CITY OF PHOENIX

UPDATE OF NORTH CENTRAL AREA MASTER STORM DRAINAGE STUDY (EAST HALF)

PROJECT NO. ST 893248

Submitted By

NBS/LOWRY

ENGINEERS & PLANNERS

September 1989

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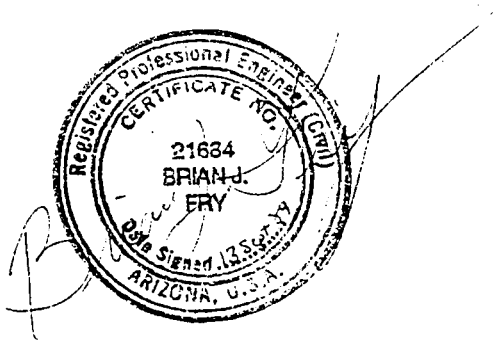
PREPARED FOR:

CITY OF PHOENIX



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EXECUTIVE SUMMARY

ABSTRACT

This North Central Storm Drain Study Update has been prepared for the City of Phoenix to identify stormdrain flows, locations, and sizes within the Upper East Fork of Cave Creek watershed for the two year frequency storm. The recommended system includes detention basin sizing and outflow considerations for the 100-year frequency storm as recommended in the "Upper East Fork Cave Creek Detention Area Sizing Study Engineering Design Descriptions." The "North Central Area Master Storm Drainage Study Update - Preliminary System Layout" presents the recommended plan developed in this report. The Detention Area Sizing Study serves as a companion volume from which to base the design of stormdrain facilities within the East Fork of Cave Creek watershed. As a result of this study the following conclusions and recommendations are made.

CONCLUSIONS

1. The storm drainage concept recommended in this plan will provide two-year flood protection within the East Fork Cave Creek watershed with the detention basins relatively dry and free from standing water.

2. The storm drainage concept recommended in this plan will work in conjunction with the 100-year system planned by the Flood Control District of Maricopa County as presented in the Upper East Fork Cave Creek Area Drainage Master Study (ADMS) and the Detention Area Sizing Study.

3. The "North Central Area Master Storm Drainage Study Update Preliminary System Layout" plans show the proposed two-year system.

RECOMMENDATIONS

1. That the City of Phoenix undertake a phased capital improvement program to implement the storm drainage plan recommended in this study.

2. That the City of Phoenix coordinate implementation of this plan with the Flood Control District of Maricopa County to ensure integration with the 100-year concept presented in the Upper East Fork Cave Creek Area Drainage Master Study (ADMS) and the Detention Area Sizing Study.

CHAPTER 1
INTRODUCTION

OBJECTIVES

This North Central Storm Drain Study Update has been prepared for the City of Phoenix to identify stormdrain flows, locations, and sizes within the Upper East Fork of Cave Creek watershed for the two year frequency storm. The recommended system includes detention basin sizing and outflow considerations for the 100-year frequency storm as recommended in the "Upper East Fork Cave Creek Detention Area Sizing Study Engineering Design Descriptions."

SCOPE OF WORK

Specific work items for this study are outlined in the scope of work for City of Phoenix project number ST-893248, dated June 15, 1989, and are summarized below:

1. Prepare TR-20 model for the area based on an update of the model prepared in the Upper East Fork Cave Creek Area Drainage Master Study (ADMS) for the Flood Control District of Maricopa County and the City of Phoenix in 1977. The model is to use the City of Phoenix 24 hour rainfall distribution for the two-year frequency storm and include existing stormdrain facilities, facilities under design, proposed facilities and additional facilities agreed upon between the City and the Consultant.

2. Recommend a two-year storm drain concept including storm drain sizes and locations, incorporating the findings of the 1989 Detention Area Sizing Study to verify capacity availability for 100-year detention basin outfalls.

3. Research major utility conflicts and prepare 1" = 400' scale plan and profile drawings showing ground surface, proposed storm drains, major utility conflicts, and storm drain hydraulic grade line location.

4. Prepare a master plan update report outlining methodology, findings, and recommendations from the study.

STUDY AREA

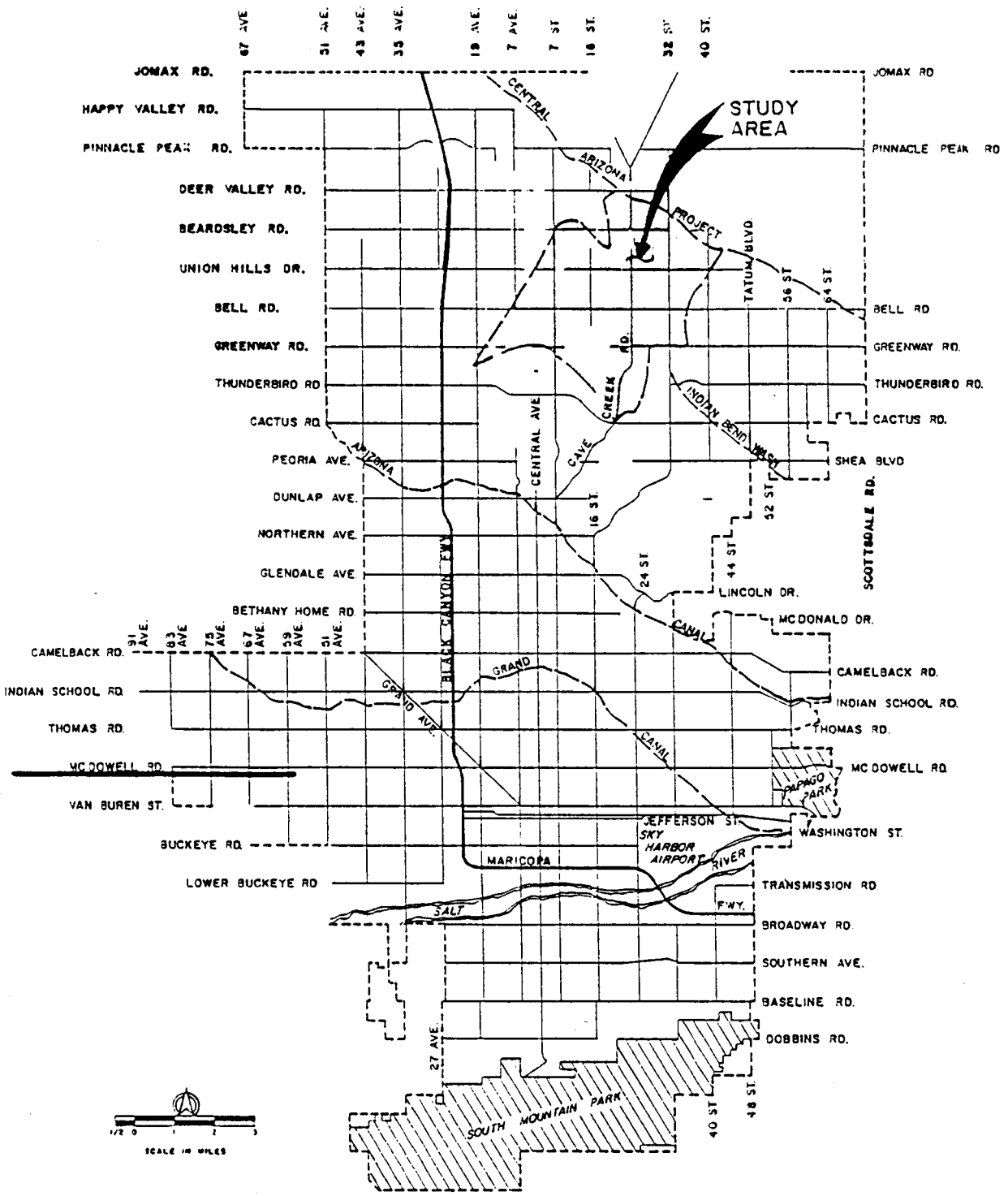
The Upper East Fork Cave Creek watershed is shown on **Figure 1**. It includes approximately 16 square miles. The area is bounded on the north by the Granite Reef Aqueduct of the Central Arizona Project. The Paradise Valley Detention Structure prevents runoff from entering the study area from the north. The east and southeast edge of the study area is the Cave Creek - Indian Bend Wash divide. This divide is now expected to be relocated to follow the proposed Squaw Peak corridor alignment. The watershed is bounded by Lookout Mountain to the south, and by Cave Creek to the west.

ACKNOWLEDGEMENTS

The completion of this study was made possible by the assistance and data furnished by many individuals whose valuable assistance is gratefully acknowledged.

We especially wish to thank Mr. Ross Blakely, Mr. Bob McClure, and Mr. Roger Olsen of the City of Phoenix for their close involvement and assistance in the completion of this study.

Those individuals on the NBS/Lowry staff who contributed to this study are as follows: Mr. Richard Perry, P.E. served as principal in charge. Mr. Brian Fry, P.E. served as project manager, and Mr. Dennis Phinney, P.E. served as project engineer. Portions of the engineering work were completed by Mr. W. Dan Boivin, R.L.S. Drafting was performed by Mr. Russell Ray. Graphics were prepared by Mr. Sam Maccherola. Typing and proofreading were done by Mrs. Debra Thomsen.



VICINITY MAP

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FIGURE 1

CHAPTER 2
HYDROLOGY

PREVIOUS STUDIES

A number of prior studies by the Flood Control District of Maricopa County and the City of Phoenix serve as the foundation for this study. A summary of the studies used follows:

City of Phoenix - North Central Area Master Storm Drainage Study (East Half)

Storm sewers in the study area west of 32nd Street were master planned by the City of Phoenix in 1981. These existing and proposed master planned storm sewers provide two-year flood protection. These sewers are identified in the North Central Area Master Storm Drainage Study.

Northeast Storm Drainage Study

Storm sewers in the study area east of 32nd Street were master planned by the City of Phoenix in 1977. These existing and proposed master planned storm sewers provide two-year flood protection. These sewers are identified in the Northeast Storm Drainage Study.

Upper East Fork Cave Creek Area Drainage Master Study (ADMS)

Flood control facilities in the study area were master planned by the Flood Control District of Maricopa County, the City of Phoenix, and the Maricopa County Highway Department in 1987. The Upper East Fork Cave Creek Area Drainage Master Study recommended a joint use concept of detention basins, open channels, parks and recreational trails to provide 100-year flood protection in the Upper East Fork Cave Creek watershed.

Upper East Fork Cave Creek Detention Area Sizing Study

The detention basins recommended in the ADMS were developed to a predesign level, the hydrology was revised and updated to coordinate the Flood Control District 100-year flood protection goals with the City of Phoenix two-year storm drain master plans. The detention basins were sized for the 100-year storm assuming all 100-year master planned storm drain facilities upstream from the basins were in place with the basin outlets sized to limit the peak outlet flows to the capacity of the previously master planned two-year system.

Integration of Two-Year Storm Sewers into 100-Year Detention Concept

The purpose of this study is to update the North Central Storm Drain Study (East Half) to incorporate the effects of the detention basins on the two-year storm drain system. A two-year system is presented incorporating the preliminary design of the detention basins from the Detention Area Sizing Study. The Detention Area Sizing Study serves as a companion volume from which to base the design of stormdrain facilities within the East Fork of Cave Creek watershed.

TR-20 WATERSHED MODEL

General Model Description

To be consistent with previous studies, the rainfall runoff relationship for the study area was modeled using the U.S. Soil Conservation Service TR-20 Computer Program. TR-20 is a single rainfall event model which computes direct runoff resulting from any synthetic or natural rainstorm. It develops flood hydrographs from runoff and routes the flow through stream channels and detention basins. It combines the routed hydrograph with those computed from tributaries and computes the peak discharges and their times of occurrence.

The TR-20 computer program is based on procedures described in SCS National Engineering Handbook, Section 4. Individual subwatershed characteristics that affect runoff are described by variables that have been developed from field measurements taken in numerous watersheds throughout the country.

In preparing the Upper East Fork Cave Creek ADMS, the Upper East Fork watershed was divided into 144 subwatersheds based on existing points of concentration and homogeneity of hydrologic characteristics. A mass curve of runoff is developed for each subwatershed based on the rainfall volume, rainfall distribution, and the runoff curve number (CN). CN's are determined by the user based on soil type, land use and hydrologic condition information.

Runoff hydrographs computed for subwatersheds are combined into composite hydrographs and routed through the watershed in the natural flow sequence as specified by the user. Recent TR-20 versions replace the convex routing method used in previous versions with a Modified Attenuated-Kinematic (Att-Kin) method which takes into account channel storage and hydrograph attenuation as the hydrograph is routed through the reach. With the Att-Kin method, the discharge-flow area relationship for simple cross sections (rectangular, triangular, trapezoidal) is fit by a power curve function of the form $Q = XA^m$, where Q and A are the discharge and area at any distance and time. The coefficient X and the exponent m are specified by the user for a representative channel cross section within the reach. These coefficients can be taken from nomographs or equations. A representative cross section can be entered for irregular channel shapes in which case the program will compute X and m values.

HYDROLOGIC CRITERIA

The development of the TR-20 model of the Upper East Fork Cave Creek watershed is described in detail in the Area Drainage Master Study Report. Parameters used in preparing the TR-20 model for this North Central Storm Drain Update may be summarized as follows:

1. **Rainfall Depth** for a 2-year 24-hour storm of 1.44 inches was used to be consistent with the previous studies.

2. **24-hour Rainfall Distribution** was based on the City of Phoenix S-Curve which is somewhat steeper and more conservative than either the Type I or Type II curves normally used by the Soil Conservation Service. This is also consistent with the previous studies.

3. **Curve Numbers** were developed based on a weighted average of computed soil and development types in each drainage subarea at build-out and are identical to those used in the Upper East Fork Cave Creek ADMS.

4. **Time of Concentration for Overland Flow** was estimated using the Upland Method. A minimum time of concentration of 10 minutes was used.

5. **Time of Concentration for Flow in Gutters** was estimated using figures contained in the "City of Phoenix Storm Drain Design Manual."

COMPUTED HYDROLOGY

The subarea designations, areas, runoff curve numbers, and times of concentration are from the ADMS and are reproduced in **Table 1**. The proposed storm drain pipe routing parameters were computed based on the recommended size and slope of the storm drain pipes. The parameters X and m required for the TR-20 routing are tabulated in **Table 2**.

Plate A summarizes computed 2-year runoff throughout the Upper East Fork Cave Creek watershed with the recommended detention basins in place. The 100-year design flows for the detention basin outlets are shown in parenthesis. **Plate B** shows the TR-20 subareas and flow

routing paths. The structure numbers used for the detention basins are as follows:

Basin No.	Location	Structure No.
1	Upper East Fork at Beardsley Road	08
2	9th Street at Union Hills Drive	59
3A	Upper East Fork at Cave Creek Road	43
3B	Upper East Fork at 20th Street	44
4	Paradise Valley Park	33
5	9th Street at Campobello	69

NORTH CENTRAL AREA MASTER STORM DRAINAGE STUDY UPDATE

DRAINAGE AREA NO.	AREA [SQ. MI.]	RUNOFF CURVE NO.	TIME OF CONCENT. [HRS.]
1	0.148	95	0.30
2	0.097	95	0.19
3	0.047	77	0.36
4	0.195	95	0.22
5	0.125	77	0.56
6	0.109	81	0.82
7	0.117	77	0.69
8	0.131	78	0.75
9	0.198	77	0.93
10	0.095	77	0.56
11	0.234	77	0.84
12	0.07	77	0.42
13	0.125	82	0.61
14	0.177	83	0.39
15	0.073	82	0.89
16	0.119	86	0.54
17	0.059	95	0.17
18	0.184	78	0.72
19	0.022	95	0.17
20	0.064	95	0.17
21	0.189	83	0.58
22	0.153	83	0.47
23	0.091	95	0.23
24	0.198	81	0.46
25	0.089	83	0.43
26	0.067	85	0.31
27	0.188	80	1.20
28	0.156	79	0.93
29	0.25	78	1.03
30	0.25	79	0.97
31	0.084	77	0.58
32	0.18	77	0.93
33	0.234	77	1.14
34	0.125	84	0.73
35	0.125	83	0.49
36	0.125	83	0.48
37	0.125	83	0.25
38	0.125	79	0.44
39	0.125	85	0.53
40	0.094	82	0.51
41	0.172	84	0.38
42	0.078	83	0.22
43	0.047	86	0.17
44	0.125	83	0.30
45	0.125	86	0.51
46	0.125	82	0.29
47	0.125	82	0.31

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TABLE 1

NORTH CENTRAL AREA MASTER STORM DRAINAGE STUDY UPDATE

DRAINAGE AREA NO.	AREA [SQ. MI.]	RUNOFF CURVE NO.	TIME OF CONCENT. [HRS.]
48	0.125	79	0.60
49	0.086	95	0.19
50	0.134	77	0.57
51	0.063	83	0.18
52	0.063	79	0.56
53	0.084	84	0.31
54	0.061	79	0.23
55	0.063	83	0.25
56	0.063	82	0.25
57	0.063	82	0.25
58	0.063	84	0.25
59	0.063	82	0.25
60	0.063	81	0.49
61	0.102	83	0.25
62	0.13	79	0.88
63	0.141	84	0.34
64	0.25	82	0.33
65	0.063	77	0.49
66	0.063	83	0.46
67	0.063	88	0.25
68	0.063	85	0.25
69	0.063	81	0.62
70	0.063	86	0.25
71	0.125	85	0.49
72	0.125	83	0.49
73	0.197	80	0.79
74	0.063	90	0.24
75	0.063	95	0.52
76	0.063	86	0.25
77	0.063	77	0.38
78	0.063	86	0.27
79	0.063	88	0.25
80	0.063	83	0.45
81	0.063	77	0.52
82	0.063	84	0.27
83	0.063	81	0.52
84	0.063	78	0.52
85	0.063	80	0.52
86	0.063	86	0.27
87	0.063	83	0.52
88	0.094	87	0.75
89	0.047	84	0.39
90	0.109	85	0.63
91	0.125	86	0.47
92	0.125	86	0.47
93	0.195	84	0.45
94	0.139	84	0.34
95	0.125	86	0.98

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TABLE 1

NORTH CENTRAL AREA MASTER STORM DRAINAGE STUDY UPDATE

DRAINAGE AREA NO.	AREA [SQ. MI.]	RUNOFF CURVE NO.	TIME OF CONCENT. [HRS.]
96	0.125	82	0.51
97	0.188	87	0.53
98	0.094	86	0.37
99	0.094	86	0.49
100	0.078	86	0.39
101	0.047	89	0.52
102	0.063	82	0.53
103	0.081	84	0.25
104	0.069	78	0.67
105	0.063	78	0.63
106	0.063	79	0.56
107	0.059	82	0.42
108	0.025	79	0.28
109	0.063	84	0.29
110	0.073	78	0.56
111	0.07	77	0.56
112	0.061	77	0.46
113	0.053	86	0.52
114	0.128	77	1.19
115	0.094	82	0.45
116	0.094	79	0.77
117	0.313	77	2.38
118	0.231	81	1.59
119	0.231	81	1.05
120	0.231	87	0.30
121	0.25	95	0.17
122	0.355	85	0.29
123	0.213	95	0.25
124	0.219	84	0.25
125	0.117	95	9.17
126	0.158	95	0.28
127	0.159	82	0.21
128	0.036	80	0.17
129	0.108	82	0.17
13	0.031	91	0.17
131	0.119	86	0.27
132	0.145	88	0.27
133	0.08	95	0.17
134	0.197	85	0.31
135	0.042	95	0.17
136	0.066	95	0.17
137	0.078	79	0.49
138	0.203	84	0.24
139	0.188	87	0.43
140	0.125	86	0.44
141	0.188	87	0.53
142	0.25	83	1.39
TOTAL	16.46		

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TABLE 1

*** M AND X FOR CIRCULAR PIPES ***

DRAINAGE AREA NO.	STREET	SLOPE [FT/FT]	ROUGHNESS n	DIAM. D [IN.]	X	M	FLOWING FULL CAP.
3	CAVE CRK	0.0025	0.012	60	4.38	1.25	141
5	CAVE CRK	0.0025	0.012	85	4.64	1.25	357
18	BEARDSLEY	0.0112	0.012	24	7.96	1.25	26
8	BEARDSLEY	0.0033	0.012	60	5.03	1.25	162
24	CAVE CRK	0.016	0.012	30	9.87	1.25	56
26	UN. HILLS	0.002	0.012	48	3.78	1.25	70
27	UN. HILLS	0.003	0.012	36	4.41	1.25	40
84,85	20th ST.	0.0033	0.012	108	5.55	1.25	777
91	BELL	0.007	0.012	36	6.73	1.25	60
90	BELL	0.007	0.012	48	7.06	1.25	130
88	BELL	0.007	0.012	60	7.33	1.25	236
88	CAVE CRK	0.0075	0.012	30	6.76	1.25	38
87	BELL	0.001	0.012	60	2.77	1.25	89
84	BELL	0.001	0.012	60	2.77	1.25	89
105	20th ST.	0.0044	0.012	78	6.07	1.25	377
104	20th ST.	0.0041	0.012	96	6.07	1.25	633
83	BELL	0.0068	0.012	84	7.64	1.25	571
107,106	18th ST.	0.0059	0.012	84	7.12	1.25	532
33,93	32nd ST.	0.005	0.012	36	5.69	1.25	51
95,96	32nd ST.	0.003	0.012	54	4.72	1.25	117
142	32nd ST.	0.0042	0.012	60	5.68	1.25	183
140	GNWY PKWY	0.0023	0.012	48	4.05	1.25	75
139	GNWY PKWY	0.0027	0.012	48	4.39	1.25	81
100	CAVE CRK	0.011	0.012	30	8.19	1.25	47
139	CAVE CRK	0.0025	0.012	72	4.52	1.25	229
129	ROBERTS	0.019	0.012	36	11.09	1.25	100
131	20th ST.	0.003	0.012	60	4.80	1.25	155
126	???	0.009	0.012	60	8.31	1.25	268
125	22nd ST.	0.0035	0.012	84	5.48	1.25	409
124	WALTMANN	0.002	0.012	96	4.24	1.25	442
22	UN HILLS	0.005	0.012	48	5.97	1.25	110
23	UN HILLS	0.0184	0.012	36	10.91	1.25	98
41	N-S	0.006	0.012	48	6.54	1.25	121
41	GROVERS	0.005	0.012	60	6.20	1.25	200
81	16th ST.	0.005	0.012	60	6.20	1.25	200
80	16th ST.	0.0065	0.012	60	7.06	1.25	227
80	BELL	0.015	0.012	18	8.78	1.25	14
109	16th ST.	0.0019	0.012	84	4.04	1.25	302
21	16th ST.	0.005	0.012	36	5.69	1.25	51
45	???	0.001	0.012	48	2.67	1.25	49
59	UN HILLS	0.004	0.012	60	5.54	1.25	178
60	UN HILLS	0.0004	0.012	72	1.81	1.25	92
60	UN HILLS	0.007	0.012	48	7.06	1.25	130
61	UN HILLS	0.0004	0.012	85	1.86	1.25	143

*** M AND X FOR CIRCULAR PIPES ***

DRAINAGE AREA NO.	STREET	SLOPE [FT/FT]	ROUGHNESS n	DIAM. D [IN.]	X	M	FLOWING FULL CAP.
62	UN HILLS	0.0004	0.012	85	1.86	1.25	143
58	7th ST.	0.007	0.012	36	6.73	1.25	60
60	7th ST.	0.007	0.012	36	6.73	1.25	60
66	9th ST.	0.005	0.012	72	6.39	1.25	324
67	9th ST.	0.005	0.012	84	6.55	1.25	489
69	9th ST.	0.005	0.012	102	6.77	1.25	821
75	9th ST.	0.0016	0.012	96	3.79	1.25	395
75	BELL	0.007	0.012	36	6.73	1.25	60
112	9th ST.	0.0016	0.012	96	3.79	1.25	395
65	7th ST.	0.005	0.012	48	5.97	1.25	110
68	7th ST.	0.005	0.012	48	5.97	1.25	110
70	7th ST.	0.003	0.012	60	4.80	1.25	155
74	7th ST.	0.001	0.012	72	2.86	1.25	145
113	7th ST.	0.0051	0.012	84	6.62	1.25	494
113	7th ST.	0.0028	0.012	36	4.26	1.25	38
74	BELL	0.005	0.012	30	5.52	1.25	31

CHAPTER 3
HYDRAULIC DESIGN

STORM DRAIN SIZING CRITERIA

The storm drain system was sized based on the flows identified in Chapter 2 Hydrology and shown on Plate A. The following criteria were used in storm drain sizing.

1. All stormdrains were sized for concrete pipe with a Manning's n of 0.012.
2. All form and manhole losses have been neglected.
3. Pipes were sized with the hydraulic grade line in the pipe except for local variations.
4. A minimum 6 foot depth of cover over the storm sewer soffit was maintained when possible to allow sewer taps to pass over the stormdrain.
5. Minimum velocities of 5 fps were maintained when possible with an absolute minimum velocity of 2 fps under design flow conditions.

Water, gas, and sanitary sewer utilities were located using the City of Phoenix quarter section maps and were avoided when possible, unavoidable conflicts have been called out on the Preliminary System Layout Plans.

The hydraulic grades for stormdrains at their points of discharge into the Greenway Channel were estimated from HEC-2 water surface profile runs for the computed two- and 100-year flows, depending on the design frequency of the pipe. The HEC-2 model was that used by Hook Engineering for their Greenway Channel design. The two-year flows were as computed in this study. The 100-year flows were as computed in the Detention Area Sizing Study.

The hydraulic grade lines were computed using the Mannings equation for pipes flowing full. HGL's are plotted only where they extend outside the pipe. Hydraulic grade lines within the pipe are indicated with a note.

CHAPTER 4
PRELIMINARY PLAN

INTRODUCTION

This chapter is a companion chapter to the "North Central Area Master Storm Drainage Study Update Preliminary System Layout" plans prepared for this study under separate cover. The chapter is divided into eleven sections, each section describes a different component project of the recommended plan. The function of each component is described as well as key features and how the component interrelates with other components. Plate A shows the recommended stormdrain flows, locations, and sizes.

1. Union Hills Drive - Cave Creek Outlet (Sheet 10 of 12)

The Union Hills Drive system collects runoff from Buffalo Ridge and carries it via 16th St., Rosemont Dr., 12th St., and Union Hills to Cave Creek Wash. Due to inadequate cover at Cave Creek Wash the stormdrain empties onto an earthen apron that will disperse the flow and allow it to flow into Cave Creek Wash.

The Union Hills stormdrain does not connect to detention basin 2 at 9th Street. A channel is master planned (ADMS, 1977) along the 9th Street alignment, north of Union Hills, which will empty into the detention basin. A low flow inlet will be provided in the channel bottom to intercept flows up to the two-year flow and convey it in a 48 inch pipe west along Union Hills Drive to 7th Street and south on 7th Street to the Greenway Channel. When channel flows exceed the inlet capacity, the excess flow will spill into the box culvert under Union Hills Drive and into the detention basin.

The system draining Buffalo Ridge consists of a 36 inch pipe in 16th Street, a 48 inch pipe in Rosemont Drive and 12th Street and a 60 inch pipe in Union Hills Drive extending to the northwest corner of detention basin 2. Three 36 inch pipes are utilized under the proposed box culvert draining the 9th Street channel. A 72 inch pipe is recommended from the box culvert to the earthen apron at Cave Creek Wash. The intent is to provide a two-year low flow system to prevent flooding of the detention basin during frequent rainfall events. Tributary flows are collected along 7th Street in a 36 inch pipe (sheet 2 of 12) and joined with the 7th Street Lateral 2.

The 72 inch pipe, the 3 - 36 inch pipes, the 60 inch pipe east of 9th Street and a portion of the 48 inch pipe are under pressure flow conditions during the two-year storm. Because the 72 inch pipe is not hydraulically connected to the detention basin, the hydraulic grade line can rise above the basin inlet elevation for the two-year flow without spilling into the basin.

Four sanitary sewer relocations have been identified in Union Hills Drive between Cave Creek Wash and 7th Street. An additional sanitary sewer conflict east of 9th Street has been avoided by extending the triple 36 inch pipes beyond the conflict.

None of the proposed system has been designed or built. The 9th Street channel was proposed in the East Fork Cave Creek Area Drainage Master Study (ADMS) and the detention basin and its concrete box inlet at 9th Street are proposed in the Detention Area Sizing Study (See Chapter 2).

2. <u>7th Street - Greenway Channel Outlet</u> (Sheet 2 of 12)

The 7th Street lateral consists of an existing 84 inch pipe extending from the Greenway Channel to Bell Road, a 72 inch pipe extending north from Bell Road for 1442 feet then downsized to a 60 inch pipe to Grovers Avenue. A 48 inch pipe extends from Grovers Avenue to Union

Hills Drive where it ties into the 48 inch line drainage the future 9th Street channel. A 36 inch pipe also exists from the Greenway Channel to Bell Road which will be connected to the Bell Road Lateral 1. No utility conflicts were identified.

There are several existing drainage facilities in the 7th Street and Bell Road area that will be tied into the proposed system. A detail of the tie-in is shown on the plans. The two existing box culverts will be removed and the flow tributary to the box culverts will be directed into the proposed 72 inch pipe.

3. 9th Street - Greenway Channel Outlet (Sheet 3 of 12)

The 9th Street system drains detention basins 2 and 5 and collects runoff from tributary areas to the east. The 9th Street stormdrain is sized for the 100-year peak discharge from the detention basins. A 96 inch pipe extends from the Greenway Channel to the outlet of Basin 5 where a 60 inch two-year low flow pipe bypasses basin 5. A double 72 inch pipe discharges into basin 5 and extends north to Grovers Avenue. An 84 inch pipe extends from Grovers to 1320 feet north of Grovers where a 72 inch pipe continues to the detention basin 2 outlet. A 36 inch diameter lateral joins the 9th Street system at Bell Road.

For flows equal to or less than the two-year peak flow the discharge into basin 5 will be contained in the basin inlet structure and discharged back out to 9th Street through 2 - 36 inch pipes into the 60 inch bypass, providing a two-year low flow bypass to prevent detention basin inundation during frequent storms. When the capacity of the 36 inch pipes is exceeded, the inflow will spill into the detention basin.

The hydraulic grade line is above the pipe because of the tailwater effects of the Greenway Channel. South of Bell Road the 100-year hydraulic grade line is at or above the existing ground elevation. This is due to the water surface elevation in the Greenway Channel during a 100-year event and the natural ground conditions and could not be lowered by upsizing the pipe.

A 12 inch sanitary sewer in Bell Road is in conflict with the 96 inch pipe and will need to be relocated. No other utility conflicts were identified.

The portion of the stormdrain south of Bell Road has been designed by Hook Engineering. The proposed 96 inch pipe north of Bell Road will tie into that pipe. Detention basins 2 and 5 are proposed in the Detention Area Sizing Study.

4. 16th Street - Greenway Channel Outlet (Sheet 4 of 12)

The 16th Street system collects runoff from the south side of Buffalo Ridge into a 48 inch pipe in Union Hills Drive, conveys it through a development to Grovers Avenue, along Grovers in a 60 inch pipe to 16th Street and along 16th Street to Bell Road where the system is upsized to an 84 inch to the Greenway Channel. An 18 inch lateral ties into the 84 inch pipe at Bell Road.

The hydraulic grade line is above the pipe for a short reach upstream of the Greenway Channel due to the tailwater effect of the channel, and is within the pipe for the remainder of the alignment. No utility conflicts have been identified.

The 84 inch pipe south of Bell Road has been designed by Hook Engineering. The proposed 60 inch pipe north of Bell Road will tie into that pipe.

5. 18th and 20th Street - Greenway Channel Outlet (Sheet 6 of 12)

The 20th Street system drains detention basins 3a and 3b at Grovers Avenue and 20th Street with a 108 inch pipe. At Bell Road the flow is split with 65% of the flow being diverted west on Bell Road to 18th Street, then south on 18th Street to the Greenway Channel in an 84 inch pipe; and 35% continuing south on 20th Street. The 60 inch Bell Road lateral 4 joins the 20th Street flow downstream from the flow split,

the combined flows continue on in a 78 inch pipe upsizing to a 96 inch pipe at the Greenway Channel. **Figure 2** shows a schematic of the flow split at 20th Street and Bell Road. The 18th and 20th Street system is sized for the 100-year peak outfall from detention basins 3a and 3b.

The hydraulic grade line is above the pipe because of the tailwater effect in the Greenway Channel. No utility conflicts have been identified. The 18th and 20th Street stormdrains have been designed by Hook Engineering from the Greenway Channel to Bell Road. The proposed system will tie in to them at Bell Road.

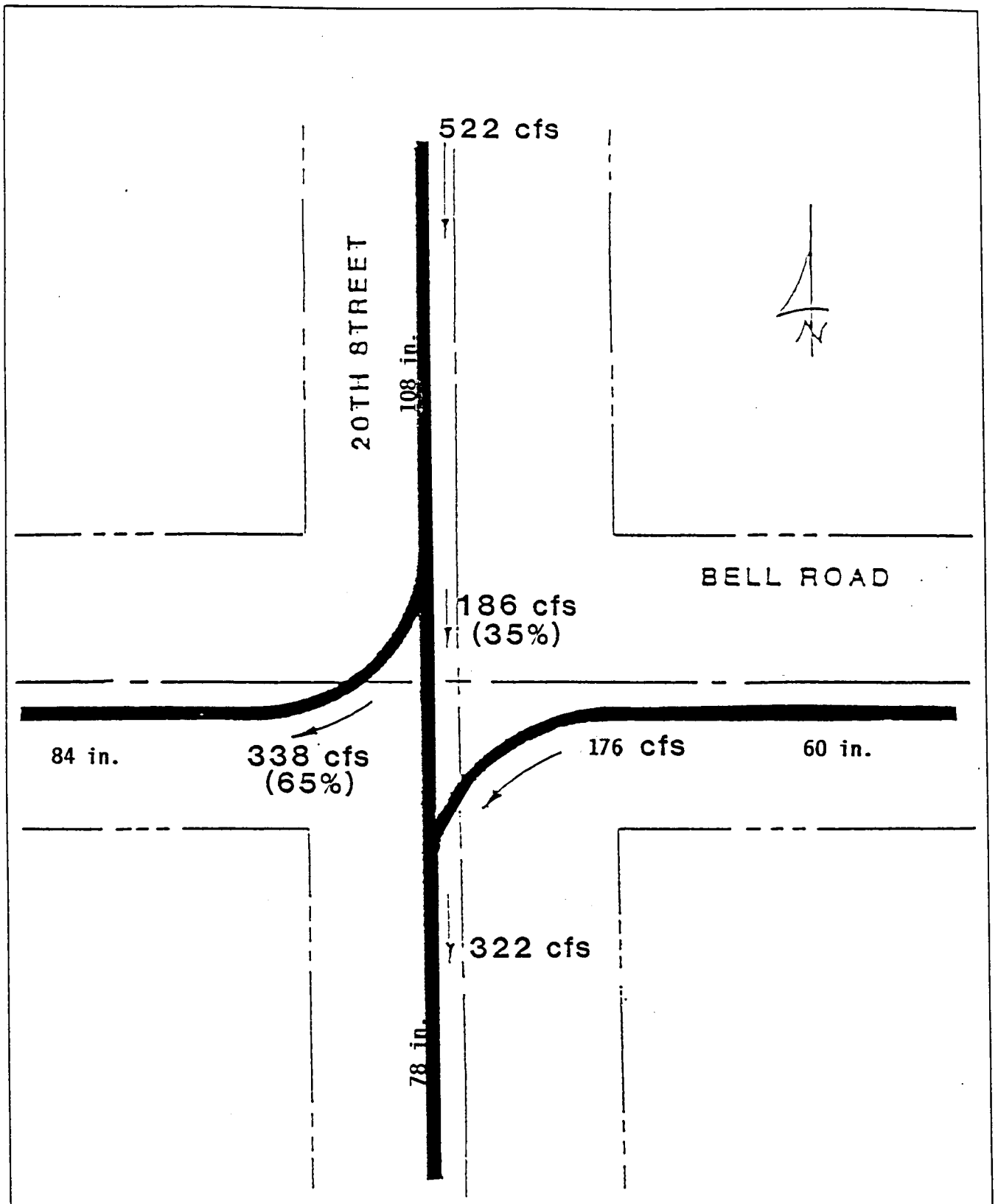
6. Bell Road Lateral 4 (Sheet 12 of 12)

Bell Road lateral 4 drains into the 20th Street lateral and extends east on Bell Road to 400 feet east of 30th Street. A 60 inch pipe extends from 20th Street to 26th Street, a 48 inch from 26th Street to 28th Street and a 36 inch from 28th Street to the end. The hydraulic grade line is above the pipe for a portion of the reach because the pipe is lowered at Cave Creek Road to avoid utilities.

7. Beardsley Rd. Lateral - East Fork Cave Creek Outlet (Sht 11 of 12)

The Beardsley Road lateral discharges into the East Fork of Cave Creek and extends west to 20th Street. A 60 inch pipe extends from Cave Creek Wash to Cave Creek Road where the 60 inch Cave Creek lateral 5 joins. A 24 inch pipe extends west on Beardsley Road to 20th Street. The outlet at the East Fork of Cave Creek does not discharge into the detention basin but into the channel to minimize detention basin flooding during frequent storm events. No utility conflicts have been identified. The East Fork channel improvements are proposed in the ADMS.

The 60 inch pipe that extends north in Cave Creek Road will pass under the proposed Outer Loop Freeway.



FLOW SPLIT AT 20TH ST. AND BELL RD.

NBS/LOWRY

FIGURE 2

8. Union Hills Lat. 3 & 4 - East Fork Cave Creek Outlet (Sht 5 of 12)

The Union Hills Laterals 3 and 4 discharge into the East Fork of Cave Creek channel at Union Hills Drive. Lateral 3 is a 48 inch pipe that extends west on Union Hills Drive and ties into the 30 inch diameter Cave Creek Lateral 4 which extends north on Cave Creek Road. Lateral 4 is a 36 inch pipe that extends east on Union Hills for 3690 feet. There is less than 4 feet of cover in the vicinity of the East Fork so that the pipes can daylight into the channel. Due to the shallow depth of cover, several utility conflicts will need to be resolved between Cave Creek Road and 28th Street.

9. Lookout Mountain Lateral - Greenway Channel Outlet (Sheet 7 of 12)

The lookout mountain lateral drains the east side of Lookout Mountain and discharges into the Greenway Channel. Stormdrain sizes vary from 36 inches in Sharon Drive to 96 inches at Waltmann Lane. An open channel extends from Waltmann Lane to the Greenway channel. The hydraulic grade line is above the pipe for a portion of the reach but is at least 2 feet below the ground surface at all times. No utility interferences have been identified.

10. Cave Creek Lateral 1 & 2 - Greenway Channel Outlet (Sheet 8 of 12)

Cave Creek Laterals 1 and 2 collect runoff along Cave Creek Road and convey it to the Greenway Channel. Lateral 1 consists of a 72 inch pipe that extends to Greenway Road and a 42 inch pipe from Greenway Road to Claire Drive. Lateral 2 consists of a 48 inch pipe to just south of Paradise Lane and a 30 inch pipe to 620 feet south of Bell Road.

Most of this system is existing or has already been designed. The portion north of Paradise Lane is the only portion not already designed or built. One sanitary sewer relocation will be required.

11. 32nd Street Lateral - Indian Bend Wash Outlet (Sheet 9 of 12)

The 32nd Street lateral drains detention basin 4 and ties into an existing 54 inch stormdrain in 32nd Street which drains into the Indian Bend Wash. The 54 inch stormdrain is undersized but ties into a 60 inch pipe at Bell Road. The 54 inch pipe will not need to be replaced if the proposed 60 inch lateral north of the undersized 54 inch is installed. The 32nd Street lateral south of Grovers is sized for the 100-year peak discharge from detention basin 4. The proposed 36 inch lateral that extends north of Grovers to Union Hills and the 30 inch from Union Hills to Siesta Lane are sized for the two-year peak discharge.

The hydraulic grade line is in the pipe. No utility conflicts have been identified. The detention basin outfall design is shown in the Detention Basin Predesign.

CHAPTER 5
IMPLEMENTATION

The objective of this study was to develop a two-year stormdrain system master plan compatible with the 100-year drainage master plan being implemented by the Flood Control District of Maricopa County in the East Fork of Cave Creek watershed. An integral part of the Districts 100-year master plan is a series of five detention basins sized to limit the future condition peak 100-year discharge to the predicted two-year peak discharges without detention.

The outfalls from the detention basins tie into portions of the two-year system recommended in this study. Detention basin outlet sizes, slopes, and elevations from the Detention Basin Predesign have been incorporated into this plan. Stormdrain sizes developed for this study have been incorporated into the Detention Basin Predesign resulting in a coordinated effort at drainage master planning within the watershed. The following conclusions and recommendations are based on the results of the coordination effort.

CONCLUSIONS

1. The storm drainage concept recommended in this plan will provide two-year flood protection within the East Fork Cave Creek watershed with the detention basins relatively dry and free from standing water.

2. The storm drainage concept recommended in this plan will work in conjunction with the 100-year system planned by the Flood Control District of Maricopa County as presented in the ADMS and the Detention Basin Predesign.

3. The North Central Area Master Storm Drainage Study Update Preliminary System Layout plans show the proposed two-year system.

RECOMMENDATIONS

1. That the City of Phoenix undertake a phased capital improvement program to implement the storm drainage plan recommended in this study.

2. That the City of Phoenix coordinate implementation of this plan with the Flood Control District of Maricopa County to ensure integration with the 100-year concept presented in the ADMS and the Detention Basin Predesign.

REFERENCES

North Central Area Master Storm Drainage Study (East Half), prepared for City of Phoenix by Cella Barr Associates, Phoenix, AZ, April 1981.

Northeast Area Master Storm Drainage Study, prepared for City of Phoenix by Southwest Computing Inc., Phoenix, AZ, 1979.

Phoenix Contour Quarter Section Maps.

Phoenix Storm Drain Design Manual, Storm Drains with Paving of Major Streets, Phoenix, August 1975. Revised July 1987.

Phoenix Utility Quarter Section Maps.

Soil Conservation Service, National Engineering Handbook Section 4, Hydrology, Washington D.C., 1972.

Soil Conservation Service, Technical Release Number 20, Users Manual, Washington D.C., May 1982.

Upper East Fork Cave Creek Area Drainage Master Study. Prepared for Flood Control District of Maricopa County by NBS/Lowry, Phoenix, AZ, October 1987.

Upper East Fork Cave Creek Detention Area Sizing Study. Prepared for Flood Control District of Maricopa County and City of Phoenix by NBS/Lowry, Phoenix, AZ, February 1989.

Upper East Fork Cave Creek Detention Area Sizing Study, Engineering Design Descriptions. Prepared for Flood Control District of Maricopa County and City of Phoenix by NBS/Lowry, Phoenix, AZ, June 1989.

APPENDIX

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

JOB TR-20                                          SUMMARY   NOPLOTS
TITLE 000 EAST FORK CAVE CREEK - NORTH CENTRAL STORM DRAIN UPDATE
TITLE 000 JOB NUMBER:  P79-086-012   FILENAME: EFNC2YR.DAT
 5 RAINFL 1            .0208
 8         0.          .004        .008        .0130       .018
 8         .022        .026        .031        .035        .04
 8         .044        .048        .053        .057        .062
 8         .066        .071        .075        .080        .093
 8         .107        .120        .140        .170        .500
 8         .830        .860        .880        .893        .907
 8         .920        .924        .928        .933        .937
 8         .942        .947        .951        .956        .960
 8         .964        .969        .973        .978        .982
 8         .987        .991        .995        1.00        1.00
 9 ENDTBL
 2 XSECTN  006         1.0
 8                     1502.       0.0         0.0
 8                     1502.4      3.7         2.1
 8                     1502.8      13.3        5.1
 8                     1503.2      29.5        9.1
 8                     1503.6      53.4        14.1
 8                     1504.0      85.8        20.0
 8                     1504.4      100.7       30.8
 8                     1504.8      169.0       50.3
 8                     1505.2      289.0       78.5
 8                     1505.6      469.8       115.4
 8                     1506.0      470.9       161.1
 8                     1506.4      952.6       295.5
 8                     1506.8      1764.7      462.7
 8                     1507.2      2878.8      662.8
 8                     1507.6      4328.4      895.6
 8                     1508.0      6145.9      1161.3
 8                     1508.4      8331.5      1460.9
 8                     1508.8      10956.2     1795.8
 9 ENDTBL
 2 XSECTN  008         1.0
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 8                     1494.3      7.4         5.7
 8                     1494.6      23.9        12.0
 8                     1494.9      47.8        18.8
 8                     1495.2      78.9        26.3
 8                     1495.5      117.0       34.3
 8                     1495.8      162.2       42.9
 8                     1496.1      165.4       53.5
 8                     1496.4      175.4       84.2
 8                     1496.7      302.7       140.5
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8                    1497.0     527.8      222.4
8                    1497.3     868.5      329.9
8                    1497.6     1343.8     463.0
8                    1497.9     1972.3     621.8
8                    1498.2     2837.4     803.3
8                    1498.5     3901.4     998.3
8                    1498.8     5131.8     1206.2
8                    1499.1     6532.4     1426.8
8                    1499.4     8107.5     1660.4
8                    1499.7     9861.7     1906.7
9 ENDTBL
2 XSECTN   014       1.0
8                    1484.0     0.0        0.0
8                    1484.3     4.5        3.5
8                    1484.6     14.6       7.4
8                    1484.9     29.3       11.7
8                    1485.2     48.4       16.4
8                    1485.5     72.0       21.6
8                    1485.8     100.0      27.1
8                    1486.1     132.3      33.0
8                    1486.4     168.7      39.4
8                    1486.7     210.3      46.4
8                    1487.0     257.3      53.8
8                    1487.3     309.9      61.7
8                    1487.6     368.3      70.1
8                    1487.9     432.9      78.9
8                    1488.2     460.0      95.4
8                    1488.5     490.0      142.0
8                    1488.8     520.2      220.5
8                    1489.1     843.7      330.9
8                    1489.4     1318.9     473.3
8                    1489.7     1968.4     647.5
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8                    1452.2     8.1        6.5
8                    1452.6     50.6       19.9
8                    1453.0     119.3      34.0
8                    1453.2     162.1      41.3
8                    1453.4     210.4      48.7
8                    1453.6     263.8      56.3
8                    1453.8     322.2      64.1
8                    1454.0     385.5      72.0
8                    1454.2     420.0      86.0
8                    1454.4     456.8      100.3
8                    1454.6     566.6      114.7
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8                    1454.8     685.9      129.2
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8                    1455.4     1098.3     173.9
8                    1455.6     1183.6     189.8
8                    1455.8     1357.3     206.7
8                    1456.0     1540.3     223.7
8                    1456.2     1740.2     240.7
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8                    1429.9     32.7       48.5
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8                    1430.1     268.3      193.9
8                    1430.2     469.2      273.6
8                    1430.4     1000.2     438.7
8                    1430.6     1689.0     611.1
8                    1430.8     2526.0     791.0
8                    1431.0     3505.8     978.2
8                    1431.2     4625.3     1172.9
8                    1431.4     5882.7     1374.9
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8                    .4         26.9       11.6
8                    .6         49.5       17.4
8                    .8         76.2       23.2
8                    1.0        106.4      29.
8                    1.2        139.9      34.8
8                    1.4        176.3      40.6
8                    1.6        215.4      46.4
8                    1.8        257.       52.2
8                    2.0        301.       58.
8                    2.2        347.3      63.8
8                    2.4        395.7      69.6
9 ENDTBL
2 XSECTN   084       1.
8                    0.0        0.0        0.0
8                    .2         5.3        3.2
8                    .4         14.9       6.4
8                    .6         27.3       9.6
8                    .8         42.0       12.8
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8                    1.4        97.3       22.4
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**********80-80 LIST OF INPUT DATA (CONTINUED)**********

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8                    .6         6.21       1.47
8                    .9         14.46      2.66
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8                    1.5        40.73      5.53
8                    1.8        58.23      7.13
8                    2.1        78.19      8.82
8                    2.4        100.20     10.56
8                    2.7        123.86     12.34
8                    3.         148.68     14.14
8                    3.3        174.15     15.93
8                    3.6        199.76     17.71
8                    3.9        224.91     19.45
8                    4.2        248.94     21.14
8                    4.5        271.14     22.75
8                    4.8        290.64     24.25
8                    5.1        306.39     25.61
8                    5.4        316.91     26.80
8                    5.7        319.50     27.75
9 ENDTBL
2 XSECTN   105       1.0
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8                    1417.9     392.9      223.9
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8                    1418.5     1805.5     628.1
8                    1418.7     2500.2     782.6
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8                    1494.3     222.       24.27
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8                    1495.0     280.       35.24
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8                    1495.7     370.       46.90
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8                    1497.1     460.       71.08
8                    1497.5     480.       78.18
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3 STRUCT      33
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8                    1464.      21.        1.38
8                    1465.      44.        3.5
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8                    1467.      86.        12.
8                    1468.      95.        18.53
8                    1469.      102.       26.3
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8                    1448.0     0.1        2.59
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8                    1449.5     580.       5.38
8                    1450.0     900.       6.32
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8                    1416.2     813.39     66.83
8                    1416.6     958.87     75.59
8                    1417.0     1108.82    84.43
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9 ENDTBL
3 STRUCT      43
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8                    1428.0      9.          0.30
8                    1430.0      80.         3.97
8                    1432.0      315.        13.08
8                    1434.0      486.        32.70
8                    1436.0      627.        59.41
8                    1438.0      740.        87.57
8                    1440.0      831.        117.19
9 ENDTBL
3 STRUCT      44
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8                    1418.0      4.          0.27
8                    1420.0      54.         4.74
8                    1422.0      121.        19.70
8                    1424.0      175.        44.90
8                    1426.0      220.        73.96
8                    1428.0      256.        104.37
8                    1430.0      287.        136.07
8                    1432.0      316.        169.06
9 ENDTBL
3 STRUCT      59
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8                    1398.       135.        8.61
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8                    1402.       260.        28.37
8                    1403.       280.        34.4
8                    1404.       300.        40.07
8                    1405.       320.        46.6
8                    1406.       336.        52.76
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**********************80-80 LIST OF INPUT DATA (CONTINUED)**********************

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8                        1381.0      164.        31.34
8                        1382.0      176.        49.36
8                        1384.0      198.        88.62
8                        1386.0      219.        129.66
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6 RUNOFF 1 001       5 .148        95.         .3
6 RUNOFF 1 002       6 .097        95.         .19
6 REACH  3 003   6   7 1400.       .04         1.66
6 RUNOFF 1 003       6 .047        77.         .36
6 ADDHYD 4 003   6 7 4
6 ADDHYD 4 003   5 4 6
6 REACH  3 005   6   7 3000.       4.64        1.25
6 RUNOFF 1 004       6 .195        95.         .22
6 REACH  3 005   6   5 1400.       .05         1.66
6 RUNOFF 1 005       6 .125        77.         .56
6 ADDHYD 4 005   6 5 4
6 ADDHYD 4 005   4 7 6
6 RUNOFF 1 019       5 .022        95.         .167
6 REACH  3 018   5   7 2700.       7.96        1.25
6 RUNOFF 1 018       5 .184        78.         .72
6 ADDHYD 4 018   5 7 4
6 ADDHYD 4 018   4 6 7
6 REACH  3 008   7   4 1800.       5.03        1.25
6 RUNOFF 1 006       5 .109        81.         .82
6 REACH  3 008   5   6 1600.
6 RUNOFF 1 007       5 .117        77.         .69
6 REACH  3 008   5   7 1400.
6 ADDHYD 4 008   6 7 5
6 RUNOFF 1 008       6 .131        78.         .75
6 ADDHYD 4 008   6 5 7
6 RESVOR 2    08 7   6 1491.0
6 ADDHYD 4 008   4 6 3
6 REACH  3 014   3   5 3000.       .17         1.47
6 RUNOFF 1 009       6 .066        79.         .93
6 REACH  3 014   6   7 2700.
6 ADDHYD 4 014   5 7 6
6 RUNOFF 1 144       5 .132        79.         .93
6 REACH  3 014   5   7 3960.       2.1         1.4
6 ADDHYD 4 014   6 7 5
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**********80-80 LIST OF INPUT DATA (CONTINUED)**********

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6 ADDHYD 4 014   5 6 4
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6 RUNOFF 1 027       5 .188        82.         1.2
6 ADDHYD 4 027   5 7 6
6 RUNOFF 1 017       5 .059        95.         .17
6 REACH  3 025   5   7 2200.       .05         1.66
6 RUNOFF 1 025       5 .089        83.         .43
6 ADDHYD 4 025   5 7 4
6 REACH  3 027   4   5 1700.       .04         1.63
6 ADDHYD 4 027   5 6 7
6 RUNOFF 1 024       5 .198        86.         .46
6 REACH  3 026   5   6 1500.       3.78        1.25
6 RUNOFF 1 026       5 .067        85.         .31
6 ADDHYD 4 026   5 6 4
6 ADDHYD 4 027   4 7 5
6 RUNOFF 1 010       4 .095        77.         .56
6 REACH  3 011   4   6 2640.       .44         1.54
6 RUNOFF 1 011       7 .234        79.         .84
6 ADDHYD 4 011   6 7 4
6 REACH  3 028   4   6 3300.       .03         1.66
6 RUNOFF 1 013       7 .125        82.         .61
6 REACH  3 028   7   4 2800.       .03         1.66
6 ADDHYD 4 028   4 6 7
6 RUNOFF 1 028       4 .156        82.         .93
6 ADDHYD 4 028   4 7 6
6 REACH  3 027   6   7 2500.       4.41        1.25
6 ADDHYD 4 027   5 7 6
6 REACH  3 037   6   4 3000.
6 RUNOFF 1 037       5 .125        83.         .25
6 ADDHYD 4 037   4 5 6
6 RESVOR 2    37 6   4 1446.0
6 REACH  3 085   4   6 3000.       6.33        1.25
6 RUNOFF 1 143       5 .0625       85.         .53
6 RESVOR 2    43 5   7 1427.5
6 RESVOR 2    44 7   5 1417.0
6 ADDHYD 4 085   5 6 7
6 REACH  3 085   7   6 660.        5.55        1.25
6 RUNOFF 1 085       7 .063        84.         .52
6 ADDHYD 4 085   6 7 5
6 REACH  3 084   5   6 1320.       5.55        1.25
6 RUNOFF 1 084       5 .063        84.         .52
6 ADDHYD 4 084   5 6 1
6 RUNOFF 1 034       4 .125        84.         .73
```

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

```
6 REACH  3 035   4   6 1320.      .31        1.54
6 RUNOFF 1 035       4 .125       83.        .49
6 ADDHYD 4 035   4 6 3
6 REACH  3 091   3   4 2640.      .22        1.54
6 RUNOFF 1 092       5 .125       86.        .47
6 REACH  3 091   5   6 1320.      6.73       1.25
6 RUNOFF 1 091       5 .125       86.        .47
6 ADDHYD 4 091   5 6 7
6 ADDHYD 4 036   4 7 6
6 REACH  3 090   6   5 1320.      7.06       1.25
6 RUNOFF 1 090       6 .109       85.        .63
6 ADDHYD 4 090   5 6 4
6 RUNOFF 1 036       5 .125       83.        .48
6 REACH  3 090   5   6 2640.      .22        1.54
6 ADDHYD 4 090   4 6 5
6 REACH  3 088   5   7 1320.      7.33       1.25
6 RUNOFF 1 089       4 .047       84.        .39
6 REACH  3 088   4   5 2000.      6.76       1.25
6 RUNOFF 1 088       4 .094       87.        .75
6 ADDHYD 4 088   4 5 6
6 ADDHYD 4 088   6 7 5
6 REACH  3 087   5   6 1320.      2.77       1.25
6 RUNOFF 1 086       7 .063       86.        .27
6 REACH  3 087   7   4 1320.
6 RUNOFF 1 087       5 .063       87.        .52
6 ADDHYD 4 087   5 4 7
6 ADDHYD 4 087   7 6 5
6 REACH  3 084   5   6 1320.      2.77       1.25
6 DIVERT 6 084   1 2 3            .35        83.
6 ADDHYD 4 084   2 6 7
6 REACH  3 105   7   6 1320.      6.07       1.25
6 RUNOFF 1 102       5 .063       82.        .63
6 REACH  3 105   5   7 1320.
6 RUNOFF 1 105       5 .063       78.        .63
6 ADDHYD 4 105   5 7 2
6 ADDHYD 4 105   2 6 7
6 REACH  3 104   7   6 1320.      6.07       1.25
6 RUNOFF 1 104       5 .069       78.        .67
6 ADDHYD 4 104   5 6 1
6 REACH  3 083   3   5 1320.      7.64       1.25
6 RUNOFF 1 083       6 .063       85.        .52
6 ADDHYD 4 083   5 6 7
6 REACH  3 106   7   6 1320.      7.12       1.25
6 RUNOFF 1 106       5 .063       79.        .56
6 ADDHYD 4 106   5 6 7
6 REACH  3 107   7   6 900.       7.12       1.25
```

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

```
6 RUNOFF 1 107       5 .059        82.        .42
6 ADDHYD 4 107   5 6 2
6 RUNOFF 1 012       5 .07         82.        .42
6 REACH  3 029   5   6 3800.       .04        1.66
6 RUNOFF 1 029       5 .25         81.        1.03
6 ADDHYD 4 029   5 6 7
6 REACH  3 033   7   6 2640.       5.69       1.25
6 RUNOFF 1 033       5 .234        80.        1.14
6 ADDHYD 4 033   5 6 7
6 RUNOFF 1 030       5 .125        79.        .83
6 REACH  3 032   5   6 3000.       6.29       1.25
6 RESVOR 2     33 6   3 1462.
6 ADDHYD 4 033   3 7 6
6 REACH  3 093   6   7 2640.       5.69       1.25
6 RUNOFF 1 093       5 .195        84.        .45
6 ADDHYD 4 093   5 7 6
6 REACH  3 095   6   4 1320.       4.72       1.25
6 RUNOFF 1 032       5 .109        80.        .81
6 REACH  3 094   5   6 3200.       .09        1.66
6 RUNOFF 1 094       5 .139        84.        .34
6 ADDHYD 4 094   5 6 7
6 REACH  3 095   7   6 2400.       .09        1.66
6 RUNOFF 1 095       5 .125        86.        .98
6 ADDHYD 4 095   5 6 7
6 ADDHYD 4 095   4 7 5
6 REACH  3 096   5   6 1320.       4.72       1.25
6 RUNOFF 1 096       5 .125        82.        .51
6 ADDHYD 4 096   5 6 7
6 REACH  3 142   7   6 1320.       5.68       1.25
6 RUNOFF 1 142       4 .25         83.        1.39
6 ADDHYD 4 142   4 6 7
6 RUNOFF 1 097       7 .188        87.        .53
6 REACH  3 098   7   5 1000.       .08        1.66
6 RUNOFF 1 098       7 .094        86.        .37
6 ADDHYD 4 098   5 7 6
6 REACH  3 099   6   7 1250.       .08        1.66
6 RUNOFF 1 099       6 .094        86.        .49
6 ADDHYD 4 099   7 6 5
6 REACH  3 139   5   7 1600.       .05        1.66
6 RUNOFF 1 101       6 .047        89.        .52
6 REACH  3 100   6   5 1320.       8.19       1.25
6 RUNOFF 1 100       4 .078        86.        .39
6 ADDHYD 4 101   5 4 6
6 REACH  3 139   6   5 600.        4.52       1.25
6 ADDHYD 4 139   5 7 3
6 RUNOFF 1 141       7 .188        87.        .53
```

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

```
6 REACH  3 140   7   5 1320.      4.05        1.25
6 RUNOFF 1 140       6 .125       86.         .44
6 ADDHYD 4 140   5 6 4
6 RUNOFF 1 137       6 .078       79.         .49
6 ADDHYD 4 140   4 6 5
6 REACH  3 139   5   6 2800.      4.39        1.25
6 ADDHYD 4 139   6 3 4
6 RUNOFF 1 136       5 .066       95.         .167
6 REACH  3 138   5   6 3000.      .17         1.66
6 RUNOFF 1 138       5 .203       84.         .24
6 ADDHYD 4 138   5 6 7
6 REACH  3 139   7   6 2000.      4.52        1.25
6 ADDHYD 4 139   4 6 7
6 RUNOFF 1 139       5 .188       87.         .43
6 ADDHYD 4 139   7 5 3
6 RUNOFF 1 128       5 .036       80.         .167
6 REACH  3 129   5   7 1100.      10.         1.25
6 RUNOFF 1 129       5 .108       82.         .167
6 ADDHYD 4 129   5 7 6
6 RUNOFF 1 130       5 .031       91.         .167
6 ADDHYD 4 129   5 6 7
6 REACH  3 131   7   6 2500.      4.8         1.25
6 RUNOFF 1 127       7 .159       82.         .21
6 ADDHYD 4 131   6 7 4
6 RUNOFF 1 132       5 .145       88.         .27
6 REACH  3 131   5   7 2000.      .17         1.66
6 ADDHYD 4 131   4 7 5
6 RUNOFF 1 131       6 .119       86.         .27
6 ADDHYD 4 131   5 6 7
6 RUNOFF 1 133       5 .08        95.         .17
6 REACH  3 131   5   6 2000.      .17         1.66
6 ADDHYD 4 131   6 7 5
6 REACH  3 126   5   6 1500.      8.31        1.25
6 RUNOFF 1 126       5 .158       95.         .28
6 ADDHYD 4 126   5 6 7
6 REACH  3 134   7   6 1500.      5.48        1.25
6 RUNOFF 1 135       7 .042       95.         .167
6 REACH  3 134   7   5 3200.      .13         1.66
6 ADDHYD 4 134   5 6 7
6 RUNOFF 1 134       6 .197       85.         .31
6 ADDHYD 4 134   6 7 5
6 RUNOFF 1 125       7 .117       95.         .167
6 ADDHYD 4 125   7 5 6
6 REACH  3 124   6   7 2500.      4.24        1.25
6 RUNOFF 1 124       6 .219       84.         .25
6 ADDHYD 4 124   6 7 5
```

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

```
6 REACH  3 124   3   7 900.       .96        1.51
6 ADDHYD 4 124   5 7 6
6 RUNOFF 1 103       5 .081       84.        .26
6 ADDHYD 4 124   5 6 7
6 REACH  3 104   7   6 1320.      .96        1.51
6 ADDHYD 4 104   1 6 4
6 REACH  3 107   4   5 1000.      .85        1.53
6 ADDHYD 4 107   5 2 7
6 RUNOFF 1 123       6 .213       95.        .25
6 ADDHYD 4 107   6 7 5
6 REACH  3 108   5   3 1700.      .85        1.53
6 RUNOFF 1 108       5 .025       83.        .28
6 ADDHYD 4 108   5 3 1
6 RUNOFF 1 022       5 .153       83.        .47
6 RUNOFF 1 023       6 .091       95.        .23
6 ADDHYD 4 023   5 6 7
6 REACH  3 041   7   6 2640.      6.54       1.25
6 RUNOFF 1 041       5 .172       84.        .38
6 ADDHYD 4 041   5 6 7
6 REACH  3 081   7   4 2640.      6.2        1.25
6 RUNOFF 1 038       7 .125       79.        .44
6 REACH  3 040   7   6 1800.      .08        1.66
6 RUNOFF 1 040       5 .094       82.        .51
6 ADDHYD 4 040   5 6 7
6 REACH  3 082   7   5 1400.      .1         1.66
6 RUNOFF 1 082       6 .063       84.        .27
6 ADDHYD 4 082   5 6 7
6 RUNOFF 1 039       5 .125       85.        .53
6 REACH  3 082   5   6 1867.      .1         1.66
6 ADDHYD 4 082   6 7 5
6 REACH  3 081   5   6 1320.      .22        1.54
6 RUNOFF 1 081       5 .063       77.        .52
6 ADDHYD 4 081   5 6 3
6 ADDHYD 4 081   3 4 5
6 REACH  3 080   5   6 1320.      7.06       1.25
6 RUNOFF 1 080       5 .063       82.        .45
6 ADDHYD 4 080   5 6 7
6 REACH  3 109   7   6 1320.      4.04       1.25
6 RUNOFF 1 109       5 .063       84.        .29
6 ADDHYD 4 109   5 6 7
6 ADDHYD 4 108   1 7 6
6 REACH  3 110   6   7 1320.      .85        1.53
6 RUNOFF 1 110       5 .073       78.        .56
6 ADDHYD 4 110   5 7 6
6 RUNOFF 1 122       4 .355       85.        .29
6 ADDHYD 4 110   6 4 5
```

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

```
6 REACH  3 111   5   6 1320.      1.07       1.53
6 RUNOFF 1 111       5 .07        77.        .56
6 ADDHYD 4 111   5 6 7
6 REACH  3 112   7   6 1320.      .04        1.63
6 RUNOFF 1 121       5 .25        95.        .17
6 ADDHYD 4 112   5 6 1
6 RUNOFF 1 049       5 .086       95.        .19
6 REACH  3 048   5   6 1320.      .04        1.66
6 RUNOFF 1 020       5 .064       95.        .17
6 REACH  3 048   5   7 2640.      .04        1.66
6 ADDHYD 4 048   6 7 5
6 RUNOFF 1 048       6 .125       82.        .6
6 ADDHYD 4 048   5 6 7
6 REACH  3 056   7   6 1866.      .12        1.66
6 RUNOFF 1 056       5 .063       82.        .25
6 ADDHYD 4 056   5 6 7
6 REACH  3 057   7   6 1320.      .76        1.58
6 RUNOFF 1 057       5 .063       82.        .25
6 ADDHYD 4 057   5 6 7
6 REACH  3 059   7   6 1320.      .74        1.58
6 RUNOFF 1 059       5 .063       82.        .25
6 ADDHYD 4 059   5 6 4
6 RUNOFF 1 043       5 .047       90.        .17
6 RUNOFF 1 021       6 .189       87.        .58
6 ADDHYD 4 021   5 6 7
6 REACH  3 045   7   5 2640.      2.67       1.25
6 RUNOFF 1 045       6 .125       90.        .51
6 ADDHYD 4 045   5 6 7
6 RUNOFF 1 047       3 .125       82.        .31
6 REACH  3 046   3   5 1320.      .51        1.54
6 RUNOFF 1 046       6 .125       82.        .29
6 ADDHYD 4 046   5 6 3
6 ADDHYD 4 045   3 7 6
6 REACH  3 059   6   7 1320.      5.54       1.25
6 REACH  3 060   7   5 1320.      1.81       1.25
6 RUNOFF 1 060       6 .063       81.        .49
6 ADDHYD 4 060   5 6 2
6 RUNOFF 1 050       5 .134       77.        .57
6 REACH  3 052   5   6 1500.      .03        1.66
6 RUNOFF 1 052       5 .063       81.        .56
6 ADDHYD 4 052   5 6 7
6 REACH  3 055   7   6 1320.      .09        1.66
6 RUNOFF 1 055       5 .063       83.        .25
6 ADDHYD 4 055   5 6 7
6 RUNOFF 1 051       5 .063       83.        .18
6 REACH  3 055   5   6 1867.      .09        1.66
```

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

```
6 ADDHYD 4 055   7 6 5
6 REACH  3 058   5   6 1320.      6.73        1.25
6 RUNOFF 1 058       5 .063       84.         .25
6 ADDHYD 4 058   5 6 7
6 REACH  3 060   7   6 1320.      6.73        1.25
6 REACH  3 060   4   5 1320.      7.06        1.25
6 ADDHYD 4 060   5 6 3
6 REACH  3 061   2   6 1320.      1.81        1.25
6 RUNOFF 1 061       5 .102       83.         .25
6 ADDHYD 4 061   5 6 7
6 RUNOFF 1 053       5 .084       84.         .31
6 REACH  3 061   5   6 2100.      .11         1.66
6 ADDHYD 4 061   7 6 5
6 REACH  3 062   5   6 2000.      1.81        1.25
6 RUNOFF 1 062       5 .13        82.         .88
6 ADDHYD 4 062   5 6 7
6 RUNOFF 1 066       7 .063       84.         .46
6 REACH  3 067   7   6 1320.      6.55        1.25
6 RUNOFF 1 067       5 .063       88.         .25
6 ADDHYD 4 067   5 6 7
6 RUNOFF 1 044       5 .125       87.         .3
6 REACH  3 067   5   6 1320.      .25         1.54
6 ADDHYD 4 067   6 7 4
6 REACH  3 069   4   6 1320.      6.77        1.25
6 RUNOFF 1 069       5 .063       81.         .62
6 ADDHYD 4 069   5 6 4
6 RUNOFF 1 042       5 .078       83.         .22
6 REACH  3 078   5   6 1600.      .09         1.66
6 RUNOFF 1 078       7 .063       86.         .27
6 ADDHYD 4 078   7 6 5
6 REACH  3 077   5   6 1320.      .23         1.54
6 RUNOFF 1 077       5 .063       77.         .38
6 ADDHYD 4 077   5 6 7
6 REACH  3 069   7   6 1320.      6.03        1.25
6 ADDHYD 4 069   6 4 2
6 REACH  3 075   2   6 1320.      3.79        1.25
6 RUNOFF 1 075       5 .063       95.         .52
6 ADDHYD 4 075   5 6 7
6 RUNOFF 1 079       5 .063       88.         .25
6 REACH  3 076   5   6 1320.      .23         1.54
6 RUNOFF 1 076       5 .063       86.         .25
6 ADDHYD 4 076   5 6 4
6 REACH  3 075   4   5 1320.      6.73        1.25
6 ADDHYD 4 075   7 5 6
6 REACH  3 112   6   4 1320.      3.79        1.25
6 RUNOFF 1 112       5 .061       77.         .46
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**********************80-80 LIST OF INPUT DATA (CONTINUED)**********************

 6 ADDHYD 4 112   5 4 7
 6 ADDHYD 4 112   1 7 2
 6 REACH  3 113   2   5 1320.       .04         1.63
 6 RUNOFF 1 113       6 .053        91.         .52
 6 ADDHYD 4 113   5 6 7
 6 RUNOFF 1 120       5 .231        87.         .30
 6 ADDHYD 4 113   5 7 1
 6 REACH  3 065   3   4 1320.       5.97        1.25
 6 RUNOFF 1 065       5 .047        82.         .49
 6 ADDHYD 4 065   4 5 7
 6 REACH  3 068   7   6 1320.       5.97        1.25
 6 RUNOFF 1 068       5 .063        85.         .25
 6 ADDHYD 4 068   5 6 7
 6 REACH  3 070   7   6 1320.       4.80        1.25
 6 RUNOFF 1 070       5 .063        86.         .25
 6 ADDHYD 4 070   5 6 7
 6 REACH  3 074   7   6 1320.       2.86        1.25
 6 RUNOFF 1 074       5 .063        90.         .24
 6 ADDHYD 4 074   5 6 7
 6 REACH  3 113   7   6 1320.       6.62        1.25
 6 ADDHYD 4 113   1 6 3
 6 REACH  3 114   3   1 3000.       .04         1.63
 6 RUNOFF 1 064       5 .25         82.         .33
 6 REACH  3 072   5   6 2640.       .18         1.54
 6 RUNOFF 1 072       5 .125        83.         .49
 6 ADDHYD 4 072   5 6 7
 6 REACH  3 114   7   6 2000.       .05         1.66
 6 RUNOFF 1 115       5 .094        82.         .45
 6 ADDHYD 4 114   5 6 7
 6 RUNOFF 1 071       5 .125        83.         .49
 6 REACH  3 114   5   6 2200.       .05         1.66
 6 ADDHYD 4 114   6 7 5
 6 RUNOFF 1 114       6 .128        85.         1.19
 6 ADDHYD 4 114   5 6 7
 6 ADDHYD 4 114   1 7 5
 6 RUNOFF 1 119       6 .231        84.         1.05
 6 ADDHYD 4 114   5 6 7
 6 REACH  3 118   7   6 4000.       .05         1.66
 6 RUNOFF 1 118       5 .231        81.         1.59
 6 ADDHYD 4 118   5 6 7
   ENDATA
 7 INCREM 6             .08
 7 COMPUT 7 001   118               1.44        24.         1 2  01  01
   ENDCMP 1
   ENDJOB 2

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


EXECUTIVE CONTROL OPERATION INCREM     MAIN TIME INCREMENT =   .08 HOURS                                    RECORD ID


EXECUTIVE CONTROL OPERATION COMPUT     FROM XSECTION   1  TO XSECTION 118                                   RECORD ID
        STARTING TIME =   .00    RAIN DEPTH =  1.44    RAIN DURATION= 24.00    RAIN TABLE NO.= 1    ANT. MOIST. COND= 2
        ALTERNATE NO.= 1         STORM NO.= 1    MAIN TIME INCREMENT =   .08 HOURS

    ***  WARNING  REACH   5 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT  ***
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*** WARNING  REACH  18 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT  ***

*** WARNING  REACH   8 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT  ***

*** WARNING  REACH  26 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT  ***

*** WARNING  REACH  28 LENGTH FACTOR (K*) GREATER THAN 1.0, CONSIDER DIVIDING REACH LENGTH  ***

*** WARNING  REACH  28 LENGTH FACTOR (K*) GREATER THAN 1.0, CONSIDER DIVIDING REACH LENGTH  ***

*** WARNING - REACH  27 INFLOW HYDROGRAPH VOLUME TRUNCATED ABOVE BASEFLOW AT       2.41 CFS,  11.62 % OF PEAK.

*** WARNING  REACH  85 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT  ***

*** WARNING  REACH  85 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT  ***

*** WARNING  REACH  84 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT  ***

*** WARNING  REACH  91 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT  ***

*** WARNING  REACH  90 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT  ***

*** WARNING  REACH  88 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT  ***

*** WARNING  REACH  88 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT  ***

*** WARNING  REACH  87 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT  ***

***WARNING - LACK OF LOW FLOW DEFINITION FOR XSECT TABLE 87. MAX.FLOW LESS THAN 2ND TABLE VALUE.

*** WARNING  REACH  84 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT  ***

*** WARNING  REACH 105 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT  ***

***WARNING - LACK OF LOW FLOW DEFINITION FOR XSECT TABLE105. MAX.FLOW LESS THAN 2ND TABLE VALUE.

*** WARNING  REACH 104 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT  ***
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*** WARNING  REACH  83 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT  ***
*** WARNING  REACH 106 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT  ***
*** WARNING  REACH 107 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT  ***
*** WARNING  REACH  29 LENGTH FACTOR (K*) GREATER THAN 1.0, CONSIDER DIVIDING REACH LENGTH  ***
*** WARNING  REACH  33 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT  ***
*** WARNING  REACH  93 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT  ***
*** WARNING  REACH  95 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT  ***
*** WARNING  REACH  96 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT  ***
*** WARNING  REACH 142 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT  ***
*** WARNING  REACH 100 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT  ***
*** WARNING  REACH 139 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT  ***
*** WARNING  REACH 140 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT  ***
*** WARNING  REACH 139 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT  ***
*** WARNING  REACH 139 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT  ***
*** WARNING  REACH 129 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT  ***
*** WARNING  REACH 131 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT  ***
*** WARNING  REACH 126 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT  ***
*** WARNING  REACH 134 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT  ***
*** WARNING  REACH 124 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT  ***
*** WARNING  REACH 124 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT  ***
*** WARNING  REACH 104 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT  ***
*** WARNING  REACH 107 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT  ***
*** WARNING  REACH 108 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT  ***
*** WARNING  REACH  41 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT  ***
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*** WARNING  REACH  81 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT  ***
*** WARNING  REACH  80 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT  ***
*** WARNING  REACH 109 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT  ***
*** WARNING  REACH 110 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT  ***
*** WARNING  REACH 111 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT  ***
*** WARNING  REACH  48 LENGTH FACTOR (K*) GREATER THAN 1.0, CONSIDER DIVIDING REACH LENGTH  ***
*** WARNING  REACH  57 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT  ***
*** WARNING  REACH  59 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT  ***
*** WARNING  REACH  59 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT  ***
*** WARNING  REACH  60 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT  ***
*** WARNING  REACH  52 LENGTH FACTOR (K*) GREATER THAN 1.0, CONSIDER DIVIDING REACH LENGTH  ***
*** WARNING  REACH  58 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT  ***
*** WARNING  REACH  60 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT  ***
*** WARNING  REACH  60 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT  ***
*** WARNING  REACH  61 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT  ***
*** WARNING  REACH  67 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT  ***
*** WARNING  REACH  69 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT  ***
*** WARNING  REACH  69 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT  ***
*** WARNING  REACH  75 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT  ***
*** WARNING  REACH  75 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT  ***
*** WARNING  REACH 112 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT  ***
*** WARNING  REACH  65 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT  ***
*** WARNING  REACH  68 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT  ***
*** WARNING  REACH  70 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT  ***
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*** WARNING  REACH  74 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT  ***

*** WARNING  REACH 113 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT  ***

EXECUTIVE CONTROL OPERATION ENDCMP     COMPUTATIONS COMPLETED FOR PASS   1                    RECORD ID


EXECUTIVE CONTROL OPERATION ENDJOB                                                              RECORD ID
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SUMMARY TABLE 1 - SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL INSTRUCTIONS IN THE ORDER PERFORMED
(A STAR(*) AFTER THE PEAK DISCHARGE TIME AND RATE (CFS) VALUES INDICATES A FLAT TOP HYDROGRAPH
A QUESTION MARK(?) INDICATES A HYDROGRAPH WITH PEAK AS LAST POINT.)

SECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RAIN TABLE #	ANTEC MOIST COND	MAIN TIME INCREM (HR)	PRECIPITATION BEGIN (HR)	PRECIPITATION AMOUNT (IN)	PRECIPITATION DURATION (HR)	RUNOFF AMOUNT (IN)	PEAK DISCHARGE ELEVATION (FT)	PEAK DISCHARGE TIME (HR)	PEAK DISCHARGE RATE (CFS)	PEAK DISCHARGE RATE (CSM)
ALTERNATE 1 STORM 1													
XSECTION 1	RUNOFF	.15	1	2	.08	.0	1.44	24.00	.95	---	12.47	77.45	523.3
XSECTION 2	RUNOFF	.10	1	2	.08	.0	1.44	24.00	.95	---	12.45	52.48	541.0
XSECTION 3	REACH	.10	1	2	.08	.0	1.44	24.00	.95	---	12.83	44.46	458.4
XSECTION 3	RUNOFF	.05	1	2	.08	.0	1.44	24.00	.18	---	12.57	5.96	126.3
XSECTION 3	ADDHYD	.14	1	2	.08	.0	1.44	24.00	.70	---	12.79	47.19	327.7
XSECTION 3	ADDHYD	.29	1	2	.08	.0	1.44	24.00	.83	---	12.52	119.08	407.8
XSECTION 5	REACH	.29	1	2	.08	.0	1.44	24.00	.83	---	12.62	116.94	400.5
XSECTION 4	RUNOFF	.19	1	2	.08	.0	1.44	24.00	.95	---	12.45	104.29	534.8
XSECTION 5	REACH	.19	1	2	.08	.0	1.44	24.00	.95	---	12.74	95.84	491.5
XSECTION 5	RUNOFF	.13	1	2	.08	.0	1.44	24.00	.18	---	12.67	12.69	101.5
XSECTION 5	ADDHYD	.32	1	2	.08	.0	1.44	24.00	.65	---	12.72	108.12	337.9
XSECTION 5	ADDHYD	.61	1	2	.08	.0	1.44	24.00	.73	---	12.64	221.49	361.9
XSECTION 19	RUNOFF	.02	1	2	.08	.0	1.44	24.00	.96	---	12.44	12.02	546.5
XSECTION 18	REACH	.02	1	2	.08	.0	1.44	24.00	.95	---	12.53	11.86	539.2
XSECTION 18	RUNOFF	.18	1	2	.08	.0	1.44	24.00	.20	---	12.75	18.39	100.0
XSECTION 18	ADDHYD	.21	1	2	.08	.0	1.44	24.00	.28	---	12.62	26.95	130.8
XSECTION 18	ADDHYD	.82	1	2	.08	.0	1.44	24.00	.62	---	12.64	248.27	303.5
XSECTION 8	REACH	.82	1	2	.08	.0	1.44	24.00	.62	1496.57	12.64	248.27	303.5
XSECTION 6	RUNOFF	.11	1	2	.08	.0	1.44	24.00	.28	---	12.80	14.02	128.7
XSECTION 8	REACH	.11	1	2	.08	.0	1.44	24.00	.28	1494.40	12.99	12.76	117.1
XSECTION 7	RUNOFF	.12	1	2	.08	.0	1.44	24.00	.18	---	12.75	10.52	89.9
XSECTION 8	REACH	.12	1	2	.08	.0	1.44	24.00	.18	1494.34	12.94	9.34	79.8
XSECTION 8	ADDHYD	.23	1	2	.08	.0	1.44	24.00	.23	1494.57	12.97	22.04	97.5
XSECTION 8	RUNOFF	.13	1	2	.08	.0	1.44	24.00	.20	---	12.78	12.55	95.8
XSECTION 8	ADDHYD	.36	1	2	.08	.0	1.44	24.00	.22	1494.72	12.90	33.31	93.3
STRUCTURE 8	RESVOR	.36	1	2	.08	.0	1.44	24.00	.22	1491.50	13.23	24.12	67.6
XSECTION 8	ADDHYD	1.17	1	2	.08	.0	1.44	24.00	.50	1496.60	12.65	260.94	222.1
XSECTION 14	REACH	1.17	1	2	.08	.0	1.44	24.00	.50	1486.73	12.98	215.04	183.0
XSECTION 9	RUNOFF	.07	1	2	.08	.0	1.44	24.00	.23	---	12.88	6.23	94.4
XSECTION 14	REACH	.07	1	2	.08	.0	1.44	24.00	.22	1484.31	13.20	4.99	75.6
XSECTION 14	ADDHYD	1.24	1	2	.08	.0	1.44	24.00	.48	1486.76	12.98	219.48	176.9
XSECTION 144	RUNOFF	.13	1	2	.08	.0	1.44	24.00	.23	---	12.88	12.46	94.4

SUMMARY TABLE 1 - SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL INSTRUCTIONS IN THE ORDER PERFORMED
(A STAR(*) AFTER THE PEAK DISCHARGE TIME AND RATE (CFS) VALUES INDICATES A FLAT TOP HYDROGRAPH
A QUESTION MARK(?) INDICATES A HYDROGRAPH WITH PEAK AS LAST POINT.)

SECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RAIN TABLE #	ANTEC MOIST COND	MAIN TIME INCREM (HR)	PRECIPITATION BEGIN (HR)	PRECIPITATION AMOUNT (IN)	PRECIPITATION DURATION (HR)	RUNOFF AMOUNT (IN)	PEAK DISCHARGE ELEVATION (FT)	PEAK DISCHARGE TIME (HR)	PEAK DISCHARGE RATE (CFS)	PEAK DISCHARGE RATE (CSM)
ALTERNATE 1 STORM 1													
XSECTION 14	REACH	.13	1	2	.08	.0	1.44	24.00	.22	1484.49	13.13	10.92	82.8
XSECTION 14	ADDHYD	1.37	1	2	.08	.0	1.44	24.00	.46	1486.82	12.99	229.79	167.4
XSECTION 16	RUNOFF	.12	1	2	.08	.0	1.44	24.00	.45	---	12.61	30.00	252.1
XSECTION 15	REACH	.12	1	2	.08	.0	1.44	24.00	.45	---	12.73	28.73	241.4
XSECTION 15	RUNOFF	.07	1	2	.08	.0	1.44	24.00	.31	---	12.83	9.91	135.8
XSECTION 15	ADDHYD	.19	1	2	.08	.0	1.44	24.00	.39	---	12.75	38.35	199.7
XSECTION 14	ADDHYD	1.56	1	2	.08	.0	1.44	24.00	.45	1487.02	12.95	260.31	166.3
XSECTION 14	RUNOFF	.18	1	2	.08	.0	1.44	24.00	.34	---	12.56	39.25	221.7
XSECTION 14	ADDHYD	1.74	1	2	.08	.0	1.44	24.00	.44	1487.08	12.91	271.93	156.1
XSECTION 27	REACH	1.74	1	2	.08	.0	1.44	24.00	.44	---	13.28	222.41	127.7
XSECTION 27	RUNOFF	.19	1	2	.08	.0	1.44	24.00	.31	---	13.03	20.85	110.9
XSECTION 27	ADDHYD	1.93	1	2	.08	.0	1.44	24.00	.42	---	13.26	240.93	124.8
XSECTION 17	RUNOFF	.06	1	2	.08	.0	1.44	24.00	.96	---	12.44	32.20	545.8
XSECTION 25	REACH	.06	1	2	.08	.0	1.44	24.00	.94	---	13.09	23.03	390.4
XSECTION 25	RUNOFF	.09	1	2	.08	.0	1.44	24.00	.34	---	12.57	19.04	213.9
XSECTION 25	ADDHYD	.15	1	2	.08	.0	1.44	24.00	.58	---	12.65	32.63	220.5
XSECTION 27	REACH	.15	1	2	.08	.0	1.44	24.00	.57	---	13.27	23.60	159.5
XSECTION 27	ADDHYD	2.08	1	2	.08	.0	1.44	24.00	.43	---	13.26	264.52	127.3
XSECTION 24	RUNOFF	.20	1	2	.08	.0	1.44	24.00	.45	---	12.57	52.96	267.5
XSECTION 26	REACH	.20	1	2	.08	.0	1.44	24.00	.45	---	12.66	52.58	265.5
XSECTION 26	RUNOFF	.07	1	2	.08	.0	1.44	24.00	.41	---	12.52	18.66	278.5
XSECTION 26	ADDHYD	.26	1	2	.08	.0	1.44	24.00	.44	---	12.60	68.16	257.2
XSECTION 27	ADDHYD	2.34	1	2	.08	.0	1.44	24.00	.43	---	13.21	277.30	118.4
XSECTION 10	RUNOFF	.09	1	2	.08	.0	1.44	24.00	.18	---	12.67	9.64	101.5
XSECTION 11	REACH	.09	1	2	.08	.0	1.44	24.00	.18	---	13.03	6.60	69.5
XSECTION 11	RUNOFF	.23	1	2	.08	.0	1.44	24.00	.23	---	12.82	23.81	101.7
XSECTION 11	ADDHYD	.33	1	2	.08	.0	1.44	24.00	.21	---	12.87	29.47	89.6
XSECTION 28	REACH	.33	1	2	.08	.0	1.44	24.00	.20	---	14.34	11.18	34.0
XSECTION 13	RUNOFF	.13	1	2	.08	.0	1.44	24.00	.31	---	12.66	20.83	166.7
XSECTION 28	REACH	.13	1	2	.08	.0	1.44	24.00	.29	---	14.09	6.09	48.7
XSECTION 28	ADDHYD	.45	1	2	.08	.0	1.44	24.00	.22	---	14.26	17.15	37.8
XSECTION 28	RUNOFF	.16	1	2	.08	.0	1.44	24.00	.31	---	12.85	20.57	131.9
XSECTION 28	ADDHYD	.61	1	2	.08	.0	1.44	24.00	.25	---	12.87	20.71	33.9
XSECTION 27	REACH	.61	1	2	.08	.0	1.44	24.00	.24	---	14.20	20.40	33.4
XSECTION 27	ADDHYD	2.95	1	2	.08	.0	1.44	24.00	.40	---	13.19	296.04	100.3
XSECTION 37	REACH	2.95	1	2	.08	.0	1.44	24.00	.39	1453.70	13.33	293.32	99.3

SUMMARY TABLE 1 - SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL INSTRUCTIONS IN THE ORDER PERFORMED
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A QUESTION MARK(?) INDICATES A HYDROGRAPH WITH PEAK AS LAST POINT.)

SECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RAIN TABLE #	ANTEC MOIST COND	MAIN TIME INCREM (HR)	PRECIPITATION BEGIN (HR)	PRECIPITATION AMOUNT (IN)	PRECIPITATION DURATION (HR)	RUNOFF AMOUNT (IN)	PEAK DISCHARGE ELEVATION (FT)	PEAK DISCHARGE TIME (HR)	PEAK DISCHARGE RATE (CFS)	PEAK DISCHARGE RATE (CSM)
ALTERNATE 1 STORM 1													
XSECTION 37	RUNOFF	.13	1	2	.08	.0	1.44	24.00	.34	---	12.50	30.46	243.7
XSECTION 37	ADDHYD	3.08	1	2	.08	.0	1.44	24.00	.39	1453.71	13.33	295.74	96.1
STRUCTURE 37	RESVOR	3.08	1	2	.08	.0	1.44	24.00	.38	1448.94	13.38	294.98	95.8
XSECTION 85	REACH	3.08	1	2	.08	.0	1.44	24.00	.37	---	13.47	294.78	95.8
XSECTION 143	RUNOFF	.06	1	2	.08	.0	1.44	24.00	.41	---	12.61	14.66	234.6
STRUCTURE 43	RESVOR	.06	1	2	.08	.0	1.44	24.00	.41	1428.03	12.85	10.00	160.1
STRUCTURE 44	RESVOR	.06	1	2	.08	.0	1.44	24.00	.40	1418.07	13.40	5.76	92.2
XSECTION 85	ADDHYD	3.14	1	2	.08	.0	1.44	24.00	.38	---	13.47	300.52	95.7
XSECTION 85	REACH	3.14	1	2	.08	.0	1.44	24.00	.38	---	13.47	300.52	95.7
XSECTION 85	RUNOFF	.06	1	2	.08	.0	1.44	24.00	.37	---	12.61	13.74	218.1
XSECTION 85	ADDHYD	3.20	1	2	.08	.0	1.44	24.00	.38	---	13.46	302.33	94.4
XSECTION 84	REACH	3.20	1	2	.08	.0	1.44	24.00	.38	3.03	13.46	302.33	94.4
XSECTION 84	RUNOFF	.06	1	2	.08	.0	1.44	24.00	.37	---	12.61	13.74	218.1
XSECTION 84	ADDHYD	3.27	1	2	.08	.0	1.44	24.00	.38	3.04	13.46	304.16	93.1
XSECTION 34	RUNOFF	.13	1	2	.08	.0	1.44	24.00	.37	---	12.72	23.17	185.4
XSECTION 35	REACH	.13	1	2	.08	.0	1.44	24.00	.37	---	12.90	21.13	169.0
XSECTION 35	RUNOFF	.13	1	2	.08	.0	1.44	24.00	.34	---	12.60	25.51	204.1
XSECTION 35	ADDHYD	.25	1	2	.08	.0	1.44	24.00	.36	---	12.67	41.51	166.1
XSECTION 91	REACH	.25	1	2	.08	.0	1.44	24.00	.35	---	13.07	32.04	128.2
XSECTION 92	RUNOFF	.13	1	2	.08	.0	1.44	24.00	.45	---	12.57	33.19	265.5
XSECTION 91	REACH	.13	1	2	.08	.0	1.44	24.00	.45	---	12.57	33.19	265.5
XSECTION 91	RUNOFF	.13	1	2	.08	.0	1.44	24.00	.45	---	12.57	33.19	265.5
XSECTION 91	ADDHYD	.25	1	2	.08	.0	1.44	24.00	.45	---	12.57	66.38	265.5
XSECTION 36	ADDHYD	.50	1	2	.08	.0	1.44	24.00	.40	---	12.63	82.46	164.9
XSECTION 90	REACH	.50	1	2	.08	.0	1.44	24.00	.40	---	12.63	82.46	164.9
XSECTION 90	RUNOFF	.11	1	2	.08	.0	1.44	24.00	.41	---	12.65	23.58	216.3
XSECTION 90	ADDHYD	.61	1	2	.08	.0	1.44	24.00	.40	---	12.63	105.99	174.0
XSECTION 36	RUNOFF	.13	1	2	.08	.0	1.44	24.00	.34	---	12.59	25.67	205.3
XSECTION 90	REACH	.13	1	2	.08	.0	1.44	24.00	.34	---	12.93	17.61	140.9
XSECTION 90	ADDHYD	.73	1	2	.08	.0	1.44	24.00	.39	---	12.66	118.22	161.1
XSECTION 88	REACH	.73	1	2	.08	.0	1.44	24.00	.39	---	12.66	118.22	161.1
XSECTION 89	RUNOFF	.05	1	2	.08	.0	1.44	24.00	.38	---	12.55	11.33	241.1
XSECTION 88	REACH	.05	1	2	.08	.0	1.44	24.00	.37	---	12.64	11.17	237.6
XSECTION 88	RUNOFF	.09	1	2	.08	.0	1.44	24.00	.49	---	12.71	22.31	237.4
XSECTION 88	ADDHYD	.14	1	2	.08	.0	1.44	24.00	.45	---	12.68	33.27	236.0
XSECTION 88	ADDHYD	.88	1	2	.08	.0	1.44	24.00	.40	---	12.66	151.45	173.1

SUMMARY TABLE 1 - SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL INSTRUCTIONS IN THE ORDER PERFORMED
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A QUESTION MARK(?) INDICATES A HYDROGRAPH WITH PEAK AS LAST POINT.)

SECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RAIN TABLE #	ANTEC MOIST COND	MAIN TIME INCREM (HR)	PRECIPITATION BEGIN (HR)	PRECIPITATION AMOUNT (IN)	PRECIPITATION DURATION (HR)	RUNOFF AMOUNT (IN)	PEAK DISCHARGE ELEVATION (FT)	PEAK DISCHARGE TIME (HR)	PEAK DISCHARGE RATE (CFS)	PEAK DISCHARGE RATE (CSM)
ALTERNATE 1 STORM 1													
XSECTION 87	REACH	.88	1	2	.08	.0	1.44	24.00	.40	1430.02	12.75	150.91	172.5
XSECTION 86	RUNOFF	.06	1	2	.08	.0	1.44	24.00	.45	---	12.50	19.01	301.7
XSECTION 87	REACH	.06	1	2	.08	.0	1.44	24.00	.44	1429.84	12.94	12.82	203.5
XSECTION 87	RUNOFF	.06	1	2	.08	.0	1.44	24.00	.49	---	12.59	17.56	278.7
XSECTION 87	ADDHYD	.13	1	2	.08	.0	1.44	24.00	.47	1429.88	12.67	25.86	205.3
XSECTION 87	ADDHYD	1.00	1	2	.08	.0	1.44	24.00	.41	1430.04	12.74	176.22	176.0
XSECTION 84	REACH	1.00	1	2	.08	.0	1.44	24.00	.41	2.08	12.83	175.76	175.6
XSECTION 84	DIVERT	1.14	1	2	.08	.0	1.44	24.00	.38	1.50	13.46	108.14	94.6
XSECTION 83	DIVERT	2.12	1	2	.08	.0	1.44	24.00	.37	1.50	13.46	196.02	92.3
XSECTION 84	ADDHYD	2.14	1	2	.08	.0	1.44	24.00	.39	2.68	12.88	255.60	119.2
XSECTION 105	REACH	2.14	1	2	.08	.0	1.44	24.00	.39	1417.77	12.88	255.60	119.2
XSECTION 102	RUNOFF	.06	1	2	.08	.0	1.44	24.00	.31	---	12.67	10.32	163.8
XSECTION 105	REACH	.06	1	2	.08	.0	1.44	24.00	.30	1417.25	13.04	7.45	118.2
XSECTION 105	RUNOFF	.06	1	2	.08	.0	1.44	24.00	.20	---	12.70	6.70	106.3
XSECTION 105	ADDHYD	.13	1	2	.08	.0	1.44	24.00	.25	1417.31	12.84	12.38	98.3
XSECTION 105	ADDHYD	2.27	1	2	.08	.0	1.44	24.00	.39	1417.78	12.88	267.93	118.0
XSECTION 104	REACH	2.27	1	2	.08	.0	1.44	24.00	.39	4.46	12.88	267.93	118.0
XSECTION 104	RUNOFF	.07	1	2	.08	.0	1.44	24.00	.20	---	12.73	7.14	103.5
XSECTION 104	ADDHYD	2.34	1	2	.08	.0	1.44	24.00	.38	4.55	12.87	274.21	117.2
XSECTION 83	REACH	2.12	1	2	.08	.0	1.44	24.00	.37	1.50	13.46	196.02	92.3
XSECTION 83	RUNOFF	.06	1	2	.08	.0	1.44	24.00	.41	---	12.60	14.96	237.5
XSECTION 83	ADDHYD	2.19	1	2	.08	.0	1.44	24.00	.37	1.51	13.45	197.99	90.6
XSECTION 106	REACH	2.19	1	2	.08	.0	1.44	24.00	.37	---	13.45	197.99	90.6
XSECTION 106	RUNOFF	.06	1	2	.08	.0	1.44	24.00	.23	---	12.65	8.10	128.5
XSECTION 106	ADDHYD	2.25	1	2	.08	.0	1.44	24.00	.37	---	13.44	199.42	88.7
XSECTION 107	REACH	2.25	1	2	.08	.0	1.44	24.00	.37	---	13.44	199.42	88.7
XSECTION 107	RUNOFF	.06	1	2	.08	.0	1.44	24.00	.31	---	12.57	11.63	197.2
XSECTION 107	ADDHYD	2.31	1	2	.08	.0	1.44	24.00	.37	---	13.43	200.66	86.9
XSECTION 12	RUNOFF	.07	1	2	.08	.0	1.44	24.00	.31	---	12.57	13.80	197.2
XSECTION 29	REACH	.07	1	2	.08	.0	1.44	24.00	.25	---	14.65	2.02	28.3
XSECTION 29	RUNOFF	.25	1	2	.08	.0	1.44	24.00	.28	---	12.93	27.58	110.3
XSECTION 29	ADDHYD	.32	1	2	.08	.0	1.44	24.00	.27	---	12.93	27.58	86.2
XSECTION 33	REACH	.32	1	2	.08	.0	1.44	24.00	.27	---	13.05	27.23	85.1
XSECTION 33	RUNOFF	.23	1	2	.08	.0	1.44	24.00	.25	---	13.01	21.38	91.4
XSECTION 33	ADDHYD	.55	1	2	.08	.0	1.44	24.00	.26	---	13.04	48.57	87.7
XSECTION 30	RUNOFF	.13	1	2	.08	.0	1.44	24.00	.23	---	12.82	12.77	102.2

SUMMARY TABLE 1 - SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL INSTRUCTIONS IN THE ORDER PERFORMED
(A STAR(*) AFTER THE PEAK DISCHARGE TIME AND RATE (CFS) VALUES INDICATES A FLAT TOP HYDROGRAPH
A QUESTION MARK(?) INDICATES A HYDROGRAPH WITH PEAK AS LAST POINT.)

SECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RAIN TABLE #	ANTEC MOIST COND	MAIN TIME INCREM (HR)	PRECIPITATION BEGIN (HR)	PRECIPITATION AMOUNT (IN)	PRECIPITATION DURATION (HR)	RUNOFF AMOUNT (IN)	PEAK DISCHARGE ELEVATION (FT)	PEAK DISCHARGE TIME (HR)	PEAK DISCHARGE RATE (CFS)	PEAK DISCHARGE RATE (CSM)
ALTERNATE 1 STORM 1													
XSECTION 32	REACH	.13	1	2	.08	.0	1.44	24.00	.23	---	12.95	12.38	99.0
STRUCTURE 33	RESVOR	.13	1	2	.08	.0	1.44	24.00	.22	1462.66	13.41	6.88	55.0
XSECTION 33	ADDHYD	.68	1	2	.08	.0	1.44	24.00	.26	---	13.06	54.09	79.7
XSECTION 93	REACH	.68	1	2	.08	.0	1.44	24.00	.25	---	13.17	53.67	79.0
XSECTION 93	RUNOFF	.19	1	2	.08	.0	1.44	24.00	.37	---	12.58	44.76	229.5
XSECTION 93	ADDHYD	.87	1	2	.08	.0	1.44	24.00	.28	---	12.70	65.47	74.9
XSECTION 95	REACH	.87	1	2	.08	.0	1.44	24.00	.28	---	12.70	65.47	74.9
XSECTION 32	RUNOFF	.11	1	2	.08	.0	1.44	24.00	.25	---	12.80	12.67	116.3
XSECTION 94	REACH	.11	1	2	.08	.0	1.44	24.00	.24	---	13.77	6.75	61.9
XSECTION 94	RUNOFF	.14	1	2	.08	.0	1.44	24.00	.38	---	12.53	34.91	251.2
XSECTION 94	ADDHYD	.25	1	2	.08	.0	1.44	24.00	.32	---	12.54	34.94	140.9
XSECTION 95	REACH	.25	1	2	.08	.0	1.44	24.00	.31	---	13.07	23.29	93.9
XSECTION 95	RUNOFF	.13	1	2	.08	.0	1.44	24.00	.45	---	12.85	23.46	187.7
XSECTION 95	ADDHYD	.37	1	2	.08	.0	1.44	24.00	.36	---	13.00	44.62	119.6
XSECTION 95	ADDHYD	1.25	1	2	.08	.0	1.44	24.00	.30	---	13.02	107.69	86.4
XSECTION 96	REACH	1.25	1	2	.08	.0	1.44	24.00	.30	---	13.02	107.69	86.4
XSECTION 96	RUNOFF	.13	1	2	.08	.0	1.44	24.00	.31	---	12.62	22.83	182.6
XSECTION 96	ADDHYD	1.37	1	2	.08	.0	1.44	24.00	.30	---	12.74	121.52	88.6
XSECTION 142	REACH	1.37	1	2	.08	.0	1.44	24.00	.30	---	12.74	121.52	88.6
XSECTION 142	RUNOFF	.25	1	2	.08	.0	1.44	24.00	.34	---	13.15	27.45	109.8
XSECTION 142	ADDHYD	1.62	1	2	.08	.0	1.44	24.00	.31	---	12.97	142.77	88.0
XSECTION 97	RUNOFF	.19	1	2	.08	.0	1.44	24.00	.49	---	12.60	51.76	275.3
XSECTION 98	REACH	.19	1	2	.08	.0	1.44	24.00	.49	---	12.76	47.62	253.3
XSECTION 98	RUNOFF	.09	1	2	.08	.0	1.44	24.00	.45	---	12.54	26.96	286.3
XSECTION 98	ADDHYD	.28	1	2	.08	.0	1.44	24.00	.48	---	12.63	68.75	243.8
XSECTION 99	REACH	.28	1	2	.08	.0	1.44	24.00	.47	---	12.82	62.02	219.9
XSECTION 99	RUNOFF	.09	1	2	.08	.0	1.44	24.00	.45	---	12.58	24.67	262.5
XSECTION 99	ADDHYD	.38	1	2	.08	.0	1.44	24.00	.47	---	12.72	81.26	216.1
XSECTION 139	REACH	.38	1	2	.08	.0	1.44	24.00	.46	---	13.08	68.17	181.3
XSECTION 101	RUNOFF	.05	1	2	.08	.0	1.44	24.00	.58	---	12.58	15.27	324.8
XSECTION 100	REACH	.05	1	2	.08	.0	1.44	24.00	.58	---	12.58	15.27	324.8
XSECTION 100	RUNOFF	.08	1	2	.08	.0	1.44	24.00	.45	---	12.54	22.04	282.6
XSECTION 101	ADDHYD	.13	1	2	.08	.0	1.44	24.00	.50	---	12.55	37.24	297.9
XSECTION 139	REACH	.13	1	2	.08	.0	1.44	24.00	.50	---	12.55	37.24	297.9
XSECTION 139	ADDHYD	.50	1	2	.08	.0	1.44	24.00	.47	---	12.94	78.02	155.7
XSECTION 141	RUNOFF	.19	1	2	.08	.0	1.44	24.00	.49	---	12.60	51.76	275.3

SUMMARY TABLE 1 - SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL INSTRUCTIONS IN THE ORDER PERFORMED
(A STAR(*) AFTER THE PEAK DISCHARGE TIME AND RATE (CFS) VALUES INDICATES A FLAT TOP HYDROGRAPH
A QUESTION MARK(?) INDICATES A HYDROGRAPH WITH PEAK AS LAST POINT.)

SECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RAIN TABLE #	ANTEC MOIST COND	MAIN TIME INCREM (HR)	PRECIPITATION BEGIN (HR)	PRECIPITATION AMOUNT (IN)	PRECIPITATION DURATION (HR)	RUNOFF AMOUNT (IN)	PEAK DISCHARGE ELEVATION (FT)	PEAK DISCHARGE TIME (HR)	PEAK DISCHARGE RATE (CFS)	PEAK DISCHARGE RATE (CSM)
ALTERNATE 1 STORM 1													
XSECTION 140	REACH	.19	1	2	.08	.0	1.44	24.00	.49	---	12.68	51.82	275.6
XSECTION 140	RUNOFF	.13	1	2	.08	.0	1.44	24.00	.45	---	12.56	34.00	272.0
XSECTION 140	ADDHYD	.31	1	2	.08	.0	1.44	24.00	.47	---	12.62	83.74	267.5
XSECTION 137	RUNOFF	.08	1	2	.08	.0	1.44	24.00	.23	---	12.62	10.76	137.9
XSECTION 140	ADDHYD	.39	1	2	.08	.0	1.44	24.00	.42	---	12.62	94.50	241.7
XSECTION 139	REACH	.39	1	2	.08	.0	1.44	24.00	.42	---	12.73	92.41	236.3
XSECTION 139	ADDHYD	.89	1	2	.08	.0	1.44	24.00	.45	---	12.74	168.94	189.4
XSECTION 136	RUNOFF	.07	1	2	.08	.0	1.44	24.00	.96	---	12.44	36.07	546.5
XSECTION 138	REACH	.07	1	2	.08	.0	1.44	24.00	.94	---	12.90	30.14	456.7
XSECTION 138	RUNOFF	.20	1	2	.08	.0	1.44	24.00	.38	---	12.49	54.10	266.5
XSECTION 138	ADDHYD	.27	1	2	.08	.0	1.44	24.00	.52	---	12.52	75.96	282.4
XSECTION 139	REACH	.27	1	2	.08	.0	1.44	24.00	.51	---	12.61	75.90	282.2
XSECTION 139	ADDHYD	1.16	1	2	.08	.0	1.44	24.00	.47	---	12.66	237.55	204.6
XSECTION 139	RUNOFF	.19	1	2	.08	.0	1.44	24.00	.49	---	12.55	55.66	296.0
XSECTION 139	ADDHYD	1.35	1	2	.08	.0	1.44	24.00	.47	---	12.64	289.15	214.3
XSECTION 128	RUNOFF	.04	1	2	.08	.0	1.44	24.00	.26	---	12.47	7.40	205.4
XSECTION 129	REACH	.04	1	2	.08	.0	1.44	24.00	.26	---	12.47	7.40	205.4
XSECTION 129	RUNOFF	.11	1	2	.08	.0	1.44	24.00	.31	---	12.47	26.19	242.5
XSECTION 129	ADDHYD	.14	1	2	.08	.0	1.44	24.00	.30	---	12.47	33.58	233.2
XSECTION 130	RUNOFF	.03	1	2	.08	.0	1.44	24.00	.69	---	12.45	13.79	444.7
XSECTION 129	ADDHYD	.17	1	2	.08	.0	1.44	24.00	.37	---	12.46	47.32	270.4
XSECTION 131	REACH	.17	1	2	.08	.0	1.44	24.00	.37	---	12.55	45.61	260.6
XSECTION 127	RUNOFF	.16	1	2	.08	.0	1.44	24.00	.31	---	12.48	36.98	232.6
XSECTION 131	ADDHYD	.33	1	2	.08	.0	1.44	24.00	.34	---	12.52	81.76	244.8
XSECTION 132	RUNOFF	.14	1	2	.08	.0	1.44	24.00	.54	---	12.49	50.29	346.3
XSECTION 131	REACH	.14	1	2	.08	.0	1.44	24.00	.53	---	12.71	44.59	307.5
XSECTION 131	ADDHYD	.48	1	2	.08	.0	1.44	24.00	.40	---	12.54	119.29	249.0
XSECTION 131	RUNOFF	.12	1	2	.08	.0	1.44	24.00	.45	---	12.50	35.90	301.7
XSECTION 131	ADDHYD	.60	1	2	.08	.0	1.44	24.00	.41	---	12.53	155.35	259.8
XSECTION 133	RUNOFF	.08	1	2	.08	.0	1.44	24.00	.96	---	12.44	43.66	545.8
XSECTION 131	REACH	.08	1	2	.08	.0	1.44	24.00	.95	---	12.71	40.12	501.6
XSECTION 131	ADDHYD	.68	1	2	.08	.0	1.44	24.00	.47	---	12.54	192.23	283.5
XSECTION 126	REACH	.68	1	2	.08	.0	1.44	24.00	.47	---	12.54	192.23	283.5
XSECTION 126	RUNOFF	.16	1	2	.08	.0	1.44	24.00	.95	---	12.46	83.00	525.3
XSECTION 126	ADDHYD	.84	1	2	.08	.0	1.44	24.00	.56	---	12.52	273.74	327.4
XSECTION 134	REACH	.84	1	2	.08	.0	1.44	24.00	.56	---	12.52	273.74	327.4

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A QUESTION MARK(?) INDICATES A HYDROGRAPH WITH PEAK AS LAST POINT.)

SECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RAIN TABLE #	ANTEC MOIST COND	MAIN TIME INCREM (HR)	PRECIPITATION BEGIN (HR)	PRECIPITATION AMOUNT (IN)	PRECIPITATION DURATION (HR)	RUNOFF AMOUNT (IN)	PEAK DISCHARGE ELEVATION (FT)	PEAK DISCHARGE TIME (HR)	PEAK DISCHARGE RATE (CFS)	PEAK DISCHARGE RATE (CSM)
ALTERNATE 1 STORM 1													
XSECTION 135	RUNOFF	.04	1	2	.08	.0	1.44	24.00	.96	---	12.44	22.95	546.5
XSECTION 134	REACH	.04	1	2	.08	.0	1.44	24.00	.94	---	13.01	16.86	401.3
XSECTION 134	ADDHYD	.88	1	2	.08	.0	1.44	24.00	.58	---	12.52	283.80	323.2
XSECTION 134	RUNOFF	.20	1	2	.08	.0	1.44	24.00	.41	---	12.52	54.86	278.5
XSECTION 134	ADDHYD	1.07	1	2	.08	.0	1.44	24.00	.55	---	12.52	338.67	315.0
XSECTION 125	RUNOFF	.12	1	2	.08	.0	1.44	24.00	.96	---	12.44	63.94	546.5
XSECTION 125	ADDHYD	1.19	1	2	.08	.0	1.44	24.00	.59	---	12.50	393.99	330.5
XSECTION 124	REACH	1.19	1	2	.08	.0	1.44	24.00	.59	---	12.59	390.75	327.8
XSECTION 124	RUNOFF	.22	1	2	.08	.0	1.44	24.00	.38	---	12.50	57.70	263.5
XSECTION 124	ADDHYD	1.41	1	2	.08	.0	1.44	24.00	.56	---	12.56	444.75	315.2
XSECTION 124	REACH	1.35	1	2	.08	.0	1.44	24.00	.47	---	12.64	289.15	214.3
XSECTION 124	ADDHYD	2.76	1	2	.08	.0	1.44	24.00	.51	---	12.59	725.22	262.8
XSECTION 103	RUNOFF	.08	1	2	.08	.0	1.44	24.00	.38	---	12.50	21.28	262.7
XSECTION 124	ADDHYD	2.84	1	2	.08	.0	1.44	24.00	.51	---	12.58	744.70	262.1
XSECTION 104	REACH	2.84	1	2	.08	.0	1.44	24.00	.51	54.95	12.58	744.70	262.1
XSECTION 104	ADDHYD	5.18	1	2	.08	.0	1.44	24.00	.45	77.73	12.62	941.38	181.7
XSECTION 107	REACH	5.18	1	2	.08	.0	1.44	24.00	.45	---	12.62	941.38	181.7
XSECTION 107	ADDHYD	7.49	1	2	.08	.0	1.44	24.00	.43	---	12.65	1057.92	141.3
XSECTION 123	RUNOFF	.21	1	2	.08	.0	1.44	24.00	.95	---	12.45	112.83	529.7
XSECTION 107	ADDHYD	7.70	1	2	.08	.0	1.44	24.00	.44	---	12.63	1129.59	146.7
XSECTION 108	REACH	7.70	1	2	.08	.0	1.44	24.00	.44	---	12.63	1129.59	146.7
XSECTION 108	RUNOFF	.03	1	2	.08	.0	1.44	24.00	.34	---	12.52	5.96	238.3
XSECTION 108	ADDHYD	7.73	1	2	.08	.0	1.44	24.00	.44	---	12.62	1134.40	146.8
XSECTION 22	RUNOFF	.15	1	2	.08	.0	1.44	24.00	.34	---	12.59	31.57	206.3
XSECTION 23	RUNOFF	.09	1	2	.08	.0	1.44	24.00	.95	---	12.45	48.62	534.3
XSECTION 23	ADDHYD	.24	1	2	.08	.0	1.44	24.00	.57	---	12.49	77.29	316.8
XSECTION 41	REACH	.24	1	2	.08	.0	1.44	24.00	.57	---	12.58	76.57	313.8
XSECTION 41	RUNOFF	.17	1	2	.08	.0	1.44	24.00	.38	---	12.55	41.81	243.1
XSECTION 41	ADDHYD	.42	1	2	.08	.0	1.44	24.00	.49	---	12.57	118.08	283.8
XSECTION 81	REACH	.42	1	2	.08	.0	1.44	24.00	.49	---	12.65	117.10	281.5
XSECTION 38	RUNOFF	.13	1	2	.08	.0	1.44	24.00	.23	---	12.59	18.03	144.2
XSECTION 40	REACH	.13	1	2	.08	.0	1.44	24.00	.22	---	13.02	11.23	89.8
XSECTION 40	RUNOFF	.09	1	2	.08	.0	1.44	24.00	.31	---	12.62	17.17	182.6
XSECTION 40	ADDHYD	.22	1	2	.08	.0	1.44	24.00	.26	---	12.71	22.59	103.2
XSECTION 82	REACH	.22	1	2	.08	.0	1.44	24.00	.26	---	13.08	18.94	86.5
XSECTION 82	RUNOFF	.06	1	2	.08	.0	1.44	24.00	.38	---	12.51	16.38	260.0

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A QUESTION MARK(?) INDICATES A HYDROGRAPH WITH PEAK AS LAST POINT.)

SECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RAIN TABLE #	ANTEC MOIST COND	MAIN TIME INCREM (HR)	PRECIPITATION BEGIN (HR)	PRECIPITATION AMOUNT (IN)	PRECIPITATION DURATION (HR)	RUNOFF AMOUNT (IN)	PEAK DISCHARGE ELEVATION (FT)	PEAK DISCHARGE TIME (HR)	PEAK DISCHARGE RATE (CFS)	PEAK DISCHARGE RATE (CSM)
ALTERNATE 1 STORM 1													
XSECTION 82	ADDHYD	.28	1	2	.08	.0	1.44	24.00	.29	---	12.56	23.93	84.8
XSECTION 39	RUNOFF	.13	1	2	.08	.0	1.44	24.00	.41	---	12.61	29.32	234.6
XSECTION 82	REACH	.13	1	2	.08	.0	1.44	24.00	.41	---	12.92	22.54	180.3
XSECTION 82	ADDHYD	.41	1	2	.08	.0	1.44	24.00	.32	---	12.95	43.18	106.1
XSECTION 81	REACH	.41	1	2	.08	.0	1.44	24.00	.32	---	13.13	41.42	101.8
XSECTION 81	RUNOFF	.06	1	2	.08	.0	1.44	24.00	.18	---	12.65	6.70	106.4
XSECTION 81	ADDHYD	.47	1	2	.08	.0	1.44	24.00	.30	---	13.09	43.59	92.7
XSECTION 81	ADDHYD	.89	1	2	.08	.0	1.44	24.00	.39	---	12.68	154.40	174.3
XSECTION 80	REACH	.89	1	2	.08	.0	1.44	24.00	.39	---	12.68	154.40	174.3
XSECTION 80	RUNOFF	.06	1	2	.08	.0	1.44	24.00	.31	---	12.59	12.12	192.4
XSECTION 80	ADDHYD	.95	1	2	.08	.0	1.44	24.00	.38	---	12.67	165.75	174.7
XSECTION 109	REACH	.95	1	2	.08	.0	1.44	24.00	.38	---	12.67	165.75	174.7
XSECTION 109	RUNOFF	.06	1	2	.08	.0	1.44	24.00	.38	---	12.52	16.42	260.6
XSECTION 109	ADDHYD	1.01	1	2	.08	.0	1.44	24.00	.38	---	12.65	177.48	175.4
XSECTION 108	ADDHYD	8.74	1	2	.08	.0	1.44	24.00	.43	---	12.63	1311.42	150.1
XSECTION 110	REACH	8.74	1	2	.08	.0	1.44	24.00	.43	---	12.63	1311.42	150.1
XSECTION 110	RUNOFF	.07	1	2	.08	.0	1.44	24.00	.20	---	12.66	8.37	114.6
XSECTION 110	ADDHYD	8.81	1	2	.08	.0	1.44	24.00	.43	---	12.63	1319.71	149.8
XSECTION 122	RUNOFF	.35	1	2	.08	.0	1.44	24.00	.41	---	12.51	98.33	277.0
XSECTION 110	ADDHYD	9.17	1	2	.08	.0	1.44	24.00	.43	---	12.61	1401.77	152.9
XSECTION 111	REACH	9.17	1	2	.08	.0	1.44	24.00	.43	---	12.61	1401.77	152.9
XSECTION 111	RUNOFF	.07	1	2	.08	.0	1.44	24.00	.18	---	12.67	7.10	101.5
XSECTION 111	ADDHYD	9.24	1	2	.08	.0	1.44	24.00	.43	---	12.61	1408.69	152.5
XSECTION 112	REACH	9.24	1	2	.08	.0	1.44	24.00	.43	---	12.74	1353.24	146.5
XSECTION 121	RUNOFF	.25	1	2	.08	.0	1.44	24.00	.96	---	12.44	136.44	545.8
XSECTION 112	ADDHYD	9.49	1	2	.08	.0	1.44	24.00	.44	---	12.72	1375.21	145.0
XSECTION 49	RUNOFF	.09	1	2	.08	.0	1.44	24.00	.95	---	12.45	46.53	541.0
XSECTION 48	REACH	.09	1	2	.08	.0	1.44	24.00	.95	---	12.83	39.53	459.6
XSECTION 20	RUNOFF	.06	1	2	.08	.0	1.44	24.00	.96	---	12.44	34.93	545.8
XSECTION 48	REACH	.06	1	2	.08	.0	1.44	24.00	.93	---	13.28	20.79	324.8
XSECTION 48	ADDHYD	.15	1	2	.08	.0	1.44	24.00	.94	---	12.87	53.08	353.9
XSECTION 48	RUNOFF	.13	1	2	.08	.0	1.44	24.00	.31	---	12.66	21.45	171.6
XSECTION 48	ADDHYD	.28	1	2	.08	.0	1.44	24.00	.65	---	12.80	70.08	254.8
XSECTION 56	REACH	.28	1	2	.08	.0	1.44	24.00	.65	---	13.08	63.98	232.7
XSECTION 56	RUNOFF	.06	1	2	.08	.0	1.44	24.00	.31	---	12.50	14.15	224.7
XSECTION 56	ADDHYD	.34	1	2	.08	.0	1.44	24.00	.59	---	13.07	65.63	194.2

SUMMARY TABLE 1 - SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL INSTRUCTIONS IN THE ORDER PERFORMED
(A STAR(*) AFTER THE PEAK DISCHARGE TIME AND RATE (CFS) VALUES INDICATES A FLAT TOP HYDROGRAPH
A QUESTION MARK(?) INDICATES A HYDROGRAPH WITH PEAK AS LAST POINT.)

SECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RAIN TABLE #	ANTEC MOIST COND	MAIN TIME INCREM (HR)	PRECIPITATION BEGIN (HR)	PRECIPITATION AMOUNT (IN)	PRECIPITATION DURATION (HR)	RUNOFF AMOUNT (IN)	PEAK DISCHARGE ELEVATION (FT)	PEAK DISCHARGE TIME (HR)	PEAK DISCHARGE RATE (CFS)	PEAK DISCHARGE RATE (CSM)
ALTERNATE 1 STORM 1													
XSECTION 57	REACH	.34	1	2	.08	.0	1.44	24.00	.59	---	13.17	65.23	193.0
XSECTION 57	RUNOFF	.06	1	2	.08	.0	1.44	24.00	.31	---	12.50	14.15	224.7
XSECTION 57	ADDHYD	.40	1	2	.08	.0	1.44	24.00	.54	---	13.16	66.64	166.2
XSECTION 59	REACH	.40	1	2	.08	.0	1.44	24.00	.54	---	13.26	66.28	165.3
XSECTION 59	RUNOFF	.06	1	2	.08	.0	1.44	24.00	.31	---	12.50	14.15	224.7
XSECTION 59	ADDHYD	.46	1	2	.08	.0	1.44	24.00	.51	---	13.26	67.48	145.4
XSECTION 43	RUNOFF	.05	1	2	.08	.0	1.44	24.00	.64	---	12.45	19.68	418.7
XSECTION 21	RUNOFF	.19	1	2	.08	.0	1.44	24.00	.49	---	12.62	50.22	265.7
XSECTION 21	ADDHYD	.24	1	2	.08	.0	1.44	24.00	.52	---	12.52	65.87	279.1
XSECTION 45	REACH	.24	1	2	.08	.0	1.44	24.00	.52	---	12.64	62.28	263.9
XSECTION 45	RUNOFF	.13	1	2	.08	.0	1.44	24.00	.63	---	12.57	43.71	349.7
XSECTION 45	ADDHYD	.36	1	2	.08	.0	1.44	24.00	.56	---	12.62	105.31	291.7
XSECTION 47	RUNOFF	.13	1	2	.08	.0	1.44	24.00	.31	---	12.53	27.40	219.2
XSECTION 46	REACH	.13	1	2	.08	.0	1.44	24.00	.31	---	12.65	25.23	201.8
XSECTION 46	RUNOFF	.13	1	2	.08	.0	1.44	24.00	.31	---	12.52	27.73	221.9
XSECTION 46	ADDHYD	.25	1	2	.08	.0	1.44	24.00	.31	---	12.56	50.47	201.9
XSECTION 45	ADDHYD	.61	1	2	.08	.0	1.44	24.00	.46	---	12.59	154.38	252.7
XSECTION 59	REACH	.61	1	2	.08	.0	1.44	24.00	.46	---	12.59	154.38	252.7
XSECTION 60	REACH	.61	1	2	.08	.0	1.44	24.00	.45	---	12.69	152.05	248.9
XSECTION 60	RUNOFF	.06	1	2	.08	.0	1.44	24.00	.28	---	12.61	10.67	169.4
XSECTION 60	ADDHYD	.67	1	2	.08	.0	1.44	24.00	.44	---	12.68	162.12	240.5
XSECTION 50	RUNOFF	.13	1	2	.08	.0	1.44	24.00	.18	---	12.67	13.43	100.2
XSECTION 52	REACH	.13	1	2	.08	.0	1.44	24.00	.18	---	13.56	6.42	47.9
XSECTION 52	RUNOFF	.06	1	2	.08	.0	1.44	24.00	.28	---	12.64	10.00	158.7
XSECTION 52	ADDHYD	.20	1	2	.08	.0	1.44	24.00	.21	---	12.65	10.08	51.2
XSECTION 55	REACH	.20	1	2	.08	.0	1.44	24.00	.21	---	13.71	7.52	38.2
XSECTION 55	RUNOFF	.06	1	2	.08	.0	1.44	24.00	.34	---	12.50	15.35	243.7
XSECTION 55	ADDHYD	.26	1	2	.08	.0	1.44	24.00	.24	---	12.53	19.18	73.8
XSECTION 51	RUNOFF	.06	1	2	.08	.0	1.44	24.00	.34	---	12.47	16.35	259.6
XSECTION 55	REACH	.06	1	2	.08	.0	1.44	24.00	.34	---	12.97	10.30	163.4
XSECTION 55	ADDHYD	.32	1	2	.08	.0	1.44	24.00	.26	---	12.56	23.13	71.6
XSECTION 58	REACH	.32	1	2	.08	.0	1.44	24.00	.26	---	12.56	23.13	71.6
XSECTION 58	RUNOFF	.06	1	2	.08	.0	1.44	24.00	.38	---	12.50	16.60	263.5
XSECTION 58	ADDHYD	.39	1	2	.08	.0	1.44	24.00	.28	---	12.53	39.59	102.6
XSECTION 60	REACH	.39	1	2	.08	.0	1.44	24.00	.28	---	12.53	39.59	102.6
XSECTION 60	REACH	.46	1	2	.08	.0	1.44	24.00	.51	---	13.26	67.48	145.4

SUMMARY TABLE 1 - SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL INSTRUCTIONS IN THE ORDER PERFORMED
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A QUESTION MARK(?) INDICATES A HYDROGRAPH WITH PEAK AS LAST POINT.)

SECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RAIN TABLE #	ANTEC MOIST COND	MAIN TIME INCREM (HR)	PRECIPITATION BEGIN (HR)	PRECIPITATION AMOUNT (IN)	PRECIPITATION DURATION (HR)	RUNOFF AMOUNT (IN)	PEAK DISCHARGE ELEVATION (FT)	PEAK DISCHARGE TIME (HR)	PEAK DISCHARGE RATE (CFS)	PEAK DISCHARGE RATE (CSM)
ALTERNATE 1 STORM 1													
XSECTION 60	ADDHYD	.85	1	2	.08	.0	1.44	24.00	.41	---	12.58	94.44	111.1
XSECTION 61	REACH	.67	1	2	.08	.0	1.44	24.00	.44	---	12.78	159.64	236.9
XSECTION 61	RUNOFF	.10	1	2	.08	.0	1.44	24.00	.34	---	12.50	24.85	243.7
XSECTION 61	ADDHYD	.78	1	2	.08	.0	1.44	24.00	.43	---	12.76	166.57	214.7
XSECTION 53	RUNOFF	.08	1	2	.08	.0	1.44	24.00	.38	---	12.53	21.67	257.9
XSECTION 61	REACH	.08	1	2	.08	.0	1.44	24.00	.37	---	12.96	14.70	175.0
XSECTION 61	ADDHYD	.86	1	2	.08	.0	1.44	24.00	.42	---	12.77	178.28	207.3
XSECTION 62	REACH	.86	1	2	.08	.0	1.44	24.00	.42	---	12.89	173.40	201.6
XSECTION 62	RUNOFF	.13	1	2	.08	.0	1.44	24.00	.31	---	12.82	17.73	136.4
XSECTION 62	ADDHYD	.99	1	2	.08	.0	1.44	24.00	.40	---	12.89	190.77	192.7
XSECTION 66	RUNOFF	.06	1	2	.08	.0	1.44	24.00	.37	---	12.58	14.30	226.9
XSECTION 67	REACH	.06	1	2	.08	.0	1.44	24.00	.37	---	12.58	14.30	226.9
XSECTION 67	RUNOFF	.06	1	2	.08	.0	1.44	24.00	.54	---	12.48	22.10	350.7
XSECTION 67	ADDHYD	.13	1	2	.08	.0	1.44	24.00	.46	---	12.51	35.64	282.8
XSECTION 44	RUNOFF	.13	1	2	.08	.0	1.44	24.00	.49	---	12.52	40.00	320.0
XSECTION 67	REACH	.13	1	2	.08	.0	1.44	24.00	.49	---	12.64	36.69	293.5
XSECTION 67	ADDHYD	.25	1	2	.08	.0	1.44	24.00	.47	---	12.55	70.02	279.0
XSECTION 69	REACH	.25	1	2	.08	.0	1.44	24.00	.47	---	12.55	70.02	279.0
XSECTION 69	RUNOFF	.06	1	2	.08	.0	1.44	24.00	.28	---	12.67	9.57	151.9
XSECTION 69	ADDHYD	.31	1	2	.08	.0	1.44	24.00	.43	---	12.56	78.76	250.8
XSECTION 42	RUNOFF	.08	1	2	.08	.0	1.44	24.00	.34	---	12.48	19.46	249.5
XSECTION 78	REACH	.08	1	2	.08	.0	1.44	24.00	.34	---	12.90	13.74	176.2
XSECTION 78	RUNOFF	.06	1	2	.08	.0	1.44	24.00	.45	---	12.50	19.01	301.7
XSECTION 78	ADDHYD	.14	1	2	.08	.0	1.44	24.00	.39	---	12.54	25.72	182.4
XSECTION 77	REACH	.14	1	2	.08	.0	1.44	24.00	.39	---	12.79	21.72	154.0
XSECTION 77	RUNOFF	.06	1	2	.08	.0	1.44	24.00	.18	---	12.58	7.78	123.6
XSECTION 77	ADDHYD	.20	1	2	.08	.0	1.44	24.00	.32	---	12.71	27.10	132.8
XSECTION 69	REACH	.20	1	2	.08	.0	1.44	24.00	.32	---	12.71	27.10	132.8
XSECTION 69	ADDHYD	.52	1	2	.08	.0	1.44	24.00	.39	---	12.59	103.21	199.2
XSECTION 75	REACH	.52	1	2	.08	.0	1.44	24.00	.39	---	12.67	103.21	199.2
XSECTION 75	RUNOFF	.06	1	2	.08	.0	1.44	24.00	.95	---	12.54	30.75	488.1
XSECTION 75	ADDHYD	.58	1	2	.08	.0	1.44	24.00	.45	---	12.64	132.04	227.3
XSECTION 79	RUNOFF	.06	1	2	.08	.0	1.44	24.00	.54	---	12.48	22.10	350.7
XSECTION 76	REACH	.06	1	2	.08	.0	1.44	24.00	.53	---	12.70	19.50	309.6
XSECTION 76	RUNOFF	.06	1	2	.08	.0	1.44	24.00	.45	---	12.49	19.24	305.4
XSECTION 76	ADDHYD	.13	1	2	.08	.0	1.44	24.00	.49	---	12.53	35.81	284.2

SUMMARY TABLE 1 - SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL INSTRUCTIONS IN THE ORDER PERFORMED
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A QUESTION MARK(?) INDICATES A HYDROGRAPH WITH PEAK AS LAST POINT.)

SECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RAIN TABLE #	ANTEC MOIST COND	MAIN TIME INCREM (HR)	PRECIPITATION BEGIN (HR)	PRECIPITATION AMOUNT (IN)	PRECIPITATION DURATION (HR)	RUNOFF AMOUNT (IN)	PEAK DISCHARGE ELEVATION (FT)	PEAK DISCHARGE TIME (HR)	PEAK DISCHARGE RATE (CFS)	PEAK DISCHARGE RATE (CSM)
ALTERNATE 1 STORM 1													
XSECTION 75	REACH	.13	1	2	.08	.0	1.44	24.00	.49	---	12.53	35.81	284.2
XSECTION 75	ADDHYD	.71	1	2	.08	.0	1.44	24.00	.46	---	12.62	164.25	232.3
XSECTION 112	REACH	.71	1	2	.08	.0	1.44	24.00	.46	---	12.62	164.25	232.3
XSECTION 112	RUNOFF	.06	1	2	.08	.0	1.44	24.00	.18	---	12.62	6.90	113.1
XSECTION 112	ADDHYD	.77	1	2	.08	.0	1.44	24.00	.44	---	12.62	171.15	222.9
XSECTION 112	ADDHYD	10.25	1	2	.08	.0	1.44	24.00	.44	---	12.71	1535.85	149.8
XSECTION 113	REACH	10.25	1	2	.08	.0	1.44	24.00	.44	---	12.83	1497.30	146.0
XSECTION 113	RUNOFF	.05	1	2	.08	.0	1.44	24.00	.69	---	12.57	19.90	375.4
XSECTION 113	ADDHYD	10.31	1	2	.08	.0	1.44	24.00	.44	---	12.83	1510.40	146.5
XSECTION 120	RUNOFF	.23	1	2	.08	.0	1.44	24.00	.49	---	12.52	73.91	320.0
XSECTION 113	ADDHYD	10.54	1	2	.08	.0	1.44	24.00	.44	---	12.82	1530.90	145.3
XSECTION 65	REACH	.85	1	2	.08	.0	1.44	24.00	.41	---	12.58	94.44	111.1
XSECTION 65	RUNOFF	.05	1	2	.08	.0	1.44	24.00	.31	---	12.60	8.76	186.3
XSECTION 65	ADDHYD	.90	1	2	.08	.0	1.44	24.00	.40	---	12.58	103.13	115.0
XSECTION 68	REACH	.90	1	2	.08	.0	1.44	24.00	.40	---	12.58	103.13	115.0
XSECTION 68	RUNOFF	.06	1	2	.08	.0	1.44	24.00	.41	---	12.49	17.89	284.0
XSECTION 68	ADDHYD	.96	1	2	.08	.0	1.44	24.00	.40	---	12.56	119.93	124.9
XSECTION 70	REACH	.96	1	2	.08	.0	1.44	24.00	.40	---	12.56	119.93	124.9
XSECTION 70	RUNOFF	.06	1	2	.08	.0	1.44	24.00	.45	---	12.49	19.24	305.4
XSECTION 70	ADDHYD	1.02	1	2	.08	.0	1.44	24.00	.40	---	12.55	138.50	135.4
XSECTION 74	REACH	1.02	1	2	.08	.0	1.44	24.00	.40	---	12.63	137.58	134.5
XSECTION 74	RUNOFF	.06	1	2	.08	.0	1.44	24.00	.63	---	12.47	25.37	402.7
XSECTION 74	ADDHYD	1.09	1	2	.08	.0	1.44	24.00	.42	---	12.60	155.31	143.0
XSECTION 113	REACH	1.09	1	2	.08	.0	1.44	24.00	.42	---	12.60	155.31	143.0
XSECTION 113	ADDHYD	11.62	1	2	.08	.0	1.44	24.00	.44	---	12.79	1641.78	141.2
XSECTION 114	REACH	11.62	1	2	.08	.0	1.44	24.00	.44	---	13.01	1508.58	129.8
XSECTION 64	RUNOFF	.25	1	2	.08	.0	1.44	24.00	.31	---	12.54	53.32	213.3
XSECTION 72	REACH	.25	1	2	.08	.0	1.44	24.00	.31	---	12.98	36.74	146.9
XSECTION 72	RUNOFF	.13	1	2	.08	.0	1.44	24.00	.34	---	12.60	25.51	204.1
XSECTION 72	ADDHYD	.38	1	2	.08	.0	1.44	24.00	.32	---	12.85	48.47	129.3
XSECTION 114	REACH	.38	1	2	.08	.0	1.44	24.00	.31	---	13.35	37.57	100.2
XSECTION 115	RUNOFF	.09	1	2	.08	.0	1.44	24.00	.31	---	12.59	18.09	192.4
XSECTION 114	ADDHYD	.47	1	2	.08	.0	1.44	24.00	.31	---	13.32	40.06	85.4
XSECTION 71	RUNOFF	.13	1	2	.08	.0	1.44	24.00	.34	---	12.60	25.51	204.1
XSECTION 114	REACH	.13	1	2	.08	.0	1.44	24.00	.33	---	13.39	14.44	115.6
XSECTION 114	ADDHYD	.59	1	2	.08	.0	1.44	24.00	.32	---	13.35	54.35	91.5

SUMMARY TABLE 1 - SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL INSTRUCTIONS IN THE ORDER PERFORMED
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A QUESTION MARK(?) INDICATES A HYDROGRAPH WITH PEAK AS LAST POINT.)

SECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RAIN TABLE #	ANTEC MOIST COND	MAIN TIME INCREM (HR)	PRECIPITATION BEGIN (HR)	PRECIPITATION AMOUNT (IN)	PRECIPITATION DURATION (HR)	RUNOFF AMOUNT (IN)	PEAK DISCHARGE ELEVATION (FT)	PEAK DISCHARGE TIME (HR)	PEAK DISCHARGE RATE (CFS)	PEAK DISCHARGE RATE (CSM)
ALTERNATE 1 STORM 1													
XSECTION 114	RUNOFF	.13	1	2	.08	.0	1.44	24.00	.41	---	12.99	19.27	150.6
XSECTION 114	ADDHYD	.72	1	2	.08	.0	1.44	24.00	.33	---	13.28	70.22	97.3
XSECTION 114	ADDHYD	12.35	1	2	.08	.0	1.44	24.00	.43	---	13.02	1571.11	127.3
XSECTION 119	RUNOFF	.23	1	2	.08	.0	1.44	24.00	.37	---	12.91	34.29	148.4
XSECTION 114	ADDHYD	12.58	1	2	.08	.0	1.44	24.00	.43	---	13.02	1604.37	127.6
XSECTION 118	REACH	12.58	1	2	.08	.0	1.44	24.00	.43	---	13.27	1488.74	118.4
XSECTION 118	RUNOFF	.23	1	2	.08	.0	1.44	24.00	.28	---	13.32	18.35	79.4
XSECTION 118	ADDHYD	12.81	1	2	.08	.0	1.44	24.00	.43	---	13.27	1507.03	117.7

SUMMARY TABLE 2 - SELECTED MODIFIED ATT-KIN REACH ROUTINGS IN ORDER OF STANDARD EXECUTIVE CONTROL INSTRUCTIONS
(A STAR(*) AFTER VOLUME ABOVE BASE(IN) INDICATES A HYDROGRAPH TRUNCATED AT A VALUE EXCEEDING BASE + 10% OF PEAK
A QUESTION MARK(?) AFTER COEFF.(C) INDICATES PARAMETERS OUTSIDE ACCEPTABLE LIMITS, SEE PREVIOUS WARNINGS)

		HYDROGRAPH INFORMATION							ROUTING PARAMETERS									PEAK	
		INFLOW		OUTFLOW		OUTFLOW+ INTERV.AREA						Q AND A EQUATION						TRAVEL TIME	
XSEC ID	REACH LENGTH (FT)	PEAK (CFS)	TIME (HR)	PEAK (CFS)	TIME (HR)	PEAK (CFS)	TIME (HR)	BASE-FLOW (CFS)	VOLUME ABOVE BASE (IN)	MAIN TIME INCR (HR)	ITER-ATION #	COEFF (X)	POWER (M)	LENGTH FACTOR (K*)	PEAK RATIO O/I (Q*)	S/Q @PEAK (K) (SEC)	ATT-KIN COEFF (C)	STOR-AGE (HR)	KINE-MATIC (HR)
ALTERNATE		1	STORM	1															
3	1400	52	12.5	44	12.8	47	12.8	0	.95	.08	1	.040	1.66	.303	.857	1222	.21	.08	.35
5	3000	117	12.6	116	12.6	---	---	0	.83	.08	1	4.64	1.25	.037	.991	271	.69?	.08	.08
5	1400	103	12.5	96	12.7	108	12.7	0	.95	.08	1	.050	1.66	.152	.926	811	.30	.08	.23
18	2700	12	12.5	12	12.6	27	12.6	0	.96	.08	1	7.96	1.25	.040	.994	251	.73?	.08	.07
8	1800	248	12.6	248	12.6	---	---	0	.62	.08	0	5.03	1.25	.015	1.000	131	1.00?	.00	.00
8	1600	14	12.8	13	13.0	---	---	0	.28	.08	1	.477	1.57	.075	.907	620	.38	.16	.18
8	1400	10	12.7	9	13.0	22	13.0	0	.18	.08	1	.477	1.57	.080	.891	603	.39	.24	.17
14	3000	261	12.6	215	13.0	---	---	0	.50	.08	1	.170	1.47	.190	.824	1150	.22	.24	.33
14	2700	6	12.9	5	13.2	219	13.0	0	.23	.08	1	.628	1.57	.179	.801	1187	.22	.32	.34
14	3960	12	12.9	11	13.1	---	---	0	.23	.08	1	2.10	1.40	.108	.877	810	.30	.24	.23
15	1300	30	12.6	29	12.7	38	12.7	0	.45	.08	1	.540	1.54	.049	.964	383	.55	.08	.11
27	3000	271	12.9	222	13.3	241	13.3	0	.44	.08	1	.040	1.63	.206	.819	1520	.17	.40	.44
25	2200	32	12.5	23	13.1	33	12.6	0	.96	.08	1	.050	1.66	.714	.727	2042	.13	.16	.60
27	1700	33	12.6	24	13.3	---	---	0	.58	.08	1	.040	1.63	.345	.723	1954	.14	.64	.58
26	1500	53	12.6	52	12.6	68	12.6	0	.45	.08	1	3.78	1.25	.030	.991	187	.87?	.08	.05
11	2640	10	12.6	7	13.0	29	12.9	0	.18	.08	1	.440	1.54	.328	.689	1323	.20	.32	.39
28	3300	29	12.9	11	14.3	---	---	0	.21	.08	1	.030	1.66	1.515	.380	5677	.05?	.72	1.41
28	2800	21	12.6	6	14.1	17	14.2	0	.31	.08	1	.030	1.66	2.187	.293	6917	.04?	.64	1.42
27	2500	21	12.9	20	14.2	---	---	0	.25*	.08	1	4.41	1.25	.010	.985	333	.60	1.28	.09
37	3000	296	13.2	293	13.4	295	13.4	0	.40	.08	1	.438	1.59	.014	.990	387	.54	.16	.11
85	3000	295	13.4	295	13.4	300	13.4	0	.38	.08	1	6.33	1.25	.010	.999	176	.90?	.08	.05
85	660	300	13.4	300	13.4	302	13.4	0	.38	.08	0	5.55	1.25	.002	1.000	43	1.00?	.00	.00
84	1320	302	13.4	302	13.4	304	13.4	0	.38	.08	0	5.55	1.25	.004	1.000	86	1.00?	.00	.00
35	1320	23	12.7	21	12.9	41	12.6	0	.37	.08	1	.310	1.54	.084	.910	609	.38	.16	.17
91	2640	41	12.6	32	13.0	---	---	0	.36	.08	1	.220	1.54	.227	.776	1244	.21	.32	.36
91	1320	33	12.6	33	12.6	66	12.6	0	.45	.08	0	6.73	1.25	.016	1.000	114	1.00?	.00	.00
90	1320	82	12.6	82	12.6	106	12.6	0	.40	.08	0	7.06	1.25	.008	1.000	92	1.00?	.00	.00
90	2640	25	12.6	18	13.0	---	---	0	.34	.08	1	.220	1.54	.435	.690	1473	.18	.32	.44
88	1320	118	12.6	118	12.6	---	---	0	.39	.08	0	7.33	1.25	.007	1.000	83	1.00?	.00	.00
88	2000	11	12.6	11	12.6	33	12.6	0	.38	.08	1	6.76	1.25	.038	.986	213	.81?	.08	.06
87	1320	151	12.6	150	12.7	---	---	0	.40	.08	1	2.77	1.25	.018	.995	171	.91?	.08	.05
87	1320	19	12.5	13	13.0	26	12.6	0	.45	.08	1	.118	1.45	.556	.674	1599	.17	.24	.47

SUMMARY TABLE 2 - SELECTED MODIFIED ATT-KIN REACH ROUTINGS IN ORDER OF STANDARD EXECUTIVE CONTROL INSTRUCTIONS
(A STAR(*) AFTER VOLUME ABOVE BASE(IN) INDICATES A HYDROGRAPH TRUNCATED AT A VALUE EXCEEDING BASE + 10% OF PEAK
A QUESTION MARK(?) AFTER COEFF.(C) INDICATES PARAMETERS OUTSIDE ACCEPTABLE LIMITS, SEE PREVIOUS WARNINGS)

		HYDROGRAPH INFORMATION							ROUTING PARAMETERS										PEAK	
		INFLOW		OUTFLOW		OUTFLOW+ INTERV.AREA						Q AND A EQUATION							TRAVEL TIME	
XSEC ID	REACH LENGTH (FT)	PEAK (CFS)	TIME (HR)	PEAK (CFS)	TIME (HR)	PEAK (CFS)	TIME (HR)	BASE-FLOW (CFS)	VOLUME ABOVE BASE (IN)	MAIN TIME INCR (HR)	ITER-ATION #	COEFF (X)	POWER (M)	LENGTH FACTOR (K*)	PEAK RATIO O/I (Q*)	S/Q @PEAK (K) (SEC)	ATT-KIN COEFF (C)	STOR-AGE (HR)	KINE-MATIC (HR)
ALTERNATE		1	STORM	1															
84	1320	176	12.7	175	12.8	---	---	0	.41	.08	1	2.77	1.25	.017	.996	166	.93?	.08	.05
105	1320	256	12.9	256	12.9	---	---	0	.39	.08	0	6.07	1.25	.005	1.000	82	1.00?	.00	.00
105	1320	10	12.6	7	13.0	12	12.9	0	.31	.08	1	.285	1.34	.320	.726	1405	.19	.32	.41
104	1320	268	12.9	268	12.9	274	12.9	0	.39	.08	0	6.07	1.25	.005	1.000	82	1.00?	.00	.00
83	1320	196	13.4	196	13.4	198	13.4	0	.37	.08	0	7.64	1.25	.003	1.000	72	1.00?	.00	.00
106	1320	198	13.4	198	13.4	199	13.4	0	.37	.08	0	7.12	1.25	.003	1.000	76	1.00?	.00	.00
107	900	199	13.4	199	13.4	201	13.4	0	.37	.08	0	7.12	1.25	.002	1.000	52	1.00?	.00	.00
29	3800	14	12.6	2	14.6	28	13.0	0	.31	.08	1	.040	1.66	4.709	.146	14078	.02?	.72	2.08
33	2640	28	13.0	27	13.0	49	13.0	0	.27	.08	1	5.69	1.25	.021	.989	271	.69?	.08	.08
32	3000	13	12.8	12	13.0	---	---	0	.23	.08	1	6.29	1.25	.043	.970	331	.61	.16	.09
93	2640	54	13.0	54	13.2	65	12.7	0	.26	.08	1	5.69	1.25	.018	.992	237	.76?	.16	.07
95	1320	65	12.7	65	12.7	---	---	0	.28	.08	0	4.72	1.25	.007	1.000	132	1.00?	.00	.00
94	3200	13	12.8	7	13.8	35	12.6	0	.25	.08	1	.090	1.66	.976	.532	2996	.09	.48	.93
95	2400	35	12.6	23	13.0	44	13.0	0	.32	.08	1	.090	1.66	.289	.669	1506	.17	.16	.45
96	1320	108	13.0	108	13.0	121	12.7	0	.30	.08	0	4.72	1.25	.007	1.000	120	1.00?	.00	.00
142	1320	121	12.7	121	12.7	143	13.0	0	.30	.08	0	5.68	1.25	.006	1.000	101	1.00?	.00	.00
98	1000	51	12.6	47	12.7	69	12.6	0	.49	.08	1	.080	1.66	.087	.921	576	.40	.16	.16
99	1250	69	12.6	62	12.8	81	12.7	0	.48	.08	1	.080	1.66	.090	.902	642	.37	.16	.18
139	1600	81	12.7	68	13.0	---	---	0	.47	.08	1	.050	1.66	.165	.836	1020	.25	.24	.29
100	1320	15	12.6	15	12.6	---	---	0	.58	.08	0	8.19	1.25	.015	1.000	114	1.00?	.00	.00
139	600	37	12.6	37	12.6	78	13.0	0	.50	.08	0	4.52	1.25	.009	1.000	70	1.00?	.00	.00
140	1320	51	12.6	51	12.7	84	12.6	0	.49	.08	1	4.05	1.25	.022	.999	157	.96?	.16	.04
139	2800	94	12.6	92	12.7	---	---	0	.42	.08	1	4.39	1.25	.046	.980	276	.69?	.08	.08
138	3000	35	12.5	30	12.9	75	12.5	0	.96	.08	1	.170	1.66	.327	.852	1274	.20	.08	.37
139	2000	75	12.5	75	12.6	---	---	0	.52	.08	1	4.52	1.25	.029	.995	202	.83?	.16	.06
129	1100	7	12.5	7	12.5	33	12.5	0	.26	.08	0	10.0	1.25	.018	1.000	94	1.00?	.00	.00
131	2500	47	12.5	46	12.6	80	12.6	0	.37	.08	1	4.80	1.25	.059	.969	264	.71?	.08	.07
131	2000	50	12.5	45	12.7	---	---	0	.54	.08	1	.170	1.66	.168	.887	738	.33	.16	.21
131	2000	43	12.5	40	12.7	---	---	0	.96	.08	1	.170	1.66	.147	.938	787	.31	.08	.22
126	1500	191	12.6	191	12.6	269	12.6	0	.47	.08	0	8.31	1.25	.010	1.000	77	1.00?	.00	.00
134	1500	269	12.6	269	12.6	---	---	0	.56	.08	0	5.48	1.25	.013	1.000	101	1.00?	.00	.00
134	3200	22	12.5	17	13.0	279	12.6	0	.96	.08	1	.130	1.66	.640	.746	1912	.14	.16	.56

SUMMARY TABLE 2 - SELECTED MODIFIED ATT-KIN REACH ROUTINGS IN ORDER OF STANDARD EXECUTIVE CONTROL INSTRUCTIONS
(A STAR(*) AFTER VOLUME ABOVE BASE(IN) INDICATES A HYDROGRAPH TRUNCATED AT A VALUE EXCEEDING BASE + 10% OF PEAK
A QUESTION MARK(?) AFTER COEFF.(C) INDICATES PARAMETERS OUTSIDE ACCEPTABLE LIMITS, SEE PREVIOUS WARNINGS)

		HYDROGRAPH INFORMATION							ROUTING PARAMETERS										PEAK	
		INFLOW		OUTFLOW		OUTFLOW+ INTERV.AREA						Q AND A EQUATION							TRAVEL TIME	
XSEC ID	REACH LENGTH (FT)	PEAK (CFS)	TIME (HR)	PEAK (CFS)	TIME (HR)	PEAK (CFS)	TIME (HR)	BASE-FLOW (CFS)	VOLUME ABOVE BASE (IN)	MAIN TIME INCR (HR)	ITER-ATION #	COEFF (X)	POWER (M)	LENGTH FACTOR (K*)	PEAK RATIO Q/I (Q*)	S/Q @PEAK (K) (SEC)	ATT-KIN COEFF (C)	STOR-AGE (HR)	KINE-MATIC (HR)
ALTERNATE		1	STORM	1															
124	2500	393	12.5	389	12.6	445	12.6	0	.59	.08	1	4.24	1.25	.028	.990	191	.86?	.08	.05
124	900	289	12.6	289	12.6	---	---	0	.47	.08	0	.960	1.51	.004	1.000	90	1.00?	.00	.00
104	1320	742	12.6	742	12.6	---	---	0	.51	.08	0	.960	1.51	.006	1.000	96	1.00?	.00	.00
107	1000	939	12.6	939	12.6	---	---	0	.45	.08	0	.850	1.53	.002	1.000	68	1.00?	.00	.00
108	1700	1128	12.6	1128	12.6	1133	12.6	0	.44	.08	0	.850	1.53	.003	1.000	108	1.00?	.00	.00
41	2640	77	12.5	76	12.6	118	12.6	0	.57	.08	1	6.54	1.25	.029	.989	197	.84?	.08	.05
81	2640	118	12.6	117	12.6	---	---	0	.49	.08	1	6.20	1.25	.029	.991	189	.86?	.08	.05
40	1800	18	12.6	11	13.0	23	12.7	0	.23	.08	1	.080	1.66	.558	.629	1580	.17	.32	.48
82	1400	23	12.7	19	13.0	24	12.6	0	.26	.08	1	.100	1.66	.118	.836	978	.26	.24	.28
82	1867	29	12.6	22	13.0	---	---	0	.41	.08	1	.100	1.66	.294	.770	1178	.22	.24	.34
81	1320	43	13.0	41	13.1	44	13.1	0	.32	.08	1	.220	1.54	.045	.959	612	.38	.16	.17
80	1320	153	12.6	153	12.6	165	12.6	0	.39	.08	0	7.06	1.25	.007	1.000	81	1.00?	.00	.00
109	1320	165	12.6	165	12.6	177	12.6	0	.38	.08	0	4.04	1.25	.013	1.000	124	1.00?	.00	.00
110	1320	1310	12.6	1310	12.6	1318	12.6	0	.43	.08	0	.850	1.53	.002	1.000	80	1.00?	.00	.00
111	1320	1395	12.6	1395	12.6	1402	12.6	0	.43	.08	0	1.07	1.53	.002	1.000	67	1.00?	.00	.00
112	1320	1402	12.6	1351	12.7	1375	12.7	0	.43	.08	1	.040	1.63	.019	.964	355	.58	.08	.10
48	1320	46	12.5	39	12.8	---	---	0	.95	.08	1	.040	1.66	.298	.859	1208	.21	.08	.35
48	2640	34	12.5	21	13.3	53	12.9	0	.96	.08	1	.040	1.66	1.145	.608	2988	.09?	.16	.33
56	1866	70	12.8	64	13.0	65	13.0	0	.65	.08	1	.120	1.66	.073	.909	744	.32	.16	.21
57	1320	65	13.0	65	13.2	66	13.1	0	.59	.08	1	.760	1.58	.008	.994	214	.80?	.16	.06
59	1320	66	13.1	66	13.3	67	13.3	0	.54	.08	1	.740	1.58	.007	.998	217	.80?	.16	.06
45	2640	65	12.5	62	12.6	105	12.6	0	.52	.08	1	2.67	1.25	.071	.955	417	.51	.16	.12
46	1320	27	12.6	25	12.6	50	12.6	0	.31	.08	1	.510	1.54	.079	.933	418	.51	.08	.12
59	1320	154	12.6	154	12.6	---	---	0	.46	.08	0	5.54	1.25	.012	1.000	98	1.00?	.00	.00
60	1320	154	12.6	151	12.7	161	12.7	0	.46	.08	1	1.81	1.25	.037	.984	240	.75?	.16	.07
52	1500	13	12.6	6	13.5	10	12.6	0	.18	.08	1	.030	1.66	1.065	.481	2793	.10?	.40	.85
55	1320	10	12.6	8	13.7	19	12.6	0	.21	.08	1	.090	1.66	.091	.746	1354	.19	1.04	.40
55	1867	16	12.5	10	13.0	---	---	0	.34	.08	1	.090	1.66	.766	.631	1581	.17	.16	.48
58	1320	23	12.6	23	12.6	39	12.6	0	.26	.08	0	6.73	1.25	.007	1.000	123	1.00?	.00	.00
60	1320	39	12.6	39	12.6	---	---	0	.28	.08	0	6.73	1.25	.008	1.000	110	1.00?	.00	.00
60	1320	67	13.3	67	13.3	---	---	0	.51	.08	0	7.06	1.25	.005	1.000	95	1.00?	.00	.00
61	1320	161	12.7	159	12.8	165	12.8	0	.44	.08	1	1.81	1.25	.036	.992	238	.75?	.08	.07

SUMMARY TABLE 2 - SELECTED MODIFIED ATT-KIN REACH ROUTINGS IN ORDER OF STANDARD EXECUTIVE CONTROL INSTRUCTIONS
(A STAR(*) AFTER VOLUME ABOVE BASE(IN) INDICATES A HYDROGRAPH TRUNCATED AT A VALUE EXCEEDING BASE + 10% OF PEAK
A QUESTION MARK(?) AFTER COEFF.(C) INDICATES PARAMETERS OUTSIDE ACCEPTABLE LIMITS, SEE PREVIOUS WARNINGS)

		HYDROGRAPH INFORMATION							ROUTING PARAMETERS										PEAK	
		INFLOW		OUTFLOW		OUTFLOW+ INTERV.AREA						Q AND A EQUATION							TRAVEL TIME	
XSEC ID	REACH LENGTH (FT)	PEAK (CFS)	TIME (HR)	PEAK (CFS)	TIME (HR)	PEAK (CFS)	TIME (HR)	BASE-FLOW (CFS)	VOLUME ABOVE BASE (IN)	MAIN TIME INCR (HR)	ITER-ATION #	COEFF (X)	POWER (M)	LENGTH FACTOR (K*)	PEAK RATIO O/I (Q*)	S/Q @PEAK (K) (SEC)	ATT-KIN COEFF (C)	STOR-AGE (HR)	KINE-MATIC (HR)
ALTERNATE		1	STORM	1															
61	2100	21	12.6	15	13.0	---	---	0	.38	.08	1	.110	1.66	.531	.690	1417	.18	.16	.42
62	2000	178	12.8	173	12.9	191	12.9	0	.42	.08	1	1.81	1.25	.052	.975	353	.58	.08	.10
67	1320	14	12.6	14	12.6	35	12.5	0	.37	.08	0	6.55	1.25	.021	1.000	138	1.00?	.00	.00
67	1320	40	12.5	37	12.6	---	---	0	.49	.08	1	.250	1.54	.117	.924	580	.40	.16	.16
69	1320	70	12.6	70	12.6	79	12.6	0	.47	.08	0	6.77	1.25	.013	1.000	98	1.00?	.00	.00
78	1600	19	12.5	14	12.9	26	12.6	0	.34	.08	1	.090	1.66	.497	.704	1263	.20	.16	.37
77	1320	26	12.6	22	12.8	27	12.7	0	.39	.08	1	.230	1.54	.098	.847	714	.34	.16	.20
69	1320	27	12.7	27	12.7	---	---	0	.32	.08	0	6.03	1.25	.012	1.000	130	1.00?	.00	.00
75	1320	103	12.6	103	12.6	132	12.6	0	.39	.08	1	3.79	1.25	.018	1.000	144	1.00?	.08	.04
76	1320	22	12.5	19	12.7	36	12.6	0	.54	.08	1	.230	1.54	.178	.881	752	.32	.16	.21
75	1320	36	12.6	36	12.6	---	---	0	.49	.08	0	6.73	1.25	.015	1.000	112	1.00?	.00	.00
112	1320	164	12.6	164	12.6	171	12.6	0	.46	.08	0	3.79	1.25	.016	1.000	131	1.00?	.00	.00
113	1320	1535	12.7	1492	12.8	1507	12.8	0	.44	.08	1	.040	1.63	.017	.972	342	.59	.08	.10
65	1320	94	12.6	94	12.6	103	12.6	0	.41	.08	0	5.97	1.25	.005	1.000	102	1.00?	.00	.00
68	1320	103	12.6	103	12.6	120	12.6	0	.40	.08	0	5.97	1.25	.005	1.000	100	1.00?	.00	.00
70	1320	120	12.6	120	12.6	138	12.6	0	.40	.08	0	4.80	1.25	.007	1.000	116	1.00?	.00	.00
74	1320	138	12.6	138	12.6	153	12.6	0	.40	.08	1	2.86	1.25	.013	.994	170	.92?	.08	.05
113	1320	153	12.6	153	12.6	---	---	0	.42	.08	0	6.62	1.25	.005	1.000	85	1.00?	.00	.00
114	3000	1641	12.8	1506	13.0	---	---	0	.44	.08	1	.040	1.63	.056	.918	758	.32	.24	.21
72	2640	53	12.6	37	13.0	48	12.9	0	.31	.08	1	.180	1.54	.439	.693	1298	.20	.16	.38
114	2000	48	12.9	38	13.4	40	13.3	0	.32	.08	1	.050	1.66	.270	.776	1566	.17	.32	.46
114	2200	25	12.6	14	13.4	---	---	0	.34	.08	1	.050	1.66	.906	.572	2234	.12	.24	.69
118	4000	1603	13.0	1488	13.3	1507	13.3	0	.43	.08	1	.050	1.66	.050	.929	779	.31	.24	.22

SUMMARY TABLE 3 - DISCHARGE (CFS) AT XSECTIONS AND STRUCTURES FOR ALL STORMS AND ALTERNATES

XSECTION/ STRUCTURE ID	DRAINAGE AREA (SQ MI)	STORM NUMBERS..... 1
STRUCTURE 44	.06	
ALTERNATE 1		5.76
STRUCTURE 43	.06	
ALTERNATE 1		10.00
STRUCTURE 37	3.08	
ALTERNATE 1		294.98
STRUCTURE 33	.13	
ALTERNATE 1		6.88
STRUCTURE 8	.36	
ALTERNATE 1		24.12
XSECTION 1	.15	
ALTERNATE 1		77.45
XSECTION 2	.10	
ALTERNATE 1		52.48
XSECTION 3	.29	
ALTERNATE 1		119.08
XSECTION 4	.19	
ALTERNATE 1		104.29
XSECTION 5	.61	
ALTERNATE 1		221.49
XSECTION 6	.11	
ALTERNATE 1		14.02
XSECTION 7	.12	
ALTERNATE 1		10.52
XSECTION 8	1.17	
ALTERNATE 1		260.94
XSECTION 9	.07	
ALTERNATE 1		6.23

SUMMARY TABLE 3 - DISCHARGE (CFS) AT XSECTIONS AND STRUCTURES FOR ALL STORMS AND ALTERNATES

XSECTION/ STRUCTURE ID	DRAINAGE AREA (SQ MI)	STORM NUMBERS..... 1
XSECTION 10	.09	
ALTERNATE 1		9.64
XSECTION 11	.33	
ALTERNATE 1		29.47
XSECTION 12	.07	
ALTERNATE 1		13.80
XSECTION 13	.13	
ALTERNATE 1		20.83
XSECTION 14	1.74	
ALTERNATE 1		271.93
XSECTION 15	.19	
ALTERNATE 1		38.35
XSECTION 16	.12	
ALTERNATE 1		30.00
XSECTION 17	.06	
ALTERNATE 1		32.20
XSECTION 18	.82	
ALTERNATE 1		248.27
XSECTION 19	.02	
ALTERNATE 1		12.02
XSECTION 20	.06	
ALTERNATE 1		34.93
XSECTION 21	.24	
ALTERNATE 1		65.87
XSECTION 22	.15	
ALTERNATE 1		31.57
XSECTION 23	.24	
ALTERNATE 1		77.29

SUMMARY TABLE 3 - DISCHARGE (CFS) AT XSECTIONS AND STRUCTURES FOR ALL STORMS AND ALTERNATES

XSECTION/ STRUCTURE ID	DRAINAGE AREA (SQ MI)	STORM NUMBERS..... 1
XSECTION 24	.20	
ALTERNATE 1		52.96
XSECTION 25	.15	
ALTERNATE 1		32.63
XSECTION 26	.26	
ALTERNATE 1		68.16
XSECTION 27	2.95	
ALTERNATE 1		296.04
XSECTION 28	.61	
ALTERNATE 1		20.71
XSECTION 29	.32	
ALTERNATE 1		27.58
XSECTION 30	.13	
ALTERNATE 1		12.77
XSECTION 32	.11	
ALTERNATE 1		12.67
XSECTION 33	.68	
ALTERNATE 1		54.09
XSECTION 34	.13	
ALTERNATE 1		23.17
XSECTION 35	.25	
ALTERNATE 1		41.51
XSECTION 36	.13	
ALTERNATE 1		25.67
XSECTION 37	3.08	
ALTERNATE 1		295.74
XSECTION 38	.13	
ALTERNATE 1		18.03

SUMMARY TABLE 3 - DISCHARGE (CFS) AT XSECTIONS AND STRUCTURES FOR ALL STORMS AND ALTERNATES

XSECTION/ STRUCTURE ID	DRAINAGE AREA (SQ MI)	STORM NUMBERS..... 1
XSECTION 39	.13	
ALTERNATE 1		29.32
XSECTION 40	.22	
ALTERNATE 1		22.59
XSECTION 41	.42	
ALTERNATE 1		118.08
XSECTION 42	.08	
ALTERNATE 1		19.46
XSECTION 43	.05	
ALTERNATE 1		19.68
XSECTION 44	.13	
ALTERNATE 1		40.00
XSECTION 45	.61	
ALTERNATE 1		154.38
XSECTION 46	.25	
ALTERNATE 1		50.47
XSECTION 47	.13	
ALTERNATE 1		27.40
XSECTION 48	.28	
ALTERNATE 1		70.08
XSECTION 49	.09	
ALTERNATE 1		46.53
XSECTION 50	.13	
ALTERNATE 1		13.43
XSECTION 51	.06	
ALTERNATE 1		16.35
XSECTION 52	.20	
ALTERNATE 1		10.08

SUMMARY TABLE 3 - DISCHARGE (CFS) AT XSECTIONS AND STRUCTURES FOR ALL STORMS AND ALTERNATES

XSECTION/ STRUCTURE ID	DRAINAGE AREA (SQ MI)	STORM NUMBERS..... 1
XSECTION 53	.08	
ALTERNATE 1		21.67
XSECTION 55	.32	
ALTERNATE 1		23.13
XSECTION 56	.34	
ALTERNATE 1		65.63
XSECTION 57	.40	
ALTERNATE 1		66.64
XSECTION 58	.39	
ALTERNATE 1		39.59
XSECTION 59	.61	
ALTERNATE 1		154.38
XSECTION 60	.85	
ALTERNATE 1		94.44
XSECTION 61	.86	
ALTERNATE 1		178.28
XSECTION 62	.99	
ALTERNATE 1		190.77
XSECTION 64	.25	
ALTERNATE 1		53.32
XSECTION 65	.90	
ALTERNATE 1		103.13
XSECTION 66	.06	
ALTERNATE 1		14.30
XSECTION 67	.25	
ALTERNATE 1		70.02
XSECTION 68	.96	
ALTERNATE 1		119.93

SUMMARY TABLE 3 - DISCHARGE (CFS) AT XSECTIONS AND STRUCTURES FOR ALL STORMS AND ALTERNATES

XSECTION/ STRUCTURE ID	DRAINAGE AREA (SQ MI)	STORM NUMBERS..... 1
XSECTION 69	.52	
ALTERNATE 1		103.21
XSECTION 70	1.02	
ALTERNATE 1		138.50
XSECTION 71	.13	
ALTERNATE 1		25.51
XSECTION 72	.38	
ALTERNATE 1		48.47
XSECTION 74	1.09	
ALTERNATE 1		155.31
XSECTION 75	.71	
ALTERNATE 1		164.25
XSECTION 76	.13	
ALTERNATE 1		35.81
XSECTION 77	.20	
ALTERNATE 1		27.10
XSECTION 78	.14	
ALTERNATE 1		25.72
XSECTION 79	.06	
ALTERNATE 1		22.10
XSECTION 80	.95	
ALTERNATE 1		165.75
XSECTION 81	.89	
ALTERNATE 1		154.40
XSECTION 82	.41	
ALTERNATE 1		43.18
XSECTION 83	2.19	
ALTERNATE 1		197.99

SUMMARY TABLE 3 - DISCHARGE (CFS) AT XSECTIONS AND STRUCTURES FOR ALL STORMS AND ALTERNATES

XSECTION/ STRUCTURE ID	DRAINAGE AREA (SQ MI)	STORM NUMBERS..... 1
XSECTION 84	2.14	
ALTERNATE 1		255.60
XSECTION 85	3.20	
ALTERNATE 1		302.33
XSECTION 86	.06	
ALTERNATE 1		19.01
XSECTION 87	1.00	
ALTERNATE 1		176.22
XSECTION 88	.88	
ALTERNATE 1		151.45
XSECTION 89	.05	
ALTERNATE 1		11.33
XSECTION 90	.73	
ALTERNATE 1		118.22
XSECTION 91	.25	
ALTERNATE 1		66.38
XSECTION 92	.13	
ALTERNATE 1		33.19
XSECTION 93	.87	
ALTERNATE 1		65.47
XSECTION 94	.25	
ALTERNATE 1		34.94
XSECTION 95	1.25	
ALTERNATE 1		107.69
XSECTION 96	1.37	
ALTERNATE 1		121.52
XSECTION 97	.19	
ALTERNATE 1		51.76

K CAVE CREEK - NORTH CENTRAL STORM DRAIN UPDATE
ER: P79-086-012 FILENAME: EFNC2YR.DAT

ATES

SECTIONS AND STRUCTURES FOR ALL STORMS AND ALTERNATES

NUMBERS.....
1

.85

1.78

4.37

8.09

17.03

54.29

73.91

36.44

98.33

112.83

744.70

393.99

273.74

36.98

SUMMARY TABLE 3 - DISCHARGE (CFS) AT XSECTIONS AND STRUCTURES FOR ALL STORMS AND ALTERNATES

XSECTION/ STRUCTURE ID	DRAINAGE AREA (SQ MI)	STORM NUMBERS..... 1
XSECTION 128	.04	
ALTERNATE 1		7.40
XSECTION 129	.17	
ALTERNATE 1		47.32
XSECTION 130	.03	
ALTERNATE 1		13.79
XSECTION 131	.68	
ALTERNATE 1		192.23
XSECTION 132	.14	
ALTERNATE 1		50.29
XSECTION 133	.08	
ALTERNATE 1		43.66
XSECTION 134	1.07	
ALTERNATE 1		338.67
XSECTION 135	.04	
ALTERNATE 1		22.95
XSECTION 136	.07	
ALTERNATE 1		36.07
XSECTION 137	.08	
ALTERNATE 1		10.76
XSECTION 138	.27	
ALTERNATE 1		75.96
XSECTION 139	1.35	
ALTERNATE 1		289.15
XSECTION 140	.39	
ALTERNATE 1		94.50
XSECTION 141	.19	
ALTERNATE 1		51.76

SUMMARY TABLE 3 - DISCHARGE (CFS) AT XSECTIONS AND STRUCTURES FOR ALL STORMS AND ALTERNATES

XSECTION/ STRUCTURE ID	DRAINAGE AREA (SQ MI)	STORM NUMBERS..... 1
XSECTION 142	1.62	
ALTERNATE 1		142.77
XSECTION 143	.06	
ALTERNATE 1		14.66
XSECTION 144	.13	
ALTERNATE 1		12.46

NBS/LOWRY
ENGINEERS & PLANNERS

~~FINCEL~~
~~WOOD~~
ROSS

July 19, 1990

Mr. Ross Blakely
Engineering Supervisor
Street Transportation Department
City of Phoenix
125 East Washington Street
Phoenix, AZ 85004

Re: North Central Storm Drain Update Revisions in the vicinity of 7th Street and Union Hills Drive.

Dear Mr. Blakely:

As a result of information received at our meeting of June 6, and per your request, we have revised the proposed stormdrain master plan in the vicinity of 7th Street and Union Hills Drive. The following specific changes have been made:

1. Union Hills Drive - Cave Creek Outlet (Sheet 10 of 12)

The Union Hills Drive system collects runoff from Buffalo Ridge and carries it via 16th Street, Rosemont Drive, 12th Street, and Union Hills to Cave Creek Wash. Design surveys have determined that the outfall at Cave Creek Wash can be placed lower than was estimated during the master planning process. Therefore, a greater hydraulic grade line slope can be achieved. As a result, the two year flow intercepted from the proposed 9th Street channel north of Union Hills can be combined with the Buffalo Ridge runoff and conveyed to Cave Creek Wash in an 84 inch pipe instead of being carried in a parallel line to the 7th Street system. This eliminates about 1200 feet of parallel pipe and reduces the flow in the 7th Street system resulting in reduced pipe sizes in 7th Street.

The lowered Cave Creek outfall elevation allows the pipe to be lowered. The three 36 inch pipes under the proposed box culvert at 9th Street have been replaced by a single 60 inch pipe. The 48 inch pipe in Rosemont Drive and 12th Street has been downsized to 42 inches and the 60 inch pipe in Union Hills has been downsized to 54 inches for a length of about 870 feet.

2. 7th Street - Greenway Channel Outlet (Sheet 2 of 12)

The 7th Street system will extend from the outfall at the Greenway Channel to Piute Avenue north of Union Hills Drive. The two year flow intercepted from the proposed 9th Street channel north of Union Hills has been redirected west in Union Hills Drive reducing the design flow in 7th Street. As a result the 48 inch pipe from Grovers to Union

Hills has been dowsized to 36 inches, the 60 inch pipe from about 1440 feet north of Bell Road to Grovers Avenue has been downsized to 48 inches, and the 72 inch pipe from Bell Road to about 1440 feet north of Bell Road has been downsized to 66 inches.

Enclosed are duplicate mylars of the revised sheets 2 and 10 of the Preliminary Concept Plans, revised reproducible Plates A and B showing the total system, and the revised TR-20 output.

If you have any questions on the proposed changes please give me a call, or we can meet at your convenience.

Very truly yours,

NBS/LOWRY

Brian Fry

Brian J. Fry, P.E.
Project Manager

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

JOB TR-20                                          SUMMARY   NOPLOTS
TITLE 000 EAST FORK CAVE CREEK - NORTH CENTRAL STORM DRAIN UPDATE
TITLE 000 JOB NUMBER:  P79-086-012   FILENAME: EFNC2YR.DAT
 5 RAINFL 1            .0208
 8          0.         .004       .008       .0130      .018
 8          .022       .026       .031       .035       .04
 8          .044       .048       .053       .057       .062
 8          .066       .071       .075       .080       .093
 8          .107       .120       .140       .170       .500
 8          .830       .860       .880       .893       .907
 8          .920       .924       .928       .933       .937
 8          .942       .947       .951       .956       .960
 8          .964       .969       .973       .978       .982
 8          .987       .991       .995       1.00       1.00
 9 ENDTBL
 2 XSECTN   006        1.0
 8                     1502.      0.0        0.0
 8                     1502.4     3.7        2.1
 8                     1502.8     13.3       5.1
 8                     1503.2     29.5       9.1
 8                     1503.6     53.4       14.1
 8                     1504.0     85.8       20.0
 8                     1504.4     100.7      30.8
 8                     1504.8     169.0      50.3
 8                     1505.2     289.0      78.5
 8                     1505.6     469.8      115.4
 8                     1506.0     470.9      161.1
 8                     1506.4     952.6      295.5
 8                     1506.8     1764.7     462.7
 8                     1507.2     2878.8     662.8
 8                     1507.6     4328.4     895.6
 8                     1508.0     6145.9     1161.3
 8                     1508.4     8331.5     1460.9
 8                     1508.8     10956.2    1795.8
 9 ENDTBL
 2 XSECTN   008        1.0
 8                     1494.0     0.0        0.0
 8                     1494.3     7.4        5.7
 8                     1494.6     23.9       12.0
 8                     1494.9     47.8       18.8
 8                     1495.2     78.9       26.3
 8                     1495.5     117.0      34.3
 8                     1495.8     162.2      42.9
 8                     1496.1     165.4      53.5
 8                     1496.4     175.4      84.2
 8                     1496.7     302.7      140.5
```

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

```
8                    1497.0     527.8      222.4
8                    1497.3     868.5      329.9
8                    1497.6     1343.8     463.0
8                    1497.9     1972.3     621.8
8                    1498.2     2837.4     803.3
8                    1498.5     3901.4     998.3
8                    1498.8     5131.8     1206.2
8                    1499.1     6532.4     1426.8
8                    1499.4     8107.5     1660.4
8                    1499.7     9861.7     1906.7
9 ENDTBL
2 XSECTN   014       1.0
8                    1484.0     0.0        0.0
8                    1484.3     4.5        3.5
8                    1484.6     14.6       7.4
8                    1484.9     29.3       11.7
8                    1485.2     48.4       16.4
8                    1485.5     72.0       21.6
8                    1485.8     100.0      27.1
8                    1486.1     132.3      33.0
8                    1486.4     168.7      39.4
8                    1486.7     210.3      46.4
8                    1487.0     257.3      53.8
8                    1487.3     309.9      61.7
8                    1487.6     368.3      70.1
8                    1487.9     432.9      78.9
8                    1488.2     460.0      95.4
8                    1488.5     490.0      142.0
8                    1488.8     520.2      220.5
8                    1489.1     843.7      330.9
8                    1489.4     1318.9     473.3
8                    1489.7     1968.4     647.5
9 ENDTBL
2 XSECTN   037       1.0
8                    1452.0     0.0        0.0
8                    1452.2     8.1        6.5
8                    1452.6     50.6       19.9
8                    1453.0     119.3      34.0
8                    1453.2     162.1      41.3
8                    1453.4     210.4      48.7
8                    1453.6     263.8      56.3
8                    1453.8     322.2      64.1
8                    1454.0     385.5      72.0
8                    1454.2     420.0      86.0
8                    1454.4     456.8      100.3
8                    1454.6     566.6      114.7
```

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

```
8                    1454.8     685.9      129.2
8                    1455.0     814.4      143.9
8                    1455.2     952.0      158.8
8                    1455.4     1098.3     173.9
8                    1455.6     1183.6     189.8
8                    1455.8     1357.3     206.7
8                    1456.0     1540.3     223.7
8                    1456.2     1740.2     240.7
9 ENDTBL
2 XSECTN   087       1.0
8                    1429.8     0.0        0.0
8                    1429.9     32.7       48.5
8                    1430.      115.8      116.0
8                    1430.1     268.3      193.9
8                    1430.2     469.2      273.6
8                    1430.4     1000.2     438.7
8                    1430.6     1689.0     611.1
8                    1430.8     2526.0     791.0
8                    1431.0     3505.8     978.2
8                    1431.2     4625.3     1172.9
8                    1431.4     5882.7     1374.9
9 ENDTBL
2 XSECTN   083       1.
8                    0.0        0.0        0.0
8                    .2         9.5        5.8
8                    .4         26.9       11.6
8                    .6         49.5       17.4
8                    .8         76.2       23.2
8                    1.0        106.4      29.
8                    1.2        139.9      34.8
8                    1.4        176.3      40.6
8                    1.6        215.4      46.4
8                    1.8        257.       52.2
8                    2.0        301.       58.
8                    2.2        347.3      63.8
8                    2.4        395.7      69.6
9 ENDTBL
2 XSECTN   084       1.
8                    0.0        0.0        0.0
8                    .2         5.3        3.2
8                    .4         14.9       6.4
8                    .6         27.3       9.6
8                    .8         42.0       12.8
8                    1.0        58.7       16.0
8                    1.2        77.2       19.2
8                    1.4        97.3       22.4
```

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

```
8                    1.6        118.8      25.6
8                    1.8        141.8      28.8
8                    2.0        166.1      32.0
8                    2.2        191.6      35.2
8                    2.4        218.3      38.4
9 ENDTBL
2 XSECTN   104       1.0
8                    0.         0.         0.
8                    .3         1.43       .53
8                    .6         6.21       1.47
8                    .9         14.46      2.66
8                    1.2        26.04      4.03
8                    1.5        40.73      5.53
8                    1.8        58.23      7.13
8                    2.1        78.19      8.82
8                    2.4        100.20     10.56
8                    2.7        123.86     12.34
8                    3.         148.68     14.14
8                    3.3        174.15     15.93
8                    3.6        199.76     17.71
8                    3.9        224.91     19.45
8                    4.2        248.94     21.14
8                    4.5        271.14     22.75
8                    4.8        290.64     24.25
8                    5.1        306.39     25.61
8                    5.4        316.91     26.80
8                    5.7        319.50     27.75
9 ENDTBL
2 XSECTN   105       1.0
8                    1417.1     0.0        0.0
8                    1417.3     9.7        14.0
8                    1417.5     61.9       56.0
8                    1417.7     182.4      125.9
8                    1417.9     392.9      223.9
8                    1418.1     737.3      347.5
8                    1418.3     1217.8     483.0
8                    1418.5     1805.5     628.1
8                    1418.7     2500.2     782.6
8                    1418.9     3303.3     946.7
9 ENDTBL
3 STRUCT     08
8                    1490.8     0.         0.
8                    1491.2     12.        0.24
8                    1491.5     24.        0.75
8                    1491.9     40.        1.85
8                    1492.2     56.        3.09
```

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

```
8                    1492.6     80.        5.38
8                    1492.9     100.       7.57
8                    1493.3     128.       11.27
8                    1493.6     156.       14.67
8                    1494.0     195.       19.96
8                    1494.3     222.       24.27
8                    1494.7     256.       30.39
8                    1495.0     280.       35.24
8                    1495.4     340.       41.85
8                    1495.7     370.       46.90
8                    1496.1     400.       53.74
8                    1496.4     420.       58.90
8                    1496.8     440.       65.83
8                    1497.1     460.       71.08
8                    1497.5     480.       78.18
9 ENDTBL
3 STRUCT      33
8                    1462.      0.         0.
8                    1464.      21.        1.38
8                    1465.      44.        3.5
8                    1466.      68.        6.91
8                    1467.      86.        12.
8                    1468.      95.        18.53
8                    1469.      102.       26.3
8                    1470.      108.       35.6
9 ENDTBL
3 STRUCT      37
8                    1446.0     0.0        -0.0
8                    1448.0     0.1        2.59
8                    1448.5     110.       3.52
8                    1449.0     320.       4.45
8                    1449.5     580.       5.38
8                    1450.0     900.       6.32
9 ENDTBL
3 STRUCT      39
8                    1413.      0.0        0.0
8                    1413.4     33.58      8.04
8                    1413.8     101.65     16.18
8                    1414.2     191.12     24.39
8                    1414.6     296.09     32.70
8                    1415.0     412.96     41.10
8                    1415.4     539.25     49.59
8                    1415.8     673.17     58.16
8                    1416.2     813.39     66.83
8                    1416.6     958.87     75.59
8                    1417.0     1108.82    84.43
```

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

```
8                    1417.4      1262.58     93.37
8                    1417.8      1419.63     102.41
8                    1418.2      1579.53     111.53
8                    1418.6      1741.94     120.75
8                    1419.0      1906.54     130.06
9 ENDTBL
3 STRUCT      43
8                    1427.5      0.          0.
8                    1428.0      9.          0.30
8                    1430.0      80.         3.97
8                    1432.0      315.        13.08
8                    1434.0      486.        32.70
8                    1436.0      627.        59.41
8                    1438.0      740.        87.57
8                    1440.0      831.        117.19
9 ENDTBL
3 STRUCT      44
8                    1417.       0.          0.
8                    1418.0      4.          0.27
8                    1420.0      54.         4.74
8                    1422.0      121.        19.70
8                    1424.0      175.        44.90
8                    1426.0      220.        73.96
8                    1428.0      256.        104.37
8                    1430.0      287.        136.07
8                    1432.0      316.        169.06
9 ENDTBL
3 STRUCT      59
8                    1393.       0.          0.
8                    1394.       8.          0.01
8                    1395.       27.         .8
8                    1396.       58.         2.34
8                    1397.       95.         5.0
8                    1398.       135.        8.61
8                    1399.       171.        13.0
8                    1400.       206.        17.66
8                    1401.       230.        23.0
8                    1402.       260.        28.37
8                    1403.       280.        34.4
8                    1404.       300.        40.07
8                    1405.       320.        46.6
8                    1406.       336.        52.76
9 ENDTBL
3 STRUCT      69
8                    1372.0      0.          0.
8                    1376.0      84.         0.02
```

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

```
8                    1377.0      105.       0.33
8                    1378.0      123.       2.05
8                    1379.0      138.       6.97
8                    1380.0      151.       16.68
8                    1381.0      164.       31.34
8                    1382.0      176.       49.36
8                    1384.0      198.       88.62
8                    1386.0      219.       129.66
9 ENDTBL
6 RUNOFF 1 001       5 .148      95.        .3
6 RUNOFF 1 002       6 .097      95.        .19
6 REACH  3 003   6   7 1400.     .04        1.66
6 RUNOFF 1 003       6 .047      77.        .36
6 ADDHYD 4 003   6 7 4
6 ADDHYD 4 003   5 4 6
6 REACH  3 005   6   7 3000.     4.64       1.25
6 RUNOFF 1 004       6 .195      95.        .22
6 REACH  3 005   6   5 1400.     .05        1.66
6 RUNOFF 1 005       6 .125      77.        .56
6 ADDHYD 4 005   6 5 4
6 ADDHYD 4 005   4 7 6
6 RUNOFF 1 019       5 .022      95.        .167
6 REACH  3 018   5   7 2700.     7.96       1.25
6 RUNOFF 1 018       5 .184      78.        .72
6 ADDHYD 4 018   5 7 4
6 ADDHYD 4 018   4 6 7
6 REACH  3 008   7   4 1800.     5.03       1.25
6 RUNOFF 1 006       5 .109      81.        .82
6 REACH  3 008   5   6 1600.
6 RUNOFF 1 007       5 .117      77.        .69
6 REACH  3 008   5   7 1400.
6 ADDHYD 4 008   6 7 5
6 RUNOFF 1 008       6 .131      78.        .75
6 ADDHYD 4 008   6 5 7
6 RESVOR 2     08 7   6 1491.0
6 ADDHYD 4 008   4 6 3
6 REACH  3 014   3   5 3000.     .17        1.47
6 RUNOFF 1 009       6 .066      79.        .93
6 REACH  3 014   6   7 2700.
6 ADDHYD 4 014   5 7 6
6 RUNOFF 1 144       5 .132      79.        .93
6 REACH  3 014   5   7 3960.     2.1        1.4
6 ADDHYD 4 014   6 7 5
6 RUNOFF 1 016       6 .119      86.        .54
6 REACH  3 015   6   7 1300.     .54        1.54
6 RUNOFF 1 015       6 .073      82.        .89
```

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

```
6 ADDHYD 4 015   6 7 4
6 ADDHYD 4 014   4 5 6
6 RUNOFF 1 014       5 .177        83.         .39
6 ADDHYD 4 014   5 6 4
6 REACH  3 027   4   7 3000.       .04         1.63
6 RUNOFF 1 027       5 .188        82.         1.2
6 ADDHYD 4 027   5 7 6
6 RUNOFF 1 017       5 .059        95.         .17
6 REACH  3 025   5   7 2200.       .05         1.66
6 RUNOFF 1 025       5 .089        83.         .43
6 ADDHYD 4 025   5 7 4
6 REACH  3 027   4   5 1700.       .04         1.63
6 ADDHYD 4 027   5 6 7
6 RUNOFF 1 024       5 .198        86.         .46
6 REACH  3 026   5   6 1500.       3.78        1.25
6 RUNOFF 1 026       5 .067        85.         .31
6 ADDHYD 4 026   5 6 4
6 ADDHYD 4 027   4 7 5
6 RUNOFF 1 010       4 .095        77.         .56
6 REACH  3 011   4   6 2640.       .44         1.54
6 RUNOFF 1 011       7 .234        79.         .84
6 ADDHYD 4 011   6 7 4
6 REACH  3 028   4   6 3300.       .03         1.66
6 RUNOFF 1 013       7 .125        82.         .61
6 REACH  3 028   7   4 2800.       .03         1.66
6 ADDHYD 4 028   4 6 7
6 RUNOFF 1 028       4 .156        82.         .93
6 ADDHYD 4 028   4 7 6
6 REACH  3 027   6   7 2500.       4.41        1.25
6 ADDHYD 4 027   5 7 6
6 REACH  3 037   6   4 3000.
6 RUNOFF 1 037       5 .125        83.         .25
6 ADDHYD 4 037   4 5 6
6 RESVOR 2    37 6   4 1446.0
6 REACH  3 085   4   6 3000.       6.33        1.25
6 RUNOFF 1 143       5 .0625       85.         .53
6 RESVOR 2    43 5   7 1427.5
6 RESVOR 2    44 7   5 1417.0
6 ADDHYD 4 085   5 6 7
6 REACH  3 085   7   6 660.        5.55        1.25
6 RUNOFF 1 085       7 .063        84.         .52
6 ADDHYD 4 085   6 7 5
6 REACH  3 084   5   6 1320.       5.55        1.25
6 RUNOFF 1 084       5 .063        84.         .52
6 ADDHYD 4 084   5 6 1
6 RUNOFF 1 034       4 .125        84.         .73
```

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

```
6 REACH  3 035   4   6 1320.      .31        1.54
6 RUNOFF 1 035       4 .125       83.        .49
6 ADDHYD 4 035   4 6 3
6 REACH  3 091   3   4 2640.      .22        1.54
6 RUNOFF 1 092       5 .125       86.        .47
6 REACH  3 091   5   6 1320.      6.73       1.25
6 RUNOFF 1 091       5 .125       86.        .47
6 ADDHYD 4 091   5 6 7
6 ADDHYD 4 036   4 7 6
6 REACH  3 090   6   5 1320.      7.06       1.25
6 RUNOFF 1 090       6 .109       85.        .63
6 ADDHYD 4 090   5 6 4
6 RUNOFF 1 036       5 .125       83.        .48
6 REACH  3 090   5   6 2640.      .22        1.54
6 ADDHYD 4 090   4 6 5
6 REACH  3 088   5   7 1320.      7.33       1.25
6 RUNOFF 1 089       4 .047       84.        .39
6 REACH  3 088   4   5 2000.      6.76       1.25
6 RUNOFF 1 088       4 .094       87.        .75
6 ADDHYD 4 088   4 5 6
6 ADDHYD 4 088   6 7 5
6 REACH  3 087   5   6 1320.      2.77       1.25
6 RUNOFF 1 086       7 .063       86.        .27
6 REACH  3 087   7   4 1320.
6 RUNOFF 1 087       5 .063       87.        .52
6 ADDHYD 4 087   5 4 7
6 ADDHYD 4 087   7 6 5
6 REACH  3 084   5   6 1320.      2.77       1.25
6 DIVERT 6 084   1 2 3            .35        83.
6 ADDHYD 4 084   2 6 7
6 REACH  3 105   7   6 1320.      6.07       1.25
6 RUNOFF 1 102       5 .063       82.        .63
6 REACH  3 105   5   7 1320.
6 RUNOFF 1 105       5 .063       78.        .63
6 ADDHYD 4 105   5 7 2
6 ADDHYD 4 105   2 6 7
6 REACH  3 104   7   6 1320.      6.07       1.25
6 RUNOFF 1 104       5 .069       78.        .67
6 ADDHYD 4 104   5 6 1
6 REACH  3 083   3   5 1320.      7.64       1.25
6 RUNOFF 1 083       6 .063       85.        .52
6 ADDHYD 4 083   5 6 7
6 REACH  3 106   7   6 1320.      7.12       1.25
6 RUNOFF 1 106       5 .063       79.        .56
6 ADDHYD 4 106   5 6 7
6 REACH  3 107   7   6 900.       7.12       1.25
```

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

```
6 RUNOFF 1 107       5 .059        82.        .42
6 ADDHYD 4 107   5 6 2
6 RUNOFF 1 012       5 .07         82.        .42
6 REACH  3 029   5   6 3800.       .04        1.66
6 RUNOFF 1 029       5 .25         81.        1.03
6 ADDHYD 4 029   5 6 7
6 REACH  3 033   7   6 2640.       5.69       1.25
6 RUNOFF 1 033       5 .234        80.        1.14
6 ADDHYD 4 033   5 6 7
6 RUNOFF 1 030       5 .125        79.        .83
6 REACH  3 032   5   6 3000.       6.29       1.25
6 RESVOR 2     33 6   3 1462.
6 ADDHYD 4 033   3 7 6
6 REACH  3 093   6   7 2640.       5.69       1.25
6 RUNOFF 1 093       5 .195        84.        .45
6 ADDHYD 4 093   5 7 6
6 REACH  3 095   6   4 1320.       4.72       1.25
6 RUNOFF 1 032       5 .109        80.        .81
6 REACH  3 094   5   6 3200.       .09        1.66
6 RUNOFF 1 094       5 .139        84.        .34
6 ADDHYD 4 094   5 6 7
6 REACH  3 095   7   6 2400.       .09        1.66
6 RUNOFF 1 095       5 .125        86.        .98
6 ADDHYD 4 095   5 6 7
6 ADDHYD 4 095   4 7 5
6 REACH  3 096   5   6 1320.       4.72       1.25
6 RUNOFF 1 096       5 .125        82.        .51
6 ADDHYD 4 096   5 6 7
6 REACH  3 142   7   6 1320.       5.68       1.25
6 RUNOFF 1 142       4 .25         83.        1.39
6 ADDHYD 4 142   4 6 7
6 RUNOFF 1 097       7 .188        87.        .53
6 REACH  3 098   7   5 1000.       .08        1.66
6 RUNOFF 1 098       7 .094        86.        .37
6 ADDHYD 4 098   5 7 6
6 REACH  3 099   6   7 1250.       .08        1.66
6 RUNOFF 1 099       6 .094        86.        .49
6 ADDHYD 4 099   7 6 5
6 REACH  3 139   5   7 1600.       .05        1.66
6 RUNOFF 1 101       6 .047        89.        .52
6 REACH  3 100   6   5 1320.       8.19       1.25
6 RUNOFF 1 100       4 .078        86.        .39
6 ADDHYD 4 101   5 4 6
6 REACH  3 139   6   5 600.        4.52       1.25
6 ADDHYD 4 139   5 7 3
6 RUNOFF 1 141       7 .188        87.        .53
```

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

```
6 REACH  3 140   7   5 1320.      4.05       1.25
6 RUNOFF 1 140       6 .125       86.        .44
6 ADDHYD 4 140   5 6 4
6 RUNOFF 1 137       6 .078       79.        .49
6 ADDHYD 4 140   4 6 5
6 REACH  3 139   5   6 2800.      4.39       1.25
6 ADDHYD 4 139   6 3 4
6 RUNOFF 1 136       5 .066       95.        .167
6 REACH  3 138   5   6 3000.      .17        1.66
6 RUNOFF 1 138       5 .203       84.        .24
6 ADDHYD 4 138   5 6 7
6 REACH  3 139   7   6 2000.      4.52       1.25
6 ADDHYD 4 139   4 6 7
6 RUNOFF 1 139       5 .188       87.        .43
6 ADDHYD 4 139   7 5 3
6 RUNOFF 1 128       5 .036       80.        .167
6 REACH  3 129   5   7 1100.      10.        1.25
6 RUNOFF 1 129       5 .108       82.        .167
6 ADDHYD 4 129   5 7 6
6 RUNOFF 1 130       5 .031       91.        .167
6 ADDHYD 4 129   5 6 7
6 REACH  3 131   7   6 2500.      4.8        1.25
6 RUNOFF 1 127       7 .159       82.        .21
6 ADDHYD 4 131   6 7 4
6 RUNOFF 1 132       5 .145       88.        .27
6 REACH  3 131   5   7 2000.      .17        1.66
6 ADDHYD 4 131   4 7 5
6 RUNOFF 1 131       6 .119       86.        .27
6 ADDHYD 4 131   5 6 7
6 RUNOFF 1 133       5 .08        95.        .17
6 REACH  3 131   5   6 2000.      .17        1.66
6 ADDHYD 4 131   6 7 5
6 REACH  3 126   5   6 1500.      8.31       1.25
6 RUNOFF 1 126       5 .158       95.        .28
6 ADDHYD 4 126   5 6 7
6 REACH  3 134   7   6 1500.      5.48       1.25
6 RUNOFF 1 135       7 .042       95.        .167
6 REACH  3 134   7   5 3200.      .13        1.66
6 ADDHYD 4 134   5 6 7
6 RUNOFF 1 134       6 .197       85.        .31
6 ADDHYD 4 134   6 7 5
6 RUNOFF 1 125       7 .117       95.        .167
6 ADDHYD 4 125   7 5 6
6 REACH  3 124   6   7 2500.      4.24       1.25
6 RUNOFF 1 124       6 .219       84.        .25
6 ADDHYD 4 124   6 7 5
```

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

```
6 REACH  3 124   3   7 900.       .96        1.51
6 ADDHYD 4 124   5 7 6
6 RUNOFF 1 103       5 .081       84.        .26
6 ADDHYD 4 124   5 6 7
6 REACH  3 104   7   6 1320.      .96        1.51
6 ADDHYD 4 104   1 6 4
6 REACH  3 107   4   5 1000.      .85        1.53
6 ADDHYD 4 107   5 2 7
6 RUNOFF 1 123       6 .213       95.        .25
6 ADDHYD 4 107   6 7 5
6 REACH  3 108   5   3 1700.      .85        1.53
6 RUNOFF 1 108       5 .025       83.        .28
6 ADDHYD 4 108   5 3 1
6 RUNOFF 1 022       5 .153       83.        .47
6 RUNOFF 1 023       6 .091       95.        .23
6 ADDHYD 4 023   5 6 7
6 REACH  3 041   7   6 2640.      6.54       1.25
6 RUNOFF 1 041       5 .172       84.        .38
6 ADDHYD 4 041   5 6 7
6 REACH  3 081   7   4 2640.      6.2        1.25
6 RUNOFF 1 038       7 .125       79.        .44
6 REACH  3 040   7   6 1800.      .08        1.66
6 RUNOFF 1 040       5 .094       82.        .51
6 ADDHYD 4 040   5 6 7
6 REACH  3 082   7   5 1400.      .1         1.66
6 RUNOFF 1 082       6 .063       84.        .27
6 ADDHYD 4 082   5 6 7
6 RUNOFF 1 039       5 .125       85.        .53
6 REACH  3 082   5   6 1867.      .1         1.66
6 ADDHYD 4 082   6 7 5
6 REACH  3 081   5   6 1320.      .22        1.54
6 RUNOFF 1 081       5 .063       77.        .52
6 ADDHYD 4 081   5 6 3
6 ADDHYD 4 081   3 4 5
6 REACH  3 080   5   6 1320.      7.06       1.25
6 RUNOFF 1 080       5 .063       82.        .45
6 ADDHYD 4 080   5 6 7
6 REACH  3 109   7   6 1320.      4.04       1.25
6 RUNOFF 1 109       5 .063       84.        .29
6 ADDHYD 4 109   5 6 7
6 ADDHYD 4 108   1 7 6
6 REACH  3 110   6   7 1320.      .85        1.53
6 RUNOFF 1 110       5 .073       78.        .56
6 ADDHYD 4 110   5 7 6
6 RUNOFF 1 122       4 .355       85.        .29
6 ADDHYD 4 110   6 4 5
```

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

```
6 REACH  3 111   5   6 1320.      1.07       1.53
6 RUNOFF 1 111       5 .07        77.        .56
6 ADDHYD 4 111   5 6 7
6 REACH  3 112   7   6 1320.      .04        1.63
6 RUNOFF 1 121       5 .25        95.        .17
6 ADDHYD 4 112   5 6 1
6 RUNOFF 1 049       5 .086       95.        .19
6 REACH  3 048   5   6 1320.      .04        1.66
6 RUNOFF 1 020       5 .064       95.        .17
6 REACH  3 048   5   7 2640.      .04        1.66
6 ADDHYD 4 048   6 7 5
6 RUNOFF 1 048       6 .125       82.        .6
6 ADDHYD 4 048   5 6 7
6 REACH  3 056   7   6 1866.      .12        1.66
6 RUNOFF 1 056       5 .063       82.        .25
6 ADDHYD 4 056   5 6 7
6 REACH  3 057   7   6 1320.      .76        1.58
6 RUNOFF 1 057       5 .063       82.        .25
6 ADDHYD 4 057   5 6 7
6 REACH  3 059   7   6 1320.      .74        1.58
6 RUNOFF 1 059       5 .063       82.        .25
6 ADDHYD 4 059   5 6 4
6 RUNOFF 1 043       5 .047       90.        .17
6 RUNOFF 1 021       6 .189       87.        .58
6 ADDHYD 4 021   5 6 7
6 REACH  3 045   7   5 2640.      2.67       1.25
6 RUNOFF 1 045       6 .125       90.        .51
6 ADDHYD 4 045   5 6 7
6 RUNOFF 1 047       3 .125       82.        .31
6 REACH  3 046   3   5 1320.      .51        1.54
6 RUNOFF 1 046       6 .125       82.        .29
6 ADDHYD 4 046   5 6 3
6 ADDHYD 4 045   3 7 6
6 REACH  3 059   6   7 1320.      5.54       1.25
6 ADDHYD 4 059   4 7 3
6 REACH  3 060   3   5 1320.      1.81       1.25
6 RUNOFF 1 060       6 .063       81.        .49
6 ADDHYD 4 060   5 6 2
6 RUNOFF 1 050       5 .134       77.        .57
6 REACH  3 052   5   6 1500.      .03        1.66
6 RUNOFF 1 052       5 .063       81.        .56
6 ADDHYD 4 052   5 6 7
6 REACH  3 055   7   6 1320.      .09        1.66
6 RUNOFF 1 055       5 .063       83.        .25
6 ADDHYD 4 055   5 6 7
6 RUNOFF 1 051       5 .063       83.        .18
```

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

```
6 REACH  3 055   5   6 1867.      .09        1.66
6 ADDHYD 4 055   7 6 5
6 REACH  3 058   5   6 1320.      6.73       1.25
6 RUNOFF 1 058       5 .063       84.        .25
6 ADDHYD 4 058   5 6 7
6 REACH  3 060   7   3 1320.      6.73       1.25
6 REACH  3 061   2   6 1320.      1.81       1.25
6 RUNOFF 1 061       5 .102       83.        .25
6 ADDHYD 4 061   5 6 7
6 RUNOFF 1 053       5 .084       84.        .31
6 REACH  3 061   5   6 2100.      .11        1.66
6 ADDHYD 4 061   7 6 5
6 REACH  3 062   5   6 2000.      1.81       1.25
6 RUNOFF 1 062       5 .13        82.        .88
6 ADDHYD 4 062   5 6 7
6 RUNOFF 1 066       7 .063       84.        .46
6 REACH  3 067   7   6 1320.      6.55       1.25
6 RUNOFF 1 067       5 .063       88.        .25
6 ADDHYD 4 067   5 6 7
6 RUNOFF 1 044       5 .125       87.        .3
6 REACH  3 067   5   6 1320.      .25        1.54
6 ADDHYD 4 067   6 7 4
6 REACH  3 069   4   6 1320.      6.77       1.25
6 RUNOFF 1 069       5 .063       81.        .62
6 ADDHYD 4 069   5 6 4
6 RUNOFF 1 042       5 .078       83.        .22
6 REACH  3 078   5   6 1600.      .09        1.66
6 RUNOFF 1 078       7 .063       86.        .27
6 ADDHYD 4 078   7 6 5
6 REACH  3 077   5   6 1320.      .23        1.54
6 RUNOFF 1 077       5 .063       77.        .38
6 ADDHYD 4 077   5 6 7
6 REACH  3 069   7   6 1320.      6.03       1.25
6 ADDHYD 4 069   6 4 2
6 REACH  3 075   2   6 1320.      3.79       1.25
6 RUNOFF 1 075       5 .063       95.        .52
6 ADDHYD 4 075   5 6 7
6 RUNOFF 1 079       5 .063       88.        .25
6 REACH  3 076   5   6 1320.      .23        1.54
6 RUNOFF 1 076       5 .063       86.        .25
6 ADDHYD 4 076   5 6 4
6 REACH  3 075   4   5 1320.      6.73       1.25
6 ADDHYD 4 075   7 5 6
6 REACH  3 112   6   4 1320.      3.79       1.25
6 RUNOFF 1 112       5 .061       77.        .46
6 ADDHYD 4 112   5 4 7
```

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

 6 ADDHYD 4 112   1 7 2
 6 REACH  3 113   2   5 1320.       .04         1.63
 6 RUNOFF 1 113       6 .053        91.         .52
 6 ADDHYD 4 113   5 6 7
 6 RUNOFF 1 120       5 .231        87.         .30
 6 ADDHYD 4 113   5 7 1
 6 REACH  3 065   3   4 1320.       5.97        1.25
 6 RUNOFF 1 065       5 .047        82.         .49
 6 ADDHYD 4 065   4 5 7
 6 REACH  3 068   7   6 1320.       5.97        1.25
 6 RUNOFF 1 068       5 .063        85.         .25
 6 ADDHYD 4 068   5 6 7
 6 REACH  3 070   7   6 1320.       4.80        1.25
 6 RUNOFF 1 070       5 .063        86.         .25
 6 ADDHYD 4 070   5 6 7
 6 REACH  3 074   7   6 1320.       2.86        1.25
 6 RUNOFF 1 074       5 .063        90.         .24
 6 ADDHYD 4 074   5 6 7
 6 REACH  3 113   7   6 1320.       6.62        1.25
 6 ADDHYD 4 113   1 6 3
 6 REACH  3 114   3   1 3000.       .04         1.63
 6 RUNOFF 1 064       5 .25         82.         .33
 6 REACH  3 072   5   6 2640.       .18         1.54
 6 RUNOFF 1 072       5 .125        83.         .49
 6 ADDHYD 4 072   5 6 7
 6 REACH  3 114   7   6 2000.       .05         1.66
 6 RUNOFF 1 115       5 .094        82.         .45
 6 ADDHYD 4 114   5 6 7
 6 RUNOFF 1 071       5 .125        83.         .49
 6 REACH  3 114   5   6 2200.       .05         1.66
 6 ADDHYD 4 114   6 7 5
 6 RUNOFF 1 114       6 .128        85.         1.19
 6 ADDHYD 4 114   5 6 7
 6 ADDHYD 4 114   1 7 5
 6 RUNOFF 1 119       6 .231        84.         1.05
 6 ADDHYD 4 114   5 6 7
 6 REACH  3 118   7   6 4000.       .05         1.66
 6 RUNOFF 1 118       5 .231        81.         1.59
 6 ADDHYD 4 118   5 6 7
   ENDATA
 7 INCREM 6             .08
 7 COMPUT 7 001   118               1.44        24.         1 2  01  01
   ENDCMP 1
   ENDJOB 2

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


EXECUTIVE CONTROL OPERATION INCREM     MAIN TIME INCREMENT =   .08 HOURS                                    RECORD ID


EXECUTIVE CONTROL OPERATION COMPUT     FROM XSECTION   1  TO XSECTION 118                                   RECORD ID
       STARTING TIME =   .00    RAIN DEPTH =  1.44    RAIN DURATION= 24.00    RAIN TABLE NO.= 1    ANT. MOIST. COND= 2
       ALTERNATE NO.= 1         STORM NO.= 1    MAIN TIME INCREMENT =   .08 HOURS

    ***  WARNING  REACH   5 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT  ***

    ***  WARNING  REACH  18 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT  ***
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*** WARNING  REACH   8 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT  ***

*** WARNING  REACH  26 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT  ***

*** WARNING  REACH  28 LENGTH FACTOR (K*) GREATER THAN 1.0, CONSIDER DIVIDING REACH LENGTH  ***

*** WARNING  REACH  28 LENGTH FACTOR (K*) GREATER THAN 1.0, CONSIDER DIVIDING REACH LENGTH  ***

*** WARNING - REACH  27 INFLOW HYDROGRAPH VOLUME TRUNCATED ABOVE BASEFLOW AT       2.41 CFS,  11.62 % OF PEAK.

*** WARNING  REACH  85 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT  ***

*** WARNING  REACH  85 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT  ***

*** WARNING  REACH  84 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT  ***

*** WARNING  REACH  91 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT  ***

*** WARNING  REACH  90 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT  ***

*** WARNING  REACH  88 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT  ***

*** WARNING  REACH  88 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT  ***

*** WARNING  REACH  87 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT  ***

***WARNING - LACK OF LOW FLOW DEFINITION FOR XSECT TABLE 87. MAX.FLOW LESS THAN 2ND TABLE VALUE.

*** WARNING  REACH  84 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT  ***

*** WARNING  REACH 105 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT  ***

***WARNING - LACK OF LOW FLOW DEFINITION FOR XSECT TABLE105. MAX.FLOW LESS THAN 2ND TABLE VALUE.

*** WARNING  REACH 104 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT  ***
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*** WARNING  REACH  83 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT  ***
*** WARNING  REACH 106 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT  ***
*** WARNING  REACH 107 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT  ***
*** WARNING  REACH  29 LENGTH FACTOR (K*) GREATER THAN 1.0, CONSIDER DIVIDING REACH LENGTH  ***
*** WARNING  REACH  33 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT  ***
*** WARNING  REACH  93 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT  ***
*** WARNING  REACH  95 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT  ***
*** WARNING  REACH  96 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT  ***
*** WARNING  REACH 142 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT  ***
*** WARNING  REACH 100 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT  ***
*** WARNING  REACH 139 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT  ***
*** WARNING  REACH 140 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT  ***
*** WARNING  REACH 139 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT  ***
*** WARNING  REACH 139 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT  ***
*** WARNING  REACH 129 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT  ***
*** WARNING  REACH 131 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT  ***
*** WARNING  REACH 126 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT  ***
*** WARNING  REACH 134 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT  ***
*** WARNING  REACH 124 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT  ***
*** WARNING  REACH 124 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT  ***
*** WARNING  REACH 104 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT  ***
*** WARNING  REACH 107 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT  ***
*** WARNING  REACH 108 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT  ***
*** WARNING  REACH  41 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT  ***
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*** WARNING  REACH  81 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT  ***
*** WARNING  REACH  80 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT  ***
*** WARNING  REACH 109 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT  ***
*** WARNING  REACH 110 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT  ***
*** WARNING  REACH 111 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT  ***
*** WARNING  REACH  48 LENGTH FACTOR (K*) GREATER THAN 1.0, CONSIDER DIVIDING REACH LENGTH  ***
*** WARNING  REACH  57 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT  ***
*** WARNING  REACH  59 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT  ***
*** WARNING  REACH  59 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT  ***
*** WARNING  REACH  60 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT  ***
*** WARNING  REACH  52 LENGTH FACTOR (K*) GREATER THAN 1.0, CONSIDER DIVIDING REACH LENGTH  ***
*** WARNING  REACH  58 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT  ***
*** WARNING  REACH  60 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT  ***
*** WARNING  REACH  61 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT  ***
*** WARNING  REACH  67 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT  ***
*** WARNING  REACH  69 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT  ***
*** WARNING  REACH  69 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT  ***
*** WARNING  REACH  75 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT  ***
*** WARNING  REACH  75 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT  ***
*** WARNING  REACH 112 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT  ***
*** WARNING  REACH  65 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT  ***
*** WARNING  REACH  68 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT  ***
*** WARNING  REACH  70 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT  ***
*** WARNING  REACH  74 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT  ***
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*** WARNING REACH 113 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT ***

EXECUTIVE CONTROL OPERATION ENDCMP COMPUTATIONS COMPLETED FOR PASS 1 RECORD ID

EXECUTIVE CONTROL OPERATION ENDJOB RECORD ID

SUMMARY TABLE 1 - SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL INSTRUCTIONS IN THE ORDER PERFORMED
(A STAR(*) AFTER THE PEAK DISCHARGE TIME AND RATE (CFS) VALUES INDICATES A FLAT TOP HYDROGRAPH
A QUESTION MARK(?) INDICATES A HYDROGRAPH WITH PEAK AS LAST POINT.)

SECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RAIN TABLE #	ANTEC MOIST COND	MAIN TIME INCREM (HR)	PRECIPITATION BEGIN (HR)	PRECIPITATION AMOUNT (IN)	PRECIPITATION DURATION (HR)	RUNOFF AMOUNT (IN)	PEAK DISCHARGE ELEVATION (FT)	PEAK DISCHARGE TIME (HR)	PEAK DISCHARGE RATE (CFS)	PEAK DISCHARGE RATE (CSM)
ALTERNATE 1 STORM 1													
XSECTION 1	RUNOFF	.15	1	2	.08	.0	1.44	24.00	.95	---	12.47	77.45	523.3
XSECTION 2	RUNOFF	.10	1	2	.08	.0	1.44	24.00	.95	---	12.45	52.48	541.0
XSECTION 3	REACH	.10	1	2	.08	.0	1.44	24.00	.95	---	12.83	44.46	458.4
XSECTION 3	RUNOFF	.05	1	2	.08	.0	1.44	24.00	.18	---	12.57	5.96	126.8
XSECTION 3	ADDHYD	.14	1	2	.08	.0	1.44	24.00	.70	---	12.79	47.19	327.7
XSECTION 3	ADDHYD	.29	1	2	.08	.0	1.44	24.00	.83	---	12.52	119.08	407.8
XSECTION 5	REACH	.29	1	2	.08	.0	1.44	24.00	.83	---	12.62	116.94	400.5
XSECTION 4	RUNOFF	.19	1	2	.08	.0	1.44	24.00	.95	---	12.45	104.29	534.8
XSECTION 5	REACH	.19	1	2	.08	.0	1.44	24.00	.95	---	12.74	95.84	491.5
XSECTION 5	RUNOFF	.13	1	2	.08	.0	1.44	24.00	.18	---	12.67	12.69	101.5
XSECTION 5	ADDHYD	.32	1	2	.08	.0	1.44	24.00	.65	---	12.72	108.12	337.9
XSECTION 5	ADDHYD	.61	1	2	.08	.0	1.44	24.00	.73	---	12.64	221.49	361.9
XSECTION 19	RUNOFF	.02	1	2	.08	.0	1.44	24.00	.96	---	12.44	12.02	546.5
XSECTION 18	REACH	.02	1	2	.08	.0	1.44	24.00	.95	---	12.53	11.86	539.2
XSECTION 18	RUNOFF	.18	1	2	.08	.0	1.44	24.00	.20	---	12.75	18.39	100.0
XSECTION 18	ADDHYD	.21	1	2	.08	.0	1.44	24.00	.28	---	12.62	26.95	130.8
XSECTION 18	ADDHYD	.82	1	2	.08	.0	1.44	24.00	.62	---	12.64	248.27	303.5
XSECTION 8	REACH	.82	1	2	.08	.0	1.44	24.00	.62	1496.57	12.64	248.27	303.5
XSECTION 6	RUNOFF	.11	1	2	.08	.0	1.44	24.00	.28	---	12.80	14.02	128.7
XSECTION 8	REACH	.11	1	2	.08	.0	1.44	24.00	.28	1494.40	12.99	12.76	117.1
XSECTION 7	RUNOFF	.12	1	2	.08	.0	1.44	24.00	.18	---	12.75	10.52	89.9
XSECTION 8	REACH	.12	1	2	.08	.0	1.44	24.00	.18	1494.34	12.94	9.34	79.8
XSECTION 8	ADDHYD	.23	1	2	.08	.0	1.44	24.00	.23	1494.57	12.97	22.04	97.5
XSECTION 8	RUNOFF	.13	1	2	.08	.0	1.44	24.00	.20	---	12.78	12.55	95.8
XSECTION 8	ADDHYD	.36	1	2	.08	.0	1.44	24.00	.22	1494.72	12.90	33.31	93.3
STRUCTURE 8	RESVOR	.36	1	2	.08	.0	1.44	24.00	.22	1491.50	13.23	24.12	67.6
XSECTION 8	ADDHYD	1.17	1	2	.08	.0	1.44	24.00	.50	1496.60	12.65	260.94	222.1
XSECTION 14	REACH	1.17	1	2	.08	.0	1.44	24.00	.50	1486.73	12.98	215.04	183.0
XSECTION 9	RUNOFF	.07	1	2	.08	.0	1.44	24.00	.23	---	12.88	6.23	94.4
XSECTION 14	REACH	.07	1	2	.08	.0	1.44	24.00	.22	1484.31	13.20	4.99	75.6
XSECTION 14	ADDHYD	1.24	1	2	.08	.0	1.44	24.00	.48	1486.76	12.98	219.48	176.9
XSECTION 144	RUNOFF	.13	1	2	.08	.0	1.44	24.00	.23	---	12.88	12.46	94.4

SUMMARY TABLE 1 - SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL INSTRUCTIONS IN THE ORDER PERFORMED
(A STAR(*) AFTER THE PEAK DISCHARGE TIME AND RATE (CFS) VALUES INDICATES A FLAT TOP HYDROGRAPH
A QUESTION MARK(?) INDICATES A HYDROGRAPH WITH PEAK AS LAST POINT.)

SECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RAIN TABLE #	ANTEC MOIST COND	MAIN TIME INCREM (HR)	PRECIPITATION BEGIN (HR)	PRECIPITATION AMOUNT (IN)	PRECIPITATION DURATION (HR)	RUNOFF AMOUNT (IN)	PEAK DISCHARGE ELEVATION (FT)	PEAK DISCHARGE TIME (HR)	PEAK DISCHARGE RATE (CFS)	PEAK DISCHARGE RATE (CSM)
ALTERNATE 1 STORM 1													
XSECTION 14	REACH	.13	1	2	.08	.0	1.44	24.00	.22	1484.49	13.13	10.92	82.8
XSECTION 14	ADDHYD	1.37	1	2	.08	.0	1.44	24.00	.46	1486.82	12.99	229.79	167.4
XSECTION 16	RUNOFF	.12	1	2	.08	.0	1.44	24.00	.45	---	12.61	30.00	252.1
XSECTION 15	REACH	.12	1	2	.08	.0	1.44	24.00	.45	---	12.73	28.73	241.4
XSECTION 15	RUNOFF	.07	1	2	.08	.0	1.44	24.00	.31	---	12.83	9.91	135.8
XSECTION 15	ADDHYD	.19	1	2	.08	.0	1.44	24.00	.39	---	12.75	38.35	199.7
XSECTION 14	ADDHYD	1.56	1	2	.08	.0	1.44	24.00	.45	1487.02	12.95	260.31	166.3
XSECTION 14	RUNOFF	.18	1	2	.08	.0	1.44	24.00	.34	---	12.56	39.25	221.7
XSECTION 14	ADDHYD	1.74	1	2	.08	.0	1.44	24.00	.44	1487.08	12.91	271.93	156.1
XSECTION 27	REACH	1.74	1	2	.08	.0	1.44	24.00	.44	---	13.28	222.41	127.7
XSECTION 27	RUNOFF	.19	1	2	.08	.0	1.44	24.00	.31	---	13.03	20.85	110.9
XSECTION 27	ADDHYD	1.93	1	2	.08	.0	1.44	24.00	.42	---	13.26	240.93	124.8
XSECTION 17	RUNOFF	.06	1	2	.08	.0	1.44	24.00	.96	---	12.44	32.20	545.8
XSECTION 25	REACH	.06	1	2	.08	.0	1.44	24.00	.94	---	13.09	23.03	390.4
XSECTION 25	RUNOFF	.09	1	2	.08	.0	1.44	24.00	.34	---	12.57	19.04	213.9
XSECTION 25	ADDHYD	.15	1	2	.08	.0	1.44	24.00	.58	---	12.65	32.63	220.5
XSECTION 27	REACH	.15	1	2	.08	.0	1.44	24.00	.57	---	13.27	23.60	159.5
XSECTION 27	ADDHYD	2.08	1	2	.08	.0	1.44	24.00	.43	---	13.26	264.52	127.3
XSECTION 24	RUNOFF	.20	1	2	.08	.0	1.44	24.00	.45	---	12.57	52.96	267.5
XSECTION 26	REACH	.20	1	2	.08	.0	1.44	24.00	.45	---	12.66	52.58	265.5
XSECTION 26	RUNOFF	.07	1	2	.08	.0	1.44	24.00	.41	---	12.52	18.66	278.5
XSECTION 26	ADDHYD	.26	1	2	.08	.0	1.44	24.00	.44	---	12.60	68.16	257.2
XSECTION 27	ADDHYD	2.34	1	2	.08	.0	1.44	24.00	.43	---	13.21	277.30	118.4
XSECTION 10	RUNOFF	.09	1	2	.08	.0	1.44	24.00	.18	---	12.67	9.64	101.5
XSECTION 11	REACH	.09	1	2	.08	.0	1.44	24.00	.18	---	13.03	6.60	69.5
XSECTION 11	RUNOFF	.23	1	2	.08	.0	1.44	24.00	.23	---	12.82	23.81	101.7
XSECTION 11	ADDHYD	.33	1	2	.08	.0	1.44	24.00	.21	---	12.87	29.47	89.6
XSECTION 28	REACH	.33	1	2	.08	.0	1.44	24.00	.20	---	14.34	11.18	34.0
XSECTION 13	RUNOFF	.13	1	2	.08	.0	1.44	24.00	.31	---	12.66	20.83	166.7
XSECTION 28	REACH	.13	1	2	.08	.0	1.44	24.00	.29	---	14.09	6.09	48.7
XSECTION 28	ADDHYD	.45	1	2	.08	.0	1.44	24.00	.22	---	14.26	17.15	37.8
XSECTION 28	RUNOFF	.16	1	2	.08	.0	1.44	24.00	.31	---	12.85	20.57	131.9
XSECTION 28	ADDHYD	.61	1	2	.08	.0	1.44	24.00	.25	---	12.87	20.71	33.9
XSECTION 27	REACH	.61	1	2	.08	.0	1.44	24.00	.24	---	14.20	20.40	33.4
XSECTION 27	ADDHYD	2.95	1	2	.08	.0	1.44	24.00	.40	---	13.19	296.04	100.3
XSECTION 37	REACH	2.95	1	2	.08	.0	1.44	24.00	.39	1453.70	13.33	293.32	99.3

SUMMARY TABLE 1 - SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL INSTRUCTIONS IN THE ORDER PERFORMED
(A STAR(*) AFTER THE PEAK DISCHARGE TIME AND RATE (CFS) VALUES INDICATES A FLAT TOP HYDROGRAPH
A QUESTION MARK(?) INDICATES A HYDROGRAPH WITH PEAK AS LAST POINT.)

SECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RAIN TABLE #	ANTEC MOIST COND	MAIN TIME INCREM (HR)	PRECIPITATION BEGIN (HR)	PRECIPITATION AMOUNT (IN)	PRECIPITATION DURATION (HR)	RUNOFF AMOUNT (IN)	PEAK DISCHARGE ELEVATION (FT)	PEAK DISCHARGE TIME (HR)	PEAK DISCHARGE RATE (CFS)	PEAK DISCHARGE RATE (CSM)
ALTERNATE 1 STORM 1													
XSECTION 37	RUNOFF	.13	1	2	.08	.0	1.44	24.00	.34	---	12.50	30.46	243.7
XSECTION 37	ADDHYD	3.08	1	2	.08	.0	1.44	24.00	.39	1453.71	13.33	295.74	96.1
STRUCTURE 37	RESVOR	3.08	1	2	.08	.0	1.44	24.00	.38	1448.94	13.38	294.98	95.8
XSECTION 85	REACH	3.08	1	2	.08	.0	1.44	24.00	.37	---	13.47	294.78	95.8
XSECTION 143	RUNOFF	.06	1	2	.08	.0	1.44	24.00	.41	---	12.61	14.66	234.6
STRUCTURE 43	RESVOR	.06	1	2	.08	.0	1.44	24.00	.41	1428.03	12.85	10.00	160.1
STRUCTURE 44	RESVOR	.06	1	2	.08	.0	1.44	24.00	.40	1418.07	13.40	5.76	92.2
XSECTION 85	ADDHYD	3.14	1	2	.08	.0	1.44	24.00	.38	---	13.47	300.52	95.7
XSECTION 85	REACH	3.14	1	2	.08	.0	1.44	24.00	.38	---	13.47	300.52	95.7
XSECTION 85	RUNOFF	.06	1	2	.08	.0	1.44	24.00	.37	---	12.61	13.74	218.1
XSECTION 85	ADDHYD	3.20	1	2	.08	.0	1.44	24.00	.38	---	13.46	302.33	94.4
XSECTION 84	REACH	3.20	1	2	.08	.0	1.44	24.00	.38	3.03	13.46	302.33	94.4
XSECTION 84	RUNOFF	.06	1	2	.08	.0	1.44	24.00	.37	---	12.61	13.74	218.1
XSECTION 84	ADDHYD	3.27	1	2	.08	.0	1.44	24.00	.38	3.04	13.46	304.16	93.1
XSECTION 34	RUNOFF	.13	1	2	.08	.0	1.44	24.00	.37	---	12.72	23.17	185.4
XSECTION 35	REACH	.13	1	2	.08	.0	1.44	24.00	.37	---	12.90	21.13	169.0
XSECTION 35	RUNOFF	.13	1	2	.08	.0	1.44	24.00	.34	---	12.60	25.51	204.1
XSECTION 35	ADDHYD	.25	1	2	.08	.0	1.44	24.00	.36	---	12.67	41.51	166.1
XSECTION 91	REACH	.25	1	2	.08	.0	1.44	24.00	.35	---	13.07	32.04	128.2
XSECTION 92	RUNOFF	.13	1	2	.08	.0	1.44	24.00	.45	---	12.57	33.19	265.5
XSECTION 91	REACH	.13	1	2	.08	.0	1.44	24.00	.45	---	12.57	33.19	265.5
XSECTION 91	RUNOFF	.13	1	2	.08	.0	1.44	24.00	.45	---	12.57	33.19	265.5
XSECTION 91	ADDHYD	.25	1	2	.08	.0	1.44	24.00	.45	---	12.57	66.38	265.5
XSECTION 36	ADDHYD	.50	1	2	.08	.0	1.44	24.00	.40	---	12.63	82.46	164.9
XSECTION 90	REACH	.50	1	2	.08	.0	1.44	24.00	.40	---	12.63	82.46	164.9
XSECTION 90	RUNOFF	.11	1	2	.08	.0	1.44	24.00	.41	---	12.65	23.58	216.3
XSECTION 90	ADDHYD	.61	1	2	.08	.0	1.44	24.00	.40	---	12.63	105.99	174.0
XSECTION 36	RUNOFF	.13	1	2	.08	.0	1.44	24.00	.34	---	12.59	25.67	205.3
XSECTION 90	REACH	.13	1	2	.08	.0	1.44	24.00	.34	---	12.93	17.61	140.9
XSECTION 90	ADDHYD	.73	1	2	.08	.0	1.44	24.00	.39	---	12.66	118.22	161.1
XSECTION 88	REACH	.73	1	2	.08	.0	1.44	24.00	.39	---	12.66	118.22	161.1
XSECTION 89	RUNOFF	.05	1	2	.08	.0	1.44	24.00	.38	---	12.55	11.33	241.1
XSECTION 88	REACH	.05	1	2	.08	.0	1.44	24.00	.37	---	12.64	11.17	237.6
XSECTION 88	RUNOFF	.09	1	2	.08	.0	1.44	24.00	.49	---	12.71	22.31	237.4
XSECTION 88	ADDHYD	.14	1	2	.08	.0	1.44	24.00	.45	---	12.68	33.27	236.0
XSECTION 88	ADDHYD	.88	1	2	.08	.0	1.44	24.00	.40	---	12.66	151.45	173.1

SUMMARY TABLE 1 - SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL INSTRUCTIONS IN THE ORDER PERFORMED
(A STAR(*) AFTER THE PEAK DISCHARGE TIME AND RATE (CFS) VALUES INDICATES A FLAT TOP HYDROGRAPH
A QUESTION MARK(?) INDICATES A HYDROGRAPH WITH PEAK AS LAST POINT.)

SECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RAIN TABLE #	ANTEC MOIST COND	MAIN TIME INCREM (HR)	PRECIPITATION BEGIN (HR)	PRECIPITATION AMOUNT (IN)	PRECIPITATION DURATION (HR)	RUNOFF AMOUNT (IN)	PEAK DISCHARGE ELEVATION (FT)	PEAK DISCHARGE TIME (HR)	PEAK DISCHARGE RATE (CFS)	PEAK DISCHARGE RATE (CSM)
ALTERNATE 1 STORM 1													
XSECTION 87	REACH	.88	1	2	.08	.0	1.44	24.00	.40	1430.02	12.75	150.91	172.5
XSECTION 86	RUNOFF	.06	1	2	.08	.0	1.44	24.00	.45	---	12.50	19.01	301.7
XSECTION 87	REACH	.06	1	2	.08	.0	1.44	24.00	.44	1429.84	12.94	12.82	203.5
XSECTION 87	RUNOFF	.06	1	2	.08	.0	1.44	24.00	.49	---	12.59	17.56	278.7
XSECTION 87	ADDHYD	.13	1	2	.08	.0	1.44	24.00	.47	1429.88	12.67	25.86	205.3
XSECTION 87	ADDHYD	1.00	1	2	.08	.0	1.44	24.00	.41	1430.04	12.74	176.22	176.0
XSECTION 84	REACH	1.00	1	2	.08	.0	1.44	24.00	.41	2.08	12.83	175.76	175.6
XSECTION 84	DIVERT	1.14	1	2	.08	.0	1.44	24.00	.38	1.50	13.46	108.14	94.6
XSECTION 83	DIVERT	2.12	1	2	.08	.0	1.44	24.00	.37	1.50	13.46	196.02	92.3
XSECTION 84	ADDHYD	2.14	1	2	.08	.0	1.44	24.00	.39	2.68	12.88	255.60	119.2
XSECTION 105	REACH	2.14	1	2	.08	.0	1.44	24.00	.39	1417.77	12.88	255.60	119.2
XSECTION 102	RUNOFF	.06	1	2	.08	.0	1.44	24.00	.31	---	12.67	10.32	163.8
XSECTION 105	REACH	.06	1	2	.08	.0	1.44	24.00	.30	1417.25	13.04	7.45	118.2
XSECTION 105	RUNOFF	.06	1	2	.08	.0	1.44	24.00	.20	---	12.70	6.70	106.3
XSECTION 105	ADDHYD	.13	1	2	.08	.0	1.44	24.00	.25	1417.31	12.84	12.38	98.3
XSECTION 105	ADDHYD	2.27	1	2	.08	.0	1.44	24.00	.39	1417.78	12.88	267.93	118.0
XSECTION 104	REACH	2.27	1	2	.08	.0	1.44	24.00	.39	4.46	12.88	267.93	118.0
XSECTION 104	RUNOFF	.07	1	2	.08	.0	1.44	24.00	.20	---	12.73	7.14	103.5
XSECTION 104	ADDHYD	2.34	1	2	.08	.0	1.44	24.00	.38	4.55	12.87	274.21	117.2
XSECTION 83	REACH	2.12	1	2	.08	.0	1.44	24.00	.37	1.50	13.46	196.02	92.3
XSECTION 83	RUNOFF	.06	1	2	.08	.0	1.44	24.00	.41	---	12.60	14.96	237.5
XSECTION 83	ADDHYD	2.19	1	2	.08	.0	1.44	24.00	.37	1.51	13.45	197.99	90.6
XSECTION 106	REACH	2.19	1	2	.08	.0	1.44	24.00	.37	---	13.45	197.99	90.6
XSECTION 106	RUNOFF	.06	1	2	.08	.0	1.44	24.00	.23	---	12.65	8.10	128.5
XSECTION 106	ADDHYD	2.25	1	2	.08	.0	1.44	24.00	.37	---	13.44	199.42	88.7
XSECTION 107	REACH	2.25	1	2	.08	.0	1.44	24.00	.37	---	13.44	199.42	88.7
XSECTION 107	RUNOFF	.06	1	2	.08	.0	1.44	24.00	.31	---	12.57	11.63	197.2
XSECTION 107	ADDHYD	2.31	1	2	.08	.0	1.44	24.00	.37	---	13.43	200.66	86.9
XSECTION 12	RUNOFF	.07	1	2	.08	.0	1.44	24.00	.31	---	12.57	13.80	197.2
XSECTION 29	REACH	.07	1	2	.08	.0	1.44	24.00	.25	---	14.65	2.02	28.8
XSECTION 29	RUNOFF	.25	1	2	.08	.0	1.44	24.00	.28	---	12.93	27.58	110.3
XSECTION 29	ADDHYD	.32	1	2	.08	.0	1.44	24.00	.27	---	12.93	27.58	86.2
XSECTION 33	REACH	.32	1	2	.08	.0	1.44	24.00	.27	---	13.05	27.23	85.1
XSECTION 33	RUNOFF	.23	1	2	.08	.0	1.44	24.00	.25	---	13.01	21.38	91.4
XSECTION 33	ADDHYD	.55	1	2	.08	.0	1.44	24.00	.26	---	13.04	48.57	87.7
XSECTION 30	RUNOFF	.13	1	2	.08	.0	1.44	24.00	.23	---	12.82	12.77	102.2

SUMMARY TABLE 1 - SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL INSTRUCTIONS IN THE ORDER PERFORMED
(A STAR(*) AFTER THE PEAK DISCHARGE TIME AND RATE (CFS) VALUES INDICATES A FLAT TOP HYDROGRAPH
A QUESTION MARK(?) INDICATES A HYDROGRAPH WITH PEAK AS LAST POINT.)

SECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RAIN TABLE #	ANTEC MOIST COND	MAIN TIME INCREM (HR)	PRECIPITATION BEGIN (HR)	PRECIPITATION AMOUNT (IN)	PRECIPITATION DURATION (HR)	RUNOFF AMOUNT (IN)	PEAK DISCHARGE ELEVATION (FT)	PEAK DISCHARGE TIME (HR)	PEAK DISCHARGE RATE (CFS)	PEAK DISCHARGE RATE (CSM)
ALTERNATE 1 STORM 1													
XSECTION 32	REACH	.13	1	2	.08	.0	1.44	24.00	.23	---	12.95	12.38	99.0
STRUCTURE 33	RESVOR	.13	1	2	.08	.0	1.44	24.00	.22	1462.66	13.41	6.88	55.0
XSECTION 33	ADDHYD	.68	1	2	.08	.0	1.44	24.00	.26	---	13.06	54.09	79.7
XSECTION 93	REACH	.68	1	2	.08	.0	1.44	24.00	.25	---	13.17	53.67	79.0
XSECTION 93	RUNOFF	.19	1	2	.08	.0	1.44	24.00	.37	---	12.58	44.76	229.5
XSECTION 93	ADDHYD	.87	1	2	.08	.0	1.44	24.00	.28	---	12.70	65.47	74.9
XSECTION 95	REACH	.87	1	2	.08	.0	1.44	24.00	.28	---	12.70	65.47	74.9
XSECTION 32	RUNOFF	.11	1	2	.08	.0	1.44	24.00	.25	---	12.80	12.67	116.3
XSECTION 94	REACH	.11	1	2	.08	.0	1.44	24.00	.24	---	13.77	6.75	61.9
XSECTION 94	RUNOFF	.14	1	2	.08	.0	1.44	24.00	.38	---	12.53	34.91	251.2
XSECTION 94	ADDHYD	.25	1	2	.08	.0	1.44	24.00	.32	---	12.54	34.94	140.9
XSECTION 95	REACH	.25	1	2	.08	.0	1.44	24.00	.31	---	13.07	23.29	93.9
XSECTION 95	RUNOFF	.13	1	2	.08	.0	1.44	24.00	.45	---	12.85	23.46	187.7
XSECTION 95	ADDHYD	.37	1	2	.08	.0	1.44	24.00	.36	---	13.00	44.62	119.6
XSECTION 95	ADDHYD	1.25	1	2	.08	.0	1.44	24.00	.30	---	13.02	107.69	86.4
XSECTION 96	REACH	1.25	1	2	.08	.0	1.44	24.00	.30	---	13.02	107.69	86.4
XSECTION 96	RUNOFF	.13	1	2	.08	.0	1.44	24.00	.31	---	12.62	22.83	182.6
XSECTION 96	ADDHYD	1.37	1	2	.08	.0	1.44	24.00	.30	---	12.74	121.52	88.6
XSECTION 142	REACH	1.37	1	2	.08	.0	1.44	24.00	.30	---	12.74	121.52	88.6
XSECTION 142	RUNOFF	.25	1	2	.08	.0	1.44	24.00	.34	---	13.15	27.45	109.8
XSECTION 142	ADDHYD	1.62	1	2	.08	.0	1.44	24.00	.31	---	12.97	142.77	88.0
XSECTION 97	RUNOFF	.19	1	2	.08	.0	1.44	24.00	.49	---	12.60	51.76	275.3
XSECTION 98	REACH	.19	1	2	.08	.0	1.44	24.00	.49	---	12.76	47.62	253.3
XSECTION 98	RUNOFF	.09	1	2	.08	.0	1.44	24.00	.45	---	12.54	26.96	286.8
XSECTION 98	ADDHYD	.28	1	2	.08	.0	1.44	24.00	.48	---	12.63	68.75	243.8
XSECTION 99	REACH	.28	1	2	.08	.0	1.44	24.00	.47	---	12.82	62.02	219.9
XSECTION 99	RUNOFF	.09	1	2	.08	.0	1.44	24.00	.45	---	12.58	24.67	262.5
XSECTION 99	ADDHYD	.38	1	2	.08	.0	1.44	24.00	.47	---	12.72	81.26	216.1
XSECTION 139	REACH	.38	1	2	.08	.0	1.44	24.00	.46	---	13.08	68.17	181.3
XSECTION 101	RUNOFF	.05	1	2	.08	.0	1.44	24.00	.58	---	12.58	15.27	324.8
XSECTION 100	REACH	.05	1	2	.08	.0	1.44	24.00	.58	---	12.58	15.27	324.8
XSECTION 100	RUNOFF	.08	1	2	.08	.0	1.44	24.00	.45	---	12.54	22.04	282.6
XSECTION 101	ADDHYD	.13	1	2	.08	.0	1.44	24.00	.50	---	12.55	37.24	297.9
XSECTION 139	REACH	.13	1	2	.08	.0	1.44	24.00	.50	---	12.55	37.24	297.9
XSECTION 139	ADDHYD	.50	1	2	.08	.0	1.44	24.00	.47	---	12.94	78.02	155.7
XSECTION 141	RUNOFF	.19	1	2	.08	.0	1.44	24.00	.49	---	12.60	51.76	275.3

SUMMARY TABLE 1 - SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL INSTRUCTIONS IN THE ORDER PERFORMED
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A QUESTION MARK(?) INDICATES A HYDROGRAPH WITH PEAK AS LAST POINT.)

SECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RAIN TABLE #	ANTEC MOIST COND	MAIN TIME INCREM (HR)	PRECIPITATION BEGIN (HR)	PRECIPITATION AMOUNT (IN)	PRECIPITATION DURATION (HR)	RUNOFF AMOUNT (IN)	PEAK DISCHARGE ELEVATION (FT)	PEAK DISCHARGE TIME (HR)	PEAK DISCHARGE RATE (CFS)	PEAK DISCHARGE RATE (CSM)
ALTERNATE 1 STORM 1													
XSECTION 140	REACH	.19	1	2	.08	.0	1.44	24.00	.49	---	12.68	51.82	275.6
XSECTION 140	RUNOFF	.13	1	2	.08	.0	1.44	24.00	.45	---	12.56	34.00	272.0
XSECTION 140	ADDHYD	.31	1	2	.08	.0	1.44	24.00	.47	---	12.62	83.74	267.5
XSECTION 137	RUNOFF	.08	1	2	.08	.0	1.44	24.00	.23	---	12.62	10.76	137.9
XSECTION 140	ADDHYD	.39	1	2	.08	.0	1.44	24.00	.42	---	12.62	94.50	241.7
XSECTION 139	REACH	.39	1	2	.08	.0	1.44	24.00	.42	---	12.73	92.41	236.3
XSECTION 139	ADDHYD	.89	1	2	.08	.0	1.44	24.00	.45	---	12.74	168.94	189.4
XSECTION 136	RUNOFF	.07	1	2	.08	.0	1.44	24.00	.96	---	12.44	36.07	546.5
XSECTION 138	REACH	.07	1	2	.08	.0	1.44	24.00	.94	---	12.90	30.14	456.7
XSECTION 138	RUNOFF	.20	1	2	.08	.0	1.44	24.00	.38	---	12.49	54.10	266.5
XSECTION 138	ADDHYD	.27	1	2	.08	.0	1.44	24.00	.52	---	12.52	75.96	282.4
XSECTION 139	REACH	.27	1	2	.08	.0	1.44	24.00	.51	---	12.61	75.90	282.2
XSECTION 139	ADDHYD	1.16	1	2	.08	.0	1.44	24.00	.47	---	12.66	237.55	204.6
XSECTION 139	RUNOFF	.19	1	2	.08	.0	1.44	24.00	.49	---	12.55	55.66	296.0
XSECTION 139	ADDHYD	1.35	1	2	.08	.0	1.44	24.00	.47	---	12.64	289.15	214.3
XSECTION 128	RUNOFF	.04	1	2	.08	.0	1.44	24.00	.26	---	12.47	7.40	205.4
XSECTION 129	REACH	.04	1	2	.08	.0	1.44	24.00	.26	---	12.47	7.40	205.4
XSECTION 129	RUNOFF	.11	1	2	.08	.0	1.44	24.00	.31	---	12.47	26.19	242.5
XSECTION 129	ADDHYD	.14	1	2	.08	.0	1.44	24.00	.30	---	12.47	33.58	233.2
XSECTION 130	RUNOFF	.03	1	2	.08	.0	1.44	24.00	.69	---	12.45	13.79	444.7
XSECTION 129	ADDHYD	.17	1	2	.08	.0	1.44	24.00	.37	---	12.46	47.32	270.4
XSECTION 131	REACH	.17	1	2	.08	.0	1.44	24.00	.37	---	12.55	45.61	260.6
XSECTION 127	RUNOFF	.16	1	2	.08	.0	1.44	24.00	.31	---	12.48	36.98	232.6
XSECTION 131	ADDHYD	.33	1	2	.08	.0	1.44	24.00	.34	---	12.52	81.76	244.8
XSECTION 132	RUNOFF	.14	1	2	.08	.0	1.44	24.00	.54	---	12.49	50.29	346.8
XSECTION 131	REACH	.14	1	2	.08	.0	1.44	24.00	.53	---	12.71	44.59	307.5
XSECTION 131	ADDHYD	.48	1	2	.08	.0	1.44	24.00	.40	---	12.54	119.29	249.0
XSECTION 131	RUNOFF	.12	1	2	.08	.0	1.44	24.00	.45	---	12.50	35.90	301.7
XSECTION 131	ADDHYD	.60	1	2	.08	.0	1.44	24.00	.41	---	12.53	155.35	259.8
XSECTION 133	RUNOFF	.08	1	2	.08	.0	1.44	24.00	.96	---	12.44	43.66	545.8
XSECTION 131	REACH	.08	1	2	.08	.0	1.44	24.00	.95	---	12.71	40.12	501.6
XSECTION 131	ADDHYD	.68	1	2	.08	.0	1.44	24.00	.47	---	12.54	192.23	283.5
XSECTION 126	REACH	.68	1	2	.08	.0	1.44	24.00	.47	---	12.54	192.23	283.5
XSECTION 126	RUNOFF	.16	1	2	.08	.0	1.44	24.00	.95	---	12.46	83.00	525.3
XSECTION 126	ADDHYD	.84	1	2	.08	.0	1.44	24.00	.56	---	12.52	273.74	327.4
XSECTION 134	REACH	.84	1	2	.08	.0	1.44	24.00	.56	---	12.52	273.74	327.4

SUMMARY TABLE 1 - SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL INSTRUCTIONS IN THE ORDER PERFORMED
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SECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RAIN TABLE #	ANTEC MOIST COND	MAIN TIME INCREM (HR)	PRECIPITATION BEGIN (HR)	PRECIPITATION AMOUNT (IN)	PRECIPITATION DURATION (HR)	RUNOFF AMOUNT (IN)	PEAK DISCHARGE ELEVATION (FT)	PEAK DISCHARGE TIME (HR)	PEAK DISCHARGE RATE (CFS)	PEAK DISCHARGE RATE (CSM)
ALTERNATE 1 STORM 1													
XSECTION 135	RUNOFF	.04	1	2	.08	.0	1.44	24.00	.96	---	12.44	22.95	546.5
XSECTION 134	REACH	.04	1	2	.08	.0	1.44	24.00	.94	---	13.01	16.86	401.3
XSECTION 134	ADDHYD	.88	1	2	.08	.0	1.44	24.00	.58	---	12.52	283.80	323.2
XSECTION 134	RUNOFF	.20	1	2	.08	.0	1.44	24.00	.41	---	12.52	54.86	278.5
XSECTION 134	ADDHYD	1.07	1	2	.08	.0	1.44	24.00	.55	---	12.52	338.67	315.0
XSECTION 125	RUNOFF	.12	1	2	.08	.0	1.44	24.00	.96	---	12.44	63.94	546.5
XSECTION 125	ADDHYD	1.19	1	2	.08	.0	1.44	24.00	.59	---	12.50	393.99	330.5
XSECTION 124	REACH	1.19	1	2	.08	.0	1.44	24.00	.59	---	12.59	390.75	327.8
XSECTION 124	RUNOFF	.22	1	2	.08	.0	1.44	24.00	.38	---	12.50	57.70	263.5
XSECTION 124	ADDHYD	1.41	1	2	.08	.0	1.44	24.00	.56	---	12.56	444.75	315.2
XSECTION 124	REACH	1.35	1	2	.08	.0	1.44	24.00	.47	---	12.64	289.15	214.3
XSECTION 124	ADDHYD	2.76	1	2	.08	.0	1.44	24.00	.51	---	12.59	725.22	262.8
XSECTION 103	RUNOFF	.08	1	2	.08	.0	1.44	24.00	.38	---	12.50	21.28	262.7
XSECTION 124	ADDHYD	2.84	1	2	.08	.0	1.44	24.00	.51	---	12.58	744.70	262.1
XSECTION 104	REACH	2.84	1	2	.08	.0	1.44	24.00	.51	54.95	12.58	744.70	262.1
XSECTION 104	ADDHYD	5.18	1	2	.08	.0	1.44	24.00	.45	77.73	12.62	941.38	181.7
XSECTION 107	REACH	5.18	1	2	.08	.0	1.44	24.00	.45	---	12.62	941.38	181.7
XSECTION 107	ADDHYD	7.49	1	2	.08	.0	1.44	24.00	.43	---	12.65	1057.92	141.3
XSECTION 123	RUNOFF	.21	1	2	.08	.0	1.44	24.00	.95	---	12.45	112.83	529.7
XSECTION 107	ADDHYD	7.70	1	2	.08	.0	1.44	24.00	.44	---	12.63	1129.59	146.7
XSECTION 108	REACH	7.70	1	2	.08	.0	1.44	24.00	.44	---	12.63	1129.59	146.7
XSECTION 108	RUNOFF	.03	1	2	.08	.0	1.44	24.00	.34	---	12.52	5.96	238.3
XSECTION 108	ADDHYD	7.73	1	2	.08	.0	1.44	24.00	.44	---	12.62	1134.40	146.8
XSECTION 22	RUNOFF	.15	1	2	.08	.0	1.44	24.00	.34	---	12.59	31.57	206.3
XSECTION 23	RUNOFF	.09	1	2	.08	.0	1.44	24.00	.95	---	12.45	48.62	534.3
XSECTION 23	ADDHYD	.24	1	2	.08	.0	1.44	24.00	.57	---	12.49	77.29	316.8
XSECTION 41	REACH	.24	1	2	.08	.0	1.44	24.00	.57	---	12.58	76.57	313.8
XSECTION 41	RUNOFF	.17	1	2	.08	.0	1.44	24.00	.38	---	12.55	41.81	243.1
XSECTION 41	ADDHYD	.42	1	2	.08	.0	1.44	24.00	.49	---	12.57	118.08	283.8
XSECTION 81	REACH	.42	1	2	.08	.0	1.44	24.00	.49	---	12.65	117.10	281.5
XSECTION 38	RUNOFF	.13	1	2	.08	.0	1.44	24.00	.23	---	12.59	18.03	144.2
XSECTION 40	REACH	.13	1	2	.08	.0	1.44	24.00	.22	---	13.02	11.23	89.8
XSECTION 40	RUNOFF	.09	1	2	.08	.0	1.44	24.00	.31	---	12.62	17.17	182.6
XSECTION 40	ADDHYD	.22	1	2	.08	.0	1.44	24.00	.26	---	12.71	22.59	103.2
XSECTION 82	REACH	.22	1	2	.08	.0	1.44	24.00	.26	---	13.08	18.94	86.5
XSECTION 82	RUNOFF	.06	1	2	.08	.0	1.44	24.00	.38	---	12.51	16.38	260.0

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A QUESTION MARK(?) INDICATES A HYDROGRAPH WITH PEAK AS LAST POINT.)

SECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RAIN TABLE #	ANTEC MOIST COND	MAIN TIME INCREM (HR)	PRECIPITATION BEGIN (HR)	PRECIPITATION AMOUNT (IN)	PRECIPITATION DURATION (HR)	RUNOFF AMOUNT (IN)	PEAK DISCHARGE ELEVATION (FT)	PEAK DISCHARGE TIME (HR)	PEAK DISCHARGE RATE (CFS)	PEAK DISCHARGE RATE (CSM)
ALTERNATE 1 STORM 1													
XSECTION 82	ADDHYD	.28	1	2	.08	.0	1.44	24.00	.29	---	12.56	23.93	84.8
XSECTION 39	RUNOFF	.13	1	2	.08	.0	1.44	24.00	.41	---	12.61	29.32	234.6
XSECTION 82	REACH	.13	1	2	.08	.0	1.44	24.00	.41	---	12.92	22.54	180.3
XSECTION 82	ADDHYD	.41	1	2	.08	.0	1.44	24.00	.32	---	12.95	43.18	106.1
XSECTION 81	REACH	.41	1	2	.08	.0	1.44	24.00	.32	---	13.13	41.42	101.8
XSECTION 81	RUNOFF	.06	1	2	.08	.0	1.44	24.00	.18	---	12.65	6.70	106.4
XSECTION 81	ADDHYD	.47	1	2	.08	.0	1.44	24.00	.30	---	13.09	43.59	92.7
XSECTION 81	ADDHYD	.89	1	2	.08	.0	1.44	24.00	.39	---	12.68	154.40	174.3
XSECTION 80	REACH	.89	1	2	.08	.0	1.44	24.00	.39	---	12.68	154.40	174.3
XSECTION 80	RUNOFF	.06	1	2	.08	.0	1.44	24.00	.31	---	12.59	12.12	192.4
XSECTION 80	ADDHYD	.95	1	2	.08	.0	1.44	24.00	.38	---	12.67	165.75	174.7
XSECTION 109	REACH	.95	1	2	.08	.0	1.44	24.00	.38	---	12.67	165.75	174.7
XSECTION 109	RUNOFF	.06	1	2	.08	.0	1.44	24.00	.38	---	12.52	16.42	260.6
XSECTION 109	ADDHYD	1.01	1	2	.08	.0	1.44	24.00	.38	---	12.65	177.48	175.4
XSECTION 108	ADDHYD	8.74	1	2	.08	.0	1.44	24.00	.43	---	12.63	1311.42	150.1
XSECTION 110	REACH	8.74	1	2	.08	.0	1.44	24.00	.43	---	12.63	1311.42	150.1
XSECTION 110	RUNOFF	.07	1	2	.08	.0	1.44	24.00	.20	---	12.66	8.37	114.6
XSECTION 110	ADDHYD	8.81	1	2	.08	.0	1.44	24.00	.43	---	12.63	1319.71	149.8
XSECTION 122	RUNOFF	.35	1	2	.08	.0	1.44	24.00	.41	---	12.51	98.33	277.0
XSECTION 110	ADDHYD	9.17	1	2	.08	.0	1.44	24.00	.43	---	12.61	1401.77	152.9
XSECTION 111	REACH	9.17	1	2	.08	.0	1.44	24.00	.43	---	12.61	1401.77	152.9
XSECTION 111	RUNOFF	.07	1	2	.08	.0	1.44	24.00	.18	---	12.67	7.10	101.5
XSECTION 111	ADDHYD	9.24	1	2	.08	.0	1.44	24.00	.43	---	12.61	1408.69	152.5
XSECTION 112	REACH	9.24	1	2	.08	.0	1.44	24.00	.43	---	12.74	1353.24	146.5
XSECTION 121	RUNOFF	.25	1	2	.08	.0	1.44	24.00	.96	---	12.44	136.44	545.8
XSECTION 112	ADDHYD	9.49	1	2	.08	.0	1.44	24.00	.44	---	12.72	1375.21	145.0
XSECTION 49	RUNOFF	.09	1	2	.08	.0	1.44	24.00	.95	---	12.45	46.53	541.0
XSECTION 48	REACH	.09	1	2	.08	.0	1.44	24.00	.95	---	12.83	39.53	459.6
XSECTION 20	RUNOFF	.06	1	2	.08	.0	1.44	24.00	.96	---	12.44	34.93	545.8
XSECTION 48	REACH	.06	1	2	.08	.0	1.44	24.00	.93	---	13.28	20.79	324.8
XSECTION 48	ADDHYD	.15	1	2	.08	.0	1.44	24.00	.94	---	12.87	53.08	353.9
XSECTION 48	RUNOFF	.13	1	2	.08	.0	1.44	24.00	.31	---	12.66	21.45	171.6
XSECTION 48	ADDHYD	.28	1	2	.08	.0	1.44	24.00	.65	---	12.80	70.08	254.8
XSECTION 56	REACH	.28	1	2	.08	.0	1.44	24.00	.65	---	13.08	63.98	232.7
XSECTION 56	RUNOFF	.06	1	2	.08	.0	1.44	24.00	.31	---	12.50	14.15	224.7
XSECTION 56	ADDHYD	.34	1	2	.08	.0	1.44	24.00	.59	---	13.07	65.63	194.2

SUMMARY TABLE 1 - SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL INSTRUCTIONS IN THE ORDER PERFORMED
(A STAR(*) AFTER THE PEAK DISCHARGE TIME AND RATE (CFS) VALUES INDICATES A FLAT TOP HYDROGRAPH
A QUESTION MARK(?) INDICATES A HYDROGRAPH WITH PEAK AS LAST POINT.)

SECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RAIN TABLE #	ANTEC MOIST COND	MAIN TIME INCREM (HR)	PRECIPITATION BEGIN (HR)	PRECIPITATION AMOUNT (IN)	PRECIPITATION DURATION (HR)	RUNOFF AMOUNT (IN)	PEAK DISCHARGE ELEVATION (FT)	PEAK DISCHARGE TIME (HR)	PEAK DISCHARGE RATE (CFS)	PEAK DISCHARGE RATE (CSM)
ALTERNATE 1 STORM 1													
XSECTION 57	REACH	.34	1	2	.08	.0	1.44	24.00	.59	---	13.17	65.23	193.0
XSECTION 57	RUNOFF	.06	1	2	.08	.0	1.44	24.00	.31	---	12.50	14.15	224.7
XSECTION 57	ADDHYD	.40	1	2	.08	.0	1.44	24.00	.54	---	13.16	66.64	166.2
XSECTION 59	REACH	.40	1	2	.08	.0	1.44	24.00	.54	---	13.26	66.28	165.3
XSECTION 59	RUNOFF	.06	1	2	.08	.0	1.44	24.00	.31	---	12.50	14.15	224.7
XSECTION 59	ADDHYD	.46	1	2	.08	.0	1.44	24.00	.51	---	13.26	67.48	145.4
XSECTION 43	RUNOFF	.05	1	2	.08	.0	1.44	24.00	.64	---	12.45	19.68	418.7
XSECTION 21	RUNOFF	.19	1	2	.08	.0	1.44	24.00	.49	---	12.62	50.22	265.7
XSECTION 21	ADDHYD	.24	1	2	.08	.0	1.44	24.00	.52	---	12.52	65.87	279.1
XSECTION 45	REACH	.24	1	2	.08	.0	1.44	24.00	.52	---	12.64	62.28	263.9
XSECTION 45	RUNOFF	.13	1	2	.08	.0	1.44	24.00	.63	---	12.57	43.71	349.7
XSECTION 45	ADDHYD	.36	1	2	.08	.0	1.44	24.00	.56	---	12.62	105.31	291.7
XSECTION 47	RUNOFF	.13	1	2	.08	.0	1.44	24.00	.31	---	12.53	27.40	219.2
XSECTION 46	REACH	.13	1	2	.08	.0	1.44	24.00	.31	---	12.65	25.23	201.8
XSECTION 46	RUNOFF	.13	1	2	.08	.0	1.44	24.00	.31	---	12.52	27.73	221.9
XSECTION 46	ADDHYD	.25	1	2	.08	.0	1.44	24.00	.31	---	12.56	50.47	201.9
XSECTION 45	ADDHYD	.61	1	2	.08	.0	1.44	24.00	.46	---	12.59	154.38	252.7
XSECTION 59	REACH	.61	1	2	.08	.0	1.44	24.00	.46	---	12.59	154.38	252.7
XSECTION 59	ADDHYD	1.08	1	2	.08	.0	1.44	24.00	.48	---	12.61	211.61	196.8
XSECTION 60	REACH	1.08	1	2	.08	.0	1.44	24.00	.48	---	12.70	208.68	194.1
XSECTION 60	RUNOFF	.06	1	2	.08	.0	1.44	24.00	.28	---	12.61	10.67	169.4
XSECTION 60	ADDHYD	1.14	1	2	.08	.0	1.44	24.00	.47	---	12.70	218.53	192.0
XSECTION 50	RUNOFF	.13	1	2	.08	.0	1.44	24.00	.18	---	12.67	13.43	100.2
XSECTION 52	REACH	.13	1	2	.08	.0	1.44	24.00	.18	---	13.56	6.42	47.9
XSECTION 52	RUNOFF	.06	1	2	.08	.0	1.44	24.00	.28	---	12.64	10.00	158.7
XSECTION 52	ADDHYD	.20	1	2	.08	.0	1.44	24.00	.21	---	12.65	10.08	51.2
XSECTION 55	REACH	.20	1	2	.08	.0	1.44	24.00	.21	---	13.71	7.52	38.2
XSECTION 55	RUNOFF	.06	1	2	.08	.0	1.44	24.00	.34	---	12.50	15.35	243.7
XSECTION 55	ADDHYD	.26	1	2	.08	.0	1.44	24.00	.24	---	12.53	19.18	73.8
XSECTION 51	RUNOFF	.06	1	2	.08	.0	1.44	24.00	.34	---	12.47	16.35	259.6
XSECTION 55	REACH	.06	1	2	.08	.0	1.44	24.00	.34	---	12.97	10.30	163.4
XSECTION 55	ADDHYD	.32	1	2	.08	.0	1.44	24.00	.26	---	12.56	23.13	71.6
XSECTION 58	REACH	.32	1	2	.08	.0	1.44	24.00	.26	---	12.56	23.13	71.6
XSECTION 58	RUNOFF	.06	1	2	.08	.0	1.44	24.00	.38	---	12.50	16.60	263.5
XSECTION 58	ADDHYD	.39	1	2	.08	.0	1.44	24.00	.28	---	12.53	39.59	102.6
XSECTION 60	REACH	.39	1	2	.08	.0	1.44	24.00	.28	---	12.53	39.59	102.6

SUMMARY TABLE 1 - SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL INSTRUCTIONS IN THE ORDER PERFORMED
(A STAR(*) AFTER THE PEAK DISCHARGE TIME AND RATE (CFS) VALUES INDICATES A FLAT TOP HYDROGRAPH
A QUESTION MARK(?) INDICATES A HYDROGRAPH WITH PEAK AS LAST POINT.)

SECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RAIN TABLE #	ANTEC MOIST COND	MAIN TIME INCREM (HR)	PRECIPITATION BEGIN (HR)	PRECIPITATION AMOUNT (IN)	PRECIPITATION DURATION (HR)	RUNOFF AMOUNT (IN)	PEAK DISCHARGE ELEVATION (FT)	PEAK DISCHARGE TIME (HR)	PEAK DISCHARGE RATE (CFS)	PEAK DISCHARGE RATE (CSM)
ALTERNATE 1 STORM 1													
XSECTION 61	REACH	1.14	1	2	.08	.0	1.44	24.00	.47	---	12.80	215.67	189.5
XSECTION 61	RUNOFF	.10	1	2	.08	.0	1.44	24.00	.34	---	12.50	24.85	243.7
XSECTION 61	ADDHYD	1.24	1	2	.08	.0	1.44	24.00	.46	---	12.78	221.89	178.9
XSECTION 53	RUNOFF	.08	1	2	.08	.0	1.44	24.00	.38	---	12.53	21.67	257.9
XSECTION 61	REACH	.08	1	2	.08	.0	1.44	24.00	.37	---	12.96	14.70	175.0
XSECTION 61	ADDHYD	1.32	1	2	.08	.0	1.44	24.00	.45	---	12.79	234.06	176.8
XSECTION 62	REACH	1.32	1	2	.08	.0	1.44	24.00	.45	---	12.91	227.58	171.9
XSECTION 62	RUNOFF	.13	1	2	.08	.0	1.44	24.00	.31	---	12.82	17.73	136.4
XSECTION 62	ADDHYD	1.45	1	2	.08	.0	1.44	24.00	.44	---	12.91	244.76	168.3
XSECTION 66	RUNOFF	.06	1	2	.08	.0	1.44	24.00	.37	---	12.58	14.30	226.9
XSECTION 67	REACH	.06	1	2	.08	.0	1.44	24.00	.37	---	12.58	14.30	226.9
XSECTION 67	RUNOFF	.06	1	2	.08	.0	1.44	24.00	.54	---	12.48	22.10	350.7
XSECTION 67	ADDHYD	.13	1	2	.08	.0	1.44	24.00	.46	---	12.51	35.64	282.8
XSECTION 44	RUNOFF	.13	1	2	.08	.0	1.44	24.00	.49	---	12.52	40.00	320.0
XSECTION 67	REACH	.13	1	2	.08	.0	1.44	24.00	.49	---	12.64	36.69	293.5
XSECTION 67	ADDHYD	.25	1	2	.08	.0	1.44	24.00	.47	---	12.55	70.02	279.0
XSECTION 69	REACH	.25	1	2	.08	.0	1.44	24.00	.47	---	12.55	70.02	279.0
XSECTION 69	RUNOFF	.06	1	2	.08	.0	1.44	24.00	.28	---	12.67	9.57	151.9
XSECTION 69	ADDHYD	.31	1	2	.08	.0	1.44	24.00	.43	---	12.56	78.76	250.8
XSECTION 42	RUNOFF	.08	1	2	.08	.0	1.44	24.00	.34	---	12.48	19.46	249.5
XSECTION 78	REACH	.08	1	2	.08	.0	1.44	24.00	.34	---	12.90	13.74	176.2
XSECTION 78	RUNOFF	.06	1	2	.08	.0	1.44	24.00	.45	---	12.50	19.01	301.7
XSECTION 78	ADDHYD	.14	1	2	.08	.0	1.44	24.00	.39	---	12.54	25.72	182.4
XSECTION 77	REACH	.14	1	2	.08	.0	1.44	24.00	.39	---	12.79	21.72	154.0
XSECTION 77	RUNOFF	.06	1	2	.08	.0	1.44	24.00	.18	---	12.58	7.78	123.6
XSECTION 77	ADDHYD	.20	1	2	.08	.0	1.44	24.00	.32	---	12.71	27.10	132.8
XSECTION 69	REACH	.20	1	2	.08	.0	1.44	24.00	.32	---	12.71	27.10	132.8
XSECTION 69	ADDHYD	.52	1	2	.08	.0	1.44	24.00	.39	---	12.59	103.21	199.2
XSECTION 75	REACH	.52	1	2	.08	.0	1.44	24.00	.39	---	12.67	103.21	199.2
XSECTION 75	RUNOFF	.06	1	2	.08	.0	1.44	24.00	.95	---	12.54	30.75	488.1
XSECTION 75	ADDHYD	.58	1	2	.08	.0	1.44	24.00	.45	---	12.64	132.04	227.3
XSECTION 79	RUNOFF	.06	1	2	.08	.0	1.44	24.00	.54	---	12.48	22.10	350.7
XSECTION 76	REACH	.06	1	2	.08	.0	1.44	24.00	.53	---	12.70	19.50	309.6
XSECTION 76	RUNOFF	.06	1	2	.08	.0	1.44	24.00	.45	---	12.49	19.24	305.4
XSECTION 76	ADDHYD	.13	1	2	.08	.0	1.44	24.00	.49	---	12.53	35.81	284.2
XSECTION 75	REACH	.13	1	2	.08	.0	1.44	24.00	.49	---	12.53	35.81	284.2

SUMMARY TABLE 1 - SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL INSTRUCTIONS IN THE ORDER PERFORMED
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A QUESTION MARK(?) INDICATES A HYDROGRAPH WITH PEAK AS LAST POINT.)

SECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RAIN TABLE #	ANTEC MOIST COND	MAIN TIME INCREM (HR)	PRECIPITATION BEGIN (HR)	PRECIPITATION AMOUNT (IN)	PRECIPITATION DURATION (HR)	RUNOFF AMOUNT (IN)	PEAK DISCHARGE ELEVATION (FT)	PEAK DISCHARGE TIME (HR)	PEAK DISCHARGE RATE (CFS)	PEAK DISCHARGE RATE (CSM)
ALTERNATE 1 STORM 1													
XSECTION 75	ADDHYD	.71	1	2	.08	.0	1.44	24.00	.46	---	12.62	164.25	232.3
XSECTION 112	REACH	.71	1	2	.08	.0	1.44	24.00	.46	---	12.62	164.25	232.3
XSECTION 112	RUNOFF	.06	1	2	.08	.0	1.44	24.00	.18	---	12.62	6.90	113.1
XSECTION 112	ADDHYD	.77	1	2	.08	.0	1.44	24.00	.44	---	12.62	171.15	222.9
XSECTION 112	ADDHYD	10.25	1	2	.08	.0	1.44	24.00	.44	---	12.71	1535.85	149.8
XSECTION 113	REACH	10.25	1	2	.08	.0	1.44	24.00	.44	---	12.83	1497.30	146.0
XSECTION 113	RUNOFF	.05	1	2	.08	.0	1.44	24.00	.69	---	12.57	19.90	375.4
XSECTION 113	ADDHYD	10.31	1	2	.08	.0	1.44	24.00	.44	---	12.83	1510.40	146.5
XSECTION 120	RUNOFF	.23	1	2	.08	.0	1.44	24.00	.49	---	12.52	73.91	320.0
XSECTION 113	ADDHYD	10.54	1	2	.08	.0	1.44	24.00	.44	---	12.82	1530.90	145.3
XSECTION 65	REACH	.39	1	2	.08	.0	1.44	24.00	.28	---	12.53	39.59	102.6
XSECTION 65	RUNOFF	.05	1	2	.08	.0	1.44	24.00	.31	---	12.60	8.76	186.3
XSECTION 65	ADDHYD	.43	1	2	.08	.0	1.44	24.00	.28	---	12.54	48.03	110.9
XSECTION 68	REACH	.43	1	2	.08	.0	1.44	24.00	.28	---	12.54	48.03	110.9
XSECTION 68	RUNOFF	.06	1	2	.08	.0	1.44	24.00	.41	---	12.49	17.89	284.0
XSECTION 68	ADDHYD	.50	1	2	.08	.0	1.44	24.00	.30	---	12.53	65.92	132.9
XSECTION 70	REACH	.50	1	2	.08	.0	1.44	24.00	.30	---	12.53	65.92	132.9
XSECTION 70	RUNOFF	.06	1	2	.08	.0	1.44	24.00	.45	---	12.49	19.24	305.4
XSECTION 70	ADDHYD	.56	1	2	.08	.0	1.44	24.00	.32	---	12.52	85.24	152.5
XSECTION 74	REACH	.56	1	2	.08	.0	1.44	24.00	.31	---	12.61	84.36	150.9
XSECTION 74	RUNOFF	.06	1	2	.08	.0	1.44	24.00	.63	---	12.47	25.37	402.7
XSECTION 74	ADDHYD	.62	1	2	.08	.0	1.44	24.00	.35	---	12.56	105.06	168.9
XSECTION 113	REACH	.62	1	2	.08	.0	1.44	24.00	.35	---	12.56	105.06	168.9
XSECTION 113	ADDHYD	11.16	1	2	.08	.0	1.44	24.00	.44	---	12.79	1585.25	142.0
XSECTION 114	REACH	11.16	1	2	.08	.0	1.44	24.00	.44	---	13.01	1454.16	130.3
XSECTION 64	RUNOFF	.25	1	2	.08	.0	1.44	24.00	.31	---	12.54	53.32	213.3
XSECTION 72	REACH	.25	1	2	.08	.0	1.44	24.00	.31	---	12.98	36.74	146.9
XSECTION 72	RUNOFF	.13	1	2	.08	.0	1.44	24.00	.34	---	12.60	25.51	204.1
XSECTION 72	ADDHYD	.38	1	2	.08	.0	1.44	24.00	.32	---	12.85	48.47	129.3
XSECTION 114	REACH	.38	1	2	.08	.0	1.44	24.00	.31	---	13.35	37.57	100.2
XSECTION 115	RUNOFF	.09	1	2	.08	.0	1.44	24.00	.31	---	12.59	18.09	192.4
XSECTION 114	ADDHYD	.47	1	2	.08	.0	1.44	24.00	.31	---	13.32	40.06	85.4
XSECTION 71	RUNOFF	.13	1	2	.08	.0	1.44	24.00	.34	---	12.60	25.51	204.1
XSECTION 114	REACH	.13	1	2	.08	.0	1.44	24.00	.33	---	13.39	14.44	115.6
XSECTION 114	ADDHYD	.59	1	2	.08	.0	1.44	24.00	.32	---	13.35	54.35	91.5
XSECTION 114	RUNOFF	.13	1	2	.08	.0	1.44	24.00	.41	---	12.99	19.27	150.6

SUMMARY TABLE 1 - SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL INSTRUCTIONS IN THE ORDER PERFORMED
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A QUESTION MARK(?) INDICATES A HYDROGRAPH WITH PEAK AS LAST POINT.)

SECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RAIN TABLE #	ANTEC MOIST COND	MAIN TIME INCREM (HR)	PRECIPITATION BEGIN (HR)	PRECIPITATION AMOUNT (IN)	PRECIPITATION DURATION (HR)	RUNOFF AMOUNT (IN)	PEAK DISCHARGE ELEVATION (FT)	PEAK DISCHARGE TIME (HR)	PEAK DISCHARGE RATE (CFS)	PEAK DISCHARGE RATE (CSM)
ALTERNATE 1 STORM 1													
XSECTION 114	ADDHYD	.72	1	2	.08	.0	1.44	24.00	.33	---	13.28	70.22	97.3
XSECTION 114	ADDHYD	11.88	1	2	.08	.0	1.44	24.00	.43	---	13.02	1516.65	127.6
XSECTION 119	RUNOFF	.23	1	2	.08	.0	1.44	24.00	.37	---	12.91	34.29	148.4
XSECTION 114	ADDHYD	12.11	1	2	.08	.0	1.44	24.00	.43	---	13.02	1549.93	128.0
XSECTION 118	REACH	12.11	1	2	.08	.0	1.44	24.00	.43	---	13.27	1434.28	118.4
XSECTION 118	RUNOFF	.23	1	2	.08	.0	1.44	24.00	.28	---	13.32	18.35	79.4
XSECTION 118	ADDHYD	12.34	1	2	.08	.0	1.44	24.00	.42	---	13.27	1452.57	117.7

SUMMARY TABLE 2 - SELECTED MODIFIED ATT-KIN REACH ROUTINGS IN ORDER OF STANDARD EXECUTIVE CONTROL INSTRUCTIONS
(A STAR(*) AFTER VOLUME ABOVE BASE(IN) INDICATES A HYDROGRAPH TRUNCATED AT A VALUE EXCEEDING BASE + 10% OF PEAK
A QUESTION MARK(?) AFTER COEFF.(C) INDICATES PARAMETERS OUTSIDE ACCEPTABLE LIMITS, SEE PREVIOUS WARNINGS)

		HYDROGRAPH INFORMATION							ROUTING PARAMETERS									PEAK	
		INFLOW		OUTFLOW		OUTFLOW+ INTERV.AREA		BASE-	VOLUME	MAIN	ITER-	Q AND A EQUATION			PEAK	S/Q	ATT-	TRAVEL TIME	
XSEC ID	REACH LENGTH (FT)	PEAK (CFS)	TIME (HR)	PEAK (CFS)	TIME (HR)	PEAK (CFS)	TIME (HR)	FLOW (CFS)	ABOVE BASE (IN)	TIME INCR (HR)	ATION #	COEFF (X)	POWER (M)	LENGTH FACTOR (K*)	RATIO O/I (Q*)	@PEAK (K) (SEC)	KIN COEFF (C)	STOR- AGE (HR)	KINE- MATIC (HR)
ALTERNATE		1	STORM	1															
3	1400	52	12.5	44	12.8	47	12.8	0	.95	.08	1	.040	1.66	.303	.857	1222	.21	.08	.35
5	3000	117	12.6	116	12.6	---	---	0	.83	.08	1	4.64	1.25	.037	.991	271	.69?	.08	.08
5	1400	103	12.5	96	12.7	108	12.7	0	.95	.08	1	.050	1.66	.152	.926	811	.30	.08	.23
18	2700	12	12.5	12	12.6	27	12.6	0	.96	.08	1	7.96	1.25	.040	.994	251	.73?	.08	.07
8	1800	248	12.6	248	12.6	---	---	0	.62	.08	0	5.03	1.25	.015	1.000	131	1.00?	.00	.00
8	1600	14	12.8	13	13.0	---	---	0	.28	.08	1	.477	1.57	.075	.907	620	.38	.16	.18
8	1400	10	12.7	9	13.0	22	13.0	0	.18	.08	1	.477	1.57	.080	.891	603	.39	.24	.17
14	3000	261	12.6	215	13.0	---	---	0	.50	.08	1	.170	1.47	.190	.824	1150	.22	.24	.33
14	2700	6	12.9	5	13.2	219	13.0	0	.23	.08	1	.628	1.57	.179	.801	1187	.22	.32	.34
14	3960	12	12.9	11	13.1	---	---	0	.23	.08	1	2.10	1.40	.108	.877	810	.30	.24	.23
15	1300	30	12.6	29	12.7	38	12.7	0	.45	.08	1	.540	1.54	.049	.964	383	.55	.08	.11
27	3000	271	12.9	222	13.3	241	13.3	0	.44	.08	1	.040	1.63	.206	.819	1520	.17	.40	.44
25	2200	32	12.5	23	13.1	33	12.6	0	.96	.08	1	.050	1.66	.714	.727	2042	.13	.16	.60
27	1700	33	12.6	24	13.3	---	---	0	.58	.08	1	.040	1.63	.345	.723	1954	.14	.64	.58
26	1500	53	12.6	52	12.6	68	12.6	0	.45	.08	1	3.78	1.25	.030	.991	187	.87?	.08	.05
11	2640	10	12.6	7	13.0	29	12.9	0	.18	.08	1	.440	1.54	.328	.689	1323	.20	.32	.39
28	3300	29	12.9	11	14.3	---	---	0	.21	.08	1	.030	1.66	1.515	.380	5677	.05?	.72	1.41
28	2800	21	12.6	6	14.1	17	14.2	0	.31	.08	1	.030	1.66	2.187	.293	6917	.04?	.64	1.42
27	2500	21	12.9	20	14.2	---	---	0	.25*	.08	1	4.41	1.25	.010	.985	333	.60	1.28	.09
37	3000	296	13.2	293	13.4	295	13.4	0	.40	.08	1	.438	1.59	.014	.990	387	.54	.16	.11
85	3000	295	13.4	295	13.4	300	13.4	0	.38	.08	1	6.33	1.25	.010	.999	176	.90?	.08	.05
85	660	300	13.4	300	13.4	302	13.4	0	.38	.08	0	5.55	1.25	.002	1.000	43	1.00?	.00	.00
84	1320	302	13.4	302	13.4	304	13.4	0	.38	.08	0	5.55	1.25	.004	1.000	86	1.00?	.00	.00
35	1320	23	12.7	21	12.9	41	12.6	0	.37	.08	1	.310	1.54	.084	.910	609	.38	.16	.17
91	2640	41	12.6	32	13.0	---	---	0	.36	.08	1	.220	1.54	.227	.776	1244	.21	.32	.36
91	1320	33	12.6	33	12.6	66	12.6	0	.45	.08	0	6.73	1.25	.016	1.000	114	1.00?	.00	.00
90	1320	82	12.6	82	12.6	106	12.6	0	.40	.08	0	7.06	1.25	.008	1.000	92	1.00?	.00	.00
90	2640	25	12.6	18	13.0	---	---	0	.34	.08	1	.220	1.54	.435	.690	1473	.18	.32	.44
88	1320	118	12.6	118	12.6	---	---	0	.39	.08	0	7.33	1.25	.007	1.000	83	1.00?	.00	.00
88	2000	11	12.6	11	12.6	33	12.6	0	.38	.08	1	6.76	1.25	.038	.986	213	.81?	.08	.06
87	1320	151	12.6	150	12.7	---	---	0	.40	.08	1	2.77	1.25	.018	.995	171	.91?	.08	.05
87	1320	19	12.5	13	13.0	26	12.6	0	.45	.08	1	.118	1.45	.556	.674	1599	.17	.24	.47

SUMMARY TABLE 2 - SELECTED MODIFIED ATT-KIN REACH ROUTINGS IN ORDER OF STANDARD EXECUTIVE CONTROL INSTRUCTIONS
(A STAR(*) AFTER VOLUME ABOVE BASE(IN) INDICATES A HYDROGRAPH TRUNCATED AT A VALUE EXCEEDING BASE + 10% OF PEAK
A QUESTION MARK(?) AFTER COEFF.(C) INDICATES PARAMETERS OUTSIDE ACCEPTABLE LIMITS, SEE PREVIOUS WARNINGS)

		HYDROGRAPH INFORMATION							ROUTING PARAMETERS									PEAK	
		INFLOW		OUTFLOW		OUTFLOW+ INTERV.AREA						Q AND A EQUATION						TRAVEL TIME	
XSEC ID	REACH LENGTH (FT)	PEAK (CFS)	TIME (HR)	PEAK (CFS)	TIME (HR)	PEAK (CFS)	TIME (HR)	BASE-FLOW (CFS)	VOLUME ABOVE BASE (IN)	MAIN TIME INCR (HR)	ITER-ATION #	COEFF (X)	POWER (M)	LENGTH FACTOR (K*)	PEAK RATIO O/I (Q*)	S/Q @PEAK (K)	ATT-KIN COEFF (C)	STOR-AGE (HR)	KINE-MATIC (HR)
ALTERNATE		1	STORM	1															
84	1320	176	12.7	175	12.8	---	---	0	.41	.08	1	2.77	1.25	.017	.996	166	.93?	.08	.05
105	1320	256	12.9	256	12.9	---	---	0	.39	.08	0	6.07	1.25	.005	1.000	82	1.00?	.00	.00
105	1320	10	12.6	7	13.0	12	12.9	0	.31	.08	1	.285	1.34	.320	.726	1405	.19	.32	.41
104	1320	268	12.9	268	12.9	274	12.9	0	.39	.08	0	6.07	1.25	.005	1.000	82	1.00?	.00	.00
83	1320	196	13.4	196	13.4	198	13.4	0	.37	.08	0	7.64	1.25	.003	1.000	72	1.00?	.00	.00
106	1320	198	13.4	198	13.4	199	13.4	0	.37	.08	0	7.12	1.25	.003	1.000	76	1.00?	.00	.00
107	900	199	13.4	199	13.4	201	13.4	0	.37	.08	0	7.12	1.25	.002	1.000	52	1.00?	.00	.00
29	3800	14	12.6	2	14.6	28	13.0	0	.31	.08	1	.040	1.66	4.709	.146	14078	.02?	.72	2.08
33	2640	28	13.0	27	13.0	49	13.0	0	.27	.08	1	5.69	1.25	.021	.989	271	.69?	.08	.08
32	3000	13	12.8	12	13.0	---	---	0	.23	.08	1	6.29	1.25	.043	.970	331	.61	.16	.09
93	2640	54	13.0	54	13.2	65	12.7	0	.26	.08	1	5.69	1.25	.018	.992	237	.76?	.16	.07
95	1320	65	12.7	65	12.7	---	---	0	.28	.08	0	4.72	1.25	.007	1.000	132	1.00?	.00	.00
94	3200	13	12.8	7	13.8	35	12.6	0	.25	.08	1	.090	1.66	.976	.532	2996	.09	.48	.93
95	2400	35	12.6	23	13.0	44	13.0	0	.32	.08	1	.090	1.66	.289	.669	1506	.17	.16	.45
96	1320	108	13.0	108	13.0	121	12.7	0	.30	.08	0	4.72	1.25	.007	1.000	120	1.00?	.00	.00
142	1320	121	12.7	121	12.7	143	13.0	0	.30	.08	0	5.68	1.25	.006	1.000	101	1.00?	.00	.00
98	1000	51	12.6	47	12.7	69	12.6	0	.49	.08	1	.080	1.66	.087	.921	576	.40	.16	.16
99	1250	69	12.6	62	12.8	81	12.7	0	.48	.08	1	.080	1.66	.090	.902	642	.37	.16	.18
139	1600	81	12.7	68	13.0	---	---	0	.47	.08	1	.050	1.66	.165	.836	1020	.25	.24	.29
100	1320	15	12.6	15	12.6	---	---	0	.58	.08	0	8.19	1.25	.015	1.000	114	1.00?	.00	.00
139	600	37	12.6	37	12.6	78	13.0	0	.50	.08	0	4.52	1.25	.009	1.000	70	1.00?	.00	.00
140	1320	51	12.6	51	12.7	84	12.6	0	.49	.08	1	4.05	1.25	.022	.999	157	.96?	.16	.04
139	2800	94	12.6	92	12.7	---	---	0	.42	.08	1	4.39	1.25	.046	.980	276	.69?	.08	.08
138	3000	35	12.5	30	12.9	75	12.5	0	.96	.08	1	.170	1.66	.327	.852	1274	.20	.08	.37
139	2000	75	12.5	75	12.6	---	---	0	.52	.08	1	4.52	1.25	.029	.995	202	.83?	.16	.06
129	1100	7	12.5	7	12.5	33	12.5	0	.26	.08	0	10.0	1.25	.018	1.000	94	1.00?	.00	.00
131	2500	47	12.5	46	12.6	80	12.6	0	.37	.08	1	4.80	1.25	.059	.969	264	.71?	.08	.07
131	2000	50	12.5	45	12.7	---	---	0	.54	.08	1	.170	1.66	.168	.887	738	.33	.16	.21
131	2000	43	12.5	40	12.7	---	---	0	.96	.08	1	.170	1.66	.147	.938	787	.31	.08	.22
126	1500	191	12.6	191	12.6	269	12.6	0	.47	.08	0	8.31	1.25	.010	1.000	77	1.00?	.00	.00
134	1500	269	12.6	269	12.6	---	---	0	.56	.08	0	5.48	1.25	.013	1.000	101	1.00?	.00	.00
134	3200	22	12.5	17	13.0	279	12.6	0	.96	.08	1	.130	1.66	.640	.746	1912	.14	.16	.56

SUMMARY TABLE 2 - SELECTED MODIFIED ATT-KIN REACH ROUTINGS IN ORDER OF STANDARD EXECUTIVE CONTROL INSTRUCTIONS
(A STAR(*) AFTER VOLUME ABOVE BASE(IN) INDICATES A HYDROGRAPH TRUNCATED AT A VALUE EXCEEDING BASE + 10% OF PEAK
A QUESTION MARK(?) AFTER COEFF.(C) INDICATES PARAMETERS OUTSIDE ACCEPTABLE LIMITS, SEE PREVIOUS WARNINGS)

		HYDROGRAPH INFORMATION							ROUTING PARAMETERS										PEAK	
		INFLOW		OUTFLOW		OUTFLOW+ INTERV.AREA													TRAVEL TIME	
XSEC ID	REACH LENGTH (FT)	PEAK (CFS)	TIME (HR)	PEAK (CFS)	TIME (HR)	PEAK (CFS)	TIME (HR)	BASE-FLOW (CFS)	VOLUME ABOVE BASE (IN)	MAIN TIME INCR (HR)	ITER-ATION #	Q AND A EQUATION COEFF (X)	POWER (M)	LENGTH FACTOR (K*)	PEAK RATIO O/I (Q*)	S/Q @PEAK (K)	ATT-KIN COEFF (C)	STOR-AGE (HR)	KINE-MATIC (HR)
ALTERNATE		1	STORM	1															
124	2500	393	12.5	389	12.6	445	12.6	0	.59	.08	1	4.24	1.25	.028	.990	191	.86?	.08	.05
124	900	289	12.6	289	12.6	---	---	0	.47	.08	0	.960	1.51	.004	1.000	90	1.00?	.00	.00
104	1320	742	12.6	742	12.6	---	---	0	.51	.08	0	.960	1.51	.006	1.000	96	1.00?	.00	.00
107	1000	939	12.6	939	12.6	---	---	0	.45	.08	0	.850	1.53	.002	1.000	68	1.00?	.00	.00
108	1700	1128	12.6	1128	12.6	1133	12.6	0	.44	.08	0	.850	1.53	.003	1.000	108	1.00?	.00	.00
41	2640	77	12.5	76	12.6	118	12.6	0	.57	.08	1	6.54	1.25	.029	.989	197	.84?	.08	.05
81	2640	118	12.6	117	12.6	---	---	0	.49	.08	1	6.20	1.25	.029	.991	189	.86?	.08	.05
40	1800	18	12.6	11	13.0	23	12.7	0	.23	.08	1	.080	1.66	.558	.629	1580	.17	.32	.48
82	1400	23	12.7	19	13.0	24	12.6	0	.26	.08	1	.100	1.66	.118	.836	978	.26	.24	.28
82	1867	29	12.6	22	13.0	---	---	0	.41	.08	1	.100	1.66	.294	.770	1178	.22	.24	.34
81	1320	43	13.0	41	13.1	44	13.1	0	.32	.08	1	.220	1.54	.045	.959	612	.38	.16	.17
80	1320	153	12.6	153	12.6	165	12.6	0	.39	.08	0	7.06	1.25	.007	1.000	81	1.00?	.00	.00
109	1320	165	12.6	165	12.6	177	12.6	0	.38	.08	0	4.04	1.25	.013	1.000	124	1.00?	.00	.00
110	1320	1310	12.6	1310	12.6	1318	12.6	0	.43	.08	0	.850	1.53	.002	1.000	80	1.00?	.00	.00
111	1320	1395	12.6	1395	12.6	1402	12.6	0	.43	.08	0	1.07	1.53	.002	1.000	67	1.00?	.00	.00
112	1320	1402	12.6	1351	12.7	1375	12.7	0	.43	.08	1	.040	1.63	.019	.964	355	.58	.08	.10
48	1320	46	12.5	39	12.8	---	---	0	.95	.08	1	.040	1.66	.298	.859	1208	.21	.08	.35
48	2640	34	12.5	21	13.3	53	12.9	0	.96	.08	1	.040	1.66	1.145	.608	2988	.09?	.16	.83
56	1866	70	12.8	64	13.0	65	13.0	0	.65	.08	1	.120	1.66	.073	.909	744	.32	.16	.21
57	1320	65	13.0	65	13.2	66	13.1	0	.59	.08	1	.760	1.58	.008	.994	214	.80?	.16	.06
59	1320	66	13.1	66	13.3	67	13.3	0	.54	.08	1	.740	1.58	.007	.998	217	.80?	.16	.06
45	2640	65	12.5	62	12.6	105	12.6	0	.52	.08	1	2.67	1.25	.071	.955	417	.51	.16	.12
46	1320	27	12.6	25	12.6	50	12.6	0	.31	.08	1	.510	1.54	.079	.933	418	.51	.08	.12
59	1320	154	12.6	154	12.6	---	---	0	.46	.08	0	5.54	1.25	.012	1.000	98	1.00?	.00	.00
60	1320	210	12.6	208	12.7	218	12.7	0	.48	.08	1	1.81	1.25	.023	.993	225	.78?	.08	.06
52	1500	13	12.6	6	13.5	10	12.6	0	.18	.08	1	.030	1.66	1.065	.481	2793	.10?	.40	.85
55	1320	10	12.6	8	13.7	19	12.6	0	.21	.08	1	.090	1.66	.091	.746	1354	.19	1.04	.40
55	1867	16	12.5	10	13.0	---	---	0	.34	.08	1	.090	1.66	.766	.631	1581	.17	.16	.48
58	1320	23	12.6	23	12.6	39	12.6	0	.26	.08	0	6.73	1.25	.007	1.000	123	1.00?	.00	.00
60	1320	39	12.6	39	12.6	---	---	0	.28	.08	0	6.73	1.25	.008	1.000	110	1.00?	.00	.00
61	1320	218	12.7	216	12.8	222	12.8	0	.47	.08	1	1.81	1.25	.023	.990	224	.78?	.08	.06
61	2100	21	12.6	15	13.0	---	---	0	.38	.08	1	.110	1.66	.531	.690	1417	.18	.16	.42

SUMMARY TABLE 2 - SELECTED MODIFIED ATT-KIN REACH ROUTINGS IN ORDER OF STANDARD EXECUTIVE CONTROL INSTRUCTIONS
(A STAR(*) AFTER VOLUME ABOVE BASE(IN) INDICATES A HYDROGRAPH TRUNCATED AT A VALUE EXCEEDING BASE + 10% OF PEAK
A QUESTION MARK(?) AFTER COEFF.(C) INDICATES PARAMETERS OUTSIDE ACCEPTABLE LIMITS, SEE PREVIOUS WARNINGS)

		HYDROGRAPH INFORMATION							ROUTING PARAMETERS									PEAK	
		INFLOW		OUTFLOW		OUTFLOW+ INTERV.AREA		BASE-	VOLUME	MAIN	ITER-	Q AND A EQUATION			PEAK	S/Q	ATT-	TRAVEL TIME	
XSEC ID	REACH LENGTH (FT)	PEAK (CFS)	TIME (HR)	PEAK (CFS)	TIME (HR)	PEAK (CFS)	TIME (HR)	FLOW (CFS)	ABOVE BASE (IN)	TIME INCR (HR)	ATION #	COEFF (X)	POWER (M)	LENGTH FACTOR (K*)	RATIO O/I (Q*)	@PEAK (K)	KIN COEFF (C)	STOR- AGE (HR)	KINE- MATIC (HR)
ALTERNATE		1	STORM	1															
62	2000	234	12.8	226	12.9	244	12.9	0	.45	.08	1	1.81	1.25	.036	.968	334	.60	.08	.09
67	1320	14	12.6	14	12.6	35	12.5	0	.37	.08	0	6.55	1.25	.021	1.000	138	1.00?	.00	.00
67	1320	40	12.5	37	12.6	---	---	0	.49	.08	1	.250	1.54	.117	.924	580	.40	.16	.16
69	1320	70	12.6	70	12.6	79	12.6	0	.47	.08	0	6.77	1.25	.013	1.000	98	1.00?	.00	.00
78	1600	19	12.5	14	12.9	26	12.6	0	.34	.08	1	.090	1.66	.497	.704	1263	.20	.16	.37
77	1320	26	12.6	22	12.8	27	12.7	0	.39	.08	1	.230	1.54	.098	.847	714	.34	.16	.20
69	1320	27	12.7	27	12.7	---	---	0	.32	.08	0	6.03	1.25	.012	1.000	130	1.00?	.00	.00
75	1320	103	12.6	103	12.6	132	12.6	0	.39	.08	1	3.79	1.25	.018	1.000	144	1.00?	.08	.04
76	1320	22	12.5	19	12.7	36	12.6	0	.54	.08	1	.230	1.54	.178	.881	752	.32	.16	.21
75	1320	36	12.6	36	12.6	---	---	0	.49	.08	0	6.73	1.25	.015	1.000	112	1.00?	.00	.00
112	1320	164	12.6	164	12.6	171	12.6	0	.46	.08	0	3.79	1.25	.016	1.000	131	1.00?	.00	.00
113	1320	1535	12.7	1492	12.8	1507	12.8	0	.44	.08	1	.040	1.63	.017	.972	342	.59	.08	.10
65	1320	39	12.6	39	12.6	48	12.6	0	.28	.08	0	5.97	1.25	.009	1.000	121	1.00?	.00	.00
68	1320	48	12.6	48	12.6	65	12.6	0	.28	.08	0	5.97	1.25	.010	1.000	117	1.00?	.00	.00
70	1320	65	12.6	65	12.6	83	12.6	0	.30	.08	0	4.80	1.25	.013	1.000	131	1.00?	.00	.00
74	1320	83	12.6	83	12.6	105	12.6	0	.32	.08	1	2.86	1.25	.022	.997	188	.87?	.08	.05
113	1320	105	12.6	105	12.6	---	---	0	.35	.08	0	6.62	1.25	.009	1.000	92	1.00?	.00	.00
114	3000	1585	12.8	1452	13.0	---	---	0	.44	.08	1	.040	1.63	.059	.916	769	.32	.24	.22
72	2640	53	12.6	37	13.0	48	12.9	0	.31	.08	1	.180	1.54	.439	.693	1298	.20	.16	.38
114	2000	48	12.9	38	13.4	40	13.3	0	.32	.08	1	.050	1.66	.270	.776	1566	.17	.32	.46
114	2200	25	12.6	14	13.4	---	---	0	.34	.08	1	.050	1.66	.906	.572	2234	.12	.24	.69
118	4000	1548	13.0	1434	13.3	1452	13.3	0	.43	.08	1	.050	1.66	.052	.926	790	.31	.24	.22

SUMMARY TABLE 3 - DISCHARGE (CFS) AT XSECTIONS AND STRUCTURES FOR ALL STORMS AND ALTERNATES

XSECTION/ STRUCTURE ID	DRAINAGE AREA (SQ MI)	STORM NUMBERS..... 1
STRUCTURE 44	.06	
ALTERNATE 1		5.76
STRUCTURE 43	.06	
ALTERNATE 1		10.00
STRUCTURE 37	3.08	
ALTERNATE 1		294.98
STRUCTURE 33	.13	
ALTERNATE 1		6.88
STRUCTURE 8	.36	
ALTERNATE 1		24.12
XSECTION 1	.15	
ALTERNATE 1		77.45
XSECTION 2	.10	
ALTERNATE 1		52.48
XSECTION 3	.29	
ALTERNATE 1		119.08
XSECTION 4	.19	
ALTERNATE 1		104.29
XSECTION 5	.61	
ALTERNATE 1		221.49
XSECTION 6	.11	
ALTERNATE 1		14.02
XSECTION 7	.12	
ALTERNATE 1		10.52
XSECTION 8	1.17	
ALTERNATE 1		260.94
XSECTION 9	.07	
ALTERNATE 1		6.23

SUMMARY TABLE 3 - DISCHARGE (CFS) AT XSECTIONS AND STRUCTURES FOR ALL STORMS AND ALTERNATES

XSECTION/ TRUCTURE ID	DRAINAGE AREA (SQ MI)	STORM NUMBERS..... 1
XSECTION 10	.09	
ALTERNATE 1		9.64
XSECTION 11	.33	
ALTERNATE 1		29.47
XSECTION 12	.07	
ALTERNATE 1		13.80
XSECTION 13	.13	
ALTERNATE 1		20.83
XSECTION 14	1.74	
ALTERNATE 1		271.93
XSECTION 15	.19	
ALTERNATE 1		38.35
XSECTION 16	.12	
ALTERNATE 1		30.00
XSECTION 17	.06	
ALTERNATE 1		32.20
XSECTION 18	.82	
ALTERNATE 1		248.27
XSECTION 19	.02	
ALTERNATE 1		12.02
XSECTION 20	.06	
ALTERNATE 1		34.93
XSECTION 21	.24	
ALTERNATE 1		65.87
XSECTION 22	.15	
ALTERNATE 1		31.57
XSECTION 23	.24	
ALTERNATE 1		77.29

SUMMARY TABLE 3 - DISCHARGE (CFS) AT XSECTIONS AND STRUCTURES FOR ALL STORMS AND ALTERNATES

XSECTION/ STRUCTURE ID	DRAINAGE AREA (SQ MI)	STORM NUMBERS..... 1
XSECTION 24	.20	
ALTERNATE 1		52.96
XSECTION 25	.15	
ALTERNATE 1		32.63
XSECTION 26	.26	
ALTERNATE 1		68.16
XSECTION 27	2.95	
ALTERNATE 1		296.04
XSECTION 28	.61	
ALTERNATE 1		20.71
XSECTION 29	.32	
ALTERNATE 1		27.58
XSECTION 30	.13	
ALTERNATE 1		12.77
XSECTION 32	.11	
ALTERNATE 1		12.67
XSECTION 33	.68	
ALTERNATE 1		54.09
XSECTION 34	.13	
ALTERNATE 1		23.17
XSECTION 35	.25	
ALTERNATE 1		41.51
XSECTION 36	.13	
ALTERNATE 1		25.67
XSECTION 37	3.08	
ALTERNATE 1		295.74
XSECTION 38	.13	
ALTERNATE 1		18.03

SUMMARY TABLE 3 - DISCHARGE (CFS) AT XSECTIONS AND STRUCTURES FOR ALL STORMS AND ALTERNATES

XSECTION/ STRUCTURE ID	DRAINAGE AREA (SQ MI)	STORM NUMBERS..... 1
XSECTION 39	.13	
ALTERNATE 1		29.32
XSECTION 40	.22	
ALTERNATE 1		22.59
XSECTION 41	.42	
ALTERNATE 1		118.08
XSECTION 42	.08	
ALTERNATE 1		19.46
XSECTION 43	.05	
ALTERNATE 1		19.68
XSECTION 44	.13	
ALTERNATE 1		40.00
XSECTION 45	.61	
ALTERNATE 1		154.38
XSECTION 46	.25	
ALTERNATE 1		50.47
XSECTION 47	.13	
ALTERNATE 1		27.40
XSECTION 48	.28	
ALTERNATE 1		70.08
XSECTION 49	.09	
ALTERNATE 1		46.53
XSECTION 50	.13	
ALTERNATE 1		13.43
XSECTION 51	.06	
ALTERNATE 1		16.35
XSECTION 52	.20	
ALTERNATE 1		10.08

SUMMARY TABLE 3 - DISCHARGE (CFS) AT XSECTIONS AND STRUCTURES FOR ALL STORMS AND ALTERNATES

XSECTION/ STRUCTURE ID	DRAINAGE AREA (SQ MI)	STORM NUMBERS..... 1
XSECTION 53	.08	
ALTERNATE 1		21.67
XSECTION 55	.32	
ALTERNATE 1		23.13
XSECTION 56	.34	
ALTERNATE 1		65.63
XSECTION 57	.40	
ALTERNATE 1		66.64
XSECTION 58	.39	
ALTERNATE 1		39.59
XSECTION 59	1.08	
ALTERNATE 1		211.61
XSECTION 60	.39	
ALTERNATE 1		39.59
XSECTION 61	1.32	
ALTERNATE 1		234.06
XSECTION 62	1.45	
ALTERNATE 1		244.76
XSECTION 64	.25	
ALTERNATE 1		53.32
XSECTION 65	.43	
ALTERNATE 1		48.03
XSECTION 66	.06	
ALTERNATE 1		14.30
XSECTION 67	.25	
ALTERNATE 1		70.02
XSECTION 68	.50	
ALTERNATE 1		65.92

SUMMARY TABLE 3 - DISCHARGE (CFS) AT XSECTIONS AND STRUCTURES FOR ALL STORMS AND ALTERNATES

XSECTION/ TRUCTURE ID	DRAINAGE AREA (SQ MI)	STORM NUMBERS..... 1
XSECTION 69	.52	
ALTERNATE 1		103.21
XSECTION 70	.56	
ALTERNATE 1		85.24
XSECTION 71	.13	
ALTERNATE 1		25.51
XSECTION 72	.38	
ALTERNATE 1		48.47
XSECTION 74	.62	
ALTERNATE 1		105.06
XSECTION 75	.71	
ALTERNATE 1		164.25
XSECTION 76	.13	
ALTERNATE 1		35.81
XSECTION 77	.20	
ALTERNATE 1		27.10
XSECTION 78	.14	
ALTERNATE 1		25.72
XSECTION 79	.06	
ALTERNATE 1		22.10
XSECTION 80	.95	
ALTERNATE 1		165.75
XSECTION 81	.89	
ALTERNATE 1		154.40
XSECTION 82	.41	
ALTERNATE 1		43.18
XSECTION 83	2.19	
ALTERNATE 1		197.99

SUMMARY TABLE 3 - DISCHARGE (CFS) AT XSECTIONS AND STRUCTURES FOR ALL STORMS AND ALTERNATES

XSECTION/ STRUCTURE ID	DRAINAGE AREA (SQ MI)	STORM NUMBERS..... 1
XSECTION 84	2.14	
ALTERNATE 1		255.60
XSECTION 85	3.20	
ALTERNATE 1		302.33
XSECTION 86	.06	
ALTERNATE 1		19.01
XSECTION 87	1.00	
ALTERNATE 1		176.22
XSECTION 88	.88	
ALTERNATE 1		151.45
XSECTION 89	.05	
ALTERNATE 1		11.33
XSECTION 90	.73	
ALTERNATE 1		118.22
XSECTION 91	.25	
ALTERNATE 1		66.38
XSECTION 92	.13	
ALTERNATE 1		33.19
XSECTION 93	.87	
ALTERNATE 1		65.47
XSECTION 94	.25	
ALTERNATE 1		34.94
XSECTION 95	1.25	
ALTERNATE 1		107.69
XSECTION 96	1.37	
ALTERNATE 1		121.52
XSECTION 97	.19	
ALTERNATE 1		51.76

SUMMARY TABLE 3 - DISCHARGE (CFS) AT XSECTIONS AND STRUCTURES FOR ALL STORMS AND ALTERNATES

XSECTION/ STRUCTURE ID	DRAINAGE AREA (SQ MI)	STORM NUMBERS..... 1
XSECTION 98	.28	
ALTERNATE 1		68.75
XSECTION 99	.38	
ALTERNATE 1		81.26
XSECTION 100	.08	
ALTERNATE 1		22.04
XSECTION 101	.13	
ALTERNATE 1		37.24
XSECTION 102	.06	
ALTERNATE 1		10.32
XSECTION 103	.08	
ALTERNATE 1		21.28
XSECTION 104	5.18	
ALTERNATE 1		941.38
XSECTION 105	2.27	
ALTERNATE 1		267.93
XSECTION 106	2.25	
ALTERNATE 1		199.42
XSECTION 107	7.70	
ALTERNATE 1		1129.59
XSECTION 108	8.74	
ALTERNATE 1		1311.42
XSECTION 109	1.01	
ALTERNATE 1		177.48
XSECTION 110	9.17	
ALTERNATE 1		1401.77
XSECTION 111	9.24	
ALTERNATE 1		1408.69

SUMMARY TABLE 3 - DISCHARGE (CFS) AT XSECTIONS AND STRUCTURES FOR ALL STORMS AND ALTERNATES

XSECTION/ STRUCTURE ID	DRAINAGE AREA (SQ MI)	STORM NUMBERS..... 1
XSECTION 112	10.25	
ALTERNATE 1		1535.85
XSECTION 113	11.16	
ALTERNATE 1		1585.25
XSECTION 114	12.11	
ALTERNATE 1		1549.93
XSECTION 115	.09	
ALTERNATE 1		18.09
XSECTION 118	12.34	
ALTERNATE 1		1452.57
XSECTION 119	.23	
ALTERNATE 1		34.29
XSECTION 120	.23	
ALTERNATE 1		73.91
XSECTION 121	.25	
ALTERNATE 1		136.44
XSECTION 122	.35	
ALTERNATE 1		98.33
XSECTION 123	.21	
ALTERNATE 1		112.83
XSECTION 124	2.84	
ALTERNATE 1		744.70
XSECTION 125	1.19	
ALTERNATE 1		393.99
XSECTION 126	.84	
ALTERNATE 1		273.74
XSECTION 127	.16	
ALTERNATE 1		36.98

SUMMARY TABLE 3 - DISCHARGE (CFS) AT XSECTIONS AND STRUCTURES FOR ALL STORMS AND ALTERNATES

XSECTION/ STRUCTURE ID	DRAINAGE AREA (SQ MI)	STORM NUMBERS..... 1
XSECTION 128	.04	
ALTERNATE 1		7.40
XSECTION 129	.17	
ALTERNATE 1		47.32
XSECTION 130	.03	
ALTERNATE 1		13.79
XSECTION 131	.68	
ALTERNATE 1		192.23
XSECTION 132	.14	
ALTERNATE 1		50.29
XSECTION 133	.08	
ALTERNATE 1		43.66
XSECTION 134	1.07	
ALTERNATE 1		338.67
XSECTION 135	.04	
ALTERNATE 1		22.95
XSECTION 136	.07	
ALTERNATE 1		36.07
XSECTION 137	.08	
ALTERNATE 1		10.76
XSECTION 138	.27	
ALTERNATE 1		75.96
XSECTION 139	1.35	
ALTERNATE 1		289.15
XSECTION 140	.39	
ALTERNATE 1		94.50
XSECTION 141	.19	
ALTERNATE 1		51.76

SUMMARY TABLE 3 - DISCHARGE (CFS) AT XSECTIONS AND STRUCTURES FOR ALL STORMS AND ALTERNATES

XSECTION/ STRUCTURE ID	DRAINAGE AREA (SQ MI)	STORM NUMBERS..... 1
XSECTION 142	1.62	
ALTERNATE 1		142.77
XSECTION 143	.06	
ALTERNATE 1		14.66
XSECTION 144	.13	
ALTERNATE 1		12.46

END OF 1 JOBS IN THIS RUN