	*****
ALTERNATE 12		*****	11	*****	*****
ALTERNATE 13		*****	*****	14	*****
ALTERNATE 16		*****	*****	*****	24
ALTERNATE 21		9	*****	*****	*****
ALTERNATE 22		*****	13	*****	*****
ALTERNATE 23		*****	*****	17	*****

TR20

Existing runoff @ KILLENWOOD POINTE NGG 2,5,10,100-YR EVENTS VERSION
07/12/** TC PRELIM. EVALUATIONS K=484 FILENAME KPEX.T20 10/01/90
10:30:33 PAGE 11

SUMMARY TABLE 3

STORM DISCHARGES (CFS) AT XSECTIONS AND STRUCTURES FOR ALL ALTERNATES

XSECTION/ STRUCTURE ID	DRAINAGE AREA (SQ MI)	STORM NUMBERS.....			
		1	2	3	6
XSECTION 5	.01				
ALTERNATE 26		*****	*****	*****	28
ALTERNATE 41		8 *****	*****	*****	*****
ALTERNATE 42		*****	13 *****	*****	*****
ALTERNATE 43		*****	*****	15 *****	*****
ALTERNATE 46		*****	*****	*****	26
XSECTION 10	.08				
ALTERNATE 11		47 *****	*****	*****	*****
ALTERNATE 12		*****	81 *****	*****	*****
ALTERNATE 13		*****	*****	104 *****	*****
ALTERNATE 16		*****	*****	*****	186
ALTERNATE 21		68 *****	*****	*****	*****
ALTERNATE 22		*****	101 *****	*****	*****
ALTERNATE 23		*****	*****	125 *****	*****
ALTERNATE 26		*****	*****	*****	210
ALTERNATE 41		65 *****	*****	*****	*****
ALTERNATE 42		*****	98 *****	*****	*****
ALTERNATE 43		*****	*****	119 *****	*****
ALTERNATE 46		*****	*****	*****	199
XSECTION 15	.08				
ALTERNATE 11		45 *****	*****	*****	*****
ALTERNATE 12		*****	78 *****	*****	*****
ALTERNATE 13		*****	*****	101 *****	*****
ALTERNATE 16		*****	*****	*****	179
ALTERNATE 21		65 *****	*****	*****	*****
ALTERNATE 22		*****	98 *****	*****	*****
ALTERNATE 23		*****	*****	120 *****	*****
ALTERNATE 26		*****	*****	*****	203
ALTERNATE 41		64 *****	*****	*****	*****
ALTERNATE 42		*****	96 *****	*****	*****
ALTERNATE 43		*****	*****	118 *****	*****
ALTERNATE 46		*****	*****	*****	197
XSECTION 20	.03				
ALTERNATE 11		22 *****	*****	*****	*****
ALTERNATE 12		*****	38 *****	*****	*****

TR20

Existing runoff @ KILLENWOOD POINTE NGG 2,5,10,100-YR EVENTS VERSION
07/12/** TC PRELIM. EVALUATIONS K=484 FILENAME KPEX.T20 10/01/90
10:30:33 PAGE 12

SUMMARY TABLE 3

STORM DISCHARGES (CFS) AT XSECTIONS AND STRUCTURES FOR ALL ALTERNATES

XSECTION/ STRUCTURE ID	DRAINAGE AREA (SQ MI)	STORM NUMBERS.....			
		1	2	3	6
XSECTION 20	.03				
ALTERNATE 13		*****	*****	48	*****
ALTERNATE 16		*****	*****	*****	85
ALTERNATE 21		31	*****	*****	*****
ALTERNATE 22		*****	47	*****	*****
ALTERNATE 23		*****	*****	58	*****
ALTERNATE 26		*****	*****	*****	97
ALTERNATE 41		28	*****	*****	*****
ALTERNATE 42		*****	42	*****	*****
ALTERNATE 43		*****	*****	51	*****
ALTERNATE 46		*****	*****	*****	85
XSECTION 25	.11				
ALTERNATE 11		63	*****	*****	*****
ALTERNATE 12		*****	109	*****	*****
ALTERNATE 13		*****	*****	141	*****
ALTERNATE 16		*****	*****	*****	249
ALTERNATE 21		90	*****	*****	*****
ALTERNATE 22		*****	137	*****	*****
ALTERNATE 23		*****	*****	168	*****
ALTERNATE 26		*****	*****	*****	284
ALTERNATE 41		89	*****	*****	*****
ALTERNATE 42		*****	134	*****	*****
ALTERNATE 43		*****	*****	164	*****
ALTERNATE 46		*****	*****	*****	274
XSECTION 35	.06				
ALTERNATE 11		37	*****	*****	*****
ALTERNATE 12		*****	64	*****	*****
ALTERNATE 13		*****	*****	83	*****
ALTERNATE 16		*****	*****	*****	146
ALTERNATE 21		53	*****	*****	*****
ALTERNATE 22		*****	81	*****	*****
ALTERNATE 23		*****	*****	99	*****
ALTERNATE 26		*****	*****	*****	166
ALTERNATE 41		50	*****	*****	*****
ALTERNATE 42		*****	75	*****	*****

TR20

Existing runoff @ KILLENWOOD POINTE NGG 2,5,10,100-YR EVENTS
07/12/** TC PRELIM. EVALUATIONS K=484 FILENAME KPEX.T20
10:30:33

VERSION
10/01/90
PAGE 13

SUMMARY TABLE 3

STORM DISCHARGES (CFS) AT XSECTIONS AND STRUCTURES FOR ALL ALTERNATES

XSECTION/ STRUCTURE ID	DRAINAGE AREA (SQ MI)	STORM NUMBERS.....			
		1	2	3	6
XSECTION 35	.06				
ALTERNATE 43		*****	*****	92	*****
ALTERNATE 46		*****	*****	*****	154
XSECTION 40	.13				
ALTERNATE 11		84	*****	*****	*****
ALTERNATE 12		*****	144	*****	*****
ALTERNATE 13		*****	*****	186	*****
ALTERNATE 16		*****	*****	*****	331
ALTERNATE 21		121	*****	*****	*****
ALTERNATE 22		*****	181	*****	*****
ALTERNATE 23		*****	*****	222	*****
ALTERNATE 26		*****	*****	*****	375
ALTERNATE 41		115	*****	*****	*****
ALTERNATE 42		*****	173	*****	*****
ALTERNATE 43		*****	*****	211	*****
ALTERNATE 46		*****	*****	*****	353
XSECTION 45	.24				
ALTERNATE 11		89	*****	*****	*****
ALTERNATE 12		*****	153	*****	*****
ALTERNATE 13		*****	*****	207	*****
ALTERNATE 16		*****	*****	*****	456
ALTERNATE 21		129	*****	*****	*****
ALTERNATE 22		*****	209	*****	*****
ALTERNATE 23		*****	*****	274	*****
ALTERNATE 26		*****	*****	*****	571
ALTERNATE 41		126	*****	*****	*****
ALTERNATE 42		*****	211	*****	*****
ALTERNATE 43		*****	*****	294	*****
ALTERNATE 46		*****	*****	*****	569

END OF 1 JOBS IN THIS RUN

SCS TR-20, VERSION 10/01/90
FILES

INPUT = kpex.t20
OUTPUT = kpex.out

, DATED 07/12/**,10:30:33

FILES GENERATED - DATED 07/12/**,10:30:33

NONE!

*** TR-20 RUN COMPLETED ***

Appendix D

**DRAINAGE ANALYSIS SUMMARY
KISER WEST ADDITION**

7/18/01

Area ID	Area ac	Accum. Area ac	Elev Max	Elev Min	Flow Length	Tc2 Calc	Avg V2	Tc5 Calc	Avg V5	Tc10 Calc	Avg V10	Tc100 Calc	vg V100	Tc2 min	Tc5 min	Tc10 min	Tc100 min	Soil Group D					
																		15 in/hr	110 in/hr	1100 in/hr	C2 CIS	C5 CIS	
A	3.34		1401.00	1392.50	570.00	29.34	0.32	27.46	0.35	23.70	0.40	16.17	0.59	29	27	24	16	2.72	3.43	4.31	7.18	2.91	4.24
B	2.66		1399.00	1389.50	400.00	8.90	0.75	8.36	0.80	7.29	0.92	5.80	1.15	15	15	15	15	3.83	4.56	5.22	7.37	7.84	9.58
A+B		6.00	1401.00	1389.50	570.00	19.74	0.48	18.49	0.51	16.00	0.59	11.38	0.83	20	18	16	15	3.42	4.20	5.22	7.37	10.66	14.02
C	1.23		1394.50	1390.00	340.00	9.98	0.57	9.37	0.60	8.16	0.69	6.50	0.87	15	15	15	15	3.83	4.56	5.22	7.37	3.63	4.43
A+B+C		7.23	1401.00	1389.50	950.00	28.00	0.57	26.24	0.60	22.71	0.70	16.36	0.97	28	26	23	16	2.78	3.50	4.40	7.18	11.30	15.08
E	1.90		1394.50	1386.00	520.00	11.50	0.75	10.80	0.80	9.41	0.92	7.49	1.16	15	15	15	15	3.83	4.56	5.22	7.37	5.60	6.84
F	4.17		1396.50	1383.00	870.00	15.13	0.96	14.22	1.02	12.38	1.17	9.86	1.47	15	15	15	15	3.83	4.56	5.22	7.37	12.30	15.02
E+F		6.07	1396.50	1383.00	870.00	15.13	0.96	14.22	1.02	12.38	1.17	9.86	1.47	15	15	15	15	3.83	4.56	5.22	7.37	17.90	21.87
G	2.09		1394.00	1383.00	590.00	11.72	0.84	11.01	0.89	9.59	1.03	7.64	1.29	15	15	15	15	3.83	4.56	5.22	7.37	6.16	7.53
H	1.24		1393.50	1386.00	350.00	8.62	0.68	8.10	0.72	7.05	0.83	5.62	1.04	15	15	15	15	3.83	4.56	5.22	7.37	3.66	4.47
G+H		3.33	1394.00	1383.00	590.00	11.72	0.84	11.01	0.89	9.59	1.03	7.64	1.29	15	15	15	15	3.83	4.56	5.22	7.37	9.82	12.00
I	20.45		1401.00	1390.50	1050.00	45.49	0.38	42.58	0.41	36.75	0.48	25.08	0.70	45	43	37	25	2.08	2.68	3.41	5.90	13.61	20.28
J	0.74		1393.50	1390.00	260.00	8.67	0.50	8.15	0.53	7.10	0.61	5.65	0.77	15	15	15	15	3.83	4.56	5.22	7.37	2.18	2.67
E+F+G+H+I		30.59	1401.00	1383.00	1300.00	36.73	0.59	34.40	0.63	29.74	0.73	20.89	1.04	37	34	30	21	2.39	3.01	3.83	6.53	34.30	46.89

Irwin Silty Clay Loam - Soil Group D; Rosehill Silty Clay - Soil Group D

Appendix E

*****80-80 LIST OF INPUT DATA FOR TR-20 HYDROLOGY*****

JOB TR-20		SUMMARY				
TITLE 003 Proposed runoff @ KILLENWOOD POINTE NGS 2.5,10,100-YR EVENTS						
TITLE FAA TC PRELIM. EVALUATIONS K=484 FILENAME KPPR3.t20						
4	DIMHYD	0.02				484
8		.000	.030	.100	.310	
8		.470	.660	.820	.990	
8		1.000	.990	.930	.860	
8		.680	.560	.460	.330	
8		.280	.241	.207	.174	
8		.126	.107	.091	.077	
8		.055	.047	.040	.034	
8		.025	.021	.018	.015	
8		.011	.009	.008	.007	
8		.005	.004	.003	.002	
8		.000	.000	.000	.000	
9	ENDTBL					
5	RAINFL 7	0.08333				6-HR M&L
8		0.0000	0.0033	0.0066	0.0099	0.0132
8		0.0166	0.0198	0.0248	0.0296	0.0346
8		0.0404	0.0463	0.0522	0.0590	0.0658
8		0.0727	0.0796	0.0864	0.0933	0.1002
8		0.1140	0.1212	0.1284	0.1356	0.1428
8		0.1550	0.1622	0.1694	0.1766	0.1838
8		0.1960	0.2032	0.2104	0.2176	0.2248
8		0.2370	0.2442	0.2514	0.2586	0.2658
8		0.2780	0.2852	0.2924	0.2996	0.3068
8		0.3190	0.3262	0.3334	0.3406	0.3478
8		0.3600	0.3672	0.3744	0.3816	0.3888
8		0.3910	0.3982	0.4054	0.4126	0.4198
8		0.4220	0.4292	0.4364	0.4436	0.4508
8		0.4610	0.4682	0.4754	0.4826	0.4898
8		0.4920	0.4992	0.5064	0.5136	0.5208
8		0.5310	0.5382	0.5454	0.5526	0.5598
8		0.5700	0.5772	0.5844	0.5916	0.5988
8		0.6090	0.6162	0.6234	0.6306	0.6378
8		0.6480	0.6552	0.6624	0.6696	0.6768
8		0.6850	0.6922	0.6994	0.7066	0.7138
8		0.7220	0.7292	0.7364	0.7436	0.7508
8		0.7670	0.7742	0.7814	0.7886	0.7958
8		0.8100	0.8172	0.8244	0.8316	0.8388
8		0.8510	0.8582	0.8654	0.8726	0.8798
8		0.8920	0.8992	0.9064	0.9136	0.9208
8		0.9310	0.9382	0.9454	0.9526	0.9598
8		0.9700	0.9772	0.9844	0.9916	0.9988
8		0.9920	0.9992	1.0000	1.0000	1.0000
9	ENDTBL					
5	RAINFL 8	0.5				24-HRSCS ZONE 5
8		.000	.002	.005	.009	.013
8		.018	.023	.029	.035	.042
8		.050	.059	.068	.078	.089
8		.101	.114	.128	.144	.162
8		.183	.208	.244	.293	.357
8		.573	.602	.635	.674	.723
8		.876	.902	.933	.969	1.000
8		.934	.943	.951	.959	.966
8		.972	.977	.982	.986	.990
8		.993	.996	.998	1.000	1.000
9	ENDTBL					
3	STRUCT	30				N POND

*****80-80 LIST OF INPUT DATA (CONTINUED)*****

8		1366.0	0.0	0.0				
8		1366.5	17.2	0.99				
8		1367.0	38.7	2.03				
8		1367.5	75.9	3.12				
8		1368.0	106.3	4.26				
8		1368.5	128.8	5.45				
8		1369.0	151.8	6.70				
8		1369.5	181.9	8.00				
8		1370.0	208.2	9.36				
9	ENDTBL							
3	STRUCT	50					S	POND
8		1362.0	0.0	0.0				
8		1362.5	20.0	1.73				
8		1363.0	40.0	3.50				
8		1363.5	60.0	5.32				
8		1364.0	93.0	7.18				
8		1364.5	139.1	9.09				
8		1365.0	200.2	11.05				
8		1365.5	272.6	13.06				
8		1366.0	359.7	15.11				
8		1366.5	462.9	17.21				
8		1367.0	588.6	19.36				
9	ENDTBL							
6	RUNOFF	1 001	3 0.0320	83.0	0.5320		1	W WSHD
6	RUNOFF	1 003	2 0.0150	95.0	0.3284		1	KW WSHD
6	ADDHYD	4 005	3 2 1				1	Qi GREEN
6	RUNOFF	1 007	2 0.0095	95.0	0.2694		1	NW WSHD
6	RUNOFF	1 010	3 0.0761	87.0	0.4573		1	S WSHD
6	RUNOFF	1 015	4 0.0806	95.0	0.4230		1	N WSHD
6	RUNOFF	1 020	5 0.0284	87.0	0.3610		1	C WSHD
6	ADDHYD	4 025	4 5 6				1	Qin NPON
6	RESVOR	2	30 6 4 1366.0				1	Qo NPOND
6	ADDHYD	4 035	1 2 5				1	W&NW
6	ADDHYD	4 040	5 3 6				1	W&NW&S
6	ADDHYD	4 045	4 6 7				1	Qin SPON
6	RESVOR	2	50 7 1 1362.0				1	Qo SPOND
	ENDATA							
7	INCREM	6	0.0833					
7	COMPUT	7 001	50 0.0	2.52	1.0	7 2	11	01 2-YR 6-H
	ENDCMP	1						
7	COMPUT	7 001	50 0.0	3.42	1.0	7 2	12	02 5-YR 6-H
	ENDCMP	1						
7	COMPUT	7 001	50 0.0	4.02	1.0	7 2	13	03 10-YR 6-
	ENDCMP	1						
7	COMPUT	7 001	50 0.0	5.94	1.0	7 2	16	06 100-YR 6
	ENDCMP	1						

*****80-80 LIST OF INPUT DATA (CONTINUED)*****

7 COMPUT 7 001	50 0.0	3.48	1.0	2 2 21 01 2-YR TYP
ENDCMP 1				
7 COMPUT 7 001	50 0.0	4.55	1.0	2 2 22 02 5-YR TYP
ENDCMP 1				
7 COMPUT 7 001	50 0.0	5.25	1.0	2 2 23 03 10-YR TY
ENDCMP 1				
7 COMPUT 7 001	50 0.0	7.80	1.0	2 2 26 06 100-YR T
ENDCMP 1				
7 COMPUT 7 001	50 0.0	3.48	1.0	8 2 41 01 2-YR ZON
ENDCMP 1				
7 COMPUT 7 001	50 0.0	4.55	1.0	8 2 42 02 5-YR ZON
ENDCMP 1				
7 COMPUT 7 001	50 0.0	5.25	1.0	8 2 43 03 10-YR ZO
ENDCMP 1				
7 COMPUT 7 001	50 0.0	7.80	1.0	8 2 46 06 100-YR Z
ENDCMP 1				
ENDJOB 2				

*****END OF 80-80 LIST*****

TR20 -----
Proposed runoff @ KILLENWOOD POINTE NGG 2.5,10,100-YR EVENTS VERSION
07/12/90 TC PRELIM. EVALUATIONS K=484 FILENAME KPPR3.t20 10/01/90
10:38:01 PASS 1 PAGE 1

COMPUTED PEAK RATE FACTOR = 484.00

EXECUTIVE CONTROL INCREM MAIN TIME INCREMENT = .08 HOURS

EXECUTIVE CONTROL COMPUT FROM XSECTION 1 TO STRUCTURE 50 2-YR 6-H
STARTING TIME = .00 RAIN DEPTH = 2.52 RAIN DURATION= 1.00
ANT. MOIST. COND. = 2 MAIN TIME INCREMENT = .08 HOURS
ALTERNATE NO.=11 STORM NO.= 1 RAIN TABLE NO.= 7

EXECUTIVE CONTROL ENDCMP COMPUTATIONS COMPLETED FOR PASS 1

EXECUTIVE CONTROL COMPUT FROM XSECTION 1 TO STRUCTURE 50 5-YR 6-H
STARTING TIME = .00 RAIN DEPTH = 3.42 RAIN DURATION= 1.00
ANT. MOIST. COND. = 2 MAIN TIME INCREMENT = .08 HOURS
ALTERNATE NO.=12 STORM NO.= 2 RAIN TABLE NO.= 7

EXECUTIVE CONTROL ENDCMP COMPUTATIONS COMPLETED FOR PASS 2

EXECUTIVE CONTROL COMPUT FROM XSECTION 1 TO STRUCTURE 50 10-YR 6-
STARTING TIME = .00 RAIN DEPTH = 4.02 RAIN DURATION= 1.00
ANT. MOIST. COND. = 2 MAIN TIME INCREMENT = .08 HOURS
ALTERNATE NO.=13 STORM NO.= 3 RAIN TABLE NO.= 7

EXECUTIVE CONTROL ENDCMP COMPUTATIONS COMPLETED FOR PASS 3

EXECUTIVE CONTROL COMPUT FROM XSECTION 1 TO STRUCTURE 50 100-YR 6
STARTING TIME = .00 RAIN DEPTH = 5.94 RAIN DURATION= 1.00
ANT. MOIST. COND. = 2 MAIN TIME INCREMENT = .08 HOURS
ALTERNATE NO.=16 STORM NO.= 6 RAIN TABLE NO.= 7

*** WARNING - DISCHARGE EXCEEDS HIGHEST RATING POINT FOR STRUCTURE 30,
VALUE EXTRAPOLATED. ***

TR20 -----
Proposed runoff @ KILLENWOOD POINTE NGG 2,5,10,100-YR EVENTS VERSION
07/12/** TC PRELIM. EVALUATIONS K=484 FILENAME KPPR3.t20 10/01/90
10:38:01 PASS 5 PAGE 2

EXECUTIVE CONTROL ENDCMP COMPUTATIONS COMPLETED FOR PASS 4

EXECUTIVE CONTROL COMPUT FROM XSECTION 1 TO STRUCTURE 50 2-YR TYP
STARTING TIME = .00 RAIN DEPTH = 3.48 RAIN DURATION= 1.00
ANT. MOIST. COND. = 2 MAIN TIME INCREMENT = .08 HOURS
ALTERNATE NO.=21 STORM NO.= 1 RAIN TABLE NO.= 2

EXECUTIVE CONTROL ENDCMP COMPUTATIONS COMPLETED FOR PASS 5

EXECUTIVE CONTROL COMPUT FROM XSECTION 1 TO STRUCTURE 50 5-YR TYP
STARTING TIME = .00 RAIN DEPTH = 4.55 RAIN DURATION= 1.00
ANT. MOIST. COND. = 2 MAIN TIME INCREMENT = .08 HOURS
ALTERNATE NO.=22 STORM NO.= 2 RAIN TABLE NO.= 2

EXECUTIVE CONTROL ENDCMP COMPUTATIONS COMPLETED FOR PASS 6

EXECUTIVE CONTROL COMPUT FROM XSECTION 1 TO STRUCTURE 50 10-YR TY
STARTING TIME = .00 RAIN DEPTH = 5.25 RAIN DURATION= 1.00
ANT. MOIST. COND. = 2 MAIN TIME INCREMENT = .08 HOURS
ALTERNATE NO.=23 STORM NO.= 3 RAIN TABLE NO.= 2

EXECUTIVE CONTROL ENDCMP COMPUTATIONS COMPLETED FOR PASS 7

EXECUTIVE CONTROL COMPUT FROM XSECTION 1 TO STRUCTURE 50 100-YR T
STARTING TIME = .00 RAIN DEPTH = 7.80 RAIN DURATION= 1.00
ANT. MOIST. COND. = 2 MAIN TIME INCREMENT = .08 HOURS
ALTERNATE NO.=26 STORM NO.= 6 RAIN TABLE NO.= 2

*** WARNING - DISCHARGE EXCEEDS HIGHEST RATING POINT FOR STRUCTURE 30,
VALUE EXTRAPOLATED. ***

EXECUTIVE CONTROL ENDCMP COMPUTATIONS COMPLETED FOR PASS 8

EXECUTIVE CONTROL COMPUT FROM XSECTION 1 TO STRUCTURE 50 2-YR ZON
STARTING TIME = .00 RAIN DEPTH = 3.48 RAIN DURATION= 1.00
ANT. MOIST. COND. = 2 MAIN TIME INCREMENT = .08 HOURS
ALTERNATE NO.=41 STORM NO.= 1 RAIN TABLE NO.= 8

EXECUTIVE CONTROL ENDCMP COMPUTATIONS COMPLETED FOR PASS 9

EXECUTIVE CONTROL COMPUT FROM XSECTION 1 TO STRUCTURE 50 5-YR ZON
STARTING TIME = .00 RAIN DEPTH = 4.55 RAIN DURATION= 1.00
ANT. MOIST. COND. = 2 MAIN TIME INCREMENT = .08 HOURS
ALTERNATE NO.=42 STORM NO.= 2 RAIN TABLE NO.= 8

EXECUTIVE CONTROL ENDCMP COMPUTATIONS COMPLETED FOR PASS 10

EXECUTIVE CONTROL COMPUT FROM XSECTION 1 TO STRUCTURE 50 10-YR ZON
STARTING TIME = .00 RAIN DEPTH = 5.25 RAIN DURATION= 1.00
ANT. MOIST. COND. = 2 MAIN TIME INCREMENT = .08 HOURS
ALTERNATE NO.=43 STORM NO.= 3 RAIN TABLE NO.= 8

EXECUTIVE CONTROL ENDCMP COMPUTATIONS COMPLETED FOR PASS 11

EXECUTIVE CONTROL COMPUT FROM XSECTION 1 TO STRUCTURE 50 100-YR Z
STARTING TIME = .00 RAIN DEPTH = 7.80 RAIN DURATION= 1.00
ANT. MOIST. COND. = 2 MAIN TIME INCREMENT = .08 HOURS
ALTERNATE NO.=46 STORM NO.= 6 RAIN TABLE NO.= 8

*** WARNING - DISCHARGE EXCEEDS HIGHEST RATING POINT FOR STRUCTURE 30,
VALUE EXTRAPOLATED. ***

TR20 -----
07/12/** Proposed runoff @ KILLENWOOD POINTE NGG 2,5,10,100-YR EVENTS VERSION
10:38:01 TC PRELIM. EVALUATIONS K=484 FILENAME RPPR3.T20 10/01/90
PASS 13 PAGE 4

EXECUTIVE CONTROL ENDCMP COMPUTATIONS COMPLETED FOR PASS 12

SUMMARY TABLE 1

SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL IN ORDER PERFORMED.
 A CHARACTER FOLLOWING THE PEAK DISCHARGE TIME AND RATE (CFS) INDICATES:
 F-FLAT TOP HYDROGRAPH T-TRUNCATED HYDROGRAPH R-RISING TRUNCATED HYDROGRAPH

XSECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RUNOFF AMOUNT (IN)	ELEVATION (FT)	PEAK DISCHARGE		
					TIME (HR)	RATE (CFS)	RATE (CSM)
RAINFALL OF 2.52 inches AND 6.00 hr DURATION, BEGINS AT .0 hrs.							
RAINFALL NUMBER 7, AMC 2							
MAIN TIME INCREMENT .08 HOURS							
ALTERNATE 11 STORM 1							
XSECTION 1	RUNOFF	.03	1.07	---	2.66	21	700.0
XSECTION 3	RUNOFF	.01	1.98	---	2.50	24	2400.0
XSECTION 5	ADDHYD	.05	1.36	---	2.56	42	840.0
XSECTION 7	RUNOFF	.01	1.97	---	2.46	17	1700.0
XSECTION 10	RUNOFF	.08	1.33	---	2.60	70	875.0
XSECTION 15	RUNOFF	.08	1.98	---	2.56	116	1450.0
XSECTION 20	RUNOFF	.03	1.33	---	2.53	30	1000.0
XSECTION 25	ADDHYD	.11	1.81	---	2.55	145	1318.2
STRUCTURE 30	RESVOR	.11	1.81	1367.64	2.79	85	772.7
XSECTION 35	ADDHYD	.06	1.46	---	2.52	57	950.0
XSECTION 40	ADDHYD	.13	1.38	---	2.56	125	961.5
XSECTION 45	ADDHYD	.24	1.58	---	2.64	193	804.2
STRUCTURE 50	RESVOR	.24	1.57	1364.01	3.21	94	391.7

RAINFALL OF 3.42 inches AND 6.00 hr DURATION, BEGINS AT .0 hrs.							
ALTERNATE 12 STORM 2							
XSECTION 1	RUNOFF	.03	1.79	---	2.64	37	1233.3
XSECTION 3	RUNOFF	.01	2.86	---	2.49	35	3500.0
XSECTION 5	ADDHYD	.05	2.13	---	2.56	66	1320.0
XSECTION 7	RUNOFF	.01	2.85	---	2.46	24	2400.0
XSECTION 10	RUNOFF	.08	2.11	---	2.59	113	1412.5
XSECTION 15	RUNOFF	.08	2.86	---	2.55	165	2062.5
XSECTION 20	RUNOFF	.03	2.11	---	2.53	48	1600.0
XSECTION 25	ADDHYD	.11	2.66	---	2.55	212	1927.3
STRUCTURE 30	RESVOR	.11	2.66	1368.31	2.80	120	1090.9
XSECTION 35	ADDHYD	.06	2.25	---	2.52	88	1466.7

SUMMARY TABLE 1

SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL IN ORDER PERFORMED.
 A CHARACTER FOLLOWING THE PEAK DISCHARGE TIME AND RATE (CFS) INDICATES:
 F-FLAT TOP HYDROGRAPH T-TRUNCATED HYDROGRAPH R-RISING TRUNCATED HYDROGRAPH

XSECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RUNOFF AMOUNT (IN)	ELEVATION (FT)	PEAK DISCHARGE		
					TIME (HR)	RATE (CFS)	RATE (CSM)
ALTERNATE 12 STORM 2							
XSECTION 40	ADDHYD	.13	2.17	---	2.56	198	1523.1
XSECTION 45	ADDHYD	.24	2.39	---	2.60	300	1250.0
STRUCTURE 50	RESVOR	.24	2.39	1364.75	3.09	170	708.3
RAINFALL OF 4.02 inches AND 6.00 hr DURATION, BEGINS AT .0 hrs.							
ALTERNATE 13 STORM 3							
XSECTION 1	RUNOFF	.03	2.30	---	2.64	47	1566.7
XSECTION 3	RUNOFF	.01	3.45	---	2.49	41	4100.0
XSECTION 5	ADDHYD	.05	2.67	---	2.55	83	1660.0
XSECTION 7	RUNOFF	.01	3.45	---	2.45	29	2900.0
XSECTION 10	RUNOFF	.08	2.65	---	2.58	143	1787.5
XSECTION 15	RUNOFF	.08	3.45	---	2.54	197	2462.5
XSECTION 20	RUNOFF	.03	2.65	---	2.52	60	2000.0
XSECTION 25	ADDHYD	.11	3.24	---	2.54	258	2345.5
STRUCTURE 30	RESVOR	.11	3.24	1368.78	2.80	142	1290.9
XSECTION 35	ADDHYD	.06	2.80	---	2.52	109	1816.7
XSECTION 40	ADDHYD	.13	2.71	---	2.56	247	1900.0
XSECTION 45	ADDHYD	.24	2.95	---	2.60	367	1529.2
STRUCTURE 50	RESVOR	.24	2.95	1365.16	3.02	224	933.3
RAINFALL OF 5.94 inches AND 6.00 hr DURATION, BEGINS AT .0 hrs.							
ALTERNATE 16 STORM 6							
XSECTION 1	RUNOFF	.03	4.04	---	2.63	83	2766.7
XSECTION 3	RUNOFF	.01	5.34	---	2.49	63	6300.0
XSECTION 5	ADDHYD	.05	4.45	---	2.56	138	2760.0
XSECTION 7	RUNOFF	.01	5.35	---	2.45	43	4300.0
XSECTION 10	RUNOFF	.08	4.45	---	2.58	236	2950.0

SUMMARY TABLE 1

SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL IN ORDER PERFORMED.
 A CHARACTER FOLLOWING THE PEAK DISCHARGE TIME AND RATE (CFS) INDICATES:
 F-FLAT TOP HYDROGRAPH T-TRUNCATED HYDROGRAPH R-RISING TRUNCATED HYDROGRAPH

XSECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RUNOFF AMOUNT (IN)	ELEVATION (FT)	PEAK DISCHARGE		
					TIME (HR)	RATE (CFS)	RATE (CSM)
ALTERNATE 16 STORM 6							
XSECTION 15	RUNOFF	.08	5.35	---	2.54	301	3762.5
XSECTION 20	RUNOFF	.03	4.45	---	2.52	100	3333.3
XSECTION 25	ADDHYD	.11	5.11	---	2.53	401	3645.5
STRUCTURE 30	RESVOR	.11	5.11	1370.16	2.80	217	1972.7
XSECTION 35	ADDHYD	.06	4.60	---	2.52	176	2933.3
XSECTION 40	ADDHYD	.13	4.52	---	2.55	408	3138.5
XSECTION 45	ADDHYD	.24	4.79	---	2.60	589	2454.2
STRUCTURE 50	RESVOR	.24	4.78	1366.28	2.89	418	1741.7
RAINFALL OF 3.48 inches AND 24.00 hr DURATION, BEGINS AT .0 hrs. RAINFALL NUMBER 2, AMC 2							
ALTERNATE 21 STORM 1							
XSECTION 1	RUNOFF	.03	1.84	---	12.20	30	1000.0
XSECTION 3	RUNOFF	.01	2.91	---	12.07	28	2800.0
XSECTION 5	ADDHYD	.05	2.18	---	12.12	55	1100.0
XSECTION 7	RUNOFF	.01	2.92	---	12.04	19	1900.0
XSECTION 10	RUNOFF	.08	2.16	---	12.16	94	1175.0
XSECTION 15	RUNOFF	.08	2.92	---	12.12	133	1662.5
XSECTION 20	RUNOFF	.03	2.16	---	12.10	40	1333.3
XSECTION 25	ADDHYD	.11	2.72	---	12.11	174	1581.8
STRUCTURE 30	RESVOR	.11	2.72	1367.89	12.35	100	909.1
XSECTION 35	ADDHYD	.06	2.31	---	12.09	73	1216.7
XSECTION 40	ADDHYD	.13	2.22	---	12.13	164	1261.5
XSECTION 45	ADDHYD	.24	2.45	---	12.18	246	1025.0
STRUCTURE 50	RESVOR	.24	2.45	1364.38	12.64	128	533.3

SUMMARY TABLE 1

SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL IN ORDER PERFORMED.
 A CHARACTER FOLLOWING THE PEAK DISCHARGE TIME AND RATE (CFS) INDICATES:
 F-FLAT TOP HYDROGRAPH T-TRUNCATED HYDROGRAPH R-RISING TRUNCATED HYDROGRAPH

XSECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RUNOFF AMOUNT (IN)	ELEVATION (FT)	PEAK DISCHARGE	
					TIME (HR)	RATE (CFS) RATE (CSM)
RAINFALL OF 4.55 inches AND 24.00 hr DURATION, BEGINS AT .0 hrs.						
ALTERNATE 22 STORM 2						
XSECTION 1	RUNOFF	.03	2.77	---	12.20	46 1533.3
XSECTION 3	RUNOFF	.01	3.97	---	12.07	38 3800.0
XSECTION 5	ADDHYD	.05	3.15	---	12.13	79 1580.0
XSECTION 7	RUNOFF	.01	3.97	---	12.04	26 2600.0
XSECTION 10	RUNOFF	.08	3.14	---	12.15	136 1700.0
XSECTION 15	RUNOFF	.08	3.97	---	12.13	179 2237.5
XSECTION 20	RUNOFF	.03	3.14	---	12.09	58 1933.3
XSECTION 25	ADDHYD	.11	3.76	---	12.12	236 2145.5
STRUCTURE 30	RESVOR	.11	3.75	1368.51	12.36	129 1172.7
XSECTION 35	ADDHYD	.06	3.29	---	12.10	103 1716.7
XSECTION 40	ADDHYD	.13	3.20	---	12.13	235 1807.7
XSECTION 45	ADDHYD	.24	3.45	---	12.17	344 1433.3
STRUCTURE 50	RESVOR	.24	3.45	1365.02	12.56	203 845.8

RAINFALL OF 5.25 inches AND 24.00 hr DURATION, BEGINS AT .0 hrs.						
ALTERNATE 23 STORM 3						
XSECTION 1	RUNOFF	.03	3.40	---	12.20	56 1866.7
XSECTION 3	RUNOFF	.01	4.66	---	12.07	44 4400.0
XSECTION 5	ADDHYD	.05	3.80	---	12.13	95 1900.0
XSECTION 7	RUNOFF	.01	4.66	---	12.04	30 3000.0
XSECTION 10	RUNOFF	.08	3.80	---	12.15	164 2050.0
XSECTION 15	RUNOFF	.08	4.66	---	12.12	208 2600.0

SUMMARY TABLE 1

SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL IN ORDER PERFORMED.
 A CHARACTER FOLLOWING THE PEAK DISCHARGE TIME AND RATE (CFS) INDICATES:
 F-FLAT TOP HYDROGRAPH T-TRUNCATED HYDROGRAPH R-RISING TRUNCATED HYDROGRAPH

XSECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RUNOFF AMOUNT (IN)	ELEVATION (FT)	PEAK DISCHARGE		
					TIME (HR)	RATE (CFS)	RATE (CSM)
ALTERNATE 23 STORM		3					
XSECTION 20	RUNOFF	.03	3.80	---	12.10	69	2300.0
XSECTION 25	ADDHYD	.11	4.44	---	12.11	277	2518.2
STRUCTURE 30	RESVOR	.11	4.44	1368.92	12.37	148	1345.5
XSECTION 35	ADDHYD	.06	3.94	---	12.10	123	2050.0
XSECTION 40	ADDHYD	.13	3.86	---	12.13	282	2169.2
XSECTION 45	ADDHYD	.24	4.12	---	12.16	405	1687.5
STRUCTURE 50	RESVOR	.24	4.12	1365.37	12.51	254	1058.3
RAINFALL OF 7.80 inches AND 24.00 hr DURATION, BEGINS AT .0 hrs.							
ALTERNATE 26 STORM		6					
XSECTION 1	RUNOFF	.03	5.78	---	12.19	95	3166.7
XSECTION 3	RUNOFF	.01	7.19	---	12.07	66	6600.0
XSECTION 5	ADDHYD	.05	6.23	---	12.13	153	3060.0
XSECTION 7	RUNOFF	.01	7.20	---	12.04	46	4600.0
XSECTION 10	RUNOFF	.08	6.25	---	12.15	264	3300.0
XSECTION 15	RUNOFF	.08	7.20	---	12.12	314	3925.0
XSECTION 20	RUNOFF	.03	6.25	---	12.09	111	3700.0
XSECTION 25	ADDHYD	.11	6.95	---	12.11	425	3863.6
STRUCTURE 30	RESVOR	.11	6.95	1370.26	12.37	222	2018.2
XSECTION 35	ADDHYD	.06	6.40	---	12.10	195	3250.0
XSECTION 40	ADDHYD	.13	6.31	---	12.13	453	3484.6
XSECTION 45	ADDHYD	.24	6.60	---	12.17	634	2641.7
STRUCTURE 50	RESVOR	.24	6.60	1366.47	12.42	458	1908.3
RAINFALL OF 3.48 inches AND 24.00 hr DURATION, BEGINS AT .0 hrs.							
RAINTABLE NUMBER 8, AMC 2							
ALTERNATE 41 STORM		1					

SUMMARY TABLE 1

SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL IN ORDER PERFORMED.
 A CHARACTER FOLLOWING THE PEAK DISCHARGE TIME AND RATE (CFS) INDICATES:
 F-FLAT TOP HYDROGRAPH T-TRUNCATED HYDROGRAPH R-RISING TRUNCATED HYDROGRAPH

XSECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RUNOFF AMOUNT (IN)	ELEVATION (FT)	PEAK DISCHARGE		
					TIME (HR)	RATE (CFS)	RATE (CSM)
ALTERNATE 41 STORM 1							
XSECTION 1	RUNOFF	.03	1.84	---	12.12	29	966.7
XSECTION 3	RUNOFF	.01	2.92	---	12.01	23	2300.0
XSECTION 5	ADDHYD	.05	2.18	---	12.06	51	1020.0
XSECTION 7	RUNOFF	.01	2.92	---	11.98	15	1500.0
XSECTION 10	RUNOFF	.08	2.16	---	12.07	85	1062.5
XSECTION 15	RUNOFF	.08	2.92	---	12.06	117	1462.5
XSECTION 20	RUNOFF	.03	2.16	---	12.04	34	1133.3
XSECTION 25	ADDHYD	.11	2.72	---	12.05	151	1372.7
STRUCTURE 30	RESVOR	.11	2.72	1367.91	12.27	101	918.2
XSECTION 35	ADDHYD	.06	2.31	---	12.05	66	1100.0
XSECTION 40	ADDHYD	.13	2.22	---	12.06	150	1153.8
XSECTION 45	ADDHYD	.24	2.45	---	12.11	238	991.7
STRUCTURE 50	RESVOR	.24	2.45	1364.47	12.51	136	566.7

RAINFALL OF 4.55 inches AND 24.00 hr DURATION, BEGINS AT .0 hrs.

ALTERNATE 42 STORM 2							
XSECTION 1	RUNOFF	.03	2.77	---	12.12	43	1433.3
XSECTION 3	RUNOFF	.01	3.97	---	12.01	31	3100.0
XSECTION 5	ADDHYD	.05	3.15	---	12.06	73	1460.0
XSECTION 7	RUNOFF	.01	3.97	---	11.98	20	2000.0
XSECTION 10	RUNOFF	.08	3.14	---	12.07	122	1525.0
XSECTION 15	RUNOFF	.08	3.97	---	12.06	156	1950.0
XSECTION 20	RUNOFF	.03	3.14	---	12.03	48	1600.0

SUMMARY TABLE 1

SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL IN ORDER PERFORMED.
 A CHARACTER FOLLOWING THE PEAK DISCHARGE TIME AND RATE (CFS) INDICATES:
 F-FLAT TOP HYDROGRAPH T-TRUNCATED HYDROGRAPH R-RISING TRUNCATED HYDROGRAPH

XSECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RUNOFF AMOUNT (IN)	ELEVATION (FT)	PEAK DISCHARGE		
					TIME (HR)	RATE (CFS)	RATE (CSM)
ALTERNATE 42 STORM 2							
XSECTION 25	ADDHYD	.11	3.76	---	12.05	205	1863.6
STRUCTURE 30	RESVOR	.11	3.75	1368.53	12.28	130	1181.8
XSECTION 35	ADDHYD	.06	3.29	---	12.05	92	1533.3
XSECTION 40	ADDHYD	.13	3.21	---	12.06	213	1638.5
XSECTION 45	ADDHYD	.24	3.45	---	12.10	328	1366.7
STRUCTURE 50	RESVOR	.24	3.45	1365.11	12.43	216	900.0
RAINFALL OF 5.25 inches AND 24.00 hr DURATION, BEGINS AT .0 hrs.							
ALTERNATE 43 STORM 3							
XSECTION 1	RUNOFF	.03	3.40	---	12.12	52	1733.3
XSECTION 3	RUNOFF	.01	4.66	---	12.01	36	3600.0
XSECTION 5	ADDHYD	.05	3.80	---	12.06	87	1740.0
XSECTION 7	RUNOFF	.01	4.66	---	11.98	23	2300.0
XSECTION 10	RUNOFF	.08	3.80	---	12.07	146	1825.0
XSECTION 15	RUNOFF	.08	4.66	---	12.06	182	2275.0
XSECTION 20	RUNOFF	.03	3.80	---	12.03	58	1933.3
XSECTION 25	ADDHYD	.11	4.44	---	12.05	240	2181.8
STRUCTURE 30	RESVOR	.11	4.44	1368.93	12.29	148	1345.5
XSECTION 35	ADDHYD	.06	3.95	---	12.05	110	1833.3
XSECTION 40	ADDHYD	.13	3.86	---	12.06	256	1969.2
XSECTION 45	ADDHYD	.24	4.12	---	12.10	386	1608.3
STRUCTURE 50	RESVOR	.24	4.12	1365.47	12.40	268	1116.7
RAINFALL OF 7.80 inches AND 24.00 hr DURATION, BEGINS AT .0 hrs.							
ALTERNATE 46 STORM 6							
XSECTION 1	RUNOFF	.03	5.78	---	12.12	88	2933.3
XSECTION 3	RUNOFF	.01	7.19	---	12.01	54	5400.0

SUMMARY TABLE 1

SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL IN ORDER PERFORMED.
 A CHARACTER FOLLOWING THE PEAK DISCHARGE TIME AND RATE (CFS) INDICATES:
 F-FLAT TOP HYDROGRAPH T-TRUNCATED HYDROGRAPH R-RISING TRUNCATED HYDROGRAPH

XSECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RUNOFF AMOUNT (IN)	ELEVATION (FT)	PEAK DISCHARGE		
					TIME (HR)	RATE (CFS)	RATE (CSM)
ALTERNATE 46 STORM 6							
XSECTION 5	ADDHYD	.05	6.23	---	12.07	140	2800.0
XSECTION 7	RUNOFF	.01	7.19	---	11.98	35	3500.0
XSECTION 10	RUNOFF	.08	6.25	---	12.07	234	2925.0
XSECTION 15	RUNOFF	.08	7.20	---	12.05	274	3425.0
XSECTION 20	RUNOFF	.03	6.25	---	12.03	93	3100.0
XSECTION 25	ADDHYD	.11	6.95	---	12.05	368	3345.5
STRUCTURE 30	RESVOR	.11	6.95	1370.29	12.29	223	2027.3
XSECTION 35	ADDHYD	.06	6.39	---	12.05	174	2900.0
XSECTION 40	ADDHYD	.13	6.31	---	12.06	408	3138.5
XSECTION 45	ADDHYD	.24	6.60	---	12.10	600	2500.0
STRUCTURE 50	RESVOR	.24	6.60	1366.55	12.32	475	1979.2

SUMMARY TABLE 3

STORM DISCHARGES (CFS) AT XSECTIONS AND STRUCTURES FOR ALL ALTERNATES

XSECTION/ STRUCTURE ID	DRAINAGE AREA (SQ MI)	STORM NUMBERS.....			
		1	2	3	6
STRUCTURE 50 .24					
ALTERNATE 11		94	*****	*****	*****
ALTERNATE 12		*****	170	*****	*****
ALTERNATE 13		*****	*****	224	*****
ALTERNATE 16		*****	*****	*****	418
ALTERNATE 21		128	*****	*****	*****
ALTERNATE 22		*****	203	*****	*****
ALTERNATE 23		*****	*****	254	*****
ALTERNATE 26		*****	*****	*****	458
ALTERNATE 41		136	*****	*****	*****
ALTERNATE 42		*****	216	*****	*****
ALTERNATE 43		*****	*****	268	*****
ALTERNATE 46		*****	*****	*****	475
STRUCTURE 30 .11					
ALTERNATE 11		85	*****	*****	*****
ALTERNATE 12		*****	120	*****	*****
ALTERNATE 13		*****	*****	142	*****
ALTERNATE 16		*****	*****	*****	217
ALTERNATE 21		100	*****	*****	*****
ALTERNATE 22		*****	129	*****	*****
ALTERNATE 23		*****	*****	148	*****
ALTERNATE 26		*****	*****	*****	222
ALTERNATE 41		101	*****	*****	*****
ALTERNATE 42		*****	130	*****	*****
ALTERNATE 43		*****	*****	148	*****
ALTERNATE 46		*****	*****	*****	223
XSECTION 1 .03					
ALTERNATE 11		21	*****	*****	*****
ALTERNATE 12		*****	37	*****	*****
ALTERNATE 13		*****	*****	47	*****
ALTERNATE 16		*****	*****	*****	83
ALTERNATE 21		30	*****	*****	*****
ALTERNATE 22		*****	46	*****	*****
ALTERNATE 23		*****	*****	56	*****

SUMMARY TABLE 3

STORM DISCHARGES (CFS) AT XSECTIONS AND STRUCTURES FOR ALL ALTERNATES

XSECTION/ STRUCTURE ID	DRAINAGE AREA (SQ MI)	STORM NUMBERS.....			
		1	2	3	6

XSECTION 1	.03				
ALTERNATE 26		*****	*****	*****	95
ALTERNATE 41		*****	*****	*****	*****
ALTERNATE 42		*****	43	*****	*****
ALTERNATE 43		*****	*****	52	*****
ALTERNATE 46		*****	*****	*****	88

XSECTION 3	.01				
ALTERNATE 11		*****	24	*****	*****
ALTERNATE 12		*****	*****	35	*****
ALTERNATE 13		*****	*****	*****	41
ALTERNATE 16		*****	*****	*****	63
ALTERNATE 21		*****	28	*****	*****
ALTERNATE 22		*****	*****	38	*****
ALTERNATE 23		*****	*****	*****	44
ALTERNATE 26		*****	*****	*****	66
ALTERNATE 41		*****	23	*****	*****
ALTERNATE 42		*****	*****	31	*****
ALTERNATE 43		*****	*****	*****	36
ALTERNATE 46		*****	*****	*****	54

XSECTION 5	.05				
ALTERNATE 11		*****	42	*****	*****
ALTERNATE 12		*****	*****	66	*****
ALTERNATE 13		*****	*****	*****	83
ALTERNATE 16		*****	*****	*****	138
ALTERNATE 21		*****	55	*****	*****
ALTERNATE 22		*****	*****	79	*****
ALTERNATE 23		*****	*****	*****	95
ALTERNATE 26		*****	*****	*****	153
ALTERNATE 41		*****	51	*****	*****
ALTERNATE 42		*****	*****	73	*****
ALTERNATE 43		*****	*****	*****	87
ALTERNATE 46		*****	*****	*****	140

XSECTION 7	.01				
ALTERNATE 11		*****	17	*****	*****
ALTERNATE 12		*****	*****	24	*****

SUMMARY TABLE 3

STORM DISCHARGES (CFS) AT XSECTIONS AND STRUCTURES FOR ALL ALTERNATES

XSECTION/ STRUCTURE ID	DRAINAGE AREA (SQ MI)	STORM NUMBERS.....			
		1	2	3	6

XSECTION 7	.01				
ALTERNATE 13		*****	*****	29	*****
ALTERNATE 16		*****	*****	*****	43
ALTERNATE 21		*****	19	*****	*****
ALTERNATE 22		*****	*****	26	*****
ALTERNATE 23		*****	*****	*****	30
ALTERNATE 26		*****	*****	*****	46
ALTERNATE 41		*****	15	*****	*****
ALTERNATE 42		*****	*****	20	*****
ALTERNATE 43		*****	*****	*****	23
ALTERNATE 46		*****	*****	*****	35

XSECTION 10	.08				
ALTERNATE 11		*****	70	*****	*****
ALTERNATE 12		*****	*****	113	*****
ALTERNATE 13		*****	*****	*****	143
ALTERNATE 16		*****	*****	*****	*****
ALTERNATE 21		*****	94	*****	*****
ALTERNATE 22		*****	*****	136	*****
ALTERNATE 23		*****	*****	*****	164
ALTERNATE 26		*****	*****	*****	*****
ALTERNATE 41		*****	85	*****	*****
ALTERNATE 42		*****	*****	122	*****
ALTERNATE 43		*****	*****	*****	146
ALTERNATE 46		*****	*****	*****	234

XSECTION 15	.08				
ALTERNATE 11		*****	116	*****	*****
ALTERNATE 12		*****	*****	165	*****
ALTERNATE 13		*****	*****	*****	197
ALTERNATE 16		*****	*****	*****	*****
ALTERNATE 21		*****	133	*****	*****
ALTERNATE 22		*****	*****	179	*****
ALTERNATE 23		*****	*****	*****	208
ALTERNATE 26		*****	*****	*****	314
ALTERNATE 41		*****	117	*****	*****
ALTERNATE 42		*****	*****	156	*****

SUMMARY TABLE 3

STORM DISCHARGES (CFS) AT XSECTIONS AND STRUCTURES FOR ALL ALTERNATES

XSECTION/ STRUCTURE ID	DRAINAGE AREA (SQ MI)	STORM NUMBERS.....			
		1	2	3	6

XSECTION 15	.08				
ALTERNATE 43		*****	*****	182	*****
ALTERNATE 46		*****	*****	*****	274

XSECTION 20	.03				
ALTERNATE 11		30	*****	*****	*****
ALTERNATE 12		*****	48	*****	*****
ALTERNATE 13		*****	*****	60	*****
ALTERNATE 16		*****	*****	*****	100
ALTERNATE 21		40	*****	*****	*****
ALTERNATE 22		*****	58	*****	*****
ALTERNATE 23		*****	*****	69	*****
ALTERNATE 26		*****	*****	*****	111
ALTERNATE 41		34	*****	*****	*****
ALTERNATE 42		*****	48	*****	*****
ALTERNATE 43		*****	*****	58	*****
ALTERNATE 46		*****	*****	*****	93

XSECTION 25	.11				
ALTERNATE 11		145	*****	*****	*****
ALTERNATE 12		*****	212	*****	*****
ALTERNATE 13		*****	*****	258	*****
ALTERNATE 16		*****	*****	*****	401
ALTERNATE 21		174	*****	*****	*****
ALTERNATE 22		*****	236	*****	*****
ALTERNATE 23		*****	*****	277	*****
ALTERNATE 26		*****	*****	*****	425
ALTERNATE 41		151	*****	*****	*****
ALTERNATE 42		*****	205	*****	*****
ALTERNATE 43		*****	*****	240	*****
ALTERNATE 46		*****	*****	*****	368

XSECTION 35	.06				
ALTERNATE 11		57	*****	*****	*****
ALTERNATE 12		*****	88	*****	*****
ALTERNATE 13		*****	*****	109	*****
ALTERNATE 16		*****	*****	*****	176
ALTERNATE 21		73	*****	*****	*****

SUMMARY TABLE 3

STORM DISCHARGES (CFS) AT XSECTIONS AND STRUCTURES FOR ALL ALTERNATES

XSECTION/ STRUCTURE ID	DRAINAGE AREA (SQ MI)	STORM NUMBERS.....			
		1	2	3	6
XSECTION 35 .06					
ALTERNATE 22		*****	103	*****	*****
ALTERNATE 23		*****	*****	123	*****
ALTERNATE 26		*****	*****	*****	195
ALTERNATE 41		*****	66	*****	*****
ALTERNATE 42		*****	92	*****	*****
ALTERNATE 43		*****	*****	110	*****
ALTERNATE 46		*****	*****	*****	174
XSECTION 40 .13					
ALTERNATE 11		*****	125	*****	*****
ALTERNATE 12		*****	*****	198	*****
ALTERNATE 13		*****	*****	*****	247
ALTERNATE 16		*****	*****	*****	408
ALTERNATE 21		*****	164	*****	*****
ALTERNATE 22		*****	*****	235	*****
ALTERNATE 23		*****	*****	*****	282
ALTERNATE 26		*****	*****	*****	453
ALTERNATE 41		*****	150	*****	*****
ALTERNATE 42		*****	*****	213	*****
ALTERNATE 43		*****	*****	*****	256
ALTERNATE 46		*****	*****	*****	408
XSECTION 45 .24					
ALTERNATE 11		*****	193	*****	*****
ALTERNATE 12		*****	*****	300	*****
ALTERNATE 13		*****	*****	*****	367
ALTERNATE 16		*****	*****	*****	589
ALTERNATE 21		*****	246	*****	*****
ALTERNATE 22		*****	*****	344	*****
ALTERNATE 23		*****	*****	*****	405
ALTERNATE 26		*****	*****	*****	634
ALTERNATE 41		*****	238	*****	*****
ALTERNATE 42		*****	*****	328	*****
ALTERNATE 43		*****	*****	*****	386
ALTERNATE 46		*****	*****	*****	600

END OF 1 JOBS IN THIS RUN

SCS TR-20, VERSION 10/01/90
FILES

INPUT = kppr3.t20
OUTPUT = kppr3.out , DATED 07/12/**,10:38:01

FILES GENERATED - DATED 07/12/**,10:38:01

NONE!

*** TR-20 RUN COMPLETED ***