

10yr

## **Technical Addendum**

TR 20 Input/Output for the Lower Sand Creek and  
Center Tributary Sand Creek

Existing and Future Basin Condition 10-year

\*\*\*\*\*BQ-BQ LIST OF INPUT DATA FOR TR-20 HYDROLOGY\*\*\*\*\*

| JOB TR-20                         |                   | SUMMARY |                       | NO PLOTS |         |
|-----------------------------------|-------------------|---------|-----------------------|----------|---------|
| TITLE 001 LOWER SAND CREEK        |                   | EX      | CONDITION             |          |         |
| TITLE 24 HR TYPE IIA STORM (10 YR |                   | AMC=2)  | FILE NAME D24EX10.DAT |          |         |
| 5                                 | RAINF1 1          | .50     |                       |          |         |
| 8                                 |                   | 0.000   | .0025                 | 0.005    | .0075   |
| 8                                 |                   | 0.015   | 0.020                 | 0.025    | 0.030   |
| 8                                 |                   | 0.060   | 0.100                 | 0.700    | 0.750   |
| 8                                 |                   | 0.798   | 0.820                 | 0.830    | 0.840   |
| 8                                 |                   | 0.860   | 0.865                 | 0.870    | 0.885   |
| 8                                 |                   | 0.900   | 0.905                 | 0.910    | 0.915   |
| 8                                 |                   | 0.927   | 0.933                 | 0.940    | 0.945   |
| 8                                 |                   | 0.955   | 0.960                 | 0.965    | 0.970   |
| 8                                 |                   | 0.980   | 0.983                 | 0.985    | 0.988   |
| 8                                 |                   | 0.993   | 0.995                 | 0.998    | 1.000   |
| 9                                 | ENDTBL            |         |                       |          |         |
| 6                                 | RUNOFF 1 37       | 1       | .23                   | 77       | 0.19    |
| 6                                 | REACH 3 138       | 1 1     | 2600.                 | 1.9      | 1.47    |
| 6                                 | RUNOFF 1 38       | 1       | .09                   | 52.0     | .20     |
| 6                                 | ADDPYD 4 38 1 2 3 |         |                       |          |         |
| 6                                 | RUNOFF 1 49       | 1       | .01                   | 53.0     | 0.1     |
| 6                                 | ADDPYD 4 49 1 3 2 |         |                       |          |         |
| 6                                 | REACH 3 149       | 2 1     | 1.0                   | .4       | 1.0     |
| 6                                 | ADDPYD 4 49 7 1 3 |         |                       |          | 1 1 1 1 |
| 6                                 | REACH 3 135       | 3 1     | 4300.                 | 0.1      | 1.65    |
| 6                                 | RUNOFF 1 35       | 2       | 0.24                  | 90.0     | 0.45    |
| 6                                 | ADDPYD 4 35 1 2 3 |         |                       |          |         |
| 6                                 | RUNOFF 1 33       | 2       | 0.12                  | 54.0     | 0.30    |
| 6                                 | ADDPYD 4 35 3 2 1 |         |                       |          |         |
| 6                                 | RUNOFF 1 34       | 2       | 0.13                  | 59.0     | 0.22    |
| 6                                 | REACH 3 133       | 1 3     | 2600.7                | 0.3      | 1.6     |

|          |   |     |       |        |      |      |
|----------|---|-----|-------|--------|------|------|
| 6 RUNOFF | 1 | 32  | 1     | 0.25   | 70.0 | 0.71 |
| 6 ADDHYD | 4 | 32  | 1 2 3 |        |      |      |
| 6 REACH  | 3 | 130 | 3 2   | 2400.0 | 0.3  | 1.6  |
| 6 RUNOFF | 1 | 30  | 1     | 0.15   | 76.0 | 0.63 |
| 6 ADDHYD | 4 | 30  | 2 1 3 |        |      |      |
| 6 RUNOFF | 1 | 31  | 2     | 0.25   | 86.0 | 0.38 |
| 6 ADDHYD | 4 | 30  | 3 2 1 |        |      |      |
| 6 REACH  | 3 | 128 | 1 2   | 1700.0 | 0.3  | 1.6  |
| 6 RUNOFF | 1 | 28  | 1     | 0.08   | 93.0 | 1.07 |
| 6 ADDHYD | 4 | 28  | 1 2 3 |        |      |      |
| 6 RUNOFF | 1 | 29  | 1     | 0.16   | 93.0 | 1.31 |
| 6 REACH  | 3 | 127 | 1 2   | 500.0  | 1.4  | 1.6  |
| 6 ADDHYD | 4 | 28  | 2 3 4 |        |      |      |
| 6 REACH  | 3 | 127 | 4 1   | 3100.0 | 0.2  | 1.6  |

1

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

|          |   |     |       |        |      |                |
|----------|---|-----|-------|--------|------|----------------|
| 6 ADDHYD | 4 | 27  | 1 6 2 |        |      | 1 1 1 1        |
| 6 RUNOFF | 1 | 27  | 3     | 0.10   | 70.0 | 0.11           |
| 6 ADDHYD | 4 | 27  | 2 3 1 |        |      |                |
| 6 RUNOFF | 1 | 26  | 3     | 0.11   | 73.0 | 1.19           |
| 6 ADDHYD | 4 | 27  | 1 3 2 |        |      |                |
| 6 REACH  | 3 | 125 | 2 3   | 5000.0 | 0.1  | 1.6            |
| 6 RUNOFF | 1 | 25  | 1     | 0.36   | 57.0 | 0.36           |
| 6 ADDHYD | 4 | 25  | 1 3 2 |        |      |                |
| 6 RUNOFF | 1 | 24  | 1     | 0.10   | 65.0 | 0.28           |
| 6 ADDHYD | 4 | 25  | 1 2 3 |        |      | 1 1 1 1        |
| 6 REACH  | 3 | 121 | 3 1   | 2500.0 | 0.2  | 1.6            |
| 6 RUNOFF | 1 | 21  | 2     | 0.15   | 65.0 | 0.04           |
| 6 ADDHYD | 4 | 21  | 1 2 4 |        |      |                |
| 6 RUNOFF | 1 | 42  | 1     | 0.13   | 71.0 | 0.85           |
| 6 RUNOFF | 1 | 47  | 2     | 0.28   | 86.0 | 0.30           |
| 6 ADDHYD | 4 | 47  | 1 2 3 |        |      |                |
| 6 REACH  | 3 | 146 | 3 1   | 1900.0 | 1.9  | 1.5            |
| 6 RUNOFF | 1 | 46  | 3     | 0.15   | 74.0 | 0.51           |
| 6 ADDHYD | 4 | 46  | 3 1 2 |        |      |                |
| 6 REACH  | 3 | 145 | 2 1   | 700.0  | 2.1  | 1.5            |
| 6 RUNOFF | 1 | 45  | 3     | 0.27   | 71.0 | 0.54           |
| 6 ADDHYD | 4 | 45  | 3 1 2 |        |      |                |
| 6 REACH  | 3 | 144 | 2 1   | 2600.0 | 1.6  | 1.5            |
| 6 RUNOFF | 1 | 44  | 3     | 0.29   | 65.0 | 0.64           |
| 6 ADDHYD | 4 | 44  | 3 1 2 |        |      |                |
| 6 REACH  | 3 | 143 | 2 1   | 2500.0 | 0.5  | 1.6            |
| 6 RUNOFF | 1 | 43  | 2     | 0.20   | 74.0 | 0.16           |
| 6 ADDHYD | 4 | 43  | 1 2 3 |        |      |                |
| 6 REACH  | 3 | 142 | 3 1   | 3100.0 | 0.3  | 1.6            |
| 6 RUNOFF | 1 | 42  | 2     | 0.25   | 74.0 | 0.65           |
| 6 ADDHYD | 4 | 42  | 1 2 3 |        |      |                |
| 6 REACH  | 3 | 141 | 3 2   | 3400.0 | 0.4  | 1.6            |
| 6 RUNOFF | 1 | 41  | 1     | 0.24   | 74.0 | 0.17           |
| 6 ADDHYD | 4 | 41  | 1 2 3 |        |      | 1 1 1 1 CENTER |
| 6 ADDHYD | 4 | 41  | 3 5 1 |        |      | 1 1 1 1 EFSC   |
| 6 REACH  | 3 | 122 | 1 3   | 3200.0 | 0.3  | 1.6            |
| 6 ADDHYD | 4 | 21  | 2 4 3 |        |      |                |
| 6 RUNOFF | 1 | 22  | 1     | .23    | 71.0 | .17            |
| 6 ADDHYD | 4 | 21  | 1 3 4 |        |      |                |
| 6 REACH  | 3 | 119 | 4 2   | 2600.0 | 0.2  | 1.6            |
| 6 RUNOFF | 1 | 19  | 1     | 0.13   | 81.0 | 0.02           |
| 6 ADDHYD | 4 | 19  | 2 1 4 |        |      |                |
| 6 RUNOFF | 1 | 20  | 2     | 0.13   | 67.0 | 0.21           |
| 6 REACH  | 3 | 120 | 2 3   | 600.0  | 1.5  | 1.4            |

\*\*\*\*\*B0-B0 LIST OF INPUT DATA (CONTINUED)\*\*\*\*\*

|          |   |     |    |       |        |      |         |
|----------|---|-----|----|-------|--------|------|---------|
| 6 REACH  | 7 | 123 | 1  | 3     | 3500.0 | 0.8  | 1.5     |
| 6 RUNOFF | 1 | 18  |    | 1     | 0.30   | 81.0 | 0.54    |
| 6 ADDHYD | 4 |     | 18 | 3 1 4 |        |      |         |
| 6 REACH  | 3 | 115 | 4  | 3     | 600.0  | 1.3  | 1.4     |
| 6 ADDHYD | 4 |     | 19 | 2 2 1 |        |      |         |
| 6 REACH  | 3 | 134 | 1  | 2     | 1500.0 | .2   | 1.6     |
| 6 RUNOFF | 1 | 34  |    | 3     | 0.10   | 74.0 | 0.02    |
| 6 ADDHYD | 4 |     | 35 | 3 2 1 |        |      |         |
| 6 REACH  | 3 | 115 | 1  | 3     | 3100.0 | 0.1  | 1.7     |
| 6 RUNOFF | 1 | 16  |    | 1     | 0.15   | 74.0 | 0.45    |
| 6 ADDHYD | 4 |     | 15 | 3 1 1 |        |      |         |
| 6 RUNOFF | 1 | 15  |    | 1     | 0.10   | 65.0 | 0.04    |
| 6 ADDHYD | 4 |     | 15 | 1 2 3 |        |      |         |
| 6 RUNOFF | 1 | 14  |    | 2     | 0.13   | 74.0 | 0.54    |
| 6 ADDHYD | 4 |     | 15 | 2 2 1 |        |      |         |
| 6 RUNOFF | 1 | 13  |    | 2     | 0.37   | 83.0 | 0.53    |
| 6 ADDHYD | 4 |     | 15 | 1 2 3 |        |      |         |
| 6 RUNOFF | 1 | 17  |    | 1     | 0.21   | 78.0 | 0.57    |
| 6 REACH  | 3 | 116 | 1  | 2     | 2400.0 | 1.1  | 1.4     |
| 6 ADDHYD | 4 |     | 15 | 2 3 1 |        |      |         |
| 6 REACH  | 3 | 112 | 1  | 2     | 3500.0 | 0.2  | 1.6     |
| 6 RUNOFF | 1 | 12  |    | 1     | .29    | 81   | .06     |
| 6 ADDHYD | 4 |     | 12 | 2 1 3 |        |      |         |
| 6 RUNOFF | 1 | 8   |    | 2     | 0.11   | 76.0 | 1.46    |
| 6 ADDHYD | 4 |     | 12 | 2 3 1 |        |      |         |
| 6 RUNOFF | 1 | 9   |    | 3     | 0.13   | 82.0 | 0.44    |
| 6 ADDHYD | 4 |     | 12 | 3 1 2 |        |      |         |
| 6 RUNOFF | 1 | 7   |    | 1     | 0.13   | 83.0 | 0.45    |
| 6 ADDHYD | 4 |     | 12 | 1 2 3 |        |      |         |
| 6 RUNOFF | 1 | 11  |    | 2     | 0.25   | 84.0 | 0.53    |
| 6 REACH  | 3 | 108 | 2  | 1     | 3200.0 | 0.4  | 1.6     |
| 6 ADDHYD | 4 |     | 12 | 1 3 2 |        |      |         |
| 6 RUNOFF | 1 | 6   |    | 1     | 0.23   | 83.0 | 0.25    |
| 6 REACH  | 3 | 107 | 1  | 3     | 3400.0 | 0.4  | 1.6     |
| 6 ADDHYD | 4 |     | 12 | 3 2 1 |        |      |         |
| 6 RUNOFF | 1 | 10  |    | 2     | 0.11   | 76.0 | 0.38    |
| 6 REACH  | 3 | 109 | 2  | 3     | 3800.0 | 0.6  | 1.6     |
| 6 ADDHYD | 4 |     | 12 | 3 1 2 |        |      | 1 1 1 1 |
| 6 REACH  | 3 | 104 | 2  | 3     | 1800.0 | 0.2  | 1.6     |
| 6 RUNOFF | 1 | 4   |    | 2     | 0.14   | 69.0 | 0.24    |
| 6 ADDHYD | 4 |     | 4  | 2 3 1 |        |      |         |
| 6 REACH  | 3 | 103 | 1  | 2     | 1400.0 | 0.2  | 1.6     |
| 6 RUNOFF | 1 | 3   |    | 1     | 0.16   | 93.0 | 0.48    |
| 6 ADDHYD | 4 |     | 3  | 1 2 3 |        |      |         |
| 6 RUNOFF | 1 | 5   |    | 2     | 0.20   | 80.0 | 0.08    |
| 6 REACH  | 3 | 105 | 2  | 4     | 3800.0 | .6   | 1.6     |

1

\*\*\*\*\*B0-B0 LIST OF INPUT DATA (CONTINUED)\*\*\*\*\*

|          |   |     |   |       |        |      |      |
|----------|---|-----|---|-------|--------|------|------|
| 6 ADDHYD | 4 |     | 5 | 3 4 2 |        |      |      |
| 6 REACH  | 3 | 102 | 1 | 3     | 2300.0 | 0.1  | 1.7  |
| 6 RUNOFF | 1 | 2   |   | 4     | 0.31   | 63.0 | 0.34 |
| 6 ADDHYD | 4 |     | 2 | 3 4 2 |        |      |      |
| 6 REACH  | 3 | 101 | 2 | 1     | 1550.0 | 0.2  | 1.7  |
| 6 RUNOFF | 1 | 1   |   | 4     | 0.19   | 52.0 | 0.45 |





```

7 READHD 6      1
7 READHD 9      0.0      .10      24.32      10000
8      .0      .0      .0      .0      .0
8      .0      .0      .0      .0      .0
8      .0      .0      .0      .0      .0
8      .0      .0      .0      .0      .0
8      .0      .0      .0      .0      .0
8      .0      .0      .0      .0      .0
8      .0      .0      .0      .0      .0
8      .0      .0      .0      .0      .0
8      .0      .0      .0      .0      .0

```

\*\*\*\*\*B0-B0 LIST OF INPUT DATA (CONTINUED)\*\*\*\*\*

```

8      .0      .0      .0      .0      .0
8      .0      .0      .0      .0      .0
8      0.00      0.00      0.00      0.00      0.00
8      0.00      0.00      0.00      0.00      1.00
8      8.00      21.00      46.00      73.0      124.00
8      180.00      219.00      236.00      242.0      246.00
8      250.00      256.00      265.00      277.00      294.00
8      314.00      338.00      365.00      368.00      425.00
8      456.00      487.00      516.00      544.00      569.00
8      592.00      613.00      631.00      647.00      661.00
8      672.00      681.00      687.00      690.0      690.00
8      687.00      681.00      673.00      662.00      650.00
8      635.00      620.00      603.00      585.0      567.00
8      549.00      528.00      508.00      488.0      469.00
8      480.00      432.00      415.00      400.0      386.00
8      373.00      362.00      352.00      342.0      335.00
8      322.00      311.00      300.00      290.0      282.00
8      275.00      269.00      264.00      259.0      255.00
8      251.00      246.00      242.00      238.0      234.00
8      231.00      228.00      235.00      223.0      221.00
8      220.00      218.00      217.00      216.0      214.00
8      213.00      211.00      210.00      208.00      207.00

```

```

9 ENDTBL
7 LIST
7 INCREM 6      .085      5-MIN
7 COMPUT 7 37      1      0.      3.0      1.0      1 2 01 01      10-YR
ENDCMP 1
ENDJOB 2

```

\*\*\*\*\*END OF B0-B0 LIST\*\*\*\*\*

```

TR10 XEQ 5/14/93 10:40 LOWER SAND CREEK EX CONDITION JOB 1 PAGE 1
REV PC/09'83 24 HR TYPE IIA STORM (10 YR AND=2) FILE NAME D24EX10.DAT PAGE 1

```

FILE NO. 1

0 COMPUTER PROGRAM FOR PROJECT FORMULATION - HYDROLOGY USER NOTES

THE USER'S MANUAL FOR THIS PROGRAM IS THE MAY 1992 DRAFT OF TR-20. CHANGES FROM THE 2/14/74 VERSION INCLUDE:

REACH ROUTING - THE MODIFIED ATT-MIN ROUTING PROCEDURE REPLACES THE CONVEX METHOD. INPUT DATA PREPARED FOR PREVIOUS PROGRAM VERSIONS USING CONVEX ROUTING COEFFICIENTS WILL NOT RUN ON THIS VERSION.

THE PREFERRED TYPE OF DATA ENTRY IS CROSS SECTION DATA REPRESENTATIVE OF A REACH. IT IS RECOMMENDED THAT THE OPTIONAL CROSS SECTION DISCHARGE-AREA PLOTS BE OBTAINED WHENEVER NEW CROSS SECTION DATA IS ENTERED. THE PLOTS SHOULD BE CHECKED FOR REASONABLENESS AND ADEQUACY OF INFILT DATA FOR THE COMPUTATION OF "M"

DISSEMINATED FOR HYDROLOGIC ENGINEERING. FOR INFORMATION, SEE THE USER MANUAL. SUMMARY TABLE 2 DISPLAYS REACH ROUTING RESULTS AND ROUTING PARAMETERS FOR COMPARISON AND CHECKING.

HYDROGRAPH GENERATION - THE PROCEDURE TO CALCULATE THE INTERNAL TIME INCREMENT AND PEAK TIME OF THE UNIT HYDROGRAPH HAVE BEEN IMPROVED. PEAK DISCHARGES AND TIMES MAY DIFFER FROM THE PREVIOUS VERSION. OUTPUT HYDROGRAPHS ARE STILL INTERPOLATED, PRINTED, AND ROUTED AT THE USER SELECTED MAIN TIME INCREMENT.

INTERMEDIATE PEAKS - METHOD ADDED TO PROVIDE DISCHARGES AT INTERMEDIATE POINTS WITHIN REACHES WITHOUT ROUTING.

OTHER - THIS VERSION CONTAINS SOME ADDITIONS TO THE INPUT AND NUMEROUS MODIFICATIONS TO THE OUTPUT. USER OPTIONS HAVE BEEN MODIFIED AND AUGMENTED ON THE JOB RECORD, RAINTABLES ADDED, ERROR AND WARNING MESSAGES EXPANDED, AND THE SUMMARY TABLE COMPLETELY REVISED. THE HOLDOUT OPTION IS NOT OPERATIONAL AT THIS TIME.

PROGRAM QUESTIONS OR PROBLEMS SHOULD BE DIRECTED TO HYDRAULIC ENGINEERS AT THE SOE NATIONAL TECHNICAL CENTER:

CHESTER, PA (NORTHEAST) -- 215-499-3933. FORT WORTH, TX (SOUTH) -- 817-354-0242 (FTER)  
LINCOLN, NE (MIDWEST) -- 402-471-1515. PORTLAND, OR (WEST) -- 425-4099 (FTS)  
OR HYDROLOGY UNIT, ENGINEERING DIVISION, LANHAM, MD -- 410-7287 (FTS).

# PROGRAM CHANGES SINCE MAY 1982:

- 12/17/82 - CORRECT PEAK RATE FACTOR FOR USER ENTERED DIXHYD  
CORRECT REACH ROUTING PEAK TRAVEL TIME PRINTED WITH FULLPRINT OPTION
- 5/02/83 - CORRECT COMPUTATIONS FOR ---
  1. DIVISION OF BASEFLOW IN DIVERT OPERATION
  2. HYDROGRAPH VOLUME SPLIT BETWEEN BASEFLOW AND ABOVE BASEFLOW
  3. CROSS SECTION DATA PLOTTING POSITION
  4. INTERMEDIATE PEAK WHEN "FROM" AREA IS LARGER THAN "THRU" AREA
  5. STORAGE ADJUSTED REACH TRAVEL TIME FOR MULTIPLE PEAK HYDROGRAPH
  6. ORDERING "FLOW-FREQ" FILE FROM SUMMARY TABLE #3 DATA
  7. BASEFLOW ENTERED WITH READHYD
  8. LOW FLOW SPLIT DURING DIVERT PROCEDURE #2 WHEN SECTION RATINGS START AT DIFFERENT ELEVATIONS
- ENHANCEMENTS ---
  1. REPLACE USER MANUAL ERROR CODES (PAGE 4-9 TO 4-11) WITH MESSAGES
  2. LABEL OUTPUT HYDROGRAPH FILES WITH CROSS SECTION/STRUCTURE, ALTERNATE AND STORM NO'S
- 09/01/83 - CORRECT INPUT AND OUTPUT ERRORS FOR INTERMEDIATE PEAKS  
CORRECT COMBINATION OF RATING TABLES FOR DIVERT  
CHECK REACH ROUTING PARAMETERS FOR ACCEPTABLE LIMITS  
ELIMINATE MINIMUM REACH TRAVEL TIME WHEN ATT-KIN COEFFICIENT EQUALS ONE

1

|          |          |       |                             |        |                       |       |         |
|----------|----------|-------|-----------------------------|--------|-----------------------|-------|---------|
| TR20 XEQ | 5/14/83  | 10:40 | LOWER SAND CREEK            | EX     | CONDITION             | SOE 1 | PAGE 1  |
| REV      | PC/09/83 |       | 24 RE TYPE 11A STORM (10 YR | AND=2) | FILE NAME D24EX10.DAT |       | PAGE 13 |

|                                    |                       |           |
|------------------------------------|-----------------------|-----------|
| EXECUTIVE CONTROL OPERATION INCREM | RECORD 10             | 5-MIN     |
| +                                  | MAIN TIME INCREMENT = | .06 HOURS |

|                                    |               |        |
|------------------------------------|---------------|--------|
| EXECUTIVE CONTROL OPERATION COMPUT | RECORD 12     | 10-MIN |
| +                                  | FROM XSECTION | 37     |
| +                                  | TO STRUCTURE  | 1      |

|                 |     |              |      |                       |           |                  |   |                     |   |
|-----------------|-----|--------------|------|-----------------------|-----------|------------------|---|---------------------|---|
| STARTING TIME = | .00 | RAIN DEPTH = | 0.00 | RAIN DURATION =       | 1.00      | RAIN TABLE NO. = | 1 | ANT. RAINF. COND. = | 1 |
| ALTERNATE NO. = | 1   | STORM NO. =  | 1    | MAIN TIME INCREMENT = | .06 HOURS |                  |   |                     |   |

\*\*\* WARNING REACH 138 ATT-KIN COEFF.(C) GREATER THAN 0.667. CONSIDER REDUCING MAIN TIME INCREMENT \*\*\*

\*\*\* WARNING-NO PEAK FOUND. MAXIMUM DISCHARGE = .02 CFS.

| SECTION<br>ID | STRUCTURE<br>OPERATION | WATERWAY<br>AREA<br>(SQ MI) | WATER<br># | COND | HYDRO<br>(HR) | BEGIN<br>(HR) | AMOUNT<br>(IN) | DURATION<br>(HR) | AMOUNT<br>(IN) | ELEVATION<br>(FT) | TIME<br>(HR) | RATE<br>(CFS) | RATE<br>(CFS) |
|---------------|------------------------|-----------------------------|------------|------|---------------|---------------|----------------|------------------|----------------|-------------------|--------------|---------------|---------------|
| ALTERNATE     | 1                      | BTOR                        |            |      |               |               |                |                  |                |                   |              |               |               |
| XSECTION 37   | RUNOFF                 | .23                         | 1          | 1    | .65           | .0            | 3.00           | 24.00            | 1.07           | ---               | 6.07         | 207.00        | 207.00        |
| XSECTION 138  | REACH                  | .25                         | 1          | 2    | .68           | .0            | 3.00           | 24.00            | 1.07           | ---               | 6.12         | 205.99        | 912.0         |
| XSECTION 38   | RUNOFF                 | .09                         | 1          | 1    | .85           | .0            | 3.00           | 24.00            | .17            | ---               | 6.13         | 2.27          | 25.7          |
| STRUCTURE 38  | ADDHYD                 | .32                         | 1          | 2    | .68           | .0            | 3.00           | 24.00            | .50            | ---               | 6.12         | 215.22        | 713.0         |
| XSECTION 49   | RUNOFF                 | .01                         | 1          | 2    | .61           | .0            | 3.00           | 24.00            | .15            | ---               | 6.06         | .64           | 64.5          |
| STRUCTURE 49  | ADDHYD                 | .33                         | 1          | 2    | .68           | .0            | 3.00           | 24.00            | .75            | ---               | 6.12         | 218.55        | 152.6         |
| XSECTION 149  | REACH                  | .33                         | 1          | 2    | .68           | .0            | 3.00           | 24.00            | .75            | ---               | 6.12         | 225.55        | 432.6         |
| STRUCTURE 49  | ADDHYD                 | 16.37                       | 1          | 2    | .68           | .0            | 3.00           | 24.00            | .42            | ---               | 5.45         | 2177.81       | 130.2         |
| XSECTION 139  | REACH                  | 16.37                       | 1          | 2    | .68           | .0            | 3.00           | 24.00            | .42            | ---               | 5.72         | 2333.93       | 124.1         |
| XSECTION 30   | RUNOFF                 | .24                         | 1          | 2    | .65           | .0            | 3.00           | 24.00            | 1.95           | ---               | 6.14         | 321.95        | 1341.5        |
| STRUCTURE 38  | ADDHYD                 | 16.61                       | 1          | 2    | .65           | .0            | 3.00           | 24.00            | .44            | ---               | 6.04         | 2174.99       | 130.8         |
| XSECTION 33   | RUNOFF                 | .12                         | 1          | 2    | .65           | .0            | 3.00           | 24.00            | .17            | ---               | 6.42         | 3.34          | 27.8          |
| STRUCTURE 38  | ADDHYD                 | 16.73                       | 1          | 2    | .65           | .0            | 3.00           | 24.00            | .44            | ---               | 6.04         | 2175.60       | 170.0         |
| XSECTION 34   | RUNOFF                 | .13                         | 1          | 2    | .68           | .0            | 3.00           | 24.00            | 1.19           | ---               | 6.04         | 139.57        | 1073.5        |
| XSECTION 133  | REACH                  | .13                         | 1          | 2    | .68           | .0            | 3.00           | 24.00            | 1.19           | ---               | 6.25         | 117.03        | 873.0         |
| STRUCTURE 35  | ADDHYD                 | 16.86                       | 1          | 2    | .68           | .0            | 3.00           | 24.00            | .45            | ---               | 6.06         | 2231.27       | 132.3         |
| XSECTION 131  | REACH                  | 16.86                       | 1          | 2    | .68           | .0            | 3.00           | 24.00            | .45            | ---               | 6.15         | 2223.26       | 131.9         |
| XSECTION 32   | RUNOFF                 | .28                         | 1          | 2    | .65           | .0            | 3.00           | 24.00            | .86            | ---               | 6.19         | 138.34        | 498.9         |
| STRUCTURE 32  | ADDHYD                 | 17.14                       | 1          | 2    | .68           | .0            | 3.00           | 24.00            | .45            | ---               | 6.18         | 2360.11       | 177.7         |
| XSECTION 130  | REACH                  | 17.14                       | 1          | 2    | .68           | .0            | 3.00           | 24.00            | .45            | ---               | 6.27         | 2357.55       | 137.0         |
| XSECTION 36   | RUNOFF                 | .15                         | 1          | 2    | .65           | .0            | 3.00           | 24.00            | .98            | ---               | 6.95         | 184.44        | 1229.6        |
| STRUCTURE 36  | ADDHYD                 | 17.29                       | 1          | 2    | .65           | .0            | 3.00           | 24.00            | .46            | ---               | 6.27         | 2373.47       | 137.3         |
| XSECTION 31   | RUNOFF                 | .25                         | 1          | 2    | .65           | .0            | 3.00           | 24.00            | 1.65           | ---               | 6.10         | 707.77        | 1227.1        |
| STRUCTURE 30  | ADDHYD                 | 17.54                       | 1          | 2    | .68           | .0            | 3.00           | 24.00            | .47            | ---               | 6.20         | 2610.71       | 145.8         |
| XSECTION 120  | REACH                  | 17.54                       | 1          | 2    | .68           | .0            | 3.00           | 24.00            | .47            | ---               | 6.20         | 2610.71       | 145.6         |
| XSECTION 28   | RUNOFF                 | .08                         | 1          | 2    | .68           | .0            | 3.00           | 24.00            | 2.23           | ---               | 6.94         | 177.50        | 2218.7        |
| STRUCTURE 28  | ADDHYD                 | 17.62                       | 1          | 2    | .68           | .0            | 3.00           | 24.00            | .48            | ---               | 6.95         | 2733.55       | 153.3         |
| XSECTION 29   | RUNOFF                 | .16                         | 1          | 2    | .65           | .0            | 3.00           | 24.00            | 2.25           | ---               | 6.04         | 293.90        | 1636.9        |
| XSECTION 129  | REACH                  | .16                         | 1          | 2    | .65           | .0            | 3.00           | 24.00            | 2.25           | ---               | 6.04         | 293.90        | 1636.5        |
| STRUCTURE 26  | ADDHYD                 | 17.78                       | 1          | 2    | .68           | .0            | 3.00           | 24.00            | .50            | ---               | 6.99         | 3018.32       | 149.6         |
| XSECTION 127  | REACH                  | 17.78                       | 1          | 2    | .68           | .0            | 3.00           | 24.00            | .50            | ---               | 6.09         | 2948.70       | 165.2         |
| STRUCTURE 27  | ADDHYD                 | 22.82                       | 1          | 2    | .68           | .0            | 3.00           | 24.00            | .58            | ---               | 6.99         | 3846.45       | 266.2         |

1

TR20 XE1 5/14/83 10:40 LOWER SAND CREEK EX CONDITION JOB 1 SUMMARY  
REV AD 09/87 24 HR TYPE IIA STORM (10 YR AMD=2) FILE NAME 024EX10.DAT PAGE 26

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

| SECTION<br>ID | STRUCTURE<br>OPERATION | WATERWAY<br>AREA<br>(SQ MI) | WATER<br># | COND | HYDRO<br>(HR) | PRECIPITATION<br>BEGIN<br>(HR) | AMOUNT<br>(IN) | DURATION<br>(HR) | RUNOFF<br>AMOUNT<br>(IN) | PEAK DISCHARGE<br>ELEVATION<br>(FT) | TIME<br>(HR) | RATE<br>(CFS) | RATE<br>(CFS) |
|---------------|------------------------|-----------------------------|------------|------|---------------|--------------------------------|----------------|------------------|--------------------------|-------------------------------------|--------------|---------------|---------------|
|---------------|------------------------|-----------------------------|------------|------|---------------|--------------------------------|----------------|------------------|--------------------------|-------------------------------------|--------------|---------------|---------------|

|              |        |       |   |   |     |    |      |       |      |     |      |         |        |
|--------------|--------|-------|---|---|-----|----|------|-------|------|-----|------|---------|--------|
| SECTION 27   | ADDHYD | 22.92 | 1 | 2 | .08 | .0 | 3.00 | 24.00 | .55  | --- | 6.99 | 5918.37 | 158.1  |
| STRUCTURE 27 | ADDHYD | 22.92 | 1 | 2 | .08 | .0 | 3.00 | 24.00 | .55  | --- | 6.99 | 5918.37 | 158.1  |
| XSECTION 28  | RUNOFF | .11   | 1 | 2 | .08 | .0 | 3.00 | 24.00 | .55  | --- | 6.70 | 28.70   | 143.2  |
| STRUCTURE 27 | ADDHYD | 23.03 | 1 | 2 | .08 | .0 | 3.00 | 24.00 | .55  | --- | 6.99 | 5919.60 | 158.1  |
| XSECTION 125 | REACH  | 23.63 | 1 | 2 | .08 | .0 | 3.00 | 24.00 | .55  | --- | 6.18 | 5530.80 | 140.1  |
| XSECTION 23  | RUNOFF | .36   | 1 | 2 | .08 | .0 | 3.00 | 24.00 | .25  | --- | 6.18 | 32.33   | 59.1   |
| STRUCTURE 25 | ADDHYD | 23.39 | 1 | 2 | .08 | .0 | 3.00 | 24.00 | .55  | --- | 6.18 | 5532.68 | 157.1  |
| XSECTION 24  | RUNOFF | .10   | 1 | 2 | .08 | .0 | 3.00 | 24.00 | .51  | --- | 6.10 | 31.63   | 358.3  |
| STRUCTURE 25 | ADDHYD | 23.49 | 1 | 2 | .08 | .0 | 3.00 | 24.00 | .55  | --- | 6.18 | 5533.40 | 158.1  |
| XSECTION 127 | REACH  | 23.49 | 1 | 2 | .08 | .0 | 3.00 | 24.00 | .55  | --- | 6.25 | 5581.25 | 157.6  |
| XSECTION 21  | RUNOFF | .15   | 1 | 2 | .08 | .0 | 3.00 | 24.00 | .43  | --- | 6.91 | 68.48   | 587.9  |
| STRUCTURE 21 | ADDHYD | 23.64 | 1 | 2 | .08 | .0 | 3.00 | 24.00 | .55  | --- | 6.25 | 5590.23 | 158.5  |
| XSECTION 48  | RUNOFF | .15   | 1 | 2 | .08 | .0 | 3.00 | 24.00 | .76  | --- | 6.45 | 38.23   | 271.0  |
| XSECTION 47  | RUNOFF | .28   | 1 | 2 | .08 | .0 | 3.00 | 24.00 | 1.61 | --- | 6.06 | 364.03  | 1371.6 |
| STRUCTURE 47 | ADDHYD | .41   | 1 | 2 | .08 | .0 | 3.00 | 24.00 | 1.37 | --- | 6.06 | 356.09  | 968.1  |
| XSECTION 146 | REACH  | .41   | 1 | 2 | .08 | .0 | 3.00 | 24.00 | 1.37 | --- | 6.06 | 356.09  | 968.1  |
| XSECTION 46  | RUNOFF | .15   | 1 | 2 | .08 | .0 | 3.00 | 24.00 | .91  | --- | 6.21 | 74.94   | 495.6  |
| STRUCTURE 46 | ADDHYD | .56   | 1 | 2 | .08 | .0 | 3.00 | 24.00 | 1.25 | --- | 6.08 | 434.82  | 812.2  |
| XSECTION 143 | REACH  | .56   | 1 | 2 | .08 | .0 | 3.00 | 24.00 | 1.25 | --- | 6.08 | 434.82  | 812.2  |
| XSECTION 45  | RUNOFF | .27   | 1 | 2 | .08 | .0 | 3.00 | 24.00 | .71  | --- | 6.24 | 102.61  | 350.0  |
| STRUCTURE 45 | ADDHYD | .83   | 1 | 2 | .08 | .0 | 3.00 | 24.00 | 1.09 | --- | 6.10 | 532.07  | 641.0  |
| XSECTION 144 | REACH  | .83   | 1 | 2 | .08 | .0 | 3.00 | 24.00 | 1.09 | --- | 6.18 | 529.33  | 637.7  |
| XSECTION 44  | RUNOFF | .29   | 1 | 2 | .08 | .0 | 3.00 | 24.00 | .51  | --- | 6.33 | 54.91   | 189.0  |
| STRUCTURE 44 | ADDHYD | 1.12  | 1 | 2 | .08 | .0 | 3.00 | 24.00 | .94  | --- | 6.19 | 575.44  | 513.8  |
| XSECTION 143 | REACH  | 1.12  | 1 | 2 | .08 | .0 | 3.00 | 24.00 | .94  | --- | 6.30 | 561.73  | 501.5  |
| XSECTION 43  | RUNOFF | .20   | 1 | 2 | .08 | .0 | 3.00 | 24.00 | .91  | --- | 6.02 | 177.27  | 886.3  |
| STRUCTURE 43 | ADDHYD | 1.32  | 1 | 2 | .08 | .0 | 3.00 | 24.00 | .93  | --- | 6.29 | 567.46  | 448.0  |
| XSECTION 142 | REACH  | 1.32  | 1 | 2 | .08 | .0 | 3.00 | 24.00 | .93  | --- | 6.41 | 553.08  | 419.0  |
| XSECTION 42  | RUNOFF | .25   | 1 | 2 | .08 | .0 | 3.00 | 24.00 | .91  | --- | 6.29 | 104.91  | 418.6  |
| STRUCTURE 42 | ADDHYD | 1.57  | 1 | 2 | .08 | .0 | 3.00 | 24.00 | .93  | --- | 6.40 | 549.44  | 413.7  |
| XSECTION 141 | REACH  | 1.57  | 1 | 2 | .08 | .0 | 3.00 | 24.00 | .93  | --- | 6.52 | 622.57  | 396.5  |
| XSECTION 41  | RUNOFF | .24   | 1 | 2 | .08 | .0 | 3.00 | 24.00 | .91  | --- | 6.34 | 204.16  | 850.7  |
| STRUCTURE 41 | ADDHYD | 1.81  | 1 | 2 | .08 | .0 | 3.00 | 24.00 | .93  | --- | 6.52 | 646.79  | 350.3  |
| STRUCTURE 41 | ADDHYD | 26.13 | 1 | 2 | .08 | .0 | 3.00 | 24.00 | .26  | --- | 6.57 | 843.54  | 121.8  |
| XSECTION 122 | REACH  | 26.13 | 1 | 2 | .08 | .0 | 3.00 | 24.00 | .26  | --- | 6.70 | 813.64  | 31.1   |
| STRUCTURE 21 | ADDHYD | 49.77 | 1 | 2 | .08 | .0 | 3.00 | 24.00 | .41  | --- | 6.27 | 5948.06 | 119.3  |

3

TR20 SEG 5/14/93 10:40 LOWER SAND CREEK EX CONDITION JOB 1 SUMMARY  
REV 02/09/87 24 HR TYPE IIA STORM (10 YR AND=2) FILE NAME DIAEXIC.DAT PAGE 25

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

| SECTION   | STANDARD  | RAIN     | ANTEC | MAIN   | PRECIPITATION |        |          | RUNOFF | PEAK DISCHARGE |      |       |        |
|-----------|-----------|----------|-------|--------|---------------|--------|----------|--------|----------------|------|-------|--------|
|           |           |          |       |        | DESIGN        | AMOUNT | DURATION |        | ELEVATION      | TIME | RATE  | DATE   |
| STRUCTURE | CONTROL   | DRAINAGE | TABLE | HEIGHT | INCREAS       | (IN)   | (IN)     | AMOUNT | (FT)           | (HR) | (DFB) | (DATE) |
| IC        | OPERATION | AREA     | #     | COND   | (FEET)        |        | HR       | (IN)   |                |      |       |        |
|           |           | (SQ MI)  |       |        |               |        |          |        |                |      |       |        |

ALTERNATE 1 STORM 1

|              |         |       |   |   |     |    |      |       |      |     |      |         |        |
|--------------|---------|-------|---|---|-----|----|------|-------|------|-----|------|---------|--------|
| SECTION 17   | REACH   | 50.17 | 1 | 1 | .08 | .0 | 3.00 | 24.00 | 1.27 | --- | 6.54 | 610.80  | 1567.7 |
| SECTION 19   | RUNOFF  | .10   | 1 | 1 | .08 | .0 | 3.00 | 24.00 | .42  | --- | 6.07 | 610.80  | 119.7  |
| STRUCTURE 19 | ADDDHYD | 50.17 | 1 | 1 | .08 | .0 | 3.00 | 24.00 | .42  | --- | 6.07 | 610.80  | 119.7  |
| SECTION 20   | RUNOFF  | .10   | 1 | 2 | .08 | .0 | 3.00 | 24.00 | .58  | --- | 6.06 | 61.45   | 488.1  |
| SECTION 120  | REACH   | .10   | 1 | 1 | .08 | .0 | 3.00 | 24.00 | .58  | --- | 6.06 | 63.45   | 488.0  |
| STRUCTURE 19 | ADDDHYD | 50.18 | 1 | 2 | .08 | .0 | 3.00 | 24.00 | .42  | --- | 6.06 | 6108.42 | 119.8  |
| SECTION 23   | RUNOFF  | .10   | 1 | 2 | .08 | .0 | 3.00 | 24.00 | .43  | --- | 6.15 | 47.34   | 208.7  |
| SECTION 123  | REACH   | .10   | 1 | 2 | .08 | .0 | 3.00 | 24.00 | .43  | --- | 6.36 | 28.32   | 148.1  |
| SECTION 10   | RUNOFF  | .50   | 1 | 2 | .08 | .0 | 3.00 | 24.00 | 1.71 | --- | 6.21 | 108.76  | 712.5  |
| STRUCTURE 10 | ADDDHYD | .50   | 1 | 2 | .08 | .0 | 3.00 | 24.00 | .96  | --- | 6.21 | 281.73  | 502.7  |
| SECTION 110  | REACH   | .50   | 1 | 1 | .08 | .0 | 3.00 | 24.00 | .96  | --- | 6.21 | 281.77  | 502.7  |
| STRUCTURE 19 | ADDDHYD | 50.76 | 1 | 2 | .08 | .0 | 3.00 | 24.00 | .42  | --- | 6.26 | 6276.11 | 117.6  |
| SECTION 130  | REACH   | 50.76 | 1 | 2 | .08 | .0 | 3.00 | 24.00 | .42  | --- | 6.26 | 6276.12 | 117.6  |
| SECTION 30   | RUNOFF  | .10   | 1 | 2 | .08 | .0 | 3.00 | 24.00 | .58  | --- | 6.35 | 112.87  | 1128.7 |
| STRUCTURE 30 | ADDDHYD | 50.86 | 1 | 2 | .08 | .0 | 3.00 | 24.00 | .42  | --- | 6.35 | 6187.83 | 127.6  |
| SECTION 115  | REACH   | 50.86 | 1 | 2 | .08 | .0 | 3.00 | 24.00 | .42  | --- | 6.36 | 6241.98 | 122.7  |
| SECTION 16   | RUNOFF  | .15   | 1 | 1 | .08 | .0 | 3.00 | 24.00 | .91  | --- | 6.17 | 52.47   | 371.2  |
| STRUCTURE 16 | ADDDHYD | 51.01 | 1 | 2 | .08 | .0 | 3.00 | 24.00 | .43  | --- | 6.38 | 6296.94 | 131.4  |
| SECTION 15   | RUNOFF  | .10   | 1 | 2 | .08 | .0 | 3.00 | 24.00 | .45  | --- | 6.51 | 58.95   | 539.9  |
| STRUCTURE 15 | ADDDHYD | 51.11 | 1 | 2 | .08 | .0 | 3.00 | 24.00 | .47  | --- | 6.38 | 6303.02 | 127.3  |
| SECTION 14   | RUNOFF  | .20   | 1 | 2 | .08 | .0 | 3.00 | 24.00 | .91  | --- | 6.23 | 110.39  | 480.0  |
| STRUCTURE 15 | ADDDHYD | 51.34 | 1 | 2 | .08 | .0 | 3.00 | 24.00 | .43  | --- | 6.38 | 6416.21 | 128.0  |
| SECTION 13   | RUNOFF  | .37   | 1 | 2 | .08 | .0 | 3.00 | 24.00 | 1.45 | --- | 6.15 | 325.95  | 881.0  |
| STRUCTURE 15 | ADDDHYD | 51.71 | 1 | 2 | .08 | .0 | 3.00 | 24.00 | .44  | --- | 6.33 | 6670.69 | 129.2  |
| SECTION 17   | RUNOFF  | .21   | 1 | 2 | .08 | .0 | 3.00 | 24.00 | 1.13 | --- | 6.23 | 130.28  | 620.4  |
| SECTION 116  | REACH   | .21   | 1 | 2 | .08 | .0 | 3.00 | 24.00 | 1.13 | --- | 6.37 | 119.46  | 558.8  |
| STRUCTURE 15 | ADDDHYD | 51.92 | 1 | 2 | .08 | .0 | 3.00 | 24.00 | .44  | --- | 6.33 | 6757.06 | 130.9  |
| SECTION 112  | REACH   | 51.92 | 1 | 2 | .08 | .0 | 3.00 | 24.00 | .44  | --- | 6.47 | 6709.02 | 129.2  |
| SECTION 12   | RUNOFF  | .29   | 1 | 2 | .08 | .0 | 3.00 | 24.00 | 1.28 | --- | 6.55 | 420.37  | 1459.9 |
| STRUCTURE 12 | ADDDHYD | 52.21 | 1 | 2 | .08 | .0 | 3.00 | 24.00 | .44  | --- | 6.45 | 6747.86 | 129.2  |
| SECTION 8    | RUNOFF  | .11   | 1 | 2 | .08 | .0 | 3.00 | 24.00 | 1.01 | --- | 6.87 | 38.29   | 257.2  |
| STRUCTURE 12 | ADDDHYD | 52.32 | 1 | 2 | .08 | .0 | 3.00 | 24.00 | .47  | --- | 6.45 | 6767.22 | 129.2  |
| SECTION 4    | RUNOFF  | .13   | 1 | 2 | .08 | .0 | 3.00 | 24.00 | 1.38 | --- | 6.14 | 120.10  | 827.9  |
| STRUCTURE 12 | ADDDHYD | 52.45 | 1 | 2 | .08 | .0 | 3.00 | 24.00 | .45  | --- | 6.44 | 6817.68 | 170.0  |

1

TS20 X20 5/14/83 10:40 LOWER SAND CREEK EX CONDITION JOB 1 SUMMARY  
REV PD/09/83 24 HR TYPE IIA STORM (10 YR AMC=2) FILE NAME D24EX10.DAT PAGE 24

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/<br>STRUCTURE | STANDARD<br>CONTROL<br>OPERATION | RAIN<br>DRAINAGE<br>AREA<br>(SQ MI) | RAINFALL<br>TABLE<br># | WATER<br>INDEX<br>COND | RAIN<br>TIME<br>(HRS) | PRECIPITATION |                |                  | RUNOFF<br>AMOUNT<br>(10 <sup>3</sup> ) | PEAK DISCHARGE    |              |               |                            |
|-----------------------|----------------------------------|-------------------------------------|------------------------|------------------------|-----------------------|---------------|----------------|------------------|----------------------------------------|-------------------|--------------|---------------|----------------------------|
|                       |                                  |                                     |                        |                        |                       | CELIC<br>(IN) | AMOUNT<br>(IN) | DURATION<br>(HR) |                                        | ELEVATION<br>(FT) | TIME<br>(HR) | RATE<br>(CFS) | RATE<br>(10 <sup>3</sup> ) |
| ALTERNATE             | 1                                | STORM                               | 1                      |                        |                       |               |                |                  |                                        |                   |              |               |                            |
| SECTION 7             | RUNOFF                           | .13                                 | 1                      | 2                      | .08                   | .0            | 3.00           | 24.00            | 1.45                                   | ---               | 6.14         | 126.29        | 171.0                      |
| STRUCTURE 12          | ADDDHYD                          | 52.38                               | 1                      | 2                      | .08                   | .0            | 3.00           | 24.00            | .45                                    | ---               | 6.44         | 6871.68       | 150.7                      |

| SECTION      | TYPE   | TIME  | DATE | TIME | DATE | TIME | DATE | TIME  | DATE | TIME | DATE | TIME    | DATE   |
|--------------|--------|-------|------|------|------|------|------|-------|------|------|------|---------|--------|
| XSECTION 6   | RUNOFF | .28   | 1    | 2    | .08  | .0   | 3.00 | 24.00 | 1.45 | ---  | 8.04 | 752.96  | 1273.8 |
| YSECTION 107 | REACH  | .28   | 1    | 2    | .08  | .0   | 3.00 | 24.00 | 1.45 | ---  | 8.25 | 749.75  | 1064.1 |
| STRUCTURE 12 | ADDHYD | 50.06 | 1    | 2    | .08  | .0   | 3.00 | 24.00 | .42  | ---  | 8.40 | 7540.61 | 136.8  |
| XSECTION 10  | RUNOFF | .11   | 1    | 2    | .08  | .0   | 3.00 | 24.00 | 1.01 | ---  | 8.11 | 752.51  | 726.0  |
| YSECTION 109 | REACH  | .11   | 1    | 2    | .08  | .0   | 3.00 | 24.00 | 1.01 | ---  | 8.28 | 751.73  | 681.2  |
| STRUCTURE 12 | ADDHYD | 50.17 | 1    | 2    | .08  | .0   | 3.00 | 24.00 | .42  | ---  | 8.40 | 7592.11 | 137.1  |
| XSECTION 104 | REACH  | 50.17 | 1    | 2    | .08  | .0   | 3.00 | 24.00 | .42  | ---  | 8.40 | 7592.16 | 137.1  |
| XSECTION 4   | RUNOFF | .14   | 1    | 2    | .08  | .0   | 3.00 | 24.00 | 1.70 | ---  | 8.00 | 754.35  | 1676.0 |
| STRUCTURE 4  | ADDHYD | 50.31 | 1    | 2    | .08  | .0   | 3.00 | 24.00 | .46  | ---  | 8.41 | 7524.81 | 137.4  |
| XSECTION 103 | REACH  | 50.31 | 1    | 2    | .08  | .0   | 3.00 | 24.00 | .46  | ---  | 8.41 | 7524.81 | 137.4  |
| XSECTION 3   | RUNOFF | .16   | 1    | 2    | .08  | .0   | 3.00 | 24.00 | 2.23 | ---  | 8.17 | 748.83  | 1553.1 |
| STRUCTURE 3  | ADDHYD | 50.47 | 1    | 2    | .08  | .0   | 3.00 | 24.00 | .47  | ---  | 8.41 | 7489.71 | 137.7  |
| XSECTION 5   | RUNOFF | .23   | 1    | 2    | .08  | .0   | 3.00 | 24.00 | 1.23 | ---  | 8.58 | 755.38  | 1329.5 |
| YSECTION 105 | REACH  | .23   | 1    | 2    | .08  | .0   | 3.00 | 24.00 | 1.24 | ---  | 8.06 | 750.80  | 1134.0 |
| STRUCTURE 3  | ADDHYD | 50.70 | 1    | 2    | .08  | .0   | 3.00 | 24.00 | .47  | ---  | 8.40 | 7492.76 | 137.8  |
| XSECTION 102 | REACH  | 50.70 | 1    | 2    | .08  | .0   | 3.00 | 24.00 | .47  | ---  | 8.40 | 7492.76 | 137.8  |
| XSECTION 2   | RUNOFF | .31   | 1    | 2    | .08  | .0   | 3.00 | 24.00 | .48  | ---  | 8.56 | 752.65  | 388.5  |
| STRUCTURE 2  | ADDHYD | 54.01 | 1    | 2    | .08  | .0   | 3.00 | 24.00 | .47  | ---  | 8.40 | 7511.81 | 137.1  |
| XSECTION 101 | REACH  | 54.01 | 1    | 2    | .08  | .0   | 3.00 | 24.00 | .47  | ---  | 8.40 | 7511.81 | 137.1  |
| YSECTION 1   | RUNOFF | .19   | 1    | 2    | .08  | .0   | 3.00 | 24.00 | .13  | ---  | 8.40 | 752.84  | 14.9   |
| STRUCTURE 1  | ADDHYD | 54.20 | 1    | 2    | .08  | .0   | 3.00 | 24.00 | .47  | ---  | 8.40 | 7514.65 | 138.6  |

```

TR20 XEB 5/14/93 10:40 LOWER SAND CREEK EX CONDITION JOB 1 SUMMARY
REV PC/09/93 24 HR TYPE IIA STORM (10 YF AKC=2) FILE NAME D24XEL0.DAT PAGE 27

```

SUMMARY TABLE 2 - SELECTED NOTIFIED 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  |       |             |       |       |
|------------------------|--------|-------|-------|-------|------|-------|------|-------|------|--------------------|------|-------|----------|--------|-------|-------|-------------|-------|-------|
| OUTFLOW=               |        |       |       |       |      |       |      |       |      | VOLUME             | WPA  | ITER= | O AND A  | PEAK   | S/B   | ATT=  | TRAVEL TIME |       |       |
| INFLOW                 |        |       |       |       |      |       |      |       |      | ABOVE              | TIME | ATION | EQUATION | LENGTH | RATIO | WPAK  | KIN         | STOR= | KINE= |
| 10                     | LENGTH | PEAK  | TIME  | PEAK  | TIME | PEAK  | TIME | FLOW  | BASE | INCR               | #    | COEFF | POWER    | FACTOR | CPI   | (K)   | COEFF       | AGE   | RATIO |
|                        | (FT)   | (CFS) | (HR)  | (CFS) | (HR) | (CFS) | (HR) | (CFS) | (IN) | (HR)               |      | (1)   | (1)      | (1)    | (1)   | (SEC) | (1)         | (HR)  | (HR)  |
| ALTERNATE              |        | 1     | STORM | 1     |      |       |      |       |      |                    |      |       |          |        |       |       |             |       |       |
| 4138                   | 3600   | 227   | 8.1   | 223   | 8.1  |       |      | 0     | 1.07 | .08                | 1    | 1.90  | 1.47     | .043   | .752  | 262   | .807        | .08   | .04   |
| 4149                   | 1      | 218   | 8.1   | 225   | 8.1  |       |      | 0     | .78  | .08                | 0    | .400  | 1.00     | .001   | 1.000 | 0     | 1.000       | .10   | .00   |
| 4135                   | 4300   | 2135  | 8.5   | 2039  | 8.7  |       |      | 0     | .62  | .08                | 1    | .600  | 1.65     | .028   | .950  | 513   | .43         | .25   | .10   |
| 4133                   | 2600   | 138   | 8.1   | 135   | 8.2  |       |      | 0     | 1.19 | .08                | 1    | .300  | 1.60     | .195   | .763  | 385   | .41         | .08   | .17   |

[illegible]

|      |      |      |     |      |     |     |     |      |     |   |     |      |      |       |     |       |     |     |
|------|------|------|-----|------|-----|-----|-----|------|-----|---|-----|------|------|-------|-----|-------|-----|-----|
| +102 | 3900 | 6778 | 6.3 | 6698 | 6.5 |     | 0   | .44  | .08 | 1 | .10 | 1.60 | .008 | .588  | 244 | .767  | .17 | .07 |
| +    |      |      |     |      |     | --- | --- |      |     |   |     | .400 |      |       |     |       |     |     |
| +103 | 3200 | 230  | 6.1 | 208  | 6.5 |     | 0   | 1.52 | .08 | 1 | .10 | 1.60 | .072 | .508  | 462 | .49   | .17 | .17 |
| +    |      |      |     |      |     | --- | --- |      |     |   |     | .400 |      |       |     |       |     |     |
| +107 | 3400 | 291  | 6.1 | 147  | 6.2 |     | 0   | 1.45 | .15 | 1 | .10 | 1.60 | .123 | .347  | 449 | .50   | .08 | .17 |
| +    |      |      |     |      |     | --- | --- |      |     |   |     | .500 |      |       |     |       |     |     |
| +109 | 3300 | 79   | 6.1 | 61   | 6.3 |     | 0   | 1.01 | .08 | 1 | .10 | 1.60 | .152 | .779  | 676 | .38   | .17 | .18 |
| +    |      |      |     |      |     | --- | --- |      |     |   |     | .200 |      |       |     |       |     |     |
| +104 | 1800 | 7275 | 6.4 | 7275 | 6.4 |     | 0   | .46  | .08 | 0 | .10 | 1.60 | .002 | 1.000 | 110 | 1.007 | .00 | .00 |
| +    |      |      |     |      |     | --- | --- |      |     |   |     | .200 |      |       |     |       |     |     |
| +103 | 1400 | 7310 | 6.4 | 7310 | 6.4 |     | 0   | .46  | .08 | 0 | .10 | 1.60 | .002 | 1.000 | 95  | 1.007 | .00 | .00 |
| +    |      |      |     |      |     | --- | --- |      |     |   |     | .200 |      |       |     |       |     |     |
| +105 | 3800 | 300  | 6.0 | 261  | 6.1 |     | 0   | 1.24 | .08 | 1 | .10 | 1.60 | .170 | .669  | 385 | .56   | .08 | .11 |
| +    |      |      |     |      |     | --- | --- |      |     |   |     |      |      |       |     |       |     |     |
| 1    |      |      |     |      |     |     |     |      |     |   |     |      |      |       |     |       |     |     |

TR20 XED 5/14/93 10:40 LOWER SAND CREEK EX CONDITION JOB 1 SUMMARY  
REV PD/09/83 24 HR TYPE IIA STORM (10 YR AND=2) FILE NAME D24EX10.DAT PAGE 22

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 WARNING)

| HYDROGRAPH INFORMATION |        |       |         |       |             |       |       |       |      | ROUTING PARAMETERS |          |        |         |        | PEAK |       |       |             |       |     |
|------------------------|--------|-------|---------|-------|-------------|-------|-------|-------|------|--------------------|----------|--------|---------|--------|------|-------|-------|-------------|-------|-----|
| OUTFLOW+               |        |       |         |       |             |       |       |       |      | VOLUME             | MAIN     | ITER-  | Q AND A |        | PEAK | S/G   | ATT-  | TRAVEL TIME |       |     |
| XSEC REACH             | INFLOW |       | OUTFLOW |       | INTERV.AREA |       | BASE- | ABOVE | TIME | ATION              | EQUATION | LENGTH | RATIO   | SPEAK  | KIN  | STOR- | KINE- |             |       |     |
| ID                     | LENGTH | PEAK  | TIME    | PEAK  | TIME        | PEAK  | TIME  | FLOW  | BASE | INCR               | #        | COEFF  | POWER   | FACTOR | D/I  | (K)   | COEFF | SEC         | MATIC |     |
|                        | (FT)   | (CFS) | (HR)    | (CFS) | (HR)        | (CFS) | (HR)  | (CFS) | (IN) | (HR)               |          | (X)    | (N)     | (K#)   | (Q#) | (SEC) | (C)   | (HR)        | (HR)  |     |
| ALTERNATE              |        | 1     | STORM   | 1     |             |       |       |       |      |                    |          |        |         |        |      |       |       |             |       |     |
| +102                   | 2300   | 7490  | 6.4     | 7490  | 6.4         |       |       | 0     | .47  | .08                | 0        | .100   |         | 1.70   | .002 | 1.000 | 133   | 1.007       | .00   | .00 |
|                        |        |       |         |       |             | ---   | ---   |       |      |                    |          | .200   |         |        |      |       |       |             |       |     |
| +101                   | 1550   | 7509  | 6.4     | 7509  | 6.4         |       |       | 0     | .47  | .08                | 0        |        |         | 1.70   | .001 | 1.000 | 60    | 1.007       | .00   | .00 |
|                        |        |       |         |       |             | ---   | ---   |       |      |                    |          |        |         |        |      |       |       |             |       |     |

TR20 XED 5/14/93 10:40 LOWER SAND CREEK EX CONDITION JOB 1 SUMMARY  
REV PD/09/83 24 HR TYPE IIA STORM (10 YR AND=2) FILE NAME D24EX10.DAT PAGE 23

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

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

| XSECTION/<br>STRUCTURE<br>ID | DRAINAGE<br>AREA<br>(SQ MI) | STORM NUMBERS.....<br>1 |
|------------------------------|-----------------------------|-------------------------|
| 0 STRUCTURE 49               | 16.37                       |                         |
| +                            |                             |                         |
| ALTERNATE 1                  | 2137.81                     |                         |
| 0 STRUCTURE 47               | .41                         |                         |
| +                            |                             |                         |
| ALTERNATE 1                  | 396.09                      |                         |
| 0 STRUCTURE 46               | .56                         |                         |
| +                            |                             |                         |
| ALTERNATE 1                  | 454.82                      |                         |
| 0 STRUCTURE 45               | .83                         |                         |
| +                            |                             |                         |
| ALTERNATE 1                  | 532.07                      |                         |
| 0 STRUCTURE 44               | 1.12                        |                         |
| +                            |                             |                         |
| ALTERNATE 1                  | 575.44                      |                         |
| 0 STRUCTURE 43               | 1.32                        |                         |
| +                            |                             |                         |
| ALTERNATE 1                  | 587.46                      |                         |
| 0 STRUCTURE 42               | 1.57                        |                         |
| +                            |                             |                         |
| ALTERNATE 1                  | 649.44                      |                         |
| 0 STRUCTURE 41               | 26.13                       |                         |
| +                            |                             |                         |
| ALTERNATE 1                  | 843.54                      |                         |
| 0 STRUCTURE 38               | .32                         |                         |
| +                            |                             |                         |
| ALTERNATE 1                  | 228.26                      |                         |
| 0 STRUCTURE 36               | 50.80                       |                         |
| +                            |                             |                         |
| ALTERNATE 1                  | 6243.99                     |                         |
| 0 STRUCTURE 35               | 16.86                       |                         |
| +                            |                             |                         |
| ALTERNATE 1                  | 2231.27                     |                         |
| 0 STRUCTURE 32               | 17.14                       |                         |
| +                            |                             |                         |
| ALTERNATE 1                  | 2360.61                     |                         |
| 0 STRUCTURE 30               | 17.54                       |                         |
| +                            |                             |                         |
| ALTERNATE 1                  | 2610.71                     |                         |
| 0 STRUCTURE 28               | 17.62                       |                         |
| +                            |                             |                         |
| ALTERNATE 1                  | 2735.55                     |                         |
| 1                            |                             |                         |

## SUMMARY

REV PC/09/83

24 HR TYPE IIA STORM (10 YR AMC=2) FILE NAME D24EX10.DAT

PAGE 31

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

| XSECTION/<br>STRUCTURE<br>ID | DRAINAGE<br>AREA<br>(SQ MI) | STORM NUMBERS.....<br>1 |
|------------------------------|-----------------------------|-------------------------|
|------------------------------|-----------------------------|-------------------------|

0 STRUCTURE 27 23.03

+

ALTERNATE 1 5923.61

0 STRUCTURE 25 23.49

+

ALTERNATE 1 5595.72

0 STRUCTURE 21 49.77

+

ALTERNATE 1 5948.18

0 STRUCTURE 19 50.70

+

ALTERNATE 1 6234.26

0 STRUCTURE 18 .44

+

ALTERNATE 1 205.80

0 STRUCTURE 15 51.86

+

ALTERNATE 1 6754.10

0 STRUCTURE 12 53.11

+

ALTERNATE 1 7248.41

0 STRUCTURE 4 53.25

+

ALTERNATE 1 7280.67

0 STRUCTURE 3 53.64

+

ALTERNATE 1 7448.49

0 STRUCTURE 2 53.95

+

ALTERNATE 1 7467.55

0 STRUCTURE 1 54.14

+

ALTERNATE 1 7470.38

0 XSECTION 1 .19

+

ALTERNATE 1 2.84

0 XSECTION 2 .31

+

ALTERNATE 1 182.85

0 XSECTION 3 .16

|   |             |        |
|---|-------------|--------|
| + |             |        |
|   | ALTERNATE 1 | 248.53 |
| 1 |             |        |

TR20 XEQ 2/ 3/92 12:45 LOWER SAND CREEK EX CONDITION JOB 1  
SUMMARY  
REV PC/09/83 24 HR TYPE IIA STORM (10 YR AMC=2) FILE NAME D24EX10.DAT  
PAGE 32

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

| XSECTION/<br>STRUCTURE<br>ID | DRAINAGE<br>AREA<br>(SQ MI) | STORM NUMBERS.....<br>1 |
|------------------------------|-----------------------------|-------------------------|
| 0 XSECTION 4                 | .14                         |                         |
| +                            |                             |                         |
| ALTERNATE 1                  |                             | 234.95                  |
| 0 XSECTION 5                 | .23                         |                         |
| +                            |                             |                         |
| ALTERNATE 1                  |                             | 305.88                  |
| 0 XSECTION 6                 | .23                         |                         |
| +                            |                             |                         |
| ALTERNATE 1                  |                             | 292.98                  |
| 0 XSECTION 7                 | .13                         |                         |
| +                            |                             |                         |
| ALTERNATE 1                  |                             | 126.29                  |
| 0 XSECTION 8                 | .11                         |                         |
| +                            |                             |                         |
| ALTERNATE 1                  |                             | 28.29                   |
| 0 XSECTION 9                 | .13                         |                         |
| +                            |                             |                         |
| ALTERNATE 1                  |                             | 120.10                  |
| 0 XSECTION 10                | .11                         |                         |
| +                            |                             |                         |
| ALTERNATE 1                  |                             | 79.90                   |
| 0 XSECTION 11                | .25                         |                         |
| +                            |                             |                         |
| ALTERNATE 1                  |                             | 233.83                  |
| 0 XSECTION 12                | .29                         |                         |
| +                            |                             |                         |
| ALTERNATE 1                  |                             | 423.37                  |
| 0 XSECTION 13                | .37                         |                         |
| +                            |                             |                         |
| ALTERNATE 1                  |                             | 325.95                  |
| 0 XSECTION 14                | .23                         |                         |
| +                            |                             |                         |
| ALTERNATE 1                  |                             | 110.39                  |
| 0 XSECTION 15                | .10                         |                         |

|            |    |        |
|------------|----|--------|
| +          |    |        |
| ALTERNATE  | 1  | 58.99  |
| 0 XSECTION | 16 | .15    |
| +          |    |        |
| ALTERNATE  | 1  | 82.67  |
| 0 XSECTION | 17 | .21    |
| +          |    |        |
| ALTERNATE  | 1  | 130.28 |
| 1          |    |        |

TR20 XEQ 2/3/92 12:45 LOWER SAND CREEK EX CONDITION JOB 1  
SUMMARY  
REV PC/09/83 24 HR TYPE IIA STORM (10 YR AMC=2) FILE NAME D24EX10.DAT  
PAGE 33

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

| XSECTION/<br>STRUCTURE<br>ID | DRAINAGE<br>AREA<br>(SQ MI) | STORM NUMBERS.....<br>1 |
|------------------------------|-----------------------------|-------------------------|
|                              |                             |                         |
| 0 XSECTION 18                | .24                         |                         |
| +                            |                             |                         |
| ALTERNATE 1                  |                             | 183.00                  |
| 0 XSECTION 19                | .13                         |                         |
| +                            |                             |                         |
| ALTERNATE 1                  |                             | 203.80                  |
| 0 XSECTION 20                | .13                         |                         |
| +                            |                             |                         |
| ALTERNATE 1                  |                             | 63.45                   |
| 0 XSECTION 21                | 50.00                       |                         |
| +                            |                             |                         |
| ALTERNATE 1                  |                             | 5996.80                 |
| 0 XSECTION 22                | .23                         |                         |
| +                            |                             |                         |
| ALTERNATE 1                  |                             | 165.54                  |
| 0 XSECTION 23                | .20                         |                         |
| +                            |                             |                         |
| ALTERNATE 1                  |                             | 47.34                   |
| 0 XSECTION 24                | .10                         |                         |
| +                            |                             |                         |
| ALTERNATE 1                  |                             | 33.63                   |
| 0 XSECTION 25                | .36                         |                         |
| +                            |                             |                         |
| ALTERNATE 1                  |                             | 32.33                   |
| 0 XSECTION 26                | .11                         |                         |
| +                            |                             |                         |
| ALTERNATE 1                  |                             | 26.76                   |
| 0 XSECTION 27                | .10                         |                         |

|            |    |        |
|------------|----|--------|
| +          |    |        |
| ALTERNATE  | 1  | 69.89  |
| 0 XSECTION | 28 | .08    |
| +          |    |        |
| ALTERNATE  | 1  | 177.50 |
| 0 XSECTION | 29 | .16    |
| +          |    |        |
| ALTERNATE  | 1  | 293.90 |
| 0 XSECTION | 30 | .15    |
| +          |    |        |
| ALTERNATE  | 1  | 184.44 |
| 0 XSECTION | 31 | .25    |
| +          |    |        |
| ALTERNATE  | 1  | 307.27 |
| 1          |    |        |

TR20 XEQ 2/ 3/92 12:45 LOWER SAND CREEK EX CONDITION  
SUMMARY

JOB 1

REV PC/09/83 24 HR TYPE IIA STORM (10 YR AMC=2) FILE NAME D24EX10.DAT  
PAGE 34

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

| XSECTION/<br>STRUCTURE<br>ID | DRAINAGE<br>AREA<br>(SQ MI) | STORM NUMBERS.....<br>1 |
|------------------------------|-----------------------------|-------------------------|
|                              |                             |                         |
| 0 XSECTION                   | 32                          | .28                     |
| +                            |                             |                         |
| ALTERNATE                    | 1                           | 136.34                  |
| 0 XSECTION                   | 33                          | .12                     |
| +                            |                             |                         |
| ALTERNATE                    | 1                           | 3.34                    |
| 0 XSECTION                   | 34                          | .13                     |
| +                            |                             |                         |
| ALTERNATE                    | 1                           | 139.57                  |
| 0 XSECTION                   | 35                          | .24                     |
| +                            |                             |                         |
| ALTERNATE                    | 1                           | 321.96                  |
| 0 XSECTION                   | 36                          | .10                     |
| +                            |                             |                         |
| ALTERNATE                    | 1                           | 112.87                  |
| 0 XSECTION                   | 37                          | .23                     |
| +                            |                             |                         |
| ALTERNATE                    | 1                           | 233.01                  |
| 0 XSECTION                   | 38                          | .09                     |
| +                            |                             |                         |
| ALTERNATE                    | 1                           | 2.27                    |
| 0 XSECTION                   | 41                          | .24                     |

|            |    |        |
|------------|----|--------|
| +          |    |        |
| ALTERNATE  | 1  | 204.16 |
| 0 XSECTION | 42 | .25    |
| +          |    |        |
| ALTERNATE  | 1  | 104.91 |
| 0 XSECTION | 43 | .20    |
| +          |    |        |
| ALTERNATE  | 1  | 177.27 |
| 0 XSECTION | 44 | .29    |
| +          |    |        |
| ALTERNATE  | 1  | 54.91  |
| 0 XSECTION | 45 | .27    |
| +          |    |        |
| ALTERNATE  | 1  | 102.61 |
| 0 XSECTION | 46 | .15    |
| +          |    |        |
| ALTERNATE  | 1  | 74.94  |
| 0 XSECTION | 47 | .28    |
| +          |    |        |
| ALTERNATE  | 1  | 384.05 |
| 1          |    |        |

TR20 XEQ 2/3/92 12:45 LOWER SAND CREEK EX CONDITION JOB 1  
SUMMARY  
REV PC/09/83 24 HR TYPE IIA STORM (10 YR AMC=2) FILE NAME D24EX10.DAT  
PAGE 35

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

|           |          |                    |
|-----------|----------|--------------------|
| XSECTION/ | DRAINAGE |                    |
| STRUCTURE | AREA     | STORM NUMBERS..... |
| ID        | (SQ MI)  | 1                  |

|            |     |         |
|------------|-----|---------|
| 0 XSECTION | 48  | .13     |
| +          |     |         |
| ALTERNATE  | 1   | 35.23   |
| 0 XSECTION | 49  | .01     |
| +          |     |         |
| ALTERNATE  | 1   | .64     |
| 0 XSECTION | 101 | 53.95   |
| +          |     |         |
| ALTERNATE  | 1   | 7467.55 |
| 0 XSECTION | 102 | 53.64   |
| +          |     |         |
| ALTERNATE  | 1   | 7448.49 |
| 0 XSECTION | 103 | 53.25   |
| +          |     |         |
| ALTERNATE  | 1   | 7280.67 |
| 0 XSECTION | 104 | 53.11   |

|                |       |         |
|----------------|-------|---------|
| +              |       |         |
| ALTERNATE 1    |       | 7248.41 |
| 0 XSECTION 105 | .23   |         |
| +              |       |         |
| ALTERNATE 1    |       | 260.83  |
| 0 XSECTION 107 | .23   |         |
| +              |       |         |
| ALTERNATE 1    |       | 249.35  |
| 0 XSECTION 108 | .25   |         |
| +              |       |         |
| ALTERNATE 1    |       | 209.33  |
| 0 XSECTION 109 | .11   |         |
| +              |       |         |
| ALTERNATE 1    |       | 61.73   |
| 0 XSECTION 112 | 51.86 |         |
| +              |       |         |
| ALTERNATE 1    |       | 6667.45 |
| 0 XSECTION 115 | 50.80 |         |
| +              |       |         |
| ALTERNATE 1    |       | 6201.20 |
| 0 XSECTION 116 | .21   |         |
| +              |       |         |
| ALTERNATE 1    |       | 119.46  |
| 0 XSECTION 118 | .44   |         |
| +              |       |         |
| ALTERNATE 1    |       | 205.80  |
| 1              |       |         |

TR20 XEQ 2/ 3/92 12:45 LOWER SAND CREEK EX CONDITION

JOB 1

SUMMARY

REV PC/09/83 24 HR TYPE IIA STORM (10 YR AMC=2) FILE NAME D24EX10.DAT  
PAGE 36

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

| XSECTION/<br>STRUCTURE<br>ID | DRAINAGE<br>AREA<br>(SQ MI) | STORM NUMBERS..... |
|------------------------------|-----------------------------|--------------------|
|                              | 1                           |                    |

|                |       |         |
|----------------|-------|---------|
| 0 XSECTION 119 | 50.00 |         |
| +              |       |         |
| ALTERNATE 1    |       | 5996.80 |
| 0 XSECTION 120 | .13   |         |
| +              |       |         |
| ALTERNATE 1    |       | 63.45   |
| 0 XSECTION 121 | 23.49 |         |
| +              |       |         |
| ALTERNATE 1    |       | 5583.62 |
| 0 XSECTION 122 | 26.13 |         |

|                |   |         |
|----------------|---|---------|
| +              |   |         |
| ALTERNATE      | 1 | 813.64  |
| 0 XSECTION 123 |   | .20     |
| +              |   |         |
| ALTERNATE      | 1 | 29.32   |
| 0 XSECTION 125 |   | 23.03   |
| +              |   |         |
| ALTERNATE      | 1 | 5532.91 |
| 0 XSECTION 126 |   | .16     |
| +              |   |         |
| ALTERNATE      | 1 | 289.24  |
| 0 XSECTION 127 |   | 17.62   |
| +              |   |         |
| ALTERNATE      | 1 | 2672.92 |
| 0 XSECTION 128 |   | 17.54   |
| +              |   |         |
| ALTERNATE      | 1 | 2610.71 |
| 0 XSECTION 130 |   | 17.14   |
| +              |   |         |
| ALTERNATE      | 1 | 2357.55 |
| 0 XSECTION 132 |   | 16.86   |
| +              |   |         |
| ALTERNATE      | 1 | 2223.26 |
| 0 XSECTION 133 |   | .13     |
| +              |   |         |
| ALTERNATE      | 1 | 107.03  |
| 0 XSECTION 135 |   | 16.37   |
| +              |   |         |
| ALTERNATE      | 1 | 2038.95 |
| 0 XSECTION 136 |   | 50.70   |
| +              |   |         |
| ALTERNATE      | 1 | 6234.26 |
| 1              |   |         |

TR20 XEQ 2/ 3/92 12:45 LOWER SAND CREEK EX CONDITION

JOB 1

SUMMARY

REV PC/09/83 24 HR TYPE IIA STORM (10 YR AMC=2) FILE NAME D24EX10.DAT  
PAGE 37

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

| XSECTION/<br>STRUCTURE<br>ID | DRAINAGE<br>AREA<br>(SQ MI) | STORM NUMBERS..... |
|------------------------------|-----------------------------|--------------------|
|                              | 1                           |                    |

0 XSECTION 138 .23

|                |   |        |
|----------------|---|--------|
| +              |   |        |
| ALTERNATE      | 1 | 225.99 |
| 0 XSECTION 141 |   | 1.57   |

+  
ALTERNATE 1 622.57  
0 XSECTION 142 1.32

+  
ALTERNATE 1 553.06  
0 XSECTION 143 1.12

+  
ALTERNATE 1 561.73  
0 XSECTION 144 .83

+  
ALTERNATE 1 529.33  
0 XSECTION 145 .56

+  
ALTERNATE 1 454.82  
0 XSECTION 146 .41

+  
ALTERNATE 1 396.09  
0 XSECTION 149 .33

+  
ALTERNATE 1 228.55  
1END OF 1 JOBS IN THIS RUN

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

| JOB TR-20                         |             | SUMMARY |        | NO PLOTS              |       |
|-----------------------------------|-------------|---------|--------|-----------------------|-------|
| TITLE 001 LOWER SAND CREEK        |             | FUT     |        | CONDITION             |       |
| TITLE 24 HR TYPE IIA STORM (10 YR |             | AMC=2)  |        | FILE NAME D24FU10.DAT |       |
| 5                                 | RAINF1 1    | .50     |        |                       |       |
| 8                                 |             | 0.000   | .0025  | 0.005                 | .0075 |
| 8                                 |             | 0.015   | 0.020  | 0.025                 | 0.030 |
| 8                                 |             | 0.060   | 0.100  | 0.700                 | 0.750 |
| 8                                 |             | 0.798   | 0.820  | 0.830                 | 0.840 |
| 8                                 |             | 0.860   | 0.885  | 0.870                 | 0.885 |
| 8                                 |             | 0.900   | 0.905  | 0.910                 | 0.915 |
| 8                                 |             | 0.927   | 0.933  | 0.940                 | 0.945 |
| 8                                 |             | 0.955   | 0.960  | 0.965                 | 0.970 |
| 8                                 |             | 0.980   | 0.983  | 0.985                 | 0.988 |
| 8                                 |             | 0.993   | 0.995  | 0.998                 | 1.000 |
| 9                                 | ENDTBL      |         |        |                       |       |
| 5                                 | RUNOFF 1 37 | 1       | .23    | 85                    | 0.19  |
| 6                                 | REACH 3 136 | 1       | 2600.  | 1.9                   | 1.47  |
| 6                                 | RUNOFF 1 35 | 1       | .09    | 86.0                  | .20   |
| 6                                 | ADDDYD 4 36 | 1 2 3   |        |                       |       |
| 6                                 | RUNOFF 1 49 | 1       | .01    | 86.0                  | 0.1   |
| 6                                 | ADDDYD 4 49 | 1 2 3   |        |                       |       |
| 6                                 | REACH 3 149 | 2 1     | 1.0    | .4                    | 1.0   |
| 6                                 | ADDDYD 4 49 | 7 1 3   |        | 1 1                   | 1 1   |
| 6                                 | REACH 3 135 | 3 1     | 4300.  | 0.1                   | 1.65  |
| 6                                 | RUNOFF 1 35 | 2       | 0.24   | 91.0                  | 0.45  |
| 6                                 | ADDDYD 4 36 | 1 2 3   |        |                       |       |
| 6                                 | RUNOFF 1 33 | 2       | 0.12   | 77.0                  | 0.60  |
| 6                                 | ADDDYD 4 35 | 2 2 1   |        |                       |       |
| 6                                 | RUNOFF 1 34 | 2       | 0.33   | 85.0                  | 0.21  |
| 6                                 | REACH 3 133 | 2 3     | 2600.0 | 0.3                   | 1.6   |

|   |        |   |     |       |        |      |      |
|---|--------|---|-----|-------|--------|------|------|
| 6 | RUNOFF | 1 | 31  | 1     | 0.25   | 88.0 | 0.33 |
| 6 | ADDHYD | 4 | 32  | 1 2 3 |        |      |      |
| 6 | REACH  | 3 | 130 | 3 2   | 2400.0 | 0.3  | 1.6  |
| 6 | RUNOFF | 1 | 30  | 1     | 0.15   | 88.0 | 0.33 |
| 6 | ADDHYD | 4 | 30  | 2 1 3 |        |      |      |
| 6 | RUNOFF | 1 | 31  | 2     | 0.25   | 88.0 | 0.33 |
| 6 | ADDHYD | 4 | 30  | 3 2 1 |        |      |      |
| 6 | REACH  | 3 | 128 | 1 2   | 1700.0 | 0.3  | 1.6  |
| 6 | RUNOFF | 1 | 28  | 1     | 0.08   | 93.0 | 0.07 |
| 6 | ADDHYD | 4 | 28  | 1 2 3 |        |      |      |
| 6 | RUNOFF | 1 | 29  | 1     | 0.16   | 93.0 | 0.31 |
| 6 | REACH  | 3 | 129 | 1 2   | 900.0  | 1.4  | 1.6  |
| 6 | ADDHYD | 4 | 28  | 2 3 4 |        |      |      |
| 6 | REACH  | 3 | 127 | 4 1   | 3100.0 | 0.2  | 1.6  |

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

|   |        |   |     |       |        |      |                |
|---|--------|---|-----|-------|--------|------|----------------|
| 6 | ADDHYD | 4 | 27  | 1 6 2 |        |      | 1 1 1 1        |
| 6 | RUNOFF | 1 | 27  | 3     | 0.10   | 93.0 | 0.11           |
| 6 | ADDHYD | 4 | 27  | 2 3 1 |        |      |                |
| 6 | RUNOFF | 1 | 26  | 3     | 0.11   | 93.0 | 1.19           |
| 6 | ADDHYD | 4 | 27  | 1 3 2 |        |      |                |
| 6 | REACH  | 3 | 125 | 2 3   | 9000.0 | 0.1  | 1.6            |
| 6 | RUNOFF | 1 | 25  | 1     | 0.36   | 81.0 | 0.36           |
| 6 | ADDHYD | 4 | 25  | 1 3 2 |        |      |                |
| 6 | RUNOFF | 1 | 24  | 1     | 0.10   | 90.0 | 0.28           |
| 6 | ADDHYD | 4 | 25  | 1 2 3 |        |      | 1 1 1 1        |
| 6 | REACH  | 3 | 121 | 3 1   | 2500.0 | 0.2  | 1.6            |
| 6 | RUNOFF | 1 | 21  | 2     | 0.15   | 87.0 | 0.04           |
| 6 | ADDHYD | 4 | 21  | 1 2 4 |        |      |                |
| 6 | RUNOFF | 1 | 46  | 1     | 0.13   | 71.0 | 0.55           |
| 6 | RUNOFF | 1 | 47  | 2     | 0.28   | 86.0 | 0.30           |
| 6 | ADDHYD | 4 | 47  | 1 2 3 |        |      |                |
| 6 | REACH  | 3 | 146 | 3 1   | 1900.0 | 1.9  | 1.5            |
| 6 | RUNOFF | 1 | 46  | 3     | 0.15   | 82.0 | 0.51           |
| 6 | ADDHYD | 4 | 46  | 3 1 2 |        |      |                |
| 6 | REACH  | 3 | 145 | 2 1   | 700.0  | 2.1  | 1.5            |
| 6 | RUNOFF | 1 | 45  | 3     | 0.27   | 80.0 | 0.54           |
| 6 | ADDHYD | 4 | 45  | 3 1 2 |        |      |                |
| 6 | REACH  | 3 | 144 | 2 1   | 2600.0 | 1.6  | 1.5            |
| 6 | RUNOFF | 1 | 44  | 3     | 0.29   | 80.0 | 0.64           |
| 6 | ADDHYD | 4 | 44  | 3 1 2 |        |      |                |
| 6 | REACH  | 3 | 143 | 2 1   | 2500.0 | 0.4  | 1.6            |
| 6 | RUNOFF | 1 | 43  | 3     | 0.20   | 78.0 | 0.06           |
| 6 | ADDHYD | 4 | 43  | 1 2 3 |        |      |                |
| 6 | REACH  | 3 | 142 | 3 1   | 3100.0 | 0.3  | 1.6            |
| 6 | RUNOFF | 1 | 42  | 2     | 0.25   | 82.0 | 0.65           |
| 6 | ADDHYD | 4 | 42  | 1 2 3 |        |      |                |
| 6 | REACH  | 3 | 141 | 3 2   | 3400.0 | 0.4  | 1.6            |
| 6 | RUNOFF | 1 | 41  | 1     | 0.24   | 82.0 | 0.19           |
| 6 | ADDHYD | 4 | 41  | 1 2 3 |        |      | 1 1 1 1 CENTER |
| 6 | ADDHYD | 4 | 41  | 3 5 1 |        |      | 1 1 1 1 EFSC   |
| 6 | REACH  | 3 | 122 | 1 2   | 3200.0 | 0.3  | 1.6            |
| 6 | ADDHYD | 4 | 21  | 2 4 3 |        |      |                |
| 6 | RUNOFF | 1 | 22  | 1     | 0.23   | 87.0 | 0.17           |
| 6 | ADDHYD | 4 | 21  | 1 3 4 |        |      |                |
| 6 | REACH  | 3 | 118 | 4 2   | 2000.0 | 0.2  | 1.6            |
| 6 | RUNOFF | 1 | 19  | 1     | 0.13   | 85.0 | 0.02           |
| 6 | ADDHYD | 4 | 19  | 2 1 4 |        |      |                |
| 6 | RUNOFF | 1 | 20  | 1     | 0.13   | 85.0 | 0.21           |
| 6 | REACH  | 3 | 120 | 2 1   | 600.0  | 1.3  | 1.4            |

\*\*\*\*\*B0-B0 LIST OF INPUT DATA (CONTINUED)\*\*\*\*\*

|   |        |   |     |   |   |        |      |         |
|---|--------|---|-----|---|---|--------|------|---------|
| 6 | REACH  | 3 | 123 | 1 | 3 | 3500.0 | 0.6  | 1.5     |
| 6 | RUNOFF | 1 | 13  |   | 1 | 0.30   | 82.0 | 0.94    |
| 6 | ADDHYD | 4 | 18  | 3 | 1 |        |      |         |
| 6 | REACH  | 3 | 115 | 4 | 3 | 600.0  | 1.3  | 1.4     |
| 6 | ADDHYD | 4 | 19  | 3 | 1 |        |      |         |
| 6 | REACH  | 3 | 136 | 1 | 2 | 1500.0 | .2   | 1.6     |
| 6 | RUNOFF | 1 | 34  |   | 3 | 0.10   | 91.0 | 0.02    |
| 6 | ADDHYD | 4 | 35  | 3 | 1 |        |      |         |
| 6 | REACH  | 3 | 113 | 1 | 3 | 3100.0 | 0.1  | 1.7     |
| 6 | RUNOFF | 1 | 12  |   | 1 | 0.15   | 85.0 | 0.45    |
| 6 | ADDHYD | 4 | 15  | 3 | 1 |        |      |         |
| 6 | RUNOFF | 1 | 15  |   | 1 | 0.10   | 90.0 | 0.04    |
| 6 | ADDHYD | 4 | 15  | 1 | 2 |        |      |         |
| 6 | RUNOFF | 1 | 14  |   | 2 | 0.23   | 91.0 | 0.54    |
| 6 | ADDHYD | 4 | 15  | 3 | 2 |        |      |         |
| 6 | RUNOFF | 1 | 13  |   | 2 | 0.37   | 85.0 | 0.53    |
| 6 | ADDHYD | 4 | 15  | 1 | 2 |        |      |         |
| 6 | RUNOFF | 1 | 17  |   | 1 | 0.21   | 87.0 | 0.57    |
| 6 | REACH  | 3 | 116 | 1 | 2 | 2400.0 | 1.1  | 1.4     |
| 6 | ADDHYD | 4 | 15  | 2 | 3 |        |      |         |
| 6 | REACH  | 3 | 112 | 1 | 2 | 3900.0 | 0.2  | 1.6     |
| 6 | RUNOFF | 1 | 12  |   | 1 | .29    | 86   | .06     |
| 6 | ADDHYD | 4 | 12  | 2 | 1 |        |      |         |
| 6 | RUNOFF | 1 | 8   |   | 2 | 0.11   | 92.0 | 1.46    |
| 6 | ADDHYD | 4 | 12  | 2 | 3 |        |      |         |
| 6 | RUNOFF | 1 | 9   |   | 3 | 0.13   | 91.0 | 0.44    |
| 6 | ADDHYD | 4 | 12  | 3 | 1 |        |      |         |
| 6 | RUNOFF | 1 | 7   |   | 1 | 0.13   | 84.0 | 0.45    |
| 6 | ADDHYD | 4 | 12  | 1 | 2 |        |      |         |
| 6 | RUNOFF | 1 | 11  |   | 2 | 0.25   | 84.0 | 0.53    |
| 6 | REACH  | 3 | 108 | 2 | 1 | 3200.0 | 0.4  | 1.6     |
| 6 | ADDHYD | 4 | 12  | 1 | 3 |        |      |         |
| 6 | RUNOFF | 1 | 6   |   | 1 | 0.23   | 85.0 | 0.25    |
| 6 | REACH  | 3 | 107 | 1 | 3 | 3400.0 | 0.4  | 1.6     |
| 6 | ADDHYD | 4 | 12  | 3 | 2 |        |      |         |
| 6 | RUNOFF | 1 | 10  |   | 2 | 0.11   | 83.0 | 0.35    |
| 6 | REACH  | 3 | 109 | 2 | 3 | 3800.0 | 0.6  | 1.6     |
| 6 | ADDHYD | 4 | 12  | 3 | 1 |        |      | 1 1 1 1 |
| 6 | REACH  | 3 | 104 | 2 | 3 | 1800.0 | 0.2  | 1.6     |
| 6 | RUNOFF | 1 | 4   |   | 2 | 0.14   | 93.0 | 0.24    |
| 6 | ADDHYD | 4 | 4   | 2 | 3 |        |      |         |
| 6 | REACH  | 3 | 103 | 1 | 2 | 1400.0 | 0.2  | 1.6     |
| 6 | RUNOFF | 1 | 3   |   | 1 | 0.16   | 93.0 | 0.48    |
| 6 | ADDHYD | 4 | 3   | 1 | 2 |        |      |         |
| 6 | RUNOFF | 1 | 5   |   | 2 | 0.23   | 90.0 | 0.08    |
| 6 | REACH  | 3 | 105 | 2 | 4 | 3800.0 | .6   | 1.6     |

\*\*\*\*\*B0-B0 LIST OF INPUT DATA (CONTINUED)\*\*\*\*\*

|   |        |   |     |   |   |        |      |      |
|---|--------|---|-----|---|---|--------|------|------|
| 6 | ADDHYD | 4 | 3   | 3 | 4 |        |      |      |
| 6 | REACH  | 3 | 102 | 2 | 3 | 3300.0 | 0.1  | 1.7  |
| 6 | RUNOFF | 1 | 2   |   | 4 | 0.31   | 93.0 | 0.04 |
| 6 | ADDHYD | 4 | 2   | 3 | 4 |        |      |      |
| 6 | REACH  | 3 | 101 | 2 | 1 | 1850.0 | 0.2  | 1.7  |
| 6 | RUNOFF | 1 | 1   |   | 4 | 0.19   | 93.0 | 0.46 |





|    |         |         |         |         |         |
|----|---------|---------|---------|---------|---------|
| 2  | 1774.00 | 1740.00 | 1706.00 | 1672.00 | 1638.00 |
| 3  | 2045.00 | 2031.00 | 2017.00 | 2003.00 | 1989.00 |
| 4  | 2038.00 | 2024.00 | 2010.00 | 1996.00 | 1982.00 |
| 5  | 1987.00 | 1973.00 | 1959.00 | 1945.00 | 1931.00 |
| 6  | 1910.00 | 1896.00 | 1882.00 | 1868.00 | 1854.00 |
| 7  | 1774.00 | 1740.00 | 1706.00 | 1672.00 | 1638.00 |
| 8  | 1597.00 | 1583.00 | 1569.00 | 1555.00 | 1541.00 |
| 9  | 1398.00 | 1384.00 | 1370.00 | 1356.00 | 1342.00 |
| 10 | 1103.00 | 1089.00 | 1075.00 | 1061.00 | 1047.00 |
| 11 | 1035.00 | 1021.00 | 1007.00 | 993.00  | 979.00  |

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

|    |        |        |        |        |        |
|----|--------|--------|--------|--------|--------|
| 1  | 905.00 | 887.00 | 868.00 | 847.00 | 828.00 |
| 2  | 811.00 | 794.00 | 775.00 | 763.00 | 749.00 |
| 3  | 736.00 | 720.00 | 711.00 | 700.00 | 688.00 |
| 4  | 678.00 | 667.00 | 656.00 | 645.00 | 633.00 |
| 5  | 625.00 | 616.00 | 606.00 | 597.00 | 588.00 |
| 6  | 580.00 | 572.00 | 564.00 | 556.00 | 549.00 |
| 7  | 542.00 | 535.00 | 528.00 | 522.00 | 516.00 |
| 8  | 510.00 | 503.00 | 499.00 | 494.00 | 489.00 |
| 9  | 484.00 | 480.00 | 475.00 | 471.00 | 467.00 |
| 10 | 463.00 | 459.00 | 455.00 | 452.00 | 448.00 |
| 11 | 445.00 | 442.00 | 438.00 | 435.00 | 432.00 |
| 12 | 429.00 | 425.00 | 421.00 | 417.00 | 413.00 |
| 13 | 408.00 | 404.00 | 399.00 | 394.00 | 390.00 |
| 14 | 385.00 | 381.00 | 377.00 | 373.00 | 369.00 |
| 15 | 365.00 | 362.00 | 358.00 | 355.00 | 351.00 |
| 16 | 346.00 | 343.00 | 342.00 | 339.00 | 337.00 |
| 17 | 334.00 | 331.00 | 328.00 | 325.00 | 323.00 |
| 18 | 320.00 | 317.00 | 315.00 | 313.00 | 311.00 |

9 ENDTBL

7 LIST

7 INCREM 6 .083 5-MIN

7 COMPUT 7 37 1 0. 3.0 1.0 1 2 01 01 10YR

ENDCMP 1

ENDJOB 2

\*\*\*\*\*END OF SO-80 LIST\*\*\*\*\*

1

TR20 XEG 5/14/93 10:42 LOWER SAND CREEK FUT CONDITION JOB 1 PAGE 1  
REV PD/09/93 24 HR TYPE IIA STORM (10 YR AMC=2) FILE NAME D24FU10.DAT PAGE 1

FILE NO. 1

0

COMPUTER PROGRAM FOR PROJECT FORMULATION - HYDROLOGY USER NOTES

THE USER'S MANUAL FOR THIS PROGRAM IS THE MAY 1982 DRAFT OF TR-20. CHANGES FROM THE 2/14/74 VERSION INCLUDE:

REACH ROUTING - THE MODIFIED ATT-KIN ROUTING PROCEDURE REPLACES THE CONVEX METHOD. INPUT DATA PREPARED FOR PREVIOUS PROGRAM VERSIONS USING CONVEX ROUTING COEFFICIENTS WILL NOT RUN ON THIS VERSION.

THE PREFERRED TYPE OF DATA ENTRY IS CROSS SECTION DATA REPRESENTATIVE OF A REACH. IT IS RECOMMENDED THAT THE OPTIONAL CROSS SECTION DISCHARGE-AREA PLOTS BE OBTAINED WHENEVER NEW CROSS SECTION DATA IS ENTERED. THE PLOTS SHOULD BE CHECKED FOR REASONABLENESS AND ADEQUACY OF INPUT DATA FOR THE COMPUTATION OF "K" VALUES USED IN THE ROUTING PROCEDURE.

GUIDELINES FOR DETERMINING OR ANALYZING REACH LENGTHS AND COEFFICIENTS (X,K) ARE AVAILABLE IN THE USER'S MANUAL. SUMMARY TABLE 2 DISPLAYS REACH ROUTING RESULTS AND ROUTING PARAMETERS FOR COMPARISON AND CHECKING.

HYDROGRAPHS ARE STILL INTERPOLATED, PRINTED, AND ROUTED AT THE USER SELECTED MAIN TIME INCREMENT.

INTERMEDIATE PEAKS - METHOD ADDED TO PROVIDE DISCHARGES AT INTERMEDIATE POINTS WITHIN REACHES WITHOUT ROUTING.

OTHER - THIS VERSION CONTAINS SOME ADDITIONS TO THE INPUT AND NUMEROUS MODIFICATIONS TO THE OUTPUT. USER OPTIONS HAVE BEEN MODIFIED AND AUGMENTED ON THE JOB RECORD, RAINTABLES ADDED, ERROR AND WARNING MESSAGES EXPANDED, AND THE SUMMARY TABLE COMPLETELY REVISED. THE HOLDOUT OPTION IS NOT OPERATIONAL AT THIS TIME.

PROGRAM QUESTIONS OR PROBLEMS SHOULD BE DIRECTED TO HYDRAULIC ENGINEERS AT THE SEE NATIONAL TECHNICAL CENTERS:

CHESTER, PA (NORTHEAST) -- 610-491-3500, FORT WORTH, TX (SOUTH) -- 817-334-5242 (FTB)  
 LINCOLN, NE (MIDWEST) -- 402-475-1111, PORTLAND, OR (WEST) -- 402-475-1111 (FTB)  
 OR HYDROLOGY UNIT, ENGINEERING DIVISION, LAMARCA, MO -- 402-7383 (FTB).

PROGRAM CHANGES SINCE MAY 1980:

- 10/17/82 - CORRECT PEAK RATE FACTOR FOR USER ENTERED DINKHYD
- CORRECT REACH ROUTING PEAK TRAVEL TIME PRINTED WITH FULLPRINT OPTION
- 5/02/83 - CORRECT COMPUTATIONS FOR ---
  - 1. DIVISION OF BASEFLOW IN DIVERT OPERATION
  - 2. HYDROGRAPH VOLUME SPLIT BETWEEN BASEFLOW AND ABOVE BASEFLOW
  - 3. CROSS SECTION DATA PLOTTING POSITION
  - 4. INTERMEDIATE PEAK WHEN "FROM" AREA IS LARGER THAN "THRU" AREA
  - 5. STORAGE ROUTED REACH TRAVEL TIME FOR MULTIPLE PEAK HYDROGRAPH
  - 6. ORDERING "FLOW-FREQ" FILE FROM SUMMARY TABLE #3 DATA
  - 7. BASEFLOW ENTERED WITH REACHHYD
  - 8. LOW FLOW SPLIT DURING DIVERT PROCEDURE #2 WHEN SECTION RATINGS START AT DIFFERENT ELEVATIONS
- EN-AMENDMENTS ---
  - 1. REPLACE USER MANUAL ERROR CODES (PAGE 4-9 TO 4-11) WITH MESSAGES
  - 2. LABEL OUTPUT HYDROGRAPH FILES WITH CROSS SECTION/STRUCTURE, ALTERNATE AND STORM NO'S
- 09/01/83 - CORRECT INPUT AND OUTPUT ERRORS FOR INTERMEDIATE PEAKS
- CORRECT COMBINATION OF RATING TABLES FOR DIVERT
- CHECK REACH ROUTING PARAMETERS FOR ACCEPTABLE LIMITS
- ELIMINATE MINIMUM REACH TRAVEL TIME WHEN ATT-KIN COEFFICIENT EQUALS ONE

EXECUTIVE CONTROL OPERATION INCREM  
 MAIN TIME INCREMENT = .08 HOURS  
 RECORD ID 5-KIN

EXECUTIVE CONTROL OPERATION OUTPUT  
 FROM XSECTION 37  
 TO STRUCTURE 1  
 STARTING TIME = .01 RAIN DEPTH = 3.00 RAIN DURATION = 1.00 RAIN TABLE NO. = 1 ANT. MOIST. COND = 2  
 ALTERNATE NO. = 1 STORM NO. = 1 MAIN TIME INCREMENT = .08 HOURS  
 RECORD ID 10YR

\*\*\* WARNING REACH 138 ATT-KIN COEFF.(C) GREATER THAN 0.647, CONSIDER REDUCING MAIN TIME INCREMENT \*\*\*  
 \*\*\* WARNING REACH 149 ATT-KIN COEFF.(C) GREATER THAN 0.647, CONSIDER REDUCING MAIN TIME INCREMENT \*\*\*

OPERATION: ALOHYD STRUCTURE 45

| PEAK TIME(HRS) | PEAK DISCHARGE(CFS) | PEAK ELEVATION(FEET) |
|----------------|---------------------|----------------------|
| 5.74           | 6874.82             | (NULL)               |
| 11.26          | 415.97              | (NULL)               |
| 12.17          | 376.23              | (NULL)               |
| 13.99          | 253.00              | (NULL)               |
| 15.98          | 7.43                | (NULL)               |
| 16.91          | 3.31                | (NULL)               |
| 17.00          | 0.00                | (NULL)               |



| ALTERNATE    | 1      | STORY | 2 |   |     |    |      |       |      |     |      |          |        |
|--------------|--------|-------|---|---|-----|----|------|-------|------|-----|------|----------|--------|
| XSECTION 37  | RUNOFF | .10   | 1 | 2 | .08 | .0 | 3.00 | 24.00 | 1.58 | --- | 5.01 | 344.84   | 1486.4 |
| XSECTION 138 | REACH  | .10   | 1 | 2 | .08 | .0 | 3.00 | 24.00 | 1.58 | --- | 5.11 | 340.70   | 1481.4 |
| XSECTION 38  | RUNOFF | .09   | 1 | 2 | .08 | .0 | 3.00 | 24.00 | 1.57 | --- | 5.02 | 339.76   | 1481.3 |
| STRUCTURE 38 | ADDHYD | .32   | 1 | 2 | .08 | .0 | 3.00 | 24.00 | 1.61 | --- | 5.08 | 354.61   | 1480.7 |
| XSECTION 49  | RUNOFF | .01   | 1 | 2 | .01 | .0 | 3.00 | 24.00 | 1.58 | --- | 5.15 | 15.80    | 1636.0 |
| STRUCTURE 49 | ADDHYD | .03   | 1 | 2 | .08 | .0 | 3.00 | 24.00 | 1.61 | --- | 5.01 | 412.04   | 1412.3 |
| XSECTION 149 | REACH  | .33   | 1 | 2 | .18 | .0 | 3.00 | 24.00 | 1.61 | --- | 5.06 | 463.04   | 1412.7 |
| STRUCTURE 49 | ADDHYD | 16.37 | 1 | 2 | .08 | .0 | 3.00 | 24.00 | 1.64 | --- | 5.06 | 6770.80  | 400.0  |
| XSECTION 139 | REACH  | 16.37 | 1 | 2 | .08 | .0 | 3.00 | 24.00 | 1.64 | --- | 5.01 | 654.12   | 735.1  |
| XSECTION 39  | ADDHYD | .34   | 1 | 2 | .01 | .0 | 3.00 | 24.00 | 2.07 | --- | 6.14 | 527.69   | 1407.0 |
| STRUCTURE 39 | ADDHYD | 16.51 | 1 | 2 | .08 | .0 | 3.00 | 24.00 | 1.65 | --- | 5.01 | 6784.68  | 400.7  |
| XSECTION 133 | RUNOFF | .11   | 1 | 2 | .08 | .0 | 3.00 | 24.00 | 1.67 | --- | 6.23 | 67.01    | 538.8  |
| STRUCTURE 35 | ADDHYD | 16.73 | 1 | 2 | .08 | .0 | 3.00 | 24.00 | 1.65 | --- | 5.93 | 6775.20  | 400.0  |
| XSECTION 34  | RUNOFF | .13   | 1 | 2 | .08 | .0 | 3.00 | 24.00 | 1.69 | --- | 6.00 | 167.63   | 1440.3 |
| XSECTION 133 | REACH  | .13   | 1 | 2 | .08 | .0 | 3.00 | 24.00 | 1.69 | --- | 6.24 | 163.34   | 1431.6 |
| STRUCTURE 35 | ADDHYD | 16.86 | 1 | 2 | .08 | .0 | 3.00 | 24.00 | 1.65 | --- | 5.93 | 6817.98  | 404.4  |
| XSECTION 132 | REACH  | 16.86 | 1 | 2 | .09 | .0 | 3.00 | 24.00 | 1.65 | --- | 5.93 | 6817.56  | 404.4  |
| XSECTION 32  | RUNOFF | .18   | 1 | 2 | .08 | .0 | 3.00 | 24.00 | 1.66 | --- | 6.15 | 305.46   | 1105.2 |
| STRUCTURE 32 | ADDHYD | 17.14 | 1 | 2 | .08 | .0 | 3.00 | 24.00 | 1.66 | --- | 5.97 | 6976.79  | 407.0  |
| XSECTION 130 | REACH  | 17.14 | 1 | 2 | .08 | .0 | 3.00 | 24.00 | 1.66 | --- | 5.97 | 6976.79  | 407.0  |
| XSECTION 30  | RUNOFF | .15   | 1 | 2 | .08 | .0 | 3.00 | 24.00 | 1.77 | --- | 5.94 | 700.74   | 2015.6 |
| STRUCTURE 30 | ADDHYD | 17.26 | 1 | 2 | .08 | .0 | 3.00 | 24.00 | 1.67 | --- | 5.95 | 7270.07  | 420.7  |
| XSECTION 31  | RUNOFF | .25   | 1 | 2 | .08 | .0 | 3.00 | 24.00 | 1.66 | --- | 6.10 | 307.27   | 1229.1 |
| STRUCTURE 30 | ADDHYD | 17.54 | 1 | 2 | .08 | .0 | 3.00 | 24.00 | 1.67 | --- | 5.96 | 7512.93  | 428.3  |
| XSECTION 128 | REACH  | 17.54 | 1 | 2 | .08 | .0 | 3.00 | 24.00 | 1.67 | --- | 5.96 | 7512.93  | 428.3  |
| XSECTION 28  | RUNOFF | .09   | 1 | 2 | .08 | .0 | 3.00 | 24.00 | 2.23 | --- | 5.94 | 177.50   | 2218.7 |
| STRUCTURE 28 | ADDHYD | 17.62 | 1 | 2 | .08 | .0 | 3.00 | 24.00 | 1.69 | --- | 5.96 | 7687.86  | 433.3  |
| XSECTION 29  | RUNOFF | .16   | 1 | 2 | .08 | .0 | 3.00 | 24.00 | 2.23 | --- | 6.04 | 293.90   | 1836.9 |
| XSECTION 129 | REACH  | .16   | 1 | 2 | .08 | .0 | 3.00 | 24.00 | 2.23 | --- | 6.04 | 293.90   | 1836.9 |
| STRUCTURE 28 | ADDHYD | 17.78 | 1 | 2 | .08 | .0 | 3.00 | 24.00 | 1.69 | --- | 5.96 | 7939.63  | 447.7  |
| XSECTION 127 | REACH  | 17.78 | 1 | 2 | .08 | .0 | 3.00 | 24.00 | 1.69 | --- | 6.03 | 7926.23  | 445.7  |
| STRUCTURE 27 | ADDHYD | 22.82 | 1 | 2 | .08 | .0 | 3.00 | 24.00 | 1.62 | --- | 6.01 | 10867.83 | 474.2  |

1

TR20 X25 5/14/93 10:42 LOWER SAND CREEK FBT CONDITION 105 1 SUMMARY  
REV PD/09/83 24 HR TYPE IIA STORM (10 YR AMC=2) FILE NAME D24FU10.DAT PAGE 36

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/<br>STRUCTURE<br>ID | STANDARD<br>CONTROL<br>OPERATION | RAIN<br>DRAINAGE<br>AREA<br>(60 AC) | RAIN<br>TABLE<br># | AMTSO<br>MOIST<br>CONT | RAIN<br>TIME<br>INCRM<br>(HR) | PRECIPITATION |                |                  | RUNOFF<br>AMOUNT<br>(IN) | PEAK DISCHARGE    |              |               |               |  |
|-----------------------------|----------------------------------|-------------------------------------|--------------------|------------------------|-------------------------------|---------------|----------------|------------------|--------------------------|-------------------|--------------|---------------|---------------|--|
|                             |                                  |                                     |                    |                        |                               | BEGBH<br>(65) | AMOUNT<br>(IN) | DURATION<br>(HR) |                          | ELEVATION<br>(FT) | TIME<br>(HR) | RATE<br>(CFS) | RATE<br>(CFS) |  |
| ALTERNATE 1 STORY 2         |                                  |                                     |                    |                        |                               |               |                |                  |                          |                   |              |               |               |  |
| XSECTION 27                 | RUNOFF                           | .10                                 | 1                  | 2                      | .08                           | .0            | 3.00           | 24.00            | 2.06                     | ---               | 5.95         | 210.88        | 2109.3        |  |
| STRUCTURE 27                | ADDHYD                           | 21.92                               | 1                  | 2                      | .08                           | .0            | 3.00           | 24.00            | 1.63                     | ---               | 6.01         | 11169.90      | 481.8         |  |
| XSECTION 26                 | RUNOFF                           | .11                                 | 1                  | 2                      | .08                           | .0            | 3.00           | 24.00            | 2.06                     | ---               | 6.52         | 92.44         | 541.2         |  |

|              |        |       |   |   |     |    |      |       |      |     |      |          |        |
|--------------|--------|-------|---|---|-----|----|------|-------|------|-----|------|----------|--------|
| XSECTION 26  | RUNOFF | .76   | 1 | 2 | .08 | .0 | 3.00 | 24.00 | 1.71 | --- | 6.10 | 752.91   | 559.7  |
| STRUCTURE 26 | ADDDYD | 23.37 | 1 | 2 | .08 | .0 | 3.00 | 24.00 | 1.74 | --- | 6.15 | 10591.90 | 464.0  |
| XSECTION 24  | RUNOFF | .10   | 1 | 2 | .08 | .0 | 3.00 | 24.00 | 1.93 | --- | 6.74 | 157.87   | 1578.7 |
| STRUCTURE 25 | ADDDYD | 23.49 | 1 | 2 | .08 | .0 | 3.00 | 24.00 | 1.14 | --- | 6.15 | 10591.83 | 467.5  |
| XSECTION 121 | REACH  | 23.49 | 1 | 2 | .08 | .0 | 3.00 | 24.00 | 1.14 | --- | 6.15 | 10591.87 | 467.5  |
| XSECTION 21  | RUNOFF | .15   | 1 | 2 | .08 | .0 | 3.00 | 24.00 | 1.88 | --- | 6.94 | 288.80   | 1921.7 |
| STRUCTURE 21 | ADDDYD | 23.54 | 1 | 2 | .08 | .0 | 3.00 | 24.00 | 1.14 | --- | 6.15 | 11014.07 | 465.9  |
| XSECTION 48  | RUNOFF | .10   | 1 | 2 | .08 | .0 | 3.00 | 24.00 | 1.73 | --- | 6.24 | 161.48   | 180.8  |
| XSECTION 47  | RUNOFF | .28   | 1 | 2 | .08 | .0 | 3.00 | 24.00 | 1.65 | --- | 6.08 | 364.00   | 187.0  |
| STRUCTURE 47 | ADDDYD | .41   | 1 | 2 | .08 | .0 | 3.00 | 24.00 | 1.58 | --- | 6.07 | 418.38   | 100.3  |
| XSECTION 148 | REACH  | .41   | 1 | 2 | .08 | .0 | 3.00 | 24.00 | 1.38 | --- | 6.07 | 418.38   | 100.3  |
| XSECTION 46  | RUNOFF | .15   | 1 | 2 | .08 | .0 | 3.00 | 24.00 | 1.33 | --- | 6.18 | 121.90   | 840.0  |
| STRUCTURE 46 | ADDDYD | .56   | 1 | 2 | .08 | .0 | 3.00 | 24.00 | 1.38 | --- | 6.09 | 523.58   | 510.9  |
| XSECTION 143 | REACH  | .56   | 1 | 2 | .08 | .0 | 3.00 | 24.00 | 1.38 | --- | 6.09 | 523.58   | 510.9  |
| XSECTION 43  | RUNOFF | .27   | 1 | 2 | .08 | .0 | 3.00 | 24.00 | 1.25 | --- | 6.20 | 193.72   | 717.5  |
| STRUCTURE 43 | ADDDYD | .57   | 1 | 2 | .08 | .0 | 3.00 | 24.00 | 1.33 | --- | 6.11 | 659.23   | 542.4  |
| XSECTION 144 | REACH  | .57   | 1 | 2 | .08 | .0 | 3.00 | 24.00 | 1.33 | --- | 6.11 | 659.23   | 542.4  |
| XSECTION 44  | RUNOFF | .29   | 1 | 2 | .08 | .0 | 3.00 | 24.00 | 1.25 | --- | 6.26 | 187.11   | 543.2  |
| STRUCTURE 44 | ADDDYD | 1.11  | 1 | 2 | .08 | .0 | 3.00 | 24.00 | 1.31 | --- | 6.13 | 851.02   | 758.2  |
| XSECTION 143 | REACH  | 1.12  | 1 | 2 | .08 | .0 | 3.00 | 24.00 | 1.31 | --- | 6.13 | 852.86   | 749.0  |
| XSECTION 42  | RUNOFF | .20   | 1 | 2 | .08 | .0 | 3.00 | 24.00 | 1.10 | --- | 6.53 | 253.65   | 1288.4 |
| STRUCTURE 42 | ADDDYD | 1.32  | 1 | 2 | .08 | .0 | 3.00 | 24.00 | 1.28 | --- | 6.23 | 841.85   | 650.8  |
| XSECTION 142 | REACH  | 1.32  | 1 | 2 | .08 | .0 | 3.00 | 24.00 | 1.28 | --- | 6.23 | 818.99   | 620.4  |
| XSECTION 42  | RUNOFF | .28   | 1 | 2 | .08 | .0 | 3.00 | 24.00 | 1.38 | --- | 6.26 | 179.55   | 718.3  |
| STRUCTURE 42 | ADDDYD | 1.57  | 1 | 2 | .08 | .0 | 3.00 | 24.00 | 1.30 | --- | 6.34 | 991.39   | 601.5  |
| XSECTION 141 | REACH  | 1.57  | 1 | 2 | .08 | .0 | 3.00 | 24.00 | 1.30 | --- | 6.45 | 962.99   | 613.4  |
| XSECTION 41  | RUNOFF | .24   | 1 | 2 | .08 | .0 | 3.00 | 24.00 | 1.38 | --- | 6.02 | 313.93   | 1308.0 |
| STRUCTURE 41 | ADDDYD | 1.51  | 1 | 2 | .08 | .0 | 3.00 | 24.00 | 1.31 | --- | 6.45 | 997.72   | 551.2  |
| STRUCTURE 41 | ADDDYD | 26.13 | 1 | 2 | .08 | .0 | 3.00 | 24.00 | 1.24 | --- | 7.05 | 2284.15  | 86.0   |
| XSECTION 122 | REACH  | 26.13 | 1 | 2 | .08 | .0 | 3.00 | 24.00 | 1.24 | --- | 7.15 | 2282.93  | 86.2   |
| STRUCTURE 21 | ADDDYD | 49.77 | 1 | 2 | .08 | .0 | 3.00 | 24.00 | 1.19 | --- | 6.17 | 11796.71 | 237.0  |

1

TR20 XEQ 5/14/93 10:42 LOWER SAND CREEK FLT CONDITION JOB 1 SUMMARY  
REV 02/07/93 24 HR TYPE IIA STORM (10 YR AND=2) FILE NAME 024F010.DAT PAGE 27

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

| SECTION/<br>STRUCTURE<br>ID | STANDARD<br>CONTROL<br>OPERATION | DRAINAGE<br>AREA<br>(SQ MI) | RAIN<br>TABLE<br># | ANTEC<br>MOIST<br>COND | RAIN<br>TIME<br>(HR) | PRECIPITATION |                |                  | RUNOFF<br>AMOUNT<br>(IN) | PEAK DISCHARGE    |              |               |                |
|-----------------------------|----------------------------------|-----------------------------|--------------------|------------------------|----------------------|---------------|----------------|------------------|--------------------------|-------------------|--------------|---------------|----------------|
|                             |                                  |                             |                    |                        |                      | BEGIN<br>(HR) | AMOUNT<br>(IN) | DURATION<br>(HR) |                          | ELEVATION<br>(FT) | TIME<br>(HR) | RATE<br>(CFS) | DATE<br>(DDMM) |
|                             |                                  |                             |                    |                        |                      |               |                |                  |                          |                   |              |               |                |
| ALTERNATE 1 STORM 1         |                                  |                             |                    |                        |                      |               |                |                  |                          |                   |              |               |                |
| XSECTION 52                 | RUNOFF                           | .27                         | 1                  | 2                      | .08                  | .0            | 3.00           | 24.00            | 1.74                     | ---               | 6.10         | 381.93        | 1800.0         |
| XSECTION 51                 | ADDDYD                           | 50.00                       | 1                  | 2                      | .08                  | .0            | 3.00           | 24.00            | 1.85                     | ---               | 6.11         | 11575.45      | 108.0          |
| XSECTION 119                | REACH                            | 50.00                       | 1                  | 2                      | .08                  | .0            | 3.00           | 24.00            | 1.19                     | ---               | 6.11         | 11575.43      | 108.0          |
| XSECTION 50                 | RUNOFF                           | .10                         | 1                  | 2                      | .07                  | .0            | 3.00           | 24.00            | 1.83                     | ---               | 6.74         | 203.29        | 1932.0         |
| STRUCTURE 19                | ADDDYD                           | 50.00                       | 1                  | 2                      | .08                  | .0            | 3.00           | 24.00            | 1.20                     | ---               | 6.15         | 11719.35      | 108.0          |

|               |         |       |   |   |     |    |      |       |      |     |      |          |        |
|---------------|---------|-------|---|---|-----|----|------|-------|------|-----|------|----------|--------|
| XSECTION 121  | REACH   | 50.26 | 1 | 2 | .08 | .0 | 3.00 | 24.00 | 1.20 | --- | 6.13 | 12170.17 | 240.1  |
| STRUCTURE 19  | ADDDHYD | 50.26 | 1 | 2 | .08 | .0 | 3.00 | 24.00 | 1.20 | --- | 6.13 | 12170.17 | 240.1  |
| XSECTION 122  | RUNOFF  | .20   | 1 | 2 | .08 | .0 | 3.00 | 24.00 | 1.21 | --- | 6.07 | 333.65   | 1618.5 |
| STRUCTURE 123 | REACH   | .20   | 1 | 2 | .08 | .0 | 3.00 | 24.00 | 2.18 | --- | 6.21 | 333.65   | 1600.2 |
| XSECTION 124  | RUNOFF  | .70   | 1 | 2 | .08 | .0 | 3.00 | 24.00 | 1.88 | --- | 6.08 | 304.79   | 1016.6 |
| STRUCTURE 125 | ADDDHYD | .70   | 1 | 2 | .08 | .0 | 3.00 | 24.00 | 1.88 | --- | 6.09 | 613.01   | 1204.6 |
| XSECTION 126  | REACH   | .60   | 1 | 2 | .08 | .0 | 3.00 | 24.00 | 1.88 | --- | 6.20 | 603.01   | 1203.6 |
| STRUCTURE 127 | ADDDHYD | 51.76 | 1 | 2 | .08 | .0 | 3.00 | 24.00 | 1.21 | --- | 6.15 | 12662.00 | 249.4  |
| XSECTION 128  | REACH   | 50.76 | 1 | 2 | .08 | .0 | 3.00 | 24.00 | 1.21 | --- | 6.15 | 12662.00 | 249.4  |
| XSECTION 129  | RUNOFF  | .10   | 1 | 2 | .08 | .0 | 3.00 | 24.00 | 1.04 | --- | 6.94 | 222.56   | 222.6  |
| STRUCTURE 130 | ADDDHYD | 51.81 | 1 | 2 | .08 | .0 | 3.00 | 24.00 | 1.21 | --- | 6.15 | 12179.13 | 249.5  |
| XSECTION 131  | REACH   | 50.81 | 1 | 2 | .08 | .0 | 3.00 | 24.00 | 1.20 | --- | 6.15 | 12679.13 | 249.5  |
| XSECTION 132  | RUNOFF  | .15   | 1 | 2 | .08 | .0 | 3.00 | 24.00 | 1.30 | --- | 6.14 | 162.51   | 1023.4 |
| STRUCTURE 133 | ADDDHYD | 51.01 | 1 | 2 | .08 | .0 | 3.00 | 24.00 | 1.21 | --- | 6.15 | 12840.95 | 251.7  |
| XSECTION 134  | RUNOFF  | .10   | 1 | 2 | .08 | .0 | 3.00 | 24.00 | 1.93 | --- | 6.74 | 110.50   | 1123.0 |
| STRUCTURE 135 | ADDDHYD | 51.01 | 1 | 2 | .08 | .0 | 3.00 | 24.00 | 1.21 | --- | 6.15 | 12856.84 | 251.6  |
| XSECTION 136  | RUNOFF  | .23   | 1 | 2 | .08 | .0 | 3.00 | 24.00 | 2.07 | --- | 6.16 | 302.65   | 1015.8 |
| STRUCTURE 137 | ADDDHYD | 51.34 | 1 | 2 | .08 | .0 | 3.00 | 24.00 | 1.21 | --- | 6.15 | 13159.35 | 251.5  |
| XSECTION 138  | RUNOFF  | .37   | 1 | 2 | .08 | .0 | 3.00 | 24.00 | 1.89 | --- | 6.15 | 345.52   | 958.7  |
| STRUCTURE 139 | ADDDHYD | 51.74 | 1 | 2 | .08 | .0 | 3.00 | 24.00 | 1.21 | --- | 6.15 | 13522.95 | 251.5  |
| XSECTION 139  | RUNOFF  | .21   | 1 | 2 | .08 | .0 | 3.00 | 24.00 | 1.74 | --- | 6.20 | 220.41   | 1049.6 |
| XSECTION 140  | REACH   | .21   | 1 | 2 | .08 | .0 | 3.00 | 24.00 | 1.74 | --- | 6.33 | 206.63   | 993.7  |
| STRUCTURE 141 | ADDDHYD | 51.92 | 1 | 2 | .08 | .0 | 3.00 | 24.00 | 1.22 | --- | 6.16 | 13685.30 | 251.6  |
| XSECTION 142  | REACH   | 51.92 | 1 | 2 | .08 | .0 | 3.00 | 24.00 | 1.22 | --- | 6.25 | 13616.97 | 252.3  |
| XSECTION 142  | RUNOFF  | .29   | 1 | 2 | .08 | .0 | 3.00 | 24.00 | 1.62 | --- | 6.94 | 520.14   | 1793.8 |
| STRUCTURE 142 | ADDDHYD | 52.21 | 1 | 2 | .08 | .0 | 3.00 | 24.00 | 1.22 | --- | 6.25 | 13660.28 | 251.6  |
| XSECTION 143  | RUNOFF  | .11   | 1 | 2 | .08 | .0 | 3.00 | 24.00 | 2.16 | --- | 6.77 | 74.16    | 674.2  |
| STRUCTURE 143 | ADDDHYD | 52.32 | 1 | 2 | .08 | .0 | 3.00 | 24.00 | 1.22 | --- | 6.25 | 13699.00 | 251.6  |
| XSECTION 144  | RUNOFF  | .13   | 1 | 2 | .08 | .0 | 3.00 | 24.00 | 2.07 | --- | 6.11 | 190.73   | 1467.2 |
| STRUCTURE 144 | ADDDHYD | 52.45 | 1 | 2 | .08 | .0 | 3.00 | 24.00 | 1.22 | --- | 6.25 | 13854.35 | 254.1  |

1

TR20 XED 5/14/93 10:42 LOWER SAND CREEK PUT CONDITION JOB 1 SUMMARY  
REV PC/04/83 24 HR TYPE IIA STORM (10 YR AMC=2) FILE NAME D24FU10.0AT PAGE 25

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<br>STRUCTURE<br>ID | STANDARD<br>CONTROL<br>OPERATION | RAINAGE<br>AREA<br>(SQ MI) | RAIN<br>TABLE<br># | AFTER<br>MOIST<br>COND | MAIN<br>TIME<br>(HR) | PRECIPITATION |                |                  | RUNOFF<br>AMOUNT<br>(IN) | PEAK DISCHARGE    |              |               |               |
|----------------------------|----------------------------------|----------------------------|--------------------|------------------------|----------------------|---------------|----------------|------------------|--------------------------|-------------------|--------------|---------------|---------------|
|                            |                                  |                            |                    |                        |                      | BEGIN<br>(HR) | AMOUNT<br>(IN) | DURATION<br>(HR) |                          | ELEVATION<br>(FT) | TIME<br>(HR) | RATE<br>(CFS) | RATE<br>(CFS) |
|                            |                                  |                            |                    |                        |                      |               |                |                  |                          |                   |              |               |               |
| ALTERNATE 1 STORM 1        |                                  |                            |                    |                        |                      |               |                |                  |                          |                   |              |               |               |
| XSECTION 7                 | RUNOFF                           | .15                        | 1                  | 1                      | .08                  | .0            | 3.00           | 24.00            | 1.82                     | ---               | 6.17         | 155.41        | 1020.1        |
| STRUCTURE 11               | ADDDHYD                          | 51.55                      | 1                  | 2                      | .08                  | .0            | 3.00           | 24.00            | 1.22                     | ---               | 6.25         | 13970.02      | 251.7         |
| XSECTION 11                | RUNOFF                           | .20                        | 1                  | 2                      | .08                  | .0            | 3.00           | 24.00            | 1.82                     | ---               | 6.18         | 177.03        | 973.5         |
| XSECTION 12                | REACH                            | .25                        | 1                  | 2                      | .08                  | .0            | 3.00           | 24.00            | 1.82                     | ---               | 6.17         | 160.13        | 837.5         |
| STRUCTURE 12               | ADDDHYD                          | 51.80                      | 1                  | 2                      | .08                  | .0            | 3.00           | 24.00            | 1.22                     | ---               | 6.25         | 14113.12      | 251.1         |
| XSECTION 13                | RUNOFF                           | .20                        | 1                  | 1                      | .08                  | .0            | 3.00           | 24.00            | 1.85                     | ---               | 6.04         | 152.46        | 1402.6        |

|               |        |       |   |   |     |    |      |       |      |     |      |          |        |
|---------------|--------|-------|---|---|-----|----|------|-------|------|-----|------|----------|--------|
| STRUCTURE 11  | ADHYP  | 53.17 | 1 | 1 | .08 | .0 | 3.00 | 24.00 | 1.23 | --- | 6.24 | 14818.62 | 273.6  |
| XSECTION 101  | REACH  | 53.17 | 1 | 2 | .08 | .0 | 3.00 | 24.00 | 1.23 | --- | 6.24 | 14818.62 | 273.6  |
| STRUCTURE 12  | ADHYP  | 53.17 | 1 | 1 | .08 | .0 | 3.00 | 24.00 | 1.23 | --- | 6.24 | 14818.62 | 273.6  |
| XSECTION 104  | REACH  | 53.17 | 1 | 2 | .08 | .0 | 3.00 | 24.00 | 1.23 | --- | 6.24 | 14818.62 | 273.6  |
| STRUCTURE 4   | RUNOFF | .14   | 1 | 2 | .08 | .0 | 3.00 | 24.00 | 2.08 | --- | 6.01 | 268.10   | 1418.0 |
| STRUCTURE 4   | ADHYP  | 53.31 | 1 | 1 | .08 | .0 | 3.00 | 24.00 | 1.23 | --- | 6.24 | 14805.90 | 274.0  |
| XSECTION 103  | REACH  | 53.31 | 1 | 2 | .08 | .0 | 3.00 | 24.00 | 1.23 | --- | 6.24 | 14805.90 | 274.0  |
| STRUCTURE 3   | RUNOFF | .18   | 1 | 1 | .08 | .0 | 3.00 | 24.00 | 1.23 | --- | 6.17 | 248.50   | 1887.0 |
| STRUCTURE 3   | ADHYP  | 53.47 | 1 | 2 | .08 | .0 | 3.00 | 24.00 | 1.23 | --- | 6.24 | 14824.71 | 273.0  |
| STRUCTURE 5   | RUNOFF | .23   | 1 | 1 | .08 | .0 | 3.00 | 24.00 | 1.57 | --- | 6.99 | 458.51   | 1983.0 |
| XSECTION 105  | REACH  | .23   | 1 | 2 | .08 | .0 | 3.00 | 24.00 | 1.36 | --- | 6.04 | 424.59   | 1948.0 |
| STRUCTURE 3   | ADHYP  | 53.70 | 1 | 2 | .08 | .0 | 3.00 | 24.00 | 1.24 | --- | 6.25 | 14868.01 | 278.0  |
| STRUCTURE 101 | REACH  | 53.70 | 1 | 2 | .08 | .0 | 3.00 | 24.00 | 1.24 | --- | 6.25 | 14868.01 | 278.0  |
| STRUCTURE 2   | RUNOFF | .31   | 1 | 2 | .08 | .0 | 3.00 | 24.00 | 2.21 | --- | 8.94 | 718.88   | 2311.0 |
| STRUCTURE 2   | ADHYP  | 54.01 | 1 | 2 | .08 | .0 | 3.00 | 24.00 | 1.24 | --- | 6.25 | 14821.75 | 278.0  |
| XSECTION 101  | REACH  | 54.01 | 1 | 2 | .08 | .0 | 3.00 | 24.00 | 1.24 | --- | 6.25 | 14821.75 | 278.0  |
| STRUCTURE 1   | RUNOFF | .19   | 1 | 2 | .08 | .0 | 3.00 | 24.00 | 1.25 | --- | 6.15 | 192.87   | 1541.0 |
| STRUCTURE 1   | ADHYP  | 54.20 | 1 | 2 | .08 | .0 | 3.00 | 24.00 | 1.25 | --- | 6.25 | 14867.28 | 282.0  |

1

TR20 SED 5/14/93 10:42 LOWER SAND CREEK FUT CONDITION JOB: 1 SUMMARY  
REV 03/09/93 24 HR TYPE IIA STORM (10 HR AMC=2) FILE NAME 2247U10.047 PAGE: 23

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  |       |        |       |       |
|------------------------|--------|------|-------|------|-------|------|-------|------|------|--------------------|------|--------|----------|---------|-------|-------|--------|-------|-------|
| OUTFLOW*               |        |      |       |      |       |      |       |      |      | VOLUME             | RAIN | ITER-  | G AND A  | PEAK    | S/D   | ATT-  | TRAVE. | TIME  |       |
| INFLOW                 |        |      |       |      |       |      |       |      |      | ABOVE              | TIME | ACTION | EQUATION | LENGTH- | RATIO | SPEAK | MIN    | STOR- | TIME- |
| REACH                  | LENGTH | PEAK | TIME  | PEAK | TIME  | PEAK | TIME  | FLOW | BASE | INCR               | #    | COEFF  | POWER    | FACTOR  | O/I   | (K)   | COEFF  | AGE   | KATIO |
| (FT)                   | (CFS)  | (HR) | (CFS) | (HR) | (CFS) | (HR) | (CFS) | (IN) | (IN) | (HR)               |      | (X)    | (X)      | (X)     | (%)   | (SEC) | (C)    | (HR)  | (HR)  |
| ALTERNATE 1 STORM 1    |        |      |       |      |       |      |       |      |      |                    |      |        |          |         |       |       |        |       |       |
| +138                   | 2600   | 303  | 6.1   | 328  | 6.1   |      |       | 0    | 1.59 | .08                | 1    | 1.90   | 1.47     | .035    | .958  | 178   | .817   | .68   | .01   |
| +144                   | 1      | 466  | 6.1   | 466  | 6.1   |      |       | 0    | 1.81 | .08                | 0    | 1.400  | 1.00     | .001    | 1.000 | 3     | 1.000  | .00   | .01   |
| +135                   | 4300   | 6785 | 5.7   | 1823 | 5.9   |      |       | 0    | 1.14 | .08                | 1    | 1.100  | 1.65     | .017    | .962  | 726   | .10    | .10   | .05   |
| +132                   | 1300   | 183  | 6.1   | 183  | 6.2   |      |       | 0    | 1.59 | .00                | 1    | 1.300  | 1.50     | .167    | .845  | 507   | .04    | .03   | .10   |
| +132                   | 2300   | 6783 | 5.9   | 1763 | 5.9   |      |       | 0    | 1.15 | .08                | 0    | 1.300  | 1.60     | .005    | 1.000 | 144   | 1.000  | .00   | .00   |
|                        |        |      |       |      |       |      |       |      |      | 1.500              |      |        |          |         |       |       |        |       |       |

[illegible]



## SUMMARY

REV PC/09/83

24 HR TYPE IIA STORM (10-YR AMC=2) FILE NAME D24FU10.DAT

PAGE 33

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

| XSECTION/<br>STRUCTURE<br>ID | DRAINAGE<br>AREA<br>(SQ MI) | STORM NUMBERS..... |
|------------------------------|-----------------------------|--------------------|
|                              | 1                           |                    |

0 STRUCTURE 49 16.37

+

ALTERNATE 1 6581.30

0 STRUCTURE 47 .39

+

ALTERNATE 1 287.68

0 STRUCTURE 46 .55

+

ALTERNATE 1 447.53

0 STRUCTURE 45 .82

+

ALTERNATE 1 652.69

0 STRUCTURE 44 1.11

+

ALTERNATE 1 963.78

0 STRUCTURE 43 1.31

+

ALTERNATE 1 976.47

0 STRUCTURE 42 1.56

+

ALTERNATE 1 1195.12

0 STRUCTURE 41 26.12

+

ALTERNATE 1 2384.73

0 STRUCTURE 38 .32

+

ALTERNATE 1 421.21

0 STRUCTURE 36 50.79

+

ALTERNATE 1 10864.46

0 STRUCTURE 35 16.86

+

ALTERNATE 1 6758.16

0 STRUCTURE 32 17.14

+

ALTERNATE 1 6991.84

0 STRUCTURE 30 17.54

+

ALTERNATE 1 7184.22

0 STRUCTURE 28 17.62

|   |             |         |
|---|-------------|---------|
| + | <hr/>       |         |
|   | ALTERNATE 1 | 7198.55 |
| 1 |             |         |

TR20 XEQ 2/ 3/92 16:37 LOWER SAND CREEK -- FUTURE CONDITION

JOB 1

SUMMARY

REV PC/09/83

24 HR TYPE IIA STORM (10-YR AMC=2) FILE NAME D24FU10.DAT

PAGE 34

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

| XSECTION/<br>STRUCTURE<br>ID | DRAINAGE<br>AREA<br>(SQ MI) | STORM NUMBERS.....<br>1 |
|------------------------------|-----------------------------|-------------------------|
| 0 STRUCTURE 27               | 23.03                       |                         |
| +                            | <hr/>                       |                         |
| ALTERNATE 1                  | 8793.29                     |                         |
| 0 STRUCTURE 25               | 23.49                       |                         |
| +                            | <hr/>                       |                         |
| ALTERNATE 1                  | 8506.89                     |                         |
| 0 STRUCTURE 21               | 49.76                       |                         |
| +                            | <hr/>                       |                         |
| ALTERNATE 1                  | 10521.35                    |                         |
| 0 STRUCTURE 19               | 50.69                       |                         |
| +                            | <hr/>                       |                         |
| ALTERNATE 1                  | 10836.41                    |                         |
| 0 STRUCTURE 18               | .44                         |                         |
| +                            | <hr/>                       |                         |
| ALTERNATE 1                  | 542.33                      |                         |
| 0 STRUCTURE 15               | 51.85                       |                         |
| +                            | <hr/>                       |                         |
| ALTERNATE 1                  | 11288.43                    |                         |
| 0 STRUCTURE 12               | 53.10                       |                         |
| +                            | <hr/>                       |                         |
| ALTERNATE 1                  | 11610.27                    |                         |
| 0 STRUCTURE 4                | 53.24                       |                         |
| +                            | <hr/>                       |                         |
| ALTERNATE 1                  | 11631.63                    |                         |
| 0 STRUCTURE 3                | 53.63                       |                         |
| +                            | <hr/>                       |                         |
| ALTERNATE 1                  | 11719.65                    |                         |
| 0 STRUCTURE 2                | 53.94                       |                         |
| +                            | <hr/>                       |                         |
| ALTERNATE 1                  | 11753.01                    |                         |
| 0 STRUCTURE 1                | 54.13                       |                         |
| +                            | <hr/>                       |                         |
| ALTERNATE 1                  | 11820.62                    |                         |
| 0 XSECTION 1                 | .19                         |                         |

|            |   |        |
|------------|---|--------|
| +          |   |        |
| ALTERNATE  | 1 | 292.87 |
| 0 XSECTION | 2 | .31    |
| +          |   |        |
| ALTERNATE  | 1 | 716.58 |
| 0 XSECTION | 3 | .16    |
| +          |   |        |
| ALTERNATE  | 1 | 248.53 |
| 1          |   |        |

TR20 XEQ 2/ 3/92 16:37 LOWER SAND CREEK -- FUTURE CONDITION JOB 1  
SUMMARY  
REV PC/09/83 24 HR TYPE IIA STORM (10-YR AMC=2) FILE NAME D24FU10.DAT  
PAGE 35

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

| XSECTION/<br>STRUCTURE<br>ID | DRAINAGE<br>AREA<br>(SQ MI) | STORM NUMBERS.....<br>1 |
|------------------------------|-----------------------------|-------------------------|
| 0 XSECTION 4 .14             |                             |                         |
| +                            |                             |                         |
| ALTERNATE                    | 1                           | 268.10                  |
| 0 XSECTION                   | 5                           | .23                     |
| +                            |                             |                         |
| ALTERNATE                    | 1                           | 458.54                  |
| 0 XSECTION                   | 6                           | .23                     |
| +                            |                             |                         |
| ALTERNATE                    | 1                           | 322.46                  |
| 0 XSECTION                   | 7                           | .13                     |
| +                            |                             |                         |
| ALTERNATE                    | 1                           | 133.45                  |
| 0 XSECTION                   | 8                           | .11                     |
| +                            |                             |                         |
| ALTERNATE                    | 1                           | 74.16                   |
| 0 XSECTION                   | 9                           | .13                     |
| +                            |                             |                         |
| ALTERNATE                    | 1                           | 190.73                  |
| 0 XSECTION                   | 10                          | .11                     |
| +                            |                             |                         |
| ALTERNATE                    | 1                           | 120.58                  |
| 0 XSECTION                   | 11                          | .25                     |
| +                            |                             |                         |
| ALTERNATE                    | 1                           | 233.83                  |
| 0 XSECTION                   | 12                          | .29                     |
| +                            |                             |                         |
| ALTERNATE                    | 1                           | 520.14                  |
| 0 XSECTION                   | 13                          | .37                     |

|            |    |        |
|------------|----|--------|
| +          |    |        |
| ALTERNATE  | 1  | 365.82 |
| 0 XSECTION | 14 | .23    |
| +          |    |        |
| ALTERNATE  | 1  | 302.65 |
| 0 XSECTION | 15 | .10    |
| +          |    |        |
| ALTERNATE  | 1  | 212.50 |
| 0 XSECTION | 16 | .15    |
| +          |    |        |
| ALTERNATE  | 1  | 162.51 |
| 0 XSECTION | 17 | .21    |
| +          |    |        |
| ALTERNATE  | 1  | 220.41 |
| 1          |    |        |

TR20 XEQ 2/3/92 16:37 LOWER SAND CREEK -- FUTURE CONDITION

JOB 1

SUMMARY

REV PC/09/83 24 HR TYPE IIA STORM (10-YR AMC=2) FILE NAME D24FU10.DAT  
PAGE 36

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

| XSECTION/<br>STRUCTURE<br>ID | DRAINAGE<br>AREA<br>(SQ MI) | STORM NUMBERS..... |
|------------------------------|-----------------------------|--------------------|
|                              |                             | 1                  |

|            |    |          |
|------------|----|----------|
| 0 XSECTION | 18 | .24      |
| +          |    |          |
| ALTERNATE  | 1  | 243.99   |
| 0 XSECTION | 19 | .13      |
| +          |    |          |
| ALTERNATE  | 1  | 238.20   |
| 0 XSECTION | 20 | .13      |
| +          |    |          |
| ALTERNATE  | 1  | 190.03   |
| 0 XSECTION | 21 | 49.99    |
| +          |    |          |
| ALTERNATE  | 1  | 10556.69 |
| 0 XSECTION | 22 | .23      |
| +          |    |          |
| ALTERNATE  | 1  | 368.47   |
| 0 XSECTION | 23 | .20      |
| +          |    |          |
| ALTERNATE  | 1  | 335.65   |
| 0 XSECTION | 24 | .10      |
| +          |    |          |
| ALTERNATE  | 1  | 167.67   |
| 0 XSECTION | 25 | .36      |

|            |    |        |
|------------|----|--------|
| +          |    |        |
| ALTERNATE  | 1  | 352.98 |
| 0 XSECTION | 26 | .11    |
| +          |    |        |
| ALTERNATE  | 1  | 92.46  |
| 0 XSECTION | 27 | .10    |
| +          |    |        |
| ALTERNATE  | 1  | 210.98 |
| 0 XSECTION | 28 | .08    |
| +          |    |        |
| ALTERNATE  | 1  | 177.50 |
| 0 XSECTION | 29 | .16    |
| +          |    |        |
| ALTERNATE  | 1  | 293.90 |
| 0 XSECTION | 30 | .15    |
| +          |    |        |
| ALTERNATE  | 1  | 302.34 |
| 0 XSECTION | 31 | .25    |
| +          |    |        |
| ALTERNATE  | 1  | 292.79 |
| 1          |    |        |

TR20 XEQ 2/ 3/92 16:37 LOWER SAND CREEK -- FUTURE CONDITION

JOB 1

SUMMARY

REV PC/09/83 24 HR TYPE IIA STORM (10-YR AMC=2) FILE NAME D24FU10.DAT  
PAGE 37

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

| XSECTION/<br>STRUCTURE<br>ID | DRAINAGE<br>AREA<br>(SQ MI) | STORM NUMBERS..... |
|------------------------------|-----------------------------|--------------------|
|                              |                             | 1                  |

|            |    |        |
|------------|----|--------|
| 0 XSECTION | 32 | .28    |
| +          |    |        |
| ALTERNATE  | 1  | 309.46 |
| 0 XSECTION | 33 | .12    |
| +          |    |        |
| ALTERNATE  | 1  | 67.02  |
| 0 XSECTION | 34 | .13    |
| +          |    |        |
| ALTERNATE  | 1  | 187.63 |
| 0 XSECTION | 35 | .24    |
| +          |    |        |
| ALTERNATE  | 1  | 337.69 |
| 0 XSECTION | 36 | .10    |
| +          |    |        |
| ALTERNATE  | 1  | 222.36 |
| 0 XSECTION | 37 | .23    |

|            |    |        |
|------------|----|--------|
| +          |    |        |
| ALTERNATE  | 1  | 344.64 |
| 0 XSECTION | 38 | .09    |
| +          |    |        |
| ALTERNATE  | 1  | 161.42 |
| 0 XSECTION | 41 | .24    |
| +          |    |        |
| ALTERNATE  | 1  | 459.56 |
| 0 XSECTION | 42 | .25    |
| +          |    |        |
| ALTERNATE  | 1  | 360.01 |
| 0 XSECTION | 43 | .20    |
| +          |    |        |
| ALTERNATE  | 1  | 372.28 |
| 0 XSECTION | 44 | .29    |
| +          |    |        |
| ALTERNATE  | 1  | 311.11 |
| 0 XSECTION | 45 | .27    |
| +          |    |        |
| ALTERNATE  | 1  | 205.88 |
| 0 XSECTION | 46 | .16    |
| +          |    |        |
| ALTERNATE  | 1  | 159.90 |
| 0 XSECTION | 47 | .26    |
| +          |    |        |
| ALTERNATE  | 1  | 266.48 |
| 1          |    |        |

TR20 XEQ .2/ 3/92 16:37 LOWER SAND CREEK -- FUTURE CONDITION

JOB 1

SUMMARY

REV PC/09/83 24 HR TYPE IIA STORM (10-YR AMC=2) FILE NAME D24FU10.DAT  
PAGE 38

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

| XSECTION/<br>STRUCTURE<br>ID | DRAINAGE<br>AREA<br>(SQ MI) | STORM NUMBERS..... |
|------------------------------|-----------------------------|--------------------|
|                              | 1                           |                    |

|            |     |          |
|------------|-----|----------|
| 0 XSECTION | 48  | .13      |
| +          |     |          |
| ALTERNATE  | 1   | 35.23    |
| 0 XSECTION | 49  | .01      |
| +          |     |          |
| ALTERNATE  | 1   | .64      |
| 0 XSECTION | 101 | 53.94    |
| +          |     |          |
| ALTERNATE  | 1   | 11753.01 |
| 0 XSECTION | 102 | 53.63    |

|            |     |          |
|------------|-----|----------|
| +          |     |          |
| ALTERNATE  | 1   | 11719.65 |
| 0 XSECTION | 103 | 53.24    |
| +          |     |          |
| ALTERNATE  | 1   | 11631.63 |
| 0 XSECTION | 104 | 53.10    |
| +          |     |          |
| ALTERNATE  | 1   | 11610.27 |
| 0 XSECTION | 105 | .23      |
| +          |     |          |
| ALTERNATE  | 1   | 424.59   |
| 0 XSECTION | 107 | .23      |
| +          |     |          |
| ALTERNATE  | 1   | 279.51   |
| 0 XSECTION | 108 | .25      |
| +          |     |          |
| ALTERNATE  | 1   | 209.33   |
| 0 XSECTION | 109 | .11      |
| +          |     |          |
| ALTERNATE  | 1   | 100.78   |
| 0 XSECTION | 112 | 51.85    |
| +          |     |          |
| ALTERNATE  | 1   | 11248.85 |
| 0 XSECTION | 115 | 50.79    |
| +          |     |          |
| ALTERNATE  | 1   | 10846.14 |
| 0 XSECTION | 116 | .21      |
| +          |     |          |
| ALTERNATE  | 1   | 208.68   |
| 0 XSECTION | 118 | .44      |
| +          |     |          |
| ALTERNATE  | 1   | 542.33   |
| 1          |     |          |

TR20 XEQ 2/ 3/92 16:37 LOWER SAND CREEK -- FUTURE CONDITION

JOB 1

SUMMARY

REV PC/09/83 24 HR TYPE IIA STORM (10-YR AMC=2) FILE NAME D24FU10.DAT  
PAGE 39

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

|           |          |                    |
|-----------|----------|--------------------|
| XSECTION/ | DRAINAGE |                    |
| STRUCTURE | AREA     | STORM NUMBERS..... |
| ID        | (SQ MI)  | 1                  |

0 XSECTION 119 49.99

|            |     |          |
|------------|-----|----------|
| +          |     |          |
| ALTERNATE  | 1   | 10556.69 |
| 0 XSECTION | 120 | .13      |

|                |       |          |
|----------------|-------|----------|
| +              |       |          |
| ALTERNATE      | 1     | 190.03   |
| 0 XSECTION 121 | 23.49 |          |
| +              |       |          |
| ALTERNATE      | 1     | 8506.89  |
| 0 XSECTION 122 | 26.12 |          |
| +              |       |          |
| ALTERNATE      | 1     | 2372.91  |
| 0 XSECTION 123 | .20   |          |
| +              |       |          |
| ALTERNATE      | 1     | 300.05   |
| 0 XSECTION 125 | 23.03 |          |
| +              |       |          |
| ALTERNATE      | 1     | 8397.90  |
| 0 XSECTION 126 | .16   |          |
| +              |       |          |
| ALTERNATE      | 1     | 289.24   |
| 0 XSECTION 127 | 17.62 |          |
| +              |       |          |
| ALTERNATE      | 1     | 7155.41  |
| 0 XSECTION 128 | 17.54 |          |
| +              |       |          |
| ALTERNATE      | 1     | 7184.22  |
| 0 XSECTION 130 | 17.14 |          |
| +              |       |          |
| ALTERNATE      | 1     | 6991.84  |
| 0 XSECTION 132 | 16.86 |          |
| +              |       |          |
| ALTERNATE      | 1     | 6758.16  |
| 0 XSECTION 133 | .13   |          |
| +              |       |          |
| ALTERNATE      | 1     | 155.04   |
| 0 XSECTION 135 | 16.37 |          |
| +              |       |          |
| ALTERNATE      | 1     | 6315.77  |
| 0 XSECTION 136 | 50.69 |          |
| +              |       |          |
| ALTERNATE      | 1     | 10836.41 |
| 1              |       |          |

TR20 XEQ 2/ 3/92 16:37 LOWER SAND CREEK -- FUTURE CONDITION

JOB 1

SUMMARY

REV PC/09/83 24 HR TYPE IIA STORM (10-YR AMC=2) FILE NAME D24FU10.DAT  
PAGE 40

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

| XSECTION/<br>STRUCTURE | DRAINAGE<br>AREA | STORM NUMBERS..... |
|------------------------|------------------|--------------------|
|------------------------|------------------|--------------------|

| ID             | (SQ MI) | 1       |
|----------------|---------|---------|
| 0 XSECTION 138 | .23     |         |
| +              |         |         |
| ALTERNATE 1    |         | 340.73  |
| 0 XSECTION 141 | 1.56    |         |
| +              |         |         |
| ALTERNATE 1    |         | 1177.51 |
| 0 XSECTION 142 | 1.31    |         |
| +              |         |         |
| ALTERNATE 1    |         | 940.77  |
| 0 XSECTION 143 | 1.11    |         |
| +              |         |         |
| ALTERNATE 1    |         | 945.41  |
| 0 XSECTION 144 | .82     |         |
| +              |         |         |
| ALTERNATE 1    |         | 652.69  |
| 0 XSECTION 145 | .55     |         |
| +              |         |         |
| ALTERNATE 1    |         | 447.53  |
| 0 XSECTION 146 | .39     |         |
| +              |         |         |
| ALTERNATE 1    |         | 287.68  |
| 0 XSECTION 149 | .33     |         |
| +              |         |         |
| ALTERNATE 1    |         | 421.45  |

1END OF 1 JOBS IN THIS RUN

## **Technical Addendum**

**TR 20 Input/Output for the Upper Sand Creek Basin**

**Existing Basin Condition 100-year and 10-year**

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

```

JOB TR-20                                SUMMARY    NOPLOTS
TITLE 001 UPPER SAND CREEK -- EXISTING CONDITION
TITLE 24 HR TYPE IIA STORM (100- AND 10-YR. AMC=2)
5 RAINFL 1                               .50
8      0.000      .0025      0.005      .0075      0.010
8      0.015      0.020      0.025      0.030      0.050
8      0.060      0.100      0.700      0.750      0.780
8      0.798      0.820      0.830      0.840      0.850
8      0.860      0.865      0.870      0.885      0.890
8      0.900      0.905      0.910      0.915      0.921
8      0.927      0.933      0.940      0.945      0.950
8      0.955      0.960      0.965      0.970      0.975
8      0.980      0.983      0.985      0.988      0.990
8      0.993      0.995      0.998      1.000      1.000
9 ENDTBL
6 RUNOFF 1 82      1      0.19      67.0      0.19
6 REACH 3 174      1 2      2300.0      0.9      1.53
6 RUNOFF 1 74      1      0.18      67.0      0.48
6 ADDHYD 4 74 1 2 3
6 REACH 3 173      3 1      2800.0      0.7      1.53
6 RUNOFF 1 75      2      0.12      67.0      .70
6 ADDHYD 4 75 1 2 3
6 RUNOFF 1 73      1      0.12      67.0      .53
6 ADDHYD 4 75 1 3 2
6 RUNOFF 1 81      1      0.39      67.0      0.51
6 REACH 3 175      1 3      3850.0      0.6      1.56
6 ADDHYD 4 75 2 3 1
6 RUNOFF 1 80      2      0.22      67.0      0.39
6 REACH 3 176      2 3      4100.0      0.6      1.56
6 ADDHYD 4 75 3 1 2
6 RUNOFF 1 76      1      0.17      67.0      0.68
6 ADDHYD 4 75 1 2 3
6 REACH 3 172      3 2      1700.0      0.8      1.53
6 RUNOFF 1 88      1      0.10      67.0      .34
6 ADDHYD 4 77 1 2 3
6 RUNOFF 1 77      2      0.25      67.0      .56
6 ADDHYD 4 77 3 2 1
6 RUNOFF 1 79      2      0.29      67.0      0.29
6 REACH 3 178      2 3      3000.0      0.6      1.56
6 RUNOFF 1 78      2      0.88      67.0      0.44
6 ADDHYD 4 78 2 3 4
6 REACH 3 177      4 2      3350.0      0.6      1.56
6 ADDHYD 4 77 2 1 3
6 REACH 3 171      3 2      3850.0      0.2      1.63
6 RUNOFF 1 71      1      0.36      70.0      .30
6 ADDHYD 4 71 1 2 3

```

1

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

```

6 REACH 3 170      3 2      2500.0      0.3      1.63
6 RUNOFF 1 70      1      0.31      70.0      0.35

```

|   |        |   |     |       |        |      |      |
|---|--------|---|-----|-------|--------|------|------|
| 6 | RUNOFF | 1 | 87  | 3     | 0.04   | 70.0 | 0.14 |
| 6 | ADDHYD | 4 | 87  | 3 2 4 |        |      |      |
| 6 | RUNOFF | 1 | 72  | 2     | 0.25   | 70.0 | 0.23 |
| 6 | REACH  | 3 | 169 | 2 3   | 3000.0 | .8   | 1.55 |
| 6 | RUNOFF | 1 | 69  | 1     | 0.25   | 70.0 | 0.80 |
| 6 | ADDHYD | 4 | 69  | 3 1 2 |        |      |      |
| 6 | REACH  | 3 | 186 | 2 1   | 1400.0 | 0.7  | 1.51 |
| 6 | RUNOFF | 1 | 86  | 2     | 0.05   | 70.0 | 0.37 |
| 6 | ADDHYD | 4 | 87  | 1 2 3 |        |      |      |
| 6 | ADDHYD | 4 | 87  | 4 3 1 |        |      |      |
| 6 | REACH  | 3 | 163 | 1 2   | 4400.0 | 0.2  | 1.64 |

|   |        |   |     |       |        |      |      |
|---|--------|---|-----|-------|--------|------|------|
| 6 | RUNOFF | 1 | 63  | 3     | 0.16   | 66.0 | 0.43 |
| 6 | ADDHYD | 4 | 63  | 2 3 4 |        |      |      |
| 6 | REACH  | 3 | 160 | 4 1   | 4400.0 | 0.2  | 1.65 |
| 6 | RUNOFF | 1 | 60  | 3     | 0.15   | 66.0 | 0.41 |
| 6 | ADDHYD | 4 | 60  | 1 3 4 |        |      |      |
| 6 | RUNOFF | 1 | 59  | 3     | 0.16   | 65.0 | .33  |
| 6 | ADDHYD | 4 | 60  | 4 3 5 |        |      |      |
| 6 | RUNOFF | 1 | 68  | 1     | 0.22   | 60.0 | .65  |
| 6 | REACH  | 3 | 167 | 1 3   | 3300.0 | 0.7  | 1.51 |
| 6 | RUNOFF | 1 | 67  | 1     | 0.27   | 60.0 | 1.52 |
| 6 | ADDHYD | 4 | 67  | 3 1 2 |        |      |      |
| 6 | REACH  | 3 | 164 | 2 3   | 2500.0 | 0.8  | 1.51 |
| 6 | RUNOFF | 1 | 64  | 2     | 0.25   | 59.0 | 1.12 |
| 6 | ADDHYD | 4 | 64  | 3 2 1 |        |      |      |
| 6 | REACH  | 3 | 159 | 1 3   | 3300.0 | 0.5  | 1.62 |
| 6 | ADDHYD | 4 | 60  | 5 3 2 |        |      |      |
| 6 | REACH  | 3 | 151 | 2 1   | 4000.0 | 0.1  | 1.65 |
| 6 | RUNOFF | 1 | 51  | 5     | 0.15   | 59.0 | .39  |
| 6 | ADDHYD | 4 | 51  | 1 5 2 |        |      |      |
| 6 | RUNOFF | 1 | 49  | 1     | 0.10   | 55.0 | 0.34 |
| 6 | ADDHYD | 4 | 51  | 1 2 5 |        |      |      |
| 6 | RUNOFF | 1 | 52  | 1     | 0.19   | 55.0 | 0.60 |
| 6 | ADDHYD | 4 | 51  | 1 5 3 |        |      |      |
| 6 | RUNOFF | 1 | 65  | 1     | 0.10   | 65.0 | 0.75 |
| 6 | REACH  | 3 | 158 | 1 2   | 3600.0 | .4   | 1.63 |
| 6 | RUNOFF | 1 | 58  | 1     | 0.17   | 84.0 | 0.43 |
| 6 | ADDHYD | 4 | 58  | 1 2 5 |        |      |      |
| 6 | REACH  | 3 | 152 | 5 1   | 3500.0 | 0.3  | 1.63 |
| 6 | ADDHYD | 4 | 51  | 3 1 4 |        |      |      |
| 6 | RUNOFF | 1 | 62  | 3     | 0.25   | 55.0 | 0.70 |
| 6 | REACH  | 3 | 161 | 3 2   | 3400.0 | .7   | 1.51 |

1

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

|   |        |   |     |       |        |      |      |
|---|--------|---|-----|-------|--------|------|------|
| 6 | RUNOFF | 1 | 61  | 1     | 0.13   | 55.0 | 0.62 |
| 6 | ADDHYD | 4 | 61  | 1 2 3 |        |      |      |
| 6 | REACH  | 3 | 150 | 3 2   | 2950.0 | 0.6  | 1.53 |
| 6 | RUNOFF | 1 | 50  | 3     | 0.13   | 54.0 | 0.63 |
| 6 | ADDHYD | 4 | 50  | 2 3 1 |        |      |      |
| 6 | REACH  | 3 | 149 | 1 2   | 2400.0 | 0.3  | 1.63 |
| 6 | ADDHYD | 4 | 51  | 4 2 3 |        |      |      |
| 6 | REACH  | 3 | 148 | 3 1   | 3300.0 | 0.3  | 1.62 |
| 6 | RUNOFF | 1 | 48  | 2     | 0.15   | 55.0 | 0.23 |
| 6 | ADDHYD | 4 | 48  | 1 2 3 |        |      |      |
| 6 | REACH  | 3 | 141 | 3 1   | 3100.0 | 0.3  | 1.62 |

|   |        |   |     |       |        |      |      |
|---|--------|---|-----|-------|--------|------|------|
| 6 | RUNOFF | 1 | 41  | 1     | 0.08   | 60.0 | 0.30 |
| 6 | ADDHYD | 4 | 41  | 1 3 4 |        |      |      |
| 6 | REACH  | 3 | 185 | 4 1   | 1100.0 | 0.3  | 1.62 |
| 6 | RUNOFF | 1 | 85  | 2     | 0.05   | 63.0 | 0.22 |
| 6 | ADDHYD | 4 | 85  | 1 2 3 |        |      |      |
| 6 | RUNOFF | 1 | 39  | 2     | 0.15   | 65.0 | 0.54 |
| 6 | ADDHYD | 4 | 85  | 2 3 1 |        |      |      |
| 6 | REACH  | 3 | 137 | 1 2   | 3900.0 | 0.2  | 1.65 |
| 6 | RUNOFF | 1 | 36  | 7     | 0.17   | 60.0 | 0.62 |
| 6 | ADDHYD | 4 | 37  | 2 7 1 |        |      |      |
| 6 | RUNOFF | 1 | 37  | 2     | 0.12   | 63.0 | 0.21 |
| 6 | ADDHYD | 4 | 37  | 2 1 4 |        |      |      |
| 6 | RUNOFF | 1 | 66  | 3     | 0.31   | 57.0 | 0.80 |
| 6 | REACH  | 3 | 157 | 3 2   | 2300.0 | 0.8  | 1.53 |
| 6 | RUNOFF | 1 | 57  | 3     | 0.16   | 60.0 | 0.53 |
| 6 | ADDHYD | 4 | 57  | 2 3 1 |        |      |      |
| 6 | REACH  | 3 | 154 | 1 2   | 3500.0 | 0.5  | 1.61 |
| 6 | RUNOFF | 1 | 55  | 3     | 0.25   | 60.0 | .58  |
| 6 | ADDHYD | 4 | 54  | 2 3 1 |        |      |      |
| 6 | RUNOFF | 1 | 56  | 3     | 0.15   | 60.0 | 0.23 |
| 6 | REACH  | 3 | 155 | 3 2   | 3450.0 | 0.6  | 1.53 |
| 6 | ADDHYD | 4 | 54  | 2 1 5 |        |      |      |
| 6 | RUNOFF | 1 | 54  | 7     | 0.25   | 60.0 | 0.33 |
| 6 | ADDHYD | 4 | 54  | 7 5 2 |        |      |      |
| 6 | REACH  | 3 | 153 | 2 3   | 2050.0 | 0.5  | 1.61 |
| 6 | RUNOFF | 1 | 53  | 5     | 0.17   | 60.0 | 0.41 |
| 6 | ADDHYD | 4 | 53  | 3 5 1 |        |      |      |
| 6 | REACH  | 3 | 147 | 1 3   | 2300.0 | 0.4  | 1.62 |
| 6 | RUNOFF | 1 | 47  | 2     | 0.26   | 60.0 | 0.45 |
| 6 | ADDHYD | 4 | 47  | 3 2 1 |        |      |      |
| 6 | REACH  | 3 | 142 | 1 2   | 5400.0 | 0.3  | 1.61 |
| 6 | RUNOFF | 1 | 42  | 3     | 0.20   | 59.0 | 0.33 |
| 6 | ADDHYD | 4 | 43  | 3 2 1 |        |      |      |

1

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

|   |        |   |     |       |        |      |      |
|---|--------|---|-----|-------|--------|------|------|
| 6 | RUNOFF | 1 | 43  | 2     | 0.14   | 62.0 | 0.77 |
| 6 | ADDHYD | 4 | 43  | 1 2 5 |        |      |      |
| 6 | RUNOFF | 1 | 45  | 1     | 0.24   | 60.0 | 0.50 |
| 6 | RUNOFF | 1 | 46  | 2     | 0.23   | 60.0 | 0.48 |
| 6 | ADDHYD | 4 | 45  | 1 2 3 |        |      |      |
| 6 | REACH  | 3 | 143 | 3 2   | 2750.0 | 0.7  | 1.55 |
| 6 | ADDHYD | 4 | 43  | 2 5 1 |        |      |      |
| 6 | REACH  | 3 | 136 | 1 2   | 2050.0 | 0.8  | 1.55 |
| 6 | ADDHYD | 4 | 37  | 2 4 1 |        |      |      |
| 6 | REACH  | 3 | 129 | 1 2   | 3800.0 | 0.1  | 1.65 |
| 6 | RUNOFF | 1 | 27  | 3     | 0.16   | 78.0 | 0.51 |
| 6 | ADDHYD | 4 | 29  | 2 3 1 |        |      |      |
| 6 | RUNOFF | 1 | 38  | 3     | 0.32   | 66.0 | 0.57 |
| 6 | REACH  | 3 | 128 | 3 2   | 1700.0 | 1.2  | 1.47 |
| 6 | RUNOFF | 1 | 28  | 4     | 0.17   | 77.0 | 0.38 |
| 6 | ADDHYD | 4 | 28  | 2 4 5 |        |      |      |
| 6 | REACH  | 3 | 127 | 5 3   | 2300.0 | 1.0  | 1.47 |
| 6 | ADDHYD | 4 | 29  | 1 3 5 |        |      |      |
| 6 | RUNOFF | 1 | 29  | 1     | .23    | 80.0 | .41  |
| 6 | ADDHYD | 4 | 29  | 1 5 4 |        |      |      |
| 6 | REACH  | 3 | 184 | 4 2   | 1350.0 | .2   | 1.63 |
| 6 | RUNOFF | 1 | 84  | 3     | 0.04   | 86.0 | 0.08 |
| 6 | ADDHYD | 4 | 30  | 2 3 1 |        |      |      |
| 6 | RUNOFF | 1 | 30  | 3     | 0.10   | 74.0 | 0.58 |

|   |        |   |     |   |   |   |        |      |      |
|---|--------|---|-----|---|---|---|--------|------|------|
| 6 | ADDHYD | 4 | 30  | 2 | 3 | 1 |        |      |      |
| 6 | RUNOFF | 1 | 44  |   |   | 3 | 0.17   | 65.0 | 0.46 |
| 6 | REACH  | 3 | 135 | 3 |   | 2 | 3100.0 | 0.9  | 1.52 |
| 6 | RUNOFF | 1 | 35  |   |   | 3 | 0.12   | 65.0 | 0.67 |
| 6 | ADDHYD | 4 | 35  | 3 | 2 | 5 |        |      |      |
| 6 | RUNOFF | 1 | 34  |   |   | 4 | 0.29   | 75.0 | 0.76 |
| 6 | ADDHYD | 4 | 35  | 5 | 4 | 3 |        |      |      |
| 6 | REACH  | 3 | 130 | 3 |   | 2 | 3700.0 | 0.9  | 1.52 |
| 6 | ADDHYD | 4 | 30  | 1 | 2 | 3 |        |      |      |
| 6 | RUNOFF | 1 | 32  |   |   | 1 | 0.11   | 82.0 | 0.56 |
| 6 | RUNOFF | 1 | 33  |   |   | 2 | 0.29   | 78.0 | 0.42 |
| 6 | ADDHYD | 4 | 33  | 2 | 1 | 4 |        |      |      |
| 6 | REACH  | 3 | 131 | 4 |   | 2 | 4400.0 | 0.7  | 1.52 |
| 6 | ADDHYD | 4 | 30  | 3 | 2 | 1 |        |      |      |
| 6 | REACH  | 3 | 125 | 1 |   | 3 | 1200.0 | 0.4  | 1.63 |
| 6 | RUNOFF | 1 | 26  |   |   | 2 | 0.19   | 82.0 | .22  |
| 6 | ADDHYD | 4 | 25  | 3 | 2 | 1 |        |      |      |
| 6 | RUNOFF | 1 | 25  |   |   | 2 | 0.04   | 78.0 | 0.07 |
| 6 | ADDHYD | 4 | 25  | 1 | 2 | 3 |        |      |      |
| 6 | RUNOFF | 1 | 24  |   |   | 1 | 0.19   | 78.0 | 0.23 |

1

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

|   |        |   |     |   |   |   |        |      |      |
|---|--------|---|-----|---|---|---|--------|------|------|
| 6 | ADDHYD | 4 | 25  | 1 | 3 | 2 |        |      |      |
| 6 | REACH  | 3 | 120 | 2 |   | 4 | 2700.0 | 0.4  | 1.61 |
| 6 | RUNOFF | 1 | 22  |   |   | 2 | 0.13   | 78.0 | 0.45 |
| 6 | ADDHYD | 4 | 20  | 4 | 2 | 3 |        |      |      |
| 6 | RUNOFF | 1 | 20  |   |   | 2 | 0.09   | 78.0 | 0.17 |
| 6 | ADDHYD | 4 | 20  | 3 | 2 | 1 |        |      |      |
| 6 | RUNOFF | 1 | 21  |   |   | 2 | 0.12   | 78.0 | 0.26 |
| 6 | ADDHYD | 4 | 20  | 2 | 1 | 3 |        |      |      |
| 6 | RUNOFF | 1 | 19  |   |   | 2 | 0.17   | 78.0 | 0.61 |
| 6 | ADDHYD | 4 | 20  | 3 | 2 | 1 |        |      |      |
| 6 | RUNOFF | 1 | 83  |   |   | 2 | 0.11   | 78.0 | 0.53 |
| 6 | ADDHYD | 4 | 20  | 1 | 2 | 3 |        |      |      |
| 6 | RUNOFF | 1 | 23  |   |   | 2 | 0.28   | 83.0 | .48  |
| 6 | REACH  | 3 | 183 | 2 |   | 1 | 2700.0 | 1.4  | 1.45 |
| 6 | ADDHYD | 4 | 20  | 1 | 3 | 2 |        |      |      |
| 6 | REACH  | 3 | 113 | 2 |   | 1 | 4200.0 | 0.1  | 1.65 |
| 6 | RUNOFF | 1 | 13  |   |   | 3 | 0.24   | 78.0 | 0.30 |
| 6 | ADDHYD | 4 | 13  | 1 | 3 | 2 |        |      |      |
| 6 | RUNOFF | 1 | 14  |   |   | 3 | 0.07   | 78.0 | 0.35 |
| 6 | ADDHYD | 4 | 13  | 2 | 3 | 1 |        |      |      |
| 6 | RUNOFF | 1 | 15  |   |   | 2 | 0.17   | 78.0 | 0.48 |
| 6 | ADDHYD | 4 | 13  | 1 | 2 | 3 |        |      |      |
| 6 | RUNOFF | 1 | 16  |   |   | 2 | 0.21   | 78.0 | 0.74 |
| 6 | REACH  | 3 | 115 | 2 |   | 1 | 1800.0 | 0.8  | 1.55 |
| 6 | ADDHYD | 4 | 13  | 1 | 3 | 2 |        |      |      |
| 6 | RUNOFF | 1 | 18  |   |   | 1 | 0.13   | 78.0 | 0.44 |
| 6 | RUNOFF | 1 | 17  |   |   | 3 | 0.17   | 78.0 | 0.66 |
| 6 | ADDHYD | 4 | 18  | 1 | 3 | 6 |        |      |      |
| 6 | REACH  | 3 | 114 | 6 |   | 3 | 1750.0 | 0.7  | 1.56 |
| 6 | ADDHYD | 4 | 13  | 3 | 2 | 1 |        |      |      |
| 6 | REACH  | 3 | 106 | 1 |   | 2 | 3100.0 | 0.3  | 1.64 |
| 6 | RUNOFF | 1 | 6   |   |   | 1 | 0.13   | 81.0 | 0.37 |
| 6 | ADDHYD | 4 | 6   | 1 | 2 | 3 |        |      |      |
| 6 | RUNOFF | 1 | 5   |   |   | 2 | 0.15   | 84.0 | 0.26 |
| 6 | ADDHYD | 4 | 6   | 3 | 2 | 1 |        |      |      |
| 6 | RUNOFF | 1 | 7   |   |   | 3 | 0.19   | 78.0 | 0.60 |
| 6 | ADDHYD | 4 | 6   | 3 | 1 | 2 |        |      |      |
| 6 | RUNOFF | 1 | 11  |   |   | 1 | 0.16   | 83.0 | 0.37 |

|          |   |     |   |       |        |      |      |
|----------|---|-----|---|-------|--------|------|------|
| 6 REACH  | 3 | 107 | 5 | 1     | 2650.0 | 1.0  | 1.45 |
| 6 ADDHYD | 4 |     | 6 | 1 2 3 |        |      |      |
| 6 REACH  | 3 | 104 | 3 | 1     | 1950.0 | 0.2  | 1.65 |
| 6 RUNOFF | 1 | 4   |   | 2     | 0.19   | 77.0 | 0.24 |
| 6 ADDHYD | 4 |     | 4 | 1 2 3 |        |      |      |
| 6 RUNOFF | 1 | 8   |   | 2     | 0.20   | 75.0 | 0.67 |

1

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

|          |   |     |    |       |        |                |                     |
|----------|---|-----|----|-------|--------|----------------|---------------------|
| 6 ADDHYD | 4 |     | 8  | 3 2 1 |        |                |                     |
| 6 RUNOFF | 1 | 10  |    | 2     | 0.14   | 86.0           | 0.17                |
| 6 REACH  | 3 | 109 | 2  | 3     | 2350.0 | 1.8            | 1.41                |
| 6 RUNOFF | 1 | 9   |    | 2     | 0.25   | 80.0           | 0.15                |
| 6 ADDHYD | 4 |     | 9  | 3 2 4 |        |                |                     |
| 6 REACH  | 3 | 108 | 4  | 2     | 2500.0 | 0.9            | 1.47                |
| 6 ADDHYD | 4 |     | 99 | 1 2 4 |        |                |                     |
|          |   |     |    |       |        | 1 1 1 1 TO D/S |                     |
| ENDATA   |   |     |    |       |        |                |                     |
| 7 LIST   |   |     |    |       |        |                |                     |
| 7 INCREM | 6 |     |    |       | .033   |                |                     |
| 7 COMPUT | 7 | 82  |    | 99    | 0.0    | 4.4            | 1.01 2 01 01 100-YR |
| ENDCMP 1 |   |     |    |       |        |                |                     |
| 7 COMPUT | 7 | 82  |    | 99    | 0.0    | 3.0            | 1.01 2 01 02 10-YR  |
| ENDCMP 1 |   |     |    |       |        |                |                     |
| ENDJOB 2 |   |     |    |       |        |                |                     |

0\*\*\*\*\*END OF 80-80 LIST\*\*\*\*\*

1

|          |          |      |                                              |       |        |
|----------|----------|------|----------------------------------------------|-------|--------|
| TR20 XEQ | 9/29/95  | 9:59 | UPPER SAND CREEK -- EXISTING CONDITION       | JOB 1 | PASS 1 |
| REV      | PC/09/83 |      | 24 HR TYPE IIA STORM (100- AND 10-YR. AMC=2) | PAGE  | 1      |

FILE NO. 1

0

COMPUTER PROGRAM FOR PROJECT FORMULATION - HYDROLOGY USER NOTES

THE USERS MANUAL FOR THIS PROGRAM IS THE MAY 1982 DRAFT OF TR-20. CHANGES FROM THE 2/14/74 VERSION INCLUDE:

REACH ROUTING - THE MODIFIED ATT-KIN ROUTING PROCEDURE REPLACES THE CONVEX METHOD. INPUT DATA PREPARED FOR PREVIOUS PROGRAM VERSIONS USING CONVEX ROUTING COEFFICIENTS WILL NOT RUN ON THIS VERSION.

THE PREFERRED TYPE OF DATA ENTRY IS CROSS SECTION DATA REPRESENTATIVE OF A REACH. IT IS RECOMMENDED THAT THE OPTIONAL CROSS SECTION DISCHARGE-AREA PLOTS BE OBTAINED WHENEVER NEW CROSS SECTION DATA IS ENTERED. THE PLOTS SHOULD BE CHECKED FOR REASONABLENESS AND ADEQUACY OF INPUT DATA FOR THE COMPUTATION OF "M" VALUES USED IN THE ROUTING PROCEDURE.

GUIDELINES FOR DETERMINING OR ANALYZING REACH LENGTHS AND COEFFICIENTS (X,M) ARE AVAILABLE IN THE USERS MANUAL. SUMMARY TABLE 2 DISPLAYS REACH ROUTING RESULTS AND ROUTING PARAMETERS FOR COMPARISON AND CHECKING.

HYDROGRAPH GENERATION - THE PROCEDURE TO CALCULATE THE INTERNAL TIME INCREMENT AND PEAK TIME OF THE UNIT HYDROGRAPH HAVE BEEN IMPROVED. PEAK DISCHARGES AND TIMES MAY DIFFER FROM THE PREVIOUS VERSION. OUTPUT HYDROGRAPHS ARE STILL INTERPOLATED, PRINTED, AND ROUTED AT THE USER SELECTED MAIN TIME INCREMENT.

INTERMEDIATE PEAKS - METHOD ADDED TO PROVIDE DISCHARGES AT INTERMEDIATE POINTS WITHIN REACHES WITHOUT ROUTING.

OTHER - THIS VERSION CONTAINS SOME ADDITIONS TO THE INPUT AND NUMEROUS MODIFICATIONS TO THE OUTPUT. USER OPTIONS HAVE BEEN MODIFIED AND AUGMENTED ON THE JOB RECORD, RAINTABLES ADDED, ERROR AND WARNING MESSAGES EXPANDED, AND THE SUMMARY TABLES COMPLETELY REVISED. THE HOLDOUT OPTION IS NOT OPERATIONAL AT THIS TIME.

PROGRAM QUESTIONS OR PROBLEMS SHOULD BE DIRECTED TO HYDRAULIC ENGINEERS AT THE SCS NATIONAL TECHNICAL CENTERS:

PROGRAM CHANGES SINCE MAY 1982:

- 12/17/82 - CORRECT PEAK RATE FACTOR FOR USER ENTERED DIMHYD  
 CORRECT REACH ROUTING PEAK TRAVEL TIME PRINTED WITH FULLPRINT OPTION
- 5/02/83 - CORRECT COMPUTATIONS FOR ---
1. DIVISION OF BASEFLOW IN DIVERT OPERATION
  2. HYDROGRAPH VOLUME SPLIT BETWEEN BASEFLOW AND ABOVE BASEFLOW
  3. CROSS SECTION DATA PLOTTING POSITION
  4. INTERMEDIATE PEAK WHEN "FROM" AREA IS LARGER THAN "THRU" AREA
  5. STORAGE ROUTED REACH TRAVEL TIME FOR MULTYPEAK HYDROGRAPH
  6. ORDERING "FLOW-FREQ" FILE FROM SUMMARY TABLE #3 DATA
  7. BASEFLOW ENTERED WITH READHYD
  8. LOW FLOW SPLIT DURING DIVERT PROCEDURE #2 WHEN SECTION RATINGS START AT DIFFERENT ELEVATIONS
- ENHANCEMENTS ---
1. REPLACE USER MANUAL ERROR CODES (PAGE 4-9 TO 4-11) WITH MESSAGES
  2. LABEL OUTPUT HYDROGRAPH FILES WITH CROSS SECTION/STRUCTURE, ALTERNATE AND STORM NO'S
- 09/01/83 - CORRECT INPUT AND OUTPUT ERRORS FOR INTERMEDIATE PEAKS  
 CORRECT COMBINATION OF RATING TABLES FOR DIVERT  
 CHECK REACH ROUTING PARAMETERS FOR ACCEPTABLE LIMITS  
 ELIMINATE MINIMUM REACH TRAVEL TIME WHEN ATT-KIN COEFFICIENT EQUALS ONE

1

|              |         |      |                                              |       |        |
|--------------|---------|------|----------------------------------------------|-------|--------|
| TR20 XEB     | 9/29/95 | 9:59 | UPPER SAND CREEK -- EXISTING CONDITION       | JOB 1 | PASS 1 |
| REV PC/09/83 |         |      | 24 HR TYPE IIA STORM (100- AND 10-YR, ANC=2) | PAGE  | 2      |

EXECUTIVE CONTROL OPERATION LIST

RECORD ID

LISTING OF CURRENT DATA

|          | TIME INCREMENT |       |       |       |       |
|----------|----------------|-------|-------|-------|-------|
| 4 DIMHYD | .0200          |       |       |       |       |
| 8        | .0000          | .0300 | .1000 | .1900 | .3100 |
| 8        | .4700          | .6600 | .8200 | .9300 | .9900 |
| 8        | 1.0000         | .9900 | .9300 | .8600 | .7800 |
| 8        | .6800          | .5600 | .4600 | .3900 | .3300 |
| 8        | .2800          | .2410 | .2070 | .1740 | .1470 |
| 8        | .1260          | .1070 | .0910 | .0770 | .0660 |
| 8        | .0550          | .0470 | .0400 | .0340 | .0290 |
| 8        | .0250          | .0210 | .0180 | .0150 | .0130 |
| 8        | .0110          | .0090 | .0080 | .0070 | .0060 |
| 8        | .0050          | .0040 | .0030 | .0020 | .0010 |
| 8        | .0000          | .0000 | .0000 | .0000 | .0000 |
| 9 ENDTBL |                |       |       |       |       |

COMPUTED PEAK RATE FACTOR = 484.00

| TABLE NO.  | TIME INCREMENT |       |       |       |       |
|------------|----------------|-------|-------|-------|-------|
| 5 RAINFL 1 | .5000          |       |       |       |       |
| 8          | .0000          | .0025 | .0050 | .0075 | .0100 |
| 8          | .0150          | .0200 | .0250 | .0300 | .0500 |

|   |       |       |       |        |        |
|---|-------|-------|-------|--------|--------|
| 8 | .8600 | .8650 | .8700 | .8850  | .8900  |
| 8 | .9000 | .9050 | .9100 | .9150  | .9210  |
| 8 | .9270 | .9330 | .9400 | .9450  | .9500  |
| 8 | .9550 | .9600 | .9650 | .9700  | .9750  |
| 8 | .9800 | .9830 | .9850 | .9880  | .9900  |
| 8 | .9930 | .9950 | .9980 | 1.0000 | 1.0000 |

9 ENDTBL

| TABLE NO.  | TIME INCREMENT |
|------------|----------------|
| 5 RAINFL 2 | .2500          |

1

|                       |                                              |
|-----------------------|----------------------------------------------|
| TR20 XEQ 9/29/95 9:59 | UPPER SAND CREEK -- EXISTING CONDITION       |
| REV PC/09/83          | 24 HR TYPE IIA STORM (100- AND 10-YR. AMC=2) |

|       |        |
|-------|--------|
| JOB 1 | PASS 1 |
|       | PAGE 3 |

|   |       |        |        |        |        |
|---|-------|--------|--------|--------|--------|
| 8 | .0000 | .0020  | .0050  | .0080  | .0110  |
| 8 | .0140 | .0170  | .0200  | .0230  | .0260  |
| 8 | .0290 | .0320  | .0350  | .0380  | .0410  |
| 8 | .0440 | .0480  | .0520  | .0560  | .0600  |
| 8 | .0640 | .0680  | .0720  | .0760  | .0800  |
| 8 | .0850 | .0900  | .0950  | .1000  | .1050  |
| 8 | .1100 | .1150  | .1200  | .1260  | .1330  |
| 8 | .1400 | .1470  | .1550  | .1630  | .1720  |
| 8 | .1810 | .1910  | .2030  | .2180  | .2360  |
| 8 | .2570 | .2830  | .3870  | .6630  | .7070  |
| 8 | .7350 | .7580  | .7760  | .7910  | .8040  |
| 8 | .8150 | .8250  | .8340  | .8420  | .8490  |
| 8 | .8560 | .8630  | .8690  | .8750  | .8810  |
| 8 | .8870 | .8930  | .8980  | .9030  | .9080  |
| 8 | .9130 | .9180  | .9220  | .9260  | .9300  |
| 8 | .9340 | .9380  | .9420  | .9460  | .9500  |
| 8 | .9530 | .9560  | .9590  | .9620  | .9650  |
| 8 | .9680 | .9710  | .9740  | .9770  | .9800  |
| 8 | .9830 | .9860  | .9890  | .9920  | .9950  |
| 8 | .9980 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |

9 ENDTBL

| TABLE NO.  | TIME INCREMENT |
|------------|----------------|
| 5 RAINFL 3 | .5000          |

|   |       |       |       |        |        |
|---|-------|-------|-------|--------|--------|
| 8 | .0000 | .0100 | .0220 | .0360  | .0510  |
| 8 | .0670 | .0830 | .0990 | .1160  | .1350  |
| 8 | .1560 | .1790 | .2040 | .2330  | .2680  |
| 8 | .3100 | .4250 | .4800 | .5200  | .5500  |
| 8 | .5770 | .6010 | .6230 | .6440  | .6640  |
| 8 | .6830 | .7010 | .7190 | .7360  | .7530  |
| 8 | .7690 | .7850 | .8000 | .8150  | .8300  |
| 8 | .8440 | .8580 | .8710 | .8840  | .8960  |
| 8 | .9080 | .9200 | .9320 | .9440  | .9560  |
| 8 | .9670 | .9780 | .9890 | 1.0000 | 1.0000 |

9 ENDTBL

| TABLE NO.  | TIME INCREMENT |
|------------|----------------|
| 5 RAINFL 4 | .5000          |

|   |       |       |       |       |       |
|---|-------|-------|-------|-------|-------|
| 8 | .0000 | .0040 | .0080 | .0120 | .0160 |
| 8 | .0200 | .0250 | .0300 | .0350 | .0400 |
| 8 | .0450 | .0500 | .0550 | .0600 | .0650 |
| 8 | .0700 | .0750 | .0810 | .0870 | .0930 |
| 8 | .0990 | .1050 | .1110 | .1180 | .1250 |

TR20 XEQ 9/29/95 9:59  
REV PC/09/83

UPPER SAND CREEK -- EXISTING CONDITION  
24 HR TYPE IIA STORM (100- AND 10-YR, AMC=2)

JOB 1 PASS 1  
PAGE 4

|   |       |        |        |        |        |
|---|-------|--------|--------|--------|--------|
| 8 | .2360 | .2550  | .2770  | .3030  | .4090  |
| 8 | .5150 | .5490  | .5830  | .6050  | .6240  |
| 8 | .6400 | .6550  | .6690  | .6820  | .6940  |
| 8 | .7050 | .7160  | .7270  | .7380  | .7480  |
| 8 | .7580 | .7670  | .7760  | .7840  | .7920  |
| 8 | .8000 | .8080  | .8160  | .8230  | .8300  |
| 8 | .8370 | .8440  | .8510  | .8580  | .8640  |
| 8 | .8700 | .8760  | .8820  | .8880  | .8940  |
| 8 | .9000 | .9060  | .9110  | .9160  | .9210  |
| 8 | .9260 | .9310  | .9360  | .9410  | .9460  |
| 8 | .9510 | .9560  | .9610  | .9660  | .9710  |
| 8 | .9760 | .9800  | .9840  | .9880  | .9920  |
| 8 | .9960 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |

9 ENDTBL

TABLE NO. TIME INCREMENT  
5 RAINFL 5 .5000

|   |       |        |        |        |        |
|---|-------|--------|--------|--------|--------|
| 8 | .0000 | .0020  | .0050  | .0080  | .0110  |
| 8 | .0140 | .0170  | .0200  | .0230  | .0260  |
| 8 | .0290 | .0320  | .0350  | .0380  | .0410  |
| 8 | .0440 | .0470  | .0510  | .0550  | .0590  |
| 8 | .0630 | .0670  | .0710  | .0750  | .0790  |
| 8 | .0840 | .0890  | .0940  | .0990  | .1040  |
| 8 | .1090 | .1140  | .1200  | .1260  | .1330  |
| 8 | .1400 | .1470  | .1540  | .1620  | .1710  |
| 8 | .1810 | .1920  | .2040  | .2170  | .2330  |
| 8 | .2520 | .2770  | .3180  | .3880  | .4980  |
| 8 | .7290 | .7520  | .7700  | .7850  | .7980  |
| 8 | .8090 | .8190  | .8290  | .8380  | .8460  |
| 8 | .8540 | .8610  | .8680  | .8740  | .8800  |
| 8 | .8860 | .8920  | .8970  | .9020  | .9070  |
| 8 | .9120 | .9170  | .9210  | .9250  | .9290  |
| 8 | .9330 | .9370  | .9410  | .9450  | .9490  |
| 8 | .9530 | .9570  | .9600  | .9630  | .9660  |
| 8 | .9690 | .9720  | .9750  | .9780  | .9810  |
| 8 | .9840 | .9870  | .9900  | .9930  | .9960  |
| 8 | .9980 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |

9 ENDTBL

TABLE NO. TIME INCREMENT  
5 RAINFL 6 .0200

|   |       |       |       |       |       |
|---|-------|-------|-------|-------|-------|
| 8 | .0000 | .0080 | .0162 | .0246 | .0333 |
| 8 | .0425 | .0524 | .0630 | .0743 | .0863 |
| 8 | .0990 | .1124 | .1265 | .1420 | .1595 |
| 8 | .1800 | .2050 | .2550 | .3450 | .4370 |

1

TR20 XEQ 9/29/95 9:59  
REV PC/09/83

UPPER SAND CREEK -- EXISTING CONDITION  
24 HR TYPE IIA STORM (100- AND 10-YR, AMC=2)

JOB 1 PASS 1  
PAGE 5

|   |       |       |       |       |       |
|---|-------|-------|-------|-------|-------|
| 8 | .5300 | .6030 | .6330 | .6600 | .6840 |
|---|-------|-------|-------|-------|-------|

|   |        |        |        |        |        |
|---|--------|--------|--------|--------|--------|
| 8 | .8561  | .8678  | .8790  | .8898  | .9002  |
| 8 | .9103  | .9201  | .9297  | .9391  | .9483  |
| 8 | .9573  | .9661  | .9747  | .9832  | .9916  |
| 8 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |

9 ENDTBL

1

TR20 XEQ 9/29/95 9:59 UPPER SAND CREEK -- EXISTING CONDITION  
REV PC/09/83 24 HR TYPE IIA STORM (100- AND 10-YR. AMC=2)

JOB 1 PASS 1  
PAGE 6

0 STANDARD CONTROL INSTRUCTIONS

|   |        |   |     |   |       |           |        |         |   |   |   |   |
|---|--------|---|-----|---|-------|-----------|--------|---------|---|---|---|---|
| 6 | RUNOFF | 1 | 82  | 1 | .1900 | 67.0000   | .19000 | 0       | 0 | 0 | 0 | 1 |
| 6 | REACH  | 3 | 174 | 1 | 2     | 2300.0000 | .9000  | 1.53000 | 0 | 0 | 0 | 1 |
| 6 | RUNOFF | 1 | 74  | 1 | .1800 | 67.0000   | .48000 | 0       | 0 | 0 | 0 | 1 |
| 6 | ADDHYD | 4 | 74  | 1 | 2     | 3         |        | 0       | 0 | 0 | 0 | 1 |
| 6 | REACH  | 3 | 173 | 3 | 1     | 2800.0000 | .7000  | 1.53000 | 0 | 0 | 0 | 1 |
| 6 | RUNOFF | 1 | 75  | 2 | .1200 | 67.0000   | .70000 | 0       | 0 | 0 | 0 | 1 |
| 6 | ADDHYD | 4 | 75  | 1 | 2     | 3         |        | 0       | 0 | 0 | 0 | 1 |
| 6 | RUNOFF | 1 | 73  | 1 | .1200 | 67.0000   | .53000 | 0       | 0 | 0 | 0 | 1 |
| 6 | ADDHYD | 4 | 75  | 1 | 3     | 2         |        | 0       | 0 | 0 | 0 | 1 |
| 6 | RUNOFF | 1 | 81  | 1 | .3900 | 67.0000   | .51000 | 0       | 0 | 0 | 0 | 1 |
| 6 | REACH  | 3 | 175 | 1 | 3     | 3850.0000 | .6000  | 1.56000 | 0 | 0 | 0 | 1 |
| 6 | ADDHYD | 4 | 75  | 2 | 3     | 1         |        | 0       | 0 | 0 | 0 | 1 |
| 6 | RUNOFF | 1 | 80  | 2 | .2200 | 67.0000   | .39000 | 0       | 0 | 0 | 0 | 1 |
| 6 | REACH  | 3 | 176 | 2 | 3     | 4100.0000 | .6000  | 1.56000 | 0 | 0 | 0 | 1 |
| 6 | ADDHYD | 4 | 75  | 3 | 1     | 2         |        | 0       | 0 | 0 | 0 | 1 |
| 6 | RUNOFF | 1 | 76  | 1 | .1700 | 67.0000   | .68000 | 0       | 0 | 0 | 0 | 1 |
| 6 | ADDHYD | 4 | 75  | 1 | 2     | 3         |        | 0       | 0 | 0 | 0 | 1 |
| 6 | REACH  | 3 | 172 | 3 | 2     | 1700.0000 | .8000  | 1.53000 | 0 | 0 | 0 | 1 |
| 6 | RUNOFF | 1 | 88  | 1 | .1000 | 67.0000   | .34000 | 0       | 0 | 0 | 0 | 1 |
| 6 | ADDHYD | 4 | 77  | 1 | 2     | 3         |        | 0       | 0 | 0 | 0 | 1 |
| 6 | RUNOFF | 1 | 77  | 2 | .2500 | 67.0000   | .56000 | 0       | 0 | 0 | 0 | 1 |
| 6 | ADDHYD | 4 | 77  | 3 | 2     | 1         |        | 0       | 0 | 0 | 0 | 1 |
| 6 | RUNOFF | 1 | 79  | 2 | .2900 | 67.0000   | .29000 | 0       | 0 | 0 | 0 | 1 |
| 6 | REACH  | 3 | 178 | 2 | 3     | 3000.0000 | .6000  | 1.56000 | 0 | 0 | 0 | 1 |
| 6 | RUNOFF | 1 | 78  | 2 | .8800 | 67.0000   | .44000 | 0       | 0 | 0 | 0 | 1 |
| 6 | ADDHYD | 4 | 78  | 2 | 3     | 4         |        | 0       | 0 | 0 | 0 | 1 |
| 6 | REACH  | 3 | 177 | 4 | 2     | 3350.0000 | .6000  | 1.56000 | 0 | 0 | 0 | 1 |
| 6 | ADDHYD | 4 | 77  | 2 | 1     | 3         |        | 0       | 0 | 0 | 0 | 1 |
| 6 | REACH  | 3 | 171 | 3 | 2     | 3850.0000 | .2000  | 1.63000 | 0 | 0 | 0 | 1 |
| 6 | RUNOFF | 1 | 71  | 1 | .3600 | 70.0000   | .30000 | 0       | 0 | 0 | 0 | 1 |
| 6 | ADDHYD | 4 | 71  | 1 | 2     | 3         |        | 0       | 0 | 0 | 0 | 1 |
| 6 | REACH  | 3 | 170 | 3 | 2     | 2500.0000 | .3000  | 1.63000 | 0 | 0 | 0 | 1 |
| 6 | RUNOFF | 1 | 70  | 1 | .3100 | 70.0000   | .35000 | 0       | 0 | 0 | 0 | 1 |
| 6 | ADDHYD | 4 | 70  | 1 | 2     | 3         |        | 0       | 0 | 0 | 0 | 1 |
| 6 | REACH  | 3 | 187 | 3 | 2     | 1200.0000 | .2000  | 1.64000 | 0 | 0 | 0 | 1 |
| 6 | RUNOFF | 1 | 87  | 3 | .0400 | 70.0000   | .14000 | 0       | 0 | 0 | 0 | 1 |
| 6 | ADDHYD | 4 | 87  | 3 | 2     | 4         |        | 0       | 0 | 0 | 0 | 1 |
| 6 | RUNOFF | 1 | 72  | 2 | .2500 | 70.0000   | .23000 | 0       | 0 | 0 | 0 | 1 |
| 6 | REACH  | 3 | 169 | 2 | 3     | 3000.0000 | .8000  | 1.55000 | 0 | 0 | 0 | 1 |
| 6 | RUNOFF | 1 | 69  | 1 | .2500 | 70.0000   | .80000 | 0       | 0 | 0 | 0 | 1 |
| 6 | ADDHYD | 4 | 69  | 3 | 1     | 2         |        | 0       | 0 | 0 | 0 | 1 |
| 6 | REACH  | 3 | 186 | 2 | 1     | 1400.0000 | .7000  | 1.51000 | 0 | 0 | 0 | 1 |
| 6 | RUNOFF | 1 | 86  | 2 | .0500 | 70.0000   | .37000 | 0       | 0 | 0 | 0 | 1 |
| 6 | ADDHYD | 4 | 87  | 1 | 2     | 3         |        | 0       | 0 | 0 | 0 | 1 |
| 6 | ADDHYD | 4 | 87  | 4 | 3     | 1         |        | 0       | 0 | 0 | 0 | 1 |

1

|          |   |     |   |   |           |         |         |   |   |   |   |   |
|----------|---|-----|---|---|-----------|---------|---------|---|---|---|---|---|
| 6 REACH  | 3 | 163 | 1 | 2 | 4400.0000 | .2000   | 1.64000 | 0 | 0 | 0 | 0 | 1 |
| 6 RUNOFF | 1 | 63  |   | 3 | .1600     | 66.0000 | .43000  | 0 | 0 | 0 | 0 | 1 |
| 6 ADDHYD | 4 | 63  | 2 | 3 | 4         |         |         | 0 | 0 | 0 | 0 | 1 |
| 6 REACH  | 3 | 160 | 4 | 1 | 4400.0000 | .2000   | 1.65000 | 0 | 0 | 0 | 0 | 1 |
| 6 RUNOFF | 1 | 60  |   | 3 | .1500     | 66.0000 | .41000  | 0 | 0 | 0 | 0 | 1 |
| 6 ADDHYD | 4 | 60  | 1 | 3 | 4         |         |         | 0 | 0 | 0 | 0 | 1 |
| 6 RUNOFF | 1 | 59  |   | 3 | .1600     | 65.0000 | .33000  | 0 | 0 | 0 | 0 | 1 |
| 6 ADDHYD | 4 | 60  | 4 | 3 | 5         |         |         | 0 | 0 | 0 | 0 | 1 |
| 6 RUNOFF | 1 | 68  |   | 1 | .2200     | 60.0000 | .65000  | 0 | 0 | 0 | 0 | 1 |
| 6 REACH  | 3 | 167 | 1 | 3 | 3300.0000 | .7000   | 1.51000 | 0 | 0 | 0 | 0 | 1 |
| 6 RUNOFF | 1 | 67  |   | 1 | .2700     | 60.0000 | 1.52000 | 0 | 0 | 0 | 0 | 1 |
| 6 ADDHYD | 4 | 67  | 3 | 1 | 2         |         |         | 0 | 0 | 0 | 0 | 1 |
| 6 REACH  | 3 | 164 | 2 | 3 | 2500.0000 | .8000   | 1.51000 | 0 | 0 | 0 | 0 | 1 |
| 6 RUNOFF | 1 | 64  |   | 2 | .2500     | 59.0000 | 1.12000 | 0 | 0 | 0 | 0 | 1 |
| 6 ADDHYD | 4 | 64  | 3 | 2 | 1         |         |         | 0 | 0 | 0 | 0 | 1 |
| 6 REACH  | 3 | 159 | 1 | 3 | 3300.0000 | .5000   | 1.62000 | 0 | 0 | 0 | 0 | 1 |
| 6 ADDHYD | 4 | 60  | 5 | 3 | 2         |         |         | 0 | 0 | 0 | 0 | 1 |
| 6 REACH  | 3 | 151 | 2 | 1 | 4000.0000 | .1000   | 1.65000 | 0 | 0 | 0 | 0 | 1 |
| 6 RUNOFF | 1 | 51  |   | 5 | .1500     | 59.0000 | .39000  | 0 | 0 | 0 | 0 | 1 |
| 6 ADDHYD | 4 | 51  | 1 | 5 | 2         |         |         | 0 | 0 | 0 | 0 | 1 |
| 6 RUNOFF | 1 | 49  |   | 1 | .1000     | 55.0000 | .34000  | 0 | 0 | 0 | 0 | 1 |
| 6 ADDHYD | 4 | 51  | 1 | 2 | 5         |         |         | 0 | 0 | 0 | 0 | 1 |
| 6 RUNOFF | 1 | 52  |   | 1 | .1900     | 55.0000 | .60000  | 0 | 0 | 0 | 0 | 1 |
| 6 ADDHYD | 4 | 51  | 1 | 5 | 3         |         |         | 0 | 0 | 0 | 0 | 1 |
| 6 RUNOFF | 1 | 65  |   | 1 | .1000     | 65.0000 | .75000  | 0 | 0 | 0 | 0 | 1 |
| 6 REACH  | 3 | 158 | 1 | 2 | 3600.0000 | .4000   | 1.63000 | 0 | 0 | 0 | 0 | 1 |
| 6 RUNOFF | 1 | 58  |   | 1 | .1700     | 84.0000 | .43000  | 0 | 0 | 0 | 0 | 1 |
| 6 ADDHYD | 4 | 58  | 1 | 2 | 5         |         |         | 0 | 0 | 0 | 0 | 1 |
| 6 REACH  | 3 | 152 | 5 | 1 | 3500.0000 | .3000   | 1.63000 | 0 | 0 | 0 | 0 | 1 |
| 6 ADDHYD | 4 | 51  | 3 | 1 | 4         |         |         | 0 | 0 | 0 | 0 | 1 |
| 6 RUNOFF | 1 | 62  |   | 3 | .2500     | 55.0000 | .70000  | 0 | 0 | 0 | 0 | 1 |
| 6 REACH  | 3 | 161 | 3 | 2 | 3400.0000 | .7000   | 1.51000 | 0 | 0 | 0 | 0 | 1 |
| 6 RUNOFF | 1 | 61  |   | 1 | .1300     | 55.0000 | .62000  | 0 | 0 | 0 | 0 | 1 |
| 6 ADDHYD | 4 | 61  | 1 | 2 | 3         |         |         | 0 | 0 | 0 | 0 | 1 |
| 6 REACH  | 3 | 150 | 3 | 2 | 2950.0000 | .6000   | 1.53000 | 0 | 0 | 0 | 0 | 1 |
| 6 RUNOFF | 1 | 50  |   | 3 | .1300     | 54.0000 | .63000  | 0 | 0 | 0 | 0 | 1 |
| 6 ADDHYD | 4 | 50  | 2 | 3 | 1         |         |         | 0 | 0 | 0 | 0 | 1 |
| 6 REACH  | 3 | 149 | 1 | 2 | 2400.0000 | .3000   | 1.63000 | 0 | 0 | 0 | 0 | 1 |
| 6 ADDHYD | 4 | 51  | 4 | 2 | 3         |         |         | 0 | 0 | 0 | 0 | 1 |
| 6 REACH  | 3 | 148 | 3 | 1 | 3300.0000 | .3000   | 1.62000 | 0 | 0 | 0 | 0 | 1 |
| 6 RUNOFF | 1 | 48  |   | 2 | .1500     | 55.0000 | .23000  | 0 | 0 | 0 | 0 | 1 |
| 6 ADDHYD | 4 | 48  | 1 | 2 | 3         |         |         | 0 | 0 | 0 | 0 | 1 |
| 6 REACH  | 3 | 141 | 3 | 1 | 3100.0000 | .3000   | 1.62000 | 0 | 0 | 0 | 0 | 1 |
| 6 RUNOFF | 1 | 40  |   | 2 | .3000     | 62.0000 | .65000  | 0 | 0 | 0 | 0 | 1 |
| 6 ADDHYD | 4 | 41  | 1 | 2 | 3         |         |         | 0 | 0 | 0 | 0 | 1 |
| 6 RUNOFF | 1 | 41  |   | 1 | .0800     | 60.0000 | .30000  | 0 | 0 | 0 | 0 | 1 |
| 6 ADDHYD | 4 | 41  | 1 | 3 | 4         |         |         | 0 | 0 | 0 | 0 | 1 |
| 6 REACH  | 3 | 185 | 4 | 1 | 1100.0000 | .3000   | 1.62000 | 0 | 0 | 0 | 0 | 1 |
| 6 RUNOFF | 1 | 85  |   | 2 | .0500     | 63.0000 | .22000  | 0 | 0 | 0 | 0 | 1 |

1

|          |   |    |   |   |       |         |        |   |   |   |   |   |
|----------|---|----|---|---|-------|---------|--------|---|---|---|---|---|
| 6 ADDHYD | 4 | 85 | 1 | 2 | 3     |         |        | 0 | 0 | 0 | 0 | 1 |
| 6 RUNOFF | 1 | 39 |   | 2 | .1500 | 65.0000 | .54000 | 0 | 0 | 0 | 0 | 1 |
| 6 ADDHYD | 4 | 85 | 2 | 3 | 1     |         |        | 0 | 0 | 0 | 0 | 1 |

|   |        |   |     |   |   |   |           |         |         |   |   |   |   |   |   |
|---|--------|---|-----|---|---|---|-----------|---------|---------|---|---|---|---|---|---|
| 6 | ADDHYD | 4 | 37  | 2 | 7 | 1 |           |         |         | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 | RUNOFF | 1 | 37  |   |   | 2 | .1200     | 63.0000 | .21000  | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 | ADDHYD | 4 | 37  | 2 | 1 | 4 |           |         |         | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 | RUNOFF | 1 | 66  |   |   | 3 | .3100     | 57.0000 | .80000  | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 | REACH  | 3 | 157 | 3 |   | 2 | 2300.0000 | .8000   | 1.53000 | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 | RUNOFF | 1 | 57  |   |   | 3 | .1600     | 60.0000 | .53000  | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 | ADDHYD | 4 | 57  | 2 | 3 | 1 |           |         |         | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 | REACH  | 3 | 154 | 1 |   | 2 | 3500.0000 | .5000   | 1.61000 | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 | RUNOFF | 1 | 55  |   |   | 3 | .2500     | 60.0000 | .58000  | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 | ADDHYD | 4 | 54  | 2 | 3 | 1 |           |         |         | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 | RUNOFF | 1 | 56  |   |   | 3 | .1500     | 60.0000 | .23000  | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 | REACH  | 3 | 155 | 3 |   | 2 | 3450.0000 | .6000   | 1.53000 | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 | ADDHYD | 4 | 54  | 2 | 1 | 5 |           |         |         | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 | RUNOFF | 1 | 54  |   |   | 7 | .2500     | 60.0000 | .33000  | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 | ADDHYD | 4 | 54  | 7 | 5 | 2 |           |         |         | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 | REACH  | 3 | 153 | 2 |   | 3 | 2050.0000 | .5000   | 1.61000 | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 | RUNOFF | 1 | 53  |   |   | 5 | .1700     | 60.0000 | .41000  | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 | ADDHYD | 4 | 53  | 3 | 5 | 1 |           |         |         | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 | REACH  | 3 | 147 | 1 |   | 3 | 2300.0000 | .4000   | 1.62000 | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 | RUNOFF | 1 | 47  |   |   | 2 | .2600     | 60.0000 | .45000  | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 | ADDHYD | 4 | 47  | 3 | 2 | 1 |           |         |         | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 | REACH  | 3 | 142 | 1 |   | 2 | 5400.0000 | .3000   | 1.61000 | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 | RUNOFF | 1 | 42  |   |   | 3 | .2000     | 59.0000 | .33000  | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 | ADDHYD | 4 | 43  | 3 | 2 | 1 |           |         |         | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 | RUNOFF | 1 | 43  |   |   | 2 | .1400     | 62.0000 | .77000  | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 | ADDHYD | 4 | 43  | 1 | 2 | 5 |           |         |         | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 | RUNOFF | 1 | 45  |   |   | 1 | .2400     | 60.0000 | .50000  | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 | RUNOFF | 1 | 46  |   |   | 2 | .2300     | 60.0000 | .48000  | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 | ADDHYD | 4 | 45  | 1 | 2 | 3 |           |         |         | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 | REACH  | 3 | 143 | 3 |   | 2 | 2750.0000 | .7000   | 1.55000 | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 | ADDHYD | 4 | 43  | 2 | 5 | 1 |           |         |         | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 | REACH  | 3 | 136 | 1 |   | 2 | 2050.0000 | .8000   | 1.55000 | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 | ADDHYD | 4 | 37  | 2 | 4 | 1 |           |         |         | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 | REACH  | 3 | 129 | 1 |   | 2 | 3800.0000 | .1000   | 1.65000 | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 | RUNOFF | 1 | 27  |   |   | 3 | .1600     | 78.0000 | .51000  | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 | ADDHYD | 4 | 29  | 2 | 3 | 1 |           |         |         | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 | RUNOFF | 1 | 38  |   |   | 3 | .3200     | 66.0000 | .57000  | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 | REACH  | 3 | 128 | 3 |   | 2 | 1700.0000 | 1.2000  | 1.47000 | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 | RUNOFF | 1 | 28  |   |   | 4 | .1700     | 77.0000 | .38000  | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 | ADDHYD | 4 | 28  | 2 | 4 | 5 |           |         |         | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 | REACH  | 3 | 127 | 5 |   | 3 | 2300.0000 | 1.0000  | 1.47000 | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 | ADDHYD | 4 | 29  | 1 | 3 | 5 |           |         |         | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 | RUNOFF | 1 | 29  |   |   | 1 | .2300     | 80.0000 | .41000  | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 | ADDHYD | 4 | 29  | 1 | 5 | 4 |           |         |         | 0 | 0 | 0 | 0 | 0 | 1 |

1

TR20 XEQ 9/29/95 9:59 UPPER SAND CREEK -- EXISTING CONDITION  
REV PC/09/83 24 HR TYPE IIA STORM (100- AND 10-YR. AMC=2)

JOB 1 PASS 1  
PAGE 9

|   |        |   |     |   |   |   |           |         |         |   |   |   |   |   |   |
|---|--------|---|-----|---|---|---|-----------|---------|---------|---|---|---|---|---|---|
| 6 | REACH  | 3 | 184 | 4 |   | 2 | 1350.0000 | .2000   | 1.63000 | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 | RUNOFF | 1 | 84  |   |   | 3 | .0400     | 86.0000 | .08000  | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 | ADDHYD | 4 | 30  | 2 | 3 | 1 |           |         |         | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 | RUNOFF | 1 | 30  |   |   | 3 | .1000     | 74.0000 | .58000  | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 | ADDHYD | 4 | 30  | 3 | 1 | 2 |           |         |         | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 | RUNOFF | 1 | 31  |   |   | 3 | .2100     | 68.0000 | .72000  | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 | ADDHYD | 4 | 30  | 2 | 3 | 1 |           |         |         | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 | RUNOFF | 1 | 44  |   |   | 3 | .1700     | 65.0000 | .46000  | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 | REACH  | 3 | 135 | 3 |   | 2 | 3100.0000 | .9000   | 1.52000 | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 | RUNOFF | 1 | 35  |   |   | 3 | .1200     | 65.0000 | .67000  | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 | ADDHYD | 4 | 35  | 3 | 2 | 5 |           |         |         | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 | RUNOFF | 1 | 34  |   |   | 4 | .2900     | 75.0000 | .76000  | 0 | 0 | 0 | 0 | 0 | 1 |

|   |        |   |     |   |   |   |           |         |         |   |   |   |   |   |   |
|---|--------|---|-----|---|---|---|-----------|---------|---------|---|---|---|---|---|---|
| 6 | ADDHYD | 4 | 30  | 1 | 2 | 3 |           |         |         | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 | RUNOFF | 1 | 32  |   |   | 1 | .1100     | 82.0000 | .56000  | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 | RUNOFF | 1 | 33  |   |   | 2 | .2900     | 78.0000 | .42000  | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 | ADDHYD | 4 | 33  | 2 | 1 | 4 |           |         |         | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 | REACH  | 3 | 131 | 4 | 2 |   | 4400.0000 | .7000   | 1.52000 | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 | ADDHYD | 4 | 30  | 3 | 2 | 1 |           |         |         | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 | REACH  | 3 | 125 | 1 | 3 |   | 1200.0000 | .4000   | 1.63000 | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 | RUNOFF | 1 | 26  |   |   | 2 | .1900     | 82.0000 | .22000  | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 | ADDHYD | 4 | 25  | 3 | 2 | 1 |           |         |         | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 | RUNOFF | 1 | 25  |   |   | 2 | .0400     | 78.0000 | .07000  | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 | ADDHYD | 4 | 25  | 1 | 2 | 3 |           |         |         | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 | RUNOFF | 1 | 24  |   |   | 1 | .1900     | 78.0000 | .23000  | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 | ADDHYD | 4 | 25  | 1 | 3 | 2 |           |         |         | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 | REACH  | 3 | 120 | 2 | 4 |   | 2700.0000 | .4000   | 1.61000 | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 | RUNOFF | 1 | 22  |   |   | 2 | .1300     | 78.0000 | .45000  | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 | ADDHYD | 4 | 20  | 4 | 2 | 3 |           |         |         | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 | RUNOFF | 1 | 20  |   |   | 2 | .0900     | 78.0000 | .17000  | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 | ADDHYD | 4 | 20  | 3 | 2 | 1 |           |         |         | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 | RUNOFF | 1 | 21  |   |   | 2 | .1200     | 78.0000 | .26000  | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 | ADDHYD | 4 | 20  | 2 | 1 | 3 |           |         |         | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 | RUNOFF | 1 | 19  |   |   | 2 | .1700     | 78.0000 | .61000  | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 | ADDHYD | 4 | 20  | 3 | 2 | 1 |           |         |         | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 | RUNOFF | 1 | 83  |   |   | 2 | .1100     | 78.0000 | .53000  | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 | ADDHYD | 4 | 20  | 1 | 2 | 3 |           |         |         | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 | RUNOFF | 1 | 23  |   |   | 2 | .2800     | 83.0000 | .48000  | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 | REACH  | 3 | 183 | 2 | 1 |   | 2700.0000 | 1.4000  | 1.45000 | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 | ADDHYD | 4 | 20  | 1 | 3 | 2 |           |         |         | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 | REACH  | 3 | 113 | 2 | 1 |   | 4200.0000 | .1000   | 1.65000 | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 | RUNOFF | 1 | 13  |   |   | 3 | .2400     | 78.0000 | .30000  | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 | ADDHYD | 4 | 13  | 1 | 3 | 2 |           |         |         | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 | RUNOFF | 1 | 14  |   |   | 3 | .0700     | 78.0000 | .35000  | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 | ADDHYD | 4 | 13  | 2 | 3 | 1 |           |         |         | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 | RUNOFF | 1 | 15  |   |   | 2 | .1700     | 78.0000 | .48000  | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 | ADDHYD | 4 | 13  | 1 | 2 | 3 |           |         |         | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 | RUNOFF | 1 | 16  |   |   | 2 | .2100     | 78.0000 | .74000  | 0 | 0 | 0 | 0 | 0 | 1 |

1

TR20 XEQ 9/29/95 9:59 UPPER SAND CREEK -- EXISTING CONDITION  
REV PC/09/83 24 HR TYPE IIA STORM (100- AND 10-YR. AMC=2)

JOB 1 PASS 1  
PAGE 10

|   |        |   |     |   |   |   |           |         |         |   |   |   |   |   |   |
|---|--------|---|-----|---|---|---|-----------|---------|---------|---|---|---|---|---|---|
| 6 | REACH  | 3 | 115 | 2 | 1 |   | 1800.0000 | .8000   | 1.55000 | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 | ADDHYD | 4 | 13  | 1 | 3 | 2 |           |         |         | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 | RUNOFF | 1 | 18  |   |   | 1 | .1300     | 78.0000 | .44000  | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 | RUNOFF | 1 | 17  |   |   | 3 | .1700     | 78.0000 | .66000  | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 | ADDHYD | 4 | 18  | 1 | 3 | 6 |           |         |         | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 | REACH  | 3 | 114 | 6 | 3 |   | 1750.0000 | .7000   | 1.56000 | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 | ADDHYD | 4 | 13  | 3 | 2 | 1 |           |         |         | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 | REACH  | 3 | 106 | 1 | 2 |   | 3100.0000 | .3000   | 1.64000 | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 | RUNOFF | 1 | 6   |   |   | 1 | .1300     | 81.0000 | .37000  | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 | ADDHYD | 4 | 6   | 1 | 2 | 3 |           |         |         | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 | RUNOFF | 1 | 5   |   |   | 2 | .1500     | 84.0000 | .26000  | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 | ADDHYD | 4 | 6   | 3 | 2 | 1 |           |         |         | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 | RUNOFF | 1 | 7   |   |   | 3 | .1900     | 78.0000 | .60000  | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 | ADDHYD | 4 | 6   | 3 | 1 | 2 |           |         |         | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 | RUNOFF | 1 | 11  |   |   | 1 | .1600     | 83.0000 | .37000  | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 | RUNOFF | 1 | 12  |   |   | 3 | .1300     | 75.0000 | .65000  | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 | ADDHYD | 4 | 11  | 3 | 1 | 5 |           |         |         | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 | REACH  | 3 | 107 | 5 | 1 |   | 2650.0000 | 1.0000  | 1.45000 | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 | ADDHYD | 4 | 6   | 1 | 2 | 3 |           |         |         | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 | REACH  | 3 | 104 | 3 | 1 |   | 1950.0000 | .2000   | 1.65000 | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 | RUNOFF | 1 | 4   |   |   | 2 | .1900     | 77.0000 | .24000  | 0 | 0 | 0 | 0 | 0 | 1 |

|   |        |   |     |   |   |   |           |         |  |         |   |   |   |   |   |
|---|--------|---|-----|---|---|---|-----------|---------|--|---------|---|---|---|---|---|
| 6 | ADDHYD | 4 | 8   | 3 | 2 | 1 |           |         |  | 0       | 0 | 0 | 0 | 0 | 1 |
| 6 | RUNOFF | 1 | 10  |   | 2 |   | .1400     | 86.0000 |  | .17000  | 0 | 0 | 0 | 0 | 1 |
| 6 | REACH  | 3 | 109 | 2 | 3 |   | 2350.0000 | 1.8000  |  | 1.41000 | 0 | 0 | 0 | 0 | 1 |
| 6 | RUNOFF | 1 | 9   |   | 2 |   | .2500     | 80.0000 |  | .15000  | 0 | 0 | 0 | 0 | 1 |
| 6 | ADDHYD | 4 | 9   | 3 | 2 | 4 |           |         |  | 0       | 0 | 0 | 0 | 0 | 1 |
| 6 | REACH  | 3 | 108 | 4 | 2 |   | 2500.0000 | .9000   |  | 1.47000 | 0 | 0 | 0 | 0 | 1 |
| 6 | ADDHYD | 4 | 99  | 1 | 2 | 4 |           |         |  | 1       | 1 | 0 | 1 | 0 | 1 |

ENDATA

END OF LISTING

|          |          |      |                                              |       |        |
|----------|----------|------|----------------------------------------------|-------|--------|
| TR20 XEQ | 9/29/95  | 9:59 | UPPER SAND CREEK -- EXISTING CONDITION       | JOB 1 | PASS 1 |
| REV      | PC/09/83 |      | 24 HR TYPE IIA STORM (100- AND 10-YR. AMC=2) | PAGE  | 11     |

|                                    |                                 |
|------------------------------------|---------------------------------|
| EXECUTIVE CONTROL OPERATION INCREM | RECORD ID                       |
| +                                  | MAIN TIME INCREMENT = .03 HOURS |

|                                    |                   |                                 |                   |                     |
|------------------------------------|-------------------|---------------------------------|-------------------|---------------------|
| EXECUTIVE CONTROL OPERATION COMPUT | RECORD ID 100-YR  |                                 |                   |                     |
| +                                  | FROM XSECTION 82  |                                 |                   |                     |
| +                                  | TO STRUCTURE 99   |                                 |                   |                     |
| STARTING TIME = .00                | RAIN DEPTH = 4.40 | RAIN DURATION= 1.00             | RAIN TABLE NO.= 1 | ANT. MOIST. COND= 2 |
| ALTERNATE NO.= 1                   | STORM NO.= 1      | MAIN TIME INCREMENT = .03 HOURS |                   |                     |

```

*** WARNING REACH 172 ATT-KIN COEFF.(C) GREATER THAN 0.667. CONSIDER REDUCING MAIN TIME INCREMENT ***
*** WARNING REACH 187 ATT-KIN COEFF.(C) GREATER THAN 0.667. CONSIDER REDUCING MAIN TIME INCREMENT ***
0 *** WARNING - REACH 164 INFLOW HYDROGRAPH VOLUME TRUNCATED ABOVE BASEFLOW AT 14.53 CFS. 12.62 % OF PEAK.
0 *** WARNING - REACH 159 INFLOW HYDROGRAPH VOLUME TRUNCATED ABOVE BASEFLOW AT 21.54 CFS. 12.58 % OF PEAK.
0 *** WARNING - REACH 150 INFLOW HYDROGRAPH VOLUME TRUNCATED ABOVE BASEFLOW AT 7.92 CFS. 10.41 % OF PEAK.
0 *** WARNING - REACH 149 INFLOW HYDROGRAPH VOLUME TRUNCATED ABOVE BASEFLOW AT 10.56 CFS. 11.95 % OF PEAK.

*** WARNING REACH 185 ATT-KIN COEFF.(C) GREATER THAN 0.667. CONSIDER REDUCING MAIN TIME INCREMENT ***
*** WARNING REACH 184 ATT-KIN COEFF.(C) GREATER THAN 0.667. CONSIDER REDUCING MAIN TIME INCREMENT ***
0 *** WARNING - REACH 184 INFLOW HYDROGRAPH VOLUME TRUNCATED ABOVE BASEFLOW AT 358.53 CFS. 10.82 % OF PEAK.

*** WARNING REACH 125 ATT-KIN COEFF.(C) GREATER THAN 0.667. CONSIDER REDUCING MAIN TIME INCREMENT ***
0 *** WARNING - REACH 125 INFLOW HYDROGRAPH VOLUME TRUNCATED ABOVE BASEFLOW AT 414.91 CFS. 11.49 % OF PEAK.
0 *** WARNING - REACH 120 INFLOW HYDROGRAPH VOLUME TRUNCATED ABOVE BASEFLOW AT 434.16 CFS. 11.84 % OF PEAK.
0 *** WARNING - REACH 113 INFLOW HYDROGRAPH VOLUME TRUNCATED ABOVE BASEFLOW AT 480.65 CFS. 11.92 % OF PEAK.
0 *** WARNING - REACH 106 INFLOW HYDROGRAPH VOLUME TRUNCATED ABOVE BASEFLOW AT 542.41 CFS. 11.51 % OF PEAK.

*** WARNING REACH 104 ATT-KIN COEFF.(C) GREATER THAN 0.667. CONSIDER REDUCING MAIN TIME INCREMENT ***
0 *** WARNING - REACH 104 INFLOW HYDROGRAPH VOLUME TRUNCATED ABOVE BASEFLOW AT 586.69 CFS. 10.93 % OF PEAK.

```

OPERATION ADDHYD STRUCTURE 99

|                |                     |                      |
|----------------|---------------------|----------------------|
| PEAK TIME(HRS) | PEAK DISCHARGE(CFS) | PEAK ELEVATION(FEET) |
| 6.32           | 5821.23             | (NULL)               |

  

|           |                          |                             |                  |           |                 |              |
|-----------|--------------------------|-----------------------------|------------------|-----------|-----------------|--------------|
| TIME(HRS) | FIRST HYDROGRAPH POINT = | .00 HOURS                   | TIME INCREMENT = | .03 HOURS | DRAINAGE AREA = | 16.04 SQ.MI. |
| 5.28      | DISCHG                   | .00 .01 .05 .14 .31 .56 .91 |                  |           | 1.36 2.32 7.14  |              |

|      |        |         |         |         |         |         |         |         |         |         |         |
|------|--------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 5.61 | DISCHG | 25.81   | 75.17   | 168.98  | 314.15  | 510.96  | 757.21  | 1049.08 | 1382.98 | 1755.67 | 2163.42 |
| 5.94 | DISCHG | 2602.47 | 3068.96 | 3557.01 | 4054.39 | 4530.11 | 4932.01 | 5242.65 | 5469.05 | 5628.31 | 5732.55 |
| 6.27 | DISCHG | 5792.92 | 5818.79 | 5816.40 | 5791.86 | 5751.23 | 5698.28 | 5634.71 | 5561.40 | 5479.50 | 5390.00 |
| 6.60 | DISCHG | 5293.87 | 5193.26 | 5091.60 | 4991.90 | 4896.22 | 4806.15 | 4722.67 | 4646.57 | 4578.25 | 4517.99 |
| 6.93 | DISCHG | 4465.71 | 4421.19 | 4383.91 | 4353.06 | 4327.29 | 4304.64 | 4283.26 | 4262.12 | 4240.29 | 4216.80 |
| 7.26 | DISCHG | 4190.55 | 4160.42 | 4125.35 | 4084.41 | 4036.87 | 3982.21 | 3920.11 | 3850.50 | 3773.59 | 3689.94 |
| 7.59 | DISCHG | 3600.48 | 3506.26 | 3408.15 | 3306.97 | 3203.59 | 3098.88 | 2993.74 | 2889.01 | 2785.49 | 2683.89 |
| 7.92 | DISCHG | 2584.83 | 2488.88 | 2396.49 | 2307.92 | 2223.09 | 2141.21 | 2061.55 | 1984.09 | 1909.18 | 1837.15 |
| 8.25 | DISCHG | 1768.21 | 1702.46 | 1639.93 | 1580.58 | 1524.36 | 1471.20 | 1420.97 | 1373.50 | 1328.63 | 1286.21 |
| 8.58 | DISCHG | 1246.14 | 1208.33 | 1172.70 | 1139.18 | 1107.70 | 1078.15 | 1050.46 | 1024.54 | 1000.28 | 977.58  |
| 8.91 | DISCHG | 956.36  | 936.50  | 917.90  | 900.47  | 884.10  | 868.67  | 854.10  | 840.29  | 827.14  | 814.56  |
| 9.24 | DISCHG | 802.49  | 790.86  | 779.59  | 768.65  | 757.99  | 747.59  | 737.43  | 727.50  | 717.80  | 708.34  |
| 9.57 | DISCHG | 699.12  | 690.17  | 681.50  | 673.13  | 665.07  | 657.35  | 649.98  | 642.97  | 636.33  | 630.06  |

RUNOFF VOLUME ABOVE BASEFLOW = 1.10 WATERSHED INCHES, 11343.44 CFS-HRS, 937.42 ACRE-FEET; BASEFLOW = .00 CFS

EXECUTIVE CONTROL OPERATION ENDCMP

RECORD ID

COMPUTATIONS COMPLETED FOR PASS 1

EXECUTIVE CONTROL OPERATION COMPUT

RECORD ID 10-YR

FROM XSECTION 82

TO STRUCTURE 99

STARTING TIME = .00 RAIN DEPTH = 3.00 RAIN DURATION= 1.00 RAIN TABLE NO.= 1 ANT. MOIST. COND= 2  
 ALTERNATE NO.= 1 STORM NO.= 2 MAIN TIME INCREMENT = .03 HOURS

|   |                                                                              |             |                  |
|---|------------------------------------------------------------------------------|-------------|------------------|
| 0 | *** WARNING - REACH 167 INFLOW HYDROGRAPH VOLUME TRUNCATED ABOVE BASEFLOW AT | 2.41 CFS,   | 11.26 % OF PEAK. |
| 0 | *** WARNING - REACH 164 INFLOW HYDROGRAPH VOLUME TRUNCATED ABOVE BASEFLOW AT | 5.96 CFS,   | 21.07 % OF PEAK. |
| 0 | *** WARNING - REACH 159 INFLOW HYDROGRAPH VOLUME TRUNCATED ABOVE BASEFLOW AT | 8.92 CFS,   | 22.44 % OF PEAK. |
| 0 | *** WARNING - REACH 151 INFLOW HYDROGRAPH VOLUME TRUNCATED ABOVE BASEFLOW AT | 90.28 CFS,  | 11.91 % OF PEAK. |
| 0 | *** WARNING - REACH 161 INFLOW HYDROGRAPH VOLUME TRUNCATED ABOVE BASEFLOW AT | 1.83 CFS,   | 21.63 % OF PEAK. |
| 0 | *** WARNING - REACH 150 INFLOW HYDROGRAPH VOLUME TRUNCATED ABOVE BASEFLOW AT | 2.84 CFS,   | 29.72 % OF PEAK. |
| 0 | *** WARNING - REACH 149 INFLOW HYDROGRAPH VOLUME TRUNCATED ABOVE BASEFLOW AT | 3.89 CFS,   | 36.88 % OF PEAK. |
| 0 | *** WARNING - REACH 148 INFLOW HYDROGRAPH VOLUME TRUNCATED ABOVE BASEFLOW AT | 110.92 CFS, | 14.58 % OF PEAK. |
| 0 | *** WARNING - REACH 141 INFLOW HYDROGRAPH VOLUME TRUNCATED ABOVE BASEFLOW AT | 116.19 CFS, | 15.44 % OF PEAK. |

\*\*\* WARNING REACH 185 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT \*\*\*

|   |                                                                              |             |                  |
|---|------------------------------------------------------------------------------|-------------|------------------|
| 0 | *** WARNING - REACH 185 INFLOW HYDROGRAPH VOLUME TRUNCATED ABOVE BASEFLOW AT | 125.76 CFS, | 16.63 % OF PEAK. |
| 0 | *** WARNING - REACH 137 INFLOW HYDROGRAPH VOLUME TRUNCATED ABOVE BASEFLOW AT | 131.11 CFS, | 17.20 % OF PEAK. |

TR20 XEQ 9/29/95 9:59 UPPER SAND CREEK -- EXISTING CONDITION  
 REV PC/09/83 24 HR TYPE IIA STORM (100- AND 10-YR, AMC=2)

JOB 1 PASS 2  
 PAGE 13

|   |                                                                              |             |                  |
|---|------------------------------------------------------------------------------|-------------|------------------|
| 0 | *** WARNING - REACH 157 INFLOW HYDROGRAPH VOLUME TRUNCATED ABOVE BASEFLOW AT | 2.72 CFS,   | 17.90 % OF PEAK. |
| 0 | *** WARNING - REACH 154 INFLOW HYDROGRAPH VOLUME TRUNCATED ABOVE BASEFLOW AT | 4.49 CFS,   | 18.60 % OF PEAK. |
| 0 | *** WARNING - REACH 153 INFLOW HYDROGRAPH VOLUME TRUNCATED ABOVE BASEFLOW AT | 11.79 CFS,  | 15.30 % OF PEAK. |
| 0 | *** WARNING - REACH 147 INFLOW HYDROGRAPH VOLUME TRUNCATED ABOVE BASEFLOW AT | 13.73 CFS,  | 15.77 % OF PEAK. |
| 0 | *** WARNING - REACH 142 INFLOW HYDROGRAPH VOLUME TRUNCATED ABOVE BASEFLOW AT | 16.73 CFS,  | 16.85 % OF PEAK. |
| 0 | *** WARNING - REACH 136 INFLOW HYDROGRAPH VOLUME TRUNCATED ABOVE BASEFLOW AT | 26.92 CFS,  | 20.27 % OF PEAK. |
| 0 | *** WARNING - REACH 129 INFLOW HYDROGRAPH VOLUME TRUNCATED ABOVE BASEFLOW AT | 171.13 CFS, | 20.36 % OF PEAK. |
| 0 | *** WARNING - REACH 184 INFLOW HYDROGRAPH VOLUME TRUNCATED ABOVE BASEFLOW AT | 207.87 CFS, | 24.33 % OF PEAK. |

\*\*\* WARNING REACH 125 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT \*\*\*

|   |                                                                              |             |                  |
|---|------------------------------------------------------------------------------|-------------|------------------|
| 0 | *** WARNING - REACH 125 INFLOW HYDROGRAPH VOLUME TRUNCATED ABOVE BASEFLOW AT | 242.19 CFS, | 24.47 % OF PEAK. |
| 0 | *** WARNING - REACH 120 INFLOW HYDROGRAPH VOLUME TRUNCATED ABOVE BASEFLOW AT | 257.51 CFS, | 24.27 % OF PEAK. |

0 \*\*\* WARNING - REACH 104 INFLOW HYDROGRAPH VOLUME TRUNCATED ABOVE BASEFLOW AT 368.36 CFS, 17.44 % OF PEAK.

OPERATION ADDHYD STRUCTURE 99

|                |                     |                      |
|----------------|---------------------|----------------------|
| PEAK TIME(HRS) | PEAK DISCHARGE(CFS) | PEAK ELEVATION(FEET) |
| 6.32           | 2363.65             | (NULL)               |
| 8.04           | 1119.07             | (NULL)               |

|           |                          |           |                  |           |                 |              |
|-----------|--------------------------|-----------|------------------|-----------|-----------------|--------------|
| TIME(HRS) | FIRST HYDROGRAPH POINT = | .00 HOURS | TIME INCREMENT = | .03 HOURS | DRAINAGE AREA = | 16.04 SQ.MI. |
| 5.28      | DISCHG                   | .00       | .00              | .00       | .00             | .11          |
| 5.61      | DISCHG                   | 1.00      | 4.72             | 15.98     | 41.94           | 89.19        |
| 5.94      | DISCHG                   | 864.58    | 1062.80          | 1275.37   | 1496.37         | 1715.99      |
| 6.27      | DISCHG                   | 2349.65   | 2362.27          | 2362.60   | 2353.27         | 2336.79      |
| 6.60      | DISCHG                   | 2137.89   | 2087.80          | 2033.17   | 1975.21         | 1915.16      |
| 6.93      | DISCHG                   | 1566.70   | 1517.14          | 1471.02   | 1428.36         | 1389.02      |
| 7.26      | DISCHG                   | 1206.15   | 1184.27          | 1164.94   | 1148.09         | 1133.64      |
| 7.59      | DISCHG                   | 1090.04   | 1088.76          | 1088.95   | 1090.38         | 1092.77      |
| 7.92      | DISCHG                   | 1113.21   | 1115.79          | 1117.73   | 1118.85         | 1118.94      |
| 8.25      | DISCHG                   | 1081.02   | 1068.48          | 1054.67   | 1039.71         | 1023.75      |
| 8.58      | DISCHG                   | 913.29    | 893.30           | 873.11    | 852.81          | 832.49       |
| 8.91      | DISCHG                   | 714.71    | 696.37           | 678.54    | 661.24          | 644.49       |

1

|          |          |      |                                              |       |        |
|----------|----------|------|----------------------------------------------|-------|--------|
| TR20 XEQ | 9/29/95  | 9:59 | UPPER SAND CREEK -- EXISTING CONDITION       | JOB 1 | PASS 2 |
| REV      | PC/09/83 |      | 24 HR TYPE IIA STORM (100- AND 10-YR, AMC=2) | PAGE  | 14     |

|      |        |        |        |        |        |        |        |        |        |        |        |
|------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 9.24 | DISCHG | 556.44 | 543.85 | 531.84 | 520.39 | 509.50 | 499.14 | 489.29 | 479.93 | 471.05 | 462.61 |
| 9.57 | DISCHG | 454.59 | 446.98 | 439.74 | 432.86 | 426.31 | 420.06 | 414.11 | 408.42 | 402.98 | 397.78 |

RUNOFF VOLUME ABOVE BASEFLOW = .45 WATERSHED INCHES, 4696.95 CFS-HRS, 388.16 ACRE-FEET; BASEFLOW = .00 CFS

|                                     |           |
|-------------------------------------|-----------|
| EXECUTIVE CONTROL OPERATION ENDCMP  | RECORD ID |
| + COMPUTATIONS COMPLETED FOR PASS 2 |           |

|                                    |           |
|------------------------------------|-----------|
| EXECUTIVE CONTROL OPERATION ENDJOB | RECORD ID |
|------------------------------------|-----------|

1

|          |          |      |                                              |       |         |
|----------|----------|------|----------------------------------------------|-------|---------|
| TR20 XEQ | 9/29/95  | 9:59 | UPPER SAND CREEK -- EXISTING CONDITION       | JOB 1 | SUMMARY |
| REV      | PC/09/83 |      | 24 HR TYPE IIA STORM (100- AND 10-YR, AMC=2) | PAGE  | 15      |

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/<br>STRUCTURE<br>ID | STANDARD<br>CONTROL<br>OPERATION | RAIN<br>DRAINAGE<br>AREA<br>(SQ MI) | ANTEC<br>TABLE<br># | MAIN<br>MOIST<br>COND | TIME<br>INCREM<br>(HR) | PRECIPITATION |                |                  | RUNOFF<br>AMOUNT<br>(IN) | PEAK DISCHARGE    |              |               |               |
|-----------------------------|----------------------------------|-------------------------------------|---------------------|-----------------------|------------------------|---------------|----------------|------------------|--------------------------|-------------------|--------------|---------------|---------------|
|                             |                                  |                                     |                     |                       |                        | BEGIN<br>(HR) | AMOUNT<br>(IN) | DURATION<br>(HR) |                          | ELEVATION<br>(FT) | TIME<br>(HR) | RATE<br>(CFS) | RATE<br>(CSM) |

ALTERNATE 1 1 STORM 1

+

|              |        |      |   |   |     |    |      |       |      |     |      |         |        |
|--------------|--------|------|---|---|-----|----|------|-------|------|-----|------|---------|--------|
| XSECTION 74  | RUNOFF | .18  | 1 | 2 | .03 | .0 | 4.40 | 24.00 | .99  | --- | 6.20 | 149.49  | 830.5  |
| STRUCTURE 74 | ADDHYD | .37  | 1 | 2 | .03 | .0 | 4.40 | 24.00 | .99  | --- | 6.12 | 359.60  | 971.9  |
| XSECTION 173 | REACH  | .37  | 1 | 2 | .03 | .0 | 4.40 | 24.00 | .99  | --- | 6.21 | 322.30  | 871.1  |
|              |        |      |   |   |     |    |      |       |      |     |      |         |        |
| XSECTION 75  | RUNOFF | .12  | 1 | 2 | .03 | .0 | 4.40 | 24.00 | .98  | --- | 6.34 | 75.64   | 630.3  |
| STRUCTURE 75 | ADDHYD | .49  | 1 | 2 | .03 | .0 | 4.40 | 24.00 | .98  | --- | 6.22 | 387.71  | 791.3  |
| XSECTION 73  | RUNOFF | .12  | 1 | 2 | .03 | .0 | 4.40 | 24.00 | .98  | --- | 6.23 | 92.97   | 774.8  |
| STRUCTURE 75 | ADDHYD | .61  | 1 | 2 | .03 | .0 | 4.40 | 24.00 | .98  | --- | 6.22 | 480.63  | 787.9  |
| XSECTION 81  | RUNOFF | .39  | 1 | 2 | .03 | .0 | 4.40 | 24.00 | .98  | --- | 6.22 | 310.16  | 795.3  |
|              |        |      |   |   |     |    |      |       |      |     |      |         |        |
| XSECTION 175 | REACH  | .39  | 1 | 2 | .03 | .0 | 4.40 | 24.00 | .98  | --- | 6.34 | 272.74  | 699.3  |
| STRUCTURE 75 | ADDHYD | 1.00 | 1 | 2 | .03 | .0 | 4.40 | 24.00 | .98  | --- | 6.26 | 726.93  | 726.9  |
| XSECTION 80  | RUNOFF | .22  | 1 | 2 | .03 | .0 | 4.40 | 24.00 | .99  | --- | 6.14 | 207.91  | 945.0  |
| XSECTION 176 | REACH  | .22  | 1 | 2 | .03 | .0 | 4.40 | 24.00 | .98  | --- | 6.31 | 167.91  | 763.2  |
| STRUCTURE 75 | ADDHYD | 1.22 | 1 | 2 | .03 | .0 | 4.40 | 24.00 | .98  | --- | 6.27 | 891.56  | 730.8  |
|              |        |      |   |   |     |    |      |       |      |     |      |         |        |
| XSECTION 76  | RUNOFF | .17  | 1 | 2 | .03 | .0 | 4.40 | 24.00 | .98  | --- | 6.33 | 109.34  | 643.2  |
| STRUCTURE 75 | ADDHYD | 1.39 | 1 | 2 | .03 | .0 | 4.40 | 24.00 | .98  | --- | 6.28 | 998.01  | 718.0  |
| XSECTION 172 | REACH  | 1.39 | 1 | 2 | .03 | .0 | 4.40 | 24.00 | .98  | --- | 6.33 | 989.50  | 711.9  |
| XSECTION 88  | RUNOFF | .10  | 1 | 2 | .03 | .0 | 4.40 | 24.00 | .99  | --- | 6.11 | 101.80  | 1018.0 |
| STRUCTURE 77 | ADDHYD | 1.49 | 1 | 2 | .03 | .0 | 4.40 | 24.00 | .98  | --- | 6.31 | 1039.65 | 697.8  |
|              |        |      |   |   |     |    |      |       |      |     |      |         |        |
| XSECTION 77  | RUNOFF | .25  | 1 | 2 | .03 | .0 | 4.40 | 24.00 | .98  | --- | 6.25 | 186.13  | 744.5  |
| STRUCTURE 77 | ADDHYD | 1.74 | 1 | 2 | .03 | .0 | 4.40 | 24.00 | .98  | --- | 6.30 | 1219.25 | 700.7  |
| XSECTION 79  | RUNOFF | .29  | 1 | 2 | .03 | .0 | 4.40 | 24.00 | .99  | --- | 6.09 | 319.80  | 1102.8 |
| XSECTION 178 | REACH  | .29  | 1 | 2 | .03 | .0 | 4.40 | 24.00 | .99  | --- | 6.17 | 280.06  | 965.7  |
| XSECTION 78  | RUNOFF | .88  | 1 | 2 | .03 | .0 | 4.40 | 24.00 | .99  | --- | 6.17 | 772.41  | 877.7  |
|              |        |      |   |   |     |    |      |       |      |     |      |         |        |
| STRUCTURE 78 | ADDHYD | 1.17 | 1 | 2 | .03 | .0 | 4.40 | 24.00 | .99  | --- | 6.17 | 1052.47 | 899.5  |
| XSECTION 177 | REACH  | 1.17 | 1 | 2 | .03 | .0 | 4.40 | 24.00 | .98  | --- | 6.25 | 990.02  | 846.2  |
| STRUCTURE 77 | ADDHYD | 2.91 | 1 | 2 | .03 | .0 | 4.40 | 24.00 | .98  | --- | 6.28 | 2193.90 | 753.9  |
| XSECTION 171 | REACH  | 2.91 | 1 | 2 | .03 | .0 | 4.40 | 24.00 | .98  | --- | 6.38 | 2035.90 | 699.6  |
| XSECTION 71  | RUNOFF | .36  | 1 | 2 | .03 | .0 | 4.40 | 24.00 | 1.17 | --- | 6.09 | 460.34  | 1278.7 |
|              |        |      |   |   |     |    |      |       |      |     |      |         |        |
| STRUCTURE 71 | ADDHYD | 3.27 | 1 | 2 | .03 | .0 | 4.40 | 24.00 | 1.00 | --- | 6.37 | 2164.36 | 661.9  |
| XSECTION 170 | REACH  | 3.27 | 1 | 2 | .03 | .0 | 4.40 | 24.00 | .99  | --- | 6.43 | 2135.36 | 653.0  |

1

TR20 XEQ 9/29/95 9:59 UPPER SAND CREEK -- EXISTING CONDITION JOB 1 SUMMARY  
REV PC/09/83 24 HR TYPE IIA STORM (100- AND 10-YR, AMC=2) PAGE 16

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/<br>STRUCTURE<br>ID | STANDARD<br>CONTROL<br>OPERATION | DRAINAGE<br>AREA<br>(SQ MI) | RAIN<br>TABLE<br># | ANTEC<br>MOIST<br>COND | MAIN<br>TIME<br>INCREM<br>(HR) | PRECIPITATION |                |                  | RUNOFF<br>AMOUNT<br>(IN) | PEAK DISCHARGE    |              |               |               |
|-----------------------------|----------------------------------|-----------------------------|--------------------|------------------------|--------------------------------|---------------|----------------|------------------|--------------------------|-------------------|--------------|---------------|---------------|
|                             |                                  |                             |                    |                        |                                | BEGIN<br>(HR) | AMOUNT<br>(IN) | DURATION<br>(HR) |                          | ELEVATION<br>(FT) | TIME<br>(HR) | RATE<br>(CFS) | RATE<br>(CSM) |
| ALTERNATE                   | 1                                | STORM                       | 1                  |                        |                                |               |                |                  |                          |                   |              |               |               |
|                             |                                  |                             |                    |                        |                                |               |                |                  |                          |                   |              |               |               |
| XSECTION 70                 | RUNOFF                           | .31                         | 1                  | 2                      | .03                            | .0            | 4.40           | 24.00            | 1.16                     | ---               | 6.11         | 367.95        | 1186.9        |
| STRUCTURE 70                | ADDHYD                           | 3.58                        | 1                  | 2                      | .03                            | .0            | 4.40           | 24.00            | 1.01                     | ---               | 6.41         | 2250.89       | 628.7         |
| XSECTION 187                | REACH                            | 3.58                        | 1                  | 2                      | .03                            | .0            | 4.40           | 24.00            | 1.01                     | ---               | 6.45         | 2244.92       | 627.1         |
| XSECTION 87                 | RUNOFF                           | .04                         | 1                  | 2                      | .03                            | .0            | 4.40           | 24.00            | 1.17                     | ---               | 6.01         | 64.58         | 1614.5        |
| STRUCTURE 87                | ADDHYD                           | 3.62                        | 1                  | 2                      | .03                            | .0            | 4.40           | 24.00            | 1.01                     | ---               | 6.45         | 2251.58       | 622.0         |
|                             |                                  |                             |                    |                        |                                |               |                |                  |                          |                   |              |               |               |
| XSECTION 72                 | RUNOFF                           | .25                         | 1                  | 2                      | .03                            | .0            | 4.40           | 24.00            | 1.17                     | ---               | 6.05         | 355.15        | 1420.6        |

|              |        |      |   |   |     |    |      |       |      |     |      |         |        |
|--------------|--------|------|---|---|-----|----|------|-------|------|-----|------|---------|--------|
| STRUCTURE 69 | ADDHYD | .50  | 1 | 2 | .03 | .0 | 4.40 | 24.00 | 1.15 | --- | 6.15 | 421.60  | 843.2  |
| XSECTION 186 | REACH  | .50  | 1 | 2 | .03 | .0 | 4.40 | 24.00 | 1.15 | --- | 6.21 | 410.64  | 821.3  |
| XSECTION 86  | RUNOFF | .05  | 1 | 2 | .03 | .0 | 4.40 | 24.00 | 1.16 | --- | 6.12 | 57.29   | 1145.7 |
| STRUCTURE 87 | ADDHYD | .55  | 1 | 2 | .03 | .0 | 4.40 | 24.00 | 1.15 | --- | 6.20 | 461.74  | 839.5  |
| STRUCTURE 87 | ADDHYD | 4.17 | 1 | 2 | .03 | .0 | 4.40 | 24.00 | 1.03 | --- | 6.43 | 2544.99 | 610.3  |
| XSECTION 163 | REACH  | 4.17 | 1 | 2 | .03 | .0 | 4.40 | 24.00 | 1.02 | --- | 6.53 | 2461.30 | 590.2  |
| XSECTION 63  | RUNOFF | .16  | 1 | 2 | .03 | .0 | 4.40 | 24.00 | .93  | --- | 6.17 | 133.99  | 837.5  |
| STRUCTURE 63 | ADDHYD | 4.33 | 1 | 2 | .03 | .0 | 4.40 | 24.00 | 1.02 | --- | 6.53 | 2507.72 | 579.2  |
| XSECTION 160 | REACH  | 4.33 | 1 | 2 | .03 | .0 | 4.40 | 24.00 | 1.01 | --- | 6.63 | 2435.15 | 562.4  |
| XSECTION 60  | RUNOFF | .15  | 1 | 2 | .03 | .0 | 4.40 | 24.00 | .93  | --- | 6.16 | 129.09  | 860.6  |
| STRUCTURE 60 | ADDHYD | 4.48 | 1 | 2 | .03 | .0 | 4.40 | 24.00 | 1.01 | --- | 6.62 | 2467.12 | 550.7  |
| XSECTION 59  | RUNOFF | .16  | 1 | 2 | .03 | .0 | 4.40 | 24.00 | .89  | --- | 6.11 | 147.84  | 924.0  |
| STRUCTURE 60 | ADDHYD | 4.64 | 1 | 2 | .03 | .0 | 4.40 | 24.00 | 1.01 | --- | 6.62 | 2493.32 | 537.4  |
| XSECTION 68  | RUNOFF | .22  | 1 | 2 | .03 | .0 | 4.40 | 24.00 | .63  | --- | 6.34 | 89.13   | 405.1  |
| XSECTION 167 | REACH  | .22  | 1 | 2 | .03 | .0 | 4.40 | 24.00 | .62  | --- | 6.51 | 76.08   | 345.8  |
| XSECTION 67  | RUNOFF | .27  | 1 | 2 | .03 | .0 | 4.40 | 24.00 | .60  | --- | 7.00 | 55.57   | 205.8  |
| STRUCTURE 67 | ADDHYD | .49  | 1 | 2 | .03 | .0 | 4.40 | 24.00 | .61  | --- | 6.62 | 115.21  | 235.1  |
| XSECTION 164 | REACH  | .49  | 1 | 2 | .03 | .0 | 4.40 | 24.00 | .60  | --- | 6.76 | 111.34  | 227.2  |
| XSECTION 64  | RUNOFF | .25  | 1 | 2 | .03 | .0 | 4.40 | 24.00 | .57  | --- | 6.70 | 60.27   | 241.1  |
| STRUCTURE 64 | ADDHYD | .74  | 1 | 2 | .03 | .0 | 4.40 | 24.00 | .59  | --- | 6.74 | 171.33  | 231.5  |
| XSECTION 159 | REACH  | .74  | 1 | 2 | .03 | .0 | 4.40 | 24.00 | .59  | --- | 6.89 | 165.24  | 223.3  |
| STRUCTURE 60 | ADDHYD | 5.38 | 1 | 2 | .03 | .0 | 4.40 | 24.00 | .95  | --- | 6.63 | 2629.17 | 488.7  |
| XSECTION 151 | REACH  | 5.38 | 1 | 2 | .03 | .0 | 4.40 | 24.00 | .94  | --- | 6.76 | 2509.46 | 466.4  |
| XSECTION 51  | RUNOFF | .15  | 1 | 2 | .03 | .0 | 4.40 | 24.00 | .60  | --- | 6.16 | 81.52   | 543.5  |
| STRUCTURE 51 | ADDHYD | 5.53 | 1 | 2 | .03 | .0 | 4.40 | 24.00 | .93  | --- | 6.76 | 2525.40 | 456.7  |
| XSECTION 49  | RUNOFF | .10  | 1 | 2 | .03 | .0 | 4.40 | 24.00 | .43  | --- | 6.14 | 40.99   | 409.9  |
| STRUCTURE 51 | ADDHYD | 5.63 | 1 | 2 | .03 | .0 | 4.40 | 24.00 | .92  | --- | 6.76 | 2532.88 | 449.9  |
| XSECTION 52  | RUNOFF | .19  | 1 | 2 | .03 | .0 | 4.40 | 24.00 | .43  | --- | 6.32 | 51.13   | 269.1  |

1

TR20 XEG 9/29/95 9:59 UPPER SAND CREEK -- EXISTING CONDITION JOB 1 SUMMARY  
REV PC/09/83 24 HR TYPE IIA STORM (100- AND 10-YR. AMC=2) PAGE 17

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/<br>STRUCTURE<br>ID | STANDARD<br>CONTROL<br>OPERATION | DRAINAGE<br>AREA<br>(SQ MI) | RAIN<br>TABLE<br># | ANTEC<br>MOIST<br>COND | MAIN<br>TIME<br>INCREM<br>(HR) | PRECIPITATION |                |                  | RUNOFF<br>AMOUNT<br>(IN) | PEAK DISCHARGE    |              |               |               |
|-----------------------------|----------------------------------|-----------------------------|--------------------|------------------------|--------------------------------|---------------|----------------|------------------|--------------------------|-------------------|--------------|---------------|---------------|
|                             |                                  |                             |                    |                        |                                | BEGIN<br>(HR) | AMOUNT<br>(IN) | DURATION<br>(HR) |                          | ELEVATION<br>(FT) | TIME<br>(HR) | RATE<br>(CFS) | RATE<br>(CSM) |
| ALTERNATE                   | 1                                | STORM                       | 1                  |                        |                                |               |                |                  |                          |                   |              |               |               |
| STRUCTURE 51                | ADDHYD                           | 5.82                        | 1                  | 2                      | .03                            | .0            | 4.40           | 24.00            | .91                      | ---               | 6.76         | 2556.64       | 439.3         |
| XSECTION 65                 | RUNOFF                           | .10                         | 1                  | 2                      | .03                            | .0            | 4.40           | 24.00            | .87                      | ---               | 6.39         | 52.45         | 524.5         |
| XSECTION 158                | REACH                            | .10                         | 1                  | 2                      | .03                            | .0            | 4.40           | 24.00            | .85                      | ---               | 6.64         | 42.82         | 428.2         |
| XSECTION 58                 | RUNOFF                           | .17                         | 1                  | 2                      | .03                            | .0            | 4.40           | 24.00            | 2.14                     | ---               | 6.13         | 331.91        | 1952.4        |
| STRUCTURE 58                | ADDHYD                           | .27                         | 1                  | 2                      | .03                            | .0            | 4.40           | 24.00            | 1.67                     | ---               | 6.14         | 340.04        | 1259.4        |
| XSECTION 152                | REACH                            | .27                         | 1                  | 2                      | .03                            | .0            | 4.40           | 24.00            | 1.66                     | ---               | 6.26         | 299.61        | 1109.7        |
| STRUCTURE 51                | ADDHYD                           | 6.09                        | 1                  | 2                      | .03                            | .0            | 4.40           | 24.00            | .94                      | ---               | 6.74         | 2682.78       | 440.5         |
| XSECTION 62                 | RUNOFF                           | .25                         | 1                  | 2                      | .03                            | .0            | 4.40           | 24.00            | .42                      | ---               | 6.40         | 59.49         | 238.0         |

|              |        |      |   |   |     |    |      |       |     |     |      |         |        |
|--------------|--------|------|---|---|-----|----|------|-------|-----|-----|------|---------|--------|
| STRUCTURE 61 | ADDHYD | .38  | 1 | 2 | .03 | .0 | 4.40 | 24.00 | .42 | --- | 6.49 | 76.13   | 200.3  |
| XSECTION 150 | REACH  | .38  | 1 | 2 | .03 | .0 | 4.40 | 24.00 | .41 | --- | 6.69 | 68.73   | 180.9  |
| XSECTION 50  | RUNOFF | .13  | 1 | 2 | .03 | .0 | 4.40 | 24.00 | .39 | --- | 6.35 | 30.03   | 231.0  |
| STRUCTURE 50 | ADDHYD | .51  | 1 | 2 | .03 | .0 | 4.40 | 24.00 | .41 | --- | 6.58 | 88.40   | 173.3  |
| XSECTION 149 | REACH  | .51  | 1 | 2 | .03 | .0 | 4.40 | 24.00 | .40 | --- | 6.78 | 83.03   | 162.8  |
| STRUCTURE 51 | ADDHYD | 6.60 | 1 | 2 | .03 | .0 | 4.40 | 24.00 | .90 | --- | 6.74 | 2765.51 | 419.0  |
| XSECTION 148 | REACH  | 6.60 | 1 | 2 | .03 | .0 | 4.40 | 24.00 | .89 | --- | 6.81 | 2741.86 | 415.4  |
| XSECTION 48  | RUNOFF | .15  | 1 | 2 | .03 | .0 | 4.40 | 24.00 | .44 | --- | 6.08 | 79.09   | 527.2  |
| STRUCTURE 48 | ADDHYD | 6.75 | 1 | 2 | .03 | .0 | 4.40 | 24.00 | .88 | --- | 6.81 | 2750.40 | 407.5  |
| XSECTION 141 | REACH  | 6.75 | 1 | 2 | .03 | .0 | 4.40 | 24.00 | .88 | --- | 6.88 | 2730.45 | 404.5  |
| XSECTION 40  | RUNOFF | .30  | 1 | 2 | .03 | .0 | 4.40 | 24.00 | .72 | --- | 6.33 | 142.30  | 474.3  |
| STRUCTURE 41 | ADDHYD | 7.05 | 1 | 2 | .03 | .0 | 4.40 | 24.00 | .87 | --- | 6.88 | 2782.50 | 394.7  |
| XSECTION 41  | RUNOFF | .08  | 1 | 2 | .03 | .0 | 4.40 | 24.00 | .64 | --- | 6.10 | 55.76   | 697.0  |
| STRUCTURE 41 | ADDHYD | 7.13 | 1 | 2 | .03 | .0 | 4.40 | 24.00 | .87 | --- | 6.88 | 2788.64 | 391.1  |
| XSECTION 185 | REACH  | 7.13 | 1 | 2 | .03 | .0 | 4.40 | 24.00 | .87 | --- | 6.91 | 2787.96 | 391.0  |
| XSECTION 85  | RUNOFF | .05  | 1 | 2 | .03 | .0 | 4.40 | 24.00 | .79 | --- | 6.06 | 49.74   | 994.8  |
| STRUCTURE 85 | ADDHYD | 7.18 | 1 | 2 | .03 | .0 | 4.40 | 24.00 | .87 | --- | 6.91 | 2792.02 | 388.9  |
| XSECTION 39  | RUNOFF | .15  | 1 | 2 | .03 | .0 | 4.40 | 24.00 | .88 | --- | 6.24 | 100.88  | 672.5  |
| STRUCTURE 85 | ADDHYD | 7.33 | 1 | 2 | .03 | .0 | 4.40 | 24.00 | .87 | --- | 6.91 | 2814.88 | 384.0  |
| XSECTION 137 | REACH  | 7.33 | 1 | 2 | .03 | .0 | 4.40 | 24.00 | .86 | --- | 7.00 | 2777.66 | 378.9  |
| XSECTION 36  | RUNOFF | .17  | 1 | 2 | .03 | .0 | 4.40 | 24.00 | .63 | --- | 6.32 | 71.36   | 419.8  |
| STRUCTURE 37 | ADDHYD | 7.50 | 1 | 2 | .03 | .0 | 4.40 | 24.00 | .86 | --- | 7.00 | 2798.04 | 373.1  |
| XSECTION 37  | RUNOFF | .12  | 1 | 2 | .03 | .0 | 4.40 | 24.00 | .79 | --- | 6.05 | 120.97  | 1008.1 |
| STRUCTURE 37 | ADDHYD | 7.62 | 1 | 2 | .03 | .0 | 4.40 | 24.00 | .86 | --- | 7.00 | 2807.73 | 368.5  |
| XSECTION 66  | RUNOFF | .31  | 1 | 2 | .03 | .0 | 4.40 | 24.00 | .50 | --- | 6.46 | 81.40   | 262.6  |
| XSECTION 157 | REACH  | .31  | 1 | 2 | .03 | .0 | 4.40 | 24.00 | .49 | --- | 6.59 | 77.32   | 249.4  |

TR20 XEQ 9/29/95 9:59 UPPER SAND CREEK -- EXISTING CONDITION  
REV PC/09/83 24 HR TYPE IIA STORM (100- AND 10-YR. AMC=2)

JOB 1 SUMMARY  
PAGE 18

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/<br>STRUCTURE<br>ID | STANDARD<br>CONTROL<br>OPERATION | DRAINAGE<br>AREA<br>(SQ MI) | RAIN<br>TABLE<br># | ANTEC<br>MOIST<br>COND | MAIN<br>TIME<br>INCREM<br>(HR) | PRECIPITATION |                |                  | RUNOFF<br>AMOUNT<br>(IN) | PEAK DISCHARGE    |              |               |               |
|-----------------------------|----------------------------------|-----------------------------|--------------------|------------------------|--------------------------------|---------------|----------------|------------------|--------------------------|-------------------|--------------|---------------|---------------|
|                             |                                  |                             |                    |                        |                                | BEGIN<br>(HR) | AMOUNT<br>(IN) | DURATION<br>(HR) |                          | ELEVATION<br>(FT) | TIME<br>(HR) | RATE<br>(CFS) | RATE<br>(CSM) |
| ALTERNATE                   | 1                                | STORM                       | 1                  |                        |                                |               |                |                  |                          |                   |              |               |               |
| XSECTION 57                 | RUNOFF                           | .16                         | 1                  | 2                      | .03                            | .0            | 4.40           | 24.00            | .64                      | ---               | 6.25         | 75.91         | 474.4         |
| STRUCTURE 57                | ADDHYD                           | .47                         | 1                  | 2                      | .03                            | .0            | 4.40           | 24.00            | .54                      | ---               | 6.39         | 125.16        | 266.3         |
| XSECTION 154                | REACH                            | .47                         | 1                  | 2                      | .03                            | .0            | 4.40           | 24.00            | .54                      | ---               | 6.59         | 114.99        | 244.7         |
| XSECTION 55                 | RUNOFF                           | .25                         | 1                  | 2                      | .03                            | .0            | 4.40           | 24.00            | .63                      | ---               | 6.29         | 110.45        | 441.8         |
| STRUCTURE 54                | ADDHYD                           | .72                         | 1                  | 2                      | .03                            | .0            | 4.40           | 24.00            | .57                      | ---               | 6.39         | 200.35        | 278.3         |
| XSECTION 56                 | RUNOFF                           | .15                         | 1                  | 2                      | .03                            | .0            | 4.40           | 24.00            | .65                      | ---               | 6.07         | 120.07        | 800.5         |
| XSECTION 155                | REACH                            | .15                         | 1                  | 2                      | .03                            | .0            | 4.40           | 24.00            | .64                      | ---               | 6.24         | 83.09         | 553.9         |
| STRUCTURE 54                | ADDHYD                           | .87                         | 1                  | 2                      | .03                            | .0            | 4.40           | 24.00            | .58                      | ---               | 6.32         | 269.67        | 310.0         |
| XSECTION 54                 | RUNOFF                           | .25                         | 1                  | 2                      | .03                            | .0            | 4.40           | 24.00            | .64                      | ---               | 6.12         | 163.97        | 655.9         |
| STRUCTURE 54                | ADDHYD                           | 1.12                        | 1                  | 2                      | .03                            | .0            | 4.40           | 24.00            | .59                      | ---               | 6.22         | 376.37        | 336.0         |

|              |        |       |   |   |     |    |      |       |      |     |      |         |        |
|--------------|--------|-------|---|---|-----|----|------|-------|------|-----|------|---------|--------|
| XSECTION 53  | RUNOFF | .17   | 1 | 2 | .03 | .0 | 4.40 | 24.00 | .64  | --- | 6.17 | 96.57   | 568.0  |
| STRUCTURE 53 | ADDHYD | 1.29  | 1 | 2 | .03 | .0 | 4.40 | 24.00 | .60  | --- | 6.27 | 443.39  | 343.7  |
| XSECTION 147 | REACH  | 1.29  | 1 | 2 | .03 | .0 | 4.40 | 24.00 | .59  | --- | 6.36 | 424.80  | 329.3  |
| XSECTION 47  | RUNOFF | .26   | 1 | 2 | .03 | .0 | 4.40 | 24.00 | .64  | --- | 6.20 | 139.34  | 535.9  |
| STRUCTURE 47 | ADDHYD | 1.55  | 1 | 2 | .03 | .0 | 4.40 | 24.00 | .60  | --- | 6.32 | 533.03  | 343.9  |
| XSECTION 142 | REACH  | 1.55  | 1 | 2 | .03 | .0 | 4.40 | 24.00 | .59  | --- | 6.52 | 443.31  | 286.0  |
| XSECTION 42  | RUNOFF | .20   | 1 | 2 | .03 | .0 | 4.40 | 24.00 | .60  | --- | 6.12 | 121.22  | 606.1  |
| STRUCTURE 43 | ADDHYD | 1.75  | 1 | 2 | .03 | .0 | 4.40 | 24.00 | .59  | --- | 6.50 | 474.06  | 270.9  |
| XSECTION 43  | RUNOFF | .14   | 1 | 2 | .03 | .0 | 4.40 | 24.00 | .72  | --- | 6.42 | 58.00   | 414.3  |
| STRUCTURE 43 | ADDHYD | 1.89  | 1 | 2 | .03 | .0 | 4.40 | 24.00 | .60  | --- | 6.49 | 530.42  | 280.6  |
| XSECTION 45  | RUNOFF | .24   | 1 | 2 | .03 | .0 | 4.40 | 24.00 | .64  | --- | 6.23 | 119.33  | 497.2  |
| XSECTION 46  | RUNOFF | .23   | 1 | 2 | .03 | .0 | 4.40 | 24.00 | .64  | --- | 6.22 | 117.63  | 511.5  |
| STRUCTURE 45 | ADDHYD | .47   | 1 | 2 | .03 | .0 | 4.40 | 24.00 | .64  | --- | 6.22 | 236.75  | 503.7  |
| XSECTION 143 | REACH  | .47   | 1 | 2 | .03 | .0 | 4.40 | 24.00 | .63  | --- | 6.33 | 216.50  | 460.6  |
| STRUCTURE 43 | ADDHYD | 2.36  | 1 | 2 | .03 | .0 | 4.40 | 24.00 | .61  | --- | 6.42 | 719.91  | 305.0  |
| XSECTION 136 | REACH  | 2.36  | 1 | 2 | .03 | .0 | 4.40 | 24.00 | .61  | --- | 6.48 | 714.35  | 302.7  |
| STRUCTURE 37 | ADDHYD | 9.98  | 1 | 2 | .03 | .0 | 4.40 | 24.00 | .80  | --- | 6.95 | 3229.68 | 323.6  |
| XSECTION 129 | REACH  | 9.98  | 1 | 2 | .03 | .0 | 4.40 | 24.00 | .79  | --- | 7.07 | 3171.27 | 317.8  |
| XSECTION 27  | RUNOFF | .16   | 1 | 2 | .03 | .0 | 4.40 | 24.00 | 1.68 | --- | 6.19 | 223.45  | 1396.5 |
| STRUCTURE 29 | ADDHYD | 10.14 | 1 | 2 | .03 | .0 | 4.40 | 24.00 | .81  | --- | 7.06 | 3199.10 | 315.5  |
| XSECTION 38  | RUNOFF | .32   | 1 | 2 | .03 | .0 | 4.40 | 24.00 | .93  | --- | 6.26 | 221.09  | 690.9  |
| XSECTION 128 | REACH  | .32   | 1 | 2 | .03 | .0 | 4.40 | 24.00 | .93  | --- | 6.33 | 215.79  | 674.4  |
| XSECTION 28  | RUNOFF | .17   | 1 | 2 | .03 | .0 | 4.40 | 24.00 | 1.61 | --- | 6.12 | 267.10  | 1571.2 |
| STRUCTURE 28 | ADDHYD | .49   | 1 | 2 | .03 | .0 | 4.40 | 24.00 | 1.16 | --- | 6.19 | 417.54  | 852.1  |
| XSECTION 127 | REACH  | .49   | 1 | 2 | .03 | .0 | 4.40 | 24.00 | 1.16 | --- | 6.27 | 403.27  | 823.0  |

1

TR20 XEQ 9/29/95 9:59 UPPER SAND CREEK -- EXISTING CONDITION JOB 1 SUMMARY  
REV PC/09/83 24 HR TYPE IIA STORM (100- AND 10-YR, AMC=2) PAGE 19

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/<br>STRUCTURE<br>ID | STANDARD<br>CONTROL<br>OPERATION | DRAINAGE<br>AREA<br>(SQ MI) | RAIN<br>TABLE<br># | ANTEC<br>MOIST<br>COND | MAIN<br>TIME<br>INCREM<br>(HR) | PRECIPITATION |                |                  | RUNOFF<br>AMOUNT<br>(IN) | PEAK DISCHARGE    |              |               |               |
|-----------------------------|----------------------------------|-----------------------------|--------------------|------------------------|--------------------------------|---------------|----------------|------------------|--------------------------|-------------------|--------------|---------------|---------------|
|                             |                                  |                             |                    |                        |                                | BEGIN<br>(HR) | AMOUNT<br>(IN) | DURATION<br>(HR) |                          | ELEVATION<br>(FT) | TIME<br>(HR) | RATE<br>(CFS) | RATE<br>(CSM) |
| ALTERNATE                   | 1                                | STORM                       | 1                  |                        |                                |               |                |                  |                          |                   |              |               |               |
| +                           |                                  |                             |                    |                        |                                |               |                |                  |                          |                   |              |               |               |
| STRUCTURE 29                | ADDHYD                           | 10.63                       | 1                  | 2                      | .03                            | .0            | 4.40           | 24.00            | .82                      | ---               | 7.05         | 3279.76       | 308.5         |
| XSECTION 29                 | RUNOFF                           | .23                         | 1                  | 2                      | .03                            | .0            | 4.40           | 24.00            | 1.83                     | ---               | 6.13         | 393.38        | 1710.3        |
| XSECTION 29                 | ADDHYD                           | 10.86                       | 1                  | 2                      | .03                            | .0            | 4.40           | 24.00            | .84                      | ---               | 7.05         | 3314.87       | 305.2         |
| XSECTION 184                | REACH                            | 10.86                       | 1                  | 2                      | .03                            | .0            | 4.40           | 24.00            | .84                      | ---               | 7.09         | 3312.54       | 305.0         |
| XSECTION 84                 | RUNOFF                           | .04                         | 1                  | 2                      | .03                            | .0            | 4.40           | 24.00            | 2.34                     | ---               | 5.99         | 116.02        | 2900.5        |
| STRUCTURE 30                | ADDHYD                           | 10.90                       | 1                  | 2                      | .03                            | .0            | 4.40           | 24.00            | .85                      | ---               | 7.09         | 3316.58       | 304.3         |
| XSECTION 30                 | RUNOFF                           | .10                         | 1                  | 2                      | .03                            | .0            | 4.40           | 24.00            | 1.40                     | ---               | 6.24         | 106.51        | 1065.1        |
| STRUCTURE 30                | ADDHYD                           | 11.00                       | 1                  | 2                      | .03                            | .0            | 4.40           | 24.00            | .85                      | ---               | 7.09         | 3333.97       | 303.1         |
| XSECTION 31                 | RUNOFF                           | .21                         | 1                  | 2                      | .03                            | .0            | 4.40           | 24.00            | 1.03                     | ---               | 6.36         | 137.62        | 655.3         |
| STRUCTURE 30                | ADDHYD                           | 11.21                       | 1                  | 2                      | .03                            | .0            | 4.40           | 24.00            | .86                      | ---               | 7.08         | 3372.97       | 300.9         |
| XSECTION 44                 | RUNOFF                           | .17                         | 1                  | 2                      | .03                            | .0            | 4.40           | 24.00            | .88                      | ---               | 6.19         | 128.31        | 754.8         |

|              |        |       |   |   |     |    |      |       |      |     |      |         |        |
|--------------|--------|-------|---|---|-----|----|------|-------|------|-----|------|---------|--------|
| STRUCTURE 35 | ADDHYD | .29   | 1 | 2 | .03 | .0 | 4.40 | 24.00 | .87  | --- | 6.34 | 180.70  | 623.1  |
| XSECTION 34  | RUNOFF | .29   | 1 | 2 | .03 | .0 | 4.40 | 24.00 | 1.46 | --- | 6.36 | 266.69  | 919.6  |
| STRUCTURE 35 | ADDHYD | .58   | 1 | 2 | .03 | .0 | 4.40 | 24.00 | 1.16 | --- | 6.35 | 447.07  | 770.8  |
| XSECTION 130 | REACH  | .58   | 1 | 2 | .03 | .0 | 4.40 | 24.00 | 1.16 | --- | 6.46 | 423.84  | 730.8  |
| STRUCTURE 30 | ADDHYD | 11.79 | 1 | 2 | .03 | .0 | 4.40 | 24.00 | .87  | --- | 7.05 | 3522.56 | 298.8  |
| XSECTION 32  | RUNOFF | .11   | 1 | 2 | .03 | .0 | 4.40 | 24.00 | 1.98 | --- | 6.21 | 171.89  | 1562.6 |
| XSECTION 33  | RUNOFF | .29   | 1 | 2 | .03 | .0 | 4.40 | 24.00 | 1.68 | --- | 6.14 | 450.82  | 1554.6 |
| STRUCTURE 33 | ADDHYD | .40   | 1 | 2 | .03 | .0 | 4.40 | 24.00 | 1.76 | --- | 6.15 | 615.57  | 1538.9 |
| XSECTION 131 | REACH  | .40   | 1 | 2 | .03 | .0 | 4.40 | 24.00 | 1.75 | --- | 6.26 | 551.62  | 1379.1 |
| STRUCTURE 30 | ADDHYD | 12.19 | 1 | 2 | .03 | .0 | 4.40 | 24.00 | .90  | --- | 7.03 | 3611.70 | 296.3  |
| XSECTION 125 | REACH  | 12.19 | 1 | 2 | .03 | .0 | 4.40 | 24.00 | .90  | --- | 7.03 | 3611.70 | 296.3  |
| XSECTION 26  | RUNOFF | .19   | 1 | 2 | .03 | .0 | 4.40 | 24.00 | 2.00 | --- | 6.03 | 437.27  | 2301.4 |
| STRUCTURE 25 | ADDHYD | 12.38 | 1 | 2 | .03 | .0 | 4.40 | 24.00 | .92  | --- | 7.03 | 3638.08 | 293.9  |
| XSECTION 25  | RUNOFF | .04   | 1 | 2 | .03 | .0 | 4.40 | 24.00 | 1.70 | --- | 5.99 | 95.47   | 2386.6 |
| STRUCTURE 25 | ADDHYD | 12.42 | 1 | 2 | .03 | .0 | 4.40 | 24.00 | .92  | --- | 7.02 | 3642.93 | 293.3  |
| XSECTION 24  | RUNOFF | .19   | 1 | 2 | .03 | .0 | 4.40 | 24.00 | 1.69 | --- | 6.04 | 376.68  | 1982.5 |
| STRUCTURE 25 | ADDHYD | 12.61 | 1 | 2 | .03 | .0 | 4.40 | 24.00 | .93  | --- | 7.02 | 3667.23 | 290.8  |
| XSECTION 120 | REACH  | 12.61 | 1 | 2 | .03 | .0 | 4.40 | 24.00 | .93  | --- | 7.07 | 3663.32 | 290.5  |
| XSECTION 22  | RUNOFF | .13   | 1 | 2 | .03 | .0 | 4.40 | 24.00 | 1.68 | --- | 6.15 | 195.88  | 1506.8 |
| STRUCTURE 20 | ADDHYD | 12.74 | 1 | 2 | .03 | .0 | 4.40 | 24.00 | .94  | --- | 7.07 | 3683.26 | 289.1  |
| XSECTION 20  | RUNOFF | .09   | 1 | 2 | .03 | .0 | 4.40 | 24.00 | 1.70 | --- | 6.02 | 190.55  | 2117.3 |
| STRUCTURE 20 | ADDHYD | 12.83 | 1 | 2 | .03 | .0 | 4.40 | 24.00 | .94  | --- | 7.07 | 3694.03 | 287.9  |
| XSECTION 21  | RUNOFF | .12   | 1 | 2 | .03 | .0 | 4.40 | 24.00 | 1.69 | --- | 6.05 | 229.23  | 1910.2 |

1

TR20 XEQ 9/29/95 9:59 UPPER SAND CREEK -- EXISTING CONDITION JOB 1 SUMMARY  
REV PC/09/83 24 HR TYPE IIA STORM (100- AND 10-YR, AMC=2) PAGE 20

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/<br>STRUCTURE<br>ID | STANDARD<br>CONTROL<br>OPERATION | DRAINAGE<br>AREA<br>(SQ MI) | RAIN<br>TABLE<br># | ANTEC<br>MOIST<br>COND | MAIN<br>TIME<br>INCRM<br>(HR) | PRECIPITATION |                |                  | RUNOFF<br>AMOUNT<br>(IN) | PEAK DISCHARGE    |              |               |               |
|-----------------------------|----------------------------------|-----------------------------|--------------------|------------------------|-------------------------------|---------------|----------------|------------------|--------------------------|-------------------|--------------|---------------|---------------|
|                             |                                  |                             |                    |                        |                               | BEGIN<br>(HR) | AMOUNT<br>(IN) | DURATION<br>(HR) |                          | ELEVATION<br>(FT) | TIME<br>(HR) | RATE<br>(CFS) | RATE<br>(CSN) |
| ALTERNATE                   | 1                                | STORM                       | 1                  |                        |                               |               |                |                  |                          |                   |              |               |               |
| STRUCTURE 20                | ADDHYD                           | 12.95                       | 1                  | 2                      | .03                           | .0            | 4.40           | 24.00            | .95                      | ---               | 7.06         | 3709.12       | 286.4         |
| XSECTION 19                 | RUNOFF                           | .17                         | 1                  | 2                      | .03                           | .0            | 4.40           | 24.00            | 1.67                     | ---               | 6.25         | 211.96        | 1246.8        |
| STRUCTURE 20                | ADDHYD                           | 13.12                       | 1                  | 2                      | .03                           | .0            | 4.40           | 24.00            | .96                      | ---               | 7.06         | 3746.52       | 285.6         |
| XSECTION 83                 | RUNOFF                           | .11                         | 1                  | 2                      | .03                           | .0            | 4.40           | 24.00            | 1.68                     | ---               | 6.20         | 150.21        | 1365.5        |
| STRUCTURE 20                | ADDHYD                           | 13.23                       | 1                  | 2                      | .03                           | .0            | 4.40           | 24.00            | .96                      | ---               | 7.05         | 3766.86       | 284.7         |
| XSECTION 23                 | RUNOFF                           | .28                         | 1                  | 2                      | .03                           | .0            | 4.40           | 24.00            | 2.06                     | ---               | 6.16         | 498.71        | 1781.1        |
| XSECTION 183                | REACH                            | .28                         | 1                  | 2                      | .03                           | .0            | 4.40           | 24.00            | 2.05                     | ---               | 6.23         | 482.40        | 1722.8        |
| STRUCTURE 20                | ADDHYD                           | 13.51                       | 1                  | 2                      | .03                           | .0            | 4.40           | 24.00            | .99                      | ---               | 6.35         | 4033.53       | 298.6         |
| XSECTION 113                | REACH                            | 13.51                       | 1                  | 2                      | .03                           | .0            | 4.40           | 24.00            | .98                      | ---               | 6.51         | 3945.68       | 292.1         |
| XSECTION 13                 | RUNOFF                           | .24                         | 1                  | 2                      | .03                           | .0            | 4.40           | 24.00            | 1.69                     | ---               | 6.07         | 436.91        | 1820.5        |
| STRUCTURE 13                | ADDHYD                           | 13.75                       | 1                  | 2                      | .03                           | .0            | 4.40           | 24.00            | .99                      | ---               | 6.49         | 4018.57       | 292.3         |
| XSECTION 14                 | RUNOFF                           | .07                         | 1                  | 2                      | .03                           | .0            | 4.40           | 24.00            | 1.69                     | ---               | 6.10         | 119.67        | 1709.5        |
| STRUCTURE 13                | ADDHYD                           | 13.82                       | 1                  | 2                      | .03                           | .0            | 4.40           | 24.00            | .99                      | ---               | 6.48         | 4046.61       | 292.8         |

|              |        |       |   |   |     |    |      |       |      |     |      |         |        |
|--------------|--------|-------|---|---|-----|----|------|-------|------|-----|------|---------|--------|
| XSECTION 16  | RUNOFF | .21   | 1 | 2 | .03 | .0 | 4.40 | 24.00 | 1.66 | --- | 6.34 | 227.53  | 1083.5 |
| XSECTION 115 | REACH  | .21   | 1 | 2 | .03 | .0 | 4.40 | 24.00 | 1.66 | --- | 6.41 | 223.59  | 1064.7 |
| STRUCTURE 13 | ADDHYD | 14.20 | 1 | 2 | .03 | .0 | 4.40 | 24.00 | 1.01 | --- | 6.42 | 4391.93 | 309.3  |
| XSECTION 18  | RUNOFF | .13   | 1 | 2 | .03 | .0 | 4.40 | 24.00 | 1.68 | --- | 6.15 | 197.85  | 1521.9 |
| XSECTION 17  | RUNOFF | .17   | 1 | 2 | .03 | .0 | 4.40 | 24.00 | 1.67 | --- | 6.28 | 200.18  | 1177.5 |
| STRUCTURE 18 | ADDHYD | .30   | 1 | 2 | .03 | .0 | 4.40 | 24.00 | 1.67 | --- | 6.20 | 379.16  | 1263.9 |
| XSECTION 114 | REACH  | .30   | 1 | 2 | .03 | .0 | 4.40 | 24.00 | 1.67 | --- | 6.27 | 372.35  | 1241.2 |
| STRUCTURE 13 | ADDHYD | 14.50 | 1 | 2 | .03 | .0 | 4.40 | 24.00 | 1.03 | --- | 6.38 | 4714.28 | 325.1  |
| XSECTION 106 | REACH  | 14.50 | 1 | 2 | .03 | .0 | 4.40 | 24.00 | 1.02 | --- | 6.44 | 4702.19 | 324.3  |
| XSECTION 6   | RUNOFF | .13   | 1 | 2 | .03 | .0 | 4.40 | 24.00 | 1.91 | --- | 6.10 | 242.82  | 1867.8 |
| STRUCTURE 6  | ADDHYD | 14.63 | 1 | 2 | .03 | .0 | 4.40 | 24.00 | 1.03 | --- | 6.42 | 4776.12 | 326.5  |
| XSECTION 5   | RUNOFF | .15   | 1 | 2 | .03 | .0 | 4.40 | 24.00 | 2.15 | --- | 6.04 | 353.40  | 2356.0 |
| STRUCTURE 6  | ADDHYD | 14.78 | 1 | 2 | .03 | .0 | 4.40 | 24.00 | 1.04 | --- | 6.41 | 4832.21 | 326.9  |
| XSECTION 7   | RUNOFF | .19   | 1 | 2 | .03 | .0 | 4.40 | 24.00 | 1.67 | --- | 6.24 | 239.51  | 1260.6 |
| STRUCTURE 6  | ADDHYD | 14.97 | 1 | 2 | .03 | .0 | 4.40 | 24.00 | 1.05 | --- | 6.38 | 5033.58 | 336.2  |
| XSECTION 11  | RUNOFF | .16   | 1 | 2 | .03 | .0 | 4.40 | 24.00 | 2.07 | --- | 6.10 | 322.04  | 2012.8 |
| XSECTION 12  | RUNOFF | .13   | 1 | 2 | .03 | .0 | 4.40 | 24.00 | 1.46 | --- | 6.28 | 134.59  | 1035.3 |
| STRUCTURE 11 | ADDHYD | .29   | 1 | 2 | .03 | .0 | 4.40 | 24.00 | 1.80 | --- | 6.13 | 424.02  | 1462.1 |
| XSECTION 107 | REACH  | .29   | 1 | 2 | .03 | .0 | 4.40 | 24.00 | 1.79 | --- | 6.22 | 400.51  | 1381.1 |
| STRUCTURE 6  | ADDHYD | 15.26 | 1 | 2 | .03 | .0 | 4.40 | 24.00 | 1.06 | --- | 6.34 | 5368.81 | 351.8  |
| XSECTION 104 | REACH  | 15.26 | 1 | 2 | .03 | .0 | 4.40 | 24.00 | 1.06 | --- | 6.39 | 5360.37 | 351.3  |

TR20 XEG 9/29/95 9:59 UPPER SAND CREEK -- EXISTING CONDITION JOB 1 SUMMARY  
REV PC/09/83 24 HR TYPE IIA STORM (100- AND 10-YR. AMC=2) PAGE 21

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/<br>STRUCTURE<br>ID | STANDARD<br>CONTROL<br>OPERATION | DRAINAGE<br>AREA<br>(SQ MI) | RAIN<br>TABLE<br># | ANTEC<br>MOIST<br>COND | MAIN<br>TIME<br>INCREM<br>(HR) | PRECIPITATION |                |                  | RUNOFF<br>AMOUNT<br>(IN) | PEAK DISCHARGE    |              |               |               |        |
|-----------------------------|----------------------------------|-----------------------------|--------------------|------------------------|--------------------------------|---------------|----------------|------------------|--------------------------|-------------------|--------------|---------------|---------------|--------|
|                             |                                  |                             |                    |                        |                                | BEGIN<br>(HR) | AMOUNT<br>(IN) | DURATION<br>(HR) |                          | ELEVATION<br>(FT) | TIME<br>(HR) | RATE<br>(CFS) | RATE<br>(CSM) |        |
| ALTERNATE 1 STORM 1         |                                  |                             |                    |                        |                                |               |                |                  |                          |                   |              |               |               |        |
| +                           |                                  |                             |                    |                        |                                |               |                |                  |                          |                   |              |               |               |        |
| XSECTION                    | 4                                | RUNOFF                      | .19                | 1                      | 2                              | .03           | .0             | 4.40             | 24.00                    | 1.62              | ---          | 6.04          | 356.83        | 1878.0 |
| STRUCTURE                   | 4                                | ADDHYD                      | 15.45              | 1                      | 2                              | .03           | .0             | 4.40             | 24.00                    | 1.07              | ---          | 6.38          | 5420.83       | 350.9  |
| XSECTION                    | 8                                | RUNOFF                      | .20                | 1                      | 2                              | .03           | .0             | 4.40             | 24.00                    | 1.46              | ---          | 6.30          | 202.22        | 1011.1 |
| STRUCTURE                   | 8                                | ADDHYD                      | 15.65              | 1                      | 2                              | .03           | .0             | 4.40             | 24.00                    | 1.07              | ---          | 6.37          | 5614.92       | 358.8  |
| XSECTION                    | 10                               | RUNOFF                      | .14                | 1                      | 2                              | .03           | .0             | 4.40             | 24.00                    | 2.33              | ---          | 6.00          | 378.47        | 2703.4 |
|                             |                                  |                             |                    |                        |                                |               |                |                  |                          |                   |              |               |               |        |
| XSECTION                    | 109                              | REACH                       | .14                | 1                      | 2                              | .03           | .0             | 4.40             | 24.00                    | 2.32              | ---          | 6.06          | 368.05        | 2628.9 |
| XSECTION                    | 9                                | RUNOFF                      | .25                | 1                      | 2                              | .03           | .0             | 4.40             | 24.00                    | 1.85              | ---          | 6.01          | 577.95        | 2311.8 |
| STRUCTURE                   | 9                                | ADDHYD                      | .39                | 1                      | 2                              | .03           | .0             | 4.40             | 24.00                    | 2.02              | ---          | 6.02          | 934.54        | 2396.3 |
| XSECTION                    | 108                              | REACH                       | .39                | 1                      | 2                              | .03           | .0             | 4.40             | 24.00                    | 2.01              | ---          | 6.07          | 900.00        | 2307.7 |
| STRUCTURE                   | 99                               | ADDHYD                      | 16.04              | 1                      | 2                              | .03           | .0             | 4.40             | 24.00                    | 1.10              | ---          | 6.32          | 5821.23       | 362.9  |
|                             |                                  |                             |                    |                        |                                |               |                |                  |                          |                   |              |               |               |        |
| ALTERNATE 1 STORM 2         |                                  |                             |                    |                        |                                |               |                |                  |                          |                   |              |               |               |        |
| +                           |                                  |                             |                    |                        |                                |               |                |                  |                          |                   |              |               |               |        |
| XSECTION                    | 82                               | RUNOFF                      | .19                | 1                      | 2                              | .03           | .0             | 3.00             | 24.00                    | .38               | ---          | 6.05          | 97.08         | 510.9  |
| XSECTION                    | 174                              | REACH                       | .19                | 1                      | 2                              | .03           | .0             | 3.00             | 24.00                    | .38               | ---          | 6.13          | 79.48         | 418.3  |
| XSECTION                    | 74                               | RUNOFF                      | .18                | 1                      | 2                              | .03           | .0             | 3.00             | 24.00                    | .38               | ---          | 6.22          | 53.18         | 295.4  |

|              |        |      |   |   |     |    |      |       |     |     |      |        |       |
|--------------|--------|------|---|---|-----|----|------|-------|-----|-----|------|--------|-------|
| XSECTION 75  | RUNOFF | .12  | 1 | 2 | .03 | .0 | 3.00 | 24.00 | .37 | --- | 6.38 | 26.40  | 220.0 |
| STRUCTURE 75 | ADDHYD | .49  | 1 | 2 | .03 | .0 | 3.00 | 24.00 | .37 | --- | 6.29 | 128.11 | 261.4 |
| XSECTION 73  | RUNOFF | .12  | 1 | 2 | .03 | .0 | 3.00 | 24.00 | .38 | --- | 6.26 | 32.84  | 273.7 |
| STRUCTURE 75 | ADDHYD | .61  | 1 | 2 | .03 | .0 | 3.00 | 24.00 | .37 | --- | 6.28 | 160.79 | 263.6 |
| XSECTION 81  | RUNOFF | .39  | 1 | 2 | .03 | .0 | 3.00 | 24.00 | .38 | --- | 6.25 | 109.85 | 281.7 |
|              |        |      |   |   |     |    |      |       |     |     |      |        |       |
| XSECTION 175 | REACH  | .39  | 1 | 2 | .03 | .0 | 3.00 | 24.00 | .37 | --- | 6.45 | 87.63  | 224.7 |
| STRUCTURE 75 | ADDHYD | 1.00 | 1 | 2 | .03 | .0 | 3.00 | 24.00 | .37 | --- | 6.34 | 235.15 | 235.2 |
| XSECTION 80  | RUNOFF | .22  | 1 | 2 | .03 | .0 | 3.00 | 24.00 | .38 | --- | 6.17 | 75.24  | 342.0 |
| XSECTION 176 | REACH  | .22  | 1 | 2 | .03 | .0 | 3.00 | 24.00 | .37 | --- | 6.40 | 52.31  | 237.8 |
| STRUCTURE 75 | ADDHYD | 1.22 | 1 | 2 | .03 | .0 | 3.00 | 24.00 | .37 | --- | 6.35 | 285.94 | 234.4 |
|              |        |      |   |   |     |    |      |       |     |     |      |        |       |
| XSECTION 76  | RUNOFF | .17  | 1 | 2 | .03 | .0 | 3.00 | 24.00 | .37 | --- | 6.37 | 38.21  | 224.7 |
| STRUCTURE 75 | ADDHYD | 1.39 | 1 | 2 | .03 | .0 | 3.00 | 24.00 | .37 | --- | 6.35 | 323.97 | 233.1 |
| XSECTION 172 | REACH  | 1.39 | 1 | 2 | .03 | .0 | 3.00 | 24.00 | .37 | --- | 6.42 | 318.34 | 229.0 |
| XSECTION 88  | RUNOFF | .10  | 1 | 2 | .03 | .0 | 3.00 | 24.00 | .38 | --- | 6.13 | 37.31  | 373.1 |
| STRUCTURE 77 | ADDHYD | 1.49 | 1 | 2 | .03 | .0 | 3.00 | 24.00 | .37 | --- | 6.41 | 331.69 | 222.6 |
|              |        |      |   |   |     |    |      |       |     |     |      |        |       |
| XSECTION 77  | RUNOFF | .25  | 1 | 2 | .03 | .0 | 3.00 | 24.00 | .37 | --- | 6.28 | 65.55  | 262.2 |
| STRUCTURE 77 | ADDHYD | 1.74 | 1 | 2 | .03 | .0 | 3.00 | 24.00 | .37 | --- | 6.39 | 389.10 | 223.6 |
| XSECTION 79  | RUNOFF | .29  | 1 | 2 | .03 | .0 | 3.00 | 24.00 | .38 | --- | 6.10 | 119.32 | 411.4 |
| XSECTION 178 | REACH  | .29  | 1 | 2 | .03 | .0 | 3.00 | 24.00 | .38 | --- | 6.25 | 92.07  | 317.5 |
| XSECTION 78  | RUNOFF | .88  | 1 | 2 | .03 | .0 | 3.00 | 24.00 | .38 | --- | 6.20 | 276.49 | 314.2 |

1

TR20 XEQ 9/29/95 9:59 UPPER SAND CREEK -- EXISTING CONDITION  
REV PC/09/83 24 HR TYPE IIA STORM (100- AND 10-YR, AMC=2)

JOB 1 SUMMARY  
PAGE 22

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/<br>STRUCTURE<br>ID | STANDARD<br>CONTROL<br>OPERATION | DRAINAGE<br>AREA<br>(SQ MI) | RAIN<br>TABLE<br># | ANTEC<br>MOIST<br>COND | MAIN<br>TIME<br>INCREM<br>(HR) | PRECIPITATION |                |                  | RUNOFF<br>AMOUNT<br>(IN) | PEAK DISCHARGE    |              |               |               |  |
|-----------------------------|----------------------------------|-----------------------------|--------------------|------------------------|--------------------------------|---------------|----------------|------------------|--------------------------|-------------------|--------------|---------------|---------------|--|
|                             |                                  |                             |                    |                        |                                | BEGIN<br>(HR) | AMOUNT<br>(IN) | DURATION<br>(HR) |                          | ELEVATION<br>(FT) | TIME<br>(HR) | RATE<br>(CFS) | RATE<br>(CSM) |  |
| ALTERNATE 1 STORM 2         |                                  |                             |                    |                        |                                |               |                |                  |                          |                   |              |               |               |  |
| +                           |                                  |                             |                    |                        |                                |               |                |                  |                          |                   |              |               |               |  |
| STRUCTURE 78                | ADDHYD                           | 1.17                        | 1                  | 2                      | .03                            | .0            | 3.00           | 24.00            | .38                      | ---               | 6.21         | 365.21        | 312.1         |  |
| XSECTION 177                | REACH                            | 1.17                        | 1                  | 2                      | .03                            | .0            | 3.00           | 24.00            | .37                      | ---               | 6.32         | 323.45        | 276.4         |  |
| STRUCTURE 77                | ADDHYD                           | 2.91                        | 1                  | 2                      | .03                            | .0            | 3.00           | 24.00            | .37                      | ---               | 6.35         | 704.87        | 242.2         |  |
| XSECTION 171                | REACH                            | 2.91                        | 1                  | 2                      | .03                            | .0            | 3.00           | 24.00            | .37                      | ---               | 6.51         | 617.88        | 212.3         |  |
| XSECTION 71                 | RUNOFF                           | .36                         | 1                  | 2                      | .03                            | .0            | 3.00           | 24.00            | .48                      | ---               | 6.10         | 189.51        | 526.4         |  |
|                             |                                  |                             |                    |                        |                                |               |                |                  |                          |                   |              |               |               |  |
| STRUCTURE 71                | ADDHYD                           | 3.27                        | 1                  | 2                      | .03                            | .0            | 3.00           | 24.00            | .38                      | ---               | 6.49         | 657.56        | 201.1         |  |
| XSECTION 170                | REACH                            | 3.27                        | 1                  | 2                      | .03                            | .0            | 3.00           | 24.00            | .38                      | ---               | 6.58         | 640.65        | 195.9         |  |
| XSECTION 70                 | RUNOFF                           | .31                         | 1                  | 2                      | .03                            | .0            | 3.00           | 24.00            | .48                      | ---               | 6.13         | 149.02        | 480.7         |  |
| STRUCTURE 70                | ADDHYD                           | 3.58                        | 1                  | 2                      | .03                            | .0            | 3.00           | 24.00            | .39                      | ---               | 6.57         | 674.44        | 188.4         |  |
| XSECTION 187                | REACH                            | 3.58                        | 1                  | 2                      | .03                            | .0            | 3.00           | 24.00            | .39                      | ---               | 6.63         | 669.74        | 187.1         |  |
|                             |                                  |                             |                    |                        |                                |               |                |                  |                          |                   |              |               |               |  |
| XSECTION 87                 | RUNOFF                           | .04                         | 1                  | 2                      | .03                            | .0            | 3.00           | 24.00            | .49                      | ---               | 6.02         | 28.69         | 717.3         |  |
| STRUCTURE 87                | ADDHYD                           | 3.62                        | 1                  | 2                      | .03                            | .0            | 3.00           | 24.00            | .39                      | ---               | 6.63         | 672.14        | 185.7         |  |
| XSECTION 72                 | RUNOFF                           | .25                         | 1                  | 2                      | .03                            | .0            | 3.00           | 24.00            | .48                      | ---               | 6.06         | 150.37        | 601.5         |  |
| XSECTION 169                | REACH                            | .25                         | 1                  | 2                      | .03                            | .0            | 3.00           | 24.00            | .48                      | ---               | 6.18         | 122.58        | 490.3         |  |
| XSECTION 69                 | RUNOFF                           | .25                         | 1                  | 2                      | .03                            | .0            | 3.00           | 24.00            | .47                      | ---               | 6.44         | 65.49         | 262.0         |  |
|                             |                                  |                             |                    |                        |                                |               |                |                  |                          |                   |              |               |               |  |
| STRUCTURE 69                | ADDHYD                           | .50                         | 1                  | 2                      | .03                            | .0            | 3.00           | 24.00            | .48                      | ---               | 6.21         | 165.65        | 331.3         |  |

|              |        |      |   |   |     |    |      |       |     |     |      |        |       |
|--------------|--------|------|---|---|-----|----|------|-------|-----|-----|------|--------|-------|
| STRUCTURE 67 | ADDHYD | .55  | 1 | 2 | .03 | .0 | 3.00 | 24.00 | .47 | --- | 6.28 | 174.18 | 316.7 |
| STRUCTURE 87 | ADDHYD | 4.17 | 1 | 2 | .03 | .0 | 3.00 | 24.00 | .40 | --- | 6.60 | 774.75 | 185.8 |
| XSECTION 163 | REACH  | 4.17 | 1 | 2 | .03 | .0 | 3.00 | 24.00 | .39 | --- | 6.77 | 734.63 | 176.2 |
| XSECTION 63  | RUNOFF | .16  | 1 | 2 | .03 | .0 | 3.00 | 24.00 | .35 | --- | 6.20 | 46.18  | 288.6 |
| STRUCTURE 63 | ADDHYD | 4.33 | 1 | 2 | .03 | .0 | 3.00 | 24.00 | .39 | --- | 6.77 | 745.76 | 172.2 |
| XSECTION 160 | REACH  | 4.33 | 1 | 2 | .03 | .0 | 3.00 | 24.00 | .39 | --- | 6.91 | 711.86 | 164.4 |
| XSECTION 60  | RUNOFF | .15  | 1 | 2 | .03 | .0 | 3.00 | 24.00 | .35 | --- | 6.18 | 44.71  | 298.0 |
| STRUCTURE 60 | ADDHYD | 4.48 | 1 | 2 | .03 | .0 | 3.00 | 24.00 | .39 | --- | 6.91 | 719.69 | 160.6 |
| XSECTION 59  | RUNOFF | .16  | 1 | 2 | .03 | .0 | 3.00 | 24.00 | .32 | --- | 6.13 | 50.07  | 312.9 |
| STRUCTURE 60 | ADDHYD | 4.64 | 1 | 2 | .03 | .0 | 3.00 | 24.00 | .38 | --- | 6.91 | 726.58 | 156.6 |
| XSECTION 68  | RUNOFF | .22  | 1 | 2 | .03 | .0 | 3.00 | 24.00 | .18 | --- | 6.39 | 21.46  | 97.5  |
| XSECTION 167 | REACH  | .22  | 1 | 2 | .03 | .0 | 3.00 | 24.00 | .18 | --- | 6.71 | 16.25  | 73.9  |
| XSECTION 67  | RUNOFF | .27  | 1 | 2 | .03 | .0 | 3.00 | 24.00 | .17 | --- | 7.11 | 14.17  | 52.5  |
| STRUCTURE 67 | ADDHYD | .49  | 1 | 2 | .03 | .0 | 3.00 | 24.00 | .17 | --- | 6.85 | 28.30  | 57.8  |
| XSECTION 164 | REACH  | .49  | 1 | 2 | .03 | .0 | 3.00 | 24.00 | .17 | --- | 7.09 | 26.96  | 55.0  |
| XSECTION 64  | RUNOFF | .25  | 1 | 2 | .03 | .0 | 3.00 | 24.00 | .16 | --- | 6.80 | 13.95  | 55.8  |
| STRUCTURE 64 | ADDHYD | .74  | 1 | 2 | .03 | .0 | 3.00 | 24.00 | .17 | --- | 6.98 | 39.77  | 53.7  |
| XSECTION 159 | REACH  | .74  | 1 | 2 | .03 | .0 | 3.00 | 24.00 | .16 | --- | 7.24 | 37.11  | 50.2  |

1

TR20 XEQ 9/29/95 9:59 UPPER SAND CREEK -- EXISTING CONDITION  
REV PC/09/83 24 HR TYPE IIA STORM (100- AND 10-YR, AMC=2)

JOB 1 SUMMARY  
PAGE 23

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/<br>STRUCTURE<br>ID | STANDARD<br>CONTROL<br>OPERATION | DRAINAGE<br>AREA<br>(SQ MI) | RAIN<br>TABLE<br># | ANTEC<br>MOIST<br>COND | MAIN<br>TIME<br>INCREM<br>(HR) | PRECIPITATION |                |                  | RUNOFF<br>AMOUNT<br>(IN) | PEAK DISCHARGE    |              |               |               |
|-----------------------------|----------------------------------|-----------------------------|--------------------|------------------------|--------------------------------|---------------|----------------|------------------|--------------------------|-------------------|--------------|---------------|---------------|
|                             |                                  |                             |                    |                        |                                | BEGIN<br>(HR) | AMOUNT<br>(IN) | DURATION<br>(HR) |                          | ELEVATION<br>(FT) | TIME<br>(HR) | RATE<br>(CFS) | RATE<br>(CSM) |
| ALTERNATE 1 STORM 2         |                                  |                             |                    |                        |                                |               |                |                  |                          |                   |              |               |               |
| +                           |                                  |                             |                    |                        |                                |               |                |                  |                          |                   |              |               |               |
| STRUCTURE 60                | ADDHYD                           | 5.38                        | 1                  | 2                      | .03                            | .0            | 3.00           | 24.00            | .35                      | ---               | 6.92         | 758.15        | 140.9         |
| XSECTION 151                | REACH                            | 5.38                        | 1                  | 2                      | .03                            | .0            | 3.00           | 24.00            | .35                      | ---               | 7.12         | 707.46        | 131.5         |
| XSECTION 51                 | RUNOFF                           | .15                         | 1                  | 2                      | .03                            | .0            | 3.00           | 24.00            | .17                      | ---               | 6.20         | 18.48         | 123.2         |
| STRUCTURE 51                | ADDHYD                           | 5.53                        | 1                  | 2                      | .03                            | .0            | 3.00           | 24.00            | .34                      | ---               | 7.12         | 711.35        | 128.6         |
| XSECTION 49                 | RUNOFF                           | .10                         | 1                  | 2                      | .03                            | .0            | 3.00           | 24.00            | .09                      | ---               | 6.19         | 5.65          | 56.5          |
|                             |                                  |                             |                    |                        |                                |               |                |                  |                          |                   |              |               |               |
| STRUCTURE 51                | ADDHYD                           | 5.63                        | 1                  | 2                      | .03                            | .0            | 3.00           | 24.00            | .34                      | ---               | 7.12         | 713.01        | 126.6         |
| XSECTION 52                 | RUNOFF                           | .19                         | 1                  | 2                      | .03                            | .0            | 3.00           | 24.00            | .09                      | ---               | 6.41         | 7.11          | 37.4          |
| STRUCTURE 51                | ADDHYD                           | 5.82                        | 1                  | 2                      | .03                            | .0            | 3.00           | 24.00            | .33                      | ---               | 7.12         | 716.69        | 123.1         |
| XSECTION 65                 | RUNOFF                           | .10                         | 1                  | 2                      | .03                            | .0            | 3.00           | 24.00            | .31                      | ---               | 6.43         | 16.85         | 168.5         |
| XSECTION 158                | REACH                            | .10                         | 1                  | 2                      | .03                            | .0            | 3.00           | 24.00            | .30                      | ---               | 6.84         | 12.05         | 120.5         |
|                             |                                  |                             |                    |                        |                                |               |                |                  |                          |                   |              |               |               |
| XSECTION 58                 | RUNOFF                           | .17                         | 1                  | 2                      | .03                            | .0            | 3.00           | 24.00            | 1.16                     | ---               | 6.14         | 179.63        | 1056.6        |
| STRUCTURE 58                | ADDHYD                           | .27                         | 1                  | 2                      | .03                            | .0            | 3.00           | 24.00            | .84                      | ---               | 6.14         | 180.19        | 667.4         |
| XSECTION 152                | REACH                            | .27                         | 1                  | 2                      | .03                            | .0            | 3.00           | 24.00            | .83                      | ---               | 6.29         | 147.55        | 546.5         |
| STRUCTURE 51                | ADDHYD                           | 6.09                        | 1                  | 2                      | .03                            | .0            | 3.00           | 24.00            | .35                      | ---               | 7.10         | 751.91        | 123.5         |
| XSECTION 62                 | RUNOFF                           | .25                         | 1                  | 2                      | .03                            | .0            | 3.00           | 24.00            | .09                      | ---               | 6.51         | 8.47          | 33.9          |
|                             |                                  |                             |                    |                        |                                |               |                |                  |                          |                   |              |               |               |
| XSECTION 161                | REACH                            | .25                         | 1                  | 2                      | .03                            | .0            | 3.00           | 24.00            | .08                      | ---               | 6.92         | 6.22          | 24.9          |
| XSECTION 61                 | RUNOFF                           | .13                         | 1                  | 2                      | .03                            | .0            | 3.00           | 24.00            | .09                      | ---               | 6.44         | 4.76          | 36.6          |
| STRUCTURE 61                | ADDHYD                           | .38                         | 1                  | 2                      | .03                            | .0            | 3.00           | 24.00            | .09                      | ---               | 6.74         | 9.56          | 25.2          |

|              |        |      |   |   |     |    |      |       |     |     |      |        |       |
|--------------|--------|------|---|---|-----|----|------|-------|-----|-----|------|--------|-------|
| STRUCTURE 50 | ADDHYD | .51  | 1 | 2 | .03 | .0 | 3.00 | 24.00 | .08 | --- | 7.07 | 10.56  | 20.7  |
| XSECTION 149 | REACH  | .51  | 1 | 2 | .03 | .0 | 3.00 | 24.00 | .08 | --- | 7.47 | 9.72   | 19.1  |
| STRUCTURE 51 | ADDHYD | 6.60 | 1 | 2 | .03 | .0 | 3.00 | 24.00 | .33 | --- | 7.10 | 760.77 | 115.3 |
| XSECTION 148 | REACH  | 6.60 | 1 | 2 | .03 | .0 | 3.00 | 24.00 | .33 | --- | 7.21 | 750.74 | 113.7 |
| XSECTION 48  | RUNOFF | .15  | 1 | 2 | .03 | .0 | 3.00 | 24.00 | .09 | --- | 6.11 | 11.56  | 77.1  |
|              |        |      |   |   |     |    |      |       |     |     |      |        |       |
| STRUCTURE 48 | ADDHYD | 6.75 | 1 | 2 | .03 | .0 | 3.00 | 24.00 | .32 | --- | 7.21 | 752.66 | 111.5 |
| XSECTION 141 | REACH  | 6.75 | 1 | 2 | .03 | .0 | 3.00 | 24.00 | .32 | --- | 7.31 | 744.27 | 110.3 |
| XSECTION 40  | RUNOFF | .30  | 1 | 2 | .03 | .0 | 3.00 | 24.00 | .23 | --- | 6.38 | 39.19  | 130.6 |
| STRUCTURE 41 | ADDHYD | 7.05 | 1 | 2 | .03 | .0 | 3.00 | 24.00 | .32 | --- | 7.31 | 754.99 | 107.1 |
| XSECTION 41  | RUNOFF | .08  | 1 | 2 | .03 | .0 | 3.00 | 24.00 | .19 | --- | 6.13 | 14.19  | 177.4 |
|              |        |      |   |   |     |    |      |       |     |     |      |        |       |
| STRUCTURE 41 | ADDHYD | 7.13 | 1 | 2 | .03 | .0 | 3.00 | 24.00 | .31 | --- | 7.31 | 756.58 | 106.1 |
| XSECTION 185 | REACH  | 7.13 | 1 | 2 | .03 | .0 | 3.00 | 24.00 | .31 | --- | 7.36 | 755.80 | 106.0 |
| XSECTION 85  | RUNOFF | .05  | 1 | 2 | .03 | .0 | 3.00 | 24.00 | .26 | --- | 6.07 | 16.16  | 323.2 |
| STRUCTURE 85 | ADDHYD | 7.18 | 1 | 2 | .03 | .0 | 3.00 | 24.00 | .31 | --- | 7.36 | 756.91 | 105.4 |
| XSECTION 39  | RUNOFF | .15  | 1 | 2 | .03 | .0 | 3.00 | 24.00 | .31 | --- | 6.28 | 32.73  | 218.2 |
|              |        |      |   |   |     |    |      |       |     |     |      |        |       |
| STRUCTURE 85 | ADDHYD | 7.33 | 1 | 2 | .03 | .0 | 3.00 | 24.00 | .31 | --- | 7.35 | 762.38 | 104.0 |

TR20 XEQ 9/29/95 9:59 UPPER SAND CREEK -- EXISTING CONDITION JOB 1 SUMMARY  
REV PC/09/83 24 HR TYPE IIA STORM (100- AND 10-YR, AMC=2) PAGE 24

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/<br>STRUCTURE<br>ID | STANDARD<br>CONTROL<br>OPERATION | DRAINAGE<br>AREA<br>(SQ MI) | RAIN<br>TABLE<br># | ANTEC<br>MOIST<br>COND | MAIN<br>TIME<br>INCREM<br>(HR) | PRECIPITATION |                |                  | RUNOFF<br>AMOUNT<br>(IN) | PEAK DISCHARGE    |              |               |               |  |
|-----------------------------|----------------------------------|-----------------------------|--------------------|------------------------|--------------------------------|---------------|----------------|------------------|--------------------------|-------------------|--------------|---------------|---------------|--|
|                             |                                  |                             |                    |                        |                                | BEGIN<br>(HR) | AMOUNT<br>(IN) | DURATION<br>(HR) |                          | ELEVATION<br>(FT) | TIME<br>(HR) | RATE<br>(CFS) | RATE<br>(CSM) |  |
| ALTERNATE 1 STORM 2         |                                  |                             |                    |                        |                                |               |                |                  |                          |                   |              |               |               |  |
| +                           |                                  |                             |                    |                        |                                |               |                |                  |                          |                   |              |               |               |  |
| XSECTION 137                | REACH                            | 7.33                        | 1                  | 2                      | .03                            | .0            | 3.00           | 24.00            | .31                      | ---               | 7.49         | 747.05        | 101.9         |  |
| XSECTION 36                 | RUNOFF                           | .17                         | 1                  | 2                      | .03                            | .0            | 3.00           | 24.00            | .19                      | ---               | 6.37         | 17.18         | 101.1         |  |
| STRUCTURE 37                | ADDHYD                           | 7.50                        | 1                  | 2                      | .03                            | .0            | 3.00           | 24.00            | .31                      | ---               | 7.49         | 751.14        | 100.2         |  |
| XSECTION 37                 | RUNOFF                           | .12                         | 1                  | 2                      | .03                            | .0            | 3.00           | 24.00            | .26                      | ---               | 6.07         | 39.61         | 330.1         |  |
| STRUCTURE 37                | ADDHYD                           | 7.62                        | 1                  | 2                      | .03                            | .0            | 3.00           | 24.00            | .31                      | ---               | 7.49         | 753.75        | 98.9          |  |
|                             |                                  |                             |                    |                        |                                |               |                |                  |                          |                   |              |               |               |  |
| XSECTION 66                 | RUNOFF                           | .31                         | 1                  | 2                      | .03                            | .0            | 3.00           | 24.00            | .12                      | ---               | 6.56         | 15.21         | 49.1          |  |
| XSECTION 157                | REACH                            | .31                         | 1                  | 2                      | .03                            | .0            | 3.00           | 24.00            | .12                      | ---               | 6.77         | 13.58         | 43.8          |  |
| XSECTION 57                 | RUNOFF                           | .16                         | 1                  | 2                      | .03                            | .0            | 3.00           | 24.00            | .19                      | ---               | 6.30         | 18.31         | 114.4         |  |
| STRUCTURE 57                | ADDHYD                           | .47                         | 1                  | 2                      | .03                            | .0            | 3.00           | 24.00            | .14                      | ---               | 6.41         | 24.16         | 51.4          |  |
| XSECTION 154                | REACH                            | .47                         | 1                  | 2                      | .03                            | .0            | 3.00           | 24.00            | .14                      | ---               | 6.85         | 20.71         | 44.1          |  |
|                             |                                  |                             |                    |                        |                                |               |                |                  |                          |                   |              |               |               |  |
| XSECTION 55                 | RUNOFF                           | .25                         | 1                  | 2                      | .03                            | .0            | 3.00           | 24.00            | .19                      | ---               | 6.34         | 26.61         | 106.4         |  |
| STRUCTURE 54                | ADDHYD                           | .72                         | 1                  | 2                      | .03                            | .0            | 3.00           | 24.00            | .15                      | ---               | 6.43         | 39.87         | 55.4          |  |
| XSECTION 56                 | RUNOFF                           | .15                         | 1                  | 2                      | .03                            | .0            | 3.00           | 24.00            | .19                      | ---               | 6.09         | 31.96         | 213.1         |  |
| XSECTION 155                | REACH                            | .15                         | 1                  | 2                      | .03                            | .0            | 3.00           | 24.00            | .18                      | ---               | 6.37         | 16.09         | 107.2         |  |
| STRUCTURE 54                | ADDHYD                           | .87                         | 1                  | 2                      | .03                            | .0            | 3.00           | 24.00            | .16                      | ---               | 6.40         | 55.64         | 64.0          |  |
|                             |                                  |                             |                    |                        |                                |               |                |                  |                          |                   |              |               |               |  |
| XSECTION 54                 | RUNOFF                           | .25                         | 1                  | 2                      | .03                            | .0            | 3.00           | 24.00            | .19                      | ---               | 6.15         | 41.27         | 165.1         |  |
| STRUCTURE 54                | ADDHYD                           | 1.12                        | 1                  | 2                      | .03                            | .0            | 3.00           | 24.00            | .17                      | ---               | 6.28         | 77.12         | 68.9          |  |
| XSECTION 153                | REACH                            | 1.12                        | 1                  | 2                      | .03                            | .0            | 3.00           | 24.00            | .16                      | ---               | 6.44         | 72.00         | 64.3          |  |
| XSECTION 53                 | RUNOFF                           | .17                         | 1                  | 2                      | .03                            | .0            | 3.00           | 24.00            | .19                      | ---               | 6.21         | 23.70         | 139.4         |  |
| STRUCTURE 53                | ADDHYD                           | 1.29                        | 1                  | 2                      | .03                            | .0            | 3.00           | 24.00            | .17                      | ---               | 6.36         | 87.07         | 67.5          |  |

|              |        |      |   |   |     |    |      |       |     |     |      |        |       |
|--------------|--------|------|---|---|-----|----|------|-------|-----|-----|------|--------|-------|
| XSECTION 47  | RUNOFF | .26  | 1 | 2 | .03 | .0 | 3.00 | 24.00 | .19 | --- | 6.24 | 33.92  | 130.5 |
| STRUCTURE 47 | ADDHYD | 1.55 | 1 | 2 | .03 | .0 | 3.00 | 24.00 | .17 | --- | 6.44 | 99.27  | 64.0  |
| XSECTION 142 | REACH  | 1.55 | 1 | 2 | .03 | .0 | 3.00 | 24.00 | .16 | --- | 6.86 | 78.99  | 51.0  |
| XSECTION 42  | RUNOFF | .20  | 1 | 2 | .03 | .0 | 3.00 | 24.00 | .17 | --- | 6.16 | 27.95  | 139.8 |
| STRUCTURE 43 | ADDHYD | 1.75 | 1 | 2 | .03 | .0 | 3.00 | 24.00 | .16 | --- | 6.83 | 84.80  | 48.5  |
| XSECTION 43  | RUNOFF | .14  | 1 | 2 | .03 | .0 | 3.00 | 24.00 | .23 | --- | 6.47 | 16.00  | 114.3 |
| STRUCTURE 43 | ADDHYD | 1.89 | 1 | 2 | .03 | .0 | 3.00 | 24.00 | .17 | --- | 6.73 | 96.24  | 50.9  |
| XSECTION 45  | RUNOFF | .24  | 1 | 2 | .03 | .0 | 3.00 | 24.00 | .19 | --- | 6.27 | 28.84  | 120.2 |
| XSECTION 46  | RUNOFF | .23  | 1 | 2 | .03 | .0 | 3.00 | 24.00 | .19 | --- | 6.26 | 28.51  | 123.9 |
| STRUCTURE 45 | ADDHYD | .47  | 1 | 2 | .03 | .0 | 3.00 | 24.00 | .19 | --- | 6.27 | 57.32  | 122.0 |
| XSECTION 143 | REACH  | .47  | 1 | 2 | .03 | .0 | 3.00 | 24.00 | .18 | --- | 6.42 | 47.39  | 100.8 |
| STRUCTURE 43 | ADDHYD | 2.36 | 1 | 2 | .03 | .0 | 3.00 | 24.00 | .17 | --- | 6.57 | 132.78 | 56.3  |
| XSECTION 136 | REACH  | 2.36 | 1 | 2 | .03 | .0 | 3.00 | 24.00 | .17 | --- | 6.68 | 131.20 | 55.6  |
| STRUCTURE 37 | ADDHYD | 9.98 | 1 | 2 | .03 | .0 | 3.00 | 24.00 | .27 | --- | 7.46 | 840.57 | 84.2  |
| XSECTION 129 | REACH  | 9.98 | 1 | 2 | .03 | .0 | 3.00 | 24.00 | .27 | --- | 7.64 | 815.51 | 81.7  |

1

TR20 XED 9/29/95 9:59 UPPER SAND CREEK -- EXISTING CONDITION JOB 1 SUMMARY  
REV PC/09/83 24 HR TYPE IIA STORM (100- AND 10-YR. AMC=2) PAGE 25

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/<br>STRUCTURE<br>ID | STANDARD<br>CONTROL<br>OPERATION | DRAINAGE<br>AREA<br>(SQ MI) | RAIN<br>TABLE<br># | ANTEC<br>MOIST<br>COND | MAIN<br>TIME<br>INCREM<br>(HR) | PRECIPITATION |                |                  | RUNOFF<br>AMOUNT<br>(IN) | PEAK DISCHARGE    |              |               |               |  |
|-----------------------------|----------------------------------|-----------------------------|--------------------|------------------------|--------------------------------|---------------|----------------|------------------|--------------------------|-------------------|--------------|---------------|---------------|--|
|                             |                                  |                             |                    |                        |                                | BEGIN<br>(HR) | AMOUNT<br>(IN) | DURATION<br>(HR) |                          | ELEVATION<br>(FT) | TIME<br>(HR) | RATE<br>(CFS) | RATE<br>(CSM) |  |
| ALTERNATE 1 STORM 2         |                                  |                             |                    |                        |                                |               |                |                  |                          |                   |              |               |               |  |
| XSECTION 27                 | RUNOFF                           | .16                         | 1                  | 2                      | .03                            | .0            | 3.00           | 24.00            | .82                      | ---               | 6.21         | 107.27        | 670.4         |  |
| STRUCTURE 29                | ADDHYD                           | 10.14                       | 1                  | 2                      | .03                            | .0            | 3.00           | 24.00            | .28                      | ---               | 7.64         | 823.36        | 81.2          |  |
| XSECTION 38                 | RUNOFF                           | .32                         | 1                  | 2                      | .03                            | .0            | 3.00           | 24.00            | .34                      | ---               | 6.29         | 74.71         | 233.5         |  |
| XSECTION 128                | REACH                            | .32                         | 1                  | 2                      | .03                            | .0            | 3.00           | 24.00            | .34                      | ---               | 6.38         | 71.19         | 222.5         |  |
| XSECTION 28                 | RUNOFF                           | .17                         | 1                  | 2                      | .03                            | .0            | 3.00           | 24.00            | .77                      | ---               | 6.13         | 127.90        | 752.4         |  |
| STRUCTURE 28                | ADDHYD                           | .49                         | 1                  | 2                      | .03                            | .0            | 3.00           | 24.00            | .49                      | ---               | 6.19         | 165.65        | 338.1         |  |
| XSECTION 127                | REACH                            | .49                         | 1                  | 2                      | .03                            | .0            | 3.00           | 24.00            | .49                      | ---               | 6.29         | 154.90        | 316.1         |  |
| STRUCTURE 29                | ADDHYD                           | 10.63                       | 1                  | 2                      | .03                            | .0            | 3.00           | 24.00            | .29                      | ---               | 7.63         | 842.94        | 79.3          |  |
| XSECTION 29                 | RUNOFF                           | .23                         | 1                  | 2                      | .03                            | .0            | 3.00           | 24.00            | .92                      | ---               | 6.14         | 198.78        | 664.2         |  |
| XSECTION 29                 | ADDHYD                           | 10.86                       | 1                  | 2                      | .03                            | .0            | 3.00           | 24.00            | .30                      | ---               | 7.63         | 854.45        | 78.7          |  |
| XSECTION 184                | REACH                            | 10.86                       | 1                  | 2                      | .03                            | .0            | 3.00           | 24.00            | .30                      | ---               | 7.69         | 853.18        | 78.6          |  |
| XSECTION 84                 | RUNOFF                           | .04                         | 1                  | 2                      | .03                            | .0            | 3.00           | 24.00            | 1.30                     | ---               | 5.99         | 69.36         | 1734.0        |  |
| STRUCTURE 30                | ADDHYD                           | 10.90                       | 1                  | 2                      | .03                            | .0            | 3.00           | 24.00            | .30                      | ---               | 7.69         | 855.93        | 78.5          |  |
| XSECTION 30                 | RUNOFF                           | .10                         | 1                  | 2                      | .03                            | .0            | 3.00           | 24.00            | .63                      | ---               | 6.27         | 46.40         | 464.0         |  |
| STRUCTURE 30                | ADDHYD                           | 11.00                       | 1                  | 2                      | .03                            | .0            | 3.00           | 24.00            | .30                      | ---               | 7.69         | 860.36        | 78.2          |  |
| XSECTION 31                 | RUNOFF                           | .21                         | 1                  | 2                      | .03                            | .0            | 3.00           | 24.00            | .40                      | ---               | 6.39         | 49.80         | 237.1         |  |
| STRUCTURE 30                | ADDHYD                           | 11.21                       | 1                  | 2                      | .03                            | .0            | 3.00           | 24.00            | .31                      | ---               | 7.69         | 868.55        | 77.5          |  |
| XSECTION 44                 | RUNOFF                           | .17                         | 1                  | 2                      | .03                            | .0            | 3.00           | 24.00            | .32                      | ---               | 6.22         | 42.13         | 247.8         |  |
| XSECTION 135                | REACH                            | .17                         | 1                  | 2                      | .03                            | .0            | 3.00           | 24.00            | .31                      | ---               | 6.38         | 33.00         | 194.1         |  |
| XSECTION 35                 | RUNOFF                           | .12                         | 1                  | 2                      | .03                            | .0            | 3.00           | 24.00            | .31                      | ---               | 6.37         | 22.09         | 184.1         |  |
| STRUCTURE 35                | ADDHYD                           | .29                         | 1                  | 2                      | .03                            | .0            | 3.00           | 24.00            | .31                      | ---               | 6.38         | 55.09         | 190.0         |  |

|              |        |       |   |   |     |    |      |       |      |     |      |         |        |
|--------------|--------|-------|---|---|-----|----|------|-------|------|-----|------|---------|--------|
| XSECTION 130 | REACH  | .58   | 1 | 2 | .03 | .0 | 3.00 | 24.00 | .49  | --- | 6.52 | 158.49  | 273.3  |
| STRUCTURE 30 | ADDHYD | 11.79 | 1 | 2 | .03 | .0 | 3.00 | 24.00 | .31  | --- | 7.66 | 899.34  | 76.3   |
| XSECTION 32  | RUNOFF | .11   | 1 | 2 | .03 | .0 | 3.00 | 24.00 | 1.03 | --- | 6.22 | 88.66   | 806.0  |
| XSECTION 33  | RUNOFF | .29   | 1 | 2 | .03 | .0 | 3.00 | 24.00 | .82  | --- | 6.15 | 218.82  | 754.5  |
| STRUCTURE 33 | ADDHYD | .40   | 1 | 2 | .03 | .0 | 3.00 | 24.00 | .88  | --- | 6.17 | 303.41  | 758.5  |
| XSECTION 131 | REACH  | .40   | 1 | 2 | .03 | .0 | 3.00 | 24.00 | .87  | --- | 6.30 | 256.10  | 640.2  |
| STRUCTURE 30 | ADDHYD | 12.19 | 1 | 2 | .03 | .0 | 3.00 | 24.00 | .33  | --- | 6.35 | 990.87  | 81.3   |
| XSECTION 125 | REACH  | 12.19 | 1 | 2 | .03 | .0 | 3.00 | 24.00 | .33  | --- | 6.39 | 988.78  | 81.1   |
| XSECTION 26  | RUNOFF | .19   | 1 | 2 | .03 | .0 | 3.00 | 24.00 | 1.04 | --- | 6.04 | 237.66  | 1250.8 |
| STRUCTURE 25 | ADDHYD | 12.38 | 1 | 2 | .03 | .0 | 3.00 | 24.00 | .34  | --- | 6.38 | 1023.72 | 82.7   |
| XSECTION 25  | RUNOFF | .04   | 1 | 2 | .03 | .0 | 3.00 | 24.00 | .83  | --- | 5.99 | 50.94   | 1273.4 |
| STRUCTURE 25 | ADDHYD | 12.42 | 1 | 2 | .03 | .0 | 3.00 | 24.00 | .34  | --- | 6.38 | 1028.36 | 82.8   |
| XSECTION 24  | RUNOFF | .19   | 1 | 2 | .03 | .0 | 3.00 | 24.00 | .83  | --- | 6.05 | 190.47  | 1002.4 |

1

TR20 XEQ 9/29/95 9:59 UPPER SAND CREEK -- EXISTING CONDITION  
REV PC/09/83 24 HR TYPE IIA STORM (100- AND 10-YR, AMC=2)

JOB 1 SUMMARY  
PAGE 26

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/<br>STRUCTURE<br>ID | STANDARD             | DRAINAGE<br>AREA<br>(SQ MI) | RAIN<br>TABLE<br># | ANTEC<br>MOIST<br>COND | MAIN<br>TIME<br>INCREM<br>(HR) | PRECIPITATION |                |                  | RUNOFF<br>AMOUNT<br>(IN) | PEAK DISCHARGE    |              |               |               |
|-----------------------------|----------------------|-----------------------------|--------------------|------------------------|--------------------------------|---------------|----------------|------------------|--------------------------|-------------------|--------------|---------------|---------------|
|                             | CONTROL<br>OPERATION |                             |                    |                        |                                | BEGIN<br>(HR) | AMOUNT<br>(IN) | DURATION<br>(HR) |                          | ELEVATION<br>(FT) | TIME<br>(HR) | RATE<br>(CFS) | RATE<br>(CSM) |
| ALTERNATE                   |                      | 1                           | STORM              | 2                      |                                |               |                |                  |                          |                   |              |               |               |
| +                           |                      |                             |                    |                        |                                |               |                |                  |                          |                   |              |               |               |
| STRUCTURE 25                | ADDHYD               | 12.61                       | 1                  | 2                      | .03                            | .0            | 3.00           | 24.00            | .35                      | ---               | 6.37         | 1060.82       | 84.1          |
| XSECTION 120                | REACH                | 12.61                       | 1                  | 2                      | .03                            | .0            | 3.00           | 24.00            | .35                      | ---               | 6.44         | 1049.14       | 83.2          |
| XSECTION 22                 | RUNOFF               | .13                         | 1                  | 2                      | .03                            | .0            | 3.00           | 24.00            | .82                      | ---               | 6.17         | 94.73         | 728.7         |
| STRUCTURE 20                | ADDHYD               | 12.74                       | 1                  | 2                      | .03                            | .0            | 3.00           | 24.00            | .35                      | ---               | 6.42         | 1096.55       | 86.1          |
| XSECTION 20                 | RUNOFF               | .09                         | 1                  | 2                      | .03                            | .0            | 3.00           | 24.00            | .83                      | ---               | 6.03         | 98.62         | 1095.8        |
|                             |                      |                             |                    |                        |                                |               |                |                  |                          |                   |              |               |               |
| STRUCTURE 20                | ADDHYD               | 12.83                       | 1                  | 2                      | .03                            | .0            | 3.00           | 24.00            | .36                      | ---               | 6.41         | 1107.59       | 86.3          |
| XSECTION 21                 | RUNOFF               | .12                         | 1                  | 2                      | .03                            | .0            | 3.00           | 24.00            | .83                      | ---               | 6.06         | 115.29        | 960.8         |
| STRUCTURE 20                | ADDHYD               | 12.95                       | 1                  | 2                      | .03                            | .0            | 3.00           | 24.00            | .36                      | ---               | 6.40         | 1128.95       | 87.2          |
| XSECTION 19                 | RUNOFF               | .17                         | 1                  | 2                      | .03                            | .0            | 3.00           | 24.00            | .82                      | ---               | 6.27         | 100.84        | 593.2         |
| STRUCTURE 20                | ADDHYD               | 13.12                       | 1                  | 2                      | .03                            | .0            | 3.00           | 24.00            | .37                      | ---               | 6.38         | 1219.02       | 92.9          |
|                             |                      |                             |                    |                        |                                |               |                |                  |                          |                   |              |               |               |
| XSECTION 83                 | RUNOFF               | .11                         | 1                  | 2                      | .03                            | .0            | 3.00           | 24.00            | .82                      | ---               | 6.22         | 71.96         | 654.2         |
| STRUCTURE 20                | ADDHYD               | 13.23                       | 1                  | 2                      | .03                            | .0            | 3.00           | 24.00            | .37                      | ---               | 6.35         | 1277.74       | 96.6          |
| XSECTION 23                 | RUNOFF               | .28                         | 1                  | 2                      | .03                            | .0            | 3.00           | 24.00            | 1.09                     | ---               | 6.17         | 263.96        | 942.7         |
| XSECTION 183                | REACH                | .28                         | 1                  | 2                      | .03                            | .0            | 3.00           | 24.00            | 1.09                     | ---               | 6.26         | 250.24        | 893.7         |
| STRUCTURE 20                | ADDHYD               | 13.51                       | 1                  | 2                      | .03                            | .0            | 3.00           | 24.00            | .39                      | ---               | 6.30         | 1515.93       | 112.2         |
|                             |                      |                             |                    |                        |                                |               |                |                  |                          |                   |              |               |               |
| XSECTION 113                | REACH                | 13.51                       | 1                  | 2                      | .03                            | .0            | 3.00           | 24.00            | .38                      | ---               | 6.48         | 1414.43       | 104.7         |
| XSECTION 13                 | RUNOFF               | .24                         | 1                  | 2                      | .03                            | .0            | 3.00           | 24.00            | .82                      | ---               | 6.08         | 216.98        | 904.1         |
| STRUCTURE 13                | ADDHYD               | 13.75                       | 1                  | 2                      | .03                            | .0            | 3.00           | 24.00            | .39                      | ---               | 6.46         | 1456.73       | 105.9         |
| XSECTION 14                 | RUNOFF               | .07                         | 1                  | 2                      | .03                            | .0            | 3.00           | 24.00            | .82                      | ---               | 6.11         | 58.81         | 840.1         |
| STRUCTURE 13                | ADDHYD               | 13.82                       | 1                  | 2                      | .03                            | .0            | 3.00           | 24.00            | .39                      | ---               | 6.46         | 1472.59       | 106.6         |
|                             |                      |                             |                    |                        |                                |               |                |                  |                          |                   |              |               |               |
| XSECTION 15                 | RUNOFF               | .17                         | 1                  | 2                      | .03                            | .0            | 3.00           | 24.00            | .82                      | ---               | 6.19         | 118.80        | 698.8         |
| STRUCTURE 13                | ADDHYD               | 13.99                       | 1                  | 2                      | .03                            | .0            | 3.00           | 24.00            | .40                      | ---               | 6.41         | 1539.17       | 110.0         |
| XSECTION 16                 | RUNOFF               | .21                         | 1                  | 2                      | .03                            | .0            | 3.00           | 24.00            | .81                      | ---               | 6.36         | 107.47        | 511.8         |

|              |        |       |   |   |     |    |      |       |      |     |      |         |        |
|--------------|--------|-------|---|---|-----|----|------|-------|------|-----|------|---------|--------|
| XSECTION 18  | RUNOFF | .13   | 1 | 2 | .03 | .0 | 3.00 | 24.00 | .82  | --- | 6.16 | 95.76   | 736.6  |
| XSECTION 17  | RUNOFF | .17   | 1 | 2 | .03 | .0 | 3.00 | 24.00 | .81  | --- | 6.30 | 94.91   | 558.3  |
| STRUCTURE 18 | ADDHYD | .30   | 1 | 2 | .03 | .0 | 3.00 | 24.00 | .82  | --- | 6.22 | 180.46  | 601.5  |
| XSECTION 114 | REACH  | .30   | 1 | 2 | .03 | .0 | 3.00 | 24.00 | .81  | --- | 6.30 | 174.52  | 581.7  |
| STRUCTURE 13 | ADDHYD | 14.50 | 1 | 2 | .03 | .0 | 3.00 | 24.00 | .41  | --- | 6.39 | 1802.53 | 124.3  |
| XSECTION 106 | REACH  | 14.50 | 1 | 2 | .03 | .0 | 3.00 | 24.00 | .41  | --- | 6.47 | 1788.42 | 123.3  |
| XSECTION 6   | RUNOFF | .13   | 1 | 2 | .03 | .0 | 3.00 | 24.00 | .98  | --- | 6.11 | 125.75  | 967.3  |
| STRUCTURE 6  | ADDHYD | 14.63 | 1 | 2 | .03 | .0 | 3.00 | 24.00 | .41  | --- | 6.45 | 1825.32 | 124.8  |
| XSECTION 5   | RUNOFF | .15   | 1 | 2 | .03 | .0 | 3.00 | 24.00 | 1.16 | --- | 6.05 | 196.58  | 1310.5 |
| STRUCTURE 6  | ADDHYD | 14.78 | 1 | 2 | .03 | .0 | 3.00 | 24.00 | .42  | --- | 6.44 | 1855.54 | 125.5  |
| XSECTION 7   | RUNOFF | .19   | 1 | 2 | .03 | .0 | 3.00 | 24.00 | .82  | --- | 6.26 | 114.00  | 600.0  |

TR20 XEQ 9/29/95 9:59 UPPER SAND CREEK -- EXISTING CONDITION JOB 1 SUMMARY  
REV PC/09/83 24 HR TYPE IIA STORM (100- AND 10-YR, AMC=2) PAGE 27

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/<br>STRUCTURE<br>ID | STANDARD<br>CONTROL<br>OPERATION | DRAINAGE<br>AREA<br>(SQ MI) | RAIN<br>TABLE<br># | ANTEC<br>MOIST<br>COND | MAIN<br>TIME<br>INCREM<br>(HR) | PRECIPITATION |                |                  | RUNOFF<br>AMOUNT<br>(IN) | PEAK DISCHARGE    |              |               |               |  |
|-----------------------------|----------------------------------|-----------------------------|--------------------|------------------------|--------------------------------|---------------|----------------|------------------|--------------------------|-------------------|--------------|---------------|---------------|--|
|                             |                                  |                             |                    |                        |                                | BEGIN<br>(HR) | AMOUNT<br>(IN) | DURATION<br>(HR) |                          | ELEVATION<br>(FT) | TIME<br>(HR) | RATE<br>(CFS) | RATE<br>(CSM) |  |
| ALTERNATE 1 STORM 2         |                                  |                             |                    |                        |                                |               |                |                  |                          |                   |              |               |               |  |
| +                           |                                  |                             |                    |                        |                                |               |                |                  |                          |                   |              |               |               |  |
| STRUCTURE 6                 | ADDHYD                           | 14.97                       | 1                  | 2                      | .03                            | .0            | 3.00           | 24.00            | .42                      | ---               | 6.41         | 1949.30       | 130.2         |  |
| XSECTION 11                 | RUNOFF                           | .16                         | 1                  | 2                      | .03                            | .0            | 3.00           | 24.00            | 1.10                     | ---               | 6.11         | 172.71        | 1079.4        |  |
| XSECTION 12                 | RUNOFF                           | .13                         | 1                  | 2                      | .03                            | .0            | 3.00           | 24.00            | .67                      | ---               | 6.31         | 59.75         | 459.6         |  |
| STRUCTURE 11                | ADDHYD                           | .29                         | 1                  | 2                      | .03                            | .0            | 3.00           | 24.00            | .91                      | ---               | 6.14         | 214.85        | 740.9         |  |
| XSECTION 107                | REACH                            | .29                         | 1                  | 2                      | .03                            | .0            | 3.00           | 24.00            | .90                      | ---               | 6.24         | 196.24        | 676.7         |  |
|                             |                                  |                             |                    |                        |                                |               |                |                  |                          |                   |              |               |               |  |
| STRUCTURE 6                 | ADDHYD                           | 15.26                       | 1                  | 2                      | .03                            | .0            | 3.00           | 24.00            | .43                      | ---               | 6.36         | 2112.54       | 138.4         |  |
| XSECTION 104                | REACH                            | 15.26                       | 1                  | 2                      | .03                            | .0            | 3.00           | 24.00            | .43                      | ---               | 6.43         | 2103.91       | 137.9         |  |
| XSECTION 4                  | RUNOFF                           | .19                         | 1                  | 2                      | .03                            | .0            | 3.00           | 24.00            | .78                      | ---               | 6.05         | 176.26        | 927.7         |  |
| STRUCTURE 4                 | ADDHYD                           | 15.45                       | 1                  | 2                      | .03                            | .0            | 3.00           | 24.00            | .44                      | ---               | 6.42         | 2131.92       | 138.0         |  |
| XSECTION 8                  | RUNOFF                           | .20                         | 1                  | 2                      | .03                            | .0            | 3.00           | 24.00            | .67                      | ---               | 6.32         | 89.67         | 448.3         |  |
|                             |                                  |                             |                    |                        |                                |               |                |                  |                          |                   |              |               |               |  |
| STRUCTURE 8                 | ADDHYD                           | 15.65                       | 1                  | 2                      | .03                            | .0            | 3.00           | 24.00            | .44                      | ---               | 6.41         | 2216.70       | 141.6         |  |
| XSECTION 10                 | RUNOFF                           | .14                         | 1                  | 2                      | .03                            | .0            | 3.00           | 24.00            | 1.29                     | ---               | 6.01         | 221.21        | 1580.1        |  |
| XSECTION 109                | REACH                            | .14                         | 1                  | 2                      | .03                            | .0            | 3.00           | 24.00            | 1.29                     | ---               | 6.07         | 210.48        | 1503.4        |  |
| XSECTION 9                  | RUNOFF                           | .25                         | 1                  | 2                      | .03                            | .0            | 3.00           | 24.00            | .93                      | ---               | 6.02         | 310.43        | 1241.7        |  |
| STRUCTURE 9                 | ADDHYD                           | .39                         | 1                  | 2                      | .03                            | .0            | 3.00           | 24.00            | 1.06                     | ---               | 6.03         | 515.64        | 1322.2        |  |
|                             |                                  |                             |                    |                        |                                |               |                |                  |                          |                   |              |               |               |  |
| XSECTION 108                | REACH                            | .39                         | 1                  | 2                      | .03                            | .0            | 3.00           | 24.00            | 1.06                     | ---               | 6.12         | 475.11        | 1218.2        |  |
| STRUCTURE 99                | ADDHYD                           | 16.04                       | 1                  | 2                      | .03                            | .0            | 3.00           | 24.00            | .45                      | ---               | 6.32         | 2363.65       | 147.4         |  |

TR20 XEQ 9/29/95 9:59 UPPER SAND CREEK -- EXISTING CONDITION JOB 1 SUMMARY  
REV PC/09/83 24 HR TYPE IIA STORM (100- AND 10-YR, AMC=2) PAGE 26

A QUESTION MARK(?) AFTER COEFF.(C) INDICATES PARAMETERS OUTSIDE ACCEPTABLE LIMITS, SEE PREVIOUS WARNINGS)

| HYDROGRAPH INFORMATION |                |               |              |               |              |               |              |               |              | ROUTING PARAMETERS |       |              |              |                |             |              | PEAK         |             |               |  |
|------------------------|----------------|---------------|--------------|---------------|--------------|---------------|--------------|---------------|--------------|--------------------|-------|--------------|--------------|----------------|-------------|--------------|--------------|-------------|---------------|--|
| OUTFLOW+               |                |               |              |               |              |               |              |               |              | VOLUME             | MAIN  | ITER-        | Q AND A      |                |             | PEAK         | S/Q          | ATT-        | TRAVEL TIME   |  |
| XSEC                   | REACH          | INFLOW        |              | OUTFLOW       |              | INTERV.AREA   |              | BASE-         | ABOVE        | TIME               | ATION | EQUATION     |              | LENGTH         | RATIO       | Q/PEAK       | KIN          | STOR-       | KINE-         |  |
| ID                     | LENGTH<br>(FT) | PEAK<br>(CFS) | TIME<br>(HR) | PEAK<br>(CFS) | TIME<br>(HR) | PEAK<br>(CFS) | TIME<br>(HR) | FLOW<br>(CFS) | BASE<br>(IN) | INCR<br>(HR)       | #     | COEFF<br>(X) | POWER<br>(M) | FACTOR<br>(K*) | Q/I<br>(Q*) | (K)<br>(SEC) | COEFF<br>(C) | AGE<br>(HR) | MATIO<br>(HR) |  |
| ALTERNATE              |                | 1             | STORM        | 1             |              |               |              |               |              |                    |       |              |              |                |             |              |              |             |               |  |
| +174                   | 2300           | 248           | 6.0          | 227           | 6.1          |               |              | 0             | 1.00         | .03                | 1     | .900         | 1.53         | .089           | .912        | 238          | .40          | .07         | .07           |  |
| +173                   | 2800           | 357           | 6.1          | 322           | 6.2          |               |              | 0             | .99          | .03                | 1     | .700         | 1.53         | .081           | .902        | 302          | .33          | .10         | .09           |  |
| +175                   | 3850           | 310           | 6.2          | 273           | 6.3          |               |              | 0             | .98          | .03                | 1     | .600         | 1.56         | .105           | .881        | 437          | .24          | .13         | .12           |  |
| +176                   | 4100           | 208           | 6.1          | 168           | 6.3          |               |              | 0             | .99          | .03                | 1     | .600         | 1.56         | .189           | .808        | 537          | .20          | .13         | .15           |  |
| +172                   | 1700           | 998           | 6.3          | 989           | 6.3          |               |              | 0             | .98          | .03                | 1     | .800         | 1.53         | .012           | .991        | 118          | .67?         | .07         | .03           |  |
| +178                   | 3000           | 318           | 6.1          | 280           | 6.2          |               |              | 0             | .99          | .03                | 1     | .600         | 1.56         | .115           | .879        | 337          | .30          | .10         | .10           |  |
| +177                   | 3350           | 1052          | 6.2          | 986           | 6.2          |               |              | 0             | .99          | .03                | 1     | .600         | 1.56         | .052           | .937        | 245          | .39          | .07         | .07           |  |
| +171                   | 3850           | 2193          | 6.3          | 2033          | 6.4          |               |              | 0             | .98          | .03                | 1     | .200         | 1.63         | .058           | .927        | 324          | .31          | .10         | .09           |  |
| +170                   | 2500           | 2164          | 6.4          | 2134          | 6.4          |               |              | 0             | 1.00         | .03                | 1     | .300         | 1.63         | .015           | .986        | 165          | .53          | .07         | .05           |  |
| +187                   | 1200           | 2250          | 6.4          | 2242          | 6.5          |               |              | 0             | 1.01         | .03                | 1     | .200         | 1.64         | .006           | .997        | 96           | .76?         | .07         | .03           |  |
| +169                   | 3000           | 354           | 6.0          | 319           | 6.1          |               |              | 0             | 1.17         | .03                | 1     | .800         | 1.55         | .099           | .902        | 279          | .35          | .07         | .08           |  |
| +186                   | 1400           | 421           | 6.1          | 411           | 6.2          |               |              | 0             | 1.15         | .03                | 1     | .700         | 1.51         | .019           | .976        | 153          | .56          | .07         | .04           |  |
| +163                   | 4400           | 2545          | 6.4          | 2461          | 6.5          |               |              | 0             | 1.03         | .03                | 1     | .200         | 1.64         | .040           | .967        | 336          | .30          | .10         | .09           |  |
| +160                   | 4400           | 2507          | 6.5          | 2435          | 6.6          |               |              | 0             | 1.02         | .03                | 1     | .200         | 1.65         | .035           | .971        | 324          | .31          | .10         | .09           |  |
| +167                   | 3300           | 89            | 6.3          | 76            | 6.5          |               |              | 0             | .63          | .03                | 1     | .700         | 1.51         | .126           | .853        | 607          | .18          | .16         | .17           |  |
| +164                   | 2500           | 115           | 6.6          | 111           | 6.8          |               |              | 0             | .61*         | .03                | 1     | .800         | 1.51         | .030           | .967        | 386          | .27          | .16         | .11           |  |

|      |      |      |     |      |     |     |     |   |      |     |   |      |      |      |       |     |      |     |     |
|------|------|------|-----|------|-----|-----|-----|---|------|-----|---|------|------|------|-------|-----|------|-----|-----|
| +159 | 3300 | 171  | 6.7 | 165  | 6.9 |     |     | 0 | .59* | .03 | 1 |      | 1.62 | .032 | .965  | 436 | .24  | .16 | .12 |
| +    |      |      |     |      |     | --- | --- |   |      |     |   |      |      |      |       |     |      |     |     |
| +151 | 4000 | 2629 | 6.6 | 2509 | 6.8 |     |     | 0 | .95  | .03 | 1 | .100 | 1.65 | .049 | .954  | 440 | .24  | .13 | .12 |
| +    |      |      |     |      |     | --- | --- |   |      |     |   |      |      |      |       |     |      |     |     |
| +158 | 3600 | 52   | 6.4 | 43   | 6.6 |     |     | 0 | .87  | .03 | 1 | .400 | 1.63 | .185 | .817  | 839 | .13  | .20 | .24 |
| +    |      |      |     |      |     | --- | --- |   |      |     |   |      |      |      |       |     |      |     |     |
| +152 | 3500 | 340  | 6.1 | 299  | 6.3 |     |     | 0 | 1.67 | .03 | 1 | .300 | 1.63 | .105 | .880  | 472 | .22  | .13 | .13 |
| +    |      |      |     |      |     | --- | --- |   |      |     |   |      |      |      |       |     |      |     |     |
| +161 | 3400 | 59   | 6.4 | 50   | 6.6 |     |     | 0 | .42  | .03 | 1 | .700 | 1.51 | .132 | .839  | 717 | .15  | .20 | .21 |
| +    |      |      |     |      |     | --- | --- |   |      |     |   |      |      |      |       |     |      |     |     |
| +150 | 2950 | 76   | 6.5 | 69   | 6.7 |     |     | 0 | .42* | .03 | 1 | .600 | 1.53 | .078 | .903  | 600 | .18  | .20 | .17 |
| +    |      |      |     |      |     | --- | --- |   |      |     |   |      |      |      |       |     |      |     |     |
| +149 | 2400 | 88   | 6.6 | 83   | 6.8 |     |     | 0 | .41* | .03 | 1 | .300 | 1.63 | .052 | .939  | 545 | .20  | .20 | .15 |
| +    |      |      |     |      |     | --- | --- |   |      |     |   |      |      |      |       |     |      |     |     |
| +148 | 3300 | 2765 | 6.7 | 2740 | 6.8 |     |     | 0 | .90  | .03 | 1 | .300 | 1.62 | .013 | .991  | 206 | .45  | .10 | .06 |
| +    |      |      |     |      |     | --- | --- |   |      |     |   |      |      |      |       |     |      |     |     |
| +141 | 3100 | 2748 | 6.8 | 2729 | 6.9 |     |     | 0 | .88  | .03 | 1 | .300 | 1.62 | .011 | .993  | 194 | .47  | .07 | .05 |
| +    |      |      |     |      |     | --- | --- |   |      |     |   |      |      |      |       |     |      |     |     |
| +185 | 1100 | 2787 | 6.9 | 2786 | 6.9 |     |     | 0 | .87  | .03 | 1 | .300 | 1.62 | .002 | 1.000 | 69  | .93? | .03 | .02 |
| +    |      |      |     |      |     | --- | --- |   |      |     |   |      |      |      |       |     |      |     |     |
| +137 | 3900 | 2814 | 6.9 | 2778 | 7.0 |     |     | 0 | .87  | .03 | 1 | .200 | 1.65 | .017 | .987  | 274 | .36  | .10 | .08 |
| +    |      |      |     |      |     | --- | --- |   |      |     |   |      |      |      |       |     |      |     |     |
| +157 | 2300 | 81   | 6.5 | 77   | 6.6 |     |     | 0 | .50  | .03 | 1 | .800 | 1.53 | .045 | .950  | 379 | .27  | .13 | .11 |
| +    |      |      |     |      |     | --- | --- |   |      |     |   |      |      |      |       |     |      |     |     |
| +154 | 3500 | 125  | 6.4 | 115  | 6.6 |     |     | 0 | .54  | .03 | 1 | .500 | 1.61 | .065 | .919  | 537 | .20  | .20 | .15 |
| +    |      |      |     |      |     | --- | --- |   |      |     |   |      |      |      |       |     |      |     |     |
| +155 | 3450 | 120  | 6.1 | 83   | 6.2 |     |     | 0 | .65  | .03 | 1 | .600 | 1.53 | .334 | .692  | 600 | .18  | .10 | .18 |
| +    |      |      |     |      |     | --- | --- |   |      |     |   |      |      |      |       |     |      |     |     |
| +153 | 2050 | 376  | 6.2 | 364  | 6.3 |     |     | 0 | .59  | .03 | 1 | .500 | 1.61 | .017 | .970  | 207 | .45  | .07 | .06 |
| +    |      |      |     |      |     | --- | --- |   |      |     |   |      |      |      |       |     |      |     |     |
| +147 | 2300 | 443  | 6.3 | 425  | 6.4 |     |     | 0 | .60  | .03 | 1 | .400 | 1.62 | .023 | .958  | 243 | .39  | .10 | .07 |
| +    |      |      |     |      |     | --- | --- |   |      |     |   |      |      |      |       |     |      |     |     |

TR20 XEQ 9/29/95 9:59 UPPER SAND CREEK -- EXISTING CONDITION  
REV PC/09/83 24 HR TYPE IIA STORM (100- AND 10-YR, AMC=2)

JOB 1 SUMMARY  
PAGE 29

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

| + XSEC REACH |                | INFLOW        |              | OUTFLOW       |              | INTERV.AREA   |              | BASE-         | ABOVE        | TIME         | ATION | EQUATION     |              | LENGTH         | RATIO       | @PEAK        | KIN          | STOR-       | KINE-         |     |
|--------------|----------------|---------------|--------------|---------------|--------------|---------------|--------------|---------------|--------------|--------------|-------|--------------|--------------|----------------|-------------|--------------|--------------|-------------|---------------|-----|
| ID           | LENGTH<br>(FT) | PEAK<br>(CFS) | TIME<br>(HR) | PEAK<br>(CFS) | TIME<br>(HR) | PEAK<br>(CFS) | TIME<br>(HR) | FLOW<br>(CFS) | BASE<br>(IN) | INCR<br>(HR) | #     | COEFF<br>(X) | POWER<br>(M) | FACTOR<br>(K*) | O/I<br>(G*) | (K)<br>(SEC) | COEFF<br>(C) | AGE<br>(HR) | MATIO<br>(HR) |     |
| + ALTERNATE  |                | 1             | STORM        | 1             |              |               |              |               |              |              |       |              |              |                |             |              |              |             |               |     |
| +142         |                | 5400          | 532          | 6.3           | 443          | 6.5           |              |               | 0            | .60          | .03   | 1            | .300         | 1.61           | .114        | .832         | 657          | .17         | .20           | .19 |
| +143         |                | 2750          | 236          | 6.2           | 216          | 6.3           |              |               | 0            | .64          | .03   | 1            | .700         | 1.55           | .064        | .916         | 321          | .31         | .10           | .09 |
| +136         |                | 2050          | 719          | 6.4           | 714          | 6.5           |              |               | 0            | .61          | .03   | 1            | .800         | 1.55           | .009        | .993         | 148          | .57         | .07           | .04 |
| +129         |                | 3800          | 3229         | 7.0           | 3171         | 7.1           |              |               | 0            | .80          | .03   | 1            | .100         | 1.65           | .027        | .982         | 385          | .27         | .10           | .11 |
| +128         |                | 1700          | 221          | 6.3           | 216          | 6.3           |              |               | 0            | .93          | .03   | 1            | 1.20         | 1.47           | .027        | .976         | 182          | .49         | .07           | .05 |
| +127         |                | 2300          | 417          | 6.2           | 403          | 6.3           |              |               | 0            | 1.16         | .03   | 1            | 1.00         | 1.47           | .036        | .967         | 227          | .41         | .07           | .06 |
| +184         |                | 1350          | 3314         | 7.1           | 3312         | 7.1           |              |               | 0            | .84*         | .03   | 1            | .200         | 1.63           | .002        | 1.000        | 97           | .76?        | .03           | .03 |
| +135         |                | 3100          | 128          | 6.2           | 112          | 6.3           |              |               | 0            | .88          | .03   | 1            | .900         | 1.52           | .109        | .876         | 416          | .25         | .10           | .12 |
| +130         |                | 3700          | 447          | 6.3           | 423          | 6.5           |              |               | 0            | 1.16         | .03   | 1            | .900         | 1.52           | .050        | .948         | 324          | .31         | .13           | .09 |
| +131         |                | 4400          | 614          | 6.1           | 551          | 6.3           |              |               | 0            | 1.76         | .03   | 1            | .700         | 1.52           | .109        | .898         | 407          | .25         | .13           | .12 |
| +125         |                | 1200          | 3612         | 7.0           | 3612         | 7.0           |              |               | 0            | .90*         | .03   | 0            | .400         | 1.63           | .001        | 1.000        | 54           | 1.00?       | .00           | .00 |
| +120         |                | 2700          | 3667         | 7.0           | 3663         | 7.1           |              |               | 0            | .93*         | .03   | 1            | .400         | 1.61           | .003        | .999         | 132          | .62         | .03           | .04 |
| +183         |                | 2700          | 498          | 6.2           | 482          | 6.2           |              |               | 0            | 2.06         | .03   | 1            | 1.40         | 1.45           | .044        | .968         | 215          | .43         | .07           | .06 |
| +113         |                | 4200          | 4032         | 6.4           | 3945         | 6.5           |              |               | 0            | .99*         | .03   | 1            | .100         | 1.65           | .017        | .978         | 390          | .26         | .13           | .11 |
| +115         |                | 1800          | 228          | 6.3           | 224          | 6.4           |              |               | 0            | 1.66         | .03   | 1            | .800         | 1.55           | .022        | .982         | 195          | .47         | .07           | .05 |
| +114         |                | 1750          | 379          | 6.2           | 372          | 6.3           |              |               | 0            | 1.67         | .03   | 1            | .700         | 1.56           | .021        | .982         | 167          | .52         | .07           | .05 |
| +106         |                | 3100          | 4713         | 6.4           | 4702         | 6.4           |              |               | 0            | 1.03*        | .03   | 1            | .300         | 1.64           | .004        | .998         | 145          | .58         | .07           | .04 |
|              |                |               |              |               |              |               |              |               |              |              |       |              | 1.00         |                |             |              |              |             |               |     |



| ALTERNATE |      | 1   | STORM | 2   |     |     |     |   |      |     |   |      |      |      |      |      |      |     |     |
|-----------|------|-----|-------|-----|-----|-----|-----|---|------|-----|---|------|------|------|------|------|------|-----|-----|
| +         |      |     |       |     |     |     |     |   |      |     |   |      |      |      |      |      |      |     |     |
| +169      | 3000 | 150 | 6.1   | 122 | 6.2 |     |     | 0 | .48  | .03 | 1 | .800 | 1.55 | .164 | .814 | 378  | .27  | .07 | .11 |
| +         |      |     |       |     |     | --- | --- |   |      |     |   |      |      |      |      |      |      |     |     |
| +186      | 1400 | 165 | 6.2   | 157 | 6.3 |     |     | 0 | .48  | .03 | 1 | .700 | 1.51 | .028 | .952 | 209  | .44  | .10 | .06 |
| +         |      |     |       |     |     | --- | --- |   |      |     |   |      |      |      |      |      |      |     |     |
| +163      | 4400 | 775 | 6.6   | 735 | 6.8 |     |     | 0 | .40  | .03 | 1 | .200 | 1.64 | .058 | .948 | 534  | .20  | .13 | .15 |
| +         |      |     |       |     |     | --- | --- |   |      |     |   |      |      |      |      |      |      |     |     |
| +160      | 4400 | 746 | 6.8   | 711 | 6.9 |     |     | 0 | .39  | .03 | 1 | .200 | 1.65 | .050 | .954 | 522  | .20  | .16 | .15 |
| +         |      |     |       |     |     | --- | --- |   |      |     |   |      |      |      |      |      |      |     |     |
| +167      | 3300 | 21  | 6.4   | 16  | 6.7 |     |     | 0 | .18* | .03 | 1 | .700 | 1.51 | .193 | .757 | 983  | .11  | .23 | .29 |
| +         |      |     |       |     |     | --- | --- |   |      |     |   |      |      |      |      |      |      |     |     |
| +164      | 2500 | 28  | 6.9   | 27  | 7.1 |     |     | 0 | .17* | .03 | 1 | .800 | 1.51 | .048 | .953 | 621  | .17  | .23 | .17 |
| +         |      |     |       |     |     | --- | --- |   |      |     |   |      |      |      |      |      |      |     |     |
| +159      | 3300 | 40  | 7.0   | 37  | 7.2 |     |     | 0 | .17* | .03 | 1 | .500 | 1.62 | .058 | .933 | 763  | .14  | .23 | .21 |
| +         |      |     |       |     |     | --- | --- |   |      |     |   |      |      |      |      |      |      |     |     |
| +151      | 4000 | 758 | 6.9   | 707 | 7.1 |     |     | 0 | .35* | .03 | 1 | .100 | 1.65 | .072 | .933 | 718  | .15  | .20 | .20 |
| +         |      |     |       |     |     | --- | --- |   |      |     |   |      |      |      |      |      |      |     |     |
| +158      | 3600 | 17  | 6.4   | 12  | 6.8 |     |     | 0 | .31  | .03 | 1 | .400 | 1.63 | .318 | .715 | 1301 | .09  | .30 | .38 |
| +         |      |     |       |     |     | --- | --- |   |      |     |   |      |      |      |      |      |      |     |     |
| +152      | 3500 | 180 | 6.1   | 147 | 6.3 |     |     | 0 | .84  | .03 | 1 | .300 | 1.63 | .170 | .817 | 604  | .18  | .16 | .17 |
| +         |      |     |       |     |     | --- | --- |   |      |     |   |      |      |      |      |      |      |     |     |
| +161      | 3400 | 8   | 6.5   | 6   | 6.9 |     |     | 0 | .09* | .03 | 1 | .700 | 1.51 | .197 | .735 | 1386 | .08  | .43 | .40 |
| +         |      |     |       |     |     | --- | --- |   |      |     |   |      |      |      |      |      |      |     |     |
| +150      | 2950 | 10  | 6.7   | 8   | 7.2 |     |     | 0 | .09* | .03 | 1 | .600 | 1.53 | .110 | .875 | 1232 | .09  | .46 | .35 |
| +         |      |     |       |     |     | --- | --- |   |      |     |   |      |      |      |      |      |      |     |     |
| +149      | 2400 | 11  | 7.1   | 10  | 7.5 |     |     | 0 | .08* | .03 | 1 | .300 | 1.63 | .088 | .921 | 1239 | .09  | .40 | .35 |
| +         |      |     |       |     |     | --- | --- |   |      |     |   |      |      |      |      |      |      |     |     |
| +148      | 3300 | 761 | 7.1   | 750 | 7.2 |     |     | 0 | .33* | .03 | 1 | .300 | 1.62 | .017 | .987 | 338  | .30  | .13 | .09 |
| +         |      |     |       |     |     | --- | --- |   |      |     |   |      |      |      |      |      |      |     |     |
| +141      | 3100 | 752 | 7.2   | 744 | 7.3 |     |     | 0 | .32* | .03 | 1 | .300 | 1.62 | .016 | .989 | 319  | .31  | .13 | .09 |
| +         |      |     |       |     |     | --- | --- |   |      |     |   |      |      |      |      |      |      |     |     |
| +185      | 1100 | 756 | 7.3   | 756 | 7.4 |     |     | 0 | .31* | .03 | 1 | .300 | 1.62 | .003 | .999 | 113  | .69? | .07 | .03 |
| +         |      |     |       |     |     | --- | --- |   |      |     |   |      |      |      |      |      |      |     |     |
| +137      | 3900 | 762 | 7.4   | 747 | 7.5 |     |     | 0 | .31* | .03 | 1 | .200 | 1.65 | .026 | .980 | 459  | .23  | .13 | .13 |
| +         |      |     |       |     |     | --- | --- |   |      |     |   |      |      |      |      |      |      |     |     |
| +157      | 2300 | 15  | 6.6   | 14  | 6.8 |     |     | 0 | .12* | .03 | 1 | .800 | 1.53 | .072 | .893 | 676  | .16  | .20 | .15 |
| +         |      |     |       |     |     | --- | --- |   |      |     |   |      |      |      |      |      |      |     |     |
| +154      | 3500 | 24  | 6.4   | 21  | 6.8 |     |     | 0 | .14* | .03 | 1 | .500 | 1.61 | .108 | .857 | 1001 | .11  | .43 | .29 |
| +         |      |     |       |     |     | --- | --- |   |      |     |   |      |      |      |      |      |      |     |     |
|           |      |     |       |     |     |     |     |   |      |     |   | .600 |      |      |      |      |      |     |     |

|      |      |     |     |     |     |     |     |   |      |     |   |      |      |      |      |      |     |     |     |
|------|------|-----|-----|-----|-----|-----|-----|---|------|-----|---|------|------|------|------|------|-----|-----|-----|
| +153 | 2050 | 77  | 6.3 | 72  | 6.4 | --- | --- | 0 | .17* | .03 | 1 | .500 | 1.61 | .028 | .935 | 378  | .27 | .16 | .11 |
| +    |      |     |     |     |     |     |     |   |      |     |   |      |      |      |      |      |     |     |     |
| +147 | 2300 | 87  | 6.4 | 81  | 6.5 | --- | --- | 0 | .17* | .03 | 1 | .400 | 1.62 | .035 | .927 | 452  | .23 | .16 | .13 |
| +    |      |     |     |     |     |     |     |   |      |     |   |      |      |      |      |      |     |     |     |
| +142 | 5400 | 99  | 6.4 | 79  | 6.9 | --- | --- | 0 | .17* | .03 | 1 | .300 | 1.61 | .165 | .796 | 1241 | .09 | .43 | .36 |
| +    |      |     |     |     |     |     |     |   |      |     |   |      |      |      |      |      |     |     |     |
| +143 | 2750 | 57  | 6.3 | 47  | 6.4 | --- | --- | 0 | .19  | .03 | 1 | .700 | 1.55 | .103 | .825 | 531  | .20 | .16 | .15 |
| +    |      |     |     |     |     |     |     |   |      |     |   |      |      |      |      |      |     |     |     |
| +136 | 2050 | 133 | 6.6 | 131 | 6.7 | --- | --- | 0 | .17* | .03 | 1 | .800 | 1.55 | .012 | .988 | 270  | .36 | .10 | .08 |
| +    |      |     |     |     |     |     |     |   |      |     |   |      |      |      |      |      |     |     |     |
| +129 | 3800 | 841 | 7.5 | 815 | 7.7 | --- | --- | 0 | .27* | .03 | 1 | .100 | 1.65 | .041 | .970 | 655  | .17 | .20 | .18 |
| +    |      |     |     |     |     |     |     |   |      |     |   |      |      |      |      |      |     |     |     |
| +128 | 1700 | 75  | 6.3 | 71  | 6.4 | --- | --- | 0 | .34  | .03 | 1 | 1.20 | 1.47 | .039 | .952 | 257  | .38 | .07 | .07 |
| +    |      |     |     |     |     |     |     |   |      |     |   |      |      |      |      |      |     |     |     |
| +127 | 2300 | 165 | 6.2 | 155 | 6.3 | --- | --- | 0 | .49  | .03 | 1 | 1.00 | 1.47 | .051 | .937 | 306  | .33 | .13 | .09 |
| +    |      |     |     |     |     |     |     |   |      |     |   |      |      |      |      |      |     |     |     |
| +184 | 1350 | 854 | 7.6 | 853 | 7.7 | --- | --- | 0 | .30* | .03 | 1 | .200 | 1.63 | .003 | .999 | 164  | .53 | .07 | .05 |
| +    |      |     |     |     |     |     |     |   |      |     |   |      |      |      |      |      |     |     |     |
| +135 | 3100 | 42  | 6.2 | 33  | 6.4 | --- | --- | 0 | .32  | .03 | 1 | .900 | 1.52 | .169 | .786 | 609  | .18 | .16 | .18 |
| +    |      |     |     |     |     |     |     |   |      |     |   |      |      |      |      |      |     |     |     |
| +130 | 3700 | 173 | 6.4 | 158 | 6.5 | --- | --- | 0 | .49  | .03 | 1 | .900 | 1.52 | .072 | .917 | 448  | .23 | .16 | .13 |
| +    |      |     |     |     |     |     |     |   |      |     |   |      |      |      |      |      |     |     |     |
| +131 | 4400 | 303 | 6.2 | 256 | 6.3 | --- | --- | 0 | .88  | .03 | 1 | .700 | 1.52 | .154 | .844 | 518  | .21 | .13 | .15 |
| +    |      |     |     |     |     |     |     |   |      |     |   |      |      |      |      |      |     |     |     |

TR20 XEB 9/29/95 9:59 UPPER SAND CREEK -- EXISTING CONDITION JOB 1 SUMMARY  
REV PD/09/83 24 HR TYPE IIA STORM (100- AND 10-YR, AMC=2) PAGE 31

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  |        |       |
|------------------------|--------|--------|-------|---------|-------|---------|-------|------|-------|--------------------|------|-------|----------|--------|-------|-------|-------|--------|-------|
| OUTFLOW*               |        |        |       |         |       |         |       |      |       | VOLUME             | MAIN | ITER- | Q AND A  |        | PEAK  | S/Q   | ATT-  | TRAVEL | TIME  |
| XSEC                   | REACH  | INFLOW |       | OUTFLOW |       | INTERV. |       | AREA | BASE- | ABOVE              | TIME | ATION | EQUATION | LENGTH | RATIO | @PEAK | KIN   | STOR-  | KINE- |
| ID                     | LENGTH | PEAK   | TIME  | PEAK    | TIME  | PEAK    | TIME  | FLOW | BASE  | INCR               | #    | COEFF | POWER    | FACTOR | Q/I   | (K)   | COEFF | AGE    | MATIC |
| (FT)                   | (CFS)  | (HR)   | (CFS) | (HR)    | (CFS) | (HR)    | (CFS) | (IN) | (HR)  |                    |      | (X)   | (M)      | (K*)   | (Q*)  | (SEC) | (C)   | (HR)   | (HR)  |

ALTERNATE 1 STORM 2



|                |      |         |        |
|----------------|------|---------|--------|
| 0 STRUCTURE 74 | .37  |         |        |
| +              |      |         |        |
| ALTERNATE 1    |      | 359.60  | 126.47 |
| 0 STRUCTURE 71 | 3.27 |         |        |
| +              |      |         |        |
| ALTERNATE 1    |      | 2164.36 | 657.56 |
| 0 STRUCTURE 70 | 3.58 |         |        |
| +              |      |         |        |
| ALTERNATE 1    |      | 2250.89 | 674.44 |
| 0 STRUCTURE 69 | .50  |         |        |
| +              |      |         |        |
| ALTERNATE 1    |      | 421.60  | 165.65 |
| 0 STRUCTURE 67 | .49  |         |        |
| +              |      |         |        |
| ALTERNATE 1    |      | 115.21  | 28.30  |
| 0 STRUCTURE 64 | .74  |         |        |
| +              |      |         |        |
| ALTERNATE 1    |      | 171.33  | 39.77  |
| 0 STRUCTURE 63 | 4.33 |         |        |
| +              |      |         |        |
| ALTERNATE 1    |      | 2507.72 | 745.76 |
| 0 STRUCTURE 61 | .38  |         |        |
| +              |      |         |        |
| ALTERNATE 1    |      | 76.13   | 9.56   |
| 1              |      |         |        |

TR20 XEQ 9/29/95 9:59  
REV PC/09/83

UPPER SAND CREEK -- EXISTING CONDITION  
24 HR TYPE IIA STORM (100- AND 10-YR, AMC=2)

JOB 1 SUMMARY  
PAGE 33

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

| XSECTION/<br>STRUCTURE<br>ID | DRAINAGE<br>AREA<br>(SQ MI) | STORM NUMBERS..... |        |
|------------------------------|-----------------------------|--------------------|--------|
|                              |                             | 1                  | 2      |
| 0 STRUCTURE 60               | 5.38                        |                    |        |
| +                            |                             |                    |        |
| ALTERNATE 1                  |                             | 2629.17            | 758.15 |
| 0 STRUCTURE 58               | .27                         |                    |        |
| +                            |                             |                    |        |
| ALTERNATE 1                  |                             | 340.04             | 180.19 |
| 0 STRUCTURE 57               | .47                         |                    |        |
| +                            |                             |                    |        |
| ALTERNATE 1                  |                             | 125.16             | 24.16  |
| 0 STRUCTURE 54               | 1.12                        |                    |        |
| +                            |                             |                    |        |
| ALTERNATE 1                  |                             | 376.37             | 77.12  |
| 0 STRUCTURE 53               | 1.29                        |                    |        |
| +                            |                             |                    |        |
| ALTERNATE 1                  |                             | 443.39             | 87.07  |
| 0 STRUCTURE 51               | 6.60                        |                    |        |
| +                            |                             |                    |        |
| ALTERNATE 1                  |                             | 2765.51            | 760.77 |
| 0 STRUCTURE 50               | .51                         |                    |        |
| +                            |                             |                    |        |
| ALTERNATE 1                  |                             | 88.40              | 10.56  |
| 0 STRUCTURE 48               | 6.75                        |                    |        |
| +                            |                             |                    |        |
| ALTERNATE 1                  |                             | 2750.40            | 752.66 |
| 0 STRUCTURE 47               | 1.55                        |                    |        |

|   |           |    |      |         |        |
|---|-----------|----|------|---------|--------|
| 0 | STRUCTURE | 45 | .47  |         |        |
| + |           |    |      |         |        |
|   | ALTERNATE | 1  |      | 236.75  | 57.32  |
| 0 | STRUCTURE | 43 | 2.36 |         |        |
| + |           |    |      |         |        |
|   | ALTERNATE | 1  |      | 719.91  | 132.78 |
| 0 | STRUCTURE | 41 | 7.13 |         |        |
| + |           |    |      |         |        |
|   | ALTERNATE | 1  |      | 2788.64 | 756.58 |
| 0 | STRUCTURE | 37 | 9.98 |         |        |
| + |           |    |      |         |        |
|   | ALTERNATE | 1  |      | 3229.68 | 840.57 |
| 0 | STRUCTURE | 35 | .58  |         |        |
| + |           |    |      |         |        |
|   | ALTERNATE | 1  |      | 447.07  | 172.89 |
| 1 |           |    |      |         |        |

TR20 XEQ 9/29/95 9:59 UPPER SAND CREEK -- EXISTING CONDITION  
 REV PC/09/B3 24 HR TYPE IIA STORM (100- AND 10-YR, AMC=2)

JOB 1 SUMMARY  
 PAGE 34

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

| XSECTION/<br>STRUCTURE<br>ID | DRAINAGE<br>AREA<br>(SQ MI) | STORM NUMBERS..... |         |
|------------------------------|-----------------------------|--------------------|---------|
|                              |                             | 1                  | 2       |
| 0 STRUCTURE 33               | .40                         |                    |         |
| +                            |                             |                    |         |
| ALTERNATE 1                  |                             | 615.57             | 303.41  |
| 0 STRUCTURE 30               | 12.19                       |                    |         |
| +                            |                             |                    |         |
| ALTERNATE 1                  |                             | 3611.70            | 990.87  |
| 0 STRUCTURE 29               | 10.63                       |                    |         |
| +                            |                             |                    |         |
| ALTERNATE 1                  |                             | 3279.76            | 842.94  |
| 0 STRUCTURE 28               | .49                         |                    |         |
| +                            |                             |                    |         |
| ALTERNATE 1                  |                             | 417.54             | 165.65  |
| 0 STRUCTURE 25               | 12.61                       |                    |         |
| +                            |                             |                    |         |
| ALTERNATE 1                  |                             | 3667.23            | 1060.82 |
| 0 STRUCTURE 20               | 13.51                       |                    |         |
| +                            |                             |                    |         |
| ALTERNATE 1                  |                             | 4033.53            | 1515.93 |
| 0 STRUCTURE 18               | .30                         |                    |         |
| +                            |                             |                    |         |
| ALTERNATE 1                  |                             | 379.16             | 180.46  |
| 0 STRUCTURE 13               | 14.50                       |                    |         |
| +                            |                             |                    |         |
| ALTERNATE 1                  |                             | 4714.28            | 1802.53 |
| 0 STRUCTURE 11               | .29                         |                    |         |
| +                            |                             |                    |         |
| ALTERNATE 1                  |                             | 424.02             | 214.85  |
| 0 STRUCTURE 9                | .39                         |                    |         |
| +                            |                             |                    |         |
| ALTERNATE 1                  |                             | 934.54             | 515.64  |
| 0 STRUCTURE 8                | 15.65                       |                    |         |
| +                            |                             |                    |         |
| ALTERNATE 1                  |                             | 5614.92            | 2216.70 |
| 0 STRUCTURE 6                | 15.26                       |                    |         |

|   |           |   |       |         |         |
|---|-----------|---|-------|---------|---------|
| 0 | STRUCTURE | 4 | 15.45 |         |         |
| + |           |   |       |         |         |
|   | ALTERNATE | 1 |       | 5420.83 | 2131.92 |
| 0 | XSECTION  | 4 | .19   |         |         |
| + |           |   |       |         |         |
|   | ALTERNATE | 1 |       | 356.83  | 176.26  |
| 1 |           |   |       |         |         |

TR20 XEQ 9/29/95 9:59 UPPER SAND CREEK -- EXISTING CONDITION  
REV PC/09/83 24 HR TYPE IIA STORM (100- AND 10-YR, AMC=2)

JOB 1 SUMMARY  
PAGE 35

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

| XSECTION/<br>STRUCTURE<br>ID | DRAINAGE<br>AREA<br>(SQ MI) | STORM NUMBERS..... |        |
|------------------------------|-----------------------------|--------------------|--------|
|                              |                             | 1                  | 2      |
| 0 XSECTION 5                 | .15                         |                    |        |
| +                            |                             |                    |        |
| ALTERNATE 1                  |                             | 353.40             | 196.58 |
| 0 XSECTION 6                 | .13                         |                    |        |
| +                            |                             |                    |        |
| ALTERNATE 1                  |                             | 242.82             | 125.75 |
| 0 XSECTION 7                 | .19                         |                    |        |
| +                            |                             |                    |        |
| ALTERNATE 1                  |                             | 239.51             | 114.00 |
| 0 XSECTION 8                 | .20                         |                    |        |
| +                            |                             |                    |        |
| ALTERNATE 1                  |                             | 202.22             | 89.67  |
| 0 XSECTION 9                 | .25                         |                    |        |
| +                            |                             |                    |        |
| ALTERNATE 1                  |                             | 577.95             | 310.43 |
| 0 XSECTION 10                | .14                         |                    |        |
| +                            |                             |                    |        |
| ALTERNATE 1                  |                             | 378.47             | 221.21 |
| 0 XSECTION 11                | .16                         |                    |        |
| +                            |                             |                    |        |
| ALTERNATE 1                  |                             | 322.04             | 172.71 |
| 0 XSECTION 12                | .13                         |                    |        |
| +                            |                             |                    |        |
| ALTERNATE 1                  |                             | 134.59             | 59.75  |
| 0 XSECTION 13                | .24                         |                    |        |
| +                            |                             |                    |        |
| ALTERNATE 1                  |                             | 436.91             | 216.98 |
| 0 XSECTION 14                | .07                         |                    |        |
| +                            |                             |                    |        |
| ALTERNATE 1                  |                             | 119.67             | 58.81  |
| 0 XSECTION 15                | .17                         |                    |        |
| +                            |                             |                    |        |
| ALTERNATE 1                  |                             | 246.71             | 118.80 |
| 0 XSECTION 16                | .21                         |                    |        |
| +                            |                             |                    |        |
| ALTERNATE 1                  |                             | 227.53             | 107.47 |
| 0 XSECTION 17                | .17                         |                    |        |
| +                            |                             |                    |        |
| ALTERNATE 1                  |                             | 200.18             | 94.91  |
| 0 XSECTION 18                | .13                         |                    |        |
| +                            |                             |                    |        |
| ALTERNATE 1                  |                             | 197.85             | 95.76  |
| 1                            |                             |                    |        |

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

| XSECTION/<br>STRUCTURE<br>ID | DRAINAGE<br>AREA<br>(SQ MI) | STORM NUMBERS..... |        |
|------------------------------|-----------------------------|--------------------|--------|
|                              |                             | 1                  | 2      |
| 0 XSECTION 19                | .17                         |                    |        |
| +                            |                             |                    |        |
| ALTERNATE 1                  |                             | 211.96             | 100.84 |
| 0 XSECTION 20                | .09                         |                    |        |
| +                            |                             |                    |        |
| ALTERNATE 1                  |                             | 190.55             | 98.62  |
| 0 XSECTION 21                | .12                         |                    |        |
| +                            |                             |                    |        |
| ALTERNATE 1                  |                             | 229.23             | 115.29 |
| 0 XSECTION 22                | .13                         |                    |        |
| +                            |                             |                    |        |
| ALTERNATE 1                  |                             | 195.88             | 94.73  |
| 0 XSECTION 23                | .28                         |                    |        |
| +                            |                             |                    |        |
| ALTERNATE 1                  |                             | 498.71             | 263.96 |
| 0 XSECTION 24                | .19                         |                    |        |
| +                            |                             |                    |        |
| ALTERNATE 1                  |                             | 376.68             | 190.47 |
| 0 XSECTION 25                | .04                         |                    |        |
| +                            |                             |                    |        |
| ALTERNATE 1                  |                             | 95.47              | 50.94  |
| 0 XSECTION 26                | .19                         |                    |        |
| +                            |                             |                    |        |
| ALTERNATE 1                  |                             | 437.27             | 237.66 |
| 0 XSECTION 27                | .16                         |                    |        |
| +                            |                             |                    |        |
| ALTERNATE 1                  |                             | 223.45             | 107.27 |
| 0 XSECTION 28                | .17                         |                    |        |
| +                            |                             |                    |        |
| ALTERNATE 1                  |                             | 267.10             | 127.90 |
| 0 XSECTION 29                | 10.86                       |                    |        |
| +                            |                             |                    |        |
| ALTERNATE 1                  |                             | 3314.87            | 854.45 |
| 0 XSECTION 30                | .10                         |                    |        |
| +                            |                             |                    |        |
| ALTERNATE 1                  |                             | 106.51             | 46.40  |
| 0 XSECTION 31                | .21                         |                    |        |
| +                            |                             |                    |        |
| ALTERNATE 1                  |                             | 137.62             | 49.80  |
| 0 XSECTION 32                | .11                         |                    |        |
| +                            |                             |                    |        |
| ALTERNATE 1                  |                             | 171.89             | 88.66  |

1

| STRUCTURE<br>ID | AREA<br>(SQ MI) | STORM NUMBERS..... |        |
|-----------------|-----------------|--------------------|--------|
|                 |                 | 1                  | 2      |
| 0 XSECTION 33   | .29             |                    |        |
| +               |                 |                    |        |
| ALTERNATE 1     |                 | 450.82             | 218.82 |
| 0 XSECTION 34   | .29             |                    |        |
| +               |                 |                    |        |
| ALTERNATE 1     |                 | 266.69             | 117.81 |
| 0 XSECTION 35   | .12             |                    |        |
| +               |                 |                    |        |
| ALTERNATE 1     |                 | 68.67              | 22.09  |
| 0 XSECTION 36   | .17             |                    |        |
| +               |                 |                    |        |
| ALTERNATE 1     |                 | 71.36              | 17.18  |
| 0 XSECTION 37   | .12             |                    |        |
| +               |                 |                    |        |
| ALTERNATE 1     |                 | 120.97             | 39.61  |
| 0 XSECTION 38   | .32             |                    |        |
| +               |                 |                    |        |
| ALTERNATE 1     |                 | 221.09             | 74.71  |
| 0 XSECTION 39   | .15             |                    |        |
| +               |                 |                    |        |
| ALTERNATE 1     |                 | 100.88             | 32.73  |
| 0 XSECTION 40   | .30             |                    |        |
| +               |                 |                    |        |
| ALTERNATE 1     |                 | 142.30             | 39.19  |
| 0 XSECTION 41   | .08             |                    |        |
| +               |                 |                    |        |
| ALTERNATE 1     |                 | 55.76              | 14.19  |
| 0 XSECTION 42   | .20             |                    |        |
| +               |                 |                    |        |
| ALTERNATE 1     |                 | 121.22             | 27.95  |
| 0 XSECTION 43   | .14             |                    |        |
| +               |                 |                    |        |
| ALTERNATE 1     |                 | 58.00              | 16.00  |
| 0 XSECTION 44   | .17             |                    |        |
| +               |                 |                    |        |
| ALTERNATE 1     |                 | 128.31             | 42.13  |
| 0 XSECTION 45   | .24             |                    |        |
| +               |                 |                    |        |
| ALTERNATE 1     |                 | 119.33             | 28.84  |
| 0 XSECTION 46   | .23             |                    |        |
| +               |                 |                    |        |
| ALTERNATE 1     |                 | 117.63             | 28.51  |

1

TR20 XEQ 9/29/95 9:59 UPPER SAND CREEK -- EXISTING CONDITION  
REV PC/09/83 24 HR TYPE IIA STORM (100- AND 10-YR, AMC=2)

JOB 1 SUMMARY  
PAGE 36

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

| XSECTION/<br>STRUCTURE<br>ID | DRAINAGE<br>AREA<br>(SQ MI) | STORM NUMBERS..... |       |
|------------------------------|-----------------------------|--------------------|-------|
|                              |                             | 1                  | 2     |
| 0 XSECTION 47                | .26                         |                    |       |
| +                            |                             |                    |       |
| ALTERNATE 1                  |                             | 139.34             | 33.92 |
| 0 XSECTION 48                | .15                         |                    |       |

|            |    |     |        |        |
|------------|----|-----|--------|--------|
| 0 XSECTION | 49 | .10 |        |        |
| +          |    |     |        |        |
| ALTERNATE  | 1  |     | 40.99  | 5.65   |
| 0 XSECTION | 50 | .13 |        |        |
| +          |    |     |        |        |
| ALTERNATE  | 1  |     | 30.03  | 3.55   |
| 0 XSECTION | 51 | .15 |        |        |
| +          |    |     |        |        |
| ALTERNATE  | 1  |     | 81.52  | 18.48  |
| 0 XSECTION | 52 | .19 |        |        |
| +          |    |     |        |        |
| ALTERNATE  | 1  |     | 51.13  | 7.11   |
| 0 XSECTION | 53 | .17 |        |        |
| +          |    |     |        |        |
| ALTERNATE  | 1  |     | 96.57  | 23.70  |
| 0 XSECTION | 54 | .25 |        |        |
| +          |    |     |        |        |
| ALTERNATE  | 1  |     | 163.97 | 41.27  |
| 0 XSECTION | 55 | .25 |        |        |
| +          |    |     |        |        |
| ALTERNATE  | 1  |     | 110.45 | 26.61  |
| 0 XSECTION | 56 | .15 |        |        |
| +          |    |     |        |        |
| ALTERNATE  | 1  |     | 120.07 | 31.96  |
| 0 XSECTION | 57 | .16 |        |        |
| +          |    |     |        |        |
| ALTERNATE  | 1  |     | 75.91  | 18.31  |
| 0 XSECTION | 58 | .17 |        |        |
| +          |    |     |        |        |
| ALTERNATE  | 1  |     | 331.91 | 179.63 |
| 0 XSECTION | 59 | .16 |        |        |
| +          |    |     |        |        |
| ALTERNATE  | 1  |     | 147.84 | 50.07  |
| 0 XSECTION | 60 | .15 |        |        |
| +          |    |     |        |        |
| ALTERNATE  | 1  |     | 129.09 | 44.71  |

1

TR20 XEQ 9/29/95 9:59 UPPER SAND CREEK -- EXISTING CONDITION  
REV PD/09/83 24 HR TYPE IIA STORM (100- AND 10-YR, AMC=2)

JOB 1 SUMMARY  
PAGE 39

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

| XSECTION/<br>STRUCTURE<br>ID | DRAINAGE<br>AREA<br>(SQ MI) | STORM NUMBERS..... |       |
|------------------------------|-----------------------------|--------------------|-------|
|                              |                             | 1                  | 2     |
| 0 XSECTION 61                | .13                         |                    |       |
| +                            |                             |                    |       |
| ALTERNATE 1                  |                             | 34.02              | 4.76  |
| 0 XSECTION 62                | .25                         |                    |       |
| +                            |                             |                    |       |
| ALTERNATE 1                  |                             | 59.49              | 8.47  |
| 0 XSECTION 63                | .16                         |                    |       |
| +                            |                             |                    |       |
| ALTERNATE 1                  |                             | 133.99             | 46.18 |
| 0 XSECTION 64                | .25                         |                    |       |
| +                            |                             |                    |       |
| ALTERNATE 1                  |                             | 60.27              | 13.95 |
| 0 XSECTION 65                | .10                         |                    |       |

|               |     |        |        |
|---------------|-----|--------|--------|
| 0 XSECTION 66 | .31 |        |        |
| +             |     |        |        |
| ALTERNATE 1   |     | 81.40  | 15.21  |
| 0 XSECTION 67 | .27 |        |        |
| +             |     |        |        |
| ALTERNATE 1   |     | 55.57  | 14.17  |
| 0 XSECTION 68 | .22 |        |        |
| +             |     |        |        |
| ALTERNATE 1   |     | 89.13  | 21.46  |
| 0 XSECTION 69 | .25 |        |        |
| +             |     |        |        |
| ALTERNATE 1   |     | 169.70 | 65.49  |
| 0 XSECTION 70 | .31 |        |        |
| +             |     |        |        |
| ALTERNATE 1   |     | 367.95 | 149.02 |
| 0 XSECTION 71 | .36 |        |        |
| +             |     |        |        |
| ALTERNATE 1   |     | 460.34 | 189.51 |
| 0 XSECTION 72 | .25 |        |        |
| +             |     |        |        |
| ALTERNATE 1   |     | 355.15 | 150.37 |
| 0 XSECTION 73 | .12 |        |        |
| +             |     |        |        |
| ALTERNATE 1   |     | 92.97  | 32.84  |
| 0 XSECTION 74 | .18 |        |        |
| +             |     |        |        |
| ALTERNATE 1   |     | 149.49 | 53.18  |
| 1             |     |        |        |

TR20 XEQ 9/29/95 9:59  
REV PC/09/83

UPPER SAND CREEK -- EXISTING CONDITION  
24 HR TYPE IIA STORM (100- AND 10-YR, AMC=2)

JOB 1 SUMMARY  
PAGE 40

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

| XSECTION/<br>STRUCTURE<br>ID | DRAINAGE<br>AREA<br>(SQ MI) | STORM NUMBERS..... |        |
|------------------------------|-----------------------------|--------------------|--------|
|                              |                             | 1                  | 2      |
| 0 XSECTION 75                | .12                         |                    |        |
| +                            |                             |                    |        |
| ALTERNATE 1                  |                             | 75.64              | 26.40  |
| 0 XSECTION 76                | .17                         |                    |        |
| +                            |                             |                    |        |
| ALTERNATE 1                  |                             | 109.34             | 38.21  |
| 0 XSECTION 77                | .25                         |                    |        |
| +                            |                             |                    |        |
| ALTERNATE 1                  |                             | 186.13             | 65.55  |
| 0 XSECTION 78                | .88                         |                    |        |
| +                            |                             |                    |        |
| ALTERNATE 1                  |                             | 772.41             | 276.49 |
| 0 XSECTION 79                | .29                         |                    |        |
| +                            |                             |                    |        |
| ALTERNATE 1                  |                             | 319.80             | 119.32 |
| 0 XSECTION 80                | .22                         |                    |        |
| +                            |                             |                    |        |
| ALTERNATE 1                  |                             | 207.91             | 75.24  |
| 0 XSECTION 81                | .39                         |                    |        |
| +                            |                             |                    |        |
| ALTERNATE 1                  |                             | 310.16             | 109.85 |
| 0 XSECTION 82                | .19                         |                    |        |

|               |     |        |       |
|---------------|-----|--------|-------|
| 0 XSECTION 83 | .11 |        |       |
| +             |     |        |       |
| ALTERNATE 1   |     | 150.21 | 71.96 |
| 0 XSECTION 84 | .04 |        |       |
| +             |     |        |       |
| ALTERNATE 1   |     | 116.02 | 69.36 |
| 0 XSECTION 85 | .05 |        |       |
| +             |     |        |       |
| ALTERNATE 1   |     | 49.74  | 16.16 |
| 0 XSECTION 86 | .05 |        |       |
| +             |     |        |       |
| ALTERNATE 1   |     | 57.29  | 23.09 |
| 0 XSECTION 87 | .04 |        |       |
| +             |     |        |       |
| ALTERNATE 1   |     | 64.58  | 28.69 |
| 0 XSECTION 88 | .10 |        |       |
| +             |     |        |       |
| ALTERNATE 1   |     | 101.80 | 37.31 |
| 1             |     |        |       |

TR20 XEQ 9/29/95 9:59 UPPER SAND CREEK -- EXISTING CONDITION  
REV PC/09/83 24 HR TYPE IIA STORM (100- AND 10-YR, AMC=2)

JOB 1 SUMMARY  
PAGE 41

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

| XSECTION/<br>STRUCTURE<br>ID | DRAINAGE<br>AREA<br>(SQ MI) | STORM NUMBERS..... |         |
|------------------------------|-----------------------------|--------------------|---------|
|                              |                             | 1                  | 2       |
| 0 XSECTION 104               | 15.26                       |                    |         |
| +                            |                             |                    |         |
| ALTERNATE 1                  |                             | 5360.37            | 2103.91 |
| 0 XSECTION 106               | 14.50                       |                    |         |
| +                            |                             |                    |         |
| ALTERNATE 1                  |                             | 4702.19            | 1788.42 |
| 0 XSECTION 107               | .29                         |                    |         |
| +                            |                             |                    |         |
| ALTERNATE 1                  |                             | 400.51             | 196.24  |
| 0 XSECTION 108               | .39                         |                    |         |
| +                            |                             |                    |         |
| ALTERNATE 1                  |                             | 900.00             | 475.11  |
| 0 XSECTION 109               | .14                         |                    |         |
| +                            |                             |                    |         |
| ALTERNATE 1                  |                             | 368.05             | 210.48  |
| 0 XSECTION 113               | 13.51                       |                    |         |
| +                            |                             |                    |         |
| ALTERNATE 1                  |                             | 3945.68            | 1414.43 |
| 0 XSECTION 114               | .30                         |                    |         |
| +                            |                             |                    |         |
| ALTERNATE 1                  |                             | 372.35             | 174.52  |
| 0 XSECTION 115               | .21                         |                    |         |
| +                            |                             |                    |         |
| ALTERNATE 1                  |                             | 223.59             | 104.29  |
| 0 XSECTION 120               | 12.61                       |                    |         |
| +                            |                             |                    |         |
| ALTERNATE 1                  |                             | 3663.32            | 1049.14 |
| 0 XSECTION 125               | 12.19                       |                    |         |
| +                            |                             |                    |         |
| ALTERNATE 1                  |                             | 3611.70            | 988.78  |
| 0 XSECTION 127               | .49                         |                    |         |

|                |      |         |        |
|----------------|------|---------|--------|
| 0 XSECTION 128 | .32  |         |        |
| +              |      |         |        |
| ALTERNATE 1    |      | 215.79  | 71.19  |
| 0 XSECTION 129 | 9.98 |         |        |
| +              |      |         |        |
| ALTERNATE 1    |      | 3171.27 | 815.51 |
| 0 XSECTION 130 | .58  |         |        |
| +              |      |         |        |
| ALTERNATE 1    |      | 423.84  | 158.49 |
| 1              |      |         |        |

TR20 XEQ 9/29/95 9:59  
REV PC/09/83

UPPER SAND CREEK -- EXISTING CONDITION  
24 HR TYPE IIA STORM (100- AND 10-YR, AMC=2)

JOB 1 SUMMARY  
PAGE 42

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

| XSECTION/<br>STRUCTURE<br>ID | DRAINAGE<br>AREA<br>(SQ MI) | STORM NUMBERS..... |        |
|------------------------------|-----------------------------|--------------------|--------|
|                              |                             | 1                  | 2      |
| 0 XSECTION 131               | .40                         |                    |        |
| +                            |                             |                    |        |
| ALTERNATE 1                  |                             | 551.62             | 256.10 |
| 0 XSECTION 135               | .17                         |                    |        |
| +                            |                             |                    |        |
| ALTERNATE 1                  |                             | 112.07             | 33.00  |
| 0 XSECTION 136               | 2.36                        |                    |        |
| +                            |                             |                    |        |
| ALTERNATE 1                  |                             | 714.35             | 131.20 |
| 0 XSECTION 137               | 7.33                        |                    |        |
| +                            |                             |                    |        |
| ALTERNATE 1                  |                             | 2777.66            | 747.05 |
| 0 XSECTION 141               | 6.75                        |                    |        |
| +                            |                             |                    |        |
| ALTERNATE 1                  |                             | 2730.45            | 744.27 |
| 0 XSECTION 142               | 1.55                        |                    |        |
| +                            |                             |                    |        |
| ALTERNATE 1                  |                             | 443.31             | 78.99  |
| 0 XSECTION 143               | .47                         |                    |        |
| +                            |                             |                    |        |
| ALTERNATE 1                  |                             | 216.50             | 47.39  |
| 0 XSECTION 147               | 1.29                        |                    |        |
| +                            |                             |                    |        |
| ALTERNATE 1                  |                             | 424.80             | 80.72  |
| 0 XSECTION 148               | 6.60                        |                    |        |
| +                            |                             |                    |        |
| ALTERNATE 1                  |                             | 2741.86            | 750.74 |
| 0 XSECTION 149               | .51                         |                    |        |
| +                            |                             |                    |        |
| ALTERNATE 1                  |                             | 83.03              | 9.72   |
| 0 XSECTION 150               | .38                         |                    |        |
| +                            |                             |                    |        |
| ALTERNATE 1                  |                             | 68.73              | 8.37   |
| 0 XSECTION 151               | 5.38                        |                    |        |
| +                            |                             |                    |        |
| ALTERNATE 1                  |                             | 2509.46            | 707.46 |
| 0 XSECTION 152               | .27                         |                    |        |
| +                            |                             |                    |        |
| ALTERNATE 1                  |                             | 299.61             | 147.55 |
| 0 XSECTION 153               | 1.12                        |                    |        |

TR20 XEQ 9/29/95 9:59  
REV PC/09/83

UPPER SAND CREEK -- EXISTING CONDITION  
24 HR TYPE IIA STORM (100- AND 10-YR, AMC=2)

JOB 1 SUMMARY  
PAGE 43

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

| XSECTION/<br>STRUCTURE<br>ID | DRAINAGE<br>AREA<br>(SQ MI) | STORM NUMBERS..... |        |
|------------------------------|-----------------------------|--------------------|--------|
|                              |                             | 1                  | 2      |
| 0 XSECTION 154               | .47                         |                    |        |
| +                            |                             |                    |        |
| ALTERNATE 1                  |                             | 114.99             | 20.71  |
| 0 XSECTION 155               | .15                         |                    |        |
| +                            |                             |                    |        |
| ALTERNATE 1                  |                             | 83.09              | 16.09  |
| 0 XSECTION 157               | .31                         |                    |        |
| +                            |                             |                    |        |
| ALTERNATE 1                  |                             | 77.32              | 13.58  |
| 0 XSECTION 158               | .10                         |                    |        |
| +                            |                             |                    |        |
| ALTERNATE 1                  |                             | 42.82              | 12.05  |
| 0 XSECTION 159               | .74                         |                    |        |
| +                            |                             |                    |        |
| ALTERNATE 1                  |                             | 165.24             | 37.11  |
| 0 XSECTION 160               | 4.33                        |                    |        |
| +                            |                             |                    |        |
| ALTERNATE 1                  |                             | 2435.15            | 711.86 |
| 0 XSECTION 161               | .25                         |                    |        |
| +                            |                             |                    |        |
| ALTERNATE 1                  |                             | 49.88              | 6.22   |
| 0 XSECTION 163               | 4.17                        |                    |        |
| +                            |                             |                    |        |
| ALTERNATE 1                  |                             | 2461.30            | 734.63 |
| 0 XSECTION 164               | .49                         |                    |        |
| +                            |                             |                    |        |
| ALTERNATE 1                  |                             | 111.34             | 26.96  |
| 0 XSECTION 167               | .22                         |                    |        |
| +                            |                             |                    |        |
| ALTERNATE 1                  |                             | 76.08              | 16.25  |
| 0 XSECTION 169               | .25                         |                    |        |
| +                            |                             |                    |        |
| ALTERNATE 1                  |                             | 321.15             | 122.58 |
| 0 XSECTION 170               | 3.27                        |                    |        |
| +                            |                             |                    |        |
| ALTERNATE 1                  |                             | 2135.36            | 640.65 |
| 0 XSECTION 171               | 2.91                        |                    |        |
| +                            |                             |                    |        |
| ALTERNATE 1                  |                             | 2035.90            | 617.88 |
| 0 XSECTION 172               | 1.39                        |                    |        |
| +                            |                             |                    |        |
| ALTERNATE 1                  |                             | 989.50             | 318.34 |

TR20 XEQ 9/29/95 9:59  
REV PC/09/83

UPPER SAND CREEK -- EXISTING CONDITION  
24 HR TYPE IIA STORM (100- AND 10-YR, AMC=2)

JOB 1 SUMMARY  
PAGE 44

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

| XSECTION/<br>STRUCTURE<br>ID | DRAINAGE<br>AREA<br>(SQ MI) | STORM NUMBERS..... |        |
|------------------------------|-----------------------------|--------------------|--------|
|                              |                             | 1                  | 2      |
| 0 XSECTION 173               | .37                         |                    |        |
| +                            |                             |                    |        |
| ALTERNATE 1                  |                             | 322.30             | 103.72 |
| 0 XSECTION 174               | .19                         |                    |        |
| +                            |                             |                    |        |
| ALTERNATE 1                  |                             | 226.74             | 79.48  |
| 0 XSECTION 175               | .39                         |                    |        |
| +                            |                             |                    |        |
| ALTERNATE 1                  |                             | 272.74             | 87.63  |
| 0 XSECTION 176               | .22                         |                    |        |
| +                            |                             |                    |        |
| ALTERNATE 1                  |                             | 167.91             | 52.31  |
| 0 XSECTION 177               | 1.17                        |                    |        |
| +                            |                             |                    |        |
| ALTERNATE 1                  |                             | 990.02             | 323.45 |
| 0 XSECTION 178               | .29                         |                    |        |
| +                            |                             |                    |        |
| ALTERNATE 1                  |                             | 280.06             | 92.07  |
| 0 XSECTION 183               | .28                         |                    |        |
| +                            |                             |                    |        |
| ALTERNATE 1                  |                             | 482.40             | 250.24 |
| 0 XSECTION 184               | 10.86                       |                    |        |
| +                            |                             |                    |        |
| ALTERNATE 1                  |                             | 3312.54            | 853.18 |
| 0 XSECTION 185               | 7.13                        |                    |        |
| +                            |                             |                    |        |
| ALTERNATE 1                  |                             | 2787.96            | 755.80 |
| 0 XSECTION 186               | .50                         |                    |        |
| +                            |                             |                    |        |
| ALTERNATE 1                  |                             | 410.64             | 157.69 |
| 0 XSECTION 187               | 3.58                        |                    |        |
| +                            |                             |                    |        |
| ALTERNATE 1                  |                             | 2244.92            | 669.74 |

1END OF 1 JOBS IN THIS RUN

C:\>

## **Technical Addendum**

TR 20 Input/Output for the Upper Sand Creek Basin

Future Basin Condition 100-year and 10-year

JOB TR-20

TITLE 001 UPPER SAND CREEK -- FUTURE CONDITION -- SUMMARY NOPLOTS  
 TITLE 24 HR TYPE IIA STORM (100- AND 10-YR, AMC=2) -- ALTERNATIVE DESIGN

| 5 RAINFL 1 |        |   |     |       | .50    |       |       |       |  |
|------------|--------|---|-----|-------|--------|-------|-------|-------|--|
| 8          |        |   |     | 0.000 | .0025  | 0.005 | .0075 | 0.010 |  |
| 8          |        |   |     | 0.015 | 0.020  | 0.025 | 0.030 | 0.050 |  |
| 8          |        |   |     | 0.060 | 0.100  | 0.700 | 0.750 | 0.780 |  |
| 8          |        |   |     | 0.798 | 0.820  | 0.830 | 0.840 | 0.850 |  |
| 8          |        |   |     | 0.860 | 0.865  | 0.870 | 0.885 | 0.890 |  |
| 8          |        |   |     | 0.900 | 0.905  | 0.910 | 0.915 | 0.921 |  |
| 8          |        |   |     | 0.927 | 0.933  | 0.940 | 0.945 | 0.950 |  |
| 8          |        |   |     | 0.955 | 0.960  | 0.965 | 0.970 | 0.975 |  |
| 8          |        |   |     | 0.980 | 0.983  | 0.985 | 0.988 | 0.990 |  |
| 8          |        |   |     | 0.993 | 0.995  | 0.998 | 1.000 | 1.000 |  |
| 9 ENDTBL   |        |   |     |       |        |       |       |       |  |
| 6          | RUNOFF | 1 | 82  | 1     | 0.19   | 67.0  | 0.19  |       |  |
| 6          | REACH  | 3 | 174 | 1 2   | 2300.0 | 0.9   | 1.53  |       |  |
| 6          | RUNOFF | 1 | 74  | 1     | 0.18   | 67.0  | 0.48  |       |  |
| 6          | ADDHYD | 4 | 74  | 1 2 3 |        |       |       |       |  |
| 6          | REACH  | 3 | 173 | 3 1   | 2800.0 | 0.7   | 1.53  |       |  |
| 6          | RUNOFF | 1 | 75  | 2     | 0.12   | 67.0  | .70   |       |  |
| 6          | ADDHYD | 4 | 75  | 1 2 3 |        |       |       |       |  |
| 6          | RUNOFF | 1 | 73  | 1     | 0.12   | 67.0  | .53   |       |  |
| 6          | ADDHYD | 4 | 75  | 1 3 2 |        |       |       |       |  |
| 6          | RUNOFF | 1 | 81  | 1     | 0.39   | 67.0  | 0.51  |       |  |
| 6          | REACH  | 3 | 175 | 1 3   | 3850.0 | 0.6   | 1.56  |       |  |
| 6          | ADDHYD | 4 | 75  | 2 3 1 |        |       |       |       |  |
| 6          | RUNOFF | 1 | 80  | 2     | 0.22   | 67.0  | 0.40  |       |  |
| 6          | REACH  | 3 | 176 | 2 3   | 4100.0 | 0.6   | 1.56  |       |  |

|   |        |   |     |   |   |   |        |      |      |
|---|--------|---|-----|---|---|---|--------|------|------|
| 6 | ADDHYD | 4 | 75  | 3 | 1 | 2 |        |      |      |
| 6 | RUNOFF | 1 | 76  |   |   | 1 | 0.17   | 67.0 | .68  |
| 6 | ADDHYD | 4 | 75  | 1 | 2 | 3 |        |      |      |
| 6 | REACH  | 3 | 172 | 3 |   | 2 | 1700.0 | 0.8  | 1.53 |
| 6 | RUNOFF | 1 | 88  |   |   | 1 | 0.10   | 67.0 | .34  |
| 6 | ADDHYD | 4 | 77  | 1 | 2 | 3 |        |      |      |
| 6 | RUNOFF | 1 | 77  |   |   | 2 | 0.25   | 67.0 | .56  |
| 6 | ADDHYD | 4 | 77  | 3 | 2 | 1 |        |      |      |
| 6 | RUNOFF | 1 | 79  |   |   | 2 | 0.29   | 67.0 | 0.29 |
| 6 | REACH  | 3 | 178 | 2 |   | 3 | 3000.0 | 0.6  | 1.56 |
| 6 | RUNOFF | 1 | 78  |   |   | 2 | 0.88   | 67.0 | 0.44 |
| 6 | ADDHYD | 4 | 78  | 2 | 3 | 4 |        |      |      |
| 6 | REACH  | 3 | 177 | 4 |   | 2 | 3350.0 | 0.6  | 1.56 |
| 6 | ADDHYD | 4 | 77  | 2 | 1 | 3 |        |      |      |
| 6 | REACH  | 3 | 171 | 3 |   | 2 | 3850.0 | 0.2  | 1.63 |
| 6 | RUNOFF | 1 | 71  |   |   | 1 | 0.36   | 75.0 | .30  |
| 6 | ADDHYD | 4 | 71  | 1 | 2 | 3 |        |      |      |

1

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

|   |        |   |     |   |   |   |        |      |      |   |   |   |   |
|---|--------|---|-----|---|---|---|--------|------|------|---|---|---|---|
| 6 | REACH  | 3 | 170 | 3 |   | 2 | 2500.0 | 0.3  | 1.63 |   |   |   |   |
| 6 | RUNOFF | 1 | 70  |   |   | 1 | 0.31   | 75.0 | 0.35 |   |   |   |   |
| 6 | ADDHYD | 4 | 70  | 1 | 2 | 3 |        |      |      | 1 | 1 | 1 | 1 |
| 6 | REACH  | 3 | 187 | 3 |   | 2 | 1200.0 | 0.2  | 1.64 |   |   |   |   |
| 6 | RUNOFF | 1 | 87  |   |   | 3 | 0.04   | 70.0 | 0.14 |   |   |   |   |
| 6 | ADDHYD | 4 | 87  | 3 | 2 | 4 |        |      |      |   |   |   |   |
| 6 | RUNOFF | 1 | 72  |   |   | 2 | 0.25   | 70.0 | 0.23 |   |   |   |   |
| 6 | REACH  | 3 | 169 | 2 |   | 3 | 3000.0 | .8   | 1.55 |   |   |   |   |
| 6 | RUNOFF | 1 | 69  |   |   | 1 | 0.25   | 75.0 | .80  |   |   |   |   |
| 6 | ADDHYD | 4 | 69  | 3 | 1 | 2 |        |      |      |   |   |   |   |
| 6 | REACH  | 3 | 186 | 2 |   | 1 | 1400.0 | 0.7  | 1.51 |   |   |   |   |
| 6 | RUNOFF | 1 | 86  |   |   | 2 | 0.05   | 75.0 | 0.37 |   |   |   |   |
| 6 | ADDHYD | 4 | 87  | 1 | 2 | 3 |        |      |      |   |   |   |   |
| 6 | ADDHYD | 4 | 87  | 4 | 3 | 1 |        |      |      |   |   |   |   |
| 6 | REACH  | 3 | 163 | 1 |   | 2 | 4400.0 | 0.2  | 1.64 |   |   |   |   |
| 6 | RUNOFF | 1 | 63  |   |   | 3 | 0.16   | 73.0 | 0.43 |   |   |   |   |
| 6 | ADDHYD | 4 | 63  | 2 | 3 | 4 |        |      |      | 1 | 1 | 1 | 1 |
| 6 | REACH  | 3 | 160 | 4 |   | 1 | 4400.0 | 0.2  | 1.65 |   |   |   |   |
| 6 | RUNOFF | 1 | 60  |   |   | 3 | 0.15   | 72.0 | 0.41 |   |   |   |   |
| 6 | ADDHYD | 4 | 60  | 1 | 3 | 4 |        |      |      |   |   |   |   |
| 6 | RUNOFF | 1 | 59  |   |   | 3 | 0.16   | 86.0 | .33  |   |   |   |   |
| 6 | ADDHYD | 4 | 60  | 4 | 3 | 5 |        |      |      |   |   |   |   |
| 6 | RUNOFF | 1 | 68  |   |   | 1 | 0.22   | 75.0 | .65  |   |   |   |   |
| 6 | REACH  | 3 | 167 | 1 |   | 3 | 3300.0 | 0.7  | 1.51 |   |   |   |   |
| 6 | RUNOFF | 1 | 67  |   |   | 1 | 0.27   | 85.0 | .54  |   |   |   |   |
| 6 | ADDHYD | 4 | 67  | 3 | 1 | 2 |        |      |      |   |   |   |   |
| 6 | REACH  | 3 | 164 | 2 |   | 3 | 2500.0 | 0.8  | 1.51 |   |   |   |   |
| 6 | RUNOFF | 1 | 64  |   |   | 2 | 0.25   | 85.0 | .30  |   |   |   |   |
| 6 | ADDHYD | 4 | 64  | 3 | 2 | 1 |        |      |      |   |   |   |   |
| 6 | REACH  | 3 | 159 | 1 |   | 3 | 3300.0 | 0.5  | 1.62 |   |   |   |   |
| 6 | ADDHYD | 4 | 60  | 5 | 3 | 2 |        |      |      | 1 | 1 | 1 | 1 |
| 6 | REACH  | 3 | 151 | 2 |   | 1 | 4000.0 | 0.1  | 1.65 | 1 | 1 | 1 | 1 |
| 6 | RUNOFF | 1 | 51  |   |   | 5 | 0.15   | 75.0 | .39  |   |   |   |   |
| 6 | ADDHYD | 4 | 51  | 1 | 5 | 2 |        |      |      |   |   |   |   |
| 6 | RUNOFF | 1 | 49  |   |   | 1 | 0.10   | 78.0 | 0.34 |   |   |   |   |
| 6 | ADDHYD | 4 | 51  | 1 | 2 | 5 |        |      |      |   |   |   |   |
| 6 | RUNOFF | 1 | 52  |   |   | 1 | 0.19   | 85.0 | 0.61 |   |   |   |   |



6 ADDHYD 4 43 3 2 1  
1

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

|          |   |     |   |   |        |      |      |   |   |   |   |
|----------|---|-----|---|---|--------|------|------|---|---|---|---|
| 6 RUNOFF | 1 | 43  |   | 2 | 0.14   | 85.0 | 0.25 |   |   |   |   |
| 6 ADDHYD | 4 | 43  | 1 | 2 |        |      |      |   |   |   |   |
| 6 RUNOFF | 1 | 45  |   | 1 | 0.24   | 86.0 | .32  |   |   |   |   |
| 6 RUNOFF | 1 | 46  |   | 2 | 0.23   | 75.0 | 0.44 |   |   |   |   |
| 6 ADDHYD | 4 | 45  | 1 | 2 |        |      |      |   |   |   |   |
| 6 REACH  | 3 | 143 |   | 3 | 2750.0 | 0.7  | 1.55 |   |   |   |   |
| 6 ADDHYD | 4 | 43  | 2 | 5 |        |      |      |   |   |   |   |
| 6 REACH  | 3 | 136 |   | 1 | 2050.0 | 0.8  | 1.55 |   |   |   |   |
| 6 ADDHYD | 4 | 37  | 2 | 4 |        |      |      | 1 | 1 | 1 | 1 |
| 6 REACH  | 3 | 129 |   | 1 | 3800.0 | 0.1  | 1.65 |   |   |   |   |
| 6 RUNOFF | 1 | 27  |   | 3 | 0.16   | 85.0 | 0.23 |   |   |   |   |
| 6 ADDHYD | 4 | 29  | 2 | 3 |        |      |      |   |   |   |   |
| 6 RUNOFF | 1 | 38  |   | 3 | 0.32   | 76.0 | 0.58 |   |   |   |   |
| 6 REACH  | 3 | 128 |   | 3 | 1700.0 | 1.2  | 1.47 |   |   |   |   |
| 6 RUNOFF | 1 | 28  |   | 4 | 0.17   | 86.0 | 0.18 |   |   |   |   |
| 6 ADDHYD | 4 | 28  | 2 | 4 |        |      |      |   |   |   |   |
| 6 REACH  | 3 | 127 |   | 5 | 2300.0 | 1.0  | 1.47 |   |   |   |   |
| 6 ADDHYD | 4 | 29  | 1 | 3 |        |      |      |   |   |   |   |
| 6 RUNOFF | 1 | 29  |   | 1 | .23    | 80.0 | .24  |   |   |   |   |
| 6 ADDHYD | 4 | 29  |   | 1 |        |      |      |   |   |   |   |
| 6 REACH  | 3 | 184 |   | 4 | 1350.0 | .2   | 1.63 |   |   |   |   |
| 6 RUNOFF | 1 | 84  |   | 3 | 0.04   | 86.0 | .08  |   |   |   |   |
| 6 ADDHYD | 4 | 30  | 2 | 3 |        |      |      |   |   |   |   |
| 6 RUNOFF | 1 | 30  |   | 3 | 0.10   | 82.0 | 0.57 |   |   |   |   |
| 6 ADDHYD | 4 | 30  | 3 | 1 |        |      |      |   |   |   |   |
| 6 RUNOFF | 1 | 31  |   | 3 | 0.21   | 92.0 | .70  |   |   |   |   |
| 6 ADDHYD | 4 | 30  | 2 | 3 |        |      |      |   |   |   |   |
| 6 RUNOFF | 1 | 44  |   | 3 | 0.17   | 81.0 | .46  |   |   |   |   |
| 6 REACH  | 3 | 135 |   | 3 | 3100.0 | 0.9  | 1.52 |   |   |   |   |
| 6 RUNOFF | 1 | 35  |   | 3 | 0.12   | 84.0 | 0.34 |   |   |   |   |
| 6 ADDHYD | 4 | 35  | 3 | 2 |        |      |      |   |   |   |   |
| 6 RUNOFF | 1 | 34  |   | 4 | 0.29   | 84.0 | .54  |   |   |   |   |
| 6 ADDHYD | 4 | 35  | 5 | 4 |        |      |      |   |   |   |   |
| 6 REACH  | 3 | 130 |   | 3 | 3700.0 | 0.9  | 1.52 |   |   |   |   |
| 6 ADDHYD | 4 | 30  | 1 | 2 |        |      |      |   |   |   |   |
| 6 RUNOFF | 1 | 32  |   | 1 | 0.11   | 95.0 | 0.56 |   |   |   |   |
| 6 RUNOFF | 1 | 33  |   | 2 | 0.29   | 92.0 | 0.25 |   |   |   |   |
| 6 ADDHYD | 4 | 33  | 2 | 1 |        |      |      |   |   |   |   |
| 6 REACH  | 3 | 131 |   | 4 | 4400.0 | 0.7  | 1.52 |   |   |   |   |
| 6 ADDHYD | 4 | 30  | 3 | 2 |        |      |      |   |   |   |   |
| 6 REACH  | 3 | 125 |   | 1 | 1200.0 | 0.4  | 1.63 |   |   |   |   |
| 6 RUNOFF | 1 | 26  |   | 2 | 0.19   | 85.0 | .22  |   |   |   |   |
| 6 ADDHYD | 4 | 25  | 3 | 2 |        |      |      |   |   |   |   |
| 6 RUNOFF | 1 | 25  |   | 2 | 0.04   | 82.0 | .07  |   |   |   |   |
| 6 ADDHYD | 4 | 25  | 1 | 2 |        |      |      |   |   |   |   |
| 6 RUNOFF | 1 | 24  |   | 1 | 0.19   | 93.0 | 0.23 |   |   |   |   |

1

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

6 ADDHYD 4 25 1 3 2

|   |        |   |     |   |   |        |      |      |   |   |   |   |
|---|--------|---|-----|---|---|--------|------|------|---|---|---|---|
| 6 | REACH  | 3 | 120 | 2 | 4 | 2700.0 | 0.4  | 1.61 |   |   |   |   |
| 6 | RUNOFF | 1 | 22  |   | 2 | 0.13   | 90.0 | 0.13 |   |   |   |   |
| 6 | ADDHYD | 4 | 20  | 4 | 2 |        |      |      |   |   |   |   |
| 6 | RUNOFF | 1 | 20  |   | 2 | 0.09   | 79.0 | .19  |   |   |   |   |
| 6 | ADDHYD | 4 | 20  | 3 | 2 |        |      |      |   |   |   |   |
| 6 | RUNOFF | 1 | 21  |   | 2 | 0.12   | 86.0 | 0.14 |   |   |   |   |
| 6 | ADDHYD | 4 | 20  | 2 | 1 |        |      |      |   |   |   |   |
| 6 | RUNOFF | 1 | 19  |   | 2 | 0.17   | 85.0 | 0.28 |   |   |   |   |
| 6 | ADDHYD | 4 | 20  | 3 | 2 |        |      |      |   |   |   |   |
| 6 | RUNOFF | 1 | 83  |   | 2 | 0.11   | 91.0 | 0.23 |   |   |   |   |
| 6 | ADDHYD | 4 | 20  | 1 | 2 |        |      |      |   |   |   |   |
| 6 | RUNOFF | 1 | 23  |   | 2 | 0.28   | 93.0 | .34  |   |   |   |   |
| 6 | REACH  | 3 | 183 | 2 | 1 | 2700.0 | 1.4  | 1.45 |   |   |   |   |
| 6 | ADDHYD | 4 | 20  | 1 | 3 |        |      |      | 1 | 1 | 1 | 1 |
| 6 | REACH  | 3 | 113 | 2 | 1 | 4200.0 | 0.1  | 1.65 |   |   |   |   |
| 6 | RUNOFF | 1 | 13  |   | 3 | 0.24   | 82.0 | 0.30 |   |   |   |   |
| 6 | ADDHYD | 4 | 13  | 1 | 3 |        |      |      |   |   |   |   |
| 6 | RUNOFF | 1 | 14  |   | 3 | 0.07   | 86.0 | 0.23 |   |   |   |   |
| 6 | ADDHYD | 4 | 13  | 2 | 3 |        |      |      |   |   |   |   |
| 6 | RUNOFF | 1 | 15  |   | 2 | 0.17   | 84.0 | 0.31 |   |   |   |   |
| 6 | ADDHYD | 4 | 13  | 1 | 2 |        |      |      |   |   |   |   |
| 6 | RUNOFF | 1 | 16  |   | 2 | 0.21   | 83.0 | 0.34 |   |   |   |   |
| 6 | REACH  | 3 | 115 | 2 | 1 | 1800.0 | 0.8  | 1.55 |   |   |   |   |
| 6 | ADDHYD | 4 | 13  | 1 | 3 |        |      |      |   |   |   |   |
| 6 | RUNOFF | 1 | 18  |   | 1 | 0.13   | 87.0 | 0.23 |   |   |   |   |
| 6 | RUNOFF | 1 | 17  |   | 3 | 0.17   | 85.0 | 0.30 |   |   |   |   |
| 6 | ADDHYD | 4 | 18  | 1 | 3 |        |      |      |   |   |   |   |
| 6 | REACH  | 3 | 114 | 6 | 3 | 1750.0 | 0.7  | 1.56 |   |   |   |   |
| 6 | ADDHYD | 4 | 13  | 3 | 2 |        |      |      |   |   |   |   |
| 6 | REACH  | 3 | 106 | 1 | 2 | 3100.0 | 0.3  | 1.64 |   |   |   |   |
| 6 | RUNOFF | 1 | 6   |   | 1 | 0.13   | 81.0 | 0.37 |   |   |   |   |
| 6 | ADDHYD | 4 | 6   | 1 | 2 |        |      |      |   |   |   |   |
| 6 | RUNOFF | 1 | 5   |   | 2 | 0.15   | 84.0 | 0.26 |   |   |   |   |
| 6 | ADDHYD | 4 | 6   | 3 | 2 |        |      |      |   |   |   |   |
| 6 | RUNOFF | 1 | 7   |   | 3 | 0.19   | 93.0 | 0.54 |   |   |   |   |
| 6 | ADDHYD | 4 | 6   | 3 | 1 |        |      |      |   |   |   |   |
| 6 | RUNOFF | 1 | 11  |   | 1 | 0.16   | 91.0 | .35  |   |   |   |   |
| 6 | RUNOFF | 1 | 12  |   | 3 | 0.13   | 93.0 | .30  |   |   |   |   |
| 6 | ADDHYD | 4 | 11  | 3 | 1 |        |      |      |   |   |   |   |
| 6 | REACH  | 3 | 107 | 5 | 1 | 2650.0 | 1.0  | 1.45 |   |   |   |   |
| 6 | ADDHYD | 4 | 6   | 1 | 2 |        |      |      | 1 | 1 | 1 | 1 |
| 6 | REACH  | 3 | 104 | 3 | 1 | 1950.0 | 0.2  | 1.65 |   |   |   |   |
| 6 | RUNOFF | 1 | 4   |   | 2 | 0.19   | 86.0 | 0.24 |   |   |   |   |
| 6 | ADDHYD | 4 | 4   | 1 | 2 |        |      |      |   |   |   |   |
| 6 | RUNOFF | 1 | 8   |   | 2 | 0.20   | 91.0 | .39  |   |   |   |   |

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

|        |        |   |     |   |   |        |      |      |   |   |   |          |
|--------|--------|---|-----|---|---|--------|------|------|---|---|---|----------|
| 6      | ADDHYD | 4 | 8   | 3 | 2 |        |      |      |   |   |   |          |
| 6      | RUNOFF | 1 | 10  |   | 2 | 0.14   | 85.0 | 0.17 |   |   |   |          |
| 6      | REACH  | 3 | 109 | 2 | 3 | 2350.0 | 1.8  | 1.41 |   |   |   |          |
| 6      | RUNOFF | 1 | 9   |   | 2 | 0.25   | 87.0 | 0.15 |   |   |   |          |
| 6      | ADDHYD | 4 | 9   | 3 | 2 |        |      |      |   |   |   |          |
| 6      | REACH  | 3 | 108 | 4 | 2 | 2500.0 | 0.9  | 1.47 |   |   |   |          |
| 6      | ADDHYD | 4 | 99  | 1 | 2 |        |      |      | 1 | 1 | 1 | 1 TO D/S |
| ENDATA |        |   |     |   |   |        |      |      |   |   |   |          |
| 7 LIST |        |   |     |   |   |        |      |      |   |   |   |          |

```

7 INCREM 6
7 COMPUT 7 82 99 .083 0.0 4.4 1.01 2 01 01 100-YR
  ENDCMP 1
7 COMPUT 7 82 99 0.0 3.0 1.01 2 01 02 10-YR
  ENDCMP 1
  ENDJOB 2
0*****END OF 80-80 LIST*****
1

```

TR20 XEQ 10/ 4/95 10:29 UPPER SAND CREEK -- FUTURE CONDITION -- ALTERNAT  
 REV PC/09/83 24 HR TYPE IIA STORM (100- AND 10-YR, AMC=2)

FILE NO. 1  
 0

COMPUTER PROGRAM FOR PROJECT FORMULATION -

THE USERS MANUAL FOR THIS PROGRAM IS THE MAY 1982 DRAFT OF TR-20.

REACH ROUTING - THE MODIFIED ATT-KIN ROUTING PROCEDURE REPLACES THE PREVIOUS PROGRAM VERSIONS USING CONVEX ROUTING COEFFICIENTS WITH THE PREFERRED TYPE OF DATA ENTRY IS CROSS SECTION DATA REPRESENTED. THE OPTIONAL CROSS SECTION DISCHARGE-AREA PLOTS BE OBTAINED WHEN THE PLOTS SHOULD BE CHECKED FOR REASONABLENESS AND ADEQUACY OF VALUES USED IN THE ROUTING PROCEDURE.

GUIDELINES FOR DETERMINING OR ANALYZING REACH LENGTHS AND COEFFICIENTS MANUAL. SUMMARY TABLE 2 DISPLAYS REACH ROUTING RESULTS AND RESULTS OF HYDROGRAPH GENERATION - THE PROCEDURE TO CALCULATE THE INTERNAL TIME HYDROGRAPH HAVE BEEN IMPROVED. PEAK DISCHARGES AND TIMES MAY BE OBTAINED FROM HYDROGRAPHS ARE STILL INTERPOLATED, PRINTED, AND ROUTED AT THE INTERMEDIATE PEAKS - METHOD ADDED TO PROVIDE DISCHARGES AT INTERMEDIATE PEAKS - THIS VERSION CONTAINS SOME ADDITIONS TO THE INPUT AND NUMERICAL OPTIONS HAVE BEEN MODIFIED AND AUGMENTED ON THE JOB RECORD, REACH DATA EXPANDED, AND THE SUMMARY TABLES COMPLETELY REVISED. THE HOLD PROGRAM QUESTIONS OR PROBLEMS SHOULD BE DIRECTED TO HYDRAULIC ENGINEER, CHESTER, PA (NORTHEAST) -- 215-499-3933, FORT WORTH, LINCOLN, NB (MIDWEST) -- 541-5318 (FTS), PORTLAND, OR OR HYDROLOGY UNIT, ENGINEERING DIVISION, LANHAM, MD -- 436-7

# PROGRAM CHANGES SINCE MAY 1982:

- 12/17/82 - CORRECT PEAK RATE FACTOR FOR USER ENTERED DIMHYD
- CORRECT REACH ROUTING PEAK TRAVEL TIME PRINTED WITH F
- 5/02/83 - CORRECT COMPUTATIONS FOR ---
  1. DIVISION OF BASEFLOW IN DIVERT OPERATION
  2. HYDROGRAPH VOLUME SPLIT BETWEEN BASEFLOW AND PEAK
  3. CROSS SECTION DATA PLOTTING POSITION
  4. INTERMEDIATE PEAK WHEN "FROM" AREA IS LARGE
  5. STORAGE ROUTED REACH TRAVEL TIME FOR MULTIPLE PEAKS
  6. ORDERING "FLOW-FREQ" FILE FROM SUMMARY TABLE
  7. BASEFLOW ENTERED WITH READHYD

8. LOW FLOW SPLIT DURING DIVERT PROCEDURE #2  
ENHANCEMENTS ---

1. REPLACE USER MANUAL ERROR CODES (PAGE 4-9)
  2. LABEL OUTPUT HYDROGRAPH FILES WITH CROSS S
- 09/01/83 - CORRECT INPUT AND OUTPUT ERRORS FOR INTERMEDIATE PEAK  
CORRECT COMBINATION OF RATING TABLES FOR DIVERT  
CHECK REACH ROUTING PARAMETERS FOR ACCEPTABLE LIMITS  
ELIMINATE MINIMUM REACH TRAVEL TIME WHEN ATT-KIN COEF

1

TR20 XEQ 10/ 4/95 10:29  
REV PC/09/83

UPPER SAND CREEK -- FUTURE CONDITION -- ALTERNAT  
24 HR TYPE IIA STORM (100- AND 10-YR, AMC=2)

EXECUTIVE CONTROL OPERATION LIST

LISTING OF CURRENT DATA

|   |        | TIME INCREMENT |       |       |       |       |
|---|--------|----------------|-------|-------|-------|-------|
| 4 | DIMHYD | .0200          |       |       |       |       |
| 8 |        | .0000          | .0300 | .1000 | .1900 | .3100 |
| 8 |        | .4700          | .6600 | .8200 | .9300 | .9900 |
| 8 |        | 1.0000         | .9900 | .9300 | .8600 | .7800 |
| 8 |        | .6800          | .5600 | .4600 | .3900 | .3300 |
| 8 |        | .2800          | .2410 | .2070 | .1740 | .1470 |
| 8 |        | .1260          | .1070 | .0910 | .0770 | .0660 |
| 8 |        | .0550          | .0470 | .0400 | .0340 | .0290 |
| 8 |        | .0250          | .0210 | .0180 | .0150 | .0130 |
| 8 |        | .0110          | .0090 | .0080 | .0070 | .0060 |
| 8 |        | .0050          | .0040 | .0030 | .0020 | .0010 |
| 8 |        | .0000          | .0000 | .0000 | .0000 | .0000 |
| 9 | ENDTBL |                |       |       |       |       |

COMPUTED PEAK RATE FACTOR = 484.00

| TABLE NO. |          | TIME INCREMENT |       |       |        |        |
|-----------|----------|----------------|-------|-------|--------|--------|
| 5         | RAINFL 1 | .5000          |       |       |        |        |
| 8         |          | .0000          | .0025 | .0050 | .0075  | .0100  |
| 8         |          | .0150          | .0200 | .0250 | .0300  | .0500  |
| 8         |          | .0600          | .1000 | .7000 | .7500  | .7800  |
| 8         |          | .7980          | .8200 | .8300 | .8400  | .8500  |
| 8         |          | .8600          | .8650 | .8700 | .8850  | .8900  |
| 8         |          | .9000          | .9050 | .9100 | .9150  | .9210  |
| 8         |          | .9270          | .9330 | .9400 | .9450  | .9500  |
| 8         |          | .9550          | .9600 | .9650 | .9700  | .9750  |
| 8         |          | .9800          | .9830 | .9850 | .9880  | .9900  |
| 8         |          | .9930          | .9950 | .9980 | 1.0000 | 1.0000 |
| 9         | ENDTBL   |                |       |       |        |        |

TABLE NO. TIME INCREMENT

5 RAINFL 2

.2500

1

TR20 XEQ 10/ 4/95 10:29  
REV PC/09/83

UPPER SAND CREEK -- FUTURE CONDITION -- ALTERNAT  
24 HR TYPE IIA STORM (100- AND 10-YR, AMC=2)

|   |       |        |        |        |        |
|---|-------|--------|--------|--------|--------|
| 8 | .0000 | .0020  | .0050  | .0080  | .0110  |
| 8 | .0140 | .0170  | .0200  | .0230  | .0260  |
| 8 | .0290 | .0320  | .0350  | .0380  | .0410  |
| 8 | .0440 | .0480  | .0520  | .0560  | .0600  |
| 8 | .0640 | .0680  | .0720  | .0760  | .0800  |
| 8 | .0850 | .0900  | .0950  | .1000  | .1050  |
| 8 | .1100 | .1150  | .1200  | .1260  | .1330  |
| 8 | .1400 | .1470  | .1550  | .1630  | .1720  |
| 8 | .1810 | .1910  | .2030  | .2180  | .2360  |
| 8 | .2570 | .2830  | .3870  | .6630  | .7070  |
| 8 | .7350 | .7580  | .7760  | .7910  | .8040  |
| 8 | .8150 | .8250  | .8340  | .8420  | .8490  |
| 8 | .8560 | .8630  | .8690  | .8750  | .8810  |
| 8 | .8870 | .8930  | .8980  | .9030  | .9080  |
| 8 | .9130 | .9180  | .9220  | .9260  | .9300  |
| 8 | .9340 | .9380  | .9420  | .9460  | .9500  |
| 8 | .9530 | .9560  | .9590  | .9620  | .9650  |
| 8 | .9680 | .9710  | .9740  | .9770  | .9800  |
| 8 | .9830 | .9860  | .9890  | .9920  | .9950  |
| 8 | .9980 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |

ENDTBL

TABLE NO. TIME INCREMENT  
5 RAINFL 3 .5000

|   |       |       |       |        |        |
|---|-------|-------|-------|--------|--------|
| 8 | .0000 | .0100 | .0220 | .0360  | .0510  |
| 8 | .0670 | .0830 | .0990 | .1160  | .1350  |
| 8 | .1560 | .1790 | .2040 | .2330  | .2680  |
| 8 | .3100 | .4250 | .4800 | .5200  | .5500  |
| 8 | .5770 | .6010 | .6230 | .6440  | .6640  |
| 8 | .6830 | .7010 | .7190 | .7360  | .7530  |
| 8 | .7690 | .7850 | .8000 | .8150  | .8300  |
| 8 | .8440 | .8580 | .8710 | .8840  | .8960  |
| 8 | .9080 | .9200 | .9320 | .9440  | .9560  |
| 8 | .9670 | .9780 | .9890 | 1.0000 | 1.0000 |

9 ENDTBL

TABLE NO. TIME INCREMENT  
5 RAINFL 4 .5000

|   |       |       |       |       |       |
|---|-------|-------|-------|-------|-------|
| 8 | .0000 | .0040 | .0080 | .0120 | .0160 |
| 8 | .0200 | .0250 | .0300 | .0350 | .0400 |
| 8 | .0450 | .0500 | .0550 | .0600 | .0650 |
| 8 | .0700 | .0750 | .0810 | .0870 | .0930 |
| 8 | .0990 | .1050 | .1110 | .1180 | .1250 |
|   | .1320 | .1400 | .1480 | .1560 | .1650 |
|   | .1740 | .1840 | .1950 | .2070 | .2200 |

TR20 XEQ 10/ 4/95 10:29  
REV PC/09/83

UPPER SAND CREEK -- FUTURE CONDITION -- ALTERNATE  
24 HR TYPE IIA STORM (100- AND 10-YR, AMC=2)

|   |        |        |        |        |        |
|---|--------|--------|--------|--------|--------|
| 8 | .2360  | .2550  | .2770  | .3030  | .4090  |
| 8 | .5150  | .5490  | .5830  | .6050  | .6240  |
| 8 | .6400  | .6550  | .6690  | .6820  | .6940  |
| 8 | .7050  | .7160  | .7270  | .7380  | .7480  |
| 8 | .7580  | .7670  | .7760  | .7840  | .7920  |
| 8 | .8000  | .8080  | .8160  | .8230  | .8300  |
| 8 | .8370  | .8440  | .8510  | .8580  | .8640  |
| 8 | .8700  | .8760  | .8820  | .8880  | .8940  |
| 8 | .9000  | .9060  | .9110  | .9160  | .9210  |
| 8 | .9260  | .9310  | .9360  | .9410  | .9460  |
| 8 | .9510  | .9560  | .9610  | .9660  | .9710  |
| 8 | .9760  | .9800  | .9840  | .9880  | .9920  |
| 8 | .9960  | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| 9 | ENDTBL |        |        |        |        |

TABLE NO. 5 RAINFL 5 TIME INCREMENT .5000

|   |        |        |        |        |        |
|---|--------|--------|--------|--------|--------|
| 8 | .0000  | .0020  | .0050  | .0080  | .0110  |
| 8 | .0140  | .0170  | .0200  | .0230  | .0260  |
| 8 | .0290  | .0320  | .0350  | .0380  | .0410  |
| 8 | .0440  | .0470  | .0510  | .0550  | .0590  |
| 8 | .0630  | .0670  | .0710  | .0750  | .0790  |
| 8 | .0840  | .0890  | .0940  | .0990  | .1040  |
| 8 | .1090  | .1140  | .1200  | .1260  | .1330  |
| 8 | .1400  | .1470  | .1540  | .1620  | .1710  |
| 8 | .1810  | .1920  | .2040  | .2170  | .2330  |
| 8 | .2520  | .2770  | .3180  | .6380  | .6980  |
| 8 | .7290  | .7520  | .7700  | .7850  | .7980  |
| 8 | .8090  | .8190  | .8290  | .8380  | .8460  |
| 8 | .8540  | .8610  | .8680  | .8740  | .8800  |
| 8 | .8860  | .8920  | .8970  | .9020  | .9070  |
| 8 | .9120  | .9170  | .9210  | .9250  | .9290  |
| 8 | .9330  | .9370  | .9410  | .9450  | .9490  |
| 8 | .9530  | .9570  | .9600  | .9630  | .9660  |
| 8 | .9690  | .9720  | .9750  | .9780  | .9810  |
| 8 | .9840  | .9870  | .9900  | .9930  | .9960  |
| 8 | .9980  | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| 9 | ENDTBL |        |        |        |        |

TABLE NO. 5 RAINFL 6 TIME INCREMENT .0200

|   |       |       |       |       |       |
|---|-------|-------|-------|-------|-------|
| 8 | .0000 | .0080 | .0162 | .0246 | .0333 |
| 8 | .0425 | .0524 | .0630 | .0743 | .0863 |
| 8 | .0990 | .1124 | .1265 | .1420 | .1595 |
| 8 | .1800 | .2050 | .2550 | .3450 | .4370 |

1

TR20 XEQ 10/ 4/95 10:29  
REV PC/09/83

UPPER SAND CREEK -- FUTURE CONDITION -- ALTERNATE  
24 HR TYPE IIA STORM (100- AND 10-YR, AMC=2)

|   |        |        |        |        |        |        |
|---|--------|--------|--------|--------|--------|--------|
| 8 |        | .5300  | .6030  | .6330  | .6600  | .6840  |
| 8 |        | .7050  | .7240  | .7420  | .7590  | .7750  |
| 8 |        | .7900  | .8043  | .8180  | .8312  | .8439  |
| 8 |        | .8561  | .8678  | .8790  | .8898  | .9002  |
| 9 |        | .9103  | .9201  | .9297  | .9391  | .9483  |
| 8 |        | .9573  | .9661  | .9747  | .9832  | .9916  |
| 8 |        | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| 9 | ENDTBL |        |        |        |        |        |

1

|                   |       |                                                  |
|-------------------|-------|--------------------------------------------------|
| TR20 XEQ 10/ 4/95 | 10:29 | UPPER SAND CREEK -- FUTURE CONDITION -- ALTERNAT |
| REV PC/09/83      |       | 24 HR TYPE IIA STORM (100- AND 10-YR, AMC=2)     |

0

# STANDARD CONTROL INSTRUCTIONS

|   |        |   |     |   |   |           |         |         |   |   |   |   |   |
|---|--------|---|-----|---|---|-----------|---------|---------|---|---|---|---|---|
| 6 | RUNOFF | 1 | 82  | 1 |   | .1900     | 67.0000 | .19000  | 0 | 0 | 0 | 0 | 1 |
| 6 | REACH  | 3 | 174 | 1 | 2 | 2300.0000 | .9000   | 1.53000 | 0 | 0 | 0 | 0 | 1 |
| 6 | RUNOFF | 1 | 74  | 1 |   | .1800     | 67.0000 | .48000  | 0 | 0 | 0 | 0 | 1 |
| 6 | ADDHYD | 4 | 74  | 1 | 2 | 3         |         | 0       | 0 | 0 | 0 | 0 | 1 |
| 6 | REACH  | 3 | 173 | 3 | 1 | 2800.0000 | .7000   | 1.53000 | 0 | 0 | 0 | 0 | 1 |
| 6 | RUNOFF | 1 | 75  | 2 |   | .1200     | 67.0000 | .70000  | 0 | 0 | 0 | 0 | 1 |
| 6 | ADDHYD | 4 | 75  | 1 | 2 | 3         |         | 0       | 0 | 0 | 0 | 0 | 1 |
| 6 | RUNOFF | 1 | 73  | 1 |   | .1200     | 67.0000 | .53000  | 0 | 0 | 0 | 0 | 1 |
| 6 | ADDHYD | 4 | 75  | 1 | 3 | 2         |         | 0       | 0 | 0 | 0 | 0 | 1 |
| 6 | RUNOFF | 1 | 81  | 1 |   | .3900     | 67.0000 | .51000  | 0 | 0 | 0 | 0 | 1 |
| 6 | REACH  | 3 | 175 | 1 | 3 | 3850.0000 | .6000   | 1.56000 | 0 | 0 | 0 | 0 | 1 |
| 6 | ADDHYD | 4 | 75  | 2 | 3 | 1         |         | 0       | 0 | 0 | 0 | 0 | 1 |
| 6 | RUNOFF | 1 | 80  | 2 |   | .2200     | 67.0000 | .40000  | 0 | 0 | 0 | 0 | 1 |
| 6 | REACH  | 3 | 176 | 2 | 3 | 4100.0000 | .6000   | 1.56000 | 0 | 0 | 0 | 0 | 1 |
| 6 | ADDHYD | 4 | 75  | 3 | 1 | 2         |         | 0       | 0 | 0 | 0 | 0 | 1 |
| 6 | RUNOFF | 1 | 76  | 1 |   | .1700     | 67.0000 | .68000  | 0 | 0 | 0 | 0 | 1 |
| 6 | ADDHYD | 4 | 75  | 1 | 2 | 3         |         | 0       | 0 | 0 | 0 | 0 | 1 |
| 6 | REACH  | 3 | 172 | 3 | 2 | 1700.0000 | .8000   | 1.53000 | 0 | 0 | 0 | 0 | 1 |
| 6 | RUNOFF | 1 | 88  | 1 |   | .1000     | 67.0000 | .34000  | 0 | 0 | 0 | 0 | 1 |
| 6 | ADDHYD | 4 | 77  | 1 | 2 | 3         |         | 0       | 0 | 0 | 0 | 0 | 1 |
| 6 | RUNOFF | 1 | 77  | 2 |   | .2500     | 67.0000 | .56000  | 0 | 0 | 0 | 0 | 1 |
| 6 | ADDHYD | 4 | 77  | 3 | 2 | 1         |         | 0       | 0 | 0 | 0 | 0 | 1 |
| 6 | RUNOFF | 1 | 79  | 2 |   | .2900     | 67.0000 | .29000  | 0 | 0 | 0 | 0 | 1 |
| 6 | REACH  | 3 | 178 | 2 | 3 | 3000.0000 | .6000   | 1.56000 | 0 | 0 | 0 | 0 | 1 |
| 6 | RUNOFF | 1 | 78  | 2 |   | .8800     | 67.0000 | .44000  | 0 | 0 | 0 | 0 | 1 |
| 6 | ADDHYD | 4 | 78  | 2 | 3 | 4         |         | 0       | 0 | 0 | 0 | 0 | 1 |
| 6 | REACH  | 3 | 177 | 4 | 2 | 3350.0000 | .6000   | 1.56000 | 0 | 0 | 0 | 0 | 1 |
| 6 | ADDHYD | 4 | 77  | 2 | 1 | 3         |         | 0       | 0 | 0 | 0 | 0 | 1 |
| 6 | REACH  | 3 | 171 | 3 | 2 | 3850.0000 | .2000   | 1.63000 | 0 | 0 | 0 | 0 | 1 |
| 6 | RUNOFF | 1 | 71  | 1 |   | .3600     | 75.0000 | .30000  | 0 | 0 | 0 | 0 | 1 |
| 6 | ADDHYD | 4 | 71  | 1 | 2 | 3         |         | 0       | 0 | 0 | 0 | 0 | 1 |
| 6 | REACH  | 3 | 170 | 3 | 2 | 2500.0000 | .3000   | 1.63000 | 0 | 0 | 0 | 0 | 1 |
| 6 | RUNOFF | 1 | 70  | 1 |   | .3100     | 75.0000 | .35000  | 0 | 0 | 0 | 0 | 1 |
| 6 | ADDHYD | 4 | 70  | 1 | 2 | 3         |         | 1       | 1 | 0 | 1 | 0 | 1 |
| 6 | REACH  | 3 | 187 | 3 | 2 | 1200.0000 | .2000   | 1.64000 | 0 | 0 | 0 | 0 | 1 |
| 6 | RUNOFF | 1 | 87  | 3 |   | .0400     | 70.0000 | .14000  | 0 | 0 | 0 | 0 | 1 |
| 6 | ADDHYD | 4 | 87  | 3 | 2 | 4         |         | 0       | 0 | 0 | 0 | 0 | 1 |
| 6 | RUNOFF | 1 | 72  | 2 |   | .2500     | 70.0000 | .23000  | 0 | 0 | 0 | 0 | 1 |
| 6 | REACH  | 3 | 169 | 2 | 3 | 3000.0000 | .8000   | 1.55000 | 0 | 0 | 0 | 0 | 1 |
| 6 | RUNOFF | 1 | 69  | 1 |   | .2500     | 75.0000 | .80000  | 0 | 0 | 0 | 0 | 1 |

|          |   |     |   |   |   |           |         |         |   |   |   |   |   |   |
|----------|---|-----|---|---|---|-----------|---------|---------|---|---|---|---|---|---|
| 6 ADDHYD | 4 | 69  | 3 | 1 | 2 |           |         |         | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 REACH  | 3 | 186 |   | 2 | 1 | 1400.0000 | .7000   | 1.51000 | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 RUNOFF | 1 | 86  |   |   | 2 | .0500     | 75.0000 | .37000  | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 ADDHYD | 4 | 87  | 1 | 2 | 3 |           |         |         | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 ADDHYD | 4 | 87  | 4 | 3 | 1 |           |         |         | 0 | 0 | 0 | 0 | 0 | 1 |

|              |          |       |                                                  |
|--------------|----------|-------|--------------------------------------------------|
| TR20 XEQ     | 10/ 4/95 | 10:29 | UPPER SAND CREEK -- FUTURE CONDITION -- ALTERNAT |
| REV PC/09/83 |          |       | 24 HR TYPE IIA STORM (100- AND 10-YR, AMC=2)     |

|          |   |     |   |   |   |           |         |         |   |   |   |   |   |   |
|----------|---|-----|---|---|---|-----------|---------|---------|---|---|---|---|---|---|
| 6 REACH  | 3 | 163 |   | 1 | 2 | 4400.0000 | .2000   | 1.64000 | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 RUNOFF | 1 | 63  |   |   | 3 | .1600     | 73.0000 | .43000  | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 ADDHYD | 4 | 63  | 2 | 3 | 4 |           |         | 1       | 1 | 0 | 1 | 0 | 1 |   |
| 6 REACH  | 3 | 160 |   | 4 | 1 | 4400.0000 | .2000   | 1.65000 | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 RUNOFF | 1 | 60  |   |   | 3 | .1500     | 72.0000 | .41000  | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 ADDHYD | 4 | 60  | 1 | 3 | 4 |           |         | 0       | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 RUNOFF | 1 | 59  |   |   | 3 | .1600     | 86.0000 | .33000  | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 ADDHYD | 4 | 60  | 4 | 3 | 5 |           |         | 0       | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 RUNOFF | 1 | 68  |   |   | 1 | .2200     | 75.0000 | .65000  | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 REACH  | 3 | 167 |   | 1 | 3 | 3300.0000 | .7000   | 1.51000 | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 RUNOFF | 1 | 67  |   |   | 1 | .2700     | 85.0000 | .54000  | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 ADDHYD | 4 | 67  | 3 | 1 | 2 |           |         | 0       | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 REACH  | 3 | 164 |   | 2 | 3 | 2500.0000 | .8000   | 1.51000 | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 RUNOFF | 1 | 64  |   |   | 2 | .2500     | 85.0000 | .30000  | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 ADDHYD | 4 | 64  | 3 | 2 | 1 |           |         | 0       | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 REACH  | 3 | 159 |   | 1 | 3 | 3300.0000 | .5000   | 1.62000 | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 ADDHYD | 4 | 60  | 5 | 3 | 2 |           |         | 1       | 1 | 0 | 1 | 0 | 1 |   |
| 6 REACH  | 3 | 151 |   | 2 | 1 | 4000.0000 | .1000   | 1.65001 | 1 | 0 | 1 | 0 | 1 |   |
| 6 RUNOFF | 1 | 51  |   |   | 5 | .1500     | 75.0000 | .39000  | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 ADDHYD | 4 | 51  | 1 | 5 | 2 |           |         | 0       | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 RUNOFF | 1 | 49  |   |   | 1 | .1000     | 78.0000 | .34000  | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 ADDHYD | 4 | 51  | 1 | 2 | 5 |           |         | 0       | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 RUNOFF | 1 | 52  |   |   | 1 | .1900     | 85.0000 | .61000  | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 ADDHYD | 4 | 51  | 1 | 5 | 3 |           |         | 0       | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 RUNOFF | 1 | 65  |   |   | 1 | .1000     | 85.0000 | .26000  | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 REACH  | 3 | 158 |   | 1 | 2 | 3600.0000 | .4000   | 1.63000 | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 RUNOFF | 1 | 58  |   |   | 1 | .1700     | 93.0000 | .26000  | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 ADDHYD | 4 | 58  | 1 | 2 | 5 |           |         | 0       | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 REACH  | 3 | 152 |   | 5 | 1 | 3500.0000 | .3000   | 1.63001 | 1 | 0 | 1 | 0 | 1 |   |
| 6 ADDHYD | 4 | 51  | 3 | 1 | 4 |           |         | 1       | 1 | 0 | 1 | 0 | 1 |   |
| 6 RUNOFF | 1 | 62  |   |   | 3 | .2500     | 86.0000 | .70000  | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 REACH  | 3 | 161 |   | 3 | 2 | 3400.0000 | .7000   | 1.51000 | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 RUNOFF | 1 | 61  |   |   | 1 | .1300     | 73.0000 | .62000  | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 ADDHYD | 4 | 61  | 1 | 2 | 3 |           |         | 0       | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 REACH  | 3 | 150 |   | 3 | 2 | 2950.0000 | .6000   | 1.53001 | 1 | 0 | 1 | 0 | 1 |   |
| 6 RUNOFF | 1 | 50  |   |   | 3 | .1300     | 85.0000 | .64000  | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 ADDHYD | 4 | 50  | 2 | 3 | 1 |           |         | 1       | 1 | 0 | 1 | 0 | 1 |   |
| 6 REACH  | 3 | 149 |   | 1 | 2 | 2400.0000 | .3000   | 1.63000 | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 ADDHYD | 4 | 51  | 4 | 2 | 3 |           |         | 0       | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 REACH  | 3 | 148 |   | 3 | 1 | 3300.0000 | .3000   | 1.62000 | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 RUNOFF | 1 | 48  |   |   | 2 | .1500     | 73.0000 | .23000  | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 ADDHYD | 4 | 48  | 1 | 2 | 3 |           |         | 0       | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 REACH  | 3 | 141 |   | 3 | 1 | 3100.0000 | .3000   | 1.62000 | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 RUNOFF | 1 | 40  |   |   | 2 | .3000     | 79.0000 | .62000  | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 ADDHYD | 4 | 41  | 1 | 2 | 3 |           |         | 0       | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 RUNOFF | 1 | 41  |   |   | 1 | .0800     | 67.0000 | .31000  | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 ADDHYD | 4 | 41  | 1 | 3 | 4 |           |         | 0       | 0 | 0 | 0 | 0 | 0 | 1 |

|          |   |     |   |   |           |         |         |   |   |   |   |   |   |
|----------|---|-----|---|---|-----------|---------|---------|---|---|---|---|---|---|
| 6 REACH  | 3 | 185 | 4 | 1 | 1100.0000 | .3000   | 1.62000 | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 RUNOFF | 1 | 85  |   | 2 | .0500     | 73.0000 | .22000  | 0 | 0 | 0 | 0 | 0 | 1 |

1

TR20 XEQ 10/ 4/95 10:29  
REV PC/09/83

UPPER SAND CREEK -- FUTURE CONDITION -- ALTERNAT  
24 HR TYPE IIA STORM (100- AND 10-YR, AMC=2)

|          |   |     |   |   |   |           |         |         |   |   |   |   |   |   |
|----------|---|-----|---|---|---|-----------|---------|---------|---|---|---|---|---|---|
| 6 ADDHYD | 4 | 85  | 1 | 2 | 3 |           |         |         | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 RUNOFF | 1 | 39  |   |   | 2 | .1500     | 84.0000 | .30000  | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 ADDHYD | 4 | 85  | 2 | 3 | 1 |           |         |         | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 REACH  | 3 | 137 | 1 |   | 2 | 3900.0000 | .2000   | 1.65000 | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 RUNOFF | 1 | 36  |   |   | 7 | .1700     | 82.0000 | .62000  | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 ADDHYD | 4 | 37  | 2 | 7 | 1 |           |         |         | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 RUNOFF | 1 | 37  |   |   | 2 | .1200     | 73.0000 | .21000  | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 ADDHYD | 4 | 37  | 2 | 1 | 4 |           |         |         | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 RUNOFF | 1 | 66  |   |   | 3 | .3100     | 87.0000 | .43000  | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 REACH  | 3 | 157 | 3 |   | 2 | 2300.0000 | .8000   | 1.53000 | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 RUNOFF | 1 | 57  |   |   | 3 | .1600     | 93.0000 | .34000  | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 ADDHYD | 4 | 57  | 2 | 3 | 1 |           |         |         | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 REACH  | 3 | 154 | 1 |   | 2 | 3500.0000 | .5000   | 1.61000 | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 RUNOFF | 1 | 55  |   |   | 3 | .2500     | 86.0000 | .46000  | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 ADDHYD | 4 | 54  | 2 | 3 | 1 |           |         |         | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 RUNOFF | 1 | 56  |   |   | 3 | .1500     | 83.0000 | .23000  | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 REACH  | 3 | 155 | 3 |   | 2 | 3450.0000 | .6000   | 1.53000 | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 ADDHYD | 4 | 54  | 2 | 1 | 5 |           |         |         | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 RUNOFF | 1 | 54  |   |   | 7 | .2500     | 93.0000 | .33000  | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 ADDHYD | 4 | 54  | 7 | 5 | 2 |           |         |         | 1 | 1 | 0 | 1 | 0 | 1 |
| 6 REACH  | 3 | 153 | 2 |   | 3 | 2050.0000 | .5000   | 1.61000 | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 RUNOFF | 1 | 53  |   |   | 5 | .1700     | 74.0000 | .41000  | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 ADDHYD | 4 | 53  | 3 | 5 | 1 |           |         |         | 1 | 1 | 0 | 1 | 0 | 1 |
| 6 REACH  | 3 | 147 | 1 |   | 3 | 2300.0000 | .4000   | 1.62000 | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 RUNOFF | 1 | 47  |   |   | 2 | .2600     | 74.0000 | .45000  | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 ADDHYD | 4 | 47  | 3 | 2 | 1 |           |         |         | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 REACH  | 3 | 142 | 1 |   | 2 | 5400.0000 | .3000   | 1.61000 | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 RUNOFF | 1 | 42  |   |   | 3 | .2000     | 81.0000 | .33000  | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 ADDHYD | 4 | 43  | 3 | 2 | 1 |           |         |         | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 RUNOFF | 1 | 43  |   |   | 2 | .1400     | 85.0000 | .25000  | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 ADDHYD | 4 | 43  | 1 | 2 | 5 |           |         |         | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 RUNOFF | 1 | 45  |   |   | 1 | .2400     | 86.0000 | .32000  | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 RUNOFF | 1 | 46  |   |   | 2 | .2300     | 75.0000 | .44000  | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 ADDHYD | 4 | 45  | 1 | 2 | 3 |           |         |         | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 REACH  | 3 | 143 | 3 |   | 2 | 2750.0000 | .7000   | 1.55000 | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 ADDHYD | 4 | 43  | 2 | 5 | 1 |           |         |         | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 REACH  | 3 | 136 | 1 |   | 2 | 2050.0000 | .8000   | 1.55000 | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 ADDHYD | 4 | 37  | 2 | 4 | 1 |           |         |         | 1 | 1 | 0 | 1 | 0 | 1 |
| 6 REACH  | 3 | 129 | 1 |   | 2 | 3800.0000 | .1000   | 1.65000 | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 RUNOFF | 1 | 27  |   |   | 3 | .1600     | 85.0000 | .23000  | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 ADDHYD | 4 | 29  | 2 | 3 | 1 |           |         |         | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 RUNOFF | 1 | 38  |   |   | 3 | .3200     | 76.0000 | .58000  | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 REACH  | 3 | 128 | 3 |   | 2 | 1700.0000 | 1.2000  | 1.47000 | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 RUNOFF | 1 | 28  |   |   | 4 | .1700     | 86.0000 | .18000  | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 ADDHYD | 4 | 28  | 2 | 4 | 5 |           |         |         | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 REACH  | 3 | 127 | 5 |   | 3 | 2300.0000 | 1.0000  | 1.47000 | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 ADDHYD | 4 | 29  | 1 | 3 | 5 |           |         |         | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 RUNOFF | 1 | 29  |   |   | 1 | .2300     | 80.0000 | .24000  | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 ADDHYD | 4 | 29  | 1 | 5 | 4 |           |         |         | 0 | 0 | 0 | 0 | 0 | 1 |

1

TR20 XEQ 10/ 4/95 10:29  
REV PC/09/83

UPPER SAND CREEK -- FUTURE CONDITION -- ALTERNAT  
24 HR TYPE IIA STORM (100- AND 10-YR, AMC=2)

|          |   |     |    |   |           |         |         |   |   |   |   |   |
|----------|---|-----|----|---|-----------|---------|---------|---|---|---|---|---|
| 6 REACH  | 3 | 184 | 4  | 2 | 1350.0000 | .2000   | 1.63000 | 0 | 0 | 0 | 0 | 1 |
| 6 RUNOFF | 1 | 84  |    | 3 | .0400     | 86.0000 | .08000  | 0 | 0 | 0 | 0 | 1 |
| 6 ADDHYD | 4 |     | 30 | 2 | 3         |         | 0       | 0 | 0 | 0 | 0 | 1 |
| 6 RUNOFF | 1 | 30  |    | 3 | .1000     | 82.0000 | .57000  | 0 | 0 | 0 | 0 | 1 |
| 6 ADDHYD | 4 |     | 30 | 3 | 1         |         | 0       | 0 | 0 | 0 | 0 | 1 |
| 6 RUNOFF | 1 | 31  |    | 3 | .2100     | 92.0000 | .70000  | 0 | 0 | 0 | 0 | 1 |
| 6 ADDHYD | 4 |     | 30 | 2 | 3         |         | 0       | 0 | 0 | 0 | 0 | 1 |
| 6 RUNOFF | 1 | 44  |    | 3 | .1700     | 81.0000 | .46000  | 0 | 0 | 0 | 0 | 1 |
| 6 REACH  | 3 | 135 |    | 2 | 3100.0000 | .9000   | 1.52000 | 0 | 0 | 0 | 0 | 1 |
| 6 RUNOFF | 1 | 35  |    | 3 | .1200     | 84.0000 | .34000  | 0 | 0 | 0 | 0 | 1 |
| 6 ADDHYD | 4 |     | 35 | 3 | 2         |         | 0       | 0 | 0 | 0 | 0 | 1 |
| 6 RUNOFF | 1 | 34  |    | 4 | .2900     | 84.0000 | .54000  | 0 | 0 | 0 | 0 | 1 |
| 6 ADDHYD | 4 |     | 35 | 5 | 4         |         | 0       | 0 | 0 | 0 | 0 | 1 |
| 6 REACH  | 3 | 130 |    | 2 | 3700.0000 | .9000   | 1.52000 | 0 | 0 | 0 | 0 | 1 |
| 6 ADDHYD | 4 |     | 30 | 1 | 2         |         | 0       | 0 | 0 | 0 | 0 | 1 |
| 6 RUNOFF | 1 | 32  |    | 1 | .1100     | 95.0000 | .56000  | 0 | 0 | 0 | 0 | 1 |
| 6 RUNOFF | 1 | 33  |    | 2 | .2900     | 92.0000 | .25000  | 0 | 0 | 0 | 0 | 1 |
| 6 ADDHYD | 4 |     | 33 | 2 | 1         |         | 0       | 0 | 0 | 0 | 0 | 1 |
| 6 REACH  | 3 | 131 |    | 2 | 4400.0000 | .7000   | 1.52000 | 0 | 0 | 0 | 0 | 1 |
| 6 ADDHYD | 4 |     | 30 | 3 | 2         |         | 0       | 0 | 0 | 0 | 0 | 1 |
| 6 REACH  | 3 | 125 |    | 3 | 1200.0000 | .4000   | 1.63000 | 0 | 0 | 0 | 0 | 1 |
| 6 RUNOFF | 1 | 26  |    | 2 | .1900     | 85.0000 | .22000  | 0 | 0 | 0 | 0 | 1 |
| 6 ADDHYD | 4 |     | 25 | 3 | 2         |         | 0       | 0 | 0 | 0 | 0 | 1 |
| 6 RUNOFF | 1 | 25  |    | 2 | .0400     | 82.0000 | .07000  | 0 | 0 | 0 | 0 | 1 |
| 6 ADDHYD | 4 |     | 25 | 1 | 2         |         | 0       | 0 | 0 | 0 | 0 | 1 |
| 6 RUNOFF | 1 | 24  |    | 1 | .1900     | 93.0000 | .23000  | 0 | 0 | 0 | 0 | 1 |
| 6 ADDHYD | 4 |     | 25 | 1 | 3         |         | 0       | 0 | 0 | 0 | 0 | 1 |
| 6 REACH  | 3 | 120 |    | 4 | 2700.0000 | .4000   | 1.61000 | 0 | 0 | 0 | 0 | 1 |
| 6 RUNOFF | 1 | 22  |    | 2 | .1300     | 90.0000 | .13000  | 0 | 0 | 0 | 0 | 1 |
| 6 ADDHYD | 4 |     | 20 | 4 | 2         |         | 0       | 0 | 0 | 0 | 0 | 1 |
| 6 RUNOFF | 1 | 20  |    | 2 | .0900     | 79.0000 | .19000  | 0 | 0 | 0 | 0 | 1 |
| 6 ADDHYD | 4 |     | 20 | 3 | 2         |         | 0       | 0 | 0 | 0 | 0 | 1 |
| 6 RUNOFF | 1 | 21  |    | 2 | .1200     | 86.0000 | .14000  | 0 | 0 | 0 | 0 | 1 |
| 6 ADDHYD | 4 |     | 20 | 2 | 1         |         | 0       | 0 | 0 | 0 | 0 | 1 |
| 6 RUNOFF | 1 | 19  |    | 2 | .1700     | 85.0000 | .28000  | 0 | 0 | 0 | 0 | 1 |
| 6 ADDHYD | 4 |     | 20 | 3 | 2         |         | 0       | 0 | 0 | 0 | 0 | 1 |
| 6 RUNOFF | 1 | 83  |    | 2 | .1100     | 91.0000 | .23000  | 0 | 0 | 0 | 0 | 1 |
| 6 ADDHYD | 4 |     | 20 | 1 | 2         |         | 0       | 0 | 0 | 0 | 0 | 1 |
| 6 RUNOFF | 1 | 23  |    | 2 | .2800     | 93.0000 | .34000  | 0 | 0 | 0 | 0 | 1 |
| 6 REACH  | 3 | 183 |    | 1 | 2700.0000 | 1.4000  | 1.45000 | 0 | 0 | 0 | 0 | 1 |
| 6 ADDHYD | 4 |     | 20 | 1 | 3         |         | 1       | 1 | 0 | 1 | 0 | 1 |
| 6 REACH  | 3 | 113 |    | 1 | 4200.0000 | .1000   | 1.65000 | 0 | 0 | 0 | 0 | 1 |
| 6 RUNOFF | 1 | 13  |    | 3 | .2400     | 82.0000 | .30000  | 0 | 0 | 0 | 0 | 1 |
| 6 ADDHYD | 4 |     | 13 | 1 | 3         |         | 0       | 0 | 0 | 0 | 0 | 1 |
| 6 RUNOFF | 1 | 14  |    | 3 | .0700     | 86.0000 | .23000  | 0 | 0 | 0 | 0 | 1 |
| 6 ADDHYD | 4 |     | 13 | 2 | 3         |         | 0       | 0 | 0 | 0 | 0 | 1 |
| 6 RUNOFF | 1 | 15  |    | 2 | .1700     | 84.0000 | .31000  | 0 | 0 | 0 | 0 | 1 |
| 6 ADDHYD | 4 |     | 13 | 1 | 2         |         | 0       | 0 | 0 | 0 | 0 | 1 |
| 6 RUNOFF | 1 | 16  |    | 2 | .2100     | 83.0000 | .34000  | 0 | 0 | 0 | 0 | 1 |